

EAST MEREENIE NO. 1 WELLCORE DESCRIPTIONS

Core No. 1: 2601' - 2605' recovered 3'6"

Coring Times: 20, 23, 30, 17 min./ft.

Top 3'0": Fine grained, well sorted, white to light grey Sandstone with irregular patches and streaks of fine to medium grained, angular, argillaceous, silty, dark grey inclusions. Sandstone cement siliceous, (mainly), argillaceous in part.

Shale inclusions contain very slight traces of mica and pyrite.

White Sandstone grains are quartz, sub-rounded, clear, frosted. Sandstone is hard and tight.

Bottom 6": Thinly bedded, argillaceous Siltstone ( $\frac{1}{4}$ " to  $\frac{1}{2}$ " thick) in clean white Sandstone. Sandstone as above but clearer (Less Siltstone) than top section of core.

Argillaceous Siltstone (Shale), black, slight traces mica and pyrite.

Dip 0°.

Core No. 2: 2605' - 2616' recovered 10'10"

Coring Times: 27, 21, 33, 25, 23, 25, 12, 17, 16, 20, 23 min./ft.

Top 3'6": Sandstone, white to light grey, siliceous, very fine to fine grained, quartz clear, frosted, sub-angular to sub-rounded grains, Sandstone well sorted, interbedded with dark grey to black Siltstone and Shale partings. Shale and Siltstone dispersed throughout interval in random minor lenses and patches (Shale, slight trace mica and pyrite).

8": Shale and Siltstone; dark grey to black, slightly micaceous and pyritic, minor (2") Sandstone bed near centre of interval. Sandstone as above.

5'0": Sandstone, white to light grey, well sorted, siliceous, quartz sub-angular to sub-rounded, clear, frosted, interbedded with minor thin lenses and patches of greyish, dark green, argillaceous Siltstone and Shale (glauconitic?). Some minor horizontal fractures and one vertical fracture near bottom of interval. Interval tight.

3": Shale dark green to black, platy, hard, micaceous, slightly pyritic.

Bottom 1'5": Sandstone white to grey, very fine to fine grained, well sorted, siliceous, quartz clear to frosted, sub-angular to sub-rounded grains, interbedded with thin lenses and patches of dark grey to black argillaceous Siltstone and Shale. Minor shaly partings.

No fluorescence. No cut. Faint petroliferous odour. Maximum 5% porosity. Possibly some porosity in fractures, core tight overall. Petroliferous odour faintly in sand sections when freshly broken.

Dip 0°.

Core No. 3: 2643' - 2668' recovered 24'9"

Coring Times: 13, 9, 12, 12, 12, 10, 13, 13, 11, 10, 10, 10,  
11, 11, 15, 15, 14, 13, 24, 17, 14, 15, 15, 11,  
11 min./ft.

Top 3' 9": Sandstone very fine to fine grained, well sorted, white to light grey, siliceous, hard, tight, quartz clear to frosted, sub-angular to sub-rounded, interbedded with minor thin lenses and patches of dark grey, black, Siltstone and Shale. Petroliferous odour.

3" Sandstone (as above) interbedded with shale (mainly), dark grey to black, hard, brittle, micaceous.

2'6" Sandstone, white to light grey (as above) very minor Siltstone and Shale partings scattered throughout. Trace pinpoint bright yellow fluorescence, trace of gas bubbling from fine horizontal fracture near base of interval. Petroliferous odour.

8" Sandstone white to light grey (as above), 2 thin Siltstone and Shale lenses ( $\frac{1}{2}$ " and  $\frac{1}{4}$ " thick) at top and 1 thin Shale band at base.

6'8" Sandstone white to light grey (as above), very minor scattered, thin streaks and patches, dark grey to black Siltstone and Shale partings. Trace pinpoint yellow fluorescence. Strong petroliferous odour especially when freshly broken.

3" Shale, dark grey, black, hard, sandy (minor) in part.

1'0" Sandstone white to light grey (as above), very minor Shale and Siltstone streaks and patches near top, lower portion clean sand with fine horizontal fractures, strong petroliferous odour.

1'11" Sandstone white to medium grey (as above), interbedded with dark grey to black Shale and Siltstone scattered throughout interval in thin lenses and patches. 1" black Shale band at base of interval. Strong petroliferous odour (on breaking).

1'0" Sandstone white to light grey, clean (as above) slight trace thin Shale partings, several fine horizontal fractures, strong petroliferous odour.

2'0" Shale, dark grey to black, hard, interbedded minor thin lenses Sandstone (light grey, fine grained, argillaceous in part).

1'9" Sandstone light grey, very fine to fine grained, well sorted, siliceous, hard, tight, quartz sub-angular to sub-rounded. Interbedded with thin bands and patches, dark grey to black, Siltstone and Shale partings. 1" black Shale streak at base of interval. Very slight petroliferous odour.

Bottom 3'0" Sandstone, very fine to fine grained, well sorted, light grey, hard, tight, little cement, quartz sub-angular to sub-rounded, minor dark grey to black Shale inclusions. Minor thin lenses of Shale and Siltstone (black). Slight petroliferous odour.

Some pinpoint fluorescence. Noticeable horizontal fractures in some section. Strong petroliferous odour. Gas bubbling slightly from small sand sections.

Gas kicks probably coming from 2648' - 2650'6" and 2658' - 2659' and 2660' - 2661'. Maximum porosity throughout core less than 5%. Overall core generally tight. Cementing material mainly siliceous.

Note: Traces of mud in fine horizontal fractures when core broken along fracture planes.

Dip 0°.

Core No. 4: 2668' - 2703' recovered 35'

Coring Times: 18, 19, 18, 18, 22, 18, 15, 17, 17, 17, 16, 15, 15,  
15, 28, 17, 16, 23, 15, 16, 12, 14, 13, 13, 18, 15,  
16, 13, 13, 13, 15, 17, 16, 13, 25, 25 min./ft.

Core was not washed or described in detail, it was immediately put into plastic bags and boxed. The following is a brief description from observations made whilst bagging the core and from a few core chips.

Top 2'6" Sandstone light grey, hard, tight, some fine horizontal fractures and strong petroliferous odour. Sandstone fine grained.

3'0" Shale, black, hard, brittle, interbedded with minor grey sand and Siltstone lenses.

3'0" Sandstone, fine grained, light grey (as above) interbedded with minor thin Shale and Siltstone, no visible fractures, strong petroliferous odour.

5'0" (approximately) Sandstone and grey Siltstone, interbedded with black Shale. Shale has trace mica and pyrite.

22'0" (approximately) mainly Shale, black, micaceous, pyritic, hard, brittle, minor interbeds of dark grey Siltstone and some thin lenses and patches of light grey Sandstone. Percentage of Shale increases toward bottom of interval.

Tentative top middle Stairway at 2680'.

Black Shale not showing in samples probably because cuttings too fine and splintery to cross shaker screen. Brown Sandstone mentioned in samples probably small patches in poorly sorted grey Sandstone and Siltstone which is interbedded in lenses and patches in black Shale.

Sample 2689'. Interbedded grey Siltstone and black Shale, minor patches very fine grained, grey Sandstone. Sample is considered to be in Middle Stairway. Shale, micaceous, hard, brittle, faintly pyritic. Siltstone, grey, siliceous with patches very fine grained, poorly sorted, siliceous Sandstone.

Strong petroliferous odour from sands in top 8'. Overall interval tight.

Dip 0°.

Core No. 5: 3105' - 3155' recovered 50'

Coring Times: 26, 15, 22, 19, 22, 19, 19, 18, 23, 23, 26, 23, 19,  
19, 20, 20, 22, 21, 27, 24, 21, 17, 19, 18, 17, 17,  
15, 17, 30, 21, 15, 18, 24, 17, 21, 33, 25, 34, 38,  
15, 13, 17, 18, 13, 22, 22, 24, 22, 17, 16 min./ft.

Core was not washed or described thoroughly, but was put into plastic bags and sealed, then boxed immediately on coming out of hole.

