APPENDIX NO. II

CORE ANALYSIS REPORTS
**WELL COMPLETION REPORT**

**AQUITAINE PETROLEUM**

**CORE ANALYSIS REPORT**

**WELL** KEEP RIVER No. 1

**CORE No. 2**

**PERMIT** OP 162

**STATE** NORTHERN TERRITORY

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**TECHNICAL DETAILS**

- **CORE BIT TYPE**: Xsec CO
- **DIAMETER**: 2 3/4" (70.4 mm)
- **DEPTH**: 2221' - 2241' (677.6 m - 683.0 m)
- **LENGTH**: 20' (0.6 m)
- **RECOVERY**: 60% 50% 45%

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**DESCRIPTION & REMARKS**

- **2221' - 2222'**
  - **SANDSTONE**
  - Grey, brownish, grey white calcareous cement.
  - Some grains angular, poorly sorted.
  - On grain size 125μm - 225μm.
  - Is anhydrite and minerals.
  - Weakly calcareous, becoming less so after 2222'.

- **2222'**
  - Appearance of microscopic lenses of clayey-black non-calcareous shale; also small patches of light grey shale with mica and pyrite.

- **2224' - 2225'**
  - **Lower Turonian**
  - **Sandstone**
  - Non-calcareous
  - Mica/pale common in shale.

- **2225' - 2226'**
  - **Upper Turonian**
  - **Sandstone**
  - Weakly to non-calcareous.
  - Thin bands of micaceous plant debris.
  - Small amount of 150-200μm.

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**FORMATION**: CARBONIFEROUS (VISEAN)

**LOWER TANIMBAR**

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**CALC %**: 9%

**DOL %**: 0%

**POROSITY**: 0%

**REACT**: 0%

**SPHER**: 0%

**Organic Matter**: 0%
TECHNICAL DETAILS
CORE BIT TYPE: Xsen C9
DIAMETER: 8½" R
DEPTH: 6052' - 6055'
LENGTH: 3'
RECOVERY LOST: 2'
RECOVERY: 100%.

DESCRIPTION
SHALE
DARK GREY
HOMOGENEOUS THROUGHOUT
MARKED NONADJACENT
NO BEDDING
EXTREMELY FLEXIBLE
SOME CONCENTRIC FEATURE
ONE LIGHT GREY OBVIOUS Silty Lenses

NB: (1) only able to penetrate to first 3' of projected 10'.
(2) cuttings immediately prior to 6032'; contained 20% dolomitic limestone SANDST.
### Core Analysis Report

**Well:** KEEP RIVER No. 1  
**Core No.:** 8  
**Permit:** GP 162  
**State:** NORTHERN TERRITORY

#### Technical Details
- **Core Bit Type:** X 6 in. C-8  
- **Diameter:** 6 in.  
- **Depth:** 6708.6" - 6712"  
- **Length:** 4.6"  
- **Recovery:** 100%  

#### Description

<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6708.6&quot;</td>
<td>Sandstone, poorly sorted, medium, calcite cement</td>
</tr>
<tr>
<td>6708.8&quot;</td>
<td>Siltstone, dark grey, coarse quartz scattered, pore slightly calcareous</td>
</tr>
<tr>
<td>6709.2&quot;</td>
<td>Quartzitic sandstone, grey, medium, well sorted, residual cement of limestone, very tight</td>
</tr>
<tr>
<td>6710&quot;</td>
<td>Quartzitic sandstone, dark grey, with coarse gravel of quartz and volcanic rocks, slightly calcareous, very tight</td>
</tr>
<tr>
<td>6711&quot;</td>
<td></td>
</tr>
<tr>
<td>6712&quot;</td>
<td></td>
</tr>
</tbody>
</table>
### Technical Details
- **Core Bit Type:** X son C8
- **Diameter:** 8 7/8" (22.95 cm)
- **Depth:** 7477' to 7486'
- **Length:** 9'
- **Recovery Lith:** 9'
- **Recovery %:** 100%

### Description & Remarks

#### 7477' to 7485' 1/4
- Dark grey to black shale, pyritic, non calcareous, friable
- Interbeds of light grey siltstone, well sorted, cross bedded, calcareous-dolomitic cement
- Very small fissures, calcite filled
- Cross bedding is underlined by thin layers of shale

#### 7485' 1/4 to 7486'
- Fine to medium sandstone, light grey, well sorted, micaceous, rare glauconite, calcareous-dolomitic cement
**Core Analysis Report**

**Well:** Keep River No.1  
**Core No.:** 10  
**Permit:** OP 162  
**State:** Northern Territory

**Description & Remarks**

**8171′ to 8172′**
- Shale dark grey, very fissile, non-calcareous, with thin interbeds of siltstone dark grey, micaceous, calcareous and brown clay (illite) cement. Very rare grains of glauconite.
- Microscopic fissures, calcite and quartz filled.

