

December 13, 2000

Mr. Valeri Tolstykh
Regulatory Activities Unit
Safety Assessment Section
Division of Nuclear Installation Safety
International Atomic Energy Agency
Wagramer Strasse 5
P.O. Box 100, A-1400
Vienna, Austria

Dear Mr. Tolstykh:

Enclosed are the following IRS reports:

- REVIEW OF REFUELING OUTAGE RISK (NRC Information Notice 2000-13).
- CRACK IN WELD AREA OF REACTOR COOLANT SYSTEM HOT LEG PIPING AT V. C. SUMMER (NRC Information Notice 2000-17, Supplement 1) - This is an update to IRS Report #7396.
- SUBSTANDARD MATERIAL SUPPLIED BY CHICAGO BULLET PROOF SYSTEMS (NRC Information Notice 2000-18).

Each report is being submitted in the following two media: (1) a hard copy of the input file for the AIRS database; and (2) a 3.5-inch HD diskette containing the input file for the AIRS database in Microsoft Word 6.0 format.

If you have any questions regarding these reports, please call Eric J. Benner of my staff. He can be reached at (301) 415-1171.

Sincerely,

/RA John R. Tappert For/

Ledyard B. Marsh, Chief
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Enclosures: as stated

cc w/enclosures 1 and 2:
Mr. Lennart Carlsson
Nuclear Safety Division
Nuclear Energy Agency
Organization for Economic
Cooperation and Development
Le Seine Saint Germain
12, Boulevard des Iles
92130, Issy-les-Moulineaux, France

Mr. Valeri Tolstykh
Regulatory Activities Unit
Safety Assessment Section
Division of Nuclear Installation Safety
International Atomic Energy Agency
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Dear Mr. Tolstykh:

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Mr. Lennart Carlsson
Nuclear Safety Division
Nuclear Energy Agency
Organization for Economic
Cooperation and Development
Le Seine Saint Germain
12, Boulevard des Iles
92130, Issy-les-Moulineaux, France

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INCIDENT REPORTING SYSTEM

IRS NO.**EVENT DATE****DATE RECEIVED**

2000/09/27

EVENT TITLE

REVIEW OF REFUELING OUTAGE RISK (NRC Information Notice 2000-13)

COUNTRY

USA

PLANT AND UNIT

Generic

REACTOR TYPE

(BWR or PWR)

INITIAL STATUS

N/A

RATED POWER (MWe NET)

N/A

DESIGNER

(WEST, GE, CE, B&W)

1st COMMERCIAL OPERATION

N/A

ABSTRACT

This IRS report discusses a review of refueling outage risk performed by the senior reactor analysts in NRC Region IV.

REVIEW OF REFUELING OUTAGE RISK (NRC Information Notice 2000-13)

Please refer to the dictionary of codes corresponding to each of the sections below and to the coding guidelines manual.

1.	Reporting Categories:	<u>1.4</u>	_____	_____
2.	Plant Status Prior to the Event:	<u>2.3</u>	_____	_____
3.	Failed/Affected Systems:	<u>3.2</u>	_____	_____
4.	Failed/Affected Components:	<u>4.0</u>	_____	_____
5.	Cause of the Event:	<u>5.4.3</u>	_____	_____
		_____	_____	_____
6.	Effects on Operation:	<u>6.0</u>	_____	_____
7.	Characteristics of the Incident:	<u>7.0</u>	_____	_____
8.	Nature of Failure or Error:	<u>8.0</u>	_____	_____
9.	Nature of Recovery Actions:	<u>9.0</u>	_____	_____

INCIDENT REPORTING SYSTEM

IRS NO.

EVENT DATE

DATE RECEIVED

2000/11/16

EVENT TITLE

CRACK IN WELD AREA OF REACTOR COOLANT SYSTEM HOT LEG PIPING AT
V. C. SUMMER (NRC Information Notice 2000-17, Supplement 1)
Update to IRS Report #7396

COUNTRY

USA

PLANT AND UNIT

Generic

REACTOR TYPE

(BWR or PWR)

INITIAL STATUS

N/A

RATED POWER (MWe NET)

N/A

DESIGNER

(WEST, GE, CE, B&W)

1st COMMERCIAL OPERATION

N/A

ABSTRACT

This IRS report discusses the crack-like indication found in a weld in the A loop hot leg pipe in the reactor coolant system (RCS) at the V. C. Summer Nuclear Station.

