FirstEnergy

Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, Ohio 43449-9760

Guy G. Campbell
Vice President - Nuclear

419-321-8588
Fax: 419-321-8337

Contains Proprietary and Restricted
Information Pursuant to 10 CFR 2.790

Docket Number 50-346

License Number NPF-3

Serial Number 2747

November 30, 2001

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Supplemental Information in Response to the November 28, 2001 Meeting Regarding the Davis-Besse Nuclear Power Station Response to NRC Bulletin 2001-01

Ladies and Gentlemen:

The purpose of this letter is to document the commitments made in a meeting held between the NRC and Davis-Besse Nuclear Power Station (DBNPS) staff's on November 28, 2001, to respond to other items as requested in the November 28, 2001, meeting, and to document commitments made on November 30, 2001, during a telephone call between the NRC Director, Division of Licensing Project Management and the DBNPS Plant Manager.

For the past several months, the DBNPS staff has been involved in in-depth and comprehensive discussions with the NRC staff regarding the technical information contained in the DBNPS response to NRC Bulletin 2001 (FirstEnergy Nuclear Operating Company (FENOC) letter Serial Number 2731, dated September 4, 2001) and the supplemental information subsequently submitted in support of that response. Through these discussions and submittals of technical information, the DBNPS staff has presented its deterministic analyses and probabilistic safety assessment (PSA) evaluations that conclude safety margins will be preserved during the operation of the DBNPS until its next refueling outage (13RFO).

A shutdown of the DBNPS in December 31, 2001, to conduct a special 100% qualified visual inspection of the reactor pressure vessel (RPV) head in addition to the scheduled refueling outage would incur dose to workers that would only be repeated several short months later during 13RFO. Based on the results of the DBNPS staff's deterministic analyses and PSA evaluations, the DBNPS has determined that it is more prudent to continue to operate the plant as described below and conduct a well-planned and prepared-for inspection at a single time during the

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scheduled refueling outage. This prudency includes avoiding the additional dose to workers that would be incurred if an additional outage for the inspection were to be performed prior to the scheduled refueling outage. This plan is consistent with the NRC's position in Bulletin 2001-01 (page 8), "...licensees should ensure that all activities related to the inspection of the VHP nozzles and the repair of identified degradation are planned and implemented to keep personnel exposures as low as reasonably achievable (ALARA), consistent with the NRC ALARA policy."

The DBNPS has notified the NRC in FENOC letter Serial Number 2731 of its commitment to perform a qualified visual inspection of the RPV head to determine if cracking of the control rod drive mechanism (CRDM) nozzles is evident. In the November 28, 2001 meeting, the DBNPS staff discussed its plan and commitment to conduct, in addition to the 100% qualified visual inspection, non-destructive examination (NDE) of 100% of the CRDM nozzles and characterization of flaws through destructive examination (consistent with ALARA principles), should such flaws be detected. This is discussed further in the Attachment 1, Response to Request 5. In addition, a meeting will be held with the NRC staff to present the planned inspection and repair activities to be conducted during 13RFO prior to February 16, 2002. However, the DBNPS staff anticipates ongoing communication during the period up to 13RFO.

The DBNPS also discussed its plan and commitment to reduce the reactor coolant system (RCS) hot leg temperature (corresponding to RPV head temperature) from 605°F to 598°F by December 16, 2001, for the remainder of the current operating cycle (Cycle 13). Industry data has shown that crack growth rate is dependent on RCS hot leg temperature and the reduction in RCS hot leg temperature at DBNPS will provide additional conservatism for continued safe operation by reducing potential crack growth rates and thereby affecting the conditional core damage probability. This change will be implemented by December 16, 2001. The PSA aspects of this change are discussed further in Attachment 1, Response to Request 1.

The DBNPS staff will also maximize the availability of the plant's redundant critical safety systems (RCS Makeup, Auxiliary Feedwater, High Pressure Injection, Low Pressure Injection, Decay Heat Removal, and Emergency Diesel Generators) until commencement of 13RFO. This will be accomplished by minimizing on-line maintenance and testing of critical safety systems that can prudently be deferred until after the plant is shut down. This adjustment will be made by December 4, 2001.

A dedicated operator will be identified and briefed for initiation of low pressure recirculation to further reduce the risk potential as discussed in Attachment 1, Response to Request 1. The dedicated operator will be in place by December 4, 2001.

At the November 28, 2001 meeting, the DBNPS also informed the NRC of its plan and commitment to move forward the start (switchyard breaker opening) of the scheduled refueling outage for the DBNPS to no later than February 16, 2002. Though the core damage risk, considering operation to the originally scheduled refueling outage, is small using the guidance of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," the change in the refueling outage date demonstrates further conservatism in the DBNPS staff's decision-making process.

