UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DAVID GEISEN	)	Docket No. IA-05-052
	)	
	)	ASLBP No. 06-845-01-EA

NRC STAFF PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

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January 16, 2009

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List of Acronyms

ACRS	Advisory Committee on Reactor Safeguards
ANO	Arkansas Nuclear One
BACC	Boric Acid Corrosion Control Program
B&W	Babcock and Wilcox
B&WOG	Babcock and Wilcox Owner's Group
CARB	Corrective Action Review Board
CNRB	Company Nuclear Review Board
CR	condition report
CRD	control rod drive
CRDM	control rod drive mechanism
EFPY	effective full power years
EPRI	Electric Power Research Institute
FENOC	FirstEnergy Nuclear Operating Company
INPO	Institute of Nuclear Power Operations
LOCA	loss of coolant accident
NDE	nondestructive examination
NEI	Nuclear Energy Institute
NOV-CP	Notice of Violation and Proposed Imposition of Civil Penalties
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OE	Office of Enforcement
OG	Owners' Group
OI	Office of Investigations
ONSx	Oconee Nuclear Station, Unit x
PCAQ	potential condition adverse to quality
PRG	Project Review Group
PWR	pressurized water reactor
PWSCC	primary water stress corrosion cracking
RCS	reactor coolant system
RFO	refueling outage
RPV	reactor pressure vessel
RVH	reactor vessel head
SRO	Senior Reactor Operator
TA	Technical Assistant
VHP	vessel head penetration

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I. INTRODUCTION

1.1 Pursuant to 10 C.F.R. § 2.714(a), the Staff hereby submits the following proposed findings of fact and conclusions of law regarding the enforcement hearing conducted from December 8 to 12, 2008.

1.2 Attached also is a list of enforcement actions against individuals carrying a five or more year sanction for the period 1993 to 2008.

II. PROCEDURAL BACKGROUND

2.1 On January 4, 2006, the Staff issued to Mr. Geisen an Order prohibiting him from any involvement in NRC licensed activities for a period of five years.[1] Thereafter, on January 19, 2006, Mr. Geisen was criminally indicted in the United States District Court for the Northern District of Ohio. The Order and the criminal indictment concern many of the same facts and issues. Mr. Geisen filed an answer to the Order and requested an expedited hearing in February, 2006.[2] The Staff requested a stay of

[1] "Order Prohibiting Involvement in NRC-Licensed Activities (Effective Immediately)" (Jan. 4, 2006) (ML053560094) ("Order").

[2] "Answer and Demand for an Expedited Hearing" (Feb. 23, 2006).

the proceeding in March 2006, because of its potential impact on the criminal proceeding.[3] The Staff's motion was denied by the Board.[4] The Board's decision was affirmed by the Commission on appeal.[5]

2.2 The Staff filed another request for a stay of the proceeding in October 2006.[6] Although denied by the Board,[7] the stay was granted by the Commission on appeal until the outcome of the criminal proceeding.[8] Mr. Geisen was subsequently found guilty on three counts of the criminal indictment and, in May 2008, was sentenced to three years probation with certain conditions, including a prohibition from employment in nuclear power industry.

2.3 In June 2008, Mr. Geisen requested that the hearing on the Order be reinstated.[9] Pursuant to the Board's request,[10] both parties filed briefs concluding that there had been an "outcome" of the criminal proceeding as the term was used by the Commission.[11] The Board agreed, and a hearing was conducted from December 8 to 12, 2008.

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[3] "NRC Staff Motion to Hold the Proceeding in Abeyance" (Mar. 20, 2006).

[4] *David Geisen*, LBP-06-13, 63 NRC 523 (2006).

[5] *David Geisen,* CLI-06-19, 64 NRC 9 (2006).

[6] "NRC Staff Motion for Stay of Proceeding or in the Alternative for a Preclusion Order" (Oct. 27, 2006).

[7] "Order (Denying Government's Request to Stay Proceeding)" (Jan. 12, 2007).

[8] *David Geisen,* CLI-07-06, 65 NRC 112 (2007).

[9] Letter from Richard Hibey to the Board (June 24, 2008).

[10] Order (Calling for Briefs) (June 30, 2008).

[11] "Brief of David C. Geisen in Response to Board's Order Dated June 30, 2008" (July 7, 2008); "NRC Staff Response to Board's Order Calling for Briefs" (July 14, 2008).

III. LEGAL STANDARDS AND REGULATORY GUIDANCE

3.1 The Staff filed a motion asking the Board to use collateral estoppel from the guilty verdict and underlying facts in the criminal proceeding to establish the Staff's claim that Mr. Geisen deliberately provided inaccurate and incomplete information to the NRC in Serial Letter 2744.[12] Mr. Geisen opposed the Staff's motion.[13]

3.2 In an e-mail to the parties on December 31, 2008, the Board asked the parties to address questions relating to the application of collateral estoppel in this proceeding. The e-mail also asked the parties to address questions relating to due process.

3.3 The e-mail offered the Staff the opportunity to brief the additional collateral estoppel and due process questions on January 30, 2008. The Staff advised the Board and the parties on January 7, 2008 that it would do so.

3.4 During the hearing, the Board asked the parties to address the application of the exclusionary rule and the Sarbanes-Oxley Act to this proceeding. Those issues are addressed below.

A. Standard and Scope of Review

3.5 Adjudicatory hearings in enforcement proceedings are essentially trials *de novo.*[14]

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[12] "NRC Staff Motion for Collateral Estoppel" (Nov. 17, 2008).

[13] "Opposition of David C. Geisen to NRC Staff's Motion for Collateral Estoppel," November 26, 2008.

[14] *Atlantic Research Corporation,* ALAB-594, 11 NRC 841, 849 (1980).

3.6 Therefore, the Board must determine, based on the record of the hearing, whether the charges are sustained and whether the sanction imposed by the Staff is warranted.[15]

3.7 The Board's decision in an adjudicatory hearing on a Staff enforcement action is not limited to the evidence in possession of the Staff at the time the order was issued. Nor is it limited to evidence cited in the order. There is no requirement that an enforcement order identify all evidence that might be relied on should an adjudicatory hearing be held on the question of whether the order should be sustained. Due process requires only that the enforcement order make the charges understandable and afford the individual a full and fair opportunity to meet those charges.[16] As the court stated in *Citizens State Bank* when ruling on the adequacy of a cease and desist Order, "'[p]leadings in administrative law proceedings are not judged by standards applied to an indictment at common law,' but are treated more like civil pleadings where the concern is with notice. . . ."[17]

3.8 The Order issued to Mr. Geisen informed him of each NRC submission for which he was charged with providing incomplete and/or inaccurate information and

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[15] *Radiation Technology, Inc.*, ALAB-567, 10 NRC 533, 536 (1979).

[16] *See Citizens State Bank v. FDIC,* 751 F.2d 209, 213 (8th Cir. 1984).

[17] *Id.* (*quoting Aloha Airlines, Inc. v. CAB,* 598 F.2d 250, 262 (D.C. Cir. 1979)). *See also Radiation Technology, supra,* at 536-38. This standard is distinguishable from the one applicable to challenges to the immediate effectiveness of enforcement sanctions. Pursuant to 10 C.F.R. § 2.202(c)(2), an individual may ask that the immediate effectiveness be set aside on the grounds that the order is not based on adequate evidence. In such a case, where the hearing concerns the adequacy of the evidence in the Staff's knowledge when it initiated the action, the Board may limit its consideration to the evidence obtained by the Staff before the Order is issued. However, the Staff is not barred from relying on additional evidence gathered after the order to defend the continued effectiveness of the order. *Advanced Medical Systems, Inc.* (One Factory Row, Geneva, Ohio) CLI-94-6, 39 NRC 285 (1994), *aff'd, Advanced Medical Systems, Inc. v. NRC,* 61 F.3d 903 (6th Cir 1995).

detailed the rationale for the Staff's enforcement sanction. The Order detailed the evidence relied on by the Staff in determining that immediate action was necessary to protect the public health and safety. Therefore, the Order was sufficient to give Mr. Geisen notice of the charges against him.

3.9 Following discovery in this proceeding and a criminal trial involving the same issues, the Staff presented additional evidence during the adjudicatory hearing to support the charges in the Order. This evidence did not alter or expand the scope of the charges in the Order, nor did the admission of this evidence deprive Mr. Geisen of the ability to defend himself during the enforcement proceeding. To the contrary, Mr. Geisen was well aware of this additional evidence, as it was presented during his criminal trial, and did not object to its admission in this proceeding. Therefore, this additional information was properly admitted into the record. With this information, the Board will be able to reach a more fully informed decision on the enforcement charges against Mr. Geisen.

B. The Exclusionary Rule

3.10 The Board has also asked the parties to address the application of the Fourth Amendment exclusionary rule to this proceeding. In general, the exclusionary rule holds that evidence collected or analyzed in violation of a defendant's constitutional rights is inadmissible for criminal prosecution in a court of law.[18] The exclusionary rule does not apply to civil proceedings except where the constitutional violation is sufficiently egregious or shocking.[19] Violations which meet this standard include deliberate Fourth

[18] *See United States v. Calandria*, 414 U.S. 338, 348 (1974) ("In sum, the rule is a judicially created remedy designed to safeguard Fourth Amendment rights generally through its deterrent effect, rather than a personal constitutional right of the party aggrieved.").

[19] *See United States v. Ortiz-Hernandez,* 2005 U.S. App. LEXIS 23273 (9th Cir. 2005) (in (continued. . .)

Amendment violations and conduct which any reasonable person should have known was a constitutional violation.[20] Even in criminal proceedings, the exclusionary rule is applied as a last resort and, when it is applied, does not bar the introduction of all evidence obtained in violation of an individual's constitutional rights. In *Hudson v. Michigan*, the Supreme Court held:

> Suppression of evidence, however, has always been our last resort, not our first impulse. The exclusionary rule generates "substantial social costs," *U.S. v. Leon*, 468 U.S. 897, 907 (1984), which sometimes include setting the guilty free and the dangerous at large. We have therefore been "cautious against expanding" it, *Colorado v. Connelly*, 479 U.S. 157, 166 (1986), and "have repeatedly emphasized that the rule's 'costly toll' upon truth-seeking and law enforcement objectives presents a high obstacle for those urging [its] application," *Pennsylvania Bd. of Probation and Parole v. Scott*, 524 U.S. 357, 364-365 (1998) (citation omitted). We have rejected "indiscriminate application" of the rule, *Leon*, *supra*, at 908, and have held it to be applicable only "where its remedial objectives are thought most efficaciously served," *United States v. Calandra*, 414 U.S. 338, 348 (1974) – that is, where its deterrence benefits outweigh its 'substantial social costs,'" *Scott, supra*, at 363 (quoting *Leon, supra*, at 907).[21]

3.11 More recently, the Supreme Court affirmed its prior holdings that application of the exclusionary rule should be a last resort, and applied the good-faith exception to the rule by allowing the introduction of evidence in a criminal proceeding that was obtained as a result of an isolated negligent bookkeeping error by a police

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(. . .continued)
view of the egregious constitutional violation in defendant's seizure based on his race, the exclusionary rule applied to bar identity evidence from a requested fingerprint exemplar).

[20] *Id.; see also Lopez-Rodriguez v. Mukasy*, 536 F.3d 1012 (9th Cir. 2008) (reasonable INS agents should have known that they were violating the Fourth Amendment when they entered Gastelum's and Lopez's residence without a warrant; thus, the INS agents' Fourth Amendment violation was "egregious" under this Circuit's controlling interpretation of the term).

[21] 547 U.S. 586, 591, 126 S.Ct. 2159, 2163 (2006).

employee.[22] The majority held that "when police mistakes are the result of negligence . . . , rather than systematic error or reckless disregard of constitutional requirements, any marginal deterrence does not 'pay its way.'"[23] Thus, "the criminal should not 'go free because the constable has blundered.'"[24]

3.12 Therefore, the exclusionary rule would permit the exclusion of evidence in an NRC enforcement proceeding only upon a showing that it was obtained through an egregious violation of an individual's constitutional rights. Because the evidence supporting the Staff's enforcement action was obtained by OI, the constitutional violation would necessarily be the result of the conduct of that investigation. However, there has been no allegation that Mr. Geisen's constitutional rights were violated during the course of that investigation. Indeed, if that were the case, one would have expected Mr. Geisen to raise that issue during the criminal prosecution, which was also premised upon the investigation conducted by OI.

3.13 In order for Mr. Geisen to seek the exclusion of evidence during the criminal trial, he would have had to raise a timely objection and identify the grounds for the violation.[25] However, Mr. Geisen never sought the exclusion of evidence on the

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[22] *Herring v. United States*, 555 U.S. ____, slip op. No. 07-513 (Jan. 14, 2009) (The Court had previously held that *Leon's* good-faith rule applied in instances where police reasonably relied upon mistaken information in a court's database that an arrest warrant was outstanding. *See Arizona v. Evans*, 514 U.S. 1, 14-15 (1995). This opinion expands that exception to include an isolated instance of negligent police error).

[23] *Id.* at 12, quoting *Leon*, 468 U.S. at 907-908, n.6 (internal quotations omitted).

[24] *Id.* at 13, quoting *People v. Defore*, 242 N.Y. 13, 21, 150 N.E. 585, 587 (1926).

[25] *See Allied Int'l, Inc. v. International Longeshore Ass'n*, 814 F.2d 32, 39-40 (1st Cir. 1987), *cert. denied*, 484 U.S. 820, 108 S.Ct. 79 (1989) ("[i]t is axiomatic that the failure to object at trial forecloses any opportunity to challenge the admissibility of the evidence on appeal."); *Bryant v. Consolidated Rail Corp.*, 672 F.2d 217, 220 (1st Cir. 1982) (failure to raise specific rule of evidence below as required by Fed.R.Evid. § 103(a)(1) makes it unnecessary to resolve issue).

grounds that it was obtained through a violation of his constitutional rights. Any constitutional violation from the criminal proceedin, if relevant here, would also taint evidence admitted in this administrative proceeding because all of the OI investigatory documents relied on by the Staff were identical to those admitted in the criminal proceeding. Mr. Geisen also failed to object to the admission of any of the evidence admitted during the administrative hearing. Mr. Geisen has therefore waived any claim that evidence should have been excluded because it was obtained in violation of his constitutional rights. Absent any claim by Mr. Geisen that his constitutional rights were violated, there is simply no basis for applying the exclusionary rule.

C. The Sarbanes-Oxley Act

3.14 The Sarbanes-Oxley Act ("Act") was enacted to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to securities laws. To accomplish this purpose, the Act requires certain senior executives of public companies to certify the material accuracy of quarterly and annual financial reports. 10 U.S.C. § 7241(a). The signing officers must certify that, among other things, they have reviewed the report, and that based on their knowledge, the report is not inaccurate, incomplete, or misleading. 15 U.S.C. § 7241(a)(1)-(3).

3.15 Because this proceeding does not involve issues of financial reporting under securities laws, the Act is not applicable. However, even were it applicable, the certification required under the Act does not, in itself, establish knowledge of material misstatements or omissions that may be contained in the financial statements. Knowledge must be established by evidence. For example, in a securities fraud case, the evidence must establish that the officer had a "reason to know, or should have

suspected, due to the presence of glaring accounting irregularities or other 'red flags,' that the financial statements contained material misstatements or omissions."[26]

IV. TECHNICAL BACKGROUND

A. WITNESSES

4.1 In support of its Order, the Staff presented the live testimony of four individuals and submitted previous testimonies of two other individuals from Mr. Geisen's criminal case. These witnesses were: Melvin Holmberg, a Reactor Inspector for the NRC in Region III (Tr. 832); Allen Hiser, a Branch Chief in the Steam Generator Tube Integrity and Chemical Engineering Branch of the Office of Nuclear Reactor Regulation ("NRR") at the NRC (Tr. 1196); Prasoon Goyal, a former Senior Mechanical Engineer at Davis-Besse (Tr. 1018); John Martin, a former two-time Regional Administrator for the NRC and current owner of an engineering consulting company, the focus of which is nuclear safety issues (Tr. 1472-3); Stephen Moffitt, former Technical Services Director in the Engineering Department of Davis-Besse (Staff Ex. 70, 74 at 1196); and Gregory Gibbs, former owner of Piedmont Management & Technical Services, Inc., which provided consultation primarily to nuclear plants in the Midwest (Staff Ex. 44, 75 at 815).

4.2 Per a joint agreement between the parties, Mr. Geisen presented himself as a witness (Tr. 1535) and the Staff presented Mr. Geisen as well (Tr. 1801).

4.3 The Staff also presented supporting exhibits, including inspection videos, which were viewed during the hearing. Tr. 825. The Staff specifically showed portions of the 1996 as-found inspection (file 96-07), the 2000 as-found inspection (file xx-00), and the 2000 cleaning video. Staff Ex. 81.

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[26] *Garfield v. NDC Health Corp.*, 466 F.3d 1255, 1266 (11th Cir. 2006).

B. DAVIS-BESSE'S REACTOR DESIGN

4.4 Davis-Besse is a pressurized water reactor. Tr. 836-37. The reactor vessel, pressurizer, and steam generators are inside containment. Staff Ex. 2; Tr. 837. Water with boric acid in the solution is used to moderate, or cool, the reactor components inside the reactor vessel. This solution is heated to approximately 550 degrees and pressurized at about 2,150 pounds per square inch. Tr. 846. There is up to about 2,000 parts per million of boron in the reactor coolant water that circulates inside the vessel head. Tr. 846.

4.5 Electrical power is generated by a series of events. Within the RCS, the pressure is established at about 2,000 pounds per square inch by the pressurizer, which contains heating elements that boil the water to maintain a steam bubble. Staff Ex. 2; Tr. 837. The reactor coolant pumps circulate water through the core of the reactor vessel, where the water is heated by nuclear fission within the reactor core. Staff Ex. 2; Tr. 837. The pressurized water is then sent into the steam generator where the heat is converted or absorbed by the feedwater, which boils off into steam. Tr. 838. The steam then circulates outside the containment structure through a turbine. The shaft of the spinning turbine is attached to and drives the electrical generator. Tr. 838. The generator produces electricity that is sent through the power lines to the power grid. Tr. 838.

4.6 Davis-Besse's reactor vessel was designed by Babcock and Wilcox . Staff Ex. 3; Tr. 1018-19. At the top of the reactor vessel is the vessel head. Staff Ex. 6; Tr. 839. The reactor vessel is part of the reactor coolant pressure boundary, and is therefore designed to contain high temperature, high pressure borated reactor coolant. The reactor vessel and the vessel head are bolted together by 60 individual studs, which allow the head to be removed during refueling outages. Tr. 839, 850, 858. Each stud

hole is annotated and that number is engraved near the stud hole. Tr. 859. The entire vessel, including the vessel head, is approximately 40 feet tall. Tr. 839.

4.7 Davis-Besse's vessel head is a little under 7 inches thick and has an inside diameter of a little over 13 feet. Tr. 841, 842. It is made of carbon steel and has a stainless steel cladding at the inside surface. Staff Ex. 5; Tr. 841, 842. The stainless steel cladding is about 3/8 of an inch thick. Staff Ex. 5; Tr. 841, 842. The stainless steel cladding serves as a corrosion barrier and prevents corrosion of the carbon steel head from the boric acid in the reactor coolant. Tr. 842-43. The normal operating temperature of the vessel head is approximately 605 degrees. Tr. 876.

4.8 At the top of the vessel head are the RPV nozzles. Tr. 841. The nozzles penetrate the vessel head and serve as a support area for the RPV CRDMs. Staff Ex. 6; Tr. 839. There are a total of 69 CRD penetrations. Staff Ex. 7; Tr. 840. The RPV nozzles are almost exactly 4 inches in diameter where they penetrate the vessel head and they all terminate at the same elevation above the vessel head. Tr. 840. Each CRD penetration is specifically numbered in a ring-like fashion beginning in the center of the head and proceeding in a concentric circle outward. Staff Ex. 7; Tr. 859-60. Therefore, the higher numbered nozzles are on the very periphery of the vessel head. Tr. 860.

4.9 An interference fit exists at room temperature where the penetration nozzles penetrate the vessel head. As stated, the nozzles are 4 inches in diameter, but the hole in the vessel head that the nozzle is inserted into is slightly smaller. Tr. 874. The nozzles are therefore cooled to negative 140 degrees Farenheit, which causes the nozzles to shrink. Tr. 874. The nozzles are then inserted into the head and allowed to warm up and expand. Tr. 874. This creates a very close fit between the nozzles and the head. This is called the interference fit. Tr. 873-74.

4.10 There is a horizontal layer of metal reflective insulation, which is about 2 inches thick, above the vessel head. Staff Ex. 5; Tr. 843. The insulation serves to minimize the heat conducted upward or lost from the RCS, and it keeps the area containing the CRDMs cool. Tr. 843. The insulation is held up by the steel support structures. Tr. 860.

4.11 Between the insulation and the CRDMs are the CRDM flanges. Tr. 843. The flanges support the CRDM housings. Tr. 848. The flange contains a mechanical joint with a seal. Tr. 848.

4.12 Along the outer rim of the service structure are a number of weep holes (also known as mouse holes), which are 5 inch x 7 inch cutouts in the service structure. Tr. 843, 849. The weep holes provide access to reach the area between the vessel head and the insulation. Tr. 844, 849. Each weep hole has a distinct number, although that number is not engraved on the vessel head. Tr. 859.

4.13 The nozzles are attached to the inside surface of the vessel head with J-groove welds. Tr. 847. These are structural circumferential welds that attach the CRD penetrations to the vessel head. Tr. 847. These J-groove welds and the nozzles are made of Inconel, which is a nickel based alloy. Inconel is subject to cracking during reactor operation. Tr. 847, 852. Thus, both the nozzles and the welds attaching the nozzles to the reactor head are susceptible to cracking.

C. NOZZLE CRACKING ISSUE – TECHNICAL INFORMATION

1. Creating Cracks

4.14 Cracking typically manifests itself initially with axial cracking either in the base material of the nozzles or in the J-groove weld. Tr. 852, 854. Circumferential cracking can begin to grow from that if the axial crack goes through-wall and causes the reactor coolant to leak out of the reactor pressure coolant boundary. If that happens,

concentrated boric acid from the reactor coolant can build up on the outside of the nozzle where circumferential cracking can develop. Tr. 852-53. Once outside the nozzle, the boric acid can travel up the nozzle and reach the top of the head. Tr. 852.

