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Joint Operating Agreement

SK Energy Co., Ltd.

And

Houston American Energy Corp.

**PLAINTIFF'S
EXHIBIT
PX-181**

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Exhibit A - Contract Area
Exhibit B - Accounting Procedure

JOINT OPERATING AGREEMENT

THIS Agreement (“**Agreement**”) is entered into on October 1, 2009 to be effective as of May 31st, 2009 (“**Effective Date**”) between **SK ENERGY CO., LTD.**, a corporation organized and existing under the laws of the Republic of Korea (“**SK**”), and Houston American Energy Corp., a company organized and existing under the laws of the state of Delaware, United States (“**HAE**”).

WITNESSETH:

WHEREAS, on November 7, 2008, SK submitted to the National Hydrocarbon Agency of Colombia (“**ANH**”), an offer related to Block CPO-4 pursuant to the Process for Invitation of Offers to Contract Exploratory Blocks in the Colombia 2008 Round (Proceso de Solicitud de Ofertas Para la Contratación de Bloques Exploratorios de la “Ronda Colombia 2008”);

WHEREAS, by resolution No. 610 of December 5, 2008, the National Hydrocarbon Agency of Colombia (ANH) awarded Block CPO-4 to SK;

WHEREAS, on December 18, 2008, the ANH and SK entered into Contract for Exploration and Production No. 29 of 2008 Llanos Orientales - Area Occidental Block CPO-4 (Contrato de Exploración y Producción No. 29 de 2008 Llanos Orientales - Area Occidental CPO-4) (“**Contract**”); and

WHEREAS, on May 31, 2009, SK and HAE entered into a Farm-out Agreement which transfers twenty-five percent (25%) of SK’s Participating Interest in its rights and obligations under the Contract to Block CPO-4 to HAE.

NOW, THEREFORE, the parties agree as follows:

ARTICLE 1 DEFINITIONS

As used in this Agreement, the following words and terms shall have the meaning ascribed to them below:

- 1.1 **Accounting Procedure** means the rules, provisions and conditions contained in Exhibit B.
- 1.2 **AFE** means an authorization for expenditure pursuant to Article 6.7.
- 1.3 **Affiliate** means a legal entity which Controls, or is Controlled by, or which is Controlled by an entity which Controls, a party. For purposes of this definition, “**Control**” means the ownership directly or indirectly of fifty (50) percent or more of the voting rights in a legal entity. “**Controls**”, “**Controlled by**” and other derivatives shall be construed accordingly.

- 1.4 **Agreed Interest Rate** means interest compounded on a monthly basis, at the rate per annum equal to the one (1) month term, London Interbank Offered Rate (LIBOR) for U.S. dollar deposits as quoted by the British Bankers' Association plus five (5) percentage points, applicable on the first Business Day prior to the due date of payment and thereafter on the first Business Day of each succeeding calendar month. If the aforesaid rate is contrary to any applicable usury law, the rate of interest to be charged shall be the maximum rate permitted by such applicable law.
- 1.5 **Appraisal Well** means any well (other than an Exploration Well or a Development Well) whose purpose at the time of commencement of drilling such well is to appraise the extent or the volume of hydrocarbon reserves contained in an existing Discovery.
- 1.6 **Business Day** means a day on which the banks in Bogota, the Republic of Colombia are customarily open for business.
- 1.7 **Commercial Discovery** means any Discovery that is sufficient to entitle the parties to apply for authorization from the Government to commence exploitation.
- 1.8 **Completion** means an operation intended to complete a well through the Christmas tree as a producer of Hydrocarbons in one or more Zones, including the setting of production casing, perforating, stimulating the well and production Testing conducted in such operation. "**Complete**" and other derivatives shall be construed accordingly.
- 1.9 **Consenting Party** means a party who agrees to participate in and pay its share of the cost of a Sole Risk Operation.
- 1.10 **Consequential Loss** means any loss, damages, costs, expenses or liabilities caused (directly or indirectly) by any of the following arising out of, relating to, or connected with this Agreement or the operations carried out under this Agreement: (i) reservoir or formation damage; (ii) inability to produce, use or dispose of Hydrocarbons; (iii) loss or deferment of income; (iv) punitive damages; or (v) other indirect damages or losses whether or not similar to the foregoing.
- 1.11 **Contract** means the instrument identified in the recitals to this Agreement and any extension, renewal or amendment thereto.
- 1.12 **Contract Area** means as of the Effective Date the area that is described in Exhibit A. The perimeter or perimeters of the Contract Area shall correspond to that area covered by the Contract, as such area may vary from time to time during the term of validity of the Contract.
- 1.13 **Deepening** means an operation whereby a well is drilled to an objective Zone below the deepest Zone in which the well was previously drilled, or below the deepest Zone

proposed in the associated AFE (if required), whichever is the deeper. "**Deepen**" and other derivatives shall be construed accordingly.

- 1.14 Development Well** means any well drilled for the production of Hydrocarbons pursuant to a development plan.
- 1.15 Discovery** means the discovery of an accumulation of Hydrocarbons whose existence until that moment was unproven by drilling.
- 1.16 Environmental Loss** means any loss, damages, costs, expenses or liabilities (other than Consequential Loss) caused by a discharge of Hydrocarbons, pollutants or other contaminants into or onto any medium (such as land, surface water, ground water and/or air) arising out of, relating to, or connected with this Agreement or the operations carried out under this Agreement, including any of the following: (i) injury or damage to, or destruction of, natural resources or real or personal property; (ii) cost of pollution control, cleanup and removal; (iii) cost of restoration of natural resources; and (iv) fines, penalties or other assessments.
- 1.17 Exploration Well** means any well the purpose of which at the time of the commencement of drilling is to explore for an accumulation of Hydrocarbons, which accumulation was at that time unproven by drilling.
- 1.18 G & G Data** means only geological, geophysical and geochemical data and other similar information that is not obtained through a well bore.
- 1.19 Government** means the government of the Republic of Colombia and any political subdivision, agency or instrumentality thereof.
- 1.20 Gross Negligence / Willful Misconduct** means any act or failure to act (whether sole, joint or concurrent) by any person or entity which was intended to cause, or which was in reckless disregard of or wanton indifference to, harmful consequences such person or entity knew, or should have known, such act or failure would have on the safety or property of another person or entity.
- 1.21 Hydrocarbons** means all substances which are subject to and covered by the Contract, including crude oil and Natural Gas.
- 1.22 Joint Account** means the accounts maintained by Operator in accordance with the provisions of this Agreement, including the Accounting Procedure.
- 1.23 Joint Operations** means those operations and activities carried out by Operator pursuant to this Agreement, the costs of which are chargeable to all parties.
- 1.24 Joint Property** means, at any point in time, all wells, facilities, equipment, materials, information, funds and property (other than Hydrocarbons) held for use in Joint Operations.

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- 1.25 **Laws / Regulations** means those laws, statutes, rules and regulations governing activities under the Contract.
- 1.26 **Minimum Work Obligations** means those work and/or expenditure obligations specified in the Contract that must be performed in order to satisfy the obligations of the Contract.
- 1.27 **Natural Gas** means all gaseous Hydrocarbons (including wet gas, dry gas and residue gas) that are subject to and covered by the Contract, but excluding crude oil.
- 1.28 **Non-Consenting Party** means each party who elects not to participate in a Sole Risk Operation.
- 1.29 **Non-Operator** means each party to this Agreement other than Operator.
- 1.30 **Operating Committee** means the committee constituted in accordance with Article 5.
- 1.31 **Operator** means a party to this Agreement designated as such in accordance with Articles 4 or 7.11(D).
- 1.32 **Participating Interest** means as to any party, the undivided interest of such party (expressed as a percentage of the total interests of all parties) in the rights and obligations derived from the parties' interest in the Contract and this Agreement.
- 1.33 **Plugging Back** means a single operation whereby a deeper Zone is abandoned in order to attempt a Completion in a shallower Zone. "**Plug Back**" and other derivatives shall be construed accordingly.
- 1.34 **Recompletion** means an operation whereby a Completion in one Zone is abandoned in order to attempt a Completion in a different Zone within the existing wellbore. "**Recomplete**" and other derivatives shall be construed accordingly.
- 1.35 **Reworking** means an operation conducted in the wellbore of a well after it is Completed to secure, restore, or improve production in a Zone which is currently open to production in the wellbore. Such operations include well stimulation operations, but exclude any routine repair or maintenance work, or drilling, Sidetracking, Deepening, Completing, ReCompleting, or Plugging Back of a well. "**Rework**" and other derivatives shall be construed accordingly.
- 1.36 **Senior Supervisory Personnel** means, with respect to a party, any individual who functions as its senior resident manager who directs all operations and activities of such party in the country or region in which he is resident, and any manager who directly reports to such senior resident manager in such country or region, but excluding all managers or supervisors who are responsible for or in charge of installations or facilities, onsite drilling, construction or production and related operations, or any other field operations.

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- 1.37 **Sidetracking** means the directional control and intentional deviation of a well from vertical so as to change the bottom hole location unless done to straighten the hole or to drill around junk in the hole or to overcome other mechanical difficulties. "**Sidetrack**" and other derivatives shall be construed accordingly.
- 1.38 **Sole Risk Operation** means those operations and activities carried out pursuant to this Agreement, the costs of which are chargeable to the account of less than all the parties.
- 1.39 **Sole Risk Well** means a well drilled pursuant to a Sole Risk Operation.
- 1.40 **Testing** means an operation intended to evaluate the capacity of a Zone to produce Hydrocarbons. "**Test**" and other derivatives shall be construed accordingly.
- 1.41 **Work Program and Budget** means a work program for Joint Operations and budget therefor as described and approved in accordance with Article 6.
- 1.42 **Zone** means a stratum of earth containing or thought to contain an accumulation of Hydrocarbons separately producible from any other accumulation of Hydrocarbons.

ARTICLE 2 EFFECTIVE DATE AND TERM

This Agreement shall have effect from the Effective Date and shall continue in effect until expiration of the Contract and thereafter until all wells have been plugged and abandoned or otherwise disposed of, all Joint Property has been disposed of by Operator in accordance with this Agreement and there has been a final accounting.

ARTICLE 3 PURPOSE AND PARTICIPATING INTERESTS

3.1 **Purpose**

The purpose of this Agreement is to establish the respective rights and obligations of the parties with regard to operations under the Contract including the joint exploration, appraisal, development, production and disposition of Hydrocarbons from the Contract Area.

3.2 **Participating Interests**

The Participating Interests of the parties as of the Effective Date are:

SK	75%
HAE	25%

3.3 *Ownership, Obligations and Liabilities*

- (A) Unless otherwise provided in this Agreement, all the rights and interests in and under the Contract, all Joint Property, and any Hydrocarbons produced from the Contract Area shall, subject to the terms of the Contract, be owned by the parties in accordance with their respective Participating Interests.
- (B) Unless otherwise provided in this Agreement, the obligations of the parties under the Contract and all liabilities and expenses incurred by Operator in connection with Joint Operations shall be charged to the Joint Account and all credits to the Joint Account shall be shared by the parties, in accordance with their respective Participating Interests.
- (C) Each party shall pay when due, in accordance with the Accounting Procedure, its Participating Interest share of Joint Account expenses, including cash advances and interest, accrued pursuant to this Agreement. A party's payment of any charge under this Agreement shall be without prejudice to its right to later contest the charge.

ARTICLE 4 OPERATOR

4.1 *Designation of Operator*

SK is designated as Operator and agrees to act as such in accordance with this Agreement.

4.2 *Rights and Duties of Operator*

- (A) Subject to the terms and conditions of this Agreement, Operator shall have all of the rights, functions and duties of Operator under the Contract and shall have exclusive charge of and shall conduct all Joint Operations. Operator may employ independent contractors and agents (which independent contractors and agents may include an Affiliate of Operator, a Non-Operator, or an Affiliate of a Non-Operator) in such Joint Operations.
- (B) In the conduct of Joint Operations, Operator shall:
 - (1) perform Joint Operations in accordance with the provisions of the Contract, the Laws / Regulations, this Agreement, and the decisions of the Operating Committee not in conflict with this Agreement;
 - (2) conduct all Joint Operations in a diligent, safe and efficient manner in accordance with such good and prudent petroleum industry practices and

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field conservation principles as are generally followed by the international petroleum industry under similar circumstances;

- (3) exercise due care with respect to the receipt, payment and accounting of funds in accordance with good and prudent practices as are generally followed by the international petroleum industry under similar circumstances;
- (4) subject to Article 4.6 and the Accounting Procedure, neither gain a profit nor suffer a loss as a result of being the Operator in its conduct of Joint Operations;
- (5) perform the duties for the Operating Committee set out in Article 5, and prepare and submit to the Operating Committee proposed Work Programs and Budgets and AFEs, as provided in Article 6;
- (6) acquire all permits, consents, approvals, and surface or other rights that may be required for or in connection with the conduct of Joint Operations;
- (7) upon receipt of reasonable advance notice, permit the representatives of any of the parties to have at all reasonable times, during normal business hours, and at their own risk and expense reasonable access to the Joint Operations with the right to observe all Joint Operations, and to inspect all Joint Property, and to conduct financial audits as provided in the Accounting Procedure;
- (8) undertake to maintain the Contract in full force and effect in accordance with such good and prudent petroleum industry practices as are generally followed by the international petroleum industry under similar circumstances. Operator shall timely pay and discharge all liabilities and expenses incurred in connection with Joint Operations and use its reasonable endeavors to keep and maintain the Joint Property free from all liens, charges and encumbrances arising out of Joint Operations;
- (9) pay to the Government for the Joint Account, within the periods and in the manner prescribed by the Contract and the Laws / Regulations, all periodic payments, royalties, taxes, fees and other payments pertaining to Joint Operations but excluding any taxes measured by the incomes of the parties;
- (10) carry out the obligations of Operator pursuant to the Contract, including preparing and furnishing such reports, records and information as may be required pursuant to the Contract;
- (11) have, in accordance with any decisions of the Operating Committee, the exclusive right and obligation to represent the parties in all dealings with

the Government with respect to matters arising under the Contract and Joint Operations. Operator shall notify the other parties as soon as possible of such meetings. Subject to the Contract and any necessary Government approvals, Non-Operators shall have the right to attend any meetings with the Government with respect to such matters, but only in the capacity of observers. Nothing contained in this Agreement shall restrict any party from holding discussions with the Government with respect to any issue peculiar to its particular business interests arising under the Contract or this Agreement, but in such event such party shall promptly advise the parties, if possible, before and in any event promptly after such discussions, provided that such party shall not be required to divulge to the parties any matters discussed to the extent the same involve proprietary information or matters not affecting the parties;

- (12) in accordance with Article 9.2 and any decisions of the Operating Committee, assess (to the extent lawful) alternatives for the disposition of Natural Gas from a Discovery;
- (13) in case of an emergency (including a significant fire, explosion, natural gas release, crude oil release, or sabotage; incident involving loss of life, serious injury to an employee, contractor, or third party, or serious property damage; strikes and riots; or evacuations of Operator personnel):
 - (i) take all necessary and proper measures for the protection of life, health, the environment and property; and
 - (ii) as soon as reasonably practicable, report to Non-Operators the details of such event and any measures Operator has taken or plans to take in response thereto;
- (14) include, to the extent practical, in its contracts with independent contractors and to the extent lawful, provisions which:
 - (a) establish that such contractors can only enforce their contracts against Operator;
 - (b) permit Operator, on behalf of itself and Non-Operators, to enforce contractual indemnities against, and recover losses and damages suffered by the parties from, (insofar as recoverable under their contracts) such contractors; and
 - (c) require such contractors to obtain the insurance as per the conditions required under Article 4.7(E).

4.3 *Operator Personnel*

Operator shall engage or retain only such employees, contractors, consultants and agents as are reasonably necessary to conduct Joint Operations. Subject to the Contract and this Agreement, Operator shall determine the number of employees, contractors, consultants

and agents, the selection of such persons, their hours of work, and the compensation to be paid to all such persons in connection with Joint Operations.

4.4 Information Supplied by Operator

- (A) Operator shall provide Non-Operators with the following data and reports (to the extent to be charged to the Joint Account) as they are currently produced or compiled from Joint Operations:
- (1) copies of all logs or surveys, including in digitally recorded format if such exists;
 - (2) daily drilling reports;
 - (3) copies of all Tests and core data and analysis reports;
 - (4) final well recap report;
 - (5) copies of plugging reports;
 - (6) copies of final geological and geophysical maps, seismic sections and shot point location maps;
 - (7) engineering studies, development schedules and quarterly progress reports on development projects;
 - (8) field and well performance reports, including reservoir studies and reserve estimates;
 - (9) as requested by a Non-Operator, (i) copies of all material reports relating to Joint Operations or the Contract Area furnished by Operator to the Government; and (ii) other material studies and reports relating to Joint Operations;
 - (10) such additional information as a Non-Operator may reasonably request, provided that the requesting party or parties pay the costs of preparation of such information and that the preparation of such information will not unduly burden Operator's administrative and technical personnel. Only Non-Operators who pay such costs will receive such additional information; and
 - (11) other reports as directed by the Operating Committee.
- (B) Operator shall give Non-Operators access at all reasonable times during normal business hours to all data and reports (other than data and reports provided to Non-Operators in accordance with Article 4.4(A)) acquired in the conduct of Joint

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Operations, which a Non-Operator may reasonably request. Any Non-Operator may make copies of such other data at its sole expense.

4.5 *Settlement of Claims and Lawsuits*

- (A) Operator shall promptly notify the parties of any and all material claims or suits that relate in any way to Joint Operations. Operator shall represent the parties and defend or oppose the claim or suit. Operator may in its sole discretion compromise or settle any such claim or suit or any related series of claims or suits for an amount not to exceed the equivalent of two hundred fifty thousand (\$250,000.00) U.S. dollars exclusive of legal fees. Operator shall obtain the approval and direction of the Operating Committee on amounts in excess of the above-stated amount. Without prejudice to the foregoing, each Non-Operator shall have the right to be represented by its own counsel at its own expense in the settlement, compromise or defense of such claims or suits.
- (B) Any Non-Operator shall promptly notify the other parties of any claim made against such Non-Operator by a third party that arises out of or may affect the Joint Operations, and such Non-Operator shall defend or settle the same in accordance with any directions given by the Operating Committee. Those costs, expenses and damages incurred pursuant to such defense or settlements, which are attributable to Joint Operations, shall be for the Joint Account.
- (C) Notwithstanding Article 4.5(A) and Article 4.5(B), each party shall have the right to participate in any such suit, prosecution, defense or settlement conducted in accordance with Article 4.5(A) and Article 4.5(B), at its sole cost and expense; provided always that no party may settle its Participating Interest share of any claim without first satisfying the Operating Committee that it can do so without prejudicing the interests of the Joint Operations.

4.6 *Limitation on Liability of Operator*

- (A) Neither Operator nor any other Indemnitee (as defined below) shall bear (except as a party to the extent of its Participating Interest share) any damage, loss, cost, expense or liability resulting from performing (or failing to perform) the duties and functions of Operator, and the Indemnitees are hereby released from liability to Non-Operators for any and all damages, losses, costs, expenses and liabilities arising out of, incident to or resulting from such performance or failure to perform, even though caused in whole or in part by a pre-existing defect, or the negligence (whether sole, joint or concurrent), gross negligence or strict liability of Operator (or any such Indemnitee).
- (B) The parties shall (in proportion to their Participating Interests) defend and indemnify Operator and its Affiliates, and their respective directors, officers, and employees (collectively, the "*Indemnitees*"), from any and all damages, losses, costs, expenses (including reasonable legal costs, expenses and attorneys' fees)

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and liabilities incident to claims, demands or causes of action brought by or on behalf of any person or entity, which claims, demands or causes of action arise out of, are incident to or result from Joint Operations, even though caused in whole or in part by a pre-existing defect, or the negligence (whether sole, joint or concurrent), gross negligence or strict liability of Operator (or any such Indemnitee).

- (C) Notwithstanding Articles 4.6(A) or 4.6(B), if any Senior Supervisory Personnel of Operator or its Affiliates engage in Gross Negligence / Willful Misconduct which proximately causes the parties to incur damage, loss, cost, expense or liability for claims, demands or causes of action referred to in Articles 4.6(A) or 4.6(B), then, in addition to its Participating Interest share Operator shall bear only the actual damage, loss, cost, expense and liability to repair, replace and/or remove Joint Property so damaged or lost, if any.
- (D) Notwithstanding the foregoing, under no circumstances shall Operator (except as a party to the extent of its Participating Interest) or any other Indemnitee bear any Consequential Loss or Environmental Loss.
- (E) Nothing in this Article 4.6 shall be deemed to relieve Operator from its Participating Interest share of any damage, loss, cost, expense or liability arising out of, incident to, or resulting from Joint Operations.

4.7 *Insurance Obtained by Operator*

- (A) Operator shall procure and maintain for the Joint Account all insurance in the types and amounts required by the Contract or the Laws / Regulations including employer's liability insurance.
- (B) Operator shall procure and maintain any further insurance, at reasonable rates, as the Operating Committee may from time to time require. In the event that such further insurance is, in Operator's reasonable opinion, unavailable or available only at an unreasonable cost, Operator shall promptly notify the Non-Operators in order to allow the Operating Committee to reconsider such further insurance. Examples of the further insurance are builder's risk, marine cargo and tanker pollution liability.
- (C) Operator shall, with respect to all insurance purchased by Operator under Article 4.7(A) and/or Article 4.7(B):
 - (1) use reasonable endeavors to procure or cause to be procured such insurance prior to or concurrently with, the commencement of relevant operations and maintain or cause to be maintained such insurance during the term of the relevant operations or any longer term required under the Contract or the Laws / Regulations;

- (2) promptly inform the participating parties when such insurance is obtained and supply them with certificates of insurance or copies of the relevant policies when the same are issued;
 - (3) arrange for the participating parties, according to their respective Participating Interests, to be named as co-insureds on the relevant policies with waivers of subrogation in favor of all the parties with respect to their interests under this Agreement;
 - (4) use reasonable endeavors to ensure that each policy shall survive the default or bankruptcy of the insured for claims arising out of an event before such default or bankruptcy and that all rights of the insured shall revert to the parties not in default or bankruptcy; and
 - (5) duly file all claims and take all necessary and proper steps to collect any proceeds and credit any proceeds to the participating parties in proportion to their respective Participating Interests.
- (D) The cost of insurance under Article 4.7(A) and Article 4.7(B) shall be for the Joint Account. The cost of insurance with respect to a Sole Risk Operation shall be charged to the Consenting Parties.
- (E) Operator shall use its reasonable endeavors to require all contractors performing work with respect to Joint Operations to:
- (1) obtain and maintain any and all insurance in the types and amounts required by the Contract, the Laws / Regulations or any decision of the Operating Committee;
 - (2) name the parties as additional insureds on the contractor's insurance policies and obtain from the insurers waivers of all rights of recourse against Operator, Non-Operators and their insurers; and
 - (3) provide Operator with certificates reflecting such insurance prior to the commencement of their services.

4.8 *Commingling of Funds*

Operator may not commingle with Operator's own funds the monies which Operator receives for the Joint Account pursuant to this Agreement.

4.9 *Resignation of Operator*

Subject to Article 4.11, Operator may resign as Operator at any time by so notifying the other parties at least one hundred twenty (120) days prior to the effective date of such resignation.

4.10 *Removal of Operator*

- (A) Subject to Article 4.11, Operator shall be removed upon receipt of notice from any Non-Operator if:
- (1) Operator becomes insolvent or bankrupt, or makes an assignment for the benefit of creditors;
 - (2) an order is made by a court or an effective resolution is passed for the reorganization under any bankruptcy law, dissolution, liquidation, or winding up of Operator;
 - (3) a receiver is appointed for a substantial part of Operator's assets; or
 - (4) Operator dissolves, liquidates, is wound up, or otherwise terminates its existence.
- (B) Subject to Article 4.11, Operator may be removed by the decision of the Non-Operators if Operator has committed a material breach of this Agreement and has either failed to commence to cure that breach within thirty (30) days of receipt of a notice from Non-Operators detailing the alleged breach or failed to diligently pursue the cure to completion. Any decision of Non-Operators to give notice of breach to Operator or to remove Operator under this Article 4.10(B) shall be made by an affirmative vote of Non-Operators holding a combined Participating Interest of more than fifty percent (50%). However, if Operator disputes such alleged commission of or failure to cure a material breach and dispute resolution proceedings are initiated pursuant to Article 18.2 in relation to such breach, then Operator shall remain appointed and no successor Operator may be appointed pending the conclusion or abandonment of such proceedings, subject to the terms of Article 8.3 with respect to Operator's breach of its payment obligations.
- (C) If there is a direct or indirect change in Control of Operator (other than a transfer of Control to an Affiliate of Operator), Operator shall promptly notify the other parties. The Operating Committee shall vote within thirty (30) days of such notification on whether or not a successor Operator should be named pursuant to Article 4.11.

4.11 *Appointment of Successor*

When a change of Operator occurs pursuant to Article 4.9 or Article 4.10:

- (A) If Operator is removed, other than in the case of Article 4.10(C), neither Operator nor any Affiliate of Operator shall have the right to be considered as a candidate for successor Operator.

- (B) The resigning or removed Operator shall be compensated out of the Joint Account for its reasonable expenses directly related to its resignation or removal, except in the case of Article 4.10(B).
- (C) The resigning or removed Operator and the successor Operator shall arrange for the taking of an inventory of all Joint Property and Hydrocarbons, and an audit of the books and records of the removed Operator. Such inventory and audit shall be completed, if possible, no later than the effective date of the change of Operator and shall be subject to the approval of the Operating Committee. The liabilities and expenses of such inventory and audit shall be charged to the Joint Account.
- (D) Replacement of Operator by a successor Operator shall not become effective prior to receipt of any necessary Government approvals.
- (E) Upon the effective date of the resignation or removal, the successor Operator shall succeed to all duties, rights and authority prescribed for Operator. The former Operator shall transfer to the successor Operator custody of all Joint Property, books of account, records and other documents maintained by Operator pertaining to the Contract Area and to Joint Operations. Upon delivery of the above-described property and data, the former Operator shall be released and discharged from all obligations and liabilities as Operator accruing after such date.
- (F) If the Operator resigns or is removed, the new Operator shall be the remaining party which has at the time the largest Participating Interest subject to that party's satisfaction of applicable legal requirements for becoming Operator. If no remaining party has a Participating Interest larger than any other party, then the Operating Committee shall appoint a successor Operator pursuant to the applicable voting procedure.

4.12 Health, Safety and Environment ("HSE")

- (A) With the goal of achieving safe and reliable operations in compliance with applicable HSE laws, rules and regulations (including avoiding significant and unintended impact on the safety or health of people, on property, or on the environment), Operator shall in the conduct of Joint Operations:
 - (1) establish and implement an HSE plan in a manner consistent with standards and procedures generally followed in the international petroleum industry under similar circumstances;
 - (2) design and operate Joint Property consistent with the HSE plan; and
 - (3) conform with locally applicable HSE laws, rules and regulations and other HSE-related statutory requirements that may apply.

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- (B) The Operating Committee shall from time to time review details of Operator's HSE plan and Operator's implementation thereof.
- (C) In the conduct of Joint Operations, Operator shall establish an annual audit program whereby independent auditors review and verify the effectiveness of the HSE plan.
- (D) Operator shall require its contractors, consultants and agents undertaking activities for the Joint Account to manage HSE risks in a manner consistent with the requirements of this Article 4.12.
- (E) Operator shall establish and enforce rules consistent with those generally followed in the international petroleum industry under similar circumstances that, at a minimum, prohibit within the Contract Area the following:
 - (1) possession, use, distribution or sale of firearms, explosives, or other weapons without the prior written approval of senior management of Operator;
 - (2) possession, use, distribution or sale of alcoholic beverages without the prior written approval of senior management of Operator; and
 - (3) possession, use, distribution or sale of illicit or non-prescribed controlled substances and the misuse of prescribed drugs.

ARTICLE 5 OPERATING COMMITTEE

5.1 *Establishment of Operating Committee*

To provide for the overall supervision and direction of Joint Operations, there is established an Operating Committee composed of representatives of each party holding a Participating Interest. Each party shall appoint one (1) representative and one (1) alternate representative to serve on the Operating Committee. Each party shall, as soon as possible after the Effective Date of this Agreement, give notice in writing to the other parties of the name and address of its representative and alternate representative to serve on the Operating Committee. Each party shall have the right to change its representative and alternate at any time by giving notice of such change to the other parties.

5.2 *Powers and Duties of Operating Committee*

The Operating Committee shall have power and duty to authorize and supervise Joint Operations that are necessary or desirable to fulfill the Contract and properly explore and exploit the Contract Area in accordance with this Agreement and in a manner appropriate in the circumstances.

5.3 Authority to Vote

The representative of a party, or in his absence his alternate representative, shall be authorized to represent and bind such party with respect to any matter which is within the powers of the Operating Committee and is properly brought before the Operating Committee. Each such representative shall have a vote equal to the Participating Interest of the party such person represents. Each alternate representative shall be entitled to attend all Operating Committee meetings but shall have no vote at such meetings except in the absence of the representative for whom he is the alternate. In addition to the representative and alternate representative, each party may also bring to any Operating Committee meetings such technical and other advisors as it may deem appropriate.

5.4 Subcommittees

The Operating Committee may establish such subcommittees, including technical subcommittees, as the Operating Committee may deem appropriate. The functions of such subcommittees shall be in an advisory capacity or as otherwise determined unanimously by the parties. Each party shall have the right to appoint a representative to each subcommittee.

5.5 Notice of Meeting

- (A) Operator may call a meeting of the Operating Committee by giving notice to the parties at least fifteen (15) days in advance of such meeting.
- (B) Any Non-Operator may request a meeting of the Operating Committee by giving notice to all the other parties. Upon receiving such request, Operator shall call such meeting for a date not less than fifteen (15) days nor more than twenty (20) days after receipt of the request.
- (C) The notice periods above may only be waived with the unanimous consent of all the parties.

5.6 Contents of Meeting Notice

- (A) Each notice of a meeting of the Operating Committee as provided by Operator shall contain:
 - (1) the date, time and location of the meeting;
 - (2) an agenda of the matters and proposals to be considered and/or voted upon; and

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- (3) copies of all proposals to be considered at the meeting (including all appropriate supporting information not previously distributed to the parties).
- (B) A party, by notice to the other parties given not less than seven (7) days prior to a meeting, may add additional matters to the agenda for a meeting.
- (C) On the request of a party, and with the unanimous consent of all parties, the Operating Committee may consider at a meeting a proposal not contained in such meeting agenda.

5.7 Location of Meetings

All meetings of the Operating Committee shall be held in the offices of the Operator in Bogotá, Colombia To the extent possible, alternate meetings of the Operating Committee shall be held in the offices of the Operator in Houston, Texas. The Operating Committee may decide to hold meetings of the Operating Committee elsewhere.

5.8 Operator's Duties for Meetings

- (A) With respect to meetings of the Operating Committee and any subcommittee, Operator's duties shall include:
 - (1) timely preparation and distribution of the agenda;
 - (2) organization and conduct of the meeting; and
 - (3) preparation of a written record or minutes of each meeting.
- (B) Operator shall have the right to appoint the chairman of the Operating Committee and all subcommittees.

5.9 Voting Procedure

- (A) Except as otherwise expressly provided in this Agreement, all decisions, approvals and other actions of the Operating Committee on all proposals coming before it shall be decided by the affirmative vote of two (2) or more parties which are not Affiliates then having collectively at least sixty-five percent (65%) of the Participating Interests ("Majority Vote"). If a Majority Vote cannot be reached to permit timely compliance with Minimum Work Obligations required by the Contract and necessary to maintain the Contract in full force and effect, then decisions, approvals or other actions shall be taken by adopting the most heavily supported proposal in terms of Participating Interest. If no proposal is the most heavily supported in terms of Participating Interests, then the Operator shall choose between those competing proposals.

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(B) The following actions shall be taken only upon unanimous vote of the parties:

- (1) amendment or voluntary termination of the Contract;
- (2) amendment of this Agreement;
- (3) unitization of the Contract Area with another area;
- (4) modification of a development plan; and
- (5) agreements with third parties for use of Joint Property.

5.10 Record of Votes

The chairman of the Operating Committee shall appoint a secretary who shall make a record of each proposal voted on and the results of such voting at each Operating Committee meeting. Each representative shall sign and be provided a copy of such record at the end of such meeting, and it shall be considered the final record of the decisions of the Operating Committee.

5.11 Minutes

The secretary shall provide each party with a copy of the minutes of the Operating Committee meeting within fifteen (15) Business Days after the end of the meeting. Each party shall have fifteen (15) days after receipt of such minutes to give notice to the secretary of its objections to the minutes. A failure to give notice specifying objection to such minutes within said fifteen (15) day period shall be deemed to be approval of such minutes. In any event, the votes recorded under Article 5.10 shall take precedence over the minutes described above.

5.12 Voting by Notice

(A) In lieu of a meeting, any party may submit any proposal to the Operating Committee for a vote by notice. The proposing party or parties shall notify Operator who shall give each party's representative notice describing the proposal so submitted and whether Operator considers such operational matter to require urgent determination. Operator shall include with such notice adequate documentation in connection with such proposal to enable the parties to make a decision. Each party shall communicate its vote by notice to Operator and the other parties within one of the following appropriate time periods after receipt of Operator's notice:

- (1) twenty-four (24) hours in the case of operations which involve the use of a drilling rig that is standing by in the Contract Area and such other operational matters reasonably considered by Operator to require by their

nature urgent determination (such operations and matters being referred to as "*Urgent Operational Matters*"); and

- (2) thirty (30) days in the case of all other proposals.
- (B) Except in the case of Article 5.12(A)(1), any party may, by notice delivered to all parties within five (5) days of receipt of Operator's notice, request that the proposal be decided at a meeting rather than by notice. In such an event, that proposal shall be decided at a meeting duly called for that purpose.
- (C) Except as provided in Article 10, any party failing to communicate its vote in a timely manner shall be deemed to have voted against such proposal.
- (D) If a meeting is not requested, then at the expiration of the appropriate time period, Operator shall give each party a confirmation notice stating the tabulation and results of the vote.

5.13 *Effect of Vote*

All decisions taken by the Operating Committee pursuant to this Article 5 shall be conclusive and binding on all the parties, except in the following cases.

- (A) If pursuant to this Article 5, a Joint Operation has been properly proposed to the Operating Committee and the Operating Committee has not approved such proposal in a timely manner, then any party that voted in favor of such proposal shall have the right for the appropriate period specified below to propose, in accordance with Article 7, a Sole Risk Operation involving operations essentially the same as those proposed for such Joint Operation.
 - (1) For proposals related to Urgent Operational Matters, such right shall be exercisable for twenty-four (24) hours after the time specified in Article 5.12(A)(1) has expired or after receipt of Operator's notice given to the parties pursuant to Article 5.13(D), as applicable.
 - (2) For proposals to develop a Discovery, such right shall be exercisable for ten (10) days after the date the Operating Committee was required to consider such proposal pursuant to Article 5.6 or Article 5.12.
 - (3) For all other proposals, such right shall be exercisable for five (5) days after the date the Operating Committee was required to consider such proposal pursuant to Article 5.6 or Article 5.12.
- (B) If a party voted against any proposal which was approved by the Operating Committee and which could be conducted as a Sole Risk Operation pursuant to Article 7, then such party shall have the right not to participate in the operation contemplated by such approval. Any such party wishing to exercise its right of

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non-consent must give notice of non-consent to all other parties within five (5) days (or twenty-four (24) hours for Urgent Operational Matters) following Operating Committee approval of such proposal. If a party exercises its right of non-consent, the parties who were not entitled to give or did not give notice of non-consent shall be Consenting Parties as to the operation contemplated by the Operating Committee approval, and shall conduct such operation as a Sole Risk Operation under Article 7; provided, however, that any such party who was not entitled to give or did not give notice of non-consent may, by notice provided to the other parties within five (5) days (or twenty-four (24) hours for Urgent Operational Matters) following the notice of non-consent given by any Non-Consenting Party, require that the Operating Committee vote again on the proposal in question. Only the parties which were not entitled to or have not exercised their right of non-consent with respect to the contemplated operation shall participate in such second vote of the Operating Committee, with voting rights proportional to their respective Participating Interest. If the Operating Committee approves again the contemplated operation, any party which voted against the contemplated operation in such second vote may elect to be a Non-Consenting Party with respect to such operation, by notice of non-consent provided to all other parties within five (5) days (or twenty-four (24) hours for Urgent Operational Matters) following the Operating Committee's second approval of such contemplated operation.

- (C) If the Consenting Parties to a Sole Risk Operation under Article 5.13(A) or Article 5.13(B) concur, then the Operating Committee may, at any time, pursuant to this Article 5, reconsider and approve, decide or take action on any proposal that the Operating Committee declined to approve earlier, or modify or revoke an earlier approval, decision or action.
- (D) Once a Joint Operation for the drilling, Deepening, Testing, Sidetracking, Plugging Back, Completing, Recompleting, Reworking, or plugging of a well has been approved and commenced, such operation shall not be discontinued without the consent of the Operating Committee; provided, however, that such operation may be discontinued if:
 - (1) an impenetrable substance or other condition in the hole is encountered which in the reasonable judgment of Operator causes the continuation of such operation to be impractical; or
 - (2) other circumstances occur which in the reasonable judgment of Operator cause the continuation of such operation to be unwarranted and the Operating Committee, within the period required under Article 5.12(A)(1) after receipt of Operator's notice, approves discontinuing such operation.

On the occurrence of either of the above, Operator shall promptly notify the parties that such operation is being discontinued pursuant to the foregoing, and any party

shall have the right to propose in accordance with Article 7 a Sole Risk Operation to continue such operation.

ARTICLE 6 WORK PROGRAMS AND BUDGETS

6.1 *Exploration and Appraisal*

- (A) Within sixty (60) days after the Effective Date, Operator shall deliver to the parties a proposed Work Program and Budget detailing the Joint Operations to be performed for the remainder of the current calendar year and, if appropriate, for the following calendar year. Within thirty (30) days of such delivery or earlier if necessary to meet any applicable deadline under the Contract, the Operating Committee shall meet to consider and to endeavor to agree on a Work Program and Budget.
- (B) On or before the end of October of each calendar year, Operator shall deliver to the parties a proposed Work Program and Budget detailing the Joint Operations to be performed for the following calendar year. Within thirty (30) days of such delivery, the Operating Committee shall meet to consider and to endeavor to agree on a Work Program and Budget.
- (C) If a Discovery is made, Operator shall deliver any notice of Discovery required under the Contract and shall as soon as possible submit to the parties a report containing available details concerning the Discovery and Operator's recommendation as to whether the Discovery merits appraisal. If the Operating Committee determines that the Discovery merits appraisal, Operator within sixty (60) days shall deliver to the parties a proposed Work Program and Budget for the appraisal of the Discovery. Within thirty (30) days of such delivery, or earlier if necessary to meet any applicable deadline under the Contract, the Operating Committee shall meet to consider, modify and then either approve or reject the appraisal Work Program and Budget. If the appraisal Work Program and Budget is approved by the Operating Committee, Operator shall take such steps as may be required under the Contract to secure approval of the appraisal Work Program and Budget by the Government. In the event the Government requires changes in the appraisal Work Program and Budget, the matter shall be resubmitted to the Operating Committee for further consideration.
- (D) The Work Program and Budget agreed pursuant to this Article shall include at least that part of any Minimum Work Obligations required to be carried out during the calendar year in question under the terms of the Contract. If within the time periods prescribed in this Article 6.1 the Operating Committee is unable to agree on such a Work Program and Budget, then the proposal capable of satisfying the Minimum Work Obligations for the calendar year in question that receives the largest Participating Interest vote (even if less than the applicable percentage under Article 5.9) shall be deemed adopted as part of the annual Work

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Program and Budget. If competing proposals receive equal votes, then Operator shall choose between those competing proposals. Any portion of a Work Program and Budget adopted pursuant to this Article 6.1(D) instead of Article 5.9 shall contain such operations for the Joint Account as are necessary to maintain the Contract in full force and effect, including such operations as are necessary to fulfill the Minimum Work Obligations required for the given calendar year, and other operations that the Operator finds reasonable and necessary.

- (E) Any approved Work Program and Budget may be revised by the Operating Committee from time to time. To the extent such revisions are approved by the Operating Committee, the Work Program and Budget shall be amended accordingly. Operator shall prepare and submit a corresponding Work Program and Budget amendment to the Government if required by the Contract.
- (F) Subject to Article 6.8, approval of any such Work Program and Budget which includes:
 - (1) an Exploration Well, whether by drilling, Deepening or Sidetracking, shall include approval for only expenditures necessary for drilling, Deepening or Sidetracking of such Exploration Well, as applicable. When an Exploration Well has reached its authorized depth, all logs, cores and other approved Tests have been conducted and the results furnished to the parties, Operator shall submit to the parties in accordance with Article 5.12(A)(1) an election to participate in an attempt to Complete such Exploration Well. Operator shall include in such submission Operator's recommendation on such Completion attempt and an AFE for such Completion costs.
 - (2) an Appraisal Well, whether by drilling, Deepening or Sidetracking, shall include approval for only expenditures necessary for drilling, Deepening or Sidetracking of such Appraisal Well, as applicable. When an Appraisal Well has reached its authorized depth, all logs, cores and other approved Tests have been conducted and the results furnished to the parties, Operator shall submit to the parties in accordance with Article 5.12(A)(1) an election to participate in an attempt to Complete such Appraisal Well. Operator shall include in such submission Operator's recommendation on such Completion attempt and an AFE for such Completion costs.
- (G) Any party desiring to propose a Completion attempt, or an alternative Completion attempt, must do so within the time period provided in Article 5.12(A)(1) by notifying all other parties. Any such proposal shall include an AFE for such Completion costs.

6.2 *Development*

- (A) If the Operating Committee determines that a Discovery may be a Commercial Discovery, Operator shall, as soon as practicable, deliver to the parties a

development plan together with the first annual Work Program and Budget (or a multi-year Work Program and Budget pursuant to Article 6.5) and provisional Work Programs and Budgets for the remainder of the development of the Discovery, which shall contain, *inter alia*:

- (1) details of the proposed work to be undertaken, personnel required, expenditures to be incurred, including timing, on a calendar year basis;
 - (2) an estimated date for the commencement of production;
 - (3) a delineation of a proposed development area; and
 - (4) any other information requested by the Operating Committee.
- (B) After receipt of the development plan and prior to any applicable deadline under the Contract, the Operating Committee shall meet to consider, modify and then either approve or reject the development plan and the first annual Work Program and Budget for the development of a Discovery, as submitted by Operator. If the Operating Committee determines that the Discovery is a Commercial Discovery and approves the corresponding development plan, Operator shall, as soon as possible, deliver any notice of Commercial Discovery required under the Contract and take such other steps as may be required under the Contract to secure approval of the development plan by the Government. In the event the Government requires changes in the development plan, the matter shall be resubmitted to the Operating Committee for further consideration.
- (C) If the development plan is approved, such work shall be incorporated into and form part of annual Work Programs and Budgets, and Operator shall, on or before the end of October of each calendar year submit a Work Program and Budget for the development area, for the following calendar year. Subject to Article 6.5, within thirty (30) days after such submittal, the Operating Committee shall endeavor to agree to such Work Program and Budget, including any necessary or appropriate revisions to the Work Program and Budget for the approved development plan.

6.3 *Production*

On or before the end of October of each calendar year, Operator shall deliver to the parties a proposed production Work Program and Budget detailing the Joint Operations to be performed in the development area and the projected production schedule for the following calendar year. Within thirty (30) days of such delivery, the Operating Committee shall agree upon a production Work Program and Budget, failing which the provisions of Article 6.1(D) shall be applied *mutatis mutandis*.

6.4 *Itemization of Expenditures*

- (A) During the preparation of the proposed Work Programs and Budgets and development plans contemplated in this Article 6, Operator shall consult with the Operating Committee or the appropriate subcommittees regarding the contents of such Work Programs and Budgets and development plans.
- (B) Each Work Program and Budget and development plan submitted by Operator shall contain an itemized estimate of the costs of Joint Operations and all other expenditures to be made for the Joint Account during the calendar year in question and shall, *inter alia*:
 - (1) identify each work category in sufficient detail to afford the ready identification of the nature, scope and duration of the activity in question;
 - (2) include such reasonable information regarding Operator's allocation procedures and estimated manpower costs as the Operating Committee may determine; and
 - (3) comply with the requirements of the Contract.
- (C) The Work Program and Budget shall designate the portion or portions of the Contract Area in which Joint Operations itemized in such Work Program and Budget are to be conducted and shall specify the kind and extent of such operations in such detail as the Operating Committee may deem suitable.

6.5 *Multi-Year Work Program and Budget*

Any work that cannot be efficiently completed within a single calendar year may be proposed in a multi-year Work Program and Budget. Upon approval by the Operating Committee, such multi-year Work Program and Budget shall, subject only to revisions approved by the Operating Committee thereafter: (i) remain in effect as between the parties (and the associated cost estimate shall be a binding pro-rata obligation of each party) through the completion of the work; and (ii) be reflected in each annual Work Program and Budget. If the Contract requires that Work Programs and Budgets be submitted to the Government for approval, such multi-year Work Program and Budget shall be submitted to the Government either in a single request for a multi-year approval or as part of the annual approval process, according to the terms of the Contract.

6.6 *Contract Awards*

Subject to the Contract, Operator shall award each contract for Joint Operations on the following basis (the amounts stated are in thousands of U.S. dollars):

	<u>Procedure A</u>	<u>Procedure B</u>	<u>Procedure C</u>
Exploration and Appraisal Operations	0 to \$500	\$500 to \$2,000	>\$2,000
Development Operations	0 to \$2,000	\$2,000 to \$10,000	>\$10,000
Production Operations	0 to \$500	\$500 to \$2,000	>\$2,000

Procedure A

- (A) Operator shall award the contract to the best qualified contractor as determined by cost and ability to perform the contract without the obligation to tender and without informing or seeking the approval of the Operating Committee Procedure B
- (B) Operator shall:
- (1) provide the parties with a list of the entities whom Operator proposes to invite to tender for the said contract;
 - (2) add to such list any entity whom a party reasonably requests to be added within fourteen (14) days of receipt of such list;
 - (3) complete the tendering process within a reasonable period of time;
 - (4) inform the parties of the entities to whom the contract has been awarded, provided that before awarding contracts to Affiliates of Operator which exceed two million (\$2,000,000) U.S. dollars, Operator shall obtain the approval of the Operating Committee;
 - (5) circulate to the parties a competitive bid analysis stating the reasons for the choice made; and
 - (6) upon the request of a party, provide such party with a copy of the final version of the contract.

Procedure C

- (C) Operator shall:
- (1) provide the parties with a list of the entities whom Operator proposes to invite to tender for the said contract;
 - (2) add to such list any entity whom a party reasonably requests to be added within fourteen (14) days of receipt of such list;

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- (3) prepare and dispatch the tender documents to the entities on the list as aforesaid and to Non-Operators;
- (4) after the expiration of the period allowed for tendering, consider and analyze the details of all bids received;
- (5) prepare and circulate to the parties a competitive bid analysis, stating Operator's recommendation as to the entity to whom the contract should be awarded, the reasons therefor, and the technical, commercial and contractual terms to be agreed upon;
- (6) obtain the approval of the Operating Committee to the recommended bid; and
- (7) upon the request of a party, provide such party with a copy of the final version of the contract.

6.7 *AFE Procedure*

- (A) Prior to incurring any commitment or expenditure for the Joint Account, which are estimated to be:
 - (1) in excess of five hundred thousand (\$500,000) U.S. dollars in an exploration or appraisal Work Program and Budget;
 - (2) in excess of two million (\$2,000,000) U.S. dollars in a development Work Program and Budget; and
 - (3) in excess of two million (\$2,000,000) U.S. dollars in a production Work Program and Budget,

Operator shall send to each Non-Operator an AFE as described in Article 6.7(C). Notwithstanding the above, Operator shall not be obliged to furnish an AFE to the parties with respect to workovers of wells and general and administrative costs that are listed as separate line items in an approved Work Program and Budget.

- (B) Notwithstanding any other provision of this Agreement, all AFEs shall be for informational purposes only. Approval of an operation in the current Work Program and Budget shall authorize Operator to conduct the operation (subject to Article 6.8) without further authorization from the Operating Committee.
- (C) Each AFE proposed by Operator shall:
 - (1) identify the operation by specific reference to the applicable line items in the Work Program and Budget;
 - (2) describe the work in detail;

- (3) contain Operator's best estimate of the total funds required to carry out such work;
- (4) outline the proposed work schedule;
- (5) provide a timetable of expenditures, if known; and
- (6) be accompanied by such other supporting information as is necessary for an informed decision.

6.8 *Over expenditures of Work Programs and Budgets*

- (A) For expenditures on any line item of an approved Work Program and Budget, Operator shall be entitled to incur without further approval of the Operating Committee an over expenditure for such line item up to ten percent (10%) of the authorized amount for such line item; provided that the cumulative total of all over expenditures for a calendar year shall not exceed five percent (5%) of the total annual Work Program and Budget in question. Operator shall promptly give notice of the amounts of over expenditures when actually incurred.
- (B) At such time as Operator reasonably anticipates the limits of Article 6.8(A) will be exceeded, Operator shall furnish to the Operating Committee a reasonably detailed estimate for approval by the Operating Committee. Upon approval by the Operating Committee, the Work Program and Budget shall be revised accordingly
- (C) The restrictions contained in this Article 6 shall be without prejudice to Operator's rights to make expenditures for Urgent Operational Matters and measures set out in Article 13.5 without the Operating Committee's approval.

**ARTICLE 7
SOLE RISK OPERATIONS**

7.1 *Limitation on Applicability*

- (A) No operations may be conducted in furtherance of the Contract except as Joint Operations under Article 5 or as Sole Risk Operations under this Article 7. No Sole Risk Operation shall be conducted (other than the tie-in of Sole Risk Operation facilities with existing production facilities pursuant to Article 7.10) which conflicts with a previously approved Joint Operation or with a previously approved Sole Risk Operation.
- (B) Operations which are required to fulfill any Minimum Work Obligations under the Contract must be proposed and conducted as Joint Operations under Article 5, and may not be proposed or conducted as Sole Risk Operations under this Article

7. Except for Sole Risk Operations relating to Deepening, Testing, Completing, Sidetracking, Plugging Back, Recompletions or Reworking of a well originally drilled to fulfill any Minimum Work Obligations, no Sole Risk Operations may be proposed or conducted until any Minimum Work Obligations are fulfilled.

- (C) No party may propose or conduct a Sole Risk Operation under this Article 7 unless and until such party has properly exercised its right to propose a Sole Risk Operation pursuant to Article 5.13, or is entitled to conduct a Sole Risk Operation pursuant to Article 10.
- (D) Any operation that may be proposed and conducted as a Joint Operation, other than operations pursuant to an approved development plan, may be proposed and conducted as a Sole Risk Operation, to the terms of this Article 7.

7.2 *Procedure to Propose Sole Risk Operations*

- (A) Subject to Article 7.1, if any party proposes to conduct a Sole Risk Operation, such party shall give notice of the proposed operation to all parties. Such notice shall specify that such operation is proposed as a Sole Risk Operation and include the work to be performed, the location, the objectives, and estimated cost of such operation.
- (B) Any party entitled to receive such notice shall have the right to participate in the proposed operation.
 - (1) For proposals to Deepen, Test, Complete, Sidetrack, Plug Back, Recomplete or Rework related to Urgent Operational Matters, any such party wishing to exercise such right must so notify the proposing party and Operator within twenty-four (24) hours after receipt of the notice proposing the Sole Risk Operation.
 - (2) For proposals to develop a Discovery, any party wishing to exercise such right must so notify Operator and the party proposing to develop within sixty (60) days after receipt of the notice proposing the Sole Risk Operation.
 - (3) For all other proposals, any such party wishing to exercise such right must so notify the proposing party and Operator within ten (10) days after receipt of the notice proposing the Sole Risk Operation.
- (C) Failure of a party to whom a proposal notice is delivered to properly reply within the period specified above shall constitute an election by that party not to participate in the proposed operation.
- (D) If all parties properly exercise their rights to participate, then the proposed operation shall be conducted as a Joint Operation. Operator shall commence such Joint Operation as promptly as practicable and conduct it with due diligence.

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- (E) If less than all parties entitled to receive such proposal notice properly exercise their rights to participate, then:
- (1) Immediately after the expiration of the applicable notice period set out in Article 7.2(B), Operator shall notify all parties of the names of the Consenting Parties and the recommendation of the proposing party as to whether the Consenting Parties should proceed with the Sole Risk Operation.
 - (2) Concurrently, Operator shall request the Consenting Parties to specify the Participating Interest each Consenting Party is willing to bear in the Sole Risk Operation.
 - (3) Within twenty-four (24) hours after receipt of such notice, each Consenting Party shall respond to Operator stating that it is willing to bear a Participating Interest in such Sole Risk Operation equal to:
 - (a) only its Participating Interest as stated in Article 3.2;
 - (b) a fraction, the numerator of which is such Consenting Party's Participating Interest as stated in Article 3.2 and the denominator of which is the aggregate of the Participating Interests of the Consenting Parties as stated in Article 3.2; or
 - (c) the Participating Interest as contemplated by Article 7.2(E)(3)(b) plus all or any part of the difference between one hundred percent (100%) and the total of the Participating Interests subscribed by the other Consenting Parties. Any portion of such difference claimed by more than one party shall be distributed to each claimant on a pro-rata basis.
 - (4) Any Consenting Party failing to advise Operator within the response period set out above shall be deemed to have elected to bear the Participating Interest set out in Article 7.2(E)(3)(b) as to the Sole Risk Operation.
 - (5) If, within the response period set out above, the Consenting Parties subscribe less than one hundred percent (100%) of the Participating Interest in the Sole Risk Operation, the party proposing such Sole Risk Operation shall be deemed to have withdrawn its proposal for the Sole Risk Operation, unless within twenty-four (24) hours of the expiry of the response period set out in Article 7.2(E)(3), the proposing party notifies the other Consenting Parties that the proposing party shall bear the unsubscribed Participating Interest.

- (6) If one hundred percent (100%) subscription to the proposed Sole Risk Operation is obtained, Operator shall promptly notify the Consenting Parties of their Participating Interests in the Sole Risk Operation.
- (7) As soon as any Sole Risk Operation is fully subscribed pursuant to Article 7.2(E)(6), Operator, subject to Article 7.11(D), shall commence such Sole Risk Operation as promptly as practicable and conduct it with due diligence in accordance with this Agreement.
- (8) If such Sole Risk Operation has not been commenced within ninety (90) days (excluding any extension specifically agreed by all parties or allowed by the force majeure provisions of Article 16) after the date of the notice given by Operator under Article 7.2(E)(6), the right to conduct such Sole Risk Operation shall terminate. If any party still desires to conduct such Sole Risk Operation, notice proposing such operation must be resubmitted to the parties in accordance with Article 7.2, as if no proposal to conduct a Sole Risk Operation had been previously made.

7.3 *Responsibility for Sole Risk Operations*

- (A) The Consenting Parties shall bear in accordance with the Participating Interests agreed under Article 7.2(E) the entire cost and liability of conducting a Sole Risk Operation and shall indemnify the Non-Consenting Parties from any and all costs and liabilities incurred incident to such Sole Risk Operation (including Consequential Loss and Environmental Loss) and shall keep the Contract Area free and clear of all liens and encumbrances of every kind created by or arising from such Sole Risk Operation.
- (B) Notwithstanding Article 7.3(A), each party shall continue to bear its Participating Interest share of the cost and liability incident to the operations in which it participated, including plugging and abandoning and restoring the surface location, but only to the extent those costs were not increased by the Sole Risk Operation.

7.4 *Consequences of Sole Risk Operations*

- (A) With regard to any Sole Risk Operation, for so long as a Non-Consenting Party has the option under Article 7.4(C) to reinstate the rights it relinquished under Article 7.4(B), such Non-Consenting Party shall be entitled to have access concurrently with the Consenting Parties to all data and other information relating to such Sole Risk Operation, other than data obtained in a Sole Risk Operation for the purpose of acquiring G & G Data. If a Non-Consenting Party desires to receive and acquire the right to use such G & G Data, then such Non-Consenting Party shall have the right to do so by paying to the Consenting Parties its Participating Interest share as set out in Article 3.2(A) of the cost incurred in obtaining such G & G Data.
- (B) Subject to Article 7.4(C) and Article 7.8, each Non-Consenting Party shall be

deemed to have relinquished to the Consenting Parties, and the Consenting Parties shall be deemed to own, in proportion to their respective Participating Interests in any Sole Risk Operation:

- (1) all of each such Non-Consenting Party's right to participate in further operations in the well or Deepened or Sidetracked portion of a well in which the Sole Risk Operation was conducted and on any Discovery made or appraised in the course of such Sole Risk Operation; and
 - (2) all of each such Non-Consenting Party's right pursuant to the Contract to take and dispose of Hydrocarbons produced and saved:
 - (a) from the well or Deepened or Sidetracked portion of a well in which such Sole Risk Operation was conducted; and
 - (b) from any wells drilled to appraise or develop a Discovery made or appraised in the course of such Sole Risk Operation.
- (C) A Non-Consenting Party shall have only the following options to reinstate the rights it relinquished pursuant to Article 7.4(B):
- (1) If the Consenting Parties decide to appraise a Discovery made in the course of a Sole Risk Operation, the Consenting Parties shall submit to each Non-Consenting Party the approved appraisal program. For thirty (30) days (or forty-eight (48) hours for Urgent Operational Matters) from receipt of such appraisal program, each Non-Consenting Party shall have the option to reinstate the rights it relinquished pursuant to Article 7.4(B) and to participate in such appraisal program. The Non-Consenting Party may exercise such option by notifying Operator within the period specified above that such Non-Consenting Party agrees to bear its Participating Interest share of the expense and liability of such appraisal program, and to pay such amounts as set out in Articles 7.5(A) and 7.5(B).
 - (2) Unless a Discovery is subject to an appraisal program and the Non-Consenting Party elected not to reinstate its relinquished interest under Article 7.4(C)(1), if the Consenting Parties decide to develop a Discovery made in the course of a Sole Risk Operation, the Consenting Parties shall submit to the Non-Consenting Parties an exploitation plan substantially in the form intended to be submitted to the Government under the Contract. For sixty (60) days from receipt of such exploitation plan or such lesser period of time prescribed by the Contract, each Non-Consenting Party shall have the option to reinstate the rights it relinquished pursuant to Article 7.4(B) and to participate in such exploitation plan. The Non-Consenting Party may exercise such option by notifying Operator within the period specified above that such Non-Consenting Party agrees to bear its Participating Interest share of the liability and expense of such exploitation plan and such future operating and producing costs, and to

pay the amounts as set out in Articles 7.5(A) and 7.5(B).

- (3) If the Consenting Parties decide to Deepen, Complete, Sidetrack, Plug Back or Recomplete an Exclusive Well and such further operation was not included in the original proposal for such Exclusive Well, the Consenting Parties shall submit to the Non-Consenting Parties the approved AFE for such further operation. For thirty (30) days (or forty-eight (48) hours for Urgent Operational Matters) from receipt of such AFE, each Non-Consenting Party shall have the option to reinstate the rights it relinquished pursuant to Article 7.4(B) and to participate in such operation. The Non-Consenting Party may exercise such option by notifying Operator within the period specified above that such Non-Consenting Party agrees to bear its Participating Interest share of the liability and expense of such further operation, and to pay the amounts as set out in Articles 7.5(A) and 7.5(B).

A Non-Consenting Party shall not be entitled to reinstate its rights in any other type of Joint Operation.

- (D) If a Non-Consenting Party does not properly and in a timely manner exercise its option under Article 7.4(C), including paying all amounts due in accordance with Articles 7.5(A) and 7.5(B), such Non-Consenting Party shall have forfeited the options as set out in Article 7.4(C) and the right to participate in the proposed program, unless such program, plan or operation is materially modified or expanded (in which case a new notice and option shall be given to such Non-Consenting Party under Article 7.4(C)).
- (E) A Non-Consenting Party exercising its option under Article 7.4(C) shall notify the other parties that it agrees to bear its share of the liability and expense of such further operation and to reimburse the amounts set out in Articles 7.5(A) and 7.5(B) that such Non-Consenting Party had not previously paid. Such Non-Consenting Party shall in no way be deemed to be entitled to any amounts paid pursuant to Articles 7.5(A) and 7.5(B) incident to such Sole Risk Operations. The Participating Interest of such Non-Consenting Party in such Sole Risk Operation shall be its Participating Interest set out in Article 3.2(A). The Consenting Parties shall contribute to the Participating Interest of the Non-Consenting Party in proportion to the excess Participating Interest that each received under Article 7.2(E). If all parties participate in the proposed operation, then such operation shall be conducted as a Joint Operation pursuant to Article 5.
- (F) If, after expiration of the period in which a Non-Consenting Party may exercise its option to participate in an approved appraisal program or exploitation plan, the Consenting Parties desire to proceed, Operator shall proceed with an evaluation plan or exploitation plan, as appropriate, under the Contract. Unless the approved appraisal program or exploitation plan is materially modified or expanded prior to the commencement of operations under such plans (in which case a new notice and option shall be given to the Non-Consenting Parties under Article 7.4(C)),

each Non-Consenting Party to such plan shall:

- (1) if the Contract so allows, elect not to apply for an appraisal area or exploitation area and forfeit all interest in such areas, or
- (2) if the Contract does not so allow, be deemed to have:
 - (a) elected not to apply for an appraisal area or exploitation area under the Contract covering such development;
 - (b) forfeited all economic interest in such appraisal area or exploitation area under the Contract; and
 - (c) assumed a fiduciary duty to exercise its legal interest in such appraisal area or exploitation area under the Contract for the benefit of the Consenting Parties.

In either case such Non-Consenting Party shall be deemed to have withdrawn from this Agreement to the extent it relates to such areas, even if the approved appraisal plan or exploitation plan is modified or expanded subsequent to the commencement of operations under such plans and shall be further deemed to have forfeited any right to participate in the construction and ownership of facilities outside such appraisal area or exploitation area designed solely for the use of such areas.

7.5 *Premium to Participate in Sole Risk Operations*

- (A) Each such Non-Consenting Party shall within thirty (30) days of the exercise of its option under Article 7.4(C), pay in immediately available funds to the Consenting Parties in proportion to their respective Participating Interests in such Sole Risk Operations a lump sum amount payable in the currency designated by such Consenting Parties. Such lump sum amount shall be equal to such Non-Consenting Party's Participating Interest share of all liabilities and expenses that were incurred in every Sole Risk Operation relating to the Discovery in which the Non-Consenting Party desires to reinstate the rights it relinquished pursuant to Article 7.4(B).
- (B) In addition to the payment required under Article 7.5(A), immediately following the exercise of its option under Article 7.4(C) each such Non-Consenting Party shall be liable to reimburse the Consenting Parties who took the risk of such Sole Risk Operations (in proportion to their respective Participating Interests) an amount equal to the total of:
 - (1) 300% of such Non-Consenting Party's Participating Interest share of all liabilities and expenses that were incurred in any Sole Risk Operation relating to obtaining the portion of the G & G Data which pertains to the Discovery, and that were not previously paid by such Non-Consenting Party; plus

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- (2) 900% of such Non-Consenting Party's Participating Interest share of all liabilities and expenses that were incurred in any Sole Risk Operation relating to the drilling, Deepening, Testing, Completing, Sidetracking, Plugging Back, Recompleting and Reworking of the Exploration Well which made the Discovery in which the Non-Consenting Party desires to reinstate the rights it relinquished pursuant to Article 7.4(B), and that were not previously paid by such Non-Consenting Party; plus
 - (3) 700% of the Non-Consenting Party's Participating Interest share of all liabilities and expenses that were incurred in any Sole Risk Operation relating to the drilling, Deepening, Testing, Completing, Sidetracking, Plugging Back, Recompleting and Reworking of the Appraisal Well(s) which delineated the Discovery in which the Non-Consenting Party desires to reinstate the rights it relinquished pursuant to Article 7.4(B), and that were not previously paid by such Non-Consenting Party.
- (C) Each such Non-Consenting Party who is liable for the amounts set out in Article 7.5(B) shall within thirty (30) days of the exercise of its option under Article 7.4(C), pay in immediately available funds the full amount due from it under Article 7.5(B) to such Consenting Parties, in the currency designated by such Consenting Parties.

7.6 *Order of Preference of Operations*

- (A) Except as otherwise specifically provided in this Agreement, if any party desires to propose the conduct of an operation that will conflict with an existing proposal for a Sole Risk Operation, such party shall have the right exercisable for five (5) days (or twenty-four (24) hours for Urgent Operational Matters) from receipt of the proposal for the Sole Risk Operation, to deliver such party's alternative proposal to all parties entitled to participate in the proposed operation. Such alternative proposal shall contain the information required under Article 7.2(A).
- (B) Each party receiving such proposals shall elect by delivery of notice to Operator and to the proposing parties within the appropriate response period set out in Article 7.2(B) to participate in one of the competing proposals. Any party not notifying Operator and the proposing parties within the response period shall be deemed to have voted against the proposals.
- (C) The proposal receiving the largest aggregate Participating Interest vote shall have priority over all other competing proposals. In the case of a tie vote, such proposals shall be considered in the following descending order of priority:
 - a. proposals to do additional Testing, coring or logging;
 - b. proposals to Deepen the well, in descending depth order;
 - c. proposals to attempt a Completion in the deepest objective Zone;

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- d. proposals to Plug Back and attempt Completions in shallower Zones, in ascending order;
 - e. proposals to Sidetrack to reach any Zones not below the deepest original authorized objective; and,
 - f. proposals to Plug and Abandon a well.
- (D) Each party shall then have two (2) days (or twenty-four (24) hours for Urgent Operational Matters) from receipt of such notice to elect by delivery of notice to Operator and the proposing parties whether such party will participate in such Sole Risk Operation, or will relinquish its interest pursuant to Article 7.4(B). Failure by a party to deliver such notice within such period shall be deemed an election not to participate in the prevailing proposal.

7.7 *Stand-By Costs*

- (A) When an operation has been performed, all tests have been conducted and the results of such tests furnished to the parties, stand by costs incurred pending response to any party's notice proposing a Sole Risk Operation for Deepening, Testing, Sidetracking, Completing, Plugging Back, Recompleting, Reworking or other further operation in such well (including the period required under Article 7.6 to resolve competing proposals) shall be charged and borne as part of the operation just completed. Stand by costs incurred subsequent to all parties responding, or expiration of the response time permitted, whichever first occurs, shall be charged to and borne by the parties proposing the Sole Risk Operation in proportion to their Participating Interests, regardless of whether such Sole Risk Operation is actually conducted.
- (B) If a further operation related to Urgent Operational Matters is proposed while the drilling rig to be utilized is on location, any party may request and receive up to five (5) additional days after expiration of the applicable response period specified in Article 7.2(B)(1) within which to respond by notifying Operator that such party agrees to bear all stand by costs and other costs incurred during such extended response period. Operator may require such party to pay the estimated stand by costs in advance as a condition to extending the response period. If more than one party requests such additional time to respond to the notice, stand by costs shall be allocated between such parties on a day-to-day basis in proportion to their Participating Interests.

7.8 *Special Considerations Regarding Deepening and Sidetracking*

- (A) A Sole Risk Well shall not be Deepened or Sidetracked without first affording the Non-Consenting Parties in accordance with this Article 7.8 the opportunity to participate in such operation.

- (B) In the event any Consenting Party desires to Deepen or Sidetrack a Sole Risk Well, such party shall initiate the procedure contemplated by Article 7.2. If a Deepening or Sidetracking operation is approved pursuant to such provisions, and if any Non-Consenting Party to the Sole Risk Well elects to participate in such Deepening or Sidetracking operation, such Non-Consenting Party shall pay its Participating Interest share of the liabilities and expenses incurred in connection with drilling the Sole Risk Well from the surface to the depth previously drilled which such Non-Consenting Party would have paid had such Non-Consenting Party agreed to participate in such Sole Risk Well; provided, however, all liabilities and expenses for Testing and Completing or attempting Completion of the well incurred by Consenting Parties prior to the commencement of actual operations to Deepen or Sidetrack beyond the depth previously drilled shall be for the sole account of the Consenting Parties.

7.9 Use of Property

The parties participating in any Deepening, Testing, Completing, Sidetracking, Plugging Back, Recompleting or Reworking of any well drilled under this Agreement shall be permitted to use (free of cost) all casing, tubing and other equipment in the well that is not needed for operations by the owners of the wellbore, but the ownership of all such equipment shall remain unchanged. On abandonment of a well in which operations with differing participation have been conducted, the parties abandoning the well shall account for all equipment in the well to the parties owning such equipment by tendering to them their respective Participating Interest shares of the value of such equipment less the cost of salvage.

7.10 Lost Production During Tie-In of Sole Risk Operation Facilities

If, during the tie-in of Sole Risk Operation facilities with the existing production facilities of another operation, the production of Hydrocarbons from such other pre-existing operations is temporarily lessened as a result, then the Consenting Parties shall compensate the parties to such existing operation for such loss of production in the following manner. Operator shall determine the amount by which each day's production during the tie-in of Sole Risk Operation facilities falls below the previous month's average daily production from the existing production facilities of such operation. The so-determined amount of lost production shall be recovered by all parties who experienced such loss in proportion to their respective Participating Interest. Upon completion of the tie-in, such lost production shall be recovered in full by Operator deducting up to one hundred percent (100%) of the production from the Sole Risk Operation, prior to the Consenting Parties being entitled to receive any such production.

7.11 Conduct of Sole Risk Operations

- (A) Each Sole Risk Operation shall be carried out by the Consenting Parties acting as the Operating Committee, subject to the provisions of this Agreement applied

mutatis mutandis to such Sole Risk Operation and subject to the terms and conditions of the Contract.

- (B) Operator, if it is conducting a Sole Risk Operation for the Consenting Parties, regardless of whether it is participating in that Sole Risk Operation, shall be entitled to request cash advances and shall not be required to use its own funds to pay any cost and expense and shall not be obliged to commence or continue Sole Risk Operations until cash advances requested have been made, and the Accounting Procedure shall apply to Operator in respect of any Sole Risk Operations conducted by it.
- (C) Should an development plan be approved in accordance with Article 6.2, or should any party propose (but not yet have the right to commence) a development plan in accordance with this Article 7, where neither the development plan nor the development proposal call for the conduct of additional appraisal drilling, and should any party wish to drill an Appraisal Well prior to the development plan, then the party proposing the Appraisal Well as a Sole Risk Operation shall be entitled to proceed first. If such an Appraisal Well is produced, any Consenting Party shall own and have the right to take in kind and separately dispose of all of the Non-Consenting Party's share of production from such Appraisal Well until the value received in sales to purchasers in arm-length transactions equals one hundred percent (100%) of such Non-Consenting Party's Participating Interest shares of all liabilities and expenses that were incurred in any Sole Risk Operations relating to the Appraisal Well. Following the completion of drilling such Appraisal Well as a Sole Risk Operation, the parties may proceed with the development plan approved pursuant to Article 5.9, or (if applicable) the parties may complete the procedures to propose a Sole Risk Operation to develop a Discovery. If, as the result of drilling such Appraisal Well as a Sole Risk Operation, the party or parties proposing to develop the Discovery decide not to do so, then each Non-Consenting Party who voted in favor of such development plan prior to the drilling of such Appraisal Well shall pay to the Consenting Party the amount such Non-Consenting Party would have paid had such Appraisal Well been drilled as a Joint Operation.
- (D) If Operator is a Non-Consenting Party to a Sole Risk Operation to develop a Discovery, then Operator may resign, but in any event shall resign on the unanimous request of the Consenting Parties, as Operator for the development for such Discovery. If Operator so resigns, the Consenting Parties shall select a Consenting Party to serve as Operator for such Sole Risk Operation only. Any such resignation of Operator and appointment of a Consenting Party to serve as Operator for such Sole Risk Operation shall be subject to the parties having first obtained any necessary Government approvals.

**ARTICLE 8
DEFAULT**

8.1 *Default and Notice*

- (A) Any party that fails to pay when due its share of Joint Account expenses (including cash advances and interest) shall be in default under this Agreement (a "***Defaulting Party***"). Operator, or any non-defaulting party in case Operator is the Defaulting Party, shall promptly give notice of such default (the "***Default Notice***") to the Defaulting Party and each of the non-defaulting parties.
- (B) For the purposes of this Article 8, "***Default Period***" means the period beginning five (5) Business Days from the date that the Default Notice is issued in accordance with this Article 8.1 and ending when all the Defaulting Party's defaults pursuant to this Article 8.1 have been remedied in full.

8.2 *Operating Committee Meetings and Data*

- (A) Notwithstanding any other provision of this Agreement, the Defaulting Party shall have no right, during the Default Period, to:
 - (1) call or attend Operating Committee or subcommittee meetings;
 - (2) vote on any matter coming before the Operating Committee or any subcommittee;
 - (3) access any data or information relating to any operations under this Agreement;
 - (4) consent to or reject data trades between the parties and third parties, nor access any data received in such data trades;
 - (5) Transfer (as defined in Article 12.1) all or part of its Participating Interest, except to non-defaulting parties in accordance with this Article 8;
 - (6) consent to or reject any Transfer (as defined in Article 12.1) or otherwise exercise any other rights in respect of Transfers under this Article 8 or under Article 12;
 - (7) receive its share of production in accordance with Article 8.4;
 - (8) withdraw from this Agreement under Article 13; or
 - (9) take assignment of any portion of another party's Participating Interest in the event such other party is either in default or withdrawing from this Agreement and the Contract.

- (B) Notwithstanding any other provisions in this Agreement, during the Default Period:
- (1) unless agreed otherwise by the non-defaulting parties, the voting interest of each non-defaulting party shall be equal to the ratio such non-defaulting party's Participating Interest bears to the total Participating Interests of the non-defaulting parties;
 - (2) any matters requiring a unanimous vote or approval of the parties shall not require the vote or approval of the Defaulting Party;
 - (3) the Defaulting Party shall be deemed to have elected not to participate in any operations that are voted upon during the Default Period, to the extent such an election would be permitted by Article 5.13 and Article 7; and
 - (4) the Defaulting Party shall be deemed to have approved, and shall join with the non-defaulting parties in taking, any other actions voted on during the Default Period.

8.3 *Allocation of Defaulted Accounts*

- (A) The party providing the Default Notice pursuant to Article 8.1 shall include in the Default Notice to each non-defaulting party a statement of: (i) the sum of money that the non-defaulting party shall pay as its portion of the Amount in Default; and (ii) if the Defaulting Party has failed to obtain or maintain any security required of such party in order to maintain the Contract in full force and effect, the type and amount of the security the non-defaulting parties shall post or the funds they shall pay in order to allow Operator, or (if Operator is in default) the notifying party, to post and maintain such security. Unless otherwise agreed, the obligations for which the Defaulting Party is in default shall be satisfied by the non-defaulting parties in proportion to the ratio that each non-defaulting party's Participating Interest bears to the Participating Interests of all non-defaulting parties. For the purposes of this Article 8:

"Amount in Default" means the Defaulting Party's share of Joint Account expenses which the Defaulting Party has failed to pay when due pursuant to the terms of this Agreement (but excluding any interest owed on such amount); and

"Total Amount in Default" means the following amounts: (i) the Amount in Default; (ii) third-party costs of obtaining and maintaining any security incurred by the non-defaulting parties or the funds paid by such parties in order to allow Operator to obtain or maintain security, in accordance with Article 8.3(A)(ii); plus (iii) any interest at the Agreed Interest Rate accrued on the amount under (i) from the date this amount is due by the Defaulting Party until paid in full by the

Defaulting Party and on the amount under (ii) from the date this amount is incurred by the non-defaulting parties until paid in full by the Defaulting Party.

- (B) If the Defaulting Party remedies its default in full before the Default Period commences, the notifying party shall promptly notify each non-defaulting party by facsimile or telephone and by email, and the non-defaulting parties shall be relieved of their obligations under Article 8.3(A). Otherwise, each non-defaulting party shall satisfy its obligations under Article 8.3(A)(i) before the Default Period commences and its obligations under Article 8.3(A)(ii) within ten (10) days following the Default Notice. If any non-defaulting party fails to timely satisfy such obligations, such party shall thereupon be a Defaulting Party subject to the provisions of this Article 8. The non-defaulting parties shall be entitled to receive their respective shares of the Total Amount in Default payable by such Defaulting Party pursuant to this Article 8.
- (C) If Operator is a Defaulting Party, then all payments otherwise payable to Operator for Joint Account costs pursuant to this Agreement shall be made to the notifying party instead until the default is cured or a successor Operator appointed. The notifying party shall maintain such funds in a segregated account separate from its own funds and shall apply such funds to third party claims due and payable from the Joint Account of which it has notice, to the extent Operator would be authorized to make such payments under the terms of this Agreement. The notifying party shall be entitled to bill or cash call the other parties in accordance with the Accounting Procedure for proper third party charges that become due and payable during such period to the extent sufficient funds are not available. When Operator has cured its default or a successor Operator is appointed, the notifying party shall turn over all remaining funds in the account to Operator and shall provide Operator and the other parties with a detailed accounting of the funds received and expended during this period. The notifying party shall not be liable for damages, losses, costs, expenses or liabilities arising as a result of its actions under this Article 8.3(C), except to the extent Operator would be liable under Article 4.6.

8.4 Remedies

- (A) During the Default Period, the Defaulting Party shall not have a right to its share of production, which shall vest in and be the property of the non-defaulting parties. Operator (or the notifying party if Operator is a Defaulting Party) shall be authorized to sell the Hydrocarbons corresponding to the share of production vested in the non-defaulting parties in an arm's-length sale on terms that are commercially reasonable under the circumstances. After deducting all costs, charges and expenses incurred in connection with such sale, Operator (or the notifying party if Operator is a Defaulting Party) shall pay the net proceeds to the non-defaulting parties in proportion to the amounts they are owed by the Defaulting Party as a part of the Total Amount in Default (in payment of first the interest and then the principal) and apply such net proceeds toward the

establishment of the Reserve Fund (as defined in Article 8.4(C)), if applicable, until all such Total Amount in Default is recovered and such Reserve Fund is established. Any surplus remaining shall be paid to the Defaulting Party, and any deficiency shall remain a debt due from the Defaulting Party to the non-defaulting parties. When making sales under this Article 8.4(A), the non-defaulting parties shall have no obligation to share any existing market or obtain a price equal to the price at which their own production is sold.

- (B) If Operator disposes of any Joint Property or if any other credit or adjustment is made to the Joint Account during the Default Period, Operator (or the notifying party if Operator is a Defaulting Party) shall be entitled to apply the Defaulting Party's Participating Interest share of the proceeds of such disposal, credit or adjustment against the Total Amount in Default (against first the interest and then the principal) and toward the establishment of the Reserve Fund (as defined in Article 8.4(C)), if applicable. Any surplus remaining shall be paid to the Defaulting Party, and any deficiency shall remain a debt due from the Defaulting Party to the non-defaulting parties.
- (C) The non-defaulting parties shall be entitled to apply the net proceeds received under Articles 8.4(A) and 8.4(B) toward the creation of a reserve fund (the "**Reserve Fund**") in an amount equal to the Defaulting Party's Participating Interest share of: (i) the estimated cost to abandon any wells and other property in which the Defaulting Party participated; (ii) the estimated cost of severance benefits for local employees upon cessation of operations; and (iii) any other identifiable costs that the non-defaulting parties anticipate will be incurred in connection with the cessation of operations. Upon the conclusion of the Default Period, all amounts held in the Reserve Fund shall be returned to the party previously in Default.
- (D) Forfeiture
- (1) If a Defaulting Party fails to fully remedy all its defaults by the thirtieth (30th) day following the date of the Default Notice, then, without prejudice to any other rights available to each non-defaulting party to recover its portion of the Total Amount in Default, each non-defaulting party shall have the option, exercisable at anytime thereafter during the Default Period, to require that the Defaulting Party completely withdraw from this Agreement and the Contract. Such option shall be exercised by notice to the Defaulting Party and each non-defaulting party. If such option is exercised, the Defaulting Party shall be deemed to have transferred, pursuant to Article 13.6, effective on the date of the non-defaulting party's or parties' notice, its Participating Interest to the non-defaulting parties.
- (2) A party which is held in default under this Agreement (and subsequently cures such default) shall be subject to the provisions of this Article 8.4(D)(2) for a period of three hundred sixty-five (365) days following the

last day of the Default Period associated with such initial occurrence of default. If such party fails to remedy a subsequent default by the fifteenth (15th) day following the date of the Default Notice associated with such subsequent occasion of default (a "**Repeat Defaulting Party**"), then, without prejudice to any other rights available to each non-defaulting party to recover its portion of the Total Amount in Default, each non-defaulting party shall have the option, exercisable at any time thereafter until the Repeat Defaulting Party has completely cured its defaults, to require that the Repeat Defaulting Party completely withdraw from this Agreement and the Contract. Such option shall be exercised by notice to the Repeat Defaulting Party and each non-defaulting party. If such option is exercised, the Repeat Defaulting Party shall be deemed to have transferred, pursuant to Article 13.6, effective on the date of the non-defaulting party's or parties' notice, its Participating Interest to the non-defaulting parties.

