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Poehler, Jeffrey

From: Roquecruz, Carla
Sent: Friday, August 03, 2012 11:44 AM
To: Poehler, Jeffrey
Cc: Rosenberg, Stacey
Subject: FW: REQUEST: Belgium - Meeting on 8/16 re Flaw indications in Doel 3 Reactor Pressure Vessel
Attachments: FANC_LOGO.gif; Doel 3 - RPV preliminary IRS report_final.docx; Potential problem on the reactor pressure vessel (RPV) of the Belgian Doel 3 NPP
Importance: High

Jeff,
FYI...

From: Hopkins, Jon
Sent: Friday, August 03, 2012 9:34 AM
To: Fairbanks, Carolyn; Hardies, Robert
Cc: Roquecruz, Carla; Hiland, Patrick; Chernoff, Harold; Cheok, Michael; McGinty, Tim; Muessle, Mary; Bahadur, Sher; Regan, Christopher; Astwood, Heather; Rodriguez, Veronica; Tehrani, Navid; Sangimino, Donna-Marie; Dehn, Jeff; Fehst, Geraldine; Nieh, Ho; Lubinski, John; Stahl, Eric
Subject: REQUEST: Belgium - Meeting on 8/16 re Flaw indications in Doel 3 Reactor Pressure Vessel
Importance: High

Carolyn & Bob,

Belgium's regulator, FANC, has invited nuclear regulators from the 7 countries that also have RPVs manufactured by RDM (list below, includes U.S.) to participate in a technical working meeting on Aug. 16 in Brussels to discuss recent UT inspection indications found on the Doel 3 RPV.

France's regulator, ASN, has already responded and said that they would attend ("ASN will participate to this meeting. The representatives will be: Sébastien CROMBEZ Director of the Nuclear pressure Equipment Department and Jean-Luc LACHAUME Deputy Director General.")

Please let me know if we should/can attend this meeting. Note that FANC plans another meeting in Sept. on this issue.

Thank you, Jon

From: VAN WONTERGHEM Frederik [mailto:Frederik.VANWONTERGHEM@FANC.FGOV.BE]
Sent: Friday, August 03, 2012 5:05 AM
To: Andre-claude.lacoste@asn.fr; jean-luc.lachaume@asn.fr; francois.balestreri@irsn.fr; Sebastien.CROMBEZ@asn.fr; info@arn.gob.ar; gerald.hennenhoefer@bmu.bund.de; martina.palm@bmu.bund.de; Ulrich.Erven@grs.de; Carla.Schwaeger@grs.de; a.vanlimborgh@mineleni.nl; kees.desbouvrie@minvrom.nl; bert.verweij@minvrom.nl; Roeland.Nieuweboer@minvrom.nl; cmt@csn.es; fjarana@mityc.es; jcb@csn.es; ann-louise.eksborg@ssm.se; Anders.Hallman@ssm.se; Lars.Skanberg@ssm.se; perolof.hagg@ssm.se; petteri.tiippana@stuk.fi; hans.wanner@ensi.ch; georg.schwarz@ensi.ch; markus.straub@ensi.ch; dietmar.Kalkhof@ensi.ch; Hopkins, Jon; Kirk, Mark; Hardies, Robert; Collins, Jay
Cc: WERTELAERS An; SCHRAUBEN Manfred; DE ROOVERE Willy; TOMBUYES Beatrice; pierre.barras@belv.be; pierre.briegleb@belv.be; benoit.deboeck@belv.be; aweyn@vincotte.be; hvandriessche@vincotte.be
Subject: URGENT Message on Nuclear Safety: Flaw indications in Doel 3 Reactor Pressure Vessel

Dear all,

This week, a preliminary IRS Incident Report was published by Belgium related to the detection of a large number of flaw indications in the reactor pressure vessel of Doel 3 (PWR - Framatome Design). (Reference IRS Number 8244: "FLAWS INDICATIONS IN THE REACTOR PRESSURE VESSEL"). In attachment you can find a copy of this IRS report.

As indicated in the IRS report, the Doel 3 NPP outage has been extended to allow further inspections and to perform additional studies by the licensee to analyze and, if possible, to validate and confirm the structural integrity of the vessel. At the moment, the licensee supposes that the flaw indications were already present at the moment of forging of the vessel, which was done by Rotterdam Droogdok Maatschappij (also referred to as Rotterdam Dockyards or RDM). Both a deterministic approach (in accordance with ASME XI Appendix A) and a probabilistic approach (in accordance with 10CFR50.61a) are being considered by the licensee to justify the structural integrity of the reactor vessel.