4.15 Boric acid can also reach the top of the head from a leaking flange. Tr. 848, 857. If the seal on the flange leaks, reactor coolant water containing boric acid can leak out and deposit on the top of the insulation. Tr. 848. 857. Sometimes the leaking reactor coolant water will run directly down the RPV nozzle and land on the reactor head. If the flange leak is large enough, the leakage could spray adjacent nozzles, run down those adjacent nozzles and deposit boric acid on the RPV head. Tr. 848-49, 1425. However, due to the dense packing of the flanges above the insulation, the flanges are as close together as possible. Tr. 983. Therefore, while it is possible that a flange spray could hit the immediately adjacent row and potentially the row after, there is no discernable path for the spray to reach any further nozzles. Tr. 983-84, 1425.

2. Detecting Cracks

4.16 There are two general categories of inspection: visual and non-visual. Tr. 862.

4.17 In order to conduct a visual inspection, the vessel head is removed and placed on a head stand, which is generally adjacent to the refueling area. Tr. 879. Therefore, visual inspections are performed while the reactor is shut down, typically during a refueling outage. During the time relevant to this proceeding, head inspections were performed during the 10th RFO in 1996, the 11th RFO in 1998, and the 12th RFO in 2000. These inspections were videotaped. Staff Ex. 81.

4.18 Visual inspections of the top surface of the vessel head are performed to look for evidence of leakage. Tr. 855. If there is a leak, the reactor coolant will flash to steam where the nozzle penetrates the dome of the vessel head (also known as the

nozzle-to-head interface). Tr. 855-56. This leaves behind deposits of boric acid, which are characteristically white in color and have been described as “popcorn-like” deposits. Tr. 856. Once evidence of leakage is detected, a non-visual inspection is generally performed to determine whether the leakage resulted from a crack. Tr. 865. Non-visual inspections are performed on the bottom surface of the head and used for confirmation because its results are more definitive. Tr. 865.

4.19 Non-visual inspections are conducted beneath the vessel head at the inside surface to detect evidence of cracking in the nozzles. Tr. 862-63. The two most common types of non-visual inspections are ultrasound and eddy current. Tr. 862. These inspections are done using specialized robotic equipment placed underneath the vessel head. Tr. 864. Although visual inspections are technically easier to perform, non-visual inspections provide more confidence in the results because they can show that material has actually been degraded as opposed to merely seeing potential indications of leakage from visual inspections. Tr. 865.

4.20 Visual inspections are used for “as-found” inspections. Tr. 918. An as-found inspection is conducted before the removal of any accumulated boron deposits from the vessel head. Tr. 918. Non-intrusive methods, such as a vacuum or low pressure air, may be used to remove what can be considered loose debris, or debris that is not indicative of popcorn-like boron deposits prior to the as-found inspection. Tr. 918-19. However, an as-found visual examination cannot be conducted after cleaning the head with water and using other mechanical means, such as crow bars, to clean the head. Tr. 888-89, 919. Once the head is cleaned like that, all evidence of leakage is washed away as well. Tr. 889.

4.21 Visual inspections can also be performed on the CRD flanges; however, those inspections are done from above, over the insulation, and therefore the vessel

head cannot be seen. Tr. 861. Thus, flange inspections are not able to determine signs of nozzle cracking.

4.22 Davis-Besse, for the period in question, relied on visual examinations to support inspections of the vessel head for evidence of leakage and also to support Davis-Besse's Boric Acid Corrosion Control program. Tr. 866. The BACC applies to all the carbon steel components in the RCS that are susceptible to corrosion. Tr. 866. The BACC was in place prior to specific programs that focused on the vessel head penetration nozzles. Tr. 866.

4.23 Davis-Besse performed its visual inspections by inserting a camera on a stick through the weep holes to view the nozzle-to-head interfaces. Tr. 855-56, 867. A monitor located outside of the service structure, next to the person manipulating the camera, shows the results of the inspection in real-time. Tr. 855. The as-found inspections conducted using this technique were videotaped during the period in question. The difficulty with this form of inspection is that the camera is mounted rigidly to the stick and with the geometry of the vessel head: (1) it is not possible to go past a certain number of rows of nozzles to see the top of the vessel head and (2) the camera is not always able to view the entire area of interest. Tr. 855.

4.24 During the time period in question (1996-2000), visual inspections were standard within the industry as the initial inspection. Tr. 950. However, if evidence of leakage was discovered, the standard was to perform additional examinations to confirm whether the leakage was from cracking in the vessel head nozzles. Tr. 950.

3. Consequences of Cracks

4.25 If the circumferential cracking is significant enough, the pressure of the reactor coolant inside the head could force the nozzle to be ejected from the top of the vessel head. Tr. 853. This could cause two dangerous safety consequences: (1) a loss

of coolant accident and (2) because the RPV nozzle supports the CRD, the control rod could potentially be damaged or ejected from the core. Tr. at 853.

D. NOZZLE CRACKING ISSUE – NRC'S ACTIONS

1. Information Notice 2001-05

4.26 The NRC has several forms of generic communications. Tr. 1201. One form, the information notice, describes operating events that occur at one or more nuclear power plants that challenge safety in some way and affect other nuclear power plants. Tr. 1198. The information notice describes the event that occurred as a way to notify the other plants, provide perspective, and suggest the plants evaluate the information notice for relevance to their plant, but would not require any further action. Tr. 1198.

4.27 On April 30, 2001, the NRC issued Information Notice 2001-05, Through-Wall Circumferential Cracking of Reactor Pressure Vessel Head Control Rod Drive Mechanism Penetration Nozzles at Oconee Nuclear Station, Unit 3 ("Information Notice"). Staff Ex. 29. The Information Notice was addressed to all PWR licensees. Staff Ex. 29 at 1. The NRC issued the Information Notice to alert the addressees to the discovery of through-wall circumferential cracks in two CRDM nozzles and J-groove welds at ONS3. Staff Ex. 29 at 1. The NRC expected the addressees to review the information to determine what was applicable to their facilities and consider appropriate actions. Staff Ex. 29 at 1. However, the Information Notice specified that there were no actions or responses required. Staff Ex. 29 at 1.

4.28 The Information Notice was issued because that type of cracking is a great concern if the crack grew far enough. If it did grow far enough, the nozzle could break, at which point the high pressure and high temperature water could eject the top of the nozzle, causing a LOCA. Tr. 1200.

4.29 The Information Notice explained that during an inspection of ONS3 on February 18, 2001, the licensee found 9 degraded CRDM penetration nozzles with 47 recordable crack indications. Staff Ex. 29 at 1. Further, the Information Notice explained that these flaws were initially identified by a visual examination that revealed the presence of small amounts of boric acid residue in the vicinity of the nine CRDM penetration nozzles. Staff Ex 29 at 1. In 2 of those 9 nozzles, subsequent dye-penetrant testing revealed 165 degree circumferential cracking. Staff Ex. 29 at 2; Staff Ex. 26 at 3-4; Staff Ex. 27 at 9-11. The circumferential crack in CRDM penetration nozzle #56 was through-wall and the circumferential crack in CRDM penetration nozzle #50 had pin hole through-wall indications. Staff Ex. 29 at 2.

4.30 Prior to the ONS3 discovery, cracking was thought to be almost exclusively axial and confined to the base materials. Tr. 869. The ONS3 finding was unexpected. Tr. 869.

2. Bulletin 2001-01

4.31 Bulletins are another form of generic communications from the NRC. Tr. 1201. Bulletins are the most significant of the NRC's generic communications. Bulletins differ from information notices because bulletins require responses by licensees. Tr. 1201. The information the NRC receives in response to bulletins are used on a plant-specific basis to determine if additional regulatory actions are needed by the NRC, either for the individual plant or for the industry. Tr. 1202.

4.32 Following the issuance of the Information Notice, another unit at Oconee, ONS2, identified additional circumferential cracking. Staff Ex. 8 at 3; Tr. 1200.

4.33 On August 3, 2001, the NRC issued Bulletin 2001-01, Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles ("Bulletin"). Staff Ex. 8. The Bulletin was addressed to all PWR licensees. Staff Ex. 8. The Bulletin was issued

to express the NRC's concern about the newly discovered circumferential cracking at ONS2 and to alert the PWR licensees to what the NRC expected from them in addressing the situation. Tr. 869.

4.34 The goal of the Bulletin was to determine the status of every PWR plant because the NRC did not have sufficient knowledge of the adequacy of previous inspections or whether future inspection plans were acceptable. Tr. 1205. This concerned the NRC because prior to Oconee, the general consensus was that substantial quantities of boric acid would be found from a leaking nozzle. Tr. 1208. Instead, Oconee quantified the amount of boric acid from their leaking nozzle as about one cubic inch. Tr. 1208. Thus, the NRC was concerned that the licensees did not have adequate sensitivity to the issue. Tr. 1210. The Bulletin stated:

> In addition, the presence of circumferential cracking at ONS3, where only a small amount of boric acid residue indicated a problem, calls into question the adequacy of current visual examinations for detecting either axial or circumferential cracking in VHP nozzles. Staff Ex. 8 at 4.

4.35 A significant concern was whether licensee inspections had been adequate to detect the small deposits indicative of nozzle leakage. Tr. 1210. The Bulletin stated:

> This is especially significant if prior existing boric acid deposits on the RPV head mask the identification of new deposits. Also, the presence of insulation on the RPV head or other impediments may restrict an effective visual examination. Staff Ex. 8 at 4.

4.36 Therefore, the NRC wanted licensees to be aware that if there were prior existing deposits from flange leakage or any other source that it would be difficult to identify the one cubic inch deposit amongst any other deposits already on the vessel head. Tr. 1210.

4.37 As a conservative approach for dealing with those concerns, the NRC stated in the Bulletin that:

> boric acid deposits that cannot be dispositioned as coming from another source should be considered, as a conservative assumption, to be from VHP nozzles, and appropriate corrective actions may be necessary. Staff Ex. 8 at 4.

4.38 Thus, absent an ability to make a positive link between the source and the deposit, licensees should assume that the deposit is the result of a leaking nozzle. Tr. 1211. The consequence of that would be that the licensee would need to do a more intrusive inspection to determine if the boric acid came from a crack in the nozzle. Tr. 1211-12.

4.39 Per the conservative approach, licensees could not merely make a correlation between a leaking flange and a deposit on the vessel head to rule out the possibility of a leaking nozzle. Tr. 1212. Instead, further examination would have to be done to identify whether the deposit was from a leaking nozzle or a leaking flange. Tr. 1212. For instance, deposits from leaking flanges tended to be light, snowflake-like deposits, with very low density. Tr. 1212, 1457. These deposits tended to not adhere to the vessel head and thus could be blown away with low pressure air or vacuumed. Tr. 1212-14. Further, it was possible to have both a leaking flange and a leaking nozzle. Tr. 1213.

4.40 At this time, the NRC issued bulletins very infrequently. This Bulletin was the first of 2001, and in fact was the first one the NRC issued since 1997. Tr. 1202-03.

4.41 Prior to the issuance of the Bulletin, there were public meetings with the industry. Tr. 1203. There was a high level of interest in the issue because there was a desire to implement the correct voluntary actions to forestall the imposition of requirements by the NRC. Tr. 1203.

4.42 The Bulletin categorized, or ranked, plants into three separate bins (high, moderate, and low), which corresponded to different requirements. Tr. 869. Plants were binned based on the number of effective full power years the plant was from the ONS3 condition. Tr. 870. For instance, if a plant was within 5 EFPY of the ONS3 service condition, they were placed into the high susceptibility bin. Tr. 870. However, a plant could also be placed into the high susceptibility bin if it had actually experienced cracking or detected boric acid deposits. Staff Ex. 8 at 7; Tr. 870.

4.43 The Bulletin also discussed the NRC's requirements for conducting examinations of the RPV head. Tr. 869. For plants placed into the high susceptibility bin, which Davis-Besse was, licensees were expected to perform a 100% qualified visual examination of the VHP nozzles. Staff Ex. 8 at 8; Staff Ex. 9 at 1 of 19; Tr. 1206. The Bulletin specified that:

> The effectiveness of the qualified visual examination should not be compromised by the presence of insulation, existing deposits on the RPV head, or other factors that could interfere with the detection of leakage. Absent the use of a qualified visual examination, a qualified volumetric examination of 100% of the VHP nozzles (with a demonstrated capability to reliably detect cracking on the OD of a VHP nozzle) may be appropriate to provide evidence of the structural integrity of the VHP nozzles. Staff Ex. 8 at 8.

4.44 The qualified visual examination has two parts: (1) ability to observe the nozzle-to-head interface to detect deposits and (2) a gap analysis that demonstrates there are sufficient gaps between the nozzle and the vessel head such that if there was a leak, a deposit would manifest on the head to be observed. Tr. 1227.

4.45 Dr. Allen Hiser testified that the conservative approach to evaluating the visual observation of the nozzle-to-head interface was to assume that all the nozzles had leaks until you could verify that each nozzle had a clean visual examination. Tr.

1452. He also testified that it was not necessarily the case that for every nozzle one needed to be able to see 360 degrees around the nozzle. Tr. 1449-50.

4.46 As explained above, an interference fit was used to minimize any gap between the nozzle and the head. If no gap existed, boric acid would not be able to travel to the top of the head and no boric acid indications would be visible. Therefore, the Bulletin asked licensees to perform an analysis to determine whether a gap would open through which boric acid could reach the top of the head during operation. The Bulletin stated that:

> One characteristic [of a qualified visual examination] is a plant-specific demonstration that any VHP nozzle exhibiting through-wall cracking will provide sufficient leakage to the RPV head surface (based on the as-built configuration of the VHPs). Staff Ex. 8 at 8.

4.47 If the gap analysis showed that for any particular nozzle there was no gap, then a qualified visual examination could not be done of that nozzle because you could not prove that a leak would yield a deposit. Tr. 1230. Thus, if a nozzle was inspected and found clean, but a gap analysis showed no gap, credit could not be given for an absence of evidence of nozzle cracking for that particular nozzle. Tr. 1232. However, if a gap analysis using conservative assumptions could not show a gap, the licensee was not then alleviated from inspecting those nozzles or reporting on the findings for them. Tr. 1232.

4.48 The Bulletin required licensees to, among other things, provide:

> a description of the VHP nozzle and RPV head inspections (type, scope, qualification requirements, and acceptance criteria) that have been performed at your plant(s) in the past 4 years, and the findings. Include a description of any limitations (insulation or other impediments) to accessibility of the bare metal of the RPV head for visual examinations. Staff Ex. 8 at 11, 1.d.

4.49 Finally, the Bulletin stated that if the licensee did not plan to perform inspections before December 31, 2001, they must "provide [their] basis for concluding that the regulatory requirements discussed in the Applicable Regulatory Requirements section will continue to be met until the inspections are performed." Staff Ex. 8 at 12.

4.50 Within two weeks of the Bulletin being issued, the NRC held a meeting with the industry to provide the NRC's basis for issuing the Bulletin and its expectations for the industry's response to the Bulletin. Tr. 1203-04.

V. FINDINGS OF FACT – VIOLATION

A. MR. GEISEN'S GENERAL KNOWLEDGE

5.1 While in college, Mr. Geisen was chosen by Admiral Rickover for the nuclear Navy. Tr. 1538.

5.2 Mr. Geisen was in the nuclear Navy for six years, and served on submarines for four of those six. Tr. 1536.

5.3 Mr. Geisen left the Navy in 1988 and began work at Davis-Besse as a systems engineer in the Mechanical Systems group. Tr. 1536, 1539. From 1988 until 1994, he had primary responsibility for the reactor coolant pumps and also had responsibility for containment spray and containment air cooling. Tr. 1536, 1539.

5.4 In 1994, Mr. Geisen entered the Senior Reactor Operator program. Tr. 1539. Mr. Geisen was in that program until 1996. Tr. 1540. The goal of the SRO program was to train the participants to become the supervisors of reactor operators. Tr. 1540. Throughout the SRO training, Mr. Geisen learned how the Davis-Besse plant operated, system-by-system. Tr. 1539-40. He also learned how to operate the plant by going through all the plant's evolutions and in the process essentially learned how to become a control room operator. Tr. 1540.

5.5 Following Mr. Geisen's completion of the SRO program, he became a supervisor in the Electrical and Controls Group within Systems Engineering. Tr. 1540. Mr. Geisen held that position from 1996 until March 2000. Tr. 1540.

5.6 Mr. Geisen was then made the manager of Design Basis Engineering in March 2000. Tr. 1548. One of the reasons that he was chosen for this position was his ability to "bridge the gap" between Design Basis Engineering, Systems Engineering, and maintenance operations. Tr. 1548-49.

5.7 Design Basis Engineering had five subgroups. Tr. 1550. These groups were: nuclear engineering, mechanical design, instrumentation and electrical design, procurement engineering, and computer systems engineering. Tr. 1550-52.

5.8 Coincident with being made Design Basis Engineering Manager, Mr. Geisen was also made a member of the Corrective Action Review Board. Tr. 1544. The CARB consisted of five or six managers. Tr. 1022. Its function was to review the corrective actions written up by the engineers and assess them for plant safety. Tr. 1022. The CARB then assigned the responsible group or engineer to analyze the problem and recommend the appropriate solution. Tr. 1022. When the responsible group or engineer finished his evaluation, a supervisor would approve it and send it back to the CARB. Tr. 1022. The CARB would then review the results, analysis, problem identification, and recommendations, and take any necessary further action on it. Tr. 1022.

5.9 When Mr. Geisen was made Design Basis Engineering Manager he also became a member of the Project Review Group. Tr. 1557. The PRG is a manager level group that reviewed proposed projects, prioritized them, and recommended funding for them. Tr. 1556.

5.10 Finally, in March 2000, Mr. Geisen also became a member of the B&WOG Steering Committee. Tr. 1590. The Steering Committee received input from the various B&WOG working groups and evaluated their projects and funding needs. Tr. 1021. The Steering Committee then made the decision about each projects' priority and funding level, and then made those recommendations to the B&WOG Executive Committee. Tr. 1021, 1590.

5.11 Prasoon Goyal was a member of a B&WOG working group: the Materials Committee. Tr. 1018. Mr. Goyal reported to Mr. Geisen about those meetings and had discussions with him about what projects the Materials Committee was working on and how much funding they needed. Tr. 1021, 1134, 1166.

5.12 Mr. Geisen received continuing training on the BACC just prior to the plant entering its 12th RFO. Staff Ex. 79 at 40; Tr. 1939.

5.13 Mr. Geisen knew that if Davis-Besse said it could view the vessel head using the BACC that that meant it could access the bare metal of the vessel head. Tr. 1939.

5.14 It was Mr. Geisen's practice to read his e-mails. Tr. 1867. It was also his practice that if he received an e-mail that was giving him information, but not requesting a response, that he would not reply. Tr. 1867. Further, if he understood the information in the e-mail, it was not his practice to schedule a follow-up meeting with the individual supplying the information. Tr. 1867.

5.15 Within Design Basis Engineering, Mr. Geisen required his employees to fill out a trip report after going on work travel to pass along the salient points they learned. Tr. 1076-77, 1598-99. Those trip reports were distributed to people on a specific distribution list, including the appropriate supervisor and Mr. Geisen. Tr. 1076-77, 1599. Mr. Geisen would receive, on average, three to four trip reports a month and

would read them all. Tr. 1600. It was not his practice to discuss the issues reported on with the people who wrote them. Tr. 1600. He would only discuss the trip report with the person if it required action to be taken. Tr. 1600.

B. MR. GEISEN'S KNOWLEDGE OF INSPECTIONS PRIOR TO SERIAL LETTER 2731

5.16 The following findings concern Mr. Geisen's knowledge of relevant facts up to, but before, the first submittal to the NRC, Serial Letter 2731, dated September 4, 2001. Specifically, we address his knowledge of limitations to inspections of the Davis-Besse vessel head during the 10th, 11th and 12th RFOs. His knowledge is divided into two parts. The first part concerns his knowledge that it was not possible to view the top of the reactor head with the inspection technique used during that time because of the limited access permitted by the small access holes and the geometry of the head. The second part concerns his knowledge of the fact that boron deposits impeded head inspections.

1. Type of Impediment – Limited Access

5.17 The vessel head is curved and visual inspections at Davis-Besse were conducted using a camera at the end of a rigid pole with a light on the end. Tr. 898-99. The camera was inserted through small openings at the bottom the head called "mouse holes." Tr. 855-56, 867. Because of the limitations of geometry and the limited access allowed by those openings, even if there were no other impediments, the camera on the stick would be unable to point downward at the nozzle-to-head interface. Tr. 899, 901. Even in the absence of no other impediments, the camera would be able to see the interface of the first two rows, and in some cases three; however, past that point (meaning the nine center nozzles, #1-9) the camera cannot be manipulated to provide the necessary view. Tr. 899.

5.18 Mr. Geisen knew that Davis-Besse used a camera on a stick to inspect the head. Tr. 1616. He also knew of the structural limitation on inspection of the head. As he said, "you just couldn't get up and around like you wanted to." Tr. 1616, 1822, 1934, 1936, 1958-59.

5.19 As early as 1994, there was a modification request to cut larger access holes in the service structure in order to allow greater access to the head. Staff Ex. 16; Tr. 1047, 1859. Several condition reports and potential condition adverse to quality reports referenced this modification through the years. Staff Ex. 16, 17.

5.20 The 1994 modification request was renewed in PCAQ 96-551 where Mr. Goyal noted that only 50-60% of the head could be viewed due to the location and size of the weep holes. Staff Ex. 16 at 9. Mr. Goyal also reported that all of the boron deposits could not be removed because of "limited accessibility to the head area." Staff Ex. 16 at 4.

5.21 The corrective action for PCAQ 96-551 was referred back to modification 94-0025 to install 9 access holes in the service structure during 13RFO. Staff Ex. 16 at 15; Tr. 1047, 1054.

5.22 In 2000, when Mr. Geisen became a member of the PRG, he became aware of the modification request to install the access holes in the service structure. Tr. 1557. He knew that the access holes were being requested because they could not get to the entire head using a camera on a stick through the weep holes. Tr. 1958-59.

5.23 As Design Basis Engineering Manager, a modification to cut access holes in the service structure was considered a design change to the plant, and thus a matter that was under his responsibility. Tr. 1801. Mr. Geisen was responsible for approving the final design product that was purchased from Framatome. Tr. 1803.

5.24 During 12RFO, and following the cleaning of the head, the Outage Insider, a company newsletter, was written. Geisen Ex. 18. It was Mr. Geisen's practice to read the Outage Insider when it came out. Tr. 1587.

