

TASK A-42

PIPE CRACKS IN BOILING WATER REACTORS

Lead NRR Organization: Division of Operating Reactors (DOR)  
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Applicability: General Electric Boiling Water Reactors  
Projected Completion Date: December 1979

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## 2. PLAN FOR PROBLEM RESOLUTION

### A. Approach

The problem will be resolved by identifying the new conclusions and recommendations reached by the present PCSG by carefully studying and comparing the conclusions and recommendations made in NUREG-75/067, NUREG-0313, and NUREG-0531. The implementation document NUREG-0313 will then be revised to incorporate those new recommendations which can be implemented immediately. For those new recommendations which will require further study before it can be implemented, a plan for establishing the staff position on each recommendation will be proposed.

### B. End Product

The end product of this activity will be a NUREG report documenting the updated staff position on material selection and processing guidelines for BWR piping based on recommendations made by the present PCSG. This report will be issued approximately in Mid-August 1979.

### C. Tasks

#### C-1. Revision of NUREG-0313, "Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping"

Review and identification of those new conclusions and recommendations in NUREG-0531 which can be implemented immediately. The specific effort will include updating the implementation document NUREG-0313 to incorporate these new recommendations. This subtask will be accomplished in Mid-August 1979.

#### C-2. Staff Recommendation of Follow-on Efforts to Reduce the Potential for IGSCC in BWR Piping

Those conclusions and recommendations of NUREG-0531 which would require further study before the staff position can be established will be identified. In addition, a plan for establishing such a position will be recommended. This subtask will also be completed approximately in Mid-August 1979. However, the technical activities for these follow-on efforts will definitely not be completed within the time span specified for this activity.

## 3. BASIS FOR CONTINUED PLANT OPERATION AND LICENSING PENDING COMPLETION OF TASK

For new plants or plants under construction and operating plants, we have concluded that, pending completion of this task, continued plant operation and licensing do not constitute an undue risk to the health and safety of the public for the following reasons:

- Although the augmented inservice inspection programs required by NRC cannot detect all IGSCC, it has demonstrated to be effective in locating most instances of IGSCC prior to cracks propagating through the wall.

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- . The leak detection system employed as a monitoring system has been effective in alerting the plant operators of primary system leakage that could result from a through-wall crack.
- . Sudden failure or significant loss-of-coolant is not expected from through-wall cracks prior to a period of leakage.
- . Should a large through-wall crack develop, go undetected by NDE inspections, and by continuous leak detection devices, and subsequently should a rupture of the line occur causing a loss-of-coolant accident, the design of a nuclear power plant is such that protection is still provided for the public health and safety.

To summarize, the various NRC actions taken to date ensure that IGSCC does not pose an immediate safety problem to operating plants and thus constitute an acceptable basis for continued plant operation and licensing.

#### 4. NRC TECHNICAL ORGANIZATION INVOLVED

- A. Engineering Branch (EB), Division of Operating Reactors, has the overall lead responsibility to see this TAP to its completion. This includes review and evaluation of the subject NUREG reports to establish the implementation guidelines with particular emphasis on operating plants, and final issuance of a NUREG report. In addition, EB will have the lead responsibility of identifying long-term follow-on efforts and recommending plans for establishing the implementing guidelines for these issues.

Manpower Estimates: 4 man-months FY 1979

- B. Materials Engineering Branch (MTEB), Division of Systems Safety, has the lead responsibility of establishing the implementation guidelines for new plants and plants under construction. MTEB will have direct input to the revision of NUREG-0313. MTEB will also identify long-term follow-on efforts and recommend plans for establishing staff position on these issues.

Manpower Estimates: 3.5 Man-Months FY 1979

#### 5. TECHNICAL ASSISTANCE

No technical assistance is needed for the present tasks. However, technical assistance may be required for the identified follow-on efforts.

#### 6. ASSISTANCE REQUIREMENTS FROM OTHER NRC OFFICES

No assistance from other NRC offices is required for Subtasks C-1 and C-2. However, some assistance may be needed for the follow-on efforts identified under Subtask C-2. All research and developmental programs aiming to increase or maintain the integrity of BWRs piping will definitely assist us in establishing the implementation guidelines for the follow-on efforts. Specifically,

- A. Office of Standards Development

Structures and Components Standards Branch/DES is currently funding EG&G to develop a Regulatory Guide on "UT of Austenitic Stainless Steel Piping."

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This guide will provide a UT performance standard or procedure which will significantly increase the detection capability for IGSCC in austenitic stainless steel piping.

B. Office of Nuclear Regulatory Research

Metallurgy and Materials Branch/RES is currently funding the Pacific Northwest Laboratories to study the "Reliability of Non-destructive Examination" aimed to pinpoint the strengths and weaknesses of NDE and recommend the appropriate experimental programs to increase the reliability of flaw detection.

7. INTERACTIONS WITH OUTSIDE ORGANIZATIONS

No major interactions with outside organizations are anticipated for the subtasks. However, an extensive interaction with outside organizations will be necessary for the follow-on efforts. This interaction involves information exchanges with licensee, GE, industry research institutes, and national labs that are active in research and development of methods to reduce the potential for IGSCC or to detect the occurrence of IGSCC. An information exchange with foreign regulatory and inspection organizations is also expected.

8. POTENTIAL PROBLEMS

No difficulties have been anticipated in achieving this task. However, some delay in achieving the follow-on efforts, if the task is expanded, might be expected because of the long-term nature of the problem and the necessary extensive interactions with other organizations.