Security Interest

- (E) In addition to the other remedies available to the non-defaulting parties under this Article 8 and any other rights available to each non-defaulting party to recover its portion of the Total Amount in Default, in the event a Defaulting Party fails to remedy its default within thirty (30) days of the Default Notice, the non-defaulting parties may elect to enforce a mortgage and security interest on the Defaulting Party's Participating Interest as set forth below, subject to the Contract and the Laws / Regulations.
- (1) Each party grants to each of the other parties, in pro rata shares based on their relative Participating Interests, a mortgage and security interest on its Participating Interest, whether now owned or hereafter acquired, together with all products and proceeds derived from that Participating Interest (collectively, the "**Collateral**") as security for (i) the payment of all amounts owing by such party (including interest and costs of collection) under this Agreement; and (ii) any security which such party is required to provide under the Contract.
 - (2) Should a Defaulting Party fail to remedy its default by the thirtieth (30th) day following the date of the Default Notice, then, each non-defaulting party shall have the option, exercisable at any time thereafter during the Default Period, to foreclose its mortgage and security interest against its pro rata share of the Collateral by any means permitted under the Contract and the Laws / Regulations and to sell all or any part of that Collateral in public or private sale after providing the Defaulting Party and other creditors with any notice required by the Contract or the Laws / Regulations, and subject to the provisions of Article 12. Except as may be prohibited by the Contract or the Laws / Regulations, the non-defaulting party that forecloses its mortgage and security interest shall be entitled to become the purchaser of the Collateral sold and shall have the

right to credit toward the purchase price the amount to which it is entitled under Article 8.4. Any deficiency in the amounts received by the foreclosing party shall remain a debt due by the Defaulting Party. The foreclosure of mortgages and security interests by one non-defaulting party shall neither affect the amounts owed by the Defaulting Party to the other non-defaulting parties nor in any way limit the rights or remedies available to them. Each party agrees that, should it become a Defaulting Party, it waives the benefit of any appraisal, valuation, stay, extension or redemption law and any other debtor protection law that otherwise could be invoked to prevent or hinder the enforcement of the mortgage and security interest granted above.

- (3) Each party agrees to execute such memoranda, financing statements and other documents, and make such filings and registrations, as may be reasonably necessary to perfect, validate and provide notice of the mortgages and security interests granted by this Article 8.4(E).
- (F) For purposes of Articles 8.4(D) and 8.4(E), the Defaulting Party shall, without delay following any request from the non-defaulting parties, do any act required to be done by the Laws / Regulations and any other applicable laws in order to render the transfer of its Participating Interest legally valid, including obtaining all governmental consents and approvals, and shall execute any document and take such other actions as may be necessary in order to effect a prompt and valid transfer. The Defaulting Party shall be obligated to promptly remove any liens and encumbrances which may exist on its assigned Participating Interests. In the event all Government approvals are not timely obtained, the Defaulting Party shall hold the assigned Participating Interest in trust for the non-defaulting parties who are entitled to receive it. Each party constitutes and appoints each other party its true and lawful attorney to execute such instruments and make such filings and applications as may be necessary to make such transfer legally effective and to obtain any necessary consents of the Government. Actions under this power of attorney may be taken by any party individually without the joinder of the others. This power of attorney is irrevocable for the term of this Agreement and is coupled with an interest. If requested, each party shall execute a form prescribed by the Operating Committee setting forth this power of attorney in more detail.
- (G) The non-defaulting parties shall be entitled to recover from the Defaulting Party all reasonable attorneys' fees and all other reasonable costs sustained in the collection of amounts owing by the Defaulting Party.
- (H) The rights and remedies granted to the non-defaulting parties in this Article 8 shall be cumulative, not exclusive, and shall be in addition to any other rights and remedies that may be available to the non-defaulting parties, whether at law, in equity or otherwise. Each right and remedy available to the non-defaulting parties

may be exercised from time to time and so often and in such order as may be considered expedient by the non-defaulting parties in their sole discretion.

8.5 *Survival*

The obligations of the Defaulting Party and the rights of the non-defaulting parties shall survive the surrender of the Contract, abandonment of Joint Operations and termination of this Agreement.

8.6 *No Right of Set Off*

Each party acknowledges and accepts that a fundamental principle of this Agreement is that each party pays its Participating Interest share of all amounts due under this Agreement as and when required. Accordingly, any party which becomes a Defaulting Party undertakes that, in respect of either any exercise by the non-defaulting parties of any rights under or the application of any of the provisions of this Article 8, such party hereby waives any right to raise by way of set off, or invoke as a defense, whether in law or equity, any failure by any other party to pay amounts due and owing under this Agreement or any alleged claim that such party may have against Operator or any Non-Operator, whether such claim arises under this Agreement or otherwise. Each party further agrees that the nature and the amount of the remedies granted to the non-defaulting parties hereunder are reasonable and appropriate in the circumstances.

**ARTICLE 9
DISPOSITION OF PRODUCTION**

9.1 *Right and Obligation to Take in Kind*

Except as otherwise provided in this Article 9 or in Article 8, each party shall have the right and obligation to own, take in kind and separately dispose of its share of production.

9.2 *Disposition of natural gas*

The parties recognize that if Natural Gas is discovered it may be necessary for the parties to enter into special arrangements for the disposal of the natural gas, which are consistent with the development plan and subject to the terms of the Contract.

**ARTICLE 10
ABANDONMENT**

10.1 *Abandonment of Wells Drilled as Joint Operations*

- (A) A decision to plug and abandon any well which has been drilled as a Joint Operation shall require the approval of the Operating Committee.

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- (B) Should any party fail to reply within the period prescribed in Article 5.12(A)(1) or Article 5.12(A)(2), whichever is applicable, after delivery of notice of Operator's proposal to plug and abandon such well, such party shall be deemed to have consented to the proposed abandonment.
- (C) If the Operating Committee approves a decision to plug and abandon an Exploration Well or Appraisal Well, subject to the Laws / Regulations, any party voting against such decision may propose (within the time periods allowed by Article 5.13(A)) to conduct an alternate Sole Risk Operation in the wellbore. If no Sole Risk Operation is timely proposed, or if a Sole Risk Operation is timely proposed but is not commenced within the applicable time periods under Article 7.2, such well shall be plugged and abandoned.
- (D) Any well plugged and abandoned under this Agreement shall be plugged and abandoned in accordance with the Laws / Regulations and at the cost, risk and expense of the parties who participated in the cost of drilling such well.
- (E) Notwithstanding anything to the contrary in this Article 10.1:
- (1) If the Operating Committee approves a decision to plug and abandon a well from which Hydrocarbons have been produced and sold, subject to the Laws / Regulations, any party voting against the decision may propose (within five (5) days after the time specified in Article 5.6, Article 5.12(A)(1) or Article 5.12(A)(2), whichever is applicable, has expired) to take over the entire well as a Sole Risk Operation. Any party originally participating in the well shall be entitled to participate in the operation of the well as a Sole Risk Operation by response notice within ten (10) days after receipt of the notice proposing the Sole Risk Operation. In such event, the Consenting Parties shall be entitled to conduct a Sole Risk Operation in the well; provided that, the proposed operation may not be in the same Zone from which production was previously obtained nor be in a Zone which is produced by any other Joint Operation wells.
 - (2) Each Non-Consenting Party shall be deemed to have relinquished free of cost to the Consenting Parties in proportion to their Participating Interests all of its interest in the wellbore of a produced well and related equipment in accordance with Article 7.4(B). The Consenting Parties shall thereafter bear all cost and liability of plugging and abandoning such well in accordance with the Laws / Regulations, to the extent the parties are or become obligated to contribute to such costs and liabilities, and shall indemnify the Non-Consenting Parties against all such costs and liabilities.
 - (3) Subject to Article 7.11(D), Operator shall continue to operate a produced well for the account of the Consenting Parties at the rates and charges contemplated by this Agreement, plus any additional cost and charges

which may arise as the result of the separate allocation of interest in such well.

10.2 *Abandonment of Sole Risk Operations*

This Article 10 shall apply *mutatis mutandis* to the abandonment of a Sole Risk Well or any well in which a Sole Risk Operation has been conducted (in which event all parties having the right to conduct further operations in such well shall be notified and have the opportunity to conduct Sole Risk Operations in the well in accordance with the provisions of this Article 10).

10.3 *Abandonment security*

At the time of proposing a development plan under Article 6.2, Operator shall also provide the parties an estimate of the work and cost after deduction of salvage value that will be required to cease operations as required by the Laws / Regulations. The estimate shall include removal and abandonment of all facilities wherever located and related to production, storage and transportation of Hydrocarbons from the development area that is the subject of the development plan. The Operating Committee shall require each party participating in such development plan to furnish security to the other participating parties to secure the obligations of each such party for the cost to cease operations.

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ARTICLE 11
SURRENDER, EXTENSIONS AND RENEWALS

11.1 Surrender

- (A) If the Contract requires the parties to surrender any portion of the Contract Area, Operator shall advise the Operating Committee of such requirement at least one hundred and twenty (120) days in advance of the earlier of the date for filing irrevocable notice of such surrender or the date of such surrender. Prior to the end of such period, the Operating Committee shall determine pursuant to Article 5 the size and shape of the surrendered area, consistent with the requirements of the Contract. If a sufficient vote of the Operating Committee cannot be attained, then the proposal supported by a simple majority of the Participating Interests shall be adopted. If no proposal attains the support of a simple majority of the Participating Interests, then the proposal receiving the largest aggregate Participating Interest vote shall be adopted. In the event of a tie, Operator shall choose among the proposals receiving the largest aggregate Participating Interest vote. The parties shall execute any and all documents and take such other actions as may be necessary to effect the surrender. Each party renounces all claims and causes of action against Operator and any other parties on account of any area surrendered in accordance with the foregoing but against its recommendation if Hydrocarbons are subsequently discovered under the surrendered area.
- (B) A surrender of all or any part of the Contract Area which is not required by the Contract shall require the unanimous consent of the parties.

11.2 Extension of the Term

- (A) A proposal by any party to extend the term of the Contract, shall be brought before the Operating Committee pursuant to Article 5.
- (B) Any party shall have the right to extend the term of the Contract, regardless of the level of support in the Operating Committee. If any party takes such action, any party not wishing to extend shall withdraw, subject to the requirements of Article 13.

ARTICLE 12
TRANSFER OF INTEREST OR RIGHTS AND CHANGES IN CONTROL

12.1 Obligations

(A) Subject to the requirements of the Contract,

- (i) any Transfer (except Transfers pursuant to Article 7, Sole Risk Operations; Article 8, Default; or Article 13, Withdrawal From Agreement) shall be effective only if it satisfies the terms and conditions of Article 12.2; and
- (ii) a party subject to a Change in Control must satisfy the terms and conditions of Article 12.3.

Should a Transfer subject to this Article or a Change in Control occur without satisfaction (in all material respects) by the transferor or the party subject to the Change in Control, as applicable, of the requirements hereof, then each other party shall be entitled to enforce specific performance of the terms of this Article 12, in addition to any other remedies (including damages) to which it may be entitled. Each party agrees that monetary damages alone would not be an adequate remedy for the breach of any party's obligations under this Article 12.

(B) For purposes of this Agreement:

"Cash Transfer" means any Transfer where the sole consideration (other than the assumption of obligations relating to the transferred Participating Interest) takes the form of cash, cash equivalents, promissory notes or retained interests (such as production payments) in the Participating Interest being transferred.

"Cash Value" means the portion of the total monetary value (expressed in U.S. dollars) of the consideration being offered by the proposed transferee (including any cash, other assets, and tax savings to the transferor from a non-cash deal) that reasonably should be allocated to the Participating Interest subject to the proposed Transfer or Change in Control.

"Change in Control" means any direct or indirect change in Control of a party (whether through merger, sale of shares or other equity interests, or otherwise) to a non-Affiliate through a single transaction or series of related transactions, from one or more transferors to one or more transferees, in which the market value of the party's Participating Interest represents more than five percent (5%) of the aggregate market value of the assets of such party and its Affiliates that are subject to the change in Control. For the purposes of this definition, market value shall be determined based upon the amount in cash a willing buyer would pay a willing seller in an arm's length transaction.

“*Encumbrance*” means a mortgage, lien, pledge, charge or other encumbrance. “*Encumber*” and other derivatives shall be construed accordingly.

“*Transfer*” means any sale, assignment, Encumbrance or other disposition by a party of any rights or obligations derived from the Contract or this Agreement (including its Participating Interest), other than its share of production and its rights to any credits, refunds or payments under this Agreement, and excluding any direct or indirect change in Control of a party.

12.2. *Transfer*

- (A) Except in the case of a party transferring all of its Participating Interest, no Transfer shall be made by any party which results in the transferor or the transferee holding a Participating Interest of less than twelve point five percent (12.5%) or any interest other than a Participating Interest in the Contract and this Agreement.
- (B) Subject to the terms of Articles 4.9 and 4.10, the party serving as Operator shall remain Operator following Transfer of a portion of its Participating Interest. In the event of a Transfer of all of its Participating Interest, the party serving as Operator shall be deemed to have resigned as Operator, effective on the date the Transfer becomes effective under this Article 12, in which event a successor Operator shall be nominated in accordance with Article 4.11. If Operator transfers all of its Participating Interest to an Affiliate, that Affiliate shall automatically become the successor Operator, provided that the transferring Operator shall remain liable for performance by the Affiliate of its obligations.
- (C) Both the transferee, and, notwithstanding the Transfer, the transferring party, shall be liable to the other parties for the transferring party’s Participating Interest share of any obligations (financial or otherwise) which have vested, matured or accrued under the provisions of the Contract or this Agreement prior to such Transfer. Such obligations, shall include any proposed expenditure approved by the Operating Committee prior to the transferring party notifying the other parties of its proposed Transfer and shall also include costs of plugging and abandoning wells or portions of wells and decommissioning facilities in which the transferring party participated (or with respect to which it was required to bear a share of the costs pursuant to this sentence) to the extent such costs are payable by the parties under the Contract.
- (D) A transferee shall have no rights in the Contract or this Agreement (except any notice and cure rights or similar rights that may be provided to a Lien Holder (as defined in Article 12.2(E)) by separate instrument signed by all parties) unless and until:
 - (1) it expressly undertakes in an instrument reasonably satisfactory to the other parties to perform the obligations of the transferor under the Contract and this Agreement in respect of the Participating Interest being

transferred and obtains any necessary Government approval for the Transfer and furnishes any guarantees required by the Government or the Contract on or before the applicable deadlines; and

- (2) except in the case of a Transfer to an Affiliate, each party has consented in writing to such Transfer, which consent shall be denied only if the transferee fails to establish to the reasonable satisfaction of each party its financial capability to perform its payment obligations under the Contract and this Agreement. No consent shall be required under this Article 12.2(D)(2) for a Transfer to an Affiliate if the transferring party agrees in an instrument reasonably satisfactory to the other parties to remain liable for its Affiliate's performance of its obligations.
- (E) Nothing contained in this Article 12 shall prevent a party from Encumbering all or any undivided share of its Participating Interest to a third party (a "*Lien Holder*") for the purpose of security relating to finance, provided that:
- (1) such party shall remain liable for all obligations relating to such interest;
 - (2) the Encumbrance shall be subject to any necessary approval of the Government and be expressly subordinated to the rights of the other parties under this Agreement; and
 - (3) such party shall ensure that any Encumbrance shall be expressed to be without prejudice to the provisions of this Agreement.
- (F) Any Transfer of all or a portion of a party's Participating Interest, other than a Transfer to an Affiliate, the granting of an Encumbrance as provided in Article 12.2(E), or a Transfer where the Participating Interest is part of a wider transaction and the Participating Interest to be assigned represents 50% or less of the value of the wider transaction, shall be subject to the following procedure.
- (1) Once the final terms and conditions of a Transfer have been fully negotiated, the transferor shall disclose all such final terms and conditions as are relevant to the acquisition of the Participating Interest (and, if applicable, the determination of the Cash Value of the Participating Interest) in a notice to the other parties, which notice shall be accompanied by a copy of all instruments or relevant portions of instruments establishing such terms and conditions. Each other party shall have the right to acquire the Participating Interest subject to the proposed Transfer from the transferor on the terms and conditions described in Article 12.2(F)(3) if, within thirty (30) Days of the transferor's notice, such party delivers to all other parties a counter-notification that it accepts such terms and conditions without reservations or conditions (subject to Articles 12.2(F)(3) and 12.2(F)(4), where applicable). If no party delivers such counter-notification, the Transfer to the proposed transferee may be

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made, subject to the other provisions of this Article 12, under terms and conditions no more favorable to the transferee than those set forth in the notice to the parties, provided that the Transfer shall be concluded within one hundred eighty (180) Days from the date of the notice plus such additional period as may be required to secure governmental approvals. No party shall have a right under this Article 12.2(F) to acquire any asset other than a Participating Interest, nor may any party be required to acquire any asset other than a Participating Interest, regardless of whether other properties are included in the Transfer.

- (2) If more than one party counter-notifies that it intends to acquire the Participating Interest subject to the proposed Transfer, then each such party shall acquire a proportion of the Participating Interest to be transferred equal to the ratio of its own Participating Interest to the total Participating Interests of all the counter-notifying parties, unless the counter-notifying parties otherwise agree.
- (3) In the event of a Cash Transfer, each other party shall have a right to acquire the Participating Interest subject to the proposed Transfer on the same final terms and conditions as were negotiated with the proposed transferee. In the event of a Transfer that is not a Cash Transfer or involves other properties included in a wider transaction (package deal), the transferor shall include in its notification to the other parties a statement of the Cash Value of the Participating Interest subject to the proposed Transfer, and each other party shall have a right to acquire such Participating Interest on the same final terms and conditions as were negotiated with the proposed transferee except that it shall pay the Cash Value in immediately available funds at the closing of the Transfer in lieu of the consideration payable in the third party offer, and the terms and conditions of the applicable instruments shall be modified as necessary to reflect the acquisition of a Participating Interest for cash. In the case of a package sale, no party may acquire the Participating Interest subject to the proposed package sale unless and until the completion of the wider transaction (as modified by the exclusion of properties subject to preemptive rights or excluded for other reasons) with the package sale transferee. If for any reason the package sale terminates without completion, the other parties' rights to acquire the Participating Interest subject to the proposed package sale shall also terminate.
- (4) For purposes of Article 12.2(F)(3), the Cash Value proposed by the transferor in its notice shall be conclusively deemed correct unless any party (each a "**Disagreeing Party**") gives notice to the transferor with a copy to the other parties within ten (10) Days of receipt of the transferor's notice stating that it does not agree with the transferor's statement of the Cash Value, stating the Cash Value it believes is correct, and providing any supporting information that it believes is helpful. In such event, the transferor and the Disagreeing Parties shall have fifteen (15) Days in

which to attempt to negotiate an Agreement on the applicable Cash Value. If no Agreement has been reached by the end of such fifteen (15) Day period, either the transferor or any Disagreeing Party shall be entitled to refer the matter to an independent expert as provided in Article 18.3 for determination of the Cash Value.

- (5) If the determination of the Cash Value is referred to an independent expert and the value submitted by the transferor is no more than five percent (5%) above the Cash Value determined by the independent expert, the transferor's value shall be used for the Cash Value and the Disagreeing Parties shall pay all costs of the expert. If the value submitted by the transferor is more than five percent (5%) above the Cash Value determined by the independent expert, the independent expert's value shall be used for the Cash Value and the transferor shall pay all costs of the expert. Subject to the independent expert's value being final and binding in accordance with Article 18.3, the Cash Value determined by the procedure shall be final and binding on all parties.
- (6) Once the Cash Value is determined under Article 12.2(F)(5), Operator shall provide notice of such Cash Value to all parties and if the Cash Value that was submitted to the independent expert by the transferor is more than five percent (5%) above the Cash Value determined by the independent expert, the transferor may elect to terminate its proposed Transfer by notice to all other parties within five (5) Days after notice to the parties of the final Cash Value. Similarly, if the Cash Value that was determined by the independent expert is more than five percent (5%) above the Cash Value submitted to the independent expert by a Disagreeing Party (or, in the case of a party that is not a Disagreeing Party, is more than five percent (5%) above the Cash Value originally proposed by the transferor), such party may elect to revoke its notice of intention to purchase the transferor's Participating Interest pursuant to Article 12.2(F)(1). If the transferor does not properly terminate the proposed Transfer and one or more parties which provided notices of their intention to purchase the transferor's Participating Interest pursuant to Article 12.2(F)(1) have not properly revoked their notices of such intention, then the transferor shall be obligated to sell and such parties shall be obligated to buy the Participating Interest at the Cash Value as determined in accordance with Article 12.2(F)(5). If all parties which provided notice of their intention to purchase the transferor's Participating Interest pursuant to Article 12.2(F)(1) properly revoke their notices of such intention, the transferor shall be free to sell the interest to the third party at the determined Cash Value or a higher value and under conditions not more favorable to the transferee than those set forth in the notice of Transfer sent by the transferor to the other parties, provided that the Transfer shall be concluded within one hundred eighty (180) Days from the date of the determination plus such additional period as may be required to secure governmental approvals.

12.3 *Change in Control*

- (A) A party subject to a Change in Control shall obtain any necessary Government approval with respect to the Change in Control and furnish any replacement security required by the Government or the Contract on or before the applicable deadlines.
- (B) A party subject to a Change in Control shall provide evidence reasonably satisfactory to the other parties that following the Change in Control such party shall continue to have the financial capability to satisfy its payment obligations under the Contract and this Agreement. Should the party that is subject to the Change in Control fail to provide such evidence, any other party, by notice to such party, may require such party to provide security satisfactory to the other parties with respect to its Participating Interest share of any obligations or liabilities which the parties may reasonably be expected to incur under the Contract and this Agreement during the then-current exploration or exploitation period or phase of the Contract.

ARTICLE 13 WITHDRAWAL FROM AGREEMENT

13.1 *Right of Withdrawal*

- (A) Subject to the provisions of this Article 13 and the Contract, any party not in default may at its option withdraw from this Agreement and the Contract by giving notice to all other parties stating its decision to withdraw. Such notice shall be unconditional and irrevocable when given, except as may be provided in Article 13.7.
- (B) The effective date of withdrawal for a withdrawing party shall be the end of the calendar month following the calendar month in which the notice of withdrawal is given, provided that if all parties elect to withdraw, the effective date of withdrawal for each party shall be the date determined by Article 13.9.

13.2 *Partial or Complete Withdrawal*

- (A) Within thirty (30) days of receipt of each withdrawing party's notification, each of the other parties may also give notice that it desires to withdraw from this Agreement and the Contract. Should all parties give notice of withdrawal, the parties shall proceed to abandon the Contract Area and terminate the Contract and this Agreement. If less than all of the parties give such notice of withdrawal, then the withdrawing parties shall take all steps to withdraw from the Contract and this Agreement on the earliest possible date and execute and deliver all necessary instruments and documents to assign their Participating Interest to the parties

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which are not withdrawing, without any compensation whatsoever, in accordance with the provisions of Article 13.6.

- (B) Any party withdrawing under Article 11.2 or this Article 13 shall at its option, (1) withdraw from the entirety of the Contract Area, or (2) withdraw only from all exploration activities under the Contract, but not from any development area, Commercial Discovery, or Discovery (whether appraised or not) made prior to such withdrawal. Such withdrawing party shall retain its rights in Joint Property, but only insofar as they relate to any such development area, Commercial Discovery or Discovery, and shall abandon all other rights in Joint Property.

13.3 *Rights of a Withdrawing Party*

A withdrawing party shall have the right to receive its share of production produced through the effective date of its withdrawal. The withdrawing party shall be entitled to receive all information to which such party is otherwise entitled under this Agreement until the effective date of its withdrawal. After giving its notification of withdrawal, a party shall not be entitled to vote on any matters coming before the Operating Committee, other than matters for which such party has financial responsibility.

13.4 *Obligations and Liabilities of a Withdrawing Party*

- (A) A withdrawing party shall, following its notification of withdrawal, remain liable only for its share of the following:
- (1) costs of Joint Operations, and Sole Risk Operations in which it has agreed to participate, that were approved by the Operating Committee or Consenting Parties as part of a Work Program and Budget (including a multi-year Work Program and Budget under Article 6.5) or AFE prior to such party's notification of withdrawal, regardless of when they are incurred;
 - (2) any Minimum Work Obligations under the Contract, and for any extension approved pursuant to Article 11.2 and with respect to which such party has failed to timely withdraw under Article 13.4(B);
 - (3) expenditures described in Articles 4.2(B)(13) and 13.5 related to an emergency occurring prior to the effective date of a party's withdrawal, regardless of when such expenditures are incurred;
 - (4) all other obligations and liabilities of the parties or Consenting Parties, as applicable, with respect to acts or omissions under this Agreement prior to the effective date of such party's withdrawal for which such party would have been liable, had it not withdrawn from this Agreement; and

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- (5) in the case of a partially withdrawing party, any costs and liabilities with respect to development areas, commercial discoveries and discoveries from which it has not withdrawn.

The obligations and liabilities for which a withdrawing party remains liable shall specifically include its share of any costs of plugging and abandoning wells or portions of wells in which it participated (or was required to bear a share of the costs pursuant to Article 13.4(A)(1)) to the extent such costs of plugging and abandoning are payable by the parties under the Contract. Any mortgages, liens, pledges, charges or other encumbrances which were placed on the withdrawing party's Participating Interest prior to such party's withdrawal shall be fully satisfied or released, at the withdrawing party's expense, prior to its withdrawal. A party's withdrawal shall not relieve it from liability to the non-withdrawing parties with respect to any obligations or liabilities attributable to the withdrawing party under this Article 13 merely because they are not identified or identifiable at the time of withdrawal.

- (B) Notwithstanding the foregoing, a party shall not be liable for any operations or expenditures it voted against (other than operations and expenditures described in Article 13.4(A)(2) or Article 13.4(A)(3)) if it sends notification of its withdrawal within five (5) days (or within twenty-four (24) hours for Urgent Operational Matters) of the Operating Committee vote approving such operation or expenditure. Likewise, a party voting against voluntarily extending the Contract shall not be liable for the Minimum Work Obligations associated therewith provided that it sends notification of its withdrawal within thirty (30) days of such vote pursuant to Article 11.2.

13.5 Emergency

If a well goes out of control or a fire, blow out, sabotage or other emergency occurs prior to the effective date of a party's withdrawal, the withdrawing party shall remain liable for its Participating Interest share of the costs of such emergency, regardless of when they are incurred.

13.6 Assignment

A withdrawing party shall assign its Participating Interest free of cost to each of the non-withdrawing parties in the proportion which each of their Participating Interests (prior to the withdrawal) bears to the total Participating Interests of all the non-withdrawing parties (prior to the withdrawal), unless the non-withdrawing parties agree otherwise. The expenses associated with the withdrawal and assignments shall be borne by the withdrawing party.

13.7 Approvals

A withdrawing party shall promptly join in such actions as may be necessary or desirable to obtain any Government approvals required in connection with the withdrawal and

assignments. The non-withdrawing parties shall use reasonable endeavors to assist the withdrawing party in obtaining such approvals. Any penalties or expenses incurred by the parties in connection with such withdrawal shall be borne by the withdrawing party. Until the Government approves a party's withdrawal and assignment to the other parties (whether it ever does so or not), the withdrawing party shall hold its Participating Interest in trust for the sole and exclusive benefit of the non-withdrawing parties with the right to be reimbursed by the non-withdrawing parties for any subsequent costs and liabilities incurred by it for which it would not have been liable, had it been allowed to withdraw by the Government. At any time before the Government approves the withdrawal and assignment to the other parties, the withdrawing party may request approval of the Operating Committee to retract its notice of withdrawal. The notice of withdrawal may only be retracted upon unanimous consent of the Operating Committee.

13.8 Security

A party withdrawing from this Agreement and the Contract pursuant to this Article 13 shall provide security satisfactory to the other parties to satisfy any obligations or liabilities for which the withdrawing party remains liable in accordance with Article 13.4, but which become due after its withdrawal, including security to cover the costs of an abandonment, if applicable.

13.9 Withdrawal or Abandonment by All Parties

In the event all parties decide to withdraw, this Agreement shall terminate subject to the terms of Article 2.

ARTICLE 14 RELATIONSHIP OF PARTIES AND TAX

14.1 Relationship of Parties

The rights, duties, obligations and liabilities of the parties under this Agreement shall be individual, not joint or collective. It is not the intention of the parties to create, nor shall this Agreement be deemed or construed to create, a mining or other partnership, joint venture or association or (except as explicitly provided in this Agreement) a trust. This Agreement shall not be deemed or construed to authorize any party to act as an agent, servant or employee for any other party for any purpose whatsoever except as explicitly set forth in this Agreement. In their relations with each other under this Agreement, the parties shall not be considered fiduciaries except as expressly provided in this Agreement.

14.2 Tax

Each party shall be responsible for reporting and discharging its own tax measured by the profit or income of the party and the satisfaction of such party's share of all contract obligations under the Contract and under this Agreement. Each party shall protect, defend and indemnify each other party from any and all loss, cost or liability arising from

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the indemnifying party's failure to report and discharge such taxes or satisfy such obligations. The parties intend that all income and all tax benefits (including deductions, depreciation, credits and capitalization) with respect to the expenditures made by the parties hereunder will be allocated by the Government tax authorities to the parties based on the share of each tax item actually received or borne by each party. If such allocation is not accomplished due to the application of the Laws / Regulations or other Government action, the parties shall attempt to adopt mutually agreeable arrangements that will allow the parties to achieve the financial results intended. Operator shall provide each party, in a timely manner and at such party's sole expense, with such information with respect to Joint Operations as such party may reasonably request for preparation of its tax returns or responding to any audit or other tax proceeding.

ARTICLE 15

VENTURE INFORMATION - CONFIDENTIALITY - INTELLECTUAL PROPERTY

15.1 *Venture Information*

- (A) Except as otherwise provided in this Article 15 or in Articles 4.4 and 8.4(A), each party will be entitled to receive all Venture Information related to operations in which such party is a participant. "*Venture Information*" means any information and results developed or acquired as a result of Joint Operations and shall be Joint Property, unless provided otherwise in accordance with this Agreement and the Contract. Each party shall have the right to use all Venture Information it receives without accounting to any other party, subject to any applicable patents and any limitations set forth in this Agreement and the Contract. For purposes of this Article 15, such right to use shall include the rights to copy, prepare derivative works, disclose, license, distribute, and sell.
- (B) Each party may, subject to any applicable restrictions and limitations set forth in the Contract, extend the right to use Venture Information to each of its Affiliates which are obligated to terms not less restrictive than this Article 15.
- (C) The acquisition or development of Venture Information under terms other than as specified in this Article 15 shall require the approval of the Operating Committee. The request for approval submitted by a party shall be accompanied by a description of, and summary of the use and disclosure restrictions which would be applicable to, the Venture Information, and any such party will be obligated to use all reasonable efforts to arrange for rights to use which are not less restrictive than specified in this Article 15.
- (D) All Venture Information received by a party under this Agreement is received on an "as is" basis without warranties, express or implied, of any kind. Any use of such Venture Information by a party shall be at such party's sole risk.

15.2 Confidentiality

- (A) Subject to the provisions of the Contract and this Article 15, the parties agree that all information in relation with Joint Operations or Sole Risk Operations shall be considered confidential and shall be kept confidential and not be disclosed during the term of the Contract and for any additional period as required by the Laws / Regulations, and/or any applicable rules or requirements of the Government to any person or entity not a party to this Agreement, except:
- (1) to an Affiliate pursuant to Article 15.1(B);
 - (2) to a governmental agency or other entity when required by the Contract;
 - (3) to the extent such information is required to be furnished in compliance with the applicable law or regulations, or pursuant to any legal proceedings or because of any order of any court binding upon a party;
 - (4) to prospective or actual attorneys engaged by any party where disclosure of such information is essential to such attorney's work for such party;
 - (5) to prospective or actual contractors and consultants engaged by any party where disclosure of such information is essential to such contractor's or consultant's work for such party;
 - (6) to a bona fide prospective transferee of a party's Participating Interest to the extent appropriate in order to allow the assessment of such Participating Interest (including an entity with whom a party and/or its Affiliates are conducting bona fide negotiations directed toward a merger, consolidation or the sale of a majority of its or an Affiliate's shares);
 - (7) to a bank or other financial institution to the extent appropriate to a party arranging for funding;
 - (8) to the extent such information must be disclosed pursuant to any rules or requirements of any government or stock exchange having jurisdiction over such party, or its Affiliates; provided that if any party desires to disclose information in an annual or periodic report to its or its Affiliates' shareholders and to the public and such disclosure is not required pursuant to any rules or requirements of any government or stock exchange, then such party shall comply with Article 19.3;
 - (9) to its respective employees for the purposes of Joint Operations or Sole Risk Operations as the case may be, subject to each party taking customary precautions to ensure such information is kept confidential; and

- (10) any information which, through no fault of a party, becomes a part of the public domain.
- (B) The disclosing party shall be responsible for protecting the confidentiality of confidential information disclosed pursuant to Articles 15.2(A)(5), (6), and (7) in accordance with the terms of this Article 15.

15.3 Intellectual Property

- (A) Subject to Articles 15.3(C) and 15.5 and unless provided otherwise in the Contract, all intellectual property rights in the Venture Information shall be Joint Property. Each party and its Affiliates have the right to use all such intellectual property rights in their own operations (including joint operations or a production sharing arrangement in which the party or its Affiliates has an ownership or equity interest) without the approval of any other party. Decisions regarding obtaining, maintaining and licensing such intellectual property rights shall be made by the Operating Committee, and the costs thereof shall be for the Joint Account. Upon unanimous consent of the Operating Committee as to ownership, licensing rights, and income distribution, the ownership of intellectual property rights in the Venture Information may be assigned to the Operator or to a party.
- (B) Nothing in this Agreement shall be deemed to require a party to (i) divulge proprietary technology to any of the other parties; or (ii) grant a license or other rights under any intellectual property rights owned or controlled by such party or its Affiliates to any of the other parties.
- (C) If in the course of carrying out activities charged to the Joint Account, a party or an Affiliate of a party makes or conceives any inventions, discoveries, or improvements which primarily relate to or are primarily based on the proprietary technology of such party or its Affiliates, then all intellectual property rights to such inventions, discoveries, or improvements shall vest exclusively in such party and each other party shall have a perpetual, royalty-free, irrevocable license to use such inventions, discoveries, or improvements, but only in connection with the Joint Operations.
- (D) Subject to Article 4.6(B), all costs and expenses of defending, settling or otherwise handling any claim which is based on the actual or alleged infringement of any intellectual property right shall be for the account of the operation from which the claim arose, whether Joint Operations or Sole Risk Operations.

15.4 Continuing Obligations

Any party ceasing to own a Participating Interest during the term of this Agreement shall nonetheless remain bound by the obligations of confidentiality in Article 15.2, and any disputes in relation thereto shall be resolved in accordance with Article 18.2.

15.5 *Trades*

Operator may, with approval of the Operating Committee, make well trades and data trades for the benefit of the parties, with any data so obtained to be furnished to all parties who participated in the cost of the data that was traded. Operator shall cause any third party to such trade to enter into an undertaking to keep the traded data confidential.

**ARTICLE 16
FORCE MAJEURE**

16.1 *Obligations*

If as a result of Force Majeure any party is rendered unable, wholly or in part, to carry out its obligations under this Agreement, other than the obligation to pay any amounts due or to furnish security, then the obligations of the party giving such notice, so far as, and to the extent, that the obligations are affected by such Force Majeure, shall be suspended during the continuance of any inability so caused and for such reasonable period thereafter as may be necessary for the party to put itself in the same position that it occupied prior to the Force Majeure, but for no longer period. The party claiming Force Majeure shall notify the other parties of the Force Majeure within a reasonable time after the occurrence of the facts relied on and shall keep all parties informed of all significant developments. Such notice shall give reasonably full particulars of the Force Majeure and also estimate the period of time which the party will probably require to remedy the Force Majeure. The affected party shall use all reasonable diligence to remove or overcome the Force Majeure situation as quickly as possible in an economic manner but shall not be obligated to settle any labor dispute except on terms acceptable to it, and all such disputes shall be handled within the sole discretion of the affected party.

16.2 *Definition of Force Majeure*

For the purposes of this Agreement, "*Force Majeure*" shall have the same meaning as is set out in the Contract.

**ARTICLE 17
NOTICES**

Except as otherwise specifically provided, all notices authorized or required between the parties by any of the provisions of this Agreement shall be in writing (in English) and delivered in person or by courier service or by any electronic means of transmitting written communications which provides written confirmation of complete transmission, and addressed to such parties. Oral communication does not constitute notice for purposes of this Agreement, and e-mail addresses and telephone numbers for the parties are listed below as a matter of convenience only. A notice given under any provision of this Agreement shall be deemed delivered only when received by the party to whom such notice is directed, and the time for such party to deliver any

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notice in response to such originating notice shall run from the date the originating notice is received. "Received" for purposes of this Article 17 shall mean actual delivery of the notice to the address of the party specified hereunder or to be thereafter notified in accordance with this Article 17. Each party shall have the right to change its address at any time and/or designate that copies of all such notices be directed to another person at another address, by giving written notice thereof to all other parties.

SK Energy Co., Ltd.	Houston American Energy Corp.
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

ARTICLE 18
APPLICABLE LAW - DISPUTE RESOLUTION - WAIVER OF SOVEREIGN
IMMUNITY

18.1 *Applicable Law*

The substantive laws of England and Wales, exclusive of any conflicts of laws principles that could require the application of any other law, shall govern this Agreement for all purposes, including the resolution of any and all disputes ("Dispute") between or among parties hereto.

18.2 *Dispute Resolution*

- (1) Arbitration. Any Dispute shall be exclusively and definitively resolved through final and binding arbitration, it being the intention of the parties that this is a broad form arbitration agreement designed to encompass all possible disputes.
- (2) Rules. The arbitration shall be conducted in accordance with the following arbitration rules (as then in effect) (the "Rules"): Rules of Arbitration of the International Chamber of Commerce ("ICC").
- (3) Number of Arbitrators. The arbitration shall be conducted by three (3) arbitrators, unless all parties to the Dispute agree to a sole arbitrator within

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thirty (30) days after the filing of the arbitration. For greater certainty, for purposes of this Article 18.2, the filing of the arbitration means the date on which the claimant's request for arbitration is received by the other parties to the Dispute.

- (4) Method of Appointment of the Arbitrators. If the arbitration is to be conducted by a sole arbitrator, then the arbitrator will be jointly selected by the parties to the Dispute. If the parties to the Dispute fail to agree on the arbitrator within thirty (30) days after the filing of the arbitration, then the arbitrator shall be appointed as provided in the Rules.

If the arbitration is to be conducted by three arbitrators and there are only two parties to the Dispute, then each party to the Dispute shall appoint one arbitrator within thirty (30) days of the filing of the arbitration, and the two arbitrators so appointed shall select the presiding arbitrator within thirty (30) days after the latter of the two arbitrators has been appointed by the parties to the Dispute. If a party to the Dispute fails to appoint its party-appointed arbitrator or if the two party-appointed arbitrators cannot reach an agreement on the presiding arbitrator within the applicable time period, then the arbitrator(s) shall be appointed as provided in the Rules.

If the arbitration is to be conducted by three arbitrators and there are more than two parties to the Dispute, then within thirty (30) days of the filing of the arbitration, all claimants shall jointly appoint one arbitrator and all respondents shall jointly appoint one arbitrator, and the two (2) arbitrators so appointed shall select the presiding arbitrator within thirty (30) days after the latter of the two arbitrators has been appointed by the parties to the Dispute. If either all claimants or all respondents fail to make a joint appointment of an arbitrator or if the party-appointed arbitrators cannot reach an agreement on the presiding arbitrator within the applicable time period, then the arbitrator(s) shall be appointed as provided in the Rules.

- (5) Consolidation. If the parties initiate multiple arbitration proceedings, the subject matters of which are related by common questions of law or fact and which could result in conflicting awards or obligations, then all such proceedings may be consolidated into a single arbitral proceeding.
- (6) Place of Arbitration. Unless otherwise agreed by all parties to the dispute, the place of arbitration shall be Houston, Texas, USA.
- (7) Language. The arbitration proceedings shall be conducted in the English language and the arbitrator shall be fluent in the English language.
- (8) Entry of Judgment. The award of the arbitral tribunal shall be final and binding. Judgment on the award of the arbitral tribunal may be entered and enforced by any court of competent jurisdiction.

- (9) Notice. All notices required for any arbitration proceeding shall be deemed properly given if sent in accordance with Article 17.
- (10) Qualifications and Conduct of the Arbitrators. All arbitrators shall be and remain at all times wholly impartial, and, once appointed, no arbitrator shall have any *ex parte* communications with any of the parties to the dispute concerning the arbitration or the underlying dispute. Whenever the parties to the dispute are of more than one nationality, the single arbitrator shall not be of the same nationality as any of the parties or their Ultimate Parent Companies (as defined below), unless the parties to the dispute otherwise agree.
- (11) Interim Measures. Any party to the dispute may apply to a court for interim measures (i) prior to the selection or appointment of an arbitrator (and thereafter as necessary to enforce the arbitrator's rulings); or (ii) in the absence of the jurisdiction of the arbitrator to rule on interim measures in a given jurisdiction. The parties agree that seeking and obtaining such interim measures shall not waive the right to arbitration. The arbitrator may grant interim measures including injunctions, attachments and conservation orders in appropriate circumstances, which measures may be immediately enforced by court order. Hearings on requests for interim measures may be held in person, by telephone, by video conference or by other means that permit the parties to the dispute to present evidence and arguments.
- (12) Costs and Attorneys' Fees. The arbitrator is authorized to award costs and attorneys' fees and to allocate them between the parties to the dispute. The costs of the arbitration proceedings, including attorneys' fees, shall be borne in the manner determined by the arbitrator.
- (13) Interest. The award shall include interest, as determined by the arbitral award, from the date of any default or other breach of this Agreement until the arbitral award is paid in full. Interest shall be awarded at the Agreed Interest Rate.
- (14) Currency of Award. The arbitral award shall be made and payable in U.S. dollars, free of any tax or other deduction.
- (15) Exemplary Damages. The parties waive their rights to claim or recover, and the arbitrator shall not award, any punitive, consequential, multiple, or other exemplary damages (whether statutory or common law) except to the extent such damages have been awarded to a third party and are subject to allocation between or among the parties to the dispute.
- (16) Waiver of Challenge to Decision or Award. To the extent permitted by law, any right to appeal or challenge any arbitral decision or award, or to

oppose enforcement of any such decision or award before a court or any governmental authority, is hereby waived by the parties except with respect to the limited grounds for modification or non-enforcement provided by any applicable arbitration statute or treaty.

- (17) Decision. The decision of the sole arbitrator shall be reduced to writing; final and binding without the right of appeal; the sole and exclusive remedy regarding any controversies, claims, counterclaims, issues or accountings presented to the arbitrator(s); made and promptly paid in U.S. dollars free of any deduction or offset; and any costs or fees incident to enforcing the award shall, to the maximum extent permitted by law, be charged against the party resisting such enforcement.
- (18) Non-Appearance. The arbitration shall proceed in the absence of a party who, after due notice, fails to answer or appear. An award shall not be made solely on the default of a party, but the arbitrator shall require the party who is present to submit such evidence as the arbitrator may determine is reasonably required to make an award.

18.3 *Expert Determination*

For any decision referred to an expert hereunder, the parties hereby agree that such decision shall be conducted expeditiously by an expert selected unanimously by the parties to the Dispute. The expert is not an arbitrator of the Dispute and shall not be deemed to be acting in an arbitral capacity. The party desiring an expert determination shall give the other parties to the Dispute written notice of the request for such determination. If the parties to the Dispute are unable to agree upon an expert within ten (10) days after receipt of the notice of request for an expert determination, then, upon the request of any of the parties to the Dispute, the International Centre for Expertise of the International Chamber of Commerce (ICC) shall appoint such expert and shall administer such expert determination through the ICC's Rules for Expertise. The expert, once appointed, shall have no *ex parte* communications with any of the parties to the Dispute concerning the expert determination or the underlying Dispute. All parties agree to cooperate fully in the expeditious conduct of such expert determination and to provide the expert with access to all facilities, books, records, documents, information and personnel necessary to make a fully informed decision in an expeditious manner. Before issuing his final decision, the expert shall issue a draft report and allow the parties to the Dispute to comment on it. The expert shall endeavor to resolve the Dispute within thirty (30) days (but no later than sixty (60) days) after his appointment, taking into account the circumstances requiring an expeditious resolution of the matter in dispute. The expert's decision shall be final and binding on the parties to the Dispute unless challenged in an arbitration pursuant to Article 18.2 within sixty (60) days of the date the expert's final decision is received by the parties to the Dispute and until replaced by such subsequent arbitral award. In such arbitration (i) the expert determination on the specific matter under Articles 12.2 shall be entitled to a rebuttable presumption of correctness; and (ii) the expert shall not (without the written consent of the parties to the Dispute) be

appointed to act as an arbitrator or as adviser to the parties to the Dispute.

18.4 *Waiver of Sovereign Immunity*

Any party that now or hereafter has a right to claim sovereign immunity for itself or any of its assets hereby waives any such immunity to the fullest extent permitted by the laws of any applicable jurisdiction. This waiver includes immunity from (i) any expert determination, mediation, or arbitration proceeding commenced pursuant to this Agreement; (ii) any judicial, administrative or other proceedings to aid the expert determination, mediation, or arbitration commenced pursuant to this Agreement; and (iii) any effort to confirm, enforce, or execute any decision, settlement, award, judgment, service of process, execution order or attachment (including pre-judgment attachment) that results from an expert determination, mediation, arbitration or any judicial or administrative proceedings commenced pursuant to this Agreement. Each party acknowledges that its rights and obligations hereunder are of a commercial and not a governmental nature.

ARTICLE 19 GENERAL PROVISIONS

19.1 *Conduct of the Parties*

- (A) Each party warrants that it and its Affiliates have not made, offered, or authorized and will not make, offer, or authorize with respect to the matters which are the subject of this Agreement, any payment, gift, promise or other advantage, whether directly or through any other person or entity, to or for the use or benefit of any public official (*i.e.*, any person holding a legislative, administrative or judicial office, including any person employed by or acting on behalf of a public agency, a public enterprise or a public international organization) or any political party or political party official or candidate for office, where such payment, gift, promise or advantage would violate (i) the applicable laws of the Republic of Colombia; (ii) the laws of the country of incorporation of such party or such party's Ultimate Parent Company (as defined below) and of the principal place of business of such Ultimate Parent Company; or (iii) the principles described in the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, signed in Paris on December 17, 1997, which entered into force on February 15, 1999, and the Convention's Commentaries. Each party shall defend, indemnify and hold the other parties harmless from and against any and all claims, damages, losses, penalties, costs and expenses arising from or related to, any breach by such first party of such warranty. Such indemnity obligation shall survive termination or expiration of this Agreement. Each party shall in good time (i) respond in reasonable detail to any notice from any other party reasonably connected with the above-stated warranty; and (ii) furnish applicable documentary support for such response upon request from such other party. "*Ultimate Parent Company*" means in a chain of Affiliates the company that

owns or controls directly or indirectly all of the Affiliates, whether or not such company is traded on a stock exchange.

- (B) Each party agrees to (i) maintain adequate internal controls; (ii) properly record and report all transactions; and (iii) comply with the laws applicable to it. Each party must rely on the other parties' system of internal controls, and on the adequacy of full disclosure of the facts, and of financial and other data regarding the Joint Operations undertaken under this Agreement. No party is in any way authorized to take any action on behalf of another party that would result in an inadequate or inaccurate recording and reporting of assets, liabilities or any other transaction, or which would put such party in violation of its obligations under the laws applicable to the operations under this Agreement.

19.2 *Conflicts of Interest*

- (A) Operator undertakes that it shall avoid any conflict of interest between its own interests (including the interests of Affiliates) and the interests of the other parties in dealing with suppliers, customers and all other organizations or individuals doing or seeking to do business with the parties in connection with activities contemplated under this Agreement.
- (B) The provisions of the preceding paragraph shall not apply to: (1) Operator's performance which is in accordance with the local preference laws or policies of the Government; or (2) Operator's acquisition of products or services from an Affiliate, or the sale thereof to an Affiliate, made in accordance with the terms of this Agreement.
- (C) Unless otherwise agreed, the parties and their Affiliates are free to engage or invest (directly or indirectly) in an unlimited number of activities or businesses, any one or more of which may be related to or in competition with the business activities contemplated under this Agreement, without having or incurring any obligation to offer any interest in such business activities to any party.

19.3 *Public Announcements*

- (A) Operator shall be responsible for the preparation and release of all public announcements and statements regarding this Agreement or the Joint Operations; provided that no public announcement or statement shall be issued or made unless, prior to its release, all the parties have been furnished with a copy of such statement or announcement and the approval of at least two (2) parties which are not Affiliates of Operator holding fifty percent (50%) or more of the Participating Interests not held by Operator or its Affiliates has been obtained. Where a public announcement or statement becomes necessary or desirable because of danger to or loss of life, damage to property or pollution as a result of activities arising under this Agreement, Operator is authorized to issue and make such

announcement or statement without prior approval of the parties, but shall promptly furnish all the parties with a copy of such announcement or statement.

- (B) If a party wishes to issue or make any public announcement or statement regarding this Agreement or the Joint Operations, it shall not do so unless, prior to the release of the public announcement or statement, such party furnishes all the parties with a copy of such announcement or statement, and obtains the approval of at least two (2) parties which are not Affiliates holding fifty percent (50%) or more of the Participating Interests not held by such announcing party or its Affiliates; provided that, notwithstanding any failure to obtain such approval, no party shall be prohibited from issuing or making any such public announcement or statement if it is necessary to do so in order to comply with the applicable laws, rules or regulations of any government, legal proceedings or stock exchange having jurisdiction over such party or its Affiliates as set forth in Article 15.2.

19.4 *Successors and Assigns*

Subject to the limitations on Transfer contained in Article 12, this Agreement shall inure to the benefit of, and be binding upon, the successors and assigns of the parties.

19.5 *Waiver*

No waiver by any party of any one or more defaults by another party in the performance of any provision of this Agreement shall operate or be construed as a waiver of any future default or defaults by the same party, whether of a like or of a different character. Except as expressly provided in this Agreement no party shall be deemed to have waived, released or modified any of its rights under this Agreement unless such party has expressly stated, in writing, that it does waive, release or modify such right.

19.6 *No Third Party Beneficiaries*

Except as provided under Article 4.6 (B), the interpretation of this Agreement shall exclude any rights under legislative provisions conferring rights under a contract to persons not a party to that contract.

19.7 Joint Preparation

Each provision of this Agreement shall be construed as though all parties participated equally in the drafting of the same. Consequently, the parties acknowledge and agree that any rule of construction that a document is to be construed against the drafting party shall not be applicable to this Agreement.

19.8 Severance of Invalid Provisions

If and for so long as any provision of this Agreement shall be deemed to be judged invalid for any reason whatsoever, such invalidity shall not affect the validity or operation of any other provision of this Agreement except only so far as shall be necessary to give effect to the construction of such invalidity, and any such invalid provision shall be deemed severed from this Agreement without affecting the validity of the balance of this Agreement.

19.9 Modifications

Except as provided in Articles 11.2(B) and 19.8, there shall be no modification of this Agreement or the Contract except by written consent of all parties.

19.10 Interpretation

- (A) Headings. The topical headings used in this Agreement are for convenience only and shall not be construed as having any substantive significance or as indicating that all of the provisions of this Agreement relating to any topic are to be found in any particular Article.
- (B) Singular and Plural. Reference to the singular includes a reference to the plural and vice versa.
- (C) Article or Exhibit. Unless otherwise provided, reference to any Article or an Exhibit means an Article or Exhibit of this Agreement.
- (D) Include. “*Include*” and “*including*” shall mean include or including without limiting the generality of the description preceding such term and are used in an illustrative sense and not a limiting sense.

19.11 Counterpart Execution

This Agreement may be executed in any number of counterparts and each such counterpart shall be deemed an original Agreement for all purposes; provided that no party shall be bound to this Agreement unless and until all parties have executed a counterpart. For purposes of assembling all counterparts into one document, Operator is authorized to detach the signature page from one or more counterparts and, after

signature thereof by the respective party, attach each signed signature page to a counterpart.

19.12 Entirety

With respect to the subject matter contained herein, this Agreement (i) is the entire Agreement of the parties; and (ii) supersedes all prior understandings and negotiations of the parties.

IN WITNESS of their agreement each party has caused its duly authorized representative to sign this instrument on the date indicated below such representative's signature.

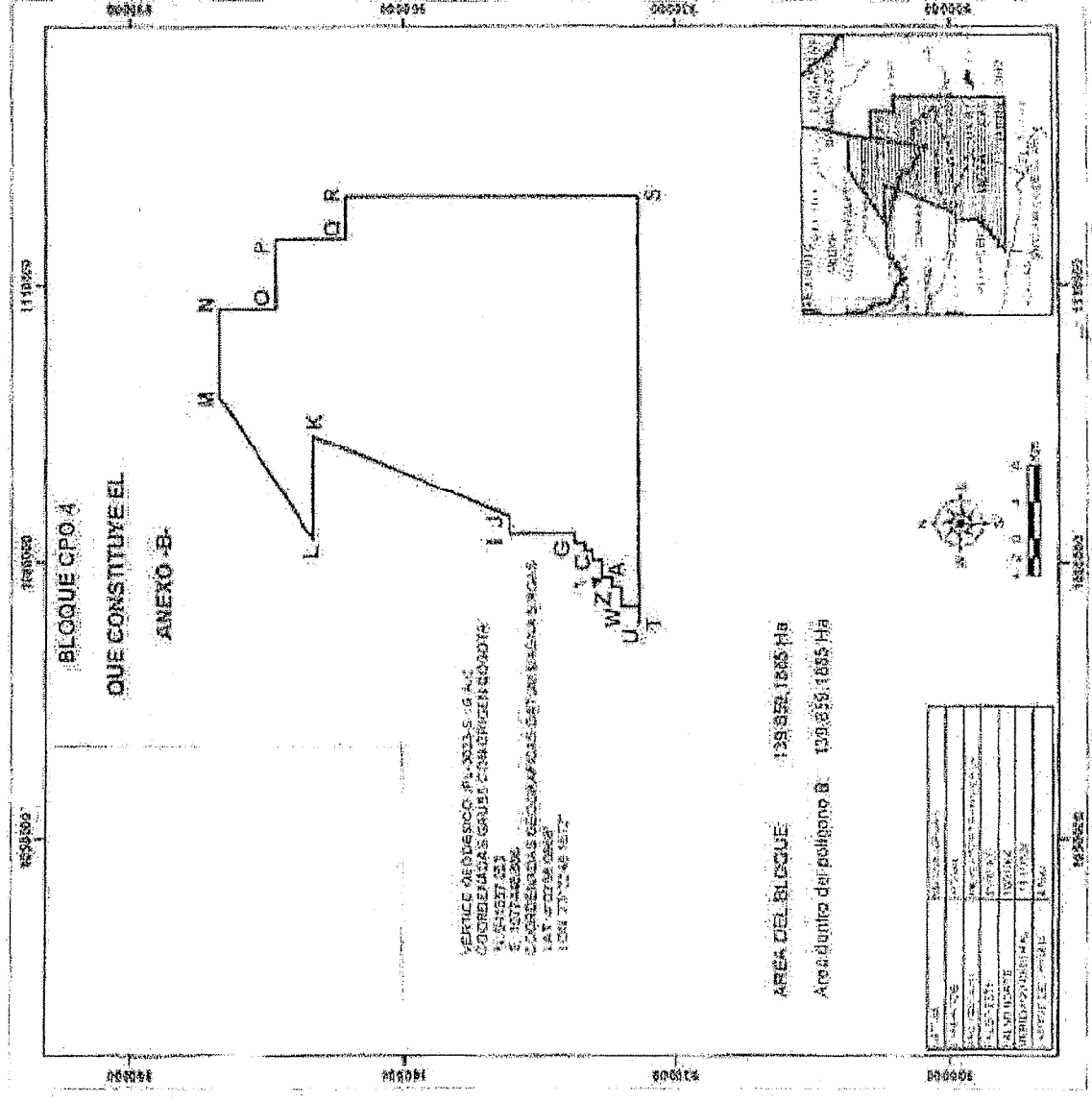
SK ENERGY CO., LTD.

By: Cheol Kim
Title: Head of E&P Division
Date: September 30, 2009

HOUSTON AMERICAN ENERGY CORP.

By: J. F. Lemlysi
Title: Chairman
Date: October 1, 2009

EXHIBIT A
CONTRACT AREA



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EXHIBIT B
ACCOUNTING PROCEDURE

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ACCOUNTING PROCEDURE

SECTION 1 GENERAL PROVISIONS

1.1 Purpose.

1.1.1 The purpose of this Accounting Procedure is to establish equitable methods for determining charges and credits applicable to operations under the Agreement which reflect the costs of Joint Operations to the end that no party shall gain or lose in relation to other parties.

1.1.2 The parties agree, however, that if the methods prove unfair or inequitable to Operator or Non-Operators, the parties shall meet and in good faith endeavor to agree on changes in methods deemed necessary to correct any unfairness or inequity.

1.2 Conflict with Agreement.

In the event of a conflict between the provisions of this Accounting Procedure and the provisions of the main body of the Agreement to which this Accounting Procedure is attached, the provisions of such main body of the Agreement shall prevail.

1.3 Definitions.

The definitions contained in the Agreement to which this Accounting Procedure is attached shall apply to this Accounting Procedure and have the same meanings when used herein. Certain terms used herein are defined as follows:

"Accrual Basis" means that basis of accounting under which costs and benefits are regarded as applicable to the period in which the liability for the cost is incurred or the right to the benefit arises, regardless of when actually invoiced, paid, or received.

"Country of Operations" means the Republic of Colombia.

"Material" means machinery, equipment and supplies acquired and held for use in Joint Operations.

"Section" means a section of this Accounting Procedure.

1.4 Joint Account Records and Currency Exchange.

1.4.1 Operator shall at all times maintain and keep true and correct records of the production and disposition of all liquid and gaseous Hydrocarbons, and of all costs and expenditures under the agreement, as well as other data necessary or proper for the settlement of accounts between the parties hereto in connection with their rights and obligations under the agreement and to enable parties to comply with their respective applicable income tax and other laws.

1.4.2 Operator shall maintain accounting records pertaining to Joint Operations in accordance with generally accepted accounting practices used in the

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international petroleum industry and any applicable statutory obligations of the Country of Operations as well as the provisions of the Contract and the Agreement.

- 1.4.3 The Joint Account shall be maintained by Operator in the English language and in United States of America ("U.S.") currency and in such other language and currency as may be required by the laws of the Country of Operations or the Contract. Conversions of currency shall be recorded at the rate actually experienced in that conversion. Currency translations are used to express the amount of expenditures and receipts for which a currency conversion has not actually occurred. Currency translations for expenditures and receipts shall be recorded in accordance with Operator's normal practice. A statement describing the practice will be provided to the Non-Operators upon request.
- 1.4.4 Any currency exchange gains or losses shall be credited or charged to the Joint Account, except as otherwise specified in this Accounting Procedure.
- 1.4.5 This Accounting Procedure shall apply, *mutatis mutandis*, to Sole Risk Operations in the same manner that it applies to Joint Operations; provided, however, that the charges and credits applicable to Consenting Parties shall be separately maintained. For the purpose of determining and calculating the remuneration of the Consenting Parties, including the premiums for Sole Risk Operations, the costs and expenditures shall be expressed in U.S. currency (irrespective of the currency in which the expenditure was incurred).
- 1.4.6 The Accrual Basis for accounting shall be used in preparing accounts concerning the Joint Operations.

1.5 Statements and Billings.

- 1.5.1 Unless otherwise agreed by the parties, Operator shall submit monthly to each party, on or before the 20th day of each month, statements of the costs and expenditures incurred during the prior month, indicating by appropriate classification the nature thereof, the corresponding budget category, and the portion of such costs charged to each of the parties.

These statements, as a minimum, shall contain the following information:

- advances of funds setting forth the currencies received from each party,
- the share of each party in total expenditures,
- the accrued expenditures,
- the current account balance of each party,
- summary of costs, credits, and expenditures on a current month, year-to-date, and inception-to-date basis or other periodic basis, as agreed by parties (such expenditures shall be grouped by the categories and line items designated in the approved Work Program and Budget submitted by Operator in accordance with Article 6.4 of the Agreement so as to

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facilitate comparison of actual expenditures against that Work Program and Budget), and

- details of unusual charges and credits in excess of one hundred thousand (\$100,000) U.S. dollars.

- 1.5.2 Operator shall, upon request, furnish a description of the accounting classifications used by it.
- 1.5.3 Amounts included in the statements and billings shall be expressed in U.S. currency and reconciled to the currencies advanced.
- 1.5.4 Each party shall be responsible for preparing its own accounting and tax reports to meet the requirements of the Country of Operations and of all other countries to which it may be subject. Operator, to the extent that the information is reasonably available from the Joint Account records, shall provide Non-Operators in a timely manner with the necessary information to facilitate the discharge of such responsibility.

1.6 Payments and Advances.

- 1.6.1 Upon approval of any Work Program and Budget, if Operator so requests, each Non-Operator shall advance its share of estimated cash requirements for the succeeding month's operations. Each such cash call shall be equal to the Operator's estimate of the money to be spent in the currencies required to perform its duties under the approved Work Program and Budget during the month concerned. For informational purposes the cash call shall contain an estimate of the funds required for the succeeding 2 (two) months detailed by the categories designated in the approved Work Program and Budget submitted by Operator in accordance with Article 6.4 of the Agreement.
- 1.6.2 Each such cash call, detailed by the categories designated in the approved Work Program and Budget submitted by Operator in accordance with Article 6.4 of the Agreement, shall be made in writing and delivered to all Non-Operators not less than 15 (fifteen) days before the payment due date. The due date for payment of such advances shall be set by Operator but shall be no sooner than the first Business Day of the month for which the advances are required. All advances shall be made without bank charges. Any charges related to receipt of advances from a Non-Operator shall be borne by that Non-Operator.
- 1.6.3 Each Non-Operator shall wire transfer its share of the full amount of each such cash call to Operator on or before the due date, in the currencies requested or any other currencies acceptable to Operator and at a bank designated by Operator. If currency provided by a Non-Operator is other than the requested currency, then the entire cost of converting to the requested currency shall be charged to that Non-Operator.
- 1.6.4 Notwithstanding the provisions of Section 1.6.2, should Operator be required to pay any sums of money for the Joint Operations which were unforeseen at the time of providing the Non-Operators with said estimates of its requirements, Operator may make a written request of the Non-Operators for special advances covering the Non-Operators' share of such payments. Each such Non-Operator

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shall make its proportional special advances within ten (10) Days after receipt of such notice.

- 1.6.5** If a Non-Operator's advances exceed its share of cash expenditures, the next succeeding cash advance requirements, after such determination, shall be reduced accordingly. However, if the amount of such excess advance is greater than the amount of the next month's estimated cash requirements for such Non-Operator, the Non-Operator may request a refund of the difference, which refund shall be made by Operator within ten (10) Days after receipt of the Non-Operator's request provided that the amount is in excess of the requesting Non-Operator's share of the cash advance requirements for the succeeding month.
- 1.6.6** If Non-Operator's advances are less than its share of cash expenditures, the deficiency shall, at Operator's option, be added to subsequent cash advance requirements or be paid by Non-Operator within ten (10) Days following the receipt of Operator's billing to Non-Operator for such deficiency.
- 1.6.7** If, under the provisions of the Agreement, Operator is required to segregate funds received from the parties, any interest received on such funds shall be applied against the next succeeding cash call or, if directed by the Operating Committee, distributed quarterly. The interest thus received shall be allocated to the parties on an equitable basis taking into consideration date of funding by each party to the accounts in proportion to the total funding into the account. A monthly statement summarizing receipts, disbursements, transfers to each joint bank account and beginning and ending balances thereof shall be provided by Operator to the parties.
- 1.6.8** If Operator does not request Non-Operators to advance their share of estimated cash requirements, each Non-Operator shall pay its share of cash expenditures within ten (10) Days following receipt of Operator's billing.
- 1.6.9** Payments of advances or billings shall be made on or before the due date. In accordance with Article 8 of the Agreement, if these payments are not received by the due date the unpaid balance shall bear and accrue interest from the due date until the payment is received by Operator at the Agreed Interest Rate. For the purpose of determining the unpaid balance and interest owed, Operator shall translate to U.S. currency all amounts owed in other currencies using the currency exchange rate, determined in accordance with Section 1.4.3, at the close of the last Business Day prior to the due date for the unpaid balance.
- 1.6.10** Subject to governmental regulation, Operator shall have the right, at any time, and from time to time, to convert the funds advanced, or any part thereof, to other currencies to the extent that such currencies are then required for operations. The cost of any such conversion shall be charged to the Joint Account.
- 1.6.11** Operator shall endeavor to maintain funds held for the Joint Account in bank accounts at a level consistent with that required for the prudent conduct of Joint Operations.

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1.6.12 If under the Agreement, Operator is required to segregate funds received from or for the Joint Account, the provisions under Section 1.6 for payments and advances by Non-Operators shall apply also to Operator.

1.7 Adjustments.

Payments of any advances or billings shall not prejudice the right of any Non-Operator to protest or question the correctness thereof; provided, however, all bills and statements rendered to Non-Operators by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of such calendar year, unless within the said twenty-four (24) month period a Non-Operator takes written exception thereto and makes claim on Operator for adjustment. Failure on the part of a Non-Operator to make claim on Operator for adjustment within such period shall establish the correctness thereof and preclude the filing of exceptions thereto or making claims for adjustment thereon. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. The provisions of this paragraph shall not prevent adjustments resulting from a physical inventory of the Material as provided for in Section 6. Operator shall be allowed to make adjustments to the Joint Account after such twenty-four (24) month period if these adjustments result from audit exceptions outside of this Accounting Procedure, third party claims, or Government or Government oil & gas company requirements. Any such adjustments shall be subject to audit within the time period specified in Section 1.8.1.

1.8 Audits.

1.8.1 A Non-Operator, upon at least sixty (60) Days advance notice in writing to Operator and all other Non-Operators, shall have the right to audit the Joint Accounts and records of Operator relating to the accounting hereunder for any calendar year within the twenty-four (24) month period following the end of such calendar year except as otherwise provided in Section 3.1. Non-Operators shall have reasonable access to Operator's personnel and to the facilities, warehouses, and offices directly or indirectly serving Joint Operations. The cost of each such audit shall be borne by Non-Operators participating in the audit. Where there are two or more Non-Operators, the Non-Operators shall make a reasonable effort to conduct joint or simultaneous audits in a manner that will result in a minimum of inconvenience to the Operator. Non-Operators must take written exception to and make claim upon the Operator for all discrepancies disclosed by said audit within said twenty-four (24) month period. Non-Operators may request information from the Operator prior to the commencement of the audit. Operator will provide the information in electronic format or hard copy documents, if electronic format is not available. Operator will provide the information requested within thirty (30) Days before commencement of the audit but in no event sooner than thirty (30) Days after the written request. The information requested shall be limited to that normally used for pre-audit work such as trial balance, general ledger, and sub-ledger data.

1.8.2 Operator shall endeavor to produce information from its Affiliates reasonably necessary to support charges from those Affiliates to the Joint Account other than those charges referred to in Section 3.1.

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1.8.3 Except for charges under Section 2.7.1, the following provisions apply to all charges from Operator for its Affiliates.

In addition to the information provided by the Operator under Section 1.8.2, a Non-Operator may seek to audit the books and records of an Affiliate of Operator relating to the charges by the Affiliate to the Joint Account for the same calendar year as provided in Section 1.8.1 above. The charges of the Affiliate shall be subject to audit in accordance with (a), (b), or (c) below or any combination thereof.

(a) If the Affiliate of Operator consents to the audit, the audit may be conducted in the same manner as the audit of the books and records of Operator. If all or part of the charges are not audited under (a) above, the unaudited portion may be audited under (b) and/or (c) below.

(b) The Affiliate may require use of an internationally recognized independent public accounting firm to confirm confidential or proprietary information and charges. The cost of the internationally recognized independent public accounting firm shall be borne by Non-Operators who requested the confirmation. The Non-Operator will seek agreement with the Affiliate on the audit scope to confirm the details and facts relating to such information and charges. If the independent public accounting firm of the Affiliate declines to conduct the audit or is not internationally recognized, the Non-Operator will seek agreement with the Affiliate on an accounting firm that is internationally recognized. The cost of using such firm shall be borne by the Non-Operator who requested the audit. Operator will endeavor to cause its Affiliate to not unreasonably withhold approval of the use of an internationally recognized independent public accounting firm or the scope of examination requested by Non-Operators.

If all or part of the charges are not audited under (a) or (b) above, the unaudited portion may be audited under (c) below.

(c) Operator may request its Affiliate to provide Non-Operators an annual report from an internationally recognized independent public accounting firm attesting that charges billed from such Affiliate to the Joint Account represent a complete and accurate allocation of its costs to the Joint Operations, exclude any element of profit, exclude any duplication of costs covered under Sections 2 and 3, and are consistent in application to all of its activities. The report will be furnished by the Operator within twelve (12) months of the request from the Non-Operator. The cost of providing the annual report shall be borne by the Non-Operator who requested the audit. No amounts paid to an Affiliate of Operator, which the Non-Operator seeks to audit, may be charged to the Joint Account if the Affiliate of the Operator does not allow audit of such amounts as provided above.

1.8.4 Any party may audit the records of an Affiliate of another party relating to that Affiliate's charges under Section 2.7.1. The provisions of Section 1.8.3 shall apply *mutatis mutandis* to such audits unless otherwise agreed by the parties. Should such charges be rejected under the provisions of 1.8.3, such charges shall be charged back to the party whose Affiliate provided the service.

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Any party may audit the records of Operator's Affiliate relating to charges under Section 2.6. The provisions of Section 1.8.3 shall apply *mutatis mutandis* to such audits unless otherwise agreed by the parties.

Any party may audit the records of a Non-Operator or its Affiliate relating to charges under Section 2.7.3. The provisions of Section 1.8.3 shall apply *mutatis mutandis* to such audit, unless otherwise agreed by the parties. Should such charges be rejected under the provisions of 1.8.3, such charges shall be charged back to the party whose Affiliate provided the service.

- 1.8.5 Any information obtained by a party under the provisions of Section 1.8 which does not relate directly to the Joint Operations shall be kept confidential and shall not be disclosed to any party, except as would otherwise be permitted by Article 15.2(A)(3) and (10) of the Agreement.
- 1.8.6 In the event that the Operator is required by law or the Contract to employ a public accounting firm to audit the Joint Account and records of Operator relating to the accounting hereunder, the cost thereof shall be a charge against the Joint Account, and a copy of the audit shall be furnished to each party.
- 1.8.7 At the conclusion of each audit, the parties shall endeavor to settle outstanding matters expeditiously. To this end the parties conducting the audit will make a reasonable effort to prepare and distribute a written report to the Operator and all the parties who participated in the audit as soon as possible and in any event within ninety (90) days after the conclusion of each audit. The report shall include all claims, with supporting documentation, arising from such audit together with comments pertinent to the operation of the accounts and records. Operator shall make a reasonable effort to reply to the report in writing as soon as possible and in any event no later than ninety (90) days after receipt of the report. Should the Non-Operators consider that the report or reply requires further investigation of any item therein, the Non-Operators shall have the right to conduct further investigation in relation to such matter notwithstanding the provisions of Sections 1.7 and 1.8.1 that the period of twenty-four (24) months may have expired. However, conducting such further investigation shall not extend the twenty-four (24) month period for taking written exception to and making a claim upon the Operator for all discrepancies disclosed by said audit. Such further investigations shall be commenced within thirty (30) days and be concluded within sixty (60) days after the receipt of such report or reply, as the case may be.
- 1.8.8 All adjustments resulting from an audit agreed between the Operator and the Non-Operator conducting the audit shall be reflected promptly in the Joint Account by the Operator and reported to the Non-Operator(s). If any dispute shall arise in connection with an audit, it shall be reported to and discussed by the Operating Committee, and, unless otherwise agreed by the parties to the dispute, resolved in accordance with the provisions of Article 18 of the Agreement. If all the parties to the dispute so agree, the adjustment(s) may be referred to an independent expert agreed to by the parties to the dispute e.g. an independent accounting firm. At the election of the parties to the dispute, the decision of the expert will be binding upon such parties. Unless otherwise

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agreed, the cost of such expert will be shared equally by all parties to the dispute.

1.8.9 The provisions of this Section 1.8 apply to audits conducted under Article 4.11(D) of the Agreement except that the sixty (60) day advance notice and the advance information provisions of Section 1.8.1 shall not apply.

1.9 Allocations.

If it becomes necessary to allocate any costs or expenditures to or between Joint Operations and any other operations, such allocation shall be made on an equitable basis. For informational purposes only, Operator shall furnish a description of its allocation procedures pertaining to these costs and expenditures and its rates for personnel and other charges, along with each proposed Work Program and Budget. Such allocation basis shall be subject to audit under Section 1.8.

SECTION 2
DIRECT CHARGES

Operator shall charge the Joint Account for all costs and expenditures incurred by Operator for the conduct of Joint Operations within the limits of approved Work Programs and Budgets or as otherwise specified in the Agreement. Charges for services normally provided by an Operator such as those contemplated in Section 2.7.2 which are provided by a party's Affiliate shall reflect the cost to the Affiliate, excluding profit, for performing such services, except as otherwise provided in Section 2.6 and Section 2.7.1.

The costs and expenditures shall be recorded as required for the settlement of accounts between the Parties hereto in connection with the rights and obligations under the Agreement and for purposes of complying with the tax laws of the Country of Operations and of such other countries to which any of the parties may be subject.

Chargeable costs and expenditures may include:

2.1 Licenses, Permits, Etc.

All costs, if any, attributable to the acquisition, maintenance, renewal or relinquishment of licenses, permits, contractual and/or surface rights acquired for Joint Operations and bonuses paid in accordance with the Contract when paid by Operator in accordance with the provisions of the Agreement.

2.2 Salaries, Wages and Related Costs.

Salaries, wages and related costs include everything constituting the employees' total compensation, as well as the cost to Operator of holiday, vacation, sickness, disability benefits, living and housing allowances, travel time, bonuses, and other customary allowances applicable to the salaries and wages chargeable hereunder, as well as the costs to Operator for employee benefits, including but not limited to employee group life insurance, group medical insurance, hospitalization, retirement, severance payments required by the laws or regulations of the Country of Operations (additional severance payments in excess of those provided by the laws or regulations of the Country of

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Operations shall be chargeable to the Joint Account to the extent that they are in accordance with Operator's benefit policies), and other benefit plans of a like nature applicable to labor costs of Operator.

All costs associated with organizational restructuring (e.g., separation benefits, relocation costs, asset disposition costs) of Operator or its Affiliates, other than those costs which are directly related to employees of Operator who are directly engaged in Joint Operations on a full time basis, will require the approval of the parties to be chargeable to the Joint Account.

Any costs associated with Country of Operations benefit plans which are not currently funded shall be accrued and not be paid by Non-Operators, unless otherwise approved by the Operating Committee, until the same are due and payable to the employee, upon withdrawal of a party pursuant to the agreement and then only by the withdrawing party, or upon termination of the agreement, whichever occurs first.

Expenditures or contributions made pursuant to assessments imposed by governmental authority for payments with respect to or on account of employees described in Section 2.2.1 and Section 2.2.2 shall be chargeable to the Joint Account.

- 2.2.1 The salaries, wages and related costs of employees of Operator and its Affiliates temporarily or permanently assigned in the Country of Operations and directly engaged in Joint Operations shall be chargeable to the Joint Account.
- 2.2.2 The salaries, wages and related costs of employees of Operator and its Affiliates temporarily or permanently assigned outside the Country of Operations directly engaged in Joint Operations and not otherwise covered in Section 2.7.2 shall be chargeable to the Joint Account.
- 2.2.3 Costs for salaries, wages and related costs may be charged to the Joint Account on an actual basis or at a rate based upon the average cost in accordance with Operator's usual practice. In determining the average cost, expatriate and national employees' rates shall be calculated separately and reviewed at least annually.
- 2.2.4 Reasonable expenses (including related travel costs) of those employees whose salaries and wages are chargeable to the Joint Account under Sections 2.2.1 and 2.2.2 and for which expenses the employees are reimbursed under the usual practice of Operator shall be chargeable to the Joint Account.
- 2.2.5 If employees are engaged in other activities in addition to the Joint Operations, the cost of such employees shall be allocated on an equitable basis.

2.3 Employee Relocation Costs.

- 2.3.1 Except as provided in Section 2.3.3, Operator's cost of employees' relocation to or from an assignment with the Joint Operations, whether within or outside the Country of Operations and whether permanently or temporarily assigned to the Joint Operations, shall be chargeable to the Joint Account. If such employee

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works on other activities in addition to Joint Operations, such relocation costs shall be allocated on an equitable basis.

2.3.2 Such relocation costs shall include transportation of employees, families, personal and household effects of the employee and family, transit expenses, and all other related costs in accordance with Operator's usual practice.

2.3.3 Relocation costs to an assignment that is not with the Joint Operations shall not be chargeable to the Joint Account unless the place of the new assignment is the point of origin of the employee or unless otherwise agreed by the Operating Committee.

2.4 Offices, Camps, and Miscellaneous Facilities.

Cost of maintaining any offices, sub-offices, camps, warehouses, housing, and other facilities of the Operator and/or Affiliates directly serving the Joint Operations. If such facilities serve operations in addition to the Joint Operations the costs shall be allocated to the properties served on an equitable basis.

2.5 Material.

Cost, net of discounts taken by Operator, of Material purchased or furnished by Operator. Such costs shall include, but are not limited to, export brokers' fees, transportation charges, loading, unloading fees, export and import duties and license fees associated with the procurement of Material and in-transit losses, if any, not covered by insurance. So far as it is reasonably practical and consistent with efficient and economical operation, only such Material shall be purchased for, and the cost thereof charged to, the Joint Account as may be required for immediate use.

2.6 Exclusively Owned Equipment and Facilities of Operator and Affiliates.

Charges for exclusively owned equipment, facilities, and utilities of Operator or any of its Affiliates at rates not to exceed the average commercial rates of non-affiliated third parties then prevailing for like equipment, facilities, and utilities for use in the area where the same are used hereunder. On request, Operator shall furnish Non-Operators a list of rates and the basis of application. Such rates shall be revised from time to time if found to be either excessive or insufficient, but not more than once every six months.

Exclusively owned drilling tools and other equipment lost in the hole or damaged beyond repair may be charged at replacement cost less depreciation plus transportation costs to deliver like equipment to the location where used.

2.7 Services.

2.7.1 The charges for services provided by third parties, including the Affiliates of the respective parties which have contracted with Operator to perform services that are normally provided by third parties, other than those services covered by Section 2.7.2, shall be chargeable to the Joint Account. Such charges for services by the Affiliates of the respective parties shall not exceed those currently prevailing if performed by non-affiliated third parties, considering quality and availability of services.

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2.7.2 The cost of services performed by Operator's Affiliates technical and professional staffs not located within the Country of Operation and not otherwise covered under Section 2.2.2, shall be chargeable to the Joint Account. The individual rates shall include salaries and wages of such technical and professional personnel, lost time, governmental assessments, and employee benefits. Costs shall also include all support costs necessary for such technical and professional personnel to perform such services, such as, but not limited to, rent, utilities, support staff, drafting, telephone and other communication expenses, computer support, supplies, depreciation, and other reasonable expenses. Examples of such services include the following:

Geologic Studies and Interpretation
Seismic Data Processing
Well Log Analysis, Correlation and Interpretation
Laboratory Services
Ecological and Environmental Engineering
Decommissioning (Abandonment) and Reclamation
Well Site Geology
Project Management and Engineering
Source Rock Analysis
Petrophysical Analysis
Geochemical Analysis
Drilling Supervision
Development Evaluation
Project Accounting and Professional Services
Other Data Processing

Costs incurred as payment for access to, and use of, technical data, intellectual property and know-how of the Operator's group of Affiliates in accordance with the technology participation agreement between the Operator and its Affiliates and in accordance with the customary cost sharing system applicable to operating companies within the Operator's group of Affiliates. Such costs shall be included in annual Work Program and Budgets as a separate line item subject to the approval of the Operating Committee.

