

Australian Aquitaine Petroleum
Well Completion Report
Keep River No. 1

APPENDIX NO. II

CORE ANALYSIS REPORTS

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AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT APPX
 MUD LOGGING CO. GEOLOGIST B F BROPHY
 GEOSERVICES
 DATE 10-9-68 SCALE 1" = 1' 1:12

WELL KEEP RIVER No. 1 CORE No. 7
 PERMIT OP 162 STATE NORTHERN TERRITORY

TECHNICAL DETAILS
 CORE BIT TYPE Xson C9
 DIAMETER 8 7/16"
 DEPTH 1603' - 1623'
 LENGTH 20' 0"
 RECOVERY LGTH 14' 10"
 RECOVERY 74.2%

CALCIUM % DOLOM %	POROSITY	PERMEABILITY	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
18.5% 27.5%	5.4%	0		TANMURRA FORMATION LOWER CARBONIFEROUS. (VISEAN)		(1603' - 1606' 11") (a) <u>CALCAREOUS SANDSTONE</u> - whitish grey. - subangular clear quartz av dia 100 μ. max dia 150 μ. - intermittent irregular beds of brown marl and thin seams of calcareous grey shale. - patches of pyrite, rim aggregates
						(1606' 11" - 1609' 14") (b) <u>FINE SANDSTONE</u> - grey, less consolidated - less calcareous - becoming more calc. at 1607' 9" - av. dia 200 μ.
						1608' 3" - grey friable <u>CALC. SHALE</u>
18.5% 30.0%						1608' 8" - very poorly cemented; grain size inc 300 μ.
						(1609' 14" - 1610' 8") (c) <u>SHALE</u> - well consolidated; quartz 55 μ.
						1610' - 1611' 10" <u>dark grey to black calcareous shale</u>
						1611' - 1612' 10" (a) <u>SANDSTONE</u> - white-grey - hard massive - poorly sorted - see log - 1611'
						As for (a) sheet #1. grain size 20 - 150 μ.
						1612' - 1614' 12" (a) <u>SANDSTONE</u> - weakly calcareous - av. dia - poorly sorted 150 - 200 μ. - weak cement.
						As for (a) sheet #1.
					1614' 12" - 1616' 9" (a) <u>SANDSTONE</u> - dark grey; weakly calcareous - friable; min bedding - microfossil.	
					(b) <u>SHALE</u> - dark grey; weakly calcareous - friable; min bedding - microfossil.	
					(1616' 9" - 1617' 10") As for (b)	
					- irregular microscopic beds of dark grey shale.	
					1617' 10" - 1623'	

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL **KEEP RIVER No.1** CORE No. **3**

PERMIT **OP 162** STATE **NORTHERN TERRITORY**

WELL COMPLETION REPORT APPX

LOGGING CO. **GEOSERVICES** GEOLOGIST **J.P. CAYE & F. BROPHY**
 DATE **15-9-68** SCALE **1 1/2" = 1' 1:12**

TECHNICAL DETAILS

CORE BIT TYPE **Xsen C9**
 DIAMETER **8 3/16"**
 DEPTH **3038' - 3052'**
 LENGTH **14' 0"**
 RECOVERY LGTH **13' 6"**
 RECOVERY **96.4%**

CALCM. %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS		
					3038			MILLIGAN FORMATION Member III Carboniferous (VISEAN) Lower		(3038' - 3046')	SHALE - black-grey. - non calcareous. - disseminated plant fragments throughout. - micaceous; mostly specular muscovite not lending to any fissility - chunky, friable, with concoidal fracture		
				3039									
				3040									
				3041									
				3042								where shown by depth marks	
				3043								SILTSTONE and SILTY SHALE - light grey (towel brown-grey) - calcareous * - quartzose with silica and/or carbonate cement. - trace of pyrite - undulating discontinuous mm. bedding.	
				3044									
				3045									
				3046								becoming more friable	
				3047								(3046' - 3050' 10")	SHALE - black grey non-calcareous - as for sheet 1.
				3048									
				3049									
				3050									
				3051								(3050' 10" - 3051' 3")	SILTSTONE - light grey calcareous - quartz angular, quartzose and calcareous matrix. - undulating/irregular mm beds.
				3052									

1287
28-2

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT APPX

MAUD LOGGING CO. GEOSERVICES GEOLOGIST F. BROPHY

DATE 19.9.68 SCALE 1" = 1' 1:12

WELL KEEP RIVER No. 1 CORE No. 2

PERMIT OP 162 STATE NORTHERN TERRITORY

TECHNICAL DETAILS

CORE BIT TYPE Xsen C9.
 DIAMETER 8 7/16"
 DEPTH 403' - 404'
 LENGTH 10' 0"
 RECOVERY LGTH 10' 0"
 RECOVERY 100%

CALCIM %	DOLOM %	POROSITY	PERMEABILITY	OIL		DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
				Trace	Good						
28.0	16.0					4037			MILLIGAN Member III	LOWER CARBONIFEROUS (VISEAN)	<p>4037' - 4037'6"</p> <p><u>CALCAREOUS SANDSTONE</u> fine grained, light grey poorly sorted, quartz sandstone siliceous / micritic cement. some recrystallization . pebbles, irregularly oolites Fragments of Echinoderms Forams: Endothyra, Paleotextularia fragments of Algae (Anatolifera) Ostracods</p>
						4037.6					<p>4037'6" - 4045'0"</p> <p><u>SHALE</u> : Sometimes silty shale. : dark grey : homogeneous : mm bedding friable throughout : weakly calcareous : microscopic mica flakes (muscovite) along bedding planes : rare calcareous fauna (1cm dia.) petaloid inclusions, distorting the parent beds. : mm interbeds quartzose grey silty shale and siltstone - calcareous : microcrystalline dolomitic shale</p>
						4045					<p>(4045' - 4047')</p> <p><u>SHALE</u> see for sheet N° 4 micro bedding structure</p>

