OMB Control No.: 3150-0012

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, DC 20555

May 28, 2004

NRC BULLETIN 2004-01: INSPECTION OF ALLOY 82/182/600 MATERIALS USED IN THE FABRICATION OF PRESSURIZER PENETRATIONS AND STEAM SPACE PIPING CONNECTIONS AT PRESSURIZED-WATER REACTORS

Addressees

All holders of operating licenses for pressurized-water nuclear power reactors (PWRs), except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor pressure vessel (RPV).

All other holders of operating licenses for nuclear power plants will receive a copy of this bulletin for information.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this bulletin to:

(1) advise PWR licensees that current methods of inspecting Alloy 82/182/600 materials used in the fabrication of pressurizer penetrations and steam space piping connections may need to be supplemented with additional measures to detect and adequately characterize flaws due to primary water stress corrosion cracking (PWSCC),

(2) request PWR addressees to provide the NRC with information related to the materials from which the pressurizer penetrations and steam space piping connections at their facilities were fabricated,

(3) request PWR licensees to provide the NRC with information related to the inspections that have been and those that will be performed to ensure that degradation of Alloy 82/182/600 materials used in the fabrication of pressurizer penetrations and steam space piping connections will be identified, adequately characterized, and repaired, and

(4) require PWR addresses to provide a written response to the NRC in accordance with the provisions of Section 50.54(f) of Title 10 of the *Code of Federal Regulations* (10 CFR 50.54(f)).

ML041480034

Background

Typical PWR pressurizers may have multiple penetrations and/or steam space piping connections which were fabricated using Alloy 600 base materials and/or Alloy 82/182 weld materials. Such penetrations may include, but are not limited to, pressurizer heater penetrations (including the "heater bundle" design used at Babcock and Wilcox-designed (B&W-designed) PWRs) and instrument line penetrations.

Steam space piping connections may include, but are not limited to, full penetration butt welds connecting power-operated relief valves, safety valves, spray lines, and vent lines to the steam space of the pressurizer. It should be noted that pressurizer surge line welds are not intended to be within the scope of this bulletin. The NRC staff is considering separately whether any additional action or information is required to address piping butt welds in the pressurizer surge line and throughout the rest of the reactor coolant system.

Operating experience has demonstrated that Alloy 82/182/600 materials exposed to primary coolant water (or steam) at the normal operating conditions of PWR plants have cracked due to PWSCC. The NRC has previously issued generic communications regarding the emergence of this phenomena, and its consequential effects, in other areas of PWR primary systems. NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," addressed PWSCC of control rod drive mechanism penetrations and other penetrations in the RPV upper heads of PWRs. NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," addressed the issue of boric acid corrosion of low alloy steel components as a result of leakage through PWSCC-induced flaws in the reactor coolant pressure boundary (RCPB). NRC Bulletin 2002-02, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs," followed up on NRC staff concerns regarding the adequacy of visual examinations as a primary inspection method for the RPV upper head and RPV upper head penetrations. Finally, NRC Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," addressed the potential for PWSCC of RPV bottom mounted instrumentation nozzles.

Operating experience, both domestic and foreign, has demonstrated that Alloy 82/182/600 materials connected to a PWR's pressurizer may be particularly susceptible to PWSCC. Since the late 1980's, approximately 50 Alloy 600 pressurizer heater sleeves at Combustion Engineering-designed (CE-designed) facilities in the United States have shown evidence of RCPB leakage which has been attributed to PWSCC. The most recent events of this type occurred at Millstone, Unit 2, and Waterford, Unit 3, in October 2003, and at Palo Verde, Unit 3, in February 2004. All available evidence from finite element modeling studies and limited nondestructive evaluation (NDE) has suggested that these leakage events were the result of axially-oriented PWSCC of the pressure boundary portion of these heater sleeves. However, NDE results from Palo Verde, Unit 2's fall 2003 refueling outage, on heater sleeves which had not shown evidence of leakage have demonstrated that circumferentially-oriented PWSCC can occur in the non-pressure boundary portion (i.e., above the J-groove attachment weld) of these components. Cracking in a TMI-1 diaphragm plate was attributed to PWSCC in the heat affected zone of the seal weld. Boric acid corrosion of the low alloy steel strongback was also observed to have resulted from the leakage.

Small diameter Alloy 82/182 instrument line penetrations have also shown evidence of PWSCC at many PWR facilities since the 1980's. For example, in October 2003, the Crystal River, Unit 3, licensee reported RCPB leakage from three pressurizer upper level instrument tap nozzles, which are exposed to the steam space in the pressurizer. The leakage was attributed to PWSCC of Alloy 82/182/600 material from which the connections were constructed.