2.8 Insurance.

Premiums paid for insurance required by law, the Contract or the agreement to be carried for the benefit of the Joint Operations.

2.9 Damages and Losses to Property.

2.9.1 All costs or expenditures necessary to replace or repair damages or losses incurred by fire, flood, storm, theft, accident, or any other cause shall be chargeable to the Joint Account. Operator shall furnish Non-Operators written notice of damages or losses incurred in excess of two hundred thousand (\$200,000) U.S. dollars as soon as practical after report of the same has been received by Operator. All losses in excess of two hundred thousand (\$200,000) U.S. dollars shall be listed separately in the monthly statement of costs and expenditures.

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- 2.9.2** Credits for settlements received from insurance carried for the benefit of Joint Operations and from others for losses or damages to Joint Property or Materials shall be chargeable to the Joint Account. Each party shall be credited with its Participating Interest share thereof except where such receipts are derived from insurance purchased by Operator for less than all parties in which event such proceeds shall be credited to those parties for whom the insurance was purchased in the proportion of their respective contributions toward the insurance coverage.
- 2.9.3** Expenditures incurred in the settlement of all losses, claims, damages, judgments, and other expenses for the account of Joint Operations shall be chargeable to the Joint Account.

2.10 Litigation, Dispute Resolution and Associated Legal Expenses.

The costs and expenses of litigation, dispute resolution and associated legal services necessary for the protection of the Joint Operations under the Agreement as follows:

- 2.10.1** Legal services, other than those provided by the parties or their Affiliate employees, necessary or expedient for the protection of the Joint Operations, and all costs and expenses of litigation, arbitration or other alternative dispute resolution procedure, including reasonable attorneys' fees and expenses, together with all judgments obtained against the parties or any of them arising from the Joint Operations.
- 2.10.2** If the parties agree, litigation, arbitration or other alternative dispute resolution procedures resulting from actions or claims affecting the Joint Operations hereunder may be handled by the legal staff of one or any of the parties or their respective Affiliates; and a charge commensurate with the reasonable costs of providing and furnishing such services rendered may be made by the party or its Affiliates providing such service to Operator for the Joint Account.

2.11 Taxes and Duties.

All taxes, duties, assessments and governmental charges, of every kind and nature, assessed or levied upon or in connection with the Joint Operations, other than any that are measured by or based upon the revenues, income and net worth of a party.

If Operator or an Affiliate is subject to income or withholding tax as a result of services performed at cost for the operations under the Agreement, its charges for such services may be increased (grossed up) by the amount of such taxes incurred.

2.12 Ecological and Environmental.

Costs incurred on the Joint Property as a result of statutory regulations for archaeological and geophysical surveys relative to identification and protection of cultural resources and/or other environmental or ecological surveys as may be required by any regulatory authority. Also, costs to provide or have available pollution containment and removal equipment plus costs of actual control, clean up and remediation resulting from responsibilities associated with hydrocarbon contamination as required by all applicable laws and regulations.

2.13 Decommissioning (Abandonment) and Reclamation.

Costs incurred for decommissioning (abandonment) and reclamation of the Joint Property, including costs required by governmental or other regulatory authority or by the Contract.

2.14 Other Expenditures.

Any other costs and expenditures incurred by Operator for the necessary and proper conduct of the Joint Operations in accordance with approved Work Programs and Budgets or as otherwise specified in the Agreement and not covered in Section 2 or in Section 3.

SECTION 3
INDIRECT CHARGES

3.1 Purpose.

Operator shall charge the Joint Account monthly for the cost of indirect services and related office costs of Operator and its Affiliates not otherwise provided in this Accounting Procedure. Indirect costs chargeable under Section 3 represent the cost of general assistance and support services provided by Operator and its Affiliates. These costs are such that it is not practical to identify or associate them with specific projects but are for services which provide the Joint Operations with needed and necessary resources which Operator requires and provide a real benefit to Joint Operations. No cost or expenditure included under Section 2 shall be included or duplicated under Section 3. The charges under Section 3 are not subject to audit under Sections 1.8.1 and 1.8.2 other than to verify that the overhead percentages are applied correctly to the expenditure basis.

3.2 Amount.

3.2.1 The indirect charge under Section 3.1 for any month shall equal the greater of the total amount of indirect charges for the period beginning at the start of the calendar year through the end of the period covered by Operator's invoice ("*Year-to-Date*") determined under Section 3.2.2, less indirect charges previously made under Section 3.1 for the calendar year in question, or the amount of the minimum assessment determined under Section 3.2.3, calculated on an annualized basis (but reduced pro rata for periods of less than one year), less indirect charges previously made under Section 3.1 for the calendar year in question.

3.2.2 Unless exceeded by the minimum assessment under Section 3.2.3, the aggregate Year-to-Date indirect charges shall be a percentage of the Year-to-Date expenditures, calculated on the following scale (U.S. dollars):

Annual Expenditures

\$0 to \$5,000,000 of expenditures = 5 %

Next \$5,000,000 - \$10,000,000 of expenditures = 3%

Excess above \$10,000,000 of expenditures = 2 %

3.2.3 A minimum amount of ten thousand (\$10,000) U.S. dollars shall be assessed each month calculated from the Effective Date, prorated if necessary.

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3.2.4 Changes

The indirect charges provided for in this Section 3 may be amended periodically by mutual agreement between the Parties if, in practice, these charges are found to be insufficient or excessive.

3.3 Exclusions.

The expenditures used to calculate the monthly indirect charge shall not include the indirect charge (calculated either as a percentage of expenditures or as a minimum monthly charge), rentals on surface rights acquired and maintained for the Joint Account, guarantee deposits, pipeline tariffs, concession acquisition costs, bonuses paid in accordance with the Contract, royalties and taxes on production or revenue to the Joint Account paid by Operator, expenditures associated with major construction projects for which a separate indirect charge is established hereunder, payments to third parties in settlement of claims, and other similar items.

Credits arising from any government subsidy payments, disposition of Material, and receipts from third parties for settlement of claims shall not be deducted from total expenditures in determining such indirect charge.

SECTION 4 ACQUISITION OF MATERIAL

4.1 Acquisitions.

Materials purchased for the Joint Account shall be charged at net cost paid by the Operator. The price of Materials purchased shall include, but shall not be limited to export broker's fees, insurance, transportation charges, loading and unloading fees, import duties, license fees, and demurrage (retention charges) associated with the procurement of Materials and applicable taxes, less all discounts taken.

4.2 Materials Furnished by Operator.

Materials required for operations shall be purchased for direct charge to the Joint Account whenever practicable, except the Operator may furnish such Materials from its stock under the following conditions:

4.2.1 New Materials (Condition "A").

New Materials transferred from the warehouse or other properties of Operator shall be priced at net cost determined in accordance with Section 4.1 as if Operator had purchased such new Material just prior to its transfer.

Such net costs shall in no event exceed the then current market price.

4.2.2 Used Materials (Conditions "B" and "C").

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- 4.2.2.1 Material which is in sound and serviceable condition and suitable for use without repair or reconditioning shall be classed as Condition "B" and priced at 75% of such new purchase net cost at the time of transfer.
- 4.2.2.2 Materials not meeting the requirements of Section 4.2.2.1, but which can be made suitable for use after being repaired or reconditioned, shall be classed as Condition "C" and priced at 50% of such new purchase net cost at the time of transfer. The cost of reconditioning shall also be charged to the Joint Account provided the Condition "C" price, plus cost of reconditioning, does not exceed the Condition "B" price; and provided that Material so classified meet the requirements for Condition "B" Material upon being repaired or reconditioned.
- 4.2.2.3 Material, which cannot be classified as Condition "B" or Condition "C", shall be priced at a value commensurate with its use.
- 4.2.2.4 Tanks, derricks, buildings, and other items of Material involving erection costs, if transferred in knocked-down condition, shall be graded as to condition as provided in Section 4.2.2, and priced on the basis of knocked-down price of like new Material.
- 4.2.2.5 Material including drill pipe, casing and tubing, which is no longer useable for its original purpose but is useable for some other purpose, shall be graded as to condition as provided in Section 4.2.2. Such Material shall be priced on the basis of the current price of items normally used for such other purpose if sold to third parties.

4.3 Premium Prices.

Whenever Material is not readily obtainable at prices specified in Sections 4.1 and 4.2 because of national emergencies, strikes or other unusual causes over which Operator has no control, Operator may charge the Joint Account for the required Material at Operator's actual cost incurred procuring such Material, in making it suitable for use, and moving it to the Contract Area, provided that notice in writing, including a detailed description of the Material required, and the required delivery date, is furnished to Non-Operators of the proposed charge at least fifteen (15) Days (or such shorter period as may be specified by Operator) before the Material is projected to be needed for operations and prior to billing Non-Operators for such Material the cost of which exceeds two hundred thousand (\$200,000) U.S. dollars. Each Non-Operator shall have the right, by so electing and notifying Operator within fifteen (15) Days (or such shorter period as may be specified by Operator) after receiving notice from Operator, to furnish in kind all or part of his share of such Material per the terms of the notice which is suitable for use and acceptable to Operator both as to quality and time of delivery. Such acceptance by Operator shall not be unreasonably withheld. If Material furnished is deemed unsuitable for use by Operator, all costs incurred in disposing of such Material or returning Material to owner shall be borne by the Non-Operator furnishing the same unless otherwise agreed by the Parties. If a Non-Operator fails to properly submit an election notification within the designated period, Operator is not required to accept Material furnished in kind by that

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Non-Operator. If Operator fails to submit proper notification prior to billing Non-Operators for such Material, Operator shall only charge the Joint Account on the basis of the price allowed during a "normal" pricing period in effect at time of movement.

4.4 Warranty of Material Furnished by Operator.

Operator does not warrant the condition or fitness for the purpose intended of the Material furnished. In case defective Material is furnished by Operator for the Joint Account, credit shall not be passed to the Joint Account until adjustment has been received by Operator from the manufacturers or their agents.

**SECTION 5
DISPOSAL OF MATERIALS**

5.1 Disposal.

Operator shall be under no obligation to purchase the interest of Non-Operators in new or used surplus Materials. Operator shall have the right to dispose of Materials but shall advise and secure prior agreement of the Operating Committee of any proposed disposition of Materials having an original cost to the Joint Account of either one hundred thousand (\$100,000) U.S. dollars individually or in the aggregate of two hundred thousand (\$200,000) U.S. dollars or more. When Joint Operations are relieved of Material charged to the Joint Account, Operator shall advise each Non-Operator of the original cost of such Material to the Joint Account so that the parties may eliminate such costs from their asset records. Credits for Material sold by Operator shall be made to the Joint Account in the month in which payment is received for the Material. Any Material sold or disposed of under this Section 5 shall be on an "as is, where is" basis without guarantees or warranties of any kind or nature. Costs and expenditures incurred by Operator in the disposition of Materials shall be charged to the Joint Account.

5.2 Material Purchased by a Party or Affiliate.

Proceeds received from Material purchased from the Joint Property by a party or an Affiliate thereof shall be credited by Operator to the Joint Account, with new Material valued in the same manner as new Material under Section 4.2.1 and used Material valued in the same manner as used Material under Section 4.2.2, unless otherwise agreed by the parties.

5.3 Division in Kind.

Division of Material in kind, if made between the parties, shall be in proportion to their respective interests in such Material. Each party will thereupon be charged individually with the value (determined in accordance with the procedure set forth in Section 4.2) of the Material received or receivable by it.

5.4 Sales to Third Parties.

Proceeds received from Material purchased from the Joint Property by third parties shall be credited by Operator to the Joint Account at the net amount collected by Operator from the buyer. If the sales price is less than the value determined in accordance with the procedure set forth in Section 4.2, then approval by the parties shall be required prior to

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the sale. Any claims by the buyer for defective materials or otherwise shall be charged back to the Joint Account if and when paid by Operator.

SECTION 6 INVENTORIES

6.1 Periodic Inventories - Notice and Representation.

At reasonable intervals, but at least annually, inventories shall be taken by Operator of all Material held in warehouse stock on which detailed accounting records are normally maintained. The expense of conducting periodic inventories shall be charged to the Joint Account. Operator shall give Non-Operators written notice at least thirty (30) Days in advance of its intention to take inventory, and Non-Operators, at their sole cost and expense, shall each be entitled to have a representative present. The failure of any Non-Operator to be represented at such inventory shall bind such Non-Operator to accept the inventory taken by Operator. Operator shall in any event furnish each Non-Operator with a reconciliation of overages and shortages. Inventory adjustments to the Joint Account shall be made for overages and shortages. Any adjustment equivalent to one hundred thousand (\$100,000) U.S. dollars or more shall be brought to the attention of the Operating Committee.

6.2 Special Inventories.

Whenever there is a sale or change of a Participating Interest in the Agreement, a special inventory may be taken by the Operator provided the seller and/or purchaser of such interest agrees to bear all of the expense thereof. In such cases, both the seller and the purchaser shall be entitled to be represented and shall be governed by the inventory so taken.

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NOVEMBER 14, 2000

CURRENT ISSUES AND RULEMAKING PROJECTS

DIVISION OF CORPORATION FINANCE

**Securities and Exchange Commission
Washington, D.C. 20549**

16. Clarification of Oil and Gas Reserve Definitions and Requirements

Over the last several years, the estimation and classification of petroleum reserves has been impacted by the development of new technologies such as 3-D seismic interpretation and reservoir simulation. Computer processor improvements have allowed the increased use of probabilistic methods in proved reserve assessments. These have led to issues of consistency and, therefore, some confusion in the reporting of proved oil and gas reserves by public issuers in their filings with the Commission. The following discussion addresses some issues the Division of Corporation Finance's engineering staff has detected in its review of these filings.

The definitions for proved oil and gas reserves for the SEC are found in Rule 4-10(a) of Regulation S-X of the Securities Exchange Act of 1934. The SEC definitions are below in bold italics. Under each section we have tried to explain the SEC staff's position regarding some of the more common issues that arise from each portion of the definitions. As most engineers who deal with the classification of reserves have come to realize, it is difficult, if not impossible, to write reserve definitions that easily cover all possible situations. Each case has to be studied as to its own unique issues. This is true with the Society of Petroleum Engineers' and others' reserve definitions as well as the SEC's definitions.

- a. **Proved oil and gas reserves are the estimated quantities of crude oil, natural gas, and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions, i.e., prices and costs as of the date the estimate is made. Prices include consideration of changes in existing prices provided by contractual arrangements, but not on escalations based upon future conditions.**

The determination of **reasonable certainty** is generated by supporting geological and engineering data. There must be data available which indicate that assumptions such as decline rates, recovery factors, reservoir limits, recovery mechanisms and volumetric estimates, gas-oil ratios or liquid yield are valid. If the

**PLAINTIFF'S
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area in question is new to exploration and there is little supporting data for decline rates, recovery factors, reservoir drive mechanisms etc., a conservative approach is appropriate until there is enough supporting data to justify the use of more liberal parameters for the estimation of proved reserves. **The concept of reasonable certainty implies that, as more technical data becomes available, a positive, or upward, revision is much more likely than a negative, or downward, revision.**

Existing economic and operating conditions are the product prices, operating costs, production methods, recovery techniques, transportation and marketing arrangements, ownership and/or entitlement terms and regulatory requirements that are extant on the effective date of the estimate. An anticipated change in conditions must have reasonable certainty of occurrence; the corresponding investment and operating expense to make that change must be included in the economic feasibility at the appropriate time. These conditions include estimated net abandonment costs to be incurred and duration of current licenses and permits.

If oil and gas prices are so low that production is actually shut-in because of uneconomic conditions, the reserves attributed to the shut-in properties can no longer be classified as proved and must be subtracted from the proved reserve data base as a negative revision. Those volumes may be included as positive revisions to a subsequent year's proved reserves only upon their return to economic status.

- b. Reservoirs are considered proved if economic producibility is supported by either actual production or conclusive formation test. The area of a reservoir considered proved includes that portion delineated by drilling and defined by gas-oil and/or oil-water contacts, if any, and the immediately adjoining portions not yet drilled, but which can be reasonably judged as economically productive on the basis of available geological and engineering data. In the absence of information on fluid contacts, the lowest known structural occurrence of hydrocarbons controls the lower proved limits of the reservoir.**

Proved reserves may be attributed to a prospective zone if a conclusive formation test has been performed or if there is production from the zone at economic rates. It is clear to the SEC staff that wireline recovery of small volumes (e.g. 100 cc) or production of a few hundred barrels per day in remote locations is not necessarily conclusive. Analyses of open-hole well logs which imply that an interval is productive are not sufficient for attribution of proved reserves. If there is an indication of economic producibility by either formation test or production, the reserves in the legal and technically justified drainage area around the well projected down to a known fluid contact or the lowest known hydrocarbons, or LKH may be considered to be proved.

In order to attribute proved reserves to legal locations adjacent to such a well (i.e. offsets), there must be conclusive, unambiguous technical data which supports reasonable certainty of production of those volumes and sufficient legal acreage to economically justify the development without going below the shallower of the fluid contact or the LKH. In the absence of a fluid contact, no offsetting reservoir volume below the LKH from a well penetration shall be classified as proved.

Upon obtaining performance history sufficient to reasonably conclude that more reserves will be recovered than those estimated volumetrically down to LKH, positive reserve revisions should be made.

- c. **Reserves that can be produced economically through applications of improved recovery techniques (such as fluid injection) are included in the "proved" classification when successful testing by a pilot project, or the operation of an installed program in the reservoir, provides support for the engineering analysis on which the project or program was based.**

If an improved recovery technique which has not been verified by routine commercial use in the area is to be applied, the hydrocarbon volumes estimated to be recoverable cannot be classified as proved reserves unless the technique has been demonstrated to be technically and economically successful by a pilot project or installed program in that specific rock volume. That demonstration should validate the feasibility study leading to the project.

- d. **Estimates of proved reserves do not include the following:**
- **oil that may become available from known reservoirs but is classified separately as "indicated additional reserves";**
 - **crude oil, natural gas, and natural gas liquids, the recovery of which is subject to reasonable doubt because of uncertainty as to geology, reservoir characteristics, or economic factors;**
 - **crude oil, natural gas, and natural gas liquids, that may occur in undrilled prospects;**
 - **crude oil, natural gas, and natural gas liquids, that may be recovered from oil**

shales, coal, gilsonite and other sources.

Geologic and reservoir characteristic uncertainties such as those relating to permeability, reservoir continuity, sealing nature of faults, structure and other unknown characteristics may prevent reserves from being classified as proved. Economic uncertainties such as the lack of a market (e.g. stranded hydrocarbons), uneconomic prices and marginal reserves that do not show a positive cash flow can also prevent reserves from being classified as proved. Hydrocarbons "manufactured" through extensive treatment of gilsonite, coal and oil shales are mining activities reportable under Industry Guide 7. They cannot be called proved oil and gas reserves. However, coal bed methane gas can be classified as proved reserves if their recovery is shown to be economically feasible.

In developing frontier areas, the existence of wells with a formation test or limited production may not be enough to classify those estimated hydrocarbon volumes as proved reserves. Issuers must demonstrate that there is reasonable certainty that a market exists for the hydrocarbons and that an economic method of extracting, treating and transporting them to market exists or is feasible and is likely to exist in the near future. A commitment by the company to develop the necessary production, treatment and transportation infrastructure is essential to the attribution of proved undeveloped reserves. Significant lack of progress on the development of those reserves may be evidence of a lack of such a commitment. Affirmation of this commitment may take the form of signed sales contracts for the products; request for proposals to build facilities; signed acceptance of bid proposals; memos of understanding between the appropriate organizations and governments; firm plans and timetables established; approved authorization for expenditures to build facilities; approved loan documents to finance the required infrastructure; initiation of construction of facilities; approved environmental permits etc. Reasonable certainty of procurement of project financing by the company is a requirement for the attribution of proved reserves. An inordinately long delay in the schedule of development may introduce doubt sufficient to preclude the attribution of proved reserves.

The history of issuance and continued recognition of permits, concessions and commerciality agreements by regulatory bodies and governments should be considered when determining whether hydrocarbon accumulations can be classified as proved reserves. Automatic renewal of those agreements cannot be expected if the regulatory body has the authority to end the agreement unless there is a long and clear track record which supports the conclusion that those approvals and renewal are a matter of course.

- e. **Proved developed oil and gas reserves are reserves that can be expected to be recovered through existing wells with existing equipment and operating methods. Additional oil and gas expected to be obtained through the application of fluid injection or other improved recovery techniques for supplementing the natural forces and mechanisms of primary recovery should be included as "proved developed reserves" only after testing by a pilot project or after the operation of an installed program has confirmed through production response that increased recovery will be achieved.**

Currently producing wells and wells awaiting minor sales connection expenditure, recompletion, additional perforations or bore hole stimulation treatment would be examples of properties with proved developed reserves since the majority of the expenditures to develop the reserves has already been spent.

Proved developed reserves from **improved recovery techniques** can be assigned after either the operation of an installed pilot program shows a positive production response to the technique or the project is fully installed and operational and has shown the production response anticipated by earlier feasibility studies. In the case with a pilot, proved developed reserves can be assigned only to that volume attributable to the pilot's influence. In the case of the fully installed project, response must be seen from the full project before all the proved developed reserves estimated can be assigned. If a project is not following original forecasts, proved developed reserves can only be assigned to the extent actually supported by the current performance. An important point here is that attribution of incremental proved developed reserves from the application of improved recovery techniques requires the installation of facilities and a production increase.

- f. **Proved undeveloped oil and gas reserves are reserves that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion. Reserves on undrilled acreage shall be limited to those drilling units offsetting productive units that are reasonably certain of production when drilled. Proved reserves for other undrilled units can be claimed only where it can be demonstrated with certainty that there is continuity of production from the existing productive formation. Under no circumstances should estimates of proved undeveloped reserves be attributable to any acreage for which an application of fluid**

injection or other improved recovery technique is contemplated, unless those techniques have been proved effective by actual tests in the area and in the same reservoir. (Emphasis added)

The SEC staff points out that this definition contains no mitigating modifier for the word *certainty*. Also, *continuity of production* requires more than the technical indication of favorable structure alone (e.g. seismic data) to meet the test for proved undeveloped reserves. Generally, proved undeveloped reserves can be claimed only for legal and technically justified drainage areas offsetting an existing productive well (but structurally no lower than LKH). If there are at least two wells in the same reservoir which are separated by more than one legal location and which show communication (reservoir continuity), proved undeveloped reserves could be claimed between the two wells, even though the location in question might be more than an offset well location away from any of the wells. In this illustration, seismic data could be used to help support this claim by showing reservoir continuity between the wells, but the required data would be the conclusive evidence of communication from production or pressure tests. The SEC staff emphasizes that proved reserves cannot be claimed more than one offset location away from a productive well if there are no other wells in the reservoir, even though seismic data may exist. The use of high-quality, well calibrated seismic data can improve reservoir description for performing volumetrics (e.g. fluid contacts). However, seismic data is not an indicator of continuity of production and, therefore, can not be the sole indicator of additional proved reserves beyond the legal and technically justified drainage areas of wells that were drilled. Continuity of production would have to be demonstrated by something other than seismic data.

In a new reservoir with only a few wells, reservoir simulation or application of generalized hydrocarbon recovery correlations would not be considered a reliable method to show increased proved undeveloped reserves. With only a few wells as data points from which to build a geologic model and little performance history to validate the results with an acceptable history match, the results of a simulation or material balance model would be speculative in nature. The results of such a simulation or material balance model would not be considered to be reasonably certain to occur in the field to the extent that additional proved undeveloped reserves could be recognized. The application of recovery correlations which are not specific to the field under consideration is not reliable enough to be the sole source for proved reserve calculations.

Reserves cannot be classified as proved undeveloped reserves based on improved recovery techniques until they have been proved effective in that reservoir or an analogous reservoir in the same geologic formation in the immediate area. An analogous reservoir is one having at least the same values or better for porosity, permeability, permeability distribution, thickness, continuity and hydrocarbon saturations.

g. Topic 12 of Accounting Series Release No. 257 of the Staff Accounting Bulletins states:

{ PAGE }

In certain instances, proved reserves may be assigned to reservoirs on the basis of a combination of electrical and other type logs and core analyses which indicate the reservoirs are analogous to similar reservoirs in the same field which are producing or have demonstrated the ability to produce on a formation test.

If the combination of data from open-hole logs and core analyses is overwhelmingly in support of economic producibility and the indicated reservoir properties are analogous to similar reservoirs in the same field which have produced or demonstrated the ability to produce on a conclusive formation test, the reserves may be classified as proved. This would probably be a rare event especially in an exploratory situation. The essence of the SEC definition is that in most cases there must at least be a conclusive formation test in a new reservoir before any reserves can be considered to be proved.

h. Statement of Financial Accounting Standards 69, paragraph 30.a. requires the following disclosure:

Future cash inflows. These shall be computed by applying year-end prices of oil and gas relating to the enterprise's proved reserves to the year-end quantities of those reserves.
(Emphasis added)

This requires the use of physical pricing determined by the market on the last day of the (fiscal) year. For instance, a west Texas oil producer should determine the posted price of crude (hub spot price for gas) on the last day of the year, apply historical adjustments (transportation, gravity, BS&W, purchaser bonuses, etc.) and use this oil or gas price on an individual property basis for proved reserve estimation and future cash flow calculation (this price is also used in the application of the full cost ceiling test). A monthly average is not the price on the last day of the year, even though that may be the price received for production on the last day of the year.

Paragraph 30b) states that future production costs are to be based on year-end figures with the assumption of the continuation of existing economic conditions.

i. Position on Probabilistic Methods of Reserve Estimating

Probabilistic methods of reserve estimating have become more useful due to improved computing and more important because of its acceptance by professional organizations such as the SPE. The SEC staff feels that it would be premature to issue any confidence criteria at this time. The SPE has specified a 90% confidence level for the determination of proved reserves by probabilistic methods. Yet, many instances of past and current practice in deterministic

methodology utilize a median or best estimate for proved reserves. Since the likelihood of a subsequent increase or positive revision to proved reserve estimates should be much greater than the likelihood of a decrease, we see an inconsistency that should be resolved. If probabilistic methods are used, the limiting criteria in the SEC definitions, such as LKH, are still in effect and shall be honored. Probabilistic aggregation of proved reserves can result in larger reserve estimates (due to the decrease in uncertainty of recovery) than simple addition would yield. We require a straight forward reconciliation of this for financial reporting purposes.

j. Use of Cautionary Note in Connection with Disclosure Language

We have seen in press releases and web sites disclosure language by oil and gas companies which would not be allowed in a document filed with the SEC. We will request that these disclosures be accompanied by the following cautionary language:

Cautionary Note to U.S. Investors -- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use certain terms {in this press release/on this web site}, such as [identify the terms], that the SEC's guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form XX, File No. X-XXXX, available from us at [registrant address at which investors can request the filing]. You can also obtain this form from the SEC by calling 1-800-SEC-0330.

Examples of these disclosures would be statements regarding "probable," "possible," or "recoverable" reserves among others.

k. Consent of Experts and Potential Civil Liability

The SEC staff reminds professionals engaged in the practice of reserve estimating and evaluation that the Securities Act of 1933 subjects to potential civil liability every expert who, with his or her consent, has been named as having prepared or certified any part of the registration statement, or as having prepared or certified any report or valuation used in connection with the registration statement. These experts include accountants, attorneys, engineers or appraisers.

November 29, 2000

VIA FACSIMILE and U.S MAIL

Douglas L. Foshee
Chairman of the Board
And President
Nuevo Energy Company



RE: Nuevo Energy Company
Registration Statement on Form S-3 Filed September 26, 2000
File No. 333-46580
And Documents Incorporated by Reference
File No. 1-10537

We have the following engineering comments on your filings. These comments supplement those set forth in the letter we issued November 9, 2000. Please file amendments in response to both letters:

Form S-3

1. On page E-35 of your document, you allude to your interests in COOGER acreage. Supplementally, tell us the details of any proved undeveloped reserves you have claimed in the COOGER area. Include for each unit the PUD volumes booked, the number of locations identified and the number of producing wells.

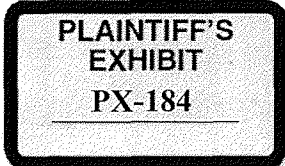
Form 10-K

2. We note your disclosure concerning your offshore California fields (page 3). Expand your disclosure under Environmental Regulation and other appropriate areas (e.g. Item 2. PROPERTIES) so that the reader is aware of the magnitude of your exit cost liability in the offshore area. Include whether you are indemnified for any part of these exit costs. Supplementally, tell us how you have treated your dismantlement, rehabilitation and abandonment costs in your determination of proved reserves and associated standardized measure. Address whether each field's:

- * estimated future net cash flow contains DR&A capital costs;
- * total estimated future net cash flow is positive if DR&A costs are included;

- * proved reserves are attributed if its estimated future net cash flows are negative due only to inclusion of DR&A costs.

3. Your statement, "The Company also has an exploration program targeting potential reserve opportunities..." (page 4 under Domestic Operations), implies the existence of reserves even though you use it to explain your exploration program. Amend your document to support this statement with factual evidence of proved reserves or delete it.



4. Supplementally, tell us if your claimed proved reserves in Congo have a longer estimated life than your current, active production permit. If so, amend your document to disclose only those proved reserves to which you have effective rights.

5. We note your disclosure concerning contingent payments for acquisitions (page 7 and elsewhere). Supplementally, tell us if your disclosed historical product prices are adjusted to include the effect of these contingent payments.

6. We note your use of realized prices including hedge effects (Item 2 and Note 17 to financial statements) in the determination of your proved reserves and the associated standardized measure of discounted future net cash flows. Statement of Financial Accounting Standard 69 requires the use of year-end prices for these calculations. The staff has described the proper method in determining year-end pricing at our web site (www.sec.gov/offices/corpfin/acctdisc.htm, then scroll down to Hedging Transactions and Definition of Proved Reserves). In future filings with the SEC, disclose your proved reserves and associated standardized measure as determined by the use of year-end prices; adjust your standardized measure for hedge effects on a company basis with a line item or footnote.

7. We note your disclosure, Net Proved Reserves (Estimated Market Case). Your description of these volumes as proved reserves is questionable. Amend your document so that these estimated oil and gas volumes are not characterized as proved reserves.

8. We note your disclosure concerning management of oil price risk under Hedging. Consistent with FRR 48, under a separate subheading titled "Hedge Policy", outline your purpose and strategy for hedging oil and gas prices, and disclose your current policy limits on the amount of hedging you do. Supplementally provide us with a copy of your formal hedge policy, if you have one. Disclose past policies, and disclose who sets and changes this policy. Discuss your internal controls on hedging activities. Outline your plans for future use of commodity hedging. Disclose your policy about trading for your own account. In that today's hedging positions might be quickly changed or unwound, elaborate on what your long-term policy is on managing your hedging position.

9. Amend your table of historical prices received under AVERAGE SALES PRICE and Note 17 to disclose the prices paid to you by the purchasers and the gain or loss due to hedging.

10. In the fourth paragraph under OUTLOOK, you disclose your 2000 capital spending budget. Expand this to disclose how much of this budget will be used to develop your disclosed proved undeveloped reserves. Amend your table of property acquisition and development activities (under Note 17) to disclose your expenditures for the development of your booked proved undeveloped reserves for the last three years.

11. We note your disclosure of the sources of change to the standardized measure does not contain a line item for incurred development costs as prescribed by SFAS 69, paragraph 33g. Amend your document to comply with this requirement.

Form 10-Q, , for the period ended 9-30-00

12. Under Exploration Activity, International (page 16), you state:

* "the Company acquired interests in two exploration permits...that offer large reserve potential within world-class proven hydrocarbon trends...". This implies the existence of reserves even though you use it in the context of your exploration program. Amend your document to support this statement with factual evidence of proved reserves or delete it.

* "The Alyane Permit lies directly within the prolific nummulite limestone trend where many of Tunisia's and Libya's largest fields have been discovered." Amend your document to support this statement with facts or delete it. Include the fact that oil and gas deposits adjacent to your property are not necessarily indicative of oil and gas deposits on your property.

* "These fields...have estimated recoverable reserves which total over 1.5 billion barrels of oil equivalent." Regulation S-K prohibits the disclosure of unproved reserves in documents filed with the SEC. Support this statement with factual evidence of proved reserves or delete it.

Web site - www.nuevoenergy.com

13. We note your website discloses, "Nuevo Energy Company (NYSE: NEV) has reached agreement to enter into two highly prospective permits in the Republic of Tunisia, North Africa, that offer large reserve potential within world-class proven hydrocarbon trends." and "The Alyane Permit lies directly within the prolific nummulite limestone trend where many of Tunisia's and Libya's largest fields have been discovered. These fields, which include, among others, Hasdrubal, Salambo, Bouri and Ashtart, have estimated recoverable reserves which total over 1.5 billion barrels of oil equivalent." Only those measures of reserves set forth in SEC Industry Guide 2, and Section 4-10(a) of Regulation S-X are permitted in filings with the SEC. If you continue to make references on your web site to terms and reserve measures (italicized above) other than those recognized by the SEC, accompany such disclosure with the following cautionary language:

Cautionary Note to U.S. Investors -- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use certain terms on this web site, such as [identify the terms], that the SEC's guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to

consider closely the disclosure in our Form XX, File No. X-XXXX, available from us at [address at which investors can request the filing]. You can also obtain this form from the SEC by calling 1-800-SEC-0330.

14. To the extent that your web site contains disclosure about adjacent or other properties on which you have no right to explore or mine, include the following language along with the above cautionary note:

This web site also contains information about adjacent properties on which we have no right to explore or mine. We advise U.S. investors that the SEC's oil and gas guidelines strictly prohibit information of this type in documents filed with the SEC. U.S. investors are cautioned that oil and gas deposits on adjacent properties are not indicative of oil and gas deposits on our properties.

Closing

File a pre-effective amendment and an amendment to your Forms 10-K and 10-Q in response to these comments. Provide a cover letter keying your response to the comments, and provide any requested supplemental information. If you believe complying with these comments is not appropriate, tell us why in your letter. We may have comments after reviewing your revised materials and your responses.

Submit requests for acceleration from the company at least two business days prior to the requested effective date. Refer to Rules 460 and 461 of the Securities Act of 1933 and Rule 15c2-8 of the Securities Exchange Act of 1934 regarding the distribution of preliminary prospectuses and requests for acceleration.

Direct any questions on these comments to Ronald Winfrey at [REDACTED] or, in his absence, to the undersigned at [REDACTED].

Sincerely,

H. Roger Schwall
Assistant Director

cc: George G. Young III, Esq. by facsimile
K. Hiller
B. Stem
R. Winfrey
M. Pressman

January 11, 2001

via facsimile and U.S. Mail

Rick A. Harrington
Chairman of the Board
CorvettePorsche Corporation

Re: CorvettePorsche Corporation
Form S-4 filed December 7, 2001
File no. 333-74798

Conoco Incorporated
Form 10-K for the year ended December 31, 2000
File no. 1-4521

Phillips Petroleum Company
Form 10-K for the year ended December 31, 2000
File no. 1-720

Dear Mr. Harrington:

We have reviewed your filings and have the following comments relating to legal disclosure and engineering issues. We will issue accounting comments in a separate letter. We may also issue additional legal comments. Please give effect to all comments.

Where indicated, we think you should revise your documents in response to these comments. However, if you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filings. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

To prevent the issuance of similar comments, please review all areas of corresponding disclosure in the various filings and make appropriate changes to all affected sections and documents.

Form S-4

PLAINTIFF'S
EXHIBIT
PX-185

General

1. We note that you filed several written communications under Rule 425 since CorvettePorsche Corp. filed the registration statement. However, subsequent to the filing of the registration statement, Rule 425 filings should be made under the Securities Act file number of the Form S-4. See Regulation M-A telephone interpretation B.12 available at www.sec.gov in the July 2000 Supplement to the Division of Corporation Finance's Manual of Publicly Available Telephone Interpretations. Please make the correction in any future filings.
2. Confirm that you will file with the Commission all materials used by either group to aid in the solicitation of proxies. See Rule 14a-6(c) of the Proxy Rules.
3. Provide us with a supplemental copy of the diagrams, pictures and other graphic information that you wish to include in this document. We may have additional comments.
4. To expedite the staff's review, please supply the information you currently omit. To identify information that is subject to change, like page numbers, you may retain brackets around the new disclosure.
5. Disclose prominently in the forepart that, due to the fixed exchange ratio and subsequent market fluctuation, stockholders may receive shares of CorvettePorsche stock worth less than the aggregate market value of their holdings of Conoco or Phillips stock prior to the merger.
6. Because this filing will constitute the initial public offering of CorvettePorsche, the safe harbor provisions of the Private Securities Litigation Reform Act do not apply to it. Therefore, revise your document throughout either (1) to remove the incorrect references to the Act or (2) to state explicitly that the safe harbor provisions of the Act do not apply to CorvettePorsche.

Outside Front Cover Page

7. List separately in the fee table the purchase rights to which you refer at page 85, or explain why you do not intend to register these rights. Also, briefly refer to the rights in the forepart of the document, and include a cross reference to the more complete disclosure that you include at page 85.

Letter to Stockholders

8. Please provide us with supplemental data that will make clear that the combined entity will rank as indicated in the first paragraph.

Questions and Answers About the Merger, page 1

9. Based on the market price of each company's stock at the time the parties negotiated and agreed upon the exchange ratio, stockholders will not receive a "premium" in the merger. In this section or the

summary section, briefly disclose why this is true. For example, if true, discuss why you view the transactions as a "merger of equals." Also, eliminate any overlapping disclosure between the two sections, which you should treat as one for purposes of clear disclosure.

10. We note by reference to page 6 and elsewhere that the requisite tax opinions relating to Section 351 are waivable conditions. Refer to our comments relating to "Material Federal Income Tax Consequences" at page 54, and make appropriate revisions to the answer to the second question on page 2.

What happens to my future dividends? -- page 2

11. Clarify what you mean by "competitive dividend policy."

Summary, page 4

12. Expand the introductory paragraph on page 3 to include a precise reference to the Risk Factors section, or summarize the principal risks in this section.

The Interests of Directors and Management in the Merger, page 6

13. As some directors will receive substantial financial benefits as well as other valuable consideration as a result of the merger, you should include references to these conflicts of interest at each place you state the boards' recommendations. Rather than summarize the benefits at each place, you may include a precise cross-reference to more detailed disclosure elsewhere in the document.

14. Quantify in dollar terms the aggregate amount of compensatory payments and all other benefits that all executive officers and directors will receive as a result of the transaction, to the extent reasonably quantifiable.

15. Discuss and quantify any material consideration each of Messrs. Dunham and Mulva will receive as a result of the merger, including, for example, restricted stock and cash. For example, it appears that Mr. Mulva's base salary would increase by about \$154,167 per year.

Comparative Market Price Information, page 7

16. Provide the trading symbol for both companies.

Risk Factors Relating to the Merger - page 12

Estimates of cost savings -- page 13

17. Revise the caption and discussion to clarify the risk. As currently drafted, this appears to constitute a disclaimer rather than a risk factor.

The Merger

Background of the Merger, page 22

18. Provide details regarding the substance and timing of all material offers and counteroffers during the course of the negotiations for the transaction. Also discuss further the negotiation of any material terms, and clarify the origin of the deal. For example, address how the parties negotiated the following items:

- * the exchange ratio;
- * the transaction structure;
- * the final percentage each company's stockholders would own post-merger; and
- * the deal protection provisions.

19. Briefly discuss the particular "potential business opportunities" considered by Phillips following the Tosco acquisition, and explain why the board considered a business combination with Conoco to be the best strategic alternative.

20. Explain why each company found it appropriate to retain more than one fairness advisor. Make clear whether any of the advisors participated to a greater or lesser extent than the others in any negotiations or in any other regard. For example, we note the disclosure at page 36 regarding Morgan Stanley's role in advising Conoco during the negotiations.

21. At page 30, you state that "Conoco did not request that a fairness opinion be provided by" CSFB. Explain why CSFB was retained, and disclose how it fulfilled this role. To the extent it presented Conoco with any reports, oral or written, provide the disclosure Items 1015(b)(5) and (b)(6) of Regulation M-A require.

22. Clarify what "finalizing" the merger agreement on November 17 entailed. We note the disclosure regarding the events of November 18.

Reasons for the Merger, page 25

23. Clarify what is meant by the term "legacy growth projects."

24. This section contains an extensive discussion of your anticipated capabilities and competitive position as a combined company. Revise the presentation in this section to address some of the uncertainties you mention in your second risk factor on page 12. If material, consider adding a new risk factor to disclose your increased exposure to particular country risks and uncertainties due to the expanded global reach of the combined entity.

25. Tell us the basis for your claims that the merger will reduce your annual combined costs by at least \$750 million within the first full year.

Recommendation of the Conoco Board of Directors, page 27

26. Clarify the reference to the benefits "described above."

27. Tell us what you anticipate the aggregate merger costs will be for both entities, and confirm that the reference to "immediately accretive" takes those expenses into account.

28. Supplementally provide us with the "security analyst earning estimates" you reference in the second bullet point.

29. Explain how each factor supports or does not support the decision to approve the merger. For example:

* explain why the "effect of the merger on the capital structure and financial ratios of Conoco" is a positive factor relating to the merger; and

* explain why the proposed composition of the New Parent Board of Directors is a positive factor relating to the merger.

30. Explain why "retaining" employees would be problematic, given the "expanded opportunities" to which you refer at page 27. If you are referring to layoffs or workforce reductions, please revise to make this clear.

31. In the ninth bullet on page 28, briefly discuss the "alternative strategies" and explain why the board did not believe the alternatives to be as favorable as the merger. Also, indicate what the board concluded regarding the feasibility of transactions with other entities.

Recommendation of the Phillips Board of Directors, page 28

32. To the extent the comments relating to the previous section apply to this section, please revise accordingly.

33. In the tenth bullet on page 29 explain how the name change provisions and the provisions preventing a change in chairmen and CEO support the merger.

34. Provide all the information Item 1015(b)(4) of Regulation M-A requires for each advisor, including quantified amounts. Also, disclose the estimated aggregate compensation each investment banker will receive in connection with the current transaction. Stating that an advisor will receive a "customary fee" is insufficient.

Opinions of Conoco's Financial Advisors, page 30

35. Give effect to all comments relating to advisors for both Conoco and Phillips, making corresponding changes as appropriate.

36. Provide us with copies of all projections, as well as any other materials exchanged among the parties that quantified any strategic, financial or operational benefits anticipated from the merger. Also provide us with any material non-public information exchanged among

the parties. Finally, provide us with the projections to which you refer at pages 35 and 43.

37. Summarize in the document any material financial projections exchanged among the parties directly or indirectly, including data provided to fairness advisors, if the parties relied upon the information.

Opinion of Morgan Stanley, page 30

38. Provide in your summary all the information Item 1015(b)(6) of Regulation M-A requires. In that regard, delete references in first paragraph on page 31 to the opinion for a discussion of the procedures followed and limitations on the scope of the review. Also, the discussion should not be "qualified in its entirety."

39. Explain why Morgan Stanley did not update all affected analyses as of November 16 to include the actual ratio based on prices as of that date. We note your statement that you "analyzed the sensitivity to the actual exchange ratio on November 16, 2001, by examining independently both Conoco's and Phillip's stock price movements for November 15 and 16, 2001."

40. Explain to us why it appears from the fifth paragraph on page 35 that the merger would be dilutive to Phillips CFPS in 2003, when the disclosure under Pro Forma Merger Analysis at page 43 suggests otherwise.

41. Explain Morgan Stanley's role in greater detail. You disclose at page 36 that Morgan Stanley advised Conoco during negotiations, but with regard to the determination of the formula, it appears that the formula was determined on November 4, five days before Morgan Stanley was retained.

Research Analyst's Future Price Targets Analysis, page 33

42. Describe how and why each analyst reviewed was selected, disclose how many were reviewed and disclose that one of the analysts was an employee of Morgan Stanley and two others were employees of Conoco's other advisors. We note that not all the analysts set target prices. When disclosing the numbers of analysts you reviewed be sure to indicate that not all of them presented the necessary data points for your analysis.

43. We note in the board book that you provided us does not include Analyst Data for Conoco/Cowboy. Supplementally explain in what format this information was presented to the Board of Directors.

Pro Forma Contribution Analysis, page 35

44. Further, clarify what you mean by the statement that "the contributions made by Conoco and Phillips are consistent with the relative exchange ratios offered in the merger." Consider including a chart to make this clear.

Potential Synergy Analysis, page 35

45. Indicate the date of each transaction discussed.

Opinion of Salomon Smith Barney, page 37

46. Summarize all material analyses the advisor performed. Refer to Item 1015(b)(6) of Regulation M-A.

Joint Financial Analyses of Phillips' Financial Advisors - page 42

47. Explain how these analyses were prepared. Describe the role of each advisor in the preparation of the opinions. If the three advisors designated employees to participate as a team with the others, discuss this in greater detail. We may have additional comments.

48. Explain why the information in the fifth paragraph on page 46 appears to differ from the disclosure in the third paragraph on page 24.

Interests of Certain Persons in the Merger, page 46

Employment Agreement with Archie W. Dunham, page 47

49. Disclose in greater detail and, if appropriate, quantify all of the "appropriate incentives" provided to Mr. Dunham. For example, quantify each part of the lump sum "severance" payment Mr. Dunham will receive as consideration for his not voluntarily terminating his employment. In addition, state the number and value of the grants of options, restricted stock and other compensatory awards.

Material Federal Income Tax Consequences of the Merger, page 54

50. You refer to additional opinions relating to Section 368. Do not assume those matters upon which counsel must opine. Also, prior to effectiveness, update the discussion in this section and file the additional opinions -- along with appropriate consents -- as exhibits. Additionally, state that if the closing opinions are materially different from the opinions you have filed as exhibits, then you will resolicit stockholders. Also state that if the condition to file the closing opinions is waived, you will recirculate and resolicit if the change in tax consequences is material.

51. We may have additional comments after reviewing the tax opinions. Make clear whether the disclosure summarizes the opinions or constitutes the opinions.

The Merger Agreement, page 59

Conditions to the Completion the Merger, page 65

52. Disclose which conditions have been satisfied, and discuss the status of others.

Directors and Management Following the Merger, page 70

53. Disclose when you will make the determination as to who will serve on the New Parent Board of Directors. If this information is known or will be known prior to the shareholder vote, amend the document to include that information.

Security Ownership of Certain Beneficial Owners and Management, page 72

54. Disclose those who have attributed beneficial ownership due to their control of the listed stockholder entities, if any.

Fairness Opinions

55. Please ensure that the versions you include with the next amendment include conformed or actual signatures.
Exhibits

56. Please note that all exhibits are subject to our review. Accordingly, with your next amendment, please file all exhibits, including the legality opinion and tax opinions relating to the merger and issuance of common stock, and the forms of proxy for both companies.

57. In the exhibit index, disclose precisely when you have filed any exhibits that you list as "previously filed" in the amended Form S-4. Also include parallel disclosure at page II-2.

58. Ensure that you provide an updated consent for Goldman, Sachs with each amendment. We note the limitation in the consent you filed as exhibit 99.3.

Phillips Petroleum Company - Form 10-K for the year ended December 31, 2000

Competition, page 28

59. For each business segment, identify the particular markets in which you compete, provide an estimate of the number of competitors and your competitive positions if known or reasonably available to you.

Executive Officers of the Registrant, page 31

60. Disclose in necessary detail the five-year business experience of all executive officers, including those who have held positions with you or your affiliates during the entire period. Include the dates of experience by month and year. Refer to Item 401(b) of Regulation S-K. You need not provide any additional disclosure for employees who have held the same position for at least the past five years.

Management's Discussion and Analysis, page 35

Capital Resources and Liquidity, page 57

61. Disclose your total debt repayment obligations for the next fiscal year.

Contingencies, page 68

Environmental, page 69

62. If material, disclose the total cost estimate for 14 remaining sites.

63. Provide a discussion of any environmental regulations that have a material effect on your operations.

Conoco Inc. - Form 10-K for the year ended December 31, 2000

Business, page 1

Business Strategy, page 1

64. We note your statement "Our vision is to be recognized around the world as a truly great, integrated, international energy company that gets to the future first." Define in your document the phrases "truly great" and "gets to the future first." In the alternative, revise to eliminate marketing oriented language.

Upstream, page 2

Summary, page 3

65. Provide objective supplemental support for your statement that your exploration performance in 1998, 1999 and 2000 was "excellent" or revise to provide adequate context for this claim.

Legal Proceedings, page 32

66. Supplementally explain why you do not discuss the \$55 million dollar jury verdict in the GTA patent infringement case referenced in Note 26 to your financial statements.

Management's Discussion and Analysis, page 37

Liquidity and Capital Resources, page 40

67. In future filings, disclose the anticipated sources of funding for your capital expenditures and expenses.

Financing Activities, page 43

68. Disclose your total debt repayment obligations for the next fiscal year.

Election of Directors, page 5 (definitive proxy statement)

69. Revise to provide each director's specific business experience during the past five years leaving no gaps and/or ambiguities. See Item 401 of Regulation S-K.

Engineering Comments

Form S-4

70. If you have significant exposure in your hedging arrangements to any one company, such as Enron or others, amend your risk factors in disclose this. Supplementally advise us if you do not.

71. We note your disclosure on page 26, "The combined company will have pro forma hydrocarbon reserves at December 31, 2000 of 8.7 billion barrels of oil equivalent..." and your footnote disclosure on page 44, "The potential value created from the synergies was calculated at six times the pre-tax synergy estimate, based upon discounted cash flow analyses of the estimated cash flows of the synergies as provided by the managements of Phillips and Conoco and assuming a range of discount rates and perpetuity growth rates." The arithmetic sum of the companies' oil equivalent reserves at year-end 2000 appears to be 7.7 billion barrels. Supplementally, tell us the role played by probabilistic reserve aggregation in the determination of the pro forma reserves and the ultimate merger value for this transaction. You may contact us for assistance in this or any other matter.

Phillips 10-K

72. Instruction 5 to Item 102 of Regulation S-K states "Estimates of oil or gas reserves other than proved ... and any estimated values of such reserves shall not be disclosed in any document publicly filed with the Commission...". Your document discloses unproved reserve volumes in several instances:

Page 5

* "The Meltwater field is estimated to contain about 25 million net barrels of recoverable hydrocarbons, 11 million barrels of which have been recorded as proved reserves."

Page 6

* "...the company estimates that 10 percent to 20 percent of the approximately 2.5 billion to 3 billion gross barrels of oil in place in the core area of the field could be recovered."

* "... Net recoverable hydrocarbons in place at Alpine are estimated at 300 million barrels of oil equivalent, of which 208 million were included in the company's year-end proved reserves."

* "...The Prudhoe Bay field is estimated to contain 8 trillion net

cubic feet of gas."

Page 15

* "The gross hydrocarbon recovery potential of the field is estimated to be 400 million barrels of petroleum liquids and 3.4 trillion cubic feet of natural gas."

Pages 16 and 73

* "This project, along with the cooperative development agreements, would enable Phillips to commercialize additional net hydrocarbons of up to 760 million barrels of oil equivalent."

Revise your document to ensure such statements disclose only proved reserves as defined in Rule 4-10 of Regulation S-X.

73. You have references to reserves in your document that do not clearly indicate, by context or statement, that the reserves are proved.

Page 8

* "Through these transactions, Phillips added approximately 200 billion cubic feet of net reserves."

Page 9

* "The agreement added approximately 130 billion cubic feet of gas equivalent to the company's reserves at closing..."

Page 14

* "Phillips booked additional reserves of 76 million barrels of oil equivalent in 1999 as a result of this acquisition, bringing its total booked reserves in the Bayu-Undan field to over 160 million barrels of oil equivalent at year-end 1999."

Revise your document to ensure these and other similar statements clearly refer to proved reserves or delete them.

74. You project future oil and gas production figures that do not clearly indicate the extent to which the production will be derived from currently booked proved reserves.

Page 8

* "...the acquired assets brought Phillips' total net U.S. coalbed methane production in 2000 to 212 million cubic feet per day. The company expects its U.S. coalbed methane production to increase by approximately 100 percent over the next four years."

Page 11

* "Production is expected by year-end 2001, with peak net rates of 5,000 barrels of oil per day and 65 million cubic feet of natural gas per day anticipated in the second quarter of 2002."

Page 13

* "The Phase I development will utilize one wellhead platform and a floating production, storage and offloading facility, with daily net production of oil expected to reach 17,000 to 20,000 barrels per day."

* "First production from Phase II could begin in 2005, with an expected net oil production rate estimated at 50,000 to 65,000 barrels per day."

Page 16

* "The upgrader is expected to begin producing commercial quantities of 26-degree API gravity oil in early 2004, at which time Phillips' net production from the Hamaca field is expected to increase to approximately 66,000 barrels per day."

Revise your document to clearly disclose the extent to which these projected production figures will be derived from currently booked proved reserves.

75. Amend your disclosure of "Average Sales Prices" (page 41) to disclose your historical oil and gas prices before and after the effect of your hedging arrangements.

76. We note your proved reserve disclosures on pp. 128-133.

* Amend your foreign proved reserves to delete those claimed that are estimated to be recovered after the expiration of your current licenses.

* Amend your proved reserve disclosure so that all your foreign proved reserves estimates do not differ materially from the volumes that would be calculated by the "economic interest method". This method is discussed under Issues in the Extractive Industries | Definitions of Proved Reserves | Production Sharing Agreements on our website, www.sec.gov/divisions/corpfin/guidance/cfactfaq.htm.

* We note your 2000 Alaskan gas production (103 BCF) and proved gas reserves (3,237 BCF). Supplementally, furnish us with your production projection and income forecast schedule for these reserves. Tell us the major markets for these proved gas reserves including lease/rig fuel and LNG export.

* We note your proved reserve definitions are incomplete. There is no requirement for the disclosure of these definitions. However, if you choose to do so, please amend future documents so that only the complete, exact text of Rule 4-10(a)(2i)(2ii)(2iii)(3)(4) is presented.

* Rule 4-10a of Regulation S-X provides that proved undeveloped oil and gas reserves can be attributed to locations not offsetting

productive units only "where it can be demonstrated with certainty that there is continuity of production from the existing productive formation (emphasis added)." Supplementally, submit to us the engineering and geologic justification for any PUD reserves you have claimed which are not in legal, technically justified locations offsetting (adjacent to) productive wells. Otherwise, affirm to us that none of your claimed PUD reserves are attributed to such locations.

77. We note your disclosure of historical development costs incurred on page 141 and your standardized measure of discounted future net cash flows on page 144. Revise your documents as follows:

* Amend this to also disclose the amounts you spent to develop your booked proved undeveloped reserves in each of the three preceding years.

* Amend the future development costs in the most recent year-end standardized measure with a footnote or additional text to disclose the amounts you have estimated will be spent in each of the next three years to develop your booked proved undeveloped reserves.

Phillips 6-30-01 10-Q

78. Your document discloses unproved reserve volumes in several instances:

Page 36

* "The accumulation is estimated to contain an additional 35 million barrels of recoverable reserves and production from the satellite field is expected to begin in 2003."

Page 37

* "The Nanuq accumulation is estimated to contain more than 40 million barrels of gross recoverable reserves."

* "The previously announced Fiord satellite accumulation is estimated to contain more than 50 million barrels of gross recoverable reserves."

* "Estimated recovery from the Jade field is 380 billion cubic feet of gas and 30 million barrels of oil."

Revise your document to ensure such statements disclose only proved reserves as defined in Rule 4-10 of Regulation S-X.

Phillips 9-30-01 10-Q

79. Your document discloses unproved reserve volumes on page 51.

* "A discovery three miles west of the Kuparuk field is estimated to contain an additional 35 million gross barrels of oil..."

* The Nanuq field is estimated to contain 40 million gross barrels of oil..."

Revise your document to ensure such statements disclose only proved

reserves as defined in Rule 4-10 of Regulation S-X.

www.phillips66.com

80. We note that your web site refers to estimated reserves, recoverable reserves, gross recoverable reserves, net hydrocarbon reserves and hydrocarbon-in-place volumes. Only those measures of reserves set forth in Industry Guide 2, and Section 4-10(a) of Regulation S-X are permitted in filings with the SEC. If you continue to make references on your web site to reserve measures other than those recognized by the SEC, accompany such disclosure in locations at least as prominent as the referenced terms with the following cautionary language:

Cautionary Note to U.S. Investors -- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use certain terms on this web site, such as [identify these and other terms as appropriate], that the SEC's guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our 10-K, File No.1-720 available from us at [registrant address at which investors can request the filing]. You can also obtain this form from the SEC by calling 1-800-SEC-0330.

Conoco 10-K

81. We note claims for several of your properties.

Page 4

* "Ursa, operated by Shell, is one of the largest discoveries to date in the deepwater Gulf of Mexico."

Page 6

* "Britannia is the largest natural gas/condensate field in the U.K. sector of the North Sea."

Page 7

* "BP Amoco operates the Miller field, Thistle Area and the Clair discovery, which is one of the largest undeveloped oil discoveries in western Europe."

Supplementally, furnish us with the technical support for these claims. Amend your documents to disclose the basis (e.g. proved reserves, areal extent) for these and similar claims.

82. Your statement on page 8, "Both licenses are in deep water and hold the potential for large gas discoveries." clearly does not comply with the requirements of Regulation S-K, Item 102 cited above.

Delete such statements.

83. Supplementally, tell us whether your claimed share of the proved reserves in the Gulf of Paria West Block is 32.5 percent as disclosed on page 9. If it is not, explain why it is not.

84. Amend your disclosure of "Average sales prices of produced petroleum" (pages 15-16) to disclose your historical oil and gas prices before and after the effect of your hedging arrangements.

85. We note your disclosure of historical development costs incurred on page 100 and your standardized measure of discounted future net cash flows on page 104. Please revise as follows:

- * Amend this to also disclose the amounts you spent to develop your booked proved undeveloped reserves in each of the three preceding years.

- * Amend the future development costs in the most recent year-end standardized measure with a footnote or additional text to disclose the amounts you have estimated will be spent in each of the next three years to develop your booked proved undeveloped reserves.

86. We note your proved reserve disclosures on pp. 101-102.

- * Amend your foreign proved reserves to delete those claimed that are estimated to be recovered after the expiration of your current licenses.

- * Amend your proved reserve disclosure so that all your foreign proved reserves estimates do not differ materially from the volumes that would be calculated by the "economic interest method". This method is discussed on our website, as noted above.

- * Rule 4-10a of Regulation S-X provides that proved undeveloped oil and gas reserves can be attributed to locations not offsetting productive units only "where it can be demonstrated with certainty that there is continuity of production from the existing productive formation (emphasis added)." Supplementally, submit to us the engineering and geologic justification for any PUD reserves you have claimed which are not in legal, technically justified locations offsetting (adjacent to) productive wells. Otherwise, affirm to us that none of your claimed PUD reserves are attributed to such locations.

Closing Comments

As appropriate, amend the Form S-4 and the Exchange Act filings. Also provide us with any requested supplemental information. Provide a cover letter keying your responses to the comments. If you believe complying with these comments is not appropriate, tell us why in your letter. We may have comments after reviewing the amendments and your responses.

You will expedite our processing of your response if you provide each person listed below with a complete courtesy package that

includes the letter of response, any requested supplemental information and marked and unmarked copies of each changed document. Please ensure that all changes are marked precisely and accurately.

When we have indicated that all outstanding comments on the registration statement have been resolved, you may provide us with a signed letter from the registrant requesting effectiveness under Rule 461. Provide that request at least two business days before the desired effective date.

Direct any questions regarding the engineering comments to Ronald Winfrey, Petroleum Engineer, at [REDACTED] [REDACTED]. Direct questions on the comments we will issue regarding financial statements and related disclosure to Karl Hiller at [REDACTED] [REDACTED] or, in his absence, to Barry Stem, Senior Assistant Chief Accountant, at [REDACTED] [REDACTED]. Direct questions on other disclosure issues to Michael Pressman at [REDACTED] [REDACTED] or, in his absence, to Timothy Levenberg, Special Counsel, at [REDACTED] [REDACTED]. Direct any correspondence to us at the following ZIP Code: 20549-0405.

Sincerely,

H. Roger Schwall
Assistant Director

cc: M. Pressman
T. Levenberg
K. Hiller
B. Stem
R. Winfrey

April 27, 2001

Harvey D. Hinman, Esq.
Vice President & General Counsel
Chevron Corporation
575 Market Street
San Francisco, CA 94105

Re: Chevron Corporation
Form S-4 Amendment no. 1 filed April 11, 2001
File no. 333-54240

Chevron Corporation
Form 10-K for the year ended December 31, 2000
File no. 1-368

Texaco Inc.
Form 10-K for the year ended December 31, 2000
File no. 1-27

Dear Mr. Hinman:

We have the following comments on the above-referenced filings.
Page numbers refer to the revised blacklined copy of the Form S-4.

Form S-4/A

1. We note your response to our prior legal comment 2. Please provide us with a copy of the omitted exhibits. Also, further explain your discussion relating to the Form of Agreement and Declaration of Trust. For example, explain how the terms of the trust agreement could differ, and briefly discuss why these changes would not be material to the matters under consideration by both companies' stockholders.

Table of Contents - page i

2. Include subheadings for the individual risk factors, as appeared in the Form S-4 as initially filed.

Summary

3. Fill in omitted information throughout the document, using

**PLAINTIFF'S
EXHIBIT
PX-186**

brackets if the information is subject to change.

The Interests of Texaco Directors and Officers in the Merger, page 5

4. In addition to your revisions on page 47, revise the summary to disclose the aggregate amount of compensatory and all other benefits that Texaco executive officers and directors may receive as a result of the transaction. See prior legal comment 13.

The Merger

Background of the Merger, page 16

5. We note your response to prior legal comment 28. Please disclose why the Texaco board determined to renew discussions with Chevron in May 2000, and how the circumstances had changed one year after Texaco terminated the initial discussions. It is unclear why Mr. Bijur indicated a willingness to begin new discussions with Chevron when the Texaco board determined, as stated in Texaco's press release dated June 2, 1999, that a potential transaction with Chevron was "unacceptable for reasons including complexity, feasibility, risk and price."

6. We restate prior legal comment 31. Discuss the specific alternatives each company considered, indicate how the boards considered the alternatives, and explain why the alternatives were deemed inferior to the merger.

7. Expand the sixth full paragraph on page 18 to clarify that the exchanged "background information" included detailed projections, or explain why this is not accurate.

Our Reasons for the Merger, page 19

8. Expand the fourth or fifth paragraphs to clarify how you measure "total stockholder return" for these purposes. Provide us with supplemental support for the statistics you cite.

Recommendation of, and Factors Considered by, the Chevron Board, page 22

9. We note your responses to prior legal comments 40 and 63.

* If the board considered the results of the analyses the financial advisor presented and as are summarized in the Form S-4, revise the first bullet on page 23 to state that the board relied upon the fairness opinion despite the results of many of the principal analyses that do not support the conclusion that the exchange ratio is fair. Identify those analyses that yield implied exchange ratio ranges below the exchange ratio in the merger, which results appear to suggest that the merger consideration is not favorable to Chevron. Explain briefly why the board relied on the fairness opinion despite those results.

* If the board did not consider the results of the analyses,

including those that suggest the merger consideration may not be favorable to Chevron, disclose this and identify the analyses that yield implied exchange ratio ranges below the merger exchange ratio.

10. Revise the sixth bullet on page 23 to identify the specific "greater benefits" the Texaco transaction is expected to yield as compared to the alternatives.

11. If you retain the first sentence in the last paragraph of this section and the section that follows, revise both to clarify that the discussion addresses and discusses all factors each board deemed material.

Recommendation of, and Factors Considered by, the Texaco Board, page 24

12. Include disclosure similar to Chevron's response to prior legal comment 45 in the list of factors the Texaco board considered.

Material Federal Income Tax Consequences, page 28

13. Refer to prior legal comment 51. Expand the last sentence in the first paragraph to make clear that you will recirculate a revised version of the proxy statement / prospectus in those circumstances.

14. The draft and unsigned opinions you filed as Exhibits 8.1 and 8.2 do not disclose the federal income tax consequences that result from the merger constituting a Section 368 reorganization. Also, the language you use at page 29 referring to the "discussion below" does not identify the text as an opinion. You must file a long or short form tax opinion that discloses the material federal income tax consequences of the merger to Texaco's stockholders. We may have additional comments.

Opinions of Financial Advisors, page 32

15. We reissue prior legal comment 53. Supplementally provide us with copies of all projections and any other materials exchanged between the parties relating to the transaction. We note that you provided only the projections relating to the strategic, financial or operational benefits anticipated from the merger. We may have additional comments.

Opinion of Chevron's Financial Advisor, page 32

16. We note the revised disclosure in response to prior legal comment 61. The revision is vague regarding how the advisor couched its findings to the board. We note, for example, that the advisor put the summary findings regarding DCF and other key analyses on the last page of its materials. The statement that Lehman Brothers did not discuss "each" qualitative judgment is not fully responsive to the staff's comment. Please revise to clarify what the board was told, and how and why the advisor de-emphasized any of its quantitative findings. We may have additional comments.

17. Expand the tabular presentation of the Segment Valuation Analysis to include additional explanation, including the disclosure contained in the first two sentences of your response to prior legal comment 65.

Opinion of Texaco's Financial Advisor, page 40

18. We note your response to prior legal comment 60 and reissue the comment. Revise the third paragraph and the parallel disclosure at page 3 to make clear that the discussion in the proxy statement / prospectus provides all the information Item 1015(b)(6) of Regulation M-A requires. Rule 411(a) does not eliminate the requirement that the summary "must include" the listed items.

19. Revise the first full paragraph on page 47 to disclose the amounts of compensation paid to CSFB during the two years prior to the announcement of the merger, in accordance with Item 1015(b)(4) of Regulation M-A. See prior legal comment 59. Also include bracketed information in the last paragraph on page 46.

20. We note that you discuss the 23-33% range of premiums at page 25. Explain why the Texaco board did not view that range as a negative since the Premiums Paid Analysis described at page 46 reveals Texaco's stockholders will receive only an 18% premium.

Texaco's Financial Advisors, page 47

21. We note your revisions in response to prior legal comment 15. It appears that Morgan Stanley's advice regarding anticipated divestitures may materially relate to the transaction. Either provide an analysis of why the advice did not materially relate to the merger or provide the disclosure required by Item 4(b) of Form S-4 and Item 1015 of Regulation M-A.

The Merger Agreement, page 66

22. Substitute "describes the" or "discloses the" or like language for "highlights" in the first sentence on page 66 and page 84.

Exhibit 8.1 - Tax opinion

23. We object to the language in the last paragraph of the opinion, which states that the opinion is "only" for the use of the company and may not be relied upon by any other person. Disclaimers of responsibility that in any way state or imply that investors are not entitled to rely on the opinion, or other limitations on whom may rely on the opinion, are unacceptable. Counsel should provide an opinion that omits the disclaimer.

Exhibit 8.2

24. Counsel should make parallel revisions to the latter half of the second paragraph of Exhibit 8.2. Also, once you provide a complete opinion, rather than a shell opinion, we may have additional comments.

Forms of Proxies

25. We note your response to prior legal comment 83. Discretionary authority is unavailable when a procedural action is intended to be taken with respect to a substantive matter for which a proxy is solicited. See Rule 14a-4. The postponement or adjournment of a meeting to solicit additional proxies does not constitute a matter incidental to the conduct of the meeting. Consequently, we consider the use of discretionary authority to postpone or adjourn a meeting to solicit more votes a substantive matter for which proxies must be independently solicited. Please revise the proxy cards in accordance with our prior comment.

26. Revise both proxies to disclose explicitly the merger and to quantify the merger consideration.

Texaco Inc. - Form 10-K for the year ended December 31, 2000

Equilon Enterprises LLC Financial Statements

Report of Independent Accountants, page 2

27. The accountant's report covering the December 31, 2000 financial statements is dated March 1, 2000. The year the audit work was completed appears incorrect. Amend the Form 10-K to include a new accountant's report that reflects the correct date for which audit fieldwork was completed.

Management's Discussion and Analysis

Results of Operations - Other Revenues

28. You state that the special charges of your affiliates in 2000 included a special gain for an employee benefit revision. Explain to us the origin of this gain. What affiliate recorded this gain, and what was the gain amount?

Texaco, Inc. Financial Statements

Description of Significant Accounting Policies

Properties, Plant and Equipment and Depreciation, Depletion and Amortization

29. You disclose that you capitalize the costs to inject carbon dioxide related to the development of oil and gas reserves. Provide further evidence to support that these costs are capitalizable development costs rather than production costs.

Engineering Comments

30. We do not agree with your response to engineering comment 98. The language you propose and which is in your recent 10-K and 8-K filings is not sufficient as it is nothing more than boilerplate language that any company with joint ownership agreements in place should include. The fact is that you have a specific equity re-determination that is currently ongoing with the DOE over Elk Hills and, therefore, you should disclose it. As you stated, the potential liability to either party is in the range of \$1 billion. Two of the four zones in dispute, the Dry Gas Zone and Carneros, have already been settled in DOE's favor. However, the largest two zones, the Stevens and Shallow Oil Zone (SOZ), are still under evaluation. Although the Independent Petroleum Engineer's (IPE) Stevens' decision is currently being reviewed by the DOE's Assistant Secretary of Fossil Energy, for fairness and technical correctness, the IPE's preliminary decision on the Stevens is still favorable to the DOE, and there is the possibility after DOE's final review it will be even more favorable to them such as with the Carneros. The IPE's work on the SOZ is not completed. Therefore, although you may believe that the risk exposure to Chevron is much lower than what the maximum amount is, that is only your opinion because neither the Stevens nor the SOZ have been finalized, but as we stated, the preliminary result of the Stevens is favorable to DOE. Like all legal proceedings there is no way to predict the outcome before the case is completed. The shareholders and potential shareholders are entitled to know that this particular dispute is ongoing and could be materially detrimental to Chevron for up to \$1 billion, just as you disclosed for years Chevron's potential liability in the Gulf Oil/City Service/Occidental lawsuit. Therefore, please amend your document and all future filings to disclose the equity dispute with the DOE at the Naval Petroleum Reserve at Elk Hills to be a material risk of potentially \$1 billion to the shareholders until it is finally resolved.

31. Regarding your engineering response number 108, service companies frequently advertise positively on new developments but until they are tested in the field there is no way to know if the purported claims are true or not. The Encapsulated Acid technique has never been attempted in the field so its results are still unknown. Please amend future filings, if this issue is discussed, to include a more balanced description of this new technique of wellbore stimulation that has not been tested in the field. We assume the service company will be making this technique available, in some form, to all companies so, if that is the case, what is the advantage to Texaco?

32. Please amend your document if necessary and future filings to remove the reference to the proposed 33,000 barrels per day rate from the Escravos project that is in Chevron's 2000 10-K report. As you stated in response number 101, these are not proved reserves, therefore, proposed rates for unproved reserves should not be disclosed.

33. You have attributed proved reserves of 130 million barrels to

Chevron's Chad/Cameroon area. What is the basis for classifying these as proved at this time?

34. You have included a discussion of the Athabasca Oil Sands in your Review of Ongoing Exploration and Production Activities in your 2000 annual report on the Form 10-K. The SEC does not consider the mining of oil sands to be an oil and gas activity. Therefore, in future filings you must discuss this type of activity outside of any discussions about oil and gas. In addition, when you attribute proved reserves to this project, they must not be included in the proved reserves of your oil and gas activities. This project also should not be included in the calculation of the Standardized Measure of Discounted Future Net Cash Flow.

35. In your discussion of activities in Argentina, you disclose that your exploration and appraisal program resulted in the addition of over 50 million barrels of proved and probable reserves. Rule 410(a) of Regulation S-X and Item 102 of Regulation S-K says that reserve disclosure should be limited to proved reserves. Therefore, in future filings do not include the quantities of probable or possible reserves for any project. Only disclose the amount that you attribute to proved reserves.

36. We notice a discussion on Texaco's website relating to the "billion barrel discovery offshore Nigeria, called Agbami." We assume these are all not proved reserves as they would represent over one-third of your total oil reserves. It is not clear if this amount is oil in place, which is much higher than reserves. If you disclose reserves which do not comply with Rule 4-10 of Regulation S-X, provide the cautionary note to investors which can be found in our website guidance that we posted in July 2000. Go to: <http://www.sec.gov/divisions/corpfin/acctdisc.htm> and scroll about three quarters down the document to Section S: Issues in the Extractive Industries. Then go to 3: the Definition of Proved Reserves and then down to paragraph k. Please revise your website and all future press releases to include this cautionary note to investors when publicly discussing unproved reserves.

37. If Texaco does not consider exploratory wells which have not resulted in recording of proved reserves pending further evaluation to be completed and they are no longer in the process of drilling such wells, the numbers of these wells and the year they were drilled should be disclosed.

38. In Texaco's 2000 report on the Form 10-K you state that you expensed \$100 million in prospects in the Gulf of Mexico that were drilled between 1995 and 1998 after further appraisal drilling in 1999 determined them to be non-commercial. FASB 19 states that if, after a year has passed, a determination that proved reserves has been found cannot be made, the well shall be considered impaired, and its costs charged to expense. Please advise. Are you currently carrying exploration wells as capitalized that were drilled over a year ago without determining if proved reserves have been found? Please explain. We may have further comments.

39. In Texaco's 2000 report on the Form 10-K under Supplemental Oil and Gas Information you state that you have a large inventory of potential hydrocarbon resources that you expect will increase your reserve base. As these are only resources at this point, it is speculation on your part that they will increase your reserve base. Therefore, this type of comment should be avoided in future filings.

Closing Information

File an amended Form S-4 and Form 10-K in response to these comments, and provide any requested supplemental information. Provide a cover letter keying your responses to the comments. If you believe complying with these comments is not appropriate, tell us why in your letter. We may have comments after reviewing the amendment and your responses.

You will expedite our processing of your response if you provide each person listed below with a complete courtesy package that includes the letter of response, any requested supplemental information and marked and unmarked copies of each changed document. Please ensure that all changes are marked precisely and accurately.

When we have indicated that all outstanding comments on the registration statement have been resolved, you may provide us with a signed letter from the registrant requesting effectiveness under Rule 461. Provide that request at least two business days before the desired effective date.

Direct any questions regarding the engineering comments to James Murphy, Petroleum Engineer, at [REDACTED] [REDACTED]. Direct questions on the comments regarding financial statements and related disclosure to Jenifer Gallagher at [REDACTED] [REDACTED] or, in her absence, to Kimberly L. Calder, Assistant Chief Accountant, at [REDACTED] [REDACTED]. Direct questions on other disclosure issues to Michele Anderson at [REDACTED] [REDACTED] or, in her absence, to Timothy Levenberg, Special Counsel, at [REDACTED] [REDACTED]. Direct any correspondence to us at the following ZIP Code: 20549-0405.

Sincerely,

H. Roger Schwall
Assistant Director

cc: via facsimile
Terry M. Kee, Esq.

M. Anderson
J. Gallagher
K. Calder

T. Levenberg
J. Murphy

March 17, 2003

Mr. Robert M. Snell
Vice President, Chief Financial Officer and Secretary
Spinnaker Exploration Company
1200 Smith Street, Suite 800
Houston, Texas 77002

RE: Form 10-K for the fiscal year ended 2001
Response Letter of March 4, 2002
File Nos. 1-16009

Dear Mr. Snell:

We have limited our reviewed of your Form 10-K to disclosures regarding your operations in the Gulf of Mexico and other offshore oil and gas producing areas. The following comments request supplemental information. Please provide us with that information within fifteen business days of the date of this letter. After reviewing that information, we may have additional comments.

1. We note in the two reserve reports provided to us that the net cost of abandonment after salvage was included for offshore properties where they were significant except in the case of the Green Canyon 338/339 where the salvage costs were estimated to offset the abandonment costs. We note that this property by far contains the largest percentage of your total reserves. Please provide us with the analysis that was performed on the abandonment costs of the Green Canyon field to support your contention that they are no more than the estimated salvage value.

2. The reserve reports also include the statement that you have assured Ryder Scott that you will proceed with the development activities in this report. Please provide to us the type of assurances you gave them in this matter. We also note that the reserve report as of December 31, 2001 estimated that you would spend \$7.75 million in 2002 and \$94.75 million in 2003 on development costs for the Green Canyon 338/339 deepwater block with production starting in 2003. Yet, your December 31, 2001 10-K said that you did not expect this discovery to go on production before 2004. Please explain to us this apparent discrepancy in the evaluation start date versus that disclosed in the filing. Also, in your reserve report

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as
of June 30, 2002 it was estimated that you would spend \$12.9
million
in the remainder of 2002 and \$65.9 million in 2003 on development
of
the Green Canyon 338/339 with production not starting until 2004.
How much development money did you actually spend in the first
half
of 2002 and how much money did you spend in the second half of
2002
on this project? Is your estimate of \$65.9 million in 2003 and
\$11.7
million in 2004 still accurate? If not, why not?

3. In your December 31, 2001 10-K filing you stated under Risk
Factors that you expect to spend approximately \$140 million to
develop the Green Canyon 338/339 Front Runner field. However, in
the
reserve report as of the same date there was only approximately
\$120
million in development costs for all categories of reserves.
Please
explain why there was this difference.

4. Regarding response number 4, although it is possible to
calculate
a water contact using pressure gradient data, we feel that
increasing
your reserves by 35% in a given reservoir by this method is not
the
intent or spirit of the SEC rules for proved reserves. The rules
state that you should limit proved reserves to the lowest know
hydrocarbon from a well penetration. We will usually not object
if
the there is an immaterial amount of reserves for that reservoir
added by this method with compelling data. However, the problem
with
using this technique for a material amount of reserves is that,
although you may be able to calculate the contact itself, you can
only assume the value of such important factors as saturations,
permeability, porosity, net thickness, etc. We feel the intent
and
spirit of the rules are to have penetrated the rock and acquired
all
the information that makes up a conclusive formation test as
required
for the attribution of proved reserves for those depths. These
volumes of reserve should be delegated to the probable category
and
not included in future SEC filings.

5. In response number 6, you state you have revised reserves based
on
additional drilling in discovery situations in the deepwater Gulf

of Mexico without a production flow test. In these situations, have you revised your ultimate reserve estimate materially up or down based on performance? If so, in what instance, how much were the revisions and what percentage of the proved reserves did the revision represent?

6. In response number 7, you indicate that you have excluded \$29.4 million from the amortization base that represents common development costs for the Spar production facility currently under construction because you expect the total proved reserves associated with the project to increase. However, would not the cost for this facility be the same whether you increased the proved reserves or not? If so, why would you exclude these costs?

7. We note a press release of January 16, 2003 announcing a new discovery in Mississippi Canyon 751 that gives "pre-drill" reserve estimates. By industry definition, if you have yet to drill a well, any estimated volume is only a resource, not reserves. The SPE/WPC defines these as "prospective resources". Therefore, you are not being accurate to describe these types of volumes as reserves in public announcements. They are in no way reserves. Please confirm to us that in future press releases you will clarify this. In addition, for press releases and websites that quote anything but proved reserves, we request that you include the following cautionary language:

Cautionary Note to U.S. Investors -- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use certain terms on this web site [or press release], such as [identify the terms], that the SEC's guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 10-K, File No. X-XXXX, available from us at [address at which investors can request the filing]. You can also obtain this form from the SEC by calling 1-800-SEC-0330.

8. In the Exhibits that you provided we noticed two intervals in the

338-A4 well that were footnoted as "May be uneconomic". However, they were classified as proved reserves. If there is doubt about the economics of a reserve volume they should not be classified as proved. Although it is immaterial in this case, please confirm to us that in future filings these types of marginal reserves will be considered unproved until you have the supporting evidence to call them proved.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Please file copies of all your correspondence on EDGAR.

You may contact James Murphy, Staff Petroleum Engineer at [REDACTED] if you have any questions regarding our comments or, in his absence, the undersigned at [REDACTED] [REDACTED] with any other questions.