5.25 Mr. Geisen was again informed of the limitations of the method used to inspect the vessel head by reading the Outage Insider. *See* Geisen Ex. 18. The Outage Insider addressed the fact that boron and inherent problems in the design of the RPV create impediments to inspection, stating:

> Due to a history of leaking Control Rod Drive Mechanism (CRDM) flanges on the Reactor Head, boric acid has built up in this area. Access to this area is very difficult due to the construction of the Service Structure surrounding the area. Geisen Ex. 18

5.26 Further, the Outage Insider addressed the fact that a clean RPV head was necessary for proper evaluation, but that had never before been achieved. Geisen Ex. 18.

5.27 The information in the Outage Insider reinforced Mr. Geisen's knowledge that access to the reactor head was limited. *See* Geisen Ex. 18. Specifically, by reading the Outage Insider, Mr. Geisen understood that: (1) it was difficult to access the top of the vessel head from the weep holes and (2) it was extremely difficult to access the top of the RPV head because of the construction of the service structure. Tr. 1848.

5.28 On July 12, 2001, Mr. Goyal sent a trip report to Mr. Geisen that contained lessons learned for Davis-Besse from Oconee and ANO-1. Staff Ex. 33. The first three lessons were:

> Service structure access is needed in order to clean and inspect the head. (Note Davis Besse does not have service structure holes)
>
> The leaking nozzle may produce very little boric acid

> The head needs to be clean in order to see a leaking nozzle
> Staff Ex. 33 at 1; Tr. 1014-16.

5.29 Mr. Geisen stated that none of these lessons would have been new information to him. Tr. 1858-60. According to Mr. Geisen, the first point was also almost moot because he had purchased a robotic rover for future inspections that would have negated the need for the service structure access holes. Tr. 1614-16. This further shows that he was aware of the inspection limitations created by the camera on a stick inspection technique and the need for action to address the problem.

5.30 The trip report also stated that the NRC planned to issue a bulletin on this subject in early August 2001, which would require a response within 30 days. Staff Ex. 33 at 3; Tr. 1016-17. Thus, Mr. Geisen was well aware of what was coming within the next month from the NRC and that they had to be prepared for it.

5.31 On August 11, 2001, Mr. Goyal sent Mr. Geisen an e-mail detailing a meeting held to discuss the Bulletin response. Staff Ex. 36. This e-mail states that "[i]t was pointed out that we can not clean our head thru the mouse holes and Andrew Seimaskzo is requesting 3 large holes be cut in the Service Structure for viewing and cleaning." Staff Ex. 36. Mr. Geisen testified that this information would not have been noteworthy to him at the time because he already knew there was a modification request in place and that Mr. Goyal attached a lot of "sentimental value" to it. Tr. 1633-34.

5.32 Although the information in the e-mail may not have been noteworthy according to Mr. Geisen, he acknowledged that this e-mail was a warning that the weep holes created an impediment to compliance with the Bulletin. Tr. 1872, 1878. Further, he knew that their technique of using a camera on a stick created a problem with conducting proper inspections, such that he "didn't view the camera on a stick as even a

viable option anymore" because he knew it was too difficult to get the camera to the top of the head. Tr. 1879-80.

5.33 From the foregoing evidence, it is clear that Mr. Geisen knew that because of the limited access to the head afforded by the mouse holes and the geometry of the head, it was not possible to view the nozzles towards the top of the head using a camera on stick. He also knew that this technique was used during the inspections conducted during the 10th, 11th and 12th RFOs.

2. Type of Impediment – Boron Deposits

5.34 In addition to the inherent inspection impediment resulting from the geometry of the head and the inspection technique used, boric acid deposits had accumulated on the reactor head and also impeded inspections. The 1998 and 2000 inspections showed large accumulations of boric acid which precluded access to substantial portions of the head and obscured a substantial number of nozzle penetrations. Staff Ex. 81. The large accumulations of boric acid deposits seen during those inspections would have obscured any of the small, popcorn-like deposits such as those seen at Oconee. Staff Ex. 77 at 4; Tr. 901.

5.35 The evidence shows that Mr. Geisen knew, before the first NRC submission relevant here, in September 2001, that Davis-Besse had a history of flange leakage that deposited large amounts of boric acid on the reactor head. As discussed below, Mr. Geisen obtained this information from a variety of sources. He received this information in a company newsletter, and also in e-mails and trip reports, all of which he read in the ordinary course of business. He reviewed and approved an engineering evaluation that told him that boron prevented detailed inspection of the nozzles. He also reviewed CRs that detailed the presence of boric acid and signed off on a mode restraint associated with one of those reports. He participated in a discussion of the need to use

extraordinary cleaning measures to remove the extensive boron deposits. Importantly, this information was consistent and clear – informing him that large boron deposits had accumulated on the head and impeded inspection of the bare metal and the nozzle penetration interfaces. And he saw the boron for himself in photographs of the head. Taken together, we find the evidence overwhelmingly establishes that he knew that boron deposits on the head impeded visual inspections.

5.36 During 12RFO, Mr. Geisen replaced Theo Swim in Outage Central approximately 3.5 weeks into the 6 week outage. Tr. 1560-61. Outage Central consisted of approximately 16 to 18 people with assigned positions from every major work group within the station. Tr. 1560-61. Outage Central was meant to function as the communication hub for the outage. Tr. 1561.

5.37 Mr. Geisen's role in Outage Central was to serve as the engineering point of contact. Tr. 1562. Therefore, any engineering issue that arose during the outage while Mr. Geisen was on shift came to him, and it was his job to determine who to assign the problem to, to contact the appropriate group, and to keep the schedule on track. Tr. 1562-63.

5.38 While in Outage Central, Mr. Geisen reviewed two condition reports. Tr. 1571-72. CRs are generated whenever a problem is discovered at the plant. Tr. 1022. Mr. Geisen reviewed CR2000-0782 (Staff Ex. 19) and the other was CR2000-1037 (Staff Ex. 18). Tr. 1571-72. Mr. Geisen's understanding of these two CRs was that there was boric acid on the head as a result of flange leakage. Tr. 1573.

5.39 The condition description in CR2000-0782 was written on April 6, 2000. Staff Ex. 19. The condition description states:

> Inspection of the Reactor flange indicated Boric Acid leakage from the weep holes (see attached pictures and inspection record). The leakage is red/brown in color. The

> leakage is worst on the east side weep holes. The worst leakage from one of the weep holes is approx 1.5 inches thick on the side of the head and pooled on top of the flange. . . . The total estimated quantity of leakage through the weep holes and resting on the flange is appox. 15 gallons. . . . Preliminary inspection of the head through the weep holes indicates clumps of Boric Acid are present on the east and south sides. . . ." Staff Ex. 19 at 1.

5.40 Mr. Geisen testified that the red color indicated that corrosion products were present. Tr. 1841-42.

5.41 CR2000-1037 (Staff Ex. 18) was placed on the mode restraint list, requiring an engineering evaluation to determine if any outage related work needed to be done prior to changing modes. Tr. 1573. Mr. Geisen read CR2000-1037 with some care to identify any work that needed to be done and realized that the head needed to be cleaned. Tr. 1573-74, 1834. He saw that there was a work order out to clean the head, and based on that work order, he removed the CR from the mode restraint list. Tr. 1574.

5.42 The impact of removing CR2000-1037 from the mode restraint list was to ultimately allow the plant to start-up. *See* Tr. 1838-39.

5.43 The first sentence of the first page of CR2000-1037 states "Inspection of the Reactor Head indicated accumulation of boron in the area of the CRD nozzle penetrations through the head." Staff Ex. 18 at 1. It goes on to state that:

> Large deposits of boron have accumulated on the top of the insulation and on the Reactor Vessel Head. . . . Initial Reactor Vessel Head inspection conducted on 4/5/2000 revealed an accumulation of boron on the Southeast Reactor head flange between the head and the studs. Boron deposits were "lava like" and originate from the "mouse holes" and CRD flanges. Staff Ex. 18 at 4.

Mr. Geisen specifically addressed this language in CR2000-0782, saying that the term "lava-like" indicates that "it was flowing out of the mouse holes, and that it was of a thick

consistency." Tr. 1842. Mr. Geisen further stated that boron would make its way down the vessel head by "flow[ing] down the sides of the CRDM nozzle tubes." Tr. 1843.

5.44 CR2000-1037 specifically addressed the possibility of nozzle leakage stating that:

> There are no boron deposits on the vertical faces of the flange of G9 drive. The bottom of the flange of G9 drive is inaccessible for inspection due to the boron buildup of the reactor head insulation, not allowing full camera insertion. Since the boron is evident only under the flange and not on the vertical surfaces, there is a high probability that G9 is a leaking CRD. Staff Ex. 18 at 4.

5.45 CR2000-1037 reiterated the NRC's concern about nozzle cracking from GL 97-01:

> The letter requires licensee to maintain a program for ensuring a timely inspection of the control rod drive mechanism (CRDM) and other vessel closure head penetrations. The program is required due to degredation of the CRDM nozzles caused by Primary Water Stress Corrosion Cracking process. In order to perform required inspections the nozzles as well as the penetrations must be free of boron deposits. Once the head is free from the boron, new boric acid deposits may be easily noted and remedial actions taken. Staff Ex. 18 at 5.

5.46 At some point during his time in Outage Central, Mr. Geisen saw one, or a series of photos, which are commonly referred to as the "Red Photo." Mr. Geisen understood the Red Photo to be an as-found photograph of the outside of the service structure from 12RFO. Tr. 1293-94, 1845. Mr. Geisen admitted that the Red Photo represented "an excessive amount of flange leakage" in 12RFO. Tr. 1620. He also described it as "ugly" and knew that there was red boron in the photo. Tr. 1844-45. He also knew that the boron had to be coming from somewhere on the RPV head. Tr. 1845.

5.47 Mr. Geisen specifically admitted that "there is no reason to expect that you can have a photo like this and have a clean head." Tr. 1846.

5.48 Testimony of two Staff witnesses established that an engineer of Mr. Geisen's training and experience would understand that the boron deposits seen in the Red Photo represented an alarming condition because it was obvious that an excessive amount of boron had accumulated on the reactor head.

5.49 Dr. Allen Hiser testified that had he seen the Red Photo during the fall of 2001, it would have caused him to take a number of actions:

> I think that what is easy for anybody to understand from the photo is there is a significant problem under the service structure on the Davis-Besse head. You don't expect to have flowing material like this coming out from that. You don't expect significant oxide quantities like this. It would be indicative of a significant corrosion event occurring under the head. I think this would have . . . gotten a lot of attention from a lot of levels at the NRC if we had had access to this. . . . I think I would have pushed for it – at a minimum the plant shutting down by the end of the year to do an inspection. This to me indicates a significant problem. My guess is I would have, you know, pushed for probably an immediate shutdown. This is a significant finding. I mean, this is – to me, this should tell almost any engineer that there is a significant problem at Davis-Besse. Tr. 1289.

5.50 Mr. John Martin was also questioned about his impressions of the Red Photo. Mr. Martin, who was a former Regional Administrator for the NRC and former member of the FENOC CNRB, owns an engineering consulting company, the focus of which is nuclear safety issues. Tr. 1472-74. During the hearing he stated:

> Well, when you look at this it's very clear that this is not snowy material. It was described to me as ceramic-like and the red color clearly shows there is corrosion products. And in fact, the training that people got on the Boric Acid Corrosion Control Program clearly said that you look for reddish-brown discoloration as a sign of corrosion. So one look at this and you knew right away that the model people had been using was just not correct and so it seemed

> pretty obvious to me this should have been viewed as a substantial problem. Tr. 1521.

5.51 During 12RFO, workers were unable to clean the head because of the extensive boron deposits. Video recordings from 12RFO show the attempted cleaning of the RPV head. Staff Ex. 81. The video shows workers using water, as well as mechanical means such as crow bars, to break loose the boric acid deposits. Tr. 883. There were piles of boric acid so large that they had to be broken apart by a crow bar and forcefully removed by hand from the 5 inch x 7 inch weep holes. Staff Ex. 81 (12RFO Cleaning Video), time stamp 25:57 and 27:32; Tr. 886.

5.52 Mr. Holmberg stated that in his experience, which was participating in over a dozen head inspections and including knowing results of head inspections from other regions, he had never seen a vessel head that required this sort of cleaning effort. Tr. 888-89. Further, he stated that there were "substantial deposits of boric acid that [Davis-Besse] had to remove during that outage." Tr. 888.

5.53 Mr. Geisen knew of the difficulty of the cleaning effort. While in Outage Central, Mr. Geisen participated in a 15-20 minute long ad-hoc meeting during which a group of engineers asked him to decide how to proceed because the regular method of cleaning the head was not working. Tr. 1567-69, 1840. Mr. Geisen knew that head cleaning was normally performed using a vacuum and possibly push rods to break up clumps of boron. Tr. 1840. Mr. Geisen also knew that coming out of 10RFO (1996) and 11RFO (1998) that boron deposits had been left on the head. Staff Ex. 79 at 183.

5.54 There was a dispute between the engineers as to what, if any, additional cleaning efforts should be undertaken given the fact that those methods had not been effective. Systems Engineering, represented by Glenn McIntyre and Andrew Siemaszko, wanted to clean the head with water. Design Engineering, represented by

Prasoon Goyal and Theo Swim, did not think it was the prudent because while dry boron on the head was inert and did not pose a risk, wet boron can be corrosive. Tr. 1567, 1841. Mr. Geisen approved the use of demineralized water heated to 175 degrees to clean the head. Staff Ex. 18 at 6; Tr. 1571, 1588.

5.55 Mr. Geisen explained his decision to approve heated water to clean the vessel head in detail during his OI interview. Staff Ex. 79. After discussing the boron accumulation issues in CR2000-0782 (Staff Ex. 19) and CR2000-1037 (Staff Ex. 18), Mr. Geisen recalled the meeting, saying:

> We just need to clean up the mess, and how are we going to address cleaning up the mess under this. There was a lot of discussion on how we were going to clean up that mess. When we actually got down to it, I got a lot of heat from one of my supervisors and one of my engineers about using water to clean the boron. They would have rather we left the boron there in a dry state. Once again, we were under the paradigm that it's not corrosive at 600 degrees, which is BS -- excuse my language -- but they didn't want to use water. They wanted to put -- they didn't want to put it back in a liquid state, and I remember having this conversation with them, saying it's not going to matter because we are going to flush it all off of this. I would rather have this flushed off than not. Staff Ex. 79 at 54.
>
> I knew we were cleaning with water, and because I had a lot of discussion with Prasoon Goyal on that topic, which to me seemed like the next logical step because we had not been successful previously in just vacuuming up stuff, so let's get in there and just wash it off; and recognizing that's how we had been cleaning boron off of the containment air coolers for the whole previous cycle, it just seemed to be the logical process for removing the boron, is to put it back in the liquid format and wash it off. Staff Ex. 79 at 58.

5.56 Further, when asked about how contentious the head cleaning issue was, Mr. Geisen answered:

> I think it was an annoyance to the directors, the outage directors, because any perturbation to the schedule was an annoyance, and this was going to clearly be a perturbation because it was not previously identified work

> that was going to need to be done. I'm not sure how that categorizes into annoyances. These guys are trying to push the schedule all the time. I can't speak to how annoyed they were. That's an emotion on their behalf; but from an outward appearance, obviously they got upset anytime there was a perturbation in the schedule, whether it was work added to the schedule or work not completed on time or whatever. Staff Ex. 79 at 63.

5.57 Mr. Geisen acknowledged that he understood the importance of having a clean head for future inspections when asked whether he would have been concerned about leaving boron on the head coming out of 12RFO:

> It would have caused me a concern because the desire -- the goal was to get it all cleaned off and from a standpoint that we wanted to have a clean slate for future inspections. You know, would it have caused me a concern that I'm corroding a hole in my head, I wish I could say that was the case; but in all honesty, that was not the case at that time. I was not operating under that frame of reference, and it was really just a frame of reference of I've got debris up there that impedes me doing an inspection next time around. Let's get it off. Staff Ex. 79 at 64.

5.58 On June 27, 2001, Mr. Geisen reviewed and approved an intra-company memorandum titled "Mode 5 Reactor Vessel Head Inspection Recommendation." Staff Ex. 31. This memorandum addressed the nozzle leakage and circumferential cracking at Oconee and ANO and asked whether Davis-Besse should perform a vessel head inspection if the plant were to shut down to Mode 5 prior to 13RFO. Staff Ex. 31 at 1-2; Tr. 1101. The discussion section states that:

> During 12th RFO at Davis-Besse (DB) the Reactor Vessel head inspection was performed in accordance with boron inspection walkdown as required by GL-88-05 and GL 97-01. Large boron leakage from a CRDM flange was observed. This leakage did not permit the detailed inspection of CRDM nozzles. Staff Ex. 31 at 2.

5.59 This document represented an engineering evaluation of a safety-related plant condition that needed managerial approval. Tr. 1102. Therefore, Mr. Geisen

reviewed this document and then signed it indicating his approval. Tr. 1606. His approval meant that he was agreeing with the engineering evaluation contained within the document. Tr. 1868.

5.60 None of this information was a surprise to Mr. Geisen because he already knew the condition of the vessel head from the Red Photo and from other reports that he had received that large boron deposits prevented a detailed inspection. Tr. 1870.

5.61 Mr. Geisen stated that, during July of 2001, he knew that if "big piles of boron" were found on the head that would necessitate the use of nondestructive examination techniques to complete a head inspection. Tr. 1618.

5.62 On July 10, 2001, Mr. Geisen received an e-mail from Prasoon Goyal entitled "Plant-specific data verification." Staff Ex. 32. This e-mail stated "The table currently shows 100% inspection which is not correct because of the large boric acid deposits on the head very few CRDMs could be inspected. Also, the table shows under 'Result' no leakage detected. This will need to be modified." Staff Ex. 32; Tr. 1110. Mr. Goyal made that statement based upon his review of the 2000 as-found video tape. Tr. 1068-69, 1110-11.

5.63 Mr. Geisen testified that this e-mail told him that only a small number of CRDMs could be inspected and that 12RFO was not even close to a 100 percent inspection. Tr. 1871. However, Mr. Geisen claims that he did not do anything with this e-mail or the knowledge conveyed in it. Tr. 1610.

5.64 On August 14, 2001, Mr. Geisen received an e-mail from Prasoon Goyal regarding Davis-Besse's response to the Bulletin. Staff Ex. 39. Within that e-mail, Mr. Goyal asks two Framatome employees whether it is "possible to go back to 1998 that is when a good head exam was done with no nozzle leakage. (meaning not taking any credit for 2000 inspection)." Staff Ex. 39.

5.65 This e-mail would not have been new information to Mr. Geisen because he already knew in August 2001 that Davis-Besse could not take credit for the 2000 inspection "[b]ecause it was nozzle leakage, and specifically at the top of the head there were several flanges that had leaked." Tr. 1634-35. He also knew in August of 2001 that there was flange leakage in 2000. Tr. 1635.

5.66 The evidence establishes that Mr. Geisen reviewed the inspection videotapes during August 2001. We base this finding on the testimony and interview report of David Geisen prepared by Jack Martin during the last week of March 2002. Staff Ex. 63.

5.67 Within a week of discovering the cavity in the vessel head, FENOC asked Mr. Martin, a representative on the CNRB, to come to Davis-Besse to assist with the management and organizational aspect of an evaluation the company wanted to undertake. Tr. 1475. His focus was primarily on who knew that boric acid was left on the vessel head after 12RFO and when they knew it. Tr. 1481.

5.68 Mr. Martin was at Davis-Besse for approximately one week performing his review. Tr. 1475.

5.69 To the best of his knowledge, Mr. Martin was the first person to perform any sort of interviews associated with the vessel head wastage event. Tr. 1477. Neither the NRC's OI nor the Department of Justice had yet to undertake any investigation at that time. Tr. 1477.

5.70 When Mr. Martin first arrived at Davis-Besse, he requested the licensing group at the plant to assemble all the correspondence between FENOC and the NRC going back several years. Tr. 1476. Specifically, Mr. Martin looked at the 1997 bulletin and the 2001 Bulletin and the company's responses to each. Tr. 1476. By reviewing

these, Mr. Martin was attempting to acquire context for his review and to understand the company's strategy for dealing with bulletins. Tr. 1476.

5.71 He viewed the vessel head and associated wastage with Mr. Siemaszko and conducted approximately 15-20 interviews that averaged about 45 minutes each. Tr. 1476, 1478. His general procedure for conducting these sorts of interviews is to ask the questions and write down what his interviewees tell him. Tr. 1484. He did not intend the notes to represent a verbatim transcript, but he did write down anything that was relevant. Tr. 1484. He also would have written down only what the individual said during the course of his interview and that it was "not [his] practice to make this stuff up. I write down what I'm told." Tr. 1522.

5.72 When Mr. Martin finished his interviews, he gave his notes to Davis-Besse's Vice President Howard Bergendahl's secretary to type for him. Tr. 1484. Mr. Martin cannot type, so any time that he has handwritten notes he needs someone else to type them for him. Tr. 1484. It is his general practice to review what is typed for him to make sure that the transcription is correct, and he cannot imagine that he did not follow that course in this instance. Tr. 1495, 1503.

5.73 Mr. Martin has undertaken reviews at other plants that have had problems, like Salem and D.C. Cook. Tr. 1475-76. In those cases, he interviewed a large number of people, such as the plant operators, and drew common themes about what they thought the problems were. Tr. 1476-77. Mr. Martin would also draw his own conclusions from those interviews. Tr. 1476.

5.74 Mr. Martin interviewed Mr. Geisen for his review. Staff Ex. 63. Mr. Martin's notes of the interview report that Mr. Geisen stated, "I know became aware of it in reviewing the videos of the inspections while preparing for the NRC interactions in August, 2001." Staff Ex. 63; Tr. 1483. Based on this information, we conclude that Mr.

Geisen viewed videotapes of past inspections prior to any of the Serial Letter responses or meetings and teleconferences in which he participated.

5.75 By viewing those videotapes, Mr. Geisen gained additional, first hand knowledge of the existence of boron on the head. As was evident from our viewing of the videotapes during and after the hearing, the inspection videos show that large accumulations of boron were present during 1998 and 2000.

