AMERADA HESS CORPORATION

TULSA

DRILLING WELL PROGNOSIS

1977 JUN 27 PM 4:11

DRILLING SERVICES

1. LEASE & WELL: Jicarilla Apache "C" #2
   Federal Lease Needs Unique # Assigned

2. LOCATION: 890' FNL & 1750' FEL, Sec. 27, T-24-N, R-5-W
   Rio Arriba County, New Mexico

3. WORKING INTERESTS: AHC 100% (All Objective Zones)

4. ELEVATIONS: Ground: 6660' (Topographical Map)
   KB: 6674' (Estimated)

5. OBJECTIVE ZONES: Pictured Cliffs @ 2300'
   Dakota @ 6685'

6. ESTIMATED FORMATION MARKERS & PLANNED TOTAL DEPTH:

| | |
|---|---|
| Ojo Alamo | 1785' |
| Kirltand-Fruitland | 1960' |
| Pictured Cliffs | 2300' |
| Lewis Shale | 2400' |
| Chacra | 3110' |
| B. Chacra | 3260' |
| Cliff House | 3805' |
| Point Lookout | 4440' |
| Mancos | 4615' |
| Gallup | 5540' |
| Sanastee | 6160' |
| L. Mancos | 6260' |
| Greenhorn | 6475' |
| Graneros Sand | 6590' |
| U. Dakota | 6685' |
| L. Dakota | 6795' |
| Morrison | 6875' |
| TD (For Permitting) | 7000' |
| TD (Actual Projected) | 6900' |

7. FORMATION EVALUATION PROGRAM:

   1) Sample Program: Catch, wash and bag samples by accepted industry standards. Geologist has responsibility of changing catching techniques and intervals as conditions dictate. AHC's representative will be responsible for bagged samples being delivered to Ed Clement at Henry Production.

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The following are sample intervals and depths:

10' sample from 2000' to total depth, except 5'

| | | |
|---|---|---|
| Samples Over: | Pictured Cliffs | 2270' to 2400' |
| | Chacra | 3080' to 3280' |
| | Cliff House | 3780' to 3910' |
| | Point Lookout | 4420' to 4575' |
| | Gallup | 5500' to 5880' |
| | Graneros-Dakota | 6400' to TD |

We recommend using Ed Clement (Geologist w/Harv. Henry) for sample examination and consultation:

2). Drilling Time & Mud Logger Recorder:

An automatic drilling time recorder will be used and in addition, the Geologist can request written drilling time over zones of interest. Drilling time records will be delivered daily with samples to Ed Clement.

3). Coring Program: None Anticipated

4). DST Program: None Anticipated

5). Electrical Logging Program:

a) Induction Electrical Log (IEL) w/Spontaneous Potential (IEL/SP)
2"=100' TD to Surface Casing
5"=100' TD to Surface Casing with the resistivity displayed Logarithmic

b) Density Log - Borehole compensated (CDL) w/Gamma Ray/Caliper/Neutron (CDL/N/GR/Caliper). Use combination side wall neutron if available, if not use "Side Door" Neutron
5"=100' TD to Surface Casing and continue GR only to surface

c) Computed DDL Laserlog (Go International)

"Correlation Logs"

1) AHC - "C" #1 J. Apache, located ½ mile East in Section 26, T-24-N, R-5-W.
2) Mobil-#4, located ½ mile west in section 27, T-24-N, R-5-W

8. MUD PROGRAM:

1) Drill surface hole to ± 350' using native mud. Discard this mud after setting surface casing.

2) Mix and condition the following mud before drilling below surface casing. Recommend recovering mud from previous well if possible. Use low solids polymer system with 6% oil. Flush hole periodically with 4 to 5 sacks of Gel and 2 to 3 sacks of LCM. Mud weight 8.8 to 9.0#/Gal, viscosity 30 to 35 sec., water loss 8 to 9 cc. Maintain this system continously to TD.

3) Recommend renting a trailer for drilling services personnel.

9. HOLE SIZE, CASING AND CEMENTING PROGRAM:

Drill 13 3/4" hole to ± 350'. Set surface string of 9 5/8".

Cement Surface casing as follows:

1) Run a float collar one (1) joint above the guide shoe.

2) Run a float guide shoe on bottom.

3) Use five (5) centralizers, equally spaced.

4) Precede cement with 10 bbl. mud flush.

5) Cement using ± 350 sacks of Class "B" with 2% $CaCl_2$ plus ¼# per sack celloflakes.

Drill 8 3/4" hole from surface casing seat into the Mancos Shale. Reduce hole size to 7 7/8" when first bit change is required in the Mancos Shale. Set production string of 5½".

Cement Production casing as follows:

1) Ruff Kote the 5½" casing through the following intervals:

a) TD to 6585' Dakota / Graneros

b) 2450' to 2200' Pictured Cliffs

2) Use two (2) centralizers above and below each of the two (2) stage collars and at each collar through the following intervals:

a) TD to 6565'

b) 2470' to 2220'

3) Use one (1) metal petal cement basket below each of the two stage collars.

4) Run a regular float guide shoe.

5) Run a float collar one (1) joint above the guide shoe.

6) Run stage collars at approximately 5500' (above the Gallup) and 3700' (above the Mesa Verde).

7) Use "Hydro-Bond" baffles on each collar through the Ruff-Koted sections.

8) Precede first stage with 25 bbl. mud flush.

9) Cement production string to surface in three stages, details to be submitted pending results of systems currently being used.

10. UNUSUAL CONDITIONS:

Possible hole sloughing and caving from below surface casing to ± 3000'.

11. GOVERNMENT AGENCY REQUIREMENTS:

1) Deviation tests shall be made at least once every 500' or at the first bit change succeeding 500'. Maximum hole deviation is five (5) degrees over any 500' interval.

2) Final log prints (except DDL Laserlog) should be filed with USGS and NMOCC.

3) Archaeological survey is required prior to building location.

12. LOG DISTRIBUTION:

Field Prints

1-Drilling Services (Tusla)
2-Technical Services (Tulsa)
1-Drilling Supervisor
2-Farmington Office
1-Monument Office
3-Seminole Office
1-Geological (Tulsa)

Final Prints

3-Farmington Office
3-Monument Office
3-Seminole Office
1-Technical Services (Tulsa)
1-Geological (Tulsa)

Film Original & Sepia

1 each - Technical Services (Tulsa)

Addresses

Amerada Hess Corp.
P. O. Drawer "D"
Monument, New Mexico 88265

Amerada Hess Corp.
P. O. Drawer 840
Seminole, Texas 79360

Amerada Hess Corp.
P. O. Drawer 2040
Tulsa, Oklahoma 74102

Mr. Harv. Henry
Box 261
Farmington, New Mexico 87401
Office Phone -- 505-325-4042
Home Phone - 505-327-9967

13. CONTACTS:

(Seminole, Texas -- Office Phone 915-758-5801)
Engineer - Dave Bertschinger - Home 505-392-8977
Geologist - Ron L. Lakson - Home 915-758-2861

Prepared By Dave P. Bertschinger 6/21/77

Date _____

Night Tulsa Telecopier 915-584-5620 Telecopier setting - 6
Night Seminole Telecopier 915-768-3141

Region Approval Grant B Miller for GHG

~~Ralph Nix~~

J. D. Johnson

OK P T Padilla

cc: J.R. Enloe
G.T. Dewhurst
L.A. Stricklin
R.G. Straw (A.P.A.V.)

Drlg Prog File