Sincerely,

H. Roger Schwall
Assistant Director

cc: H. Roger Schwall
James Murphy

November 5, 2003

via U.S. mail

James R. Joyce
President, Chief Executive Officer and Chief Financial Officer
Magellan Petroleum Corporation
P.O. Box 1146
Madison, Connecticut 06443-1146

Re: Magellan Petroleum Corporation
Form S-3 filed October 8, 2003
File No. 333-109553

Form 10-K for the year ended June 30, 2003
Filed September 26, 2003
File No. 1-05507

Dear Mr. Joyce:

We have limited our review of the above filings to the disclosure of your reserves and have the following comments. Where indicated, we think you should revise your documents in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

10-K for the year ended June 20, 2003

Engineering Comments

General

1. Please provide us supplementally with a copy of your latest reserve report.
2. Supplementally, please reconcile your reported proved reserves of 38 BCF of gas and 554 thousand barrels of oil in the 10-K report with the net proved reserves of 83.7 BCF of gas and 1.06 million barrels of oil reported on your website for the Mereenie and Palm Valley fields.
3. We note that your web site refers to recoverable reserves. Only

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those measures of reserves set forth in Industry Guide 2 and Section 4-10(a) of Regulation S-X are permitted in filings with the SEC. If you continue to make references on your web site or in press releases to reserve measures other than those recognized by the SEC, accompany such disclosure with the following cautionary language:

Cautionary Note to U.S. Investors -- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use certain terms on this web site or press release, such as [identify the terms], that the SEC's guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form XX, File No. X-XXXX, available from us at [address at which investors can request the filing]. You can also obtain this form from the SEC by calling 1-800-SEC-0330.

Business, page 4,

Dingo Gas Field

4. Please remove the term "recoverable" reserves as these are not defined under Rule 4-10(a) of Regulation S-X. In addition, if the quantities of 25 BCF include unproved reserves, such as probable and possible, please remove these quantities from the total. Only proved reserve disclosure is permitted under Rule 4-10(a) of Regulation S-X. Specify if these reserves are gross or net to your interest.

5. As we understand from your website, no market for the gas resources in the Dingo Gas Field has been found. Therefore, these are not proved reserves and should be removed from the filing. In addition, you should disclose that no market has emerged for any of the gas volumes discovered to date.

Properties, page 17

Production

6. You have not disclosed any production volumes under this section. Please disclose the net production of oil and gas for each of the last three years.

Financial Statements and Supplementary Data, page 42

Notes to Consolidated Financial Statements

Oil and Gas Properties

Dingo Gas Field

7. Please remove the term "recoverable" reserves as these are not

defined under Rule 4-10(a) of Regulation S-X. In addition, if the quantities of 25 BCF include unproved reserves, such as probable and possible, please remove these quantities from the total. Only proved reserve disclosure is permitted under Rule 4-10(a) of Regulation S-X. Specify if these reserves are gross or net to your interest.

8. As we understand from your website, no market for the gas resources in the Dingo Gas Field has been found. Therefore, these are not proved reserves and should be removed from the filing. In addition, you should disclose that no market has emerged for any of the gas volumes discovered to date.

9. Supplementally, disclose to us the effect, if any, on your financial statements of removing any proved reserves in the Dingo Gas field.

Closing Comments

Please your Form 10-K in response to these comments. Mark the amendment to show all changes made to the document, whether in response to our comments or otherwise. Provide a cover letter that correlates your responses to our comments.

No other review of the registration statement has been or will be made. All persons who are by statute responsible for the adequacy and accuracy of the registration statement are urged to be certain that all information required under the Securities Act of 1933 has been included.

You are also reminded to consider applicable requirements regarding distribution of the preliminary prospectus.


We will consider a written request for acceleration of the effective date of the registration statement as a confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

You may contact James Murphy, Petroleum Engineer, at (202) 942-2939 if you have questions regarding engineering comments. Direct questions relating to all other disclosure issues to Perry Hindin at (202) 942-2822 or, in his absence, to the undersigned at (202) 942-1870. Please send all correspondence to us at the following ZIP code: 20549-0405.

Sincerely,

H. Roger Schwall
Assistant Director

cc: Perry Hindin, Esq.
James Murphy

via facsimile
Edward B. Whittemore


SECURITIES AND EXCHANGE COMMISSION

17 CFR Parts 210, 229, 231 and 241

[Release Nos. 33-8870; 34-56945; File No. S7-29-07]

RIN 3235-AK00

**CONCEPT RELEASE ON POSSIBLE REVISIONS TO THE DISCLOSURE
REQUIREMENTS RELATING TO OIL AND GAS RESERVES**

AGENCY: Securities and Exchange Commission.

ACTION: Concept release.

SUMMARY: The Commission is publishing this Concept Release to obtain information about the extent and nature of the public's interest in revising oil and gas reserves disclosure requirements which exist in their current form in Regulation S-K and Regulation S-X under the Securities Act of 1933 and the Securities Exchange Act of 1934. The Commission adopted the current oil and gas reserves disclosure requirements between 1978 and 1982. In the decades that have passed since the adoption of these rules, there have been significant changes in the oil and gas industry. Some commentators have expressed concern that the Commission's rules have not adapted to current practices and may not provide investors with the most useful picture of oil and gas reserves public companies hold.

DATES: Comments should be received on or before February 19, 2008.

ADDRESSES: Comments may be submitted by any of the following methods:

Electronic comments:

- Use the Commission's Internet comment form
(<http://www.sec.gov/rules/concept.shtml>); or

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- Send an e-mail to rule-comments@sec.gov. Please include File Number S7-29-07 on the subject line; or

Use the Federal e-Rulemaking Portal <http://www.regulations.gov>. Follow the instructions for submitting comments.

Paper comments:

- Send paper submissions in triplicate to Nancy M. Morris, Secretary, Securities and Exchange Commission, 100 F Street, NE, Washington, DC 20549-1090.

All submissions should refer to File Number S7-29-07. This file number should be included on the subject line if e-mail is used. To help us process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (<http://www.sec.gov/rules/concept.shtml>). Comments also are available for public inspection and copying in the Commission's Public Reference Room, 100 F Street, NE, Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. All comments received will be posted without change; we do not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly.

FOR FURTHER INFORMATION CONTACT: Questions on this Concept Release should be directed to Mellissa Campbell Duru, Attorney-Advisor or Dr. W. John Lee, Academic Petroleum Engineering Fellow at [REDACTED] Division of Corporation Finance; or Mark Mahar, Associate Chief Accountant, Office of the Chief Accountant at

(202) 551-5300; U.S. Securities and Exchange Commission, 100 F Street, NE,
Washington, DC 20549.

SUPPLEMENTAL INFORMATION:

TABLE OF CONTENTS

- I. Introduction**
- II. Definition of Oil and Gas Reserves**
- III. The Impact of Technology**
- IV. Alternative Classification Systems**
- V. Independent Preparation, Assessment or Evaluation of Reserves Disclosure**
- VI. General Request for Comment**

I. Introduction

Throughout the Commission's history, our focus on the information needs of investors in public companies has caused us to continually re-evaluate the disclosure requirements of the federal securities laws. The extent and pace of changes in the oil and gas industry, and public concern that our oil and gas reserves disclosure requirements are not fully aligned with current industry practice, have led us to reconsider those requirements. Through this Concept Release, the Commission seeks public comment on our oil and gas reserves disclosure requirements.¹ While we set forth a number of general and specific questions, we welcome comments on any other concerns commenters may have related to these issues.

¹ The Commission is currently considering the use of International Financial Reporting Standards as published by the International Accounting Standards Board by U.S. public companies. The International Accounting Standards Board is also undertaking a project with respect to the convergence of accounting and disclosure reporting practices related to all extractive industries. This concept release is not seeking comment with respect to those matters.

The current oil and gas reserves disclosure requirements have been in place for some time. The Energy Policy and Conservation Act of 1975 directed the Commission to “take such steps as may be necessary to assure the development and observance of accounting practices to be followed in the preparation of accounts by persons engaged, in whole or in part, in the production of crude oil or natural gas in the United States.”² In 1978, the Commission issued Accounting Series Release No. 253, which amended Regulation S-X by adding new Rule 3-18,³ the precursor to Rule 4-10 of Regulation S-X.⁴ Rule 4-10 prescribes the financial and reporting standards for companies engaged in oil and gas producing activities. Rule 4-10 defines what constitutes oil and gas producing activities and proved reserves.⁵ Item 102 of Regulation S-K, which the Commission adopted in 1982, requires that companies disclose their proved reserves and prohibits them from disclosing other categories of reserves.⁶ There have been significant technological advancements, changes in the oil and gas markets, and changes in the types of projects in which companies invest since the Commission adopted these rules and disclosure requirements. Many in the oil and gas industry, including some oil and gas companies, professional organizations and analysts, believe that our oil and gas reserves

² See 42 U.S.C. 6201-6422.

³ See Accounting Series Release No. 253 (August 31, 1978) [43 FR 40688]. See also Accounting Series Release No. 257 (December 19, 1978) [43 FR 60404] (further amending Rule 3-18 of Regulation S-X and revising the definition of proved reserves).

⁴ 17 CFR 210.4-10. See Release No. 33-6233 (Sept. 25, 1980) [45 FR 63660] (adopting amendments to Regulation S-X, including Rule 4-10).

⁵ 17 CFR 210.4-10(a).

⁶ Item 102 of Regulation S-K [17 CFR 229.102]. In 1982, the Commission adopted Item 102 of Regulation S-K. Item 102 contains the disclosure requirements previously located in Item 2 of Regulation S-K. See Release No. 33-6383 (March 16, 1982) [47 FR 11380]. The Commission also “recast[...] the disclosure requirements for oil and gas operations, formerly contained in Item 2(b) of Regulation S-K, as an industry guide.” See Release No. 33-6384 (March 16, 1982) [47 FR 11476].

disclosure requirements have not kept pace with industry changes.⁷ Other commentators suggest that our reserves disclosure requirements prevent an investor from viewing the company through management's eyes. These commentators also believe that our rules prevent companies from fully presenting the reasons for their oil and gas project investment decisions.⁸

II. Definition of Oil and Gas Reserves

Even though they do not appear on a company's balance sheet, oil and gas reserves are among the most significant assets of an oil and gas company. Given that they lie in deeply buried geological formations, oil and gas reserves are difficult to measure and, until a company extracts them, it can only estimate their volume.

Item 102 of Regulation S-K sets forth the disclosure requirements for the physical property of a company. Instruction 3 to Item 102 requires an oil and gas company to disclose material information about its proved reserves. Instruction 5 to Item 102 prohibits a company from disclosing reserves estimates other than proved reserves in any filing it makes with the Commission. Instruction 6 to Item 102 states that the definitions in Rule 4-10 of Regulation S-X shall apply to Item 102 with respect to oil and gas operations.⁹

Rule 4-10(a)(2) defines proved reserves as "the estimated quantities of crude oil, natural gas, and natural gas liquids which geological and engineering data demonstrate

⁷ See, for example, Steve Levine, "Tracking the Numbers: Oil Firms Want SEC to Loosen Reserves Rules," Wall Street Journal (February 7, 2006); Christopher Hope, "Oil Majors Back Attack on SEC Rules," The Daily Telegraph (London) (February 24, 2005); "Deloitte Calls on Regulators to Update Rules for Oil and Gas Reserves Reporting," (February 9, 2005) Business Wire Inc. available at http://biz.yahoo.com/bw/050209/95991_1.html.

⁸ See, for example, Christopher Hope, "Oil Majors Back Attack on SEC Rules," The Daily Telegraph (London)(February 24, 2005).

with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions, i.e. prices and costs as of the date the estimate is made.”¹⁰ While the rule does not define “reasonable certainty,” the staff has interpreted this term to mean a level of certainty such that, as more information about a reservoir becomes available, it is more likely than not that the additional data will confirm or enhance the company’s original estimate of the quantity it can ultimately recover.¹¹ The staff has historically interpreted the requirement that the reserves be recoverable “under existing economic ... conditions,” referred to in Rule 4-10(a)(2)(i) as “economic producibility,” to mean that the company can sell the resources for more than its cost to extract and transport them to market.¹² In other words, the company may classify its reserves as proved only if it can economically produce them. Although Rule 4-10 does not specify the price a company should use to make this determination, the staff has historically applied the fiscal year end price requirements set forth in two related accounting standards – Statement of Financial and Accounting Standard No. 19 and Statement of Financial and Accounting Standard No. 69.¹³

Rule 4-10(a)(2) also requires that a company be able to recover resources “under existing ... operating conditions” before classifying them as proved reserves. In the

⁹ 17 CFR 229.102.

¹⁰ 17 CFR 210.4-10(a)(2).

¹¹ See Division of Corporation Finance, Current Issues and Rulemaking Projects (November 14, 2000) available at <http://www.sec.gov/divisions/corpfin/guidance/cfoilgasinterps.htm>.

¹² Id.

¹³ See Financial Accounting Standards Board, Statement of Financial Accounting Standard No. 19: Financial Accounting and Reporting by Oil and Gas Producing Companies (December 1977); and Financial Accounting Standards Board, Statement of Financial Accounting Standard No. 69: Disclosures About Oil and Gas Producing Activities-an Amendment of FASB Statements 19, 25, 33, 39 (November 1982). These standards set forth the year-end price requirement used for calculating discounted future net cash flows of proved reserves.

absence of a definition of “existing operating conditions,” the staff has historically interpreted this to include a ready market and a means to transport resources to that market.¹⁴ For oil, these conditions are generally deemed to be met because a company can easily transport oil to a sales point. For gas, there must be a pipeline to transport the gas to a sales point.¹⁵ If a company does not have a current means to transport gas, the staff assumes a ready market for gas does not exist.¹⁶ Therefore, the staff does not consider gas without a means of transport, known as stranded gas, to qualify for classification as proved reserves under Rule 4-10.¹⁷

To estimate whether it can economically produce its oil and gas resources, a company relies on different methods to evaluate a reservoir where it believes reserves exist. Rule 4-10(a)(2)(i) specifies the tests a company must conduct and the type of data it must consider to estimate, with reasonable certainty, its proved reserves. The company must support its economic producibility conclusion by either actual production from a reservoir or by a conclusive formation test. Although not defined in Rule 4-10, the staff has historically considered a conclusive formation test to include a combination of drilling and well flow testing.¹⁸

¹⁴ See Division of Corporation Finance, Current Issues and Rulemaking Projects (November 14, 2000) available at <http://www.sec.gov/divisions/corpfin/guidance/cfoilgasinterps.htm>.

¹⁵ An alternative is to convert the gas to a liquid. Historically, however, such conversion projects have been capital intensive and have not always been economically justified given the quantity of reserves.

¹⁶ See Division of Corporation Finance, Current Issues and Rulemaking Projects (November 14, 2000) available at <http://www.sec.gov/divisions/corpfin/guidance/cfoilgasinterps.htm>.

¹⁷ Id.

¹⁸ Under a particular set of circumstances, the staff viewed this requirement slightly differently. See the subsequent discussion in note 24 for details regarding companies operating in the deepwater Gulf of Mexico.

Rule 4-10(a)(4) allows a company to classify, as part of its proved reserves, the proved undeveloped reserves that it expects to recover from “new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required.”¹⁹ Proved undeveloped reserves are restricted to “offsetting productive units that are reasonably certain of production when drilled.”²⁰ In the absence of a definition of the term “offsetting” in Rule 4-10(a)(4), the staff has historically interpreted this to mean immediately adjacent.²¹ Rule 4-10(a)(4) does not specify a period of time during which a company should expect to commence drilling the new well or the period of time in which a company will incur a relatively major expenditure. Some industry commentators have expressed concern that companies continue to categorize quantities of proved undeveloped reserves for extended periods of time without taking any action to develop these reserves.²² This raises the question as to whether such quantities originally met, or currently meet, the reasonable certainty requirement.

Finally, Rule 4-10(a)(4) allows a company to claim resources as proved undeveloped reserves for other undrilled units “only where it can be demonstrated with certainty that there is continuity of production from the existing productive formation.”²³ Many companies are utilizing new technologies, such as 3-D seismic, to provide estimates, which they believe are reasonably certain, of proved undeveloped reserves

¹⁹ 17 CFR 210.4-10(a)(4).

²⁰ Id.

²¹ See Division of Corporation Finance, Current Issues and Rulemaking Projects (November 14, 2000) available at <http://www.sec.gov/divisions/corpfin/guidance/cfoilgasinterps.htm>

²² See, for example, Leslie Haynes, “Defining PUDs,” *Oil & Gas Investor*; Volume 244; Issue 5 (May 1, 2004).

²³ 17 CFR 210.4-10(a)(4).

more than one offset away. Nevertheless, given Rule 4-10(a)(4)'s requirement of certainty versus reasonable certainty, the staff has considered the requirement of certainty to have a relatively higher threshold than reasonable certainty and, therefore, has not accepted estimates of proved undeveloped reserves based on such technologies. Some commentators have expressed concern that, in practice, this constitutes absolute certainty which they believe is too stringent a criterion.

III. The Impact of Technology

Technological advances since 1978 have improved how companies may identify oil and gas resources. Advances such as 3-D and 4-D seismic interpretation provide increased information about reservoirs and their boundaries. Reservoir description tools and computer reservoir simulation models continue to improve as technology changes.

While a company may currently choose to use new techniques to help it decide where to drill additional wells, the staff has, in nearly all cases, continued to require that, in the absence of actual production, a company support economic producibility through a conclusive formation test. With one exception, the staff interprets this to mean direct contact with the reservoir through drilling and a well-flow test.²⁴

Given the scarcity of relatively accessible petroleum reserves that companies can

²⁴ In a particular set of circumstances, the staff does not object to companies operating in the deepwater Gulf of Mexico asserting reasonable certainty and economic producibility without a well-flow test. In 2002 and 2003, the staff reviewed the disclosure of oil and gas companies operating in the deepwater Gulf of Mexico. In response to staff comments, companies provided extensive data from open hole logs, core samples, wire line conveyed sampling and seismic surveys to support their position that a traditional well-flow test was not necessary in that specific location. Given the results of this data, the staff does not object to classification of proved reserves in the absence of a traditional well flow test as long as a company's conclusions are supported by all four tests. This position, however, is limited to this specific geographic location. See the Division of Corporation Finance: Letter to Companies With Oil and Gas Operations in the Gulf of Mexico (April 15, 2004) available at <http://www.sec.gov/divisions/corpfin/guidance/oilgasltr04152004.htm>.

extract using conventional techniques, companies are increasingly looking to resources that are more difficult to access due to their geologic or geographical location or require specialized extraction techniques. Among these resources are tar sands and oil shales, both of which contain chemical compounds which can be processed into oil. When the Commission adopted the proved reserves definitions in 1978, the only effective way to extract these compounds was through traditional mining techniques. Since 1978, however, companies have developed techniques to extract these compounds using oil and gas drilling techniques. Despite these technological advances, Rule 4-10 prohibits a company from including the oil it extracts from tar sands and oil shales in its estimation of proved reserves. Rule 4-10 states that “oil and gas producing activities do not include ...[t]he extraction of hydrocarbons from shale, tar sands, or coal.”²⁵ Rule 4-10 excludes “crude oil, natural gas, and natural gas liquids, that may be recovered from oil shales, coal, gilsonite and other such sources” from the definition of proved reserves.²⁶ Notwithstanding a company’s ability to economically extract oil from tar sands and oil shales, Rule 4-10 prevents it from including these amounts in its estimates of proved reserves.²⁷

IV. Alternative Classification Systems

The Commission’s proved reserves definitions are those used by the Department of Energy in 1978 and were based upon definitions used by the Society of Petroleum

²⁵ 17 CFR 210.4-10(a)(1)(ii)(D).

²⁶ 17 CFR 210.4-10(a)(2)(iii)(D).

²⁷ Canadian regulators have revised their definitions of oil reserves to include non-traditional resources such as bitumen, which is extracted from tar sands. See, for example, Statements of the Alberta Securities Commission with respect to National Instrument (NI) 51-101 (National Instrument 51-101 Standards of Disclosure for Oil and Gas Activities) available at www.albertasecurities.com.

Engineers and the general industry at that time. Since 1978, the Society of Petroleum Engineers has made several significant revisions to its classification framework. It released its most recent version, the “Petroleum Resources Management System,” in February 2007.²⁸ This system was jointly sponsored by the World Petroleum Council, the American Association of Petroleum Geologists and the Society of Petroleum Evaluation Engineers. The classification framework defines a broad range of reserves categories, contingent resources and prospective resources.²⁹ We understand that oil and gas companies may use this classification framework to prepare reserves estimates for purposes other than their SEC filings and that investors in private financing transactions and participants in business combinations may use this framework as well.

The International Accounting Standards Board is currently consulting with the Society of Petroleum Engineers Oil and Gas Reserves Committee regarding oil and gas company accounting requirements.³⁰ The United Nations Economic Commission for Europe and the United Nations Economic and Social Council are currently working together to establish an international classification system to classify resources in the oil and gas and mining industries.³¹ Finally, other jurisdictions, such as Canada, have

²⁸ See Society of Petroleum Engineers, the World Petroleum Council, American Association of Petroleum Geologists, and the Society of Petroleum Evaluation Engineers, Petroleum Resources Management System, SPE/WPC/AAPG/SPEE (2007).

²⁹ Id.

³⁰ See, for example, American Association of Petroleum Geologists and Society of Petroleum Engineers International Multidisciplinary Conference on Oil and Gas Reserves and Resources, Washington, DC (June 24-26, 2007) available at http://www.spe.org/spe-site/spe/spe/industry/reserves/AAPG-SPE_EXECUTIVE_SUMMARY_29AUG07.pdf.

³¹ See United Nations Framework Classification System for Fossil Energy and Mineral Resources, United Nations Economic Council For Europe (March, 2006) available at <http://www.unece.org/ie/se/pdfs/UNFC/UNFCemr.pdf>.

adopted disclosure requirements that share characteristics with the Petroleum Resources Management System.³²

V. Independent Preparation, Assessment or Evaluation of Reserves Disclosure

Although a company may engage a third party to prepare its reserves estimates, assess its estimates, or evaluate the proved reserves information in the filings that it makes with us, our rules do not require it to do so. While some professional organizations may require their members to follow certain standards in providing such services, it does not appear that these standards are binding or that these professional organizations have any specialized enforcement mechanisms to assure compliance with them.

VI. General Request for Comment

As noted above, in light of the extent and pace of changes in the oil and gas industry and public concern that our oil and gas reserves disclosure requirements are not fully aligned with current industry practice, we are reconsidering our oil and gas reserves disclosure requirements. The Commission seeks public comment on our oil and gas reserves disclosure requirements and related issues.

Questions:

1. Should we replace our rules-based current oil and gas reserves disclosure requirements, which identify in specific terms which disclosures are required and which are prohibited, with a principles-based rule? If yes, what primary disclosure principles should the Commission consider? If the Commission were

³² See SPE Oil and Gas Reserves Committee, Mapping Subcommittee Final Report (December 2005) – Comparisons of Selected Reserves of Selected Reserves and Resources Classifications and Associated Definitions.

to adopt a principles-based reserves disclosure framework, how could it affect disclosure quality, consistency and comparability?

2. Should the Commission consider allowing companies to disclose reserves other than proved reserves in filings with the SEC? If we were to allow companies to include reserves other than proved reserves, what reserves disclosure should we consider? Should we specify categories of reserves? If so, how should we define those categories?

3. Should the Commission adopt all or part of the Society of Petroleum Engineers – Petroleum Resources Management System? If so, what portions should we consider adopting? Are there other classification frameworks the Commission should consider? If the Commission were to adopt a different classification framework, how should the Commission respond if that framework is later changed?

4. Should we consider revising the current definition of proved reserves, proved developed reserves and proved undeveloped reserves? If so, how? Is there a way to revise the definition or the elements of the definition, to accommodate future technological innovations?

5. Should we specify the tests companies must undertake to estimate reserves? If so, what tests should we require? Should we specify the data companies must produce to support reserves conclusions? If so, what data should we require? Should we specify the process a company must follow to assess that data in estimating its reserves?

6. Should we reconsider the concept of reasonable certainty? If we were to replace it, what should we replace it with? How could that affect disclosure quality? Should we consider requiring companies to make certain assumptions? Should we prohibit others?

7. Should we reconsider the concept of certainty with regard to proved undeveloped reserves? Should we allow companies to indefinitely classify undeveloped reserves as proved?

8. Should we reconsider the concept of economic producibility? If we were to replace it, what should we replace it with? How could that affect disclosure quality? Should we consider requiring companies to make certain assumptions? Should we prohibit others?

9. Should we reconsider the concept of existing operating conditions? If we were to replace it, what should we replace it with? How could that affect disclosure quality? Should we consider requiring companies to make certain assumptions? Should we prohibit others?

10. Should we reconsider requiring companies to use a sale price in estimating reserves? If so, how should we establish the price framework? Should we require or allow companies to use an average price instead of a fixed price or a futures price instead of a spot price? Should we allow companies to determine the price framework? How would allowing companies to use different prices affect disclosure quality and consistency? Regardless of the pricing method that is used, should we allow or require companies to present a sensitivity analysis that would quantify the effect of price changes on the level of proved reserves?

11. Should we consider eliminating any of the current exclusions from proved reserves? How could removing these exclusions affect disclosure quality?
12. Should we consider eliminating any of the current exclusions from oil and gas activities? How could removing these exclusions affect disclosure quality?
13. Should we consider eliminating the current restrictions on including oil and gas reserves from sources that require further processing, e.g., tar sands? If we were to eliminate the current restrictions, how should we consider a disclosure framework for those reserves? What physical form of those reserves should we consider in evaluating such a framework? Is there a way to establish a disclosure framework that accommodates unforeseen resource discoveries and processing methods?
14. What aspects of technology should we consider in evaluating a disclosure framework? Is there a way to establish a disclosure framework that accommodates technological advances?
15. Should we consider requiring companies to engage an independent third party to evaluate their reserves estimates in the filings they make with us? If yes, what should that party's role be? Should we specify who would qualify to perform this function? If so, who should be permitted to perform this function and what professional standards should they follow? Are there professional organizations that the Commission can look to set and enforce adherence to those standards?

In addition to the areas for comment identified above, we are interested in any other issues that commenters may wish to address and the benefits and costs relating to investors, issuers and other market participants of the possibility of revising disclosure rules pertaining to petroleum reserves included in Commission filings. Please be as specific as possible in your discussion and analysis of any additional issues. Where possible, please provide empirical data or observations to support or illustrate your comments.

By the Commission.

Florence E. Harmon
Deputy Secretary

December 12, 2007

HOUSTON AMERICAN ENERGY CLOSES REGISTERED DIRECT OFFERING

Houston, Texas, December 4, 2009 – Houston American Energy Corp. (NASDAQ: HUSA) (the “Company”) an independent energy company with interests in oil and natural gas wells and prospects, announced today that it closed and received the funds from its previously announced registered direct offering in the amount of 2,890,000 shares of the Company’s common stock to select institutional investors at \$4.68 per share in a registered direct offering for net proceeds of approximately \$12.8 million, after deducting placement agents’ fees and estimated offering expenses. The Company intends to use the net proceeds from the offering for general working capital purposes, including funding the Company’s share of costs of development of properties in which the Company hold interests.

Global Hunter Securities, LLC acted as lead placement agent and Knight Capital Markets, LLC acted as a co-placement agent for the offering.

A shelf registration statement relating to these securities previously was filed and declared effective by the Securities and Exchange Commission. A prospectus supplement related to the offering was filed with the Securities and Exchange Commission. This press release does not constitute an offer to sell or the solicitation of offers to buy any security and shall not constitute an offer, solicitation, or sale of any security in any jurisdiction in which such offer, solicitation, or sale would be unlawful. A copy of the base prospectus and prospectus supplement can be obtained at the Securities and Exchange Commission's website <http://www.sec.gov> or from Global Hunter Securities, LLC at 400 Poydras Street, Suite 1510 New Orleans, Louisiana 70130 Attn: Kelly Vest.

About Houston American Energy Corp

Based in Houston, Texas, Houston American Energy Corp is an independent energy company with interests in oil and natural gas wells and prospects. The company's business strategy includes a property mix of producing and non-producing assets with a focus on Colombia, Texas, and Louisiana.

Forward-Looking Statements

The statements contained in this press release that are not historical are "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including statements, without limitation, regarding the Company's expectations, beliefs, intentions or strategies regarding the future. These statements are qualified by important factors that could cause the Company's actual results to differ materially from those reflected by the forward-looking statements. Such factors include but are not limited to: production variances from expectations, volatility of product prices, the capital expenditures required to fund the Company’s operations, environmental risks, competition, government regulation, and the ability of the Company to implement its business strategy, including those risks and factors described from time to time in the Company's reports and registration statements filed with the Securities and Exchange Commission, including but not limited to the Company's Annual Report on Form 10-K for the year ended December 31, 2008 filed with the Securities and Exchange Commission on March 16, 2009, and our subsequently filed reports. The Company cautions readers not to place undue reliance on any forward-looking statements. The Company does not undertake, and specifically disclaims any obligation, to update or revise such statements to reflect new circumstances or unanticipated events as they occur.

**PLAINTIFF'S
EXHIBIT
PX-202**

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1 every day which matters to us from a liquidity prospective.

2 Q Okay, and do you recall how many shares Columbia
3 Wanger purchased?

4 A Roughly 2.4 million. That's my recollection. I
5 believe it was 2.4 million.

6 Q Okay, and you said that your investment decision
7 was based on your view of the prospectivity of the CPO 4
8 block principally?

9 A Yes.

10 Q And, secondarily, the Serrania block?

11 A That's correct.

12 Q Can you tell me what it is about the prospectivity
13 of the CPO 4 block that was interesting to you?

14 A Sure. The two things that most interest me in CPO
15 4 block is the fact that there are very highly productive
16 wells, highly profitable wells, drilled almost immediately to
17 the northern boundary of CPO 4. That there are large scale
18 investments being made immediately made to the east of the
19 CPO 4 block in the CPO 5 block by the oil and nature gas
20 company of India, or ONGC for short.

21 And, also in addition, that SK Energy was involved
22 in the CPO 4 block so that whether they are right or wrong or
23 its prospectivity, they view that prospect or that block as
24 having enough scale to merit the attention of their people
25 and a place in their capital budget which is considerable.

1 It's also my belief that the nation of Columbia
2 sits atop a working hydrocarbon system that extends from
3 Ecuador to Trinidad. And, that trend if you look at it on a
4 map, runs right through the CPO 4 block.

5 Q Are there any other factors that you considered?

6 A The attraction of the CPO 4 block given
7 prospectivity in the region, as well as, near prospectivity
8 defined its immediately adjacent blocks were the primary
9 drivers. The Serrania block is interesting in that it's a
10 large target, but has, in my opinion, a lower likelihood of
11 success.

12 Q Okay, and why is that?

13 A The faulting is a little less certain from the
14 conversations that I had with people. It's also in a more
15 remote area and it's also an area that as produced more heavy
16 oil which is harder to both flow, flow out of the wells, flow
17 to market, and receives a lower price than lighter --

18 Q Okay. Did Houston American's reserve estimates for
19 the CPO 4 block have, influence your investment decision?

20 A Yes.

21 Q How so?

22 A I used them as starting points to evaluate what the
23 blocks may recover as far as doing math of a range of values,
24 a range of recovery factors, and a range of potential
25 valuations on recovered oil.

1 Q Did you do anything to verify or validate the
2 reserve estimates that Houston American provided to you?

3 A No.

4 Q Did you contact anyone at SK Energy about the
5 estimates?

6 A No.

7 Q Was there ever a time that you learned that SK
8 Energy had, had estimated recoverable reserves as something
9 substantially less than three to four billion barrels of oil?

10 A No.

11 Q If you had learned that SK Energy energies estimate
12 was, in fact, substantially lower than three to four billion
13 barrels of recoverable oil, would that have affected your
14 investment decision?

15 A It would affect the range of options I'd evaluate.
16 Whether it would affect the decision, I wouldn't know until I
17 saw it.

18 Q How would it affect the range of options that you'd
19 evaluate?

20 A By reducing.

21 BY MR. WEISS:

22 Q Let me get a sense of how important some of these
23 different factors that you discussed are. We talked about
24 the chances of being productive and neighboring properties
25 that have success or chances of being productive, as well as

1 the, the three to four billion barrel estimate as being a
2 factor.

3 If all of the things had been equal, right, and the
4 neighboring properties were doing whatever they're doing, but
5 the estimate coming out of HUSA had been in the range of 500
6 million to a billion as opposed to ranging literally from one
7 billion to five, how would that have affected your valuation?

8 A It's a reasonably theoretical question, but the,
9 well, one it lowers it. Reduces the amount of prospectivity.
10 But, to be honest, the three to four and five billion barrel
11 type numbers are, have a very low probability of success.
12 There are extremely few fields of that size.

13 Q When you hear that kind of number, see it in a
14 presentation for example, I mean, is it literally going in
15 one ear and out the other or does it make an impact on some
16 level? Is there some kernel that you take from it? I'm just
17 trying to get a sense. I mean, he could have, by that, by a
18 certain logic, he could have told you a hundred billion
19 barrels. You're not sort of listening until oil comes out of
20 the ground, so what does it mean when he, when he presents a
21 large number? It has to have some impact. It has to have
22 some place in your mind.

23 MR. LONG: I think, if I may, you know, as you had
24 commented earlier and when he heard about this number that
25 you discount it.

1 THE WITNESS: Yeah.
 2 MR. LONG: Due to the fact that, you know, until it
 3 comes out of the ground it doesn't mean anything. So, I
 4 think the question is, you know, why would it mean something
 5 in context. Is that --
 6 MR. WEISS: That's fair.
 7 THE WITNESS: Why would it mean something.
 8 MR. LONG: Or, would it mean something? How do you
 9 reconcile against your prior statement?
 10 THE WITNESS: Oh, could you just rephrase it one
 11 more time for me?
 12 BY MR. WEISS:
 13 Q Yes, I can. Let me try and make it very simple.
 14 A Sure.
 15 Q If really the thing that you're thinking about is
 16 will any oil actually come out of the ground.
 17 A Yeah.
 18 Q Then in one sense it doesn't matter whether
 19 somebody like Mr. Tuleger says there are 12 barrels of oil or
 20 there are a hundred million barrels of oil. But, clearly, if
 21 he says a number that's very low, that might have an impact
 22 on you, on your thinking about it, and if he says one that's
 23 very high, that might have a different kind of impact, not
 24 withstanding your ultimate belief that until oil flows, I'm
 25 sort of a skeptic. Is that clearer?

1 A Yeah, yeah.
 2 Q Okay.
 3 MR. LONG: Was that a question?
 4 BY MR. WEISS:
 5 Q The question is what is the impact when he comes
 6 out with a number, not withstanding your ultimate belief that
 7 until oil flows I'm sort of a skeptic? That's the question.
 8 A Okay. All right, thank you. Okay, so the way I
 9 think about it is, billion barrel prospects are interesting
 10 from an investor's prospective because there's something
 11 that, about the geology or the subsurface that makes you
 12 think there's a large structure. What we really want, and
 13 the way to think about structure is a tank, how big is the
 14 tank. So, they're not underground pools, but in analogy, for
 15 analogy purposes, if someone's talking about a billion barrel
 16 structure, they're talking about something that as you looked
 17 down on it from 35,000 feet, likely covers a pretty big area,
 18 or also, is very thick.
 19 And, that you also have, we can talk about what a
 20 working hydrocarbon system implies and there's five things
 21 you have to have, but the generic point is, you have to have
 22 something to trap the oil. And, you have to have a big
 23 enough structure or tank to hold it where it's been trapped.
 24 So, when someone throws out, we think we're looking
 25 at a billion barrel field, and I build oil, really don't care

1 whether it's a billion or 10 billion, that's all fine by me.
 2 The point of a billion barrel structure is you're looking at
 3 a big tank and you think you have something that trapped it
 4 there, you can hold a bunch of it, and you have a better
 5 chance of getting it out. That's what it tells me.
 6 Structure, structure, trap, and then the, the only
 7 question I was going leave is then the question is do you
 8 have hydrocarbon generation and migration. So, in other
 9 words, the oil had to be cooked somewhere deeper in the earth
 10 and then it may have stayed generally where it was cooked,
 11 but again, oil moves via heat, so it's constantly trying to
 12 rise to the top. If you go on the, so as oils migrating,
 13 you're looking for something that traps it. Whether it's
 14 hard rock, and we talked about a anticline at OMBU,
 15 anticline, an anticline is a big, hard rock dome and that
 16 oils actually trying to get to the surface to ooze out of the
 17 ground like a tar pit. But, if something catches it in a
 18 way, now I'm making money. As long as I can drill that and
 19 flow the oil to a pipe line, a truck, or refinery.
 20 So, a billion barrel field tells me someone, if
 21 they have credibility and access to seismic, et cetera, and
 22 well logs, has delineated a large structure somewhere close
 23 to a working hydrocarbon system or a belief that there's a
 24 working hydrocarbon system.
 25 Q So, then what matters is the, the actual

1 geology and the structure rather than the estimates about the
 2 recoverable --
 3 A That's correct from an engineering prospective and
 4 a mathematical prospective. But, the, you want to make sure
 5 it's a big enough number to, to risk mobilizing in the
 6 Columbian jungle or the deep water of Gulf of Mexico to go
 7 find it. So, if John says it's ten million barrels, I, ten
 8 million barrels is interesting to me, but I'd want to drill
 9 it in a shallow field in Kansas. I don't want to go to
 10 Columbia for ten million barrels.
 11 BY MR. CAVE:
 12 Q Okay.
 13 A Nor east Africa or pick one.
 14 Q Prior to the time that you made an investment
 15 recommendation to purchase approximately 2.4 million shares
 16 of Houston American's common stock, did you do any kind of
 17 mathematical modeling?
 18 A Yes.
 19 Q Can you describe that to me?
 20 A Yeah, I started with some oil in place estimates,
 21 some recovery factors, range of values. Then migrated it
 22 down through valuing those potential barrels, both as far as,
 23 barrels that a reserve engineer would sign off on that are
 24 approved reserves like we were talking about, like a
 25 Netherland Suel would verify, as well as, what the market or

1 Q Just so the record is clear, similar to the duties
2 that you described in connection with your work at Exxon?
3 A With Exxon. The only difference is it's all
4 computerized now where when I started, it was paper.
5 Q When did it become computerized?
6 A It became computerized around 1985 to 1987. That was
7 the transition period.
8 Q Did you have a particular focus during your time with
9 Nippon?
10 A Yes. Venezuela, Colombia, Ecuador, Peru.
11 Q After you left Nippon, what did you do?
12 A Went to work for a company called Teikoku. T-e-i-k-
13 o-k-u, a Japanese company. I worked for them for a year doing
14 the same thing. This was for South America as well.
15 Q Were there particular countries in South America?
16 A Mexico, Venezuela, Colombia. Those were the three
17 countries. Ecuador also.
18 Q Are you familiar with a region in Colombia known as
19 "The Llanos Basin?"
20 A Yes.
21 Q During your time at Nippon, did you work on any
22 prospects in the Llanos Basin?
23 A Looked at some, but not the detail like what I do
24 now. Like a cursory, people would bring projects in and I'd
25 look at them.

1 Q During your time at Teikoku, did you work on any
2 prospects in the Llanos Basin?
3 A No.
4 Q You mentioned you were at Teikoku for about a year.
5 A About a year; yes.
6 Q What did you do next?
7 A I went to London to work for a company called CCC.
8 Q Do you know what that stands for?
9 A Consolidated Contractors Company. I think that's
10 right.
11 Q What did you do for them?
12 A I was an interpreter, geophysical interpreter.
13 Q How long were you with CCC?
14 A Almost two years, right at two years.
15 Q Did you focus on a particular geographic region?
16 A The Middle East and West Africa.
17 Q What did you do next?
18 A Then I came back to Houston and went to work for SK.
19 Q How long were you with SK?
20 A I was with SK for about two and a half years. Yeah,
21 two and a half years.
22 Q From some time in 2008?
23 A Right at the middle of 2007 to October of 2009, right
24 about two and a half years.
25 Q What did you do for SK Energy?

1 A I was an interpreter.
2 Q I said SK Energy. I think you said SK.
3 A Right. They just use SK. In the U.S., it's SK E&P
4 Company.
5 Q Is that who employed you?
6 A That's who employed me, the U.S. company.
7 Q Was it your understanding that SK E&P was a
8 subsidiary of some other entity?
9 A Yes.
10 Q What entity was that?
11 A It's called SK Corporation in Seoul, Korea.
12 Q What did you do for SK E&P?
13 A I was a geophysicist interpreter.
14 Q Did you focus on a particular geographic region?
15 A Colombia was the key thing for them, and participated
16 in the -- Colombia does bid rounds, so they'll put a bunch of
17 blocks up to be bid on for work programs.
18 That was my job, to look at that data, high grade the
19 blocks, and then we would bring in geologists and other people
20 to work as a team and recommend bidding, you know, on the
21 particular block.
22 Q When you said you looked at data, what kind of data
23 did you look at?
24 A Seismic data, reports, well information, whatever is
25 available on those particular blocks.

1 Q What is "well information?"
2 A Electric logs, well files, production history.
3 Q Why do you look at that data?
4 A You have to have that as a basis to evaluate the
5 prospectivity of a particular block.
6 Q Let me take this bit by bit here. Do well logs help
7 you evaluate the prospectivity of a particular block?
8 A Yes, they do.
9 Q How so?
10 A They'll tell you what horizons are there and they
11 will give you sand thicknesses, and the well information will
12 tell you porosity and then if there are any kind of production
13 tests, you will know what the permeabilities are, what flow
14 rates are available, what quality of oil is coming out of the
15 area.
16 Q Those are all things you can get from well log data?
17 A Yes.
18 Q You mentioned something about sand thickness. What
19 is that?
20 A Oil is reservoired in specific sands, so you have to
21 know the thickness of those sands to calculate potential
22 reserves.
23 Q You also mentioned porosity. What is that?
24 A Porosity is the space between the sand grains, and
25 that is where the oil is found. That's where it's stored.

1 Q Why do you look at porosity when you're evaluating
2 the prospectivity of a particular area?

3 A It will tell you how much oil can be reservoired, the
4 higher the porosity, the more oil you are going to find.

5 Q You also said something about permeability.

6 A Yes. Permeability is the space -- not the space
7 between the grains but it's the space that hooks those areas
8 together. Permeability indicates the amount of oil that can
9 flow through the sand grains, so that when you drill through it
10 and you perforate it, then the permeability allows the oil to
11 come out of the sand formation into the well bore and then to
12 the surface.

13 Q Again, permeability is something you can -- that is
14 reflected or you can calculate based on well log information?

15 A Yes. The well log data, usually you will get the
16 actual rock samples, and then those are run through specific
17 tests in a laboratory. They will give you the exact porosity
18 and the exact permeability. You will have real numbers.

19 From the electric log information, you can calculate
20 porosity, and it's always going to be plus or minus a couple of
21 percentage points.

22 The permeability you can infer, and you will know
23 that it's what we call "tight." There's no permeability. Or
24 we can say it's very good permeability or poor permeability,
25 but we can't put a number to it.

1 drill so many wells.

2 In Colombia, the bid is actually a percent of your
3 profit. In addition to royalty that they charge, then you
4 would say okay, I will give you X percentage of my profit as a
5 bonus, and that's the bid factor.

6 That's the way Colombia runs it now.

7 Q In return, what did SK get?

8 A To get a block if they won it, drill in it, do
9 whatever the work parameters are, and then whatever is found,
10 they can produce up to a certain point, recuperate expenses,
11 all costs, and then the profit kicks in. Then you start paying
12 the government back.

13 Q Did there come a time in 2008 when SK in fact bid on
14 certain blocks in Colombia?

15 A Yes. I'm trying to remember when. I think it was
16 around October of 2008, when the bids were submitted. I'm
17 guessing right now. I can't remember. I know they were
18 awarded in December of 2008. I know that.

19 They bid on probably six blocks, won two of them.

20 Q What are those two?

21 A CPO-4, which is in the Llanos Basin, and they won
22 SSJN-5, which is in the Lower Mag Basin, Lower Magdalena Basin.

23 Q Where is the Llanos Basin?

24 A The Llanos Basin is in Eastern Colombia. It borders
25 the country of Venezuela.

1 Q When you described some of the work you did for SK
2 Energy, you mentioned something about high grading blocks.
3 What does that mean?

4 A That means they would put up 100 blocks.

5 Q Colombia?

6 A Colombia. Then they would give you all the available
7 data that the government has for those blocks. We would go
8 through and look at them block by block, and then we would say
9 okay, in this particular basin, we only want to really look at
10 two or three out of a dozen. We would do that for all of the
11 basins.

12 Then we would bring a team of people in, geologists,
13 engineers, more geophysicists, and then we would sit down and
14 actually map each block and find out what the porosities are of
15 the wells, what the potential permeabilities are, are there oil
16 fields close by, what kind of rates of production they have,
17 what type of oil is coming out.

18 Using that information, we can say okay, out of these
19 three, this is the best one, the second, and then the last one.

20 Then we would recommend to the company let's bid on
21 this block for this basin and let's bid on two or three over
22 here. That's what was done in 2008 for the bid round.

23 Q What does it mean to bid on a block?

24 A The government will usually say okay, you have a
25 minimum work program that you have to do, so much seismic,

1 Q Where is the Lower Magdalena Basin?

2 A The Lower Magdalena Basin is on the very northern
3 part of the country, and it actually come up to the Caribbean
4 Ocean.

5 Q Approximately how large is the Llanos Basin?

6 A Gee. Let me think. It's very large. I think we
7 figured out you could put five Korea's, six Korea's into the
8 Llanos Basin. It's a huge area. I don't remember the acreage
9 or square miles.

10 Q That's helpful. That's a helpful ball park. Thank
11 you. In or around October of 2008, SK submitted bids for six
12 blocks, and prior to that time, some work had been done in
13 evaluating those blocks; is that right?

14 A That's correct; yes.

15 Q The work -- you described some of that work to me
16 already. Were you involved -- let me back up.

17 Let's focus on the work that was done on the CPO-4
18 block prior to submitting the bid. Can you tell me what SK did
19 on the CPO-4 block before -- to analyze or evaluate the CPO-4
20 block prior to submitting the bid in or around October of 2008?

21 A We received all the data from the government. Then
22 loaded it into the various programs that are used for the
23 seismic work and the geologic work.

24 The seismic data, I went through, tied well
25 information into the seismic, so I knew what horizons to map.

1 A That's from the Corcel 1. The numbers actually come
 2 off here (indicating), but in the Petrominerales' write-up's,
 3 as they test wells, they tell you what the sand thicknesses are
 4 in different sands. We have all those numbers, as it comes
 5 south towards the block.
 6 Q In this sub-bullet point, it reads "165 feet net
 7 sand," is that the number that was used in your calculations?
 8 A Yes.
 9 Q Why did you use 165 feet instead of 270 feet?
 10 A That was my risking.
 11 Q If I do the math correctly, that's about a 61 percent
 12 risk; is that right?
 13 A Yeah.
 14 Q Why did you use a 61 percent risk?
 15 A I know the sand thickness changes because of the type
 16 of deposition and it's not a sheet sand. It's going to thicken
 17 and thin. I figured by the time it gets over to where CPO-4
 18 is, there has to be one of those things, it has to thin up, so
 19 it's going to affect the net sand in there.
 20 Q You risked it to thin about 105 feet?
 21 A Right.
 22 Q How did you come up with that number?
 23 A Well, it's more -- how do I answer that. When I look
 24 at the logs, I look at the data, I look at the seismic, and
 25 then I can see some changes in the seismic. I can see certain

1 Q 2010 or 2009?
 2 A 2010. I think it's 2010.
 3 Q This presentation is October 2010.
 4 A Right. Those wells came on -- they came on -- they
 5 drilled the wells right after we signed the agreement with SK.
 6 Q December 2009 and January and February of 2010?
 7 A Yes.
 8 Q The next sub-bullet point there under "Assumptions"
 9 on page nine, "500 barrels per acre foot recovery factor (based
 10 on high permeability and porosity and offset wells)."
 11 We have talked a little bit about the 500 barrels per
 12 acre foot. Here in the parenthetical, the presentation states
 13 "Based on high permeability and porosity and offset wells."
 14 What does that refer to?
 15 A The wells, like the Condalia wells, they come on line
 16 at 15,000 barrels a day out of about ten foot per sections.
 17 The permeability, that's where the two Darcies of permeability
 18 come from, very high porosity. Those are numbers they
 19 provided, Petrominerales provided in their press releases and
 20 things like that.
 21 It gives a handle to what kind of rates you can
 22 expect coming out of there. I've looked at a bunch of other
 23 fields, and that's where I got my 500 barrels per acre foot.
 24 This just confirmed, it's right there beside the
 25 block. I can actually anchor my rule of thumb number.

1 reflectors that are thinning coming down.
 2 My estimate was based on that, I can see about 100
 3 feet of thinning coming across.
 4 Q Do I understand correctly that based on data from
 5 Petrominerales, the net sands in that Corcel play thin as they
 6 approach the COP-4 block?
 7 A Yes. Some of them do thin as you come down. We also
 8 know there is one sand that is very thick on their part, but
 9 it's questionable whether it even comes into the block. The
 10 270 feet there doesn't reflect that thickening sand.
 11 Where is it? This is the Corcel No. 1. In the
 12 adjacent block, it's called Guatiquia. That is where a couple
 13 of the really high producing wells we reference in here are.
 14 They have a sand that you don't even see on here in the Corcel.
 15 I know it's not blanket. I have to discount the possibility of
 16 that from showing up.
 17 Q Can you spell "Guatiquia?"
 18 A It's G-u-a-t-i-q-u-i-a.
 19 Q Looking at the map on page five, I see Guatiquia.
 20 A Right. You will see there are a couple of wells in
 21 there called Condalia. The field is Condalia, but the block
 22 name is called Guatiquia.
 23 Q When did those Condalia wells come on line?
 24 A They came on line in December, January and February
 25 of 2010.

1 Q How is it that the permeability and porosity numbers
 2 from the Condalia wells anchor your rule of thumb?
 3 A Because in most, you'll get 23 percent porosity in
 4 places, you're going to have 500 millidarcies of permeability.
 5 It's kind of an average.
 6 Over here in this area, from Apiay across into the
 7 Corcel trend, the permeability numbers are in the Darcy range.
 8 The porosities are up to 30 percent.
 9 We know the reservoir is one of the best they have
 10 out in that basin.
 11 Q Is there any math that you use to support the rule
 12 of thumb?
 13 A Originally, yeah. I get the size of the field, I
 14 knew the vertical thickness of the thing. I knew what kind of
 15 sands were in there. I had numbers of rates of production. I
 16 also had cumulative produced barrels.
 17 I had done some of those numbers early on, not when
 18 I was at SK, but before. I have always carried a number in the
 19 back of my mind. Since I started working here and I started
 20 looking, everything is holding together. My rule of thumb
 21 seems to hold together very nicely.
 22 Q You mentioned that in other areas the range is close
 23 to 500 millidarcies for porosity. Is that the Llanos Basin?
 24 A The Llanos Basin; yes. As you go to the east, the
 25 sands get thinner and they get dirtier. There is more shale

In The Matter Of:
Paul Spitzberg, et al. v.
Houston American Energy Corp., et al.

James C. Fluker, III
November 10, 2014
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1 THE VIDEOGRAPHER: My name is Eddie Wadley
2 on behalf of NexGen Reporting. It is 9:14 a.m. on
3 November the 10th in the year 2014.
4 If the court reporter will please swear
5 this witness in, we will begin with this deposition.
6 JAMES C. FLUKER, III,
7 having been first duly sworn, testified as follows:
8 EXAMINATION
9 Q. (BY MR. PECHT) Please state your full name for
10 the record.
11 A. James C. Fluker, III.
12 Q. Mr. Fluker, my name is Gerry Pecht. I am
13 representing Houston American Energy Corporation and the
14 other defendants in the federal class action case and
15 I'm going to be asking you some questions today.
16 I want to start off by asking you a little
17 bit about your work at SK to sort of set the -- the
18 stage here. Did you work for SK Energy?
19 A. Yes, I did.
20 Q. And what period of time did you work for them?
21 A. 207 through 209.
22 Q. From the year 2007 to 2009?
23 A. Right.
24 Q. And can you give me -- be more specific in 2009
25 when you left?

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1 A. I left the end of October.
2 Q. And were you involved in the analysis of the
3 CPO-4 block in connection with SK's bidding on that
4 block?
5 A. Yes, I was.
6 Q. And you're a geophysicist?
7 A. That's correct.
8 Q. And what did you do on the analysis of the
9 CPO-4 block prior to the bidding? What kind of work did
10 you do?
11 A. Collect the database that was available, review
12 it, identify the primary targets, based on the regional
13 work, and then looked at the data to identify potential
14 structures that could be drilled in the future, you
15 know, once SK was able to win the bid for that block.
16 Q. Okay. And did you continue to work on the
17 CPO-4 block after SK Energy was awarded the bid?
18 A. I did a little bit, yes.
19 Q. Okay. And did you work on that block into
20 2009?
21 A. Yes, at the beginning of 2009.
22 Q. And did SK Energy win the bid in about --
23 formally win the bid in December 2008?
24 A. In December 2008, they actually signed the
25 license with the Government for the block. So they --

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1 Q. And was the well on the east side of the block,
2 the Metica?
3 A. That is correct, yes, the Metica.
4 Q. And why was it significant that on the west
5 side of the CPO-4 Block there was the Apiay field and
6 then on the east side there were these two wells with
7 shows in them, why was that significant in wanting to --
8 in SK wanting to acquire the block?
9 A. It put the block adjacent to producing fields,
10 adjacent to wells with shows and -- and it highlighted
11 that there was a petroleum system, hydrocarbons were
12 going through there and if you were able to identify
13 some structures, traps, they would probably have oil in
14 them. The probability was high that they would have oil
15 in them.
16 Q. And why was the probability high that they
17 would have oil in them?
18 A. Because there was production out of those same
19 reservoirs just to the west of the block and the same
20 reservoirs had had shows in the other two wells that
21 were on the east side.
22 Q. And when we're talking about reservoirs, are
23 they -- are these the sands, the different sands?
24 A. That's correct, yes.
25 Q. And in terms of the production on the west side

Page 18

1 out of Apiay, what were the sands that were being
2 producing out of Apiay or what you call the reservoirs?
3 A. Those were the C-7 sands, the C-9, the Mirador,
4 the Barco, the Guadalupe and the Une.
5 Q. And -- and in your analysis were you able to
6 determine whether those sands or reservoirs were also on
7 the CPO-4 Block?
8 A. When -- when the logs were examined that go
9 through the Apiay field and they were compared with the
10 wells on the east side, you could see the same sand
11 packages on both sides of the block. So geological
12 modeling would indicate that those go through the block.
13 Q. And in terms of SK's bid on the block, was SK
14 aggressive in its bid or how would you characterize how
15 it approached the bidding process?
16 A. The -- the -- the bidding -- at that -- for
17 that particular bid round was set up where there was a
18 mandatory work program and then the companies had to bid
19 a percentage of their profit after royalties taken out
20 and that. And the bid that SK put, which is 32 percent,
21 was -- was quite -- you know, aggressive. So they were
22 very, very interested in the -- in the block. It was
23 the highest rated one that was identified.
24 Q. So just so I understand this, everybody who bid
25 on that CPO-4 Block -- and, by the way, were there other

Page 19

1 bidders other than SK? .
2 A. Yes, there were.
3 Q. And who were they?
4 A. Noble was one of the companies.
5 Q. Noble Energy?
6 A. Noble Energy. Petrominerales was bidding on
7 it. There were two others that I cannot remember the
8 names right now.
9 Q. So it was a competitive bidding process?
10 A. It was a competitive bidding process, yes.
11 Q. And you mentioned that every one of them that
12 bid had to commit to a set work program?
13 A. That's correct, yes.
14 Q. All right. And then there was also a set
15 royalty that everybody had to pay?
16 A. That's correct.
17 Q. That's -- that is --
18 A. Eight to 25 percent royalty.
19 Q. And that -- and when you said "8 to 25 percent
20 royalty," did it vary depending upon the level of
21 production?
22 A. That's correct, yes.
23 Q. And then you said that also that where the
24 competitive nature of the bidding came in was bidding up
25 a percentage of the profit?

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1 A. Of the profit, that is correct.
2 Q. And SK bid up to -- bid up to 32 percent --
3 A. Thirty-two percent.
4 Q. -- of its profit would go to the government of
5 Colombia?
6 A. That's correct, yes.
7 Q. And do you know what the next highest bid was?
8 A. The next highest was in the 20s. So it wasn't
9 that far below and it just staggered down from there.
10 Q. Okay. So SK was the most aggressive bidder --
11 A. Right.
12 Q. -- and won the block?
13 A. And won the block, that's correct.
14 Q. But other companies also were very interested
15 in the block?
16 A. Yes.
17 Q. And then you said that after the block was
18 acquired by SK, SK -- and you, yourself, continued to
19 evaluate the block?
20 A. I did for a while, and then I got shifted over
21 to Peru and SK brought in another geophysical
22 interpreter to do the actual mapping of the leads and
23 prospects within the block.
24 Q. I've seen in the technical meetings through
25 October of 2009, that you attended those meetings with

Page 21

1 regard to the CPO-4 Block?
2 A. Yes, I was.
3 Q. So you continued to have your hand in the
4 block?
5 A. In the -- yes, I did.
6 Q. I want to ask you some questions about some of
7 the SK people.
8 Are you familiar with a D.S. Choi?
9 A. Yes. He was the general manager for SK's
10 office in Houston at that time.
11 Q. And did he have any prior experience with
12 Colombia?
13 A. In Colombia, not necessarily, but he was
14 involved in work that SK -- in -- when it was called
15 Uconn Oil, participated in Ecuador and it was on the
16 east side of the mountain. So the geology runs, you
17 know, very similar. The names of formations change is
18 all.
19 Q. But he had no actual experience in Colombia?
20 A. No, huh-uh, no.
21 Q. And -- and he -- you said he was the general
22 manager of SK?
23 A. Yes, he was.
24 Q. During the period of time that you were there?
25 A. Yes.

Page 22

1 Q. And did he have his interests divided? I mean,
2 was he just focused on Colombia or was he divided and
3 looking at a number of other projects?
4 A. He was looking at a number of others. There
5 was a project off the West Coast of Africa that SK was
6 partnered in. And so that was one of the projects that
7 he paid attention to. They were also involved in
8 offshore projects in Brazil. And so he worked that as
9 well.
10 Q. And did he also work the Peru project?
11 A. And the Peru project, yes.
12 Q. And there's a Howard Young at SK.
13 A. Yes.
14 Q. What was his role at SK?
15 A. He was a commercial person. So he was involved
16 with the contracts, the government legalities, that type
17 of thing.
18 Q. And did he have any prior experience in the
19 Llanos Basin?
20 A. No, huh-uh.
21 Q. And there was an individual by the name of Juan
22 Pablo Reyes. Are you familiar with him?
23 A. Yes.
24 Q. And what was his position at SK?
25 A. He was a geophysical interpreter that was hired

Page 23

1 by the Bogota office, SK's Bogota office.
2 Q. And do you recall approximately when he was
3 hired?
4 A. He was hired after the contract was signed. So
5 that would have been early '09.
6 Q. And you said he was a geophysical interpreter?
7 A. Yes.
8 Q. Did he -- where did he get his education from?
9 A. In the university system in Colombia.
10 Q. Did he go to one of the high-ranked
11 universities there?
12 A. Yes. He went to one of the better ones there,
13 yes.
14 Q. And how much time did he spend in the Llanos
15 Basin? Did he have a history with it?
16 A. I would say he spent quite a bit of his career
17 there, yes.
18 Q. And -- and when he came to work for SK,
19 approximately how long had he been working as a
20 geophysical interpreter in the Llanos Basin?
21 A. At least 20 years.
22 Q. And did he continue to work on the CPO-4 Block
23 in 2009?
24 A. Yes, he did.
25 Q. Was he actually physically located in Colombia?

Page 24

1 A. Yes.
2 Q. You mentioned a Mr. Barry Rava who came to
3 work, I believe you said, as a consultant to SK?
4 A. As a consultant to SK, yes.
5 Q. Was he physically located in Colombia?
6 A. No.
7 Q. Did he have any prior experience with the
8 Llanos Basin prior to the work that he did for SK?
9 A. Probably not.
10 Q. Okay. Let me show you a document that we're
11 going to mark as Exhibit I to your deposition. Some of
12 these documents -- okay. I'll just -- some of these
13 documents have prior exhibit stickies on it from your
14 testimony before the SEC.
15 (Exhibit No. 1 marked)
16 A. Uh-huh.
17 Q. (BY MR. PECHT) So I'm going to put Exhibit I on
18 here, and this is a document that bears the date
19 August 2008 and is -- it has a series of colored charts
20 on it, and it says "3 Phase Expulsion" at the top of the
21 page. And then in the block on the right-hand side it
22 says "Colombia Llanos TEA Source Rock."
23 MR. LONGMAN: I'm sorry. Could you
24 identify this document in terms of the names of what
25 was sent on Friday and --

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Brett Allen Hendrickson
November 12, 2014

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1 going to go over-the-wall in a stock, and it was Houston
2 American. And so once we went over-the-wall, I called
3 the broker working the trade and had him cancel the
4 order.
5 That's why I can remember for sure we owned
6 stock in the open -- we bought open market stock before
7 the offering. And these trade dates, this trade record
8 would indicate the same.
9 Q. (BY MR. PECHT) And I just --
10 MR. LONGMAN: And November 30th was your
11 jury --
12 THE WITNESS: Yeah. And you can kind of
13 back into that because I know I had jury duty the day I
14 was -- I found out about it.
15 I also recall the jury duty lady telling me
16 that if I signed up for jury duty shortly after
17 Thanksgiving, that I'm more likely to get out of it.
18 And so it would make sense that I had jury duty on
19 November 30th of Thanksgiving that year. It fell like
20 the week before or something.
21 Q. (BY MR. PECHT) Yeah. And I want to get a
22 little bit more precise about the notes.
23 And by the way, you may not know this, but,
24 you know, these notes with the SEC, it becomes a
25 centerpiece for the SEC's case trying to bar

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1 Mr. Terwilliger from serving as an officer or director
2 of a public company and seeking tens of millions of
3 dollars in penalties and fines from him.
4 Were you aware of that?
5 A. I was aware the SEC was working a case. I
6 didn't -- I was not aware of the penalties they were
7 prescribing.
8 Q. So that's why I'm trying to get into these
9 notes in a little more detail about how precise they are
10 and the date of them, and everything.
11 A. Okay.
12 Q. So just to get into this, we've seen the date
13 at the top of these notes. Are you absolutely sure the
14 date is November the 24th, or are we unsure about it?
15 A. I would say if we want to be absolutely sure,
16 we should check my Outlook calendar.
17 Q. Okay. Do you have it?
18 A. I believe our e-mails go back -- our records go
19 back to '09 on that.
20 Q. Okay. So just so I'm understanding, as you sit
21 here today, are you -- because I want to make sure we're
22 very precise about things like this.
23 Are you sure or not sure it was November
24 the 24th?
25 A. If you made me -- if you pin me down to a

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1 probability, I'd say it's in the 90 percent. Above
2 90 percent sure.
3 Q. But you're not positive?
4 A. I can't be 100 percent positive.
5 Q. All right.
6 A. And you can't --
7 MR. LONGMAN: Objection. Calls for
8 speculation.
9 A. And without speculating too much, we should
10 just check the Outlook calendar if it's that important
11 to everybody.
12 Q. (BY MR. PECHT) And you're not sure exactly who
13 all was there?
14 A. I know Mr. Terwilliger was there. I know Luke
15 was there. I know I was there. I don't know if anyone
16 from Global Hunter was there.
17 Q. All right.
18 A. I guess it's also possible someone from another
19 firm was there, but I don't think so.
20 Q. There could have been some someone from another
21 firm yet that was there as well?
22 A. That happens from time to time. Like where
23 they say, Hey, Nokomis is hosting in their conference
24 room, but to make better use of the management's time,
25 we're having a guy from across the street walk over

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1 I don't recall that being the case. I'm
2 just telling that happens sometimes.
3 Q. Okay. Is it possible that you did buy Houston
4 American shares before you ever met with
5 Mr. Terwilliger?
6 A. It's certainly possible. From time to time, we
7 do what we call lead-off positions.
8 Q. All right. We'll come back to this later.
9 (Deposition Exhibit Number 50 was marked
10 for identification.)
11 Q. (BY MR. PECHT) Let me hand you what's been
12 marked as Exhibit Number 50.
13 A. (Witness examined exhibit.)
14 Q. And this is an e-mail from --
15 MR. LONGMAN: Do these exhibit numbers
16 refer to SEC -- the SEC proceedings?
17 MR. PECHT: No, this is -- I just marked
18 it. Oh, did I mismark the number?
19 MR. LONGMAN: No, no, no. I'm just
20 questioning what the 50 -- 50 is the -- you're going
21 from the deposition two days ago?
22 MR. PECHT: Yeah, yeah. We're just adding
23 to it.
24 MR. LONGMAN: Oh, okay. I just wanted to
25 be clear. Okay.

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1 MR. PECHT: Okay.
2 Q. (BY MR. PECHT) And then it says, "Those leads
3 are detailed in the following graph." And then there's
4 the various sands that are identified, the C7, the
5 Mirador and the Une; and then a list of Lead 1 to 22
6 against those various sands, correct?
7 A. Yes.
8 Q. Coming up with a total of 977 million barrels
9 of resource potential, correct?
10 A. 977 is -- oh, yes.
11 Q. And that is a -- if you look down below it, it
12 says, "SK Energy has identified the three primary
13 hydrocarbon bearing sands on the CPO-4, are the C7, the
14 Mirador and the Une." And it says, "The company then
15 places 150 barrels per acre foot as the amount of oil
16 recoverable."
17 So if you look on this chart, you can see
18 where it says "oil per acre" and "barrels," and it uses
19 150?
20 A. Yes.
21 Q. So they were looking at an acreage for each of
22 the sands and then applying a recovery rate of 150
23 barrels per acre foot. That's what SK was doing,
24 correct?
25 A. That's what -- I didn't get that from SK, but

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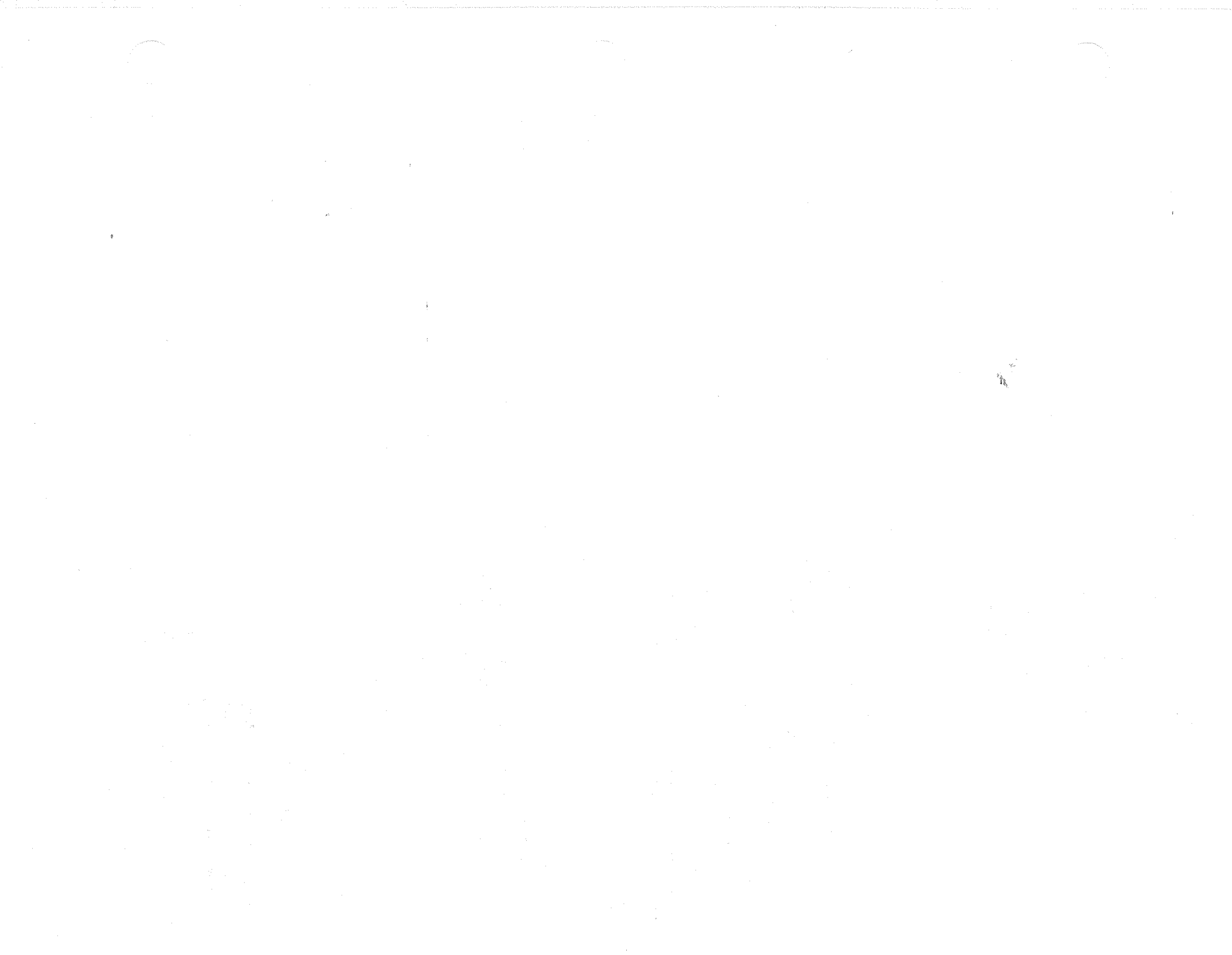
1 that's what this would indicate, yes.
2 Q. That's what Global Hunter indicated?
3 A. Yes.
4 Q. And -- but there was nothing that, you know,
5 sort of surprised you or shocked you about any of this
6 coming out of Global Hunter when you read it?
7 A. No.
8 Q. And you know that resource potential is just an
9 estimate of what might be there, and that you've got to
10 do a lot more work before you find out what actually was
11 there, right?
12 A. Yes.
13 Q. So --
14 MR. LONGMAN: Do you know how resource
15 potential -- I'm sorry.
16 Do you know how resource potential is
17 determined.
18 THE WITNESS: A lot of different ways. I
19 mean, in this case, that page 6 diagram kind of lays it
20 out. They take the amount of acres they have and then
21 the amount of oil per acre-feet and do the
22 multiplication.
23 And so you add those 22 lines that are
24 taken from a spreadsheet and it adds up to 977. That's
25 how they do it this in case.

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1 MR. LONGMAN: And SK's estimate was 150
2 barrels per acre foot. Is that what that 150 means?
3 THE WITNESS: Yes.
4 MR. LONGMAN: Thank you. Sorry.
5 THE WITNESS: Yeah. No problem.
6 Q. (BY MR. PECHT) And because this is a resource
7 potential, this is not something that is particularly
8 material to you in making your investment decision,
9 correct?
10 A. I don't -- I can't say that's an entirely fair
11 statement, because as I said earlier, this had a low
12 margin of safety. So for us to get involved with a thin
13 or low margin of safety, it has to have -- and we'll
14 probably adjust to different upside horizons and the
15 different upside scenarios, but it has to have at least
16 a decent shot at having big, big upside. So the fact
17 this had big, big upside was part of the reason we made
18 the investment.
19 Q. But the reason you thought it had big upside
20 was the Petrominerales was right next door, and you
21 thought that the same structures that were
22 Pertrominerales' Corcel block that were on CPO-4,
23 correct?
24 A. We put more weight -- it's accurate to say we
25 put more weight on what Petrominerales was doing and

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1 already producing than this, because this -- the 150
2 barrels per-acre-feet without Petrominerales, that would
3 be much more theoretical. And so we put more weight on
4 the Petrominerales actual production.
5 Q. In any event, you knew that SK's estimate of
6 the resource potential was about a billion barrels?
7 A. I recall knowing that, yeah. I mean, I would
8 have known it and read it, yeah.
9 Q. Okay. I want to just get on the table all of
10 the investor reports that were issued that refer to
11 Houston American, and --
12 A. All of the letters from Nokomis Capital to our
13 investors?
14 Q. Yes.
15 A. Okay.
16 Q. You don't call them investor reports?
17 A. We call them quarterly letters.
18 Q. Quarterly letters. So let me just start with
19 each one of them. We'll kind of mark them and put them
20 in front of you, and then we'll go through the ones that
21 we need to go through.
22 A. Okay.
23 (Deposition Exhibit Number 56 was marked
24 for identification.)
25 Q. (BY MR. PECHT) So -- and you can just identify



1 UNITED STATES SECURITIES AND EXCHANGE COMMISSION

2
3 In the Matter of:)
4) File No. HO-11507-A
5 HOUSTON AMERICAN ENERGY CORP.)
6

7 WITNESS: Barry Rava
8 PAGES: 1 through 161
9 PLACE: 1000 Louisiana
10 Suite 2300
11 Houston, Texas 77002
12 DATE: Monday, December 3, 2012
13

14 The above-entitled matter came on for hearing,
15 pursuant to notice, at 1:15 p.m.
16
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22

23
24 Diversified Reporting Services, Inc.
25

██████████ ██████████

1 A Okay.

2 Q And that "Total Potential" slide shows
3 22 -- the 22 areas of interest and then at three
4 depths. And this total acreage amount, if you
5 add up the acreage for the C-7, the Mirador and
6 the Une across the 22 areas of interest, I'll
7 represent to you it comes out to about a little
8 over 84,000 acres?

9 A Uh-huh.

10 Q And then if you --

11 A These are -- these are acres.

12 Q Acres.

13 A That's correct.

14 Q Then if you take a look at the three
15 slides we were just reviewing there in Exhibit --

16 A Like 42, or something like that.

17 Q -- 157. So you've got the 33 C-9 --
18 let's see, 33 on the --

19 A C-9.

20 Q -- C-9. And then you've got the 34
21 areas of interest on the Mirador.

22 A Uh-huh.

23 Q And then 47 areas of interest on the
24 Paleozoic.

25 If you add those acreage numbers up,

1 you get just under 57,000 acres. So it's 84,000
2 acres total back in April of '09, and about
3 57,000 acres in October of 2009.

4 A Okay.

5 Q Can you tell me how those numbers
6 relate, if at all?

7 A Well, the later ones -- they're both
8 totals of prospective structural closures that
9 are anticipated by the 2D data. The earlier one,
10 the data was not as high of quality, so it was
11 more error prone. The later one is more refined
12 data, all the lines are on the same set of
13 processing parameters and the same datums, they
14 all have the same kind of processing applied. So
15 in theory, the later number should be a more
16 accurate reflection.

17 Q Okay. And do you have an understanding
18 as to why the total number of acres came down?

19 A For the very reasons I just mentioned.
20 So the data was higher quality.

21 Q Okay.

22 A So it was better to -- easier to refine
23 it and reach conclusions.

24 Q Okay.

25 A In general, the more data you put in

1 the area, the smaller it gets, just a rule of
2 thumb. You start out, if you just looked at the
3 well, the Negritos well, say, my god, there's
4 going to be hydrocarbons all over this place. You
5 know, CPO-9 is this many acres. We got all this.

6 Then you add the 2D data to it and you
7 say, "Look, there's a big hole over here, it's
8 just a syncline. So half of it is syncline. So
9 now we're only half as big as we were before.

10 And then you reprocess the data or you
11 put someone on it and they actually start drawing
12 faults and stuff. And they say, "Well, you know,
13 not only do I have a big syncline, but now only
14 half of what's left has structures on it." So
15 now you're down to a fourth of what you had.

16 And then you reprocess the seismic data
17 and all of the sudden where you had 200
18 millisecond mis-ties in the data and you made an
19 assumption about which reflector you want, now
20 the reflectors are the same, so that makes it
21 smaller.

22 And then when you go shoot 3D data,
23 it's going to get smaller again. And when you
24 start drilling your holes -- your wells based on
25 the 3D data, all of the sudden your 200-acre

1 closure is -- now you discover that you had
2 another mis-tie between your wells and your
3 seismic and instead of having 200 acres here, you
4 only have 100 acres here.

5 So the more data you put in, usually it
6 gets smaller. Very, very rarely in oil and gas
7 when you add more data does it ever get bigger.
8 It just doesn't work that way.

9 Q If you'll take a look there at that
10 October 21 presentation we've been talking about,
11 there's a slide 45. The title is, "Site Combined
12 AOI's, 53 Structures."

13 A Yes.

14 Q And that we've talked about. That's
15 based on the updated analysis and it's more total
16 structures, but less total acreage; is that
17 right?

18 A Correct. So it's got all the polygons
19 added in on each level.

20 Q Okay.

21 A So some structures had two polygons on
22 them and that would only count as one structure
23 on this slide.

24 Q Okay. The next slide is a slide
25 called, "High Potential." Do you see that?

1 And so everyone goes through and says this is
2 my favorite. This is my favorite. It's a notion of
3 moving up to what you like, and that's a form of
4 high-grading.

5 Q Okay. And had SK -- of these 100 leads or
6 prospects, had SK high-graded some of those? Had they
7 gone through and selected the ones they liked in
8 particular?

9 A Well, I don't know that I'd actually call it
10 that. They, I believe, because I think we filed it in
11 the form of our 8-K when we announced the block
12 acquisition that there were 110 identified leads or
13 prospects.

14 That number came from SK. They told us to
15 put 110 in there. In a lot of their materials, they
16 selected -- and it could be a form of high-grading if
17 that's the word you want to use.

18 I don't choose to use the word because I
19 don't know what was in their mind. But they -- they
20 did a more detailed analysis of 22.

21 Q And was the analysis also -- of those 22 also
22 based on the 2D seismic information?

23 A Yes. That is correct.

24 Q How does one -- what does a more detailed
25 analysis look like? Let me -- let me back up a little

1 bit. I've got 2D seismic information, and I've got a
2 team of guys that look at that 2D seismic information,
3 and they identify traps, and they identify other
4 geological formations or structures.

5 And from that analysis, they identify 100
6 plus leads or prospects. What additional analysis goes
7 on in order to -- after in order to high-grade a
8 particular lead or prospect?

9 MR. PECHT: I think he said he didn't want to
10 use the word "high-grade," that that's the word you're
11 using.

12 BY MR. CAVE:

13 Q I picked it up -- I apologize, Mr.
14 Terwilliger. I picked it up from your testimony.

15 MR. PECHT: From a different --

16 THE WITNESS: From a different context.

17 MR. CAVE: I see.

18 MR. PECHT: You provided this from a
19 different context.

20 THE WITNESS: What SK did of the 22 is
21 they're looking to find a lot of oil, and so the
22 justification for SK committing to take the block was
23 is there a lot of oil there.

24 So what they did is they didn't want to go
25 through every little thing. They said okay. They took

1 22 of the prospects, and let's do as much detailed
2 analysis as we can do with the information at hand and
3 determine if these are successfully drilled, and they
4 look like this after 3D and D or whatever, how much oil
5 might be possible to recover out of there if these are
6 -- if these leads or prospects are successful?

7 And that's high -- I don't want to use the
8 word "high-grading," but that's taking it to another
9 level.

10 BY MR. CAVE:

11 Q Just so that I'm not confused, you did use
12 the word "high-grade" previously. What did you -- when
13 you used the term "high-grade" initially, what did you
14 mean by that?

15 A Well, high-grade means different things to
16 different people. It means in my mind what I would do
17 is if I have ten opportunities and I can only do one at
18 a time, which am I going to do first.

19 It doesn't mean I don't think all ten might
20 not work. It's that -- it's essentially establishing
21 an order of preference.

22 Q Going back to the third bullet point there on
23 slide twelve, continuing in the sentence after 100
24 identified leads or prospects, the bullet point states,
25 "with estimated recoverable reserves of 1 to 4 billion

1 barrels."

2 I think you had mentioned -- you described
3 previously where that information came from: and if I
4 recall correctly, it was -- that number is your number
5 or a Houston American number and an SK number.

6 Do you know what SK -- what SK's estimate for
7 the recoverable reserves of the CPO-4 Block was at this
8 time?

9 A What we know -- and we have provided you with
10 that information -- is that they analyzed 22 of the
11 leads and prospects, and they came up with, using their
12 recovery factors and their assumptions, possible
13 recoverable reserves of those 22 if they're all
14 successful of around a billion barrels.

15 I think it's 970-something million or
16 whatever. You have the exact figures. I don't. And
17 so that's the number that they came up with analyzing
18 22 of 110 leads.

19 So they looked at twenty percent of the leads
20 and prospects and determined that they have a potential
21 if everything works and God bless us that, you know, it
22 could be a billion barrels of oil there to recover.

23 Q So when the range -- the range here in this
24 bullet point is from 1 to 4 billion barrels. SK's
25 estimate is around 1 billion barrels if I understand

1 it. So the range from one to four, how do you then get
2 to four?

