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REPORT
as of
JULY 31, 2016
on the
UNCONVENTIONAL PROSPECTIVE RESOURCES
attributable to
VARIOUS PROSPECTS
owned by
IGAS ENERGY PLC
in
VARIOUS LICENSE BLOCKS
UNITED KINGDOM

TABLE of CONTENTS

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FOREWORD

Scope of Investigation

This report presents estimates, as of July 31, 2016, of the unconventional prospective petroleum resources of various prospects located in various license blocks in the United Kingdom. This report is being prepared on behalf of IGas Energy PLC (IGas). IGas has represented that it currently owns various working interests in these prospects under the terms of the exploration and production licenses issued (Table 1).

A possibility exists that the prospects will not result in successful discoveries and development, in which case there could be no future revenue. There is no certainty that any portion of the unconventional prospective resources estimated herein will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of the unconventional prospective resources evaluated.

Estimates of the unconventional prospective resources should be regarded only as estimates that may change as additional information becomes available. Not only are such unconventional

prospective resources estimates based on that information which is currently available, but such estimates are also subject to the uncertainties inherent in the application of judgmental factors in interpreting such information. Unconventional prospective resources quantities estimates should not be confused with those quantities that are associated with contingent resources or reserves due to the additional risks involved. The quantities that might actually be recovered, should they be discovered and developed, may differ significantly from the estimates presented herein.

The unconventional prospective resources estimates presented in this report have been prepared in accordance with the Petroleum Resources Management System (PRMS) approved in March 2007 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, and the Society of Petroleum Evaluation Engineers. These unconventional prospective resources definitions are discussed in detail in the Definition of Unconventional Prospective Resources section of this report.

The unconventional prospective resources estimated in this report are expressed as gross and working interest unconventional prospective resources. Gross unconventional prospective resources are defined as the total estimated petroleum that is potentially recoverable from undiscovered accumulations after July 31, 2016. Working interest unconventional prospective resources are defined as the product of the gross unconventional prospective resources and IGas working interest.

The unconventional prospective resources estimated herein are those quantities of petroleum that are potentially recoverable from accumulations yet to be discovered. Because of the uncertainty of commerciality and the lack of sufficient exploration drilling, the unconventional prospective resources estimated herein cannot be classified as contingent resources or reserves. The unconventional prospective resources estimates in this report are not provided as a means of comparison to contingent resources or reserves. Table 1 summarizes ownership, potential hydrocarbon phase, and prospect location for the prospect portfolio presented herein. Tables 2 and 3 summarize the prospective resources volumes and probability of geologic success (P_g) for the prospect portfolio estimated herein. Table 4 summarizes the prospective resources volumes and various potential target parameters for the prospect portfolio estimated herein.

Authority

This report was authorized by John Blaymires, COO, IGas.

Source of Information

In the preparation of this report we have relied, without independent verification, upon information furnished by or on behalf of IGas with respect to the property interests to be evaluated, subsurface data as they pertain to the target objectives and prospects, and various other information and technical data that were accepted as represented. Site visits to the prospects evaluated herein were not made by DeGolyer and MacNaughton, as these potential accumulations are undrilled and prospective; therefore, production facilities are not relevant. This report was based on data available as of July 31, 2016.

DEFINITION of UNCONVENTIONAL PROSPECTIVE RESOURCES

Estimates of petroleum resources included in this report are classified as unconventional prospective resources and have been prepared in accordance with the PRMS approved in March 2007 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, and the Society of Petroleum Evaluation Engineers. Because of the lack of commerciality or sufficient drilling, the unconventional prospective resources estimated herein cannot be classified as contingent resources or reserves. The unconventional petroleum resources are classified as follows:

> *Unconventional Prospective Resources* – Those quantities of petroleum that are estimated, as of a given date, to be potentially recoverable from undiscovered unconventional accumulations by application of future development projects. Unconventional Prospective Resources may exist in petroleum accumulations that are pervasive throughout a large potential production area and would not be significantly affected by hydrodynamic influences (also called continuous-type deposits). Typically, such accumulations (once discovered) require specialized extraction technology (e.g., dewatering of CBM*, massive fracturing programs for shale gas, shale oil, tight gas, steam and/or solvents to mobilize bitumen for in-situ recovery, and, in some cases, mining activities).

In contrast to conventional reservoirs, natural gas can also be found in more difficult to extract unconventional deposits, such as coal beds (coal seam gas), or in shales (shale gas), low quality reservoirs (tight gas), or as gas hydrates.

> *Shale Oil, Shale Gas, and Coal Seam Gas* are examples where the natural gas or oil is still within the source rock, not having migrated to a porous and permeable reservoir.

> *Tight Gas* occurs within low permeability reservoir rocks, which are rocks with matrix porosities of 10 per cent or less and permeabilities of 0.1 millidarcy (mD) or less, exclusive of fractures. Tight gas can be regionally

distributed (for example, basin-centered gas), rather than accumulated in a readily producible reservoir in a discrete structural closure as in a conventional gas field.

Gas Hydrates are naturally occurring ice-like solids (clathrates) in which water molecules trap gas molecules in deep-sea sediments and in and below the permafrost soils of the polar regions.

The estimation of resources quantities for a prospect is subject to both technical and commercial uncertainties and, in general, may be quoted as a range. The range of uncertainty reflects a reasonable range of estimated potentially recoverable quantities. In all cases, the range of uncertainty is dependent on the amount and quality of both technical and commercial data that are available and may change as more data become available.

Low, Best, High, and Mean Estimates – Estimates of petroleum resources in this report are expressed using the terms low estimate, best estimate, high estimate, and mean estimate to reflect the range of uncertainty.

A detailed explanation of the probabilistic terms used herein and identified with an asterisk (*) is included in the glossary bound with this report. For probabilistic estimates of petroleum resources, the low estimate reported herein is the P_{90}* quantity derived from probabilistic analysis. This means that there is at least a 90-percent probability that, assuming the prospect is discovered and developed, the quantities actually recovered will equal or exceed the low estimate. The best (median) estimate is the P_{50}* quantity derived from probabilistic analysis. This means that there is at least a 50-percent probability that, assuming the prospect is discovered and developed, the quantities actually recovered will equal or exceed the best (median) estimate. The high estimate is the P_{10}* quantity derived from probabilistic analysis. This means that there is at least a 10-percent probability that, assuming the prospect is discovered and developed, the quantities actually recovered will equal or exceed the high estimate. The expected value* (EV), an outcome of the probabilistic analysis, is the mean estimate.

Uncertainties Related to Prospective Resources – The quantity of petroleum discovered by exploration drilling depends on the number of

prospects that are successful as well as the quantity that each success contains. Reliable forecasts of these quantities are, therefore, dependent on accurate predictions of the number of discoveries that are likely to be made if the entire portfolio of prospects is drilled. The accuracy of this forecast depends on the portfolio size, and an accurate assessment of the P_g *.

Probability of Geologic Success – The probability of geologic success (P_g) is defined as the probability of discovering reservoirs that flow hydrocarbons at a measurable rate. The P_g is estimated by quantifying with a probability each of the following individual geologic chance factors: trap, source, reservoir, and migration. The product of the probabilities of these four chance factors is P_g. P_g is predicated and correlated to the minimum case prospective resources gross recoverable volume(s). Consequently, the P_g is not linked to economically viable volumes, economic flow rates, or economic field size assumptions.

In this report estimates of prospective resources are presented both before and after adjustment for P_g. Total prospective resources estimates are based on the probabilistic summation (statistical aggregate) of the quantities for the total inventory of prospects. The statistical aggregate P_g-adjusted mean estimate, or "aggregated geologic chance-adjusted mean estimate," is a probability-weighted average geologic success case expectation (average) of the hydrocarbon quantities potentially recoverable if all of the prospects in a portfolio were drilled. The P_g-adjusted mean estimate is a "blended" quantity; it is a product of the statistically aggregated mean volume estimate and the portfolio's probability of geologic success. This statistical measure considers and stochastically quantifies the geological success and geological failure outcomes. Consequently, it represents the average or mean "geologic success case" volume outcome of drilling all of the prospects in the exploration program.

Application of P_g to estimate the P_g-adjusted prospective resources quantities does not equate prospective resources with reserves or contingent resources. P_g-adjusted prospective resources quantities cannot be compared directly to or aggregated with either reserves or contingent resources. Estimates of P_g are interpretive and are dependent on the quality and quantity of data currently made available. Future

data acquisition, such as additional drilling or seismic acquisition, can have a significant effect on P_g estimation. These additional data are not confined to the study area, but also include data from similar geologic settings or technological advancements that could affect the estimation of P_g.

Predictability versus Portfolio Size – The accuracy of forecasts of the number of discoveries that are likely to be made is constrained by the number of prospects in the exploration portfolio. The size of the portfolio and P_g together are helpful in gauging the limits on the reliability of these forecasts. A high P_g, which indicates a high chance of discovering measurable petroleum, may not require a large portfolio to ensure that at least one discovery will be made (assuming the P_g does not change during drilling of some of the prospects). By contrast, a low P_g, which indicates a low chance of discovering measurable petroleum, could require a large number of prospects to ensure a high confidence level of making even a single discovery. The relationship between portfolio size, P_g, and the probability of a fully unsuccessful drilling program that results in a series of wells not encountering measurable hydrocarbons is referred to herein as the predictability versus portfolio size (PPS) relationship*. It is critical to be aware of PPS, because an unsuccessful drilling program, which results in a series of wells that do not encounter measurable hydrocarbons, can adversely affect any exploration effort, resulting in a negative present worth.

For a large prospect portfolio, the P_g-adjusted mean (statistical aggregate) estimate of the prospective resources quantity should be a reasonable estimate of the recoverable petroleum quantities found if all prospects are drilled. When the number of prospects in the portfolio is small and the P_g is low, the recoverable petroleum actually found may be considerably smaller than the statistical aggregate P_g-adjusted mean estimate would indicate. It follows that the probability that all of the prospects will be unsuccessful is smaller when a large inventory of prospects exist.

Prospect Technical Evaluation Stage – A prospect can often be subcategorized based on its current stage of technical evaluation. The different stages of technical evaluation relate to the amount of geologic, geophysical, engineering, and petrophysical data as well as the quality of available data.

Prospect – A prospect is a potential accumulation that is sufficiently well defined to be a viable drilling target. For a prospect, sufficient data and analyses exist to identify and quantify the technical uncertainties, to determine reasonable ranges of geologic chance factors and engineering and petrophysical parameters, and to estimate prospective resources.

Lead – A lead is less well defined and requires additional data and/or evaluation to be classified as a prospect. An example would be a poorly defined closure mapped using sparse regional seismic data in a basin containing favorable source and reservoir(s). A lead may or may not be elevated to prospect status depending on the results of additional technical work. A lead must have a P_g equal to or less than 0.05 to reflect the inherent technical uncertainty.

Play – A project associated with a prospective trend of potential prospects, but which requires more data acquisition and/or evaluation in order to define specific leads or prospects.

ESTIMATION of UNCONVENTIONAL PROSPECTIVE RESOURCES

Estimates of unconventional prospective resources were prepared by the use of standard geological and engineering methods generally accepted by the petroleum industry. The method or combination of methods used in the analysis of the reservoirs was tempered by experience with similar reservoirs, stage of development, and quality and completeness of basic data.

The probabilistic analysis of the unconventional prospective resources in this study considered the uncertainty in the amount of petroleum that may be discovered and the P_g. The uncertainty analysis addresses the range of possibilities for any given volumetric parameter. Minimum, maximum, low, best, high, and mean estimates of unconventional prospective resources were estimated to address this uncertainty. The P_g analysis addresses the probability that the identified prospect will contain petroleum that flows at a measurable rate.

Estimates of recovery efficiency presented in this report are based on analog data and global experience and reflect the potential range in recovery for the potential reservoirs considered in each prospect. Recovery efficiency estimates do not incorporate development or economic input and are subject to change upon selection of specific development options and costs, economic parameters, and product price scenarios.

Volumetrics, Quantitative Risk Assessment, and the Application of P_g

Minimum, low, modal, best, mean, high, and maximum representations of potential productive area were interpreted from maps, available seismic data, and/or analogy. Representations for the petrophysical parameters (porosity, hydrocarbon saturation, and net hydrocarbon thickness) and engineering parameters (recovery efficiency and fluid properties) were also estimated based on available well data, regional data, analog field data, and global experience. Individual probability distributions for rock volume and petrophysical and engineering parameters were estimated from these representations and are summarized in Table 4.

The distributions for the variables were derived from (1) scenario-based interpretations, (2) the geologic, geophysical, petrophysical, and engineering data available, (3) local, regional, and global

knowledge, and (4) field and case studies in the literature. The parameters used to model the recoverable quantities were potential productive area, net hydrocarbon thickness, geometric correction factor, porosity, hydrocarbon saturation, formation volume factor, and recovery efficiency. Minimum, mean, and maximum representations were used to statistically model and shape the input P_{90}, P_{50}, and P_{10} parameters. Potential productive area, net hydrocarbon thickness, and recovery efficiency were modeled using truncated lognormal distributions. Truncated normal distributions were used to model geometric correction factor, formation volume factor, porosity, and hydrocarbon saturation. Latin hypercube sampling was used to better represent the tails of the distributions.