Core sections with gas bubbling on removal from barrel are in plastic bags marked with "X".

Top 10': Mostly Sandstone, fine to coarse grained, interbedded grey, white siliceous, quartz sub-angular to rounded (clear, coarse grains). Sandstone is interbedded with dark grey to black, argillaceous Siltstone and Shale (pyritic and micaceous). Some mica in fine grained sands. Faint petroliferous odour. Some horizontal fractures.

20' interbedded Sandstone and Shale, Sandstone mostly fine grained, grey (slightly micaceous) tight, siliceous. Lenses and patches of dark grey, black Siltstone and Shale in Sandstone. Shale, black micaceous, pyritic.

20' Sandstone, grey, white, fine to coarse grained, (as above), with lenses, patches and interbeds of black Shale (micaceous). Some horizontal fractures in sand sections. Faint petroliferous odour.

Bottom 10': Mostly dark grey, black Shale and argillaceous Siltstone, some interbeds grey, white Sandstone (as above). Shale is micaceous and pyritic. Sandstone is mainly siliceous, faintly argillaceous.

Some sections of core appear to contain worm tubes and possible vertical fractures (filled with quartz Sandstone). These can only be verified by study of core after it is cleaned.

Core Sample 3135': Interbedded fine to coarse grained, grey, white, Sandstone, siliceous, clean tight. Interbedded with black Siltstone and Shale (micaceous and pyritic). Coarse Sandstone contains clear rounded quartz.

Core No. 6: 3456' - 3476' recovered 19'8"

Coring Times: 23, 24, 28, 25, 31, 28, 30, 28, 24, 30, 24, 30,  
24, 25, 24, 24, 29, 20, 22, 19 min./ft.

Only part of the core was washed and logged. Most of the core was packed into plastic bags and boxed immediately.

Top: The core consists mainly of dark grey to black Shale with stringers and lenses of Limestone.

Shale: Dark grey to black, micaceous, pyritic (some pyritic disseminated throughout Shale, some in patches along bedding planes), slight to very calcareous, carbonaceous, very fossiliferous. Fossils are - plants (leaf and stems, some with ribs preserved?), Trilobites (mainly pygidium preserved), Brachiopods (reveal spirifer are present). Straight ammonites (Nautiloides?). Some possible graptolites, Shale has strong petroliferous odour.

Limestone: Fine, white, grey, disseminated in random lenses and stringers throughout Shale. Limestone fluorescence, blue, yellow (sandy Limestone is usually yellow brown).

Calcite is present in vertical veins throughout Shale sections of core. Limestone has positive cut with CC/4 varying from poor to fair (producing golden fluorescence in sample).

Bottom 2' of core had gas bubbling (possibly from fine horizontal fractures which are in Shales throughout core). One open horizontal fracture was noted 1' from bottom of core.

Shales and Limestone appear to have excellent source characteristics.

Core No. 6 (cont'd.)

Strong petroliferous odour. Fluorescence and cut in Limestone throughout core. Gas bubbling from bottom 2' of core. Some fine horizontal fractures in Shales.

Dip 0°.

Core No. 7: 3807' - 3825' recovered 18'

Coring Times: 44, 28, 21, 25, 21, 27, 24, 22, 24, 29, 36,  
41, 34, 27, 24, 21, 36, 81 min./ft.

Core was bagged and boxed immediately upon recovery. Description is from observations made while bagging and a few core chips and samples.

Top 6' mainly fine grained, white, grey Sandstone, partly clean, partly dirty (argillaceous) material, poor to medium sorting. Some quartz filled worm tubes up to 2" long in this section. Interbeds and stringers of dark grey, black Shale, slightly micaceous, slightly calcareous, some pyrite in patches. Sandstone and Shale are in lenses and patches and interfinger worm tubes are scattered throughout interval,

Upper section grades into 8' mainly dark grey, black, slightly micaceous, slightly calcareous Shale with interbeds and stringers of fine to medium white, grey, siliceous Sandstone.

Bottom 4' fine to medium grained, medium to poorly sorted, white, brown, Sandstone. Occasional patches coarse grained Sandstone. Sandstone is siliceous and tight, colouring is mottled, grey, whitish, brown. Small beds of pyrite in Shale i.e. (pyrite in patches not disseminated). Quartz is clear, frosted, brown, some faceted grains, angular (minor) to sub-rounded. Some possible dark mineral grains. Little cement but cement appears to vary from argillaceous, through haematitic? to siliceous (mainly).

No apparent porosity in lower interval. Core overall appears tight.

Very minor gas bubbling from 6" interval at 3815'. Fluorescence throughout Sandstone section. Faint petroliferous odour in Sandstone.

Dip 0°.

Core No. 8: 3825' - 3831' recovered 5'11"

Coring Times: 48, 58, 71, 100, 79, 85 min./ft.

Medium to coarse grained Sandstone, medium to poorly sorted, white, grey, brown, siliceous. Good gas bubbling and minor amount condensate (yellowish colour) exuding from top 3' of core. For 2'6" to 3' from top of core. Sandstone was fractured into small (2") angular chips. Maybe some porosity in upper part of core. Core was put into plastic bags and boxed immediately on being recovered. Description is from small chips and observations made whilst boxing.

Sandstone is mottled, grey, white, brown, medium grained, occasionally coarse, slight trace fine to pinpoint porosity. Quartz clear, frosted, brown grains, sub-angular to rounded. Little cementing material (cement mainly siliceous). Sandstone hard, slightly friable.

Gas and condensate bubbling from top 3'. Slight fluorescence and good cut in clean Sandstone sections (patchy). No evidence of fractures. Faint to strong petroliferous odour less than 5% porosity in Sandstone.

Dip 0°.

Core No. 9: 3840' - 3852' recovered 11'5"

Coring Times: 33, 27, 25, 23, 32, 24, 26, 31, 33, 38, 82,  
66 min./ft.

Core was put into plastic bags and boxed immediately upon recovery. Description is from scattered core chips and observations made whilst boxing.

Top 9'5" interbeds and stringers Sandstone and Shale. Sandstone and Shale in scattered and interfingering lenses. Thin (maximum 6") beds of good Sandstone and good Shale, but majority of interval consists of scattered Shale and sand lenses.

Sandstone medium grained, medium to poor sorting, siliceous, occasional small vugs and beds of coarse grained Sandstone (exhibiting very slight porosity) scattered argillaceous grains throughout. Traces hydrocarbon in scattered porosity zones.

Shale dark grey to black, slightly micaceous, slightly pyritic, fissile in part, silty in part.

Parts of Sandstone, fine grained, coarse grained. These patches are random in general, some coarse grains appear to be in thin beds producing cracks in core and allowing mud to enter (evidence of porosity).

Bottom 2' mainly Sandstone, medium grained, medium to poor sorting with random vugs and patches (cracks) of coarser Sandstone producing slightly more porosity. Vugs do not appear interconnected (No Permeability?). Some minor Shales and argillaceous grains, coarse Sandstone appears to be slightly porous. Intergranular (solution) porosity not more than 5% residual hydrocarbon appears to stain these grains.

Overall interval appears tight but contains gas and possible condensate. Gas appears to come from slightly coarser grained vugs and patches (some thin beds). No noticeable fractures. Thin beds and vugs contain very little cement. Possibly correlate with porosity at 3920' in Mereenie No. 1.

Scattered worm tubes throughout core. Minor amount vertical.

Gas bubbling throughout interval. Good slight porosity Sandstone in bottom 2'. Slight fluorescence and cut throughout Sandstone. Fluorescence blue and golden. Possible slight porosity in small sand lenses (up to 5%). Trace CH in porosity zones. Petroliferous odour throughout. No evidence of good fractures.

Dip 0°.

Core No. 10: 3852' - 3855' recovered 2'1"

Coring Times: 30, 92, 110 min./ft.

Core was put into plastic bags and boxed immediately upon recovery. Following description is from small chip and observations made whilst boxing.