3 A Well, there's a number of ways you can get
4 there. First of all, SK is only looking at twenty
5 percent of the prospects. So do you multiply their
6 number by five? I wouldn't. But you multiply it by
7 something, three, four.

8 An important distinction -- SK had never had
9 any experience in Colombia, and that's the reason I
10 think we're a partner of theirs. They used the
11 recovery factor of 150 barrels of oil per acre-foot of
12 reservoir, and that is -- I've never seen a recovery
13 factor that low in Colombia.

14 We typically use going in 500 barrels per
15 acre-foot. So in order to get this approximate range,
16 we just -- we didn't consider the other 88 prospects.

17 We knew they were there. We knew they would
18 add immensely to the numbers if we wanted to try to put
19 potential reserves from them. What we did is we just
20 kind of added a more traditional and accepted and
21 common and what we know to be true recovery factor to
22 SK's work and said, well, we don't have to analyze
23 these additional 88 leads.

24 We'll just say that using SK's work which is
25 extensive and our knowledge that a 1 to 4 billion

1 barrel potential if this stuff works is probably
2 reasonable and certainly we think defensible.

3 MR. PECHT: What do you fellows want to do
4 about lunch?

5 MR. WEISS: We definitely should have lunch.
6 Is this a good breaking point?

7 MR. CAVE: We can stop now, yeah. I'm happy
8 to come back to this.

9 MR. WEISS: If this is a good place to break.
10 If not, we'll break shortly.

11 MR. CAVE: Yeah. We're off the record at
12 12:15.

13 (Whereupon, at 12:15 p.m., a lunch recess was
14 taken.)

15 A F T E R N O O N S E S S I O N

16 MR. CAVE: We are on the record at 1:20 p.m.

17 BY MR. CAVE:

18 Q Mr. Terwilliger, while we were off the
19 record, did you have any substantive communications
20 with the staff about your testimony today?

21 A No.

22 Q Did you have any substantive communications
23 about the investigation itself?

24 A No. Do you want me to look at this?

25 Q Sure. Mr. Terwilliger, before we went off

1 the record, we were talking about this -- the third
2 bullet point on Page 13 of 39 of the presentation
3 attached to the 8-K, Exhibit 6.

4 In particular, we were discussing the
5 language there at the end of that bullet point,
6 estimated recoverable reserves of 1 to 4 billion
7 barrels, and you had described to me that SK used a
8 recovery factor of 150 barrels per acre-foot, and we
9 talked about other recovery factors that one might use
10 instead of 150 barrels per acre-foot.

11 What recovery -- well, did Houston American
12 use a different number for barrels per acre-foot than
13 SK Energy in its estimates for the CPO-4 Block?

14 MR. PECHT: There's a range here of numbers.

15 BY MR. CAVE:

16 Q Mr. Terwilliger, do I understand your
17 previous testimony correctly to be that the one billion
18 end of the range of the 1 to 4 billion barrel range is
19 determined -- or SK used -- let me back up -- that SK
20 reached that 1 billion number by using a 150 barrel per
21 acre-foot figure?

22 A Yes, from 22 leads or prospects with
23 estimated recovery of approximately a billion barrels
24 using a recovery factor of 150 barrels per acre-foot.
25 Therefore, if the 22 leads and/or prospects that they

1 examined were successful, they could potentially have a
2 recovery of roughly a billion barrels using 150 barrels
3 per acre-foot.

4 Q To your knowledge, did SK ever use a
5 different or higher recovery factor for the CPO-4
6 Block?

7 A I don't know what they might have used
8 internally. It's not a number we would use, nor is it
9 a number -- 150 barrels per acre-foot is not a number
10 that is -- I've ever seen used in ten years in
11 Colombia.

12 BY MR. WEISS:

13 Q Do you know how SK came to use 150 barrels
14 per acre-foot?

15 A Oh, they just applied some very conservative
16 worldwide assumptions, but not relating specifically to
17 Colombia.

18 Q How do you know that?

19 A Well, one of the -- I said, "Why did you use
20 that number?" They said, "Oh, it's just a number that
21 we just threw out there. We don't really know
22 specifically, but we know that that's a conservative
23 number in a lot of places."

24 Q Who did you talk to at SK that gave you that
25 answer?

1 A Yes. As it relates to this, yes.

2 Q Okay. And so is the 974 million barrel
3 number identified on HA464, is that the source for the
4 one billion barrel end of the range on Exhibit 6?

5 A It is part of it. As you recall, we stated
6 there were 110 leads and prospects. There are 88 other
7 prospects that we've looked at a lot of them, and so we
8 realized that you're only looking at approximately
9 twenty percent of the leads and prospects, and SK using
10 their recovery comes up with approximately a billion
11 barrels.

12 Using our recovery, we come up with 3.246
13 billion barrels using their numbers. So we said we're
14 not going to close this up to five times or three times
15 or two times. We just think a very reasonable and a
16 very defendable potential of these leads and prospects
17 is just a number of 1 to 4 billion barrels.

18 Q So somewhere between -- so your view is that
19 a reasonable estimate of the prospect is somewhere
20 between SK's estimate of 974 million and Houston
21 American's estimate of approximately three or four
22 times that number?

23 MR. PECHT: I'm not sure he's saying exactly
24 that.

25 THE WITNESS: No, no. What I'm saying is

1 applicable to the Llanos Basin of approximately a
2 billion barrels.

3 So what we did is we said, "Okay. Where do
4 we stand?" If we take SK's number and we don't do
5 anything else to it and we use from our experience and
6 what everybody else uses in the basin of 500 barrels an
7 acre-foot, where does that lie?

8 It lies in 3 and a quarter billion barrels.
9 We said, well, we're not going to go -- we're not going
10 to try to make this a large number by putting in
11 potential reserves to the other 88 leads and prospects.
12 We'll just suffice it to say we can defend a 1 to 4
13 billion barrel potential number from the block.

14 Q Did you ever talk to anyone at SK about that
15 range, the 1 to 4 billion barrel range?

16 A SK reviewed this furnished exhibit to an 8-K
17 filing which we're discussing, and they were very much
18 in agreement with it.

19 Q Were they in agreement with the content of
20 the third bullet point on --

21 A As far as I know, they didn't find exception
22 with any part of it.

23 Q Did you -- did you point it out to them?

24 A I did not go through this word per word. It
25 was sent to them. They would have no possible reason

1 that we looked at over 100 leads, and we -- at this
2 point, there's no reason for us to try to go through
3 every one of them, but we saw an awful lot of things we
4 liked.

5 So what we found by taking SK's work and our
6 work and using SK's recoveries and what are industry
7 accepted recoveries and our recoveries through our
8 experience in Colombia, we said we can defend a 1.4
9 billion barrel range all day long. We can put in a
10 much large number and defend it.

11 So we just said, okay, look, three leads and
12 prospects, 100 of them, 22 of which are shown here, we
13 believe that there's a potential within those leads or
14 prospects if they're successful of potentially having
15 possible reserves of 1 to 4 billion barrels, period.

16 BY MR. CAVE:

17 Q Okay. And I guess my question is a little
18 bit narrower. There's a range here on Exhibit 6 of 1
19 to 4 billion, and the range -- that range is something
20 that Houston calculated based on its own analysis of
21 SK's information. Is that correct?

22 A We used the information from SK along with
23 our own analysis, and SK is suggesting that looking at
24 one-fifth of the leads and prospects, they come up with
25 using very unrealistic recoveries that really are not

1 to quarrel with that. If they come up with a billion
2 barrels, we're only looking at twenty percent of the --
3 of the prospects.

4 Q And were you ever --

5 A It would not make any sense, sir.

6 Q Have you ever -- has SK, to your knowledge,
7 ever used a number larger than 974 million in
8 estimating reserves for the CPO-4 Block?

9 A I don't know what they may have used. I
10 can't speak for SK.

11 Q Looking at the one-page Exhibit 90, do you
12 know -- well, looking at the slide itself, do you know
13 where this slide came from?

14 A It was generated by SK as a result of their
15 work and analysis of these 22 leads and prospects.

16 Q Was it part of a larger document or was it a
17 one-page slide?

18 A I think it was part of a larger document.

19 Q And did you review -- is that one of the
20 documents that you looked at when making a decision
21 about whether to invest in the CPO-4 Block?

22 A We looked at it, and we looked at their work
23 on various horizons and looked at the seismic, looked
24 at what they did, and -- and it looked very, very
25 reasonable to us.

1 Q There's some handwriting here on the bottom
2 of Exhibit 90. There's an arrow pointing from 150 to
3 some text, some handwritten text that says J, comma,
4 recovery S, slash, B 500.

5 Do you recognize that handwriting?

6 A Yes. I wrote that to our CFO critiquing this
7 information and saying that I'd never -- well, I just
8 wanted him to be aware of what I think the recovery
9 factor should be.

10 Q And does S, slash, B there stand for should
11 bc?

12 A Should be 500.

13 Q So you were telling Mr. Jacobs -- your
14 handwritten note here communicates to Mr. Jacobs that
15 the recovery should be 500 --

16 A Yes.

17 Q -- barrels per acre-foot?

18 A Right.

19 Q Okay. And do you know -- do you recall what
20 context -- the context of the communication with Mr.
21 Jacobs?

22 A I have no idea. It could be the context of
23 preparing this information or other. I don't -- I
24 don't remember.

25 Q Do you know whether this handwritten note was

1 A Yes.

2 Q Do you know what that means?

3 A I don't know the precise meaning of the RR
4 definition, but I know what they're trying to say
5 there, you know. I don't -- it's -- what it is it's an
6 engineering -- as you know, I'm not a petroleum
7 engineer.

8 Those are -- those are engineering numbers
9 that support basically what they're trying to say in
10 the -- in the large piece of it.

11 Q There's a handful of -- there's five
12 different numbers under Unit RR: porosity, SO, SO,
13 slash, BO, GF, and RF. Do you know what porosity means
14 in that context?

15 A Porosity is the amount of space that's in the
16 holes in the sand of the rock.

17 Q And here the number is twenty percent. Do
18 you know what the twenty percent then refers to in this
19 context?

20 A Well, they're estimating porosity across the
21 board of twenty percent porosity for everything.

22 Q And what's the significance in evaluating
23 potential reserves of porosity?

24 A Porosity will -- will help you try to find
25 out what's in the -- what's in the rock and what you're

1 made in connection with Houston American's response to
2 the October 25th letter from the Securities and
3 Exchange Commission or did the handwritten note predate
4 that letter?

5 A It certainly predated it.

6 Q And then there's handwriting to the -- to the
7 right of the comment we just talked about. It looks
8 like S, slash, B 3.246 billion. Is that your
9 handwriting as well?

10 A Yes.

11 Q And S, slash, B there is should be?

12 A Yes. That's applying the 500 barrel per
13 acre-foot to the -- to the number and grossing it up
14 and suggesting that number as opposed to the number of
15 974.

16 Q Okay. So 500 is 3.33 times 150. So if I
17 multiply 974 by 3.33, I'll get to approximately 3.246.

18 A If my math is correct, yes.

19 Q I won't hold you to it on that, but I just
20 wanted to make sure I understood conceptually. Thank
21 you.

22 There's a box here -- there's another box --
23 many boxes on this slide; but on the slide itself,
24 there's a box here with the title Unit RR. Do you see
25 that?

1 -- what you're dealing with.

2 It's just a -- it's just a -- prior to
3 drilling any wells looking at the area, it's an
4 assumption you make, and that's an assumption they
5 made.

6 Q And do you know what the assumption was based
7 on?

8 A No, but it's -- it's their assumption. I
9 mean, I've seen porosities all over the map down there.
10 But, you know, if you want to go in with twenty
11 percent, you can go in with twenty percent. It doesn't
12 -- it's any assumption you want to make.

13 Q And the next line of the RR box says SO.
14 What does SO stand for?

15 A I'm not sure of all these designations, so
16 I'd -- like I say, I'm not a petroleum engineer, so I'd
17 have to refer to one. So I'd rather not answer. I
18 don't -- I don't want to give you bad information.

19 Q Do you know whether it refers to saturation?

20 A These are components of an engineering model
21 to make judgments, and I'd rather defer to an engineer.

22 Q And SO, slash, BO, do you know what that
23 refers to?

24 A The same -- the same answer for all of them
25 within that box.

1 the document. The date of the document is reflected on
2 the date of the 8-K.

3 MR. WEISS: Which is November 9, 2009.

4 MR. PECHT: Thank you.

5 BY MR. CAVE:

6 Q Going back to Slide 12's bullet point we
7 focused on before, I just want to circle back to this
8 because I know a lot of your testimony over the last
9 couple of hours has focused on -- has been a product of
10 questions I asked about this 1 to 4 billion barrel
11 range.

12 And the central question is and remains for
13 purposes of this line of questioning whose number is
14 that, and I'd like to try to sort of distill some of
15 what we've talked about, Mr. Terwilliger, and hope you
16 will tell me if it's a fair distillation or no.

17 The 1 to 4 billion -- the low end of the 1 to
18 4 billion barrel range of one billion is based on
19 specific numbers that SK Energy provided, including but
20 not necessarily limited to the 974 million barrel
21 representation made on one of the slides that we've
22 reviewed.

23 The high end of the range is based on Houston
24 American's own independent analysis of the underlying
25 data and an extrapolation from the information that SK

1 document, and there may have been some changes made.
2 don't know. But this was not changed, and clearly it
3 has their name right on the top of it, SK Energy, and
4 they do pay attention. And if they had a problem with
5 a number, they certainly did not tell us.

6 Q I guess my question is a little bit
7 different. Did you ever hear anyone at SK use this
8 range or a number of greater than a billion barrels in
9 connection with estimates for the CPO-4 Block?

10 MR. PECHT: You're now talking about in a
11 conversation?

12 MR. CAVE: In a conversation or in a
13 document.

14 THE WITNESS: Well, in the flier they sent
15 out, I think they used a billion barrels. I gather
16 based on these numbers, you have a copy of that flier.
17 There were internally lots of numbers bandied around.

18 But what we were looking at was trying to
19 describe the block as best we could and being
20 conservative, and we said there's a range of possible
21 recoverable reserves from leads or prospects in the 1
22 to 4 billion barrel range.

23 And you can ask the questions over again,
24 sir, but I believe that I have defended it here today,
25 and I will continue to defend it.

1 provided based on its own experience in the block to
2 the higher number of four billion barrels.

3 A Well, the number comes a number of ways. We
4 only looked at 22 leads. We did not -- for purposes of
5 this estimate, we used SK's numbers which can get to
6 one to 3.25 billion barrels depending on recoveries you
7 use. Then we did some of our own work and looked
8 around, and we said, well, we can almost make this --
9 we can almost defend any kind of number here but let's
10 make an attempt at being conservative because we don't
11 want to act too promotional.

12 So we decided that we would use a 1 to 4
13 billion barrel estimate, and that could be defended by
14 an analysis of over 100 leads. It can be defended by
15 an analysis of the 22 leads in SK, and it can be
16 defended by a recovery factor.

17 So it's a range of potentially one billion to
18 four billion barrel potential from leads or prospects,
19 and the range is comprised of -- you could do it one of
20 several different ways to get to those numbers, and --
21 and that's consistent with the facts, and -- and we
22 stand by it.

23 Q Did SK ever adopt that range to your
24 knowledge?

25 A Well, as I mentioned to you, SK approved this

1 MR. WEISS: I think Mark's question was a
2 little different, and maybe it didn't come across. I
3 think what Mark is asking is, have you ever heard SK
4 adopt either the range of 1 to \$4 billion, either --

5 MR. PECHT: Barrels.

6 MR. WEISS: Barrels. Sorry. 1 to 4 billion
7 barrels either in a conversation with someone or in a
8 document that SK puts together. We're not asking again
9 for you to defend HUSA's estimate of up to four
10 billion.

11 BY MR. WEISS:

12 Q We want to know, have you ever heard SK use
13 any number greater than a billion in its description or
14 discussion of the NCPO-4 Block?

15 A I've heard a lot of numbers, and a lot of
16 them were made up with a lot of optimism, and I heard
17 also early on that they just stuck 150 barrels. They
18 just put some standard worldwide assumptions. It
19 wasn't specific to Colombia.

20 I've been working very closely with these
21 guys, and there's an awful lot of stuff that has come
22 out. They share a sense of optimism about the block,
23 and there's a -- they think there could be a giant
24 field on the block that we haven't discussed in here
25 today but where the geophysicists are working on it now

1 representations nor guarantees or statements to anyone
2 how much oil we're going to find on the block. We talk
3 about leads and prospects and what happens if they may
4 work, period.

5 Q Much earlier today we had talked about the
6 Cara Cara exploration block, and we talked about the
7 Cara Cara being sold for \$26.03 per proved barrel of
8 reserves.

9 If I take that same number, is it apples to
10 apples for me to say that a billion barrels of
11 estimated recoverable reserves on the CPO-4 Block has a
12 value of 26.03 billion dollars to SK and Houston
13 American?

14 A There are no reserves on the CPO-4 Block.
15 There's nothing to talk about.

16 Q What do you mean by that?

17 A There are no reserves. If you look at our
18 SEC filings, we didn't -- we filed 10Ks, 10Qs. We have
19 no reserves attributable to the CPO-4 Block. There are
20 no reserves on the block.

21 MR. PECHT: Why don't we take a break. Is
22 this a good time?

23 MR. CAVE: Yeah, we can take a break. It's
24 3:45 p.m.

25 (Recess taken.)

1 Q And when did you see it?

2 A It says here that it was sent to me April
3 17th, 2009.

4 Q Okay. And do you think you looked at it, at
5 the flier on or around April 17th, 2009?

6 A Yes.

7 Q The top e-mail in the chain is from you to
8 J.J.J. at houstonamericanenergy.com.

9 A Uh-huh.

10 Q Who is J.J.J. at Houston -- who e-mail
11 account is jjj@houstonamericancnrgy.com?

12 A J. Jacobs.

13 Q Okay. And the e-mail below what's described
14 as the original message here is from Jim Fluker to you,
15 and I believe you'd previously described a meeting at
16 which Mr. Fluker was present. Who is Mr. Fluker?

17 A Fluker was a consultant working for SK Energy
18 at the time.

19 Q Okay. And what was his -- what was his role
20 with respect to the CPO-4 Block?

21 A He was the point man on putting the block
22 together, I believe, but the only thing I can actually
23 say is he was the guy who was the one who was
24 representing SK in the marketing of the block to
25 industry partners.

1 MR. CAVE: We are on the record at 4:04 p.m.

2 BY MR. CAVE:

3 Q Mr. Terwilliger, while we were off the
4 record, did we have any -- did you have any substantive
5 discussions with the staff about your testimony or
6 about the investigation?

7 A No.

8 (SEC Exhibit No. 92 was marked for
9 identification.)

10 BY MR. CAVE:

11 Q Mr. Terwilliger, I'm handing you a document
12 the reporter has marked as HO11507, Exhibit 92. It's a
13 multipage document that bears a hand control number --
14 hand printed control number HA279 through 280 on the
15 first two pages; and the second three pages, the first
16 page bears a control indicator HA279 to 280 attached.

17 I'd ask you to take a moment to look at
18 Exhibit 92 and let me know when you're done.

19 (Witness examines the document.)

20 A Okay.

21 Q Mr. Terwilliger, do you recognize Exhibit 92?

22 A It looks like some e-mails and a copy of a
23 flier put out by SK.

24 Q Do you recognize the flier?

25 A I believe I've seen it before. yeah.

1 Q If I could just turn your attention to the
2 flier, the title is Farming Opportunity, Block CPO-4,
3 Llanos Basin in Colombia.

4 There's a few points, opportunity
5 description, CPO-4 Block overview, the next page,
6 hydrocarbon potential. And then on the last page 3 of
7 3, Subsection C of hydrocarbon potential is
8 multihydrocarbon plays, multistuctures?

9 What does multihydrocarbon plays mean?

10 A More than one hydrocarbon play.

11 Q Okay. And what's a hydrocarbon play?

12 A A place to look for hydrocarbons.

13 Q And so there's two things listed, hydrocarbon
14 play and a structure. What's the difference between a
15 play and a structure?

16 A I don't know how to answer your question.
17 People use different things for different things. A
18 play can mean anything, and a structure can mean
19 something else. I don't know the -- I can't -- I don't
20 know how to answer your question.

21 Q You're relatively familiar with the CPO-4
22 Block at this point. Do you have an understanding of
23 what three hydrocarbon plays means in the context of
24 the CPO-4 Block?

25 MR. PECHT: Today or at this time?

1 We never talked about estimated reserve or
 2 anything. We always talked about any potential
 3 associated with leads and prospects.
 4 Q During those meetings, did you ever ascribe
 5 or, rather, attribute to -- let me back up. Let me
 6 start the question over.
 7 During the meetings, did you ever tell
 8 investors that SK Energy had estimated that the
 9 recoverable reserves for the CPO-4 Block were between 1
 10 and 4 billion barrels?
 11 A I don't specifically remember saying it in
 12 that way. I don't -- once I started my presentation, I
 13 never really addressed SK Energy.
 14 I don't like to speak for another company,
 15 and I don't like another company to speak for us. So
 16 we incorporated their estimates in arriving at our
 17 conclusions, but we didn't specifically point to them.
 18 Q Did you talk to investors about potential
 19 value of a 1 to 4 billion barrel recovery on the CPO-4
 20 Block to Houston American?
 21 A No and yes. I think it -- I've asked, you
 22 know, many times what would happen in terms of cash
 23 flow from the block and what effect that would have on
 24 the company.
 25 I would say, well, if you want to assume we

1 If you decide you want to buy the stock or
 2 get involved and like the company, we think it's an
 3 opportunity, but you have to recognize you're moving
 4 forward of perfect information. That's always my line.
 5 MR. WEISS: Moving forward on what?
 6 THE WITNESS: Forward of perfect information,
 7 and it's an exploration story, period.
 8 MR. CAVE: We are off the record at 5
 9 o'clock.
 10 (A brief recess was taken.)
 11 MR. CAVE: We're on the record at 5:01 p.m.
 12 Mr. Terwilliger, while we were off the
 13 record, did you have any substantive conversations with
 14 the staff about your testimony or this investigation?
 15 THE WITNESS: No.
 16 MR. CAVE: Mr. Terwilliger, at this time, we
 17 are adjourning testimony until tomorrow morning at 8:30
 18 a.m.
 19 And we are off the record at 5:02 p.m.
 20 (Whereupon, at 5:02 p.m., the examination was
 21 adjourned, to reconvene Thursday, March 15, 2012, at
 22 8:30 a.m.)
 23 * * * * *
 24
 25

1 have a well third as good or half as good as
 2 Petrominerales, this is probably what you could look
 3 for in cash flow, and you can make some rationale as to
 4 how you think that affects the price of the stock based
 5 on what number you used.
 6 And the only other number would be that there
 7 was another sale. I think it was after this. Talisman
 8 sold out -- no. Talisman and Ecopetrol bought out BP
 9 right after the spill, and they paid \$25 a barrel for
 10 proven reserves in the ground.
 11 We sold Cara Cara for twenty-six. So when
 12 people would say, well, what is oil worth in Colombia,
 13 which is a very fair question, I would say to the
 14 extent that we ever end up or have proven reserves
 15 which we hope to one day, we have none now, the market
 16 of proven reserves in the ground -- and there were
 17 other factors, but a yardstick is \$25 a barrel with
 18 other factors, but that's a yardstick.
 19 So people could then make their own
 20 conclusions, but we never guided in the direction of
 21 any number nor -- and we prefaced every presentation --
 22 I always said to people -- I said we're going to talk
 23 to you about an exploration play and give you a lot of
 24 detail about offset operators and everything else, but
 25 it's an exploration play.

1 REPORTER'S CERTIFICATE
 2
 3 I, Barby D. Black, reporter, hereby certify
 4 that the foregoing transcript consisting of 184 pages
 5 is a complete, true, and accurate transcript of the
 6 statements indicated, held on March 14, 2012, in the
 7 matter of: Houston American Energy Corp.
 8 I further certify that this proceeding was
 9 recorded by me and that the foregoing transcript has
 10 been prepared under my direction.
 11
 12 Date: March 22, 2012.
 13
 14
 15 _____
 16 Official Reporter
 17 Diversified Reporting Services, Inc.
 18
 19
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1 investors including Encap and Nabors has been marked out.

2 Do you know why that's been marked out?

3 A Yes. For the same reason that Dan Yu came out. And
4 this has nothing to do with anything. I just don't believe in
5 mentioning someone else's name in anything. We don't issue
6 press releases talking about someone else unless we pre-approve
7 it, and shown us at that time a private company. And it was no
8 one's damn business that it was owned by Encap and Nabors.
9 It's their business. I may have mentioned it to Snow on the
10 phone. And I was just suggesting to him that he not include
11 that in anything he might write.

12 Q In the third paragraph there in that same section,
13 there's a -- the word deep has been scratched out and the 4,000
14 feet has been inserted there or recommended as an insertion
15 there. Is that your handwriting, 4,000 feet?

16 A Yes. I was just correcting a fact of Mr. Snow. He
17 has the wells are deep. And I think when we discussed it on
18 the phone, they were only going to 4,000 feet. That's a
19 factually incorrect statement. 4,000 feet is not a deep well.

20 Q Did you have a phone conversation with Mr. Snow in
21 which you described the CPO 4 Block?

22 A I had several -- some conversations with Mr. Snow.
23 And he asked me a lot of questions. And I think the CPO 4
24 Block was discussed along with all sorts of things. And
25 specifically I don't remember what was discussed.

1 Q During the phone calls or phone call -- Multiple
2 calls or one, or do you not remember? Don't worry about it.
3 During the phone call or phone calls with Mr. Snow, did you
4 tell Mr. Snow that Houston American believed CPO 4 oil in the
5 ground was worth 20 to \$25 a barrel?

6 A That is a totally incorrect statement you just made.
7 Since we have no proved reserves on CPO 4, that statement is
8 incorrect.

9 Q You say that's a factually incorrect statement?

10 A Yes. Proven reserves quoted to sell at 25 to \$26 a
11 barrel. As I testified earlier, CPO 4 is an exploration block,
12 that no well has been drilled on it and there are no proven
13 reserves on CPO 4.

14 Q Can I ask you to turn to page 561 of this Exhibit 97.
15 In the paragraph there above Serrania Block, the adjoining Ombu
16 discovery and Los Picachos Block, there's a paragraph that
17 begins a one to four BBL resource. Do you see that paragraph?

18 A Yes.

19 Q The third sentence of that paragraph states HUSA
20 believes CPO 4 oil in the ground is worth 20 to \$25 a barrel.
21 Do you see that?

22 A No. I don't see it.

23 MR. WEISS: It's the second line of the
24 paragraph. HUSA believes CPO 4 oil.

25 Q It's the paragraph above Serrania. I may have been

1 unclear.

2 MR. WEISS: Paragraph above this sentence, the
3 second line.

4 A What that is -- what that statement means is in the
5 event we have oil on CPO 4 and whether it's one barrel or two
6 barrels or billions of barrels, based on the expected APIs and
7 the ranges of sales, it would suggest that if there is oil on
8 CPO 4, it would be worth in that range. And that's what I told
9 David. Like I say, I did not -- this isn't my report, and I
10 didn't edit it. I just glanced through it and made some major
11 corrections. And that's it. And Houston American we do
12 believe that if we find oil on CPO 4 and we can generate proven
13 reserves after we drill wells, that oil would sell in the
14 market for 20 to \$25 a barrel based on comparable sales in the
15 basin and similar APIs.

16 Q Mr. Terwilliger, a moment ago I asked you if the call
17 or calls that you had with Mr. Snow, you told him that Houston
18 American believed the CPO 4 oil in the ground was worth 20 to
19 \$25 a barrel. You responded in your testimony that was
20 factually incorrect.

21 A I did not make that statement.

22 Q Is it your testimony now that the statement is not
23 factually incorrect? Is it factually incorrect or is it not?

24 A The statement is --

25 MR. PECHT: Wait a minute.

1 MR. CAVE: I am happy to let the record stand as
2 it is now. I am offering Mr. Terwilliger --

3 MR. PECHT: You asked a different question
4 before. Now you're asking yet a different question, and you're
5 asking whether one is the same as the other. So why don't you
6 ask the questions one at a time.

7 MR. WEISS: We have been asking questions one at
8 a time.

9 BY MR. WEISS:

10 Q The statement that's in the report, the draft report,
11 HUSA believes CPO 4 oil in the ground is worth 20 to \$25 a
12 barrel. Is that factually accurate or inaccurate statement?

13 A That is an inaccurate statement. That is not what I
14 told Mr. Snow.

15 Q Why is it inaccurate?

16 A Because it's incomplete. It is an incomplete
17 statement, and it doesn't take into all the facts that I have
18 told you previously in testimony. Proven reserves, of which
19 CPO 4 has none as of the date of this report, would suggest to
20 be worth 20 to \$25 a barrel in the ground as per sales of which
21 we participated in one have taken place, but not what he is
22 saying here.

23 Q Why didn't you make any edits or changes or
24 corrections to that statement?

25 A Sir, it could very well be because I didn't even see

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UNITED STATES OF AMERICA
BEFORE THE
SECURITIES AND EXCHANGE COMMISSION

IN THE MATTER OF *
*
HOUSTON AMERICAN *
ENERGY CORP * ORDER DIRECTING PRIVATE
* INVESTIGATION AND DIRECTING
HO-11507 * OFFICERS TO TAKE TESTIMONY

ORAL AND VIDEOTAPED DEPOSITION OF
MR. JOHN TERWILLIGER, JR.
JANUARY 29TH, 2013

ORAL AND VIDEOTAPED DEPOSITION of MR. JOHN
TERWILLIGER, JR., produced as a witness at the
instance of the SEC, and duly sworn, was taken in
the above-styled and numbered cause on the 29TH of
JANUARY, 2013, from 9:00 a.m. to 2:54 p.m., before

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<p>1 every prospective resource, so I really don't have 2 a comment on that, sir.</p> <p>3 Most of the stuff we look at, you 4 know, it tells us, well, we've presented what was 5 producing was higher but suggests it could be 260, 6 whatever. I don't know. I didn't look at it.</p> <p>7 Q. Are there any -- well, let's take a look 8 at the next page, page 130.</p> <p>9 Here we've got another prospective 10 resource in the Las Garzas Block prospect B8.</p> <p>11 Do you see that?</p> <p>12 A. Uh-huh. Yes.</p> <p>13 Q. Thank you.</p> <p>14 All right. If we do the same math 15 here -- we'll take the high estimate there of the 16 recoverable -- 611,500 and we divide that by the 17 net volume of 3,312, that gets a recovery factor 18 of 260 barrels per acre foot, the same thing we 19 saw on page 129.</p> <p>20 Does that surprise you to see to 21 wells -- or two prospective -- two prospects in 22 the Las Garzas Block that show a recovery factor 23 of less than 300 barrels per acre foot?</p> <p>24 A. I -- it's an -- it's an undrilled 25 prospect, and it's assumptions that this gentleman</p>	<p>1 would recover the oil from prospects drilled in 2 the Las Garzas Block than other prospects in the 3 Llanos Basin?</p> <p>4 A. Well, the problem with the Las Garzas 5 Block -- and it would affect the recoveries -- is 6 that the oil there is heavier, and it's 17 API. 7 And, however, your oil can have better recoveries, 8 and -- but in 3100 feet, which this last example 9 you showed, it's difficult to move. The water 10 will at those shallow depths and in thin -- and 11 relatively thin sands, the -- the water can 12 displace the oil.</p> <p>13 So these recovery factors here -- 14 that's not to say that 17 gravity API oil at 15 deeper depths doesn't have a much more significant 16 recovery factor. But we -- we spent an awful lot 17 of time -- I did -- looking into this, and that 18 affects the recoveries here.</p> <p>19 So if there's anything special to the 20 Las Garzas, it's the nature of the structures, 21 it's the shallow depth, relatively thin sands, and 22 the heavy oil that are going to make it lower than 23 what you would expect in other places.</p> <p>24 Q. And due to those factors that you just 25 described, would you, therefore, expect to see</p>
<p>Page 67</p> <p>1 has made.</p> <p>2 And, like I say, I never looked at 3 the assumptions. Most of the things I looked at, 4 remember, were generally north of 300.</p> <p>5 To suggest that there are things less 6 than 300, sure, could be. I don't know.</p> <p>7 Q. So in an undrilled prospect such as these 8 two in the Las Garzas Block, it doesn't surprise 9 you to see an estimated recovery factor of less 10 than 300 barrels per acre foot?</p> <p>11 A. I didn't really pay attention to it.</p> <p>12 Q. Okay.</p> <p>13 A. I never audited it with that in mind.</p> <p>14 Q. Are there any features about the 15 Las Garzas Block that make it perhaps less 16 prospective than other blocks in the Llanos Basin?</p> <p>17 A. Well --</p> <p>18 Q. Let me back up. There's an imbedded 19 assumption in my question.</p> <p>20 Is -- do you consider the 21 Las Garzas Block to be less prospective than other 22 blocks in the Llanos Basin?</p> <p>23 MR. PECHT: What do you mean by, 24 "less prospective"?</p> <p>25 Q. (BY MR. CAVE) Is it less likely that you</p>	<p>Page 69</p> <p>1 lower recovery factors in the Las Garzas Block 2 than you might see in other areas of the 3 Llanos Basin?</p> <p>4 A. Well, I only know that because, you know, 5 having drilled the wells.</p> <p>6 You know, first of all, before we 7 drilled the well, we didn't realize what -- what 8 API of oil we were going to have going in. We had 9 heavier oil. And I think based on well 10 performance, the gentleman that wrote this report 11 was giving it low recovery factors than he might 12 have in other places.</p> <p>13 And, like I say, 17 API oil at 14 different depths and different places can recover 15 vastly more per acre foot. But in these shallow 16 wells, it's very difficult with the pressures, et 17 cetera.</p> <p>18 Q. Let's take a look at one more, 19 Mr. Terwilliger. Flip to page 236. It likes 236 20 reflects the prospective resource from the 21 La Cuerva Block, prospect 9.</p> <p>22 Do you see that?</p> <p>23 A. Yes.</p> <p>24 Q. Okay. And I will -- with your indulgence, 25 I will do the math again. We've got recoverable,</p>

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1 it looks like, of 3,571,400 barrels of prospective
 2 resources. We will divide that by the net volume.
 3 It's 273. Let me just double-check my math.
 4 Okay. You get 273 barrels per acre
 5 foot.
 6 Does it surprise you to see in the
 7 La Cuerva Block a recovery factor of less than 300
 8 barrels per acre foot?
 9 A. I really wasn't paying attention to the
 10 La Cuerva much. And once again, this is a
 11 prospective resource.
 12 The reason is it was a -- we only
 13 owned 1.59 something percent of the block and we
 14 were a small owner and we were interested in other
 15 things. And they were drilling a lot of wells out
 16 there, and none of them really performed greatly.
 17 So we were really -- I wasn't really too actively
 18 involved in it at the time. I was allocating my
 19 time to other issues.
 20 Q. Okay. Mr. Terwilliger, I will take back
 21 Exhibit 93 again. Hopefully, it's the last time.
 22 You can keep the binder. We probably won't look
 23 at it again, but it's -- I will just stack it
 24 here.
 25 MR. CAVE: I will take yours back.

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1 Gerry, if you want to hold onto it, you're welcome
 2 to.
 3 MR. PECHT: Yeah. I want to say that
 4 we've been here since 9:00 o'clock. We've had a
 5 couple of breaks. We haven't, so far, covered a
 6 single new document.
 7 These are all documents that you had
 8 available to you when you took his testimony last
 9 time.
 10 MR. WEISS: Not this one.
 11 MR. PECHT: This one is new?
 12 MR. CAVE: This one was produced
 13 after his testimony. If you will recall, page 92
 14 was produced.
 15 MR. PECHT: I am sorry. No problem.
 16 MR. WEISS: No problem.
 17 Q. (BY MR. CAVE) Mr. Terwilliger, I handed
 18 you a document that prior to today's testimony was
 19 marked as Exhibit 166. Exhibit 166 is a
 20 spiral-bound collection of documents. I'll state
 21 for the record that the staff of the SEC compiled
 22 the documents. So this is not otherwise unrelated
 23 or weren't produced as a set like this, but
 24 they've been bound by us for convenience during
 25 today's testimony. It will make it a little

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1 easier to reference the documents.
 2 The top document is a document we've
 3 seen before, and I don't expect to cover it in any
 4 detail today. It's here for your convenience, if
 5 you would like to look at it.
 6 That document is a November 2009
 7 investor presentation by Houston American Energy
 8 Corp. If you will recall back in March, we took a
 9 look at some of the statements that were contained
 10 in that presentation.
 11 The second document, which is behind
 12 tab 1, confusingly -- the first document is behind
 13 the yellow binding.
 14 The first tab is a document that we
 15 also looked at the last time we spoke. It's an
 16 April 13, 2009 Investor Presentation by -- I am
 17 sorry -- an April 13, 2009 presentation of
 18 SK Energy titled, "CPO-4 in the Llanos Basin
 19 Columbia Farm-in Opportunity."
 20 And you will recall, as well, that we
 21 looked at that document in some detail the last
 22 time we spoke. I have two questions for you about
 23 the document, and then we'll move on. There is a
 24 red -- a page that's got a yellow and a red flag
 25 on it.

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1 Do you see that there? There you go.
 2 The first question is, there's this
 3 group of three columns here: Acres, and then
 4 there's a recoverable reserve column.
 5 Do you know what, if any,
 6 relationship there is between acres and
 7 recoverable reserve?
 8 A. Well, acres is a -- is a size issue.
 9 Recoverable reserves are what you're
 10 going to get out of it. So there must be a
 11 relationship.
 12 Q. Is it that the larger number of -- if
 13 the -- if the -- if the acreage number increased
 14 and everything else being -- everything else being
 15 equal, would you expect the recoverable reserve
 16 estimate to increase proportionately?
 17 A. There are more acres, more size, then the
 18 recoverable reserves would increase.
 19 Q. And by the same token, fewer acres,
 20 smaller size, would the recoverable reserve
 21 estimate decrease?
 22 A. That's correct.
 23 Q. Okay. You can flip two tabs to tab 3.
 24 Behind tab 3 is a document titled -- it's a
 25 multi-page document titled, "Minutes from the

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1 2:45.
 2 Q. (BY MR. CAVE) Mr. Terwilliger, while we
 3 were off the record, did you have any substantive
 4 conversations with the staff about your testimony
 5 or about the investigation?
 6 A. No.
 7 Q. Mr. Terwilliger, do you understand you're
 8 still under oath?
 9 A. No.
 10 Q. Mr. Terwilliger, we have no further
 11 questions at this time. We may call you again to
 12 testify in this investigation. Should this be
 13 necessary, we'll contact Mr. Pecht.
 14 Do you wish to clarify anything or
 15 add to anything you've made to the statements
 16 today?
 17 MR. PECHT: I've got a clarifying
 18 question I want to.
 19 MR. CAVE: Okay. Mr. Pecht, do you
 20 wish to ask any clarifying questions?
 21 MR. PECHT: Yes.
 22 EXAMINATION
 23 BY MR. PECHT:
 24 Q. Did SK Energy review and approve Houston
 25 American's November 2009 presentation with the

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1 estimates in it that you have discussed during
 2 your testimony both today and in the last session
 3 that we had?
 4 A. Yes, they review -- they reviewed and
 5 approved it.
 6 MR. PECHT: That's all I have.
 7 MR. WEISS: I just want to follow up
 8 on what you asked.
 9 Is there a document that shows
 10 approval by SK?
 11 THE WITNESS: Not necessarily. It
 12 could have been done verbally or it could have
 13 been done in a one-line e-mail that got cancelled,
 14 but they did approve it.
 15 MR. WEISS: Do you have --
 16 MR. CAVE: Sorry.
 17 MR. WEISS: I am sorry.
 18 Do you have -- just let me finish the
 19 question.
 20 THE WITNESS: I am sorry.
 21 MR. WEISS: -- a recollection of
 22 receiving back from SK an approval in some form?
 23 THE WITNESS: Yes. It could have
 24 been a -- a verbal, or it could have been an
 25 e-mail.

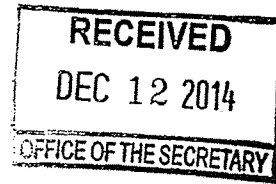
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1 SK is required to -- to review
 2 everything and submit to the ANH that's made
 3 public record, and they always do that.
 4 And in this particular case, I don't
 5 know which one of us may have submitted it to
 6 them. I don't remember exactly, but I do remember
 7 it was approved.
 8 We could not have filed it as a -- in
 9 the manner in which we did if it was not approved.
 10 MR. WEISS: Do you recall if the
 11 approval came back to you or somebody else?
 12 THE WITNESS: Honestly, I can't say I
 13 remember.
 14 One approval I got was a verbal on
 15 something, and others come back perfunctory
 16 e-mails. I just don't know.
 17 FURTHER EXAMINATION
 18 BY MR. CAVE:
 19 Q. You said that SK reviewed and approved the
 20 presentations.
 21 What did they do to review it?
 22 A. I think they -- they -- they reviewed
 23 everything within the presentation that pertained
 24 to the CPO-4 Block and I think they may have even
 25 had some questions on it, but I can't recall at

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1 the time.
 2 Q. And how do you know that they reviewed
 3 everything that pertained to the CPO-4 Block?
 4 A. They told us they did, and they're
 5 required to.
 6 Q. They told you.
 7 And what did -- how did they tell you
 8 they reviewed everything related to the CPO-4
 9 Block?
 10 What form did the communication take?
 11 A. I think I said I don't exactly remember,
 12 but I am certain that it was reviewed.
 13 Our press release announcing that we
 14 took the block was reviewed by them. I remember
 15 getting a verbal from one of the guys on that
 16 where we announced there was 100 leads and
 17 prospects, and this was submitted to them. It
 18 could have come back to the lawyer, I don't know.
 19 Q. Mr. Terwilliger, I have no further
 20 questions.
 21 MR. CAVE: Mr. Pecht, do you have
 22 any?
 23 MR. PECHT: Yeah.
 24 FURTHER EXAMINATION
 25 BY MR. PECHT:

CONFIDENTIAL
CONTAINS INFORMATION
SUBJECT TO THE
PROTECTIVE ORDERS IN
AP FILE NO. 3-16000



TECHNICAL EXPERT

Independent Technical Expert
In the Matter of
Houston American Energy Corp. et al.
File Number 3-16000

Statement of Reply

December 12, 2014

Prepared for
The Division of Enforcement of the United
States Securities and Exchange Commission

Prepared by
NETHERLAND, SEWELL & ASSOCIATES, INC.

INTRODUCTION

1. The Division of Enforcement of the United States Securities and Exchange Commission has engaged Netherland, Sewell & Associates, Inc. (NSAI) as an independent technical expert for In the Matter of Houston American Energy Corp. et al., File Number 3-16000.
2. In mid-2009, Houston American Energy Corp. (Houston American) executed a farm-in agreement with SK Energy (SK), pursuant to which it obtained a 25 percent "working interest" in the CPO-4 Block (Block). SK continued to act as the operator of the Block, which meant that it retained control of most decisions related to the Block's development.
3. In November 2009, Houston American created a multipage investor presentation that described the Block and provided an abbreviated overview of SK's evaluation (Reference 1, referred to herein as "the Presentation"). In addition to including certain slides from SK's "Farm-In Opportunity" document (Reference 2), the Presentation stated that the Block "contains over 100 identified leads or prospects with estimated recoverable reserves of 1 to 4 billion barrels".
4. NSAI presented its original findings in its report dated November 21, 2014, and titled "Independent Technical Expert In the Matter of Houston American Energy Corp., et al, File Number 3-16000" (Reference 3, referred to herein as "NSAI Report 1").
5. Dr. Michael L. Wiggins, Ph.D., P.E., representing Houston American, presented his expert report, also on November 21, 2014, and titled "Technical Expert Summary, Assessment of Oil and Gas Resource Statements, Llanos Basin, Colombia, South America" (Reference 4, referred to herein as "Wiggins Report 2"). In Wiggins Report 2, Dr. Wiggins provided his opinion on the following:
 - a. Was Houston American's estimate of "1 to 4 billion barrels" of recoverable reserves reasonable based on information available at the time the statement was made in November 2009?
 - b. Is 500 barrels of oil per acre-foot (BBL/ac-ft) a reasonable recovery factor in the western Llanos Basin area when compared to SK's estimate of 150 BBL/ac-ft as used in its April 2009 presentation?
 - c. Was it misleading to use the term "recoverable reserves" in the 2009 presentation?
 - d. Is a value metric of \$20.00 per barrel of recoverable oil reasonable when evaluating oil resources in the Llanos Basin in late 2009 or early 2010?
6. Dr. Wiggins previously submitted an expert report dated August 21, 2012 (Reference 5, referred to herein as "Wiggins Report 1"). In Wiggins Report 1, Dr. Wiggins enunciated many of the same opinions expressed in Wiggins Report 2 while also providing various documents that were referenced in NSAI Report 1.
7. A number of the documents referenced in Wiggins Report 2 will be referenced again in this Statement of Reply, which is NSAI's response to Wiggins Report 2. However, because there are no discovered volumes on the Block, there are no reserves or intrinsic value, and since lease sales and/or their tax treatment are not within the scope of our study, we do not address Item 5.d. above.
8. For this Statement of Reply, I relied on (1) NSAI Report 1 and materials referenced therein and (2) Wiggins Report 2 and materials referenced therein.

OVERVIEW OF LLANOS BASIN PRODUCTION INFORMATION AND COMPARISON TO HOUSTON AMERICAN'S AND DR. WIGGINS' EXPECTATIONS FOR THE CPO-4 BLOCK

9. In NSAI Report 1, we outlined how Houston American's recoverable volume estimates were unreasonably large with respect to historical production and the trend of discovery sizes in the basin. The Llanos Basin is a well-explored, mature hydrocarbon-producing basin with over 250 discovery wells drilled since the late 1940s (Reference 6). By the end of 2007, a total of 2.9 billion barrels of oil had been produced from the entire Llanos Basin (Reference 7). The cumulative field size distribution (Reference 3, Figure 3) shows the typical creaming curve distribution of highly explored basins, in which the largest fields are found early on and field size diminishes over time. During 2012, the average field size of new discoveries in the Llanos Basin was estimated to be 2 to 3 million barrels (MMBBL) of oil (Reference 8).
10. Some fields in the basin may have very high recovery factors, or very large areas, or thick oil reservoirs, or excellent reservoir and fluid properties, to justify recoverable oil (RO) of 500 BBL/ac-ft or higher, but it would be rare that all these factors would come together in a single discovery and certainly impossible to occur in "over 100 leads or prospects". When and if this occurs, the result can be a giant field, with over 500 MMBBL of RO. Such fields are rare (only three have been discovered in Colombia), and there is no indication there was one or more on the Block.
11. Dr. Wiggins spends much of his report opining that it is technically possible for the RO to be 500 BBL/ac-ft by tweaking some of the inputs in the volumetric formula used by SK (e.g., increasing porosity, decreasing water saturation, and increasing recovery factor) and that some reservoirs in the Llanos Basin do exhibit recovery rates of 500 BBL/ac-ft (Wiggins Report 2).
12. While it is true that SK's RO of 150 BBL/ac-ft can, as a function of arithmetic, be increased to 500 BBL/ac-ft, Dr. Wiggins' results-driven analysis and focus on RO make it very easy to miss the point. The reality is that Houston American's reserves estimate of 1 to 4 billion barrels of oil does not fit with the geology and reservoir properties surrounding the Block. Under the circumstances, the logical exercise is not to look for a way to justify the multibillion-barrel estimate but instead is to identify how the estimate got so high.
13. As pointed out in NSAI Report 1, Houston American's overestimate of recoverable volumes is a result of applying an inflated RO to an exaggerated gross rock volume (GRV). With a minor amount of probing, Houston American's executives should have recognized that the polygons, which signify closures, on SK's maps were not "leads or prospects" but were large, highly speculative features that were unsupported by available seismic data and that GRV should have been highly discounted as a result. When the data supporting those so-called "leads or prospects" were subsequently reprocessed and interpreted in the second quarter of 2009, Houston American certainly should have been aware that closure sizes had substantially declined. Regardless of the RO used, applying it to the pre-reprocessed GRV escalated estimates beyond reasonable expectations for the Block.
14. The error in Dr. Wiggins' (and Houston American's) approach is illustrated by his discussion of the Corcel Block (Reference 4). According to Dr. Wiggins, the Corcel discoveries exhibited a high RO that was not incorporated into SK's estimates, which is used by Dr. Wiggins to justify a departure from SK's estimates. However, the Corcel Block is in the Deep Llanos Basin, which has small to moderate GRV sizes (e.g., Corcel and Guatiquia). There have been recent discoveries in the Corcel Block (Corcel A [2007] estimated at 13.6 MMBBL and Corcel C [2008] at 7.0 MMBBL of ultimate recoverable "reserves") (Reference 9) and Guatiquia Block (2009, Candelilla and Yatay, reserves unreported) that offset the Block to the northeast. None of these discoveries have declared reserves, or even resources, approaching anything close to 1 to 4 billion barrels of oil. Although the Corcel Block RO might be somewhat higher than values used by SK for the Block, GRV for the Corcel accumulation is small, resulting in field sizes averaging only 10 MMBBL of oil per discovery. To get to Houston American's low end of 1 billion barrels would require 100 such discoveries on the Block.

15. Thus, while Wiggins uses the Corcel to suggest that SK's RO was too low, he misses a main point: the Corcel analogy is fundamentally at odds with Houston American's reserves estimate of 1 to 4 billion barrels.
16. In short, regardless of the method used to arrive at its estimate of 1 to 4 billion barrels, common sense is sufficient to show that the estimate is inconsistent with the production information and discovery profile of the basin.
17. In addition to its misplaced claims about the Corcel analogy, Houston American appears to present a second misleading analogy for its inflated volume range in its November 2009 Presentation. In the bullet point immediately following the reserves estimate of 1 to 4 billion barrels, the Presentation describes the adjacent Apiay Field and states that it is "estimated to have in excess of 610 million barrels of 25-33 API oil recoverable" (Reference 1). In fact, Apiay Field has 610 MMBBL of oil-in-place, only a fraction of which is recoverable (Reference 9). Therefore, the Presentation's inaccurate description of Apiay Field overstates the potential of the Block.

ADDITIONAL PROSPECTIVE RESERVOIR FORMATIONS OVERSTATE THE BLOCK'S TOTAL POTENTIAL

18. Dr. Wiggins contends that a "competent person with experience in the Llanos Basin would understand" that SK's 974-MMBBL estimate "dealt with only a subset [three of six] of the prospective formations in CPO-4" and as a result, "was only a fraction of the total recoverable potential for CPO-4" (Reference 4, Paragraph 29). As discussed below, Dr. Wiggins' contention is not supported by the Llanos Basin's production history or by data from the Block. Based on a review of geological data from the Block and from the Llanos Basin, a "competent person" would have widened the range of uncertainty of SK's estimates to account for the likelihood that not all reservoir formations would be produced. Dr. Wiggins' assertion that more sands means larger recoverable oil volume appears to be another justification for overstated estimates that are fundamentally at odds with the production profile of the Llanos Basin.
19. The production data from the Llanos Basin contradicts Dr. Wiggins' contention. Very few fields in the basin have produced from three formations, and most produce from just one or two. We are not aware of any fields that have successfully exploited four or more formations. SK's estimates assumed production from three of six possible sand formations. As a result, SK's estimates were already at the upper limits of what can be supported by oil field data in the Llanos Basin. Dr. Wiggins does not address this shortcoming in his analysis and instead implies that the Block, unlike any of the other exploration and production blocks in the Llanos Basin, would produce from as many as six formations.
20. A brief review of the geological history of the Llanos Basin, described below, better illustrates the shortcomings of Dr. Wiggins' analysis. A more complete review of the basin's geological history is contained in NSAI Report 1 (Reference 3). The basin's geological history and exploration results help to explain why, even though at least six potential reservoir formations exist in different parts of the basin, producing fields tend to encounter producible hydrocarbons in only one or two of these reservoir formations.
21. The Llanos Basin is one of the four primary oil-bearing basins in Colombia (Reference 3, Figure 1). The Llanos Basin is a large basin located in the central and eastern part of the country and is approximately 77,200 square miles in size. Within the Llanos Basin itself there are four diverse and geologically distinct producing areas or provinces. From west to east these provinces are commonly referred to as the Foothills, the Deep Llanos, the Plains, and the Heavy Oil (Figure 1). Oil gravities, depth of oil, depositional features, geology, and producing horizons vary from area to area and create significantly varying oil recovery characteristics between the various provinces of the Llanos Basin. During much of its history the depositional environment of the basin was dominated by marginal marine conditions. As such, the basin contains a large

proportion of sand, which is evident in the series of stacked sands that can be seen on the well log from the Negritos-1 well that was drilled on the Block and from well logs for wells in adjacent lease blocks.

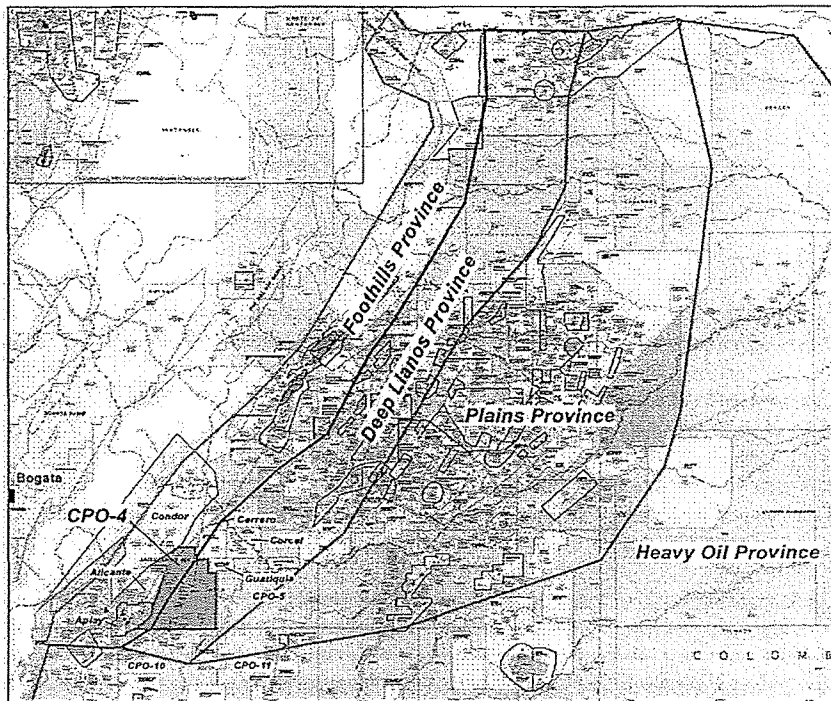


Figure 1 – Petroleum Provinces in the Llanos Basin

22. Because of its large size and diverse geology, the Llanos Basin has a variety of different hydrocarbon trap types throughout the sedimentary section. As a result, hydrocarbons have accumulated in many different reservoir formations in different parts of the basin. Over the vast extent of the basin, six different hydrocarbon-bearing reservoir formations in various combinations have been encountered. These formations are known as the Carbonera 7 (C7), Carbonera 9 (C9), Mirador, Barca, Guadalupe, and Une (Reference 2). However, the presence of a sandy formation does not directly correlate to either (a) the presence of reservoir-quality porosity and permeability or (b) the existence of potentially recoverable hydrocarbons in a formation. Poor reservoir quality sands result from clay content in the sands and the physical environment of the subsurface causing compaction and mineral precipitation that reduce porosity and the connectivity between pores. There are numerous reasons why reservoir-quality sands are not hydrocarbon-filled, which is the primary cause for the high failure rate in exploration drilling: (1) the absence of a true closure (i.e., no trap), (2) the top or lateral seal is leaky or was breached, (3) the absence of hydrocarbon migration pathways to the reservoir within closure, and (4) the absence of a mature source rock (although that does not appear to be a problem in the Llanos Basin). Therefore, while the six prospective reservoir formations may exist in a single location, there is no reason to conclude that multiple formations hold potentially recoverable hydrocarbons.

23. A majority of the producing fields in the Llanos Basin have only a single, primary producing reservoir formation, even if multiple formations are otherwise present. SK's April 2009 Farm-In Opportunity document (Reference 2) illustrates this point. The Farm-In Opportunity document depicts the producing formations for 14 fields in the Llanos Basin. Of these 14 fields, only one, Cusiana, produces from three different formations. Two others produce from two formations, and the remaining 11 fields produce from only one formation. In many of those 11 fields, other reservoir formations are present but do not produce hydrocarbons.

24. Similarly, in the IHS field database (Reference 9) relied upon by Dr. Wiggins, none of the 45 fields in the Llanos Basin produced from more than one formation.
25. The production information from the Llanos Basin plainly demonstrates that the Block was highly unlikely to encounter and produce even from three stacked reservoir formations within a single location (play, lead, or prospect), much less six reservoir formations.
26. Further, Dr. Wiggins' contention is in conflict with data from the Block itself. In effect, Dr. Wiggins contends that "leads or prospects" on the Block could encounter up to six producing reservoir formations. However, data from the Block and adjacent blocks show this to be geologically improbable because the six sands are not uniformly present on the Block, a fact that is readily discernable from SK's data, which was reviewed by Dr. Wiggins and made available to Houston American.
27. SK's April 2009 Farm-In Opportunity document (Reference 2) shows that the Negritos-1 well encountered just four potential reservoir formations, none of which contained producible hydrocarbons. Similarly, four of the nearby wells analyzed by SK, Llanos-1, Metica-1-1, Camoa-1, and Valdivia-2, each encountered no more than three potential reservoir formations. The reservoirs in two of the wells were wet, and the other two wells each had one hydrocarbon-bearing reservoir. The Apiay-1 well appears to have intersected only four stacked reservoir formations, two of which are hydrocarbon-bearing (Reference 2). In summary, the six potential reservoir formations are not continuous throughout the area of interest, which means that it is highly unlikely for any significant number of locations in the Block to contain all six potential reservoir formations, much less six hydrocarbon-bearing formations.
28. Dr. Wiggins states in Paragraph 29 that "SK's recoverable hydrocarbon potential of 974 MMBO was only a fraction of the total recoverable potential for CPO-4" (Reference 4). He implies that had SK included all the potential reservoir intervals, the estimate would be much larger than 974 MMBBL. Such an estimate would be grossly overstating the evidence documented in the regional data. It certainly appears from analog field data that wells rarely encounter all six reservoirs and that pooling moveable hydrocarbons in stacked reservoirs is rare in the Llanos Basin.

HOUSTON AMERICAN'S PRESENTATION, NOVEMBER 2009: DR. WIGGINS' CLAIMS REGARDING "COMPETENT PERSON" ARE UNFOUNDED

29. Dr. Wiggins states in Paragraph 23 of Wiggins Report 2 that "any competent person would understand the statements [in the Presentation] were made in the context of an exploration venture, which could result in a range of potential outcomes, from bad to good" (Reference 4). Regardless of whether a person would have thought Houston American was involved in an exploration project, it is actually not explicitly stated in the Presentation that it is an exploration project. Houston American left the interpretation entirely up to the reader. In my judgment, the presentation is unclear about the state of activity in the Block, the level of understanding of the petroleum system, and the relative risk of the project.
30. As an illustration of how a "competent person" may have interpreted Houston American's Presentation, I offer the following plausible scenarios:
 - 30.1. First, the Presentation claims the Block contains recoverable reserves. A "competent person" would consider that to mean the volumes are at the very least discovered and commercial.
 - 30.2. Second, the Presentation claims the Block "contains over 100 identified leads or prospects" (Reference 1). A "competent person" would consider that to mean there is a fair amount of data available that have been worked to identify a large number of viable drilling locations, not a large number of speculative closures unsupported by data.

- 30.3. Third, the Presentation claims the Block contains "1 to 4 billion barrels" of recoverable reserves (Reference 1). A "competent person" would consider that to mean the low side (i.e., high probability) of the range is 1 billion barrels of recoverable reserves. However, the low end of the range of "1 to 4 billion barrels" did not capture SK's much lower "high estimate", much less the 65 MMBBL of undiscovered, unrisks prospective resources estimated by Petrotech Engineering Ltd. (Petrotech) less than one year after Houston American's Presentation (Reference 10).
- 30.4. Fourth, it is unclear how a "competent person" would understand the fourth bullet point on the Presentation summary page that states the adjacent Apiay Field "is estimated to have in excess of 610 million barrels of 25-33 API oil recoverable" (Reference 1, Page 12). Two pages later Apiay Field is described as having 610 million barrels of oil-in-place (Reference 1, Page 14). At the very least, had a potential investor noticed this discrepancy, he would be confused. It seems reasonable to assume that had the correct recoverable volume been stated, 274 MMBBL of oil according to IHS (Reference 9), a "competent person" would certainly understand the impact of having to find four analog fields on the Block to reach 1 billion barrels, rather than only two.

HOUSTON AMERICAN'S PRESENTATION, NOVEMBER 2009: DR. WIGGINS' CLAIMS REGARDING THE WELL ON THE BLOCK ARE UNFOUNDED

31. Dr. Wiggins argues that since "Houston American's SEC filings did not indicate any drilled or producing wells on CPO-4", Houston American's estimates were, by definition, "potential resources" rather than "reserves" (Reference 4, Paragraph 60). However, the Presentation clearly shows the Negritos-1 well was drilled on the Block (Reference 1, Page 15).
32. Although the Presentation disclosed the existence of a well drilled on the Block, it omitted that the well had poor results. Most industry professionals and investors would have considered information from a well on the Block to be critical data to evaluate the exploration potential and risk. However, it is conceivable that the dry hole on the Block would reflect negatively on the project.
33. By disclosing the existence of a drilled well on the Block, the Presentation implied a level of project maturity that supported the inference that the Block contained "reserves". But by omitting the critical fact that the drilled well was unsuccessful, the Presentation understated known risks on the Block.

HOUSTON AMERICAN'S PRESENTATION, NOVEMBER 2009: THE RANGE OF VOLUME ESTIMATES CONVEYS GREATER CERTAINTY THAN IS WARRANTED

34. The variance between the low and the high end of a range of estimates can be used as a measure of uncertainty. For example, a range with a ratio of 2 between the low and high value (1 to 2, 2 to 4, 3 to 6, etc.) suggests a higher level of certainty than a ratio of 8 (1 to 8, 2 to 16, 3 to 24, etc.). Thus, a range provides a quick-look validation for evaluating the reasonableness of volume estimates. A developed field with production from multiple wells should be better understood, and for that reason, the ratio of high to low estimates should be relatively low, generally falling below 3. By contrast, exploration leads and prospects based on poor-quality, widely spaced seismic data should represent that uncertainty with a much greater ratio of high to low estimates, often over 10 or even 30. A variance ratio of 4, as suggested by Houston American's volume estimates of "1 to 4 billion barrels" indicates a high degree of certainty and does not represent the activity, data available, and understanding of the Block's potential as of November 2009.
35. By including SK's "Total Potential" (Reference 2), rather than its actual low estimates, as the floor to its range of "1 to 4 billion barrels", Houston American compressed the apparent variance and thus understated the degree of risk and uncertainty associated with the Block. Accurately disclosing the true low estimate would

not make Houston American's 4-billion-barrel estimate valid, but it would have provided additional context to convey the extent of risk and uncertainty associated with the Block.

36. In fact, within a year, Houston American's own reserves consultant, Petrotech, estimated most likely prospective resources to be 65 MMBBL in the northern portion of the Block (Reference 10), as compared to Houston American's low estimate of 1 billion barrels of recoverable reserves, which has a variance ratio of 16. The variance ratio climbs sharply to 64 when compared to Houston American's high estimate of 4 billion barrels of recoverable reserves, which is another measure of how unreasonably high the Houston American volume estimates for the Block were.

HOUSTON AMERICAN'S PRESENTATION, NOVEMBER 2009: DECREASING GRV WAS NOT FACTORED INTO THE RANGE OF VOLUME ESTIMATES

37. As pointed out in NSAI Report 1, Houston American certainly should have been aware that closure sizes had decreased as a result of the reprocessed 2-D seismic data prior to November 2009. This trend of shrinking closures continued in 2010 with the interpretation of the 3-D seismic data. Petrotech identified 54 multireservoir "prospects" with most likely prospective resources of 65 MMBBL (using a reasonable RO range of 105 to 470 BBL/ac-ft), or an average of 1.2 MMBBL per "prospect" (Reference 10). At this average size, it would have required more than 800 "prospects" with a 100 percent success rate to reach 1 billion barrels. We are not aware of any other block in the Llanos Basin with even 50 "leads or prospects".
38. An equally important factor when considering Houston American's recoverable reserves estimates of "1 to 4 billion barrels" is Houston American's apparent lack of independent analysis. With even the smallest amount of probing, an experienced petroleum industry professional would have identified that the polygons on SK's maps were not "leads or prospects" but that many were highly speculative features unsupported by available data. To include volumes from concepts and plays is uncharacteristic in exploration projects.

GEOMETRIC FACTOR IS ESSENTIAL IN DETERMINATION OF IN-PLACE AND RECOVERABLE VOLUMES

39. Dr. Wiggins contends that SK's RO estimate was too low in part because SK used a "geometric factor" (GF) of 70 percent in its RO calculation. He further contends that applying a GF to the RO is "inconsistent with general use" (Reference 4, Paragraph 43). The implication of Dr. Wiggins' contention is that SK's resources estimate, which drew on the RO, understated the Block's true potential. But intentionally or not, Dr. Wiggins' contention involves nothing more than a misunderstanding and misapplication of the term. As discussed in NSAI Report 1, recoverable resources (RR) are calculated by multiplying computed RO expressed in BBL/ac-ft by the GRV expressed in acre-feet. The basic formula is expressed as $RR = RO * GRV$, where GF is factored in to either RO or GRV.
40. GF is a fractional amount of less than one that is ordinarily applied to GRV to account for nonconformities in the shape of the hydrocarbon-filled reservoir (i.e., to reduce the total GRV). As a matter of simple algebra, it does not matter whether GF is factored in to RO or to GRV; the resulting resources calculation will be the same. Expressed algebraically, this point becomes obvious: $(RO * GF) * GRV = RO * (GF * GRV)$.
41. Dr. Wiggins' report results in some confusion on this point, but his assertion that SK's estimates were understated because SK used the formula $(RO * GF) * GRV$ to calculate recoverable resources rather than $RO * (GF * GRV)$ is absolutely incorrect.
42. In the April 2009 Farm-In Opportunity document (Reference 2), SK disclosed that it had applied GF to RO (i.e., $(RO * GF) * GRV$). Thus, with a very simple, one-step calculation, Houston American could have backed

out the 70 percent GF and would have seen that SK's RO of 150 BBL/ac-ft that incorporated GF was the equivalent of an RO of 214 BBL/ac-ft ($150 / 0.70 = 214$) without GF. Importantly, that adjustment would have had no effect on SK's final resources estimate, because at the same time that Houston American backed the 70 percent GF out of RO, it would have needed to then apply it to GRV, leaving the final resources estimate of 974 MMBBL unchanged.

43. Dr. Wiggins relies on this simple algebraic oversight to highlight the apparent, but not actual, differences between the ROs estimated by SK, Houston American, and other data sources he cites. GF should be applied consistently to in-place and recoverable volume calculations, either to RO or to GRV. In the detailed field and "prospect" recoverable volume calculations for the Llanos Basin and the Block, both IHS and Petrotech universally applied GFs ranging from 0.65 to 0.80 (References 9 and 10).

NEARBY RESERVOIR AND FLUID PROPERTY ANALOGS PROVIDE APPROPRIATE RO VALUES IN THE BLOCK

44. Both SK and Houston American seemingly ignored the diversity in reservoir and fluid properties in attempting to quantify the potential oil recovery per acre-foot with a single RO value for every closure in the Block. Dr. Wiggins subsequently demonstrated in his report that there is a large range of RO values and that 500 BBL/ac-ft is at the upper end for the Llanos Basin according to SK's research of offset well control. The table in Figure 2 summarizes the recovery factor and RO estimates from Tudor Pickering Holt & Co. (Tudor Pickering) (Reference 11) and Dr. Wiggins (Reference 4). Tudor Pickering is a well-known and respected integrated energy investment and merchant bank, providing high-quality advice and services to institutional and corporate clients worldwide. The table below, which was prepared with data from Wiggins Report 1 (Reference 5), recognizes the diversity of recoveries in the Block.

Province	Recovery Factor (decimal) from Tudor Pickering (Reference 11)			Recovery Factor (decimal) from Wiggins Report 2 (Reference 4)		
	P90	P50	P10	Low	Average	High
Foothills	0.20	0.25	0.30	N/A	N/A	N/A
Deep Llanos	0.28	0.35	0.38	0.35	0.49	0.63
Plains	0.25	0.30	0.35	0.43	0.56	0.68
Heavy Oil	0.15	0.15	0.15	N/A	N/A	N/A
Province	RO (BBL/ac-ft) Using Wiggins-Derived Unit Oil-in-Place ⁽¹⁾ and Tudor Pickering Recovery Factors			RO (BBL/ac-ft) Using Wiggins-Derived Unit Oil-in-Place ⁽¹⁾ and Wiggins Recovery Factors		
	P90	P50	P10	Low	Average	High
Foothills	171	213	256	N/A	N/A	N/A
Deep Llanos	239	299	324	299	418	537
Plains	213	256	299	367	473	580
Heavy Oil	128	128	128	N/A	N/A	N/A
Weighted-Average P50 RO (BBL/ac-ft) Foothills (37.5%) and Deep Llanos (62.5%) Using Wiggins-Derived Unit Oil-in-Place ⁽¹⁾ and Tudor Pickering Recovery Factors			Average RO (BBL/ac-ft) Plains (100%) Using Wiggins-Derived Unit Oil-in-Place ⁽¹⁾ and Wiggins Recovery Factors			
267			473			

⁽¹⁾ The Wiggins-derived unit oil-in-place is 853 BBL/ac-ft (Reference 4, Figure 6).

Figure 2 – Recovery Factor and RO in the Llanos Basin

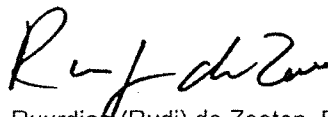
45. The fields and/or blocks in which Houston American once owned an interest, as noted directly and indirectly by Dr. Wiggins (Reference 4), include Caracara, Cabiona, Dorotea, Leona, Las Garzas, and La Cuerva, which are all located in the Plains Province of the Llanos Basin (Figure 1). From data referenced in Wiggins Report 2, which we have not independently verified, these fields have a cumulative average RO of 382 BBL/ac-ft, with a range from 175 to 680 BBL/ac-ft (Reference 4, Paragraph 50). The Plains Province is presumably where Houston American built its Colombian experience. In fact, during Mr. John Terwilliger's testimony on March 14, 2012 (Reference 12, Page 93), Mr. Terwilliger indicates that 500 BBL/ac-ft is the best RO value to use, yet his own expert shows that there are fields with ROs substantially below 500 BBL/ac-ft in which Houston American once owned an interest. Mr. Terwilliger further states that he has never seen an RO value below 300 BBL/ac-ft in the Llanos Basin, yet again his own expert and seemingly his own personal experience refute this claim.
46. Houston American's entire Colombian experience, as of April 2009, was limited to the Plains Province in the Llanos Basin, where RO values are higher than they are in the Foothills Province, although not uniformly 500 BBL/ac-ft. Mr. Terwilliger appears to have no direct knowledge of the Foothills Province. Applying knowledge gained from the Plains Province to a project in the Deep Llanos and Foothills Provinces, without the proper adjustments, could overstate the potential in the Block. Dr. Wiggins does not explain why Houston American, or any exploration company, relied on basinwide averages for RO rather than use SK's more appropriate reservoir and fluid property database derived from well data adjacent to the Block.
47. Dr. Wiggins seemingly implies, though, that even 500 BBL/ac-ft is a conservative RO by introducing data from the IHS field database that lists an RO range from 56 BBL/ac-ft to greater than 1,300 BBL/ac-ft (References 4 and 9). Using Dr. Wiggins' recommended 53 percent recovery factor (Reference 4, Figure 6) suggests an in-place oil volume of 2,453 BBL/ac-ft (1,300 BBL/ac-ft divided by 0.53), or three times the in-place volume Dr. Wiggins indicates is the in-place volume for the Block on Figure 6 in Wiggins Report 2 (Reference 4). Using the reservoir and fluid property data derived from SK's research, it would be physically impossible to approach 2,453 BBL/ac-ft of oil-in-place on the Block. Dr. Wiggins offers no independent verification of any porosity and water saturation values from analysis of offset logs as performed by SK to support calculations that would result in 1,300 BBL/ac-ft of recoverable oil. Rather, it appears Dr. Wiggins' reservoir and fluid property values were generated with the purpose of underpinning high RO estimates. Most judicious engineers would not consider an RO of 1,300 BBL/ac-ft to have sufficient technical basis to be applied in this part of the Llanos Basin.
48. However, using parts of Dr. Wiggins' own data, a more reasonable approach would be to use the low end RO of 56 BBL/ac-ft (Reference 4, Paragraph 54) and the upper RO value of 456 BBL/ac-ft derived by Dr. Wiggins and based on SK's April 2009 reservoir and fluid parameters (Reference 4, Figure 6). The average of these values is 256 BBL/ac-ft, or half the RO of 500 BBL/ac-ft used by Houston American. Another method would be to use a weighted average of ROs to reflect the combined contribution of the Foothills and Deep Llanos potential. Using data provided by Tudor Pickering in Wiggins Report 1 from August 2012, a single weighted-average RO of 267 BBL/ac-ft can be calculated (Figure 2). A similar weighted-average calculation cannot be made using Dr. Wiggins' data because he did not provide any analogous recovery factors for the Foothills Province. Regardless, the two methods produce similar results, both of which are significantly less than 500 BBL/ac-ft. The RO values discussed above, referenced from Wiggins Report 2 (Reference 4) and Tudor Pickering (Reference 11) and calculated by me, are all standard RO values which exclude GF.
49. In our review of the data provided to the Securities and Exchange Commission (SEC) by Houston American, we see no indication that Houston American conducted its own analysis of the Block prior to November 2009. To the contrary, Houston American appears to have adopted wholesale (and to have improperly recharacterized) SK's aggressive interpretation of potential closures and to have more than tripled SK's original RO without conducting its own volumetric assessment of the Block. Contrary to Dr. Wiggins' statements in Paragraph 18 (Reference 4), we saw no evidence that Houston American had "developed an understanding of the geological and production characteristics of the Basin through actual field operations" or that "this first-hand knowledge provided Houston American and its management a perspective to review the

exploration expectations provided by SK in 2009". Further, we saw no evidence that "based on its experiences, Houston American was able to judge the information and develop its own perspective on the value of the CPO-4 concession to its operations", as stated by Dr. Wiggins (Reference 4, Paragraph 18).

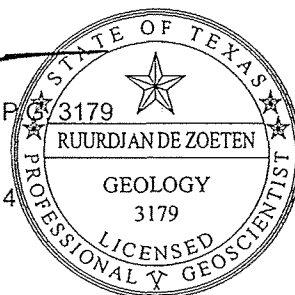
MISUSE OF THE TERMS "RESERVES" AND "RESOURCES" IN THE PUBLIC FORUM _____

- 50. Dr. Wiggins provided a series of press releases, industry articles, and company-prepared presentations to support his opinion that the "industry uses the term "reserves" in ways that are not always consistent with" definitions found in SEC or Petroleum Resources Management System (PRMS) publications (Reference 4, Paragraph 57).
- 51. According to standard definitions (i.e., PRMS) the term "reserves" is applied to predrill estimates if the wells are planned to be drilled into discovered and commercial oil or gas accumulations. In many of the articles cited by Dr. Wiggins it is clear that reserves did exist and the term was correctly applied in predrill estimates associated with wells being drilled into existing discoveries or oil fields. In many other publications cited, there is insufficient information provided to determine whether standard oil industry terms were used correctly. A reader of the documents cited by Dr. Wiggins, even a competent one, cannot necessarily make the distinction from the limited information provided.
- 52. We found that the official company publications prepared by various companies and cited by Dr. Wiggins used the terms "reserves" and "resources" in accordance with PRMS or SEC guidelines, and/or the information provided unambiguously supported how the terms were used properly. We could find no examples of energy firm representatives who, when quoted in the various publications, used the terms "reserves" or "resources" incorrectly.

Sincerely,

By: 
Ruurdjan (Rudi) de Zoeten, P. 3179
Vice President

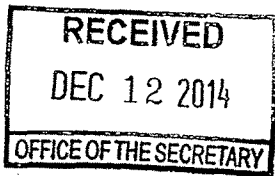
Date Signed: December 12, 2014



RDZ:AMH

TABLE OF REFERENCES

Houston American Energy Corp. Investor Presentation, November 2009	1
SK Energy Farm-in Opportunity, April 13, 2009	2
Netherland, Sewell & Associates, Inc. Independent Technical Expert Report, November 21, 2014	3
Technical Expert Summary, Michael L. Wiggins, November 21, 2014	4
Technical Expert Summary, Michael L. Wiggins, William M. Cobb & Associates, Inc., August 21, 2012	5
Hydrocarbon Discovery Potential in Colombian Basins: Creaming Curve Analysis	6
Petroleum System Variations in the Llanos Basin	7
Average Discovery Size in 2012 for the Llanos Basin	8
Llanos Basin Field Parameters and Computed Recovery Factors from IHS Data	9
Petrotech Engineering Ltd. Report, October 6, 2010	10
Tudor Pickering Holt & Co. Update on Colombia	11
John Terwilliger Testimony, March 14, 2012	12



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AP FILE NO. 3-16000

REBUTTAL EXPERT REPORT OF D. RONALD HARRELL, PE

*Rebuttal to the Report Assessment of Oil and Gas Resource Statements, Llanos Basin,
Colombia, South America by Michael L. Wiggins, PhD*

Prepared by:

D. Ronald Harrell, PE
RSK (UK) Limited



Dated: December 12, 2014

A handwritten signature in cursive script, appearing to read "D. Ronald Harrell".

D. Ronald Harrell, PE

INTRODUCTION

This Rebuttal Report has been prepared by D. Ronald Harrell, PE at the request of the US Securities and Exchange Commission (SEC) and relates to certain representations made in a 2009 investor presentation by Houston American Energy Corp. ("Houston American") involving investment in a petroleum exploration license in Colombia, South America. This report specifically addresses Dr. Wiggins' opinions and conclusions in three (Nos. 2-4) of his assigned four questions as directly quoted from his report:

1. Was Houston American's estimate of "1 to 4 billion barrels" of recoverable reserves reasonable based on information available at the time the statement was made in November 2009?
2. Is 500 barrels of oil per acre-ft a reasonable recovery factor in the western Llanos Basin area when compared to SK's estimate of 150 barrels of oil per acre-ft as used in its April 2009 presentation?
3. Was it misleading to use the term "recoverable reserves" in the 2009 presentation?
4. Is a value metric of \$20 per barrel of recoverable oil reasonable when evaluating oil resources in the Llanos Basin in late 2009 or early 2010?

Dr. Wiggins opinions related to Topics 2 through 4 are discussed in this report; his conclusions contained in Topic No. 1 are primarily exploration geoscience based and fall outside my field of education and experience and will be addressed separately by Dr. Richard Bishop. I am being compensated at the rate of \$600 per hour for my work on this matter.

QUALIFICATIONS

I am a Petroleum Engineering graduate of Louisiana Tech University and a licensed Professional Engineer in Texas, Louisiana and Mississippi. My professional experience includes 7 years as a petroleum engineer with an independent oil and gas producer where I was involved in all phases of the upstream production industry including drilling, completion and field operations, water treatment and disposal as well as secondary recovery studies and operation. Subsequently, I spent 38 years with Ryder Scott Company Petroleum Consultants (RSC), retiring in 2006, and continue to hold the title of Chairman Emeritus. During this tenure, I was involved in and responsible for reserves and reservoir studies in virtually every petroleum producing region of the world. I remain an active member of both Society of Petroleum Engineers (SPE) and Society of Petroleum Evaluation Engineers (SPEE) and have been recognized as a Distinguished Member by SPE and a Distinguished Life Member by SPEE. I am an SPE technical paper peer reviewer, a former SPE Distinguished Lecturer and a member of the SPE Distinguished Lecturer Selection Committee. I am an author of numerous technical papers, many of which involve

recommended engineering practices, adherence to international evaluation standards and regulatory compliance.