Each individual volumetric parameter was investigated using a probabilistic approach with attention to variability. Deterministic data were used to anchor and shape the various distributions. The rock volume parameters had the greatest range of variability, and therefore had the greatest impact on the uncertainty of the simulation. The volumetric parameter variability was based on the structural and stratigraphic uncertainties due to the depositional environment and quality of the seismic data. Analog field data were statistically incorporated to derive uncertainty limits and constraints on the net hydrocarbon thickness pore volume. Uncertainty associated with the depth conversion, seismic interpretation, gross interval thickness mapping, and net hydrocarbon thickness assumptions were also derived from studies of analogous reservoirs, multiple interpretative scenarios, and sensitivity analyses.

A P_g analysis was applied to estimate the quantities that may actually result from drilling these unconventional prospects. In the P_g analysis, the P_g estimates were made for each prospect from the product of the probabilities of the four geologic chance factors: trap, reservoir, migration, and source. The P_g is predicated and correlated to the minimum case prospective resources gross recoverable volume(s). The P_g is not linked to economically viable volumes, economic flow rates, or economic field size assumptions. The P_g is predicated and correlated to the minimum case prospective resources gross recoverable volume(s).

The following equation was used in the probabilistic volumetric model:

For Shale Gas:

$$PGUR = A \times h[43560 \times E_g \times \phi \times S_g + 1359.7 \times G_s \times \rho] \times R_f$$

where: PGUR = Prospective gross ultimate recovery (scf)
A = Productive area (acres)
h = Net hydrocarbon thickness (feet)
E_g = Gas expansion factor (scf/rcf)
ϕ = Porosity (decimal)
S_g = Gas saturation (decimal)
G_s = Sorbed gas storage capacity (scf/ton)
ρ = Shale density (grams per cubic centimeter (g/cc))
R_f = Recovery efficiency (decimal)

Estimates of gross and working interest unconventional prospective resources and the P_g estimates, as of July 31, 2016, evaluated herein are shown in Tables 2 and 3. The P_g-adjusted mean estimate of the unconventional prospective resources was then made by the probabilistic product of P_g and the resources distributions for the prospect. These results were then stochastically summed (zero dependency) to produce the statistical aggregate P_g-adjusted mean estimate unconventional prospective resources. The range in probability of the mean occurrence (P_{MEAN})* for the prospective resources volumes were estimated as defined in the glossary of this report. The range in P_{MEAN} for the statistical aggregate P_g-adjusted mean gas estimate is 0.05 to 0.08.

The prospective resources evaluated herein were estimated in accordance with the PRMS as described in the Definition of Unconventional Prospective Resources section of this report. The British Geological Survey (BGS) describes a methodology to estimate the volume of original gas in-place (OGIP) in areas where the source shale is present, thermally mature, and at a depth of adequate pressure, (Andrews 2013). This OGIP estimation does not consider uncertainty in potentially productive areas, rather it characterizes the area in whole. At the request of IGas, the BGS methodology was utilized and estimates of OGIP analogous to the BGS methodology are described and shown in the Appendix and Table A1 bound with this report.

Application of the P_g factor to estimate the P_g-adjusted prospective resources quantities does not equate prospective resources with reserves or contingent resources. The P_g-adjusted estimates of prospective resources quantities cannot be compared directly to or aggregated with either reserves or contingent resources. Estimates of P_g are interpretive and are dependent

on the quality and quantity of data currently available. Future data acquisition, such as additional drilling or seismic acquisition, can have a significant effect on P_g estimation. These additional data are not confined to the area of study, but also include data from similar geologic settings or from technological advancements that could affect the estimation of P_g or impact the interpretation of the petroleum system.

Non-associated gas is gas at initial reservoir conditions with no crude oil present in the reservoir. Gas-cap gas is gas at initial reservoir conditions and is in communication with an underlying oil zone. Solution gas is gas dissolved in crude oil at initial reservoir conditions. In known accumulations, solution gas and gas-cap gas are sometimes produced together and, as a whole, referred to as associated gas. Prospective raw natural gas quantities (non-associated and associated) included herein are defined as the total gas potentially producible from the prospective reservoirs before any reduction for shrinkage for potential field and/or platform handling, separation, processing, fuel usage, flaring, reinjection, and/or pipeline losses.

It is not certain whether prospective reservoirs will be gas bearing, oil bearing, or water bearing. Hydrocarbon phase determination is based on the phase chance of occurrence per the present interpretation of the petroleum system. Unconventional prospective resources volumes in this report are identified herein as raw natural gas. In this report, 31 potential accumulations are referred to as prospects to reflect the current stage of technical evaluation.

In this report, gas quantities are expressed in English units at a temperature base of 60 degrees Fahrenheit (°F) and at a pressure base of 14.7 pounds per square inch absolute (psia).

The application of any geologic or economic chance factor to these unconventional prospective resources quantities does not equate them with reserves or contingent resources. Chance factor-adjusted estimates (geological or economic) of unconventional prospective resources quantities cannot be compared directly to or aggregated with contingent resources or reserves.

There is no certainty that any portion of the unconventional prospective resources estimated herein will be discovered. If

discovered, there is no certainty that it will be commercially viable to produce any portion of the unconventional prospective resources evaluated.

SUMMARY and CONCLUSIONS

Prospective resources in 31 prospects have been evaluated in various license blocks in the United Kingdom. The unconventional prospective resources estimates presented below are based on the statistical aggregation method. Estimates of the gross and working interest unconventional prospective raw natural gas resources, as of July 31, 2016, are summarized as follows, expressed in English units in millions of cubic feet ($10^6 ft^3$):

	Low Estimate	Best Estimate	High Estimate	Mean Estimate
Gross Unconventional Raw Natural Gas Prospective Resources, $10^6 ft^3$	16,737,566	22,974,272	32,042,540	23,809,012
Working Interest Unconventional Raw Natural Gas Prospective Resources, $10^6 ft^3$	7,669,833	10,562,549	14,722,008	10,955,834

Notes:

1. Low, best, high, and mean estimates in this table are P_{90}, P_{50}, P_{10}, and mean, respectively.
2. P_g has not been applied to the volumes in this table.
3. Application of any geological and economic chance factor does not equate unconventional prospective resources to contingent resources or reserves.
4. The unconventional prospective resources presented above are based on the statistical aggregation method.
5. There is no certainty that any portion of the unconventional prospective resources estimated herein will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of the unconventional prospective resources evaluated.

The gross and working interest statistical aggregate P_g-adjusted mean estimate unconventional prospective raw natural gas resources, as of July 31, 2016, are summarized as follows, expressed in English units in $10^6 ft^3$:

	Mean Estimate
Gross P_g-Adjusted Unconventional Raw Natural Gas Prospective Resources, $10^6 ft^3$	5,436,310
Working Interest P_g-Adjusted Unconventional Raw Natural Gas Prospective Resources, $10^6 ft^3$	2,543,273

Notes:

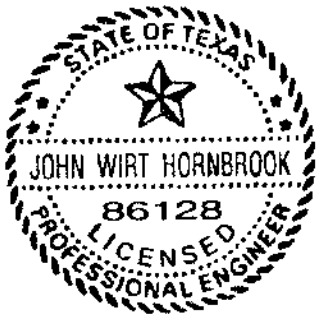
1. Application of any geological and economic chance factor does not equate unconventional prospective resources to contingent resources or reserves.
2. The unconventional prospective resources presented above are based on the statistical aggregation method.
3. P_g is predicated on and correlated to the minimum case prospective resources gross recoverable volume(s). The P_g is not linked to economically viable volumes, economic flow rates, or economic field size assumptions.
4. The range in P_{MEAN} for the statistical aggregate P_g-adjusted mean gas estimate is 0.05 to 0.08.
5. There is no certainty that any portion of the prospective resources estimated herein will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of the prospective resources evaluated.

The arithmetic summation method was used to aggregate resources quantities above the field, property, or project level. The prospective resources quantities aggregated by the arithmetic summation method for the unconventional prospects evaluated in this report are presented in the prospective resources tables bound with this report.

Submitted,

DeGOLYER and MacNAUGHTON
Texas Registered Engineering Firm F-716

SIGNED: October 11, 2016



John W. Hornbrook, P.E.
Senior Vice President
DeGolyer and MacNaughton

GLOSSARY

Accumulation – The term accumulation is used to identify an individual body of moveable petroleum. A known accumulation (one determined to contain reserves or contingent resources) must have been penetrated by a well. The well must have clearly demonstrated the existence of moveable petroleum by flow to the surface or at least some recovery of a sample of petroleum through the well. However, log and/or core data from the well may establish an accumulation, provided there is a good analogy to a nearby and geologically comparable known accumulation.

Arithmetic Summation – The process of adding a set of numbers that represent estimates of resources quantities at the reservoir, prospect, or portfolio level and estimates of PPW_{10} at the prospect or portfolio level. Statistical aggregation yields different results.

Best (Median) *Estimate* – The best (median) estimate is the P_{50} quantity. P_{50} means that there is a 50-percent chance that an estimated quantity, such as a prospective resources volume or associated quantity, will be equaled or exceeded.

Barrel of Oil Equivalent – Gas quantities are converted to barrels of oil equivalent (BOE) using 6,000 cubic feet of gas per barrel.

Coal Bed Methane – Coal bed methane (CBM) is a form of natural gas extracted from coal beds. Coals are unconventional reservoirs characterzied by more than 50 percent by weight and more than 70 percent by volume of carbonaceous material formed from compaction and induration of variously altered plant remains similar to those in peaty deposits. Gas is generated as a result of the coalification of the organic matter, and is generally 85 to 99 percent methane. Gas is held to the coal matrix by sorption. CBM is also known as coal seam gas.

Contingent Resources – Those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations by application of development projects, but which are not currently considered to be commercially recoverable due to one or more contingencies.

Geometric Correction Factor – The geometric correction factor (GCF) is a geometry adjustment correction that takes into account the relationship of the potential fluid contact to the geometry of the reservoir and trap. Input parameters used to estimate the geometric correction factor include trap shape, length-to-width ratio, potential reservoir thickness, and the height of the potential trapping closure (potential hydrocarbon column height).

High Estimate – The high estimate is the P_{10} quantity. P_{10} means there is a 10-percent chance that an estimated quantity, such as a prospective resources volume or associated quantity, will be equaled or exceeded.

Lead – A lead is less well defined and requires additional data and/or evaluation to be classified as a prospect. An example would be a poorly defined closure mapped using sparse regional seismic data in a basin containing favorable source and reservoir(s). A lead may or may not be elevated to prospect status depending on the results of additional technical work. A lead must have a P_g equal to or less than 0.05 to reflect the inherent technical uncertainty.

Low Estimate – The low estimate is the P_{90} quantity. P_{90} means there is a 90-percent chance that an estimated quantity, such as a prospective resources volume or associated quantity, will be equaled or exceeded.

Mean Estimate – In accordance with petroleum industry standards, the mean estimate is the probability-weighted average (expected value), which typically has a probability in the P_{45} to P_{15} range, depending on the variance of prospective resources volume or associated quantity. Therefore, the probability of a prospect or accumulation containing the probability-weighted average volume or greater is usually between 45 and 15 percent. The mean estimate is the preferred probabilistic estimate of resources volumes.

Median – Median is the P_{50} quantity, where the P_{50} means there is a 50-percent chance that a given variable (such as prospective resources, porosity, or water saturation) is equaled or exceeded. The median of a data set is a number such that half the measurements are below the median and half are above.

The median is the best estimate in probabilistic estimations of prospective resources, as required by the PRMS guidelines.

Migration Chance Factor – Migration chance factor ($P_{migration}$) is defined as the probability that a trap either predates or is coincident with petroleum migration and that there exists vertical and/or lateral migration pathways linking the source to the trap.

Mode – The mode is the quantity that occurs with the greatest frequency in the data set and therefore is the quantity that has the greatest probability of occurrence. However, the mode may not be uniquely defined, as is the case in multimodal distributions.

P_g-adjusted Mean Estimate, statistical aggregate – The statistical aggregate P_g-adjusted mean estimate, or "aggregated geologic chance-adjusted mean

estimate," is a probability-weighted average geologic success case expectation (average) of the hydrocarbon quantities potentially discovered if all of the prospects in a portfolio were drilled. The P_g-adjusted mean estimate is a "blended" quantity; it is a product of the statistically aggregated mean volume estimate and the portfolio's probability of geologic success. This statistical measure considers and stochastically quantifies the geological success and geological failure outcomes. Consequently, it represents the average or mean "geologic success case" volume outcome of drilling all of the prospects in the exploration portfolio. The P_g-adjusted mean volume estimate for a single prospect is calculated as follows:

$$P_g\text{-adjusted mean estimate} = P_g \times \text{mean estimate (mean geological success case volumes)} \quad (1)$$

The probability of the statistical aggregate P_g-adjusted mean estimate is estimated by the product of the portfolio P_g and the probability of the mean volume occurrence for the entire prospect portfolio. The equation is as follows:

$$\text{Statistical aggregate } P_g\text{-adjusted mean estimate, probability of occurrence} = \text{Portfolio } P_g \times \text{mean volume probability estimate for the portfolio} \quad (2)$$

P_n *Nomenclature* – This report uses the convention of denoting probability with a subscript representing the greater than cumulative probability distribution. As such, the notation P_n indicates the probability that there is an n-percent chance that a specific input or output quantity will be equaled or exceeded. For example, P_{90} means that there is a 90-percent chance that a variable (such as prospective resources, porosity, or water saturation) is equaled or exceeded.

Play – A project associated with a prospective trend of potential prospects, but which requires more data acquisition and/or evaluation in order to define specific leads or prospects.

