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**Bamford, Peter**

**From:** Bamford, Peter (NRR)  
**Sent:** Monday, November 23, 2009 5:10 PM  
**To:** Sigmon, Rebecca (NRR)  
**Cc:** Chernoff, Harold; Miller, Ed (NRR)  
**Subject:** FW: ACTION: Update on the TMI event int'l interest- so consider an INES rating  
**Attachments:** TMI High Activity Preliminary ERF with Site Comments.doc

Rebecca, attached is the version of the IAEA report that incorporates the licensee's comments. It looks like they just had some minor comments to the sentence on dose estimates for the site workers.

Bear in mind that if you decide to formally submit this report you will have to re-evaluate the press release question in conjunction with OPA.

Peter Bamford  
 NRR/DORL/LPL 1-2  
 Limerick & TMI-1 Project Manager  
 301-415-2833

-----Original Message-----

**From:** Sigmon, Rebecca  
**Sent:** Monday, November 23, 2009 4:31 PM  
**To:** Bamford, Peter  
**Subject:** FW: ACTION: Update on the TMI event int'l interest- so consider an INES rating

-----Original Message-----

**From:** Brown, Frederick  
**Sent:** Monday, November 23, 2009 4:28 PM  
**To:** Leeds, Eric  
**Cc:** Cullingford, Michael; Zimmerman, Jacob; Cheek, Michael; Orders, William; Johnson, Michael; Jones, Cynthia; Burnell, Scott; Brenner, Eliot; Leach, Melvyn; McDermott, Brian; Lew, David; Roberts, Darrell; Sigmon, Rebecca; Thomas, Eric; Thorp, John; Boger, Bruce  
**Subject:** RE: ACTION: Update on the TMI event int'l interest- so consider an INES rating

In an effort to ensure that we would not be doing more harm than good, we coordinated with OPA and Region I prior to submitting the INES notification to the IAEA.

OPA felt strongly that making a notification at this time would be counterproductive. Based on that input, and unless something changes, we do not intend to make the notification.

The NRR Operating Experience Branch rates every EN against the INES criteria as a part of our assessment process. This event was rated at the "0" level if anyone asks.

Fred

-----Original Message-----

**From:** Leeds, Eric  
**Sent:** Monday, November 23, 2009 12:56 PM  
**To:** Boger, Bruce  
**Cc:** Cullingford, Michael; Zimmerman, Jacob; Brown, Frederick; Cheek, Michael; Orders, William; Johnson, Michael

B/12/1  
~~10/1~~

Subject: ACTION: Update on the TMI event int'l interest- so consider an INES rating  
Importance: High

Bruce -

I think Cindy makes a good suggestion below. Who on the staff would take this for action?

Eric J. Leeds, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-1270

-----Original Message-----

From: Jones, Cynthia  
Sent: Monday, November 23, 2009 9:39 AM  
To: Sigmon, Rebecca  
Cc: Dean, Bill; Wiggins, Jim; Leeds, Eric; Ross-Lee, MaryJane; Thorp, John  
Subject: Re: Update on the TMI event int'l interest- so consider an INES rating  
Importance: High

Thx Rebecca

Based on what you have given me it based on exposures its a level 0 (NRC does not have dose constraints). If you gather more info from the licensee I agree with you it could rise to a Level 1. I think it would be a good idea for NRR mgmt to decide to issue an ERF for this as a Level 1 or 0 just to help alleviate the concerns of the int'l community (I have had inquiries from Bulgaria, IAEA, Germany and the UK on this so far).

Look forward to hearing what NRR decides to do. And remind the mgmt that this would be a good example of explaining the safety significance of the event via INES- esp for your international counterparts who are wondering what the INES rating would be. But try to issue a provisional ERF within a day to make NRC's point.

Cyndi

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Cynthia G. Jones, Ph.D.  
Sr. Technical Advisor for Nuclear Security,  
NRC/NSIR  
Sent from blackberry

----- Original Message -----

From: Sigmon, Rebecca  
To: Jones, Cynthia  
Cc: Ross-Lee, MaryJane; Rini, Brett; Thorp, John; Thomas, Eric; Brown, Michael  
Sent: Mon Nov 23 08:14:05 2009  
Subject: Update on the TMI event

Below is the latest update I have from Region I. Highest dose appears to be 38 mrem with about 20 people showing excess exposure - I'd call it a nominal Level 0 that could possibly be considered for upgrade to Level 1 based on the number of people involved. I don't see any indication that the criteria for consideration of a Level 2 under radiological barriers and controls were tripped. The reactor is currently defueled so there were still a substantial number of safety layers in place to prevent the maximum possible release (though pending determination of the cause a Level 1 under Defense in Depth might be warranted).

