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James H. Lash
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January 18, 2005
L-05-013

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

Subject: Beaver Valley Power Station, Unit Nos. 1 and 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Response to Request for Additional Information in Support of LAR Nos. 306 and 176 Emergency Diesel Generator Allowed Outage Time Extension (TAC Nos. MC3331 and MC3332)

This letter provides the FirstEnergy Nuclear Operating Company (FENOC) response to an NRC request for additional information (RAI) dated January 5, 2005, relating to FENOC letter L-04-072 dated May 26, 2004.

FENOC letter L-04-072 submitted License Amendment Request (LAR) Nos. 306 and 176 for Beaver Valley Power Station (BVPS) Unit Nos. 1 and 2, respectively. These amendment requests proposed changes to the BVPS Unit Nos. 1 and 2 technical specifications which would extend the current emergency diesel generator (EDG) allowed outage time to 14 days, remove the surveillance requirement for performing EDG maintenance inspections from the technical specifications, and revise the EDG technical specification requirements for restoring EDG fuel oil properties to within limits.

The FENOC response to the request for additional information is provided as Attachment A to this letter. New commitments contained within this submittal are described in Attachment B.

This information does not change the evaluations or conclusions of the No Significant Hazards Consideration presented in FENOC letter L-04-072. If there are any questions concerning this matter, please contact Mr. Henry L. Hegrat, Supervisor - Licensing, at 330-315-6944.

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I declare under penalty of perjury that the foregoing is true and correct. Executed on January 18, 2005.

Sincerely,

James H. Lash

Attachments:

Response to Request for Additional Information Related to BVPS-1 and 2 EDG Allowed Outage Time

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. P. C. Cataldo, NRC Sr. Resident Inspector
Mr. S. J. Collins, NRC Region I Administrator
Mr. D. A. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

Attachment A

Letter L-05-013

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
RELATED TO FIRSTENERGY NUCLEAR OPERATING COMPANY
BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2
EMERGENCY DIESEL GENERATOR ALLOWED OUTAGE TIME
DOCKET NOS. 50-334 AND 50-412

By letter dated May 26, 2004, as supplemented October 29 and December 3, 2004, FENOC, the licensee, proposed changes to BVPS-1 and 2 Technical Specifications to extend AOTs for the EDGs from 72 hours to 14 days to restore an inoperable EDG to operable status. In order for the Nuclear Regulatory Commission (NRC) staff to complete its review of the proposed change, the following information is needed.

1. **The licensee's October 29, 2004, initial response to question No. 3 of the NRC staff's first-round RAI, indicated that the BVPS-1 and 2 probabilistic risk assessment (PRA) credits repair of an EDG that was unavailable or failed in a core damage sequence. The license amendment that is being evaluated changes the length of time an EDG may be out of service and allows the manufacturer's recommended maintenance, which is currently performed during shutdown, to be done online. As indicated in the October 29, 2004, RAI response to question No. 6, Table 2, the mean time-to-repair (MTTR) is expected to increase from 12.8 hours to 59.7 hours (BVPS-1) and from 9.25 hours to 43.17 hours (BVPS-2). Please provide the following information (see Regulatory Guide (RG) 1.177, Section 2.3.4.2).**

   a. **Calculate the change in BVPS-1 and 2 core damage frequency (CDF) and large early release frequency using EDG recovery curves updated to reflect the anticipated MTTR after the change in AOT. Alternately, a bounding sensitivity may be performed assuming no recovery or repair is credited for the portion of the EDG unavailability attributable to performing the manufacturer's recommended maintenance online instead of shutdown.**

      Response:
      As stated in the response to Question No. 3 of the RAI dated October 29, 2004 there were two sets of diesel generator recovery probability curves, one for the recovery of one out of one EDG, and one for the recovery of one out of two EDGs. Each set of these EDG non-recovery curves consisted of a 5^{th}, 50^{th}, and 95^{th} percentile curve, and were provided in Attachment C, Figures 1 and 2 of the previous RAI response.