5.76 On the 12RFO inspection video itself (video 00-xx), Davis-Besse workers can be heard to describe what they see as, “This area is majorly affected by boric acid,” Staff Ex. 81, time stamp 8:26; Tr. 921; “The bottom could not be seen because it’s covered in boric acid,” Staff Ex. 81, time stamp 10:56; Tr. 922; “lava-like configuration,” Staff Ex. 81, time stamp 14:38; Tr. 922; “The camera is stuck and a piece of boron came upon us.” Staff Ex. 81, time stamp 17:28; Tr. 925.

C. MR. GEISEN’S KNOWLEDGE OF NOZZLE CRACKING ISSUE

5.77 The evidence establishes that Mr. Geisen understood that the Bulletin was prompted by the Staff’s concern that licensee head inspections were adequate to see the small, popcorn-like indications of nozzle leakage. He knew that the Staff was asking licensee to provide information regarding past inspections for this reason.

5.78 As Design Basis Engineering Manager, Mr. Geisen was also a member of the B&WOG Steering Committee. At the time, a significant focus of the group was the nozzle cracking issue. Therefore, the group – including Mr. Geisen – was briefed on the findings at Oconee. Tr. 1804-05. Through his participation in the Steering Committee, Mr. Geisen became familiar with the nozzle cracking issue. Tr. 1591.

5.79 On December 13, 2000, Prasoon Goyal forwarded Mr. Geisen and others an e-mail regarding lessons learned from ONS1:

> The amount of boric acid observed in the visual inspection was very small and that it is important to have a clean head for a good visual inspection. If the head is not clean, the chances of finding boric acid such as that observed at Oconee 1 are not very good. Staff Ex. 21; Tr. 1074-75.

Mr. Geisen stated that this was not new information to him because he had already been briefed by the Duke representative on the B&WOG Steering Committee about the ONS1 inspection. Staff Ex. 71 at 1955.

5.80 Therefore, by December 2000, he already knew the amount of boric acid one would find indicative of nozzle cracking was very small and that it was important to have a clean head since it would be much harder to find the small boric acid deposits without it. Staff Ex. 71 at 1955. Therefore, the December 13, 2000 e-mail was informative but did not require any action on his part. Staff Ex. 71 at 1955.

5.81 On January 30, 2001, Prasoon Goyal sent Mr. Geisen and others a trip report regarding a B&WOG Material Group Committee meeting. Staff Ex. 22. The first bullet point states that "Boric Acid crystals were detected on RVH during the routine visual head inspection. They were able to find this leak because their CRDM flanges do not leak and the head was in pristine condition." Staff Ex. 22; Tr. 1079.

5.82 This information was relevant to Davis-Besse because, at the time, Davis-Besse had an issue with flange leakage and the head was not in pristine condition. Tr. 1080. Therefore, at Davis-Besse, the small, popcorn-type deposits indicative of nozzle cracking could be obscured by, or confused with, boron deposits from flange leakage. *See* Tr. 1080.

5.83 When he received the January 2001, e-mail, Mr. Geisen knew that Davis-Besse had a history of flange leakage and that the vessel head was certainly not pristine entering 12RFO. Tr. 1854. He also knew that boron from flange leakage could obscure indications of nozzle leakage. Staff Ex. 71 at 1957. Thus, Mr. Geisen knew that Davis-

Besse did not have the two conditions necessary to find the small, popcorn-like indications of nozzle leakage. Tr. 1854.

5.84 Further, Mr. Geisen had already been fully briefed on this issue by the representative from Oconee during one of the B&WOG Steering Committee meetings. Tr. 1600. The Oconee representative to the B&WOG Steering Committee also reported on the small, popcorn-like indications of nozzle leakage, and showed pictures. Tr. 1805, 1808.

5.85 On April 19, 2001, Mr. Geisen was listed as a presenter of information about Davis-Besse at a Framatome sponsored "CRDM Nozzle and Weld Cracking Information Exchange Meeting" in Lynchburg, VA. Staff Ex. 26. At that meeting, Duke Energy made a presentation on the ONS3 RPV head leakage titled "Cracking of RV Head Penetrations Due to Primary Water Stress Corrosion Cracking (PWSCC)". Staff Ex. 26 at 5. Another presentation was made that day titled "ANO-1 CRDM Nozzle 56 Inspection and Repair." Staff Ex. 27.

5.86 On April 26, 2001, Prasoon Goyal sent Mr. Geisen and others a trip report regarding a meeting between the Nuclear Energy Institute and the NRC. Staff Ex. 28. The trip report states that "Steve Fyfith of FTI presented the Safety Assessment (SA) for B&WOG plants. The SA basically indicated that these types of cracks are very tight and the leakage rate is very low." Staff Ex. 28 at 3. This indicated that you could have a fairly large crack and still have small boron indications. Tr. 1856. In April of 2001, this was not new information to Mr. Geisen. Tr. 1856.

5.87 Based on the knowledge that Mr. Geisen had gained on the nozzle cracking issue from his time on the B&WOG Steering Committee, Mr. Geisen made a presentation to senior management at Davis-Besse on circumferential cracking at ONS3 at some point during the spring of 2001 because this was a new event. Tr. 1806; Staff

Ex. 71 at 1837-38. Mr. Geisen also made a presentation to NRC Commissioner Merrifield. Staff Ex. 71 at 1838. Mr. Geisen stated that he may have spoken about how the issues could impact Davis-Besse or their relevance to Davis-Besse, but would have to refresh his recollection. Staff Ex. 71 at 1838.

5.88 Mr. Geisen, based on conversations among various B&WOG Steering Committee members, expected the NRC to issue a bulletin regarding circumferential cracking. Tr. 1806. In Mr. Geisen's criminal case, he said that a discussion occurred at some point during the summer that there would likely be a bulletin coming out. Staff Ex. 71 at 1847.

5.89 Mr. Geisen was familiar with the language in the Bulletin. Tr. 1813. When the Bulletin came in, he was already knowledgeable about the circumferential cracks at Oconee. Tr. 1816. The Bulletin, however, further informed him that the NRC was concerned about the adequacy of the industry's inspections and that one of the NRC's issues was that the indications of leakage were very small such that they could be masked or covered up by boric acid from other sources. Tr. 1817-18. He was aware that the NRC's concern was that inspections be sufficiently thorough to see the small nozzle crack indications. Tr. 1819.

5.90 Mr. Geisen understood that section 1.d of the Bulletin required licensees to describe all of the inspections that had been conducted for the previous four years. Tr. 1820. He also assumed that the VT-2 type of examination required by the NRC meant an ability to visually inspect 360 degrees around every nozzle. Tr. 1821-22.

5.91 Mr. Geisen also understood section 1.d to ask about "limitations, insulation, or other impediments to accessibility of the bare metal of the RPV head for visual examinations," but says he keyed in specifically on the word "insulation" in

evaluating the response. Tr. 1822. He acknowledged that the insulation created an impediment to visual inspection, but he never told the NRC. Tr. 1823.

5.92 On August 22, 2001, Prasoon Goyal sent Mr. Geisen and others a trip report regarding a meeting held on August 15, 2001 between EPRI and the NRC regarding the Bulletin responses. Staff Ex. 40. Mr. Geisen stated that this was a trip report he would have read with care. Tr. 1862. This document informed Mr. Geisen that Davis-Besse would need to have a qualified visual inspection and that for the examination to be capable of reliable detection, it would be necessary to see the entire head, including all nozzles on the head. Tr. 1863. Therefore, Mr. Geisen knew that a partial inspection would not have satisfied the NRC's expectations. Tr. 1864.

D. MATERIALITY

5.93 FENOC responded to the Bulletin for Davis-Besse in written submittals identified as Serial Letters 2731, 2735 and 2744, described below. Managers of Davis-Besse provided additional information responsive to the Bulletin in a teleconference with the Staff on October 3, 2001, in a briefing before the Commissioners' TAs on October 11, 2001, and during a meeting of the ACRS on November 9, 2001. The Staff considered all of that information in order to determine whether regulatory action was necessary to address circumferential cracking of nozzles at Davis-Besse. Staff Ex. 77 at 2.

5.94 Mr. Geisen and the Staff have stipulated that each of these submittals was material to the NRC. Therefore, we find that all of the cited instances where Mr. Geisen submitted inaccurate and incomplete information were material to the NRC in violation of 10 C.F.R. § 50.5(a)(2). Staff Ex. 77 at 2; Tr. 1221-22, 1239-40, 2106.

E. SERIAL LETTER 2731

1. Mr. Geisen's Role

5.95 Serial Letter 2731 was submitted to the NRC on September 4, 2001. Staff Ex. 9

5.96 Mr. Geisen was given the final copy of Serial Letter 2731 on August 28, 2001. Tr. 1638. When he performed his green sheet review of the document, he read through the document and made sure that it was technically accurate according to what he knew and that the appropriate people had previously reviewed and approved it. Tr. 1638-39. He then signed the green sheet as the Design Basis Manager that same day. Staff Ex. 10 at 6.

5.97 On August 30, 2001, Mr. Cook brought Mr. Geisen the green sheet for Serial Letter 2731 again to sign, this time on behalf of Stephen Moffitt. Tr. 1639. Mr. Geisen signed off on the green sheet after verifying that the appropriate people that report to Mr. Moffitt had reviewed and approved the document. Staff Ex. 10 at 6; Tr. 1640.

5.98 Mr. Geisen's signature represented his independent determination that the information was complete and accurate. Mr. Geisen acknowledged that it would not have been acceptable for him to sign off on Serial Letter 2731 simply because someone else had already signed off, even if that person had more knowledge than he did. Tr. 1901. He also admitted that he was responsible for verifying the accuracy of the document. Tr. 1903.

2. The Submission of Information to the NRC

5.99 Serial Letter 2731 responded to the Bulletin's request for:

> information regarding the structural integrity of the reactor pressure vessel head penetration (VHP) nozzles, including the extent of nozzle leakage and cracking that has been

> found to date, inspections and repairs that have been completed to satisfy applicable regulatory requirements, and the basis for concluding that plans for future inspections will ensure compliance with applicable regulatory requirements. Staff Ex. 9.

5.100 The Bulletin specifically requested information concerning any limitations (insulation or other impediments) to accessibility of the bare metal of the vessel head for visual examinations. Staff Ex. 8 at 11, 1.d. The Bulletin asked for:

> [A] description of the VHP nozzle and RPV head inspections (type, scope, qualification requirements, and acceptance criteria) that have been performed at your plant(s) in the past 4 years, and the findings. Include a description of any limitations (insulation or other impediments) to accessibility of the bare metal of the RPV head for visual examinations.

5.101 Serial Letter 2731 responded with the following statements:

> The DBNPS has performed two inspections within the past four years, during the 11th Refueling Outage (RFO) in April 1998 and during the 12th RFO in April 2000. The scope of the visual inspection was to inspect the bare metal RPV head that was accessible through the weep holes to identify any boric acid leaks/deposits. The DBNPS also inspected 100% of Control Rod Drive Mechanism (CRDM) flanges for leaks in response to Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants." The results of these two recent inspections are described below.
>
> Inspections of the RPV head area performed with the RPV head insulation installed in accordance with DBNPS procedure NG-EN-00324, "Boric Acid Corrosion Control Program," which was developed in response to Generic Letter 88-05. As stated previously, a gap exists between the RPV head and the insulation, the minimum gap being at the dome center of the RPV head where it is approximately 2 inches, and does not impede visual inspection. The service structure envelopes the DBNPS RPV head and has 18 openings (weep holes) at the bottom through which inspections are performed. There are 69 CRDM nozzles that penetrate the RPV head. The metal reflective insulation is located above the head and does not interfere with the visual inspection. The visual

inspection is performed by the use of a small camera. This camera is inserted through the weep holes.
. . . . . .

April 2000 Inspection Results (12 RFO)
In April 2000, Framatome Nuclear Power Services performed a 100% video inspection of CRDM flanges above the RPV insulation. Five leaking CRDM flanges were identified at locations F10, D10, C11, F8 and G9. The main source of leakage was associated with the D10 CRDM flange. Positive evidence (boron deposits on the vertical faces of the CRDM flanges and nozzle) existed that drives F8, F10 and C11 had limited gasket leakage. CRDM G9 had boron deposits under the CRDM flange between the flange and insulation, providing confidence that this leakage was associated with flange leakage. All five CRDM gaskets were replaced and the D10 CRDM flange was machined. Visual inspection of the flanges was performed. Some boric acid crystals had accumulated on the RPV head insulation beneath the leaking flanges. These deposits were cleaned (vacuumed). After cleaning the area above the insulation was videotaped for future reference.

Inspection of the RPV head/nozzles area indicated some accumulation of boric acid deposits. The boric acid deposits were located beneath the leaking flanges with clear evidence of downward flow. No visible evidence of nozzle leakage was detected. The RPV head area was cleaned with demineralized water to the greatest extent possible while maintaining the principles of As-Low-As-Reasonably-Achievable (ALARA) regarding the dose. Subsequent video inspection of the cleaned RPV head areas and nozzles was performed for future reference.

Subsequent Review of the 1998 and 2000 Inspection Videotapes Results
Since May 2001, a review of the 1998 and 2000 inspection videotapes of the RPV head has been performed. This review was conducted to re-confirm the indications of boron leakage experienced at the DBNPS were not similar to the indications seen at ONS and ANO-1; i.e., was not indicative of RPV nozzle leakage. This review determined that indications such as those that would result from RPV head penetration leakage were not evident. Staff Ex. 9 at 2-3.

3. Inaccuracies and/or Omissions

5.102 Serial Letter 2731 was incomplete because it failed to disclose the limitations on the inspections of the reactor head. As discussed above, the inspections were limited for two reasons. First, due to limited access to the head through the weep holes and the geometry of the head, it was not possible to reach the top region of the head using a camera on a stick. In addition, the 1998 and 2000 inspections were limited because of the existence of large boron deposits which prevented access to substantial portions of the head and a significant number of nozzle penetrations. *See supra* Part V.B.

5.103 The parties have stipulation that Serial Letter 2731 was incomplete because:

> it did not state that boric acid deposits impeded access to the RPV head during the 11RFO and 12RFO inspections. Boric acid deposits filled weep holes through which the inspection camera was inserted, making it impossible to view the head through those access points. Boric acid deposits also prevented access to portions of the head where it extended from the RPV head to the insulation above the head. Staff Ex. 77 at 4.

5.104 Serial Letter 2731 was also inaccurate in a number of respects. The statement that during 12RFO "Some boric acid crystals had accumulated on the vessel head insulation beneath the leaking flanges" (Staff Ex. 9 at 3) was not accurate. In fact, the 12RFO inspection revealed large accumulations of boric acid on the RPV head which precluded access to substantial portions of the RPV head, completely engulfed many nozzle penetrations, and leaked out of weep holes at the bottom of the head. Staff Ex. 77 at 3-4.

5.105 Serial Letter 2731 also inaccurately stated that with respect to the previous four years' inspections:

> Since May 2001, a review of the 1998 and 2000 inspection videotapes of the RPV head has been performed. This review was conducted to reconfirm the indications of boron leakage experienced at the DBNPS were not similar to the indications seen at ONS and ANO-1; i.e., was not indicative of RPV nozzle leakage. This review determined that indications such as those that would result from RPV head penetration leakage were not evident. Staff Ex. 9 at 3.

5.106 This information was not complete and accurate because the boron deposits observed at ONS3 and ANO-1 were small, measuring less than 1 cubic inch. At Davis-Besse, the 1998 and 2000 inspection videotapes showed large accumulations of boric acid deposits which precluded access to substantial portions of the head and obscured a substantial number of the nozzle penetrations. The large accumulations of boric acid deposits would have obscured any indications of nozzle leakage such as those seen at ONS and ANO-1. Staff Ex. 77 at 4.

5.107 Mr. Geisen knew the significance of the information because he was familiar with the Bulletin and the nature of the information it requested. Thus, he knew that a primary purpose of the Bulletin was to obtain information regarding past inspections so the NRC could determine whether they were adequate to find the small, popcorn-like indications of nozzle leakage found at other plants. He also knew that the NRC was asking for a description of any impediments to inspections, including pre-existing boron deposits. *See supra* Part V.C.

5.108 When he read Serial Letter 2731, Mr. Geisen knew that: (1) there was limited access available through the weep holes that was an impediment to inspection, yet Serial Letter 2731 never addressed that and (2) there was a proposal to cut access holes in the service structure of the RPV because of the impediment to inspection.

Therefore, he knew that Serial Letter 2731 did not disclose the fact that limited access to the reactor head was an impediment to inspection. Staff Ex. 71 at 1972-73; *see supra* Part V.B.1.

5.109 When he read Serial Letter 2731, Mr. Geisen also knew of that boric acid impeded inspection of the reactor head. *See supra* Part V.B.2. Therefore, he knew that Serial Letter 2731 did not disclose the fact that boron deposits were an impediment to inspection.

5.110 Mr. Geisen's knowledge of the existence of boron acid deposits on the head is established by substantial evidence in the record. He testified that as of mid-August of 2001, well before he signed off on Serial Letter 2731, he knew that the 2000 inspection was not a thorough 100% inspection because of flange leakage. Staff Ex. 71 at 1967.

5.111 Mr. Geisen also saw the Red Photo during 12RFO, which showed boric acid streaming out of the weep holes, signifying significant boric acid deposits on the RPV head. *See supra* Part V.B.2.

5.112 Mr. Geisen admitted to signing off on the technical accuracy of Serial Letter 2731 knowing that boric acid from the flanges that created an impediment to inspection even though Serial Letter 2731 did not disclose the impediment. Staff Ex. 71 at 1972-73.

5.113 Based on the wealth of knowledge Mr. Geisen had regarding the nozzle cracking issue and the impediments to visual inspection created by the geometry of the head, the inspection technique, and boron deposits on the head, Mr. Geisen did not need to perform any investigation to understand the inaccuracies and omissions in Serial Letter 2731 described above. Instead, the inaccuracies and omissions would have been evident from his merely reading the document.

F. OCTOBER 3, 2001 TELECONFERENCE

1. Additional Information Obtained by Mr. Geisen

5.114 On September 14, 2001, Gregory Gibbs, a consultant hired by FENOC, wrote a short report ("Gibbs Report") and distributed it to a number of individuals, Mr. Geisen included. Staff Ex. 44 at 3; Staff Ex. 75 at 832-33; Tr. 1889. Under point number 1 of the Gibbs Report, he wrote:

> It is noted that on completion of 12RFO, the Reactor Vessel head did have boric acid crystal deposits of considerable depth left in the center top area of the head, since cleaning of this area at that time was not successful in removing all the deposits (partly due to limited access). Staff Ex. 44 at 1.

5.115 Mr. Gibbs went on to write:

> Davis-Besse stated in its response to NRC Bulletin 2001-01 that the top head visual inspections would not be compromised due to any pre-existing boric acid crystal deposits. Given previous experience in removing boric acid deposits from the head, the likely need to remove these deposits at the center top head by mechanical means, the severely restricted access allowed by the service structure mouse holes for mechanical cleaning, the industry experience of Duke Power that clearly emphasizes the need for good access to the head for cleaning and inspection and the NRC commitments and inspection requirements for the visual inspection, the most prudent course of action to avoid outage delays would be to access holes in the Reactor Service Structure as soon as possible in 13RFO. Staff Ex. 44 at 1.

5.116 Mr. Geisen admitted receiving and reading the Gibbs Report, Tr. 1892-93, and stated that he would have read it according to the priority he assigned it. Tr. 1895. Regarding the relative priority of this document, he would have accounted for the fact that it was prepared at his supervisor's request. Tr. 1939-40. He also stated that the above paragraph related to matters that were a part of his responsibility as Design Basis

Engineering Manager and would be important to review in the course of his duties. Tr. 1887.

5.117 Mr. Geisen stated that he would have been too busy with the September 2001 INPO evaluation to read the Gibbs Report right away. Tr. 1893-94. However, this is not consistent with his testimony that he read the Outage Insider immediately while he was working long shifts in Outage Central. Tr. 1587. In any event, we note that the INPO evaluation ended on September 28, 2001. Tr. 1894. Therefore, we conclude that even if Mr. Geisen did not read the Gibbs Report right away, he read it sometime before the October 3, 2001 teleconference, which related to the very topics discussed in the report.

5.118 On September 28, 2001, Dr. Brian Sheron, NRC's Associate Director of Project Licensing and Technical Analysis, called FENOC's Chief Nuclear Officer, Bob Saunders. Staff Ex. 46. During that telephone call, Dr. Sheron strongly suggested that FENOC reconsider its September 4, 2001 response to the Bulletin and consider shutting down the reactor prior to December 31, 2001 to conduct an inspection of the reactor vessel head. Staff Ex. 46.

5.119 On the day of Dr. Sheron's call, Mr. Geisen was at a meeting with other managers to discuss the INPO exit meeting earlier that morning. Tr. 1644. Mr. Campbell interrupted the meeting to consult with Mr. Lockwood and Mr. Moffitt regarding the call with Dr. Sheron. Staff Ex. 78; Tr. 1644, 1905. At Mr. Moffitt's request, Mr. Geisen met with Mr. Campbell. Tr. 1644, 1905.

5.120 Mr. Geisen testified that Mr. Campbell was angry. Tr. 1905. Mr. Geisen surmised that Mr. Campbell was upset because "[Mr. Saunders] just chewed [Mr. Campbell's] butt out for getting blindsided." Tr. 1671.

5.121 Dr. Sheron's telephone call prompted a strong management reaction. Tr. 1905. Because the suggestion that Davis-Besse consider shutting down had been unexpected, a conference call between Davis-Besse and the NRC Staff was proposed to get more information about the Staff's concerns. Tr. 1645. The heightened management attention included Mr. Geisen, who became more involved in the Bulletin responses after Dr. Sheron's call. Tr. 1906.

5.122 On October 2, 2001, Mr. Geisen attended a meeting in preparation for the October 3, 2001 teleconference with the NRC as a follow-up to the NRC's concerns as expressed by Dr. Sheron. Staff Ex. 48; Tr. 1915; *See* Tr. 1919. The agenda for the preparation meeting included discussing what was to be said to the NRC and what questions were to be asked of the NRC. Tr. 1646. Approximately 1-2 dozen individuals were involved in the preparation for the October 3, 2001 telephone conference. Tr. 1647.