I became a member of the SPE Oil and Gas Reserves Committee (OGRC) in 1996 and was a participant in developing the 1997 SPE/WPC (World Petroleum Council) Reserves Definitions, a forerunner of the Petroleum Resources Management System (PRMS) released in early 2007. I chaired the 2000 OGRC and led the creation and approval of the 2001 Petroleum Resources Classification System sponsored by SPE, WPC and the American Association of Petroleum Geologists (AAPG). I have remained as SPEE's observer to the OGRC since that time and was an active participant in the development of the 2007 PRMS and as principle author of the 2007 SPE Standards for Estimating and Auditing of Reserves Information.

Following the notification on December 11, 2007 by the SEC's Division of Corporation Finance about an Oil and Gas Concept Release, I began to participate in meetings with some of my former Ryder Scott partners about creating a company response to the SEC's invitation for comments from interested parties and the public. The final order from the SEC contained new and expanded guidance for annual oil and gas reserves reporting rules effective beginning with the end of calendar year 2009. I did not submit a personal response.

I serve on three University Boards, and serve as a Senior Advisor for RSK [UK] Limited, the Carlyle Group Energy Mezzanine Fund and the Morgan Stanley Capital Partners Energy Fund. My complete resume' is attached as Exhibit A. My recent litigation experience is shown on the attached Exhibit B.

MATERIALS CONSIDERED

The information considered in rendering the opinions set forth in this report is listed in Exhibit C. In addition, I relied upon other publicly available information as referenced throughout this report.

REBUTTAL OPINIONS

My observations and conclusions relative to the three relevant petroleum engineering topics addressed by Dr. Wiggins follow:

Topic 2: Was a recovery factor of 500 STBO/ac-ft. reasonable?

Dr. Wiggins' opinion that an estimated recovery factor (RF) of 500 STBO/ac-ft. was reasonable is confusing and based on an unreliable methodology. Dr. Wiggins properly referred to the RF as hydrocarbons recovered as a fraction or percentage of the original hydrocarbons in place. This is consistent with the industry recognized definition in reservoir engineering textbooks, corporate training manuals and the PRMS. However, Dr. Wiggins then declares that "an alternate measure of recovery factor "is the ratio of "estimated ultimate hydrocarbon recovery to the estimated

hydrocarbon bulk volume (acre-ft).” His alternate method is rarely, if ever, used in reserves evaluation reports and is not found in the PRMS report or glossary.

Further, a standalone term such as 500 STBO/ac-ft. only has meaning if the physical conditions under which it is developed and used are defined. Dr. Wiggins’ STBO/ac-ft. “alternate recovery factor” is greatly influenced by the integrated result of numerous parameters, including the PRMS-recognized recovery factor. These parameters include, without exclusion, (1) average reservoir porosity (%), (2) interstitial water saturations (%), fluid saturation pressures (psia), (3) Gas-oil ratios (which are related to reservoir shrinkage factors, reservoir pressures and temperature), and (4) a judiciously determined recovery factor giving consideration to reservoir permeability, reservoir fluid contacts, expected drive mechanisms (water drive, solution gas drive, expanding gas cap drive, etc), well locations, well density, completion methods, regulatory limitations, marketing constraints and the competence and financial strength of the operator. Thus, a reservoir might yield 300, 500, 900 or just 56 STBO/ac-ft. depending on many physical factors and the production techniques employed. There are infinite combinations of the above factors that might support a particular RF. Without a disciplined analysis of the factors supporting a particular RF, simply stating an estimated RF is meaningless.

Dr. Wiggins’ conclusions about this topic are set forth in sections 42-55 of his report, and summarized in section 72. In this long discussion about estimated oil recovery quantities per ac-ft. numerous estimates are quoted from various sources ranging from low to high sequentially as follows: 56, 105, 133, 147, 150, 250, 300, 360, 368, 382, 390, 438, 454, 455, 465, 470, 489, 500, 594, 650, 680, 700, 785, 1000, 1300 and 1372. There is no analysis of the factors underlying these estimates. Nor is there any analysis of whether the underlying factors supporting any one of these estimates are similar to the conditions present on the CPO-4 Block. The cited estimates cover a range with a multiple of almost 25 to 1 and with a simple arithmetic average of 499 STBO/acre-ft. apparently endorsed by Dr. Wiggins when he asserts that “recoverable resources of 500 STBO/ac-ft. is reasonable ‘within the context’ of an exploration concession in the Llanos Basin.”

I respectfully disagree with Dr. Wiggins’ opinion and find the results of such a simplistic arithmetically-derived estimated recovery quantity to be unreliable, likely meaningless and not the product expected of competent reservoir engineering *even if* all of the various underlying sources were deemed reliable. The potential error arising from applying an RF of 500 STBO/ac-ft. to undiscovered reservoirs of unknown and undefined area, net thickness and rock and fluid quality is enormous. Such an RF is unsupportable absent significant due diligence using rock and fluid quality measurements not made available in the November 2009 Investor Presentation. Indeed, a virtually infinite combination of completely unreasonable or erroneous reservoir characteristics could be used in a calculation to yield a result equivalent to 500 STBO/ac-ft.

Topic 3: Was use of the term “recoverable reserves” misleading?

On at least 29 occasions in sections 12 through 70 of his report, Dr. Wiggins uses the expression “leads or prospects” to represent more than 100 separate areas for which he asserts using the term “recoverable reserves” was “not false and misleading” as long as this use was made “in this context” of the Houston American November 2009 Investor Presentation. Dr. Wiggins seems to believe that his “in this context” qualifier somehow excuses a lack of transparency at best and serious misrepresentation at worst.

I respectfully disagree with Dr. Wiggins’ conclusion that the use of the term “Recoverable Reserves” was justified *in any context* when describing properties where commercial quantities of oil and/or gas have not been confirmed through the drilling and testing of at least one well through the productive reservoir(s). Further, using the combined term “leads or prospects” without refinement and/or explanation is virtually meaningless and likely misleading. Indeed, a cursory review of the documents relied upon by Dr. Wiggins finds a dearth of information identifying *any* ready-to-drill prospects among the “leads or prospects” mentioned numerous times.

A *Lead* is defined in the Petroleum Resource Management System (PRMS) as: “a potential accumulation that is currently poorly defined and requires more data acquisition and/or evaluation in order to be classified as a prospect”. A *Prospect* is defined in the PRMS as: “a potential accumulation that is sufficiently well defined to represent a viable drilling target”. Combining the number of lead and prospect targets into a single number detracts from full disclosure and transparency and obscures the importance of defensible and understandable information. Further, as explained by Mr. De Zoeten, many of the “leads and prospects” identified by Houston American in fact met neither definition.

All three categories of reserves recognized in the PRMS (*i.e.*, Proved, Probable and Possible) are defined as follows: “Reserves are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions”. The imbedded term “known accumulations” is clarified further in the PRMS document as having been confirmed by the penetration and testing of at least one well providing data sufficient to confirm commerciality – a condition not found anywhere among the subject Llanos Basin properties.

There is, in my opinion, absolutely no evidence cited by Dr. Wiggins, including the 2009 Investor Presentation, to rationally support any credible designation of acreage within the CPO-4 Block as containing “recoverable reserves” or as deserving the term “ready to drill prospect” as generally defined within the industry. The giant step of referring to potential resources assumed to be contained in unknown (and unpenetrated) reservoirs in areas requiring additional data acquisition and evaluation to somehow being designated and upgraded to “Recoverable Reserves” is far too important and significant to be hidden under cover of “in this context”.

My comments related to the foregoing are not complete without further clarification of the significance and global reach of the PRMS guidance. The PRMS was approved in March 2007 by the leadership of three international professional societies (including the SPE and SPEE, of which I am a member) plus the World Petroleum Council. Collectively, these organizations represent 69 member countries (including the US, South Korea and Colombia) and almost 200,000 members in 130 countries. Most of the more significant global stock exchanges have adopted the PRMS in whole or in significant part as has the United States Securities and Exchange Commission (SEC) and the Energy Information Agency (EIA) of the US Department of Energy (DOE). More recently, the PRMS has been accepted by The United Nations ECE Framework Classification for Fossil Energy and Mineral Reserves and Resources as the preferred resources assessment guidance for petroleum fuels.

The Preamble to the PRMS contains the following sentences: "These definitions and guidelines are designed to provide a common reference for the international petroleum industry, including national reporting and regulatory disclosure agencies, and to support petroleum project and portfolio management requirements. They are intended to improve clarity in global communications regarding petroleum resources. It is expected that this document will be supplemented with industry education programs and application guides addressing their implementation in a wide spectrum of technical and/or commercial settings." The subsequent "application guides" – Guidelines for Applications of the PRMS – was published by SPE in November 2011, and I was a chapter co-author of this document.

The PRMS has found widespread adoption and use across the petroleum industry by public and private petroleum exploration and production companies, regulatory authorities, governmental agencies and consultancies, and is taught in most universities offering petroleum engineering or petroleum geology degrees. It has achieved the sponsors' goal of becoming an international standard. Misuse of its terms and meanings are considered by most evaluation experts as a serious ethical breach.

This global familiarity with and acceptance of PRMS by industry has been facilitated by numerous technical presentations in meetings and conferences throughout every significant petroleum producing region of the world by dozens of competent and respected petroleum evaluators. As one of many individuals committed to the universal adoption and use of the definitions and principles underlying the PRMS, I have addressed thousands of energy professionals in meetings across the US and in numerous foreign countries including Canada, Venezuela, Trinidad, the UK, Norway, Sweden, Denmark, the Netherlands, Austria, Croatia, Switzerland, Spain, Turkey, Azerbaijan, Kazakhstan, China, Libya, Tunisia, South Africa, Kuwait, Saudi Arabia, Bahrain, Qatar and Oman.

It is also worthy of mention that Dr. Wiggins' Table 2 ostensibly was prepared and made part of his report to justify his position that it is sometimes acceptable to misuse the term "recoverable reserves" in some instances because it is sometimes misused.

First, Dr. Wiggins' argument is woefully misguided. Table 2 consists predominately of examples in which an oil and gas company used the term "pre-drill reserves." Dr. Wiggins cites these examples to demonstrate that oil and gas companies sometimes use the terms "reserves" in a manner that does not conform to the SEC or PRMS definitions. But in fact, both the SEC and PRMS recognize that "reserves" can be estimated and booked even before a well is drilled—in other words, a "pre-drill" reserve is entirely consistent with both the SEC or PRMS definitions of the term. As Dr. Wiggins clearly knows, the SEC's rules contain an entire section on *undeveloped* oil and gas reserves, and those rules describe the circumstances in which an oil and gas company can classify "[un]drilled locations . . . as having undeveloped reserves." (See Regulation S-X, Rule 4-10(31), "Undeveloped Oil and Gas Reserves".) The same is true of the PRMS, which defines "undeveloped reserves" as quantities of oil expected to be recovered through future investments in, among other things, "new wells on undrilled acreage in known accumulations." Accordingly, I believe Mr. Wiggins' assertion about what Table 2 shows is simply wrong.

Second, even if Table 2 did contain examples of instances in which an oil and gas company misused a term, it would still not support Dr. Wiggins' contention. Ignorance and misuse of industry accepted standards and terminology by a small number of industry participants is not evidence that such standards do not exist or apply. No matter how widely accepted industry terms are, some individuals and entities will intentionally or recklessly misuse them, which in no way condones Houston American's misuse of the term "recoverable reserves."

Topic 4: Was the value of \$20/Bbl for oil in the ground reasonable?

Sections 60 through 68 and summary section 73 contain Dr. Wiggins' opinion that an oil in-the-ground price of \$20 per barrel as used by Houston American is reasonable if recoverable oil resources were to be discovered and developed on CPO-4.

I disagree that Dr. Wiggins' in-the-ground oil price of \$20 per barrel even approaches reasonableness. His report included discussions about several generally identified property transactions resulting in equivalent values for oil ranging from \$12.74 to \$28.71 per barrel – averaging \$20.73 per barrel – not far from the value believed "reasonable" by Dr. Wiggins. The fact that he overlooked, or ignored, is that all, or certainly most, of these selected transactions and published data sources involved *producing* reserves (and not speculative un-risked resources) with a defined future production stream, an established revenue stream, and after much or most of the necessary capital spending had been already made for prospect evaluation, well drilling and completion costs, production equipment and facilities necessary to market the produced oil and gas. Additionally, there is no evidence that the fiscal regimes and operating and capital costs in the CPO-4 exploration area are in any way comparable to those related to the transactions allegedly supporting the \$20 per barrel value. Indeed, it is my understanding that the CPO-4 licensing agreement includes a 31 percent net profits interest payable to the state in addition to a separate royalty percentage paid to the state – an extreme and rare financial burden

adding to the financial risk and uncertainty of any profitability to be derived from the exploratory effort.

Further, Dr. Wiggins' per-barrel prices reflect the time value of net established future revenues received over an estimated defined time period. A net equivalent present value in 2009 of \$20 per barrel for a future stream of income would be decreased to less than \$5 per barrel for the same revenue stream delayed 10 years and applying a discount rate of return of 15 percent for example. Very few investors will be content with an exploratory-driven rate of return of this modest but common 15 percent discount rate. Dr. Wiggins' \$20 per barrel in-the-ground value was derived from transactions where most of the development and capital costs had already likely been made. In contrast, the per-barrel prices of the CPO-4 exploration area entailed significant future risk capital being necessary for the search for and development of any reserves that may be identified in CPO-4.

CONCLUSION

Both Dr. Wiggins and I are licensed engineers, Distinguished Members of SPE and members of the SPEE. As such, we are bound by standards of conduct and ethics established by state licensing boards and professional organizations to which we belong. The single organization to which we belong that specifically is focused on reserves and resources evaluation is the Society of Petroleum Evaluation Engineers (SPEE). Our ethical standard of conduct includes the following paragraph (emphasis added):

The first duty of any ethical professional engineer is to place safety, health and welfare of the public above all else. In the usual perspective of engineers' relationship to the design of bridges, roads and buildings, the duty is easy to understand. However, the connection to petroleum engineers is more difficult to grasp, and even harder in relation to petroleum evaluation engineers. But the connection is there – by protecting investors and stockholders, by facilitating project financing and by preventing fraud. These are broader issues than the ones usually focused on by SPEE members, yet they are critical to professional conduct.

EXHIBIT A

D. RONALD (RON) HARRELL, P.E.

CURRICULUM VITAE – DECEMBER 2014

EDUCATION

BS degree, Petroleum Engineering, Magna Cum Laude, Louisiana Tech University, 1957

PROFESSIONAL ASSOCIATIONS

- Licensed Professional Engineer in the States of Texas, Louisiana and Mississippi
- Distinguished Member of the Society of Petroleum Engineers (SPE)
- Distinguished Life Member of the Society of Petroleum Evaluation Engineers (SPEE)
- Member of the Independent Producers Association of America (IPAA)
- Member of the US National Petroleum Council (NPC) Supply Committee (2006/2007)

BOARD MEMBERSHIPS and ADVISORY POSITIONS

2001 - present	Chairman (2003-2005 and 2008 to present) and founding member of Petroleum Engineering Advisory Board, University of Houston
2001 - present	Life Member and former President of Engineering and Science Foundation Board, Louisiana Tech University
2006 - 2009	Chairman of the Board, Kerogen Energy Resources, Inc., Houston, TX
2006 - 2013	Board Member and member of Compensation Committee, Union Drilling Inc., Ft. Worth, TX
2008 - present	Board Member and Past President, Pioneer Oil Producers Society, Houston, TX
2007 - present	Senior Advisor, RSK (UK) Limited, Houston, TX
2010 - present	Board Member, eCORP International, LLP, Houston, TX
2010 - present	Senior Advisor, The Carlyle Group, New York, NY
2011 - present	Founding Member Subsea Engineering Advisory Board, University of Houston
2014 - present	Senior Advisor, Morgan Stanley Capital Partners, New York, NY

SUMMARY OF EMPLOYMENT

Ryder Scott Company - March 1968 - April 2006

Retired as Board Chairman in 2006 following relinquishing CEO position in 2005. Remain as Chairman Emeritus. Company founded in 1937 and serves petroleum industry and related clients in preparing reservoir evaluation and management studies worldwide.

Ralph E. Davis Associates Inc. - 1964 - 1968

Petroleum reservoir engineer in Shreveport, LA., with a general consulting practice of reservoir engineering and geological studies.

McAlester Fuel Company - 1957 - 1964

Petroleum engineer in Magnolia AR. Various engineering duties related to oil and gas production and property acquisition with primary responsibility of maintaining oil and gas reserves studies for all company-owned properties.

District petroleum engineer in Laurel, MS., in 1963 and 1964. Responsible for all operations within Mississippi including well drilling and completion, production operations, unitization and secondary recovery studies and regulatory matters.

GEOGRAPHICAL AREAS OF EXPERIENCE

U.S.A.	Onshore and offshore areas of all petroleum producing states
Canada	Saskatchewan, British Columbia and Alberta.
S. America	Argentina, Colombia, Trinidad and Venezuela.
Australia	All areas.
Eurasia	North Sea, Italy, Russia, Kazakhstan, Turkmenistan and Azerbaijan
Asia	Indonesia, Malaysia and China
Africa	Angola, Egypt, Tunisia and offshore West Africa
Middle East	Iran, Iraq, Kuwait, Jordan, Saudi Arabia, Bahrain and UAE

NATURAL GAS STORAGE

Participated in the screening, design, installation and monitoring all facets of numerous underground gas storage projects in North America. Prepared technical papers for publication, testified in regulatory hearings and made numerous presentations to various industry organizations.

EXPERT TESTIMONY

Appearances before the U.S. Federal Power Commission (FPC) and the U.S. Federal Energy Regulatory Commission (FERC), Louisiana Department of Conservation,

Mississippi Oil and Gas Board, Florida Public Service Commission, Arkansas Public Service Commission, Texas Railroad Commission, Federal Court for the District of Columbia, the Western District Federal Court of Louisiana, Eastern District Federal Court of Louisiana, Southern District Federal Court of California, District Court of Denver County, state of Colorado, Northern District Federal Court of Oklahoma, Southern District Federal Court of Texas, District Federal Court of Alaska, United States Tax Court, Federal Bankruptcy Court of Eastern District of Kentucky, and State Courts in Alabama, California, Kansas, Louisiana, Mississippi, Oklahoma, Texas and West Virginia. Numerous appearances in International Chamber of Commerce arbitrations involving petroleum reserves and resources in North America, Turkmenistan, Italy and Jordan.

Appearances before regulatory agencies include testimony related to reservoir management, optimum well spacing, well completion procedures, unitization, gas-storage operations, gas-deliverability studies, potential gas supply for pipeline construction and optimum rates of production.

Expert testimony through depositions, arbitrations and/or court appearances includes such topics as deliverability testing, gas contract take-or-pay studies, ratable take, drainage, reservoir damage, rate sensitivity, property evaluation, prospect analysis, underground gas storage, reserves and resources definitions, categories and classifications, fair market value determination, prudent operating practices, lease preferential rights issues, and contract compliance.

RESERVOIR ENGINEERING STANDARDS

Member of SPE Oil and Gas Reserves Committee (OGRC) 1996-2001, responsible for international petroleum reserves and resources classifications and definitional standards. Chairman of OGRC in 1999-2000. SPEE observer position on OGRC 2001-present. Chairman of SPEE Reserves Definitions Committee, 2001-2006. Chairman of four SPEE-sponsored forums related to compliance with US SEC reserves definitions, 2000-2003. Chairman of industry committee formed to investigate the need to offer training and potential certification of petroleum reserves evaluators, 2004-2006. Founder, Chairman and at-large member, 2006-2011, of joint SPE-SPEE-AAPG-WPC-SEG Committee (JCRET) created in July 2006 to approve, develop and offer training in (a) relevant reserves and resources definitions (b) recommended industry-approved technical practices and (c) ethics training to petroleum reserves evaluators worldwide. Steering Committee Member and Session Leader for SPE-ATW in Dallas in 1999 on Probabilistic Assessment of Reserves, two ATWs in Houston in 2000 on same topic and one ATW in Caracas in 2002 on similar subject. Session Leader for Reserves ATW in Shanghai in 2005. Keynote speaker for SPE Resources Definitions and Applications in Muscat in March 2007 and Calgary in May 2007. Principal Author of SPE's "Estimating and Auditing Standards" approved by SPE in 2007. Session Leader for SPE Forum Series in Colorado, June 2007. Steering Committee Member and Plenary speaker at AAPG/SPE International Interdisciplinary Reserves Conference, Washington D.C. June 2007. Presenter at July 2011 SPE/AAPG/SPEE Resources and Reserves Symposium in Houston.

SPEAKING ENGAGEMENTS

Mr. Harrell is frequently invited to speak on various reservoir engineering subjects including oil and gas appraisal, property sales and acquisition, oil and gas reserves definitions and classifications, differences in reserves estimates, engineer's roles in litigation, professional standards and ethics training, qualification of evaluation engineers and underground natural gas storage. He has delivered several hundred presentations at annual international SPE conferences, local and international SPE chapters (Austria, Canada, Croatia, Denmark, Norway, Switzerland, Trinidad, Saudi Arabia, U.K., Venezuela, and the Netherlands), SPEE chapter meetings and annual conferences, the 1997 International Society of Appraisers Conference, several local CPA groups, the U.S. Internal Revenue Service, numerous oil and gas producers, financial organizations and dozens of conferences sponsored by Gas Daily, Executive Enterprises, Insight conferences, Energy Forum, Platt's and many others. As an SPE Distinguished Lecturer in 2007-08, he made 34 presentations relating to reserves and resources definitions in 17 countries. In 2005-2010, he presented papers and/or participated as a panelist at annual conferences for SPE, SPEE, OTC, WPC, IPTC and AAPG in several countries and the United States.

He has also served as an SPE representative in meetings with the United Nations in Geneva and recently served as a member of a Supply Committee established by the US National Petroleum Council in Washington, D.C. Co-chair of Platt's Shale Gas Conference, June 2011, Houston

HONORS AND AWARDS

- Louisiana Tech University - Distinguished Engineering Alumnus award (2002)
- SPE - Regional Reservoir Description and Dynamics Award – Gulf Coast Section (2007)
- SPEE – Distinguished Life Membership Award (2007)
- SPE - Distinguished Lecturer (2007-2008) (34 presentations/17 Countries)
- SPE - Distinguished Member (2007)
- SPE – Regional Public Service Award – Gulf Coast Section (May 2012)
- AIME – 2009 AIME Mineral Economics Award (October 2009)
- Louisiana Tech University - Distinguished Alumnus in Petroleum Engineering (2007)
- Southern Arkansas University - Distinguished Alumnus Lifetime Award (April 2011)
- University of Houston – President's Medallion Award (May 2011)

PUBLICATIONS/PROFESSIONAL PAPERS

Decline Curve Analysis – “The Petroleum Engineer”, 1958

Natural Gas Storage – “Natural Gas Week”, 1990

- Adapting Probabilistic Methods to Conform to Regulatory Guidelines – SPE Paper No. 63202, October 2000, co-authored with H. G. Acuña
- Understanding US SEC Guidelines Minimizes Reserves Reporting Problems – “Oil and Gas Journal”, September 24, 2001, co-authored with T. L. Gardner
- E&D Update: China Implementing Western Standards – “Oil and Gas Executive Report” (SPE) Vol. 3, No. 3, 2000
- Estimation and Classification of Primary Reserves of Oil, Gas and Condensate - “SPE Petroleum Engineering Handbook”, Chapter 18, third edition, co-authored with Chapman Cronquist, 2007
- Current Applications of “The Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information” to meet the Objectives of the Sarbanes-Oxley Act of 2002 - SPE Paper No. 84143, October 2003
- Significant Differences in Proved Reserves Volumes Estimated Using SPE/WPC Reserves Compared to United States Securities and Exchange Commission (SEC) Definitions – SPE Paper No. 84145, co-authored with Thomas L. Gardner, October 2003
- SEC, Industry Discussion Illuminates Reserves Reporting Issues – “Oil and Gas Journal”, June 23, 2003, co-authored with T.L. Gardner
- Whose Reserves Estimates Can I Trust? – “World Energy” – Vol. 7, No. 1, 2004
- Oil and Gas Reserves Estimates Recurring Mistakes and Errors – SPE Paper No. 91069, September 2004, co-authored by J. E. Hodgin and Thomas Wagenhofer
- Certifying Reserves Certifiers: The Time Has Come – SPE Paper No. 94517, April 2005
- Oil and Gas Reserves Estimates – OTC Paper No. 17714, May 2005
- Precision and Reliability in Petroleum Reserves Estimates – Petroleum Accounting and Financial Management Journal of the Institute of Petroleum Accounting, Summer 2005, Vol. 24, No. 2
- Restoring Investor Confidence Through Improved Reserves Estimating and Reporting, SPE Paper No. 96807, October 2005, co-authored with J. E. Hodgin, SPE
- Restoring Investor Confidence in Petroleum Reserves Worldwide – A Joint Industry Effort – International Petroleum Technology Conference (IPTC) Paper No. 10179, November 2005, co-authored with Bala Dharan, Ph.D.
- Significant Differences in Proved Reserves Estimates Using SPE/WPC Definitions Compared to United States Securities and Exchange Commission Definitions – SPE Paper 84145 (peer reviewed), co-authored by Thomas Gardner, SPE Reservoir Evaluation and Engineering, December 2005

The Selection, Application and Misapplication of Reservoir Analogs for the Estimation of Petroleum Reserves – SPE Paper 102505, September 2006, co-authored with John Hodgins, SPE

Historic Agreement Establishes Training Program For Petroleum Reserves Evaluators – SPE Paper No. 107738, April 2007, co-authored with Michael Black, SPE and Dan Olds, SPE

Assessment of World Petroleum Supply Enhanced by New Industry Resources Definitions – OTC Paper 19081, May 2007, co-authored with J.E. Hodgins. SPE

Industry Needs A Fresh Approach to Petroleum Engineer Training – “Oil & Gas Journal”, August 27, 2007

Enterprise Risk Management in the Petroleum Industry Using Qualitative and Quantitative to Validate Information – SPE Paper No. 109882, November 2007, co-authored with Scott W. Randall and Donald Griffin, SPE

Achieving Global Acceptance of and Compliance with a Universal Set of Petroleum Resources and Reserves Definitions – Are We There Yet? – SPE Paper No.114162, January 2007

JCORET: Next-Generation Training for Next-Generation Results –“World Energy” – Vol. 10, No. 4, 2008

Achieving Global Acceptance of and Compliance with a Universal Set of Petroleum Resources and Reserves Definitions – Are We There Yet? – “SPE Journal of Technology”, Vol. 60, No. 10, October 2008

Proposition – Global Effort to Model Largest Oil Fields – “Oil & Gas Journal” – June 8, 2009, co-authored with Wayne Kelley, Richard Bishop and Kirby Wells

The Growing Importance of Petroleum Reserves Estimation and Auditing Standards – SPE Paper No. 124260, October 2009

Global Oil Supply: Separating Fact From Fiction – “Houston Chronicle” Editorial – October 25, 2009, co-authored with Wayne Kelley and Richard Bishop

Reserves Evaluators: Reduce Litigation Liability Through Defensive Report Preparation – Presented to SPEE Annual Conference, June 8, 2010

New Guidelines Document Assists With PRMS Applications - SPE Paper 162520- co-Authored with John Lee and Satinder Purewal, SPE, October 2012

EXHIBIT B

EXPERT WITNESS ENGAGEMENTS (LAST FOUR YEARS)

2011 – Abbott, et al. v. BP Exploration and Production, Inc., et al., S.D. Tex. Civil Action No. 4:09-Cv-01193. Reserves/value Offshore GOM field – whistleblower lawsuit –expert report and deposition – trial delayed.

2011 – Henderson v. Windrush – Bossier Parish, LA. Expert report – lease value – testimony at trial – Haynesville Shale.

2012 – Bradford Drilling Associates XXIX, L.P. v. Norse Energy Corp. USA, Index No. 2011-606926. NY state lease reserves/resources partnership dispute – prepared critique of internal reserves report – bench trial – summary judgment.

2012 – Eagle Rock v. Gulfstream, Cause No. DC-11-02971 (Dallas Co. Texas, 14th Judicial District). East Texas gas field/sour gas plant shutdown – alleged formation damage calculation including estimated financial consequences of delayed production. Prepared expert report; case settled.

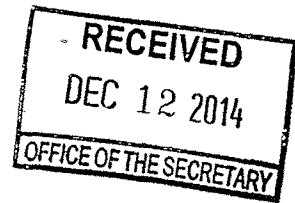
2013 – Meyer, et al. v. JPMorgan Chase Bank, NA, Cause No. 2010-CI-10977. Expert report and deposition taken. Case settled.

EXHIBIT C

MATERIALS CONSIDERED

Information considered by Mr. Harrell in rendering his rebuttal opinions included, without exclusion:

1. The expert report of Michael Wiggins and supporting materials;
2. The expert report of William Abington and supporting materials;
3. The expert report by Ruurdjan de Zoeten;
4. The November 2009 Investor Presentation by Houston America;
5. Petroleum Resources Management System (2007), available at http://www.spe.org/industry/docs/Petroleum_Resources_Management_System_2007.pdf; and
6. SPEE Ethical Standards, available at <https://secure.spee.org/sites/default/files/wp-files/pdf/ReferencesResources/SPEE%20Discussion%20and%20Guidance%20on%20ethics.pdf>.



UNITED STATES OF AMERICA
Before the
SECURITIES AND EXCHANGE COMMISSION

In the Matter of

HOUSTON AMERICAN ENERGY
CORP., JOHN F. TERWILLIGER, JR.,
UNDISCOVERED EQUITIES INC.,
and KEVIN T. McKNIGHT,

Respondents.

Administrative Proceeding File No. 3-16000

REBUTTAL EXPERT REPORT OF BRANKO JOVANOVIC, PH.D.

December 12, 2014

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I. Background and scope of analysis

- (1) Respondents' expert, Ms. Lucy P. Allen, prepared a report (Allen Report) assessing "the materiality of statements attributable to Houston American and John Terwilliger that the Securities and Exchange Commission ("SEC") alleges to be materially false and misleading."¹ Counsel for the Division of Enforcement of the US Securities and Exchange Commission has asked me to review the Allen Report and opine on the methodology and assumptions used therein. I have not been asked to respond to statements in the Allen Report concerning Ms. Allen's opinions regarding investors' understanding of the language that HUSA used to qualify the CPO-4 Block reserve estimate, as this would require me to speculate on matters that are beyond my expertise of an economist.
- (2) I previously issued an expert report in this matter, served on November 21, 2014 (Initial Report).

II. Qualifications

- (3) My qualifications and compensation are set out in my Initial Report. My opinions in this matter are in no way dependent on my or Bates White's compensation.

III. Materials relied upon

- (4) The materials considered for the purposes of this report are the documents listed in Exhibit 1.

IV. Summary of Opinions

- (5) My opinions, discussed in more detail below, are as follows:
 1. Ms. Allen erroneously attributes HUSA's stock price rise to Petrominerales's success, independent of HUSA's false and misleading statements about its reserves.
 - a. Ms. Allen ignores the fact that HUSA promoted the proximity of its CPO-4 Block to Petrominerales's fields to lend support to HUSA's false and misleading statements about its recoverable reserves. While Petrominerales's success may have affected investors' valuations

¹ Report of Lucy P. Allen, Nov. 21, 2014 [hereinafter Allen Report], ¶ 1.

of HUSA, their valuations of HUSA were fundamentally driven by the recoverable reserve estimate put forth by HUSA. As production from the Petrominerales fields increased, investors would have used this information to revise upward the likelihood that HUSA would be able to recover its stated estimates of its recoverable reserves. However, the rise in HUSA's stock price cannot be fully explained by simple analogy to the nearby Petrominerales fields: Even if the recoverable reserves for the CPO-4 Block had been similar in quantity to the recoverable reserves of the nearby Petrominerales fields, this amount of reserves would not have been sufficient to substantially increase the valuation of HUSA's stock price above its level as of late 2009 or early 2010. Although it is conceivable that some news events about Petrominerales could have some impact on HUSA's stock price, that effect was mediated through HUSA's public statements that the Block had massive estimated recoverable reserves.

- b. Ms. Allen does not offer any quantitative evidence that Petrominerales's news announcements had a significant impact on HUSA's stock price. Ms. Allen asserts that HUSA's stock price and Petrominerales's stock price are causally related but does not provide a statistical test for that relationship. Indeed, she asserts that HUSA's stock price is due to Petrominerales and its Candelilla wells, without testing it empirically. Had she done so, she would not have found a statistical relationship on any day other than February 16, 2010, which coincides with the publication of a Dow Jones article titled "Houston American Gains on Success of Neighbor's Well."²
 - c. Ms. Allen ignores HUSA's efforts to promote its proximity to Candelilla to both lend credence to the magnitude of its CPO-4 Block reserve estimates and to reduce investors' discount rates applicable to its inflated reserve estimates.
2. Ms. Allen's assessment of the materiality of alleged public disclosures of potential importance to HUSA's investors is flawed.
 - a. Ms. Allen erroneously finds that HUSA's November 10, 2009, statement on estimated recoverable reserves at the CPO-4 Block was not material to investors. Ms. Allen fails to adequately control for industry stock price movements and account for changes in market volatility. Further, Ms. Allen fails to exclude October 16, 2009, from her estimation period. On that day, HUSA announced that it had finalized its farmout agreement and joint operating agreement with SK Energy and acquired 25% rights to the CPO-4 Block in the Western Llanos Basin of Colombia.³

² Jennifer Cummings, "UPDATE: Houston American Gains on Success of Neighbor's Well," Dow Jones News Service, Feb. 16, 2010.

³ Houston American Energy Corp., Current Report (Form 8-K) (Oct. 16, 2009), ex. 99.1, HUSA Press Release, Oct. 2009. ("Under the Farmout Agreement, Houston American has agreed to pay 25.0% of all past and future cost related to the

- b. Ms. Allen erroneously interprets the October 12, 2010, announcement as a corrective disclosure. Ms. Allen misinterprets the lack of a statistically significant price decline following the October 12, 2010, disclosure as evidence that “the market did not consider the original alleged misstatement of 1–4 billion barrels of ‘estimated recoverable reserves’ to be material.”⁴ Rather, the lack of a statistically significant price decline following the October 12, 2010, disclosure can be viewed as evidence that HUSA’s stock price, in part, already reflected a lack of confidence in HUSA’s initial estimated recoverable reserves announcement that was brought about by the April 7, 2010, Seeking Alpha articles and June 28, 2010, Sharesleuth article.
 3. Ms. Allen does not consider the cumulative effect of statements made to individual investors or publicly disclosed by analysts.
- (6) I maintain the opinion from my Initial Report that the news announcements on November 10, 2009, February 16, 2010, April 7, 2010, and June 28, 2010, contained new information that was important to HUSA’s investors.

V. Bases for opinions

V.A. Ms. Allen erroneously attributes HUSA’s stock price rise to Petrominerales’s success

- (7) Ms. Allen asserts that “[c]ontrary to SEC’s implications, market commentary provide no indication that Houston American’s stock price rise from November 2009 to April 2010 was due to the alleged misrepresentations. Rather, analyst reports and news articles attributed Houston American’s stock price during this period to the success Petrominerales . . . was having at wells neighboring the CPO-4 block.”⁵ This section will explain the various flaws with Ms. Allen’s conclusions regarding the effects of Petrominerales’s new announcements on HUSA’s stock price.

CPO 4 block as well as an additional 12.5% of the Seismic Acquisition Costs incurred during the Phase 1 Work Program, for which Houston American will receive a 25.0% interest in the CPO 4 Block.”)

⁴ Allen Report, ¶ 54.

⁵ *Id.* ¶ 13.

V.A.1. Ms. Allen ignores the fact that while Petrominerales's success may have affected investors' valuations of HUSA, their valuations were also affected by HUSA's recoverable reserve estimates

- (8) In my Initial Report, I explained that estimated ultimate recovery and discount rates are key inputs into the valuation of E&P companies. For that reason, other things remaining equal, news announcements containing new, positive information about the estimated ultimate recovery of thousands of barrels of oil equivalent ("EUR-MBOE") or discount rates should increase HUSA's valuation and stock price. The February 16, 2010, *Dow Jones* article regarding Petrominerales' Candelilla-2 well suggested that the CPO-4 Block's proximity to Petrominerales's wells would translate into similar success and may have caused investors to increase their expected likelihood of success at the CPO-4 Block and therefore lower their discount factor.⁶ A lower discount factor would have had a positive effect on estimated expected cash flows from the CPO-4 Block in HUSA's valuation and a positive effect on HUSA's stock price. The magnitude of this positive effect, however, also depends on the size of the estimated ultimate recovery.
- (9) Figure 1 illustrates this point.⁷ The first row summarizes the valuation performed by equity research analysts at Global Hunter Securities (GHS) on October 19, 2009.⁸ To illustrate the sensitivity of valuations to changes in key inputs, Figure 1 also presents three hypothetical valuations that are based on GHS's underlying methodology. These hypothetical scenarios demonstrate how the CPO-4 Block per-share valuation would change as the estimated ultimate recoveries and discount factor change, while keeping the other inputs constant.
- (10) The first hypothetical scenario illustrates the change to the CPO-4 Block valuation attributable to an increase to the EUR-MBOE from 50,000 to 242,000.⁹ In isolation, the increased EUR-MBOE raises the price per share by \$9.96, from \$2.59 to \$12.55. The second hypothetical scenario illustrates the change to the October 19, 2009, valuation, assuming a likelihood of success of 25% rather than 10% (keeping the EUR-MBOE constant at 50,000). This change alone would cause the stock price valuation to increase from \$2.59 to \$6.48.
- (11) The third hypothetical scenario illustrates changes in the valuation attributable to changes in both the likelihood of successful extraction and the EUR-MBOE. This third hypothetical scenario assumes a

⁶ Petrominerales first issued a press release regarding the Candelilla-2 well on February 15, 2010. This was President's Day, so the effective date of this announcement is February 16, 2010.

⁷ A similar figure is included in my Initial Report.

⁸ See GRE00039479 (Global Hunter Securities, "Houston American Energy Corp.," Oct. 19, 2009), at 480.

⁹ This is consistent with the change in the EUR-MBOE between the October 19, 2009, Global Hunter Securities analyst report and the January 19, 2010, Global Hunter Securities analyst report. See GRE00117874 (Global Hunter Securities, "Houston American Energy Corp.," Jan. 19, 2010), at 882.

likelihood of success of 25% rather than 10% and an increase to the EUR-MBOE from 50,000 to 242,000. These two changes cause the resulting valuation to increase to \$31.37 per share, or more than 10 times higher than the share price valuation as of October 19, 2009.

Figure 1: CPO-4 Block valuation illustration

Valuation	HUSA EUR-MBOE ¹⁰	Per BOE ¹¹	Value	Discount factor	DNAV	Shares outstanding	Per share
	A	B	$C = (A \times 1000) \times B$	D	$E = C \times (1 - D)$	F	$G = E / F$
Oct. 19, 2009	50,000 ¹²	\$14.55	\$727,500,000	90%	\$72,750,000	28,062,000	\$2.59
<i>Hypothetical scenarios</i>							
1	242,000	\$14.55	\$3,521,100,000	90%	\$352,110,000	28,062,000	\$12.55
2	50,000	\$14.55	\$727,500,000	75%	\$181,875,000	28,062,000	\$6.48
3	242,000	\$14.55	\$3,521,100,000	75%	\$880,275,000	28,062,000	\$31.37

Source: GRE00039479 (Global Hunter Securities, "Houston American Energy Corp.," Oct. 19, 2009), at 480. The analyst report provided a valuation of HUSA's stock price, taking into account HUSA's 25% working interest in the CPO-4 Block, and assumed a likelihood of success of 10% (equivalent to a discount factor of 90%).

- (12) Therefore, as can be seen in Figure 1, while news announcements regarding Petrominerales's Candelilla wells may have caused investors to increase their expected likelihood of success at the CPO-4 Block and therefore lower their discount factor, the dollar magnitude of that increase depends on the estimated ultimate recovery. Lowering the discount factor alone raises the stock price by \$4.11 per share, from \$2.59 to \$6.48. Lowering the discount factor and increasing the estimated ultimate recovery, however, implies an increase of \$28.28 per share. This analysis demonstrates that the estimate of the ultimate recovery is a key factor in investors' valuation of the CPO-4 Block.

V.A.1.a. Reserves similar in quantity to reserves at nearby Petrominerales's fields would not lead to a substantially greater valuation for the CPO-4 Block

- (13) To further illustrate the point that HUSA's stock price increase cannot be solely attributed to news announcements regarding Petrominerales's Candelilla wells, I calculate the impact on HUSA's stock price assuming that the CPO-4 Block's reserves were similar in quantity to those at the nearby Petrominerales fields.
- (14) Figure 2 provides a summary of the CPO-4 Block's valuation with HUSA's CPO-4 Block reserve estimates, based on Petrominerales's reserve disclosure at nearby fields at three different dates

¹⁰ EUR-MBOE stands for estimated ultimate recovery, thousands of barrels of oil equivalent.

¹¹ BOE stands for barrels of oil equivalent.

¹² Based on GHS's estimate, HUSA's share of gross oil resource is 50 million (i.e., 50 net locations multiplied by 1,000 EUR-MBOE), and the total CPO-4 Block gross oil resource is 200 million (i.e., 50 million HUSA share divided by 25% working interest).

(March 2009, March 2010, and March 2011).¹³ For each date, HUSA's share of the CPO-4 Block's reserves is calculated by taking HUSA's working interest multiplied by Petrominerales's reserve quantities at nearby fields.¹⁴

- (15) Figure 2 illustrates that even when assuming that the CPO-4 Block contained similar quantities of reserves as nearby Petrominerales fields, the implied price per share ranges from \$2.90 to \$5.16 when using a 0% discount factor. Applying a 75% discount factor lowers the price per share range to between \$0.73 and \$1.29. The price per share implied by Petrominerales's reported reserves (at either a 0% or 75% discount factor) is significantly lower than that reported in GHS's January 19, 2010, analyst report.¹⁵ This is not surprising, as HUSA's share of the EUR-MBOE ranges from only 5,600 to 10,700. In all, Petrominerales's annual reports stated proved plus probable reserves ranging from 22,930,000 barrels to 28,461,000 barrels at fields located near the CPO-4 Block. In contrast, the November 10, 2009, investor presentation given to the SEC by HUSA management showed estimated recoverable reserves of 1 billion to 4 billion barrels for the CPO-4 Block. In other words, Petrominerales's success at nearby fields alone does not lead to a substantially greater valuation for the CPO-4 Block.

¹³ Petrominerales's reserve estimates were prepared by the company's independent reserve evaluator. (Petrominerales, Annual Information Form, 2008, at 9; Petrominerales, Annual Information Form, 2009, at 10; Petrominerales, Annual Information Form, 2010, at 14).

¹⁴ HUSA's working interest increased from 25% to 37.5% on July 31, 2010.

¹⁵ These discount factors (0% and 75%) are hypothetical discount factors to illustrate the resulting valuation of the CPO-4 Block. A 0% discount factor implies that the investors were certain of the realization of the reserve estimates and thus leads to a higher valuation. GHS applied a 75% discount factor to HUSA's other properties in its Oct. 19, 2009, analyst report that included a 90% discount factor for the CPO-4 Block. See GRE00039479 (Global Hunter Securities, "Houston American Energy Corp.," Oct. 19, 2009), at 480.

Figure 2: CPO-4 Block valuation based on Petrominerales's reserve quantities at nearby fields

Valuation period	HUSA EUR- MBOE ¹⁶	Per BOE ¹⁷	Value	Discount factor	DNAV	Shares outstanding	Per share
	A	B	$C = (A \times 1000) \times B$	D	$E = C \times (1 - D)$	F	$G = E / F$
Valuation using a 0% discount rate							
Mar. 2009–Feb. 2010	5,598 ¹⁸	\$14.55	\$81,443,625	0.0%	\$81,443,625	28,062,000	\$2.90
Mar. 2010–Feb. 2011	6,882 ¹⁹	\$15.00	\$103,233,750	0.0%	\$103,233,750	31,000,000	\$3.33
Mar. 2011–Feb. 2012	10,673 ²⁰	\$15.00	\$160,093,125	0.0%	\$160,093,125	31,000,000	\$5.16
Valuation using a 75% discount rate							
Mar. 2009–Feb. 2010	5,598	\$14.55	\$81,443,625	75.0%	\$20,360,906	28,062,000	\$0.73
Mar. 2010–Feb. 2011	6,882	\$15.00	\$103,233,750	75.0%	\$25,808,438	31,000,000	\$0.83
Mar. 2011–Feb. 2012	10,673	\$15.00	\$160,093,125	75.0%	\$40,023,281	31,000,000	\$1.29

Source: Petrominerales, Annual Information Form, 2008, at 9; Petrominerales, Annual Information Form, 2009, at 10; Petrominerales, Annual Information Form, 2010, at 14; GRE00039479 (Global Hunter Securities, "Houston American Energy Corp.," Oct. 19, 2009), at 480.

V.A.1.b. Petrominerales's success had no effect on the acquisition terms of HUSA's additional stake in the CPO-4 Block

- (16) Were Ms. Allen correct that Petrominerales's success was the primary factor driving the value of the CPO-4 Block, then one would expect SK Energy to have demanded much better terms when selling a stake in the Block following the news of Petrominerales's success. We can therefore test her conclusion by examining the terms of SK Energy's subsequent sale of an additional 25% stake in the CPO-4 Block to HUSA and Gulf United Energy, Inc.
- (17) On July 31, 2010, HUSA announced that it had reached a deal with SK Energy to acquire an additional 12.5% stake in the CPO-4 Block, bringing its interest in any estimated recoverable reserves from 25% to 37.5%.²¹ Gulf United Energy, Inc. filed its own Form 8-K on August 5, 2010, which disclosed that it had also acquired a 12.5% interest in the CPO-4 Block in July 2010.²² In total, therefore, SK sold a 25% interest in the CPO-4 Block in July 2010. In exchange for this 25% interest, SK Energy did not receive much more in return from its two farminees than it had in October 2009,

¹⁶ EUR-MBOE stands for estimated ultimate recovery, thousands of barrels of oil equivalent.

¹⁷ BOE stands for barrels of oil equivalent.

¹⁸ HUSA's share of the reserves is calculated by taking 25% of Corcel's proved plus probable plus possible reserves of 22,390Mbbl. See Petrominerales, Annual Information Form, 2008, at 9.

¹⁹ HUSA's share of the reserves is calculated by taking 25% of Corcel's and Guatiquia's proved plus probable reserves of 27,529Mbbl. See Petrominerales, Annual Information Form, 2009, at 10.

²⁰ HUSA's share of the reserves is calculated by taking 37.5% of all of Petrominerales's proved plus probable reserves in the Deep Llanos area of 28,461Mbbl. See Petrominerales, Annual Information Form, 2010, at 14.

²¹ Note that the effective date for this announcement is August 2, 2010, the following Monday.

²² Gulf United Energy, Inc., Current Report (Form 8-K) (Aug. 5, 2010).

when it sold 25% of the CPO-4 Block to HUSA alone.²³ The success of Petrominerales's wells apparently did not significantly alter SK Energy's valuation of the CPO-4 Block over this time period.

V.A.2. Ms. Allen does not offer any quantitative evidence that Petrominerales's news announcements had a significant impact on HUSA's stock price

- (18) Ms. Allen lists seven dates on which Petrominerales "began issuing updates on its Candelilla wells, which neighbored the CPO-4 block." However, Ms. Allen tests the materiality to HUSA's stock price of only one of these seven announcement dates (February 15, 2010) and provides no reason for choosing just this announcement date or any quantitative evidence regarding the materiality of the remaining six announcement dates. While Ms. Allen finds a statistically significant positive excess return on the February 16, 2010, announcement, the effective date of Petrominerales's announcement coincides with the publication of a Dow Jones article titled "Houston American Gains on Success of Neighbor's Well," which included quotes about the prospects of the CPO-4 Block from GHS analyst Philip McPherson and HUSA CFO James Jacobs.²⁴
- (19) By using the market model described in my Initial Report,²⁵ I confirmed that the remaining six Petrominerales news announcements did not have a statistically significant impact on HUSA's stock price (see Figure 3).²⁶

²³ In October 2009, SK Energy received 25% of all (past and ongoing) costs and an additional 12.5% of seismic costs in exchange for a 25% interest in the CPO-4 Block. In July 2010, SK Energy received 25% of all (past and ongoing) costs and an additional 25% of seismic costs in exchange for a 25% interest in the CPO-4 Block. SK therefore only received 12.5% of seismic costs more in July 2010 than it did in October 2009. Total seismic costs for the CPO-4 Block were approximately \$20 million, so 12.5% of seismic costs were \$2.5 million. (See Houston American Investor Presentation, p. 34.) SK Energy therefore only increased its total valuation of the CPO-4 Block by \$10 million for selling the same 25% interest in CPO-4 Block, even though the project was more mature at that point.

²⁴ Jennifer Cummings, "UPDATE: Houston American Gains on Success of Neighbor's Well," Dow Jones News Service, Feb. 16, 2010.

²⁵ Initial Report, section VI.C.3.

²⁶ The statistical significance of these days is robust with respect to choice of industry indices and estimation methodology used in the Allen Report.

Figure 3: Abnormal returns for the seven Petrominerales-related news announcement days cited by Ms. Allen

Date	Abnormal log returns	Root mean-squared error	p-value	Statistically significant
Jan. 4, 2010	-0.003	0.047	0.950	No
Feb. 3, 2010	0.054	0.049	0.271	No
Feb. 16, 2010	0.125	0.047	0.008	Yes
Feb. 22, 2010	-0.003	0.056	0.951	No
Mar. 11, 2010	0.024	0.052	0.648	No
Mar. 18, 2010	0.015	0.056	0.784	No
Mar. 29, 2010	0.053	0.049	0.274	No

V.A.3. HUSA's leveraging of the news about Petrominerales

- (20) Ms. Allen suggests that market sources (i.e., analyst reports and news articles) independently linked the CPO-4 Block and Petrominerales's successful wells.²⁷ She does not acknowledge HUSA's active role in leveraging the good news and fortune of Petrominerales to enhance its own image and marketability with investors by suggesting that the CPO-4 Block's proximity to Petrominerales's wells would translate into similar success.
- (21) On numerous occasions throughout the first few months of 2010, HUSA touted the CPO-4 Block's proximity to Petrominerales's successful wells. In these efforts, the company engaged GHS as well as a paid promoter.²⁸ After Petrominerales announced production at its Candelilla-1 well on January 4, 2010, HUSA's CFO, James Jacobs, forwarded the announcement to a contact at Columbia Management, a large asset management firm.²⁹ On that same day, HUSA's CEO forwarded a GHS email incorporating the Petrominerales news to a financial services firm. The email stressed the proximity of the CPO-4 Block to the Candelilla-1 well and concluded that "the best place to find oil is where it has already been found."³⁰

²⁷ Allen Report, ¶ 13.

²⁸ See testimony ex. 95 (Undiscovered Equities, Inc., Consulting Agreement between Undiscovered Equities, Inc., and Houston American Energy Corp., Nov. 5, 2009), at 1. Undiscovered Equities was paid \$20,000 for consulting services from November 9, 2009, to May 9, 2010.

²⁹ SEC-HO1107-006062 (email from James Jacobs, Chief Financial Officer, HUSA, to William Doyle, Columbia Management, "Petrominerales Announcement," and attachment *2010_01_03_Candelilla_Update.pdf* (Jan. 4, 2010)).

³⁰ SEC-Northeast-E-0006447 (email from John Terwilliger, Chief Executive Officer, HUSA, to Lee Tawes, Northeast Securities, "Petrominerales Announces 11,500 Barrel Per Day Well in Close Proximity to HUSA's CPO-4 Block" (Jan. 4, 2010)).

- (22) At the end of 2009, Undiscovered Equities included HUSA in its top picks for 2010.³¹ HUSA engaged Undiscovered Equities on November 5, 2009, to help “support the implementation and maintenance of an ongoing program to increase the investment communities’ awareness” of HUSA, including “direct email and telephone correspondence to . . . sources consisting of high net worth investors and brokers.”³² Kevin McKnight, Undiscovered Equities’s President, issued another update on the company on January 5, 2010, titled “Petrominerales announces 11,500 barrel per day well in close proximity to Houston American Energy’s CPO-4 Block.”³³
- (23) On January 19, 2010, GHS raised its price target on HUSA from \$7 to \$14, highlighting the proximity of the CPO-4 Block to Petrominerales’s discoveries and stated: “From the vintage data the company [SK Energy] has found over 100 prospects. Thus far they have high graded 22 of those prospects which contain an estimated 1 billion barrels of unrisks oil potential.”³⁴ In its valuation, GHS used a total estimate of 1 billion barrels to calculate HUSA’s price per share of \$11.71 for the CPO-4 Block alone.³⁵
- (24) On February 3, 2010, Petrominerales provided an update on its Candelilla-2 well. Mr. Terwilliger again shared the information with Columbia Management, “appropriating” the Petrominerales announcement and the proximity of Candelilla-2 well to the CPO-4 Block. He said, “I wanted to call your attention to this as I view it as another positive indicator that we have a good chance for major accumulations on the CPO-4.”³⁶
- (25) On February 15, 2010, Petrominerales released positive news related to the Candelilla-2 well. A day later, in a Dow Jones Newswires article, HUSA’s CFO reiterated that the CPO-4 Block “abuts the area Petrominerales is drilling.”³⁷ On that same day, a GHS email noted that “[Petrominerales

³¹ See testimony ex. 96 (Undiscovered Equities, “Undiscovered Equities’ Top Picks for 2010,” *Undiscovered Equities* (blog), Dec. 31, 2009, http://undiscoveredequities.blogspot.com/2009_12_01_archive.html), at 2. (“SK Energy believes the CPO 4 Block has over 100 via drilling locations with estimated recoverable reserves of 1-4 billion barrels.”)

³² See testimony ex. 95 (Undiscovered Equities, Inc., Consulting Agreement between Undiscovered Equities, Inc., and Houston American Energy Corp., Nov. 5, 2009), at 1. Undiscovered Equities was paid \$20,000 for consulting services from November 9, 2009, to May 9, 2010.

³³ SEC-CKCooper-E-0007399 (email from Kevin McKnight, President, Undiscovered Equities, to Alex Montano, CK Cooper, “Houston American Energy (NASDAQ:HUSA) Petrominerales Announces 11,500 Barrel Per Day Well in Close Proximity to HUSA’s CPO-4 Block” (Jan. 5, 2010)).

³⁴ GRE00117874 (Global Hunter Securities, “Houston American Energy,” Jan. 19, 2010), at 879. (“Petrominerales has announced another significant discovery, the Guatiquia, a well that had initial production of 11,500 bopd. This is in addition to the Corcel discovery which currently has 10 wells producing in excess of 20,000 bopd. HUSA’s CPO-4 block lies two miles west and adjacent to these discoveries.”)

³⁵ GRE00117874 (Global Hunter Securities, “Houston American Energy,” Jan. 19, 2010), at 882.

³⁶ SEC-HO1107-005317 (email from John Terwilliger, Chief Executive Officer, HUSA, to William Doyle, Columbia Management, “Negritos-1,” and attachment *Negritos-1208.pdf* (Feb. 4, 2010)).

³⁷ GRE00141413 (company-wide email from Richard D. Hastings, Consumer Strategist, Global Hunter Securities LLC, containing Dow Jones article “GHS in the Media: Phil McPherson - WSJ/Dow Jones - Houston American Gains on Success of Neighbor’s Well” (Feb. 16, 2010)).

Candelilla-1 and -2] wells are adjacent to HUSA's yet undrilled CPO-4 Block which could hold billions of barrels."³⁸ Additional emails from GHS employees spread the news as well.³⁹

- (26) On that same day, Northeast Securities—a multi-line financial service firm whose executive vice president, Orrie Lee Tawes, was on HUSA's board—started disseminating a report authored by David G. Snow of Energy Equities.⁴⁰ The report said that the company's "new 25% CPO-4 block is 2.4 miles from a Petrominerales 15,800+ b/d well announced today" and that it had potential of "upward to \$67-269/share."⁴¹ Snow's report was prepared based on the notes that he took during his conversations with HUSA's CEO,⁴² who also approved the final version of the report.⁴³
- (27) HUSA executives and GHS analysts continued to stress the potential of the CPO-4 Block investment based on its proximity to Petrominerales's wells. For example, on March 10, 2010, in a reprint of the March 3, 2010, Dow Jones article titled "Houston American's Colombia Stake May Pay Big," HUSA's CFO was quoted in the *Wall Street Journal* as saying "imagine going back to Texas in the 20s."⁴⁴ The implication of this statement was that the investors stood to make enormous profits. For the article, GHS analyst Philip McPherson provided a valuation for HUSA based on the CPO-4 Block having "similar success to its neighbors."
- (28) On March 18, 2010, Petrominerales announced that it had begun drilling its third well at Candelilla. GHS shared this information with its clients, noting the proximity between HUSA's CPO-4 Block and the Petrominerales block with the Candelilla wells and calling Petrominerales's announcement "another positive data point for HUSA and Colombian oil."⁴⁵
- (29) By asserting that analyst reports and news articles independently linked the CPO-4 Block and Petrominerales's successful wells, Ms. Allen ignores HUSA's efforts to promote its proximity to the Candelilla wells as a way of both adding credibility to its false and misleading reserve estimate and

³⁸ GRE00141193 (email from Brandon Winkler, Global Hunter Securities LLC, to undisclosed recipients, "For Those Following the HUSA (and You Should Be)" (Feb. 16, 2010)).

³⁹ GRE00140955 (company-wide email from Philip McPherson, Analyst, Global Hunter Securities LLC, "Petrominerales Produces Candelilla-2 at over 15,800 BOPD and Cases Yenac-1 as Another Potential Oil Well," and attachment *2010_02_14_Candelilla-2 on Production FINAL.pdf* (Feb. 15, 2010)); GRE00141171 (email from Greg Tuerk, Managing Director-Institutional Sales, Global Hunter Securities LLC, to undisclosed recipients, "Petrominerales Produces Candelilla-2 at over 15,800 BOPD and Cases Yenac-1 as Another Potential Oil Well," and attachment *2010_02_14_Candelilla-2 on Production FINAL.pdf* (Feb. 16, 2010)).

⁴⁰ Houston American Energy Corp., Current Report (Form 8-K) (Nov. 9, 2009), at 38.

⁴¹ David G. Snow, "Houston American Energy," Energy Equities Inc., Feb. 15, 2010.

⁴² Affidavit of David Snow, May 1, 2013.

⁴³ *Id.*

⁴⁴ GRE00155558 (email from Jennifer Cummings, Reporter, Dow Jones Newswires, to Philip McPherson, Analyst, Global Hunter Securities LLC, containing article "Houston American's Colombia Stake may Pay Big" (Mar. 3, 2010)).

⁴⁵ GRE00165026 (email from Tim Arthurs, Global Hunter Securities LLC, to undisclosed recipients, "HUSA: Petrominerales Drills Candelilla-3 Well, Another Positive Data Point for HUSA and Colombian Oil" (Mar. 18, 2010)).

demonstrating the likelihood that HUSA would be able to recover the false and misleading estimate of reserves. This “leveraging” by HUSA of news about Petrominerales magnified the effect on HUSA’s stock price of HUSA’s false and misleading statements about its estimated recoverable reserves on the CPO-4 Block, as it ultimately reduced the discount rates used by investors to value HUSA’s alleged reserves.

V.B. Ms. Allen’s assessment of materiality of alleged public disclosures of potential importance to HUSA’s investors is flawed

- (30) Ms. Allen presents analysis in which she tests for statistically significant price movement following eight news announcements of potential importance to HUSA’s investors.⁴⁶ Two of these announcements were HUSA’s public disclosures on November 10, 2009, and October 12, 2010. Ms. Allen erroneously concludes that the November 10, 2009, announcement was not material to investors and misinterprets the October 12, 2010, announcement as a corrective disclosure.

V.B.1. Ms. Allen erroneously finds that HUSA’s November 10, 2009, statement on estimated recoverable reserves at the CPO-4 Block was not material to investors

- (31) Ms. Allen conducts an event study to test the significance of the price movement following HUSA’s November 10, 2009, announcement.⁴⁷ Ms. Allen first estimates a market model—i.e., she uses “a regression to estimate the relationship between Houston American’s daily stock price returns and the daily returns of the indices.”⁴⁸ The regression results and the returns of the indices are then used to calculate HUSA’s “excess” stock price movement “for the days being tested” and test their statistical significance.^{49, 50}
- (32) Ms. Allen’s methodology suffers from three major flaws.

1. Ms. Allen fails to adequately control for industry stock price movements.

⁴⁶ Allen Report, App. B-1, App. B-2.

⁴⁷ The event study, which is designed to measure the price movement of a security in response to new information, is described in more detail in section VI.C.1 of my Initial Report.

⁴⁸ Allen Report, ¶ 27. Although Ms. Allen does not explicitly state which statistical procedure she uses to arrive at the market model estimates, I assume that she uses Ordinary Least Squares.

⁴⁹ Allen Report, ¶ 27.

⁵⁰ Ms. Allen uses a different estimation period for each announcement date that she tests. See Allen Report, App. B-1, App. B-2. Here, I focus on her assessment of the November 10, 2009, announcement.

2. Ms. Allen fails to exclude October 16, 2009, from her estimation period. On that day, HUSA announced that it had finalized its farmout agreement and joint operating agreement with SK Energy and acquired 25% rights to the CPO-4 Block in the Western Llanos Basin of Colombia.⁵¹
 3. Ms. Allen fails to adequately account for changes in market volatility.
- (33) Although these flaws apply to all dates that Ms. Allen tested, I focus on their relevance to her analysis of the November 10, 2009, announcement.

V.B.1.a. Ms. Allen fails to adequately control for industry stock price movements

- (34) Ms. Allen's market model estimates the relationship between Houston American's daily stock price returns and the daily return of the S&P 500, a broad market index, and two alternative industry indices. While the broad market index controls for economic news that affects the entire stock market and the economy as a whole, the industry index controls for various industry phenomena that affect firms that are similar to the company.⁵²
- (35) Ms. Allen uses two alternative indices to control for industry stock price movements: the Dow Jones U.S. Exploration and Production Index and the Bloomberg Independent E&P and Integrated Oils index.⁵³ Ms. Allen reports that "after controlling for the S&P 500, the first alternative industry index (Dow Jones Energy Index) was not statistically significant while the second industry index (Bloomberg Independent E&P and Integrated Oils index) was statistically significant."⁵⁴
- (36) Ms. Allen's use of these two indices produces unreliable results. Since, as I explain below, the two industry indices are unreliable, neither index can successfully control for industry factors, and Ms. Allen's market model fails to reliably calculate the firm-specific stock price movement.

⁵¹ Houston American Energy Corp., Current Report (Form 8-K) (Oct. 16, 2009), ex. 99.1, HUSA Press Release, Oct. 2009. ("Under the Farmout Agreement, Houston American has agreed to pay 25.0% of all past and future cost related to the CPO 4 block as well as an additional 12.5% of the Seismic Acquisition Costs incurred during the Phase 1 Work Program, for which Houston American will receive a 25.0% interest in the CPO 4 Block.")

⁵² To successfully control for the economic news that commonly affects the firms in the industry of interest, the industry index should consist of companies whose price movements reflect the same or similar factors as those affecting the company being examined. These firms, often referred to as "guideline companies," are generally companies with similar characteristics such as competing with the company at issue (and therefore participate in the same markets), having similar business models, and being of comparable size. Guideline companies may include firms mentioned in the company's financial statements or by analysts, as well as firms listed in the same industry classification as the company. However, a use of an "off-the-shelf" index is also common, and its use may even preempt criticism that the set of guideline companies was chosen subjectively. One common modification of an off-the-shelf index occurs when the company of interest is one of the constituents of the index and its "share" in the index is significant. In such cases, the company is generally "removed" from the index, and new, adjusted index values are calculated.

⁵³ Allen Report, ¶ 27.

⁵⁴ *Id.* n.35.

- (37) The constituents of the Dow Jones U.S. Exploration and Production Index are not available, and one cannot establish whether HUSA's returns have a "weight" that would affect the return of the index.⁵⁵ The higher the weight of HUSA in the index, the less this index is able to control for industry price movements that are not attributable to HUSA's performance.
- (38) The Bloomberg Independent E&P and Integrated Oils index is not reliable. Bloomberg does not actively maintain the Independent E&P and Integrated Oils index, and the last date of active management is unknown.⁵⁶ Further, the number of index constituents drops dramatically, from 129 companies on average between October 2008 and March 2010 to 26 companies in April 2010.⁵⁷ Lastly, Bloomberg provides conflicting information about the construction of this index; while it states that this index is equally weighted, Bloomberg also provides individual member weight on a historical basis. HUSA's weight in the index increases from 0.5% in October 2009 and peaked at 3% in March 2010 before falling to 1% in December 2010.

V.B.1.b. Ms. Allen fails to exclude October 16, 2009, from her estimation period

- (39) On October 16, 2009, HUSA announced that it finalized its farmout agreement and joint operating agreement with SK Energy and acquired 25% rights to the CPO-4 Block in the Western Llanos Basin of Colombia.⁵⁸ The investment in the CPO-4 Block was the largest working interest in an E&P concession in the company's history; following the announcement, HUSA's stock price increased by \$0.94 (25%).⁵⁹ Ms. Allen's failure to exclude October 16, 2009, from her estimation period prevents her from establishing a "clean" benchmark period, which ought to exclude any news associated with the CPO-4 Block.
- (40) Ms. Allen's analysis, summarized in Appendices B-1 and B-2 of her report, indicates that she is aware of the importance of using a clean benchmark period. Ms. Allen tests the significance of the excess price movement following eight announcement dates. For each of these dates, Ms. Allen estimates the market model on a "period one year prior to the event, excluding returns on other days tested." The same rationale for excluding each of the dates tested would also exclude October 16, 2009, as they all pertain to the CPO-4 Block.

⁵⁵ According to Bloomberg, "Dow Jones U.S. Exploration and Production Index" is a "capitalization weighted index" but information regarding the weight of the member companies is not available.

⁵⁶ Bloomberg helpdesk.

⁵⁷ Bloomberg.

⁵⁸ Houston American Energy Corp., Current Report (Form 8-K) (Oct. 16, 2009); ex. 99.1, HUSA Press Release, Oct. 2009. ("Under the Farmout Agreement, Houston American has agreed to pay 25.0% of all past and future cost related to the CPO 4 block as well as an additional 12.5% of the Seismic Acquisition Costs incurred during the Phase 1 Work Program, for which Houston American will receive a 25.0% interest in the CPO 4 Block..")

⁵⁹ HUSA's closing stock price was \$3.76 on October 15, 2009, and \$4.70 on October 16, 2009.

V.B.1.c. Ms. Allen fails to adequately account for changes in market volatility

- (41) As I pointed out in my Initial Report, market volatility was elevated during the period that Ms. Allen used to estimate the market model for November 10, 2009. The start of the estimation period coincides with a period of increased market volatility from December 2007 to June 2009 stemming from a recession and financial crisis in the US economy.^{60, 61}
- (42) Ms. Allen fails to adequately account for changes in market volatility and the presence of heteroskedasticity in her market model.^{62, 63} One consequence of the presence of heteroskedasticity in a market model is that the standard error used to assess the statistical significance of the event days is overstated and the statistical significance of the tested days is understated.
- (43) I apply the White (1980) test to test the null hypothesis that the estimated market model residuals are homoskedastic, meaning that they have a constant variance. The White test provides strong evidence against the null hypothesis. It suggests that the null hypothesis of homoskedasticity can be rejected at the 3.06% level in Ms. Allen's market model in which the industry movement is controlled by using the Dow Jones U.S. Exploration and Production Index. Similarly, in her other market model, in which the industry movement is controlled by using the Bloomberg Independent E&P and Integrated Oils index, the null hypotheses of homoskedasticity can be rejected at the 0.25% significance level.⁶⁴ The presence of heteroskedasticity in Ms. Allen's market model causes Ms. Allen to overstate the standard error that she uses to assess the statistical significance of the event days and to understate the statistical significance of the November 10, 2009, announcement.
- (44) The analysis I put forth in my Initial Report does not suffer from the three flaws described above. I found that the company's stock price increased from \$3.95 to \$4.35 in the wake of the announcement

⁶⁰ National Bureau of Economic Research, Business Cycle Dating Committee, Sept. 20, 2010, *available at* <http://www.nber.org/cycles/sept2010.pdf>. ("At its meeting, the committee determined that a trough in business activity occurred in the US economy in June 2009. The trough marks the end of the recession that began in December 2007 and the beginning of an expansion. The recession lasted 18 months, which makes it the longest of any recession since World War II.")

⁶¹ Ms. Allen used an estimation period that was dependent on the event that she was examining. Allen Report, Appendix B-1 and Appendix B-2, specifies that Ms. Allen used the year preceding an event as its estimation period, excluding returns on other days tested. In all, seven of the eight "reaction dates" that Ms. Allen analyzed were affected by the period of high volatility that lasted through June 2009. In addition to November 10, 2009, these dates include December 1, 2009, December 31, 2009, January 19, 2010, January 25, 2010, February 16, 2010, and March 29, 2010.

⁶² I assume that Ms. Allen attempts to control for changes in market volatility by using an estimation period one year prior to the tested date, rather than using the same estimation period for all test dates.

⁶³ Ms. Allen has not provided the estimates of her market model. Counsel for respondents stated in an email to SEC that "Ms. Allen does not have any code and did not use any programming languages" to arrive at the results she outlined in Appendix B-1 and Appendix B-2. Email from Mark Oakes, counsel for HUSA, Fulbright & Jaworski LLP, to Melissa Armstrong, SEC attorney, "Exchange of Expert Reports" (Nov. 25, 2014).

⁶⁴ Halbert White, "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity," *Econometrica* 48, no. 4 (1980): 817-38.

and that a price increase of \$0.41 (10.3%) is attributable to the information released in the November 10, 2009, announcement. This price increase is statistically significant at the 5% significance level.⁶⁵

- (45) To further corroborate the findings from my Initial Report, I also estimated an OLS model over a one-year period starting in November 10, 2009, when HUSA first announced its recoverable reserves estimate for the CPO-4 Block.⁶⁶ In this event study, I use the market and industry indices used in Ms. Allen's event studies. In order to obtain a "clean" benchmark period, I exclude any news associated with the CPO-4 Block from the estimation period. Using Ms. Allen's market model in which the industry movement is controlled by using the Dow Jones U.S. Exploration and Production Index, the November 10, 2009, announcement is associated with an abnormal return of 0.092, or 9.6%, which is statistically significant at the 1.82% significance level. Using Ms. Allen's market model in which the industry movement is controlled by using the Bloomberg Independent E&P and Integrated Oils index, the November 10, 2009, announcement is associated with an abnormal return of 0.098, or 10.3%, which is statistically significant at the 1.01% level.

V.B.2. Ms. Allen erroneously interprets the October 12, 2010, announcement as corrective disclosure

- (46) On October 12, 2010, HUSA released the executive summary of an independent reserve engineer's report, which contained the engineer's estimate that HUSA's interest in the CPO-4 Block consisted of 24.549 million barrels of unrisks prospective resources.⁶⁷ I disagree with Ms. Allen's characterization of this announcement as "corrective."⁶⁸ As I explained in my Initial Report, if

⁶⁵ Initial Report, Fig. 9 and ¶ 63.

⁶⁶ In an April 1999 NERA Working Paper, Tabak and Dunbar explain that "[t]here are three general choices for the placement of an estimation window: before the event window, surrounding the event window, and after the event window." They further explain:

In securities fraud cases, estimation windows are often placed before the beginning of the alleged class period, even if the only event measured is at the end of the period. This is likely done so that the estimation window would cover a "clean" period that could not have been tainted by any alleged stock price inflation. There is often no theoretical basis for doing so, because the concern about a "clean" period actually relates to the possibility of the estimation of the relationship between the stock and the index being contaminated by the effects of the event being studied. That is, one does not want any overlap between the estimation window and the event window. Depending on the nature of the alleged stock price manipulation, there may be no statistical basis for excluding prices during the period of alleged manipulation from the estimation window.

David I. Tabak and Frederick C. Dunbar, "Materiality and Magnitude: Event Studies in the Courtroom," NERA Working Paper no. 34, Apr. 1999, at 9.

⁶⁷ Houston American Energy Corp., Current Report (Form 8-K) (Oct. 12, 2010), ex. 99.1, HUSA Investor Presentation, Oct. 2010, at 11. The engineer also noted that HUSA's share of the unrisks prospective resources was between 9.344 million and 63.349 million barrels under the low and high estimates, respectively.

⁶⁸ Allen Report ¶ 54.

investors at the time still gave credence to HUSA's recoverable reserves estimate of 1 billion to 4 billion barrels, then this report showing unrisks prospective resources at 24.549 million barrels may be viewed as a corrective one and would be expected to have negatively affected HUSA's stock price.⁶⁹

- (47) The lack of a statistically significant price decline following the October 12, 2010, disclosure, therefore, can be viewed not as evidence that "the market did not consider the original alleged misstatement of 1-4 billion barrels of 'estimated recoverable reserves' to be material"⁷⁰ but as evidence that the HUSA's stock price, in part, already reflected a lack of confidence in HUSA's initial estimated recoverable reserves announcement following the April 7, 2010, Seeking Alpha articles and June 28, 2010, Sharesleuth article. The lack of a statistically significant price decline following the October 12, 2010, disclosure implies that the lower resource estimate information disclosed in the October 12, 2010, disclosure was already reflected in HUSA's stock price.
- (48) Contrary to Ms. Allen's observation that "there is no indication that the two Seeking Alpha blog posts were related to or corrective of the Company's alleged misstatement regarding '1 to 4 billion barrels' of 'estimated reserves,'"⁷¹ one of the Seeking Alpha articles, published on April 7, 2010, specifically raised concerns about HUSA executives possibly inflating reserves. The author wrote: "we found a number of items that should be serious red flags to any investor. For example, management has a poor track record of estimating or possibly inflating proven reserves."⁷²

V.C. Ms. Allen does not consider the cumulative effect of statements made to individual investors or publicly disclosed by analysts

- (49) Ms. Allen attempts to assess the materiality of certain alleged misstatements by HUSA and its management by examining the deposition testimony of certain investors and their trading in HUSA stock. Ms. Allen also quantitatively tests HUSA's stock price return following certain event dates.^{73, 74}

⁶⁹ For discussion regarding the difference between "recoverable reserves" and "unrisks prospective resources," see Independent Technical Expert prepared by Netherland, Sewell & Associates, Nov. 2014, ¶ 95.

⁷⁰ Allen Report, ¶ 54.

⁷¹ *Id.* ¶ 107.

⁷² Shareholder Watchdog, "Houston American Energy Corp. Set Up for Collapse," Seeking Alpha, Apr. 7, 2010.

⁷³ Specifically, Ms. Allen tests the statistical significance of HUSA's abnormal stock price return on the following dates: December 1, 2009 (GHS email sent to potential investors), December 31, 2009 (Undiscovered Equities report), January 19, 2010 (GHS analyst report on HUSA), January 25, 2010 (GHS email sent to potential investors), and March 26, 2010 (HUSA 10-K shows no proved reserves at the CPO-4 Block). See Allen Report, App. B-1, App. B-2. For each of these five announcement dates, Ms. Allen estimates the market model on a "period one year prior to the event, excluding returns on other days tested." She finds a statistically significant excess price movement following one of these five days, February 15, 2010, which I discussed in paragraph (25).

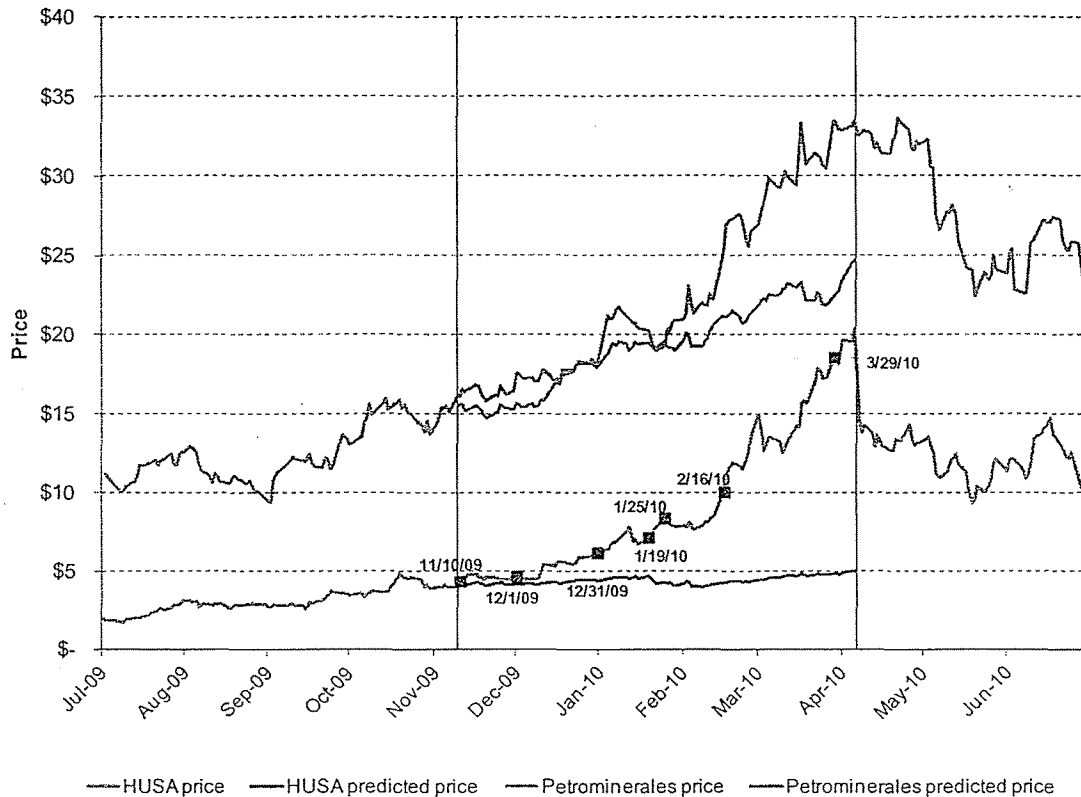
- (50) Ms. Allen's predominantly qualitative methodology for assessing the materiality of these alleged misstatements is flawed, as Ms. Allen does not consider the cumulative effect of these statements and the fact that they coincide with HUSA's efforts to attract investors. As shown in Figure 4, the actual and predicted prices for both HUSA and Petrominerales diverged over time between November 9, 2009, when Undiscovered Equities's consulting agreement with HUSA went into effect, and April 6, 2010, the day before the Seeking Alpha articles were published.^{75,76} The divergence between predicted and actual prices was greater for HUSA than for Petrominerales. Ms. Allen's primarily qualitative methodology does not capture the cumulative effect of statements made between November 9, 2009, and April 6, 2010.

⁷⁴ On two of these dates, December 1, 2009, and January 25, 2010, GHS sent emails to potential investors. Ms. Allen's treatment of these two dates suggest that the emails were received, reviewed, and acted upon by the potential investors on the same day on which they were sent by GHS. Ms. Allen offers no support for these assumptions. The reliability of an event study requires that the day and time of day when the news reaches the market are known. See Esther Bruegger and Frederick C. Dunbar, "Estimating Financial Fraud Damages with Response Coefficients," *Journal of Corporation Law* 35, no. 1 (2009): 25.

⁷⁵ The calculation of HUSA's and Petrominerales's predicted stock prices includes an adjustment to the predicted return involving the standard error based on model (1) in my Initial Report estimated by OLS and the number of days over which returns were calculated. See Esther Bruegger and Frederick C. Dunbar, "Estimating Financial Fraud Damages with Response Coefficients," *Journal of Corporation Law* 35, no. 1 (2009): 24.

⁷⁶ The red dots signify Ms. Allen's reaction dates that occur between November 9, 2009, and April 6, 2010. Allen Report, App. B-1, App. B-2.

Figure 4: Prices and predicted prices for HUSA and Petrominerales's stocks



- (51) In the days leading up to HUSA's December 2009 public offering and for several months thereafter, HUSA and its placement agent, GHS, engaged in a series of activities to attract investors. These activities included conducting road show presentations and emailing potential investors. In addition, HUSA hired Undiscovered Equities to help in its outreach efforts.⁷⁷
- (52) Global Hunter Securities conducted road show presentations for potential investors throughout the United States; locations included Dallas on November 24, 2009, and the West Coast on January 25–

⁷⁷ Ms. Allen appears to consider the December 31, 2009, Undiscovered Equities publication among the statements publicly made by analysts. As I pointed out in my Initial Report, HUSA engaged Undiscovered Equities on November 5, 2009, to help "support the implementation and maintenance of an ongoing program to increase the investment communities' awareness" of HUSA, including "direct email and telephone correspondence to . . . sources consisting of high net worth investors and brokers." See testimony ex. 95 (Undiscovered Equities, Inc., Consulting Agreement between Undiscovered Equities, Inc., and Houston American Energy Corp., Nov. 5, 2009), at 1. Undiscovered Equities was paid \$20,000 for consulting services from November 9, 2009, to May 9, 2010.