Further, additional operator training will be conducted to increase the awareness of and response to the initiating event that is associated with the NRC Bulletin. This training will include simulator training on the control rod ejection accident, and will be commenced by December 6, 2001. After December 6, 2001, licensed members of on-shift operating crews will have completed this training.

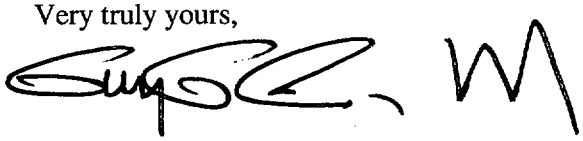
In response to these items, several other questions were raised by the NRC staff concerning the analyses, evaluations, and processes that were presented. Attachment 1 responds to those questions, and provides the necessary justification for the continued safe operation of the DBNPS.

In summary, these comprehensive plant-specific integrated plans, commitments, analyses and evaluations by the DBNPS are consistent in ensuring the continued safe operation of the DBNPS. As stated previously, these plans, commitments, evaluations and analyses ensure radiation exposure to workers meets as-low-as-reasonably-achievable (ALARA) objectives and are consistent with the continued safe and prudent operation of the plant.

Attachments 2 and 4 to this letter are considered to be restricted by Framatome ANP and the FENOC, respectively, and are requested to be withheld from public disclosure pursuant to 10 CFR 2.790. Affidavits prepared by Framatome ANP and the FENOC complying with the requirements of 10 CFR 2.790 are provided in Attachments 3 and 5 citing the basis for Attachments 2 and 4, respectively, to be withheld from public disclosure.

If you have any questions or require further information, please contact Mr. David H. Lockwood, Manager-Regulatory Affairs, at (419) 321-8450.

Very truly yours,



Enclosure and Attachments

cc: J. E. Dyer, Regional Administrator, NRC Region III
D.V. Pickett, DB-1 Backup NRC/NRR Project Manager
S. P. Sands, DB-1 NRC/NRR Project Manager
D. S. Simpkins, DB-1 Acting Senior Resident Inspector
Utility Radiological Safety Board

SUPPLEMENTAL INFORMATION

IN RESPONSE TO

NRC BULLETIN 2001-01

FOR

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NUMBER 1

This letter is submitted pursuant to 10 CFR 50.54(f) and contains supplemental information concerning the response (Serial Number 2371, dated September 4, 2001) to NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," for the Davis-Besse Nuclear Power Station, Unit Number 1.

I, Guy G. Campbell, state that (1) I am Vice President - Nuclear of the FirstEnergy Nuclear Operating Company, (2) I am duly authorized to execute and file this certification on behalf of the Toledo Edison Company and The Cleveland Electric Illuminating Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

By _____
Guy G. Campbell, Vice President-Nuclear

Affirmed and subscribed before me this 30th day of November, 2001.

_____
Notary Public, State of Ohio

Nora L. Flood
My Commission expires September 4, 2002.

Response to NRC Requests for Additional Information as Discussed at November 28, 2001 Meeting

Request 1:

Explain any compensatory actions that are credited in the PSA and their effect on the CDF. Include:

a. The error probabilities associated with the operator actions.
b. The compensatory actions taken when going from one risk category to another in the daily risk monitor.

Response:

a. No compensatory actions were credited in the PSA analysis results as presented at the meeting on November 28, 2001. However, several of the proposed actions would have a measurable impact on the CDF. Table 1 identifies compensatory actions that are planned which could have a measurable effect on the PSA analysis. The impact on risk from a possible CRDM nozzle failure and the impact on the baseline core damage frequency are both identified in this table.

Table 1 – Compensatory Actions and Effect of Risk

Compensatory Action	**Impact of Compensatory Action**	**Core Damage Frequency Reduction (percent)**
Deferral of Maintenance on High Pressure Injection and Low Pressure Injection for remainder of operating cycle to 13 RFO	Conditional Core Damage Probability for CRDM Nozzle Crack	17%
	Baseline Core Damage Frequency	6%
Dedicated Operator for Initiation of Low Pressure Recirculation	Conditional Core Damage Probability for CRDM Nozzle Crack	17%
	Baseline Core Damage Frequency	1%
Reduction in Hot Leg Temperature	Conditional Core Damage Probability for CRDM Nozzle Crack	16%

Table 2 shows the cumulative impact of the compensatory actions on CDF, LERF and conditional core damage probability (CDP) crediting several different inspection scopes.