Finally, inspection results from September 2003 at Tsuruga, Unit 2, in Japan are relevant with respect to PWSCC in larger diameter, butt welded lines connected to the steam space of the pressurizer. Evidence of boron deposits on the surface of a pressurizer relief valve nozzle (inside diameter 130 mm, or approximately 5 inches) led to the discovery of five axially-oriented flaws in the nickel-based alloy weld material used in the fabrication of the nozzle-to-safe end weld. Subsequent NDE performed on a safety valve nozzle of similar diameter resulted in the discovery of two additional flaws in its nozzle-to-safe end weld. Fractographic analysis of the flaw surfaces confirmed PWSCC as the mechanism for flaw initiation and growth. This event at Tsuruga, Unit 2 was similar to an event at Palisades in 1993 where leakage was observed and attributed to a circumferentially-oriented PWSCC flaw in a line leading to the unit's power-operated relief valves.

The occurrence of PWSCC in Alloy 82/182/600 materials used in the fabrication of pressurizer penetrations and steam space piping connections is not surprising. The initiation and growth of PWSCC flaws is known to be strongly dependent on the temperature of the primary system water to which the Alloy 82/182/600 materials are exposed. Given the fact that at the pressurizer the reactor coolant system environment attains a temperature of about 650°F (343 °C), PWSCC should be expected to occur in these materials and an effective degradation management program is warranted.

Discussion

The pressurizer and its penetrations and connections are an integral part of the RCPB, and their integrity is important to the safe operation of the plant. Since the onset of PWSCC in Alloy 82/182/600 materials used in the fabrication of pressurizer penetrations in the late 1980s, inspection programs have been based on the identification of RCPB leakage and the repair of leaking penetrations. The acceptability of such a degradation management program has been, in large part, predicated on the assumption that PWSCC in the RCPB at these locations will always be axially-oriented, limited in extent, and readily detectable through visual inspections and/or on-line leakage monitoring systems inside containment.

The recent evidence of circumferential cracking of the non-pressure boundary portion of pressurizer heater sleeves at Palo Verde, Unit 2, challenges this assumption. Based upon NRC experience with the evolution of PWSCC degradation in other parts of the RCPB (e.g., RPV upper head penetrations), evidence of circumferential PWSCC at a given RCPB location has usually been observed after axial PWSCC at that location was discovered. The experience with Alloy 82/182/600 pressurizer heater sleeves in CE-designed facilities through the fall 2003 inspections at Palo Verde, Unit 2, appears to substantiate that a similar trend may be evident at these locations.

This experience indicates that there is an increasing potential for the onset of circumferential cracking of the RCPB portion of Alloy 82/182/600 materials used in the fabrication of pressurizer penetrations and steam space piping connections. The NRC is also concerned about the ability of existing licensee degradation management programs to identify the onset of circumferential RCPB cracking at these locations in an effective and timely manner. The identification of the onset of circumferential PWSCC in Alloy 82/182/600 materials exposed to the high temperature pressurizer environment at a given facility is critical, due to the potential for initiation and growth of PWSCC flaws and the potential for circumferential cracking to result in abnormal leakage, rapidly propagating failure, and/or gross rupture of the RCPB.

The small amount of leakage from the cracks that have been discovered to date in Alloy 82/182/600 pressurizer penetrations and steam space piping connections does not represent an immediate safety problem. Safety systems included in plant designs and required to be available during plant operation would be able to mitigate the effects of even more significant leaks, up to and including the gross rupture of the largest piping connection to the pressurizer shell. However, to maintain the overall defense-in-depth philosophy incorporated into the design and operation of nuclear power plants, licensees should take appropriate actions to ensure that the integrity of pressurizer penetrations and steam space piping connections is maintained and the potential for challenging facility safety systems is minimized.

The NRC staff believes that it is appropriate for licensees to assess their current inspection practices to ensure that the integrity of pressurizer penetrations and steam space piping connections is being maintained. Inspections capable of detecting through-wall leakage from any pressurizer penetration or steam space piping connection, beginning at the next refueling outage, would provide confidence in the integrity of the locations. If visual inspections are performed to detect evidence of possible leakage, a bare metal examination of 100 percent of the circumference of each Alloy 82/182/600 pressurizer penetration and steam space piping connection would be effective at finding leakage due to PWSCC flaws and acceptable to the NRC staff.