Core No. 10 (Continued)

Top 1'8" Sandstone, medium grained, medium to poor sorting, white, grey, siliceous. Minor streaks (very thin beds) and patches (vugs) of coarse Sandstone. Quartz angular to sub-rounded, clear, frosted. Minor amount argillaceous material throughout Sandstone. Minor amount scattered worm tubes throughout interval. Coarse Sandstone in streaks and patches contains residual hydrocarbon and has slight porosity (up to 8%). Thin streaks of coarse Sandstone filled with mud (evidence of porosity) and may be rubbed out with fingers.

Bottom 5" dark grey to black Shale, slightly micaceous, brittle.

Faint petroliferous odour. Good fluorescence and cut in Sandstone. Fluorescence bluish golden specks. Slight porosity (up to 8%) in coarse Sandstone. Gas bubbling from entire Sandstone interval.

Dip 0°.

Core No. 11: 4125' - 4131' recovered 6'

Coring Times: 24, 20, 39, 22, 31, 30 min./ft.

Core not described in detail, but put into plastic bags and boxed immediately after recovery. Following description is from scattered core chips and observations made whilst boxing.

6' Sandstone fine to medium grained (occasionally coarse) medium to poor sorting, grey, slight brownish. Sandstone clean, white to light grey, scattered argillaceous grains, finely quartzitic in part, faintly calcareous, siliceous, little cement, much dead hydrocarbon and slight solution porosity. Quartz is clear, frosted, angular to sub-rounded (some rounded grains). Porosity is in patches with some solution cracks (largely horizontal, some vertical?). Very slightly friable, some slight fracturing (random) along shaly planes. Gas bubbling throughout entire interval.

Scattered stylitic material and very minor interbeds and lenses dark grey, black, micaceous Shale.

Scattered fluorescence and cut. Much dead CH. Possibly some condensate bubbling 2' from bottom?. Faint petroliferous odour when broken.

Dip 0°.

Core No. 12: 4131' - 4139' recovered 7'6"

Coring Times: 30, 31, 18, 40, 37, 36, 35, 24 min./ft.

Core was not described in detail but was put into plastic bags and boxed immediately upon recovery.

Top 3' medium grained, medium sorting, grey, slightly brownish Sandstone, very minor interbeds and lenses Shale. Sandstone is siliceous slight trace glauconitic cement, scattered solution porosity is apparent in small solution cracks in Sandstone. Quartz is clear, frosted, slightly milky, angular to sub-rounded. Little cement in Sandstone.

2' dark grey, black Shale, micaceous, hard. Some scattered minor, medium grained Sandstone in Shale.

Bottom 4' fine to medium grained (some coarse grains) medium sorting grey slight brown Sandstone, small beds finely quartzitic Sandstone (quartzite), scattered argillaceous grains, evidence of slight to fair solution porosity. Trace pyrite, siliceous, little cementing material.

No evidence of good fractures but abundant horizontal and vertical solution cracks (slight porosity). Thin intervals in Sandstone show slight porosity. Very minor Shale except in middle 2'. Sandstone generally clean. Some minor scattered worm tubes in interval.

Gas bubbling throughout interval. Slight solution porosity (maximum 5%). Scattered fluorescence and cut (slight). Good petroliferous odour (freshly broken).

Dip 0°.

Core No. 13: 4273' - 4306' recovered 32'11"

Coring Times: 28, 25, 33, 27, 17, 14, 18, 13, 30, 20, 19, 12,  
19, 27, 17, 16, 17, 19, 18, 15, 25, 18, 21, 23,  
24, 21, 23, 31, 28, 35, 41, 43, 57 min./ft.

Core was not examined in detail but was put into plastic bags and boxed immediately upon recovery. Following description was made from scattered core chips and observations made whilst boxing.

Top 11' Sandstone, white to greyish brown to brown, siliceous, fine to medium grained with occasional thin lenses and patches of coarse grained Sandstone. Quartz angular to sub-rounded, well to medium sorting, slightly friable in part. Some poor intergranular and pinpoint porosity, (5 to 82). Minor thin lenses of fine grained Sandstone, argillaceous with black carbonaceous fragments and grains scattered throughout the interval in thin horizontal lenses and beds.

2" - 4284' - bed of conglomerate, greyish green, with particles (quartz) ranging in size from coarse grained sand to 1 pebble 2" x 1" (chert). Pebbles appear water worn with fitted surface some of which contain black carbonaceous material.

21'9" Upper six feet consists of white to light grey to greyish brown, fine grained Sandstone interbedded with greyish green and minor reddish silty Shale. The greyish green Shale is micaceous and appears to be chloritic. Sandstone is argillaceous in part with some greyish green chloritic cement. Current bedding occurs in the Sandstone within this interval. Sets differing up to 22°. Remainder of interval consists of interbeds of minor Sandstone (as in top of core) and silty Shale. Shale grades from red to green, is micaceous. Red Shale possibly haematitic?. Green possibly Chloritic?. Scattered worm tubes throughout silty section.

Bottom 3' (approx.) fine grained, quartzitic Sandstone ranging in colour from white to red, red colouring possibly due to haematitic cement. Minor thin lenses and streaks of red and green silt and Shale scattered throughout interval.

Overall interval tight. Slight porosity in upper Sandstone section.

Appears to be change from black to red Shales at 4284' (environmental change). Sandstone in general becoming slightly dirtier in lower sections (does not apply to quartzite).



Core No. 13 (Cont'd)

Gas bubbling throughout interval. Slight patchy fluorescence. Good petroliferous odour when broken.

Dip 0°.

Core No. 14: 4490' - 4501' recovered 11'

Coring Times: 18, 37, 41, 49, 40, 30, 32, 79, 43, 26, 33 min./ft.

Core was not described in detail but was put into plastic bags and boxed immediately upon recovery. Following description was from scattered core chips and observations made whilst boxing.

Top 5' Sandstone with minor interbeds reddish brown Shale, Sandstone is fine to medium grained, occasionally coarse, well to medium sorted, siliceous with some clay cement and haematite. Colour ranges from white through grey to brown and red-brown. Cementing material is faintly calcareous. Quartz is sub-angular to rounded. Scattered rounded coarse grains throughout Sandstone. Sandstone is slightly current bedded, some solution cracks and coarse grained blebs are scattered throughout interval. Shaly interbeds are of reddish-brown (partly silty). Possibly haematitic Shale.

3' mainly Sandstone, very minor Shale (as above). Sandstone is white (mainly) fine grained, clean, well sorted, some clay cement, scattered rectangular blebs of reddish Sandstone up to ¼" across occur. The quartz in these blebs is slightly coarser than in the white Sandstone.

Bottom 3' mainly Sandstone, small beds of white Sandstone with red blebs (as above) with beds of grey, red-brown Sandstone (as in Upper part of core). There are scattered patches of coarse grains throughout Sandstone but mainly it is fine to medium and well sorted with some clay cement.

There are scattered lenses and patches of red and green (partly silty). Shales scattered throughout the core bedding planes and wavy in outline. There are some scattered worm tubes throughout core. Shales may be partly glauconitic.

Gas bubbling throughout interval. Trace porosity scattered throughout core. Maximum 5%. Slight scattered golden fluorescence. Scattered solution porosity and rounded coarse grains.

Dip 0°.

Core No. 15: 4511' - 4533' recovered 22'

Coring Times: 25, 48, 47, 53, 70, 53, 40, 51, 60,  
37, 41, 60, 55, 42, 64, 40, 45, 33, 43, 45,  
62, 60 min./ft.

Core was not described in detail but was put into plastic containers and boxed immediately upon recovery. Following description is from isolated chips and observations made whilst boxing.

Core is Sandstone throughout with minor interbeds lenses and stringers of Shale.

Sandstone is fine to medium grained, well to medium sorted, white, brown, to brownish red. Occasional patches and isolated grains of coarse (usually rounded) quartz. Sandstone is siliceous, mainly clean, some clay cement. Quartz is clear, sub-angular to rounded, slight trace of current bedding (not well developed) slightly friable in part, hard.