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT


WELL **KEEP RIVER No. 1** CORE No. **5**
 PERMIT **OP 162** STATE **NORTHERN TERRITORY**

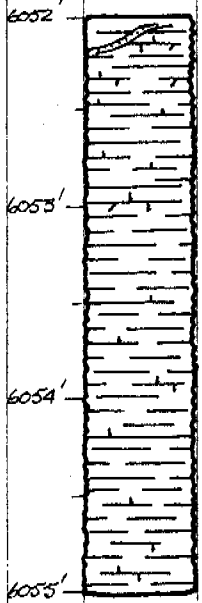
WELL COMPLETION REPORT APPX
 MUD LOGGING CO. **GEOSERVICES** GEOLOGIST **F BROPHY**
 DATE **28.9.68** SCALE **1"=1' 1:12**

TECHNICAL DETAILS

CORE BIT TYPE **Xson C9**
 DIAMETER **8 7/8"**
 DEPTH **5018' 5028'**
 LENGTH **10'0"**
 RECOVERY LGTH **10'0"**
 RECOVERY **100%**

CALOM %	DOLOM %	POROSIY	PERMEA- BILITY	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS		
					5018			Member III (VISEAN) MURKIN FORMATION CARBONIFEROUS		5018'0"			
					5019						5018' - 5026'	SILTY SHALE	light and dark grey variegated speckled. argillaceous cement, mainly subangular quartz grains weakly calcareous, minor dolomite cement. micaceous, microgranular fine bedding subhorizontal, irregular lensoid MICRO "scour and fill" structures dips < 30°.
3.4 C	3.8 D.				5020								MM and CM. LENSES and INTERBEDS of: QUARTZOSE SILTSTONE light grey, grading to fine grained sandstone.
					5021								calcareous cement; minor dolomite poorly sorted, quartz subangular. inclusions of pure white calcite, chert and opaque microcrystalline LNST.
7.6 C	9.6 D.				5022								cemented in places to give friable blocky. Endothyrids
					5023							5023'	SANDY SILTSTONE grey speckled sometimes brownish calcareous (minor dolomite) argillaceous cement. poorly sorted. fragments of conoid, LNST, calcite (Lgum.
10.2 C	4.0 D.	3.08%	0.5% md.		5024								
					5025								
					5026								
					5027								SILTY SHALE as for strat at next core level of coarse sandy calcareous siltstone
					5028					5028'			

AUSTRALIAN AQUITAINE PETROLEUM  GEOLOGICAL SERVICE		WELL COMPLETION REPORT APPX. 2	
		MUD LOGGING CO. GEOSERVICES	GEOLOGIST F BROPHY
CORE ANALYSIS REPORT		DATE 6 : 10 : 68	SCALE 1" = 1' 1:12.
WELL KEEP RIVER No.1	CORE No. 6	TECHNICAL DETAILS CORE BIT TYPE Xsen C9. DIAMETER 8 7/16" DEPTH 6052' - 6055' LENGTH 3' RECOVERY LGTH 3' RECOVERY 100%	
PERMIT OP 162	STATE NORTHERN TERRITORY		

CALCIM %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW		DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS
				Trace	Good							
						6052'			6052'		<u>SHALE</u> dark grey homogeneous throughout mainly non calcareous mm bedding extremely friable semi-concordal fracture rare light grey calcareous silty lenses	
						6053'				6053'		
						6054'				6054'		
						6055'				6055'		
												NB. (i) only able to penetrate to first 3' of projected 10'. (ii) cuttings immediately prior to 6052' contained 20% calcareous fine grain SANDST.

24% C.
 1.6% D.

