

Omaha Public Power District  
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Omaha, Nebraska 68102-2247  
402/636-2000

June 12, 1992  
LIC-92-197R

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Main Station P1-137  
Washington, DC 20555

- References:
1. Docket No. 50-285
  2. Letter from OPPD (W. G. Gates) to NRC (Document Control Desk) dated July 30, 1991 (LIC-91-177R)
  3. Letter from NRC (D. M. Crutchfield) to Chairman - Advanced Light Water Reactor Steering Committee (E. E. Kintner) dated February 27, 1992. "Major Technical and Policy Issues Concerning the Evolutionary And Passive Plant Designs"
  4. Letter from NRC (D. L. Wigginton) to OPPD (W. G. Gates) dated April 8, 1992

Gentlemen:

SUBJECT: NRC Information Request Regarding Post Accident Sampling System (PASS) - Fort Calhoun Station (FCS), Unit 1 (TAC No. M81256)

Omaha Public Power District (OPPD) is providing this letter in response to the NRC's request (Reference 4) for additional information on the time needed to obtain a reactor coolant (RC) grab sample and analyze it for dissolved gas. In a telephone call on May 11, 1992, Mr. T. C. Matthews of my staff spoke with Mr. S. D. Bloom of the NRC and received a 30 day extension to allow OPPD to perform additional research prior to submitting this response. In Reference 2, OPPD proposed to delete credit for the PASS automatic inline dissolved gas analysis sequence and retain only the ability to obtain an undiluted, pressurized RC grab sample for offsite dissolved gas analysis. The NRC request for additional information is stated below:

#### NRC REQUEST

Criterion 1 in Item II.B.3 of NUREG-0737 specifies that the licensee should have the capability to obtain reactor coolant samples and containment atmosphere samples and perform analysis within 3 hours of a decision to obtain them. Either confirm that the Fort Calhoun Station's modified procedure for dissolved gas analysis, based on taking grab samples, meets this requirement, or indicate how much time is expected to pass between the decision to take the sample and the completion of the analysis. Justify the acceptability of a time greater than 3 hours.

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OPPD RESPONSE

As stated in Reference 2, OPPD does not have the ability to analyze undiluted, pressurized RC grab samples onsite and currently does not have pre-arranged agreements for offsite analysis. The nearest facility capable of analyzing an undiluted, pressurized RC grab sample for dissolved gases is the Department of Energy's (DOE) Argonne National Laboratory (ANL) in Argonne, Illinois. ANL representatives have estimated that following notification, it would take 48 hours to set up the initial test equipment/shielding and have results from the first sample analysis. Upon receipt by ANL, subsequent samples could be analyzed in 3 to 8 hours. Use of prebuilt specialized test equipment to decrease the set-up time for analysis of the initial RC grab sample is not considered practical by ANL.

A hypothetical timeline (Attachment A) was developed, which assumes that the decision to take a grab sample is made 6 hours after the beginning of an accident and ANL is notified at that time. The grab sample is then actually taken at 24 hours into the accident. This sample time is based on Reference 3, page 30, which concluded that samples for dissolved gas and chloride analysis can be taken up to 24 hours after the beginning of an accident. The grab sample would then be trucked to ANL, and the results would be available approximately 30 hours after the sample was taken (54 hours into the accident).

Less time would be necessary to analyze subsequent grab samples as the initial ANL test equipment setup would be reused. Following analysis of the first grab sample, the sample container would be trucked back to FCS where another sample could then be taken, shipped, and analyzed. As shown on Attachment A, the estimated time to receive analysis results for subsequent samples is 20 hours after the sample is taken at FCS. A total of 37 hours is estimated between the results of each subsequent analysis.

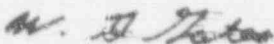
Criterion (8) of NUREG 0737 Item II.B.3 states that the equipment available for back up grab sample analysis shall provide results at least once per day for 7 days following an accident and then at least once per week. OPPD's utilization of ANL for offsite grab sample dissolved gas analysis does not meet the 24 hour frequency of Criterion (8). The initial grab sample results would take 54 hours with subsequent analysis results available approximately every 37 hours. Although the specific sample analysis frequency of NUREG 0737 Item II.B.3 would not be met by this process, it would provide confirmatory analysis information to assess the accident severity.

OPPD considers the above noted analysis timeframes justified since information obtained from RC dissolved gas sample analysis is useful only to confirm the extent of core damage and not for accident mitigation. However, isotopic analysis of diluted RC grab samples through operation of the PASS can help evaluate core damage. Safety related, real time instrumentation to monitor fuel failure is available to the operators and Technical Support Center personnel for use in accident mitigation. This instrumentation includes the core exit thermocouples, heated junction thermocouples, containment radiation monitors and containment atmosphere hydrogen monitors. Details of this justification are available in Reference 2.

OPPD is negotiating a formal agreement with the DOE to utilize the ANL hot cell facilities for post-accident dissolved gas analysis of RC grab samples. This agreement, when reflected in appropriate FCS procedures, will provide a process which meets the intent of NUREG 0737 Item II.B.3. If this approach is acceptable to the NRC, these actions will be completed on a schedule to be coordinated with the NRC Project Manager for FCS.

If you should have any questions, please contact me.

Sincerely,



W. G. Gates  
Division Manager  
Nuclear Operations

WGG/sel

Attachment

c: LeBoeuf, Lamb, Leiby & MacRae  
R. D. Martin, NRC Regional Administrator, Region IV  
R. P. Mullikin, NRC Senior Resident Inspector  
S. D. Bloom, NRC Acting Project Manager

Time-line for Obtaining PASS RC Grab Sample Dissolved Gas Analysis

A postulated time line for obtaining the initial grab sample following an accident is as follows:

- Accident Occurs at "T" Hours
- At 6 hours into the accident it is determined that a RC grab sample will be taken for dissolved gas analysis. At this time, ANL and a qualified trucker would be notified. The PASS would determine certain radionuclides in the RC and the activity level of a grab sample. This information would be used in radioactivity calculations to meet Federal regulations for shipping the grab sample as well as for analysis preparation at ANL.
- At 24 hours into the accident a grab sample is taken using container SL-19. The basis of taking a sample at this time is the NRC staff comment in Reference 3.
- The grab sample is loaded onto the truck at "T" plus 27 hours.
- The grab sample is delivered to ANL at "T" plus 39 hours.
- ANL dissolved gas analysis results available at "T" plus 54 hours (30 hours after the sample was taken).

Subsequent actions to obtain additional sample analysis results would occur as follows:

- ANL grab sample analysis complete at "S" hours
- Load container SL-19 onto truck at ANL, "S" plus 2 hours
- Truck arrives at Fort Calhoun Station, "S" plus 14 hours
- Unload and reconnect for new sample, "S" plus 16 hours
- Grab sample taken, "S" plus 17 hours
- Prepare and load container SL-19, "S" plus 19 hours
- Truck arrives at ANL, "S" plus 31 hours
- Unload container SL-19, conduct dissolved gas analysis and have results available, "S" plus 37 hours (20 hours after sample was taken).