April 15, 2010

NRC 2010-0040
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
Renewed License Nos. DPR-24 and DPR-27

License Amendment Request 261, Supplement 4
Extended Power Uprate

References:
(1) FPL Energy Point Beach, LLC letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)
(2) NRC letter to NextEra Energy Point Beach, LLC, dated February 1, 2010, Point Beach Nuclear Plant, Unit 1 and 2 – Request for Additional Information from Electrical Engineering Branch Re: Auxiliary Feedwater – Round 2 (TAC Nos. ME1081 and ME1082) (ML100120331)
(3) NextEra Energy Point Beach, LLC letter to NRC, dated March 3, 2010, License Amendment Request 261, Extended Power Uprate, Response to Request for Additional Request (ML100630133)
(4) NextEra Energy Point Beach letter to the NRC, dated March 25, 2010, License Amendment Request 261, Extended Power Uprate, Regulatory Commitment Change (ML100840637)

Pursuant to 10 CFR 50.90, NextEra Energy Point Beach, LLC (NextEra) hereby submits Supplement 4 to License Amendment Request (LAR) 261 (Reference 1) for Point Beach Nuclear Plant (PBNP), Units 1 and 2. Via Reference (2), the NRC staff determined that additional information was required to enable the staff's continued review of the request.

NextEra provided responses to the staff's questions (Reference 3) and committed to providing final responses to Question 1 and Question 6 of Reference (2) by March 26, 2010. Via Reference (4), NextEra revised the date for providing responses to Question 1 and Question 6 of Reference (2) to April 16, 2010. This supplement provides the responses to Question 1 and Question 6 of Reference (2) in Enclosures 1 and 2, respectively.

Enclosure 3 contains NextEra's evaluation of the proposed Technical Specification (TS) changes based on the response to Question 6. The evaluation includes a determination that the proposed TS changes involve no significant hazards as defined in 10 CFR 50.92. The evaluation concludes that this change satisfies the criteria of 10 CFR 51.22 for categorical exclusion from the requirements for an environmental assessment. The determination that the proposed TS changes involve no significant hazards does not negatively impact the determination presented in LAR 261 (Reference 1).

Enclosure 4 contains a markup of proposed TS changes. Enclosure 5 contains a markup of proposed TS Bases changes. The bases are being provided for information. NRC approval is not being requested.

The proposed TS changes have been reviewed by the Plant Operations Review Committee.

Summary of Regulatory Commitments

The following new Regulatory Commitments are proposed:

- Prior to implementing the new auxiliary feedwater (AFW) design, NextEra will modify load sequencing for the emergency diesel generators (EDG) to change AFW pump start from a random start time to a fixed start at 32.5 seconds following closure of the EDG output breaker.
- Prior to implementing the new AFW design, NextEra will modify control room recirculation fan, W-13B1, to ensure that the fan is capable of restarting, without tripping the overcurrent protection, if the motor control center contactor drops out during sequencing.

This letter fulfills the following Regulatory Commitment made in Reference (4).

- NextEra will provide final responses to Question 1 and Question 6 of the NRC letter dated February 1, 2010 (ML100120331), by April 16, 2010.

In accordance with 10 CFR 50.91, a copy of this letter is being provided to the designated Wisconsin Official.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on April 15, 2010.

Very truly yours,

NextEra Energy Point Beach, LLC

FOR

Larry Meyer
Site Vice President

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

ENCLOSURE 1

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

The NRC staff determined that additional information was required (Reference 1) to enable the Electrical Engineering Branch to continue review of the auxiliary feedwater (AFW) portion of License Amendment Request (LAR) 261, Extended Power Uprate (EPU) (Reference 2). The following information is provided by NextEra Energy Point Beach, LLC (NextEra) in response to Question 1.

Question 1

In response to staff's request for additional information (RAI) dated August 26, 2009, regarding the emergency diesel generator (EDG) voltage dip below the acceptance limit of 75 percent nominal voltage during motor start, the licensee stated that the EDGs are capable of starting safeguard loads, and the voltage recovers quickly to the acceptable level. Based on staff's review of the dynamic loading calculations, the staff notes that under certain loading conditions for Train "A" EDG, the frequency is outside 2 percent margin, the worst-case voltage dip is 45-48 percent and the voltage overshoot is 129.5 percent. Train "A" voltage and frequency variations are outside the industry accepted standards and guidance. Provide detailed analyses regarding the downstream effects on components such as contactors, control fuses, inverters, battery chargers, solenoids, motor-operated valves, solid state devices, etc., and the basis to show that all required loads will start and continue to run with sufficient margins after accounting for any uncertainties. Provide justification for the performance capabilities of the EDG "A" regulator and excitation systems to support shutdown equipment within design-basis requirements during a design-basis accident. The staff notes that Train "B" EDG bus voltages remain above 75 percent of nominal voltage, consistent with NRC Regulatory Guide (RG) 1.9, throughout the motor starting sequence in all postulated loading conditions. Provide a summary of all bus voltages for the 'B' train distribution system.

NextEra Response

The requirements listed in Question 1 are based on Regulatory Guide (RG) 1.9, Revision 4, Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants, (Reference 3). Although NextEra is not committed to RG 1.9 in the Point Beach Nuclear Plant (PBNP) current licensing basis, the following discussion is provided to address the acceptability of the PBNP design.