The industry's Materials Reliability Program (MRP) has recommended that PWR licensees perform bare metal visual inspections of all Alloy 82/182/600 primary system pressure boundary locations normally operated at greater than or equal to 350°F within a facility's next two refueling outages, unless an equivalent inspection was performed during the facility's most recent refueling outage. This recommendation would be applicable to all Alloy 82/182/600 pressurizer penetrations and steam space piping connections. This recommendation was included in a letter from Leslie Hartz, Chair, MRP Senior Representatives, dated January 20, 2004, [ADAMS Accession# ML040360483] to all PWR licensees.

The MRP is an industry program, coordinated by the Electric Power Research Institute (EPRI), to address materials-related issues associated with PWRs. In addition, recommendations regarding the inspection of the CE-designed fleet's pressurizer heater sleeves were provided by the Westinghouse Owners Group (WOG) [ADAMS Accession# ML040480309]. The WOG recommended that licensees of CE-designed facilities should, at each refueling outage:

(1) perform a bare metal visual inspection of 100 percent of all pressurizer heater sleeve locations in such a way that visual access to the bare metal 360 degrees around each sleeve can be attained,

(2) perform NDE capable of characterizing crack orientation of all sleeves for which visual inspection shows evidence of leakage. The NDE of each leaking sleeve will be performed prior to repair of the sleeve, and

(3) if the NDE defines the flaw as potential circumferential cracking below the sleeve attachment weld, the NRC will be notified immediately and an appropriate inspection plan developed. The plan will define additional sleeves to be inspected by NDE sufficient to determine the extent of condition commensurate with the characterization of the flaw.

The NRC staff has reviewed the recommendations made by the WOG in its January 30, 2004, letter and finds that, with minor modifications, it would constitute an effective degradation management program for all Alloy 82/182/600 covered under the scope of this bulletin based on our current state of knowledge. The use of bare metal visual examinations is warranted given that significant PWSCC flaws may only produce small amounts of boric acid deposits that may not be visible unless a 100 percent bare metal visual inspection is conducted. As a modification of item (3) above, the NRC staff believes that the topic of NDE scope expansion should be discussed with the NRC staff if circumferential PWSCC is observed in either the pressure boundary or non-pressure boundary portions of any locations covered under the scope of this bulletin to ensure that the licensee has performed an adequate extent-of-condition evaluation. A facility which has seen evidence of non-pressure boundary circumferential PWSCC may be more susceptible to circumferential PWSCC of the pressure boundary in “like locations” (those similar in design, function, fabrication, etc.) and thus may need to perform additional NDE to verify that like locations within the pressurizer boundary retain adequate structural integrity before returning the unit to power operation. A licensee who does not intend to perform additional NDE upon the identification of non-pressure boundary circumferential PWSCC should be prepared to provide a technical basis to explain why the observation of non-pressure boundary circumferential PWSCC is not a relevant indication with respect to the potential for pressure boundary circumferential PWSCC in other like locations within the boundary of its pressurizer.

The NRC staff is working with the industry and other stakeholders to revise the American Society of Mechanical Engineers (ASME) Code and NRC regulations to address inspection of RCPB locations susceptible to cracking, including pressurizer penetrations and steam space piping connections. The NRC has posted and will continue to post information about this subject on its Web site (http://www.nrc.gov/reactors/operating/ops-experience/pressure-boundary-integrity/pressurizer-issues/index.html).

Applicable Regulatory Requirements

Several provisions of the NRC regulations and plant operating licenses (addressed in plant technical specifications (TSs)) pertain to RCPB integrity and the issues addressed by this bulletin. The general design criteria (GDC) for nuclear power plants (Appendix A to 10 CFR Part 50), or, as appropriate, similar requirements in the licensing basis for a reactor facility, the

requirements of 10 CFR 50.55a, and the quality assurance criteria of Appendix B to 10 CFR Part 50, provide the bases and requirements for NRC staff assessment of the potential for, and consequences of, degradation of the RCPB.

The applicable GDCs include GDC 14 (Reactor coolant pressure boundary), GDC 31 (Fracture prevention of reactor coolant pressure boundary), and GDC 32 (Inspection of reactor coolant pressure boundary). GDC 14 specifies that the RCPB be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture. GDC 31 specifies that the probability of rapidly propagating fracture of the RCPB be minimized. GDC 32 specifies that components which are part of the RCPB have the capability of being periodically inspected to assess their structural and leaktight integrity.