      The baseline electric power recovery model assumed that the EDG non-recovery probability distributions were weighted by 0.1, 0.8 and 0.1 for the 95^{th}, 50^{th}, and 5^{th}

percentile curves. As stated in the previous RAI response for the single EDG non-recovery curves, the 95th percentile curve assumed that 20 percent of the time the EDG was non-recoverable due to maintenance, the 50th percentile curve assumed that this EDG maintenance unavailability was recoverable 2 hours after restoration began, and the 5th percentile curve assumed that there was no EDG maintenance, so the EDG was recoverable after personnel responded. These values were bounding for both the current and extended AOT cases, so they were not adjusted in the analysis supporting the LAR submittal or the previous RAI response.

Although this RAI requests that the increased MTTR from 12.8 hours to 59.7 hours (BVPS-1) and from 9.25 hours to 43.17 hours (BVPS-2) be reflected in the EDG recovery curves, these increased times will not necessarily impact the electric power recovery model for the following reasons:

- The increase in the MTTR values were artificially inflated by the ratio of the extended 14 day AOT to the current 3 day AOT (as shown in Table 2 of the prior RAI response) to account for the decrease in urgency of repairing the EDG given the extended AOT (e.g., work around the clock may not be needed). If an actual emergent condition were to arise (i.e., SBO condition) the urgency in repairing the EDG will be brought to the forefront and work would continue until the EDG is repaired. In fact, the MTTR may actually be less than those hours shown in Table 2.

- Additionally, EDG recovery is not credited after the lesser of time to core uncovery or depletion of the EDG support battery following the EDG failure (offsite power is assumed to fail at time zero). Since in most SBO scenarios, the EDG support batteries will deplete (2.6 hours for BVPS-1 and 3.5 hours for BVPS-2) prior to core uncovery, only the cumulative probability of recovering an EDG before 2.6 hours (BVPS-1) and 3.5 hours (BVPS-2) is credited and no additional EDG recovery probability is given after this time. Therefore, in most SBO cases, the EDG non-recovery probability is about 50% (BVPS-1) and 38% (BVPS-2) for recovering 1 out of 2 EDGs, and about 60% (BVPS-1) and 52% (BVPS-2) for recovering 1 out of 1 EDGs, based on the EDG non-recovery factors at 2.6 hours (BVPS-1) and 3.5 hours (BVPS-2). These EDG non-recovery probabilities can be seen in the Attachment C, Figures 1 and 2 of the previous response. At BVPS-1, since both the current and increased AOT expected MTTR values for a failed EDG are longer than 2.6 hours (12.8 hrs and 59.7 hrs, respectively), the EDG non-recovery probabilities are fixed at the approximately 50 percent and 60 percent probabilities (Figures 1 and 2, respectively) and are not impacted in the electric power recovery (EPR) model. At BVPS-2, both the current and increased AOT expected MTTR values for a failed EDG are also longer than 3.5 hours (9.25 hrs and 43.17 hrs, respectively), so the EDG non-recovery probabilities are fixed at the approximately 38 percent and 52 percent probabilities (Figures 1 and 2, respectively) and are not impacted in the EPR model. If core uncovery occurs prior to the EDG support battery depletion, these EDG non-recovery probabilities would be even higher.

However, in order to show a change in risk due to the extended EDG AOT the EDG non-recovery curves were revised as follows:

For the single EDG non-recovery curves (Figure 1), the 95th percentile curve was set to 1.0 for all times to represent that any EDG maintenance accounted for in Table 2 of the previous RAI response is non-recoverable since it would take longer than the support battery depletion time to recover it. The 50th percentile curve was not adjusted, since it would be applicable to the test activities shown in Table 1 of the previous RAI response (i.e., the EDG could be recovered prior to battery depletion). Similarly, no adjustments were made to the 5th percentile curve, since it is applicable to the times when there is no maintenance or testing performed on the EDG.