As far as submission to NEWS based on significant public interest, I can float the idea on the NRR end; more information as to the cause will hopefully be available in the next couple of hours.

Rebecca Sigmon  
Reactor Systems Engineer  
NRR/DIRS/IOEB  
Operating Experience Branch  
(301) 415-4018  
Rebecca.Sigmon@nrc.gov

-----Original Message-----

From: Bamford, Peter  
Sent: Monday, November 23, 2009 5:49 AM  
To: NRR DIRS IOEB Distribution  
Subject: FW: Update on the TMI event

This is information available as of Sunday evening(11/22). I'll send an update Mon AM sometime around 0800.

Peter Bamford  
NRR/DORL/LPL 1-2  
Limerick & TMI-1 Project Manager  
301-415-2833

-----Original Message-----

From: Bamford, Peter  
Sent: Sunday, November 22, 2009 7:09 PM  
To: Chernoff, Harold  
Cc: Nelson, Robert; Giitter, Joseph  
Subject: FW: Update on the TMI event

Harold, I participated in a conference call today (Sunday 11/22) at 4:30 PM sponsored by the Region at which they provided an update to this weekend's activities at TMI-1. Here is a summary:

Approximately at 4 PM Saturday 11/21 TMI had an event involving loss of contamination control inside containment. At the time the reactor was defueled with a hole cut in the containment wall to support the ongoing SG replacement outage. The licensee is not sure at this time what activity inside containment led to the problem. Their investigation is focusing on two activities (1) "A" piping loop decontamination activities or (2) some work on a drain line on the B" SG.

At the time of the event 175 workers were inside containment. Of these workers 151 people were selected for detailed monitoring based on nasal smears and portal monitor readings. Of the 151, about 20 people have potentially received doses greater than 10 mR. Two workers initially haven calculated doses of 183 and 202 mR. However the region feels that these estimates may be in error and are being re-evaluated. The next highest dose to a worker was 38 mR. The region appeared confident the the 38 mR person would end up being the highest exposure for this event. No site worker left the site with external contamination. Airborne contamination levels inside containment have been restored to pre-event levels and cleanup of containment surfaces is in progress. The tarp that was covering the containment opening was contaminated on its inside surface and is in the process of being replaced.

With the open equipment hatch and the SG opening there was the potential for a release outside of containment. At the time of the event a slight positive pressure existed in containment. This has now been corrected to what it should be, ie a slightly negative pressure. Based on readings from radiation monitors present at the SG opening and the duration of the positive pressure, the estimates of release levels are still less than one percent of the quarterly ODCM limit.

This event has generated a significant amount of media interest. Regional OPA and state liaison officers have taken inquiries from multiple radio, print media and TV stations. They have performed a media briefing at TMI at 2 PM today and have conducted an interview with CNN. Good Morning America is also interested and requested an interview with the Chariman tomorrow (Monday) morning. The region offered them Sam Collins or possibly the EDO representing the NRC. (The Chariman's office and the acting DEDO were represented on the 4:30 pm call today.) GMA said they may decide to interview just an Exelon manager (possibly Bill Noll the Site VP) if they cannot get the Chariman. The GMA interview was left to be decided after the phone call. If it occurs, it sounded to me that it would likely take place in a Philadelphia studio with Sam representing the NRC. The region feels the local reporting has been balanced and factual with no fear-mongering.

The PA governor's office has been notified and they understand this is a low level event. They apparently have some concerns about notification timeliness. The PA state was notified about 9:30 PM last night (event time was 4 PM). Based on the PA state notification, an event report was filed with the HOO (event number 45514). This event was far below levels that would warrant an unusual event declaration.

Activities for the remainder of the evening were to sort out the GMA interview and respond to further media requests (regional OPA lead). The rest of the regional activities are going to stand down at this time.

I'll update you in the morning after the 0730 call.

