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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC. 20555-0001
ATTENTION: MR. D. SZWARC

Dear Mr. Szwarc:

SUBJECT: REQUEST FOR IRIS NEAR TERM NRC REVIEW RESOURCES

Reference: STD-ES-03-31, "Request for Iris Near Term Review And Budget Estimate," Letter to L. C. Fields (NRC) from C. L. Kling (W), August 12, 2003.

SUMMARY

We appreciated the opportunity to talk with you, Joe Williams and Laura Dudes on November 4, 2004 to discuss our expectations for near term staff review of submitted IRIS topicals. Per your request, we are updating our August 2003 letter (Reference). This update includes:

1. Status of interactions to date.
2. Discussion of items included in pre-licensing
3. Westinghouse/IRIS support on reduced emergency planning
4. Interest from US power producers
5. Anticipated schedule and budget

The purpose of the near term review will be to provide informal and written staff feedback to support our preparation for and implementation of the IRIS planned test program. NRC-Westinghouse concurrence on this test program is one of the two current objectives of the pre-application.

We expect the near term feedback will be provided after the staff has reviewed the following topicals:

1. WCAP-16318-P, "IRIS Small Break LOCA (SBLOCA) PIRT," and Addendum 1 "IRIS SBLOCA Sensitivity Report for PIRT Development," to confirm the relative importance of phenomena in the IRIS response to SBLOCAs,

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2. WCAP-16392-P, "IRIS Test Program" to confirm sufficient data will be generated to support the Evaluation Model Development and Assessment Process (EMDAP), and
3. WCAP-16103-P, "IRIS Scaling Analysis, Part 2," which will cover Stage 3 (Top-Down System Scaling Analysis) of the Hierarchical, Two-Tired Scaling Analysis.

STATUS OF INTERACTIONS TO DATE

To date the following six sets of IRIS documents have been submitted to the NRC:

1. Eleven IRIS overview papers
2. WCAP-16062-P, "IRIS Plant Description Document"
3. WCAP-16103-P, "IRIS Scaling Analysis, Part I"
4. WCAP-16082-P, "IRIS Preliminary Safety Assessment, Vol. I and II"
5. STD-ES-04-09, Attachment 1, "Preliminary Steam Generator Tube Rupture Analysis For Iris"
6. WCAP-16318-P, "IRIS Small Break LOCA Phenomena Identification and Ranking Table (PIRT)" and Addendum 1 "IRIS SBLOCA Sensitivity Report for PIRT Development,"

The eleven overview papers include information on IRIS overall approach and philosophy, design status, and systems and components design. They provide a general overview, the basic principles of design, safety analysis, and computational methods. These papers are only intended to provide background information for the pre-licensing effort.

WCAP-16062-P provides a detailed overview of the IRIS design. It is also only intended to provide background information for the NRC review effort. The information in the topical focuses on IRIS specific characteristics, addressing only cursorily or not at all what we expect will be very similar to AP600/AP1000.

WCAP-16103-P, Part 1 provides a detailed overview of the first two stages of the IRIS Scaling Analysis, Stage 1 (System Decomposition) and Stage 2 (Scale Identification) of the Hierarchical, Two-Tired Scaling Analysis.

The two volumes of WCAP-16082-P and Attachment 1 to STD-ES-04-09 provide a preliminary safety assessment of the IRIS reactor and include an overview of the IRIS approach to safety. The events analysed in these topicals are a subset of those studied for AP1000 and AP600, and have been selected (1) to address those events where IRIS response is different from AP1000, and (2) to provide an initial overview of the IRIS response to different anticipated operational occurrences and design basis events.

WCAP-16318-P, Volume I contains the background and results of the IRIS Small Break LOCA (SBLOCA) PIRT Project. Addendum 1 to WCAP-16318-P contains the IRIS SBLOCA sensitivity report used to support the PIRT development. The PIRT addresses SBLOCA because this

transient is unique to IRIS with its extensive use of passive systems and RCS/containment interaction.

The primary objective of the IRIS SBLOCA PIRT project was to identify the relative importance of phenomena in the IRIS response to SBLOCAs. This relative importance, coupled with the current relative state of knowledge for the phenomena, provides a framework for the planning of the continued experimental and analytical efforts. To satisfy the SBLOCA PIRT Project objectives, Westinghouse organized an expert panel whose members were carefully selected to insure the PIRT results reflect internationally recognized experience in reactor safety analysis, and were not biased by program preconceptions internal to the IRIS Program.