NRC regulations at 10 CFR 50.55a state that ASME Code Class 1 components (which include the RCPB) must meet the requirements of Section XI of the ASME Code. Various portions of the ASME Code address RCPB inspection. For example, Table IWB-2500-1 of Section XI of the ASME Code provides examination requirements during system leakage testing of all pressure-retaining components of the RCPB and references IWB-3522 for acceptance standards. IWB-3522.1(c) and (e) specify that conditions requiring correction include the detection of leakage from insulated components and discoloration or accumulated residues on the surfaces of components, insulation, or floor areas that may be evidence of borated water leakage, with leakage defined as the through-wall leakage that penetrates the pressure retaining membrane. Therefore, 10 CFR 50.55a, by reference to the ASME Code, does not permit through-wall degradation of pressurizer penetrations and steam space piping connections. For through-wall leakage identified by visual examinations in accordance with the ASME Code, acceptance standards for the identified degradation are provided in IWB-3142. Specifically, supplemental examination (by surface or volumetric examination), corrective measures or repairs, analytical evaluation, and replacement provide methods for determining the acceptability of degraded components.

Criterion V (Instructions, Procedures, and Drawings) of Appendix B to 10 CFR Part 50 states that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Criterion V further states that instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Visual and volumetric examinations of the RCPB are activities that should be documented in accordance with these requirements.

Criterion IX (Control of Special Processes) of Appendix B to 10 CFR Part 50 states that special processes, including nondestructive testing, shall be controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

Criterion XVI (Corrective Action) of Appendix B to 10 CFR Part 50 states that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. For significant conditions adverse to quality, the measures taken shall include root cause determination and corrective action to preclude repetition of the adverse conditions.

For degradation of the RCPB, the root cause determination is important for understanding the nature of the degradation present and the required actions to mitigate future degradation. These actions could include proactive inspections and repair of potentially degraded portions of the RCPB.

Plant TSs pertain to this issue insofar as they do not allow operation with known through-wall reactor coolant system pressure boundary leakage.

Requested Information

(1) All subject PWR licensees are requested to provide the following information within 60 days of the date of this bulletin.

(a) A description of the pressurizer penetrations and steam space piping connections at your plant. At a minimum, this description should include materials of construction (e.g., stainless steel piping and/or weld metal, Alloy 600 piping/sleeves, Alloy 82/182 weld metal or buttering, etc.), joint design (e.g., partial penetration welds, full penetration welds, bolted connections, etc.), and, in the case of welded joints, whether or not the weld was stress-relieved prior to being put into service. Additional information relevant with respect to determining the susceptibility of your plant's pressurizer penetrations and steam space piping connections to PWSCC should also be included.

(b) A description of the inspection program for Alloy 82/182/600 pressurizer penetrations and steam space piping connections that has been implemented at your plant. The description should include when the inspections were performed; the areas, penetrations and steam space piping connections inspected; the extent (percentage) of coverage achieved for each location which was inspected; the inspection methods used; the process used to resolve any inspection findings; the quality of the documentation of the inspections (e.g., written report, video record, photographs); and, the basis for concluding that your plant satisfies applicable regulatory requirements related to the integrity of pressurizer penetrations and steam space piping connections. If leaking pressurizer penetrations or steam space piping connections were found, indicate what followup NDE was performed to characterize flaws in the leaking penetrations.

(c) A description of the Alloy 82/182/600 pressurizer penetration and steam space piping connection inspection program that will be implemented at your plant during the next and subsequent refueling outages. The description should include the areas, penetrations and steam space piping connections to be inspected; the extent (percentage) of coverage to be achieved for each location; inspection methods to be used; qualification standards for the inspection methods and personnel; the process used to resolve any inspection indications; the inspection documentation to be generated; and the basis for concluding that your plant will satisfy applicable regulatory requirements related to the structural and leakage integrity of pressurizer penetrations and steam space piping connections. If leaking pressurizer penetrations or steam

space piping connections are found, indicate what followup NDE will be performed to characterize flaws in the leaking penetrations. Provide your plans for expansion of the scope of NDE to be performed if circumferential flaws are found in any portion of the leaking pressurizer penetrations or steam space piping connections.

(d) In light of the information discussed in this bulletin and your understanding of the relevance of recent industry operating experience to your facility, explain why the inspection program identified in your response to item (1)(c) above is adequate for the purpose of maintaining the integrity of your facility's RCPB and for meeting all applicable regulatory requirements which pertain to your facility.