CRACK IN WELD AREA OF REACTOR COOLANT SYSTEM HOT LEG PIPING AT
V. C. SUMMER (NRC Information Notice 2000-17, Supplement 1)
Update to IRS Report #7396

Please refer to the dictionary of codes corresponding to each of the sections below and to the coding guidelines manual.

1.	Reporting Categories:	<u>1.2.2</u>	_____	_____
2.	Plant Status Prior to the Event:	<u>2.3</u>	_____	_____
3.	Failed/Affected Systems:	<u>3.AE</u>	_____	_____
4.	Failed/Affected Components:	<u>4.2.6</u>	_____	_____
5.	Cause of the Event:	<u>5.1.0</u>	_____	_____
		_____	_____	_____
6.	Effects on Operation:	<u>6.0</u>	_____	_____
7.	Characteristics of the Incident:	<u>7.2</u>	_____	_____
8.	Nature of Failure or Error:	<u>8.3</u>	_____	_____
9.	Nature of Recovery Actions:	<u>9.0</u>	_____	_____

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

November 16, 2000

NRC INFORMATION NOTICE 2000-17,SUPPLEMENT 1: CRACK IN WELD AREA OF
REACTOR COOLANT SYSTEM
HOT LEG PIPING AT V. C.
SUMMER

Addressees

All holders of operating licenses for nuclear power reactors except those who have 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) supplement to tell addressees more about the crack-like indication found in a weld in the A loop hot leg pipe in the reactor coolant system (RCS) at the V. C. Summer Nuclear Station. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, no specific action or written response is required.

Description of Circumstances

On October 7, 2000, during a containment inspection after entering a refueling outage, the licensee identified a large quantity of boron on the floor and protruding from the air boot around the "A" loop RCS hot leg pipe. The licensee performed a liquid penetrant test (PT) on October 12, 2000, which indicated the existence of a 4-inch long circumferential indication in the first weld between the reactor vessel nozzle and the "A" loop hot leg piping, approximately 3 feet from the reactor vessel. The NRC issued IN 2000-17 on October 18, 2000, to inform addressees of this information.

The licensee subsequently removed all fuel from the reactor vessel to perform more thorough examinations. Ultrasonic examination (UT) and eddy current testing from the inside diameter (ID) of the "A" loop hot leg piping did not confirm a flaw at the location of the circumferential indication found by the initial PT. An additional PT performed on the OD of the pipe on November 12, 2000, confirmed the original 4-inch long circumferential indication, and identified that other smaller circumferential indications were present.

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The UT and eddy current testing did identify an indication at a different location. This indication is an axial crack-like indication, is approximately 2.7 inches long, and is located approximately 9 degrees counterclockwise from top dead center (TDC) of the weld. Based on the UT data, the axial crack-like indication begins at the ID and shows evidence of complete through-wall extension. Visual examination from the OD identified a small "weep hole" in the center of the weld at approximately the same circumferential location as the UT and eddy current indications. A PT of this area could not confirm that the axial crack-like indication was present on the OD because of slight leakage from the "weep hole." The UT and eddy current show that the crack-like indication extends from approximately the centerline of the weld toward the reactor nozzle. Final determination of the leakage path is not expected until metallographic examination of the subject weld is completed.

The NRC held a public meeting with the licensee on October 25, 2000 in the Region II offices in Atlanta, GA, to discuss the licensee's activities. A second public meeting will be held at the NRC Headquarters in Rockville, MD, on November 21, 2000, to discuss the licensee's activities to date and proposed actions.

Discussion

The licensee has assembled a multi disciplinary team, including experts from Westinghouse, the Electric Power Research Institute (EPRI), and other industry experts, to conduct a root cause assessment and develop corrective actions. The NRC is reviewing the licensee efforts. At present, there have been no reports from any other licensee in the United States of similar cracking. Once the failure mechanism is understood, the staff will assess the generic applicability of the event, including the impacts on the in-service inspection (ISI) program and leak-before-break (LBB) analyses.