The phenomena for all other transients are expected to be enveloped by this SBLOCA PIRT and/or related PIRTs for AP1000. Westinghouse will either confirm these assumptions when we complete an IRIS transient PIRT by February 2005 or we will provide an updated report identifying any additional phenomena that need to be considered.

NRC feedback on the information submitted to date was provided by an informal meeting in April 2004. The main conclusions of this meeting were:

1. The NRC had no objections or reservations to the documentation submitted, and
2. Westinghouse appears to have a complete set of Chapter 15 safety analyses and the results appear to be acceptable.

By the end of January 2005, Westinghouse will submit WCAP-16392-P, "IRIS Test Program" for staff review. WCAP-16392-P will describe the detailed test program the IRIS consortium will implement 1) to quantify design information required to support the specification and manufacture of unique first-of-a-kind IRIS design features, and 2) to generate sufficient test date to adequately support the EMDAP used to verify the acceptability of licensing analysis methods.

By the end of March 2005, Westinghouse will submit WCAP-16103-P, "IRIS Scaling Analysis, Part 2" for staff review. WCAP-16103-P, Part 2 will contain Stage 3 (Top-Down System Scaling Analysis) and includes information to support the NRC review of the proposed IRIS test program. The final, Stage 4 report of the IRIS Scaling Analysis will be prepared after the test facilities have been identified and their parameters have been characterized.

DISCUSSION OF ITEMS INCLUDED IN PRE-LICENSING

The objectives of the IRIS pre-licensing application are currently limited to a critical assessment of 1) the planned test program and 2) the application of risk informed regulations.

NRC review and documented feedback on the PIRT, stage 3 scaling and test program topicals is important 1) to identify all necessary tests to support the EMDAP, 2) to establish the range of tests to be performed and 3) to limit, to the extent possible, the future need to perform new and different tests or to significantly extend the ranges of proposed test. Westinghouse and the other IRIS consortium members realize that the testing program itself and the licensing process may indicate additional tests need to be performed; however, we want to avoid, to the extent

possible, either additional testing or retesting. A well conceived test program, based on our understanding of unique IRIS features and appropriate NRC feedback should allow us to attain this goal. Initial NRC feedback is desirable to be completed by mid-2005.

Another major pre-licensing activity will be planning and executing a program to justify the reduction of the emergency planning zone (EPZ) to the exclusion area of the IRIS plant. While the IRIS consortium believes IRIS can be easily licensed via 10CFR52 and related regulations for current ESP applications, in the longer term we want to take advantage of the reduced plant risk resulting from the IRIS Safety-by-Design™ approach. While this advantage can be implemented by relaxing the safety classification of some systems/components and reducing some Technical Specification requirements, a much larger benefit would be reducing or eliminating the emergency planning requirements beyond the exclusion area. In this way, the impact of IRIS on the public can be treated like for any other industrial installation.

Westinghouse realizes any effort to reduce current emergency planning requirements will be long term, requiring both adequate documentation from the IRIS consortium to support reducing the EPZ and, concurrently, NRC/industry support to change appropriate emergency planning regulations.

In 2005, Westinghouse intends to provide an initial round of documentation to support IRIS' capability to reduce the EPZ. We will want NRC review and comment on this material, as well as, ongoing interactions to support and keep current with the regulatory change process.

WESTINGHOUSE/IRIS SUPPORT ON REDUCED EMERGENCY PLANNING

Westinghouse and IRIS consortium personnel are participating with a variety of domestic and international organizations to advance the process of implementing risk informed licensing into the design and licensing process, including the potential of reducing the EPZ. Domestically, Westinghouse personnel directly support 1) numerous committees (e.g., ANS, ASME, etc.) developing standards for implementing risk informed methods and 2) industry initiatives to improve licensing for future plants (e.g., NEI New Regulatory Task Force).

Internationally, IAEA has approved a Co-ordinated Research Project (CRP) supporting Westinghouse and several other IRIS consortium members for the investigation of methodologies to assess possible reduction of the EPZ. The IAEA is also considering another CRP on probabilistic safety assessment of nuclear facilities to external events, in recognition that once the impact of internal events is reduced to very low levels (e.g., ~10^{-8} CDF/yr), external events become the dominant CDF contributor. Westinghouse and other members of the IRIS consortium are also planning to participate in this CRP.

Westinghouse wants to coordinate with the NRC implementation of the results of these standards and projects into a plan that will lead to further risk informed changes in existing regulations, including the potential for reducing the EPZ.

