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Subject: Arkansas Nuclear One - Unit 1 and Unit 2
Docket No. 50-313 and 50-368
License No. DPR-51 and NPF-6
Supplemental Information on Relief From Post Accident Sampling System Requirements of NUREG-0737

Gentlemen:

By request of the Nuclear Regulatory Commission (NRC) during a conference call held on February 10, 2000 between the NRC and Arkansas Nuclear One (ANO), the following information is provided as a supplement to ANO's submittal dated July 7, 1999 (0CAN079901) proposing relief from NUREG-0737 requirements associated with the Post Accident Sampling System (PASS). As a result of the call, the NRC staff requested a specific statement regarding ANO's intent to provide or maintain sampling guidance within appropriate procedures following the proposed elimination of PASS requirements. Therefore, this submittal is intended to address the NRC request regarding sampling guidance that will be available in ANO procedures following the proposed elimination of PASS requirements. In addition, two issues were discussed during other conversations with the NRC regarding I-131 assessment and pH control for plants not having a passive pH control method. In order to support timely resolution of all outstanding issues, these two issues are also addressed within this supplemental letter.

ANO letter 0CAN079901 provided information, relevant to sampling under accident conditions, that would be maintained in current accident-related procedures following the elimination of the PASS. The following statements are excerpts from 0CAN079901.

> "...samples could be used for informatory purposes and provide useful data for future enhancement to accident mitigation strategies. In this respect, ANO understands the value of such samples and intends to support the collection of this data. However, ANO does not believe it is necessary to have pre-established systems, components, or requirements that specifically provide for obtaining such samples due to the low significance this information will have relevant to the event in progress and the cost of maintaining such equipment and programs. Current emergency procedures, programs, and planning provide for the preparation of

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> action plans to obtain post accident goals important to the site, the industry, and the NRC, including the gathering of samples, without the reliance on a PASS." (Reference *Summary*, 0CAN079901, Attachment 1, page 15 of 19)

In addition to the above information, ANO provided examples of such guidance contained within the current ANO Severe Accident Management Guidelines (SAMG) procedure to the NRC via the aforementioned conference call. Specifically, it was noted that the SAMG acknowledges the potential for using results of sampling (e.g. references to potential measurement of Cesium-134, Tellurium-129, and Rubidium-88) as one possible informational source within the process of accident assessment. Other examples where sampling is referenced in the SAMG include the monitoring of containment airborne radioactivity, the sampling of reactor coolant gases, and references to pH concerns when added fluids to the reactor coolant that were not assumed in the original accident analyses. These and similar references for the use of sample results are intended to be maintained in the SAMG if plant conditions support sampling efforts. Changes to the SAMG and other accident-related procedures that reference sampling (Emergency Plan Procedures, Emergency Operating Procedures, Abnormal Operating Procedures, Chemistry Procedures, Radiological Procedures, and the Core Damage Assessment Methodology) are intended to be limited to the removal of any reference to using the PASS to obtain samples. This also includes the removal of any reliance on samples to enable rapid accident assessment and mitigation (other than those accidents of 5% clad failure or less) and the addition of dose-based data to enhance procedures and further aid in the assessment of the accident in progress. In addition, ANO committed to maintaining the ability for offsite analysis of samples as stated in 0CAN079901.

The use of the aforementioned procedures apparently led to some confusion during the NRC review process. The main concern was that the SAMG did not offer methods to obtain samples should they be desired by the ANO Emergency Response Organization (ERO). At ANO, the SAMG is maintained to provide rapid guidance to upper-level ERO personnel in assessing and mitigating the accident in progress. Since a tremendous in-flow of data must be processed by these individuals in short order, the SAMG was developed to be concise in aiding the decision making of ERO personnel so as to not unduly delay mitigating actions. Placing redundant information within the SAMG to describe sampling specifics would only provide burdensome information, slowing the decision making process. Therefore, the philosophies employed at ANO limit the information contained within the SAMG, with the more detailed and specific information for such activities maintained within implementing procedures (such as Chemistry Procedures for the subject of sampling during accident conditions). Following is an example of how the ANO process functions.

The SAMG relies on "in-plant" instruments to trend accident progression and track the success of recovery actions. In addition, as discussed above, the responsible ERO director (normally the Technical Support Center (TSC) Director) is prompted by the SAMG and other procedures to consider sampling when conditions allow. The primary intent of sampling would be to provide additional input to the core damage assessment for purposes of post accident cleanup and containment entry. Once the TSC Director has determined that plant conditions (esp., radiological conditions) may permit a sample without resulting in station personnel exceeding radiological exposure limits, the request to obtain the sample is

communicated to another ERO support group, the Operations Support Center (OSC). Since sampling is not used in the ANO accident assessment or mitigation process except for events involving less that 5% clad failure or for long term recovery strategy, the request for sampling will generally be after radiological decay has taken place for events of high clad or fuel failures. For events involving less than 5% clad failure, sampling may be requested from the onset of the event by the Shift Operations Superintendent, usually prior to the ERO being activated. Once a sample is requested during the more significant events, the OSC organization establishes a team of knowledgeable personnel in the various support areas, including chemistry and radiological protection personnel. The team is quickly briefed as to the state of the plant, the requested task, and the radiological and other safety concerns that are involved, including a review of applicable procedures to be used to perform the task. The level of detail necessary to safely obtain the requested sample in this event will be located in chemistry and radiological procedures.