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL KEEP RIVER No. 1

CORE No. 7

PERMIT OP 162

STATE NORTHERN TERRITORY

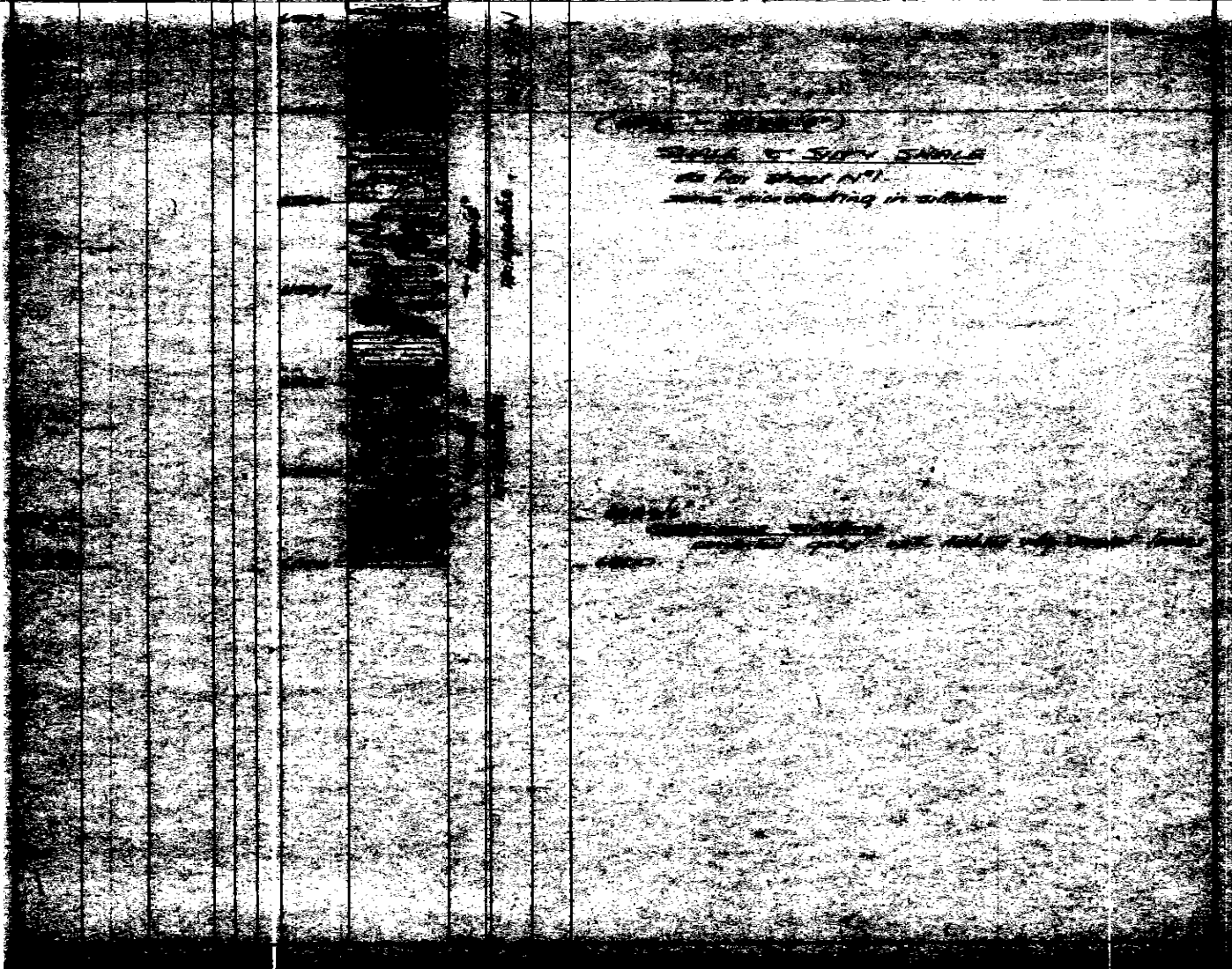
WELL COMPLETION REPORT APPX
 MUD LOGGING CO. GEOSERVICES GEOLOGIST J.P. CAYE & F. BROPHY
 DATE 11-10-68 SCALE 1" = 1' 1:12

TECHNICAL DETAILS

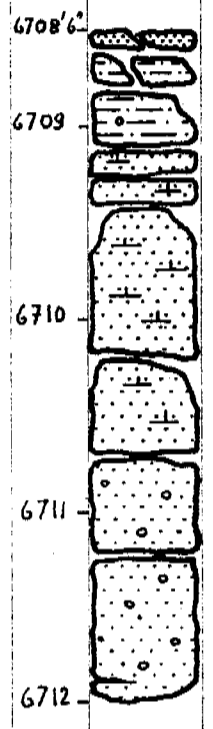
CORE BIT TYPE Xsen C8
 DIAMETER 8 7/8"
 DEPTH 6387 - 6400'
 LENGTH 13' 0"
 RECOVERY LGTH 13' 0"
 RECOVERY 100%

CALCIM %	DOLOM %	POROSITY	PERMEABILITY	IL	SH	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS
						6387			FORMATION Member IV Part I LOWER CARBONIFEROUS (VISERN)		(6387' - 6395')	SHALE - grading to silty shale. - grey to greyish-brown - weakly calcareous - friable nm bedding, blocky. - lenses, xenoliths, irregular thin beds calcareous siltstone (with olive traces)
					6388							
					6389							
					6390							
					6391							
					6392						(6393' - 6394')	SILTSTONE - fine SANDSTONE - calcareous - dolomitic (with olive traces)
					6393							

52 G.
0.0 N
45 G.
1.5 N
60 G.
1.2 N



AUSTRALIAN PETROLEUM GEOLOGICAL SERVICE		AQUITAINE PETROLEUM		WELL COMPLETION REPORT		APPX. 2					
		CORE ANALYSIS REPORT		MUD LOGGING CO. GEOSERVICES		GEOLOGIST J.P. CAYE					
				DATE 21-10-68		SCALE					
WELL KEEP RIVER No.1		CORE No. 8		TECHNICAL DETAILS							
PERMIT OP 162		STATE NORTHERN TERRITORY		CORE BIT TYPE X sen C8 DIAMETER 6 3/4 DEPTH 6708'6" - 6712' LENGTH 3'6" RECOVERY LGTH 3'6" RECOVERY 100%							
CALCIM %	DULOM %	POROSITY	PERMEABILITY	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS
1.6% 5.2%	1.2% 4.5%				6708'6"	6709		MILLIGAN FORMATION Member IV (UPPER PART)	LOWER CARBONIFEROUS (VISEAN)	6708'6"	6708'8"
					6710					6709'2"	6710'9"
					6711					6711'9"	6712'
					6712						



MILLIGAN FORMATION Member IV (UPPER PART)
LOWER CARBONIFEROUS (VISEAN)

6708'6" SANDSTONE, poorly sorted, medium, calcareous cement

6708'8" SILTSTONE, dark grey, coarse quartz scattered, very slightly calcareous

6709'2"

6710 QUARTZITIC SANDSTONE, grey, medium, well sorted, residual cement of limestone, very tight

6710'9"

6711 QUARTZITIC SANDSTONE, light grey, with scarce gravels of quartz and volcanic rocks, slightly calcareous, very tight

6712'