A dynamic loading calculation for each diesel generator (EDG) was performed to demonstrate that each EDG is capable of performing their specified safety function. As part of the detailed design phase of the AFW project, the following change was made to the AFW design that will improve the EDG dynamic response. Starting of the new AFW pump was changed from a random load to a fixed load block at 32.5 seconds after EDG breaker closure. This design change from a random start of the AFW pump improves the EDG voltage response profile by preventing interaction with existing load blocks and moving the AFW load block beyond the present 10.5 seconds load block and the service water pump load blocks. This will improve plant response by reducing design basis accident Loss of Offsite Power/Loss of Coolant Accident (LOOP/LOCA) motor-operated valve (MOV) response times and prevent the AFW pump from starting simultaneously with the service water pumps and the containment spray pump during a large break LOCA. Starting the AFW pumps at 32.5 seconds after EDG breaker closure meets the AFW design basis requirements.

The EDG dynamic model was compared to the actual EDG response during integrated safeguards testing conducted to ensure that the model conservatively envelopes the actual EDG response. Changes to the EDG dynamic model were made since previous NextEra responses provided to Questions 1 and 2 of Reference (4). These changes to more accurately model the response of the engine and generator primarily resulted in changes to the frequency response. The frequency dips and overshoot increased from the previous request for additional information (RAI) response (Reference 4). The changes in frequency response did not affect the ability of any equipment from meeting its design function.

The revised analysis demonstrates that:

1. The minimum voltage for the AFW pump start at 32.5 seconds during the large break LOCA is approximately 75% of nominal 4160 V bus voltage on the Train "A" EDGs G-01 and G-02, and

2. The performance capabilities of the Train "A" EDG voltage regulator and excitation system supporting required equipment are within design basis requirements following a design basis accident (DBA).

The Train "A" and "B" EDGs are capable of successfully sequencing all required electrical loads for the DBA loading on the EDGs, including the loads for the upgraded AFW system and alternative source term (AST) modifications. The overall minimum EDG voltage is not affected by the new AFW design and continues to occur in the initial EDG load block. For accidents where the containment spray pump start may be delayed, the potential simultaneous start of the containment spray pump and the AFW pump has been evaluated and found to be acceptable. Additional specific analyses of downstream effects were evaluated in the revised dynamic loading calculation and are summarized below.

<u>Analysis of Affects on Downstream Components</u>

The following analyses address the effects on downstream components resulting from the EDG dynamic response to design basis loading conditions. The analysis is based on vendor supplied equipment ratings.

<u>Motor Control Center Contactors</u>

The operation for most of the equipment fed from the 480 V motor control centers (MCC) contactors is dependent on the control circuits fed by a control power transformer (CPT). The control circuits consist of starter/contactors and auxiliary devices that control the operation of the equipment and ensure they perform their safety function. The control circuits must maintain minimum voltage requirements to pickup and hold-in conditions to maintain operation of the equipment and to ensure equipment is capable of performing required safety function(s).

Therefore, the voltages at the MCCs were evaluated during the load sequencing of the EDG to evaluate the impact on the MCC loads.

The following evaluations were performed for the MCC loads:

1. The MCC bus voltages plotted from the Electrical Transient and Analysis Program™ (ETAP) simulations were examined to determine if the bus voltage drops below the manufacturer's contactor dropout voltage. After dropout, the MCC loads will automatically re-energize when the voltage dip recovers to a value such that the MCC bus voltage rises to the manufacturer's contactor pickup voltage.

2. The time at which dropout occurs and the time at which the voltage rises above the MCC contactor pickup voltage were determined.

3. Each MCC contactor that drops out was examined further to determine the impact on the system.

Each contactor that drops out was evaluated to ensure that the loads protective device does not trip upon restart of the load as described below. Contactors for MOVs that drop out were also evaluated to ensure that the MOVs are capable of meeting their design basis functions. This is described in more detail below.

In summary, the dynamic EDG loading calculation results show that there is an initial delay in energizing the MCC loads when the EDG output breakers close because the initial voltages are below the pickup requirements of the 480 V MCC contactors. The voltage recovers above the pickup requirements of the contactors to start the required loads. In addition, the MCC contactors on Train "A" also drop below their holding voltage requirements during the loading sequence when two switchgear motors start simultaneously. This occurs only when containment spray pumps have a delayed motor start. The voltage recovers above the pickup requirements of the contactors to re-start the required loads. The loads are capable of restarting and operating to meet design bases requirements.

Motor Control Center Control Circuit Fuses

The control circuits for most of the 480 V MCC loads are powered from small CPTs fed directly from the 480 V MCC buses. These control circuits are protected by control power fuses. During automatic load sequencing, these controls circuits might be subjected to the inrush currents associated with contactor and auxiliary relay pickup for slightly longer than normal durations due to reduced bus voltages. In addition, following the acceleration of large load steps, the control circuits may carry higher than normal holding currents for brief periods due to the overshoot of the EDG excitation system. The impact of these effects on the control power fuses for the safety related loads was evaluated. The evaluation concluded that the control circuit fuses will not operate inadvertently due to (a) the inrush currents associated with contactor pickup for slightly longer than normal durations during the voltage dips associated with large load steps or (b) the higher than normal holding currents due to the overshoot of the EDG excitation system.