Predictability versus Portfolio Size – The number of prospects in a prospect portfolio influences the reliability of the forecast of drilling results. The relationship between predictability versus portfolio size (PPS) is also known in the petroleum industry literature as "Gambler's Ruin." The relationship of probability to portfolio size is described by the binomial probability equation given as follows:

$$P_{x^n} = (C_{x^n})(p)^x(1-p)^{n-x} \quad (3)$$

where: P_{x^n} = the probability of x successes in n trials
C_{x^n} = the number of mutually exclusive ways that x successes can be arranged in n trials
p = the probability of success for a given trial (for petroleum exploration, this is P_g)
x = the number of successes (e.g., the number of discoveries)
n = the number of trials (e.g., the number of wells to be drilled)

Note: For the case of n successive dry holes, C_{x^n} and p each equals 1, so the probability of failure is the quantity (1-p) raised to the number of trials.

Probability of Geologic Success – The probability of geologic success (P_g) is defined as the probability of discovering reservoirs that flow hydrocarbons at a measurable rate. The P_g is estimated by quantifying with a probability each of the following individual geologic chance factors: trap, source, reservoir, and migration. The product of the probabilities of these four chance factors is P_g. P_g is predicated and correlated to the minimum case prospective resources gross recoverable volume(s). Consequently, the P_g is not linked to economically viable volumes, economic flow rates, or economic field size assumptions.

Probability of the Mean Occurrence – The probability of the mean occurrence P_{MEAN} is defined as the probability of occurrence of the mean quantity as defined by the distribution(s) in the Monte Carlo simulation. The probability associated with the mean is dependent on the variance of the distribution, and type of distribution from which the mean is estimated. Typically, the range in probability of occurrence for the statistical mean estimate is 0.45 to 0.15 for lognormal (positively skewed) distributions. The statistical mean has a probability of occurrence of 0.50 for normal (symmetric) distributions.

Prospect – A prospect is a potential accumulation that is sufficiently well defined to be a viable drilling target. For a prospect, sufficient data and analyses exist to identify and quantify the technical uncertainties, to determine reasonable ranges of geologic chance factors and engineering and petrophysical parameters, and to estimate prospective resources. In addition, a viable drilling target requires that 70 percent of the median potential production area be located within the block or license area of interest.

Prospective Resources – Those quantities of petroleum that are estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects.

Raw Natural Gas – Raw natural gas is the total gas produced from the reservoir prior to processing or separation and includes all nonhydrocarbon components as well as any gas equivalent of condensate.

Reservoir Chance Factor – The reservoir chance factor ($P_{reservoir}$) is defined as the probability associated with the presence of porous and permeable reservoir quality rock.

Source Chance Factor – The source chance factor (P_{source}) is defined as the probability associated with the presence of a hydrocarbon source rock rich enough, of sufficient volume, and in the proper spatial position to charge the prospective area or areas.

Standard Deviation – Standard deviation (SD) is a measure of distribution spread. It is the positive square root of the variance. The variance is the summation of the squared distance from the mean of all possible values. Since the units of standard deviation are the same as those of the sample set, it is the most practical measure of population spread.

$$\sigma = \sqrt{\sigma^2} = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \mu)^2}{n-1}} \qquad (4)$$

where: σ = standard deviation
σ^2 = variance
n = sample size
x_i = value in data set
μ = sample set mean

Statistical Aggregation – The process of probabilistically aggregating distributions that represent estimates of resources quantities at the reservoir, prospect, or portfolio level and estimates of PPW_{10} at the prospect or portfolio level. Arithmetic summation yields different results, except for the mean estimate.

Trap Chance Factor – The trap chance factor (P_{trap}) is defined as the probability associated with the presence of a structural closure and/or a stratigraphic trapping configuration with competent vertical and lateral seals, and the lack of any post migration seal integrity events or breaches.

Unconventional Prospective Resources – Those quantities of petroleum that are estimated, as of a given date, to be potentially recoverable from undiscovered unconventional accumulations by application of future development projects. Unconventional prospective resources may exist in petroleum accumulations that are pervasive throughout a large potential production area and would not be significantly affected by hydrodynamic influences (also called "continuous-type deposits"). Typically, such accumulations (once discovered) require specialized extraction technology (e.g., dewatering of CBM, massive fracturing programs for shale gas, shale oil, tight gas, steam and/or solvents to mobilize bitumen for in-situ recovery, and, in some cases, mining activities).

Variance – The variance (σ^2) is a measure of how much the distribution is spread from the mean. The variance sums up the squared distance from the mean of all possible values of x. The variance has units that are the squared units of x. The use of these units limits the intuitive value of variance.

$$\sigma^2 = \frac{\sum_{i=1}^{n} (x_i - \mu)}{n - 1} \tag{5}$$

where: σ^2 = variance
n = sample size
x_i = value in data set
μ = sample set mean

Working Interest – Working interest prospective resources are that portion of the gross prospective resources to be potentially produced from the properties attributable to the interests owned by "Company" before deduction of any associated royalty burdens, net profits payable or government profit share. Working interest is a percentage of ownership in an oil and gas lease granting its owner the right to explore, drill and produce oil and gas from a tract of property. Working interest owners are obligated to pay a corresponding percentage of the cost of leasing, drilling, producing and operating a well or unit. The working interest also entitles its owner to share in production revenues with other working interest owners, based on the percentage of working interest owned.

TABLE 1
PROSPECT PORTFOLIO SUMMARY
as of
JULY 31, 2016
for
IGAS
in
VARIOUS PROSPECTS
VARIOUS LICENSE BLOCKS
UNITED KINGDOM

DEGOLYER MACNAUGHTON
F-716
TEXAS REGISTERED ENGINEERING FIRM

Prospect	Area	License	Blocks	Working Interest (decimal)	Potential Hydrocarbon Phase
York	North A-S	PEDL146	SE/54a, SE/55, SE/56	0.75	Gas
Normanby	North A-S	PL 162	SE/81b,SE/91a	1.00	Gas
Thorne	East Midlands	EXL 288	SE/51a B/C/D, SE/61a B/C/D, SE/61b, SE/61c	0.75	Gas
Gainsborough/Beckingham/Corringham/Glentworth	East Midlands	ML4	SK/78c,d,SK/79b,c,SK/88a,d,SK/89d,f,SK/98a,SK/99c	1.00	Gas
West Everton	East Midlands	PEDL139	SK/69	0.32	Gas
Everton/Springs Road	East Midlands	PEDL140	SK/78f, SK/79a	0.32	Gas
Ranskill	East Midlands	PEDL012	SK/68a	0.55	Gas
Lound	East Midlands	PEDL200	SK/58b, SK/68b	0.55	Gas
Cold Hanworth	East Midlands	PEDL6	SK/78a, SK/88c,f,SK/98c,i, TF/8a	1.00	Gas
Armthorpe	East Midlands	PEDL169	SE/60a BELOW SMB	0.80	Gas
Hemsworth	East Midlands	PEDL273	SE41e/SE31c	0.35	Gas
Willingham by Stow	East Midlands	PEDL316	SK89e/SK88b/SK87c	0.35	Gas
Rawmarsh	East Midlands	PEDL305	SK59b/SK49	0.35	Gas
Welton/Nettleham/Scampton North/Stainton	East Midlands	PL179 (W)	TF/7b, TF/8b, SK/97b,SK/98e	1.00	Gas
East Glentworth	East Midlands	PL179 (EG)	SK/98b	1.00	Gas
Bothamsall	East Midlands	ML6	SK/67d	1.00	Gas
South Leverton	East Midlands	ML7	SK/77c,SK/78e,SK/87a,SK/88e	1.00	Gas
West Beckingham	East Midlands	PL178	SK/78b,SK/79d	1.00	Gas
Chorlton	North West	PEDL188	SJ/45	0.75	Gas
Upton	North West	PEDL189	SJ/46	0.25	Gas
Four Oaks /Doe Green	North West	PEDL145	SJ/58b, SJ/58c, SJ/58d	0.40	Gas
Ellesmere Port	North West	PEDL184	SJ/27, SJ/28, SJ/37	0.50	Gas
Ince Marshes	North West	PEDL190	SJ/47	0.50	Gas
Parkside /Irlam	North West	PEDL193	SJ/68, SJ/69e, SJ/79	0.40	Gas
Burtonwood	North West	EXL 273	SJ/59a	0.15	Gas
Blacon	North West	PEDL147	SJ/36a	0.25	Gas
Sandbach	North West	PEDL295	SJ64/SJ65	0.30	Gas
Hemswell	North A-S	PEDL317	SK99a	1.00	Gas
Hemswell	East Midlands	PEDL210	SK/87f,SK/88h,i,SK/97a,SK/98f,g	0.75	Gas
Dunholme	East Midlands	AL9	SK/97c,SK/98d,TF/7a,TF/8c	1.00	Gas
Crewe	North West	PEDL293	SJ75/SJ76	0.30	Gas

TABLE 2
ESTIMATE of the GROSS PROSPECTIVE RAW NATURAL GAS RESOURCES
as of
JULY 31, 2016
for
IGAS
in
VARIOUS GAS PROSPECTS
VARIOUS LICENSE BLOCKS
UNITED KINGDOM

DEGOLYER MACNAUGHTON
F-716
TEXAS REGISTERED ENGINEERING FIRM

				Gross Prospective Raw Natural Gas Resources Summary					
Prospect	Area	License	Blocks	Low Estimate ($10^6 ft^3$)	Best Estimate ($10^6 ft^3$)	High Estimate ($10^6 ft^3$)	Mean Estimate ($10^6 ft^3$)	Probability of Geologic Success, P_g (decimal)	P_g-Adjusted Mean Estimate ($10^6 ft^3$)
York	North A-S	PEDL146	SE/54a, SE/55, SE/56	70,315	357,748	1,578,403	654,957	0.176	115,534
Normanby	North A-S	PL 162	SE/81b,SE/91a	794	4,233	18,988	8,008	0.176	1,413
Thorne	East Midlands	EXL 288	SE/51a B/C/D, SE/61a B/C/D, SE/61b, SE/61c	108,568	443,101	1,560,178	691,808	0.252	174,336
Gainsborough/Beckingham/Corringham/Glentworth	East Midlands	ML4	SK/78c,d,SK/79b,c,SK/88a,d,SK/89d,f,SK/98a,SK/99c	184,864	748,337	2,557,987	1,115,331	0.252	281,063
West Everton	East Midlands	PEDL139	SK/69	220,208	918,443	3,432,701	1,433,889	0.252	361,340
Everton/Springs Road	East Midlands	PEDL140	SK/78f, SK/79a	294,814	1,270,238	4,625,499	2,026,567	0.252	510,695
Ranskill	East Midlands	PEDL012	SK/68a	21,676	95,970	377,777	168,750	0.252	42,525
Lound	East Midlands	PEDL200	SK/58b, SK/68b	102,403	422,542	1,481,541	650,428	0.252	163,908
Cold Hanworth	East Midlands	PEDL6	SK/78a, SK/88c,f,SK/98c,i, TF/8a	71,466	322,783	1,162,796	508,651	0.252	128,180
Amthorpe	East Midlands	PEDL169	SE/60a BELOW SMB	225,096	925,162	3,030,320	1,401,378	0.252	353,147
Hemsworth	East Midlands	PEDL273	SE41e/SE31c	247,010	1,050,865	3,689,138	1,675,797	0.252	422,301
Willingham by Stow	East Midlands	PEDL316	SK89e/SK88b/SK87c	165,061	670,621	2,323,569	1,023,949	0.252	258,035
Rawmarsh	East Midlands	PEDL305	SK59b/SK49	232,184	1,008,768	3,684,636	1,588,435	0.252	400,286
Welton/Nettleham/Scampton North/Stainton	East Midlands	PL179 (W)	TF/7b, TF/8b, SK/97b,SK/98e	15,527	71,218	233,706	107,493	0.252	27,088
East Glentworth	East Midlands	PL179 (EG)	SK/98b	696	3,260	11,572	4,884	0.252	1,231
Bathamsall	East Midlands	ML6	SK/67d	4,004	17,937	63,399	27,928	0.252	7,038
South Leverton	East Midlands	ML7	SK/77c,SK/78e,SK/87a,SK/88e	5,589	23,331	90,552	39,691	0.252	10,002
West Beckingham	East Midlands	PL178	SK/78b,SK/79d	2,915	14,312	47,905	21,398	0.252	5,392
Chorlton	North West	PEDL188	SJ/45	35,889	142,735	502,439	222,445	0.202	44,845
Upton	North West	PEDL189	SJ/46	128,750	545,350	1,894,031	848,795	0.202	171,117
Four Oaks /Doe Green	North West	PEDL145	SJ/58b, SJ/58c, SJ/58d	87,700	361,498	1,208,634	545,312	0.202	109,935
Ellesmere Port	North West	PEDL184	SJ/27, SJ/28, SJ/37	130,408	653,187	2,304,011	1,014,505	0.202	204,524
Ince Marshes	North West	PEDL190	SJ/47	116,540	502,539	1,706,005	755,519	0.202	152,313
Parkside /Irlam	North West	PEDL193	SJ/68, SJ/69a, SJ/79	193,711	753,240	2,672,375	1,156,423	0.202	233,136
Burtonwood	North West	EXL 273	SJ/59a	34,695	142,113	493,762	218,805	0.202	44,111
Blacon	North West	PEDL147	SJ/36a	133,884	567,788	2,018,845	889,532	0.202	179,330
Sandbach	North West	PEDL295	SJ64/SJ65	308,058	1,273,900	4,121,999	1,867,010	0.202	376,389
Hemswell	North A-S	PEDL317	SK99a	770	3,678	17,432	7,457	0.176	1,315
Hemswell	East Midlands	PEDL210	SK/87f,SK/88h,i,SK/97a,SK/98f,g	69,170	288,304	1,006,159	433,578	0.252	109,262
Dunholme	East Midlands	AL9	SK/97c,SK/98d,TF/7a,TF/8c	6,562	26,781	95,255	42,492	0.252	10,708
Crewe	North West	PEDL293	SJ75/SJ76	435,159	1,753,511	6,220,145	2,657,797	0.202	535,812
Statistical Aggregate				**16,737,566**	**22,974,272**	**32,042,540**	**23,809,012**	**0.228**	**5,436,310**
Arithmetic Summation				3,854,576	15,383,492	54,231,755	23,809,012	0.228	5,436,310

Notes:

1. Low, best, high, and mean estimates follow the PRMS guidelines for prospective resources.
2. Low, best, high, and mean estimates in this table are P_{90}, P_{50}, P_{10}, and mean respectively.
3. P_g is defined as the probability of discovering reservoirs which flow petroleum at a measurable rate.
4. P_g has been rounded for presentation purposes. Multiplication using this presented P_g may yield imprecise results. Dividing the P_g-adjusted mean estimate by the mean estimate yields the precise P_g.
5. Application of any geological and economic chance factor does not equate prospective resources to contingent resources or reserves.
6. Recovery efficiency is applied to prospective resources in this table.
7. Arithmetic summation of probabilistic estimates produces invalid results except for the mean estimate.
   Arithmetic summation of probabilistic estimates is presented in this table in compliance with PRMS guidelines.
8. Summations may vary from those shown here due to rounding.
9. There is no certainty that any portion of the prospective resources estimated herein will be discovered.
   If discovered, there is no certainty that it will be commercially viable to produce any portion of the prospective resources evaluated.
10. The range in $P_{f\text{-}min}$ for the statistical aggregate P_g-adjusted mean estimate is 0.05 to 0.08.