Core No. 15 (Cont'd.)

Small patches, spots and beds of apparent red Sandstone is due to a red stain on the quartz grains. Staining is on the surface (maybe calcareous spots). Overall interval appears tight with some small patches having apparent porosity.

Shale varies from brown through red to green is silty in part, maybe haematitic, chloritic, and glauconitic. Most Shaly contacts are wavy and gas was bubbling quite well from some of them. Shale beds are rarely more than  $\frac{1}{2}$ " thick.

Sandstone overall colour varies from white to brown, is very even grained. Slight trace scattered worm tubes.

Gas bubbling throughout interval. Slight porosity. Maximum 5%. Faint petroliferous odour when broken. Very slight scattered golden fluorescence. Occasional coarse rounded quartz grains.

Dip 0°.

Core No. 16: 4668' - 4672' recovered 3'

Coring Times: 42, 57, 82, 79 min./ft.

Core description is taken from core washed. 2' of core was not washed but was boxed and bagged immediately upon recovery.

Sandstone grey, fine grained, medium sorting, quartzitic, extremely hard, calcareous, slight clay cement. Quartz angular to sub-rounded, some grains breaking with conchoidal fracture, stylitic material scattered throughout interval (generally horizontal). Very slight gas bubbling from stylitic contacts. Foetid smell when freshly broken, tight, minor scattered argillaceous grains, very slight scattered fluorescence, slight current bedding throughout, semi-conchoidal fracture in Sandstone, very minor interbeds, black, micaceous Shale.

Very slight gas bubbling. Very slight scattered fluorescence.

Dip 0°.

Core No. 17: 4695' - 4705' recovered 9'7"

Coring Times: 69, 70, 70, 70, 49, 19, 21, 20, 77, 89 min./ft.

NOTE: Due to pipe tally taken at total depth core depth altered to 4687' - 4697'. This for actual depth of Core No. 17. To avoid confusion, sample depth and footage for bit runs etc. remains unaltered.

Part of core examined in detail on location; remainder was put into plastic bags and boxed immediately upon recovery.

Top 3' mainly Sandstone, grey, fine grained, slightly current bedded. Quartz angular to sub-rounded, quartzitic, calcareous, possibly some clay cement. Sandstone breaks across sand grains, very minor black micaceous Shale along current bedding planes.

2' Sandstone dark grey, medium to coarse grained, poor to medium sorting. Quartz is sub-angular to sub-rounded, quartzitic, calcareous, Sandstone breaks across quartz grains. Possibly some clay cement, possibly some heavy mineral around quartz grains i.e. in form of dark grey, black, stain on quartz. Some scattered gypsum (anhydrite). Rhombic crystals through Sandstone.

Core No. 17 (Cont'd.)

3' Sandstone (breaks around quartz grains) mainly fine to medium grained, grey, brownish, slightly softer than above, hard. Horizontal stylolite through Sandstone. Sandstone is medium sorted, quartz is sub-angular to rounded, not as well cemented as above.

Bottom 2' hard, white grey, quartzitic Sandstone, fine grained, medium sorting, calcareous, minor beds black Shale, some stylolites. Sandstone is extremely hard (breaks across quartz grains). Quartz sub-angular to sub-rounded.

Overall interval is tight and hard, minor patches glauconitic Shale and grains of glauconite scattered throughout interval.

No gas. Foetid smell when freshly broken. Gas bubbling from Shale and stylolitic contacts. Very slight scattered golden fluorescence. Some blue fluorescence.

Dip 0°.

## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: July 14/64

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with mercury at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating flowing media. (ii) Residual oil and water saturations were determined using Sozhet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	1	2603'1" 2603'5"	Sandstone - grey, hard, with shale and silty streaks	6.7	7.2	Nil	Nil	2.49	2.67	20	Nil	Nil	Nil	Nil	Nil	
"	2A	2605'11" 2606' 2"	Sandstone as above	6.9	7.6	"	"	2.47	2.67	7	"	"	"	"	"	
"	2B	2609'11" 2610' 3"	Sandstone - light grey, very fine grain, silty.	10.5	9.7	"	"	2.37	2.64	12	"	"	"	"	"	
"	2C	2610'7" 2610'11"	Sandstone as above with silty and clayey matrix.	9.8	9.3	"	"	2.41	2.65	7	"	"	"	"	"	
"	2D	2614'3" 2614'5"	Sandstone - grey to white, very fine grain.	8.3	6.5	"	"	2.45	2.64	5	"	"	"	"	"	
"	3A	2643'7" 2644'4"	Sandstone - as above with shale laminae and traces fractures.	12.5	12.6	"	"	2.32	2.66	6	"	"	"	"	Faint	
"	3B	2645'6" 2646'1"	Sandstone - light grey, very fine grain, clean.	5.7	9.6	"	"	2.48	2.64	30	"	"	"	"	Faint	
"	3C	2646'10" 2647'1"	Sandstone - as above, traces shale inclusions.	9.2	10.3	"	"	2.40	2.65	8	"	"	"	"	Faint	

Additional Information:

inclusions.

General File No. 62/399  
Well File No. 64/4033

## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: July 17/64

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with <sup>air</sup>mercury at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Sozhet type apparatus. (iii) Acetone test precipitates and presence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Merenie No. 1	3D	2649'1" 2649'4"	Sandstone - light grey, very fine grain, silt and shale laminae.	5.5	5.9	Nil	Nil	2.52	2.67	10	Nil	Nil	Nil	Nil	Trace	
"	3E	2650'5" 2650'9"	Sandstone - grey, very fine grain, slightly silty.	5.8	10.5	Nil	Nil	2.42	2.64	25	Nil	Nil	Nil	Nil	Trace	
"	3F	2651'9" 2652'1"	Sandstone as above with traces of shale laminae.	11.7	11.6	Nil	2.9	2.32	2.64	22	Nil	Nil	Trace	Nil	Trace	
"	3G	2653'7" 2654'	Sandstone - white, very fine grain, clean.	11.1	11.6	2.0	2.9	2.32	2.63	11	Nil	Nil	Nil	Nil	Trace	
"	3H	2654'3" 2655'2"	Sandstone as above	13.9	11.9	Nil	2.7	2.28	2.63	25	Nil	Nil	Nil	Nil	Trace	
"	3I	2657' 2657'4"	Sandstone as above	10.1	9.0	Nil	Nil	2.37	2.63	28	Nil	Nil	Nil	Nil	Trace	
"	3J	2659'11" 2660'3"	Sandstone as above with traces shale and siltstone inclusions.	10.9	10.2	Nil	Nil	2.36	2.64	28	Nil	Nil	Nil	Nil	Trace	
"	3K	2660'7" 2660'10"	Sandstone, as above.	7.9	8.3	Nil	Nil	2.42	2.65	6	Nil	Nil	Nil	Nil	Trace	

Additional Information:

General File No. 62/399

Well File No. 64/4033

Date: July 16/64

CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with <sup>air</sup>mercury at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Sozhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	3L	2662'11" 2663' 8"	Sandstone - grey, irregular silt and shale laminae	6.6	4.8	Nil	Nil	2.52	2.67	18	Nil	Nil	Nil	Nil	Trace	
"	3M	2665'3" 2665'11"	Sandstone, light grey, very fine grain, traces shaly laminae	10.1	10.5	7.5	4.2	2.36	2.64	7	Nil	Nil	Trace	Nil	Trace	

Additional Information:

General File No. 62/399  
Well File No. 64/4033

## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: 25th September, 1964.