Protective Devices

The MCC contactors for the 460 V motors required to perform a safety function may experience a single dropout after initial pickup during EDG load sequencing due to bus voltage dips associated with the start of two large motors in subsequent load steps. This occurs only when containment spray pumps have a delayed motor starts. As the EDG excitation system restores voltage these motor contactors will pickup again and the associated motors will restart. Each of these motors is protected by a circuit breaker and a thermal overload (TOL) device. The size, ratings, and settings for these protective devices were evaluated to determine whether the associated circuit breaker or TOL inadvertently trip or prevent the motors from restarting. Existing safety-related equipment that is automatically loaded on the EDGs were evaluated and will operate without their protective device tripping on overcurrent during the loading sequence on the EDG. Control Room recirculation fan W-13B1 is presently manually loaded on the EDG after the load sequencing. The AST modifications will have W-13B1 automatically start in the initial EDG load block. The analysis identified that for the new automatic loading feature of W-13B1, a design change will be needed to ensure that the fan is capable of restarting, without tripping the overcurrent protection, if its MCC contactor drops out during sequencing.

Inverters

Inverters are powered from direct current (DC) buses and are not affected by EDG transient voltage conditions. The backup inverter supply source and synchronizing voltage sources are not supplied from an EDG backed source.

Battery Chargers

Upon a LOOP, the battery charger supply contactors will drop out and will not be automatically loaded on the EDGs. During this period, the 125 V DC loads are supplied by their associated station battery until such time as power to the chargers is restored. The chargers must be manually loaded on the EDGs by operator action following a LOOP.

Solenoids

Solenoid valves were reviewed and no solenoid valves were identified that automatically start from the EDGs. Solenoid valves are typically powered by the 120 V AC instrument power (inverter supply) or 125 V DC battery power systems and therefore are not affected by EDG transient voltage conditions.

Motor-Operated Valves

There are several MOVs powered from the 480 V MCCs. The MOVs that automatically stroke during the first 100 seconds were evaluated to confirm that the response time requirements assumed in the accident analyses are met. The total time required for the MOVs to complete their safety function was also determined. The MOV circuits and EDG transient voltage results were reviewed to determine maximum time that MOV stroke would be interrupted due to contactor dropout and/or motor stall conditions. This stroke interruption time was added to the nameplate stroke time and then compared to the accident analysis required stroke time. All MOVs demonstrated the ability to complete their valve stroke in the required time. The minimum stroke time margin was determined to be 0.77 seconds (approximately 5%). The summary of this evaluation for the Train "A" MOVs is presented in Attachment 6.

The Train "B" MOVs were evaluated to ensure that they were bounded by Train "A" MOVs.

Solid State Devices

Loads that are automatically loaded or process loaded on the EDGs were reviewed. No solid state loads were identified.

Evaluation of 480V Switchgear Loss of Voltage Relays

The 480 V safety-related switchgear (1B-03, 1B-04, 2B-03 and 2B-04) contain loss of voltage (LOV) relays to initiate load shedding and block automatic load sequencing until sufficient voltage recovers on the bus. The 480 V LOV relays strip the appropriate loads by initiating a trip signal for the switchgear loads when the bus voltage drops below the 480 V LOV relay dropout setting. After the 480 V LOV relay drops out, the logic prevents load sequencing until voltage is restored to the 480 V LOV relay reset value by offsite power or EDG output breaker closure.

For Train "A", the stripping function is blocked when the associated EDG output breaker is closed. Therefore, if the voltage drops below the 480 V LOV dropout setting while powered from the EDG, the 480 V loads will not be stripped.

For Train "B", the stripping function is not blocked when the associated EDG output breaker is closed. Therefore, if the voltage drops below the 480 V LOV dropout setting while powered from the EDG, the 480 V loads would be stripped and re-sequenced. The EDG transient response voltage profiles were reviewed and the conclusion determined that the Train "B" 480 V switchgear voltages do not result in the loss of voltage relays actuating during load sequencing.

Performance Capabilities of EDG "A" Regulator and Excitation Systems

The EDG dynamic loading calculation included system tuning and parameter validation. The purpose of this effort was to tune the generator, governor and exciter parameters to provide performance characteristics in ETAP that match, in the conservative direction, the response of the EDG during plant integrated safeguards testing. (The ETAP models tend to over predict the actual plant voltage overshoot in the high direction.) A model adjustment was performed to ensure that the voltage dip profiles were conservative with respect to actual transient data used to benchmark the model.

The G-01 and G-02 EDGs utilize an EMD/Basler Mag-Amp voltage regulator with static exciter. The static exciter is a three-phase, full-wave magnetic amplifier that supplies DC excitation current to the generator field. The static exciter amplifies the voltage regulator signal to the power level required for proper generator field excitation. The exciter assembly consists of six individual reactors, rectifying diodes, and a magnetic amplifier.

Power input to the main windings of the exciter is supplied from a three-phase potential transformer. In addition, power current transformers are also used to prevent output voltage collapse and provide rapid voltage recovery when large motor loads are started.