Table 2 – Cumulative Impact of Compensatory Actions

Case	CDF		LERF		CDP	
	No Actions	With Actions	No Actions	With Actions	No Actions	With Actions
Partial Inspection 10, 11 and 12 RFO	1.2E-6	5.7E-7	1.7E-9	8.4E-10	1.5E-7	7.0E-8
Partial Inspection 10 RFO	2.2E-6	1.1E-6	3.3E-9	1.6E-9	2.7E-7	1.4E-7
No Inspections	1.5E-5	7.0E-6	2.2E-8	1.0E-8	1.9E-6	8.6E-7

b. The DBNPS procedure, NG-DB-00001, On-line Risk Management, (Attachment 7 to this letter) is used to manage risk during normal operational activities involving testing and maintenance. Normally, the Risk Management Process is applied to planned activities for the week to identify the activities that can impact risk. During each day, a Risk Category is assigned for the duration of the maintenance or testing activities, or multiple system activities, that can impact the risk to plant safety. The categories are assigned a color (green, yellow, or orange) based on the impact of the activities on the baseline core damage frequency (CDF). That is, for activities that would result in a CDF on the order of less than 2 times the baseline risk, a category of green is assigned. Based on this risk level, no specific risk management actions are required. If the activities result in a CDF of greater than 2 times the baseline CDF (category of yellow, orange or red), management actions are intensified to minimize the time in the category and reduce any potential for inadvertent increase in CDF. These actions are detailed in Attachment 3 of NG-DB-00001.

The DBNPS proposes to maximize the availability of the plant's redundant critical safety systems (Makeup, Auxiliary Feedwater, High Pressure Injection, Low Pressure Injection, Decay Heat Removal, and Emergency Diesel Generators) until commencement of 13RFO, thereby ensure the impact on risk is maintained at a low level. This will be accomplished by minimizing on-line maintenance and testing of

critical safety systems that can prudently be deferred until after the plant is shut down. The adjustment in work planning and scheduling to maximize the cited systems' availability will be implemented by December 4, 2001. As seen by the response to Request 1.a above, the reduction in risk that can be accomplished by this deferral is substantial.

Request 2:

Perform the PSA for the Upper (95%) Projection 1.5 Shape Parameter without any credit for the 1998 and 2000 inspections, and provide the results.

Response:

Table 3 shows the risk results of the upper 95% projection with 1.5 shape factor assuming several different inspection scopes.

Table 3 – Results for Upper 95% Projections with 1.5 Shape Factor

Case	CDF		LERF		CDP	
	No Actions	With Actions	No Actions	With Actions	No Actions	With Actions
Partial Inspection 10, 11 and 12 RFO	5.6E-6	2.7E-6	8.3E-9	4.0E-9	6.9E-7	3.3E-7
Partial Inspection 10 RFO	1.1E-5	5.2E-6	1.6E-8	7.8E-9	1.4E-6	6.4E-7
No Inspections	7.0E-5	3.4E-5	1.0E-7	5.0E-8	8.6E-6	4.2E-6

Request 3:

Explain what the basis is for the reduction in the CDF by a factor of 30 from that provided to the NRC staff during the meeting on November 14, 2001 compared to that provided at the meeting on November 28, 2001.

Response:

As discussed in the meeting on November 28, 2001, several changes were made to the PSA model in response to the most recent industry information and comments from previous meetings. The following changes were incorporated:

1. Initiating Event Frequency – The constant rate initiation event frequency was replaced with a Weibull cumulate probability distribution.

2. Probability of Circumferential Cracking – Additional industry data from B&W plant CRDM nozzle inspections was included in the analysis.

3. Plant-Specific Through-Wall Stresses – The revised analysis replaced a generic through wall stress profile with the Dominion Engineering through wall stress profile (Attachments 2 and 4).

The stress profile and stress intensity factor solutions used in the Monte Carlo analysis for the time dependent probability of failure analysis are provided in Attachment 2. These values are considered to be proprietary information and should be withheld from public disclosure. Attachment 3 herein contains the affidavit prepared pursuant to 10 CFR 2.790 that provides Framatome ANP's basis for the proprietary nature of the document being requested to be withheld from public disclosure.

The DBNPS-specific CRDM nozzle stress analysis is provided in DBNPS Document Number 01-0761 (Dominion Engineering Calculation No. C-3206-00-1) in Attachment 4. This calculation contains Restricted information and should be withheld from public disclosure. Attachment 5 herein contains the affidavit prepared pursuant to 10 CFR 2.790 that provides the basis for the Restricted nature of the documents being requested to be withheld from public disclosure.