AUSTRALIAN AQUITAINE		WELL COMPLETION REPORT	APPX. 2
PETROLEUM		MUD LOGGING CO. GEOSERVICES	GEOLOGIST J.P. CAYE
GEOLOGICAL SERVICE		DATE 1 - 11 - 68	SCALE 1" = 1' 1:12
CORE ANALYSIS REPORT			
WELL KEEP RIVER No. 1		CORE No. 9	
PERMIT OP 162		STATE NORTHERN TERRITORY	
TECHNICAL DETAILS			
CORE BIT TYPE X sen C 8			
DIAMETER 8 7/16			
DEPTH 7477' to 7486'			
LENGTH 9'			
RECOVERY LGTH 9'			
RECOVERY 100%			




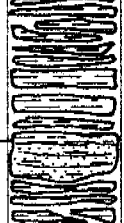

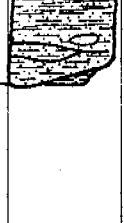

CALCIM. %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS	
					7477			MILLIGAN FORMATION Member IV UPPER PART LOWER CARBONIFEROUS (VISEAN)		<p style="text-align: center;"><u>7477' to 7485' 1/4</u></p> <p>Dark grey to black shale, pyritic, non calcareous, friable. Interbeds of light grey siltstone, well sorted, cross bedded, calcareo-dolomitic cement. Very small fissures, calcite filled. Cross bedding is underlined by thin layers of shale.</p>	
					7478						
					7479						
					7480						
					7481						
					7482						
					7483						
					7484						
					7485						
					7486						
										<p style="text-align: center;"><u>7485' 1/4 to 7486'</u></p> <p>Fine to medium sandstone, light grey, well sorted, micaceous, rare glauconite, calcareo-dolomitic cement.</p>	

1.6%
1.6%

14.5%
20.5%

8.2%
11.2%

11
10
9
8
7
6
5
4
3
2
1
0
1
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10
11

AUSTRALIAN AQUITAINE  PETROLEUM GEOLOGICAL SERVICE		WELL COMPLETION REPORT APPX. 2								
CORE ANALYSIS REPORT		MUD LOGGING CO. GEOSERVICES	GEOLOGIST J.P. CAYE							
WELL KEEP RIVER No.1		CORE No. 10	DATE 15-11-68							
PERMIT OP 162		STATE NORTHERN TERRITORY	SCALE 1" = 1' 1/2							
TECHNICAL DETAILS										
CORE BIT TYPE X en C 8 DIAMETER 8" 15/32 DEPTH 8171' - 8176' 1/2 LENGTH 5' 1/2 RECOVERY LGTH 5' RECOVERY 90%										
CALCIM. %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
				Trace Fair Good						
6.4%	1.6%				8171'			MILLIGAN FORMATION Member IV Part 1		8171' to 8175' Shale dark grey, very fissile, non calcareous, with thin interbeds of silstone dark grey, micaceous, calcareous and brown clay (illite) cement. very rare grains of glauconite Microscopic fissures, calcite and quartz filled
2.4%	0%				8172'					
3.10%	1.65%				8173'					
					8174'					
					8175'					8175' to 8176' Quartzitic sandstone, dark to medium grey, micaceous, calcareo-dolomitic, and, illitic cement. Fine grained Numerous fissures calcite filled, and rare un-shaped pebbles of dolomitic shale and ferruginous shale
					8176'					
								LOWER CARBONIFEROUS (VISEAN)		

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT APPX

MUD LOGGING CO. GEOSERVICES GEOLOGIST F. BROPHY

DATE 28-11-68 SCALE 1" = 1' 1:12

TECHNICAL DETAILS

CORE BIT TYPE C 9 X sen
 DIAMETER 8 7/8"
 DEPTH 8924' - 8934'
 LENGTH 10' 0"
 RECOVERY LGTH 10' 0"
 RECOVERY 100%

WELL KEEP RIVER No. 1 CORE No. 11
 PERMIT OP 162 STATE NORTHERN TERRITORY

CALCIM %	DOLOM %	POROSITY	PERMEABILITY	OIL		DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
				TOOPOUR	SHOWN						
1.6%	0.5%					8924			Part 2 Member III (VISEAN) CARBONIFEROUS		<p>SANDSTONE med coarse calcareous silicified quartz angular - silic + calc. dol cement no porosity</p> <p>8924' 5" - 8932'</p> <p>SHALE - grey black non calcareous - mm/cm bedding subhorizontal - brittle - subfissile concoidal fracture - thin cm interbeds lenses of quartzose, usually non calcareous siltstone - v. friable - pyrite common in parts (eg 8926')</p>
3.2%	5.0%					8925					
						8926					
						8927					
						8928					
						8929					
						8930					
						8931					
						8932					
						8933			MILLIGAN		<p>8932' - 8934'</p> <p>SHALE as for sheet 1, black non calcareous sub fissile</p>
						8934					

AUSTRALIAN PETROLEUM
AQUITAINE



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT		APPX 2
MUD LOGGING CO. GEOSERVICES	GEOLOGIST F. BROPHY	
DATE 11 - 12 - 68	SCALE 11 - 1' 1:12	

