AMAX EXPLORATION, INC.
A SUBSIDIARY OF AMAX INC.

GEOTHERMAL BRANCH

INTER-OFFICE MEMORANDUM

SUBJECT: Drilling Operations at the McCoy Project
Lander & Churchill Counties, Nevada

DATE: Jan. 7, 1980

TO: W. M. Dolan, H. J. Olson, H. D. Pilkington, J. E. Deymonaz, J. T. Gross
A. P. Wicklund, Ron Barr, Dale Corman, W. E. Merrill

FROM: Andy Pfaff

This memo is intended to provide a simple summary of the discussion that took place on January 3rd in Bill Dolan's office. In attendance were Bill Dolan, Percy Wicklund, Harry Olson, Dean Pilkington, Wendy Merrill, Jim Gross, Al Cobb, David Langenkemp, Ron Barr and myself.

The principle topics of discussion were as shown on the meeting agenda (Attachment 1).

Areas of specific agreement or emphasis were as follows:

1. A larger rig (2,500 ft capacity) will be used in opening the hole from 6-1/4" to 12-1/4" on Well 14-7. The larger rig may be used to TD on Well 14-7 depending upon the performance of American Geothermal Drilling (AGD)'s Portadrill 524 on Well 66-8. AGD will arrange for this rig by January 31st.

2. An earthen ramp will be constructed and used with AGD's steel structure while drilling ahead on Well 66-8. Such an installation may be used on Well 14-7 or a cellar with drive over capability may be used. The final arrangement will be determined once a rig is obtained to open the hole on Well 14-7.

3. A shale shaker will be used whenever drilling mud is used.

4. The geolograph will be used at all times while drilling

5. The API Form 3T-6, Daily Drilling Report Form, will be used to record daily activity and equipment usage.

6. The safety portion of the Plan of Operation was reviewed and special emphasis was given to the following areas.

   a. Fire safety - AGD will insure that fire extinguishers continue to be available and that trash burning will not be conducted within 100 ft of the rig.

b. Safety shoes and hard hats will be used by personnel working on and about the rig.

c. Eye protection equipment will be purchased and made available to AGD employees by AGD.

d. Fencing (hog-wire) will be installed by AGD around any open pits when a site is not being used.

7. AMAX will be notified of the BOPE test far enough in advance of the test so that AMAX can give U.S.G.S. personnel 24 hours notice of the test.

8. Supervisory and personnel problems on the part of AGD will not be tolerated.

9. AGD will submit invoices in accordance with the terms of the contract.

10 Andy Pfaff will be the point of contact for any drilling problems that AGD may encounter. He will be responsible for advising AMAX's representative in the field on what procedures should be being followed. Al Cobb will contact Andy on a daily basis on drilling progress.

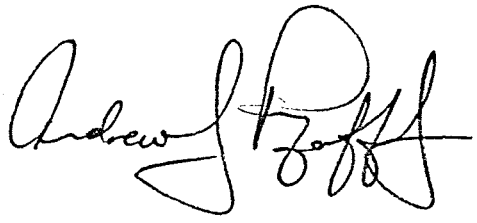
11. Drilling will proceed on Well 66-8 and Well 14-7 according to the attached plans. (Attachments 2 and 3)

12. Any matters dealing with regulatory procedures or matters will be referred to Wendy Merrill.

13. Noise hazard measurements will be made by AMAX personnel.

14. H_2S monitoring and abatement equipment will be installed after fluid has been encountered and analyzed.

15. AGD will obtain the necessary equipment, e.g. subs, stabilizers, etc., to proceed in accordance to Attachments 2 & 3.



ATTACHMENT 1

McCOY DRILLING PROGRAM

AGENDA FOR MEETING OF 3 JANUARY 1980

I. Solutions to Problem Areas

- A. Supervision & crews
- B. Equipment
  - 1. Rig
  - 2. Drilling Materials
    - a. Availability
    - b. Care & Maintenance
- C. Adherence to terms of contract