For the one out of two EDG non-recovery curves (Figure 2), the 95th percentile curve already accounts for only one EDG being recoverable, so no adjustments were made. However, sensitivity cases also set this curve to 1.0 for all times. Likewise, when there is no maintenance or testing performed on the EDGs, the 5th percentile curve was used without any further adjustments, since both EDGs would be recoverable. Since the 50th percentile curve is estimated from the 5th and 95th percentile curves, it too was used without any further adjustments.

Furthermore, for this RAI response the assumed EDG non-recovery probability distribution weights were adjusted to represent the fraction of the year that each curve is applied.

BVPS-1

For the Case 1 average baseline (current EDG AOT) analysis, there are 29.92 hours when the EDG is non-recoverable due to maintenance (Table 2 of prior RAI), so the 95th percentile curve was weighted to 0.0034 (29.92 hrs / 8760 hrs). There are also 37.67 hours when the EDG is recoverable only after 2 hours due to testing (Table 1 of prior RAI), so the 50th percentile curve was weighted to 0.0043 (37.67 hrs / 8760 hrs). For the remainder of the year there is no testing or maintenance, so the 5th percentile curve weight was adjusted to 0.9923 (1.0 - 0.0034 – 0.0043). In addition to these changes to the EDG non-recovery curves, the EDG unavailability fractions used in electric power recovery model to calculate the conditional probability of onsite power system failures in a 24-hour mission time, were adjusted to reflect the current EDG AOT unavailability of 0.348%.

For the Case 2 average extended EDG AOT analysis, there are 214.32 hours when the EDG is non-recoverable due to maintenance (Table 2 of prior RAI), so the 95th percentile curve was weighted to 0.0245 (214.32 hrs / 8760 hrs). There are still 37.67 hours when the EDG is recoverable only after 2 hours due to testing (Table 1 of prior RAI), so the 50th percentile curve was weighted to 0.0043 (37.67 hrs / 8760 hrs). For the remainder of the year there is no testing or maintenance, so the 5th percentile curve weight was adjusted to 0.9712 (1.0 - 0.0245 – 0.0043). Likewise, for Case 2 the EDG unavailability fractions used to calculate the onsite power conditional failure probabilities were adjusted to 1.79% to reflect the expected EDG unavailability with the extended AOT.

BVPS-2

For the Case 1 average baseline (current EDG AOT) analysis, there are 19.97 hours when the EDG is non-recoverable due to maintenance (Table 2 of prior RAI), so the 95th percentile curve was weighted to 0.002 (19.97 hrs / 8760 hrs). There are also 10.5 hours when the EDG is recoverable only after 2 hours due to testing (Table 1 of prior RAI), so the 50th percentile curve was weighted to 0.001 (10.5 hrs / 8760 hrs). For the remainder of the year there is no testing or maintenance, so the 5th percentile curve weight was adjusted to 0.997 (1.0 - 0.002 – 0.001). In addition to these changes to the EDG non-recovery curves, the EDG unavailability fractions used in electric power recovery model to calculate the conditional probability of onsite power system failures in a 24-hour mission time, were adjusted to reflect the current EDG AOT unavailability of 0.77%.

For the Case 2 average extended EDG AOT analysis, there are 146.21 hours when the EDG is non-recoverable due to maintenance (Table 2 of prior RAI), so the 95th percentile curve was weighted to 0.017 (146.21 hrs / 8760 hrs). There are still 10.5 hours when the EDG is recoverable only after 2 hours due to testing (Table 1 of prior RAI), so the 50th percentile curve was weighted to 0.001 (10.5 hrs / 8760 hrs). For the remainder of the year there is no testing or maintenance, so the 5th percentile curve weight was adjusted to 0.982 (1.0 - 0.017 – 0.001). Likewise, for Case 2 the EDG unavailability fractions used to calculate the onsite power conditional failure probabilities were adjusted to 2.88% to reflect the expected EDG unavailability with the extended AOT.

The results of these electric power recovery model changes on the BVPS-1 and BVPS-2 core damage frequency and large early release frequency are provided in the Revised Tables 1 and 2. All cases were quantified using a truncation frequency of 1E-12.

