ONTARIO POWER GENERATION

Records File Information: Attach to Modification Outline for scanning into bookmarked record of Master EC.

Internal Use Only

N-FORM-10528-R001*

Pressure Boundary Designers Checklist

Facility ☒ DND ☐ PND ☐ NWM ☐ Nuclear Other: _____			Master EC: 88528
Modification Team Leader or Assigned Engineer ensures this checklist is completed.			
Answer all of the following questions. See back of form for question guidance.	**Yes**	**No**	**Comments**
1. Does change involve a pressure retaining system or the containment pressure boundary?	☒	☐	New Nuclear Class 3 and 6 tanks and associated piping for storing heavy water will be added to the DNGS station in support of refurbishment and TRF operational improvements.
2. Does the change impact a structure which supports a pressure retaining system meeting the criteria in one of the following ways: • Alter its seismic response • Alter its load bearing capacity • Alter deflected shape or flexibility?	☒	☐	The portion of the building that encloses D2O tanks, must be seismically qualified to DBE category D, and the load bearing capacity of the new facility must be established. The new building may impact the load bearing and seismic response of the current HWMB/TRF based on its proximity and connection. The current HWMB/TRF supports a number of pressure retaining systems.
3. Does change impact pressure, flow rates, temperatures or loading that a system is subjected to?	☒	☐	Flow rates to the station upgrader and detritiation processes are required to meet the TRF operational improvement objectives. Changes to station pumping requirements to ensure transfer of heavy water are also required.
4. Does change involve an item, or its orientation or location, in such a way that it could impact a pressure retaining system (e.g. create a missile target or a configuration whereby such an item could fall on a pressure retaining system).	☒	☐	Rigging and hoisting equipment including an elevator and cranes will be permanently installed in the new facility. The overhead cranes may impact pressure boundary systems.
5. Does the change alter the ASME code of record?	☒	☐	Existing systems designed to older codes will require modification. For example, D2O S&I system is designed to CSA-N285.0-M81 and ASME B31.1 (1980).
6. Does the change impact system classification?	☐	☒	Nuclear Class 3 and 6 classifications will remain for the existing systems.
For any of the above questions answered Yes, document the issue in the modification Issue Tracking file for follow-up during the design phase in accordance with Pressure Boundary program requirements.			

_____ _____ _____

*Associated with N-PROC-MP-0090, Modification Process

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Pressure Boundary Designers Checklist

Prepared by (please print)	Signature	Date (DDMMMYYYY)

Key Points for Pressure Boundary Checklist

1. Changes to pressure retaining systems, or the containment pressure boundary, are subject to specific licence conditions, CSA standards and the ASME Code. PB Program Document N-PROG-MP-0004 identifies PB activities that may constitute an Engineering Change. Examples of such changes include:

   - Rerouting of piping
   - Changing piping or component materials
   - Changing mass distribution, such as the addition of a leak sealing “box” around a valve
   - Replacing a valve
   - A welding repair
   - A change to a containment penetration
   - A change to a PB design specification (Design Pressure, Temperature, etc.)

   Care must be taken to properly categorize repairs and replacements (which are not Engineering Changes) versus modifications.

   Work is generally considered a repair if:

   - It involves a “like for like” changing of a component
   - It involves a replacement which is not identical, but which meets the design specifications
   - It involves replacement of a failed or worn component with another of a similar type, or repair of a system using material and components similar to those used in the original design.

2. Changes that impact a pipe support or a component supporting a pump or valve, as well as changes to structures that these supports transmit loads to, can effect the response of piping systems or components, Examples:

   - Adding an additional load or constraint to a frame structure which supports pressure retaining systems (such loads could come from additional Fire Protection or Equipment Qualification requirements)
   - Moving, removing or adding bracing to a frame structure (this may occur as a temporary move to facilitate a change)
   - Altering a piping penetration or placing a new penetration in close proximity to a piping penetration for the purposes of another program (e.g. Fire Protection)
   - Replacing a snubber with a rigid support.

3. Changes to plant equipment may impact systems or sections of systems not experiencing the change. These changes may result in altered design input, such as changes in pressure, temperatures, flowrates or hydraulic loading (e.g. water hammer). Examples:

   - Plugging of heat exchanger tubes
   - Power upgrades
   - Changes to valve control circuits that change valve closure times
   - Changes to room environment that may impact thermal expansion or potential for corrosion.

4. A modification may add or relocate structural elements or equipment in such a way that their failure could impact a pressure retaining item, such as creating an unanticipated seismic interaction. This could include cabinets, cable tray and conduit, or commercial items like fans, HVAC ducts, service water, etc. Alternatively, a barrier that is credited for serving as a missile barrier could be moved, eliminating or reducing the protection provided by this item.

5. An engineering change may require use of the ASME code of record currently in place for the system affected by the change. This could require some or all of the system involved in the change to meet the requirements of this later code of record.

6. A change may alter the safety requirements of a system, thereby altering its classification. This could require re-analysis of the system to factor in revised seismic criteria, transient analysis and stress analyses.