



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 21 1988

NOTE TO: L. C. Rouse, J. J. Swift

SUBJECT: STAFF REVIEW OF MARTIN MARIETTA'S COMMENTS ON SFC'S AUTOCLAVE REPORT

On December 16, 1987, the period of performance for Contract FIN B0302 between the NRC and ORO was extended from January 31 to February 29, 1988, to provide additional time for review of Martin Marietta Energy System's final draft report, dated November 11, 1988. I have reviewed the subject report and developed several minor questions and comments regarding the clarity and presentation of certain of the contractor's findings. (see Enclosure)

In general, I agree with the contractor's bottom line conclusion that the relative risks of steam chest and autoclave operation have not been adequately addressed in the licensee's analyses. In fact, I developed a similar conclusion following my initial review of the licensee's report. (refer to Note from R. B. Provencher to W. T. Crow dated February 13, 1987)

Specifically, the contractor concluded:

- o The calculation of risks associated with autoclave and steam chest operation would be useful in comparing the relative hazards involved with the competing processes.
- o SFC's analysis concentrates on demonstrating that cylinder ruptures are very low frequency events. However, the actual risks should be evaluated and compared.
- o Small and large leaks from cylinders were calculated to be relatively high frequency events. While the consequences are expected to be smaller than for ruptures, they have not been shown to be negligible. To the extent they are not negligible, as may be the case for large cylinder leaks, the risk reduction potential of the operation of autoclaves vs. steam chests may be greatest for these events.

Overall, Martin Marietta concluded, "the assertion that autoclaves do not provide any significant increased safety margin over the modified steam chest has not been adequately substantiated." I agree with this and conclude that, to date, the licensee has not adequately fulfilled its commitment made before the Commission on March 13, 1986, to compare the risks of operation of autoclaves vs. modified steam chests.

I suggest that we transmit our comments on the final draft report to Martin Marietta by the end of February 1988. Once they incorporate our comments and submit the final letter report, I recommend that we send a copy to Sequoyah Fuels Corporation since it contains a critical analysis of key steps in their probabilistic risk analysis. SFC should be required to evaluate the contractor report, improve their PRA as recommended by Martin Marietta (to the extent that

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they agree with the recommendations, otherwise, provide justification for disagreement), and reanalyze the risk associated with the operation of autoclaves as opposed to modified steam chests. This reanalysis of risk should include the consequences as well as the probability of occurrence of an event.

Since the licensee has not provided us with a complete risk analysis as committed to during the March 13, 1986, meeting before the Commission, we possess as much information about the risks of operation of autoclaves vs. steam chests as we did before the licensee submitted its reports. Once we receive the complete risk analysis, we will be in a position to determine whether the reduction of risk afforded by autoclaves, if any, justifies our enforcing their use.

R. B. Provencher
R. B. Provencher

Enclosure:
As Stated

ENCLOSURE

Section 2.1 Accident Frequencies

- o Finding Nos. 3 & 4: staff was not able to distinguish the difference in information presented in Nos. 3 & 4 of this section. No. 1 states that the cylinder rupture frequency is reduced by a factor of 200 due to automatic termination of steam flow following high UF₆ pressure. Whereas, No. 4 assigns a reduction factor of between 75 and 200 for what appears to be the same scenario. These findings require further explanation to better clarify the differences in reduction factors and/or scenarios.
- o Finding No. 7: staff was not able to determine what the contractor was implying when requesting that, "the actual sequence definition should be stated." Also, the contractor assumes that the frequency of $4.83E-6/y$ is the fraction of cylinder ruptures occurring in steam chests or autoclaves. It is unclear to staff if this refers to ruptures due to hydrocarbons alone, or to other factors as well. Therefore, staff requests that the contractor clarify this finding.

Section 2.2 Containment

- o Finding No. 1: the contractor refers to Appendix A of the April 1986 report, however, the correct reference is Appendix A of the August 1986 report.