Request 4:

Provide the inspection history of other plants' nozzles where no axial or circumferential leaks have been identified on the same material heats used in 64 of the Davis-Besse nozzles.

Response:

The inspection history of CRDM nozzle material heats that are the same as those installed at the DBNPS is provided in Attachment 5, Framatome ANP Document 51-5015818-00, "Davis-Besse CRDM Nozzle Heat Information." This document is considered to be proprietary information and should be withheld from public disclosure. Attachment 3 herein contains the affidavit prepared pursuant to 10 CFR 2.790 that provides Framatome

ANP's basis for the proprietary nature of the document being requested to be withheld from public disclosure.

Request 5:

Provide a further discussion of the inspections proposed to be conducted.

Response:

The following inspections will be performed:

A 100 % qualified visual examination of the reactor pressure vessel (RPV) head will be performed. The DBNPS defines a qualified visual examination as follows:

The DBNPS has determined that five elements are necessary to have a qualified visual examination.

1. Qualified personnel

2. Equipment capable of obtaining the resolution required to perform the inspection.

3. A procedure to govern the inspection activities.

4. Analysis showing that the nozzle to RPV head annulus area clearances are sufficient to show detectable leakage.

5. The nozzle to RPV head annulus area is sufficiently un-obscured to allow leakage to be detected.

Nozzles 1, 2, 3, and 4 have been conservatively analyzed to not meet the requirements of element number four, which requires a sufficient clearance to show detectable leakage. Since these nozzles do not meet this requirement, supplemental examination of each of these nozzles will be required. If any other nozzle to RPV head annulus area is found to be obscured from visual examination during the qualified visual examination to be performed during the DBNPS 13RFO, supplemental examinations will also be performed on each of these nozzles.

The current plans for scope of supplemental examinations would be the performance of ultrasonic testing of each nozzle requiring supplemental examination. The ultrasonic inspection would look for both axial and circumferential cracks throughout the full thickness of the nozzle material. The length of nozzle to be inspected is from the bottom of the nozzle up to just above the high point of the weld.

In addition to the qualified visual examination, the DBNPS is proposing to perform the following inspections to provide additional information to the industry.

1. Perform ultrasonic testing of all 69 nozzles. The ultrasonic inspection would look for both axial and circumferential cracks throughout the full thickness of the nozzle material. The length of nozzle to be inspected is from the bottom of the nozzle up to just above the high point of the weld.

2. Perform dye penetrant testing of the J-Groove weld and outside diameter of the nozzle below the weld on any nozzles that have a verified leak path from the CRDM nozzle to RPV head annulus area.

3. Flaws will be characterized through destructive examination, consistent with ALARA principles.

In addition to the ultrasonic and dye penetrant testing, the DBNPS is working with its repair vendor to develop a qualified surface examination method for the J-groove weld. If a qualified and reliable method is available for 13RFO, the DBNPS will perform a surface examination of the 69 J-groove welds.

In addition, a meeting will be held with the NRC staff to present the planned inspection and repair activities to be conducted during 13RFO prior to February 16, 2001. However, the DBNPS staff anticipates ongoing communication during the period up to 13RFO.

Since this is an emerging issue with evolving information regarding PWSCC cracking of RPV nozzles, the DBNPS is continuing to work with industry groups such as the Electric Power Research Institute (EPRI) Material Reliability Program (MRP), as well as the NRC, to provide information. This includes sharing information on samples of boron residue that has leaked from the annulus of an RPV nozzle, if any leaking nozzles are found. In addition, the DBNPS will share information it obtains on CRDM nozzles containing PWSCC cracking, if applicable. As required, the scope of this additional information will be balanced against the application of ALARA principles for dose.

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License Number NPF-3
Serial Number 2747
Attachment 3

Framatome ANP Affidavit for
Document 51-5015816-00 (Attachment 2)
And
Document 51-505818-00 (Attachment 6)
(3 Pages Follow)

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

1. My name is Jerald S. Holm. I am Manager, Product Licensing, for Framatome ANP ("FRA-ANP"), and as such I am authorized to execute this Affidavit.

2. I am familiar with the criteria applied by FRA-ANP to determine whether certain FRA-ANP information is proprietary. I am familiar with the policies established by FRA-ANP to ensure the proper application of these criteria.

3. I am familiar with the FRA-ANP documents 51-5015818-00 and 51-5015816-00 which are referred to herein as "Document." Information contained in this Document has been classified by FRA-ANP as proprietary in accordance with the policies established by FRA-ANP for the control and protection of proprietary and confidential information.

4. This Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by FRA-ANP and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in this Document as proprietary and confidential.