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with <sup>air</sup>mercury at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparatus Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
EAST MEREENIE NO. 1	4	2668' 7" 2668' 11"	Sandstone and shale	7	8	Nil	Nil	2.47	2.67	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	4	2675' 4"	Shale with sandstone lenses	2	7	"	"	2.60	2.70	19	Nil	Nil	Nil	Nil	Faint trace	Nil
"	4	2675' 11" 2676' 4½"	Shale, siltstone and sandstone	2	3	"	"	2.72	2.79	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Rare whitish in sandstone.
"	4	2679' 7" 2680' 2"	Sandstone and shale	7	7	"	"	2.49	2.68	5	Nil	Nil	Nil	Nil	Faint trace	Nil
"	4	2682' 11"	Siltstone, sandstone & shale	6	5	"	"	2.55	2.69	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Faint blue glow.
"	4	2686' 9" 2687' 4"	Sandstone and shale.	4	4	"	1*	2.64	2.73	80	Nil	Nil	Nil	Nil	Faint trace	Nil
"	4	2689' 11½" 2690' 4"	as above	3	4	"	Nil	2.60	2.70	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	4	2693' 1½" 2693' 6½"	Shale and siltstone	3+			N.D.	2.67	2.75	100	Nil	Nil	Nil	Nil	Faint trace	Nil

Additional Information:

\* Bedding plane fracture visible.

+ No plug because of splitting along bedding planes. Piece only used.

General File No. 62/399

Well File No. 64/4033

Date: 25th SEPTEMBER, 1964.

CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with ~~mercury~~ <sup>mercury</sup> at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	4	2696' 5" 2697' 0"	Siltstone and shale	6	7	Nil	Nil	2.54	2.71	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	4	2699' 8½" 2700' 0"	Shale, siltstone and sandstone	3	3	"	"	2.66	2.73	"	"	"	"	"	"	Nil
East Mereenie No. 1	5	3105' 9" 3106' 2"	Shale, sandstone and siltstone	4	12	Nil	Nil	2.53	2.72	22	Nil	Nil	Nil	Nil	Faint trace	Faint blue glow.
"	5	3109' 7" 3109' 10"	Sandstone	6	6	"	"	2.52	2.67	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	5	3111' 8" 3112' 1"	Sandstone	5	6	"	"	2.54	2.68	11	Nil	Nil	Nil	Nil	Faint trace	Nil
"	5	3117' 2" 3117' 10½"	Siltstone and shale	12	4	"	3*	2.49	2.72	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	5	3119' 3" 3119' 8"	Siltstone, shale, sandstone lenses	12	11	"	Nil	2.39	2.69	28	Nil	Nil	Nil	Nil	Faint trace	Nil

Additional Information: \* Bedding plane fracture visible.

General File No. 62/399

Well File No.

64/4033



## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: 25th SEPTEMBER, 1964.

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with ~~mercury~~ <sup>air</sup> at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	5	3122' 2" 3122' 8½"	Sandstone	6	6	Nil	Nil	2.55	2.71	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Yellow-white speckled.
"	5	3128' 3" 3128' 9"	Siltstone	9	5	"	"	2.50	2.68	"	"	"	"	"	"	Nil
"	5	3131' 10½" 3132' 4"	Siltstone	12	12	"	"	2.39	2.72	"	"	"	"	"	"	Nil
"	5	3133' 9½" 3134' 4"	Sandstone siltstone & shale	10	7	"	3*	2.49	2.71	25	Nil	Nil	Nil	Nil	Faint trace	Nil
"	5	3139' 10½" 3140' 4"	Shale with sandstone lenses	10	12	"	Nil	2.43	2.72	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Dull bluish glow in sandstone
"	5	3143' 0" 3143' 4"	Sandstone and shale	5	5	"	"	2.54	2.67	"	"	"	"	"	"	Whitish-yellow speckled
"	5	3145' 11" 3146' 7"	Siltstone	14	14	"	"	2.31	2.67	17	Nil	Nil	Nil	Nil	Faint trace	Rare bluish patches.
"	5	3149' 8½" 3150' 3½"	Shale, sandstone and siltstone	6	9	"	"	2.53	2.72	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil

Additional Information: \* Bedding plane fracture visible

General File No. 62/399  
Well File No. 64/4033

## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: 25th SEPTEMBER 1964

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with <sup>air</sup>mercury at 70 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	5	3153' 11" 3154' 3 1/2"	Shale with sandstone lenses	2	3	Nil	Nil	2.63	2.68	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	5	3155' 8" 3156' 2"	Siltstone sandstone & shale	8	10	"	"	2.44	2.67	27	Nil	Nil	Nil	Nil	Trace	Nil
East Mereenie No. 1	6	3458' 3 1/2" 3458' 9"	Shale and sandstone siliceous	2	3	Nil	2*	2.65	2.71	18	Trace only	Pale yellow	Fair	Pale yellow	Strong	Yellowish-white in sandstone.
"	6	3461' 1 1/2" 3461' 8"	Shale	2	1	"	Nil	2.62	2.66	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	6	3465' 11" 3466' 3 1/2"	Shale	1	1	"	"	2.66	2.68	"	"	"	"	"	"	Nil
"	6	3467' 10" 3468' 2"	Shale				N.D. +	2.66	2.69	"	"	"	"	"	"	Nil
"	6	3471' 11 1/2" 3472' 6"	Shale	1	2	Nil	Nil	2.74	2.79	100	Trace only	Trace	Fair	Nil	Fair	Rare yellow specks.

Additional Information:

- \* Fracture visible.
- + Friable, no plugs. Piece only used.

General File No. 62/399  
Well File No. 64/4033

## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: 25th SEPTEMBER, 1964.

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with <sup>air</sup> ~~mercury~~ at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	7	3809' 10 $\frac{1}{2}$ " 3810' 4 $\frac{1}{2}$ "	Shale and siltstone	5	4	Nil	Nil	2.59	2.70	45	Nil	Nil	Nil	Nil	Trace	Dull blue glow.
"	7	3813' 1" 3813' 8"	Shale and siltstone	7	7	"	"	2.54	2.72	35	Nil	"	"	"	Faint trace	Nil
"	7	3815' 3" 3815' 9"	Shale and siltstone	7	6	"	"	2.54	2.75	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	7	3817' 7" 3818' 0 $\frac{1}{2}$ "	Shale and siltstone	1			N.D.	2.69	2.71	"	"	"	"	"	"	Nil
"	7	3823' 3" 3823' 9"	Sandstone	9	14	17	814	2.40	2.69	Nil	Nil	Nil	Nil	Trace	Fair	Rare yellow spots.

Additional Information:

General File No. 62/399  
Well File No. 64/4033

Date: 21st OCTOBER, 1964.

CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with mercury at 750<sup>30</sup> p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Sozhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	8	3826' 6"	Sandstone	12	9	417	53	2.41	2.68	Nil	Nil	Trace	Nil	Pale Yellow	Fair	Rare dull blue spots.
"	8	3828' 0"	Sandstone	12	13	429	941	2.33	2.67	"	"	"	"	"	"	Rare dull yellow and blue specks.
"	9	3840' 2"	Shale and siltstone	6	4	Nil	Nil	2.61	2.76	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	9	3844' 2" 3844' 11"	Shale and sandstone	7	6	"	"	2.56	2.74	"	"	"	"	"	"	Dull grey yellow in sst.
"	9	3847' 3" 3847' 11"	Shale and sandstone	5	7	"	"	2.56	2.71	"	"	"	"	"	"	Nil
"	9	3849' 1" 3849' 10"	Sandstone and shale.	5	5	"	2	2.53	2.66	Nil	Nil	Nil	Nil	Trace	Fair	Bluish glow
"	10	3852' 0" 3853' 5"	Sandstone and shale.	6	8	2	5	2.47	2.67	"	"	Trace	Nil	Yellow	Fair	Nil
"	11	4125' 0" 4125' 10"	Sandstone	N.D.	9	N.D.	39	2.41	2.66	"	"	"	"	Pale Yellow	Fair	Nil

Additional Information:

General File No. 62/399

Well File No. 64/4033

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: 21st OCTOBER, 1964.

CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with mercury at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	11	4126' 5" 4127' 0"	Sandstone	5	6	Nil	12	2.51	2.66	Nil	Nil	Nil	Nil	Trace	Fair	Rare orange and yellow specks.
"	11	4128' 5"	Sandstone and siltstone	7	13	Nil	1	2.39	2.66	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Blue in patches.
"	11	4129' 4130'	Sandstone	9	9	2	2	2.42	2.66	Nil	Nil	Nil	Nil	Trace	Fair	Rare yellow specks.
"	12	4132' 4133'	Sandstone	3	5	Nil	Nil	2.55	2.66	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pale blue.
"	12	4135' 4136'	Sandstone	9	10	8	22	2.40	2.65	Nil	Nil	Nil	Nil	Trace	Fair	Rare yellow specks
"	12	4138'	Sandstone	9	8	3	15	2.43	2.65	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	As above
"	13	4273' 3"	Sandstone	40	10	38	30	2.38	2.65	Nil	Nil	Nil	Nil	Yellow	Fair	As above
"	13	4275'	Sandstone	11	11	16	56	2.36	2.66	Nil	Nil	Nil	Nil	Yellow	Fair	As above

Additional Information:

General File No. 62/399  
Well File No. 64/4033

## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: 29th October, 1964

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with ~~mercury~~ <sup>air</sup> at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks Fluorescence of freshly broken core.
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Merreenie No. 1	13	4276'4" 4276'9"	Sandstone	11	11	59	53	2.36	2.65	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Very rare whitish yellow spots
"	13	4284'5" 4284'10"	Sandstone siltstone and shale	8	8	Nil	Nil	2.47	2.69	10	Nil	Trace	Nil	Pale yellow	Fair	Whitish yellow in sandstone
"	13	4287'1"	Sandstone	4	5	"	"	2.59	2.71	22	"	Nil	"	Nil	Nil	Nil
"	13	4289'2"	Sandstone	6	6	"	"	2.50	2.65	Nil	"	Trace	"	Pale yellow	Fair	Speckled bright yellow
"	13	4295'	Sandstone	3	5	"	1	2.59	2.69	"	"	Nil	"	Nil	Nil	Very rare yellow specks
"	13	4298'	Sandstone	7	5	"	Nil	2.52	2.68	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Speckled yellow in patches
"	13	4299'7"	Sandstone	7	N.D.	"	N.D.	2.47	2.66	7	Nil	Nil	Nil	Nil	Nil	Speckled yellow and orange in patches
"	14	4491'	Sandstone	8	5	1	Nil	2.48	2.66	Nil	"	"	"	"	Fair	Nil

Additional Information:

General File No. 62/399  
Well File No. 64/4033

Date: 29th October, 1964

CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with <sup>air</sup>mercury at 750 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Sozhet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Apparent Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	14	4493'	Sandstone	7	10	Nil	2	2.45	2.67	10	Nil	Nil	Nil	Nil	Trace	Very rare yellow specks
"	14	4498'3"	Sandstone	7	10	"	1	2.44	2.67	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	15	4513'3"	Sandstone	5	6	"	Nil	2.52	2.66	Nil	Nil	Nil	Nil	Nil	Trace	Speckled yellow and orange
"	15	4517'	Sandstone	6	6	"	"	2.50	2.66	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil
"	15	4525'	Sandstone	9	4	"	"	2.49	2.66	4	Nil	Trace	Nil	Pale yellow	Fair	Nil
"	15	4526'9" 4527'0"	Sandstone	9	11	"	"	2.40	2.67	3	Nil	Trace	Nil	Pale yellow	Fair	Nil
"	16	INSUFFICIENT CORE SAMPLE FOR ANALYSIS														
"	17	4687'8"	Sandstone	3	3	Nil	Nil	2.59	2.67	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Nil

Additional Information:

General File No. 62/399  
Well File No. 64/4033

## Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra.

Date: 29th October 1964

## CORE ANALYSIS RESULTS

Notes:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V & H) cut at right angles from the core or sample. Ruska porosimeter and permeameter were used, with <sup>air</sup> pressure at 150 p.s.i.g. and dry nitrogen, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates and fluorescence of solvent after extraction are recorded as, nil, trace, fair, strong or very strong.

Well or Area	Core or Sample No.	Depth in ft. From:- To:-	Lithology	Effective Porosity in % by Vol.		Absolute Permeability in Millidarcys		Avg. density in gms./cc.		Fluid Saturation in % Pore Space		Acetone Test		Solvent after Extraction		Remarks
				V	H	V	H	Dry Bulk	Grain	Water	Oil	Colour	Precipitate	Colour	Fluor.	
East Mereenie No. 1	17	4690' 4691'	Sandstone with coaly material	9	10	Nil	16	2.41	2.67	6	Nil	Nil	Nil	Nil	Trace	Blue
"	17	4691' 4692'	Sandstone	9	6	5	Nil	2.47	2.67	3	Nil	Nil	Nil	Nil	Trace	Dull bluish

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COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

TELEPHONE J4261

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BUREAU OF MINERAL RESOURCES.

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A.C.T.

62/399

In Reply Please Quote.....

- 8 DEC 1964

7 DEC 1964

The Operations Manager,  
Exoil (N.T.) N.L.,  
Box 281 P, G.P.O.,  
BRISBANE. QLD.

Dear Sir,

East Mereenie No. 1

Enclosed for your information are the results of the porosity, permeability and density determinations by the "whole core technique" on samples of cores Nos. 7, 8, 9, 10, 11, 12, 13, 15 and 17.

Porosities were determined by the gas expansion technique, and permeabilities in a rubber-sleeved Hassler cell. The three permeability values shown in the tabulation were determined from one test while flowing air in the direction of the axis of a core sample (vertical) and from two tests while flowing air in two directions respectively at right angle to each other and perpendicular to the core axis (horizontal positions 1 and 2). Where bedding or lamination were discernible in a core sample the horizontal permeability (position 1) is that determined in the direction of the strike and the horizontal permeability of position 2 is that in the direction of the dip.

Yours faithfully,

*J. M. Rayner*

(J. M. RAYNER)  
Director.

WHOLE CORE POROSITY AND PERMEABILITY ANALYSIS

Well No. Number	Core Number	Length of Core Sample Tested (cm)	Depth (Feet)	Lithology	Porosity (% Bulk Volume)	Density (Grams/cc)		Dry Air Permeability (Millidarcy)			Remarks
						Dry Bulk	Apparent Grain	Horizontal Position 1	Horizontal Position 2	Vertical	
East Mereenie No. 1.	7	16.2	3824	Fine-grain, grey sandstone	10.6	2.37	2.65	315	298	1350	
	7	15.23	3825	"	8.7	2.42	2.65	110	109	21	
	8	8.49	3829	"	11.6	2.34	2.64	274	312	465	Vertical fracture
	9	12.2	3850	Very shaly, silty pyritic sandstone	3.1	2.66	2.72	0	0	0	
	10	10.49	3853	Dark grey, very fine-grain, sandstone	6.6	2.46	2.64	2.8	2.5	2.1	
	11	8.78	4125	Very fine to fine-grain, grey sandstone	4.7	2.52	2.64	3.7	2.6	0.2	
	11	12.65	4128	Dense, hard, very fine-grain, grey sandstone	1.9	2.58	2.64	0	0	0	
	12	10.5	4132	White-light grey, very fine-grain sandstone	3.8	2.53	2.64	0	0	0	
	12	7.61	4134	Light grey, slightly pyritic, fine-grain sandstone	6.1	2.48	2.64	2.8	2.2	0.4	
	12	8.38	4137	Light grey, very fine-grain sandstone	9.1	2.39	2.63	8.7	9.1	4.4	Trace horizontal fractures
	13	11.39	4274	Fine to medium-grain, grey sandstone	9.5	2.37	2.63	37	33	11	
	13	11.51	4279	Very fine-grain, grey sandstone	7.7	2.42	2.63	4.7	4.3	4.0	
	13	7.46	4281	"	6.9	2.44	2.63	1.3	0.4	0.5	Trace vertical fractures
	13	9.33	4293	"	7.6	2.42	2.63	3.1	2.8	1.8	
	13	11.7	4302	Reddish grey, very fine-grain sandstone	2.5	2.57	2.64	0	0	0	
	15	17.32	4528	Rust-spotted, very fine-grain light grey sandstone	0.7	2.61	2.64	0	0	0	
	17	12.29	4690	Fine-grain grey sandstone	6.9	2.45	2.63	10.9	9.8	4.4	

106G/48/39  
(151WT/1)EAST MEREENIE No.1 CORE 6, 3470 FEET.