5.123 Mr. Geisen prepared for the October 3, 2001 teleconference by reading Serial Letter 2731. Tr. 1647.

5.124 Mr. Geisen testified that when preparing for the teleconference, he did not talk to Mr. Goyal, who was his subordinate and an expert in nozzle cracking, about Davis-Beese' past inspections. *See* Tr. 1907, 1908. However, on October 3, 2001, Mr. Goyal sent Mr. Geisen an e-mail discussing the crack growth rate in the CRDM nozzle tubes with Mr. Geisen. Staff Ex. 49. Mr. Goyal cautioned Mr. Geisen that "[s]hould NRC ask a question on this subject we need to say that the industry (expert) are in process of establishing the rate." Staff Ex. 49.

2. Mr. Geisen's Statements During the Teleconference

5.125 On October 3, 2001, FENOC representatives, including Mr. Geisen, participated in a telephone conference with representatives of the NRC. Staff Ex. 77 at 4. The telephone conference was a follow-up to Serial Letter 2731. Staff Ex. 77 at 4.

5.126 On the October 3, 2001 telephone conference, the participants discussed the condition of the reactor vessel head during video inspections performed during 10RFO (1996), 11RFO (1998) and 12RFO (2000). Staff Ex. 77 at 4.

5.127 Dr. Hiser was one of the NRC representatives participating on the October 3, 2001 telephone conference. Staff Ex. 52. He testified that the purpose of the teleconference was to discuss FENOC's response to the Bulletin and to seek clarifying and additional information. Tr. 1244-45.

5.128 Mr. Holmberg was another NRC representative participating on the October 3, 2001 telephone conference. Staff Ex. 52; Tr. 939. During the telephone conference, as reflected in Mr. Holmberg's meeting notes, the NRC questioned the scope of the 12RFO (2000) vessel head examination. Staff Ex. 52. Mr. Holmberg testified that, consistent with the Bulletin, the NRC participants were attempting to ascertain the number of vessel head penetrations that had been inspected. Tr. 940.

5.129 During the telephone conference, Mr. Geisen spoke about past inspections. Staff Ex. 77 at 4; Tr. 1663. He stated that videotapes of the 10RFO (1996), 11RFO (1998) and 12RFO (2000) reactor vessel head inspections had been reviewed. Staff Ex. 77 at 4. He told the NRC that "100% of the reactor vessel head was inspected which included the CRD housing to head interfaces." Staff Ex. 52; *see* Staff Ex. 74 at 1928-29. "However, for 5-6 nozzles near the center of the head, boric acid from CRD flange leakage precluded definitive conclusions that the CRD nozzle welds were not leaking." Staff Ex. 52.

5.130 These statements are consistent with Dr. Hiser's recollection that Mr. Geisen's statements were very positive and affirming relating to the condition of the reactor vessel head. Tr. 1246

5.131 At the end of the telephone conference, Davis-Besse agreed to provide a nozzle-by-nozzle table of inspection results that Dr. Hiser had requested. *See* Staff Ex. 71 at 1910; *see* Staff Ex. 74 at 1929.

3. Inaccuracies and/or Omissions

5.132 Mr. Geisen's statement that 100% of the reactor vessel head had been inspected but for 5-6 nozzles at the top of the vessel head was inaccurate because: (1) it was not possible to inspect the entire head using a camera on a stick because of the limited access to the head through the weep holes and the geometry of the head, and (2) large accumulations of boric acid deposits impeded access to large portions of the reactor vessel head, impeding the 1998 and 2000 inspections. Staff Ex. 77 at 4; *see supra* Part V.B.

5.133 As explained above, Mr Geisen knew of both impediments when he made that statement. Therefore, he knew that the information he provided to the NRC Staff was inaccurate. *See supra* Part V.B.

5.134 Mr. Geisen was unable to cite any basis for his statement that 100% of the head had been inspected. While he testified that Serial Letter 2731 was the source of his statements regarding the 11RFO (1998) and 12RFO (2000) inspections, he was unable to identify any language in Serial Letter 2731 indicating that 100% of the reactor vessel head was inspected. Tr. 1920-21.

5.135 Mr. Geisen's statement during the teleconference that 100% of the RPV head had been inspected but for 5-6 nozzles at the top of the RPV head was also inaccurate because the accumulations of boric acid on the head were so extensive that,

by 2000, large portions of the vessel head could not be viewed. These areas extended well beyond the top 6 nozzles. Staff Ex. 77 at 4.

5.136 Mr. Geisen knew that this statement was inaccurate based on the information he learned: (1) during the 2000 RFO from the CRs, including the red photo, and learning about the unsuccessful cleaning efforts, (2) from reviewing the videotapes of the inspections, (3) from numerous e-mails and trip reports, (4) from an engineering evaluation he reviewed and approved, and (5) from a consultant report.

G. COMMISSIONERS' TECHNICAL ASSISTANTS' BRIEFING

1. Additional Knowledge Obtained

5.137 After the October 3rd teleconference, Mr. Geisen was tasked with overseeing the nozzle-by-nozzle table that Dr. Hiser had requested. Staff Ex. 71 at 1910. Mr. Geisen assigned the task of developing the nozzle table to Mr. Siemaszko using the 1998 and 2000 inspections. Tr. 1692-93. Mr. Geisen was also assigned to manage development of a crack growth analysis. That analysis was being developed to support their argument for continuing operation. Tr. 1690.

5.138 At some point after the October 3, 2001 telephone conference but before October 11, 2001, Mr. Geisen testified that he met with Mr. Siemaszko for about an hour relating to the nozzle-by-nozzle table Mr. Geisen had assigned to Mr. Siemaszko to develop. Tr.1696, 1698. During his October 22, 2002 OI interview, Mr. Geisen estimated the meeting to have been an hour to an hour and a half. Staff Ex. 79 at 114.

5.139 Mr. Geisen testified that he did not know which inspection tapes he viewed with Mr. Siemaszko although Mr. Geisen admitted that it was fair to assume that he viewed the 1998 and 2000 inspections. Tr. 1696, 1697. Mr. Geisen testified that Mr. Siemaszko showed him still frames of the inspection videos that had been converted to a digitized format. Tr. 1696, 1697.

5.140 Mr. Geisen's testimony at the hearing was contradicted by his testimony at his October 22, 2002 OI interview during which he had the following exchange with Special Agent Ulie:

> Senior Special Agent Ulie: We will come back to the documents, but I just wanted to ask, with respect to the video inspection tapes, you said you viewed last fall some of the video inspections.
>
> Mr. Geisen: Portions, yes.
>
> Senior Special Agent Ulie: All right. Do you recall which outages and which inspections, whether they were a head or flange?
>
> Mr. Geisen: I didn't view any of the flange inspections. My reviews were directly of the head under the insulation.
>
> Senior Special Agent Ulie: Okay.
>
> Mr. Geisen: I had viewed portions of the '96, the 1998 and 2000 when I was reviewing it with Andrew to see how he looked at each one.
>
> Senior Special Agent Ulie: Were they of the as-found or as left or both?
>
> Mr. Geisen: These would all have been the as-found.
>
> Senior Special Agent Ulie: Do you recall the time frame on that?
>
> Mr. Geisen: It would have been early October.

Staff Ex. 79 at 144-45. At no time during the interview did Mr. Geisen state that his viewing was limited only to still frames of the digitized inspection videos.

5.141 In light of the fact that more than seven years have passed since Mr. Geisen's meeting with Siemaszko, we credit Mr. Geisen's recollection closest in time to that meeting. We, therefore find that Mr. Giesen met with Mr. Siemaszko and viewed portions of the 1996, 1998 and 2000 video inspections tapes for at least an hour to at most an hour and a half.

2. Mr. Geisen's Role

5.142 On October 11, 2001, Mr. Geisen and other FENOC representatives met with the NRC Commissioners' TAs to present a safety basis to allow operation of the Davis-Besse plant until the RFO in March 2002. Staff Ex. 77 at 4 ("TA Briefing").

5.143 During the meeting, Mr. Geisen and other FENOC representatives provided a slide presentation. Staff Ex. 55; Staff Ex. 56; Staff Ex. 71 at 1916-17.

5.144 On the night before the TA Briefing, Mr. Geisen and other FENOC representatives met in a conference room at their hotel to develop the presentation slides. Staff Ex. 71 at 1916-17.

5.145 Mr. Geisen was the scribe who created the slides on his laptop. Tr. 1925. Since Mr. Geisen was the most knowledgeable within the group about inspections, Mr. Geisen was the source of the information regarding the inspections. *See* Tr. 1925.

5.146 At the time he made his presentation to the Commissioner's TAs, Mr. Geisen had not received the nozzle-by-nozzle table from Mr. Siemaszko. Tr. 1925.

5.147 During the briefing, Mr. Geisen presented slide 6 which, in part, stated "[c]onducted and recorded video inspection of head during 11RFO (April 1998) and 12 RFO (April 2000) . . . No head penetration leakage was identified." Staff Ex. 55.

5.148 Mr. Geisen also presented slide 7 which, in part, stated "[a]ll CRDM penetrations were verified to be free from 'popcorn' type boron deposits using video recordings from 11RFO or 12 RFO." Staff Ex. 55; Tr. 1927.

3. Inaccuracies and/or Omissions

5.149 Mr. Geisen's representation that all CRDM penetrations had been verified to be free from "popcorn" type deposits using video recordings of inspections from 11RFO or 12RFO was inaccurate. Staff Ex. 77 at 5; Tr. 912, 914, 920.

5.150 In fact, the task of reviewing the inspection videos to determine inspection results on a nozzle-by-nozzle basis, which was being done by Mr. Siemaszko, had not been completed. Mr. Geisen knew the status of the review because he was responsible for overseeing the development of the table.

5.151 Mr. Geisen also knew, when he made the presentation at the briefing, that boric acid deposits masked a substantial number of the CRDM penetrations during each of those inspections, making it impossible to verify that "popcorn" type deposits were not present on those penetrations. *See* Staff Ex. 32; Staff Ex. 77 at 5; *See supra* Part V.B.2. Thus, Mr. Geisen knew it was impossible to determine whether evidence of head penetration leakage was present. Staff Ex. 77 at 5; *see* Tr. 912, 914, 920.

5.152 Mr. Geisen was unable to identify any basis for his inaccurate representations at the briefing. Mr. Geisen testified that the only information he reviewed to prepare for the TA Briefing was the information in Serial Letter 2731. Tr. 1925. In the following exchange during his cross-examination, Mr. Geisen explained his source of the information for the bullet point in slide 7 where he made the statement that all CRDM penetrations were verified to be free from popcorn type boron deposits using video recordings from 11RFO or 12RFO:

> Question: All right. Let's go to 2731, Exhibit 9. And let's go back to page 3 of 19, where it talks about April 2000 inspection results 12RFO. Now, would you please direct our attention to where it says there that all the nozzle penetrations were verified to be free of popcorn deposits?
>
> Mr. Geisen: It doesn't use those exact words in there.
>
> Question: And what words did you rely on?
>
> Mr. Geisen: This was – I took the information that was in 2731, call it absorbed [sic], became my frame of reference, and from that frame of reference made the statement. So to say that there's going to be a word-for-word correlation, I can't point to that.

> Question: Well, can you show us what words gave you that information?
>
> Mr. Geisen: The fact that the review was conducted to reconfirm that indication of boron leakage at Davis-Besse nuclear power station were not similar to those indications seen at ONS and ANO-1. That's in the bullet for subsequent review of 1998 and 2000 inspection video tapes.
>
> Question: Are you saying that that told you that all of the nozzles had been inspected?
>
> Mr. Geisen: No, what I'm saying is that is what caught – you asked the question of where did that bullet come from, and that's where I got that information for that bullet. Tr. 1928-29.

5.153 While acknowledging that the use of the term "verified" in his presentation was a very affirmative statement (Tr. 1927), Mr. Geisen, nevertheless, testified that the intent of that statement was not to convey to the NRC that the plant had looked at every CRDM penetration even though, as Mr. Geisen also acknowledged, Slide 7 so stated. Tr. 1929-30.

5.154 Mr. Geisen therefore asks the Board to believe that he told the Commissioners' TAs that he could verify that no evidence of leakage was evident believing that statement was true based on the information in Serial Letter 2731. As he acknowledged, Serial Letter 2731 does not contain any information to support that representation. Further, this representation is inconsistent will all the previous knowledge he had regarding the reactor head inspections. Therefore, we find that Mr. Geisen's testimony is not credible. We find that Mr. Geisen intended to mislead the NRC by affirmatively stating that all nozzles were verified to be free of popcorn deposits when in fact he knew he had no basis for making such assertion. We also find that Mr. Geisen knew that the referenced bullet points on slides 6 and 7 were incomplete and

inaccurate because he knew that the build-up of boron deposits on the reactor vessel head masked a significant number of nozzle to head interfaces which precluded the determination of nozzle leakage and the verification of presence of “popcorn” type boron deposits.

H. SERIAL LETTER 2735

1. Additional Information

5.155 Mr. Geisen testified that at some point after October 11, 2001, but before October 17, 2001, he received the nozzle-by-nozzle table for 1998 and 2000 inspections from Mr. Siemaszko. Tr. 1720-21. As noted previously, the NRC’s Dr. Hiser had requested this information during the October 3, 2001 telephone conference. Staff Ex. 71 at 1987; *see supra* Part V.F.2.

5.156 Upon reviewing the table when he received it from Siemaszko, Mr. Geisen testified that he realized that the information in the nozzle-by-nozzle table could not be reconciled with the information he had provided to the Commissioner’s TAs. Tr. 1945-46.

5.157 Mr. Geisen testified that he informed Mr. Moffitt that he had provided inaccurate information to the Commissioner’s TAs that needed to be corrected. Tr. 1721, 1946. A decision was made to provide a new supplemental submittal to the NRC. Tr. 1721, 1729. According to Mr. Geisen, this was the “genesis” of Serial Letter 2735, which was to correct the inaccurate information Mr. Geisen had provided to the Commissioner’s TAs on October 11, 2001. Tr. 1721, 1946.

2. Mr. Geisen’s Role

5.158 On October 17, 2001, Serial Letter 2735 was submitted to the NRC. Staff Ex. 11.

5.159 On the same day, Mr. Geisen signed-off on the green sheet for Serial Letter 2735. Staff Ex. 12. He signed off as the responsible manager for Serial Letter 2735. Staff Ex. 12. As a manager signing off on box 14 of the green sheet, Mr. Geisen was responsible to verify the technical accuracy of the document. Staff Ex. 12; Tr. 1642.

3. The Submission of Information to the NRC

5.160 Serial Letter 2735 provided supplemental information regarding the results of the head inspections conducted in 1998 and 2000. Staff Ex. 77 at 5. In addition, Serial Letter 2735 included information concerning the head inspection conducted in 1996, during 10RFO, to support FENOC's claim that, notwithstanding the existence of boric acid deposits on the RPV head, there would be minimal public risk if Davis-Besse were allowed to operate until the next refueling outage, scheduled for March 2002, when a qualified visual inspection of the RPV head would be performed. Staff Ex. 77 at 5.

5.161 This claim was supported by a safety assessment which assumed that routine inspections would detect minor leaks well before any catastrophic failure could occur. Staff Ex. 77 at 5. The safety assessment concluded that these visual inspections would minimize public risk because it was highly likely that signs of nozzle or penetration weld leakage would be observed before the leakage caused nozzle structural failure or detachment. Staff Ex. 77 at 5.

5.162 The safety assessment, which was prepared by a contractor to FENOC, noted:

> . . . boric acid crystal buildup from flange leaks may have masked indications of CRDM nozzle leakage in the past, and may have contributed to the exterior circumferential OD cracks at the ONS not being detected by an inspection sooner.
> . . . . . .

> Over the last five to seven years, the RV head inspections have become increasingly more meaningful because of utility efforts to clean the head of boron deposits resulting from past CRDM nozzle flange leakage and other sources. A clean RV head will make new boron crystals at the nozzle penetrations more evident, and reduce the likelihood that the leakage will be missed or masked by other sources of boron on the RV head. Staff Ex. 11 at 27 of 56.

5.163 The Serial Letter included the following summary information regarding the inspections of the RPV head:

> In May 1996, during a refueling outage, the RPV head was inspected. No leakage was identified, and these results have been recently verified by a re-review of the video tapes obtained from that inspection. The RPV head was mechanically cleaned at the end of the outage. Subsequent inspections of the RPV head in the next two refueling outages (1998 and 2000), also did not identify any leakage in the CRDM nozzle-to-head areas that could be inspected. Video tapes taken during these inspections have also been re-reviewed.
>
> Accordingly, using the end of outage in 1996 as the postulated worst-case time for an axial crack to reach a through-wall condition, the projected time for the crack to reach its critical through-wall circumferential size was determined based on the results from an Framatome ANP assessment. This RV Head Nozzle and Weld Safety Assessment demonstrates the postulated crack will take approximately 7.5 years to manifest into an ASME Code allowable crack size. Applying this 7.5 years to the May 1996 inspection projects the worst-case allowable crack size being reached in November 2003. It is important to note the allowable crack size will still maintain an ASME Code safety factor of three.
>
> . . . . . .
>
> Based on the previous inspections conducted, re-reviewed inspection videos, analyses that have been performed concerning crack growth rates, the ability to identify cracking, and industry evaluations and findings, it is concluded there is reasonable assurance that the DBNPS will continue to operate safely to the next refueling outage scheduled for March 2002. Staff Ex. 11 at pages 1-2 of 5.

5.164 The Serial Letter included the following supplemental information regarding the inspections of the RPV head:

> The inspections performed during the 10th, 11th, and 12th Refueling Outage (10 RFO, conducted April 8 to June 2, 1996; 11RFO, conducted April 10, to the May 23, 1998; and, 12RFO, conducted April 1 to May 18, 2000) consisted of a whole head visual inspection of the RPV head in accordance with the DBNPS Boric Acid control Program pursuant to Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants." The visual inspections were conducted by remote camera and included below insulation inspections of the RPV bare head such that the Control Rod Drive Mechanism (CRDM) nozzle penetrations were viewed. During 10RFO, 65 of 69 nozzles were viewed, during 11RFO, 50 of 69 nozzles were viewed, and during 12RFO, 45 of 69 nozzles were viewed. It should be noted that 19 of the obscured nozzles in 12 RFO were also those obscured in 11RFO. Following 11RFO, the RPV head was mechanically cleaned in localized areas as limited by the service structure design. Following 12RFO, the RPV head was cleaned with demineralized water to the extent possible to provide a clean head for evaluating future inspection results.
>
> The affected areas of accumulated boric acid crystal deposits were video taped, and have subsequently been reviewed with specific focus on boric acid crystal deposits with reference to the CRDM nozzle penetration leakage as previously observed at the Oconee Nuclear Station, Unit 3 (ONS-3) and at Arkansas Nuclear One, Unit 1 (ANO-1). During the 12RFO inspection, 24 of the 69 nozzles were obscured by boric acid crystal deposits that were clearly attributable to leaking motor tube flanges from the center CRDMs. A further subsequent review of the video tapes has been conducted and corroborates the previous statements and conclusions stated in letter Serial Number 2731 that the results of this review did not identify any boric acid crystal deposits that would have been attributed to leakage from the CRDM nozzle penetrations, but were indicative of CRDM flange leakage. Included as Attachments 2 and 3 are the inspection results for 10RFO, 11RFO and 12RFO, and a figure representing these nozzle locations, respectively. Staff Ex. 11 at pages 2-3 of 5.

5.165 A table in Attachment 2 to Serial Letter 2735 depicted the inspection findings from 1996, 1998 and 2000. Staff Ex. 11, Attachment 2. The table findings were catalogued as (1) flange leak evident, (2) no leak observed, meaning the visual inspection was satisfactory and no video record was required, or (3) no leak recorded, meaning that nozzle inspection was recorded on videotape. Staff Ex. 77 at 5. For the 1996 inspection, no findings were reported on the table. Staff Ex. 11, Attachment 2; Staff Ex. 77 at 5. A note to the table stated the following:

> In 1996 during 10RFO, the entire RPV head was inspected. Since the video was void of head orientation narration, each specific nozzle view could not be correlated. Staff Ex. 11, Attachment 2, Page 2 of 2.

5.166 Also attached to Serial Letter 2735 were head maps on which the 11 and 12RFO inspection findings were depicted. The head maps identified the following information for each nozzle for the 11RFO inspection, the 12 RFO inspection, and the 11RFO and 12RFO inspections combined:

(1) No leakage identified

(2) Evaluated not to have sufficient gap to exhibit leakage

(3) Insufficient gap with leaking flange

(4) Nozzle obscured by boron

(5) Nozzle obscured by boron with leaking flange

(6) Newly affected, since 11RFO, by leaking flange(s)
Staff Ex. 77 at 5.

5.167 The head map for 11RFO labeled 50 of the 69 nozzles “no leakage identified.” Staff Ex. 77 at 5. The remaining 19 nozzles - labeled (2) through (5) - were clustered in the southeastern portion of the head. The head map for 12RFO labeled 45 of the 69 nozzles as “no leakage identified.” Staff Ex. 77 at 5. The remaining 24 nozzles – labeled (2) through (5) - included the same nozzles with those labels for

11RFO and 5 additional nozzles located in the southeastern portion of the head. Staff Ex. 77 at 5.

5.168 The head maps for 11RFO and 12RFO labeled five nozzles on the southeastern portion of the head to be (3) or (6), "with leaking flange." Staff Ex. 77 at 5.

4. Inaccuracies and/or Omissions

5.169 The statement that the 10, 11 and 12RFO inspections consisted of a whole head visual inspection in accordance with the BACC was inaccurate in two respects. A whole head inspection was not conducted during any of those inspections. Additionally, none of the inspections satisfied the BACC.

5.170 We will first address the representation that a "whole head visual inspection" is inaccurate. The plain meaning of that term is that every part of the head was seen. The plain meaning of the term "whole head inspection" was consistent with the understanding of both the Staff's inspection expert, Mr. Holmberg, and also with Dr. Hiser. Mr. Holmberg testified that a "whole head visual inspection" meant that each of the vessel head penetration nozzles could be examined to determine that the nozzles were not leaking. Tr. 874-75. Dr. Hiser testified that a "whole head visual inspection" meant a 100% inspection and that there were no impediments to accessing any part of the vessel head. Tr. 1269-70, 1272, 1294-95.

5.171 Mr. Geisen understood that the NRC would interpret his representation that a "whole head visual inspection" had been conducted to mean that every part of the head had been seen. *See* Staff Ex. 79 at 181; Tr. 1953, 1966. His explanation that he meant that an inspection of the entire head, as opposed to a sample of the head, was being attempted, Tr. 1667, 1953, is not credible. Mr. Geisen conceded that, to his knowledge, sample inspections of the reactor head were never conducted. Tr. 1910-11. Dr. Hiser agreed, explaining that the NRC's expectation was that there would be no

sampling and that every nozzle would be inspected, since every nozzle was a potential leaker to cause a LOCA. Tr. 1270.

