Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE 2-1
Doyle _____ Carl _____
Don _____ Rolino _____
Wes _____ Other _____
Ken _____
FILE PAP-HDR

memorandum

TO: **Distribution** DATE: **January 29, 1988**

FROM: **Don Brown** MAIL STOP/TELEPHONE: **J979/7-7811**

SYMBOL: **ESS-4-88-25**

SUBJECT: **POST EXPT. 2074 TEMPERATURE LOG IN EE-3A**

Introduction

During the latter part of Expt. 2074, the EE-3A annulus above the cemented-in liner -- between the 4-1/2-in tubing and the 9-5/8-in casing -- began to flow, with this outflow increasing to about 5-1/2 gpm near the end of this experiment. Although the available evidence strongly suggests that the annular flow was coming from the high-pressure Phase II reservoir through a fracture network that bypasses the cemented-in liner in EE-3A, this conclusion needed to be verified by a temperature (with collar locator) log. This log was run on Jan. 21, 1988, 44 days following the end of the pumping phase of Expt. 2074.

Conclusion

Although there was a significant delay in running this log following the termination of pumping at EE-3A on Dec. 8, 1987, the temperature rise indicating the point of hot reservoir in-flow into the annulus is still clear. As shown in Fig. 1, this bypass flow enters the annular region at a depth of about 10,855 feet (converted to drill pipe depths using collar locator data). This entrance point is about 85 feet above the top of the liner cement at 10,940 feet, as determined by Don Dreesen from the cement bond log.

However, there is no evidence of bypass flow in the PBR seal area at 9225 feet, precluding a seal leak as the source of this annular outflow.

Additional Results

Figure 2 compares the EE-3A temperature logs taken before and after the redrilling of wellbore EE-2A -- and obviously before and after Expt. 2074. Of most significance is the redistribution of flow between the two major fracture entrances in EE-3A, probably as a direct consequence of the redrilling of EE-2A. The deeper fracture entrance at about 11,900 feet appears to have taken even more of the flow during Expt. 2074, as compared to the flow distribution during the ICFT (as reflected by the Oct. 14, 1987 log).

However, the difference in injection pressure levels during these two flow tests -- about 800 to 1000 psi higher for the ICFT -- may have contributed to this inlet flow redistribution in EE-3A.

During the Oct. 14th temperature log, we were unable to get deeper than 12,107 feet (wireline depth), even after several attempts. This suggested that there was over 150 feet of fill at the bottom of EE-3A as a consequence of the ICFT. However, during this more recent EE-3A log, we were able -- after several attempts -- to get past this hole obstruction, and logged to a firm setdown at 12,242 feet (about 12,220 ft drill pipe depth). This would indicate that there is presently only about 20 to 30 feet of fill in EE-3A, above a drilled TD of 12,243 feet. (The odd shape for the bottommost part of the log shown in Fig. 1 is due to several attempts to get past the obstruction and packing mud around the thermistor.)

Distribution:

Doyle Evans, ESS-DO, MS D446

Wes Myers, ESS-DO, MS D446

All ESS-4

Bert Dennis, MS J980

Evon Stephani, MS J980

Jerry Kolar, MS J980

Pete Chavez, MS J980

ESS-DOT

Mort Smith, ESS-DOT

Schon Levey, ESS-1

Dale Counce, ESS-1

Pat Trujillo, ESS-1

Figure 1

Figure 2