Some additional information on the types of flaw indications and other possible reactor vessels forged by this company can be found below.

Considering the potential consequences of this event, the Belgian regulatory body would like to organise on short notice a technical working meeting in Brussels on this issue for those regulatory bodies which could be interested by these findings, specifically those regulatory bodies of countries where RPVs forged by RDM can be present.

During this technical working meeting, additional information on the results found at Doel 3 NPP and the on-going licensee investigations and calculations will be made available by the Belgian regulatory body (FANC, its technical support organisation Bel V and the Authorized Inspection Authority AIB Vinçotte International). In addition, a roundtable discussion between regulatory bodies will be held to discuss relevant experiences with this kind of inspections and flaw indications. Specific topics/questions to be discussed during this roundtable discussion are mentioned in an email by Bel V which was sent last week (see attachment). We are especially interested to know if this type of ISI was already performed in your countries on the reactor vessels forged by this company, and if so, what the results have been. May we kindly invite every country to present additional available input and thoughts to our working meeting .

This technical working meeting shall take place in Brussels (FANC offices, Ravensteinstraat 36, 1000 Brussels) on Thursday 16 August between 10h00 and 16h00.

We would be very grateful if one or more technical experts of your organisation could be present during this working meeting.

To confirm your participation, please send me a reply by email to frederik.vanwonderghem@fanc.fgov.be (tel. ++32 2 289 2082) before Friday 10 August.

If you have further technical questions on this event, you can contact pierre.briegleb@belv.be (tel ++32 2 528 0245).

A second technical working meeting could be held in the near future (presumably early September) to discuss the available results of the additional inspections at Tihange 2 and the results of the licensee investigations and calculations aiming to confirm the structural integrity of the reactor vessel. Further actions in your countries can also be discussed during this second meeting. We will inform you as soon as possible of the timing of this second working meeting.

Best regards,

Frederik Van Wonderghem

Department of Nuclear Facilities and Waste
Federal Agency for Nuclear Control
Ravensteinstraat 36, 1000 Brussel, Belgium

www.fanc.fgov.be

Tel.: +32 (0)2 289 20 82

Fax: +32 (0)2 289 21 12

Additional information on the types of flaw indications and other possible reactor vessels

Preliminary results from additional inspections

- As described in the IRS message, considering the limitations of the inspection method which revealed the presence of those defects, an inspection of the whole height of the RPV with the UT-qualified method used to control the beltline welds has subsequently been performed. This inspection covers the whole thickness and the whole height of the RPV of Doel 3.
- The preliminary results from those additional inspections confirm the presence of several thousand (up to 10000) flaw indications in the reactor vessel base material. These flaw indications seem to be laminar in shape and have average diameters of 25 mm.

Reactor Pressel Vessels forged by Rotterdam Droogdok Maatschappij (also referred to as Rotterdam Dockyards or RDM)

- The Doel 3 and Tihange 2 RPVs were forged by RDM, which according to the Licensee Electrabel provided some 20+ vessels in Europe and the US.
- The table below gives an overview of these RPVs (this list has been established by the licensee and could contain errors or omissions).

Atucha 1	PHWR		335	1980	Siemens
Doel 3	PWR	3	1000	1982	Framatome
Tihange 2	PWR	3	1000	1982	Framatome
Brünsbittel	BWR	-	770	1977	KWU
Philippsburg 1	BWR		890	1980	KWU
Dodewaard	BWR	-	52	1968	RDM
Borssele	PWR	2	515	1973	KWU
S ^{ta} Maria de Garona	BWR		450	1971	General Electric
Cofrentes	BWR	-	1064	1984	General Electric
Ringhals 2	PWR	3	813	1974	Westinghouse
Leibstadt	BWR	-	1165	1984	General Electric
Mühleberg	BWR	-	373	1971	General Electric
Catawba 1	PWR	4	1129	1985	Westinghouse
McGuire 2	PWR	4	1100	1983	Westinghouse
North Anna 1	PWR	3	903	1978	Westinghouse
North Anna 2	PWR	3	973	1980	Westinghouse
Quad Cities 1	BWR	-	882	1972	General Electric
Sequoyah 1	PWR	4	1162	1980	Westinghouse
Sequoyah 2	PWR	4	1126	1981	Westinghouse
Surry 1	PWR	3	839	1972	Westinghouse
Surry 2	PWR	3	800	1973	Westinghouse
Watts Bar 1	PWR	4	1123	1996	Westinghouse

FANC & AFCN

Het FANC is ISO 9001:2008 gecertificeerd – L'AFCN est certifiée ISO 9001:2008.

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