TABLE 3
ESTIMATE of the WORKING INTEREST PROSPECTIVE RAW NATURAL GAS RESOURCES
as of
JULY 31, 2016
for
IGAS
in
VARIOUS GAS PROSPECTS
VARIOUS LICENSE BLOCKS
UNITED KINGDOM

DEGOLYER MACNAUGHTON
F-716
TEXAS REGISTERED ENGINEERING FIRM

				Working Interest Prospective Raw Natural Gas Resources Summary					
Prospect	Area	License	Blocks	Low Estimate ($10^6 ft^3$)	Best Estimate ($10^6 ft^3$)	High Estimate ($10^6 ft^3$)	Mean Estimate ($10^6 ft^3$)	Probability of Geologic Success, P_g (decimal)	P_g-Adjusted Mean Estimate ($10^6 ft^3$)
York	North A-S	PEDL146	SE/54a, SE/55, SE/56	52,736	268,311	1,183,802	491,218	0.176	86,651
Normanby	North A-S	PL 162	SE/81b,SE/91a	794	4,233	18,988	8,008	0.176	1,413
Thorne	East Midlands	EXL 288	SE/51a B/C/D, SE/61a B/C/D, SE/61b, SE/61c	81,426	332,326	1,170,133	518,856	0.252	130,752
Gainsborough/Beckingham/Corringham/Glentworth	East Midlands	ML4	SK/78c,d,SK/79b,c,SK/88a,d,SK/89d,f,SK/98a,SK/99c	184,864	748,337	2,557,987	1,115,331	0.252	281,063
West Everton	East Midlands	PEDL139	SK/69	70,467	293,902	1,098,464	456,844	0.252	115,629
Everton/Springs Road	East Midlands	PEDL140	SK/78f, SK/79a	94,340	406,476	1,480,160	648,502	0.252	163,422
Ranskill	East Midlands	PEDL012	SK/58a	11,922	52,783	207,777	92,812	0.252	23,389
Lound	East Midlands	PEDL200	SK/58b, SK/68b	56,371	232,398	814,848	357,736	0.252	90,149
Cold Hanworth	East Midlands	PEDL6	SK/78a, SK/88c,f,SK/98c,i, TF/8a	71,466	322,783	1,162,796	508,651	0.252	128,180
Amthorpe	East Midlands	PEDL169	SE/60a BELOW SMB	180,077	740,129	2,424,256	1,121,103	0.252	282,518
Hemsworth	East Midlands	PEDL273	SE41e/SE31c	86,453	367,803	1,291,198	586,529	0.252	147,805
Willingham by Stow	East Midlands	PEDL316	SK89e/SK88b/SK87c	57,771	234,717	813,249	358,382	0.252	90,312
Rawmarsh	East Midlands	PEDL305	SK59b/SK49	81,264	353,069	1,289,623	555,952	0.252	140,100
Welton/Nettleham/Scampton North/Stainton	East Midlands	PL179 (W)	TF/7b, TF/8b, SK/97b,SK/98e	15,527	71,218	233,706	107,493	0.252	27,088
East Glentworth	East Midlands	PL179 (EG)	SK/98b	696	3,260	11,572	4,884	0.252	1,231
Bathamsall	East Midlands	ML6	SK/67d	4,004	17,937	63,399	27,928	0.252	7,038
South Leverton	East Midlands	ML7	SK/77c,SK/78e,SK/87a,SK/88e	5,589	23,331	90,552	39,691	0.252	10,002
West Beckingham	East Midlands	PL178	SK/78b,SK/79d	2,915	14,312	47,905	21,398	0.252	5,392
Chorlton	North West	PEDL188	SJ/45	26,917	107,051	376,829	166,833	0.202	33,634
Upton	North West	PEDL189	SJ/46	32,188	136,338	473,508	212,199	0.202	42,779
Four Oaks /Doe Green	North West	PEDL145	SJ/58b, SJ/58c, SJ/58d	35,080	144,599	483,453	216,125	0.202	43,574
Ellesmere Port	North West	PEDL184	SJ/27, SJ/28, SJ/37	65,204	326,594	1,152,006	507,252	0.202	102,262
Ince Marshes	North West	PEDL190	SJ/47	58,270	251,270	853,003	377,759	0.202	76,156
Parkside /Irlam	North West	PEDL193	SJ/68, SJ/69a, SJ/79	77,485	301,296	1,068,950	462,569	0.202	93,254
Burtonwood	North West	EXL 273	SJ/59a	5,204	21,317	74,064	32,821	0.202	6,617
Blacon	North West	PEDL147	SJ/36a	33,471	141,947	504,711	222,383	0.202	44,832
Sandbach	North West	PEDL295	SJ64/SJ65	92,417	382,170	1,236,500	560,103	0.202	112,917
Hemswell	North A-S	PEDL317	SK99a	770	3,678	17,432	7,457	0.176	1,315
Hemswell	East Midlands	PEDL210	SK/87f,SK/88h,i,SK/97a,SK/98f,g	51,878	216,228	754,619	325,183	0.252	81,946
Dunholme	East Midlands	AL9	SK/97c,SK/98d,TF/7a,TF/8c	6,562	26,781	95,255	42,492	0.252	10,708
Crewe	North West	PEDL293	SJ75/SJ76	130,548	526,053	1,866,044	797,339	0.202	160,744
Statistical Aggregate				**7,669,833**	**10,562,549**	**14,722,008**	**10,955,834**	**0.232**	**2,543,273**
Arithmetic Summation				1,874,575	7,072,546	24,916,888	10,955,834	0.232	2,543,273

Notes:

1. Low, best, high, and mean estimates follow the PRMS guidelines for prospective resources.
2. Low, best, high, and mean estimates in this table are P_{90}, P_{50}, P_{10}, and mean respectively.
3. P_g is defined as the probability of discovering reservoirs which flow petroleum at a measurable rate.
4. P_g has been rounded for presentation purposes. Multiplication using this presented P_g may yield imprecise results. Dividing the P_g-adjusted mean estimate by the mean estimate yields the precise P_g.
5. Application of any geological and economic chance factor does not equate prospective resources to contingent resources or reserves.
6. Recovery efficiency is applied to prospective resources in this table.
7. Arithmetic summation of probabilistic estimates produces invalid results except for the mean estimate.
   Arithmetic summation of probabilistic estimates is presented in this table in compliance with PRMS guidelines.
8. Summations may vary from those shown here due to rounding.
9. There is no certainty that any portion of the prospective resources estimated herein will be discovered.
   If discovered, there is no certainty that it will be commercially viable to produce any portion of the prospective resources evaluated.
10. The range in P_{1-min} for the statistical aggregate P_g-adjusted mean estimate is 0.05 to 0.08.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

TABLE 4
PROBABILITY DISTRIBUTIONS
for
MONTE CARLO SIMULATION
as of
JULY 31, 2016
for
IGAS
in
VARIOUS GAS PROSPECTS
VARIOUS LICENSE BLOCKS
UNITED KINGDOM

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_{0}	Mean
York	PEDL146	Productive area, acres	9,435	19,523	30,351	46,647	67,562	31,915
		Productive area, square kilometers	38.2	79.0	122.8	188.8	273.4	129.2
		Net shale thickness, feet	26.20	72.47	148.24	302.95	1,050.12	173.36
		Net shale thickness, meters	7.99	22.09	45.19	92.34	320.06	52.84
		Sorbed gas storage capacity, scf/ton	0.004	14.116	49.400	92.040	167.910	51.064
		Sorbed gas storage capacity, cubic meters/ton	0.00011	0.39525	1.38341	2.57713	4.70149	1.45229
		Shale density, g/cc or tons/cubic meter	2.466	2.530	2.565	2.600	2.669	2.565
		Matrix porosity, decimal	0.024	0.040	0.049	0.059	0.072	0.049
		Matrix gas saturation, decimal	0.178	0.352	0.504	0.658	0.861	0.505
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.499	0.801	0.224
		Condensate Yield, barrels/MMscf	0.802	1.275	3.440	9.176	14.394	4.255
		Condensate, barrels	13,090	165,748	1,239,511	7,008,553	44,512,157	2,787,015
		Prospective OGIP, cubic feet	163,258,980,879	790,767,966,220	2,197,022,048,697	5,792,632,796,169	24,042,499,302,101	2,899,812,396,247
		Prospective gross ultimate recovery, cubic feet	8,262,120,571	70,315,223,818	357,747,993,904	1,578,402,866,216	10,710,428,442,542	654,957,114,858
Normanby	PL 162	Productive area, acres	1,575	2,968	4,618	7,092	10,301	4,867
		Productive area, square kilometers	6.4	12.0	18.7	20.7	41.7	19.7
		Net shale thickness, feet	0.74	4.48	11.01	26.89	135.86	14.06
		Net shale thickness, meters	0.22	1.38	3.35	8.20	41.41	4.29
		Sorbed gas storage capacity, scf/ton	0.066	14.146	49.430	92.039	168.850	51.806
		Sorbed gas storage capacity, cubic meters/ton	0.00185	0.39606	1.30404	2.57700	4.72797	1.45225
		Shale density, g/cc or tons/cubic meter	2.478	2.530	2.565	2.600	2.657	2.565
		Matrix porosity, decimal	0.012	0.040	0.056	0.071	0.099	0.056
		Matrix gas saturation, decimal	0.181	0.350	0.462	0.574	0.786	0.462
		Formation volume factor, Bg	161	213	302	397	470	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.498	0.801	0.224
		Condensate Yield, barrels/MMscf	0.802	1.273	3.439	9.150	14.356	4.430
		Condensate, barrels	37	2,065	14,458	83,418	2,356,166	35,780
		Prospective OGIP, cubic feet	1,057,924,368	6,155,763,970	25,064,807,134	72,958,703,832	609,443,886,354	38,057,257,040
		Prospective gross ultimate recovery, cubic feet	20,509,864	794,087,250	4,232,549,710	18,868,347,110	183,430,690,287	8,008,209,920
Thorne	EXL 288	Productive area, acres	2,666	5,313	8,267	12,716	18,465	8,686
		Productive area, square kilometers	10.8	21.5	33.5	51.5	74.7	35.2
		Net shale thickness, feet	304.47	524.94	732.50	1,021.50	1,834.31	758.01
		Net shale thickness, meters	92.80	159.99	223.25	311.34	559.07	231.03
		Sorbed gas storage capacity, scf/ton	0.139	14.176	49.431	91.852	176.417	51.872
		Sorbed gas storage capacity, cubic meters/ton	0.00390	0.39691	1.30407	2.57165	4.93960	1.45242
		Shale density, g/cc or tons/cubic meter	2.473	2.530	2.565	2.600	2.653	2.565
		Matrix porosity, decimal	0.004	0.030	0.047	0.064	0.094	0.047
		Matrix gas saturation, decimal	0.154	0.305	0.471	0.640	0.897	0.473
		Formation volume factor, Bg	161	213	302	397	470	304
		Recovery efficiency, decimal	0.007	0.047	0.169	0.498	0.804	0.224
		Condensate Yield, barrels/MMscf	0.805	1.275	3.435	9.168	14.316	4.450
		Condensate, barrels	26,806	278,003	1,490,848	7,186,644	50,152,446	3,078,930
		Prospective OGIP, cubic feet	319,550,334,105	1,265,535,829,914	2,801,085,306,115	5,401,834,105,853	16,883,546,627,416	3,147,312,057,076
		Prospective gross ultimate recovery, cubic feet	6,632,877,060	108,568,453,870	473,101,183,709	1,590,177,670,754	8,292,767,792,249	691,808,150,785