As can be seen in the Revised Table 2 results, all but the change in CDF at BVPS-2 are below the Regulatory Guide 1.174 acceptance guidelines of 1E-6 per reactor year for change in CDF and 1E-7 per reactor year for change in LERF; thereby demonstrating a very small increase in plant risk.

Since the Revised Table 2 change in CDF at BVPS-2 is still above 1E-6 per reactor year, Table 3 was also revised using the results provided in the response to Question 1.b of this RAI. Based on the Revised Table 3 results, the increase in the BVPS Unit 2 CDF based on the expected time in the preventive and corrective alignments is:

Delta CDF = (CDF expected time in maintenance. alignments) - (CDF for Baseline)
= (3.35E-05) - (3.27E-05)
= 8.37E-07 per reactor year

Based on the above revised Delta CDF results, the calculated increase in CDF for BVPS-2 using the expected time in preventive and corrective maintenance alignments is also still less than the Regulatory Guide 1.174 acceptance guideline of 1E-6 per reactor year for demonstrating a very small increase in plant risk.

Revised Table 1
CDF and LERF Results for Sensitivity Cases

Case	BVPS-1		BVPS-2	
	CDF (per year)	LERF (per year)	CDF (per year)	LERF (per year)
Revised Case 1 Baseline (Current EDG Unavailability)	2.34E-05	1.03E-06	3.27E-05	1.12E-06
Case 1 Baseline (Current EDG Unavailability)	2.34E-05	1.03E-06	3.27E-05	1.12E-06
Change in Case 1	-1.79E-08	0.00E+00	-3.37E-08	-2.00E-11
Revised Case 2 (14 day AOT Estimated Unavail.)	2.36E-05	1.03E-06	3.41E-05	1.12E-06
Case 2 (14 day AOT Estimated Unavail.)	2.36E-05	1.03E-06	3.42E-05	1.12E-06
Change in Case 2	-1.63E-08	0.00E+00	-3.05E-08	-2.00E-11
Revised Case 3 (One EDG in PM Alignment)	2.45E-05	1.05E-06	4.39E-05	1.06E-06
Case 3 (One EDG in PM Alignment)	2.45E-05	1.05E-06	4.29E-05	1.06E-06
Change in Case 3	1.78E-08	1.30E-10	9.73E-07	2.63E-09
Revised Case 4 (One EDG in CM Alignment)	2.67E-05	1.05E-06	7.95E-05	1.09E-06
Case 4 (One EDG in CM Alignment)	2.63E-05	1.05E-06	7.60E-05	1.07E-06
Change in Case 4	4.87E-07	5.90E-10	3.53E-06	2.10E-08
Revised Case 5 (One EDG in CM Alignment) (One Offsite Power Circuit Unavail.)	3.37E-04	1.08E-05	2.01E-03	1.64E-06
Case 5 (One EDG in CM Alignment) (One Offsite Power Circuit Unavail.)	3.37E-04	1.08E-05	2.01E-03	1.46E-06
Change in Case 5	4.18E-07	6.00E-10	3.59E-06	1.81E-07
Revised Case 6 (One EDG in CM Alignment) (One Offsite Power Circuit Unavail.) (No Common Cause)	3.24E-04	1.09E-05	1.67E-03	1.36E-06
Case 6 (One EDG in CM Alignment) (One Offsite Power Circuit Unavail.) (No Common Cause)	3.24E-04	1.09E-05	1.67E-03	1.34E-06
Change in Case 6	2.02E-07	2.00E-10	9.00E-07	2.15E-08

Revised Table 2
Change in CDF and LERF Post AOT Extension

Risk Measure	BVPS-1 Increase over Baseline	BVPS-2 Increase over Baseline
Revised Delta CDF	2.10E-07 / reactor yr	1.45E-06 / reactor yr
Delta CDF	2.08E-07 / reactor yr	1.45E-06 / reactor yr
Change in Delta CDF	1.60E-09 / reactor yr	3.20E-09 / reactor yr
Revised Delta LERF	5.00E-10 / reactor yr	7.00E-11 / reactor yr
Delta LERF	5.00E-10 / reactor yr	7.00E-11 / reactor yr
Change in Delta LERF	0.00E+00 / reactor yr	0.00E+00 / reactor yr