TECHNICAL DETAILS

CORE BIT TYPE	Xsen C8
DIAMETER	8 7/8"
DEPTH	9907' - 9917'
LENGTH	10' 10"
RECOVERY LGTH	10' 10"
RECOVERY	100%

WELL	KEEP RIVER No. 1	CORE No. 12
PERMIT	OP 162	STATE NORTHERN TERRITORY

CALCIM % DOLOM. %	FOROSITY	PERME- ABILITY	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS		
52% calcite	12%	10.1 md.	Trace Fair Good	9907			FORMATION (TOURNAISIAN)		<p><u>SHALE</u></p> <ul style="list-style-type: none"> - black grey fissile friable - non calcareous - sometimes poorly sorted with subrounded medium grained quartz grains. - mm subhorizontal interbeds of calcareous of quartzite light grey siltstone poorly sorted. 		
				9908							
				9909							
				9910							
49% calcite				9911						<p><u>SANDSTONE / SILTSTONE</u></p> <ul style="list-style-type: none"> - in bands of up to 6" thick - light grey. - strongly calcareous (spindle cement recrystallized) - poorly sorted av. grain size 150 - 200 μ max. grain size 600 μ. - quartz subangular / subrounded. 	
				9912						9912' 2"	<ul style="list-style-type: none"> - fr. of angular plagioclase with evidence of secondary growth. - oolites not common, rounded quartz with Fe and shale coating. - fr. of sub mm. calcite veinlets
42% calcite	10%	10.1 md.		9913						9913' 5"	<ul style="list-style-type: none"> - fragments of BRYOZOA, CORAL, SPONGE and SPINES possible fragments of large
				9914							<p>SEPTIMIUS</p>
				9915							<p>CALCAREOUS</p>
				9916							<p>LOWER</p>
				9917						9917'	<p>as for sheet 1 mainly shale fissile black grey non calcareous shale.</p>

AUSTRALIAN PETROLEUM
AQUITAINE



GEOLOGICAL SERVICE
CORE ANALYSIS REPORT

WELL COMPLETION REPORT		APPX.
MUD LOGGING CO. GEOSERVICES	GEOLOGIST F B BROPHY	
DATE 23-12-68	SCALE 1"=1' 1:12	

WELL KEEP RIVER No.1	CORE No 13
PERMIT OP 162	STATE NORTHERN TERRITORY

TECHNICAL DETAILS
 CORE BIT TYPE **X sen C20**
 DIAMETER **5 1/8"**
 DEPTH **10451'-10462.8'**
 LENGTH **11.8'**
 RECOVERY LGTH **11.8'**
 RECOVERY **100%**

CALCM % DOLCM %	POROSITY	PERMEABILITY	OIL SHOW			DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS			
			Trace	Fair	Good									
						10452			(TOURNAISIAN) CARBONIFEROUS		(10451'-10454'2") SHALE Dark grey friable non calcareous lenticular micso beds. speckled with calcareous siltstone granules trace of conoid. lighter grey beds of calcareous siltstone			
					10455	(10454'2"-10455'8") CALCAREOUS SANDSTONE med-coarse interbeds 250-500µ. abundant conoid; some tabular. fine common; spall cement no porosity; shale interbeds.								
					10454									
					10455									
					10456									
					10457									
					10458									
					10459									
					10460									
					10461									
					10462									
					10462.8									

CALCIMETER SHOW 2.85%
 of Ca⁺⁺ from activity in sect.
 73.0%
 48.0%

NO POROSITY
 NO PERMEABILITY

FORMATION
 SEPTIMUS
 LOWER

SHALE with light grey calcareous siltst.

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT		APPX. 2
MUD LOGGING CO. GEOSERVICES	GEOLOGIST J.P. CAYE	
DATE 1-1-1969	SCALE 1" = 1' 1/12	
TECHNICAL DETAILS CORE BIT TYPE CHRIS C9 DIAMETER 4 3/4 DEPTH 11.200-11.206 LENGTH 6' RECOVERY LGTH 6' RECOVERY 100%		

WELL KEEP RIVER No.1	CORE No. 14
PERMIT OP 162	STATE NORTHERN TERRITORY

CALCIM. %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS	
1.6%	0.1%	NIL	NIL	NIL	11.200			ENGA FORMATION LOWER CARBONIFEROUS (TOURNAISIAN)		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, sparitic cement.	
4.8%	0.4%				11.201						
					11.202						
					11.203						
18.5%	0.1%				11.204						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 calcitic water, dissolving silica, and giving calcareous sandstone
					11.205						
					11.206						

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL **KEEP RIVER No.1** CORE No **15**

PERMIT **OP 162** STATE **NORTHERN TERRITORY**

WELL COMPLETION REPORT APPX

MUD LOGGING CO. **GEOSERVICES** GEOLOGIST **JP CAYE**
 DATE **7-1-1969** SCALE **1" : 1' 1/2**

TECHNICAL DETAILS

CORE BIT TYPE **CHRIS. C20**
 DIAMETER **4 3/4"**
 DEPTH **11462' TO 11476'**
 LENGTH **14'**
 RECOVERY LGTH **14'**
 RECOVERY **100%**

CALCIM %	DOLOM %	POROSITY	PERMEABILITY	TOSS	OIL	SHOWN	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS		
							11462'		16°	FORMATION (TOURNAISIAN)		<p><u>From 11462' to 11468'</u></p> <p>ALTERNATION OF SILTY SHALE, DARK GREY, SLIGHTLY TO NON CALCAREOUS AND LIGHT GREY, SLIGHTLY FELDSPATHIC, VERY SANDY COARSE GRAINED, SUBROUNDED, DOLOMITIC BIODISPITE WITH FINELY CRINOIDS AND RARE OSTROCOIDS</p> <p>INTRAFORMATIONAL UNCONFORMITY</p>		
22%	44%					11463'								
22%	44%					11464'								
						11465'								
						11466'								
						11467'								
						11468'								<p><u>From 11468' to 11474'</u></p> <p>LIGHT GREY, SANDY, COARSE GRAINED, SUBROUNDED, DOLOMITIC BIODISPITE WITH BROKEN CRINOIDS, BRACHIOPOD, BRACHIOPODA. (SHELLS AND SPINES)</p> <p>ARGILLACEOUS JOINT</p>
						11469'								
						11470'								
						11471'								
						11472'								
25%	40%					11473'						<p>ARGILLACEOUS JOINT</p> <p>QUARTZ VERY COARSE, OFTEN CENTRAL PART OF THE CRINOIDS VERY OFTEN SILICIFIED</p>		
33%	44%					11474'						<p><u>From 11474' to 11476'</u></p> <p>ALTERNATION OF THIN LAYERS OF SILTY SHALE, NOT CALCAREOUS, WITH LIGHT GREY, CALCAREOUS-DOLOMITIC SANDSTONE, MEDIUM GRAINED, VERY TIGHT.</p> <p>NUMEROUS FIGURES OF INTRAFORMATIONAL UNCONFORMITY</p>		
						11475'								
						11476'								