TABLE 4 – PROBABILITY DISTRIBUTIONS – *(Continued)*

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_0	Mean
Gainsborough/Beckingham/Corringham/Glentworth	ML4	Productive area, acres	2,682	5,055	7,868	12,089	17,631	8,279
		Productive area, square kilometers	10.9	20.5	31.9	48.9	71.4	33.5
		Net shale thickness, feet	527.71	913.45	1,178.95	1,521.49	2,254.48	1,203.04
		Net shale thickness, meters	161.32	278.41	359.33	463.73	687.13	366.67
		Sorbed gas storage capacity, scf/ton	0.173	14.108	49.415	91.857	197.551	51.855
		Sorbed gas storage capacity, cubic meters/ton	0.00484	0.39503	1.38368	2.57284	5.53229	1.45306
		Shale density, g/cc or tons/cubic meter	2.479	2.530	2.565	2.600	2.659	2.565
		Matrix porosity, decimal	0.007	0.032	0.050	0.069	0.100	0.050
		Matrix gas saturation, decimal	0.154	0.308	0.495	0.656	0.892	0.488
		Formation volume factor, Bg	160	213	302	397	479	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.496	0.802	0.224
		Condensate Yield, barrels/MMscf	0.800	1.277	3.440	9.179	14.340	4.478
		Condensate, barrels	43,881	428,556	2,474,237	12,486,513	148,956,531	4,994,757
		Prospective OGIP, cubic feet	616,149,179,437	2,210,009,002,852	4,448,132,442,057	9,600,977,690,439	21,326,659,906,101	5,070,400,748,763
		Prospective gross ultimate recovery, cubic feet	19,254,175,833	184,554,203,550	748,336,515,636	2,557,556,878,211	15,795,578,372,497	1,115,331,061,937
West Everton	PEDL139	Productive area, acres	2,591	7,060	10,869	16,908	24,061	11,503
		Productive area, square kilometers	10.5	28.6	44.5	68.4	99.8	46.5
		Net shale thickness, feet	440.60	766.92	1,054.76	1,448.69	2,455.12	1,087.63
		Net shale thickness, meters	134.29	233.74	321.48	441.54	748.28	331.49
		Sorbed gas storage capacity, scf/ton	0.132	14.137	48.392	91.864	178.058	51.881
		Sorbed gas storage capacity, cubic meters/ton	0.00369	0.39583	1.35297	2.57276	5.01361	1.45265
		Shale density, g/cc or tons/cubic meter	2.477	2.530	2.565	2.600	2.654	2.565
		Matrix porosity, decimal	0.007	0.032	0.049	0.067	0.096	0.050
		Matrix gas saturation, decimal	0.150	0.309	0.501	0.697	0.893	0.503
		Formation volume factor, Bg	161	213	302	397	480	304
		Recovery efficiency, decimal	0.006	0.047	0.169	0.497	0.803	0.224
		Condensate Yield, barrels/MMscf	0.802	1.273	3.436	9.173	14.362	4.455
		Condensate, barrels	82,770	509,931	3,080,776	15,028,224	66,157,052	6,392,384
		Prospective OGIP, cubic feet	556,230,773,233	2,597,620,074,730	5,508,825,027,159	11,439,062,706,860	31,270,568,756,391	6,430,495,335,047
		Prospective gross ultimate recovery, cubic feet	15,808,329,326	220,208,227,008	918,442,910,407	3,432,700,707,765	14,150,176,694,110	1,433,888,650,905
Everton/Springs Road	PEDL140	Productive area, acres	5,238	10,010	15,687	23,841	34,709	16,373
		Productive area, square kilometers	21.2	40.5	63.5	96.5	140.5	66.3
		Net shale thickness, feet	441.33	767.50	1,054.44	1,448.22	2,271.29	1,087.64
		Net shale thickness, meters	134.51	233.95	321.38	441.39	692.26	331.47
		Sorbed gas storage capacity, scf/ton	0.163	14.194	49.425	91.875	158.237	51.661
		Sorbed gas storage capacity, cubic meters/ton	0.00457	0.39744	1.38391	2.57249	4.43064	1.45211
		Shale density, g/cc or tons/cubic meter	2.479	2.530	2.565	2.600	2.660	2.565
		Matrix porosity, decimal	0.009	0.030	0.048	0.067	0.095	0.049
		Matrix gas saturation, decimal	0.153	0.309	0.501	0.697	0.900	0.503
		Formation volume factor, Bg	160	212	303	397	479	304
		Recovery efficiency, decimal	0.005	0.047	0.169	0.499	0.803	0.224
		Condensate Yield, barrels/MMscf	0.802	1.275	3.435	9.179	14.358	4.523
		Condensate, barrels	48,486	808,315	4,206,943	22,047,712	121,219,631	9,168,249
		Prospective OGIP, cubic feet	976,554,480,702	3,547,935,430,031	7,615,528,311,548	16,106,764,114,415	41,552,247,633,353	8,962,917,610,745
		Prospective gross ultimate recovery, cubic feet	30,719,076,509	294,819,530,574	1,270,239,373,020	4,626,499,790,929	16,026,072,158,719	2,026,567,290,278
Ranskill	PEDL012	Productive area, acres	1,193	2,334	3,626	5,576	8,145	3,816
		Productive area, square kilometers	4.8	9.4	14.7	22.6	33.0	15.4
		Net shale thickness, feet	185.72	336.00	468.31	651.63	1,071.33	482.37
		Net shale thickness, meters	57.52	102.43	142.73	198.67	326.53	147.03
		Sorbed gas storage capacity, scf/ton	0.055	14.148	49.079	92.014	159.927	51.053
		Sorbed gas storage capacity, cubic meters/ton	0.00155	0.39609	1.38235	2.57640	4.47795	1.45186
		Shale density, g/cc or tons/cubic meter	2.469	2.530	2.565	2.600	2.653	2.565
		Matrix porosity, decimal	0.009	0.030	0.044	0.059	0.087	0.045
		Matrix gas saturation, decimal	0.016	0.115	0.354	0.632	0.891	0.367
		Formation volume factor, Bg	160	213	302	397	478	304
		Recovery efficiency, decimal	0.007	0.040	0.169	0.499	0.802	0.224
		Condensate Yield, barrels/MMscf	0.804	1.275	3.436	9.167	14.335	4.387
		Condensate, barrels	4,012	55,702	330,251	1,786,415	10,386,460	740,350
		Prospective OGIP, cubic feet	24,871,117,084	239,658,105,500	618,182,916,769	1,407,931,296,943	3,525,308,204,164	742,008,436,312
		Prospective gross ultimate recovery, cubic feet	3,255,686,373	21,678,065,230	95,960,702,055	377,776,583,478	1,579,050,709,459	160,749,940,050

DeGolyer
MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

TABLE 4 – PROBABILITY DISTRIBUTIONS – *(Continued)*

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_{0}	Mean
Lound	PEDL200	Productive area, acres	3,749	8,059	12,531	18,255	27,558	13,182
		Productive area, square kilometers	15.2	32.6	50.7	77.9	113.1	53.3
		Net shale thickness, feet	170.84	335.31	468.33	651.72	1,052.27	484.31
		Net shale thickness, meters	52.07	102.20	142.74	198.63	320.72	147.61
		Sorbed gas storage capacity, scf/ton	0.068	14.092	49.400	91.531	174.562	51.876
		Sorbed gas storage capacity, cubic meters/ton	0.00190	0.39458	1.38319	2.57406	4.88836	1.45252
		Shale density, g/cc or tons/cubic meter	2.460	2.530	2.565	2.600	2.654	2.565
		Matrix porosity, decimal	0.009	0.030	0.044	0.059	0.083	0.045
		Matrix gas saturation, decimal	0.156	0.313	0.471	0.630	0.852	0.472
		Formation volume factor, Bg	161	213	302	397	477	304
		Recovery efficiency, decimal	0.005	0.048	0.169	0.496	0.802	0.224
		Condensate Yield, barrels/MMscf	0.803	1.275	3.440	9.180	14.359	4.325
		Condensate, barrels	22,588	255,263	1,435,405	5,893,772	38,737,635	2,813,058
		Prospective OGIP, cubic feet	165,418,710,276	1,202,745,124,735	2,542,601,074,443	5,090,783,680,201	17,101,633,786,193	2,329,124,295,730
		Prospective gross ultimate recovery, cubic feet	5,509,140,140	102,492,900,563	422,542,418,557	1,481,540,922,104	7,025,862,705,754	650,428,218,471
Cold Hanworth	PEDL6	Productive area, acres	4,927	9,650	14,990	23,038	33,514	15,772
		Productive area, square kilometers	19.9	39.1	60.7	93.2	135.6	63.8
		Net shale thickness, feet	102.62	201.58	303.00	454.53	1,041.00	318.77
		Net shale thickness, meters	31.28	61.44	92.35	138.53	317.28	97.16
		Sorbed gas storage capacity, scf/ton	0.173	14.192	46.362	91.850	150.022	51.849
		Sorbed gas storage capacity, cubic meters/ton	0.00485	0.39737	1.30268	2.57460	4.20061	1.45177
		Shale density, g/cc or tons/cubic meter	2.460	2.530	2.565	2.600	2.653	2.565
		Matrix porosity, decimal	0.010	0.030	0.044	0.059	0.082	0.045
		Matrix gas saturation, decimal	0.154	0.303	0.456	0.610	0.850	0.457
		Formation volume factor, Bg	161	212	302	397	480	304
		Recovery efficiency, decimal	0.005	0.048	0.169	0.498	0.801	0.224
		Condensate Yield, barrels/MMscf	0.802	1.273	3.436	9.157	14.332	4.349
		Condensate, barrels	20,716	188,930	1,102,875	5,280,052	34,603,435	2,212,391
		Prospective OGIP, cubic feet	272,210,614,952	978,773,489,380	1,960,213,418,615	4,121,596,623,087	10,201,805,132,571	2,260,980,107,205
		Prospective gross ultimate recovery, cubic feet	6,435,307,869	71,460,040,818	322,763,402,046	1,102,795,838,746	4,234,438,630,493	508,961,181,217
Armthorpe	PEDL169	Productive area, acres	2,142	4,387	6,815	10,480	15,201	7,170
		Productive area, square kilometers	8.7	17.0	27.6	42.4	61.5	29.0
		Net shale thickness, feet	918.96	1,354.20	1,752.69	2,270.09	4,083.69	1,790.47
		Net shale thickness, meters	280.09	412.74	534.28	691.69	1,244.71	545.71
		Sorbed gas storage capacity, scf/ton	0.014	14.169	46.411	91.944	157.314	51.856
		Sorbed gas storage capacity, cubic meters/ton	0.00041	0.39674	1.30052	2.57442	4.40479	1.45204
		Shale density, g/cc or tons/cubic meter	2.476	2.530	2.565	2.600	2.671	2.565
		Matrix porosity, decimal	0.003	0.030	0.048	0.066	0.095	0.048
		Matrix gas saturation, decimal	0.153	0.309	0.501	0.697	0.895	0.503
		Formation volume factor, Bg	161	212	302	397	478	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.498	0.801	0.224
		Condensate Yield, barrels/MMscf	0.805	1.278	3.436	9.175	14.312	4.254
		Condensate, barrels	98,612	577,280	3,188,455	13,417,848	91,478,866	5,961,191
		Prospective OGIP, cubic feet	824,625,321,641	2,798,850,850,791	5,454,252,857,069	10,977,297,327,030	30,456,357,307,069	6,394,262,220,809
		Prospective gross ultimate recovery, cubic feet	27,275,530,338	225,096,816,945	926,161,796,861	3,030,320,047,444	12,482,678,168,161	1,401,378,360,286
Hemsworth	PEDL273	Productive area, acres	7,035	13,858	21,645	33,120	48,074	22,805
		Productive area, square kilometers	28.5	56.1	[illegible]	134.0	194.5	[illegible]
		Net shale thickness, feet	294.59	481.37	669.32	929.59	1,489.35	691.70
		Net shale thickness, meters	89.79	146.71	204.00	283.32	453.93	210.82
		Sorbed gas storage capacity, scf/ton	0.129	14.149	49.357	91.963	192.539	51.888
		Sorbed gas storage capacity, cubic meters/ton	0.00361	0.39601	1.38196	2.57495	5.39107	1.45286
		Shale density, g/cc or tons/cubic meter	2.477	2.530	2.565	2.600	2.652	2.565
		Matrix porosity, decimal	0.006	0.030	0.046	0.062	0.087	0.046
		Matrix gas saturation, decimal	0.151	0.308	0.481	0.660	0.864	0.483
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.006	0.048	0.169	0.499	0.803	0.224
		Condensate Yield, barrels/MMscf	0.801	1.273	3.438	9.175	14.315	4.484
		Condensate, barrels	51,314	592,039	3,582,637	17,534,962	135,390,732	7,514,017
		Prospective OGIP, cubic feet	549,812,441,628	2,989,841,556,830	6,535,158,517,808	13,005,243,346,553	33,656,142,493,500	7,433,800,757,739
		Prospective gross ultimate recovery, cubic feet	23,969,616,680	247,009,903,617	1,050,864,599,299	3,689,137,593,761	20,341,089,516,795	1,875,797,475,833

