Inventory Completeness and Categorization

Ontario Hydro Nuclear
Year 2000 Project

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for the OECD NEA International Workshop on the Impact of Year 2000 on the Nuclear Industry
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Overview

• Objective of Inventory Completeness
• Inventory Process Overview
• Categorization
  – Safety Related Digital Asset List
• Results
• Ongoing work
Objective of Inventory Completeness

• A complete and accurate digital asset inventory
  – Reduce risk associated with missed assets
  – Demonstrate due diligence

• A systematic and traceable inventory process involving:
  – Initial identification of digital assets
  – Asset discovery
  – Inventory process completion
Inventory Process Overview

• Initial identification of digital assets
  – Surveys to all asset owners
  – Searches of manufacturer and design manuals

• Asset discovery
  – Prioritize discovery areas
  – Identify sources of information
  – Perform searches

• Inventory process completion
Prioritization of Discovery Areas

1) Special Safety Systems

2) Other Safety Related Systems

3) Other Systems
   – Areas of plant with no inventory
   – Process systems and locations with no inventory
   – Remaining systems and locations
Sources of Information

- Station Drawings
- Material & Equipment Databases
- Engineering Change Notices
- Field Checks
- People (Maintenance, Operation, Engineering)
Discovery Process

• Consistent method with traceability (checklist)
• Focus on I&C equipment
• Use field checks and discussions with System Responsible Engineers and maintenance staff
• Pay special attention to areas where new assets are being discovered
Example Methodology

• Using checklist to record progress and findings:
  – Get drawings for a system (USI)
  – Highlight possible digital assets
  – Review Engineering change packages
  – Review manufacturer, design, and op manuals
  – Perform field check
  – Interview operating and engineering staff
  – Complete new asset identification forms
  – Submit system search package for USI
  – Submit new assets for renovation/certification
Inventory Process Completion

• Quality and completeness review of asset information
  – Comparison of asset information between plants
  – Resolution of comparison discrepancies

• Asset Owner Signoff
Inventory Categorization

For every asset identified, perform:

• business impact categorization
  - high/medium/low impact

• safety categorization
  - Safety Related Digital Asset (SRDA) list

• technical assessment
Safety Related Digital Asset (SRDA) List

• Safety Related Digital Assets are:
  – Digital assets which are part of systems on the stations’ safety related systems list, and are without effective fault-mitigating circumstances
  – Digital assets that are deemed by the asset owner to be safety related assets

• OHN has in place a process to ensure that:
  – all the safety related assets are identified
  – there is consistency
  – any discrepancies are understood
SRDA List Process

• From inventory, extract:
  – all assets with a business impact rated ‘High - Impact on Safety’
  – all assets under any safety related USI

• Review list with the System Responsible Engineer to determine:
  – whether any of the assets have effective fault-mitigating circumstances to justify removal from list
  – any assets not included, that should be
  – any additional assets that owner wants included
SRDA List Process (cont.)

• Compare plant lists, hold discussions to resolve differences

• Obtain concurrence of Nuclear Safety Managers

• Assign each system to one of three categories:
  – Special Safety Systems (SSS)
  – Failure could challenge a SSS
  – Other Safety Related
Results

Safety Related Digital Systems

<table>
<thead>
<tr>
<th>Site</th>
<th>SSS</th>
<th>Failure Could Challenge SSS</th>
<th>Safety Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bruce</td>
<td>None</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Darlington</td>
<td>4</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Pickering</td>
<td>2</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>
Pickering Process Assets: Inventory Searches for All USIs

- **Type A Planned**
- **S-R Planned**
- **All Planned**
- **Type A Actual**
- **S-R Actual**
- **All Actual**

**SSS USI searches done**

**Safety Related USI searches done**

**All USI searches started**

- **Internal Goal**: all USI searches to be done by 30-Oct
- **Committed target**: 60% of searches to be done by 30-Oct
- **Committed target**: 100% of searches to be done by 30-Nov
- **100% searches completed**
Total new Y2K digital assets: 469

Impact assessment:
- High impact: 29
- Medium impact: 35
- Low impact: 405
Inventory Numbers - Pickering

<table>
<thead>
<tr>
<th></th>
<th>Inventory Completeness Assets</th>
<th>Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>29</td>
<td>152</td>
</tr>
<tr>
<td>Medium</td>
<td>35</td>
<td>196</td>
</tr>
<tr>
<td>Low</td>
<td>405</td>
<td>1331</td>
</tr>
<tr>
<td>Total</td>
<td>469</td>
<td>1679</td>
</tr>
</tbody>
</table>
Asset Discovery Experience

• Many of the new assets were discovered in:
  – Skid mounted equipment
  – Loose instrumentation
  – Engineering changes not installed
  – New systems

• Equipment information is not available from one source

• Systematic checks using consistent approach critical
Ongoing work

• Safeguards in Plant Procedures
  – Procurement, engineering, etc.

• Periodic checking
  – New purchases
  – Engineering changes
  – Temporary changes

• Awareness training of staff
Closing

An accurate and complete inventory is fundamental to the entire Y2K process.
Inventory Completeness and Skiing: One and the Same!