5.172 None of those inspections consisted of a "whole head inspection" because, as discussed above, the top region of the head could not be visualized using a camera on a stick. Therefore, none of the inspections conducted during the 10, 11 or 12RFOs could view the top of head.

5.173 Mr. Geisen knew that whole head visual inspections were not performed during any of those RFOs because he knew that the camera on a stick inspection technique would not allow access to certain portions of the vessel head. *See supra* Part V.B.1.

5.174 The statement that whole head visual inspections was inaccurate for the additional reason that boron deposits precluded inspection of portions of the head and of a significant number of nozzles. For example, Mr. Holmberg testified that during the 2000 vessel head inspection, there was such build-up of boron physically blocking the camera access to a significant portion of the vessel head and therefore masking the nozzle-to-head interface. *See* Tr. 901.

5.175 Mr. Geisen knew that whole head visual inspections were not performed during 12RFO for the additional reason that boron deposits precluded access to areas of the head and precluded visualization of a number of nozzle-to-vessel head interfaces. *See supra* Part V.B.2.

5.176 The statement in Serial Letter 2735 that the 10, 11 and 12RFO inspections were performed in accordance with the BACC was inaccurate because boric acid deposits prevented access to portions of the reactor head. Mr. Geisen knew that this statement was inaccurate because he knew that: (1) compliance with the BACC

required access to the bare metal of the reactor head, Tr. 1939, and (2) that boric acid deposits precluded access to areas of the reactor head. *See supra* Part V.B.2.

5.177 The statement in Serial Letter 2735 that a review of the video inspections corroborated statements in Serial Letter 2731 that the boric acid crystal deposits were attributable to flange leakage, not leakage attributable to nozzle leakage, was inaccurate. As discussed above, the large boric acid deposits on the head would obscure the small popcorn-like indications of nozzle leakage. Therefore, it was impossible to determine whether boric acid deposits indicative of nozzle leakage were present. Staff Ex. 77 at 4.

5.178 Mr. Geisen knew that this statement was inaccurate because not only was he familiar with the Bulletin and the nature and significance of the information requested (*see supra* Part V.C.) but also because of the information he learned: (1) during the 2000 RFO from the CRs, including the red photo, and learning about the unsuccessful cleaning efforts, (2) from reviewing the videotapes of the inspections, (3) from numerous e-mails and trip reports, (4) from an engineering evaluation he reviewed and approved, and (5) from a consultant report. *See supra* Part V.B.2.

5.179 The table submitted with Serial Letter 2735 inaccurately reported, in Note 1, that "in 1996 during 10 RFO, the entire RPV head was inspected." Staff Ex. 11, Attachment 2, Page 2 of 2. As discussed above, the inspection conducted during 1996 could not visualize the top region of the head because of the limited access and the geometry of the head. *See supra* Part V.B.1.

5.180 Mr. Geisen wrote Note 1 on the table submitted with Serial Letter 2735. Tr. 1952.

5.181 Mr. Geisen testified that this statement meant that every nozzle was visualized. Tr. 1953. Mr. Geisen knew this statement was inaccurate because: (1) he

knew that each nozzle could not be visualized using the inspection technique used during the inspections (Tr. 1616; *see supra* Part V.B.1).and (2) he knew that it was not possible to see 100% of the vessel head in 1996. Tr. 1959; *see supra* Part V.B.2.

5.182 Therefore, we find that Mr. Geisen wrote the note in Serial Letter 2735 stating that in 1996 "the entire RPV head was inspected" while knowing it to be inaccurate because he knew that the entire vessel had not been inspected in 1996 because of the camera on a stick technique.

5.183 On the table submitted with Serial Letter 2735, Mr. Geisen also wrote that "[s]ince the video was void of head orientation narration, each specific nozzle view could not be correlated." Staff Ex. 11; Tr. 1952.

5.184 Mr. Holmberg also testified that in the 1996 inspection video tape, the narrator on the video tape called out stud hole numbers in order to orient a reviewer of the video inspection as to where they were looking on the vessel head. Tr. 908, 915. For instance, the narrator's voice (who Mr. Goyal testified was his, Tr. 1028) can be heard on the 1996 video inspection (96-07) at time stamps 2:34, 7:40 and 13:00. Staff Ex. 81; Tr. 913, 915, 916. Mr. Goyal testified the purpose of calling out stud numbers was to be able to coordinate the video with the actual location of the nozzles being recorded. Tr. 1029.

5.185 We find that the 1996 video inspection tape included audio head orientation narration which allowed the correlation of the nozzle views to specific nozzles. We find that Mr. Geisen knew that the 1996 had an audio narration because he viewed portions of the 1996 inspection tape in August and early October 2001. *See Supra* Part V.B.2.

I. SERIAL LETTER 2744

1. Mr. Geisen's Role

5.186 On October 24, 2001, FENOC representatives, including Mr. Geisen, met with the NRC. Staff Ex. 71 at 1922. The purpose of the meeting was to discuss FENOC's proposal to defer inspections recommended by the Bulletin to the spring 2002 RFO. Staff Ex. 58.

5.187 During the meeting, FENOC representatives gave a slide presentation. Staff Ex. 58; Staff Ex. 74 at 1248. Mr. Geisen presented the slides dealing with the deterministic analysis. Staff Ex. 74 at 1248, 1250.

5.188 Slide 9 was one of the slides presented by Mr. Geisen. Staff Ex. 71 at 1924. The first bullet point on slide 9 states that "All CRDM penetrations were verified to be free from 'popcorn' type boron deposits using video recordings from 10RFO, 11RFO or 12RFO." Staff Ex. 58. This statement is the same as the admittedly inaccurate statement in slide 7 of the October 11, 2001 TA Briefing but for the addition of "10RFO." Staff Ex. 71 at 1924.

5.189 By virtue of the fact that Mr. Geisen, on five occasions, personally provided information to the NRC regarding past vessel head inspections and was also the manager responsible for the assembly of such information in FENOC's written submittals to the NRC, we find that Mr. Geisen was the FENOC representative most knowledgeable about the scope and limitations of Davis-Besse's past inspections.

5.190 Six days later, on October 30, 2001, Mr. Geisen signed-off on the green sheet for Serial Letter 2744. Staff Ex. 14.

5.191 On the same day, Serial Letter 2744 was submitted to the NRC. Staff Ex. 13.

5.192 Mr. Geisen testified that he wrote the note to the nozzle-by-nozzle table attached to Serial Letter 2744. Tr. 1960-61.

5.193 Mr. Geisen also testified that he wrote the captions to the photographs included in Serial Letter 2744. Tr. 1963.

2. The Submission of Information to the NRC

5.194 Serial Letter 2744 provided the following supplemental information regarding the inspections of the vessel head:

> The inspections performed during the 10th, 11th, and 12th Refueling Outage (10RFO, conducted April 8 to June 2, 1996; 11RFO, conducted April 10, to May 23, 1998; and, 12RFO, conducted April 1 to May 18, 2000) consisted of a whole head visual inspection of the RPV head in accordance with the DBNPS Boric Acid Corrosion Control Program pursuant to Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants." The visual inspections were conducted by remote camera and included below insulation inspections of the RPV bare head such that the Control Rod Drive Mechanism (CRDM) nozzle penetrations were viewed. During 10RFO, 65 of 69 nozzles were viewed, during 11RFO, 50 of 69 nozzles were viewed, and during 12RFO, 45 of 69 nozzles were viewed. It should be noted that 19 of the obscured nozzles in 12RFO were also those obscured in 11RFO. Following 11RFO, the RPV head was mechanically cleaned in localized areas as limited by the service structure design. Following 12RFO, the RPV head was cleaned with demineralized water to the extent possible to provide a clean head for evaluating future inspection results.
>
> The affected areas of accumulated boric acid crystal deposits were video taped, and have subsequently been reviewed with specific focus on boric acid crystal deposits with reference to the CRDM nozzle penetration leakage as previously observed at the Oconee Nuclear Station, Unit 3 (ONS-3) and at Arkansas Nuclear One, Unit 1 (ANO-1). During the 12RFO inspection, 24 of the 69 nozzles were obscured by boric acid crystal deposits that were clearly attributable to leaking motor tube flanges from the center CRDMs. A further subsequent review of the video tapes has been conducted and the results of this review did not identify any boric acid crystal deposits that would have

> been attributed to leakage from the CRDM nozzle penetrations, but were indicative of CRDM flange leakage. Staff Ex. 13 at 1-2.

5.195 Attached to Serial Letter 2744 was a copy of the nozzle-by-nozzle table submitted as an attachment to Serial Letter 2735 on which note 1 had been revised. On the table submitted with Serial Letter 2744 the note read:

> In 1996 during 10 RFO, 100% of nozzles were inspected by visual examination. Since the video was void of head orientation narration, each specific nozzle view could not be correlated by nozzle number. Nozzles 1, 2, 3, and 4 which do not have sufficient interference gap were excluded. The remaining 65 nozzles did not show any evidence of leakage. Staff Ex. 13; Staff Ex. 77 at 8-9; Tr. 1750.

5.196 Serial Letter 2744 included photographic images of the 10RFO (1996), 11RFO (1998) and 12RFO (2000) vessel head inspections which had been converted from the inspection video tapes for the respective years. The photographs were accompanied by captions. Staff Ex. 13.

3. Inaccuracies and/or Omissions

5.197 Serial Letter 2744 repeated the inaccurate statement in Serial Letter 2735 that the 10, 11 and 12RFO inspections consisted of a whole head visual inspection in accordance with the BACC. We find that the statement was inaccurate for the same reasons described above for Serial Letter 2735. We also find that Mr. Geisen knew that the statement was inaccurate for the reasons described above. *See supra* Part V.H.4.

5.198 The note on the table submitted with Serial Letter 2744 inaccurately stated that during 10RFO 100% of the nozzles were inspected by visual examination. Staff Ex. 77 at 10.

5.199 Mr. Geisen acknowledged that his note in Serial Letter 2744 was stronger than the note he wrote under the same nozzle-by-nozzle table in Serial Letter 2735. Tr.

1961. In response to a question from Judge Trikouros, Mr. Geisen did not have an explanation for modifying the note to make it stronger. *See* Tr. 1966.

5.200 As explained above, Mr Geisen knew that it was impossible to view the entire head using a camera on stick due to limited access through the mouse holes and the geometry of the head. *See supra* Part V.B.1.

5.201 We find that Mr. Geisen wrote the note in Serial Letter 2744 stating that in 1996 "100% of nozzles were inspected by visual examination" knowing it to be inaccurate. We also find that the modification of the note to a stronger assertion than that in Serial Letter 2735 demonstrates Mr. Geisen's clear intent to mislead the NRC.

5.202 Mr. Geisen wrote the captions for the photographs attached to SL 2744. Tr. 1963.

5.203 A caption for the photographs for the 1998 inspection (11RFO) stated that the photographs were representative of the condition of the head. This statement was inaccurate because the photographs depicted only small boric acid deposits and failed to show the much larger boric acid deposits found during the inspection. Staff Ex. 77 at 10.

5.204 Serial Letter 2744 misrepresented the condition of the reactor vessel head during 12RFO by including photographs showing small amounts of boric acid deposits and omitting photographs showing larger boric acid deposits from the reactor vessel head inspection videos. Staff Ex. 77 at 10.

5.205 We find that Mr. Geisen knew photographs showing larger boric acid deposits were omitted from Serial Letter 2744 based on Mr. Geisen's knowledge that large accumulations of boric acid had been deposited on the head. *See supra* Part V.B.2. He knew that large boron deposits had accumulated on the head from multiple sources, including his review of inspection video tapes. *See supra* Part V.B.2. Further,

he could see that the photographs did not depict these large deposits. For instance, Serial Letter 2744 did not include any photographs of nozzles engulfed in boron deposits from 12RFO (2000) inspection video tapes, even though Mr. Geisen had viewed portions of the 2000 video inspection. Staff Ex. 79 at 144-45.

5.206 The table submitted with Serial Letter 2744 inaccurately stated that the 1996 inspection video was void of head orientation making it impossible to determine nozzle numbers. Staff Ex. 77 at 10. In fact, the video recording contained head orientation narration which permitted nozzle identification. Staff Ex. 77 at 10.

5.207 Mr. Geisen knew that the 1996 had an audio narration because he viewed portions of the 1996 inspection tape in August and early October 2001. *See supra* Part V.B.2.

J. ACRS MEETING

1. Additional Information

5.208 On November 8, 2001, Mr. Geisen traveled to Washington, D.C. to attend a public meeting that day at the NRC and an ACRS meeting the following day. Tr. 1757. When Mr. Geisen arrived, he was informed that he was selected to show the videotapes of past inspections to the NRC Staff that evening. Tr. 1758.

5.209 Mr. Geisen was handed the videotapes between late morning and mid-day to present at a 5pm closed meeting with the Staff. Tr. 1758-59. To his knowledge, he was given six videotapes, containing the 1996, 1998, and 2000 inspections. Tr. 1759.

5.210 At some time after 5pm, Mr. Geisen met with a number of Staff members and began showing them videotapes. Staff Ex. 79 at 1932; Tr. 1295. Mr. Geisen was the only representative from Davis-Besse at the meeting; the rest of the participants were NRC Staff. Tr. 1296.

5.211 Mr. Geisen's memory of which tapes he showed has varied over the years. In October of 2002, Mr. Geisen stated in his OI interview that he only showed one tape, did not even finish the entire tape, and that he's 80% confident it was the 2000 inspection video. Staff Ex. 79 at 147-48. However, during his criminal trial and at the hearing, he stated that he showed the entire 1996 inspection videotape and a portion of the 1998 inspection videotape and none of the 2000 inspection videotape. Staff Ex. 71 at 1934-37; Tr. 1761-63.

5.212 Dr. Hiser, who was present at this meeting, recalls viewing portions of the 1996 and 1998 inspection videotapes during the meeting. Tr. 1295. Dr. Hiser stated that Mr. Geisen did not show the 2000 inspection videotape. Tr. 1301.

5.213 Given Mr. Geisen's varying memory of the events through time, we credit Dr. Hiser's testimony as reflecting what videotapes were shown.

5.214 Dr. Hiser stated that the 1996 video showed "relatively benign conditions, not a lot of boron on the head . . . boron in various places but, you know, clearly not a significant problem." Tr. 1300.

5.215 Dr. Hiser characterized the portions of the 1998 videotape as "more boron on the head, but, again, relatively small quantities. I mean, maybe, you know, a half-inch thick, something like that, on the head itself, nothing that would really raise a lot of concerns." Tr. 1300.

5.216 Mr. Geisen admitted to counseling the Staff against taking the time to watch the 2000 inspection videotape:

> Mr. Geisen: I offered to, but I also know -- was criticized for saying comments along the line of that: If you thought '98 was bad, 2000 is even worse because –
>
> Question: What were you speaking to when you said that?

> Mr. Geisen: Well, I mean the focus, the coloring and the glare of everything, the optics were much worse on 2000. That is what we had said in our 2744 document. Staff Ex. 71 at 1937.

5.217 We find that based on Mr. Geisen's statement, he was more familiar with the contents of the inspection videotapes than he could have been by simply based on viewing still frames with Mr. Siemaszko almost a month earlier. Instead, he must have actually viewed the videotapes prior to showing them to the Staff.

5.218 Further, Mr. Geisen testified that he supplied the inspection information to the slides for the TA Briefing because he was the most knowledgeable member of the group on Davis-Besse's past inspections. Tr. 1925. He has testified that he was more knowledgeable than Mr. Moffitt by the date of the ACRS meeting the following day and that he volunteered to answer the ACRS's question regarding the extent of inspections in 1998 and 2000 because he was the most knowledgeable person there. Tr. 1988.

5.219 Based on those facts, we find that Mr. Geisen was specifically tasked with presenting the videotapes on behalf of Davis-Besse because he was the most knowledgeable person on the November 8, 2001 team.

2. The Submission of Information to the NRC

5.220 On November 9, 2001, Mr. Geisen and other FENOC managers met with the ACRS to discuss FENOC's crack growth rate model and present information on circumferential cracking of the Davis-Besse reactor vessel head nozzles. Staff Ex. 77 at 10; Tr. 1757.

5.221 During the ACRS meeting Mr. Geisen and another Davis-Besse manager made a presentation regarding the plant specific crack growth analysis that had been performed. During that meeting, Mr. Geisen responded to a question from Vice Chairman Bonca. Referring to a representation that the 1998 and 2000 inspections had

been limited, Mr. Bonca asked "what was the extent of the inspection?" Staff Ex. 59. Mr. Geisen responded by stating:

> I'll talk to that. What we did is recognize – this is Dave Geisen. With regard to these inspections, recognize that they were not done looking for this particular phenomenon. They were looking for other things. The two inspections done in 1998 and 2000 were really looking for the impact of boric acid leakage from leaky flanges that we had subsequently repaired and what was the impact to that. So the view that we got from those was in many cases some of the drives you couldn't even get a good view of. There were many cases, the camera angle was looking upwards because it was looking at the structural material of the service structure on top of the head. When we looked at the 1996 data, you got more of a downward look at these nozzles because we were specifically following around a vacuum and probe that was looking for head wastage as result of the boron being deposited on head. So what really comes down to it, the best video we have on this goes all the way back to 1996. Staff Ex. 59 at 397-98.

5.222 The crack growth analyses was performed in order to justify operation beyond December 2000 by demonstrating that a crack would not grow to the point that it could result in ejection of the nozzle by that time. Tr. 1881-82. Mr. Geisen explained that the analysis assumed that the crack would grow from a starting point. The starting point would be a time when no nozzle cracking were present. This would be determined by an inspection which provided assurance that no indications of nozzle leakage were present. Tr. 1882.

5.223 Therefore, the validity of the crack growth analysis depended on a good head inspection. The adequacy of the head inspection used as a baseline was therefore an essential to the crack growth analysis. Thus, it was not surprising that questions regarding inspections were raised during the ACRS hearing.

3. Inaccuracies and/or Omissions

5.224 Mr. Geisen's statement that the head inspections in 1998 and 2000 were performed to look for different things than the 1996 inspection was inaccurate. In fact, all inspections of the reactor head are conducted to view the condition of the head and components. *See* Tr. 867.

5.225 Referring to the 1998 and 2000 inspections, Serial Letter 2731 stated that the "[t]he scope of the visual inspection was to inspect the bare metal RPV head area that was accessible through the weep holes to identify any boric acid leaks/deposits." Staff Ex. 9 at 2 of 19. Mr. Goyal testified that the purpose of the 1996 vessel head inspection was to look at the head for boric acid. Tr. 1029.

5.226 Mr. Holmberg testified that, in the 12RFO (2000) inspection, the purpose was to look at the bare surface of the reactor vessel head. *See* Tr. 921, 923. The narrator on the 2000 inspection video indicated that his intention to view the reactor vessel head surface. *See* Staff Ex. 81, time stamp 10:08, 15:34. Mr. Holmberg testified that the camera operator was attempting to view the nozzle/vessel head interfaces. Tr. 920-21.

5.227 Mr. Geisen was unable to explain why as-found head inspections would be looking for different things. To the contrary, evidence shows that inspections were all conducted to view the condition of the reactor vessel head. In fact, he knew that the inspections were intended to view the surface of the vessel head. Tr. 1969. Therefore, we find that Mr. Geisen's statement that the inspections were looking for different things was deliberately inaccurate and misleading.

5.228 Mr. Geisen's statement that the 1996 inspection provided the best views of the head because it was following a vacuum and probe looking for head wastage was inaccurate. Staff Ex. 59 at 398. As explained by Mr. Holmberg, the cleaning video

showing the vacuum was only a few minutes long and did not afford any additional views of the nozzles which he used in his review. Tr. 937-38; Staff Ex. 81.

5.229 Mr. Gesein knew that the inspection information which supported the Bulletin responses was obtained only from the as-found inspection, which was conducted before cleaning. Tr. 1702. Similarly, only information of the as-found condition of the head could support a baseline for the crack growth analysis. Tr. 1434-35.

5.230 Mr. Geisen's response was also incomplete. Mr. Geisen knew, but did not tell the ACRS, that the 1996 afforded better views of the nozzles because the later inspections were obscured by the significant boron deposits which had accumulated on the reactor head. *See* Tr. 1969-73. He also knew, but did not tell the ACRS, that the previous inspections had been limited because access to the head was restricted by the mouse holes and the geometry of the head. *See supra* Part V.B.1.

VI. CONCLUSIONS OF LAW – VIOLATION

6.1 Mr. Geisen deliberately provided incomplete and inaccurate information to the NRC in violation of 10 C.F.R. § 50.5(a)(2) in (1) Serial Letter 2731, (2) a teleconference with the NRC on October 3, 2001, (3) a briefing of the Commissioner's technical assistants on October 11, 2001, (4) Serial Letter 2735, (5) Serial Letter 2744, and (6) an ACRS meeting of November 9, 2001.

VII. SANCTION BACKGROUND

7.1 In determining the appropriate enforcement sanction against Mr. Geisen, we are guided by the NRC Enforcement Policy ("Policy"). Staff Ex. 1. The Commission's Policy directs the decisions by Licensing Boards as well as enforcement actions taken by the Staff.[27]

7.2 The primary purpose of the Policy is to support the NRC's overall safety mission in protecting the public health and safety and the environment. Staff Ex. 1 at 4. To achieve that purpose, the policy strives to ensure compliance with NRC requirements by deterring noncompliance and encouraging prompt identification and prompt, comprehensive correction of violations. Staff Ex. 1 at 4; Tr. 2013, 2261. This is the reason that licensees and their employees are subject to enforcement sanctions when the high standard of compliance expected by the NRC is not satisfied. Staff Ex. 1 at 4.

7.3 The NRC may take enforcement action against two types of individuals: licensed and unlicensed individuals. Staff Ex. 1 at 39-40; Tr. 2016. The NRC recognizes that enforcement actions against individuals are significant actions which must be closely controlled and judiciously applied. Staff Ex. 1 at 39; Tr. 2038. The NRC may only take enforcement action against unlicensed individuals if their actions amount to deliberate misconduct. Staff Ex. 1 at 40; Tr. 2016. To support the charge of deliberate misconduct, the NRC must prove that the individual had actual knowledge of an NRC requirement and knowingly took an action contrary to that knowledge. Tr. 2031, 2281.