TABLE 4 – PROBABILITY DISTRIBUTIONS – *(Continued)*

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_0	Mean
Willingham by Stow	PEDL316	Productive area, acres	3,839	7,860	12,225	18,789	27,221	12,869
		Productive area, square kilometers	15.5	31.8	49.5	76.0	110.2	52.0
		Net shale thickness, feet	351.42	539.60	722.65	965.59	1,559.72	741.83
		Net shale thickness, meters	107.11	164.52	220.26	294.60	475.39	226.10
		Sorbed gas storage capacity, scf/ton	0.091	14.123	49.357	92.013	157.810	51.863
		Sorbed gas storage capacity, cubic meters/ton	0.00254	0.39544	1.38284	2.57637	4.69867	1.45216
		Shale density, g/cc or tons/cubic meter	2.468	2.530	2.565	2.600	2.657	2.565
		Matrix porosity, decimal	0.005	0.030	0.047	0.064	0.092	0.047
		Matrix gas saturation, decimal	0.153	0.305	0.481	0.659	0.895	0.483
		Formation volume factor, Bg	161	213	309	397	478	304
		Recovery efficiency, decimal	0.005	0.048	0.169	0.498	0.801	0.224
		Condensate Yield, barrels/MMscf	0.804	1.279	3.435	9.182	14.396	4.392
		Condensate, barrels	26,554	359,673	2,245,674	10,807,804	117,234,537	4,497,412
		Prospective OGIP, cubic feet	465,647,653,478	1,903,712,065,190	4,068,464,947,181	7,956,834,658,896	20,512,670,993,032	4,599,423,501,027
		Prospective gross ultimate recovery, cubic feet	13,276,771,532	165,050,520,179	670,620,756,812	2,323,569,251,626	9,198,821,592,824	1,023,949,451,572
Rawmarsh	PEDL305	Productive area, acres	5,265	10,114	15,717	24,159	34,918	15,536
		Productive area, square kilometers	21.3	40.9	63.6	97.8	141.3	62.9
		Net shale thickness, feet	322.06	597.59	818.61	1,121.16	1,779.60	844.13
		Net shale thickness, meters	98.16	182.14	249.56	341.71	542.40	257.28
		Sorbed gas storage capacity, scf/ton	0.086	14.148	49.413	91.529	179.423	51.875
		Sorbed gas storage capacity, cubic meters/ton	0.00242	0.39614	1.38356	2.57401	5.02384	1.45251
		Shale density, g/cc or tons/cubic meter	2.477	2.530	2.565	2.600	2.661	2.565
		Matrix porosity, decimal	0.006	0.032	0.049	0.064	0.089	0.048
		Matrix gas saturation, decimal	0.156	0.315	0.495	0.679	0.890	0.497
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.005	0.048	0.169	0.497	0.805	0.224
		Condensate Yield, barrels/MMscf	0.802	1.277	3.437	9.184	14.376	4.430
		Condensate, barrels	90,240	569,785	3,253,363	15,976,745	137,873,155	7,035,359
		Prospective OGIP, cubic feet	1,046,679,650,947	2,837,819,727,579	5,978,377,940,800	12,292,683,101,962	33,990,259,499,843	6,996,902,154,900
		Prospective gross ultimate recovery, cubic feet	15,365,624,714	232,184,019,379	1,008,767,722,098	3,684,635,895,557	16,054,310,681,553	1,588,435,059,051
Welton/Nettleham/Scampton North/Stainton	PEDL179 (W)	Productive area, acres	2,311	5,247	8,630	14,024	21,266	9,206
		Productive area, square kilometers	9.4	21.2	34.9	56.8	86.1	37.3
		Net shale thickness, feet	58.24	87.60	115.19	151.39	241.74	117.86
		Net shale thickness, meters	17.75	26.72	35.11	46.14	73.68	35.93
		Sorbed gas storage capacity, scf/ton	0.159	14.098	46.375	91.878	157.215	51.860
		Sorbed gas storage capacity, cubic meters/ton	0.00444	0.39447	1.30249	2.57537	4.40202	1.45180
		Shale density, g/cc or tons/cubic meter	2.471	2.530	2.565	2.600	2.652	2.565
		Matrix porosity, decimal	0.012	0.030	0.042	0.055	0.080	0.043
		Matrix gas saturation, decimal	0.156	0.313	0.466	0.620	0.853	0.467
		Formation volume factor, Bg	161	213	302	397	479	304
		Recovery efficiency, decimal	0.007	0.047	0.169	0.497	0.803	0.224
		Condensate Yield, barrels/MMscf	0.803	1.274	3.439	9.184	14.398	4.487
		Condensate, barrels	3,338	36,249	234,890	1,090,065	8,330,220	482,313
		Prospective OGIP, cubic feet	46,203,509,050	200,335,099,764	410,763,729,476	852,763,904,762	2,106,959,119,265	470,056,120,303
		Prospective gross ultimate recovery, cubic feet	920,914,865	15,520,946,722	71,217,608,149	232,705,734,021	1,080,063,159,091	107,782,949,814
East Glentworth	PEDL179 (EG)	Productive area, acres	139	256	396	609	885	416
		Productive area, square kilometers	0.5	1.0	1.6	2.5	3.6	1.7
		Net shale thickness, feet	67.12	87.62	115.19	151.41	263.70	117.89
		Net shale thickness, meters	17.41	26.71	35.11	46.15	77.32	35.93
		Sorbed gas storage capacity, scf/ton	0.012	14.148	49.393	92.030	173.214	51.870
		Sorbed gas storage capacity, cubic meters/ton	0.00033	0.39614	1.38300	2.57685	4.84599	1.45236
		Shale density, g/cc or tons/cubic meter	2.480	2.530	2.565	2.600	2.652	2.565
		Matrix porosity, decimal	0.012	0.030	0.042	0.055	0.075	0.043
		Matrix gas saturation, decimal	0.156	0.313	0.466	0.620	0.856	0.467
		Formation volume factor, Bg	160	212	302	397	478	304
		Recovery efficiency, decimal	0.006	0.047	0.169	0.499	0.805	0.224
		Condensate Yield, barrels/MMscf	0.801	1.275	3.438	9.184	14.393	4.230
		Condensate, barrels	122	1,919	11,156	60,013	321,665	20,866
		Prospective OGIP, cubic feet	2,105,340,767	9,278,479,562	18,809,401,556	36,700,112,054	105,178,104,710	21,537,018,731
		Prospective gross ultimate recovery, cubic feet	123,946,221	695,709,750	3,259,748,730	11,671,672,170	41,609,619,819	4,883,671,271

TABLE 4 – PROBABILITY DISTRIBUTIONS – *(Continued)*

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_{0}	Mean
Rothamsall	ML6	Productive area, acres	413	784	1,219	1,871	2,729	1,281
		Productive area, square kilometers	1.7	3.2	4.9	7.6	11.0	5.2
		Net shale thickness, feet	64.50	125.07	200.00	318.85	669.72	213.79
		Net shale thickness, meters	19.66	38.12	60.96	97.19	204.12	65.16
		Sorbed gas storage capacity, scf/ton	0.167	14.155	49.411	92.047	174.325	51.873
		Sorbed gas storage capacity, cubic meters/ton	0.00466	0.39676	1.38351	2.57733	4.88111	1.45246
		Shale density, g/cc or tons/cubic meter	2.475	2.530	2.565	2.600	2.655	2.565
		Matrix porosity, decimal	0.006	0.030	0.043	0.057	0.077	0.043
		Matrix gas saturation, decimal	0.177	0.351	0.490	0.630	0.826	0.491
		Formation volume factor, Bg	160	212	303	397	478	304
		Recovery efficiency, decimal	0.005	0.048	0.169	0.499	0.800	0.224
		Condensate Yield, barrels/MMscf	0.803	1.273	3.439	9.167	14.359	4.277
		Condensate, barrels	825	11,186	58,690	274,032	1,497,175	118,455
		Prospective OGIP, cubic feet	13,732,420,460	45,397,769,560	110,861,474,405	227,325,191,679	625,370,946,334	126,728,737,643
		Prospective gross ultimate recovery, cubic feet	621,310,555	4,003,514,389	17,537,483,096	53,399,295,753	276,891,575,636	27,927,927,537
South Leverton	ML7	Productive area, acres	399	855	1,346	2,070	2,599	1,415
		Productive area, square kilometers	1.6	3.5	5.4	8.4	12.1	5.7
		Net shale thickness, feet	69.25	148.85	247.64	410.89	971.80	268.02
		Net shale thickness, meters	21.11	45.38	75.49	125.23	296.19	81.69
		Sorbed gas storage capacity, scf/ton	0.036	14.143	49.402	91.854	159.608	51.854
		Sorbed gas storage capacity, cubic meters/ton	0.00100	0.39601	1.38328	2.57194	4.46904	1.45192
		Shale density, g/cc or tons/cubic meter	2.465	2.530	2.565	2.600	2.663	2.565
		Matrix porosity, decimal	0.007	0.030	0.046	0.063	0.089	0.047
		Matrix gas saturation, decimal	0.152	0.304	0.466	0.630	0.866	0.467
		Formation volume factor, Bg	160	213	303	397	490	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.498	0.805	0.224
		Condensate Yield, barrels/MMscf	0.800	1.277	3.437	9.184	14.314	4.212
		Condensate, barrels	425	15,757	86,455	355,418	3,415,167	157,170
		Prospective OGIP, cubic feet	12,151,593,877	63,552,064,361	146,939,429,242	328,149,770,953	978,815,178,041	177,494,360,062
		Prospective gross ultimate recovery, cubic feet	402,044,752	5,568,956,971	23,331,386,504	90,552,302,755	384,072,243,395	39,551,195,848
West Beckingham	PL178	Productive area, acres	80	178	232	357	521	244
		Productive area, square kilometers	0.3	0.6	0.9	1.4	2.1	1.0
		Net shale thickness, feet	260.39	488.93	718.48	1,055.76	1,893.69	751.79
		Net shale thickness, meters	79.36	149.02	218.90	321.70	577.28	229.13
		Sorbed gas storage capacity, scf/ton	0.066	14.103	49.368	91.868	158.777	51.867
		Sorbed gas storage capacity, cubic meters/ton	0.00184	0.39408	1.38230	2.57258	4.44575	1.45169
		Shale density, g/cc or tons/cubic meter	2.451	2.530	2.565	2.600	2.660	2.565
		Matrix porosity, decimal	0.008	0.034	0.050	0.067	0.092	0.050
		Matrix gas saturation, decimal	0.159	0.317	0.501	0.688	0.896	0.502
		Formation volume factor, Bg	160	213	303	397	470	304
		Recovery efficiency, decimal	0.005	0.048	0.169	0.498	0.804	0.224
		Condensate Yield, barrels/MMscf	0.800	1.275	3.438	9.157	14.061	4.306
		Condensate, barrels	1,030	7,645	44,314	228,230	1,301,122	93,847
		Prospective OGIP, cubic feet	15,220,842,167	37,391,009,755	81,695,706,264	171,297,607,530	545,028,536,104	95,576,297,012
		Prospective gross ultimate recovery, cubic feet	237,358,080	2,917,903,157	14,312,003,063	47,904,610,122	255,802,806,842	21,387,641,747
Chorlton	PEDL188	Productive area, acres	3,734	7,077	10,992	16,913	24,663	11,564
		Productive area, square kilometers	15.1	28.6	44.5	68.4	99.8	46.8
		Net shale thickness, feet	74.89	124.39	174.18	243.91	399.89	180.33
		Net shale thickness, meters	22.83	37.91	53.09	74.34	121.88	54.96
		Sorbed gas storage capacity, scf/ton	0.065	7.868	27.472	51.137	90.413	28.813
		Sorbed gas storage capacity, cubic meters/ton	0.00182	0.22032	0.76922	1.43183	2.53155	0.80682
		Shale density, g/cc or tons/cubic meter	2.601	2.640	2.655	2.670	2.692	2.655
		Matrix porosity, decimal	0.002	0.030	0.050	0.070	0.102	0.050
		Matrix gas saturation, decimal	0.279	0.457	0.673	0.889	0.856	0.573
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.006	0.047	0.169	0.499	0.804	0.224
		Condensate Yield, barrels/MMscf	0.802	1.275	3.441	9.177	14.380	4.265
		Condensate, barrels	8,120	90,397	487,069	2,380,010	19,742,897	348,882
		Prospective OGIP, cubic feet	101,872,511,840	412,530,538,418	881,625,153,525	1,718,284,593,195	3,858,595,476,158	995,906,194,227
		Prospective gross ultimate recovery, cubic feet	3,873,700,037	35,890,102,658	142,735,234,026	502,439,154,417	1,501,272,628,902	222,444,619,486