Proper voltage regulation is provided by a combination of a reverse acting control signal that regulates the available excitation and a forward acting bias signal that is set for 115% full load rated generator field current. The bias signal is stationary and the reverse acting control signal sets the excitation via the voltage regulator. An increase in voltage regulation signal reduces the excitation. A decrease in control signal results in an increase in excitation and will provide an output current of at least 115% of full load generator field current. During a motor starting transient, the voltage regulator control signal will decrease to allow the magnetic amplifier to rapidly increase, supporting the excitation necessary to mitigate voltage drop and provide rapid voltage recovery. Therefore, the EDGs will be capable of recovering the EDG output voltage as a result of a the large voltage drop due to a large motor load based on the design of the voltage regulator / excitation system as long as the EDG is maintained within the maximum allowable dead load pickup capability. Train "A" EDGs G-01 and G-02 have a maximum dead load pickup capability of 12.5 mega volt-amperes (MVA). This is the maximum impact load (e.g. starting MVA) the EDG can successfully start and recover. The maximum impact load in the EDG load sequencing is less than 7 MVA.

The voltage dips are transient in nature and rapidly recover to within +5% of 97.5% of nominal voltage. The 97.5% nominal voltage is assumed to account for setting uncertainty in the nominal EDG voltage. As a result, the significant initial voltage dip does not challenge the voltage regulator system, nor cause it to operate in a different discrete region (i.e., excitation dependency on other components) other than for what it is designed. The very rapid voltage recovery exhibited during testing indicates sufficient margin remains in the excitation system to rapidly recover generator terminal voltage and complete the starting of each of the automatically connected loads. The dynamic loading calculation confirms that the Train "A" EDGs are capable of performing their designated safety function and all loads will be successfully sequenced with acceptable loading times with no adverse impact to the diesel powered equipment.

The sequential loading of EDGs is accomplished via the use of discrete time delay relays, which initiate individual feeder breaker closure for the designated load. The time delay relays for each load have an inherent tolerance range, the effects of which have been accounted for when performing analysis of the loading sequence on the EDG. This is done to account for setting uncertainty of the timing relays. For any two consecutive steps in the sequence, the worst case scenario will be that the timer in the first step of the sequence is at full positive tolerance and the timer in the subsequent step of the sequence is at its full negative tolerance to establish the minimum time between consecutive load blocks. This timing tolerance is evaluated in the dynamic loading calculation.

The EDG transient loading analysis was performed using ETAP safety-related software. The motor modeling has been validated by tests. The maximum loading conditions during a LOOP for EDG transient analysis is based on individual worst-case loading sequence on the EDG when being automatically loaded. The worst case total loading of the EDG occurs with one EDG supplying both units during a design basis event with a LOOP/LOCA on one unit coincident with a LOOP on the other unit. The following safeguards actuation signals are present on the accident unit: Safety injection, containment isolation and high-high containment pressure.

Design basis LOOP/LOCA event EDG load sequencing includes the following safeguards equipment:

Equipment	Start Time
Component Cooling Water (non-accident unit)	0+
High Head Safety Injection	0+
Residual Heat Removal	5.5
Containment Spray	10.25
Service Water	15.5
Service Water	20.5
Service Water	25.75
Auxiliary Feedwater	32.5
Containment Cooling Fans	39.4
Containment Cooling Fans	46.75

Notes:

1. Time after EDG breaker is closed and power is restored.

2. Containment spray pump start occurs 10.25 seconds after receipt of a high-high containment pressure signal and having bus voltage available. For a design basis accident LOCA with concurrent LOOP condition, the high-high containment pressure signal is received prior to EDG breaker closure.

The following ETAP cases were performed in the dynamic loading calculation to address large break LOCA design basis accident loading conditions for the Train "A" EDGs G01 and G02.

Case #	Case Description
8-1	EDG G-01/G-02 Unit 1 LOOP/LOCA with Unit 2 LOOP.
9-1	EDG G-01/G-02 Unit 1 LOOP with Unit 2 LOOP/LOCA.

The EDG voltage and frequency traces for these cases are included in Attachment 1. Other non-large break LOCA design basis accident ETAP cases were also performed for the Train "A" EDGs in which the containment spray pump starts in later load blocks. These cases also demonstrate the sequenced loads will successfully start, accelerate their driven equipment, and meet criteria evaluated above. The bounding worst case non-large break LOCA design basis EDG voltage and frequency traces are provided in Attachment 2.

Attachment 3 provides a summary of bus voltages for the "B" train distribution system for the above large break LOCA design basis ETAP Cases.

<u>Summary of "B" Train Distribution System Bus Voltages</u>

The dynamic loading calculation includes design basis loading conditions for the Train "B" EDGs. For these cases, the EDG bus voltages remain above 75% of nominal voltage, consistent with Regulatory Guide 1.9, throughout the motor starting sequence in all postulated loading conditions. The following ETAP cases were performed to address large break LOCA design basis accident loading conditions for the Train "B" EDGs G03 and G04.

Case #	Case Description
7-1	EDG G-03/G-04 Unit 1 LOOP/LOCA with Unit 2 LOOP
10-1	EDG G-03/G-04 Unit 1 LOOP with Unit 2 LOOP/LOCA

The EDG voltage and frequency traces for these cases are included in Attachment 4. Other non-large break LOCA design basis accident ETAP cases were also performed for the Train "B" EDGs for cases where the containment spray pump starts in later load blocks. For these cases, the EDG voltage and frequency also remain within Regulatory Guide 1.9 limits.