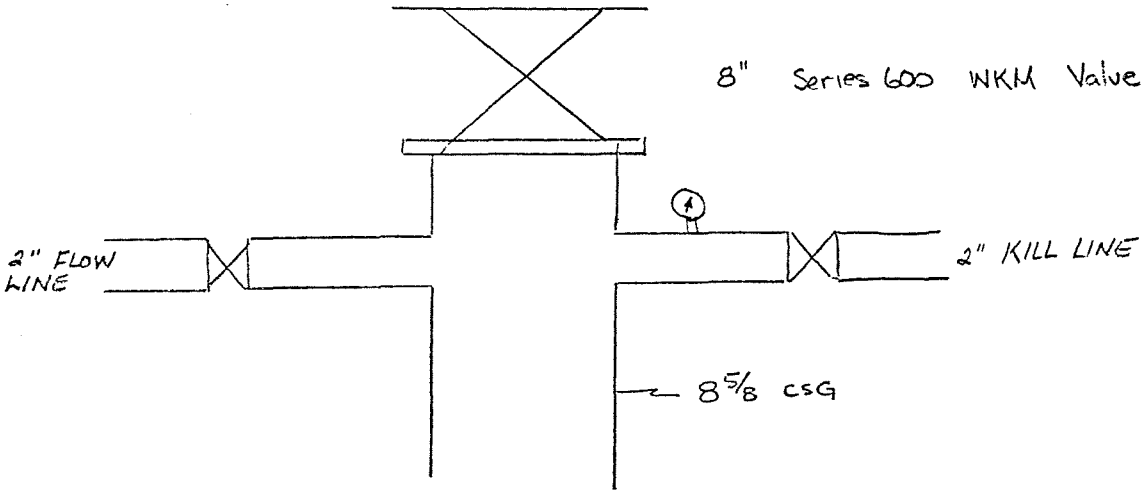
II. Drilling Program for 66-8
(See Attachment A)

III. Drilling Program for 14-7
(See Attachment B)

ATTACHMENT 2

DRILLING PROGRAM 66-8

1. Test Casing



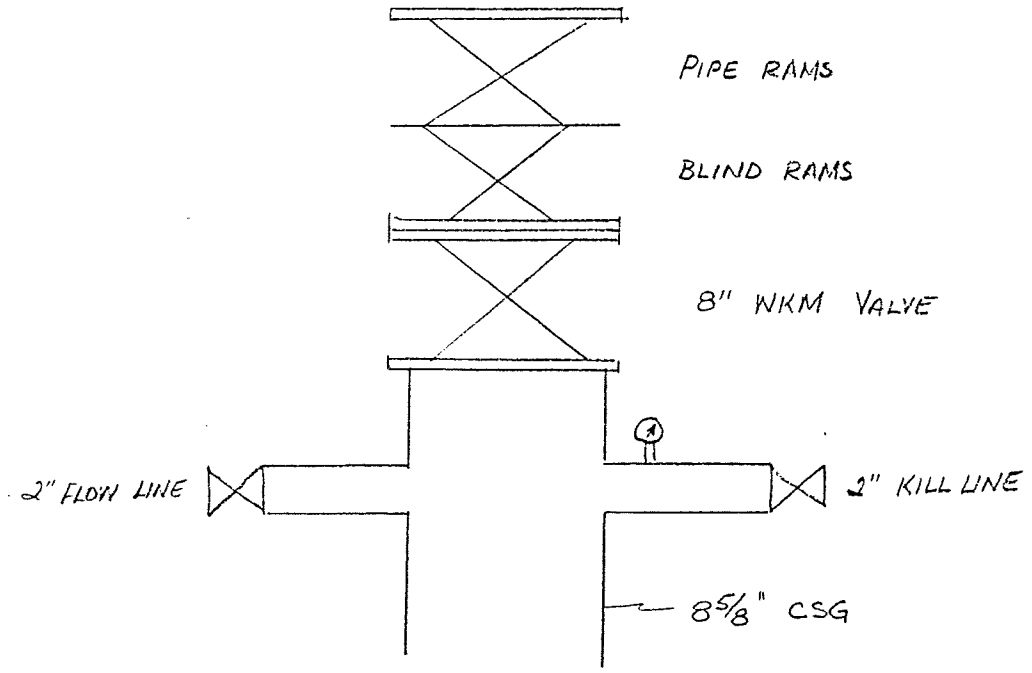
a) Install pressure gage on fill line
b) Close 8" valve
c) Close 2" valve on Flow Line
d) Open 2" valve on kill line
e) Using kill line, pump fluid into csg until pressure gage ≈ 250 psig
f) Close 2" valve on kill line
g) Note any bleedoff in pressure