**8172′ to 8174′**
- Quartzitic siltstone, dark to medium grey, micaceous, calcareous, dolomitic, and illitic cement. Fine-grained. Numerous fissures calcite filled, and rare un-shaped pebbles of dolomitic shale and ferruginous shale.
### TECHNICAL DETAILS

- **CORE BIT TYPE**: C9 x 6mm
- **DIAMETER**: 8 1/2"
- **DEPTH**: 8924' - 8934'
- **LENGTH**: 10' 0"
- **RECOVERY LITH 10' 0"**: 100%

### DESCRIPTION & REMARKS

- **SANDSTONE**: Medium grained calcareous silicified. Quartz angular = silicified dolomite. No porosity.

<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8924'</td>
<td>Sandstone</td>
</tr>
<tr>
<td>8924.5' - 8932'</td>
<td>Shale</td>
</tr>
<tr>
<td>8932' - 8934'</td>
<td>Shale</td>
</tr>
</tbody>
</table>

- **SHALES**:
  - Grey black non-calciteous
  - mm/cm bedding, subhorizontal
  - brittle, sub-fissile, conoidal fracture
  - thin cm interbedded lenses of quartzose, usually non-calcareous, siltstone
  - friable
  - pyrite common in parts (e.g. 8924')

- **8924' - 8934'**: Shale
  - As for sheet 1, black non-calciteous, sub-fissile.

### FORMATION

- **Member**: Lower Carboniferous

### MILLICAN
SANDSTONE / SULPHITE
- in bands of up to 6' thick
- light grey
- shows calcareous (coarse cement)
- poorly sorted, angular to subrounded grains up to 20 mm
- matrix and matrix-prismatic quartzite
- weakly indurated
- poorly and poorly cemented

As for shale:
- mainly black with occasional calcareous shale
<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SHALE</strong></td>
<td></td>
</tr>
<tr>
<td>Dark grey friable non calcareous sediment, micro beds</td>
<td></td>
</tr>
<tr>
<td>speckled with calcareous siltstone grains</td>
<td></td>
</tr>
<tr>
<td>face of chert.</td>
<td></td>
</tr>
<tr>
<td>light grey bed of calcareous siltstone</td>
<td></td>
</tr>
</tbody>
</table>

| **CALCAREOUS SANDSTONE**     |                  |
| Porous chalk, fine to coarse, interbedded with grey to black |                  |
| sandstone, some flinty |                  |
| Quartz, feldspar, no cement |                  |
| Colour: cream. |                  |
| Schist minerals |                  |

| **SHALE**                    |                  |
| with 1-2° pitch beds of calcareous sandstone, thin, interbedded with chalk |                  |
| mm. intercalations of grey to white sandstone, chalk |                  |
| Bedding: mm. on bedding |                  |
**Core Analysis Report**

**Well Completion Report**

**WELL**

KEEP RIVER No.1

**PERMIT**

OP 162

**STATE**

NORTHERN TERRITORY

**Core**: CHAIG C5

**Diameter**: 4 1/2

**Depth**: 11.200 - 11.204

**Length**: 4

**Recovery**: 100%

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**Description & Remarks**

**From 11.200 to 11.204**

Silty shale, chunky, black, to very argillaceous sandstone, fine, badly sorted, feldspathic, with slumping and reworking figures; lenses of quartzitic sandstone, grey, finely grained, spartic cement.

