Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Distribution *2/4*
FROM: G. Zyvoloski, Z. Dash and H. Murphy
SYMBOL: ESS-4-83-162
SUBJECT: EXPERIMENT 2028: FLOWING TEMPERATURE LOGS AND EVALUATION OF WELLBORE HEAT TRANSFER COEFFICIENTS WITH THE NITROGEN BLANKETS: REVISION I

DATE: June 20, 1983
MAIL STOP/TELEPHONE: J981/7-4318

Background

The accurate assessment of temperatures in the casing and liner is critical to the safety of EE-3 during the upcoming fracturing experiment. The purpose of this experiment is to obtain heat transfer coefficients for the nitrogen filled annulus as well as the water filled annulus below the nitrogen water interface. In addition the flowing temperature logs that were not obtained during Experiment 2026 because of an obstruction; will now be obtained in this experiment.

Equipment

1. OWP logging van; temperature tool with collar locator (rated to 500°F); high-pressure grease injector.
2. Dowell Pump Truck capable of 5 BPM.

Instrumentation

1. Injection (and vent) pressure transducer: 0-10,000 psi monitored on a strip chart in DAT.
2. Injection Flow Rate: 0-200 gpm using a 2-inch turbine meter on the high-pressure side of the Dowell cementer, monitored in DAT.
3. Injection Temperature (range and location to be determined by ESS-6, in cooperation with Joe Skalski).
4. Vent flow rate - capable of measuring a vent flow of between 60 and 100 gpm.
5. Backside (N_2) pressure & Pinger

Procedures

- A. Background and Flowing Temperature Logs
 1. Inject N_2 into annulus (approximately 3 hours)
 2. Land tubing in PBR (2-8 hours)

+ Dowell barrel }
count 3 t

3. Set up sounder for N_2 level measurements.
4. Rig up Dowell; rig up OWP for high-pressure temperature logging.
5. Run in the hole with the OWP temperature tool; observe temperatures without logging, to find N_2 depth in annulus; log from 10,000 feet to TD (11,770 ft) at 50 ft/minute; then park the tool at about 10,100 feet.
6. Pressurize EE-3 at an injection flow rate of approximately 1 BPM. *(but maintain constant)* Dowell to announce over net times when each ¹⁰ barrels injected.
7. When the injection pressure reaches 4000 psi (or as determined by Scientific Advisor) log from 10,100 to TD at about ⁵⁰ 100 feet per minute.
8. Return to the parking depth.
9. When the injection pressure reaches 5000 psi, repeat steps 7 and 8 above. If Scientific Advisor so indicates, pressurize to 5500 psi and repeat 7 and 8 again.
- 10 Park tool at 4000 feet.

B. Nitrogen Evaluations

1. If necessary (sounder not working) log hole to determine water level, adjust to desired depth.
2. Pump 5 BPM or maximum allowable flow for 6 hours.
3. Log to depth of 8000 ft - park tool.
4. Shut-in well, let recover 2 hours.
5. Log hole to TD
6. Perform a controlled vent test at a constant 60 GPM vent rate.

Job Assignments

Experiment Coordinator: Don Dreesen *a Bob Hendron*

Scientific Advisor: George Zyvoloski or Hugh Murphy

Distribution

John Whetten/D446
Paul Franke/J981
Mort Smith/J979
Bob Hendron/J979
Lee Brown/J979
Dan Cash/J979
Dan Miles/J979
Bill Laughlin/D446
George Cocks/J979
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Greg Nunz/J981
Don Brown/J979
Rod Spence/J979
Bert Dennis/J980
Pat Trujillo/J979
Tom Dey/J980
Kerry Burns/J981
Bob Nicholson/J979
ESS-4 Staff

Expt. 2028

Objectives of Expt. 2028

1. HP (~ 5000 psi) test of PBR } 10,216 ft } Most
 & Screwed-in connection } 10,890 ft } Critical
2. Two to three flowing temp. logs of openhole section
3. N_2 blanket effectiveness (overall heat transfer coefficient)
4. Ventback pressure performance
 (fracture closure indication)
5. Water-filled annulus heat transfer coefficient

Bottom Up: for Expt. 2028

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Expt 2028

There will be a coordination meeting for
Expts 2026 and 2029 at Fenton Hill on Friday
Morning (5/6/88) at 0930.

Joe &/w Henderson } Autho in all
Bert } Experiments

At of 48 hrs for Joe Henderson at least
Costa Rica today

Problem Areas

1. Flow Separator

- 3:00 today
- a. Control Valve Area ? !
 - b. Orifice size
 - c. AP / or Nme
 - d. P up & P down
- } Who in charge ?

2. H₂S Monitoring System

- a. Chris Hensen
- b. Who called out rental system
- c. Bert's job or Leudecke's ?

3. Communications Net ?

- a. Leave com-net as is
- b. Radios for Bert's guys when setting up GRI
- c. Same radios to back side & data van; Bert to issue

Pre-meeting @ 2029

E. Cub Lamm
S. Adm Votter
J. Hill

Friday ~~PM~~ AM AM

0800

0830

time schedule

2026

Bert's man up Sunday

3:00 today

memorandum

TO: Distribution

DATE: April 21, 1983

FROM: G. Zyvoloski and Z. Dash

MAIL STOP/TELEPHONE: J981/7-4318

SYMBOL: ESS-4/83/162

SUBJECT: EXPERIMENT 2028: EVALUATION OF WELLBORE HEAT TRANSFER COEFFICIENTS WITH THE NITROGEN BLANKETS

Background:

The accurate assessment of temperatures in the casing and liner is critical to the safety of EE-3 during the upcoming fracturing experiment. The purpose of this experiment is to obtain heat transfer coefficients for the nitrogen filled annulus as well as the water filled annulus below the nitrogen water interface.

Based on preliminary WBHT analysis we propose the following experiment.

Equipment:

- 1) Temperature tool and associated DAT support
- 2) Pump unit capable of 5 BPM.

Procedure:

- 1) Log hole to end of casing
- 2) Pressurize annulus with nitrogen
- 3) Log hole to determine water level: adjust water level to desired depth
- 4) Lift tool to depth of 4000 ft or as specified by scientific advisor
- 5) Pump 5 BPM or maximum allowable flow for 6 hr
- 6) Log to depth of 8000 ft - park tool
- 7) Shut-in well, let recover 2 hrs
- 8) Log hole to bottom of casing and then out
- 9) Perform a controlled vent test at a constant 60 GPM vent rate.

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