The NRC staff has received preliminary information that a foreign plant recently found crack indications in a reactor coolant hot leg weld during an in-service inspection. The NRC has also received preliminary information that another foreign plant found a weld crack indication at the interface of the reactor coolant system piping and the residual heat removal system piping. The staff has asked the foreign regulatory bodies for more information about these and has also asked other foreign regulatory bodies to provide information about any similar conditions.

The NRC has developed a Web page to keep the public informed of this event (<http://www.nrc.gov/NRC/REACTOR/SUMMER/index.htm>). Another supplement to this information notice will be issued when the root cause of the flaw and extent of condition are determined, or when new information becomes available. The NRC will assess the need for further generic action as new information becomes available.

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

RA/Charles D. Petrone Acting For/

Ledyard B. Marsh, Chief
Events Assessment, Generic Communications
and Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Technical contacts: Eric Benner, NRR
301-415- 1171
E-mail: ejb1@nrc.gov

Billy Crowley, Region II
404-562-4612
E-mail: brc@nrc.gov

William Koo, NRR
301-415-2706
E-mail: whk@nrc.gov

Attachment:
List of Recently Issued NRC Information Notices

INCIDENT REPORTING SYSTEM

IRS NO.	EVENT DATE 2000/11/29	DATE RECEIVED
EVENT TITLE SUBSTANDARD MATERIAL SUPPLIED BY CHICAGO BULLET PROOF SYSTEMS (NRC Information Notice 2000-18)		
COUNTRY USA	PLANT AND UNIT Generic	REACTOR TYPE (BWR or PWR)
INITIAL STATUS N/A	RATED POWER (MWe NET) N/A	
DESIGNER (WEST, GE, CE, B&W)	1st COMMERCIAL OPERATION N/A	

ABSTRACT

This IRS report discusses substandard material supplied by Chicago Bullet Proof Systems (CBPS) to Fort St. Vrain and Susquehanna nuclear power plants. CBPS supplied material that was not in conformance with specifications of the purchase orders and not in conformance with NRC guidance documents (NUREG-0908). CBPS certified by Certificates of Compliance that the steel wall armor material supplied to Fort St. Vrain and Susquehanna conformed with UL Standard 752, Level 4, when in fact metallurgical testing by licensees determined the material to be substandard. PSC's procurement program identified the material as substandard before installing it at Fort St. Vrain. PP&L, after determining that its installed gun port was not in compliance with UL Standard 752, Level 4, took appropriate corrective action.

SUBSTANDARD MATERIAL SUPPLIED BY CHICAGO BULLET PROOF SYSTEMS
(NRC Information Notice 2000-18)

Please refer to the dictionary of codes corresponding to each of the sections below and to the coding guidelines manual.

1.	Reporting Categories:	<u>1.4</u>	_____	_____
2.	Plant Status Prior to the Event:	<u>2.0</u>	_____	_____
3.	Failed/Affected Systems:	<u>3.Z</u>	_____	_____
4.	Failed/Affected Components:	<u>4.0</u>	_____	_____
5.	Cause of the Event:	<u>5.1.10.3</u>	_____	_____
		_____	_____	_____
6.	Effects on Operation:	<u>6.0</u>	_____	_____
7.	Characteristics of the Incident:	<u>7.16</u>	_____	_____
8.	Nature of Failure or Error:	<u>8.2</u>	_____	_____
9.	Nature of Recovery Actions:	<u>9.0</u>	_____	_____

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D. C. 20555-0001

November 29, 2000

NRC INFORMATION NOTICE 2000-18: SUBSTANDARD MATERIAL SUPPLIED BY
CHICAGO BULLET PROOF SYSTEMS

Addressees

All 10 CFR¹ Part 50 Licensees and Applicants.
All Category I Fuel Facilities.
All 10 CFR¹ Part 72 Licensees and Applicants.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to inform addressees of substandard material supplied by Chicago Bullet Proof Systems (CBPS) to Fort St. Vrain and Susquehanna nuclear power plants. 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

CBPS supplied substandard materials to two NRC licensees.