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

TABLE 4 – PROBABILITY DISTRIBUTIONS – *(Continued)*

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_0	Mean
Upton	PEDL189	Productive area, acres	3,126	7,058	10,594	16,855	24,552	11,563
		Productive area, square kilometers	12.7	28.6	44.5	68.3	99.4	46.8
		Net shale thickness, feet	317.18	488.55	654.56	876.26	1,350.88	672.00
		Net shale thickness, meters	96.67	148.91	199.50	267.07	411.73	204.81
		Sorbed gas storage capacity, scf/ton	0.009	7.551	27.470	51.139	86.024	28.811
		Sorbed gas storage capacity, cubic meters/ton	0.00024	0.21393	0.77816	1.49130	2.40866	0.80669
		Shale density, g/cc or tons/cubic meter	2.616	2.640	2.655	2.670	2.695	2.655
		Matrix porosity, decimal	0.002	0.030	0.050	0.070	0.102	0.050
		Matrix gas saturation, decimal	0.290	0.460	0.551	0.653	0.826	0.551
		Formation volume factor, Bg	161	212	303	397	479	304
		Recovery efficiency, decimal	0.005	0.048	0.169	0.496	0.804	0.224
		Condensate Yield, barrels/MMscf	0.803	1.277	3.437	9.159	14.377	4.483
		Condensate, barrels	38,234	334,012	1,757,725	9,194,399	79,516,206	3,504,752
		Prospective OGIP, cubic feet	416,840,136,737	1,562,695,305,016	3,314,939,309,953	6,529,041,348,626	16,608,209,906,049	3,612,191,777,272
		Prospective gross ultimate recovery, cubic feet	16,262,507,555	126,750,126,482	546,350,145,825	1,594,030,595,059	9,154,344,711,123	848,754,617,705
Four Oaks/Doe Green	PEDL145	Productive area, acres	2,300	5,250	8,171	12,571	18,165	8,586
		Productive area, square kilometers	9.3	21.3	33.1	50.9	73.6	34.8
		Net shale thickness, feet	293.74	435.69	568.92	742.66	1,130.30	581.39
		Net shale thickness, meters	89.53	132.79	173.40	226.35	344.50	177.20
		Sorbed gas storage capacity, scf/ton	0.033	7.684	27.462	51.095	86.093	28.812
		Sorbed gas storage capacity, cubic meters/ton	0.00092	0.22075	0.78892	1.43066	2.42741	0.80874
		Shale density, g/cc or tons/cubic meter	2.615	2.640	2.655	2.670	2.699	2.655
		Matrix porosity, decimal	0.015	0.034	0.047	0.060	0.079	0.047
		Matrix gas saturation, decimal	0.511	0.574	0.611	0.648	0.711	0.611
		Formation volume factor, Bg	161	213	303	397	478	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.498	0.803	0.224
		Condensate Yield, barrels/MMscf	0.805	1.278	3.440	9.154	14.069	4.509
		Condensate, barrels	38,023	222,840	1,189,083	5,879,541	26,711,466	2,459,078
		Prospective OGIP, cubic feet	281,456,042,301	1,131,582,554,258	2,149,276,934,095	4,041,069,300,504	10,030,939,300,639	2,434,049,108,760
		Prospective gross ultimate recovery, cubic feet	21,468,982,071	87,700,090,653	351,497,549,451	1,208,033,528,395	3,975,239,528,144	545,311,688,449
Ellesmere Port	PEDL184	Productive area, acres	9,610	20,669	32,157	49,493	71,718	33,835
		Productive area, square kilometers	38.9	83.6	130.1	200.3	290.2	136.9
		Net shale thickness, feet	87.58	194.22	326.14	547.18	1,200.11	354.14
		Net shale thickness, meters	26.69	59.20	99.40	166.77	365.79	107.94
		Sorbed gas storage capacity, scf/ton	0.042	7.645	27.449	51.070	88.976	28.816
		Sorbed gas storage capacity, cubic meters/ton	0.00118	0.21967	0.78858	1.42997	2.40134	0.80689
		Shale density, g/cc or tons/cubic meter	2.617	2.640	2.655	2.670	2.693	2.655
		Matrix porosity, decimal	0.000	0.027	0.049	0.070	0.106	0.049
		Matrix gas saturation, decimal	0.211	0.339	0.429	0.519	0.657	0.429
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.006	0.048	0.169	0.498	0.800	0.224
		Condensate Yield, barrels/MMscf	0.804	1.274	3.440	9.173	14.027	4.575
		Condensate, barrels	26,698	349,635	2,063,228	10,837,502	92,155,768	4,641,114
		Prospective OGIP, cubic feet	104,054,872,820	1,587,208,154,293	3,751,224,687,271	8,307,416,548,656	25,689,916,555,004	4,569,731,310,995
		Prospective gross ultimate recovery, cubic feet	14,319,771,062	130,408,327,313	653,187,234,014	2,304,011,296,910	9,753,049,254,504	1,014,504,522,991
Ince Marshes	PEDL190	Productive area, acres	3,499	6,607	10,274	15,792	22,896	10,811
		Productive area, square kilometers	14.2	25.7	41.6	63.9	92.7	43.8
		Net shale thickness, feet	351.55	539.32	716.36	949.63	1,480.74	734.02
		Net shale thickness, meters	107.15	164.38	218.34	289.43	451.31	223.72
		Sorbed gas storage capacity, scf/ton	0.016	7.899	27.465	51.065	90.261	28.816
		Sorbed gas storage capacity, cubic meters/ton	0.00046	0.22069	0.78592	1.43039	2.52731	0.80586
		Shale density, g/cc or tons/cubic meter	2.615	2.640	2.655	2.670	2.699	2.655
		Matrix porosity, decimal	0.001	0.030	0.050	0.070	0.099	0.050
		Matrix gas saturation, decimal	0.283	0.408	0.479	0.553	0.669	0.479
		Formation volume factor, Bg	160	213	302	397	478	304
		Recovery efficiency, decimal	0.006	0.048	0.169	0.499	0.801	0.224
		Condensate Yield, barrels/MMscf	0.805	1.273	3.437	9.157	14.335	4.352
		Condensate, barrels	29,769	297,490	1,649,526	7,780,505	41,492,474	3,316,415
		Prospective OGIP, cubic feet	376,507,477,570	1,450,082,276,194	3,001,202,251,424	5,698,157,622,705	13,350,549,906,807	3,354,408,755,937
		Prospective gross ultimate recovery, cubic feet	16,699,304,854	116,539,763,835	502,639,351,462	1,706,005,124,076	6,958,900,696,577	756,518,704,034

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

TABLE 4 – PROBABILITY DISTRIBUTIONS – *(Continued)*

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_0	Mean
Parkside / [illegible]	PEDL153	Productive area, acres	10,633	20,949	32,572	50,099	72,655	34,263
		Productive area, square kilometers	43.0	84.8	131.8	202.7	294.1	138.7
		Net shale thickness, feet	140.77	240.94	348.51	504.34	936.25	363.45
		Net shale thickness, meters	42.90	73.44	106.22	153.72	285.35	110.77
		Sorbed gas storage capacity, scf/ton	0.039	7.881	27.460	51.038	86.446	28.815
		Sorbed gas storage capacity, cubic meters/ton	0.00109	0.22068	0.76888	1.42906	2.42049	0.80683
		Shale density, g/cc or tons/cubic meter	2.613	2.640	2.655	2.670	2.692	2.655
		Matrix porosity, decimal	0.009	0.030	0.045	0.060	0.083	0.045
		Matrix gas saturation, decimal	0.405	0.484	0.538	0.593	0.670	0.538
		Formation volume factor, Bg	160	213	302	397	478	304
		Recovery efficiency, decimal	0.004	0.048	0.169	0.497	0.801	0.224
		Condensate Yield, barrels/MMscf	0.802	1.278	3.437	9.186	14.374	4.293
		Condensate, barrels	45,333	482,751	2,526,819	12,175,514	55,813,794	4,971,381
		Prospective OGIP, cubic feet	569,207,600,024	2,313,092,742,764	4,629,675,549,364	9,102,471,226,650	19,268,845,011,399	5,264,273,438,304
		Prospective gross ultimate recovery, cubic feet	22,849,712,172	153,711,456,789	753,239,693,123	2,672,374,727,522	7,922,837,644,634	1,155,423,433,971
Buttonwood	EXL273	Productive area, acres	1,753	3,391	5,276	8,115	11,810	5,551
		Productive area, square kilometers	7.1	13.7	21.4	32.8	47.8	22.5
		Net shale thickness, feet	134.17	263.44	379.00	545.56	1,081.13	395.02
		Net shale thickness, meters	40.89	80.29	115.51	166.29	329.51	120.40
		Sorbed gas storage capacity, scf/ton	0.040	7.880	27.445	51.105	92.765	28.815
		Sorbed gas storage capacity, cubic meters/ton	0.00111	0.22063	0.76845	1.43099	2.59743	0.80680
		Shale density, g/cc or tons/cubic meter	2.617	2.640	2.655	2.670	2.702	2.655
		Matrix porosity, decimal	0.004	0.031	0.045	0.060	0.082	0.045
		Matrix gas saturation, decimal	0.465	0.523	0.564	0.605	0.669	0.564
		Formation volume factor, Bg	160	213	302	397	479	304
		Recovery efficiency, decimal	0.004	0.048	0.169	0.496	0.805	0.224
		Condensate Yield, barrels/MMscf	0.804	1.277	3.439	9.176	14.389	4.308
		Condensate, barrels	2,161	87,360	485,535	2,380,029	12,143,720	955,784
		Prospective OGIP, cubic feet	124,349,693,022	425,354,141,930	944,723,934,274	1,657,761,929,672	4,519,813,146,191	967,421,325,699
		Prospective gross ultimate recovery, cubic feet	1,539,023,275	34,695,360,648	142,113,476,595	493,761,528,617	1,547,100,357,569	218,804,738,563
Beacon	PEDL147	Productive area, acres	2,906	6,291	9,764	15,050	21,916	10,292
		Productive area, square kilometers	11.8	25.5	39.6	60.9	88.7	41.6
		Net shale thickness, feet	287.00	504.97	727.26	1,045.38	2,366.67	757.82
		Net shale thickness, meters	87.47	153.91	221.66	318.62	721.39	230.97
		Sorbed gas storage capacity, scf/ton	0.002	7.865	27.454	51.037	89.401	28.817
		Sorbed gas storage capacity, cubic meters/ton	0.00005	0.22021	0.76870	1.42905	2.50323	0.80689
		Shale density, g/cc or tons/cubic meter	2.616	2.640	2.655	2.670	2.691	2.655
		Matrix porosity, decimal	0.001	0.030	0.055	0.080	0.121	0.055
		Matrix gas saturation, decimal	0.283	0.445	0.558	0.671	0.852	0.558
		Formation volume factor, Bg	160	213	302	397	479	304
		Recovery efficiency, decimal	0.006	0.047	0.169	0.498	0.802	0.224
		Condensate Yield, barrels/MMscf	0.802	1.278	3.434	9.162	14.351	4.507
		Condensate, barrels	29,001	311,517	1,911,166	9,600,421	77,591,869	4,009,789
		Prospective OGIP, cubic feet	402,171,679,656	1,542,930,844,640	3,405,698,102,546	7,132,839,581,779	21,777,566,331,491	3,982,003,880,170
		Prospective gross ultimate recovery, cubic feet	10,556,041,930	133,684,710,620	507,768,194,210	2,018,844,795,513	9,843,438,600,974	889,632,367,906
Sandbach	PEDL295	Productive area, acres	7,266	14,152	21,934	33,803	49,210	23,128
		Productive area, square kilometers	29.4	57.3	89.0	136.8	199.1	93.6
		Net shale thickness, feet	439.99	619.94	790.81	1,007.89	1,550.77	806.49
		Net shale thickness, meters	134.10	188.95	241.03	307.19	472.65	245.80
		Sorbed gas storage capacity, scf/ton	0.060	7.859	27.450	51.050	99.660	28.826
		Sorbed gas storage capacity, cubic meters/ton	0.00168	0.21989	0.76861	1.42939	2.78769	0.80713
		Shale density, g/cc or tons/cubic meter	2.615	2.640	2.655	2.670	2.698	2.655
		Matrix porosity, decimal	0.001	0.030	0.050	0.070	0.110	0.050
		Matrix gas saturation, decimal	0.320	0.474	0.534	0.595	0.689	0.534
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.006	0.048	0.169	0.497	0.801	0.224
		Condensate Yield, barrels/MMscf	0.802	1.275	3.438	9.179	14.359	4.359
		Condensate, barrels	106,934	777,995	4,140,639	19,466,675	119,169,936	8,213,708
		Prospective OGIP, cubic feet	1,142,097,700,109	3,540,935,578,374	7,657,822,632,269	13,751,157,591,811	29,995,259,903,409	8,455,578,771,181
		Prospective gross ultimate recovery, cubic feet	37,657,423,646	308,058,302,057	1,273,839,809,810	4,121,939,879,867	19,977,156,041,756	1,867,010,120,996