Pete

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**EVENT RATING FORM (ERF)**

Event No.:

Sent Date:

<b>THE INTERNATIONAL NUCLEAR EVENT SCALE (INES)</b>															
EVENT TITLE		RADIATION RELEASE IN CONTAINMENT ASSOCIATED WITH STEAM GENERATOR REMOVAL										EVENT DATE			
												11/21/2009			
RATING		RATING DATE	OUT OF SCALE	DEVIATION	INCIDENT			ACCIDENT				FACILITY TYPE			
PROVISIONAL	<input checked="" type="checkbox"/>			0	1	2	3	4	5	6	7	Power Reactor	<input checked="" type="checkbox"/>	Research Reactor	<input type="checkbox"/>
FINAL	<input type="checkbox"/>	11/23/2009	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RadWaste Facility	<input type="checkbox"/>	Radiation Source	<input type="checkbox"/>
COUNTRY				FACILITY NAME / PLACE								Irradiation	<input type="checkbox"/>	Transportation	<input type="checkbox"/>
United States				Three Mile Island, Unit 1/Middletown, PA								Fuel Fabrication	<input type="checkbox"/>	Fuel Reprocessing	<input type="checkbox"/>
												Research Facility	<input type="checkbox"/>	Mining/Milling	<input type="checkbox"/>
												Enrichment Facility	<input type="checkbox"/>	Other	<input type="checkbox"/>
												<b>YES</b>	<b>NO</b>		
<b>Off-site impact</b>															
Release Beyond Authorised Limits												<input type="checkbox"/>	X		
Overexposure of Members of Public												<input type="checkbox"/>	X		
<b>On-Site Impact</b>															
Contamination Spread												X	<input type="checkbox"/>		
Worker Overexposure												<input type="checkbox"/>	X		
Damage to Radiological Barriers												<input type="checkbox"/>	X		
Degradation of Defence In-depth												<input type="checkbox"/>	X		
Person Injured Physically or Casualty												<input type="checkbox"/>	X		
Is There a Continuing Problem												<input type="checkbox"/>	X		
Press Release Issued (if yes, please attach)												<input type="checkbox"/>	X		
<b>Event Description</b>															
<p>During refueling outage activities, which included operations to replace both of the unit's steam generators, low levels of radiation activity were measured on radiation monitors installed in the reactor building. Personnel were directed to immediately leave the reactor building until the source of the activity could be identified. Monitoring devices at the reactor building steam generator replacement construction opening indicated a slight increase in activity. Levels have since returned to normal. No contamination was identified outside of the reactor building. Of 145 workers monitored for exposure to the radiation activity, about 19 were initially found to have exposures greater than 0.1 mSv (10 mrem), with the highest exposure estimated to be 0.38 mSv (38 mrem). No worker approached or exceeded any exposure limits. The sources of the activity are believed to be from maintenance tasks related to the removal of the plant's steam generators or ventilation line-up changes, though the exact cause of the increase in activity levels is still unknown. The reactor was defueled at the time of the event.</p>															
<b>Rating Justification and Difficulties Encountered</b>															
(quote relevant user manual paragraphs)															
<p>This event has been given a preliminary rating of 0, "Below Scale" based on section 2.3.1 of the International Nuclear and Radiological Event Scale 2008 User's Manual (<a href="http://www-pub.iaea.org/MTCD/publications/PubDetails.asp?pubId=8120">http://www-pub.iaea.org/MTCD/publications/PubDetails.asp?pubId=8120</a>). The justification for the rating is that no member of the public was exposed to any excess activity, and all exposures to workers were well within established statutory limits and licensee-established dose constraints. Though increasing the rating based on the number of personnel exposed is indicated for higher levels of exposure, at these levels no such increase is warranted. This event is being submitted due to interest expressed by member states of the IAEA for the INES rating of the event.</p>															
<b>Contact Person for Further Information</b>															

This form is provided by the IAEA INES Coordinator: Rejane Spiegelberg Planer,  
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NOTE: This form *should not* be used for sending information to the IAEA about an actual event!  
For this purpose the Nuclear Events Web-based System (<http://www-news.iaea.org>) should be used instead.

**EVENT RATING FORM (ERF)**

<b>Name</b> Dr. Cynthia Jones, Office of Nuclear Security and Incident Response		<b>Affiliation</b> U.S. Nuclear Regulatory Commission
<b>Address:</b> Mail Stop T4-D22A, Washington, DC 20555		
<b>Phone:</b> 301-415-0298	<b>Fax:</b> 301-415-6382	<b>eMail:</b> <a href="mailto:cynthia.jones@nrc.gov">cynthia.jones@nrc.gov</a>

This form is provided by the **IAEA INES Coordinator**: Rejane Spiegelberg Planer,  
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