

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, D.C. 20555

June 1, 1992

NRC INFORMATION NOTICE 92-42: FRAUDULENT BOLTS IN SEISMICALLY DESIGNED WALLS

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to fraudulent anchor and through wall bolts found in seismic structures. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

From March 30 through April 10, 1992, an NRC engineering team performed a special inspection at the Brunswick Steam Electric Plant. The inspection included masonry block and poured concrete walls in the building housing the diesel generators that provide emergency electrical power for the plant. The team discovered that many of the bolts in these walls which appeared to exist and provide lateral support, did not in fact exist. The bolts were apparently installed during plant construction by a subcontractor to Brown and Root. In many instances, heads cut from bolts had been attached to the angle iron that was designed to provide lateral support for the walls during an earthquake. The bolt heads made it appear that there were bolts supporting the wall, but without the bolt shanks there was no support. In the worst case, more than 85 percent of the bolts installed in one wall were either fraudulent or did not otherwise meet design requirements. For some of these bolts, the anchors had not been installed. In other cases, the bolts were too short to adequately engage the anchors. Other bolts that should have completely penetrated the walls did not.

Some employees of Carolina Power and Light Company, licensee for the Brunswick plant, were aware of problems with bolts in some walls in 1987. Nevertheless, the licensee did not take effective action to determine the extent of the problem and correct it. Initially, the licensee used feeler gauges inserted under the angle iron to determine whether or not the shanks of bolts were in place. In some cases, because the licensee's inspector could feel the anchor sleeve, the licensee assumed that bolt shanks were present when they were not. However, during and after NRC's special inspection, the licensee performed

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Updated on 6-15-92

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inspections and evaluations that were progressively more thorough. On the basis of that work, the licensee concluded that certain of the walls were not capable of performing their intended safety function and the licensee has shut down both reactors until the problem is corrected.

#### Discussion

The block and poured concrete walls separate the four trains of emergency diesel generating equipment and ensure that all of the trains do not become inoperable because of a common hazard. The masonry block walls and the steel plates attached to them provide missile protection for this equipment. The walls were intended to withstand the design-basis earthquake. The capability of the walls to perform their intended function has been compromised since the fraudulent and deficient bolts were installed in approximately 1973.

This information notice requires no specific action or written response. If you have any question about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

*Charles E. Rossi*

Charles E. Rossi, Director  
Division of Operational Events Assessment  
Office of Nuclear Reactor Regulation

Technical contacts: John Thompson, AEOD  
(301) 492-8091

Roger Woodruff, NRR  
(301) 504-1152

Attachment: List of Recently Issued Information Notices

*Filled in Jacket*

LIST OF RECENTLY ISSUED  
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
92-41	Consideration of the Stem Rejection Load in Calculation of Required Valve Thrust	05/29/92	All holders of OLs or CPs for nuclear power reactors.
92-40	Inadequate Testing of Emergency Bus Under- voltage Logic Circuitry	05/27/92	All holders of OLs or CPs for nuclear power reactors.
92-39	Unplanned Return to Criticality during Reactor Shutdown	05/13/92	All holders of OLs or CPs for nuclear power reactors.
92-38	Implementation Date for the Revision to the EPA Manual of Protective Action Guides and Pro- tective Actions for Nuclear Incidents	05/12/92	All holders of OLs or CPs for nuclear power reactors, non-power reactors and materials licensees auth- orized to possess large quantities of radioactive material.
92-37	Implementation of the Deliberate Misconduct Rule	05/08/92	All Nuclear Regulatory Commission Materials Licensees.
92-16, Supp. 1	Loss of Flow from the Re- sidual Heat Removal Pump during Refueling Cavity Draindown	05/07/92	All holders of OLs or CPs for nuclear power reactors.
92-36	Intersystem LOCA Outside Containment	05/07/92	All holders of OLs or CPs for nuclear power reactors.
92-35	Higher Than Predicted Ero- sion/Corrosion in Unisol- able Reactor Coolant Pres- sure Boundary Piping Inside Containment at A Boiling Water Reactor	05/06/92	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License  
CP = Construction Permit

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### Discussion

The block and poured concrete walls separate the four trains of emergency diesel generating equipment and ensure that all of the trains do not become inoperable because of a common hazard. The masonry block walls and the steel plates attached to them provide missile protection for this equipment. The walls were intended to withstand the design-basis earthquake. The capability of the walls to perform their intended function has been compromised since the fraudulent and deficient bolts were installed in approximately 1973.