Revised Table 3
BVPS-2 Conditional CDP
Using Expected Time in Maintenance Alignments

Case	Alignment Description	Conditional CDF (per yr)	Hrs	CCDP
Corrective Maint. (Case 4)	One EDG in Corrective Maintenance	7.95E-05	86.4	7.84E-07
Preventive Maint. (Case 3)	One EDG in Preventive Maintenance	4.39E-05	206.0	1.03E-06
Surveillances (Case 4)	One EDG in routine surveillance testing	7.95E-05	21.0	1.91E-07
Baseline (Case 1)	Base case assumptions for remainder of year	3.27E-05	8446.6	3.15E-05
			CCDP Summation:	3.35E-05

b. Calculate the change in BVPS-1 and 2 incremental conditional core damage probability and incremental conditional large early release probability assuming no recovery or repair is credited for the out-of-service EDGs.

Response:
The incremental conditional core damage probabilities and incremental conditional large early release probabilities assuming no recovery or repair is credited for the out-of-service EDGs, while in either preventive or corrective maintenance, are presented in Revised Tables 4 and 5. The revised values in these tables were calculated using the values presented in Revised Table 1, above, and the methodology provided in the response to the prior RAI dated October 29, 2004 Question No. 10.

Since the BVPS-2 conditional LERF values calculated with an EDG in preventive and corrective maintenance are still less than the baseline LERF (since the October 29, 2004 response to RAI Question No. 11.c still applies), the revised results are considered to be risk neutral with respect to ICLERP.

Revised Table 4
ICCDP and ICLERP during EDG Preventive Maintenance

	BVPS-1		BVPS-2	
Maintenance Duration	**ICCDP**	**ICLERP**	**ICCDP**	**ICLERP**
Revised Maximum Expected Duration (Unit 1-168 hrs) (Unit 2-264 hrs)	2.12E-08	4.15E-10	3.38E-07	Risk Neutral
Maximum Expected Duration (Unit 1-168 hrs) (Unit 2-264 hrs)	2.06E-08	4.03E-10	3.07E-07	Risk Neutral
Change in Maximum Expected Duration	6.85E-10	1.24E-11	3.03E-08	7.99E-11
Revised Full 14 Day AOT	4.25E-08	8.31E-10	4.30E-07	Risk Neutral
Full 14 Day AOT	4.11E-08	8.07E-10	3.91E-07	Risk Neutral
Change in Full 14 Day AOT	1.37E-09	2.38E-11	3.86E-08	1.02E-10

Revised Table 5
ICCDP and ICLERP during EDG Corrective Maintenance

	BVPS-1		BVPS-2	
	ICCDP	**ICLERP**	**ICCDP**	**ICLERP**
Revised Corrective Maintenance	5.01E-08	8.58E-10	5.39E-07	Risk Neutral
Corrective Maintenance	4.75E-08	8.52E-10	4.93E-07	Risk Neutral
Change in Corrective Maintenance	2.65E-09	6.24E-12	4.56E-08	1.53E-10

2. **In Section 4.3.2 of the May 26, 2004, license amendment request, Tier 3 credits the BVPS-1 and 2, Maintenance Rule Program (Title 10 of the Code of Federal Regulations, Section 50.64(a)(4)). The licensee states: "The risk assessment is performed ... using the BVPS PRA Models and the Safety Monitor Program to calculate CDF for actual plant conditions." Is the EDG recovery or repair credited in the Maintenance Rule risk assessment when the plant configuration includes an out-of-service EDG? If the answer is "yes," describe how the Maintenance Rule Program will correctly assess and manage risk during online performance of the manufacturer's recommended maintenance, since the EDG will not be recoverable until the maintenance evolution is concluded (see RG 1.177, Section 2.3.3).**