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[27] *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Unit 1; Sequoyah Nuclear Plant, Units 1 and 2; Browns Ferry Nuclear Plant, Units 1,2 and 3), CLI-04-24, 60 N.R.C. 160, 218, fn.176 (2004).

7.4 As part of the NRC's deliberate misconduct rule, the NRC may only take enforcement action against unlicensed individuals who have deliberately provided or caused a licensee to provide inaccurate or incomplete information on a matter material to the NRC. 10 C.F.R. § 50.5(a)(2); Staff Ex. 15; Staff Ex. 1 at 40. The NRC considers violations involving the integrity of an individual, such as lying, to be one of the more serious violations it encounters. Staff Ex. 1 at 39; Tr. 2018.

A. ASSESSING THE SAFETY SIGNIFICANCE OF THE VIOLATION

7.5 The first step in determining the appropriate sanction is to assess relative importance or significance of each violation. Staff Ex. 1 at 8. In determining the significance of the noncompliance, the NRC considers:

(1) actual safety consequences;

(2) potential safety consequences;

(3) potential for impacting the NRC's ability to perform its regulatory function; and

(4) any willful aspects of the violation. Staff Ex. 1 at 8.

7.6 Severity levels are assigned to violations under the Policy. Staff Ex. 1 at 11. Severity Level I violations are the most significant, while Severity Level IV violations are the least significant. Staff Ex. 1 at 12. Severity Level I and II violations are of very significant regulatory concern, and generally those violations involve actual or high potential consequences on public health and safety. Staff Ex. 1 at 12. Severity Level III violations are cause for significant regulatory concern. Staff Ex. 1 at 12. Severity Level IV violations are less serious but are of more than minor concerns and involve noncompliance with NRC requirements that are not considered significant based on risk; however, this should not be misunderstood to imply that Severity Level IV violations have no risk significance. Staff Ex. 1 at 12.

7.7 Most individual Severity Level III or IV violations will be handled by citing only the facility licensee. Staff Ex. 1 at 39.

1. Actual and Potential Safety Consequences

7.8 In evaluating the actual safety consequences of a violation, the NRC considers such issues as actual onsite or offsite releases of radiation, onsite or offsite radiation exposures, accidental criticalities, core damage, loss of significant safety barriers, loss of control of radioactive material or radiological emergencies. Staff Ex. 1 at 9.

7.9 Actual safety consequences are more severe issue than potential safety consequences. Tr. 2107, 2110, 2260.

7.10 Mr. O'Brien testified that violations are assigned a Severity Level I where actual safety consequences occur. Tr. 2108.

7.11 In determining the potential safety consequences of a violation, the NRC considers the realistic likelihood of affecting safety, i.e., the existence of credible scenarios with potentially significant actual consequences. Staff Ex. 1 at 9. A higher severity level is warranted for violations that have greater risk consequences. Staff Ex. 1 at 9.

2. Impact on the Regulatory Process

7.12 In assessing the violation's impact on the regulatory process, the NRC considers failures to provide complete and accurate information to the NRC. Staff Ex. 1 at 9; 10 C.F.R. §§ 50.5(a)(2) and 50.9; Staff Ex. 15. In assessing the significance of these types of violations, the NRC is to consider appropriate factors which may include;

(1) the significance of the underlying issue;

(2) whether the failure actually impeded or influenced regulatory action;

(3) the level of the individual involved; and

(4) the reasonableness of the failure given the individual's position and training. Staff Ex. 1 at 9.

3. Willfulness

7.13 In evaluating the significance of a violation involving willfulness, consideration is given to:

(1) the position and responsibilities of the person involved in the violation;

(2) the significance of the underlying violation;

(3) the intent of the violator (i.e., careless disregard or deliberateness); and

(4) the economic or other advantage, if any, gained as a result of the violation. Staff Ex. 1 at 10.

The relative weight given to each of these factors is dependent on the circumstances of the violation. Staff Ex. 1 at 10.

7.14 Willful violations are of particular concern to the NRC because its regulatory program is based on licensees and their employees acting with integrity and communicating with candor. Staff Ex. 1 at 10. Because willful violations cannot be tolerated, they may be considered more significant than the same regulatory violation when willfulness is not present. Staff Ex. 1 at 10.

B. TAKING ENFORCEMENT ACTIONS AGAINST UNLICENSED INDIVIDUALS

7.15 Once the NRC determines that an unlicensed individual has violated the deliberate misconduct rule and assessed the safety significance of the violation, the Staff must then determine what enforcement action to take against that individual, and thus conclude what is the appropriate sanction. Tr. 2259. The decision of whether to take enforcement action against an unlicensed person is made on a case by case basis, Tr. 2021, taking the following factors into consideration:

(1) The level of the individual within the organization.

(2) The individual's training and experience as well as knowledge of the potential consequences of the wrongdoing.

(3) The safety consequences of the misconduct.

(4) The benefit to the wrongdoer, e.g., personal or corporate gain.

(5) The degree of supervision of the individual, i.e., how closely is the individual monitored or audited, and the likelihood of detection (such as a radiographer working independently in the field as contrasted with a team activity at a power plant).

(6) The employer's response, e.g., disciplinary action taken.

(7) The attitude of the wrongdoer, e.g., admission of wrongdoing, acceptance of responsibility.

(8) The degree of management responsibility or culpability.

(9) Who identified the misconduct. Staff Ex. 1 at 41.

7.16 The nine factors are considered collectively; however, one or several factors can dominate, depending on the significance of the factor(s). Tr. 2022.

7.17 With respect to violations involving the submission of materially inaccurate or incomplete information, the Enforcement Policy specifically addresses oral statements in determining whether to take enforcement action. Staff Ex. 1 at 43. Recognizing that oral information may be less reliable than written submittals, the Policy notes that the NRC must be able to rely on oral communications from licensee officials concerning significant information. Staff Ex. 1 at 43. Therefore, in determining whether to take enforcement action for an oral statement, consideration may be given to the following factors:

(1) the degree of knowledge that the communicator should have had, regarding the matter, in view of his or her position, training, and experience;

(2) the opportunity and time available prior to the communication to assure the accuracy or completeness of the information;

(3) the degree of intent or negligence, if any, involved;

(4) the formality of the communication;

(5) the reasonableness of NRC reliance on the information;

(6) the importance of the information which was wrong or not provided; and

(7) the reasonableness of the explanation for not providing complete and accurate information. Staff Ex. 1 at 43.

7.18 If, after analyzing the factors in conjunction with the Severity Level of the violation, the Staff determines that enforcement action is warranted against the unlicensed individual, the particular sanction to be used should be determined on a case by case basis. Staff Ex. 1 at 41.

7.19 The NRC has a number of types of sanctions it may employ, such as: notices of violation, orders, letters of reprimand, or demands for information. Staff Ex. 1 at 41.

7.20 If the Staff determines that the appropriate sanction is an order, it may include provisions that:

(1) prohibit involvement in NRC-licensed activities for a specified period of time (normally not to exceed 5 years), or until certain conditions are satisfied;

(2) require notification of the NRC before resuming work in licensed activities; or

(3) require the person to tell a prospective employer or customer engaged in licensed activities that the person

has been subject to an NRC order. Staff Ex. 1 at 41-42; Tr. 2019.

VIII. SANCTION

8.1 The Commission's Policy sets forth broad guidelines and principles to follow in determining the appropriate sanction without dictating a particular result for a certain set of circumstances. Instead, we are called on to apply our judgment in weighing the factors that govern enforcement sanctions in light of the overarching goal of ensuring that public health and safety is protected through compliance with NRC requirements.

8.2 In undertaking this task, we are guided by the Staff's assessment of these principles. While not binding on us, the Staff's assessment represents the informed judgment of enforcement specialists and technical experts. These individuals have the technical expertise to evaluate the potential safety consequences of the violation and the enforcement experience to assess the appropriate penalty in the context of similar violations. We therefore afford substantial weight to the Staff's assessment of the severity of the violation and the Staff's assessment of the appropriate sanction.

A. ASSESSING THE SAFETY SIGNIFICANCE OF THE VIOLATION

8.3 At the outset, we address the safety significance of the underlying violation – the submission of inaccurate and incomplete information to the NRC. On April 21, 2005, FENOC was issued "Notice of Violation and Proposed Imposition of Civil Penalties -- $5,450,000" (ML051090552) ("NOV-CP"). Davis-Besse was cited for five violations, which totaled a civil penalty of $5.45 million. One of those violations, I.E., was the submission of materially inaccurate and incomplete information in response to the Bulletin, in violation of § 50.9. NOV-CP at 4-5. This was assigned a Severity Level of I, the highest Severity Level, and FENOC was assessed a $120,000 penalty. NOV-CP at

6. Mr. Geisen is charged with the deliberate submission of inaccurate and incomplete information in the same submittals in response to the Bulletin.

8.4 The Staff determined that these violations were of very high safety and regulatory significance. NOV-CP (Letter) at 2.

1. Safety Consequences

8.5 The potential safety consequences of the safety issue addressed in the Bulletin were the consequences of a nozzle ejection due to circumferential cracking. This could cause two dangerous safety consequences: (1) a loss of coolant accident ("LOCA") and (2) damage or ejection of a control rod. Staff Ex. 8 at 13; Tr. 853, 1811, 2105-06.

8.6 The large boron deposits on the head were a warning that nozzle cracking was sufficient to cause these significant safety consequences.

8.7 The inaccurate and incomplete information, which concealed the existence, and extent, of boron on the RPV head allowed Davis-Besse to operate with this potentially dangerous condition for an additional two and one half months.

2. Impact on the Regulatory Process

8.8 The Policy recognizes the importance of ensuring that the NRC obtains complete and accurate information in order to carry out its safety mission. Staff Ex. 1 at 9. For this type of violation, which impacts the integrity of the regulatory process, the safety significance is to be determined based on specific factors.

a. Significance of the Underlying Issue

8.9 The information requested concerned a significant safety concern - the possibility that nozzle cracking could go undetected unless reactor head inspections could detect even small, popcorn-like deposits. Staff Ex. 8 at 4. This concern had significant safety implications because substantial cracking of a nozzle at Oconee was

found when the only visible indications on the head were small boron deposits. Staff Ex. 8 at 2. Previously, it was believed that substantial boron deposits would be seen before significant cracking occurred. Staff Ex. 8 at 3. The high significance of the concern to the NRC was demonstrated by the fact that it prompted the issuance of an NRC bulletin. Tr. 1201. Bulletins are issued rarely and are prompted by the identification of issues of significant safety concerns. Tr. 1201.

8.10 Therefore, the significance of the underlying issue in this instance was of the very highest concern, thus supporting a Severity Level I determination. Staff Ex. 1 at 9.

b. Violation's Effect on Regulatory Action

8.11 The misleading information had a direct impact on the NRC's regulatory decisions. The Staff would have taken immediate regulatory action had complete and accurate information been provided. NOV-CP (Letter) at 3-4.

> The inaccurate and incomplete information provided by FENOC in its responses directly contributed to enabling FENOC to operate the plant beyond the Bulletin 2001-01 recommended shutdown date of December 31, 2001. Had the NRC known that the Davis-Besse Station was being operated with reactor coolant system pressure boundary leakage, the NRC would have taken immediate regulatory action to shut down the plant and to require the licensee to implement appropriate corrective actions. The startup and operation of the Davis-Besse Station, with reactor coolant system pressure boundary leakage, was a continuing violation of Davis-Besse Technical Specification 3.4.6.2.a. NOV-CP (Letter) at 3-4.

8.12 We agree that the second factor also supports the highest Severity Level classification for the violation since the information actually impeded or influenced regulatory action. Staff Ex. 1 at 9. The Bulletin required licensees to provide responses detailing nozzle and head inspections for the previous four years, which the NRC then evaluated to determine whether regulatory action was necessary. Staff Ex. 8 at 11; Tr.

1202, 1205-06. In the case of Davis-Besse, the NRC called licensee management to suggest early shutdown of the reactor to conduct further inspections. *E.g.* Tr. 1630, 1645, 1862. This prompted the licensee to provide further information to the NRC, which concealed the extent of boric acid deposits on the reactor head and the limitations to head inspections. The misleading information had the intended effect – convincing the NRC to allow operation beyond December 2001.

c. Level of the Individual and Reasonableness of the Violation

8.13 The last factor to be considered, the level of the individual within the organization and the reasonableness of the violation given the individual's position and training, continues to support a finding of the highest safety significance. Staff Ex. 1 at 9. Mr. Geisen was the Manager of Design Basis Engineering and thus had oversight of a large number of individuals: 42 directly underneath him and an additional 30-35 individuals that he was the on-site leader to. Tr. 1553-54, 2104. He also represented the licensee to the Agency. Tr. 2104. Accordingly, Mr. Geisen had significant authority and influence within the organization.

8.14 Managers establish an example for others within the licensee organization; therefore, it is particularly important that they be held to a high standard and be subject to sanctions which are equal to or greater than those imposed for lower level workers.

3. Willfulness

8.15 The severity of the violation is further enhanced by the fact that Mr. Geisen's violation was deliberate. The Policy provides that willful violations are by definition of particular concern because the regulatory program depends on employees to act with integrity and communicate with candor. Staff Ex. 1 at 10. When these factors

are considered, it is clear that the violation against Mr. Geisen was of the highest severity level: a Severity Level I.

B. TAKING ENFORCEMENT ACTIONS AGAINST UNLICENSED INDIVIDUALS

8.16 The appropriate sanction for the violation must account for the severity level as well as the additional nine factors which the Policy specifies for enforcement actions taken against unlicensed individuals.

8.17 During the hearing, we heard testimony from Kenneth O'Brien, an enforcement officer in Region III. In that position, he is responsible for overseeing the implementation of the Enforcement Policy in Region III. Tr. 2009-10. He explained that the Staff is not limited to the factors specified in the Policy, but may also account for other factors such as whether the violation was repetitive and the existence of opportunities for an individual to correct inaccurate or incomplete information. Tr. 2022. Mr. O'Brien explained that, in the case of Mr. Geisen, the Staff's enforcement decision accounted for the fact that Mr. Geisen repeatedly provided inaccurate and incomplete information on a matter of great safety significance to the Agency. Tr. 2100. Thus, just as we have, the Staff reached the initial determination that the violation was of the highest severity level given its safety significance.

8.18 Mr. O'Brien discussed the manner in which the Staff evaluated the nine factors called out in the Policy as being applicable to enforcement sanctions against non-licensed individuals. Staff Ex. 1 at 41. As required by the Policy, the Staff considered those factors in determining the length of the employment ban against Mr. Giesen. Tr. 2037, 2100-01. The Staff ultimately determined that based on the nine factors, a five-year ban on involvement in NRC-licensed activities was the appropriate sanction. Tr. 2067.

8.19 The first factor in the Policy is the level of the individual within the organization. Staff Ex. 1 at 40; Tr. 2104. Mr. O'Brien explained that the Staff places a higher level of responsibility and accountability on an individual as they advance within a licensed organization. Tr. 2022. Not only does that individual have a greater role within the organization, but they also have the opportunity to influence others and to change the way others view the need to comply with the NRC's requirements. Tr. 2022-23, 2104.

8.20 In Mr. Geisen's case, he was the Manager of Design Basis Engineering and thus had oversight of a large number of individuals: 42 directly underneath him and an additional 30-35 individuals that he was the on-site leader to. Tr. 1553-54, 2104. He also represented the licensee to the Agency. Tr. 2104. We agree that this is an aggravating factor and thus warrants the imposition of a greater sanction. Tr. 2104.

8.21 Also with regard to this factor, we note that an individual's position within an organization does not shield him from responsibility for submitting inaccurate or incomplete information. An individual who holds a position of significant responsibility within the organization cannot be allowed to deny responsibility because other individuals may share culpability. To the contrary, such an individual should be held to a higher degree of responsibility for the violation.

8.22 Ultimately, our charge is to determine the appropriate sanction for Mr. Geisen based on his actions, not whether other individuals within Davis-Besse also shared responsibility for the misleading information which was provided to the NRC. We note the importance of holding managers accountable for the representations they make to government regulators. Indeed, Congress has responded to this concern by passing the Sarbanes-Oxley Act to require managers to provide information under oath or affirmation in filings to the Securities and Exchange Commission. While not applicable

here, the Act demonstrates Congress' recognition of the importance of holding managers accountable for actions which may influence governmental actions.

8.23 The second factor in the Policy is the individual's training and experience and knowledge of the potential consequences of wrongdoing. Staff Ex 1 at 41; Tr. 2104.

8.24 Mr. Geisen was a highly knowledgeable engineer with substantial experience and training in the nuclear industry. His training included implementation of Davis-Besse's Boric Acid Corrosion Control Program. Staff Ex. 79 at 40; Tr. 1939.

8.25 Regarding the second part of the second factor, the testimony of Mr. Geisen established that he understood the high safety significance of the nozzle cracking issue that prompted the Bulletin. Tr. 1806-08, 1813. He also knew of the requirement that all information provided must be complete and accurate. Tr. 1900-01, 2104. Finally, he and other managers knew that the NRC was closely following the information being provided on this issue and was considering imposing a significant regulatory action – shutting down the reactor for inspection – based on the responses. E.g. Tr. 1630, 1645, 1862.

8.26 For all of the reasons stated in both parts, we conclude that this factor warrants a higher sanction. This is consistent with the Staff's determination. Tr. 2104-05.

8.27 The third factor in the Policy is the safety consequences of the misconduct. Staff Ex. 1 at 41; Tr. 2106, 2259. The concern that prompted the issuance of the Bulletin asking for the results of head inspections was of substantial safety significance. Tr. 1200-01. As a consequence of the inaccurate and incomplete information which concealed the true condition of the head, the NRC was convinced to allow continued operation for an additional two and one half months. Tr. 2105-06.

8.28 The NRC considers both the actual and the potential safety consequences of the violation to be very significant to the determination of the sanction. Tr. 2110. However, the NRC considers it more significant if the safety consequences actually occur. Tr. 2110, 2260.

8.29 We agree with the Staff that this constitutes an aggravating factor, based on the consequences anticipated at the time – allowing nozzle cracking to go undetected – and the actual consequences – corrosion of the reactor head. Tr. 2105-06, 2108, 2110.

8.30 The fourth factor in the Policy is the benefit to the wrongdoer, e.g. personal or corporate gain. Staff Ex. 1 at 41; Tr. 2100. While there was no evidence of personal gain to Mr. Geisen, the evidence demonstrated a substantial financial incentive to FENOC to prevent early shutdown the reactor. Tr. 1501, 1521-22. Thus, Mr. Geisen's actions furthered the corporate interest by convincing the NRC to allow continued operation through misleading representations regarding reactor inspections. While we agree with the Staff's assessment that this factor is neutral, Tr. 2111-12, we observe that the evidence presented during the hearing demonstrates Mr. Geisen's motivation for providing misleading information to the NRC.

8.31 The fifth factor in the Policy is the degree of supervision of the individual. Staff Ex. 1 at 41; Tr. 2111-12. To evaluate this, the Staff looks at an individual's position to determine whether they have the ability to directly affect public health and safety without any other oversight or involvement, such that there is a higher probability of their taking an action independent of other review that could negatively impact public health and safety. Tr. 2115.

8.32 Mr. O'Brien explained that, in this case, Mr. Geisen was providing the inaccurate and incomplete information directly to the NRC. Tr. 2112. Mr. Geisen had

very little oversight and/or supervision of his activities as they related to the information presented to the NRC. Tr. 2115. The Staff thus found these to be aggravating factors. Tr. 2115. We agree with the Staff given the fact that Mr. Geisen was acting as the individual responsible for the misleading inspection information, we conclude that his responsibility and, therefore, the sanction for the violation, is enhanced.

8.33 The sixth factor in the Policy is the employer's response and any disciplinary action taken. Staff Ex. 1 at 41; Tr. 2118. The Staff here evaluates what actions the employer took to respond to the violation and determines whether those meet the Agency's goals of ensuring that others understand the importance of complying with the NRC's rules and regulations, such that there is a deterrent effect for non-compliance. Tr. 2118-19.

8.34 Mr. O'Brien explained that the employer's response, would be a neutral or mitigating factor because Mr. Geisen was demoted and then left his employment. Tr. 2119. We also agree that given the impact on Mr. Geisen's employment and income as a consequence of his actions, these would amount to mitigating factors in the sanction determination process.

8.35 The seventh factor in the Policy is the attitude of the wrongdoer. This is evidenced by an individual's admission of wrongdoing or acceptance of responsibility. Staff Ex. 1 at 41; Tr. 2119. Mr. O'Brien explained that the attitude of the wrongdoer was an aggravating factor because Mr. Geisen did not admit wrongdoing or accept responsibility for his actions. Tr. 2119. We note that at the time the sanction was imposed, the Staff did not have the benefit of Mr. Geisen's statements during the hearing, where he expressed remorse at the outcome of his actions. Tr. 2120. That being said, Mr. O'Brien stated that after hearing Mr. Geisen's testimony, he was unsure if it would have changed the Staff's determination on factor 7. 2125-27.

8.36 Mr. Geisen's acknowledgment that he could have done a better job as manager and therefore regrets the outcome do not amount to the type of admission of wrongdoing or acceptance of responsibility that would provide us confidence Mr. Geisen understands the gravity and consequences of his actions. Mr. Geisen takes no responsibility for making false and misleading statements to the NRC. Until Mr. Geisen is able to admit that, we are unable to find that this factor does anything but aggravate the necessary sanction.

8.37 The eighth factor in the Policy is the degree of management responsibility or culpability. Staff Ex. 1 at 41; Tr. 2128. The Staff found that there was no management culpability or responsibility associated with Mr. Geisen's actions. Tr. 2128-29. The Staff therefore found this to be a neutral factor. Tr. 2128-29.

8.38 The final and ninth factor in the Policy is who identified the misconduct. Staff Ex. 1 at 41; Tr. 2129. The Staff identified the misconduct, and therefore this was determined to be an aggravating factor for the sanction. Tr. 2129.

8.39 We note that the fact that some of Mr. Geisen's representations were made orally does not mitigate the severity of the violation. The evidence shows that Mr. Geisen's oral statements were, if anything, subject to more preparation on his part because they occurred after the call from Brian Sheron, which prompted increased management attention and involvement. *See supra* Part V.F.1. The October 3, 2001 conference call and the briefing of the TAs were preceded by preparation meetings in which Mr. Geisen participated. *See supra* Part V.F.1, V.G.2. The communications were directed to NRC Staff and, for those to the Commissioner technical assistants and ACRS, in highly formal settings. Therefore, no mitigation is warranted for the oral nature of some of his statements.

