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U. S. Nuclear Regulatory Commission
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SUBJECT: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Hydrogen Purge System

Gentlemen:

The purpose of this letter is to inform the NRC of a change to the Arkansas Nuclear One Unit 2 (ANO-2) Safety Analysis Report and a change to the ANO-2 NUREG 0737 Item II.E.4.1 submittal such that the Hydrogen Purge System (HPS) is not described as a backup to the Hydrogen Recombiners for combustible gas control. Our investigation has determined that the plant design basis is maintained without the HPS as described below and that compliance with the pertinent regulations can be demonstrated. ANO has performed a 10CFR50.59 review which resulted in the determination that the HPS is not necessary at ANO-2. This letter is provided to inform your staff of the issues regarding our resolution of the matter, and to clearly demonstrate the absence of any implication for public health and safety. This has been discussed with Mr. Chester Poslusny, the ANO-2 NRR Project Manager.

The regulatory requirements for combustible gas control systems are defined by 10CFR50.44. For ANO-2, internal hydrogen recombiners are provided as the primary combustible gas control system in conformance with 10CFR50.44 and General Design Criterion 41. As originally designed, the Hydrogen Purge System was provided as a backup for combustible gas control and was intended to meet the specific requirement of 10CFR50.44(e) which states,

> " . . . However, the capability for controlled purging shall be provided."

Regulatory Guide 1.7 Revision 2 also states,

> " . . . purging should not be the primary means for controlling combustible gases following a LOCA. It is advisable, however, that the capability for controlled purging be provided to aid in containment atmosphere cleanup."

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During the Licensing process for ANO-2, problems with the HPS were identified in Inspection Reports dated October 4, 1978 (2CNA107803) and December 1, 1978 (2CNA127855). The discrepancies associated with the HPS were resolved in a subsequent Inspection Report dated December 14, 1978 (2CNA127858). This inspection report references NRC internal memoranda which acknowledge that the originally intended function of the HPS was to serve as a backup to the Hydrogen Recombiner System for combustible gas control. The internal memoranda further state, however, that the upcoming revision to Regulatory Guide 1.7, Revision 1 dated September, 1976, and 10CFR50 would be consistent with the Staff's finding that 10CFR50.44 did not require a backup combustible gas purging function, but rather a containment atmosphere cleanup function. Specifically, the memorandum states,

> "Although the amended section 50.44 requires that a purge system be installed, its function will be to serve as a post-accident containment atmosphere cleanup system rather than as a backup to the combustible gas control system. Since the existing Hydrogen Recombiner System consists of redundant, 100% capacity recombiners located inside containment, we do not require a backup hydrogen purge system."

Based on this interpretation by the NRC of the use of the HPS, the system was clearly considered for atmosphere cleanup vice combustible gas control.[1]

Our recent re-review of this issue ultimately led to the inspection reports and the internal memoranda. It is evident that the SAR requires revision in regard to what systems are credited for hydrogen removal and containment atmosphere cleanup and that the capability for controlled purging per 10CFR50.44(e) can be met by other means than the HPS.

Based on the expressed use of the HPS as a post accident purge capability for cleanup purposes, ANO has determined that the system could still be made operational for this function if necessary following a loss of coolant accident. However, consistent with the ANO-1 approach, the controlled purging function of containment atmosphere cleanup for ANO-2 can also be met by the capability of the Containment Purge System. This system is designed

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[1] This philosophy was reiterated in the NRC approval of ANO-1 Technical Specification Amendment No. 102 which deleted the HPS from the ANO-1 Technical Specifications and replaced it with the Hydrogen Recombiners. Correspondence relating to this change stated ANO's position for ANO-1 that the HPS was no longer required other than for other shared portions of the system (e.g., for Hydrogen sampling). It should also be noted that the Standard Review Plan 6.2.5 specifically references the purging-related guidance of RG 1.7 as applying to "post-accident cleanup."

with HEPA, charcoal and roughing filters and the capability has been specifically supported by recent calculations. Therefore, ANO's intent is to change the ANO-2 SAR such that the HPS is not described as a backup to the Hydrogen Recombiners for Combustible Gas Control. The requirement for purging capability for post-LOCA atmospheric cleanup will be met by the Containment Purge System, thus only those portions of the HPS system shared by other required systems (e.g., Containment Air Monitoring Systems) will be needed. Further, the crediting of Containment Purge has been evaluated per the criteria of 10CFR50.59 and determined not to involve an unreviewed safety question.

In Response to NUREG-0737 Item II.E.4.1, ANO credited the Hydrogen Purge System to meet the requirements for ANO-2 (Letter 1-120-10 dated December, 1980). Based on our analysis associated with the above resolution, the purging requirements may be met by the Containment Purge System. This is consistent with our response to this NUREG Item for ANO-1.

In summary, we have determined that the HPS is not necessary for combustible gas control, but rather as a post-accident atmospheric cleanup capability. In this regard, the ANO-2 HPS could be made operational for a long term post-accident response capability; however, ANO has determined that crediting of the ANO-2 Containment Purge System is acceptable. The regulatory requirements for combustible gas control are met by the Hydrogen Recombiner System and the controlled purge capability is met by the Containment Purge System. It is therefore the intent of ANO to deactivate the Hydrogen Purge System. An associated ANO-2 Safety Analysis Report revision to reflect deletion of the requirement of the HPS as a backup to the recombiners for combustible gas control will be processed as a part of the next annual update.

Should you or your staff have any questions concerning this resolution, do not hesitate to call.

Very truly yours,

James J. Fisicaro

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JJF/CWT/djm

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