TABLE 4 – PROBABILITY DISTRIBUTIONS – *(Continued)*

Prospect	Potential Target	Parameter	P_{100}	P_{90}	P_{50}	P_{10}	P_{0}	Mean
Crewe	P_DD253	Productive area, acres	6,552	14,142	21,590	33,797	48,835	23,125
		Productive area, square kilometers	26.6	57.2	89.0	136.8	197.6	93.6
		Net shale thickness, feet	516.12	805.78	1,058.58	1,391.16	2,122.59	1,083.19
		Net shale thickness, meters	157.32	245.59	322.79	424.01	646.94	330.14
		Sorbed gas storage capacity, scf/ton	0.023	7.558	27.450	51.056	86.661	28.815
		Sorbed gas storage capacity, cubic meters/ton	0.00064	0.22004	0.78859	1.49048	2.48250	0.80681
		Shale density, g/cc or tons/cubic meter	2.617	2.640	2.655	2.670	2.693	2.655
		Matrix porosity, decimal	0.020	0.037	0.049	0.060	0.079	0.049
		Matrix gas saturation, decimal	0.276	0.459	0.576	0.653	0.846	0.576
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.003	0.048	0.169	0.496	0.803	0.224
		Condensate Yield, barrels/MMscf	0.805	1.275	3.437	9.164	14.363	4.503
		Condensate, barrels	45,343	1,089,542	6,050,126	28,740,434	164,813,377	11,957,432
		Prospective OGIP, cubic feet	1,747,851,568,659	5,447,002,863,378	10,642,510,279,814	19,747,109,948,862	45,246,700,363,434	11,877,867,872,939
		Prospective gross ultimate recovery, cubic feet	34,306,452,560	435,158,522,532	1,753,511,101,155	6,220,145,050,894	17,347,572,072,574	2,657,756,595,719
Hemswell	P_DD317	Productive area, acres	3,057	6,294	9,784	15,037	21,966	10,292
		Productive area, square kilometers	12.4	25.5	39.6	60.9	88.9	41.6
		Net shale thickness, feet	0.68	2.51	6.04	14.49	59.91	7.64
		Net shale thickness, meters	0.21	0.77	1.84	4.42	18.26	2.33
		Sorbed gas storage capacity, scf/ton	0.144	14.135	48.435	91.854	191.753	51.852
		Sorbed gas storage capacity, cubic meters/ton	0.00402	0.39578	1.38419	2.57275	5.36907	1.45297
		Shale density, g/cc or tons/cubic meter	2.475	2.530	2.565	2.600	2.660	2.565
		Matrix porosity, decimal	0.000	0.012	0.040	0.075	0.127	0.042
		Matrix gas saturation, decimal	0.202	0.350	0.454	0.558	0.713	0.454
		Formation volume factor, Bg	161	213	302	397	479	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.499	0.805	0.224
		Condensate Yield, barrels/MMscf	0.803	1.275	3.441	9.159	14.352	4.576
		Condensate, barrels	139	2,028	13,179	73,894	1,410,573	34,124
		Prospective OGIP, cubic feet	1,343,782,646	7,270,824,557	22,605,156,017	70,655,498,310	280,323,196,446	39,383,118,488
		Prospective gross ultimate recovery, cubic feet	61,155,100	755,856,509	3,677,523,566	17,431,971,375	116,142,090,614	7,456,997,873
Hemswell	PED_210	Productive area, acres	3,644	8,199	12,758	19,628	28,379	13,420
		Productive area, square kilometers	14.7	33.2	51.6	79.4	114.8	54.3
		Net shale thickness, feet	131.21	229.80	316.92	436.75	841.15	327.23
		Net shale thickness, meters	39.99	70.05	96.59	133.11	256.37	99.74
		Sorbed gas storage capacity, scf/ton	0.134	14.178	46.369	91.813	156.814	51.854
		Sorbed gas storage capacity, cubic meters/ton	0.00376	0.39697	1.30290	2.57056	4.38559	1.45191
		Shale density, g/cc or tons/cubic meter	2.472	2.530	2.565	2.600	2.653	2.565
		Matrix porosity, decimal	0.009	0.030	0.043	0.057	0.076	0.043
		Matrix gas saturation, decimal	0.153	0.305	0.466	0.630	0.859	0.467
		Formation volume factor, Bg	160	213	302	397	478	304
		Recovery efficiency, decimal	0.007	0.048	0.169	0.499	0.800	0.224
		Condensate Yield, barrels/MMscf	0.805	1.273	3.440	9.169	14.394	4.424
		Condensate, barrels	13,231	183,857	974,498	4,680,214	31,729,954	1,918,223
		Prospective OGIP, cubic feet	106,631,530,974	603,357,276,461	1,730,732,405,740	3,378,697,303,997	9,156,123,729,846	1,975,750,600,761
		Prospective gross ultimate recovery, cubic feet	6,262,008,365	69,170,042,674	288,303,684,451	1,000,159,151,277	3,490,263,670,276	433,577,739,883
Dunholme	A_9	Productive area, acres	313	619	955	1,466	2,134	1,004
		Productive area, square kilometers	1.3	2.5	3.9	5.9	8.6	4.1
		Net shale thickness, feet	146.79	252.28	368.49	537.36	1,072.71	386.37
		Net shale thickness, meters	44.74	76.89	112.31	163.95	326.94	117.45
		Sorbed gas storage capacity, scf/ton	0.056	14.100	49.409	92.030	156.766	51.665
		Sorbed gas storage capacity, cubic meters/ton	0.00157	0.39504	1.38343	2.57655	4.38945	1.45155
		Shale density, g/cc or tons/cubic meter	2.479	2.530	2.565	2.600	2.665	2.565
		Matrix porosity, decimal	0.002	0.030	0.047	0.064	0.089	0.047
		Matrix gas saturation, decimal	0.187	0.350	0.480	0.610	0.856	0.480
		Formation volume factor, Bg	161	213	302	397	478	304
		Recovery efficiency, decimal	0.006	0.048	0.169	0.499	0.802	0.224
		Condensate Yield, barrels/MMscf	0.803	1.274	3.440	9.172	14.330	4.360
		Condensate, barrels	1,169	16,713	86,329	496,665	7,642,912	184,820
		Prospective OGIP, cubic feet	17,392,385,861	75,098,771,632	153,278,441,074	317,723,930,858	953,735,607,437	185,181,818,573
		Prospective gross ultimate recovery, cubic feet	650,954,732	6,562,144,544	26,750,906,002	96,254,568,939	670,949,279,747	42,492,076,463

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APPENDIX
to
REPORT
as of
JULY 31, 2016
on the
UNCONVENTIONAL PROSPECTIVE RESOURCES
attributable to
VARIOUS PROSPECTS
owned by
IGAS ENERGY PLC
in
VARIOUS LICENSE BLOCKS
UNITED KINGDOM

APPENDIX

The British Geological Survey (BGS) has estimated the potential original gas in place (OGIP) in its report titled "The Carboniferous Bowland Shale gas report: geology and resource estimation" (Andrews 2013). The methodology used in the BGS estimate includes the entirety of the area where source shale is present, thermally mature, and at a depth of adequate pressure. This OGIP estimation does not consider uncertainty in potential productive areas, rather it characterizes the area in whole. Estimates of OGIP analogous to the BGS methodology for IGas-owned properties are shown in Table A1.

The following table summarizes the key variables in the BGS estimates:

Variable	Uncertainty
Gross Rock Volume/3–D Geological Model	The 2–D seismic data interpreted in the study area are of generally poor to moderate quality. A two-standard-deviation variation has been used on the gross rock volume, but it could be greater, resulting in a wider range of estimated gas volumes.
Definition of Prospective Shale	The definition of net prospective shale used in this report could be optimistic; it includes a wide variety of shales, not just those with the highest gamma-log response (and hence highest total organic content (TOC)). This definition is influenced by the fact that the most suitable shales for current extraction techniques are not necessarily those with the highest TOC. Any approach that is more pessimistic would have the greatest effect on the lower Bowland-Hodder unit volumes.
Definition of Gas Maturity	The use of Ro > 1.1 percent as the top of the gas window is possibly optimistic. It could be 1.4 percent, which would reduce the estimated gas volume.
Shallow Depth Cut-Off	The use of 5,000 feet is based on USGS global screening criteria. If this were deeper, this would reduce the estimated gas volume.
Gas-Filled Porosity of the Shale	The use of a mean of 3 percent is a conservative estimate. It could be greater, which would increase the estimated gas volume. The large range of values has a significant effect on the calculated gas-in-place figure (see Figures 3 and 4).
Reservoir Pressure	The assumption that the shales are at hydrostatic pressure is conservative. Any amount of overpressure would increase the estimated gas volume.
Adsorbed Gas Content	The use of 0.5 to 2.0 cubic meters per ton is lower than some U.S. analogues. Any increase in this range of values would increase the estimated gas volume.
Bulk density	The average density of 2.6 grams per cubic centimeter is a robust estimate. If the density is higher, this will increase the estimated gas volume (and vice versa).

Reference

Andrews, I.J. 2013. "The Carboniferous Bowland Shale gas study: geology and resource estimation." British Geological Survey for Department of Energy and Climate Change, London, UK.

The BGS report can be downloaded from the United Kingdom Government website here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226874/BGS_DECC_BowlandShaleGasReport_MAIN_REPORT.pdf

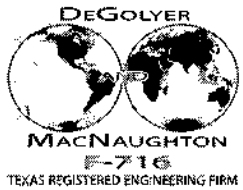

TABLE A1
DETERMINISTIC ESTIMATE
of
GROSS GAS IN-PLACE[1]
using
BGS METHODOLOGY
as of
JULY 31, 2016
for
IGAS
in
VARIOUS GAS PROSPECTS
VARIOUS LICENSE BLOCKS
UNITED KINGDOM

Prospect	Area	License	Blocks	Full License area (acres)	Mean Net Shale thickness (ft)	Mean Sorbed Gas Storage Capacity (m^3/ton)	Mean Shale Density (g/cc)	Mean Matrix Porosity (decimal)	Mean Matrix Gas Saturation (decimal)	Mean Formation Volume Factor (ft^3/ft^3)	Deterministic Estimate of Gross Gas In-Place[1] ($10^9 ft^3$)
York	North A-S	PEDL146	SE/54a, SE/55, SE/56	68,172	173.4	1.452	2.565	0.049	0.505	304	5,784
Normanby	North A-S	PL 162	SE/81b,SE/91a	10,374	14.1	1.452	2.565	0.056	0.462	304	74
Hemswell	North A-S	PEDL317	SK99a	9,633	7.6	1.453	2.565	0.042	0.454	304	31
Thorne	East Midlands	EXL 288	SE/51a B//C/D, SE/61a B/C/D, SE/61b, SE/61c	18,574	758.0	1.453	2.565	0.047	0.473	304	6,432
Gainsborough/Beckingham/Corringham/Glentworth	East Midlands	ML4	SK/78c,d,SK/79b,c,SK/88a,d,SK/89d,f,SK/98a,SK/99c	17,683	1,203.0	1.453	2.565	0.050	0.498	304	10,475
West Everton	East Midlands	PEDL139	SK/69	24,700	1,087.6	1.453	2.565	0.050	0.503	304	13,223
Everton/Springs Road	East Midlands	PEDL140	SK/78f, SK/79a	34,975	1,087.5	1.453	2.565	0.050	0.503	304	18,721
Ranskill	East Midlands	PEDL012	SK/68a	8,151	484.4	1.452	2.565	0.045	0.367	304	1,495
Lound	East Midlands	PEDL200	SK/58b, SK/68b	28,158	484.3	1.453	2.565	0.045	0.472	304	6,009
Hemswell	East Midlands	PEDL210	SK/87f,SK/88h,i,SK/97a,SK/98f,g	28,667	327.2	1.452	2.565	0.043	0.467	304	4,049
Cold Hanworth	East Midlands	PEDL6	SK/78a, SK/88c,,f,SK/98c,i, TF/8a	33,691	318.8	1.452	2.565	0.045	0.457	304	4,537
Armthorpe	East Midlands	PEDL169	SE/60a BELOW SMB	15,314	1,790.5	1.452	2.565	0.048	0.503	304	13,221
Hemsworth	East Midlands	PEDL273	SE41e/SE31c	47,844	691.7	1.453	2.565	0.046	0.483	304	15,116
Willingham by Stow	East Midlands	PEDL316	SK89e/SK88b/SK87c	27,442	741.8	1.452	2.565	0.047	0.483	304	9,428
Rawmarsh	East Midlands	PEDL305	SK59b/SK49	35,321	844.1	1.453	2.565	0.048	0.497	304	14,274
Dunholme	East Midlands	AL9	SK/97c,SK/98d,TF/7a,TF/8c	2,144	385.4	1.452	2.565	0.047	0.480	304	381
Welton/Nettleham/Scampton North/Stainton	East Midlands	PL179 (W)	TF/7b, TF/8b, SK/97b,SK/98e	25,540	117.9	1.452	2.565	0.043	0.467	304	1,280
East Glentworth	East Midlands	PL179 (EG)	SK/98b	889	117.9	1.452	2.565	0.043	0.467	304	45
Bothamsall	East Midlands	ML6	SK/67d	2,737	213.8	1.452	2.565	0.043	0.491	304	260
South Leverton	East Midlands	ML7	SK/77c,SK/78e,SK/87a,SK/88e	3,023	268.0	1.452	2.565	0.047	0.467	304	365
West Beckingham	East Midlands	PL178	SK/78b,SK/79d	521	751.8	1.452	2.565	0.050	0.502	304	195
Chorlton	North West	PEDL188	SJ/45	24,700	180.3	0.807	2.655	0.050	0.573	304	2,108
Upton	North West	PEDL189	SJ/46	24,700	672.0	0.807	2.655	0.050	0.581	304	7,948
Four Oaks /Doe Green	North West	PEDL145	SJ/58b, SJ/58c, SJ/58d	18,362	581.4	0.807	2.655	0.047	0.611	304	5,059
Ellesmere Port	North West	PEDL184	SJ/27, SJ/28, SJ/37	72,272	354.1	0.807	2.655	0.049	0.429	304	9,462
Ince Marshes	North West	PEDL190	SJ/47	23,092	734.0	0.807	2.655	0.050	0.479	304	6,971
Parkside /Irlam	North West	PEDL193	SJ/68, SJ/69e, SJ/79	73,186	363.4	0.807	2.655	0.045	0.538	304	11,025
Burtonwood	North West	EXL 273	SJ/59a	11,856	395.0	0.807	2.655	0.045	0.564	304	2,030
Blacon	North West	PEDL147	SJ/36a	21,983	757.8	0.807	2.655	0.055	0.558	304	8,349
Sandbach	North West	PEDL295	SJ64/SJ65	49,400	805.5	0.807	2.655	0.050	0.534	304	17,819
Crewe	North West	PEDL293	SJ75/SJ76	49,400	1,083.2	0.807	2.655	0.049	0.576	304	24,801
Arithmetic Summation											**221,065**

Notes:

1. At the request of IGas an estimate of gas in-place using BGS methodology was performed.