8.40 We agree with the Staff's assessment. Mr. Geisen took on responsibility for providing information to the NRC concerning reactor inspections. Therefore, he was personally responsible for the information. E.g. Tr. 1923, 1927. Even though he acknowledges that he knew that information he provided to the NRC was inaccurate, he did not take any personal responsibility for ensuring that it was corrected. Tr. 1947. Even though he reported the problem to his management, he knew that it was not corrected and took no further action to address his misstatements. Tr. 1947. Instead, he concurred on additional information which continued to provide misleading information concerning the condition of the head. Staff Ex. 11, 12.

8.41 Finally, we note that both Mr. O'Brien, who heard all of Mr. Geisen's testimony, and Mr. James Luehman, former Deputy Director of the Office of Enforcement, who heard most of Mr. Geisen's testimony, Tr. 2283, stated that none of the information they heard from Mr. Geisen during the hearing would have changed their original determination that Mr. Geisen deliberately provided inaccurate and incomplete information to the NRC and that a five-year ban was appropriate. Tr. 2082-3, 2102, 2233-35, 2286.

IX. CONCLUSIONS – SANCTION

A. ASSESSING THE SAFETY SIGNIFICANCE

9.1 In reaching a final decision on the sanction, we begin by considering the safety significance of this violation. The evidence demonstrates that this violation was of the highest safety significance, a Severity Level I violation, based on numerous factors, including: (1) the significance of the underlying safety issue, (2) the repetitive nature of the violation, (3) the NRC's reliance on the misleading information in making regulatory decisions, (4) the actual safety consequences of the violation, and (5) the deliberate nature of the violation. The Policy tells us that the sanction to be imposed is informed

first by the safety significance of the violation. Staff Ex. 1 at 8. The significance in this case warrants imposition of the most severe sanction.

9.2 Because the enforcement action involves an unlicensed individual, the Policy directs us to consider additional factors specific to Mr. Geisen, such as his level within the organization, training and experience and the degree to which his actions were supervised. As described above, we find that, overall, these factors warrant an increase in the severity of the sanction. Thus, we conclude that Mr. Geisen's violation warrants a sanction appropriate for a violation of the highest safety significance.

B. TAKING ENFORCEMENT ACTIONS AGAINST UNLICENSED INDIVIDUALS

9.3 We find that factors 1, 2, 3, 5, 7, and 9 are aggravating. Mr. Geisen held a management position with virtually no oversight, and thus had an ability to influence others at the plant. He understood the safety issue due to his training and experience, and also understood NRC requirements, and has yet to take full responsibility for his actions. Further, neither Mr. Geisen, nor anyone else at Davis-Besse identified the misconduct.

9.4 Factors 4 and 8 are neutral. There was no evidence of personal gain to Mr. Geisen or management culpability.

9.5 Factor 6 is mitigating because he was demoted from his position.

9.6 Overall, we believe that the aggravating factors outweigh the mitigating factors and therefore support a greater sanction against Mr. Geisen.

9.7 To inform our assessment of the appropriate sanction, we heard testimony from James Luehman, former Deputy Director of the Office of Enforcement. Tr. 2251-52. He explained that he had reviewed the Office of Enforcement's database for cases that involved the submission of incomplete and inaccurate information by individuals of similar levels within an organization and concerning issues of

comparatively similar safety significance. Tr. 2252-53, 2255-56. He noted that the common factors in most cases are the position of the individual and the safety significance of the violation. Tr. 2259. For first line supervisors involved in less significant violations, one year bans had been applied; whereas for the cases involving the highest safety significance and higher level within the organization, five year bans had been imposed. Tr. 2263-64. However, he noted that the Staff is not limited to any specific time and has imposed a lifetime ban. Tr. 2264.

9.8 We also received a report[28] from the Staff showing that over the past 15 years, approximately 50 individuals have received five year bans or more. That report is consistent with Mr. Luehman's assessment that five year bans are reserved for the most egregious violations. This case falls within that category because it involves the deliberate submission of inaccurate and incomplete information by a manager on repeated occasions on a matter of the highest safety consequence. Accordingly, we agree with the Staff's determination that a five year ban from involvement in NRC licensed activities is appropriate.

Respectfully submitted,

/RA/

Lisa B. Clark
Shahram Ghasemian
Kimberly A. Sexton

dated at Rockville, MD
this 16th day of January, 2009

[28] Attachment 1.

ATTACHMENT 1

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
1	Aguilar, Oscar	IA-07-029	1/22/2008	Reactor	5	Yes	Order issued against a contract security officer who confessed to deliberately removing firing pins from contingency response weapons. The missing pins rendered the weapons non-functional and as a result the licensee was determined to be in violation of NRC Order and Interim Compensatory Measures.
2	Allmon, Randall	IA-98-061	1/27/1999	Reactor	5	Yes	Order issued against a contractor Project Manager for deliberately making statements to the licensee and the NRC that were inaccurate relating to cracking of certain welds of a loaded spent fuel cask.
3	Bandy, Finis	IA-97-087	11/19/1997	Reactor	5	Yes	Order issued against an Instrumentation and Control Technician for deliberately falsely stating to the licensee during the course of 1993 that he had been convicted in 1991 of excessive speeding while driving when, in fact, he had been convicted of theft of personal property and for deliberately altering copies of court records that were provided to the licensee and again in 1996 deliberately falsely stating to the licensee and the NRC that he had been convicted in 1991 of excessive speeding while driving.
4	Barnhart, Jeffrey	IA-97-049	6/23/1997	Reactor	5	Yes	Order issued against a contractor employee for deliberately assuming the name of his deceased brother on his personal history questionnaire and misinforming the licensee as to his history of drug use and conviction for possession of marijuana.
5	Baudino, Daniel	IA-97-032	5/27/1997	Reactor	5	Yes	Order issued against a contractor employee for deliberately submitting false information regarding his criminal history on his personal history questionnaire to gain unescorted access to the nuclear facility.
6	Blacklock, Sue	IA-97-059	8/5/1997	Reactor	5	Yes	Order issued against a former Primary Chemistry Manager for instructing another employee to falsify a sampling document.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
7	Bolton, Eugene	IA-96-009	2/23/1996	Reactor	5	Yes	Order issued against a Senior Nuclear Production technician for knowingly submitting a surrogate urine sample which he had collected on a previous date and maintained for that purpose and for admitting that he provided surrogate urine samples in the past when selected for Fitness for Duty testing in order to avoid detection of the presence of illegal substances.
8	Brooks, Leland	IA-98-024	7/24/1998	Reactor	5	Yes	Order issued against a Millwright for deliberately omitting criminal history information when completing a Personnel Access Questionnaire to gain unescorted access to a nuclear power plant.
9	Brumer, Jon	IA-07-027	1/22/2008	Reactor	5	Yes	Order issued against a contract security officer who confessed to deliberately removing and breaking firing pins from contingency response weapons. The missing pins rendered the weapons non-functional and as a result the licensee was determined to be in violation of NRC Order and Interim Compensatory Measures. Mr. Brumer had initially denied having any knowledge associated with the broken firing pin event when interviewed by NRC Office of Investigations. He later recanted and admitted to removing and breaking the firing pin.
10	Bynum, Joseph	IA-96-101	1/13/1997	Reactor	5	Yes	Order issued against a Vice President for discriminating a manager for engaging in a protected activity
11	Johnson, Thomas	IA-98-002	4/28/1998	Reactor	5	Yes	Order issued against a contractor Computer Programmer for deliberately altering computer code used to select individuals for random drug and alcohol testing to ensure that certain individuals (including themselves) would be excluded from random Fitness for Duty screening.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
12	Mattocks, James	IA-07-008	3/21/2007	Reactor	5	Yes	Order issued to a contract security officer for deliberately removing a Bushmaster .223 Caliber M4/A3 assault rifle and thermal imaging scope from the licensee's facility without authorization. He later pled guilty to the charge of grand theft. He was sentenced to 14 months of incarceration to be followed by 2 years probation.
13	Milas, David	IA-98-047	9/18/1998	Reactor	5	Yes	Order issued against an applicant for a reactor operator's license who acted as a look out for another applicant to illegally gain access to the NRC examination and making copies of the NRC examination. Mr. Milas was prosecuted and pled guilty to a criminal charge involving the compromise of a written examination for NRC reactor operators' licenses. As a part of his guilty plea, Mr. Milas agreed to never apply for a position as a reactor operator at any facility under the jurisdiction, administration or control of the NRC.
14	Miller, Dale	IA-05-053	1/4/2006	Reactor	5	Yes	Order issued against a Compliance Supervisor for deliberately providing the licensee and the NRC information that he knew was not complete or accurate. Pursuant to a settlement agreement, Mr. Miller's sanctions were modified.
15	Moffitt, Steven	IA-05-054	1/4/2006	Reactor	5	Yes	Order issued against the Technical Services Director for knowingly providing incomplete and inaccurate information to the licensee and the NRC. Pursuant to a settlement agreement, Mr. Moffitt's sanctions were modified.
16	Nardslico, Jr., Albert	IA-98-001	4/28/1998	Reactor	5	Yes	Order issued against a contractor Computer Programmer for deliberately altering computer code used to select individuals for random drug and alcohol testing to ensure that certain individuals (including themselves) would be excluded from random Fitness for Duty screening.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
17	Preston, Douglas	IA-94-004	4/5/1994	Reactor	5	Yes	Order issued against a contractor laborer for deliberately falsely stating on the access authorization application that he had no criminal history for crimes other than minor traffic offenses when in fact he had a criminal record. He also admitted to lying to a licensee investigator and indicated that he would lie again about his criminal record.
18	Rogers, Brian	IA-98-062	1/27/1999	Reactor	5	Yes	Order issued against a contractor Quality Assurance Manager for deliberately making statements to the licensee and the NRC that were inaccurate relating to cracking of certain welds of a loaded spent fuel cask.
19	Siemaszko, Andrew	IA-05-021	4/21/2005	Reactor	5	No	Order issued against a System Engineer for deliberately providing materially incomplete and inaccurate information in condition report and a work order that are records the NRC requires the licensee to maintain. He further provided inaccurate or otherwise misleading information to the licensee which was later submitted to the NRC.
20	Wilson, Lonnie	IA-97-050	6/27/1997	Reactor	5	Yes	Order issued against a contract Insulator for deliberately falsifying information contained in a background questionnaire by not stating that he failed a fitness-for-duty drug test and that he had been denied access to the turkey point nuclear power station in July 1991. Mr. Wilson was also prosecuted in a district court for making false statements on his access application at another nuclear plant and was found guilty. He was sentenced to 2-year probation and a $2000 fine and other penalties.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
21	Bauer, Dr., James	IA-94-011	5/10/1994	Materials	5	Yes	Order issued against the Radiation Safety Officer/the sole authorized user of byproduct material under the license for deliberately providing to the NRC inspectors information that he knew to be incomplete or inaccurate and failed to conduct a required survey which resulted in unnecessary radiation exposure to member of the public. Pursuant to a settlement agreement, the duration of the sanction was modified.
22	Ben-Haim, Ph.D., Aharon	IA-97-065	7/31/1997	Materials	Indefinite pending further order/5	Yes	Order issued against a Consultant Medical Physicist for completed a license application for Dr. Elamir (IA-97-064) knowing that it was inaccurate. Upon completion of the investigation, a second order was issued setting the 5 year sanction. Pursuant to a evidentiary hearing, the ASLB commuted the 5 year sanction.
23	Bilinsky, John	IA-02-031	12/12/2002	Materials	5	Yes	Order issued against a Technician for acquiring and possessing a gauge without authorization.
24	Bodian M.D., Jerome (Licensee)	IA-94-023	9/8/1994	Materials	5	Yes	Confirmatory Order issued against licensee Doctor for deliberately providing to NRC inspectors information that he knew to be incomplete or inaccurate. He demonstrated an unwillingness to comply with NRC requirements.
25	Boschuk, Jr., John	IA-98-019	4/10/2005	Materials	5	Yes	Order issued against the Owner/President for deliberately providing inaccurate statements to the NRC more than one letter for example stating that three gauges had not been used for two years and had not left the licensee's storage area when in fact he had transferred one of the gauges. He also deliberately transferred a gauge to another entity in violation of the order revoking the license.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
26	Boschuk, Lourdes	IA-98-020	4/10/1998	Materials	5	Yes	Order issued against Owner/President for deliberately making a series of inaccurate statements to the NRC in three written and one oral submittals and deliberately destroying business and transactional records of the licensee in order to conceal from the NRC the unauthorized use and/or transfer of the gauges.
27	Dawson, James	IA-99-002	4/29/1999	Materials	5	Yes	Order issued against a radiographer for knowingly conducting radiography at a site at which there was no radiation survey instrument; knowingly conducting radiography without performing radiation surveys each time the radiographic source was returned to its shielded position following an exposure; knowingly conducting radiography without wearing all of the required personal radiation monitoring equipment; knowingly permitting the radiographer's assistant to resume work associated with licensed material after the radiographer's assistant pocket dosimeter went off-scale and before a determination of the radiographer's assistant's radiation exposure had been made; knowingly failing to immediately contact the appropriate radiation safety officer after the radiographer's assistant's pocket dosimeter went off-scale.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
28	Elamir, M.D., Magdy	IA-97-064	7/31/1997	Materials	5	Yes	Order issued against Owner/President for deliberately causing and permitting the licensee to conduct licensed activities in the absence of the authorized user and RSO named on the license application and on the NRC license. NOTE: the initial order was issued prohibiting involvement in NRC licensed activities pending further order. Upon completion of the OI investigation, in September 1997, another order was issued indicating the duration of the ban. Pursuant to a settlement agreement, the terms of the order were modified.
29	Gardecki, Richard	IA-93-001	5/4/1993	Materials	5	Yes	Order issued against an Assistant Health Physicist for falsifying his educational background to gain employment and deliberately providing NRC investigators information that he knew to be inaccurate.
30	Hood, Virgil	IA-01-021	9/12/2001	Materials	5	Yes	Order issued against the President/Radiation Safety Officer for deliberately not responding in any manner or comply with the requirements of an order which revoked a license to possess byproduct material. He failed to maintain the licensed material in a safe storage, immediately notify the NRC of the licensee's current business location and the status of the licensed material and transfer the material to an authorized recipient within 30 days.
31	Hoyle, Eddie	IA-05-026	9/9/2005	Materials	5	Yes	Order issued against Owner/President/Sole employee for deliberately taking possession of several portable gauging devices containing licensed radioactive material without a license to possess byproduct material.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
32	Jenson, Mark	IA-96-042	7/16/1996	Materials	5	No	Order against the President of the licensee for deliberately permitting unqualified radiographers to perform radiography for the licensee; attempted to generate a false, NRC-required training record for the contract radiographers; requested that radiographers sign a document indicating that the individual had been trained when in fact the contract radiographer had not been trained.
33	Kimbley, William (Licensee)	IA-95-015/6	6/12/1995	Materials	5	Yes	Confirmatory Order issued against Owner/licensee deliberately violated NRC requirements by allowing operators to use moisture density gauges without personnel monitoring devices; not performing leak tests of two moisture density gauges; not requesting a license amendment to name a new Radiation Protection Officer; storing licensed material at an unauthorized location; allowing moisture density gauges to be used with an expired license.
34	Kumar, Krishna	IA-97-011	2/18/11997	Materials	10	Yes	Order issued against the President of the licensee and a contractor to other licensee for deliberately submitting to other licensees certain qualification certification examination results and Personnel Certification Summaries which were inaccurate; providing three inaccurate letters stating that the trustworthiness and reliability of two individuals had been established by an investigation when he knew that the individuals had used illegal substances; fabrication of source utilization logs as a result of his direction; providing the NRC a letter which contained inaccurate information relating to whether corrective actions had been taken in response to violations listed in an NRC notice of violation.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
35	Lillard, Rodney	IA-00-006	10/17/2000	Materials	5	Yes	Order issued against the President/Radiation Safety Officer for deliberately failing to report or ensuring that a report of an incident was made to the NRC within the required period and failing to provide compete and accurate information to the NRC when he told a NRC inspector that no reportable event had occurred.
36	Maas, John	IA-96-100	12/12/1996	Materials	5	Yes	Confirmatory Order issued against the President of licensee for deliberate abandonment of gauges with the knowledge of the President. He was prosecuted by the Department of Justice and pled guilty. He was sentenced to probation and required to perform community service.
37	McCool, Daniel	IA-94-017	8/26/2004	Materials	5	Yes	Order issued against a Radiographer (President of Licensee) for deliberately violating a licensee's license condition by failing to train new Radiation Protection Officers and by allowing others to administer the RPO qualification process. In addition, he deliberately provided false information to an investigator and an inspector regarding training of an individual in order to qualify that individual for work as an RPO. He pled guilty to two felony violations of the Atomic Energy Act.
38	Mulkey, James	IA-97-012	2/18/1997	Materials	5	Yes	Order issued to Vice President/Radiation Safety Officer of the licensee for deliberately providing false information to the NRC during a telephone discussion with a NRC representative. He also provided other NRC licensees inaccurate qualification certification examination results and personnel certification summaries.
39	Myers, John	IA-05-042	9/9/2005	Materials	5	Yes	Order issued against Owner/President/Sole employee of a contractor to the licensee for taking possession of several portable gauging devices without a NRC license.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
40	Nelson, James	IA-97-004	1/27/1997	Materials	5	Yes	Order issued against owner and operator of the licensee for deliberately permitting use of a portable moisture density gauge containing NRC-licensed material while under an Order suspending such license and deliberately providing information to the NRC regarding the identity of the Radiation Protection Officer on the license that he knew was inaccurate.
41	Odegard, Richard	IA-94-018	8/26/2004	Materials	5	Yes	Order issued against a Radiographer (Vice President of Licensee) for deliberately creating false documents concerning the training of licensee employees. He also deliberately provided false testimony during a NRC investigation. He pled guilty to one felony count involving deliberate violations of the Atomic Energy Act.
42	Osorio, Jesus	IA-96-043	7/16/1996	Materials	5	No	Order issued against the Radiation Safety Officer for deliberately permitting unqualified radiographers to perform radiography for the licensee; providing false documentation to NRC inspectors reflecting qualifications of the radiographers; and providing false oral statement to the NRC inspector indicating that he had demonstrated the safe use of radiography equipment to the radiographers when in fact he had not conducted such demonstration.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
43	Phillips, Hartsell	IA-94-001	3/10/1994	Materials	Indefinite/ settled to 5	Yes	Order issued against Chief Technologist/Radiation Safety Officer/Chairman of Radiation Safety Committee for deliberately increasing radiopharmaceutical dosages administered to patients above the dosages prescribed by the authorized user. He also falsified the dosage records of those patients. The practice of falsifying dosage records continued over an extended period of time. Pursuant to a settlement, the prohibition to engaging in NRC-licensed activities was changed to 5 years.
44	Pitts, Stanley	IA-05-031	8/2/2005	Materials	5	Yes	Order issued against a former Technician and authorized nuclear gauge operator for stealing and illegally possessing the portable gauging device containing licensed radioactive material.
45	Roudebush, Christopher	IA-04-019	12/30/2004	Materials	5	Yes	Order issued against the Owner/President/Radiographer for engaging in a series of deliberate misconducts including but not limited to deliberately conducting industrial radiography at locations other than a permanent radiographic location; deliberately permitting individuals to act as a radiographer's assistant before the individuals had successfully completed the required training; deliberately failing to conduct inspections and routine maintenance of licensee radiographic exposure devices; deliberately providing inaccurate and incomplete information to the NRC inspector about maintaining records of quarterly inspections of radiographic exposure devices; deliberately providing inaccurate and incomplete information to a special agent of the NRC OI when he stated that he had destroyed a computer described in a subpoena from the NRC.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
46	Rowland, Paige	IA-01-023	4/2/2001	Materials	5	Yes	Order issued against a Nuclear Medicine Technician for deliberately having an unqualified technician perform lung scan without being under the supervision of an authorized user and providing false information to the NRC relating to who performed a lung scan. She was prosecuted by the U.S. Attorney's office in Michigan. She pled guilty to a criminal charge involving knowingly providing false statements to the NRC.
47	Speciale, Richard	IA-99-019	7/21/1999	Materials	5	Yes	Order issued against a former Director and Radiation Safety Officer for deliberately untrained individuals to use gauges; not providing these individuals with the necessary dosimeter while they were using the gauges; providing the NRC inaccurate information concerning the number of gauges possessed and used by the licensee and concerning the training of gauge users and while in position of Director, directing the use of gauges even though even though the applicable license had been suspended.
48	Wicks, Larry	IA-94-024	9/27/1994	Materials	5	Yes	Order issued against the President/Radiation Safety Officer for deliberately failing to send an employee's thermoluminescent dosimeter for processing after he learned of an incident and for deliberately failing to perform an evaluation of this employee's radiation exposure after becoming aware of the incident and for not being truthful in responding to NRC inspectors and investigators about this incident and for failing to ensure that properly calibrated alarm ratemeters were provided and used by radiography personnel.

Individuals Prohibited From NRC Licensed Activities For 5 Years or more (excluding Mr. Geisen)
(1993-2008)

	Name	Case No.	Date	Type of Licensee	Duration	Immediately Effective Order	Brief Summary
49	Yu, M.D., Hung	IA-95-037	9/18/1995	Materials	Indefinite/ relaxed by order	Yes	Order issued against a Medical Physicist for deliberately providing inaccurate dose calculation information to licensee. A subsequent order was issued relaxing the initial order because after a conference, Mr. Yu admitted providing inaccurate information to the licensee. The order was modified to time served.
50	Zuverink, Marc	IA-95-022	6/27/1995	Materials	10	Yes	Order against a radiation worker for stealing and transferring NRC-licensed material.
	Note: This list was compiled by searching current and historic databases and documents, and therefore is not						
	represented to be a complete list with absolute certainty.						

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DAVID GEISEN	)	Docket No. IA-05-052
	)	
	)	ASLBP No. 06-845-01-EA
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW" in the above captioned proceeding have been served on the following persons by deposit in the United States Mail; through deposit in the Nuclear Regulatory Commission internal mail system as indicated by an asterisk (*); and by electronic mail as indicated by a double asterisk (**) on this 16th day of January, 2009.

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