

TOTCO DEVIATION SURVEY

| <u>DEPTH</u> | <u>DEG. OFF VERTICAL</u> | <u>DEPTH</u> | <u>DEG. OFF VERTICAL</u> | <u>DEPTH</u> | <u>DEG. OFF VERTICAL</u> |
|--------------|--------------------------|--------------|--------------------------|--------------|--------------------------|
| 250          | 3/4                      | 1850         | 1 1/4                    | 3423         | 1 3/4                    |
| 400          | 1/2                      | 2100         | 1/4                      | 3550         | 2                        |
| 1050         | 1 3/4                    | 2760         | 1/2                      | 3935         | 1 3/4                    |
| 1159         | 2 1/4                    | 3060         | 2 1/4                    | 4030         | 2                        |
| 1350         | 2 3/4                    | 3150         | 2 1/2                    | 4238         | 1 1/2                    |
| 1450         | 2 1/4                    | 3250         | 2 1/4                    | 4450         | 1 3/4                    |
|              |                          |              |                          | 4675         | 1 1/4                    |

CORE RECORD

| <u>No.</u> | <u>FROM</u> | <u>TO</u> | <u>SEC.</u> | <u>DESCRIPTION</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------|-------------|-----------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | 4675        | 4703      | 28'         | Dolomite. 4675-4695 20' finely crystalline dolomite, light tan to gray stylitic scattered shale partings, slightly fractured w/anhydrite fractures, no shows. 4695-4696 1' dolomite finely crystalline light gray w/ 5% inner crystalline porosity. 4696-4699 3' dolomite finely crystalline light gray stylitic, no shows. 4699-4700 1' dolomite finely crystalline light gray w/ trace of inner crystalline porosity fractured. 4700-4701 1' dolomite finely crystalline light gray stylitic, no shows. 4701-4703 2' dolomite finely crystalline light gray w/10% inner crystalline porosity.                                                                                                                                                                                                                                                                                                                    |
| 2          | 4703        | 4731      | 28'         | Dolomite. 4703-4706 3' dolomite finely crystalline light gray to green, 10% inner crystalline porosity w/occasional small vuggy porosity. 4706-4707 1' dolomite, finely crystalline light gray dense stylitic, no shows. 4707-4713 6' dolomite finely crystalline light gray 10% inner crystalline porosity and occasional small vuggs. 4713-4716 3' dolomite finely crystalline light gray w/trace to 5% inner crystalline porosity and occasional small vuggs. 4716-4718 2' dolomite finely crystalline light gray dense stylitic w/occasional shale partings, no shows. 4718-4720 2' dolomite finely crystalline light gray w/5% inner crystalline porosity. 4720-4726 6' dolomite, finely crystalline light gray w/trace inner crystalline porosity. 4726-4730 4' dolomite finely crystalline light gray w/dense stylitic, no shows. 4730-4731 1' dolomite, finely crystalline light gray w/5% vuggy porosity. |
| 3          | 4731        | 4752      | 21'         | Dolomite. 4731-4733 2' dolomite finely crystalline light gray to tan stylitic w/trace inner crystalline porosity and 3" black shale partings. 4733-4735 2' dolomite, finely crystalline light gray to tan with occasional small vuggs. 4735-4746 11' dolomite finely crystalline light tan to light gray very stylitic with occasional shale partings. 4746-4751 5' dolomite, finely crystalline light tan inclusion fractures, no shows. 4751-4752 1' dolomite finely crystalline light tan to light gray w/5% inner coarse crystalline porosity, small vuggs, bleeding gas. Dense, no shows.                                                                                                                                                                                                                                                                                                                     |

DRILL STEM TESTS - None

ACIDIZING AND OTHER COMPLETION OPERATION

- 3-2-56 Cardinal acidized open hole 4675-4752 w/3000 gals. 15% XLST. 38 mins., 1.9 BPM. TP 4000-3500-4000#. CP - Pkr. 5 min SIP 3000#. Swabbed 19 BLC (all) in 3 hrs. Swabbed 14 BNO / 30 BAW in 14 hrs. Slight show of gas.
- 3-3-56 Cardinal Reacidized open hole 4675-4752 w/6000 gals 15% XLST. TP 4500-4500#, 5.3 BPM, 27 mins. 5 min SIP 2500#. Swabbed 19 BLC (all) in 3 hrs. Swabbed 20 BNO / 52 BAW in 17 hrs. Slight show of gas.
- 3-4-56 Cardinal Reacidized open hole 4675-4752 w/12000 gals 15% XLST. TP 4500-4900#, 7 BPM, 41 mins., 5 min. SIP 2600#. Swabbed 19 BLC (all) in 3 hrs. then swabbed 24 BNO / 38 BAW in 14 hrs. Slight show of gas.

| Year | Volume | Number | Pages    | Price  |
|------|--------|--------|----------|--------|
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