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Original Signed by  
Charles E. Rossi

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Division of Operational Events Assessment  
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Document Name: 92-42.IN

#### \*SEE PREVIOUS CONCURRENCES

AEOD:DEIIB	AEOD:DEIIB	OEAB	TECH EDITOR	SC:OEAB
*JWThompson	*RLloyd	*RWWoodruff	*MFMejac	*RLDennig
5/14/92	5/14/92	5/ 8/92	5/ 8/92	5/14/92
PM:PD24	*BC:OEAB	RII	D/OI:RII	*BC:OGCB
*RHLo	AEChaffee	DVerrelli	JVorse	CHBerlinger
5/14/92	5/19/92	5/22/92	5/26/92	5/20/92

ESGB  
RR for G.B.  
5/28/92

(by phone  
to Rossi)

(via phone  
call from  
Verrelli  
to Rossi)

*Discussed with  
Lieberman on  
5/28/92  
C. Rossi*

*Changes to use word  
fraudulent and  
inclusion of  
statement of  
Brown and Root  
\*EJReis were discussed  
with E. R. Reeson  
5/22/92.*

D:DOEA  
CERoss18  
5/24/92

of performing their intended safety function and shut down both reactors until the problem is corrected.

### Discussion

The block and poured concrete walls separate the four trains of emergency diesel generating equipment and ensure that all of the trains do not become inoperable because of a common hazard. The masonry block walls and the steel plates attached to them provide missile protection for this equipment. The walls are designed to withstand the design-basis earthquake. The capability of the walls to perform their intended function has been compromised since the phoney bolt heads and deficient bolts were installed in approximately 1973.

This information notice requires no specific action or written response. If you have any question about the information in this notice, please contact <sup>one of</sup> the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation project manager. X  
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### Attachment:

1. List of Recently Issued Information Notices

### CONCURRENCE:

\* See previous concurrence pages.

AEOD:DEIIB	AEOD:DEIIB	OEAB	TECH EDITOR	SC:OEAB	OGC
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5/14/92	5/14/92	5/ 8/92	5/ 8/92	5/14/92	5/14/92
PM:PD24	BC:OEAB	BC:OGCB	D:DOEA		
*RHLo	AEChaffee	CHBerlinger	CERossi		
5/14/92	5/19/92	5/20/92	5/ /92		

405.in

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Office of Nuclear Reactor Regulation

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*Roger Woodruff, NRR*  
(301) 504 1152

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FM:PD24	BC:OEAB	BC:OGCB	D:DOEA
RHLo <i>N. Le</i>	AEChaffee	CHBerlinger	CERossi
5/14/92	5/ /92	5/ /92	5/ /92

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Discussion

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*\*By telephone.  
D.W.W.*

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*JWThompson	*RLloyd	*RWWoodruff	*MFMejac	RLPennig	CABarth
5/14/92	5/14/92	5/ 8/92	5/ 8/92	5/14/92	5/ /92
PM:PD24	BC:OEAB	BC:OGCB	D:DOEA	OGC	
RHLo	AEChaffee	CHBerlinger	CERossi	<i>5/14/92</i>	
5/ /92	5/ /92	5/ /92	5/ /92		405.in

Discussion

The concrete walls provide separation for the four trains of emergency diesel generating equipment and provide assurance that all of the trains do not become inoperable because of a common hazard. The masonry block walls and the steel plates attached to them provide missile protection for this equipment. The walls are designed to withstand the design basis earthquake. The capability of the walls to perform their intended function has been compromised since the fraudulent or deficient bolts were installed in approximately 1973.

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5/ /92	5/8/92	5/8/92	5/ /92	5/ /92	5/ /92
BC:OGCB	D:DOEA				
CHBerlinger	CERossi				
5/ /92	5/ /92				