INTEREST FROM US POWER PRODUCERS

In the process of establishing the priority of staff resources, the NRC has asked Westinghouse to indicate domestic interest in the IRIS plant.

IRIS has participated in essentially all of the recent Early Site Permit applications (see for example NUREG-1811). IRIS has ranked high in these evaluations with few, if any, reservations concerning the ability to license and implement the IRIS design. However, because IRIS licensing will not be completed and deployment is not scheduled before 2012-2015, IRIS has not been the first choice of these evaluations. Other plants further advanced in the licensing process and with more mature designs (e.g., AP1000) have been ranked higher because they can be deployed in the 2008-2010 timeframe.

In addition, IRIS has been approached (August 2004) by an organization called "EnergyPath Corporation" (Wilmington NC). They are evaluating options on behalf of the Texas Gulf Coast Chemical Industry to provide 1200 - 1600 MWe of new nuclear generating capacity, to replace natural gas generation (because of its volatile prices). Westinghouse has provided EnergyPath with an extensive list of detailed IRIS technical and economics criteria. Their evaluation of 8 nuclear designs is nearing completion, and as part of our comprehensive consultation, we have obtained some (informal/preliminary) feedback.

Generally EnergyPath's feedback on IRIS technical parameters is extremely positive. Commercially, they are currently focusing on options that can provide new generating capacity by 2010. EnergyPath nevertheless assessed IRIS as having the required technical and commercial merit to keep it as one of the 'short-list' evaluated options and have requested a "Supply Letter" setting out the provisional contractual arrangements.

Westinghouse believes this level of domestic interest is sufficient to warrant the NRC staffing support requested below.

ANTICIPATED SCHEDULE AND BUDGET

In the near term, Westinghouse requests an informal meeting with the NRC staff in January to provide initial feedback on the PIRT topical submitted in September, 2004. The purpose of the staff review will be to confirm the relative importance of phenomena in the IRIS response to SBLOCAs. Based on the staff review of other previously submitted topicals, Westinghouse would also want NRC concurrence that the phenomena for essentially all other transients have been adequately addressed by AP600/AP1000 PIRTs.

Subsequent to submitting the scaling and test plan topicals, Westinghouse requests an informal meeting with the staff in April to provide initial feedback to confirm sufficient data will be generated to support the EMDAP for those analytical models the IRIS consortium will use to perform IRIS licensing analyses.

Following the generation and submittal of responses to NRC concerns, if any, raised during these informal meetings, Westinghouse will expect written feedback on the test plan by mid-

2005. Around that time, we will identify any subsequent meetings needed to discuss the IRIS test plan and results.

By mid-2005, Westinghouse will submit at least two additional topicals addressing 1) IRIS conformance with current Standard Review Plan guidance and 2) the initial IRIS PRA analysis results. In the same timeframe, Westinghouse will also submit a white paper on our proposed approach to justify No Emergency Response. This white paper will include: 1) background information, 2) state-of-the-art methods, 3) the international outlook and 4) proposed methodology/approach.

About the time of these submittals Westinghouse will request an administrative meeting to discuss the expected schedule for completing NRC review of this new information.

Westinghouse currently anticipates about 0.5 man-year NRC administrative and 1.0 man-year NRC staff support in fiscal '05 to manage the meetings and complete the reviews outlined above.

We are also updating our best estimate of the longer term (i.e., beyond fiscal '05) IRIS licensing process/schedule. The schedule discussed below is our current best estimate and may change due to the timing of NRC review feedback and possibly revised priorities at Westinghouse.

Following completion of the near term effort discussed above, we would expect another round of pre-licensing submittals/reviews in the process of generating the information required to docket the IRIS design and start formal design certification. Issues currently expected to be addressed in this time period include: 1) on-going test progress and adequacy of test results; 2) development of additional EMDAP information to support the selection and justification of specific methods to be used for the IRIS licensing analyses; 3) progress on the implementation of risk informed licensing; 4) adequate quality assurance practices for an international design team; and 5) any additional, unresolved issues raised earlier in the pre-application process.

In the long term, our goal is to have the first IRIS module deployed in the 2012-2015 timeframe. To meet this goal we need to start IRIS specific testing in 2005 and to begin the formal design certification process in late 2006.

Please contact me (860) 731-6604 or Mario Carelli (412) 256-1042 if you need any clarification or more information regarding this request.

Regards,

Charles L. Kling, Licensing Manager
IRIS Project

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