   Response:
   Currently, the BVPS PRA models and the Safety Monitor Program to calculate CDF for actual plant conditions does include EDG recovery or repair credited in the (a)(4) risk assessment when the plant configuration includes an out-of-service EDG. To correctly assess and manage risk during online performance of the manufacturer's recommended maintenance (since the EDG will not be recoverable until the maintenance evolution is concluded) the Safety Monitor Program will be revised. This revision will include utilizing the Indirect Effects Module in Safety Monitor to set the baseline electric power recovery (Top Event RE) split fraction values to the appropriate split fraction values corresponding to either one EDG recoverable or zero EDGs recoverable, whenever the manufacturer's recommended maintenance activities are performed on-line.

3. **Based on the October 29, 2004, RAI response to question Nos. 11.b and 11.c, it appears that anomalous results can occur because the BVPS-1 and 2 PRA models do not apply recovery and repair credit consistently across scenarios. Specific examples are the credits for refueling water storage tank (RWST) refill and fast bus transfer repair. While this approach may be reasonable for an average risk model, these assumptions may mask the actual risk impact of the requested change.**

   Please identify the key assumptions in the PRA model and their impact on the risk assessment of the requested change in EDG AOT. Provide sensitivity studies of the risk metrics with no credit for RWST refill and fast bus transfer repair. Include a sensitivity analysis for any other key assumptions identified or provide a basis for concluding that the key assumptions will not affect the risk assessment significantly (see RG 1.174, Section 2.2.3.3).

   Response:
   The key assumptions made in the PRA models that significantly impact the EDG extended AOT and their impact on the risk assessments are as follows:

   - At BVPS-1, the PRA model assumes that interfacing systems LOCA events can be mitigated, given that a HHSI pump can provide continued RCS inventory makeup from the RWST. The BVPS-2 PRA model does not credit any such mitigating actions to

reduce the interfacing systems LOCA events, because the initiating event frequency is almost 2 orders of magnitude lower than Unit 1's, due to system arrangements. Therefore, the impact to LERF at BVPS-1 is much more sensitive to the EDG dependency than BVPS-2, as was addressed in the October 29, 2004 response to the previous RAI Question No. 11.b.

- Repair/replacement of the fast bus transfer breakers was only credited when offsite power was available and both EDGs have failed. If one EDG was successful in providing AC power to the emergency bus, the recovery of the fast bus transfer breakers was not pursued in the model, since power to one train of ESF equipment was available and the fast bus transfer breaker recovery would be a longer-term action. This does not significantly impact the CDF results as shown in Table 1 of the LAR submittal and Revised Table 1 in this RAI response. However, this does slightly impact the BVPS-2 LERF results, as was addressed in the October 29, 2004 response to the previous RAI Question No. 11.c.

- If core damage does not occur within 48 hours following the loss of seal cooling, the BVPS SBO sensitivity cases using MAAP show that RCS conditions (temperature, pressure, and level) are controlled and safety injection recirculation is not required. Therefore, electric power recovery of some type is assumed to be a guaranteed success for these sequences, and they are not binned to a core damage end state in the PRA models. The underlying assumption in this approach is that there would be sufficient time to implement recovery strategies from the Beaver Valley Severe Accident Management Guidelines (SAMGs) prior to the onset of core damage. This assumption only impacts the BVPS-1 risk results, as there were no such sequences at BVPS-2 due to the turbine-driven auxiliary feedwater pump failure following the steam generator overfill condition caused by the loss of steam generator level instrumentation after the batteries deplete. At BVPS-1, the dedicated auxiliary feedwater pump can be used to remove decay heat, and is not impacted by steam generator overfill conditions. Therefore, the baseline RCP seal LOCA contribution at Unit 2 is approximately 4E-06 higher than at Unit 1.

- Other PRA modeling key assumptions that impacted the EDG AOT extension risk results are addressed in Attachment B of the October 29, 2004 response to the previous RAI.

The sensitivity study results of the risk metrics, given no credit for makeup to the RWST and fast bus transfer breaker repair, are provided in Tables 1A, 2A, 4A, and 5A. A review of the CDF and LERF dominant sequences for all of the EDG sensitivity cases did not reveal any other PRA modeling assumptions that would significantly impact the risk metrics of the extended EDG AOT.