As discussed in 0CAN079901, most samples (should they be requested) will be obtained from the normal sample system. Containment air samples may be obtained from the Hydrogen Analyzer/Containment Air Monitoring System flow paths. These sample points and methods will be maintained and revised as appropriate in current chemistry procedures. As referenced in 0CAN079901, many other possible sample points may exist depending on the type of accident in progress. However, ANO does not believe it is appropriate to identify every possible sample point since the same precautions and methodologies already established in current chemistry procedures may be quickly applied to such locations should they be needed.

Regarding commitments associated with I-131, Topical Report CE NPSD-1157 appeared unclear as to what methods would be used for iodine determinations. Additionally, the text of 0CAN079901 may also be unclear with respect to I-131 sampling. The following is an excerpt from 0CAN079901:

> "...coupled with the I-131 on-site and off-site survey detection capabilities..."
> (Reference 0CAN079901, Attachment 1, Page 12 of 19, Paragraph 3)

Given its context, the above statement should not be considered to imply that an I-131 specific analysis is performed in the field (off-site). Presently, ANO obtains an iodine sample, representative of all applicable iodine isotopes, during field surveys. The dose attributed to the iodines is used to check and adjust the iodine dose being projected (estimated) by in-plant computers monitoring the release. The current Emergency Plan uses the overall iodine dose, not an I-131 equivalency, as input to accident assessment and to formulate the protective action recommendations to the State of Arkansas. Use of iodine field measurements within the Emergency Plan to establish estimates of public dose is considered a conservative approach and is appropriate for purposes of emergency planning. Furthermore, the field assessment of iodine is of greater accuracy than that which would result from an I-131 analysis performed when sampling the reactor coolant or containment atmosphere, since known iodine plate-out phenomenon can dramatically skew these sample results. The field sample cartridge is bagged, sealed, and delivered to the ERO should additional analysis be desired at a later time. ANO intends to continue obtaining field samples of overall iodine and provide dose estimates based on these samples to the responsible ERO personnel.

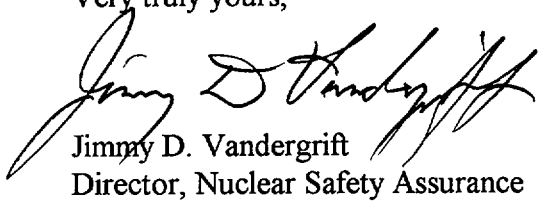
In addition to the above, ANO agrees that it is necessary to ensure that containment sump pH is controlled for those plants that do not have a passive pH control system. ANO-1 (a B&W plant included in the aforementioned ANO request) relies on the active injection of sodium hydroxide (NaOH) for sump pH control. Should a LOCA occur that results in actuation of long-term recircirculation of reactor coolant from the containment sump, but did not cause a containment pressure rise that resulted in spray/NaOH actuation, manual operator action would be necessary to ensure sump pH is increased to acceptable values. This action would include manual actuation of spray/NaOH systems upon commencement of sump recirculation or shortly thereafter. Table 7.1 of Topical Report CE NPSD-1157 includes a commitment that plants with active pH control systems must ensure long term pH control for transients where the additive system is not automatically actuated (the word "automatically" was inadvertently left out of the initial statement). Therefore, in order to meet this requirement, plants relying on NaOH injection should have procedural controls that ensure the injection of NaOH will occur under applicable circumstances.

As described in 0CAN079901, ANO – Unit 2 (ANO-2) uses passive pH control in the form of Trisodium Phosphate Decahydrate (TSP) located at strategic points throughout the containment building basement. However, the aforementioned submittal also seeks approval of NUREG-0737 relief concerning PASS requirements for ANO - Unit 1 (ANO-1), a B&W plant, which relies on active pH control by the injection of NaOH. In addressing sump pH control concerns, the existing ANO-1 Emergency Operating Procedure provides the necessary guidance to ensure NaOH injection occurs should the above scenario, or one similar to it, take place. Upon actuation of sump recirculation, the operators are required to verify NaOH tank level. If the level in the tank indicates that full NaOH injection has not taken place, the operators are instructed to inject the remainder of the tank contents until a pre-established level is achieved. Therefore, the concern for plants that rely on active pH control systems is presently and appropriately addressed for ANO-1.

Based on the information provided above, ANO is committed to maintaining, and where appropriate, enhancing current sampling criteria within accident-related procedures. As stated previously, the requirement to use a PASS to obtain samples will be removed from these procedures. In addition, procedures will be revised to ensure that no accident assessment or mitigation strategy will require a sample in order to initiate the necessary accident response modes in a timely manner. ANO will continue to obtain iodine samples in the field and, based on these samples, provide an iodine dose estimate to the responsible ERO personnel. The concerns associated with plants having active pH control systems is adequately addressed for ANO-1. Finally, ANO will continue to provide sufficient tools and guidance for obtaining samples under accident conditions, where plant radiological conditions allow.

Should further information be desired, please do not hesitate to call.

Very truly yours,



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