**From 11.204 to 11.206**

Quartzitic sandstone, rare. Feldspaths and micas, fine to medium grained, well sorted, fissures, calcite filled, having facilitated circulation of high concentration calcite water, dissolving silica, and giving calcareous sandstone.
DESCRIPTION

From 11462′ to 11468′

Alternation of Silty shale, dark grey, argillaceous and light grey, sand and calcareous and very sandy calcareous and very sandy calcareous, sub-rounded, subangular, dolomitic, tuffaceous with minor calcite and minor argillaceous.

Intraformational Unconformity

From 11468′ to 11474′

Light grey, sandy, coarse sandstone, massive, angular, sub-rounded, sub-rounded, with scattered, calcite, tuffaceous, sandy, black sandstones. (Shale and Conglomerate)

Argillaceous Joint

From 11474′ to 11476′

Alternation of thin layers of Silty shale, not calcareous, with light grey, calcareo-tuffaceous, argillaceous, medium grained, very tight.

Numerous figures of intraformational unconformity
**Dark grey, very slightly silty, calcareo-dolomitic shale**
**Core Analysis Report**

**Well**: Keep River No.1  
**Core No.**: 17  
**Permit**: OP 162  
**State**: Northern Territory

**Technical Details**
- **Core Bit Type**: X'M C9  
- **Diameter**: 4 3/4"  
- **Depth**: (325) - (1225)  
- **Length**: 3'  
- **Recovery LITH**: 3  
- **Recovery**: 100%

**Description & Remarks**

**Algal Reef Facies**
- Bivalved micrite with Brachiopods and Foraminifera  
- Containing in the upper part micrite with Foraminifera  
- Encrusting Algae, Ostracods - Fissures filled with siltstones

**Description**
- Bivalved micrite with bivalved micrite, foraminifera, ostracods - Ostracods - Sponges, Foraminifera  
- Encrusting Algae - Calcareous, Sponges  
- Ostracods

**Upper Devonian (Palaeozoic)**

### Log Data

<table>
<thead>
<tr>
<th>Depth</th>
<th>Log</th>
<th>D.P.</th>
<th>Formation</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1225</td>
<td></td>
<td></td>
<td>Upper Devonian Limestone</td>
<td>(Famennian ?)</td>
</tr>
<tr>
<td>1225</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1225</td>
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<tr>
<td>1225</td>
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</tbody>
</table>
DOLODISMICRITITE
- Verrugated light and dark grey
- Dolomicrospar groundmass dark grey
- Partly replaced by aragonite
- Patchy spots of white sparite and marl — maybe of algal origin

- Sphalerite crystals characteristic ~ 0.5 mm dia.
- Authigenic quartz needles in sparite
- Vertical to subvertical mm/cm
- Fissures filled with calcite and argillaceous marl; sometimes merging into greyish brown argillaceous calcareous patches
- Rare stylolites filled with dark grey shale and microscopic dolomite ~ 0.287" = 0.3
- V. friable on drying
- Patches of salt crystals, cavity infilling (back reef facies)

DOLODISMICRITITE as above
- White patches of sparite in argillite-micrite matrix
- Traces of salt
- Pyrite, authigenic quartz
<table>
<thead>
<tr>
<th>Age</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Devonian</td>
<td>Light and dark grey with white, opake patches of sparcite</td>
</tr>
<tr>
<td></td>
<td>Light carbonates, algae, and encrusting algae</td>
</tr>
<tr>
<td></td>
<td>microcrystalline dolomite with brown micrite,</td>
</tr>
<tr>
<td></td>
<td>common discontious veins of calcite, friable</td>
</tr>
<tr>
<td></td>
<td>on drying</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1390.11" - 14003.0"

(i) Dolomarite
- Light grey
- Coarse grained, au diameter of grains 750 μ
- Lightly packed no porosity
- Pseudo brecciation

(ii) Dolomicate
- Darker grey with authigenic quartz

(iii) Dolodisomicrite
- Fractured with lenses of calcareous quartzose siltstone
- Pseudo brecciation
  - Scattered calcispheres
  - Rare foram (ENDOXYRAs)
  - Stylolites fairly common

Dolosparite and Diasomicrite
- With fracturing and calcite
- Siltstone filling
- Brecciation as for sheet no
**Technical Details**

- **Core Bit Type:** C9 X5en
- **Diameter:** 4 1/2"
- **Depth:** 14572' - 14584' 10"
- **Length:** 12' 10"
- **Recovery:** 100%.