Attachment 5 provides a summary of bus voltages for the "B" train distribution system for the above large break LOCA design basis ETAP cases.

The following Attachments provide additional information for this response:

ATTACHMENT DESCRIPTION	ATTACHMENT
Train "A" EDG Voltage and Frequency Graphs - Design Basis Large Break LOCA & LOOP	1
Train "A" EDG Voltage and Frequency Graphs – Non-Large Break Design Basis LOCA & LOOP	2
Train "A" Distribution System Voltages	3
Train "B" EDG Voltage and Frequency Graphs - Design Basis Large Break LOCA & LOOP	4
Train "B" Distribution System Voltages	5
Motor-Operated Valve Stroke Evaluation	6

References

(1) NRC letter to NextEra Energy Point Beach, LLC, dated February 1, 2010, Point Beach Nuclear Plant, Units 1 and 2 – Request for Additional Information from Electrical Engineering Branch Re: Auxiliary Feedwater – Round 2 (TAC Nos. ME1081 and ME1082) (ML100120331)

(2) FPL Energy Point Beach, LLC letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)

(3) Regulatory Guide 1.9, Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants, Revision 4, dated March 2007 (ML070380553)

(4) NextEra Energy Point Beach, LLC letter to NRC, dated September 25, 2009, License Amendment Request 261, Extended Power Uprate, Response to Request for Additional Information (ML092750395)

ATTACHMENT 1

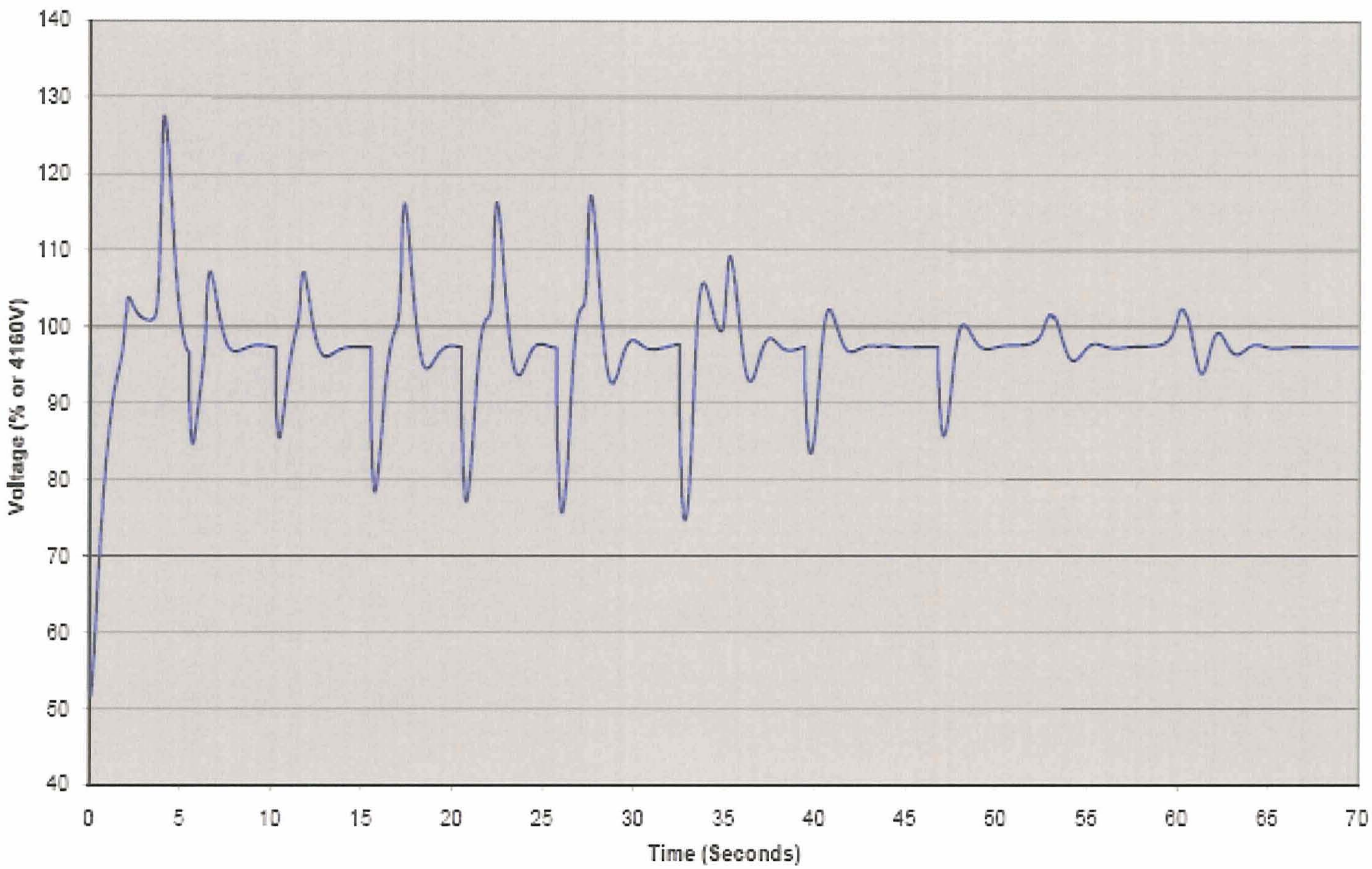
NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