Fort St. Vrain

Public Service Company Colorado (PSCo,) a contractor for the U. S. Department of Energy, the licensee for the independent spent fuel storage installation (ISFSI) at Fort St. Vrain, notified the NRC that CBPS supplied substandard steel plating for a security alarm station at Fort St. Vrain. CBPS was required to provide a Certificate of Compliance to certify that materials conformed to Underwriters Laboratory (UL) Standard 752, Level 4. This UL Standard was specified on the PSC purchase order. With regard to the steel plating, the purchase order listed Shot-Tex #4 Bullet Resistant Steel Wall Armor (CBPS's proprietary name for material that conforms with UL Standard 752, Level 4). CBPS's subcontractor, Metaltek Fabricating, Inc., actually shipped the steel to Fort St. Vrain. PSC asked CBPS to provide a certified material test report for the steel, but CBPS declined to do so, claiming that the information was proprietary. CBPS told PSC that the material supplied, Shot-Tex #4, conformed to the UL standard and subsequently provided

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¹Code of Federal Regulations

a Certificate of Compliance. PSC had the steel independently tested and determined it to be similar to A-36 type mild carbon steel, which is not in conformance with UL Standard 752, Level 4.

Susquehanna

A contractor for Pennsylvania Power and Light (PP&L), the licensee for Susquehanna, issued a purchase order to CBPS for a replacement gun port, including a mounting plate and side plate, for the Susquehanna plant. The purchase order specified that the gun port, the mounting plate and the side plate, were to be constructed of Shot Tex #4 Bullet Resistant Steel Wall Armor. After supplying the gun port to PP&L, CBPS provided PP&L a Certificate of Compliance certifying that the gun port material conformed with UL Standard 752, Level 4. A PP&L metallurgist independently did a nondestructive test of the gun port mounting plate and slide plate. The test showed that the mounting plate had the hardness of A-36 type mild carbon steel, and was not in conformance with UL Standard 752, Level 4.

Discussion

The regulations in 10 CFR 73.51, "Requirements for the physical protection of stored spent nuclear fuel and high-level radioactive waste," and 10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," state that structures must be constructed of bullet-resistant material. NUREG-0908, "Acceptance Criteria for the Evaluation of Nuclear Power Reactor Security Plans," states that an acceptable security plan defines bullet-resistant material as capable of resisting a high-power rifle round (Level 4), as described in UL Standard 752.

In the two cases described above, CBPS supplied material that was not in conformance with specifications of the purchase orders and not in conformance with NRC guidance documents (NUREG-0908). CBPS certified by Certificates of Compliance that the steel wall armor material supplied to Fort St. Vrain and Susquehanna conformed with UL Standard 752, Level 4, when in fact metallurgical testing by licensees determined the material to be substandard. PSC's procurement program identified the material as substandard before installing it at Fort St. Vrain. PP&L, after determining that its installed gun port was not in compliance with UL Standard 752, Level 4, took appropriate corrective action.

The NRC staff found that although CBPS was responsible for material certification and verification at the Metaltek facility, CBPS did not adequately perform material quality and chemical verification activities. The NRC also found that CBPS did not typically request certified material test reports for any of the steel used for UL Standard 752, Level 4 applications.

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

/RA/

Michael F. Weber, Director
Division of Fuel Cycle Safety

and Safeguards
Office of Nuclear Material Safety

and Safeguards

/RA/

Ledyard B. Marsh, Chief
Events Assessment, Generic
Communications
and Non-Power Reactors Branch
Division of Regulatory Improvement
Programs
Office of Nuclear Reactor
Regulation

Technical contacts: Joseph Petrosino, NRR
301-415-2979
E-mail: jjp1@nrc.gov

Robert Skelton, NRR
301-415-3309
E-mail: rfs1@nrc.gov

Eric Benner, NRR
301-415-1171
E-mail: ejb1@nrc.gov

Michael Warren, NMSS
301-415-8098
E-mail: msw@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

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SECRETARY: Violet Bowden
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