GL0916-1

GEORGE P. ZEBAL AND ASSOCIATES
INDUSTRIAL UTILIZATION OF GEOLOGY

GRAPHIC WELL REPORT

Company: Magma Power Company
Area: East Mesa
Contractor: Coastal Drilling Co.
Commenced: 1-21-77
Completed: 2-03-77
Casing Record: 26-inch conductor set at 93 feet; 13 3/8-inch surface set at 2156 feet

Well: Magma-USA 46-7
Location: 2500 feet east and 1650 feet north of SW corner of sec. 7, T. 14 S., R. 19 E.
Elevation:
Ground Level: 30 feet
Kelly Bushing: 42 feet
Remarks: Injection well

Engineering Data

Bit Record	Mud Record	Temp. °F at flow line	Depth Feet below KB	Drilling Time Ft/min	Sample Log	Sample Descriptions
Make-type Serial No. Footage: In Out Hours Bearings Condition	Date Type Weight Viscosity Water loss pH Sand Salinity pH			Deviation Degrees Drill Stem Test Data	Porosity Index	

Geological Data

Note: Porosity index consists of thickness of zone of porosity preceded by increasing or decreasing arrows.

Note: Drilling fluid not logged.

Sample Descriptions — Depth, Sample Description

- 100: Buff clay
- Lean fine gravel in coarse sand; gravels and cobbles
- Buff clay; Lean fine gravel in medium to coarse sand
- Buff clay; Lean fine gravel in coarse sand
- 200: Buff clay
- Buff clay
- Lean fine gravel in coarse sand
- 300: Buff clay
- Lean fine gravel in coarse sand
- Buff clay
- Fine gravel in medium to coarse sand
- 400: Buff clay
- 500: Lean; gravelly sand; fine to fine gravel in medium to coarse sand
- Buff clay with streaks of fine gravelly sand; fine to coarse gravel sand; fine to medium gravel sand; and hard, light buff, calcareous, silty sand
- 600: Lean; fine to medium gravel
- 700: Buff clay; Sand to silt
- Buff clay; Fine gravel in lenses; fine to medium gravel sand
- Buff clay with thin streaks of hard, buff, calcareous, sandy siltstone; some gravels
- Fine gravel in lenses; fine to medium gravel sand
- Buff clay with thin streaks of hard, buff, calcareous, sandy siltstone; some gravels
- Buff clay
- 800: Lean; gravelly sand; medium to coarse gravel sand
- Buff clay with thin streaks of hard, buff, calcareous, sandy siltstone; some gravels
- Buff clay with hard, buff, calcareous, sandy siltstone
- Lean fine gravel in fine to medium gravel sand
- Buff clay; some gravels
- 900: Lean; fine to medium gravel sand; some gravels
- Buff clay
- Sand, buff, calcareous, sandy siltstone
- 1000: Lean; gravelly sand; fine to fine gravel in coarse gravel sand
- Buff clay with thin streaks of hard, buff, sandy siltstone
- Lean; fine to fine gravel in fine to coarse gravel sand
- Thinly interbedded layers of buff clay; buff, sandy clay; hard, sandy sand (smooth); calcareous, sandy siltstone; and light hard, buff, well-cemented, calcareous, very fine grain siltstone (very resistant, medium to coarse sand partially filled w/ mud)
- 1100: Probably light moderately cemented, sand in very fine
- Thinly interbedded layers of clay, sandy clay, hard, sandy siltstone, and hard light sand as above
- 1200: Lean fine gravel in coarse grain sand
- Maroon clay
- Lean fine gravel in coarse grain sand
- Maroon to brown clay with streaks of buff, stiff silt
- 1300: Lean; gravelly sand; fine gravel in very fine grain sand
- Maroon to brown clay with streaks of buff, stiff silt
- Lean; gravelly sand; fine gravel in very fine grain sand
- Brown clay and light buff silt
- Light buff silt; brown clay; very fine grain sand
- 1400: Brown clay
- Light clay and silt above
- Brown clay
- Lean; fine to very fine grain sand
- Brown clay and soft buff silt
- Light, light buff; very silty; unconsolidated; fine grain sand
- 1500: Brown clay
- Light buff silt above
- Lean; fine to very fine grain sand
- Brown and maroon clay with streaks of hard, soft, calcareous, sandy siltstone
- 1600: Lean; fine to very fine grain sand
- Brown; sandy clay
- Lean; fine to very fine grain sand
- Light, light buff; very silty; unconsolidated; fine grain sand
- Brown clay
- 1700: Lean fine gravel in coarse grain sand
- Maroon clay
- Lean fine gravel in coarse grain sand
- Maroon to brown clay with streaks of hard, soft, calcareous, sandy siltstone
- Brown clay and sandy maroon clay
- Light, light buff; calcareous; very silty; very fine grain sand
- 1800: Lean, brown; very fine to fine grain sand (filtered on 0.2.1.)
- Brown silty clay with streaks of hard, light, stiff calcareous siltstone; very fine grain
- Sandy clay; lenses of maroon
- Lean, yellow sand as above
- 1900: Lean, brown fine grain sand
- Brown, sandy clay; much sandstone
- Lean, very silty; very fine to fine grain sand
- Gray, silty clay
- Lean, brown, very fine to medium grain sand
- Buff and gray, silty clay with streaks of hard light buff, calcareous, sandy siltstone
- 2000: Lean, brown, very fine to medium grain sand
- Light moderately cemented, very fine grain sand
- Gray, silty clay
- Lean, coarse sand as above
- Gray silty clay; trace carbon outcrop
- Lean, coarse sand as above
- 2100: Lean, gravelly sand; very fine to coarse grain sand
- Note: Drilled on sand to temporary of 2.5 feet of gravel, cobbles and sand
- 2200: Lean, brown, very fine to medium grain sand
- Lean, brown, very fine to medium grain sand
- 2300: Lean, brown, very fine to medium grain sand
- Lean, brown, very fine to medium grain sand
- 2400: Lean, brown, very fine to medium grain sand
- Lean, brown, very fine to medium grain sand
- 2500: Brown to light silty clay with streaks of hard, light, stiff, calcareous, silty siltstone; very fine grain sand; some gravel; stone moss
- Lean, brown, very fine to medium grain sand
- Gray, silty clay; much sandstone
- Lean, brown, very fine to medium grain sand
- 2600: Gray, silty clay
- Lean, brown, very fine to medium grain sand
- Buff and gray, silty clay with streaks of hard light buff, calcareous, sandy siltstone
- Lean, brown, very fine to medium grain sand
- 2700: Light moderately cemented, very fine grain sand
- Gray, silty clay
- Lean, coarse sand as above
- Gray silty clay; trace carbon outcrop
- Lean, coarse sand as above
- 2800: Lean, gravelly sand; very fine to coarse grain sand
- Gray, silty clay
- Lean, brown, very fine to medium grain sand
- Lean, brown, very fine to medium grain sand
- 2900: Lean, brown, very fine to medium grain sand
- Gray, silty clay
- Lean, coarse sand as above
- Gray silty clay; trace carbon outcrop
- Lean, coarse sand as above
- 3000: Lean, gravelly sand; very fine to coarse grain sand
- Note: Drilled on sand to temporary of 2.5 feet of gravel, cobbles and sand
- T.D. 3000'