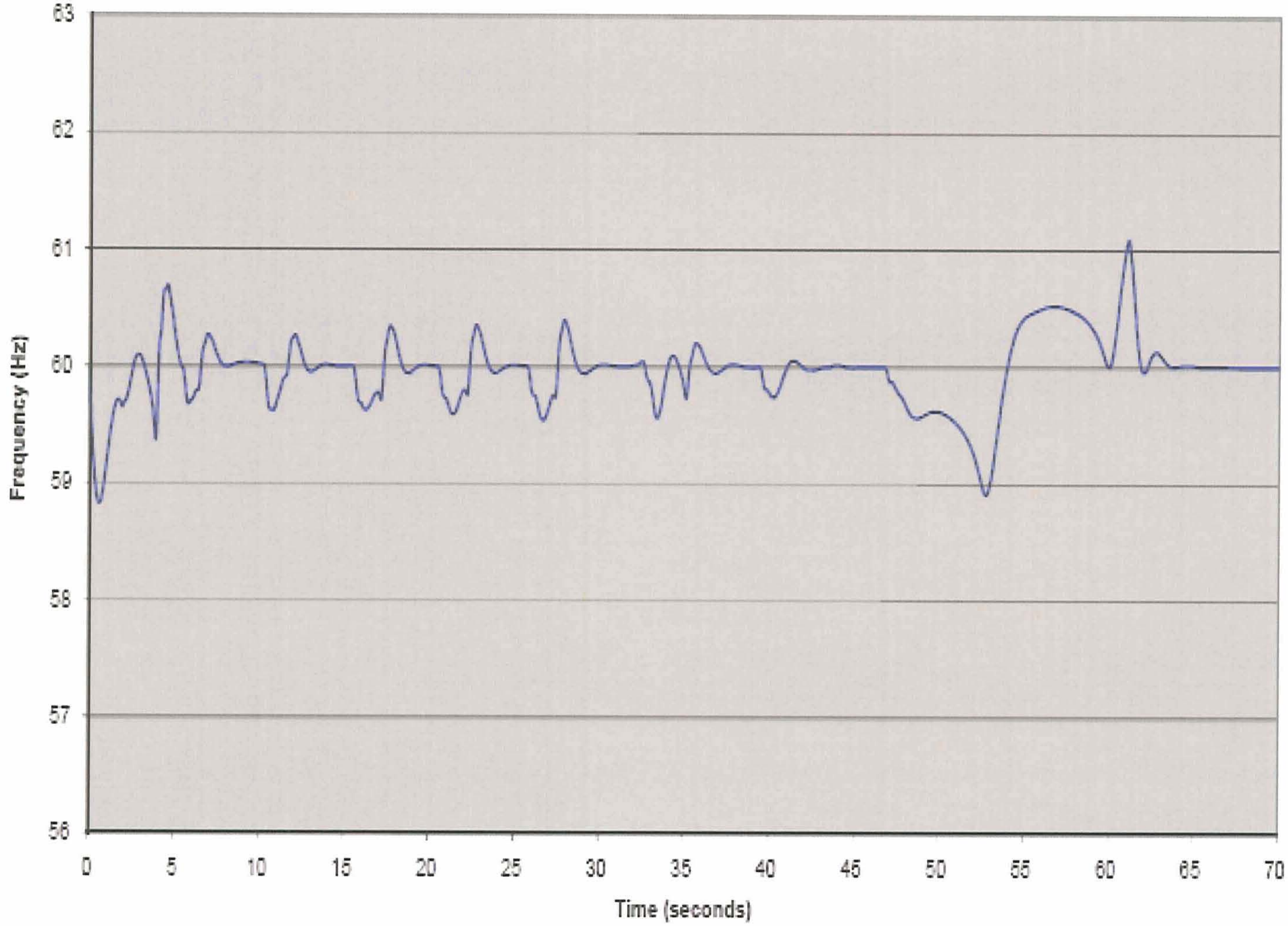
TRAIN "A" EMERGENCY DIESEL GENERATOR
VOLTAGE AND FREQUENCY PROFILES
LARGE BREAK LOSS OF COOLANT ACCIDENT
WITH LOSS OF OFFSITE POWER