2. If pressure does not drop, go to Step 4.
If pressure drops:

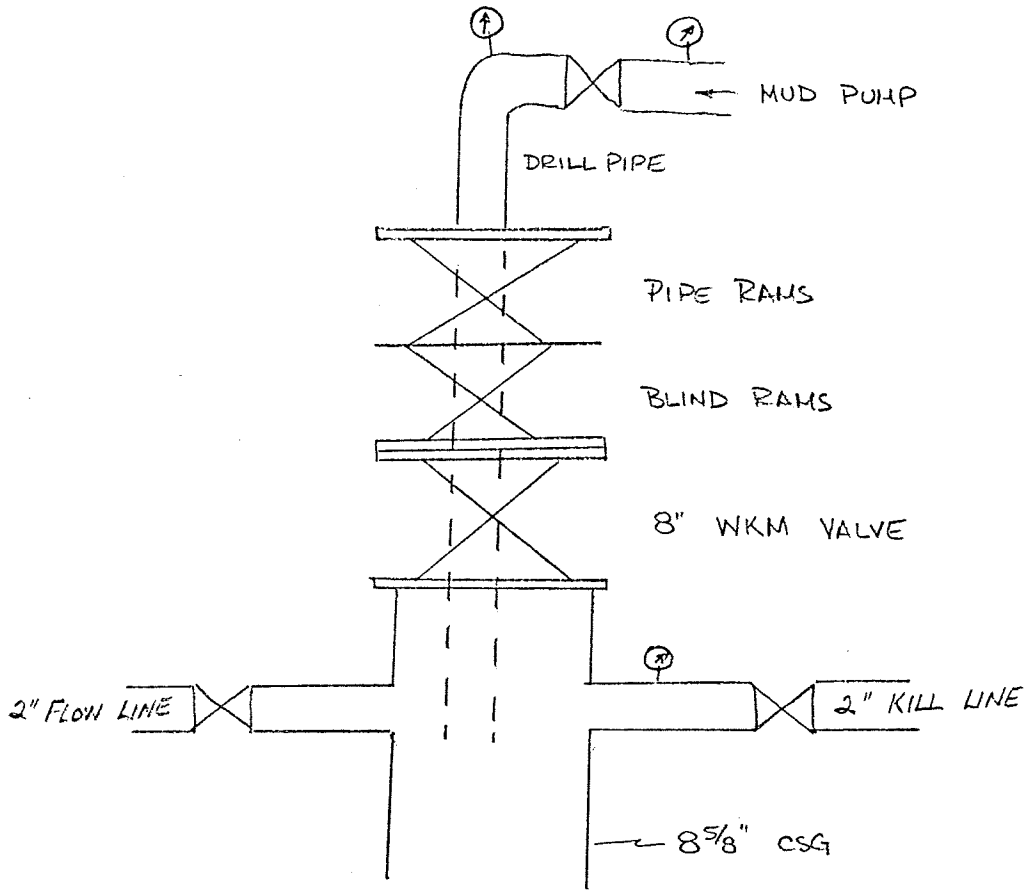
a) Blow csg dry (min circulating time of air - 1 hr)
b) Mix cement slurry - 120 sacks cement, 6 gal water/sack 2% calcium chloride
c) Place cement in csg
d) Pressure csg to 500 psig. Check pressure every 10 min. If pressure has bled off, pressure again to 500 psig using kill line. Repeat for 1 hr.
e) WOC for 12 hr

3. Drill out cement using 7-7/8" rock bit, 4-1/2" collar to 200 ft. Drilling fluid treated with bicarbonate of soda will be used.

4. Test BOP



a) Test blind rams
   1) Open 8" valve
   2) Close 2" flow line valve
   3) Close blind rams
   4) Open 2" kill line valve
   5) Pump fluid into kill line until pressure reaches 200 psig
   6. Close 2" kill line valve
   7. Note pressure change with time. 200 psig must be held for 30 minutes for a successful test.



b) Test Pipe Rams
   1) Open blind rams
   2) Open 8" valve
   3) Close 2" kill line valve
   4) Close 2" flow line valve
   5) Install valve between drill pipe and mud pump
   6) Install pressure gage between mud pump and valve
   7) Install pressure gage between valve and BOP
   8) Close pipe rams
   9) Pump fluid down drill pipe until the pressure gage between the valve and BOP reads 200 psig
   10) Close the valve between the mud pump and drill pipe
   11) Note pressure changes on all gages. Pressure on gage between valve and BOP must remain at 200 psig for 30 min for test to be successful

5. After successful BOP test:
   Drill out cement using 7-7/8" bit with 4-1/2" drill collars and 7-7/8" stabilizer. Use drilling fluid treated with bicarbonate of soda. Bottom hole assembly should be:
   4-1/2" collar(s)
   7-7/8" stabilizer (rubber)
   4-1/2" collar
   7-7/8" bit

6. Drill ahead using downhole hammer with 6-1/4" bit. Drill with air. Bottom hole assembly should be:

6-1/4" stabilizer
4-1/2" collar
Downhole hammer 6-1/4"

7. When fluid is encountered, collect a fluid sample. Continue drilling with air until fluid entry cannot be handled with air drilling.

