


From: Holonich, Joseph
Sent: Wednesday, March 12, 2014 1:23 PM
To: Amberge, Kyle; 'Contractor - Wirtz, Charles'
Cc: Hardies, Robert; Hiser, Allen; Cheruvenki, Ganesh; Poehler, Jeffrey; Tregoning, Robert; Purtscher, Patrick; 'Andrew.Odell@exeloncorp.com' (Andrew.Odell@exeloncorp.com); Dyle, Robin; Rao, Appajosula
Subject: Summary Tables For CASS Position.docx
Attachments: Summary tables for CASS position.docx

Kyle/Chuck,

As discussed today during our conference call, attached please find the subject tables. They are being provided to you for your use. The NRC staff would welcome any comments you may have.

A copy of this Email and the attachment will be placed in ADAMS and made publically available.

Joe Holonich

United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of: Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)	
	ASLBP #: 07-858-03-LR-BD01
	Docket #: 05000247 05000286
	Exhibit #: ENT000664-00-BD01
	Admitted: 11/5/2015
	Rejected:
Other:	
	Identified: 11/5/2015
	Withdrawn:
	Stricken:

Proposed NRC position on Screening of CASS Reactor Vessel Internal Components

The NRC staff requires licensees/applicants to consider embrittlement from both thermal aging and neutron irradiation. The staff would consider screening for susceptibility to embrittlement based on fluence and ferrite content (measured or calculated from Hull's equation and summarized in Tables A, B, and C shown below) to be conservative.

Table A Screening for Components with < 0.45 dpa neutron exposure

Molybdenum (wt. %)	Casting Method	Susceptibility	Delta ferrite %
High 2.0-3.0% (CF-8M)	static	TE	> 14%
		No	≤ 14%
	centrifugal	TE	> 20%
		No	≤ 20%
Low 0.5% max (CF-3 and CF-8)	static	TE	> 20%
		No	≤ 20%
	centrifugal	No	All

Table B Screening for Components with 0.45 dpa ≤ neutron exposure ≤ 1.5 dpa

Molybdenum (wt. %)	Casting Method	Susceptibility	Delta ferrite %
High 2.0-3.0% (CF-8M)	static	TE + IE	> 10%
		No	≤ 10%
	centrifugal	TE + IE	> 15%
		No	≤ 15%
Low 0.5% max (CF-3 and CF-8)	static	TE + IE	> 15%
		No	≤ 15%
	centrifugal	No	All

Table C Screening for Components with > 1.5 dpa neutron exposure

Molybdenum (wt. %)	Casting Method	Susceptibility	Delta ferrite %
High 2.0-3.0% (CF-8M)	static	TE + IE	> 10%
		IE	≤ 10%
	centrifugal	TE + IE	> 15%
		IE	≤ 15%
Low 0.5% max (CF-3 and CF-8)	static	TE + IE	> 15%
		IE	≤ 15%
	centrifugal	IE	All