(2) Within 60 days of plant restart following the next inspection of the Alloy 82/182/600 pressurizer penetrations and steam space piping connections, the subject PWR licensees should either:

(a) submit to the NRC a statement indicating that the inspections described in the licensee's response to item (1)(c) of this bulletin were completed and a description of the as-found condition of the pressurizer shell, any findings of relevant indications of through-wall leakage, followup NDE performed to characterize flaws in leaking penetrations or steam space piping connections, a summary of all relevant indications found by NDE, a summary of the disposition of any findings of boric acid, and any corrective actions taken and/or repairs made as a result of the indications found,

or

(b) if the licensee was unable to complete the inspections described in response to item (1)(c) of this bulletin, submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the pressurizer shell, any findings of relevant indications of through-wall leakage, followup NDE performed to characterize flaws in leaking penetrations or steam space piping connections, a summary of all relevant indications found by NDE, a summary of the disposition of any findings of boric acid, and any corrective actions taken and/or repairs made as a result of the indications found. In addition, supplement the answer which you provided to item (1)(d) above to explain why the inspections that you completed were adequate for the purpose of maintaining the integrity of your facility's RCPB and for meeting all applicable regulatory requirements which pertain to your facility.

For lines attached directly to the pressurizer, with the exception of the surge line, the information requested in (1) and (2) above should be provided for any locations, including those remote from the pressurizer shell, which contain Alloy 82/182/600 materials which are exposed to conditions similar to those of the pressurizer environment.

Required Response

In accordance with 10 CFR 50.54(f), the subject PWR addressees are required to submit a written response to this bulletin. This information is sought to verify licensees' compliance with the current licensing basis for the subject PWR addressees.
The addressees have two options:

(1) addressees may choose to submit written responses providing the information requested above within the requested time periods, or

(2) addressees who choose not to provide the information requested or cannot meet the requested completion dates are required to submit written responses within 15 days of the date of this bulletin. The responses must address any alternative course of action proposed, including the basis for the acceptability of the proposed alternative course of action.

The required written responses should be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, 11555 Rockville Pike, Rockville, Maryland 20852, under oath or affirmation under the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f). In addition, a copy of the response should be submitted to the appropriate Regional Administrator.

Reasons for Information Request

NRC regulatory requirements and plant TS requirements prohibit operation with known through-wall leakage from the RCPB. NRC regulations, plant TSs, and ASME Code requirements are intended to make licensees perform inspections to maintain an extremely low probability of abnormal leakage, or rapidly propagating failure, and of gross rupture. The current inspection program implemented at some PWRs may not permit timely identification of degradation of Alloy 82/182/600 materials exposed to the pressurizer environment in a manner consistent with NRC requirements.

This information request is necessary to permit the NRC staff to verify compliance with existing regulations and plant-specific licensing bases. The information being requested by this bulletin focuses on Alloy 82/182/600 materials exposed to the pressurizer environment and is information that is not currently available to the NRC staff.

The NRC staff will use the information to assess the acceptability of current licensee inspection programs, and to determine the need for, and guide the development of, any additional regulatory actions (e.g., generic communications, orders, or rulemaking) to address the integrity of these RCPB locations. Such regulatory actions could include regulatory requirements for augmented inspection programs under 10 CFR 50.55a(g)(6)(ii). The NRC staff will review the responses to this bulletin to determine whether the PWR licensees' inspections provide reasonable assurance that existing applicable regulations are met. If concerns are identified, the NRC staff will contact each affected licensee.

Related Generic Communications

Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," August 21, 2003 (ADAMS Accession No. ML032320153)

Bulletin 2002-02, “Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs,” August 9, 2002 (ADAMS Accession No. ML022200494)

Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity,” March 18, 2002 (ADAMS Accession No. ML020770497)

Bulletin 2001-01, “Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles,” August 3, 2001 (ADAMS Accession No. ML012080284)

Backfit Discussion

Under the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f), this bulletin transmits an information request for the purpose of verifying compliance with existing applicable regulatory requirements (see the Applicable Regulatory Requirements section of this bulletin). Specifically, the required information will enable the NRC staff to determine whether current inspection and maintenance practices for the detection of degradation of the RCPB at reactor facilities (similar to the degradation observed at Millstone, Unit 2, Crystal River, Unit 3, Tsuruga, Unit 2, and TMI-1) provide reasonable assurance that RCPB integrity is being maintained. No backfit is either intended or approved by the issuance of this bulletin, and the NRC staff has not performed a backfit analysis.