4 pages follow

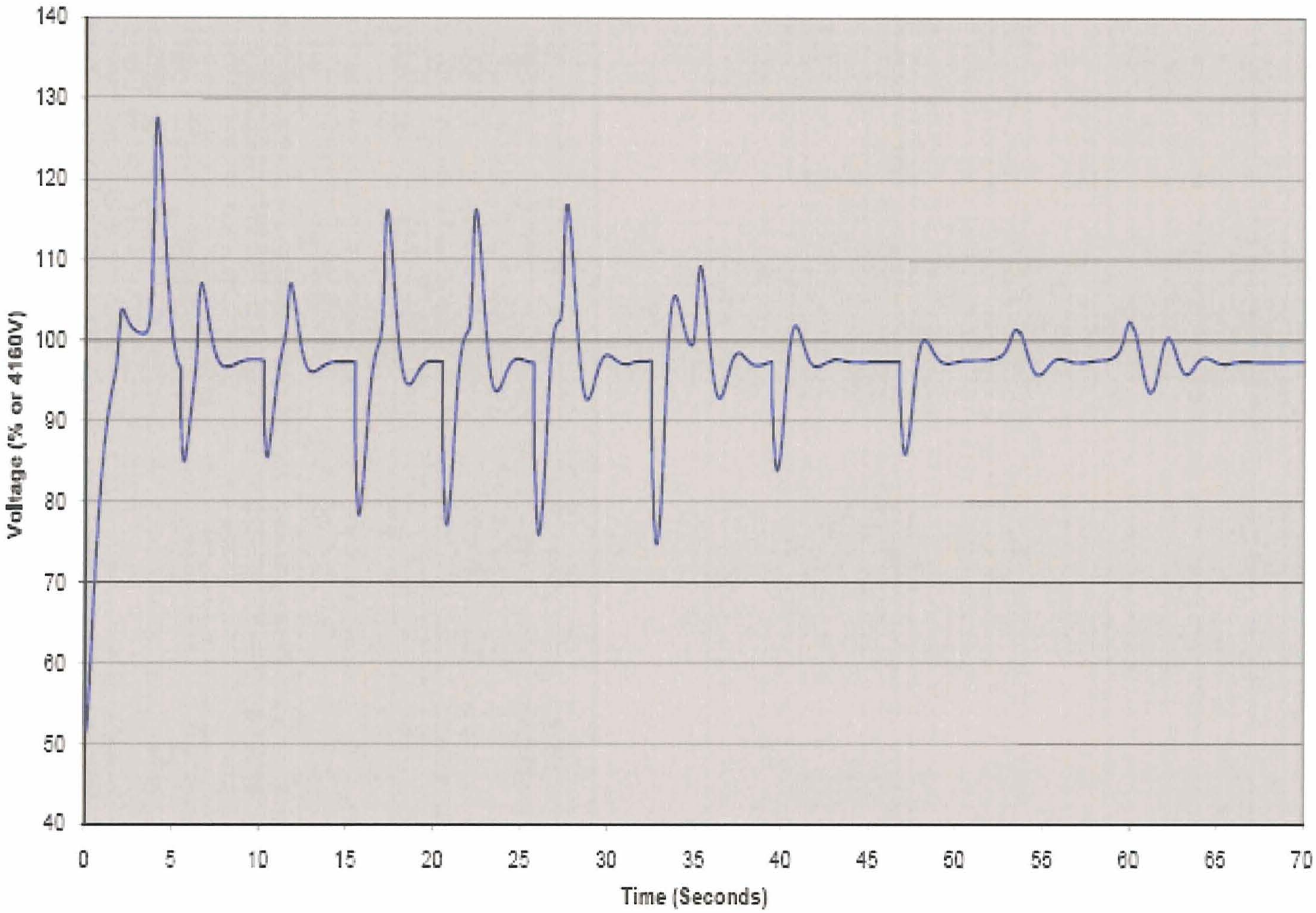
G-01/G-02 Voltage Profile
Unit 1 Design Basis Large Break LOCA & LOOP (Unit 2 LOOP only)



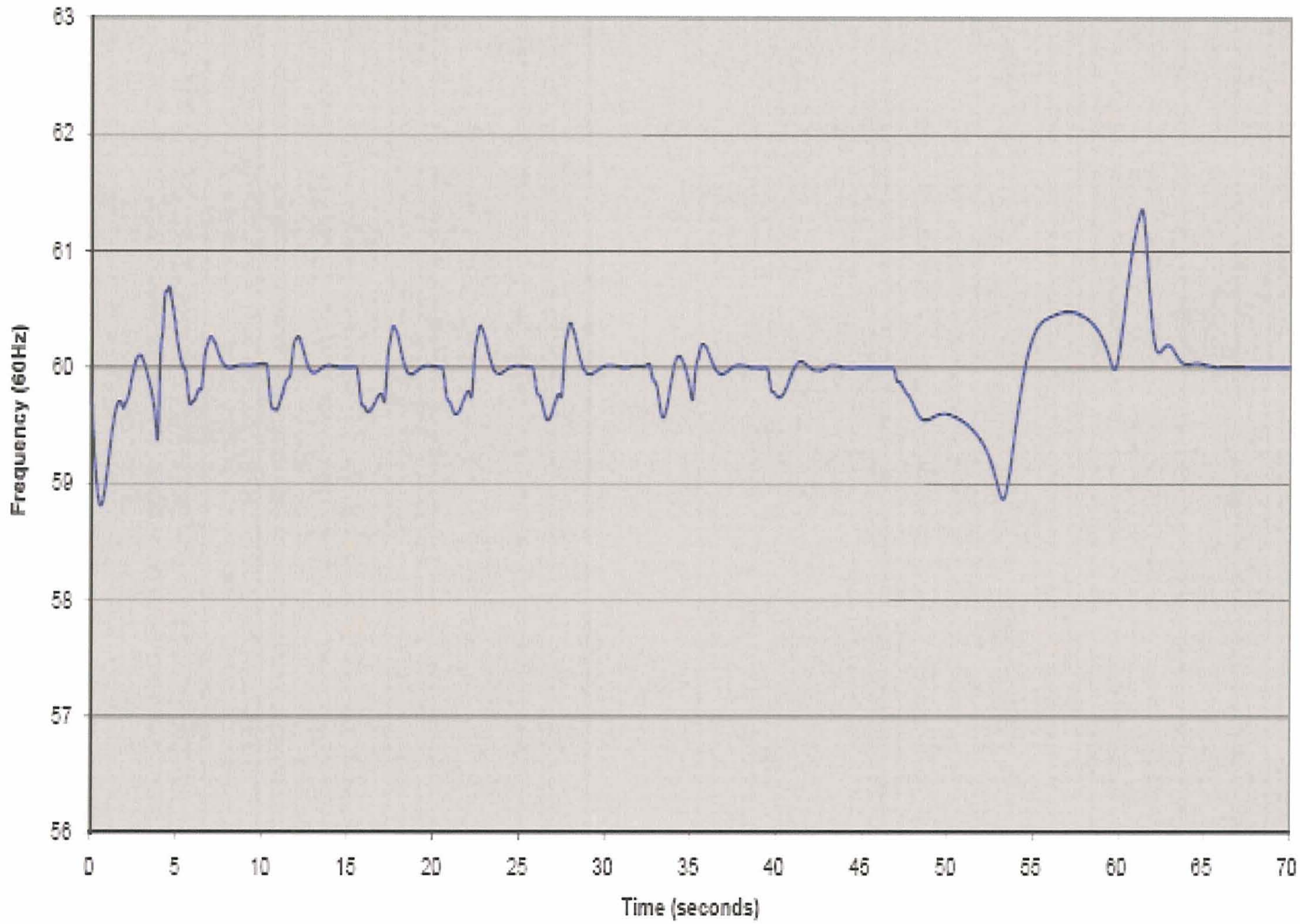
G-01/G-02 Frequency Profile
Unit 1 Design Basis Large Break LOCA & LOOP (Unit 2 LOOP only)