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT APPX. 2

MUD LOGGING CO. **GEOSERVICES** GEOLOGIST **J.P. CAYE**

DATE **19-1-69** SCALE **1" = 1' 1/12**



TECHNICAL DETAILS

CORE BIT TYPE *Reverse circulation*
 JUNK BASKET
 DIAMETER **5 1/2"**
 DEPTH **12.066 to 12.068**
 LENGTH **2'**
 RECOVERY LGTH **2'**
 RECOVERY **100%**

WELL **KEEP RIVER No.1** CORE No. **16**
 PERMIT **OP 162** STATE **NORTHERN TERRITORY**

CALCIM % DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW		DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
			Trace	Good						
12 1/2 % 22,2 %	NIL				12.066		10°	UNNAMED FORMATION		Dark grey, very slightly silty, calcareo-dolomitic shale.
					12.067			LOWER CARBONIFEROUS to DEVONIAN		
					12.068					

12 1/2 %
 22,2 %
 NIL
 10°
 UNNAMED FORMATION
 LOWER CARBONIFEROUS to DEVONIAN

AUSTRALIAN AQUITAINE PETROLEUM  GEOLOGICAL SERVICE		WELL COMPLETION REPORT APPX. 2							
		MUD LOGGING CO. GEOSERVICES	GEOLOGIST J.P. CAYE						
		DATE 22-1-69	SCALE 1" = 1' 1/12						
CORE ANALYSIS REPORT		TECHNICAL DETAILS CORE BIT TYPE $X^{en} C9$ DIAMETER 4" 3/4 DEPTH 12251 - 12254 LENGTH 3' RECOVERY LGTH 3' RECOVERY 100%							
WELL KEEP RIVER No.1	CORE No. 17								
PERMIT OP 162	STATE NORTHERN TERRITORY								
CALCIM. % DOLOM. %	POROSITY	PERMEABILITY Trace Fair Good	OIL SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
70% 30%	N I L	N I L	N I L	12251 12252 12253 12254		N I N G B I N G	L I M E S T O N E	U P P E R	D E V O N I A N (FAMENNIAN?)
									<u>Algal Reef facies</u> Biocalodismicrite with Brachiopods Gastro pods containing in their shell pelmicrite with Plectogyra sp. encrusting algae Ostracods - Fissures filled with dolospante Biocalodismicrite with bituminous pyrite joints Quasiendothyra - Girvanella? ducii (2op) stylolite -stylolitic joints Biocalodismicrite with recrystallised Algae - -Calcsphera - Spicules - Ostracods Gastropods - Solenopora - Calcsphera - Ostracods

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL **KEEP RIVER No.1** CORE No. **18**
 PERMIT **OP 162** STATE **NORTHERN TERRITORY**

WELL COMPLETION REPORT		APPX.
MUD LOGGING CO. GEOSERVICES	GEOLOGIST F BROPHY	
DATE 30-1-69	SCALE 1" = 1' 1:12	
TECHNICAL DETAILS CORE BIT TYPE Xsen C9 DIAMETER 4 3/4" DEPTH 12 875' - 12 888' LENGTH 13' 0" RECOVERY LGTH 13' 0" RECOVERY 100 %		

CALCIM %	DOLOM %	POROSITY	PERMEABILITY	OIL	SPON	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS
71%	29%					12 875			NINGBING LIMESTONE	UPPER DEVONIAN	<p>DOLODISMICRITE</p> <ul style="list-style-type: none"> - variegated light and dark grey - dolomitic groundmass dark grey partly replaced by amorphous patches of white sparite and marl - maybe of algal origin. - euhedral pyrite crystals characteristic < 0.5mm dia - authigenic quartz needles in micrite - 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 .2879' - 80' - v. friable on drying - patches of salt crystals - cavity infilling 	<p>(back reef facies)</p>
52%	44%				76							
46%	54%				77							
					78							
					79							
					80							
					81							
					82							
					83							
					84							
64%	36%					12 888				<p>DOLODISMICRITE</p> <p>as above</p> <ul style="list-style-type: none"> - white patches of sparite in argillo-micrite matrix - traces of salt - pyrite, authigenic quartz 		
					85							
					86							
64%	36%					12 892						

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL KEEP RIVER No.1

CORE No. 19

PERMIT OP 162

STATE NORTHERN TERRITORY

WELL COMPLETION REPORT		APPX.
MUD LOGGING CO. GEOSERVICES	GEOLOGIST A F BROPHY	
DATE 3-2-1969	SCALE 1" = 1' 1:12	
TECHNICAL DETAILS		
CORE BIT TYPE	C 8	
DIAMETER	8 7/8"	
DEPTH	13460'6" - 13472'	
LENGTH	11'6"	
RECOVERY LGTH	11'6"	
RECOVERY	100%	

