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Poehler, Jeffrey

From: Hardies, Robert *MR*
Sent: Thursday, August 02, 2012 12:06 PM
To: Hiland, Patrick
Cc: Fairbanks, Carolyn; Poehler, Jeffrey; Cheok, Michael
Subject: RE: INFO: Potential problem on the reactor pressure vessel (RPV) of the Belgian Doel 3 NPP

I think it would typically be the CVIB branch chief or me. I can take this.

Robert Hardies
Senior Level Advisor for Materials Engineering
Division of Engineering
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission

Office Phone 301 415-5802

Cell (b)(6)

From: Hiland, Patrick *MR*
Sent: Thursday, August 02, 2012 10:29 AM
To: Hardies, Robert
Cc: Fairbanks, Carolyn; Poehler, Jeffrey; Cheok, Michael
Subject: RE: INFO: Potential problem on the reactor pressure vessel (RPV) of the Belgian Doel 3 NPP
Importance: High

Bob, who would have lead for follow-up on an issue like this? I believe we will find money to attend meeting if invited. 10,000 Indications?

From: Hopkins, Jon *MR*
Sent: Thursday, August 02, 2012 9:32 AM
To: Hardies, Robert; Fairbanks, Carolyn
Cc: Regan, Christopher; Rodriguez, Veronica; Astwood, Heather; Chernoff, Harold; Hiland, Patrick; Cheok, Michael; McGinty, Tim; Muessle, Mary; Bahadur, Sher; Roquecruz, Carla; Fehst, Geraldine; Tehrani, Navid
Subject: INFO: Potential problem on the reactor pressure vessel (RPV) of the Belgian Doel 3 NPP
Importance: High

Bob & Carolyn,

Attached is additional information from Belgium on the RPV UT inspection indications (10,000 indications) that they have found at Doel 3 NPP.

Belgium called me before they sent this information. They informed me that FANC (the Belgium Nuclear Regulator) will have a meeting on this topic with the licensee this month and will likely invite the NRC to attend. Likely that the meeting will be the week of August 13. NRR International travel money is tight, but consider if invited could we (should we) send someone and we will look at can we afford it.

Charge all time on this to TAC ME3707.

Jon

C/44

From: Briegleb Pierre [mailto:pierre.briegleb@belv.be]
Sent: Thursday, August 02, 2012 9:13 AM
To: Hopkins, Jon
Subject: RE: Potential problem on the reactor pressure vessel (RPV) of the Belgian Doel 3 NPP

Dear Jon,

As proposed during our phone call of today, I sent you an update of the status regarding the flaw indications of the Doel 3 NPP.

Thank you for your attention,
Best regards,

Pierre Briegleb
National Project Coordinator
Bel V – Subsidiary of the Federal Agency for Nuclear Control (Belgium)

From: Hopkins, Jon [mailto:Jon.Hopkins@nrc.gov]
Sent: jeudi 26 juillet 2012 20:48
To: Briegleb Pierre
Cc: Fehst, Geraldine
Subject: RE: Potential problem on the reactor pressure vessel (RPV) of the Belgian Doel 3 NPP

Pierre,

Greetings. I am the liaison for Belgium in the Office of Nuclear Reactor Regulation, USNRC, and Ms. Fehst is our Office of International Programs contact for Belgium.

NRC has received your email (below) and is reviewing it. I will keep you informed regarding information that we can provide in response.

Thank you and best regards,
Jon Hopkins
Senior Project Manager for International Activities
Office of Nuclear Reactor Regulation
USNRC
+1 301 415 3027
Jon.Hopkins@nrc.gov

From: Briegleb Pierre [mailto:pierre.briegleb@belv.be]
Sent: Wednesday, July 25, 2012 3:40 AM
To: Sebastien.CROMBEY@cea.fr; CRESPO BRAVO JULIO; Hardies, Robert; Collins, Jay; Kirk, Mark; peter.tilppana@stuk.fi; dietmar.Kalkhof@ensl.ch; kees.desbouvrie@minvrom.nl
Cc: De Boeck Benoit; Barras Pierre; Hoebeek Simon; Fonkwa Christelle; Deledicque Vincent; SCHRAUBEN Manfred; WERTELAERS An; VAN WONTERGHEM Frederik; TOMBUYSES Beatrice; aweyn@vincotte.be
Subject: Potential problem on the reactor pressure vessel (RPV) of the Belgian Doel 3 NPP

Dear Sirs,

We are now facing in Belgium a potential problem on the reactor pressure vessel (RPV) of the Doel 3 NPP. Non-destructive examination revealed a lot of "indications" that need to be confirmed by another inspection technique (ongoing).

We would like to have your feedback, experience and advice regarding this potential problem. You will find hereunder a more comprehensive background and some questions we would like to answer.

Best regards,

Pierre Briegleb
National Project Coordinator
Bel V – Subsidiary of the Federal Agency for Nuclear Control (Belgium)

Potential problem on the reactor pressure vessel

Belgian pressure vessels are inspected according to ASME XI. Volumetric inspections of the beltline zone are normally limited to the circumferential welds and surrounding heat affected zone and base material, within the limits settled by the code.

Additionally, as a result of the experience at Tricastin, inspections aiming at detecting possible underclad defects in the pressure vessel beltline region are planned for all Belgian plants. The first inspection of this kind took place at Doel 3 this summer.

These inspections are performed with a qualified method and encompass the whole height of the vessel beltline region. This means that we inspect cladded base material in zones where no volumetric in-service inspection was performed up to now.

At Doel 3, according to the Owner, no underclad defects were detected.

Nevertheless, lot of defect indications of an apparently different type were detected by this UT-inspection aiming at detecting underclad defects, especially in one of the three forged rings (SA-508-cl.3). These indications appear to be laminar flaws, more or less parallel to the inner/outer surface of the pressure vessel, located in- and outside the inspected zone where underclad defects were looked at. Obviously, it is not possible to justify those indications on a one-by-one basis by means of an analytical evaluation according to the App. A of ASME XI code requirements.

The inspection method which revealed the presence of those defects has been qualified for detecting underclad defect.

An inspection of the whole height with the qualified method used to control the beltline welds started on the 16th of July; the results should not be available before begin of August. Similar inspections will be performed at Tihange 2 during the month of August.

In the absence of any other explanation at this stage, the Owner supposes to be in presence of fabrication defects.

The Doel 3 and Tihange 2 RPVs were forged by Rotterdam Dockyards (RDM), which according to the Owner provided some 24 vessels in Europe and the US. NUREG 1511 – Suppl. 2, p. 7-3, identifies 8 US units with RDM forged rings. Other European countries possibly concerned are Spain, Switzerland, the Netherlands (Borssele, Dodewaard), and probably others, not identified by Bel V at this stage.

Some questions:

1. Are there in your country RPVs (forged rings) fabricated by Rotterdam Dockyards (RDM)?
2. Is there any known concern with respect to fabrication defects in those rings?

3. Did you perform volumetric inspections in the beltline region which could have detected laminar defects in the beltline base material (a) during fabrication (b) in-service? If the answer is yes, describe which inspection (type, extent, frequency) and the corresponding results.
4. Do you perform inspections aiming at detecting underclad defects? If so, describe which inspection (type, extent, frequency) and the corresponding results.