27, 2010.⁷⁸ The November 24, 2009, alleged misstatements by Mr. Terwilliger coincide with the Dallas road show.

- (53) In addition to road show presentations, both GHS and HUSA emailed potential investors as part of their promotional efforts.⁷⁹ As mentioned earlier in this report, these emails often highlighted the CPO-4 Block's proximity to successful Petrominerales wells. In addition, the emails often mentioned estimated reserves of 3 billion to 5 billion barrels of oil for the CPO-4 Block.⁸⁰ GHS provided analyst coverage for the company. In its January 19, 2010, report, in its valuation of the CPO-4 Block, GHS used an estimate of "total gross oil" of 1 billion barrels (the lower bound of HUSA's own estimate).⁸¹
- (54) As mentioned earlier, one of the steps that HUSA took to generate publicity was engaging Undiscovered Equities on November 5, 2009, to "increase the investment communities' awareness" of HUSA.⁸² Undiscovered Equities recommended HUSA to potential investors often during late 2009 and early 2010.⁸³ In addition, Undiscovered Equities was quick to highlight positive press that HUSA received in other publications, namely the *Wall Street Journal*.⁸⁴

⁷⁸ GRE00066100 (Global Hunter Securities, "Houston American Energy Corp. (HUSA): Global Hunter Securities Non-Deal Dallas Roadshow," Nov. 24, 2009). Dallas Roadshow participants included the following investors: BBS Capital, Delos Investment, Atlas Capital, Hodges Capital, and WS Capital; GRE00118860 (Global Hunter Securities, "Houston American Energy Corp. (HUSA): Global Hunter Securities Non-Deal West Coast Roadshow," Jan. 19, 2010). The West Coast Roadshow participants included Lake Union Capital, TW Asset Management, Roxbury Capital, Fuller & Thaler, Cambrian Capital, Dunlap Equity, Alder Capital, NWQ Investment Management, and 300 North Capital, LLC.

⁷⁹ See, e.g., GRE00075169 (email from Stephen Mathes, Global Hunter Securities, to Kyle Krueger, Managing Director, at Apollo Capital Corp., "FW: HUSA-Details," (Dec. 1, 2009)); GRE00103882 (email from Greg Tuerk, Managing Director-Institutional Sales, Global Hunter Securities, to Charles Kist, "HUSA-My Home Run Pick for 2010-Incremental Positive News Based on Petrominerales Announcement Today" (Jan. 4, 2010)), at 883; GRE00140955 (company-wide email from Philip McPherson, Analyst, Global Hunter Securities LLC, "Petrominerales Produces Candelilla-2 at over 15,800 BOPD and Cases Yenac-1 as Another Potential Oil Well," and attachment *2010_02_14_Candelilla-2 on Production FINAL.pdf* (Feb. 15, 2010)); SEC-HO1107-006062 (email from James Jacobs, Chief Financial Officer, HUSA, to William Doyle, Columbia Management, "Petrominerales Announcement," and attachment *2010_01_03_Candelilla_Update.pdf* (Jan. 4, 2010)).

⁸⁰ See, e.g., GRE00103882 (email from Greg Tuerk, Managing Director-Institutional Sales, Global Hunter Securities, to Charles Kist, "HUSA-My Home Run Pick for 2010-Incremental Positive news based on Petrominerales announcement today," (Jan. 4, 2010)), at 883; GRE00123542 (email from Stephen Mathes, Global Hunter Securities, to Mike Scholten, Ingalls & Snyder, "Houston American (HUSA): 10+ bagger in the making?," (Jan. 25, 2010)).

⁸¹ GRE00117874 (Global Hunter Securities, "Houston American Energy Corp.," Jan. 19, 2010), at 879.

⁸² See testimony ex. 95 (Undiscovered Equities, Inc., Consulting Agreement between Undiscovered Equities, Inc., and Houston American Energy Corp., Nov. 5, 2009), at 1. Undiscovered Equities was paid \$20,000 for consulting services from November 9, 2009, to May 9, 2010.

⁸³ See testimony ex. 96 (Undiscovered Equities, "Undiscovered Equities' Top Picks for 2010," *Undiscovered Equities* (blog), Dec. 31, 2009, http://undiscoveredequities.blogspot.com/2009_12_01_archive.html), at 2. On January 5, 2010, Undiscovered Equities sent an HUSA update highlighting positive production news from a Petrominerales well close to the CPO-4 Block. SEC-CKCooper-E-0007399 (email from Kevin McKnight, President, Undiscovered Equities, to Alex Montano, CK Cooper, "Houston American Energy (NASDAQ:HUSA) Petrominerales Announces 11,500 Barrel Per Day Well in Close Proximity to HUSA's CPO-4 Block" (Jan. 5, 2010)). Soon after, on January 11, Undiscovered Equities highlighted HUSA as one of the top performers of the new year. SEC-Northeast-E-0005010 (email from Kevin McKnight, President, Undiscovered Equities, to Lee Tawes, Director of Northeast Securities and Houston American

- (55) In the following section, I estimate the cumulative change in HUSA's stock price attributable to both "the statements made to individual investors or publicly disclosed by analysts" and HUSA's promotional efforts during this same period. I perform this analysis by using two alternative approaches. First, I examine HUSA's stock price decline following the April 7, 2010, Seeking Alpha articles. Second, I calculate the difference between HUSA's and Petrominerales's cumulative abnormal returns (CAR) between November 9, 2009, and April 6, 2010.

V.C.1.a. Assessing the cumulative effect of statements made to individual investors or publicly disclosed by analysts using the Seeking Alpha articles as a partial corrective disclosure

- (56) As I explained in my Initial Report, on April 7, 2010, two Seeking Alpha articles questioned HUSA's valuation.⁸⁵ One article stated: "one has to believe that a \$15 million investment made just a few months ago is now worth over \$500 million."⁸⁶ It also hypothesized that HUSA investors were unaware of, or overlooking, "prior indiscretions by HUSA's management team at a bankrupted company."⁸⁷ Related to the CPO-4 Block, the article noted that SK Energy's willingness to "dump" 50% of its interest should be considered "a massive red flag" and that "[a]t the very best, we believe there is a huge disconnect between the valuations of Petrominerales Ltd, who has proven success in Colombia, and the highly speculative investment in HUSA."⁸⁸ The other article challenged the validity of a valuation based on the proximity of the CPO-4 Block to Petrominerales's Candelilla-1 and -2 wells. In the wake of the announcement, HUSA's stock price fell from \$20.35 to \$15.51. A price drop of \$5.54 (-27.6%) is attributable to the information released in the April 7, 2010, Seeking Alpha articles.
- (57) The price drop following the Seeking Alpha articles indicates that investors acted upon the information put forth in the two articles. This price drop, however, may also incorporate the correction related to the November 10, 2009, and February 16, 2010, announcements, which I addressed separately in my Initial Report. To arrive at an estimate of the effect of HUSA's alleged

board member, "Undiscovered Equities Top Performers Of The New Year" (Jan. 11, 2010)).

⁸⁴ On both February 17, 2010, and March 11, 2010, Undiscovered Equities highlighted HUSA's recent coverage in the *Wall Street Journal*. Kevin McKnight, "Houston American Energy Corp Highlighted in the *Wall Street Journal* (NASDAQ:HUSA)," M2 Communications, Feb. 17, 2010; Kevin McKnight, "Houston American Energy Once Again Highlighted in the *Wall Street Journal*; Houston American Energy's Stake in Colombia May Pay Off," *Undiscovered Equities* (blog), Mar. 10, 2010, <http://undiscoveredequities.blogspot.com/2010/03/houston-american-energy-once-again.html>.

⁸⁵ This is also contrary to Ms. Allen's observation that "there is no indication that the two Seeking Alpha blog posts were related to or corrective of the Company's alleged misstatement regarding '1 to 4 billion barrels' of 'estimated reserves.'" Allen Report, ¶ 107.

⁸⁶ Shareholder Watchdog, "Houston American Energy Corp. Set Up for Collapse," Seeking Alpha, Apr. 7, 2010.

⁸⁷ *Id.*

⁸⁸ *Id.*

misrepresentations made during the relevant period, I subtract the price increases associated with the November 10, 2009, and February 16, 2010, announcements.⁸⁹ Based on this method, I find that a price drop of \$3.96 (-19%) is attributable to HUSA's alleged misrepresentations made during the relevant period.

V.C.1.b. Assessing the cumulative effect of statements made to individual investors or publicly disclosed by analysts using the cumulative abnormal return

- (58) As an alternative, to assess the cumulative effect of these promotional efforts, I calculate the cumulative abnormal return (CAR) and its statistical significance, by following the methodology of MacKinlay (1997).⁹⁰ The CAR is found by summing the difference between a stock's expected returns and actual returns over a period of time. It is useful for quantifying the abnormal returns due to conduct that takes place over a period of time, especially when there is ambiguity regarding the exact date that information was received by potential investors. I calculate the CAR to measure the effect of statements regarding the size of the CPO-4 Block's reserves publically disclosed by analysts and made by HUSA, GHS, and Undiscovered Equities to potential investors.
- (59) The CAR is calculated as the sum of the log abnormal returns from November 9, 2009, when Undiscovered Equities's consulting agreement with HUSA went into effect, to April 6, 2010, the day before the Seeking Alpha articles, excluding the abnormal returns on days when the new information about the CPO-4 Block was disseminated.
- (60) The CAR calculated over this period may incorporate the effect of Petrominerales's success on HUSA's stock price. To calculate the CAR attributable to other allegedly false and misleading statements that HUSA and its executives made over this period, I subtract the Petrominerales CAR from the HUSA CAR.^{91, 92}
- (61) By using this methodology, I calculate a HUSA CAR of 1.33, which implies a 277% cumulative abnormal return and an \$11.04 increase in HUSA's stock price.⁹³ The CAR is statistically significant

⁸⁹ See Initial Report at Fig. 9.

⁹⁰ A. Craig MacKinlay, "Event Studies in Economics and Finance," *Journal of Economics Literature* 35, no. 1 (1997): 21.

⁹¹ Note that a higher CAR for HUSA implies that the increase in HUSA's stock price is not simply a result of similar reduction in the discount rates applied to both HUSA and Petrominerales. Without any misrepresentations and misstatements by HUSA, one would expect a higher CAR for Petrominerales, as news on the Candelilla wells resolves the uncertainty of their productive capacity.

⁹² I estimate the relationship between HUSA's and Petrominerales's stock price returns over the period between November 9, 2009, and April 6, 2010, and find that, on average, a 1% increase in Petrominerales's stock price return, holding all else equal, is associated with a 0.41% increase in HUSA's stock price return. Therefore, netting the entire Petrominerales CAR from the HUSA CAR overstates the portion of HUSA's CAR attributable to Petrominerales's success.

⁹³ For simplicity, the calculation of the increase in HUSA's stock price implied by the HUSA's CAR does not include an adjustment to the expected excess return involving the variance of the excess return. See Esther Bruegger and Frederick

at a 4.6% significance level (i.e., under the null hypothesis that the CAR is zero, there is a 4.6% chance that the observed level of the CAR occurred by chance).⁹⁴ The Petrominerales CAR over this same period is 0.38, which implies a 47% CAR and is statistically insignificant.

- (62) The difference between the actual HUSA CAR and that for Petrominerales is 0.94, which implies that a 157% CAR can be attributable to the alleged misrepresentations. This abnormal return implies an increase in the HUSA stock price of \$6.27.

VI. Conclusion

- (63) I disagree with Ms. Allen's assertion that HUSA's stock price rise is attributable to Petrominerales's success. Ms. Allen ignores the fact that HUSA promoted the proximity of its CPO-4 Block to Petrominerales's fields to lend support to HUSA's false and misleading statements about its recoverable reserves. While Petrominerales's success may have affected investors' valuations of HUSA, their valuations of HUSA were fundamentally driven by the recoverable reserve estimate put forth by HUSA. As production from the Petrominerales fields increased, investors would have used this information to revise upward the likelihood that HUSA would be able to recover its stated estimates of its recoverable reserves.
- (64) The rise in HUSA's stock price cannot be explained by simple analogy to the nearby Petrominerales fields: Even if the recoverable reserves for the CPO-4 Block had been similar in quantity to the recoverable reserves of the nearby Petrominerales fields, this amount of reserves would not have been sufficient to substantially increase the valuation of HUSA's stock price above its level as of late 2009 or early 2010. Although it is conceivable that some news events about Petrominerales could have some impact on HUSA's stock price, that effect was mediated through HUSA's public statements that the Block had massive estimated recoverable reserves.
- (65) Ms. Allen's assessment of the materiality of alleged public disclosures of potential importance to HUSA's investors is flawed. Ms. Allen's event study methodology suffers from various flaws that cause her to erroneously find that HUSA's November 10, 2009, statement on estimated recoverable reserves at the CPO-4 Block was not material to investors. Further, Ms. Allen erroneously interprets the October 12, 2010, announcement as a corrective disclosure and fails to consider the cumulative

C. Dunbar, "Estimating Financial Fraud Damages with Response Coefficients," *Journal of Corporation Law* 35, no. 1 (2009): 24. Applying this adjustment would yield a higher increase in HUSA's stock price attributable to allegedly false and misleading statements that HUSA and its executives made over this period.

⁹⁴ The standard error of the CAR is calculated by using model (1) in my Initial Report estimated by OLS. Because the OLS model is based on the assumption of homoskedastic error terms, which I demonstrated not to be true, it overestimates the CAR's standard error and understates its statistical significance.

effect of statements made to individual investors or publicly disclosed by analysts and HUSA's promotional efforts.

- (66) I maintain the opinion from my Initial Report that the news announcements on November 10, 2009, February 16, 2010, April 7, 2010, and June 28, 2010, contained new information that was important to the company's investors.
- (67) In this rebuttal report, I have outlined my opinions and the bases for them. I reserve the right to expand, amend, and/or change this report based upon additional information that may be subsequently provided to or obtained by me.

Branko Jovanovic, Ph.D.

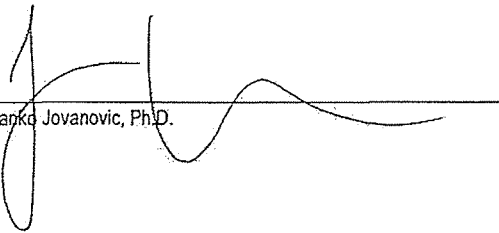


Exhibit 1. Materials relied upon

I incorporate by reference all materials listed in my Initial Report. Additional materials are listed below.

Legal documents

- Affidavit of David Snow, May 1, 2013.
- Expert Report of Branko Jovanovic, Ph.D., Nov. 21, 2014.
- Independent Technical Expert, Nov. 21, 2014
- Report of Lucy P. Allen, Nov. 21, 2014.

SEC filings and corporate annual reports

- Petrominerales, Annual Information Form, 2008
- Petrominerales, Annual Information Form, 2009
- Petrominerales, Annual Information Form, 2010
- Gulf United Energy, Inc., Current Report (Form 8-K) (Aug. 5, 2010).

Discovery documents (bates number beginning)

- GRE00140955 (company-wide email from Philip McPherson, Analyst, Global Hunter Securities LLC, "Petrominerales Produces Candelilla-2 at over 15,800 BOPD and Cases Yenac-1 as Another Potential Oil Well," and attachment *2010_02_14_Candelilla-2_on_Production_FINAL.pdf* (Feb. 15, 2010)).
- GRE00141171 (email from Greg Tuerk, Managing Director-Institutional Sales, Global Hunter Securities LLC, to undisclosed recipients, "Petrominerales Produces Candelilla-2 at over 15,800 BOPD and Cases Yenac-1 as Another Potential Oil Well," and attachment *2010_02_14_Candelilla-2_on_Production_FINAL.pdf* (Feb. 16, 2010)).
- SEC-Northeast-E-0006447 (email from John Terwilliger, Chief Executive Officer, HUSA, to Lee Tawes, Northeast Securities, "Petrominerales Announces 11,500 Barrel Per Day Well in Close Proximity to HUSA's CPO-4 Block" (Jan. 4, 2010)).
- SEC-HO1107-006062 (email from James Jacobs, Chief Financial Officer, HUSA, to William Doyle, Columbia Management, "Petrominerales Announcement" and attachment *2010_01_03_Candelilla_Update.pdf* (Jan. 4, 2010)).

Other resources

- Bruegger, Esther, and Frederick C. Dunbar. “Estimating Financial Fraud Damages with Response Coefficients.” *Journal of Corporation Law* 35, no. 1 (2009):11–69.
- MacKinlay, A. Craig. “Event Studies in Economics and Finance.” *Journal of Economics Literature* 35, no. 1 (1997): 13–39.
- Tabak, David I., and Frederick C. Dunbar. “Materiality and Magnitude: Event Studies in the Courtroom.” NERA Working Paper no. 34, Apr. 1999. Available at <http://www.nera.com/content/dam/nera/publications/archive1/3841.pdf>.
- Snow, David G. “Houston American Energy.” Energy Equities Inc., Feb. 15, 2010.
- Email from Mark Oakes, counsel for HUSA, Fulbright & Jaworski LLP, to Melissa Armstrong, SEC attorney, “Exchange of Expert Reports” (Nov. 25, 2014).



REBUTTAL REPORT

United States Securities and Exchange Commission
Administrative Proceeding File No. 3-16000

In The Matter Of
Houston American Energy Corp., et al.

Report Prepared By

Michael L. Wiggins, Ph.D., P.E.
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Michael L. Wiggins December 12, 2014
Michael L. Wiggins, Ph.D., P.E. Date



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Introduction

1. I have been asked by Fulbright & Jaworski LLP (Fulbright) to review and respond to the Technical Expert Report prepared by Netherland, Sewell & Associates, Inc. (de Zoeten Report)¹ in this matter and to determine if it changes any of my opinions or conclusions presented in my Technical Expert Summary(Wiggins Report).²

Overview

2. The de Zoeten Report does not change any opinions or findings in my prior report. After reviewing and considering the de Zoeten Report, I am still of the opinion that: (1) Houston American Energy Corp.'s (Houston American) estimate of "1 to 4 billion barrels" of recoverable reserves was reasonable; (2) 500 STBO/acre-ft is a reasonable recovery factor in the western Llanos Basin area; (3) use of the term "recoverable reserves" in the November 2009 presentation was not misleading; and, (4) a value metric of \$20 per barrel of recoverable oil was reasonable when evaluating oil resources in the Llanos Basin in late 2009 or early 2010.
3. I disagree with de Zoeten's opinion that "an estimated '1 to 4 billion barrels' of recoverable reserves was not supported by available geologic data and exceeded reasonable benchmarks when compared to the volume of discovered hydrocarbons from the entire Llanos Basin." I note that under Petroleum Resources Management System (PRMS) terminology adopted by de Zoeten in his report, Houston American's estimate would be a "resource" estimate, yet de Zoeten misleadingly compares the estimate to proved reserve estimates in Colombia to claim it exceeded reasonable benchmarks. Further, de Zoeten states in his report that most of CPO-4 is in the Deep Llanos Province of the Llanos Basin. His summary indicates the Deep Llanos is characterized by "strong aquifer support" with "high recovery factors" that range from "230 to 500 BBL/ac-ft." Applying this range of recovery factors to the approximately one billion barrel estimate contained in SK Energy's (SK) April 2009 presentation yields an estimated range that closely resembles the range provided by Houston American.
4. I disagree with de Zoeten's opinion that Houston American's claim that CPO-4 "contained over '100 leads or prospects' ... understated the degree of risk or uncertainty associated with the Block" and that CPO-4 did not contain over "100 leads or prospects." First, de Zoeten's opinion hinges entirely on the statement that "[w]ithin the petroleum industry, there is a broad consensus about the meaning of these terms," which is not true. Companies use these terms in differing ways, even the SEC has not adopted these terms for use in SEC filings (and the challenged estimate was not in an SEC filing). Houston American provided in its SEC filings a common definition of prospects that includes areas "that will require substantial additional seismic data processing and interpretation." Second, even accepting the definitions of "leads" and "prospects" set forth by de Zoeten, CPO-4 contained over 100

¹ de Zoeten, 2014: Independent Technical Expert in the Matter of Houston American Energy Corp., et al, File Number 3-16000, 21 November 2014.

² Wiggins, 2014: Technical Expert Summary: Assessment of Oil and Gas Resource Statements, Llanos Basin, Colombia, South America, 21 November 2014.

leads or prospects. De Zoeten does not dispute that there were over 100 closures on CPO-4, and his definition of "lead" is extremely broad and refers to a "potential accumulation" that is "poorly defined and requires more data acquisition and/or evaluation." I disagree with de Zoeten's efforts to characterize the closures identified by SK and Houston American as "plays," a term that typically refers to an entire geographical region or trend with similar characteristics (and not to specific closures or structures on a concession mapped with the aid of seismic data).

5. I disagree with de Zoeten's opinion that the use of the term "recoverable reserves" somehow "understated the degree of risk and uncertainty associated with the Block" and that "reserves are uniformly understood to be quantities of oil that have been discovered and deemed to be commercially producible." The word "reserves" is often used to describe exploration assessments or pre-drill estimates, not PRMS reserves. There is no requirement to use a PRMS definition of reserves outside SEC filings, and it was abundantly clear from Houston American's November 2009 presentation (as well as a number of other public documents) that CPO-4 was an exploratory concession with exploratory wells to be drilled in the future.
6. I disagree with de Zoeten's opinion that Houston American's estimate of "1 to 4 billion barrels of recoverable oil was not supported by SK's evaluation of the Block between April and November 2009," and that work conducted during this period "had an overwhelmingly negative impact." Although not acknowledged by de Zoeten in his report, SK's own estimates in October and November 2009 *were higher* than the approximately one billion barrel estimate SK shared with Houston American in April 2009. Seismic reprocessing gave SK additional confidence in its leads or prospects, and Petrominerales released information showing that a nearby concession, Corcel, was producing oil at high rates and from sands not included in the April 2009 estimate provided to Houston American. One of the sands, the Guadalupe, was several times thicker than the thickest sand included in the April 2009 estimate provided to Houston American.

I. Use of the Term "Recoverable Reserves" Was Not Improper or Misleading

7. De Zoeten relies on PRMS to support his opinion that Houston American's estimate of "recoverable reserves" understated the risk of the exploration venture. It is clear from the November 2009 investor presentation and regulatory filings that Houston American's references to "recoverable reserves" did not apply or purport to apply PRMS definitions. Houston American was also not required or obligated by any SEC rule or regulation to apply PRMS definitions in the November 2009 investor presentation, which was not a SEC filing. Since it was clear from the November 2009 presentation that Houston American's reference to "recoverable reserves" did not refer to PRMS reserves, and since Houston American was not required to use PRMS reserve definitions, de Zoeten's analysis, and in fact the entire de Zoeten report (which relies wholesale on PRMS) does not withstand scrutiny.
8. De Zoeten asserts that PRMS is the standard industry terminology for discussing reserve and resource volumes and that reserves are "uniformly understood to be quantities of oil

that have been discovered and deemed to be commercially producible” (the PRMS definition).³ In other words, according to de Zoeten, definitional terms that expressly apply only to SEC filings must be used in non-filings as well because there is a “broad consensus” on the meaning of these words. While the PRMS definition of “reserves” is the definition used by reserve engineers for preparing regulatory filings, the word “reserves” is often used in exploration assessments or pre-drill estimates of resource volumes that may be discovered in an exploration venture.⁴ The SEC has never implemented any regulation requiring the use of PRMS terminology in non-SEC filings.

9. Of note, PRMS was not even adopted by the Society of Petroleum Engineers (SPE) until March 2007, the SEC’s rules allowing companies to report in their SEC filings probable and possible reserves as defined by PRMS did not go into effect until 1 January 2010,⁵ and it is not true that by November 2009 (or even today) there was a broad consensus on the meaning of the terms defined by PRMS. In fact, although the SEC now follows the PRMS definition of reserves for SEC filings (and only in SEC filings), the SEC has never adopted the PRMS resource definitions relied on by de Zoeten in his report, including the definitions of “lead,” “prospect,” and “play.”
10. SK consistently used the word “recoverable reserves” to mean the same thing as resources in its own presentations. This is inconsistent with de Zoeten’s opinion that reserves are “uniformly understood to be quantities of oil that have been discovered and deemed to be commercially producible.” When one reviews the context of SK’s presentations, there is no doubt its estimates are exploration assessments or pre-drill estimates of resource volumes and not “reserves” as defined by SEC or PRMS guidelines.
11. As explained in my original report, the SEC recognized that industry uses the word “reserves” in contexts that are not consistent with its definition of reserves applicable to SEC filings: “We have seen in press releases and web sites disclosure language by oil and gas companies which would not be allowed in a document filed with the SEC.”⁶ One of the specific examples of such language provided in the release is the term “recoverable reserves.” The release does not suggest or imply that the use of such terms is improper or contrary to SEC rules. By acknowledging the use of the word reserves in a non-SEC context in press releases and web sites (non-SEC filings) and providing cautionary language to accompany such use, it is clear the SEC understood that the word “reserves” has multiple meanings depending on the context in which it is used. This contradicts de Zoeten’s statement that reserves has a uniform definition accepted by all organizations and petroleum professionals.
12. Table 1 of my original report is a chart of three SEC comment letters advising issuers to use the SEC’s cautionary language when using “recoverable reserves” in ways other than that

³ De Zoeten, 2014: Pages 7-10.

⁴ Wiggins, 2014: Tables 1 and 2.

⁵ Lee, 2009: “Modernization of the SEC Oil and Gas Reserves Reporting Requirements,” SPE Economics & Management Journal, SPE, October 2009.

⁶ Excerpt Current Issues and Rulemaking Projects Outline, Securities and Exchange Commission (Nov. 14, 2000), available at <http://www.sec.gov/divisions/corpfin/guidance/cfoilgasinterps.htm>).

defined by the SEC rules for filings, indicating the SEC understands there is not a uniform usage of the word reserves.⁷ In each of these examples, companies used “recoverable reserves” to describe pre-drill estimates, also referred to as resource estimates. Table 2 of my original report provides examples where exploration and production companies used the terms reserves, estimated recoverable reserves, and other variants to describe exploration assessments or pre-drill estimates of resource volumes contrary to de Zoeten’s claim. In each example, the context shows that these estimates of reserves do not conform to the PRMS definition of reserves. These examples indicate that the word “reserves” does not have a specific, industry-accepted definition in all contexts.

13. Houston American’s estimate is expressly based on “leads or prospects,” which indicates without doubt that it was a pre-drill estimate and did not refer to oil that had been “discovered and deemed to be commercially producible” (which is the PRMS definition of reserves proffered by de Zoeten). The estimate also refers to a broad range of 1 to 4 billion barrels, rather than the specific amounts of “proved,” “probable,” and “possible” volumes used under the PRMS system. Despite the fact that it is clear from the estimate itself that it was not and did not purport to be PRMS reserves, and despite the fact that it is clear that this was a pre-drill estimate, de Zoeten applies PRMS definitions so he can reach an opinion that use of the term “recoverable reserves” understated the risk.
14. De Zoeten also states that the November 2009 investor presentation “does not indicate . . . that the Block is an exploration project.”⁸ This statement is false. As stated above, the challenged estimate is expressly based on “leads or prospects,” which shows this was an exploration project. Further, numerous other statements in the November 2009 investor presentation show that CPO-4 was an exploration project. Slide 13, for example, showed that project was in the beginning of “Phase 1” of an “Exploration Period and Work Obligation.” Phase 1 was shown as a three-year period, which would include acquiring more seismic and drilling “2 Exploration Wells.” Various other slides and statements, including the 2010 budget, and the disclaimer on the first page, show this was an exploration project. In addition, various other statements outside the November 2009 investor presentation, including statements by Houston American in its SEC filings, and statements by analysts, demonstrate that this was an exploration project and the market understood that was the case.⁹
15. In my opinion, de Zoeten improperly applies PRMS to Houston American’s statements regarding the evaluation of CPO-4 and ignores the context of Houston American’s statements. This failure to consider Houston American’s statements within the context of an unrisks, exploration venture, which is clearly indicated in the November 2009 investor presentation, shows that de Zoeten’s analysis is not valid.

⁷ See also HA-CORPFIN-000000859, 5 February 2003 SEC Comment Letter to Murphy Oil Corporation advising that issuers should use the cautionary language in non-SEC communications that contain statements about “preliminary,” “predrill,” or “recoverable reserves” among others.

⁸ De Zoeten, 2014: ¶84.

⁹ Houston American 8-K filed Oct. 16, 2009; Houston American 10-Q filed November 5, 2009; SEC Exhibit 45 - Global Hunter Analyst Report dated October 19, 2009; Global Hunter Analyst Report dated November 9, 2009.

II. Houston American's Estimate Was Supported By Geological Data And Did Not Exceed Reasonable Benchmarks

16. De Zoeten challenges Houston American's recoverable reserve (resource) estimate of "1 to 4 billion barrels" on the grounds that the estimate was not supported by technical data and was not consistent with "reasonable benchmarks." Houston American based its estimate of 1 to 4 billion barrels on data and analysis undertaken by SK and its own experience in Colombia, and the estimate was reasonable.
17. In its April 2009 report provided to Houston American, SK estimated recoverable reserves of 974 MMBO covering 22 identified geologic structures that included only a portion of the potential hydrocarbon horizons.¹⁰ SK's estimate used a unit recovery rate of 150 STBO/acre-ft. De Zoeten offers the opinion that SK's estimate of unit recovery rate was reasonable and calculated according to industry norms. In addition, de Zoeten discusses the range of recovery rates from 60 STBO/acre-ft to 500 STBO/acre-ft to support SK's April 2009 estimate of unit recovery rate.
18. In his discussion, de Zoeten does not include the entire range of unit recovery rates from the sources he cited. For example, de Zoeten states "Lonquist & Co. LLC, provided data with ROs as low as 56 BBL/ac-ft;" however, he fails to mention that this same reference has unit recovery rates as high as 1,372 STBO/acre-ft with an arithmetic average recovery rate of 454 STBO/acre-ft.¹¹ De Zoeten also refers to unit recovery rates for three blocks that Houston American held interests in to support the SK value. However, de Zoeten failed to address two other fields in this reference in which Houston American had an interest, the Cabiona and Dorotea Blocks. The range of recovery rates provided by de Zoeten was 149 STBO/acre-ft to 255 STBO/acre-ft, which becomes 149 STBO/acre-ft to 680 STBO/acre-ft if the two additional blocks are included.¹² De Zoeten also did not consider the Caracara concession where Houston American had an interest, which had a range of recovery factors from 147 STBO/acre-ft to 650 STBO/acre-ft, with an average of 438 STBO/acre-ft for probable reserves.¹³
19. In his discussion of the Llanos Basin, de Zoeten indicates the majority of CPO-4 lies within the Deep Llanos Province where there is strong aquifer support and high recovery factors. Knowing that a significant portion of CPO-4 is subject to strong aquifer support as evidenced by offsetting production, one would expect unit recovery rates to be higher than SK's 150 STBO/acre-ft. By failing to report the complete range of recovery rates, de Zoeten fails to provide the proper context in which to evaluate SK's unit recovery rate and estimate a range of potential resource volumes for CPO-4.

¹⁰ SK Energy, 2009a: "CPO-4 in Llanos Basin Colombia – Farm-in Opportunity," presentation dated 13 April 2009. SK had another April 2009 presentation estimating recoverable reserves of approximately 2,500 MMBO from 12 of 22 identified structures.

¹¹ Lonquist & Co., LLC, 2012: "Oil Recovery Overview, Llanos Basin, Republic of Colombia," letter to Houston American Energy Corp., 12 April 2012.

¹² Petrotech Engineering Ltd., 2010a: Evaluation of the Interests of Hupecol Operating in the Cabiona, Dorotea, Laz Garzas, Leona and La Cuerva Exploration & Production Blocks in the Llano Basin, Colombia," 8 March 2010.

¹³ DeGoyler and MacNaughton, 2005: Appraisal Report as of August 31, 2005 on Reserves of the Peguita and Elizita Fields in the Caracara Block, Llanos Basin, Colombia," dated 27 February 2006.

20. Houston American provided a range of resource estimates from 1,000 MMBO to 4,000 MMBO based on SK's analysis of the technical data and its use of a unit recovery rate of 150 STBO/acre-ft on the low end and Houston American's estimate of 500 STBO/acre-ft on the high end. De Zoeten agrees with the unit recovery rates used by Houston American when he refers to unit recovery rates ranging from 230 STBO/acre-ft to 500 STBO/acre-ft in the Deep Llanos Province.¹⁴ Contrary to de Zoeten's opinion that Houston American understated the uncertainty associated with its volume estimate, this range of volumes provided by Houston American indicates that it was attempting to capture a range of potential resource volumes for CPO-4.
21. In his report, de Zoeten discusses historical reserve estimates for the country of Colombia and specific proved reserve estimates for the Llanos Basin as benchmarks for Houston American's resource estimates. In this discussion, de Zoeten focuses on proved reserve estimates and compares them to Houston American's unrisksed resource estimates essentially comparing an "apple to an orange" to suggest that Houston American's resource estimate far exceed proved reserve estimates and therefore was unrealistic. This comparison is incorrect. Using de Zoeten's proposed terminology, Houston American's resource estimate is a "resource" estimate and de Zoeten should have compared it to resource estimates, not to estimates of proved reserves. Houston American never represented that its estimate was proved reserves and noted on page six of the November 2009 investor presentation that Colombia had an estimated 1.36 billion barrels of proved reserves.
22. Comparing Houston American's estimate to other resource estimates for Colombia and for the Llanos Basin shows that it does not exceed reasonable benchmarks. For example, in 2010 Canacol, an NSAI client, estimated that one field in Colombia in which it owned an interest contained 27.4 billion barrels of resources.¹⁵ In 2009, the National Hydrocarbon Agency of Colombia (ANH) estimated the exploration potential of the Llanos Basin to range from 4.6 to 41.3 billion barrels.¹⁶ These resource estimates, unlike the proved reserve estimates referred to by de Zoeten, provide analogous benchmarks to Houston American's estimate. Of note, CPO-4 is one of the larger concessions in the Llanos Basin and it was SK's number one target in Colombia after evaluating a number of other concessions. Houston American's estimate of 1 to 4 billion barrels did not exceed reasonable benchmarks.

III. CPO-4 Contained Over 100 Leads Or Prospects And de Zoeten's Effort To Characterize Leads As "Plays" Does Not Withstand Scrutiny

23. De Zoeten does not dispute that SK identified 122 closures in three reservoirs on CPO-4.¹⁷ De Zoeten, however, claims that "[o]nly a small percentage of SK's closures qualify as 'leads'" and that "[n]one qualify as 'prospects,' and none form a valid basis for a reserve

¹⁴ Tudor, Pickering, Holt & Co., 2011: "Update on Colombia," 2011.

¹⁵ Dow Jones News article regarding Canacol Energy Ltd. and resource estimates for Capella Field, Colombia. Embedded in an e-mail from Stojanik to Terwilliger dated 08 September 2010.

¹⁶ ANH, 2009: Prospectivity of the Basins Offered for the Open Round Colombia 2010, ANH Special Publication, 2009.

¹⁷ De Zoeten, 2014. ¶71.

estimate.” First, it should be noted that de Zoeten is apparently using the PRMS definition of “reserves,” which does not apply here, to reach an opinion that the volumes determined by SK do not form a valid basis for a reserve estimate. Using de Zoeten’s proposed PRMS definitions, this was a “resource” estimate, not a “reserve” estimate, and de Zoeten explains in his report that resource estimates are made “even for areas within sparsely drilled, data-poor basins.”¹⁸

24. Second, de Zoeten relies on PRMS definitions of “prospects,” “leads,” and “plays” to support his opinion that there were no prospects and few leads. Even if one assumes these terms have the meanings ascribed to them by PRMS, de Zoeten’s contention that the closures were “plays” and not leads or prospects is demonstrably wrong. The PRMS definition of “lead” is extremely broad and refers to a “potential accumulation” that is “poorly defined and requires more data acquisition and/or evaluation.” I disagree with Mr. de Zoeten’s efforts to characterize the closures as “plays,” a term that refers to an entire geographical region or trend with similar characteristics (and not to closures on a specific concession mapped with the aid of seismic data). PRMS defines play as “a project associated with a prospective trend of potential prospects,” not closures mapped on a specific concession.
25. Third, although the closures mapped by SK were clearly leads and prospects as defined by PRMS, the terms leads and prospects do not have a uniform definition within the industry as suggested by de Zoeten. Further, PRMS does not provide specific guidelines such as those used by de Zoeten to discriminate between leads and prospects. PRMS simply indicates a lead is a “potential accumulation that is currently poorly defined” while a prospect is a “potential accumulation that is sufficiently well defined to represent a viable drilling target.” The mapped accumulation is determined to be a lead or prospect depending on the level of data and analysis available and the judgment of the technical personnel involved in the evaluation. In this case, SK had defined specific closures based on geologic and seismic data and determined these closures represented leads and prospects, and it referred to them as such in its presentations and reports. In fact one of the closures, referred to as the Cachirre prospect, was later drilled based solely on the 2-D seismic data available in 2009.
26. Houston American defined “prospects” in its 2009 year-end SEC Form 10-K: “Our prospects are properties on which we have identified what we believe, based on available seismic and geological information, to be indications of oil or natural gas. Our prospects are in various stages of evaluation, ranging from a prospect that is ready to drill to a prospect that will require substantial additional seismic data processing and interpretation.”¹⁹ Thus, the work by SK and Houston American satisfied this definition of prospect. The October 2009 SK report indicates it has identified 53 structures on CPO-4 that contained 114 leads or prospects in three of six potentially hydrocarbon producing horizons.²⁰

¹⁸ De Zoeten, 2014. ¶39.

¹⁹ Houston American, 2010: SEC Form 10-K for the ended December 31, 2009.

²⁰ SK Energy, 2009d: “CPO-4 Llanos Basin Colombia – Farm-in Opportunity,” presentation dated 21 October 2009.

27. In his analysis, de Zoeten criticizes the work of SK by simply reviewing SK's presentations and declaring that the majority of SK's leads or prospects did not meet his interpretation of leads and prospects under PRMS. As previously noted, Houston American's definition of prospect is the proper reference definition in this analysis and not de Zoeten's interpretation of PRMS. Even using PRMS, however, de Zoeten's proffered limitations on what constitutes a "lead" are not specified anywhere in PRMS. De Zoeten, for example, claims that twenty-five percent of the leads should not be leads because they are supported by one seismic line. While the accuracy of this statement is not possible to determine without actually examining all the available seismic (which de Zoeten did not do), it is common to base leads on one seismic line. Indeed some professionals distinguish between a lead and prospect on the basis of whether it has one seismic line (a lead) or two (a prospect).²¹
28. In addition, de Zoeten admits that he did not perform an independent analysis of well log and seismic data, which limits the quality of his analysis. Despite the fact that he has not reviewed the seismic data, de Zoeten declares that none of the closures on CPO-4 were prospects and asserts that SK (and therefore Houston American) mischaracterized certain closures as leads. I disagree with de Zoeten's analysis of CPO-4 and SK's technical work, which was not based on any analysis of the underlying data.
29. It is my opinion that it was reasonable for Houston American to rely on SK's technical work mapping leads and prospects on CPO-4. SK was one of the largest Asian energy companies and had exclusive control of all operations and activities associated with CPO-4 and had a contractual obligation, through the Joint Operating Agreement, to provide geological and geophysical analyses and maps to Houston American.²² SK's maps of leads and prospects were based on extensive analysis of over 1,800 km of seismic data. It had reprocessed 1,289 km of this seismic data to improve the quality of the interpretation and analysis. From this work, SK provided information detailing this additional analysis and maps showing leads and prospects from this work.²³
30. In my opinion, de Zoeten's analysis of the leads or prospects on CPO-4 is inconsistent with the technical evaluation performed by SK and Houston American's definition of prospect. Houston American did not mischaracterize the 100 leads or prospects on CPO-4, nor mislead the reader regarding the risk and uncertainty associated with its resource estimates for CPO-4.

IV. The Outlook For CPO-4 Improved Throughout 2009 – It Did Not Deteriorate

31. De Zoeten opines that additional technical work undertaken by SK and Houston American between SK's April presentation and November 2009 had a negative impact on CPO-4. This opinion is not supported by the analyses conducted during this seven month period.

²¹ See, e.g., Alfred Kjemperud, *Prospect and Play Analysis*; Petrotech, *Evaluation of the Interests of Consolidated AGX Resources Corp. in the Arauca Block in Llanos Basin in Colombia*, June 1, 2007 (discussing leads identified with one seismic line).

²² Joint Operating Agreement.

²³ SK Energy, 2009b: "1st Technical Committee Meeting: CPO-4 Block, Colombia," presentation dated September 2009; SK Energy, 2009c: "Technical Committee Meeting: CPO-4 Block, Colombia," presentation dated 14 October 2009.

From this additional evaluation, the number of leads or prospects increased resulting in an increased resource estimate by SK from 974 MMBO²⁴ to 1,274 MMBO.²⁵ The reprocessing of the seismic data provided SK and Houston American confidence that structures and closures initially identified were still viable following the analysis. The average areal extent of the potential closures were reduced, which is common in exploration ventures as more data is collected and analyzed; however, additional closures were identified during the analysis. In addition, SK increased its unit recovery rate as it continued its evaluation, an indication of increased confidence in potential hydrocarbon recovery. The positive drilling and production results in the adjoining Corcel and Guatiquia blocks also encouraged SK and Houston American as they continued their evaluation of CPO-4.

32. The analysis of CPO-4 from Houston American's initial involvement in mid-2009 through its November 2009 presentation was positive. The parties continued to evaluate the geologic and seismic information including plans to acquire additional seismic data. In addition, the positive results at Corcel and Guatiquia enhanced the prospectivity of CPO-4 as an exploration prospect. The reprocessing of the seismic data resulted in increasing the number of structures to 53 from 22 while the number of leads or prospects increased from 56 to 114. This was positive from an exploration perspective as one has more opportunities to discover hydrocarbons. During this period, the evaluation of CPO-4 became more positive, not negative, as stated by de Zoeten.

²⁴ SK had another April 2009 presentation estimating recoverable reserves of approximately 2,500 MMBO from 12 of 22 identified structures.

²⁵ De Zoeten also asserts that the volume reduction "is clearly reflected in documents that were presented at Technical Committee Meetings ... in September and October 2009 that we understand to have been attended by Houston American's Chief Executive Officer." The September 2009 presentation contains volume information for just one sand, the Mirador. The October 2009 presentation does not discuss volumes at all. A third October 2009 presentation cited by de Zoeten, the "SK Energy Farm-in Opportunity," was not presented to Houston American.

TECHNICAL EXPERT SUMMARY

Assessment of Oil and Gas Resource Statements
Llanos Basin
Colombia, South America

Report Prepared By

Michael L. Wiggins, Ph.D., P.E.
Texas Registered Engineering Firm F-16321



Michael L. Wiggins November 21, 2014
Michael L. Wiggins, Ph.D., P.E. Date



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**Assessment of Oil and Gas Resource Statements
Llanos Basin
Colombia, South America**

Introduction

1. Fulbright & Jaworski LLP (Fulbright) has requested that Michael L. Wiggins provide expert assistance in the field of petroleum engineering related to the estimation of hydrocarbon resources. In particular, Fulbright has requested assistance with understanding these estimates for reservoirs located in the Llanos Basin of Colombia, South America in relation to certain information provided by Houston American Energy Corp. (Houston American) in late 2009 and 2010.
2. In providing this assistance and forming the opinions presented herein, various documents furnished by Fulbright, publicly available information, and non-confidential information contained within Wiggins' files have been reviewed and analyzed.
3. Wiggins holds B.S. (1979), M.Eng. (1988), and Ph.D. (1991) degrees in petroleum engineering from Texas A&M University and is a registered professional engineer in the states of Texas and Oklahoma. Wiggins' professional experience covers approximately 35 years and spans the traditional areas of petroleum engineering including reservoir, drilling, and production engineering. He has been elected a Distinguished Member of the Society of Petroleum Engineers (SPE) and served on its Board of Directors. He has served as an expert in U.S. Federal and State Court proceedings, State regulatory hearings, and arbitration matters.
4. Wiggins' experience includes 15 years as a professor of petroleum engineering at the University of Oklahoma (1991-2006) where he taught courses and conducted research on topics related to reservoir engineering, estimating hydrocarbon resources, waterflooding, production operations, economic evaluation of oil and gas projects, and reservoir management. He has experience with international and independent exploration and production (E&P) companies and has provided consulting services for national oil companies, international oil companies, international service companies, and independent E&P companies. In addition, he teaches technical short courses related to reservoir engineering, estimating hydrocarbon resources, petroleum project evaluations, waterflooding, and production operations on an international basis.
5. Wiggins has assisted with the assessment and evaluation of several projects in Colombia including reservoirs located in the Llanos Basin. In this capacity, he has provided technical reservoir engineering services associated with evaluating exploration projects and estimating potential hydrocarbon resources for these projects. In addition, he has evaluated producing reservoirs to estimate original hydrocarbons-in-place, ultimate hydrocarbon recovery, and hydrocarbon resources and reserves.

6. Wiggins serves as a technical editor for several specialty journals including those for SPE. For three years, he served as the executive editor for the *SPE Production & Facilities* journal, which covered technical topics related to oil and gas production, separation processes, surface equipment, and facilities. He has authored numerous articles in his areas of technical expertise. Wiggins' resume is included as Appendix A.
7. Wiggins joined William M. Cobb & Associates, Inc. (Cobb & Associates) in Dallas, Texas as a Senior Vice President in 2006 where he provided technical consulting services to the oil and gas industry. He was elected President of the firm in January 2011. Cobb & Associates was organized in 1983 and is an international oil and gas consulting firm offering petroleum engineering and geological services to the industry. It provides reservoir engineering services to large and small E&P companies, international oil companies, national oil companies, banks, and financial institutions. It also offers litigation support and provides technical short courses on an international basis. In March 2013, Wiggins joined Mid-Con Energy Operating LLC as Executive Vice President and was named President of the firm in August 2014. In this capacity, he directs the operations of an independent E&P company headquartered in Dallas, Texas.
8. This report has been limited to those issues for which Wiggins has the necessary expertise to investigate, analyze, or opine. In addition, he has made all the inquiries that are relevant and appropriate in forming the opinions offered here in responding to the requests made by Fulbright. To his knowledge, no significant matters have been withheld in preparing this report related to the scope of this investigation. Wiggins is being compensated at the rate of \$350 per hour for his time on this matter and his compensation is not contingent on the opinions issued in this report.
9. This report has been based on data and information available to Wiggins at the time the report was generated; however, he reserves the right to amend or supplement this report if additional facts or data comes to his attention relevant to his analysis and opinions. The documents that are referred to in this report are listed as References at the end of this report.

Background

10. In December 2008, SK Energy (SK) obtained an exploration concession in the western part of the Llanos Basin from the government of Colombia. This concession is referred to as CPO-4 and covers approximately 345,400 acres with an initial exploration period of six years to acquire and process seismic data, drill at least five exploration wells, and evaluate the concession for commercial hydrocarbon production. At the time of this concession, there had been one exploration well drilled on CPO-4, the Intercol Negritos No. 1. This well, which is located in the far southeast corner of the concession, was drilled and abandoned in 1962.¹
11. Following a preliminary evaluation, SK began to solicit potential partners to explore the CPO-4 concession in early 2009 through a three-page flyer providing a description of the concession, its hydrocarbon potential, and a timeline for data room access and negotiating

¹ SK Energy, 2009b: "CPO-4 in Llanos Basin Colombia – Farm-in Opportunity," presentation dated 13 April 2009.

terms of an agreement.² This three-page flyer indicates CPO-4 is in a proven hydrocarbon area surrounded by producing fields and contains multiple structures with more than three reservoir horizons in each structure. In addition, SK prepared a management presentation dated 13 April 2009 to provide a technical overview of the concession.³

12. The April presentation includes a survey of the regional geology, stratigraphy across CPO-4, reservoir data from nearby reservoirs and fields, and an overview of a high-level screening of potential exploration leads or prospects in the concession. In this document, SK indicates there are multiple reservoir targets (leads or prospects) in each structure with qualitative information provided for 22 of these structures.⁴ From a technical perspective, this document was a qualitative screening of the hydrocarbon potential of CPO-4 to encourage additional review of the concession by interested parties.
13. In mid-2009, Houston American entered into a farmout agreement with SK in which the company agreed to pay 25 percent of all past costs plus an additional 12.5 percent of the seismic acquisition costs in order to earn an undivided 25 percent interest in the CPO-4 concession.⁵ This agreement was followed by a technical committee meeting led by SK in October 2009.⁶ At this meeting, SK provided additional technical information and proposed plans for obtaining additional seismic data for analyzing the concession. While primarily covering geologic and geophysical data, the meeting presentation indicates additional formations of exploration interest to those reviewed in the April presentation. These additional formations would increase the exploration value of the CPO-4 concession relative to the review provided in April.
14. Houston American provided an investor presentation in November 2009 that indicates it had entered into an agreement with SK to explore CPO-4. Houston American provided a disclaimer at the beginning of the presentation related to the risks and uncertainties of forward-looking statements, which would be provided in the presentation. In addition, Houston American clearly indicated it would present hydrocarbon volume estimates that were not proved reserves and could not be used in the US Securities and Exchange Commission (SEC) filings. Furthermore, the statements indicated all volumes were unrisks, undiscounted, unadjusted and subject to substantial uncertainty. In this context, Houston American indicated "CPO-4 Block consists of 345,452 net acres and contains over 100 identified leads or prospects with estimated recoverable reserves of 1 to 4 billion barrels."⁷
15. Wiggins has been engaged by Fulbright to assist in responding to claims presented by the SEC in its Order Instituting Proceedings (OIP) relative to Houston American's estimates of potential hydrocarbon resources associated with its interest in CPO-4. Specifically, Fulbright has asked him to review the SK presentations, Houston American's November 2009 investor

² SK Energy, 2009a: "Farm-in Opportunity: Block CPO-4, Llanos Basin in Colombia," flyer prepared early 2009.

³ SK Energy, 2009b.

⁴ As used in SK's presentations, a lead or prospect represents a potentially hydrocarbon bearing formation located on a geologic structure that may serve as a hydrocarbon trap. In this context, a structure that contains two potential hydrocarbon bearing formations represents two leads or prospects.

⁵ Houston American Energy Corp., 2009: "Investor Presentation," November 2009, page 12.

⁶ SK Energy, 2009c: "Technical Committee Meeting: CPO-4 Block, Colombia," presentation dated 14 October 2009.

⁷ Houston American, 2009: pages 1 and 12.

presentation, OIP, information obtained from various parties involved in this matter, and public information regarding hydrocarbon resources in the Llanos Basin and opine on the reasonableness of Houston American's statements relative to the CPO-4 concession.

16. Exploration ventures carry great uncertainty and are high risk. Oil and gas exploration companies use regional geophysical and geological information, with limited drilling and hydrocarbon production information, in an attempt to identify potential hydrocarbon accumulations. This process includes a high-level survey to identify prospective production basins, regions, or areas. From this review, leads or prospects are identified for additional evaluation that may eventually result in the drilling of an exploration well. Technical personnel involved with these activities understand there is a wide range of potential outcomes in identifying these leads or prospects from drilling a dry hole to finding an uneconomic or marginal hydrocarbon accumulation to developing a world-class reservoir.
17. As a result, when industry professionals discuss exploration activities they understand the wide range of potential values that may be assumed in the preliminary evaluation of a particular project. Due to this range of potential values, organizations and individuals are driven by the corporate culture in which they have developed their experience and that organization's or individual's tolerance for risk. If the corporate culture is mildly tolerant of risk, then its perception and value of a particular lead or prospect will be less than that of one that has a higher tolerance for risk. In addition, if the corporation has past experience in a particular area, it will have a greater understanding of the uncertainties than one that has little experience in the area, which tends to make the less experienced organization more conservative in its evaluation of a particular lead or prospect.
18. In the case of the CPO-4 concession, Houston American had been operating in Colombia since 2001 through its partners, participating in drilling approximately 94 wells with a 67 percent success rate to November 2009. Based on its activities in the Llanos Basin, Houston American developed an understanding of the geological and production characteristics of the Basin through actual field operations. This first-hand knowledge provided Houston American and its management a perspective to review the exploration expectations provided by SK in 2009. Based on its experiences, Houston American was able to judge the information and develop its own perspective on the value of the CPO-4 concession to its operations.
19. In addition, during the period from 2007 through 2010, Petrominerales Ltd. (Petrominerales) discovered oil in the Corcel and Guatiquia concessions, which are on the northeast border of CPO-4.⁸ Due to its operations in the Llanos Basin, Houston American was aware of Petrominerales' activity at Corcel and Guatiquia and closely monitored published results. These discoveries enhanced the quality of the exploration leads or prospects on CPO-4 and provided direct evidence of commercial production in the Mirador, Guadalupe, and Ubaque formations. At Corcel, Petrominerales reported test rates from a number of wells ranging from 1,200 BOPD to 8,000 BOPD during the period of 2007 to 2009. In January 2010, Petrominerales reported test rates of 11,000 BOPD of high gravity oil in a Candelilla well on

⁸ Petrominerales Ltd.: Information from website <http://www.petrominerales.com/>. Various press releases from 2007 through 2010.

the Guatiquia Block after reporting the casing of this well in late 2009.⁹ As shown in Fig. 1, the Candelilla area is southwest and on trend with Corcel and northeast and on trend with CPO-4.¹⁰ The proximity of these new discoveries as SK and Houston American are developing plans for CPO-4 enhance the potential for this concession, which would be reflected in the exploration evaluation of CPO-4 by a competent professional.

20. Within the context of an exploration venture, Houston American utilized its experiences in other Colombia producing projects, along with the recent exploration results reported by Petrominerales, to evaluate CPO-4 based on information furnished by SK and develop its November 2009 investor presentation. In general, its November 2009 presentation is an overview of Houston American and its operations. The presentation is 38 pages in length and contains general technical information relative to CPO-4 and other Houston American operations. Of these 38 pages, 16 pages are related to SK and CPO-4 including 4 pages committed to an overview of Petrominerales' Corcel area. Within this information there is one page (page 12) that provides a summary of the farmout agreement with SK and the potential of CPO-4.¹¹ This is the only reference in the presentation to potentially recoverable reserves in the project and is the third of seven bullet points made on the page.
21. Wiggins has been asked to provide an opinion related to four specific issues:
 - Was Houston American's estimate of "1 to 4 billion barrels" of recoverable reserves reasonable based on information available at the time the statement was made in November 2009?
 - Is 500 barrels of oil per acre-ft a reasonable recovery factor in the western Llanos Basin area when compared to SK's estimate of 150 barrels of oil per acre-ft as used in its April 2009 presentation?
 - Was it misleading to use the term "recoverable reserves" in the 2009 presentation?
 - Is a value metric of \$20 per barrel of recoverable oil reasonable when evaluating oil resources in the Llanos Basin in late 2009 or early 2010?
22. These questions are addressed in the following sections in the order they have been stated above. The responses have been based on information provided by Fulbright, data and information contained in the presentations and filings of SK and Houston American, publicly available data related to hydrocarbon production in the Llanos Basin, non-confidential information in Wiggins' files, and his professional experience.
23. Each topic is related to the reasonableness of the statement, which is dependent on the time the statement is offered, data available, experience of the statement maker, and the context in which it is offered. As such, the opinions provided in this report are placed within this context to determine reasonableness based on professional judgment. As in all aspects of hydrocarbon evaluation, there are uncertainties inherent in the interpretation of geologic and engineering data and conclusions necessarily represent informed professional judgments. Therefore,

⁹ *Ibid.*

¹⁰ IHS, 2011: Colombia Eastern Sheet Map (CO11H1EST), November 2011; Houston American, 2012: "Investor Presentation," March 2012, page 30.

¹¹ Houston American, 2009: page 12.

Houston American made its statements based on its experience while realizing any competent person would understand the statements were made in the context of an exploration venture, which could result in a range of potential outcomes, from bad to good.

Statement of Recoverable Reserves

24. In its November 2009 investor presentation, Houston American discusses its agreement with SK regarding the CPO-4 concession. In the information, it makes the following statement: *CPO 4 Block consists of 345,452 net acres and contains over 100 identified leads or prospects with estimated recoverable reserves of 1 to 4 billion barrels.*¹² This statement was made after Houston American had provided several disclaimers related to the information being presented. Its disclaimers were related to the risk and uncertainty of forward-looking statements and that the presentation would contain references to resources and reserves that were prohibited in SEC filings as they were not proved reserves. In addition, it provided the alert that all reserve volumes presented were unrisked, undiscounted, unadjusted, and were subject to substantial uncertainty.¹³
25. The SEC has questioned whether Houston American had a basis to support its claim regarding the number of leads or prospects contained on CPO-4 and the recoverable reserve volumes as they were not supported by information provided by SK in its April 2009 presentation.¹⁴
26. The work presented by SK was developed based on various qualities of two-dimensional (2-D) seismic data dating from 1970 to 1994 and one well drilled on the concession in 1962. While this data was limited, it was supplemented with information from surrounding exploration wells and producing fields. It appears SK used 15 drilled wells and 1,825 km of 2-D seismic data in its scoping evaluation of CPO-4.¹⁵ In addition, it appears that SK did not incorporate the results of recent exploration activities at Corcel from 2007 through 2009 into its evaluation, which would have enhanced SK's review. From this work, SK developed leads or prospects for CPO-4. A lead or prospect refers to a potentially hydrocarbon bearing formation on a geologic structure that might serve as a hydrocarbon trap.
27. The limited amount of data is typical for exploration projects, which often have less data to analyze when acquiring an exploration concession. The primary purpose of a State to create exploration concessions is to encourage a third-party to acquire data to evaluate the concessions potential for commercial production. The data acquired is usually regional geophysical and geologic data including seismic acquisition and the drilling of wells at prospective hydrocarbon-bearing areas to obtain subsurface data and assess the commercial feasibility of hydrocarbon production.
28. In this case, SK had recently acquired the CPO-4 concession and had undertaken a preliminary evaluation to assess the hydrocarbon potential of the concession and highlight promising areas for additional evaluation and to encourage potential partners for its project.

¹² *Ibid.*

¹³ *Ibid.*: page 1.

¹⁴ SK Energy, 2009b.

¹⁵ *Ibid.*: page 22.

In its April presentation, SK highlights potentially productive reservoirs in CPO-4 based on hydrocarbon production in the near-vicinity of the concession. These prospective productive reservoirs included the Carbonera 7 (C7), Carbonera 9 (C9), Mirador, Barco, Guadalupe, and Une formations.¹⁶ The electrical well log for the Negritos No. 1 drilled in 1962 on CPO-4 indicated potential reservoir quality rock in the C7, C9, Mirador, Barco, and Guadalupe formations (See Fig. 2). The highest quality rock in this particular well was in the Guadalupe followed by the Barco and Mirador formations.

29. SK's summary indicated recoverable hydrocarbon potential for 22 structures containing 56 leads or prospects totaling 974 MMBO as shown in Fig. 3.¹⁷ In this analysis, SK only included potential for three prospective reservoirs: C7, Mirador, and Une. The recoverable volume estimates were prepared using an average thickness of 225 ft and a unit recovery rate of 150 STBO/acre-ft. It did not include the C9, Barco, or Guadalupe formations, with the latter two indicating the greatest potential in the Negritos well. Consequently, a competent person with experience in the Llanos Basin would understand the summary table included in the presentation dealt with only a subset of the prospective formations in CPO-4. As a result, SK's recoverable hydrocarbon potential of 974 MMBO was only a fraction of the total recoverable potential for CPO-4.
30. SK prepared a variation of this presentation with the same title and date.¹⁸ In this presentation, SK indicates it had identified 22 structures on CPO-4 and then provided details for only 12 of the 22 structures as shown in Fig. 4. Its recoverable reserve estimate for these 12 structures was 2,489 MMBO from only three of the potentially six productive reservoir intervals (Carbonera, Mirador, and Paleozoic).¹⁹ This estimate was prepared using an average thickness of 150 ft and a unit recovery rate of 200 STBO/acre-ft. This estimate of recoverable volumes from only a fraction of the structures and formations identified by SK on CPO-4 suggests that SK considered the potential recoverable volumes could be much higher than those reflected in its other April 2009 report. For example, if one increased the average thickness for these calculations to 225 ft as used by SK in its previous April calculations, then its recoverable reserve estimate would be over 3,700 MMBO for only three of the potentially six production formations and for only 12 of 22 identified structures.
31. A technical committee meeting concerning CPO-4 was held in October 2009 and was led by SK as operator of the concession.²⁰ The purpose of this meeting was to review additional analyses furnished by SK and approve three-dimensional (3-D) seismic acquisition. SK furnished a presentation at this meeting that included over 100 leads or prospects in the C9,

¹⁶ *Ibid.*: page 17.

¹⁷ *Ibid.*: pages 28-29. SK is inconsistent in its use of the terms leads and structures. In the table on page 29, it lists leads; however, these are the 22 structures mentioned on page 28. Each structure has multiple horizons present representing the 56 leads or prospects on these 22 structures. There is an error in the number of horizons mentioned on page 28 as page 29 indicates 56 horizons (leads or prospects) and not the 58 horizons noted on page 28.

¹⁸ SK Energy, 2009b-2. "CPO-4 in Llanos Basin Colombia – Farm-in Opportunity," presentation dated 13 April 2009. This presentation contains 68 pages versus 53 pages in SK Energy, 2009b.

¹⁹ *Ibid.*: pages 15-16 and 18-19.

²⁰ SK Energy, 2009c.

Mirador, and Paleozoic formations.²¹ This work was in addition to that provided in the April 2009 presentation. It is significant to note that SK has now incorporated results from the Corcel area into its evaluation, which was absent in the April 2009 presentation.

32. In addition, SK prepared a presentation dated 21 October 2009 for use in soliciting additional partners for CPO-4.²² This presentation clearly indicates additional technical work performed by SK since its initial presentation in April 2009 including seismic reprocessing and analysis, improved geologic correlation with commercial fields across the basin, and analysis of the Corcel play adjoining CPO-4. In this presentation, SK now identifies 53 structures on CPO-4 versus its original 22 structures in the April 2009 presentation. Further, SK indicates these 53 structures contain 114 leads or prospects in the C-9 (33), Mirador (34), and Paleozoic (47). In this presentation, SK uses a unit recovery rate of 300 STBO/acre-ft essentially doubling its unit recovery rate of 150 STBO/acre-ft from the April presentation.²³ If one performs the recoverable reserve volumes as SK did for all 114 leads or prospects, the recoverable reserves are approximately 1,192 MMBO. SK prepared a report in November 2009 that indicates 122 leads in the Carbonera, Mirador, and Paleozoic formations with estimated recoverable reserves of 1,372 MMBO.²⁴
33. By November 2009, SK had identified 53 structures on CPO-4 that contained over 100 leads or prospects from three of six potential hydrocarbon bearing formations. Its recoverable reserve estimates ranged from 974 MMBO to over 2,400 MMBO, representing a fraction of the exploration potential for CPO-4.
34. When dealing with exploration projects, one is trying to capture a range of potential outcomes for an individual project realizing the uncertainties associated with the venture in order to manage the risk of the project. Consequently, SK's estimates would be adjusted based on the experience of the evaluator reviewing its work. For example, many reservoirs in the Llanos Basin are subject to active aquifer support that may result in recovery factors of 40 to 60 percent.²⁵ In this example, if one increases SK's recovery efficiency to 60 percent to account for active aquifer support then its recoverable resources range from 1.9 billion barrels to over 4 billion barrels, which is within the range of estimates provided by Houston American.
35. From deposition testimony, Fluker indicates that SK employees used varying ranges of recovery factors for CPO-4.²⁶ He stated he used a recovery factor of 500 STBO/acre-ft based on his experience while the Colombian employees of SK working in Bogota used higher recover factors. In particular, he indicated that geophysicist Reyes used a recovery factor of 1,000 STBO/acre-ft for the Llanos Basin based on his experience in the Basin. This range of

²¹ *Ibid.*: pages 29, 31, 33, and 60. Minutes of CPO-4 Technical Committee Meeting indicate James Jacobs of Houston American was in attendance. His final note from the meeting states "more than 100 leads."

²² SK Energy, 2009d: "CPO-4 Llanos Basin Colombia – Farm-in Opportunity," presentation dated 21 October 2009.

²³ *Ibid.*: pages 39-45.

²⁴ SK Energy, 2009e: CPO-4 Final Report dated November 2009, pages 1-5.

²⁵ Tudor, Pickering, Holt & Co., 2011: "Update on Colombia," 2011, pages 23, 35-36, and 38; Wood Mackenzie, 2010a: "Corcel Asset Analysis," August 2010, page 5; Wood Mackenzie, 2010b: "Condor Asset Analysis," August 2010, page 5.

²⁶ Fluker, 2012: Deposition of James C. Fluker, III taken on 17 July 2012 in Washington, D.C. pages 78-79; Fluker, 2014: Deposition of James C. Fluker, III taken on 10 November 2014 in Houston, Texas. pages 90-92.

recovery factors would increase SK's April 2009 recoverable reserve estimate from 974 MMBO to 5,000 MMBO or more. Once again, these volumes are within the range of volume estimates reported by Houston American.

36. By the time Houston American prepared its November 2009 investor presentation, it had received information from SK indicating SK had identified 53 structures on CPO-4 containing over 100 leads or prospects in three formations, which excluded the most attractive formations in the Negritos well, the Guadalupe and Barco formations. This information led Houston American to include in its investor presentation that it had entered into an agreement with SK to explore CPO-4, which had "*over 100 identified leads or prospects with estimated recoverable reserves of 1 to 4 billion barrels*" as an individual bullet point among seven on the page.²⁷
37. This statement by Houston American was based on information provided by SK within its presentations as SK had identified over 100 leads or prospects from 53 structures on CPO-4 from only three formations (C9, Mirador, and Paleozoic) containing over 1,300 MMBO. In addition, SK had conducted a preliminary evaluation of the concession and provided an estimate of recoverable reserves of 974 MMBO from 22 structures based on only three of six formations SK had indicated could be potentially productive on CPO-4. In another presentation, its estimate was over 2,400 MMBO from 12 structures. These estimates provide a range of potential outcomes that were being considered by SK as it conducted its evaluation of CPO-4. In addition, by using reasonable engineering and geologic assumptions, one can use SK's data to increase its recoverable reserve estimates to over 3,700 MMBO.
38. In its OIP, the SEC claims that Houston American had no basis for making the claims related to the 100 leads or prospects with recoverable reserves of one to four billion barrels. It further claims that CPO-4 "did not contain 'identified leads or prospects'" and "did not have 'estimated recoverable reserves.'" These claims are contrary to the evidence available for review. SK had identified more than 100 leads or prospects on 53 structures located in CPO-4. Multiple SK documents support that these leads or prospects had been identified through geologic and engineering analysis and Houston American's use of the terms "leads or prospects" was not misleading.
39. In these same materials, it is clear that SK have estimated recoverable reserve volumes that ranged from 1 billion barrels to over 2.5 billion barrels. In addition, by using professional judgment and SK's work, estimates of recoverable reserve volumes could exceed 4 billion barrels of oil for CPO-4. These estimates were based on data and information specific to concessions surrounding CPO-4 and to CPO-4 itself. Thus, these estimates were block specific. Finally, from the context of Houston American's presentation and its disclaimers, it is evident that SK had drilled no wells on the block and that the recoverable reserves discussed by SK and Houston American were estimates of potential resources, and the use of the word recoverable reserves in this context is not inconsistent with industry usage.

²⁷ Houston American, 2009: page 12.

Recovery Per Acre-Foot

40. Recovery efficiency, which is often referred to as recovery factor, is expressed as a percentage of hydrocarbons recovered or estimated to be recovered as a fraction or percentage of the original hydrocarbons-in-place (OHIP). An alternative measure of recovery factor is expressed as the ratio of estimated ultimate hydrocarbon recovery to the estimated hydrocarbon bulk volume (acre-ft). The hydrocarbon bulk volume represents that portion of the subsurface reservoir that is expected to contain hydrocarbons. The hydrocarbon bulk volume is estimated by mapping the areal extent of the reservoir formation and integrating it with the variation of formation thickness across the hydrocarbon accumulation. These parameters are estimated from geophysical and geologic data including seismic and well log data.
41. There are two basic approaches to estimate recovery factors. One is to take historical performance data to yield an estimate of ultimate hydrocarbon recovery and divide it by the hydrocarbon bulk volume of the reservoir. Incorporating the evaluator's experience, this approach provides quality estimates of recovery factor based on actual reservoir behavior. The second is to calculate the recovery factor by estimating the reservoir parameters from the available data and the recovery efficiency from the reservoir drive mechanism and the evaluator's experience. When determined by the second approach, the recovery factor is the product of several reservoir properties and can be calculated from the following relationship.

$$RF = \frac{7,758 \phi (1 - S_w)}{B_o} E_R$$

Where,

- RF = Recovery factor, STBO/acre-ft
 ϕ = Porosity, fraction
 S_w = Water saturation, fraction
 B_o = Oil formation volume factor, Rbl/STB
 E_R = Recovery efficiency, fraction

42. In estimating recoverable resources in its April 2009 presentation, SK used a unit recovery rate of 150 STBO/acre-ft as shown in its report summary.²⁸ In its table, SK utilized an average porosity of 20 percent, water saturation of 40 percent, oil formation volume factor of 1.11 Rbl/STB, and recovery efficiency of 30 percent. Applying these parameters in the equation yields a recovery factor of 251 STBO/acre-ft.
43. Based on the declaration of Choi,²⁹ SK adjusted this recovery factor by a geometric factor of 0.7 and a confidence level of 0.85, which yields SK's unit recovery rate of 150 STBO/acre-ft. Both of these adjustments would not be normally reflected in the recovery factor calculation of recoverable oil per hydrocarbon bulk volume. The geometric factor is used to account for the fraction of the hydrocarbon bulk volume that may not contribute to production

²⁸ SK Energy, 2009b: page 29.

²⁹ Choi, D.S., 2014: Declaration of Dong Soo Choi in the Matter of Houston American Energy Corp. (HO-11507) dated 24 July 2014.

due to geologic conditions, reservoir drive mechanisms, or operational strategies. This factor is not generally included when estimating the recovery factor as it is based on the acre-ft bulk volume, not a fraction of an acre-ft. When SK used the geometric factor of 0.7, it essentially was making a reservoir bulk volume adjustment that resulted in a lower recovery factor estimate inconsistent with general use. In addition, SK also incorporated a risk factor of 0.85 to further reduce the recovery factor. Once again, this adjustment is not consistent with the general use of the recovery factor as this risk adjustment is not generally made to the recovery factor.

44. These parameters are based on the quality and quantity of technical data available and the professional judgment of the evaluator. The judgment of the evaluator will be strongly influenced by his or her experience in a particular geologic basin, area, or field. SK could have provided a range of recovery factors based on its analysis and the range of rock and fluid properties estimated for its leads or prospects; however, it decided to provide a single recovery factor (really, unit recovery rate) in its April 2009 presentation. If one did create a range of parameters using information provided by SK and basic engineering knowledge of the area, then the recovery factors could be as low as 250 STBO/acre-ft, as used by SK, to as much as 785 STBO/acre-ft or higher. For example, if one assumes an average porosity of 25 percent, oil saturation of 75 percent, and a recovery efficiency of 60 percent with the other parameters used by SK, the unit recovery rate would be 465 STBO/acre-ft.
45. In fact, SK used a range of unit recovery rates in its analyses of CPO-4, including unit recovery rates higher than 150 STBO/acre-ft. In its October 2009 Farm-In Opportunity presentation, SK used a unit recovery rate of 300 STBO/acre-ft and this value still included geometric and confidence factors.³⁰ If the geometric and confidence factors are removed, SK's recovery factor would be 390 STBO/acre-ft. A Gulf United Energy presentation dated August 2010 confirms SK had increased its unit recovery rate to 300 STBO/acre-ft.³¹
46. By May 2012, SK used a range of estimated recovery factors, including 489 STBO/acre-ft that was used for at least one CPO-4 lead or prospect.³² These values indicate the potential range of recovery factors developed by SK changed over time and captured a range from 150 STBO/acre-ft to at least 489 STBO/acre-ft. Therefore, SK did not develop one estimate of unit recovery rate and use it exclusively during its evaluation of CPO-4 but refined that estimate as time progressed. Its estimate of 489 STBO/acre-ft is consistent with the 500 STBO/acre-ft that the SEC indicates was used recklessly by Houston American.
47. As noted earlier, SK employees used a range of recovery factors during 2009. Based on Fluker's testimony, SK employees used recovery factors ranging from 150 STBO/acre-ft to 1,000 STBO/acre-ft.³³ The recovery factor is influenced by the recovery efficiency. As the recovery efficiency increases, the recovery factor will also increase assuming all other parameters remain constant. SK prepared a chart of recovery efficiencies (Fig. 5) for a

³⁰ SK Energy, 2009d.

³¹ Gulf United, 2010: Gulf United Energy presentation covering CPO-4 and other South American areas, August 2010.

³² Murphy, 2012: CPO-4 Volumetric Calculation, e-mail from Craig Michael Murphy to Ken Jeffers and Jim Fluker, 15 May 2012.

³³ Fluker, 2012: pages 78-79; Fluker, 2014: pages 90-92.

number of fields in the proximity to CPO-4 ranging from 35 percent to 68 percent.³⁴ These recovery efficiencies were developed by SK and are higher than the 30 percent recovery efficiency it used to estimate its April 2009 150 STBO/acre-ft unit recovery rate. If SK used a 68 percent recovery efficiency with its April 2009 parameters, its calculated recovery factor would increase from 250 STBO/acre-ft to over 550 STBO/acre-ft, which is consistent with the 500 STBO/acre-ft used by Houston American.

48. During the period of 2007 through 2010, Petrominerales discovered oil in the Corcel and Guatiquia concessions, which are adjacent to CPO-4. The SEC contacted Petrominerales' reservoir engineering manager to discuss Corcel. In handwritten notes, the SEC indicated that Petrominerales had estimated oil-in-place for Corcel at 940 STBO/acre-ft.³⁵ The notes further indicate that Petrominerales was estimating a recovery efficiency of 50 percent for Corcel resulting in a recovery factor of 470 STBO/acre-ft. This recovery factor is again consistent with the 500 STBO/acre-ft recovery factor used by Houston American.
49. In a 2003 report prepared relative to resource estimates for the Caracara area in the Llanos Basin, Greenberg used a recovery factor of 500 STBO/acre-ft.³⁶ DeGolyer and MacNaughton prepared a 2005 estimate of proved and probable reserves in the Caracara area for properties in which Houston American had an interest. DeGolyer and MacNaughton estimated recovery factors ranging from 147 STBO/acre-ft to 650 STBO/acre-ft, with an average of 368 STBO/acre-ft for proved reserves to 438 STBO/acre-ft for probable reserves.³⁷ In 2010, Petrotech Engineering Ltd. (Petrotech) prepared a report for Houston American that evaluated 16 areas representing 54 prospects with 152 prospective reservoirs on CPO-4 with recovery factors ranging from 105 to 470 STBO/acre-ft.³⁸ Lonquist & Co., LLC (Lonquist & Co.), a petroleum engineering consulting firm, provided a letter dated 12 April 2012 summarizing its experience with recovery factors in the Llanos Basin. Based on recent client work, it reported recovery factors ranging from 56 STBO/acre-ft to 1,372 STBO/acre-ft with an arithmetic average recovery of 454 STBO/acre-ft from reservoirs in the Carbonera to the Ubaque formations.³⁹
50. In March 2010, Petrotech performed an engineering evaluation of properties operated by Hupecol Operating, LLC in the Llanos Basin.⁴⁰ Houston American had an operating interest in these properties for a number of years where they had participated in drilling approximately 100 wells. This report covered five exploration and production blocks where Houston American held working interests ranging from 1.6 percent to 12.5 percent. Recovery factors

³⁴ SK Energy, 2010: "CPO-4 Prospects & Resources," presentation dated 04 October 2010, page 11.

³⁵ Fluker, 2014: Exhibit 14. Notes of SEC interview with Ryan Adair dated 02 February 2012.

³⁶ Greenburg, R.L., 2003: "Caracara 3D Interpretation," 15 July 2003. [HUSASEC 000045-000053]

³⁷ DeGolyer and MacNaughton, 2005: Appraisal Report as of August 31, 2005 on Reserves of the Peguita and Elizita Fields in the Caracara Block, Llanos Basin, Colombia," dated 27 February 2006.

³⁸ Petrotech Engineering Ltd., 2010b: Evaluation of the Interests of Houston American Energy Corp. in the Serrania & Picachos Blocks in the Caguan-Putumayo Basin and in the CPO 4 Block in Llanos Basin, Colombia," 6 October 2010.

³⁹ Lonquist & Co., LLC, 2012: "Oil Recovery Overview, Llanos Basin, Republic of Colombia," letter to Houston American Energy Corp., 12 April 2012. [HUSASEC 000401]

⁴⁰ Petrotech Engineering Ltd., 2010a: Evaluation of the Interests of Hupecol Operating in the Cabiona, Dorotea, Laz Garzas, Leona and La Cuerva Exploration & Production Blocks in the Llano Basin, Colombia," 8 March 2010.

for these properties ranged from 175 STBO/acre-ft to 680 STBO/acre-ft based on Petrotech's evaluation and averaged 382 STBO/acre-ft for all estimated recovery factors. In its OIP, the SEC provided a range of estimates from this report based on only three of the five production blocks and appears to have excluded the Cabiona and Dorotea Blocks where the recovery factors were higher than those reported by the SEC. Thus its conclusion that Houston American was reckless in not knowing that SK's recovery estimate of 150 STBO/acre-ft was consistent with experience in the area is flawed as it did not capture the entire range of Houston American's experience in the Llanos Basin nor the future work of SK.

51. In addition, an analysis of public data obtained from IHS indicates recovery factors range from 133 STBO/acre-ft to greater than 1,300 STBO/acre-ft. The analysis of the IHS data included the Une, Guadalupe, Mirador, and C7 formations with an average recovery factor of 594 STBO/acre-ft.⁴¹ This analysis was based on estimating the reservoir's ultimate recovery and dividing by the hydrocarbon bulk volume to yield the recovery factor. This empirical recovery factor is based on actual reservoir performance and removes many of the assumptions required in estimating the reservoir parameters required in the volumetric estimate of recovery factor.
52. Wiggins has prepared a technical estimate of recovery factors using the general information provided by SK in its April 2009 presentation and his experience in the Llanos Basin. Active aquifer support is common in the Llanos Basin and was assumed in this analysis. As shown in Figs. 6 and 7, the recovery factors range from 455 STB/acre-ft to almost 700 STBO/acre-ft when the porosity is increased to 25 percent and the water saturation is decreased to 30 percent. The analysis supports the range of recovery factors provided by Greenberg, Lonquist & Co., and the IHS data.
53. In deposition testimony, Fluker indicated he used recovery factor estimates of 500 STBO/acre-ft for leads or prospects in Colombia.⁴² As a former employee of SK, he considered the 150 STBO/acre-ft initially used by SK as conservative, which is consistent with the fact that SK used higher unit recovery rates in other materials. Fluker later joined Gulf United when the company participated in the CPO-4 project. While at Gulf United, the company estimated potential resources for CPO-4 using 500 STBO/acre-ft for leads or prospects on CPO-4 that were on the Corcel Trend.⁴³
54. Overall, these recovery factors are consistent with the recovery factor attributed to Houston American of 500 STBO/acre-ft. As the range of recovery factors is from 56 STBO/acre-ft to more than 1,300 STBO/acre-ft, estimating recoverable resources of 500 STBO/acre-ft is reasonable within the context of an exploration concession in the Llanos Basin and is supported by the average recoveries of 454 STBO/acre-ft to 594 STBO/acre-ft reported by Lonquist & Co. and calculated from the IHS data.

⁴¹ Jeffers, K.A., 2012: "Llanos Basin Field Parameters and Computed Recovery Factors from IHS Data," 2012. [HUSA SEC 000402-000404]

⁴² Fluker, 2012: pages 78-79.

⁴³ Fluker, 2010: E-mail from Jim Fluker to Ken Jeffers dated 27 September 2010 with attachment.

