

TASK CLOSE OUT DOCUMENT

*file
IAG*

Task Scope *Instrument Diagnostics*

To: M. Levenson
S. Levy
E. Zebroski

Task No. *11*

Date Complete *4/30/74*

Reason felt task is complete:

Reported

Members of Committee

A.C. Kuyter
G. J. Leake
S. J. Bull
E. L. Ziegler

J. J. Ackerman
Signed
Committee Leader

TO: SIG Distribution

Attached is a summary report on the noise analysis study of thermocouple signals for natural circulation performed by ORNL/SAI personnel.

cc: R. C. Kryter, ORNL

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ORNL-SAI SUMMARY REPORT

4/30/79

R.C. Kryton
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① T/C noise following RCP shutdown is:

(a) very small in magnitude ($0.1 - 0.5^\circ\text{F}$).

(b) Not different in major characteristics relative to one-pump flow conditions examined previously, except that hottest T/C's no longer have greatest noise.

(c) With few exceptions, shows essentially zero correlation (coherence) amongst the T/C's.

(d) Shows no evidence of core boiling, as characterized through THTF tests at ORNL.

(e) Regarding (c) above, one T/C pair [12F & 9H] was found to be strongly correlated (coherence ~ 0.9) with phase = 180° at a frequency of $\sim 0.5\text{Hz}$. Also, one T/C [09H] was found to respond to system oscillations associated with makeup water turnoff.

② Erratic T/C readings (low values) can be explained in terms of T/C shunting to ground thru various leakage resistances:

Correct (no shunt) reading = 180°F

Low-side of T/C connected to gnd = 40°F

High-side of T/C " " = 140°F

High-side of T/C to gnd thru 10K-Ω = 176°F

" " " thru 2K-Ω = 164°F

So if leakage resistance varies with time (water in cables?), almost any reading is possible.

③ Observation: With no RCS major forcing functions present, the system behaves ~~like~~^{like} a very lightly damped manner, and should be treated "gently", i.e., step changes should be minimized.

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④ For correlation with other plant parameters, we requested B & W to put on the strip chart recorders MLL tank level and pressurizer level. Suggest also pni pressure noise signals from A & B loops on same recorder.