A two-inch section of core from Exoil et al's East Mereenie No.1 Well contains fossils in abundance. An asaphid trilobite belonging to an undescribed genus (aff. Ptychopyge sp.2.) is the commonest fossil. Other fossils are: a dichograptid graptolite, (indet.), an articulate brachiopod (indet.), an ostracod (undescribed), and the machaeridian Plumulites.

The trilobite and ostracod are characteristic of the early Larapintine Horn Valley Formation, which also contains dichograptids (including Didmograptus cf. patulus). This part of the East Mereenie sequence may therefore be assigned to that Formation, which is dated as late lower Ordovician (Arenigian).

The core is of particular interest for two reasons. First, it permits a study of the siltstone part of the Formation, which, though constituting the bulk of the formation, is generally poorly exposed at the surface. Secondly, the trilobite aff. Ptychopyge sp.2. is one of the rarer elements of the Horn Valley fauna and is poorly preserved in the superficial limestone. This material elucidates a number of details of its morphology.

The opportunity of examining this core from the non-subsidized part of the well is greatly appreciated.

J. Gilbert-Tomlinson.

9th July, 1964.

Bureau of Mineral Resources,  
Geological Branch,  
CANBERRA. A.C.T.

## GAS ANALYSIS BY GAS CHROMATOGRAPHY

WELL : EAST MERRENIÉ NO. 1

SAMPLE COMPONENT	D.S.T. 1 DEPTH : 2578'-2703'	D.S.T. 2 DEPTH : 3079'-3155'	
H, He	} Approx. 4*%	NIL	
O + Ar		NIL	
N		1.7 %	
CO		N.Dc.	
CO <sub>2</sub>		0.26%	TRACE
METHANE		57.4 %	65.9 %
ETHANE		18.0 %	22.6 %
PROPANE		10.2 %	6.7 %
ISOBUTANE		1.68%	0.69%
BUTANE		4.2 %	1.57%
ISOPENTANE	1.31%	0.46%	
PENTANE	1.48%	0.37%	
ISOHEXANE	0.51%	} TRACES	
3 METHYL PENTANE	0.17%		
HEXANE	0.62%		
OTHERS	TRACE		

NOTES: N.Dc. - Not detected

\*) Unable to determine these components due to accidental loss of sample.

Analyses - by J. Puchel

GAS ANALYSIS  
BY GAS CHROMATOGRAPHY

WELL: EAST HERBEMIE No.1

Sample Component	D.S.T. 5 Depth: 3669'-3776'	D.S.T. 6 Depth: 3774'-3825'	D.S.T. 6 Depth: 3824'-	D.S.T. 6 Depth: 3774'-3825'	D.S.T. 7 Depth: 3824'-3852'	D.S.T. 8 Depth: 3851'-3885'	D.S.T. 9 Depth: 3885'-3945'	D.S.T. 11 Depth: 4115'-4139'	D.S.T. 12 Depth: 4140'-4180'	D.S.T. 13 Depth: 4245'-4273'	D.S.T. 14 Depth: 4272-4306'	D.S.T. 16 Depth: 4450'-4501'
H <sub>2</sub> , He	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
O <sub>2</sub> + Ar	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
N <sub>2</sub>	7.6%	7.5%	8.3%	7.5%	8.3%	7.95%	7.96%	8.05%	8.30%	10.3%	11.2%	17.2%
CO	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
CO <sub>2</sub>	0.26%	0.26%	0.29%	0.26%	0.29%	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Methane	72.6%	72.3%	72.2%	72.3%	72.2%	72.9%	72.3%	72.1%	70.5%	72.7%	70.6%	72.0%
Eth.	13.0%	12.9%	12.4%	12.9%	12.4%	12.6%	13.0%	12.8%	13.7%	11.5%	11.7%	6.9%
Propane	4.3%	4.4%	4.6%	4.4%	4.6%	4.2%	4.3%	4.2%	4.7%	4.2%	4.0%	2.2%
Isobutane	0.39%	0.43%	0.38%	0.43%	0.38%	0.43%	0.42%	0.40%	0.50%	0.43%	0.44%	0.21%
Butane	1.02%	1.22%	1.09%	1.22%	1.09%	1.17%	1.15%	1.06%	1.25%	1.05%	1.10%	0.70%
Isopentane	0.23%	0.29%	0.22%	0.29%	0.22%	0.26%	0.25%	0.25%	0.28%	0.24%	0.25%	0.20%
pentane	0.28%	0.37%	0.28%	0.37%	0.28%	0.34%	0.33%	0.33%	0.37%	0.30%	0.31%	0.24%
2, 2 Dimethylbutane } 2, 3 Dimethylbutane }	Trace	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
3 Methylpentane	0.020%	0.04%	0.05%	0.04%	0.05%	0.075%	0.072%	0.064%	0.10%	0.072%	0.071%	0.076%
Isobexane	0.065%	0.09%	0.065%	0.09%	0.065%	0.051%	0.052%	0.043%	0.044%	0.034%	0.030%	0.041%
Hexane	0.120%	0.10%	0.10%	0.10%	0.10%	0.137%	0.119%	0.149%	0.132%	0.096%	0.12%	0.10%
H <sub>2</sub> S	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Calculated total calorific value at 14.7 p.s.i. and 80°F (dry basis) in B.t.u./cu. ft.	1154	1165	1148	1165	1148	1159	1163	1150	1176	1120	1109	964

GAS ANALYSIS

EAST LEBRENNIE NO. 1

Component	Well Head No. 1 140 P.S.I. Before Surface Choke	Well Head No. 2 140 P.S.I.	Dry Gas No. 1 90 P.S.I. From Separator Gas Line	Dry Gas No. 2 90 P.S.I. From Separator Gas Line	Condensate No. 1 90 P.S.I. From Separator Oil Line
H <sub>2</sub>	N.D.	N.D.	N.D.	N.D.	
He	Trace	Trace	Trace	Trace	
O + Ar	Trace	Trace	Trace	Trace	0.39%
N <sub>2</sub>	7.94%	8.25%	9.9%	8.8%	
CO	N.D.	N.D.	N.D.	N.D.	
CO <sub>2</sub>	Nil	Nil	Nil	Nil	Nil
Methane	69.0%	71.5%	72.5%	73.5%	1.40%
Ethane	12.45%	11.9%	11.9%	12.3%	7.11%
Unidentifiables)A:					.19%
)B:					.14%
Propane	5.53%	4.7%	4.05%	4.0%	13.75%
Isobutane	0.81%	0.59%	0.37%	0.33%	4.50%
Butane	2.36%	1.63%	0.87%	0.85%	17.6%
Isopentane	0.63%	0.47%	0.165%	0.155%	8.05%
Pentane	0.735%	0.57%	0.180%	0.160%	17.7%
Neohexane	0.015%	Trace			.17%
2 Methylbutanes	0.180%	0.115%	Trace Each	Trace Each	4.0%
3 Methylpentane	0.145%	0.070%			2.13%
Hexane	0.175%	0.140%			11.75%
Trimethylbutanes + Methylcyclohexane					.19%
Methylhexanes + Cyclohexanes + Dimethylpentanes					3.98%
Heptane					3.98%
Trimethylpentanes + Heptanes to Nonanes including 4 unidentified fractions					3.07%
H <sub>2</sub> S	N.D.	N.D.	N.D.	N.D.	N.D.

N.D. = Not Determined

AN427/65

1.