Table 1A
RWST Refill and Fast Bus Breaker Repair Sensitivity Study
CDF and LERF Results for Sensitivity Cases

	BVPS-1		BVPS-2	
Case	**CDF (per year)**	**LERF (per year)**	**CDF (per year)**	**LERF (per year)**
Case 1 Baseline (Current EDG Unavailability)	1.70E-04	1.16E-04	1.60E-04	1.03E-04
Case 2 (14 day AOT Estimated Unavail.)	1.71E-04	1.16E-04	1.61E-04	1.03E-04
Case 3 (One EDG in PM Alignment)	1.80E-04	1.16E-04	1.81E-04	1.03E-04
Case 4 (One EDG in CM Alignment)	1.85E-04	1.16E-04	2.18E-04	1.03E-04
Case 5 (One EDG in CM Alignment) (One Offsite Power Circuit Unavail.)	3.87E-03	1.17E-04	3.69E-03	1.08E-04
Case 6 (One EDG in CM Alignment) (One Offsite Power Circuit Unavail.) (No Common Cause)	3.83E-03	1.17E-04	3.36E-03	1.08E-04

Table 2A
RWST Refill and Fast Bus Breaker Repair Sensitivity Study
Change in CDF and LERF Post AOT Extension

Risk Measure	**BVPS-1 Increase over Baseline**	**BVPS-2 Increase over Baseline**
Delta CDF	4.67E-07 / reactor yr	8.42E-07 / reactor yr
Delta LERF	0.00E+00 / reactor yr	0.00E+00 / reactor yr

Table 4A
RWST Refill and Fast Bus Breaker Repair Sensitivity Study
ICCDP and ICLERP during EDG Preventive Maintenance

	BVPS-1		BVPS-2	
Maintenance Duration	**ICCDP**	**ICLERP***	**ICCDP**	**ICLERP**
Maximum Expected Duration (Unit 1-168 hrs) (Unit 2-264 hrs)	1.89E-07	-5.75E-11	6.42E-07	7.23E-10
Full 14 Day AOT	3.79E-07	-1.15E-10	8.17E-07	9.21E-10

* These values are zero when rounded to four decimal places, when rounded to five decimal places the Maximum Expected Duration ICLERP is –5.75E-11, and the Full 14 Day AOT ICLERP is –1.15E-10, due to sequence truncation.

Table 5A
RWST Refill and Fast Bus Breaker Repair Sensitivity Study
ICCDP and ICLERP during EDG Corrective Maintenance

BVPS-1		BVPS-2	
ICCDP	**ICLERP****	**ICCDP**	**ICLERP**
4.10E-07	-1.57E-10	9.39E-07	9.77E-10

** This value is zero when rounded to four decimal places, when rounded to five decimal places the ICLERP is -1.57E-10, due to sequence truncation.

ATTACHMENT B

Commitment List

Letter L-05-013

The following list identifies those actions committed to by FirstEnergy Nuclear Operating Company (FENOC) for Beaver Valley Power Station (BVPS) Unit Nos. 1 and 2 in this document. Any other actions discussed in the submittal represent intended or planned actions by Beaver Valley. These other actions are described only as information and are not regulatory commitments. Please notify Mr. Henry L. Hegrat, Supervisor - Licensing, at 330-315-6944, of any questions regarding this document or associated regulatory commitments.

Commitment	Due Date
1. To correctly assess and manage risk during online performance of the manufacturer's recommended maintenance (since the EDG will not be recoverable until the maintenance evolution is concluded) the Safety Monitor Program will be revised. This revision will include utilizing the Indirect Effects Module in Safety Monitor to set the baseline electric power recovery (Top Event RE) split fraction values to the appropriate split fraction values corresponding to either one EDG recoverable or zero EDGs recoverable, whenever the manufacturer's recommended maintenance activities are performed on-line.	Amendment Implementation