CALCIM %	DOLOM %	POROSITY	PERMEABILITY	TRACE OIL	SHOW	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS	
												Trace
78 %	19 %			NIL		13461			LIMESTONE	DEVONIAN	<p><u>DOLOSPARITE</u> + <u>DOLOPELSPARITE</u></p> <ul style="list-style-type: none"> - light and dark grey with white opaque patches of sparite - groundmass sparite with dolomite rhombs replacing calcite - opaque patches containing intraclasts pellets possible encrusting algae - remains of crinoids - microcrystalline authigenic quartz ubiquitous 	
72 %	16 %					13462			NINGBING	UPPER	<ul style="list-style-type: none"> - <u>STYLOLITES</u> with brown microcrystalline dolomite common - discontinuous veinlets of calcite - friable on drying 	
						13463						
						13464						
						13465						
						13466						
						13467						
						13468						
						13469						
						13470						<p><u>DOLOSPARITE</u> + <u>DOLOPELSPARITE</u></p> <ul style="list-style-type: none"> - encrusting algae crinoid and intraclasts
						13471						
73 %	22 %					13472						

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL **KEEP RIVER No.1** CORE No **20**
 PERMIT **OP 162** STATE **NORTHERN TERRITORY**

WELL COMPLETION REPORT		APPX.
MUD LOGGING CO. GEOSERVICES	GEOLOGIST F BROPHY	
DATE 7-2-69	SCALE 1" = 1' 1:12	
TECHNICAL DETAILS		
CORE BIT TYPE	Xsen C9	
DIAMETER	4 3/4"	
DEPTH	13994' 11" - 14006' 0"	
LENGTH	11' 1"	
RECOVERY LGTH	11' 1"	
RECOVERY	100%	

CALCIM %	DOLOM %	FOROSITY	PERMEA- BILITY	OIL TRACE	SPON FOUR	DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS	
70%	25%					13995			LIMESTONE	DEVONIAN	13994' 11" - 14003' 0" (i) <u>DOLOSPARITE</u> - Light grey - Coarse grained, av diameter of grains 750µ - Lightly packed no porosity - pseudo brecciation (ii) <u>DOLOMICRITE</u> - Darker grey with authigenic quartz (iii) <u>DOLODISMICRITE</u> - Fractured with lenses of calcareous quartzose siltstone - pseudo brecciation Scattered calcispheres " crinoids Rare Foram (ENDOTHYRA?) stylolites Fairly common		
67%	3%					13996							
						13997							
						13998							
						13999							
						14000				NINGBING	UPPER		
41%	18%					14001							
						14002							
						14003							
						14004				LIMESTONE	DEVONIAN	<u>DOLOSPARITE AND DISMICRITE</u> - with fracturing and calc. siltstone filling - brecciation as for sheet #1	
61%	33%					14005							
61%	17%					14006			NINGBING	UPPER			

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT		APPX.
MUD LOGGING CO. GEOSERVICES	GEOLOGIST F. BROPHY	
DATE 11-2-69	SCALE 1" = 1' 1:12	

WELL KEEP RIVER No. 1	CORE No. 21
PERMIT OP 162	STATE NORTHERN TERRITORY

TECHNICAL DETAILS
 CORE BIT TYPE **C9 XSen**
 DIAMETER **4 3/4"**
 DEPTH **14572' - 14584' 10"**
 LENGTH **12' 10"**
 RECOVERY LGTH **12' 10"**
 RECOVERY **100%**

CALCIM %	DOLOM %	POROSITY	PERMEABILITY	TRACE OIL	LOG	DEPTH	DIP	FORMATION	AGE	DESCRIPTION	REMARKS
52%	22%		NIL	Trace		14572		NINGBING LIMESTONE	UPPER DEVONIAN	14572' - 14580'	<p>DOLOMICROSPARITE</p> <ul style="list-style-type: none"> - dark grey crystalline - sparitic dolomitic groundmass silt size; sometimes sugary texture - clastic siltsize 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 - DOLODISMICRITE - much less common - micrite grey cloudy, amorphous
53%	27%		NIL	Fair		14573					
			NIL	Good		14574					
			NIL			14575					
			NIL			14576					
			NIL			14577					
			NIL			14578					
52%	34%		NIL			14579					
			NIL			14580					
			NIL			14581					
			NIL			14582					
			NIL			14583					
55%	37%		NIL			14584		NINGBING LIMESTONE	UPPER DEVONIAN	14580' - 14584' 10"	<p>DOLOMICROSPARITE</p> <ul style="list-style-type: none"> - as for 14572' 0" - 14580'
			NIL			14584' 10"					

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT APPX.

