

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
OFFICE OF NEW REACTORS  
WASHINGTON, DC 20555-0001

August 29, 2018

NRC INFORMATION NOTICE 2018-10: THERMAL SLEEVE FLANGE WEAR LEADS TO  
STUCK CONTROL ROD AT FOREIGN NUCLEAR  
PLANT

## **ADDRESSEES**

All holders of an operating license or construction permit for a nuclear power reactor under Title 10 of the *Code of Federal Regulations* Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

## **PURPOSE**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addressees about recent operating experience (OE) related to Westinghouse (WEC) nuclear steam supply system plants that have thermal sleeves in the control rod drive mechanism (CRDM) penetration tubes. The available OE demonstrates the potential for these components to experience wear of the thermal sleeve flange from contact against the CRDM penetration tube. The resulting wear can have significant consequences which were not previously considered for WEC designed pressurized water reactors (PWRs). The purpose of this IN is to raise industry awareness regarding this issue for similar designed PWRs. The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. Suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response is required.

## **DESCRIPTION OF CIRCUMSTANCES**

In December 2017, following a refueling outage at an Electricite de France (EDF) facility, the French plant identified one stuck control as part of the rod control rod drop and stepping tests, which precluded the plant from starting up. The plant returned to mode 6, removed the vessel head and determined by visual inspection that the CRDM thermal sleeve flange in the centermost location was completely worn through. This resulted in a loose part that lodged in the path of the CRDM shaft, thereby precluding motion of the control rod. Within the same time frame, another stuck control rod occurred at another French plant. Due to the common wear issue observed at these two plants, EDF notified the French Nuclear Safety Authority in February 2018 of the significant safety events.

Due to similarities in design it is reasonable to assume that over time US plants may also experience similar wear. Additional information is available in WEC letter Nos. LTR-NRC-18-34 and LTR-NRC-18-53, dated May 23, 2018, and July 17, 2018, respectively. These documents can be found on the NRC's public Web site under Agencywide Documents Access and Management System Accession Nos. ML18143B678 and ML18198A275.

**ML18214A710**

## **BACKGROUND**

There have been no prior NRC Generic Communications related to the issue of CRDM thermal sleeve flange wear.

## **DISCUSSION**

The above operating experiences illustrate that unexpected wear could occur in certain thermal sleeves during normal operating conditions. Therefore, facilities that have similarly designed thermal sleeves may consider monitoring for thermal sleeve flange wear and if needed consider taking corrective action(s) to mitigate any potential safety consequences that can result from the noted wear.

## **CONTACTS**

This information notice does not require any specific action or written response. Please direct any questions about this matter to the technical contacts listed below.

**/RA/**

**/RA by Michael King for/**

George A. Wilson, Director  
Division of Materials and License Renewal  
Office of Nuclear Reactor Regulation

Christopher G. Miller, Director  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation

Technical Contact: David Rudland, NRR  
301-415-1896  
E-mail: [David.Rudland@nrc.gov](mailto:David.Rudland@nrc.gov)

**NRC INFORMATION NOTICE 2018-xx: "THERMAL SLEEVE FLANGE WEAR LEADS TO STUCK CONTROL ROD AT FOREIGN NUCLEAR PLANT," Date: August 29, 2018**

**ADAMS Accession No.: ML18214A710**

**\*email concurrence**

<b>OFFICE</b>	NRR/DMLR/ MPHB	OIP/ICAB	RI*	RII*	RIII*	RIV*
<b>NAME</b>	RKalikian	SWittick	MFerdas*	SSandal*	AStone*	GGeorge*
<b>DATE</b>	8/27 /18	8/28/18	8/09/18	8/03/18	8/13/18	8/04/18
<b>OFFICE</b>	NRR/DIRS/IRGB/ /PM	NRR/DIRS/IRGB/ PM	NRR/DIRS/IRGB/L A	NRR/DIRS/IRGB/ BC	NRR/DMLR/D	NRR/DIRS/D
<b>NAME</b>	GCroon	BBenney	ELee	BPham*	GWilson*	CMiller* /RA by MKing for/
<b>DATE</b>	8/27 /18	8/27 /18	08/21/18	8/27/18	8/29/18	8/29/18
<b>OFFICE</b>	NRO/DCIP/D					
<b>NAME</b>	TMcGinty*					
<b>DATE</b>	08/29/18					

**OFFICIAL RECORD COPY**