55. The range of recoverable reserves presented by Houston American was consistent with the range of recovery factors it had experienced in the Llanos Basin as an operator with Hupecol, the range of recovery factors used by SK over time, and the various recovery factors reported by others that ranged from 50 STBO/acre-ft to 1,300 STBO/acre-ft. In using the 500 STBO/acre-ft to estimate potential recoverable reserves, Houston American did not mislead the reader of its November 2009 presentation as it clearly was a reasonable assumption based on its experience in the Llanos Basin and the work of others.

Use of the Term “Recoverable Reserves”

56. In its OIP, the SEC implies that Houston American improperly used the word “recoverable reserves” in its presentations to indicate “reserves” as defined by the Petroleum Resource Management System (PRMS). When one reviews the disclaimers and the context of Houston American’s presentation, it is clear the term “recoverable reserves” is not used by Houston American to indicate PRMS reserves as implied by the SEC.
57. Further, it should be noted that industry uses the term “reserves” in ways that are not always consistent with SEC or PRMS definitions contrary to the claims of the SEC. In 2000, the SEC issued a release that addresses the use of the term “reserves” in documents not filed with the SEC: “We have seen in press releases and web sites disclosure language by oil and gas companies which would not be allowed in a document filed with the SEC.”⁴⁴ One of the specific examples of such language provided in the release is the term “recoverable reserves,” which is the term used in Houston American’s November 2009 estimate challenged here. The release does not suggest or imply that the use of such terms is improper or contrary to SEC rules. Instead, the release requests that the use of such terms be accompanied by specific cautionary language. By acknowledging the use of the word reserves in a non-SEC context in press releases and web sites (non-SEC filings) and providing cautionary language to accompany such use, it is clear the SEC understood that the word “reserves” has multiple meanings depending on the context in which it is used. This is further demonstrated by the examples in Table 1, which is a chart of three SEC comment letters advising issuers to use the SEC’s cautionary language when using “recoverable reserves.”⁴⁵ In this case, Houston American included the cautionary language recommended by the SEC in its forward looking statements at the beginning of the presentation.
58. The SEC suggests in its OIP the word “reserves” is a term that has a specific, industry-accepted definition confined to the SEC definition or the PRMS definition while ignoring other potential definitions or uses. While this definition of “reserves” is the definition used by reserve engineers for preparing regulatory filings, the word “reserves” is often used to describe pre-drill estimates or exploration assessments of resource volumes that may be discovered in exploration ventures or future drilling activities. Exploration and production

⁴⁴ Excerpt Current Issues and Rulemaking Projects Outline, Securities and Exchange Commission (Nov. 14, 2000), available at <http://www.sec.gov/divisions/corpfin/guidance/cfoilgasinterps.htm>).

⁴⁵ See also HA-CORPFIN-000000859, 5 February 2003 SEC Comment Letter to Murphy Oil Corporation advising that issuers should use the cautionary language in non-SEC communications that contain statements about “preliminary,” “predrill,” or “recoverable reserves” among others.

companies frequently use terms such as “reserves” and “estimated recoverable reserves” and other such variants to describe pre-drill estimates or exploration assessments.

59. Examples of such use include those shown in Table 2. In each example, the context shows that these estimates of reserves do not conform to the SEC or the PRMS definition of reserves. These examples indicate that the word “reserves” does not have a specific, industry-accepted definition in all contexts. Like many words in the English language, the context in which a word is used provides the meaning or appropriate definition of the word.
60. In Houston American’s November 2009 investor presentation, it is clear there are no productive wells on CPO-4 as the presented work plan indicates the requirement to obtain seismic data and drill two exploratory wells during the three year period of Phase 1. In addition, CPO-4 is depicted as being surrounded by existing fields. From the context, it is clear that CPO-4 is an exploration project containing no known or discovered reserves with all references to reserves being pre-drill estimates of potential resources.⁴⁶ Houston American’s SEC filings did not indicate any drilled or producing wells on CPO-4 and described the exploration nature of the concession.⁴⁷
61. From the discussion of CPO-4, lack of a producing well on the block, and the work obligations to obtain and process seismic data and drill exploration wells contained in Houston American’s November 2009 investor presentation, it is evident that all hydrocarbon volumes discussed in association with CPO-4 were potential resource volumes and not reserves as defined by PRMS. In our opinion and the context in which it was used, the use of the term “recoverable reserves” by Houston American in its November 2009 presentation was not false or misleading and did not suggest proved reserves or reserves consistent with SEC or PRMS definitions as claimed by the SEC.

Value Per Barrel

62. Fair market values for hydrocarbon properties are generally estimated using a discounted cash flow analysis of the estimated hydrocarbons to be recovered and the costs associated with recovering those hydrocarbons.⁴⁸ These estimated values are then adjusted based on the quality of information supporting the hydrocarbon estimates, product price forecasts, and cost estimates.
63. In addition to the discounted cash flow analysis, there are three other general categories of methods encountered in estimating fair market values of hydrocarbon resources.⁴⁹ One subset is the price per hydrocarbon resource volume in the reservoir. These values are based on the purchase and sales prices of hydrocarbon properties divided by the estimated hydrocarbon resources associated with the property. This approach is dependent on the quality of the hydrocarbon resource estimate, which is not always reported in a transaction. However, the

⁴⁶ Houston American, 2009: pages 9-24.

⁴⁷ For example, see Houston American, 2010: SEC Form 10-K for the ended December 31, 2009, pages 5-6, 29-30, 36, F-18-F-19.

⁴⁸ Garb, F.A., 1990: “Which Fair-Market-Value Method Should You Use?,” *JPT*, January 1990, pages 8-17.

⁴⁹ *Ibid.*

approach does provide a quick way to compare recent transactions if one has a general idea of the hydrocarbon resource estimates. Historically, the price per barrel of oil in the ground has been about one-quarter to one-third of the wellhead oil price.

64. In general, purchases are based on the perceived value of reserves or resources that have been identified by drilling and production on the prospective properties. For exploration projects, value is generally placed on lease or concession acquisition costs and not on potential resource volumes. In the acquisition of properties, the primary purchase value is placed on proved reserves with minor value associated with probable and possible reserves. Consequently, the predominant portion of value will be attributed to proved reserves.
65. In a 2009 survey of parameters used in property evaluation, there was a question related to transaction values measured by price per barrel.⁵⁰ This survey essentially covered transactions during 2008. Without distinction of reserve category, the range of average values was from \$12.74 per barrel to \$25.66 per barrel. For proved developed reserves the average values ranged from \$16.52 to \$25.56 per barrel, while possible reserves were valued at averages ranging from \$0.65 to \$2.23 per barrel. These later values highlight the fact that little value is attributed to possible or prospective resources on a per barrel basis. While a knowledgeable person would realize there may be some value included for unrealized potential, the purchaser rarely provides significant value for that potential as evidenced by the low values attributed to possible reserves.
66. In a summary of large Latin American E&P transactions during the period of 2008 through 2009, Scotia Waterous provided information on three transactions involving Colombia properties as shown in Fig. 8. Two of these were priced at \$23.59 to \$28.71 per barrel based on proved plus probable reserves.⁵¹ These two transactions occurred in March and July 2008 when oil prices were averaging \$100 to \$130 per barrel. Applying the historical ratio, the price range would be \$25 to \$30 per barrel, which is consistent with the reported range.
67. In one of the transactions, Houston American had interests in properties operated by Hupecol that were transferred to the buyer (CEPSA) at the price of \$23.59 per barrel of proved and probable reserves. The exchange price based on proved reserves only was \$26.06 per barrel. This direct experience by Houston American in 2008 provided a basis to support its estimate of transaction values it may have provided in 2009.
68. In its OIP, the SEC has questioned Houston American referring to a value metric of \$20 per barrel of producing resources during the period of 2009 to 2010. Houston American did not claim it had proven reserves on CPO-4, and it appears any such discussions took place in a hypothetical context of what oil would be worth if discovered. Based on the information provided by the SPEE survey, the Scotia Waterous information, and Houston American's

⁵⁰ SPEE, 2009: "Survey of Parameters Used in Property Evaluation," page 39.

⁵¹ Scotia Waterous, 2009: "Large Latin American E&P Transactions." The third transaction was a transfer of assets from a company to the national oil company, Ecopetrol, at \$6.39 per barrel of proved plus probable reserves. This transaction occurred in March 2009 when oil prices had suffered a steep decline in late 2009. For the first quarter of 2009, oil prices were approximately \$40 to \$45 per barrel. A rule-of-thumb for estimating exchange prices per barrel is that the value will be approximately one-quarter to one-third the current oil price. In this case, the value would have been approximately \$10 per barrel, which is consistent with the price paid for the proved reserves (\$9.67 per barrel).

own transaction experience, this price metric was reasonable in response to questions related to value of the properties if hydrocarbons were discovered and were economically producible. It appears the SEC has taken the comments out of context and there was nothing misleading about the value metric attributed to Houston American.

Summary

69. Wiggins has reviewed the statements made by Houston American in its November 2009 investor presentation regarding CPO-4. In our opinion, the statements are reasonable in the context of an exploration venture and supported by work completed by SK, analogous data from productive reservoirs in the Llanos Basin, and Houston American's experience in the Llanos Basin.
70. Information provided by SK supports Houston American's claim of over 100 leads or prospects on CPO-4. Its use of the term leads or prospects is consistent with the information provided by SK and was not misleading.
71. SK presented a range of recoverable reserves of approximately 1.0 to 2.5 billion barrels of oil based on only three of six potentially productive formations on CPO-4 during 2009. Adjustments to recovery factors to account for increased recovery efficiencies due to aquifer support or enhanced reservoir parameters due to the successful exploration results at Corcel would also increase recoverable resource estimates from 1.0 to approximately 4.0 billion barrels of oil. These values are within the range of recoverable resources provided by Houston American and are consistent with pre-drill resource estimates in an exploration venture.
72. A recovery factor of 500 STBO/acre-ft has been attributed to Houston American regarding CPO-4, which the SEC has indicated is inconsistent with those developed by SK and with other estimates in the Llanos Basin. This estimate is consistent with estimates of recovery factors: (1) provided by other evaluators; (2) calculated from the range of reservoir parameters for productive reservoirs in the vicinity of CPO-4; (3) developed by SK in other materials concerning CPO-4; (4) estimated from historical performance data for the Llanos Basin; and (5) estimates developed by Wiggins. Recovery factors range from 56 STBO/acre-ft to more than 1,300 STBO/acre-ft. This range of recovery factors captures Houston American's estimate of 500 STBO/acre-ft, which is reasonable for CPO-4 and is not inconsistent with recovery rates seen in the Llanos Basin.
73. Survey data from 2009 property acquisitions and Colombia-specific transaction data indicate a range of price metrics from \$23 to \$29 per barrel of proved and probable resources. These values are consistent with the price metric of \$20 per barrel of recoverable resources attributed to Houston American and referenced by the SEC, which appears reasonable if the resources are discovered and developed on CPO-4.
74. In summary, claims by the SEC that Houston American was reckless in its evaluation of CPO-4 appear to lack technical merit when reviewed within the context of an exploration venture. The statements made by Houston American are reasonable based on information available at the time they were made, analogous performance of Llanos Basin reservoirs, and

the experience of Houston American in Colombia. In our opinion, the statements made or attributed to Houston American were not misleading within the context of an exploration venture, which is obvious from all materials and discussions, and are consistent with our professional judgment.

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Petrotech Engineering Ltd.: "Evaluation of the Interests of Houston American Energy Corp. in the Serrania & Picachos Blocks in the Caguan-Putumayo Basin and in the CPO 4 Block in Llanos Basin, Colombia," as of 30 September 2010, report dated 6 October 2010.

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Scotia Waterous: "Large Latin American E&P Transactions," summary of six transactions from March 2008 through March 2009.

SK Energy: "Farm-in Opportunity: Block CPO-4, Llanos Basin in Colombia," undated three-page flyer announcing CPO-4 opportunity, prepared first-half 2009.

SK Energy: "CPO-4 Final Report," dated November 2009.

SK Energy: "CPO-4 in Llanos Basin Colombia: Farm-in Opportunity," presentation dated 13 April 2009.

SK Energy: "CPO-4 in Llanos Basin Colombia: Farm-in Opportunity," presentation dated 13 April 2009. (This version contains 68 pages versus the previous version with 53 pages.)

SK Energy: "CPO-4 Llanos Basin Colombia: Farm-in Opportunity," presentation dated 21 October 2009.

SK Energy: "CPO-4 Prospects & Resources," presentation dated 04 October 2010.

SK Energy: "Technical Committee Meeting: CPO-4 Block, Colombia," presentation dated 14 October 2009.

SPEE: "Survey of Parameters Used in Property Evaluation," 2009.

Tudor, Pickering, Holt & Co.: "Update on Colombia – Foothills, heavy oil, infrastructure and more in the Llanos and Putumayo," presentation dated 2011.

U.S. Securities and Exchange Commission: "Excerpt Current Issues and Rulemaking Projects Outline, Securities and Exchange Commission," dated 14 November 2000.

Wood Mackenzie: "Condor Asset Analysis," report dated August 2010.

Wood Mackenzie: "Corcel Asset Analysis," report dated August 2010.

TABLES

Table 1. SEC Comments on the Use of Recoverable Reserves

REFERENCE	SEC COMMENT LETTER
<p>o Acquires Interests in Two Exploration nits in the Republic of Tunisia</p> <p><a href="http://www.prnewswire.com/news-
ases/nuevo-acquires-interests-in-two-
oration-permits-in-the-republic-of-tunisia-
15957.html">://www.prnewswire.com/news- ases/nuevo-acquires-interests-in-two- oration-permits-in-the-republic-of-tunisia- 15957.html</p>	<p>November 29, 2000 SEC Letter to Nuevo Energy Company, HA-CORPFIN-000000490:</p> <p>We note your website discloses, “Nuevo Energy Company (NYSE: NEV) has reached agreement to enter in highly prospective permits in the Republic of Tunisia, North Africa, that offer large reserve potential within world proven hydrocarbon trends.” and “The Alyane Permit lies directly within the prolific nummulite limestone trend many of Tunisia’s and Libya’s largest fields have been discovered. These fields, which include, among Hasdrubal, Salambo, Bouri and Ashtart, have estimated recoverable reserves which total over 1.5 billion barrels of oil equivalent.” Only those measures of reserves set forth in SEC Industry Guide 2, and Section 4-10(a) of Regulation S-X are permitted in filings with the SEC. If you continue to make references on your web site to terms and measures (italicized above) other than those recognized by the SEC, accompany such disclosure with the following cautionary language:</p> <p>Cautionary Note to U.S. Investors -- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by production or conclusive formation tests to be economically and legally producible under existing economic operating conditions. We use certain terms on this web site, such as [identify the terms], that the SEC’s guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure on our Form XX, File No. X-XXXX, available from us at [address at which investors can request the filing]. You can obtain this form from the SEC by calling 1- 800-SEC-0330.</p>
<p>er Sanctions Sable Field Development shore South Africa</p> <p><a href="http://investors.pxd.com/phoenix.zhtml?c=90959
-irol-newsArticle_print&ID=273372">://investors.pxd.com/phoenix.zhtml?c=90959 -irol-newsArticle_print&ID=273372</p>	<p>July 20, 2001 SEC Letter to Pioneer Natural Resources Company, HA-CORPFIN-000000453:</p> <p>Your news releases use terms not allowed in filings with the SEC. Some examples are: “oil equivalent reserves”, July 20, 2001; “estimated recoverable oil reserves”, June 18, 2001; “four billion barrels of oil and gas reserves”, May 18, 2001; “potential net gas equivalent reserves”, “potential multi-TCF gas accumulation”, April 25, 2001. Only those measures of reserves set forth in Industry Guide 2, and Section 4-10(a) of Regulation S-X are permitted in filings with the SEC. If you continue to make references on your web site to reserve measures other than those recognized by the SEC, accompany such disclosure in locations at least as prominent as the referenced terms with the following cautionary language:</p> <p>Cautionary Note to U.S. Investors -- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by production or conclusive formation tests to be economically and legally producible under existing economic operating conditions. We use certain terms on this web site, such as [identify the terms], that the SEC’s guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure on our Form XX, File No. X-XXXX, available from us at [address at which investors can request the filing]. You can obtain this form from the SEC by calling 1- 800-SEC-0330.</p>

REFERENCE	SEC COMMENT LETTER
	<p>production or conclusive formation tests to be economically and legally producible under existing economic operating conditions. We use certain terms on this web site, such as [identify the quoted terms above], that the guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider close disclosure in our Form 10-K, SEC File #1-13245 available from us at [registrant address at which investors can file the filing]. You can also obtain this form from the SEC by calling 1-800-SEC-0330.</p>
<p>Comments of ERHC Energy's Peter Ntephe from Red Chip Small-Cap Investors Conference http://erhc.com/articles/comments-of-erhc-energy-peter-ntephe-from-redchip-small-cap-investors-conference/</p>	<p>February 27, 2008 SEC Letter to ERHC Energy Inc., HA-CORPPFIN-000000806:</p> <p>We note your presentation of 14.4 billion barrels of oil as “recoverable reserves potential.” Please modify this term to explain your meaning for this term. Also please include language similar to the following:</p> <p>Cautionary Note to U.S. Investors- The United States Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use certain terms on this web site, such as “recoverable reserves potential,” that the SEC guidelines generally prohibit us from including in filings with the SEC. U.S. Investors are urged to consider close disclosure in our Form 10-K. You may review our filings with the SEC at the following website: http://www.sec.gov/edgar/searchedgar/company_search.html.</p>

Table 2. Industry Use of Reserves in a Pre-Drill Context

	DATE	SOURCE	STATEMENT
1	1/14	Relinquishment Report: Suncor Energy	“Predrill, Scotney was assessed to have a GCOS of 23% and mean recoverable reserves of 35 MMbbls. The key risks identified predrill were lack of lateral seal and reservoir. Overall predrill volumes for the prospect P90-P50-P10 were 33-82-181 MMbbls STOOIP and 10-27-70 MMbbls recoverable.”
2	11/21/13	Quarterly Report: Daybreak Oil and Gas, Inc. for Period Ended August 31, 2013	“The drilling targets are the Olcese and Eocene sands between 1,000 and 2,000 feet deep. We plan to drill an exploratory well during 2014. We estimate that the Glide Kendall prospect is 200 acres in size with a gross recoverable reserve potential of 1.8 million barrels of oil.”
3	06/30/13	Growing Upside As Ophir Maintains 100% Record, Business Monitor Online	“The discovery is expected to meet the pre-drill estimated mean recoverable reserves of around 17bn cubic meters (bcm) of gas.”
4	02/26/13	OIL SEARCH LIMITED; 2012 Full Year results. 26 February 2013, ASX ComNews	“Our pre-drill estimate of potential recoverable reserves in the Jeribe and Euphrates remains unchanged, in the 250-500 million barrel range.”
5	1/29/13	Quarterly Report: Beach Energy	“The joint venture has committed to drill an exploration well planned for the drill ready Kaheru prospect in the 2013/14 drilling season, subject to securing a suitable drilling rig. The Kaheru prospect lies to the east of the producing Kupe gas and oil field and lies just offshore from the onshore Rimu and Kauri oil fields. The operator, NZOG, estimates the mean recoverable reserves (unrisked) at 45 MMbbl in the case of an oil discovery . . .”
6	1/13	Investor Brochure: Key Petroleum Limited	“Seismically defined drillable prospect; Drilling Program lodged to drill in 2013; Potential recoverable reserves of 3-5MBO”
7	09/06/12	Victory Energy Announces Significant Commercial Flows At Pinetop, Benzanga.com	“Pre-drill gross recoverable reserve potential per well was estimated at 350,000 BOE to 450,00 BOE, with total recoverable reserve potential of 3,150,000 BOE to 4,050,00 (9 wells).”

	DATE	SOURCE	STATEMENT
8	09/6/12	Victor Energy Drills Largest Flowing Oil Well in Company History	“Pre-drill gross recoverable reserve potential per well was estimated at 350,000 BOE to 450,000 BOE, with total recoverable reserve potential of 3,150,000 BOE to 4,050,000 BOE (9 wells).”
9	05/04/12	Tower Looks to Namibia Campaign, International Oil Daily	“The firm has a fully carried 15% interest in the well, but is reliant on the operator, Arcadia, securing a farm-out before drilling can commence. An independent report last year identified five targets in the so-called Delta structure, which is estimated to hold over 9 billion bbl of recoverable reserves (IOD Feb.24'12).”
10	03/16/12	Naga Utara well plan for SPC, Upstream	“Estimated pre-drill recoverable reserves at Naga Utara were 80 billion cubic feet of gas. There are existing gas pipelines and processing infrastructure in close proximity to the field.”
11	2012	Investor Presentation: Miesen Development Corp: West Gabrysch Prospect	“The West Gabrysch Prospect in Jackson County, Texas is a 3D seismic controlled, low risk drilling prospect in a Proven Producing trend with multiple drilling objectives. It is believed that the well should see all of the primary and secondary objectives in a very favorable structural position with respect to the sub-surface control. Based on 3D seismic and area well control, the estimated recoverable reserves for the lease are projected to be 800,000+ Bbls Oil and 535,000 MCF Natural Gas, with most of the reserves at 6,300 feet.”
12	12/16/11	Edison Investment Research: Simba Energy	“Based on the data in Exhibit 8 it is conceivable that Simba could be targeting as much as 250m to 2.5bnbbls recoverable reserves on any of its prospects. As such our initial, indicative valuation focuses on the potential pre-drill value that can be ascribed to any of its key assets assuming seismic interpretation and preliminary exploration efforts prove encouraging and a potential farm-out deal can be achieved.”
13	10/16/11	Tap seeks oil reserves with its New Zealand wildcat	“The well has a planned total depth of 3,000m and is targeting the Shag Point Formation for which pre-drill recoverable reserves have been estimated at 70-80 MMbo.”
14	09/28/11	Gudrun field production to start Q1 2014 – Statoil, European Spot Gas Markets	“Pre-drilling began on the first of six wells in early September, according to Statoil. Recoverable reserves are estimated at 11.2 million cubic metres of oil and 6.6 billion cubic metres of gas.”

	DATE	SOURCE	STATEMENT
15	09/28/11	Eni buys GDF stake in North Sea fields, European Spot Gas Markets	“Pre-drilling began on the first of six wells in early September, according to Statoil. Recoverable reserves are estimated at 11.2 million cubic metres of oil and 6.6 billion cubic metres of gas.”
16	9/9/11	Magellan Petroleum Corporation Completes Farm Out of Bakken and Deep Rights to VAALCO Energy, and Further Consolidates Ownership of Its Montana Fields	“Among these risks and uncertainties are, the extent of the recoverable reserves in the Deep Intervals, whether the new wells to be drilled by VAALCO will be successful in extracting the recoverable reserves . . .”
17	7/13/11	Investor Presentation: Milagro Oil & Gas	“Estimates of resource potential, recoverable reserves or estimated ultimately recoverable amounts do not reflect volumes that are demonstrated as being commercially or technically recoverable. Even if commercially or technically recoverable, a significant recovery factor would be applied to these volumes to determine estimates of volumes of proved reserves. Accordingly, these estimates are by their nature more speculative than estimates of proved reserves and accordingly are subject to substantially greater risk of being actually realized by us. The methodology for resource potential, recoverable reserves or estimated ultimately recoverable amounts may also be different than the methodology and guidelines used by the Society of Petroleum Engineers and is different from the SEC’s guidelines for estimating probable and possible reserves.”
18	7/1/11	STOS Bringing in Drillship for Ruru Well	“Jager, who is also chairman of Shell Companies in New Zealand, declined to give any details regarding the Ruru prospect, such as the size of the areal closure of the structure or any pre-drill recoverable reserves estimates.”
19	6/11	LM Energy Investor Presentation	Listing “[m]ean recoverable oil rserve[s] of c 2mmbbl” for “[w]ell to be spudded on 01 July 2011”
20	05/24/11	AUSTIN EXPLORATION LIMITED; Placement Prospectus, ASX ComNews	<p>“Pre-drilling activities, will begin in July 2011 and the first well is projected to be drilled during, September 2011. It is planned that second and third wells will follow through, December 2011.”</p> <p>“Investment highlights of the Birch Projects are as follows: (a) 5,000 net acres targeted – material for AKK.</p>

	DATE	SOURCE	STATEMENT
			(b) Estimated recoverable reserves per vertical well at 200,000 barrels of oil.”
21	3/29/11	Investment Research / Initiating Coverage: African Petroleum Corp. Ltd.	<p>“The Company has a dominant acreage position, a rigorous technical evaluation approach, has established a reputation for meeting exploration commitments on a timely basis, and is expected to drill two high-impact exploration wells in 2011 providing investors with near-term potential upside.”</p> <p>Charts list “Gross Estimated Recoverable Reserves”</p>
22	02/09/11	UK’s Premier clips Catcher oil reserves after poor well, Platts Oilgram News	<p>“Previously the company had estimated gross recoverable reserves of 60-100 million barrels in the prospects and had expected up to 30 million barrels of oil in Catcher North. ‘While the [gas] result was in line with Premier’s pre-drill expectations, the [oil] result was a disappointment,’ CEO Simon Lockett said in a statement.”</p>
23	1/21/11	Rocksource details 2011 drilling prospect sizes	<p>“Norvarg, operated by Total in PL535 in the Barents Sea, is due to be drilled by the West Phoenix between May and June this year, and is forecast as having 270 m boe of mean recoverable reserves comprising both oil and gas. Norvarg is a four-way structural closure with Snadd and Kobbe formation reservoirs, a Jurassic shale sealing system and a Kobbe formation source rock which was proven in the Ververis prospect.”</p>
24	10/20/10	Industry Report: Patersons Oil and Gas Research	<p>“TAP has a number of short term catalysts which include the drilling of Zola-1 in Q4 2010 targeting 1tcf of gas (+\$0.30/sh unrisked upside), followed by the drilling of Craigow-1 in the Bass Basin in Q1 2011 targeting estimated recoverable reserves of 20mmbbls (+\$0.40/sh unrisked upside)”</p>
25	10/10	Presentation: Petroleum Exploration Opportunities in Jeanne d’Arc Basin Arc Basin, Call for Bids NL10-01	<p>“A fourth large compound field, Hebron (denoted Hebron in further discussions), estimated to contain 581 million barrels recoverable reserves/resources will be developed starting in 2012 with first oil expected in 2017.”</p>
26	09/10/10	Serica set to spud Dambus-1, Upstream	<p>“The jack-up drilling rig Trident-IX has arrived on location off East Kalimantan to drill the Dambus-1 exploration well, which is targeting a prospect with pre-drill estimated recoverable reserves of about 130 million barrels of oil and 300 billion cubic feet of gas.”</p>

	DATE	SOURCE	STATEMENT
27	05/07/10	Salamander Energy Strikes Gas at Laotian Wildcat, IHS Global Insight	“Salamander Energy has discovered gas with Bang Nouan-1 wildcat exploration well on the Savannakhet production sharing contract in southern Laos. The well was drilled using the MB Century 26 rig to a total depth of 3400 metres and logging has been completed. Pre-drilling the well was believed to have prospective recoverable reserves estimated at 1.1 tcf.”
28	2/22/10	Falklands: Desire Petroleum spuds Liz 14/19-A exploration well	“Pre-drill reserves estimates for the Liz Prospect are 990 mbo STOIP (P50) and recoverable reserves 281 mmbo.”
29	2010	Optimal Learning from Pre-Post Drill Evaluations. The Case of Multiple Target Prospects	“We often use a log-log format for the cross-plot in order to be able to accommodate programs with significant differences in pre-drill expected recoverable reserves.”
30	10/09	Presentation: Delivering Growth through Acquisition of Proven Reserves & Enhancement of Producing Assets	“Major seismic interpretation executed on the 5,700 sq.km PSC area. Four prospects and five leads identified with gross mean 2P STOIP of 5,7 billion barrels and recoverable reserves of 1,484 billion barrels.”
31	9/25/09	Interim Results Presentation: Afren PLC	“Farm in agreement signed for the development of the Okwok field” “Estimated STOIP of 225 mmbbls with recoverable reserves in excess of 70 mmbbls”
32	3/09	Update Presentation: Amerisur Resources PLC	Seismic Interpretation- Principal Leads with chart showing “Recoverable Reserves”
33	11/9/08	Investor Village Posting: Another DWY post from the American Politics Board	“Pre-drill estimates, based on 3D seismic, are six to ten million bbls of recoverable reserves on this 100% owned prospect.”
34	10/09/08	Prime, Oil Search Spud Shakal-1 Well in Iraqi Kurdistan, IHS Global Insight	“The companies are targeting Tertiary and Cretaceous reservoirs similar to those in nearby discoveries, as the block is situated in the prolific Zagros fold belt, in trend with several other earlier and significant discoveries in the region. It has been suggested that the nearby Pulkhana structure, which holds the 300-million-barrel Pulkhana oilfield, could extent into the companies’ block and pre-drilling estimates by the companies suggest there could be potential for the block to contain unrisks recoverable reserves of some 250 million barrels.”

	DATE	SOURCE	STATEMENT
35	07/28/08	Rift makes gas find in Papua New Guinea, Oil & Gas Journal	"Puk Puk-1 was targeting an estimated predrill recoverable reserve of 226 bcf of gas."
36	02/22/08	Providence gets a Hook into Ireland	"According to partner Faroe Island-based minnow Atlantic Petroleum, Hook Head's pre-drill estimated recoverable reserves stood at about 70 million barrels of oil."
37	12/5/07	Drilling to start this week in PEL91 Cooper Basin	"Pre-drill P50 recoverable reserves of 0.5 million barrels of oil for the Birkhead/Hutton formations and 0.9 million barrels for the Namur Sandstone are estimated."
38	11/30/07	Serica has wildcats in sights, Upstream	"Toronto-listed Serica Energy is just days away from spudding the first of two wildcats with pre-drill estimated recoverable reserves of more than 100 million barrels of oil each on its Biliton production sharing contract off Indonesia, writes Amanda Battersby."
39	09/30/07	Providence Resources, Petroleum Review	"Pre-drill gross recoverable reserves were estimated at between 3.5bn to 5.8bn cf of gas."
40	9/07	Investors Presentation: Oil Basins Limited	"Recoverable reserves" 270 MMbbls (prospective potential recoverable) for drill ready prospect
41	5/07	Research Report: Black Rock Oil & Gas plc	"The Acacia Este prospect in Colombia, with estimated recoverable reserves of around 50m barrels (bbls), is expected to be spudded in the middle of May." "The first well on this prospect is expected towards the middle of May. The prospect is situated between the Arce oilfield and the Bukhara oil prospect, with estimated recoverable reserves of 50m bbls."
42	04/02/07	IMPRESS ENERGY LIMITED; Wirraway-1 Expected to Spud Shortly, ASX ComNews	Listing "Pre Drill Estimated Recoverable reserves"
43	02/23/07	Farm-out at Madura, Upstream	"The search is now on for a rig to drill the Kurnia-1 wildcat, which has estimated pre-drill recoverable reserves of 199 million barrels of oil and 256 billion cubic feet of gas."
44	1/25/07	Equity Report: Aminex Company Update: Ruvuma PSA	"Aminex has identified a series of prospects and leads from old Texaco maps. Initial targets are Cretaceous and Tertiary formations (as per Mnazi Bay), where a mixture of folding and faulting is believed to provide a trap for hydrocarbons. The largest of the mapped leads is estimated to contain potential recoverable reserves of 180 mmboc."

	DATE	SOURCE	STATEMENT
45	01/19/07	GREAT ARTESIAN OIL & GAS LIMITED; Appadare-1 Drilling Report, ASX Com News	"Pre-drill mean recoverable reserves of 1.2 million barrels of oil and a 'fill to spill' potential of 2.1 million barrels of recoverable oil are estimated. Appadare-1 will take about 10 days to drill and 3 days to evaluate."
46	01/17/07	GREAT ARTESIAN OIL AND GAS: APPADARE 1 DRILLING AHEAD, Australian Company News Bites	"The well will test the Poolowanna and Patchawarra potential of a combination structural-stratigraphic trap. Pre-drill mean recoverable reserves of 1.2 million barrels are estimated."
47	01/10/07	IMPRESS ENERGY LIMITED; Progress Report on Wilpinnie – 4, ASX ComNews	"The Wilpinnie-4 (Tomcat Prospect) structure has potential oil in place of 7.5 MMbbl (P50) and potential Recoverable reserves of 3.5 MMbbl (P50)." "Pre Drill estimated of Oil in Place and Recoverable Reserves"
48	11/10/06	Chevron targets Cambodia finds, Upstream	"Before Chevron's initial drilling on Block A, which it was awarded in march 2002, pre-drill estimated recoverable reserves were put at 400 million barrels of liquids and 3 trillion cubic feet of gas."
49	07/14/06	Cambodia push from Chevron, Upstream	"Pre-drill estimated recoverable reserves at Block A were put at 400 million barrels of liquids and 3 trillion cubic feet of gas, with industry sources saying that the region was likely to be gas-prone."
50	07/14/06	Tullow gets set to tap Bangora field appraisal well, Upstream	"Bangora had estimated pre-drill recoverable reserves of between 250 billion and 750 billion cubic feet of gas before the discovery well came in at the top of this range."
51	7/2006	BHP sanctions Shenzi	"First production from Shenzi is expected in mid-2009 through seven pre-drilled subsea wells. Full field development will include 15 production wells and water injection facilities." "Gross recoverable reserves from Shenzi are estimated at 350-400 MMboe. BHP operates Shenzi with a 44% working interest. BP and Hess each hold a 28% stake."
52	05/19/06	Tullow's testing time at Bangora, Upstream	"Bangora had estimated pre-drill recoverable reserves of between 250 billion and 750 billion cubic feet of gas and came in at the top of this range when the discovery wild-cat flowed at a combined rate of more than 120 MMcfd of gas."

	DATE	SOURCE	STATEMENT
53	10/14/05	Cambodia attraction for Indocan, Upstream	"Sources said earlier that Block A and Cambodia's offshore waters were likely to be gas-prone, although estimated pre-drill recoverable reserves of 400 million barrels of oil were touted for Block A."
54	03/18/05	Cambodia top-level legwork, Upstream	"Pre-drill estimated recoverable reserves for block A were put at 400 million barrels of liquids and 3 trillion cubic feet of gas, although some industry sources said they believed the acreage would likely be gas prone."
55	01/28/05	Oil Search eyes drilling bonanza to beat Kapul-1 woe, Upstream	"The well had pre-drill recoverable reserves potential of 113 million barrels of oil."
56	12/24/04	Cambodian confirmation, Upstream	"Pre-drill estimated recoverable reserves at the 6278-square kilometre block were put at 400 million barrels of liquids and 3 trillion cubic feet of gas, with sources saying the region is likely to be gas-prone."
57	12/24/04	KMG aiming deep with Gulf probes, Upstream	"Pre-drill estimates put the potential recoverable reserves between 40 million and 150 million barrels of oil equivalent."
58	12/03/04	Tullow well taps Bangora gas pay, Upstream	"Bangora had estimated pre-drill recoverable reserves of between 250 billion and 750 billion cubic feet of gas, and has come in at the top of this range."
59	11/05/04	Noble talks over Lorien prospects, Upstream	"Pre-drill estimates had put potential Lorien recoverable reserves somewhere between 50 million and 150 million boe, however Noble now carries the find as a 20 million to 30 million boe discovery with possible upside."
60	09/10/04	Edison pressing on with Munir drilling, Upstream	"Pre-drill estimates for Seqanat deep-1 pegged potential recoverable reserves there at up to 2 billion barrels. The Shakestan prospect is thought to have potential for between 500 million and 1 billion barrels."
61	06/25/04	Iran spurs Munir oil find hopes, Upstream	"Pre-drill estimates for Seqanat deep-1, which targeted seven reservoirs - including Sarvak, Dariyan, Fahliyan and Surmeh - pegged potential recoverable reserves at up to 2 billion barrels. The Shakestan prospect is thought to have potential for another 500 million to 1 billion barrels."

	DATE	SOURCE	STATEMENT
62	5/9/04	Petroleum News, Vol. 9, No. 19	“Because of the region’s complex geology and reservoir imaging challenges, no one is certain of Thunder Horse’s true potential. Some analysts believe the play could hold upward of 7 billion barrels of recoverable reserves, although 3 billion barrels is often cited as the likely mean.”
63	02/20/04	Cambodia lures ChevronTexaco, Upstream	“A seismic survey was conducted last year and the results of this will be evaluated and used to help plan this summer’s drilling campaign. Pre-drill estimated recoverable reserves for the 6278-square kilometre block were put at 400 million barrels of liquids and 3 trillion cubic feet of gas.”
64	02/13/04	Noble hopes to play trump card at Queen of Hearts, Upstream	“Pre-drill estimates had placed recoverable reserves potential as high as 100 million barrels of oil equivalent.”
65	2/04	Success Rate Makes for Good Year	“Pre-drill reserve estimates were in excess of 300 mmbo.”
66	2004	Petroleum Reserves, Determination	“Reserve estimates during the pre-drill exploratory phase are often based on known geologic factors from other areas thought to be sufficiently similar to the area under study applied to a reservoir description based on site specific interpretive data. . . The range of uncertainty at this time can be quite large.”
67	07/25/03	Lorien exploration well comes up with goods, Upstream	“Pre-drill estimates had put potential Lorien recoverable reserves somewhere between 50 million and 150 million barrels of oil equivalent.”
68	11/08/02	Kerr-McGee Updates Gulf of Mexico Deepwater Drilling Activity, PR Newswire	“The rig is currently being moved from Hornet to the DeSoto prospect on East Breaks block 638. This satellite to the company's Boomvang field has pre-drill reserve estimates of 15 million to 25 million BOE and could be developed as a subsea tieback to the Boomvang spar facility.”
69	7/2002	Gas pipeline down, but not out, Petroleum Economist	“Pre-drilling, potential recoverable reserves were placed at 30m barrels.”
70	06/21/02	Bonus on..., Upstream	“The pre-drill potential recoverable reserve estimates for the Tariki sandstone reservoirs in the Huinga prospect were 46 million barrels of oil and 161 billion cubic feet of gas.”

	DATE	SOURCE	STATEMENT
71	05/01/01	Pancontinental Oil & Gas NL, Jobson's Mining Year Book	"Based on the remapping carried out by the PNOG, the pre-drill potential total recoverable reserves for the Fuga Island prospect had been estimated at 5.24 Tcf (trillion cubic feet) gas or 1,3,57 million barrels (mmb) oil for the sum of the Lubuagan, Sicalao and Ibulao reservoirs anticipated in the Fuga prospect."
72	02/19/01	WON NEW – ASX Company Announcement, AAP Newsfeed	"Puffin-6 is an appraisal well which will test the southwest culmination of the Puffin Oilfield which has the potential for recoverable reserves of 55 million barrels."
73	7/23/96	Blenheim Field: the appraisal of a small oil field with a horizontal well	"Pre-drill recoverable reserves in the prospect were estimated at 18x10 BBL oil."
74	06/14/95	SAGA OUTLINES FUTURE PLANS FOR GOLDEN BLOCK 34/7, FT Energy Newsletters	"The plan is to produce Tordis East through one or two wells tied back to a new template installed near the Tordis manifold . . . Recoverable reserves for Tordis East are put at 28.2m boe."
75	06/18/92	PRE-PRODUCTION DRILLING SET BY CHEVRON AT ALBA, Oilgram News	"The pre-drilling will provide the first production well for Alba, to be hooked up along with others to the platform to be installed next summer . . . Alba is estimated to contain up to 400-million bbl of recoverable reserves, with production expected to peak at 60-70,000 b/d in the first phase."
76	01/15/92	HYDRO DELAYS OSEBERG EAST PDO SUBMISSION BY A YEAR, FT Energy Newsletters	"Recoverable reserves are estimated at 346m barrels and start-up is scheduled for late-1995, provided approval comes by Spring 1993. A steel jacket is planned, tied back to the Oseberg Field centre, plus a 16-slot template, enabling some of the wells to be pre-drilled."
77	09/1991	Progress on £ 1.1bn Nelson development, The Oilman	"If the project stays on schedule, Nelson could start producing by late 1993. . . Recoverable reserves are estimated by Shell to be 450 million barrels of oil, 185bcf of gas (84bcf sales gas) and 3.6 million tonnes of NGL."
78	04/10/90	NORSK HYDRO SETS SCHEDULE FOR OFFSHORE BRAGE DEVELOPMENT, Platt's Oilgram News	"Pre-drilling of three production wells and one water injection will start in 1992. Brage's total recoverable reserves are estimated at 250-million bbl of oil and 2.8-billion cu meters of gas."

	DATE	SOURCE	STATEMENT
79	11/16/87	Oil field off Tierra del Fuego under development, Oil & Gas Journal	"The Hydra field is medium-sized, in terms of recoverable reserves, and relatively costly to develop because of environmental factors. But the existence of nearby oil and gas accumulations discovered during a successful exploration campaign on the Austral permit was a boost to the decision and the key factor in the selection of the development scheme. . . The recoverable reserves are estimated at around 7 million cu m or 44 million bbl with pressure maintenance and artificial lift."
80		Prospect LKO	Listing "potential reserves" for drilling prospect.
81		Spanish Lake	Listing "potential reserves" for drilling prospect.
82		Eureka Prospect	Listing "estimated reserves" for drilling prospect.
83		S. University Prospect	Listing "reserve potential" for drilling prospect.
84		Southwest Holmwood Prospect	Listing "estimated reserves" for drilling prospect.
85		Phoenix Prospect	"Estimated Reserves Zone for Possible Pays"
86		Grosse Isle "B" Prospect	Listing "prospect reserve potential" for drilling prospect.
87		Barataria Bay North Prospect	Listing "reserve potential" for drilling prospect.
88		Bling Hog Prospect	"Potential reserves total 6.95 MMBO and 11.5 BCFG from all prospective reservoirs."

FIGURES

Fig. 1. CPO-4 Concession Relative to Area Fields.

Surrounded Area by Existing Fields

Source Rock

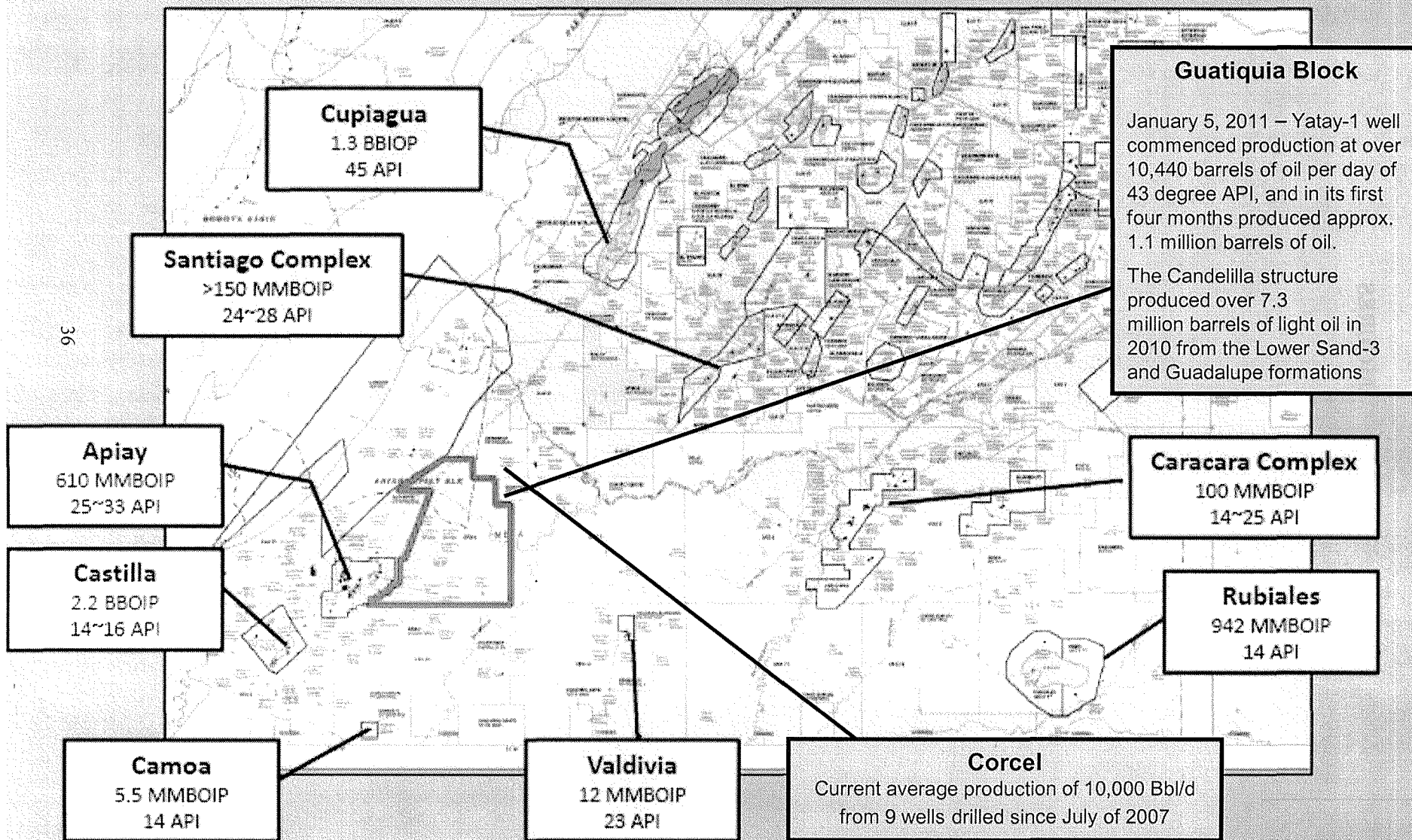


Fig. 2. Intercol Negritos No. 1 Well Log.

Company INTERCOL
 Well NEGRITOS-1
 Field WILDCAT
 County _____ State META Country COLOMBIA
 Location GAUSS ORIGIN BOGOTA

Section _____ Township _____ Range _____ API Num NEGR0001
 Permanent Datum _____ Elevation _____ K.B. _____
 Log Measured From _____, _____ Above Perm Datum D.F. _____
 Drilling Meas From _____ G.L. _____

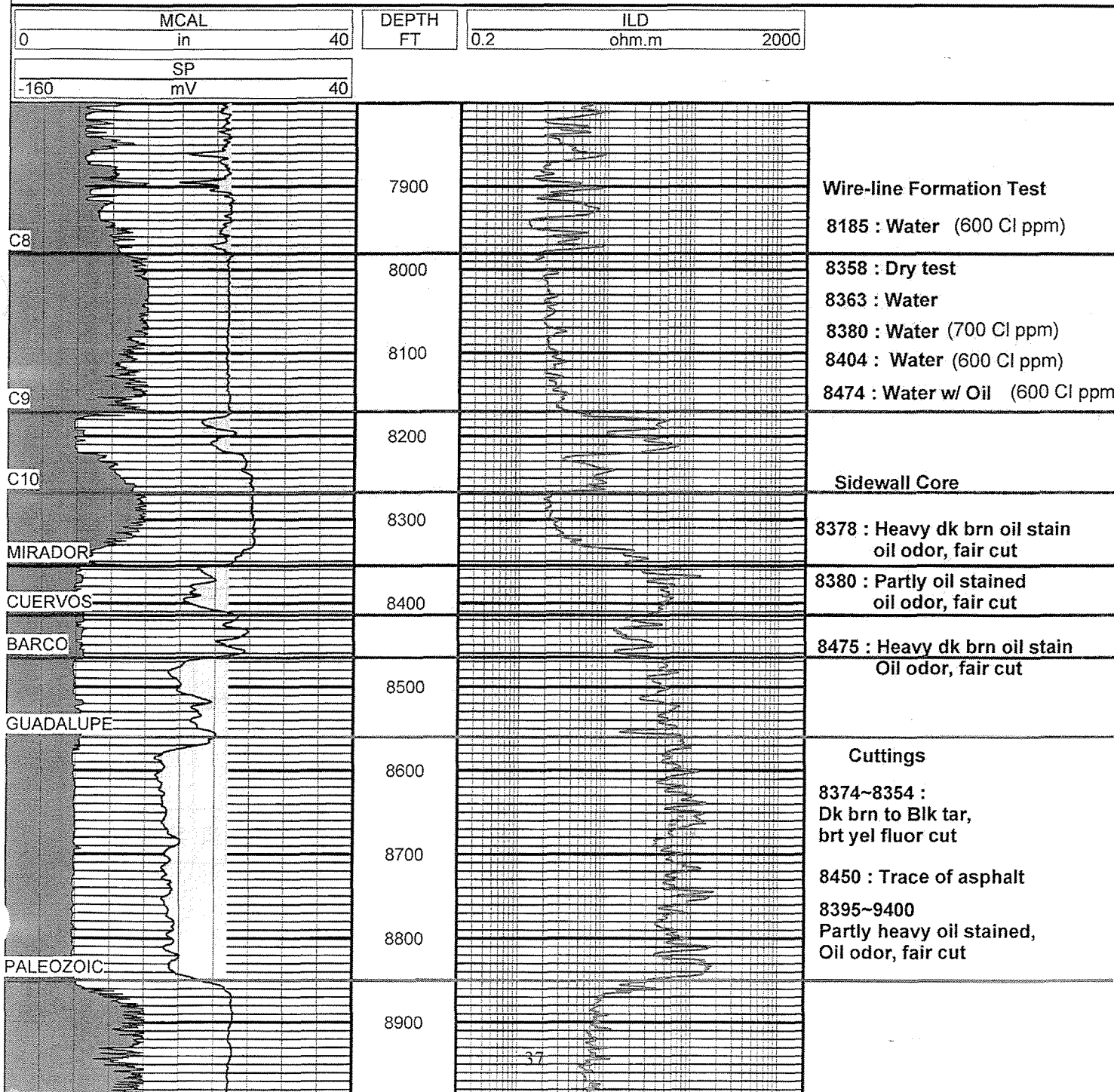


Fig. 3. SK Summary of Recoverable Reserves - 150 STBO/acre-ft.

Total Potential

Lead	Acres			Unit R.R.	Net Pay (C9+M+U)	Recoverable Reserve (MMBO)	Remark
	C7	Mirador	Une				
1	1055	724	899	150	50'+100'+75'	29	Synthetic
2	556	212	417	150	50'+100'+75'	12	Synthetic
3	420	291	0	150	50'+100'+75'	8	Synthetic
4	6358	6506	3495	150	50'+100'+75'	185	Thrust
5	1018	2119	1435	150	50'+100'+75'	56	Thrust
6	531	114	388	150	50'+100'+75'	10	Inversion
7	1097	657	311	150	50'+100'+75'	22	Inversion
8	1606	1074	694	150	50'+100'+75'	36	Inversion
9	3821	7037	420	150	50'+100'+75'	139	Inversion
10	469	0	0	150	50'+100'+75'	4	Inversion
11	447	622	509	150	50'+100'+75'	18	Inversion
12	664	659	0	150	50'+100'+75'	15	Inversion
13	2687	936	761	150	50'+100'+75'	43	Inversion
14	882	3399	1625	150	50'+100'+75'	76	Drapeover
15	993	1692	605	150	50'+100'+75'	40	Inversion
16	284	847	452	150	50'+100'+75'	20	Inversion
17	0	420	326	150	50'+100'+75'	10	Inversion
18	0	818	0	150	50'+100'+75'	12	Inversion
19	0	0	1247	150	50'+100'+75'	14	Inversion
20	3320	4029	2364	150	50'+100'+75'	112	Thrust
21	2510	2611	3162	150	50'+100'+75'	94	Thrust
22	790	1102	0	150	50'+100'+75'	22	Thrust
Total Potential						974	

Unit R.R.

- Porosity : 20 %
- So : 60%
- So/Bo : 0.9
- GF : 0.7
- RF : 30 %

Net Pay

- Avg. Thickness
- From Net Sd Map

Fig. 4. SK Summary of Recover Reserves - 200 STBO/acre-ft.

Recoverable Reserves

● Recoverable Reserves by Lead

LEAD	A	B	C	D	E	F
Area [acre]	9,716	10,178	3,865	16,365	4,574	3,375
Rec. Reserve [MMBO]	291	305	116	491	137	101
LEAD	G	H	I	J	K	L
Area [acre]	3,099	15,550	1,579	4,386	5,908	4,379
Rec. Reserve [MMBO]	93	467	47	132	177	131
Total Rec. Reserve [MMBO]	2,489					

Assumption 1: Net Pay 150 ft

Assumption 2: Recoverable Reserve per unit volume (acre)x(ft): 200 BO

Fig. 6. SK Recovery Factor with Aquifer Support.

November 21, 2014 9:55 AM V981111_03	Michael L. Wiggins, Ph.D., P.E. Petroleum Engineering Consultant
	Combination Drive - Oil Reserves

Well Name : CPO-4 Block
 Reservoir: All Reservoirs
 Field: Colombia
 Case: Proved + Probable
 Base Pressure: 14.650

Analysis per Acre Foot

Variable	Units	Value	Remarks
Drive Type (PD / Comb.)	P or C	C	
Porosity	Percent	20.0	
Water Saturation	Percent	40.0	
Oil Reservoir Volume	AC-FT	1	
Gas Cap Volume	AC-FT	0	
Reservoir Temperature	Degrees F	190	
Initial Reservoir Pressure	PSIA	3700	8500 ft average depth
Calc: PBP (0), Initial GOR (1), Neither (2):		0	Calc Bubble Point Pressure
PBP Will Be Calc'd	psia		
Input Initial 1st Stage Separator GOF	SCF/STB	150	
Include Stock Tank GOR	(Yes if checked)	<input type="checkbox"/>	Stock Tank GOR not used.
Cumulative GOR	SCF/STB	500	
Oil Gravity	Degrees API	20.0	
Wet Gas Gravity	Air = 1	0.700	
Mole % Nitrogen	Percent	0.00	
Mole % Carbon Dioxide	Percent	0.00	
Mole % Hydrogen Sulfide	Percent	0.00	
Separator Temperature	Degrees F	80	
Separator Pressure	PSIA	100	
Pressure Depletion	Percent	30.0	
Sweep Efficiency	Percent	75.0	
Reservoir Volume Swept	AC-FT	1	

Calculated Values	Units	Defaults	Value
Gas Cap - Oil Volume Ratio		0.000	0.000
Bubble Point Pressure	PSIA	1286	1286
Oil FVF @ Bubble Point	BBL/STB	1.1195	1.1195
Residual Oil Saturation	Percent	17.6	17.6

Calculated Values	Units	Initial	Final
Reservoir Pressure	PSIA	3700	2590
Oil Formation Volume Factor	BBL/STB	1.0914	1.1026
Gas Formation Volume Factor	SCF/CF	220.0	160.6
Solution Gas Oil Ratio	SCF/STB	150	150
Total Formation Volume Factor	BBL/STB	1.0914	1.1026
Unit Oil in Place	BBL/AF	853.0	N/A
Total Oil in Place	MBO	0.9	N/A

	% of Initial	Unit Recov. BBL/AF	Oil MBO	Gas MMSCF	GOR MSCF/STB
Press. Depletion (Pi to Pb)	1.01	8.638	0.009	0.001	0.150
Press. Depletion (Pb to Pa)	---	---	---	---	#VALUE!
Water Drive	52.41	447.005	0.447	0.067	0.150
Total	53.42	455.643	0.456	0.068	0.150

Initial Reserves (MBO / MMCF)	0.5	0.1	0.150
Cumulative Production			
Estimated Production			
Estimated Production			
Remaining Reserves	0.5	0.1	0.150

Fig. 7. Wiggins Recovery Factor with Aquifer Support.

November 21, 2014 9:50 AM V981111_03	Michael L. Wiggins, Ph.D., P.E. Petroleum Engineering Consultant
	Combination Drive - Oil Reserves

Well Name : CPO-4 Block
 Reservoir: All Reservoirs
 Field: Colombia
 Case: Proved + Probable
 Base Pressure: 14.650

Analysis per Acre Foot

Variable	Units	Value	Remarks
Drive Type (PD / Comb.)	P or C	C	
Porosity	Percent	25.0	
Water Saturation	Percent	30.0	
Oil Reservoir Volume	AC-FT	1	
Gas Cap Volume	AC-FT	0	
Reservoir Temperature	Degrees F	190	
Initial Reservoir Pressure	PSIA	3700	8500 ft average depth
Calc: PBP (0), Initial GOR (1), Neither (2):		0	Calc Bubble Point Pressure
PBP Will Be Calc'd	psia		
Input Initial 1st Stage Separator GOR	SCF/STB	150	
Include Stock Tank GOR	(Yes if checked)	<input type="checkbox"/>	Stock Tank GOR not used.
Cumulative GOR	SCF/STB	500	
Oil Gravity	Degrees API	20.0	
Wet Gas Gravity	Air = 1	0.700	
Mole % Nitrogen	Percent	0.00	
Mole % Carbon Dioxide	Percent	0.00	
Mole % Hydrogen Sulfide	Percent	0.00	
Separator Temperature	Degrees F	80	
Separator Pressure	PSIA	100	
Pressure Depletion	Percent	30.0	
Sweep Efficiency	Percent	75.0	
Reservoir Volume Swept	AC-FT	1	

Calculated Values	Units	Defaults	Value
Gas Cap - Oil Volume Ratio		0.000	0.000
Bubble Point Pressure	PSIA	1286	1286
Oil FVF @ Bubble Point	BBL/STB	1.1195	1.1195
Residual Oil Saturation	Percent	18.4	18.4

Calculated Values	Units	Initial	Final
Reservoir Pressure	PSIA	3700	2590
Oil Formation Volume Factor	BBL/STB	1.0914	1.1026
Gas Formation Volume Factor	SCF/CF	220.0	160.6
Solution Gas Oil Ratio	SCF/STB	150	150
Total Formation Volume Factor	BBL/STB	1.0914	1.1026
Unit Oil in Place	BBL/AF	1243.9	N/A
Total Oil in Place	MBO	1.2	N/A

	% of Initial	Unit Recov. BBL/AF	Oil MBO	Gas MMSCF	GOR MSCF/STB
Press. Depletion (Pi to Pb)	1.01	12.597	0.013	0.002	0.150
Press. Depletion (Pb to Pa)	---	---	---	---	#VALUE!
Water Drive	54.70	680.473	0.680	0.102	0.150
Total	55.72	693.071	0.693	0.104	0.150

Initial Reserves (MBO / MMCF)	0.7	0.1	0.150
Cumulative Production			
Estimated Production			
Estimated Production			
Remaining Reserves	0.7	0.1	0.150

Large Latin American E&P Transactions

Since 2006, Scotia Waterous has advised on the majority of the large E&P transactions in Latin America.

Talisman Energy Inc.
Advised on the sale of Trinidad and Tobago assets to

US\$312,000,000
Financial Adviser
Scotia Waterous
Pending

Advised on the acquisition of Offshore International Group (Petro-Tech)

US\$900,000,000
Financial Adviser
Scotia Waterous
February 2009

Advised on divestiture of Colombian assets to

US\$920,000,000
Financial Adviser
Scotia Waterous
March 2008

Omlinex Group
Omlinex de Colombia, Ltd.

Advised on sale of Colombian subsidiary to

US\$850,000,000
Financial Adviser
Scotia Waterous
September 2006

Advised on acquisition of Ecuadorian subsidiaries from

US\$1,420,000,000
Financial Adviser
Scotia Waterous
February 2006

Advised on Argentine asset divestitures to

US\$675,000,000
Financial Adviser
Scotia Waterous
January 2006

Date Announced	Buyer	Seller	Type	Transaction Value (\$M)	Oil Leverage		Res. Value/ Production (\$/boe/d)	1P		2P		Country
					1P Reserves (%)	Production (%)		Res. Value/ Reserves (\$/boe)	R/P Ratio (Years)	Res. Value/ Reserves (\$/boe)	R/P Ratio (Years)	
20-Mar-09	Talisman Energy	CNOOC/Sinopec	Asset	\$312,800	11%	100%	\$64,020	\$7.59	23.1	\$5.43	32.3	Trinidad & Tobago
10-Mar-09	Ecopetrol	Hocol Petroleum	Asset	\$580,000	99%	NA	\$26,364	\$9.67	7.5	\$6.39	11.3	Colombia
6-Feb-09	KNOC / Ecopetrol	Offshore Int'l Group	Corporate	\$900,000	NA	NA	\$75,000	NA	NA	\$9.00	22.8	Peru
29-Jul-08	Gran Tierra	Solana Resources	Corporate	\$606,010	97%	97%	\$126,898	\$45.40	7.7	\$28.71	12.9	Colombia
17-Mar-08	CEPSA	Hupecol	Asset	\$920,000	NA	100%	\$57,317	\$26.06	6.0	\$23.59	6.7	Colombia
4-Mar-08	StatoilHydro	Anadarko	Asset	\$1,850,000	NA	NA	NA	NA	NA	\$7.40	NA	Brazil
Mean				\$971,202	98%	98%	\$71,395	\$27.04	7.1	\$15.02	13.4	
Mean (excl. high & low)				\$808,670	NA	NA	\$66,159	\$26.06	7.5	\$13.33	12.1	
Median				\$900,000	98%	98%	\$66,159	\$26.06	7.5	\$9.00	12.1	

Scotia Waterous advised transaction

APPENDIX A

Michael L. Wiggins

Mid-Con Energy Operating, LLC

2501 N. Harwood, Suite 2410

Dallas, Texas 75201

972-479-5980 office 469-206-6823 fax

mwiggin@midcon-energy.com

EDUCATION:

Ph.D., Petroleum Engineering
Texas A&M University, May 1991

M.Eng., Petroleum Engineering
Texas A&M University, August 1988

B.S., Petroleum Engineering
Texas A&M University, May 1979

WORK EXPERIENCE:

3/2013 - Present

Mid-Con Energy Operating, LLC

<i>President</i>	<i>8/2014 – Present</i>
<i>Executive Vice President</i>	<i>3/2013 – 7/2014</i>

- Serve as chief engineer and chief operating officer for an independent upstream E&P company. Duties include supervising management staff and technical evaluation of waterflood and improved oil recovery projects, reserve determination and reporting, and reservoir management programs.

2006 - 3/2013

William M. Cobb & Associates, Inc.

<i>President</i>	<i>2011 – 2013</i>
<i>Senior Vice President</i>	<i>2006 – 2010</i>

- Perform technical and economic studies of oil and gas reservoirs for reservoir management, waterflood and EOR assessment and design, reserve determination, and production optimization
- Provide expert witness testimony involving petroleum engineering functions and industry practices
- Teach petroleum engineering industry courses in the areas of reservoir management, reservoir engineering, waterflooding, well completions and performance, and economic evaluations

1991 - 2006

The University of Oklahoma (Norman, Oklahoma)

Professor, School of Petroleum and Geological Engineering

- Taught undergraduate and graduate level petroleum engineering classes in areas of reservoir management, reservoir and production engineering, and petroleum economics
- Conducted research in the areas of flow through porous media, reservoir recovery processes, well performance, reservoir and production engineering, artificial lift, and environmental management

1987 - 1991

Texas A&M University (College Station, Texas)

Graduate Assistant, Petroleum Engineering Department

- Conducted research in the areas of well performance and reservoir management
- Assisted in teaching an introductory course on engineering and computers

1986 - 1987

Independent Consulting Engineer (Liberty, Texas)

- Performed reservoir projections and economic analysis on oil and gas properties under consideration for acquisition and divestment

1985 - 1986

ITR Petroleum, Inc. (Houston, Texas)

Petroleum Engineer

- Performed duties of a production engineer for operated and non-operated properties in South Texas and Oklahoma

1981 - 1985

Templeton Energy, Inc (Houston, Texas)

Petroleum Engineer

- Prepared drilling and completion programs for company operated properties primarily in Kansas, Oklahoma, Louisiana, and Texas
- Managed all production operations in Texas, Louisiana, Mississippi, Oklahoma and Kansas
- Supervised engineering, technical, clerical and field personnel

1980 – 1981

*The Bertman Companies (Liberty, Texas)
Petroleum Engineer*

- Supervised the operations of a small independent on the upper Texas Gulf Coast

1979 – 1980

*Sun Gas Company (Lafayette, Louisiana)
Production Engineer*

- Performed production engineering and field duties on properties in the upper Texas Gulf Coast, North Louisiana, and Mississippi

RESEARCH FUNDING:

Secured funding for and participated in 13 externally funded research projects while at the University of Oklahoma. Total external funding was 2.5 million dollars. Served as Project Director and Principal Investigator for 11 of these projects. Projects were funded by the U.S. Department of Energy, U.S. Environmental Protection Agency, Sandia National Laboratories, and various exploration and production companies including Phillips Petroleum, Marathon, Kerr-McGee, Devon Energy, and Anadarko Petroleum.

TEACHING ACTIVITY:

Academic teaching experience includes petroleum engineering courses at both the graduate and undergraduate level in reservoir engineering, production engineering, and petroleum economic evaluation. Industry short course teaching activity includes courses in petroleum reservoir management, basic reservoir engineering, well completions and performance, and petroleum economic evaluation.

GRADUATE STUDENT ACTIVITY:

Supervised 18 graduate students through degree completion, four doctoral students, and 14 masters students. Theses encompassed a range of topics related to fluid flow in porous media, reservoir engineering, production engineering, well performance, artificial lift, and environmental issues.

TECHNICAL AND PROFESSIONAL SOCIETIES:

- Society of Petroleum Engineers
 - Carll, Lucas, and Uren Award Committee, 2010-2012
 - 2010 Annual Technical Conference and Exhibition Program Committee
 - Member of Reservoir Monitoring Technical Program Subcommittee, Annual Technical Conference and Exhibition, 2008-2010

- Board of Directors, 2004 - 2006
 - Executive Editor, SPE Production and Facilities, 2001-2004
 - Elected Distinguished Member by Board of Directors, 2003
 - General Chairman, 2003 Production and Operations Symposium 2001-2003
 - Recipient of the Mid-Continent Region Service Award, 2002
 - Program Chairman, Oklahoma City Chapter, Reservoir Engineering and Economic Study Group, 2001-2002
 - Member of the Waterflooding Subcommittee, SPE Reprint Series, 2000-2002
 - Program Chairman, 2001 Production Operations Symposium, 2000-2001
 - Director, Oklahoma City Chapter, 1999-2001
 - Review Chairman, SPE Production and Facilities, 1998-2001
 - Served on the Engineering Registration Committee, 1996-1999
 - Member of the Reservoir Management Subcommittee, SPE Reprint Series, 1996-1998
 - Program Committee, SPE Production Operations Symposiums, 2009, 2007, 2005, 2003, 2001, 1999, 1997, 1995, 1993
 - Recipient of the Outstanding Technical Editor Award, 1996, 1997, 2009
 - Technical Editor, SPE Production and Facilities, 1995 to present
 - Member, Petroleum Computer Conference Committee, 1995 - 1997
 - Approved ABET Petroleum Engineering Visitor, 1993 to present
 - PI EPSILON TAU, The National Petroleum Engineering Honor Society, 1978
-
- Society of Petroleum Evaluation Engineers
 - American Society for Engineering Education
 - Network of Excellence in Training (NExT)
 - Petroleum Engineering Peer Review Board, 2000 – present
 - University of Oklahoma, Norman
 - General Chairman, Conference on Naturally Fractured Reservoirs
 - Recipient, Petroleum and Geological Engineering Distinguished Achievement Award, 2000
 - College of Engineering Dean's Senior Advisory Committee, 1999 – 2000
 - Student Chapter Faculty Advisor, 1991-1996

REGISTRATION:

- Registered Professional Engineer, States of Texas and Oklahoma

PUBLICATIONS:

- Akhimiona, N. and Wiggins, M.L.: "An Inflow Performance Relationship for Horizontal Gas Wells," paper SPE 97627 presented at the 2005 SPE Eastern Regional Meeting, Morgantown, WV, 14-16 September.
- Wiggins, M.L. and Wang, H-S.: "A Two-Phase IPR for Horizontal Oil Wells," paper SPE 94302 presented at the 2005 SPE Production & Operations Symposium, Oklahoma, OK, 16-19 April.
- Anklam, E.G. and Wiggins, M.L.: "Horizontal Well Productivity and Wellbore Pressure Behavior Incorporating Wellbore Hydraulics," paper SPE 94316 presented at the 2005 SPE Production & Operations Symposium, Oklahoma, OK, 16-19 April.
- Ogunsina, O.O. and Wiggins, M.L.: "A Review of Downhole Separation Technology," paper SPE 94276 presented at the 2005 SPE Production & Operations Symposium, Oklahoma, OK, 16-19 April.
- Anklam, E.G. and Wiggins, M.L.: "A Review of Horizontal Wellbore Pressure Equations," paper SPE 94314 presented at the 2005 SPE Production & Operations Symposium, Oklahoma, OK, 16-19 April.
- Gallice, F. and Wiggins, M.L.: "Comparison of Two-Phase Inflow Performance Relationships," SPEPF (May 2004) 100-104.
- Brown, R.L., Wiggins, M.L. and Gupta, A.: "Seismic Determination of Saturation in Fractured Reservoirs," SPE Journal (September 2002) 237-242.
- Penuela, G., Hughes, R.G., Civan, F. and Wiggins, M.L.: "Elongated-Slab Models for Interporosity Flow in Naturally Fractured Reservoirs," paper NFR-003 presented at the 2002 Conference on Naturally Fractured Reservoirs, 3-4 June 2002.
- Penuela, G., Civan, F., Hughes, R.G., and Wiggins, M.L.: "Time-Dependent Shape Factors for Interporosity Flow in Naturally Fractured Gas-Condensate Reservoirs," paper SPE 75524 presented at the SPE Gas Technology Symposium held in Calgary, 30 April - 2 May 2002.
- Penuela, G., Hughes, R.G., Civan, F., and Wiggins, M.L.: "Time-Dependent Shape Factors for Secondary Recovery in Naturally Fractured Reservoirs," paper SPE 75234 presented at the SPE/DOE Improved Oil Recovery Symposium, Tulsa, April 13-17, 2002.

- Striz, E.A. and Wiggins, M.L.: "A Coupled Model to Predict Interformation Flow Through an Abandoned Wellbore," SPE Production and Facilities (February 2002) 11-22.
- Gasbari, S. and Wiggins, M.L.: "A Dynamic Plunger Lift Model for Gas Wells," SPE Production and Facilities (May 2001) 89-96.
- Goel, N., Wiggins, M.L. and Shah, S.: "Analytical Modeling of Gas Recovery from In Situ Hydrates Dissociation," Journal of Petroleum Science and Engineering (April 2001) 113-125.
- Brown, R.L., Wiggins, M.L. and Gupta, A.: "Seismic Determination of Saturation in Fractured Reservoirs," paper SPE 67278, Proceedings 2001 SPE Production and Operations Symposium, Oklahoma City, OK, March 25-28.
- Brown, R.L., Wiggins, M.L. and Gupta, A.: "Problems Calibrating Production and Seismic Data for Fractured Reservoirs," paper SPE 67317, Proceedings 2001 SPE Production and Operations Symposium, Oklahoma City, OK, March 25-28.
- Wiggins, M.L.: "Analytical Inflow Performance Relationships," ASME Journal of Energy Resources Technology (March 1999) 24-30.
- Wiggins, M.L., Nguyen, S.H., and Gasbarri, S.: "Optimizing Plunger Lift Operations in Oil and Gas Wells," paper SPE 52119, Proceedings 1999 SPE Mid-Continent Operations Symposium, Oklahoma City, OK, March 28-31.
- Wiggins, M.L. and Startzman, R.A.: "An Approach to Reservoir Management," Reservoir Management, Reprint Series No. 48, SPE, Richardson, TX (1998) 9-15.
- Gallice, F. and Wiggins, M.L.: "Comparison of Two-Phase Inflow Performance Relationships," paper SPE 52171, Proceedings 1999 SPE Mid-Continent Operations Symposium, Oklahoma City, OK, March 28-31.
- Striz, E.A. and Wiggins, M.L.: "A Coupled Model to Predict Interformation Flow Through an Abandoned Wellbore," paper SPE 49151, Proceedings 1998 SPE Annual Technical Meeting and Exhibition, New Orleans, LA, Sept. 27-30.
- Wiggins, M.L., Broussard, N.J., and Rieke, H.H.: "Advisory Boards: Leveraging Industry Resources," paper SPE 39491, Proceedings 1997 SPE Annual Technical Conference and Exhibition, San Antonio, TX, Oct. 5-8.
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APPENDIX B

Expert Testimony History 2011-2014

- 2011 Represent PDVSA Petroleo, S.A. (defendant) in an ICC arbitration dispute with the SIMCO Consortium and Wood Group Engineering (North Sea) Limited regarding contract termination for water treatment and water injection services in Lake Maracaibo, Venezuela. Prepared expert report and presented arbitration testimony.

MLW
11-21-2014

Llanos Basin Field Parameters and Computed Recovery Factors From HIS Data

<u>Field</u>	<u>Discovered</u>	<u>Reservoirs</u>	<u>Main</u>	<u>Reserves</u> MMBO	<u>Area</u> acres	<u>Thickness</u> net feet	<u>Column</u> feet	<u>Wedge F</u>	<u>Computed Recovery Factor</u> B/AF	<u>Trap</u>	<u>Porosity</u>	<u>Perm.</u>	<u>Test(oil)</u> BOPD	<u>API</u>	<u>Test(gas)</u> MCFPD	<u>Salinity</u> ppm
Note: Reserve numbers are Proven and Probable and do not include Possible																
Aplay	1981	2	Une	274	1248	245	250	0.65	1379	Anti	19	1000	4509	25	464	
Morichal	1984	3	Une	7.7	1783	38	70	0.65	175	UTF	11					
Castilla	1969	1	Une	265.83	2471	262		0.65	632	Anti			1070	14		
Castilla Norte	1988	1	Une	150.7	1482	134		0.65	1167	Fault		1000	120	13		
Chichimene	1969	2	Une	70.67	1235	67	250	0.65	1314	Anti	17	150	800	21		
Cravo Sur	1982	4	Une	4.3	1294	25	30	0.65	204	UTF			2448	39		
El Palmer	1990	2	Une	6.3	371	140	90	0.65	290	UTF	17		1945	22		12500
Corcel C	2008	2	Une	7	300	70		0.65	513	AD Anti	20					
AVERAGE Une				98	1273	123	138		709		17	717	1815	22	464	12500

<u>Field</u>	<u>Discovered</u>	<u>Reservoirs</u>	<u>Main</u>	<u>Reserves</u> MMBO	<u>Area</u> acres	<u>Thickness</u> net feet	<u>Column</u> feet	<u>Wedge F</u>	<u>Computed Recovery Factor</u> B/AF	<u>Trap</u>	<u>Porosity</u>	<u>Perm.</u>	<u>Test(oil)</u> BOPD	<u>API</u>	<u>Test(gas)</u> MCFPD	<u>Salinity</u> ppm
Note: Reserve numbers are Proven and Probable and do not include Possible																
Cernicalo 1ST	2007	2	Guadalupe	0.85	247	12		0.65	441	UTF	28		530	24		
AVERAGE Guadalupe				0.85	247	12		0.65	441		28		530	24		

<u>Field</u>	<u>Discovered</u>	<u>Reservoirs</u>	<u>Main</u>	<u>Reserves</u> MMBO	<u>Area</u> acres	<u>Thickness</u> net feet	<u>Column</u> feet	<u>Wedge F</u>	<u>Computed Recovery Factor</u> B/AF	<u>Trap</u>	<u>Porosity</u>	<u>Perm.</u>	<u>Test(oil)</u> BOPD	<u>API</u>	<u>Test(gas)</u> MCFPD	<u>Salinity</u> ppm
Note: Reserve numbers are Proven and Probable and do not include Possible																
Campo Rico	1986	1	Mirador	4.26	865	11	125	0.65	689	UTF	20	1000	650	16		900
Juncal	1991	1	Mirador	5.17	247	138	65	0.65	495		18					
La Gloria	1987	2	Mirador	30.92	1739	67	74	0.65	408	UTF	18		1900	16	1900	
Rancho Hermoso	1984	5	Mirador	31.33	1729	8		0.65	3485	UTF	20		1048	37	96	
Tocaria	1980	4	Mirador	12.45	2470	17	42	0.65	456	UTF			970	33		12000
Cravo Este	1987	2	Mirador	0.6	988	7		0.65	133	UTF			2360	42		
Los Trompillos	1990	1	Mirador	10.42	823	120		0.65	162	UTF	19	950	1361	30		150

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Corcel A	2007	3	Mirador	13.6	400	100		0.65	523	AD	UTF	20	1000	2800	28		
Santiago	1975	1	Mirador	46.67	988	110		0.65	661		UTF						
Santiago Este	1988	1	Mirador	6.1	371	82	75	0.65	337		UTF			1644	22		250
La Gloria Norte	1983	1	Mirador	22	1161	150	48	0.65	607		UTF	20	5000	1670	18	1010	14200
Tocaria	1980	4	Mirador	12.5	2470	17	42	0.65	458		UTF	25		1604	32	90	12000
AVERAGE Mirador				16	1188	69	67		701			20	1988	1601	27	774	6583

<u>Field</u>	<u>Discovered</u>	<u>Reservoirs</u>	<u>Main</u>	<u>Reserves</u> MMBO	<u>Area</u> acres	<u>Thickness</u> net feet	<u>Column</u> feet	<u>Wedge F</u>	<u>Computed Recovery Factor</u> B/AF	<u>Trap</u>	<u>Porosity</u>	<u>Perm.</u>	<u>Test(oil)</u> BOPD	<u>API</u>	<u>Test(gas)</u> MCFPD	<u>Salinity</u> ppm
	Note: Reserve numbers are Proven and Probable and do not include Possible															
Trinidad	1974	2	C7	36.1	2841	30		0.65	652	UTF	25		1604	32	90	
Cano Garzo	1979	2	C7	9	988	42	80	0.65	334	UTF	25		2630	34		2000
Cano Garzo Norte	1983	1	C7	11.04	741	30	59	0.65	764	UTF	25	400	3200	42	126	
Guanapalo	1986	1	C7	1.6	415	4		0.65	1483	UTF		1000	1899	26		
Jordan	1985	1	C7	12.01	581	17		0.65	1871	UTF	25	1000	1100	28		
Jordan Norte	1986	1	C7	1.64	833	7		0.65	433	UTF	25	1000	1100	28		
Mateguafa	1999	1	C7	4.17	2398	20	155	0.65	134	UTF			777	32		
Guahibos	1988	2	C7	0.4	180	10		0.65	342	UTF			1953	30		
Sardinas	1982	1	C7	18.01	2300	22		0.65	548	UTF	25	1000	500	22		
Yopo 1	2012	1	C7	3.17	309	33		0.65	478	FA	28	1000	970	40		
Guarilaque	1988	1	C7	50.02	3433	13		0.65	1724	UTF	25	1000	1210	26		
Guarimena	1988	1	C7	1.5	1640	8		0.65	176	UTF	25	1000	1963	33		
Barranquero	2010	1	C7	0.48	124	4		0.65	1489	FA	29	1000	504	28		
Guacamayo	1989	1	C7	0.68	306	21		0.65	163	UTF	25	1000	222	41		
Barquerena	1982	3	C7	4	2223	19		0.65	146	UTF		3000	2850	33	63	2800
Palmarito	1988	3	C7	10.5	1687	30		0.65	319	UTF		400				

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La Flora	1985	2	C7	10	1121	30		0.65	457	UTF			2730	35		
Paravare	1986	2	C7	1.1	988	10		0.65	171	UTF	25	1000	1070	29		
Los Toros	1989	2	C7	7.5	949	20		0.65	608	UTF		400				
Copa B	2011	2	C7	1.9	432	12		0.65	564	FA	27	1000	1114	38		
Petirrojo	2011	1	C7	2.54	185	32		0.65	660	FA	29	1000	1545	41		
Ambar	2010	1	C7	124.33	12844	41	108	0.65	363	UTF/Strat	29			16		
Jaspe	2010	1	C7	32.08	7904	16		0.65	390	UTF/Strat	30			16		
Opalo	2010	1	C7	46.17	9386	22	86	0.65	344	UTF/Strat	32			16		
Rubiales	1981	2	C7	438.7	74112	38.5	72	0.65	237	Strat	28		305	12		
AVERAGE C7	No stratigraphic Fields			9	1175	20	98		644		26	1013	1523	33	93	2400
AVERAGE C7	All Fields			33	5157	21	93		594		27	1013	1462	29	93	2400

<u>Reserves</u>	<u>Area</u>	<u>Thickness</u>	<u>Column</u>	<u>Computed Recovery Factor</u>	<u>Trap</u>	<u>Porosity</u>	<u>Perm.</u>	<u>Test(oil)</u>	<u>API</u>	<u>Test(gas)</u>	<u>Salinity</u>
MMBO	acres	net feet	feet	B/AF				BOPD		MCFPD	ppm

Note: Reserve numbers are Proven and Probable and do not include Possible

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