MUD LOGGING CO. GEOSERVICES GEOLOGIST B.F. BROPHY


DATE 15-2-69 SCALE 1" = 1' 1:12


TECHNICAL DETAILS

CORE BIT TYPE C8 X sen.
 DIAMETER 4 3/4"
 DEPTH 15139 - 15154
 LENGTH 15'
 RECOVERY LGTH 14.6"
 RECOVERY 97%

WELL KEEP RIVER No.1 CORE No. 22
 PERMIT OP 162 STATE NORTHERN TERRITORY

CALCIM. %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW			DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION	REMARKS
				Trace	Fair	Good							
70%	30%						15139			LIMESTONE	DEVONIAN	(a) 15139' - 15141'	MICRODOLOSPARIITE AND DOLODISMICRITE - dark grey, with darker speckles - numerous fz. pellets intraclasts - calcite veinlets - stylolites
22%	22.5%	N / L	N / L				15140			LIMESTONE	DEVONIAN	(b) 15141' - 15145' 10"	PSEUDOBRECCIATED DOLOSTONE - offwhite, light grey - hypidiotopic grain size 100-360 μ - lightly packed no porosity - trace authigenic quartz. - trace calcite veinlets - trace HALITE
22%	48%	N / L	N / L				15141			NINGBING	UPPER	15145' 10" - 15147'	MICRODOLOSPARIITE as for (a)
25%	43%	N / L	N / L				15142			NINGBING	UPPER	15147' - 15148'	
							15143			LIMESTONE	DEVONIAN	15148' - 15149'	DOLODISMICRITE AND MICRODOLOSPARIITE - numerous silt size pellets throughout - algae fragments - intraclasts DISPHAEIA - calcispheres, gravels (1.8 mm. dia.) - stylolites - some mm. cavities with anhedral dolomite crystallisation.
							15144			NINGBING	UPPER	15149' - 15150'	
							15145			LIMESTONE	DEVONIAN	15150' - 15151'	
							15146			NINGBING	UPPER	15151' - 15152'	
							15147			LIMESTONE	DEVONIAN	15152' - 15153'	
							15148			NINGBING	UPPER	15153' - 15154'	cloudy DISMICRITE with pseudo brecciation trace crinoid 15153' 6"
							15149			LIMESTONE	DEVONIAN	15154' 0"	
							15150			NINGBING	UPPER		
							15151			LIMESTONE	DEVONIAN		
							15152			NINGBING	UPPER		
							15153			LIMESTONE	DEVONIAN		
							15154			NINGBING	UPPER		

 <p>AUSTRALIAN AQUITAINE PETROLEUM</p> <p>GEOLOGICAL SERVICE</p>		WELL COMPLETION REPORT		APPX. 2	
		MUD LOGGING CO. GEOSERVICES		GEOLOGIST F. BROPHY	
		DATE 19.2.69		SCALE 1"=1' 1:12	
CORE ANALYSIS REPORT		TECHNICAL DETAILS			
WELL KEEP RIVER No.1		CORE No. 23		CORE BIT TYPE Xsen C9.	
PERMIT OP 162		STATE NORTHERN TERRITORY		DIAMETER 4 3/4"	
				DEPTH 15574'-15578'	
				LENGTH 4'0"	
				RECOVERY LGTH 3'0"	
				RECOVERY 75%	

CALCIM. %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW		DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
				Trace	Good						
3.5%	3.5%	NIL	NIL			15574					<p><u>(15574'-15578')</u></p> <p><u>QUARTZITE</u></p> <ul style="list-style-type: none"> - light grey becoming white at 15576'. - poorly sorted dia. range 40µ - 240µ. large grains rounded to 3-rounded. - trace of calcite; plagioclase feldspar. - irregular mm. beds lenses of sil. argillite - very fine grained pyrite throughout. - microfaulting.
0.8%	3.1%					15575					
0.0%	0.8%					15576					
						15577					
						15578					

COCKATOO ?
 UPPER DEVONIAN ?

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL COMPLETION REPORT		APPX. 2
MUD LOGGING CO. GEOSERVICES	GEOLOGIST F. BROPHY	
DATE 22-2-69	SCALE 1" = 1' 1:12	

TECHNICAL DETAILS

CORE BIT TYPE: X_{sen} C8
 DIAMETER: 4 3/4"
 DEPTH: 15614' - 15617'3"
 LENGTH: 3'3"
 RECOVERY LGTH: 3'3"
 RECOVERY: 100%

WELL KEEP RIVER No.1	CORE No. 24
PERMIT OP 162	STATE NORTHERN TERRITORY

CALCIM. % DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW			DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
			Trace	Fair	Good						
3.3% 5.0%	—	—				15614					<p>15614 - 15617'3"</p> <p><u>QUARTZITE</u></p> <ul style="list-style-type: none"> - grey-light colour - v. fine-fine grain size grains 30-120µ. poorly sorted - no porosity or permeability - trace calcite, plagioclase pyrite - tr. green translucent mineral. - hard, tight; subhorizontal bedding. <p>15617'3"</p>
0.8% 0.8%	N I L	—				15615					
0.8% 2.4%	—	—				15616					
						15617					

? PROTEROZOIC ? or Upper Devonian

AUSTRALIAN AQUITAINE PETROLEUM



GEOLOGICAL SERVICE

CORE ANALYSIS REPORT

WELL **KEEP RIVER No.1** CORE No. **25**
 PERMIT **OP 162** STATE **NORTHERN TERRITORY**

WELL COMPLETION REPORT APPX. **2**
 MUD LOGGING CO. **GEOSERVICES** GEOLOGIST **F. BROPHY**
 DATE **23-2-60.** SCALE **1" = 1'**

TECHNICAL DETAILS
 CORE BIT TYPE **Xsen C8.**
 DIAMETER **4 3/4"**
 DEPTH **15617'3" - 15623'**
 LENGTH **5'9"**
 RECOVERY LGTH **5'9"**
 RECOVERY **100%**

CALCIM. %	DOLOM. %	POROSITY	PERMEABILITY	OIL SHOW		DEPTH	LOG	DIP	FORMATION	AGE	DESCRIPTION & REMARKS
				Trace	Good						
2.4 %	0.0 %					15617					
3.2 %	4.9 %					15618		?			
0.8 %	0.0 %					15619		11-18°			
						15620					
						15621					
						15622					
0.0 %	0.8 %					15623					

? PROTEROZOIC ? or UPPER DEVONIAN

15617'3"
QUARTZITE
 - variegated light and dark grey
 - bedding distinct from 15618'7" ; 11-18°.
 - hard light, vt-fine grains subangular
 average dia = 40µ.
 - medium-poor sorting
 - very weakly calcareous.
 - trace of vtq. plagioclase feldspar.
 15623' TOTAL DEPTH KEEP RIVER NO.1