Federal Register Notification

A notice of opportunity for public comment on this bulletin was not published in the *Federal Register* because the NRC staff is requesting information from power reactor licensees on an expedited basis for the purpose of assessing compliance with existing applicable regulatory requirements and the need for subsequent regulatory action. This bulletin was prompted by the discovery of leaks at Tsuruga, Unit 2, Millstone, Unit 2, Waterford, Unit 3, and non-RCPB circumferential cracking at Palo Verde, Unit 2. As the resolution of this matter progresses, the opportunity for public involvement will be provided. Nevertheless, comments on the actions requested and the technical issues addressed by this bulletin may be sent to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001.

Small Business Regulatory Enforcement Fairness Act

The NRC has determined that this action is not subject to the Small Business Regulatory Enforcement Fairness Act of 1996.

Paperwork Reduction Act Statement

This bulletin contains information collections that are covered by the Office of Management and Budget clearance number 3150-0012, which expires August 31, 2006. The burden to the public for these mandatory information collections is estimated to average 200 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of these information collections, including suggestions for reducing the burden, to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by

Internet electronic mail to INFOCOLLECTS@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0012), Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, an information collection unless the requesting document displays a currently valid OMB control number.

If you have any questions about this matter, please contact one of the technical persons listed below or the appropriate Office of Nuclear Reactor Regulation project manager.

/RA/
Bruce A. Boger, Director
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

Technical Contacts: Timothy G. Colburn, NRR
301-415-1402

Matthew A. Mitchell, NRR
301-415-3303

Attachment: List of Recently Issued NRC Bulletins

Internet electronic mail to INFOCOLLECTS@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0012), Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, an information collection unless the requesting document displays a currently valid OMB control number.

If you have any questions about this matter, please contact one of the technical persons listed below or the appropriate Office of Nuclear Reactor Regulation project manager.

/RA/
Bruce A. Boger, Director
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

Technical Contacts: Timothy G. Colburn, NRR
301-415-1402

Matthew A. Mitchell, NRR
301-415-3303

Attachment: List of Recently Issued NRC Bulletins

DISTRIBUTION:
ADAMS
Bulletin File

DOCUMENT NAME: C:\MyFiles\Checkout\SP04-0078.wpd
ADAMS ACCESSION NUMBER: ML041480034

OFFICE	LPD1:DLPM	EMCB:DE	OES:IROB:DIPM	
NAME	TGColburn	MAMitchell	CDPetrone	
DATE	05/27/2004	05/27/2004	05/27/2004	

OFFICE	A:SC:OES:IROB:DIPM	C:IROB:DIPM	D:DIPM	
NAME	CPJackson	WDBeckner	BABoger	
DATE	05/27/2004	05/27/2004	05/28/2004	

OFFICIAL RECORD COPY

LIST OF RECENTLY ISSUED NRC BULLETIN NOTICES

Bulletin No.	Subject	Date of Issuance	Issued to
2003-04	Rebaselining of Data in the Nuclear Materials Management and Safeguards System	10/08/2003	All U.S. Nuclear Regulatory Commission (NRC) licensees, Agreement State licensees, and Certificate Holders (hereafter referred to as licensees) who: (1) Have in their possession, or are licensed to possess, one or more of the following: foreign obligated natural uranium, depleted uranium, or thorium; uranium enriched in the isotope U-235, U-233, plutonium, plutonium-238, or who currently have unreconciled nuclear material balances with the Nuclear Materials Management and Safeguards System (NMMSS).
2003-03	Potentially Defective 1-Inch Valves for Uranium Hexafluoride Cylinders	08/29/2003	(1) U.S. Nuclear Regulatory Commission (NRC) licensees and certificate holders authorized to possess and use source material and/or special nuclear material for the heating, emptying, and filling of uranium hexafluoride (UF_6) in 30- and 48-inch cylinders. (2) Registered users of certificates of compliance for enriched (fissile) UF_6 packages, under 10 CFR Part 71.
2003-02	Shadow Corrosion Resulting in Fuel Channel Bowing	08/21/2003	All holders of operating licenses for pressurized-water nuclear power reactors (PWRs) with penetrations in the lower head of the reactor pressure vessel (RPV), except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor pressure vessel.

Note: NRC generic communications may be received in electronic format shortly after they are issued by subscribing to the NRC listserver as follows:

To subscribe send an e-mail to <listproc@nrc.gov >, no subject, and the following command in the message portion:

subscribe gc-nrr firstname lastname

OL = Operating License
CP = Construction Permit