5. This Document has been made available to the U.S. Nuclear Regulatory Commission in confidence with the request that the information contained in the Document be withheld from public disclosure.

6. The following criteria are customarily applied by FRA-ANP to determine whether information should be classified as proprietary:

(a) The information reveals details of FRA-ANP's research and development plans and programs or their results.

(b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.

(c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for FRA-ANP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for FRA-ANP in product optimization or marketability.

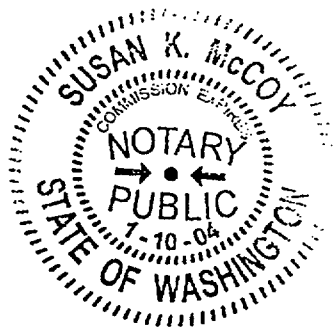
(e) The information is vital to a competitive advantage held by FRA-ANP, would be helpful to competitors to FRA-ANP, and would likely cause substantial harm to the competitive position of FRA-ANP.

7. In accordance with FRA-ANP's policies governing the protection and control of information, proprietary information contained in this Document has been made available, on a limited basis, to others outside FRA-ANP only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. FRA-ANP policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

9. The foregoing statements are true and correct to the best of my knowledge, information, and belief.

SUBSCRIBED before me this 29th day of November, 2001.



Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/10/04

Docket Number 50-346
License Number NPF-3
Serial Number 2747
Attachment 5

Affidavit of Steven P. Moffitt

(2 Pages Follow)

AFFIDAVIT OF STEVEN P. MOFFITT

A. My name is Steven P. Moffitt. I am Director–Technical Services for FirstEnergy Nuclear Operating Company ("FENOC") at the Davis-Besse Nuclear Power Station, Unit 1 ("DBNPS-1"), and as such, I am authorized to execute this Affidavit.

B. I am familiar with the criteria applied by FENOC to determine whether certain FENOC information is proprietary and I am familiar with the procedures established with FENOC to ensure the proper application of these criteria.

C. I am familiar with the information in FENOC letter Serial Number 2747, dated November , 2001. Information contained in this letter related to DBNPS-1 Stress Calculations for the Control Rod Drive Mechanism (CRDM) Nozzles performed by Dominion Engineering, Inc. (DBNPS Document No. 01-0761, Dominion Engineering , Inc Calculation No. C-3206-00-1) have been classified by FENOC as **Restricted** in accordance with the policies established by FENOC for the control and protection of confidential and proprietary information.

D. This information is being made available to the U.S. Nuclear Regulatory Commission in confidence with a statement that it is **Restricted** information and a request that the information related to the refueling outage date be withheld from public disclosure.

E. The following information is provided to demonstrate that the provisions of the Code of Federal Regulations, Title – Energy, Part 2, Section 790 have been considered in the confidential and commercial classification of this information as **Restricted:**

(i) The DBNPS-1 Stress Calculations for the CRDM Nozzles have been held in confidence by FENOC.

(ii) The DBNPS-1 Stress Calculations for the CRDM Nozzles contains information that is considered to be of a proprietary and confidential nature and is of the type customarily held in confidence by FENOC and not made available to the public. I am aware that other companies regard information of the kind contained in this document as proprietary and confidential.

(iii) The DBNPS-1 Stress Calculations for the CRDM Nozzles are being transmitted to the U.S. Nuclear Regulatory Commission in confidence with the request that the information contained within the document be withheld from public disclosure.

(iv) The DBNPS-1 Stress Calculations for the CRDM Nozzles is not available in public sources.

(v) The DBNPS-1 Stress Calculation for CRDM Nozzles is contains confidential and technical information regarding a process, methodology,

or component, the application which results in a competitive advantage to FENOC. This information can not be easily acquired by others.

F. In accordance with FENOC's policies governing the protection and control of information, this **Restricted** information has been made available, on a limited basis, outside FENOC only as required and under suitable non-disclosure agreement providing limited use of the information.

G. FENOC requires that **Restricted** information contained the DBNPS-1 Stress Calculations for the CRDM Nozzles performed by Dominion Engineering, Inc. (DBNPS Document No. 01-0761, Dominion Engineering , Inc Calculation No. C-3206-00-1) be kept in a secured file or area and distributed only on a need to know basis.

H. The foregoing statements are true and correct to the best of my knowledge, information, and belief.

By: Steven P. Moffitt
Steven P. Moffitt

Affirmed and subscribed before me this 30th day of November, 2001.

Nora L. Flood
Notary Public, State of Ohio
Nora L. Flood
My Commission expires September 4, 2002.