ANALYSIS OF SAMPLE OF LIQUID CONDENSATE.

The sample cylinder contained both liquid and gas at approximately 60lbs per square inch pressure.

No quantitative analysis was made on the gas. Its qualitative composition was shown by gas chromatographic examination to be generally similar to the gas samples previously reported except that the traces of higher molecular weight hydrocarbons were present in slightly larger amounts.

The condensate analysis was made on the liquid after removal from the cylinder. Gases dissolved in the liquid under pressure were liberated when the pressure was removed and were not included in the liquid analysed.

Description:

Clear water white highly mobile volatile liquid with very slight pale blue fluorescence under ultra violet light.

Flash Point: Below 20°C

Density: 0.662 at 15°C

Olefines plus Aromatics:

Due to the high volatility of the liquid there was a loss in volume during the determination of 2%. However the lack of colour change in the sulphating acid mixture used indicates olefines plus aromatics, probably less than 0.5%.

Distillation Range:

Weight Sample in	66.2 grams	15°C
First drop	20°C	
5% recovered	31	
10% "	41.5	
20% "	54.5	
30% "	65	
40% "	75	
50% "	87	
60% "	96	
70% "	115	
80% "	141	
90% "	195	
Last drop	209	
Weight distillate	60.5 grams	
Weight residue	1.8 grams	
Recovery	94%	

AN164/65

1.

## ANALYSIS

East Mereenie  
 No. 1 D.S.F. No. 14  
 4272' - 4306'  
 150 psi

Natural Gas

Density relative to air		0.746
Nitrogen plus Oxygen		11 %
Carbon Dioxide	CO <sub>2</sub>	N.D.
Methane	CH <sub>4</sub>	70 %
Ethane	C <sub>2</sub> H <sub>6</sub>	12.6 %
Propane	C <sub>3</sub> H <sub>8</sub>	4.8 %
i-Butane	C <sub>4</sub> H <sub>10</sub>	0.37 %
n-Butane	C <sub>4</sub> H <sub>10</sub>	0.85 %
i-Pentane	C <sub>5</sub> H <sub>12</sub>	0.20 %
n-Pentane	C <sub>5</sub> H <sub>12</sub>	0.25 %
X Di-Methyl Butane	C <sub>6</sub> H <sub>14</sub>	50 ppm
X 2 Methyl Pentane	C <sub>6</sub> H <sub>14</sub>	600 ppm
X 3 Methyl Pentane	C <sub>6</sub> H <sub>14</sub>	280 ppm
n-Hexane	C <sub>6</sub> H <sub>14</sub>	1000 ppm
i-Heptanes	C <sub>7</sub> H <sub>16</sub>	450 ppm
n-Heptane	C <sub>7</sub> H <sub>16</sub>	350 ppm
i-Octanes	C <sub>8</sub> H <sub>18</sub>	200 ppm
n-Octane	C <sub>8</sub> H <sub>18</sub>	100 ppm
C <sub>9</sub> plus Hydrocarbons		100 ppm

N.D. indicates Not Detected

## Analysis by Gas Chromatography

X The accurate identification of this constituent is not certain because of the lack of reference standard but from the relative position of the elutions, the assumed identity is most probable.

km:l



AN306/65

1.

## ANALYSIS

East Mereenie  
No. 1 D.S.T. No.16  
4450' - 4501'

Natural Gas

Density relative to air		0.738
Nitrogen plus Oxygen		17 %
Carbon Dioxide	CO <sub>2</sub>	N.D.
Methane	CH <sub>4</sub>	69 %
Ethane	C <sub>2</sub> H <sub>6</sub>	10 %
Propane	C <sub>3</sub> H <sub>8</sub>	2.8 %
i-Butane	C <sub>4</sub> H <sub>10</sub>	0.35 %
n-Butane	C <sub>4</sub> H <sub>10</sub>	0.75 %
i-Pentane	C <sub>5</sub> H <sub>12</sub>	0.18 %
n-Pentane	C <sub>5</sub> H <sub>12</sub>	0.20 %
* Di-Methyl Butane	C <sub>6</sub> H <sub>14</sub>	60 ppm
* 2 Methyl Pentane	C <sub>6</sub> H <sub>14</sub>	600 ppm
* 3 Methyl Pentane	C <sub>6</sub> H <sub>14</sub>	320 ppm
n-Hexane	C <sub>6</sub> H <sub>14</sub>	900 ppm
i-Heptanes	C <sub>7</sub> H <sub>16</sub>	600 ppm
n-Heptane	C <sub>7</sub> H <sub>16</sub>	380 ppm
i-Octanes	C <sub>8</sub> H <sub>18</sub>	250 ppm
n-Octane	C <sub>8</sub> H <sub>18</sub>	130 ppm
C <sub>9</sub> plus Hydrocarbons		100 ppm

N.D. indicates Not Detected

## Analysis by Gas Chromatography

\* The accurate identification of this constituent is not certain because of the lack of reference standard but from the relative position of the elutions, the assumed identity is most probable.

km:1

SCHLUMBERGER SEACO INC.

To EXCIL

July 8th 1964.

Interpretation of East Mereenie No. 1

ES (3), MLC (3) and SL (2) recorded on July 6th/7th 1964.

Rm = 0.41 at 151°F  
Rmf = 0.26 at "  
Rmc = 0.85 " "

SSP = - 40mV  
RW = 0.09 at BHT

The ratio  $R_{xo}/R_t$  has been estimated from R16" and R64" after bore hole correction. Chart 4-2 (D-4) gives the lower limits for water saturation, based on  $R_w$  derived from the SP curve. Higher values for  $R_w$  would give more pessimistic water saturations.

A Gamma Ray would be useful to evaluate the shaliness of the formation.

For the porosity calculation from the Sonic Log, we assumed a sandstone matrix of  $V_m = 18,000$ . Should this value increase, the porosity would increase. Microlog has been used only for detection of permeable zone. No quantitative interpretation with the Microlog is reliable, if the porosities are less than 15%. A Microlaterolog would be recommended for better evaluation of  $R_{xo}$ .

We used the method of limits for determination of  $R_t$ . Thin beds make it impossible to use the lateral readings of the ES. Laterolog would be preferable for the determination of the  $R_t$ .



Interpretation of East Meereenie No.1

Logs available: ES, MLC and SL.

Rm = .49 at 156°F  
Rmf = .27 at "  
Rmc = .9 " "

SSP = - 65 mV; corresponds to Rw = 0.05

The MLC gives a rather constant value of Rxo 150.  
Assuming a residual gas saturation of 20% in the flushed zone this would give porosities  $\phi < 10\%$

Porosities can be derived from the SL using a matrix transit time of 45 ms/ft (22000ft/sec). This is the transit time in the tight bottom zone, where porosities were assumed to be almost zero.

Water saturations have been calculated from R16" and R64" with the method of limits. (The lateral curve can not be used due to the shoulder effects):

4140"

R16"=98; R64"=250; d=8 $\frac{3}{4}$ ";  
R16" corr=250; R64" corr = 160;  
R64" corr < R16" corr therefore Rt < R64" corr and Ri  $\geq$  R16" corr.  
 $\frac{Rxo}{Rt} \geq \frac{R16" \text{ corr}}{R64" \text{ corr}} = 1.56$

With Rmf/Rw = 5.4 we get from chart 4-2 SW  $\geq$  42%

4435"

R16" = 30; R64" = 43; d = 8 $\frac{3}{4}$ "  
R16" corr=35; R64" corr = 28;

Similar conclusions lead to  $\frac{Rxo}{Rt} \geq 1.25$

With Rmf/Rw = 5.4 chart 4-2 gives SW  $>$  40%

Conclusion:

There seems to be a fairly constant water saturation of about 40% below 4100'. Variations of resistivity readings can be explained by changes of porosity, as indicated by the SL ( $\phi = 8\% \dots\dots 13\%$ ).

More exact Rt values (as from IES and/or LL) would give more precise information on SW.

31st July 1964.