Drilling Time — Depth, Drilling Time

- 0°30'
- 0°30'
- 3°45'
- 8°45'
- 4°45'
- 4°45'
- 0.D.T. No. 1 Packer interval 2234'-2242' Two types of heavy shale in 1 hour Rec. 2080' fluid 240' sand F.P.I.P. 1012 F.P.F.P. 1088 F.S.I.P. 1080 B.H.P. 1124 B.H.T. 229° 4°45'
- 0.D.T. No. 2 Packer interval 2494'-2502' Two types of heavy shale in 1 hour Rec. 2443' fluid, 18 sand F.H.P. 1212 F.I.P. 1248 F.F.P. 1284 B.H.P. 1248°
- 1°-15'
- Drilled 3048 Logged 3093 B.H.T. Stabilized 229°F

Porosity Index

- 0.0.T. No. 3 Packer interval 2800'-2808' Two types of heavy shale in 1 hour Rec. 2443' fluid, 18 sand F.H.P. 1212 F.I.P. 1248 F.F.P. 1284 B.H.P. 1248°
- 0.0.T. No. 4 Packer interval 2494'-2502' Two types of heavy shale in 1 hour Rec. 2443' fluid, 18 sand F.H.P. 1212 F.I.P. 1248 F.F.P. 1284 B.H.P. 1248°
- 0.0.T. No. 5 Packer interval 2800'-2808' Two types of heavy shale in 1 hour Rec. 2443' fluid, 18 sand F.H.P. 1212 F.I.P. 1248 F.F.P. 1284 B.H.P. 1248°
- 2-01-77 Set-Ignite AM 0.0 PM 0.0
- 2-02-77 Set-Ignite AM 0.0 PM 0.0
- 2-03-77 Set-Ignite AM 0.0 PM 0.0