INL USQ PROCESS
POTENTIAL INADEQUACY IN THE SAFETY ANALYSIS (PISA) FORM
(DO NOT USE FOR PROPOSED CHANGES)

Facility or Activity: ATR

USQ Process No.: RTC-USQ-2007-354

Subject: ATR Primary Coolant System Pipe Supports

Describe the New Information/Discovery:

INL Subcontractor MPR performed a walkdown of the ATR Primary Coolant System (PCS) (December 11-14, 2006) and identified differences between the piping supports included in internal technical report RE-A-79-011, "ATR Primary Coolant System Piping Design Analysis," January 22, 1979, and the as-found conditions. The differences were reported in a MPR Trip Report dated December 28, 2006 and a MPR Telecon Memorandum dated February 26, 2007.

MPR identified additional supports which were not included in RE-A-79-011, and other supports which were located a few feet from the location given in RE-A-79-011. The MPR Trip Report includes red line mark up drawings which provide additional information regarding support locations, dimensions, configurations, etc. These red line mark ups aided in the development of the MPR computer models.

The only existing drawings of the ATR PCS which show pipe supports are 120925, 120926, 120927, 120928, 120932, 120935, and 120936. Pipe supports are not shown on the ATR spoolpiece drawings or the ATR Inservice Inspection (ISI) weld drawings.

The following additional supports were identified by MPR during their walkdowns:

a. Line 1-45 which connects the PCS Surge Tank 670-M-12 to line 1-13 has two supports instead of one as indicated in RE-A-79-011. These supports are not shown on any PCS drawing. RE-A-79-011 concludes the piping and one support satisfy the design requirements of the code. There is no record of modifications to the pipe supports on line 1-45.

b. Line 1-42 the Bypass Demineralizer Supply has an extra support which was installed at Node 9 in 2004 using FCF-7.4.1.4-10/7406. This support is outside the radiographic boundary.

c. Line 1-40 has an additional horizontal support to the wall.

d. Line 1-17 has an additional PR-6 vertical support which is only loaded when the primary coolant is drained out of line 1-17.

e. Line 1-43 has an additional horizontal support that is not shown in RE-A-79-011.

f. Line 1-44 rigid hanger RH-16 is located a few feet and around an elbow from the location shown in RE-A-79-011.

g. Line 1-46 has rigid hanger RH-22 near the location where line 1-44 T's into line 1-46 instead of being located on line 1-44.

h. Line 1-47 PS-10 is located closer to the elbow than indicated in RE-A-79-011.

i. Line 1-136 connects to Line 1-46, but is not shown on the piping isometric in RE-A-79-011.

j. The eight mechanical snubbers (MS-1 through MS-8) are not shown in RE-A-79-011.

k. The discharge line of the four primary coolant pumps (lines 1-22, 1-23, 1-24, and 1-25) each have an additional pair of spring hangers (SH-5A and SH-5B) that are not shown in RE-A-79-011.

There is no record of any modifications performed on any of these pipe supports (except for the one new support on line 1-42). These supports are in addition to the pipe supports which were included in the PCS model used in RE-A-79-011.

There is one Engineering Design File EDF TRA-ATR-844 which was generated in response to Non-Conformance Report NCR M2021, which identified missing supports on PCS lines 1-41, 1-42, and 1-47. MPR did not identify any missing supports, only extra supports.

The modeling and analyses of the ATR PCS to the new seismic design criteria being performed by MPR is not within the scope of the current seismic upgrade plan (PLN-588). The inputs and methodologies being used by

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MPR are consistent with the scope of PLN-588. The ultimate goal of PLN-588 is to re-evaluate all of the safety-related structures, systems, and components (SSCs) in ATR to the new seismic design criteria.

Identify the applicable safety basis document(s) (e. g., DSA, SAR, BIO, TSRs, etc.):
Advanced Test Reactor (ATR) Upgraded Final Safety Analysis Report (UFSAR)(SAR-153)

Technical Safety Requirements (TSR) for the ATR (TSR-186)

R. F. Davidson, "ATR Primary Coolant System Piping Design Analysis," RE-A-79-011, January 22, 1979

RTC NPH Assessment Plan (PLN-588)

I. PISA ASSESSMENT

a. Is there a potential inadequacy in the analytical methodology and/or tools used in the safety basis?
☐ Yes ☒ No

b. Is there a potential discrepancy between the safety basis assumptions, provisions, or conditions, in the accident analysis and the facility operation or parameters?
☐ Yes ☒ No

c. Is the actual physical condition of the facility different than as described in the safety basis (discrepant as-found condition)?
☐ Yes ☒ No

d. Has an actual or postulated operational event or incident revealed a potential inadequacy in the safety basis?
☐ Yes ☒ No

e. Is this an activity or condition not analyzed in the existing safety basis?
☐ Yes ☒ No

Provide an explanation of the assessment result:
The currently accepted seismic evaluation for the ATR PCS is RE-A-79-011. The ATR Safe Shutdown Earthquake (SSE) seismic design criteria has changed several times since RE-A-79-011 was released in 1979, yet the seismic evaluation of RE-A-79-011 has been considered bounding for the various seismic design criteria since 1979.

The ATR SSCs are being re-evaluated to the new seismic design criteria based on the scope, schedule, and funding as prescribed in PLN-588. The ATR PCS will be re-evaluated when funding and scope are available to complete the analysis. Until that time, RE-A-79-011 is the currently approved seismic analysis of the ATR PCS as referenced in the ATR authorization bases documents (SAR-153).

Many of the supports that were not included in RE-A-79-011 are installed at locations that are outside the radiographic boundary, upstream of check valves which would be shut following a seismic event, and on 6-inch and smaller piping. RE-A-79-011 evaluated the PCS without these additional piping supports. MPR has sent out the first version of their PCS piping analyses for review and comment with the as-built piping supports. The MPR analyses did not identify any unacceptable piping stresses or displacements with these additional supports included in the model.

J. D. BROWER / G. L. Sharp	Jeffrey O'Brien / [illegible]	4/12/07 / 4/12/07
USQ Evaluator Print/Type Name	USQ Evaluator Signature	Date

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B. P. CLEMENTS	B P Clements	9/14/07
Nuclear Facility Manager Print/Type Name	Nuclear Facility Manager Signature	Date

If the answer to ALL of the assessment questions above is No, file the completed form. Do not complete Section II, III, or IV.
If the answer to any one of the assessment questions is Yes, there is a potentially inadequate safety analysis (PISA):

- Nuclear Facility Manager document actions (Section II), including interim operating restrictions, taken to place or maintain the facility in a safe condition.
- Nuclear Facility Manager execute reporting process per MCP-190 or AWP-3.1, for PISA.
- USQ evaluator proceed to Section III.

II. DOCUMENT ACTIONS TAKEN TO PLACE OR MAINTAIN FACILITY IN A SAFE CONDITION AND PROVIDE THE BASIS FOR THE SELECTION OF ANY INTERIM CONTROLS

Safety Analyst Print/Type Name	Safety Analyst Signature	Date
Nuclear Facility Manager Print/Type Name	Nuclear Facility Manager Signature	Date

Is independent technical review required? Yes ☐ No ☐

Nuclear Facility Manager Signature or Initials

Independent Reviewer Print/Type Name	Independent Reviewer Signature	Date

III. DETERMINATION

Identify applicable section(s) of the safety basis document(s) (e.g., DSA, SAR, BIO, TSRs, etc.).

IIIa: POTENTIAL FOR AN INCREASE IN PROBABILITY OR CONSEQUENCE OF AN ACCIDENT OR MALFUNCTION EVALUATED IN THE SAFETY BASIS