**Description & Remarks**

- **14572'0" - 14580'**
  - **Dolomicrosparite**
    - Dark grey crystalline
    - Sparitic dolomitic groundmass
    - Silt size; sometimes sugary texture
    - Clastic silt size quartz throughout
    - Fossils rare; trace crinoid and foraminifera (unidentified); trace encrusting algae.
    - Pellets and intraclasts ubiquitous and characteristic
    - Dolomitic thread-like stylolites
    - Calcite veinlets of replacement and recrystallisation
    - Tight no porosity permeability
  - **Dolopelletite**
    - Much less common
    - Micritic grey cloudy, amorphous

- **14580' - 14584' 10"**
  - **Dolomicrosparite**
    - As for 14572'0" - 14580'
**Core Analysis Report**

**Well:** Keep River No. 1

**Core:** No. 22

**Permit:** OP 162

**State:** Northern Territory

**Well Completion Report**

**Core Bit Type:** C8

**Diameter:** 4 5/8"

**Depth:** 15139' - 15154'

**Length:** 15'

**Recovery Lsth:** 14.6'

**Recovery:** 97%

**Technical Details**

**Description & Remarks**

(a) 15139' - 15141'

Microdolomiparite and Dolomicrite

- Dark grey, with darker speckles
- Numerous Fe pellets intraclasts
- Calcite veins
- Stylolites

(b) 15141' - 15145'0"

Pseudo-Brecciated Dolostone

- Off-white, light grey
- Hyperidiomorphic grain size 100-360 μ
- Lightly packed no porosity
- Trace authigenic quartz
- Trace calcite veins
- Trace halite

(c) 15145'0" - 15147'

Microdolomiparite as for (a)

(d) 15147' - 15148'

Dolostone with cloudy microsparite

- Numerous silt size pellets throughout
- Algae fragments
- Intraclasts Disparate
- Calcispheres, gravels (1-8 mm. dim.)
- Stylolites
- Some mm. cavities with anhedral dolomite crystallisation.

Cloudy Dissparite with pseudobrecciation

Trace crinoid

15150'6"

15150'0"
AQUITAINE
PETROLEUM

CORE ANALYSIS REPORT

WELL: KEEP RIVER No. 1
PERMIT: OP 162
STATE: NORTHERN TERRITORY

CALCITE % 1.0
DOLOMITE % 0.5
POROSITY 0.0
PEAKED 0.0
FRACTURE 0.0
DEPTH 1576' 1576'
LOG 1576' 1576'
DIP 1576' 1576'
FORMATION CORDAITE 2

DESCRIPTION & REMARKS

QUARTZITE
- Light grey becoming white at 1576'.
- Poorly sorted dia. range 40µ-200µ.
  Large grains rounded to sub-rounded.
- Mix of calcite, phlogopite, feldspar.
- Irregular mm. beds lenses of oil and illite.
- Very fine grained pyrite throughout.
- Microfossils.
1564' - 1567'3"

Quartzite
- gray, light colour
- very fine to fine grain size, grains 30-120μm
- poorly sorted
- no porosity or permeability
- trace calcite, plagioclase, pyrite
- trace green translucent mineral
- hard, tight, subhorizontal bedding

1567'3"
### Core Analysis Report

**Well:** Keep River No. 1  
**Core No.:** 25  
**Permit:** OP 162  
**State:** Northern Territory

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Description &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1561 - 1567</td>
<td>Quartzite</td>
</tr>
<tr>
<td>1567 - 1569</td>
<td>- Very light and dark grey.</td>
</tr>
<tr>
<td>1569 - 1572</td>
<td>- Bedding distinct from 1564° to 40°.</td>
</tr>
<tr>
<td>1572 - 1579</td>
<td>- Hard light, flat linear, sparse, subpolygonal.</td>
</tr>
<tr>
<td>1579 - 1583</td>
<td>- Average die = 40µ.</td>
</tr>
<tr>
<td>1583 - 1586</td>
<td>- Medium porous rock.</td>
</tr>
<tr>
<td>1586 - 1589</td>
<td>- Very grey, calcareous.</td>
</tr>
<tr>
<td>1589 - 1592</td>
<td>- Occ. of very phosphorus fossils.</td>
</tr>
</tbody>
</table>