8. Switch to mud system and use rock bit with following downhole assembly to TD.

4-1/2" collars
6-1/4" stabilizer
4-1/2" collar
6-1/4" stabilizer
6-1/4" bit

Notes: 1) When drilling with fluid the following properties will be maintained:

Mud weight: 8.5 - 9.0 lb/gal
Funnel viscosity: 35 - 40 sec

2) When drilling with fluid, shale shaker will be used continuously

Additional materials needed (minimum):

1) Pressure gages - 3 ea. (500 psi minimum range)

2) Subs to go from
   a) 6-1/4: rock bit to 4-1/2: collar
   b) 4-1/2" collar to 7-7/8" stabilizer
   c) 7-7/8" stabilizer to 2-7/8" drill pipe
   d) Downhole hammer to 4-1/2" collar
   e) 4-1/2" collar to 6-1/4" stabilizer
   f) 6-1/4" stabilizer to 2-7/8" drill pipe
   g) 6-1/4" rock bit to 6-1/4" stabilizer
   h) 6-1/4" stabilizer to 4-1/2" collar

3) Mud balance

4) Marsh funnel or Fann V-G viscometer (preferable)

5) 7-7/8" stabilizer

6) Bicarbonate of soda to reduce cement contamination of mud

ATTACHMENT 3

DRILLING PROGRAM: 14-7

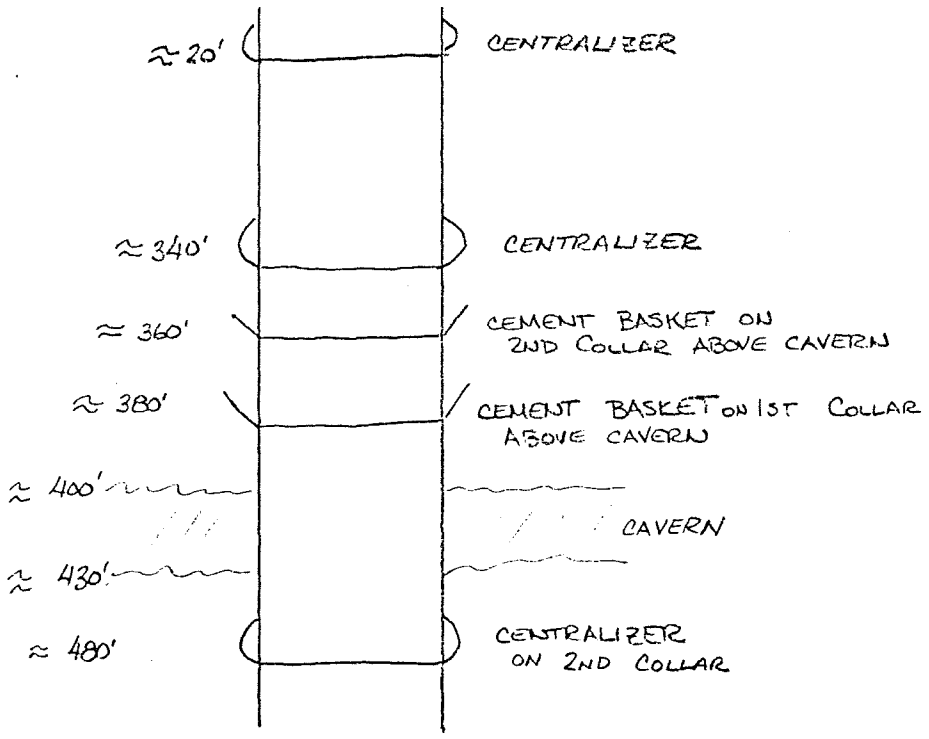
1. Open hole to ≈ 9" using tri-cone type hole opener. Opener should have cones for hard formation. Drill with air. The following bottom hole assembly should be used:

Collars
Stabilizer
7" collars (flexible on size)
Stabilizer (equal to size of opener)
Shock sub
Hole Opener (should have 6" bit)

2. Open hole to 12-1/4" using tri-cone hole opener. Opener should have cones for hard formation. Drill using air. The following bottom hole assembly should be used.

7" collars
Stabilizer (equal to hole size)
7" collar (flexible on size)
Stabilizer (equal to hole size)
Shock sub
Hole opener (should have 9-5/8 bit)

3. Cement 8-5/8" casing as follows: Mix 5.2 gallons of water/sack of cement + 2% calcium chloride



a) Pick up weight of 5500 lb
b) Place 1-2 sacks of cement down annulus - to open cement baskets
c) Place 59 sacks of cement down casing
d) Place 160 sacks of cement down annulus

4. Test BOPE as in 66-8.

5. Drill out cement +50' using 7-7/8 rock bit and 4-1/2" collars. Use drilling fluid treated with bicarbonate of soda

6. Continue with pendulum assembly until deviation returns to 4°. Use air to drill.

7. Follow steps 6 thru 8 in 66-8 program.

Additional materials needed:

1) Appropriate subs
2) Cones for hole openers or new openers
3) 7" collars depending on rig equipment