G-01/G-02 Voltage Profile
Unit 2 Design Basis Large Break LOCA & LOOP (Unit 1 LOOP Only)



G-01/G-02 Frequency Profile
Unit 2 Design Basis Large Break LOCA & LOOP (Unit 1 LOOP Only)



ATTACHMENT 2

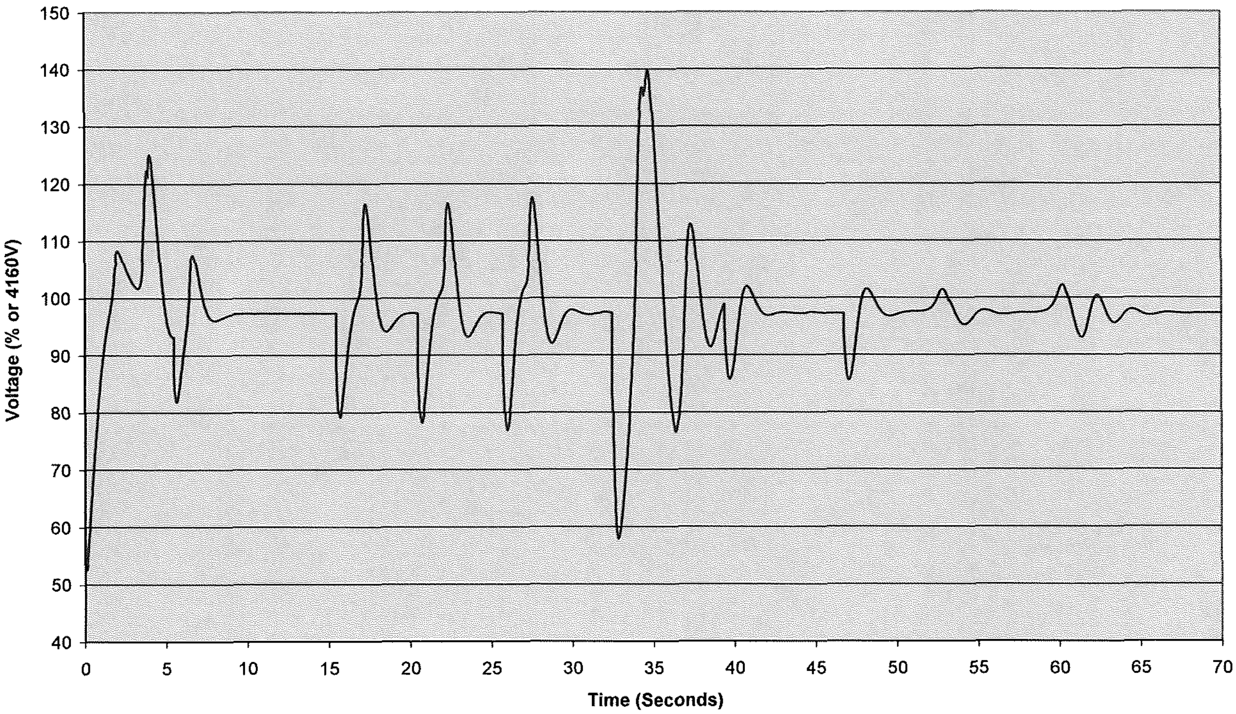
NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

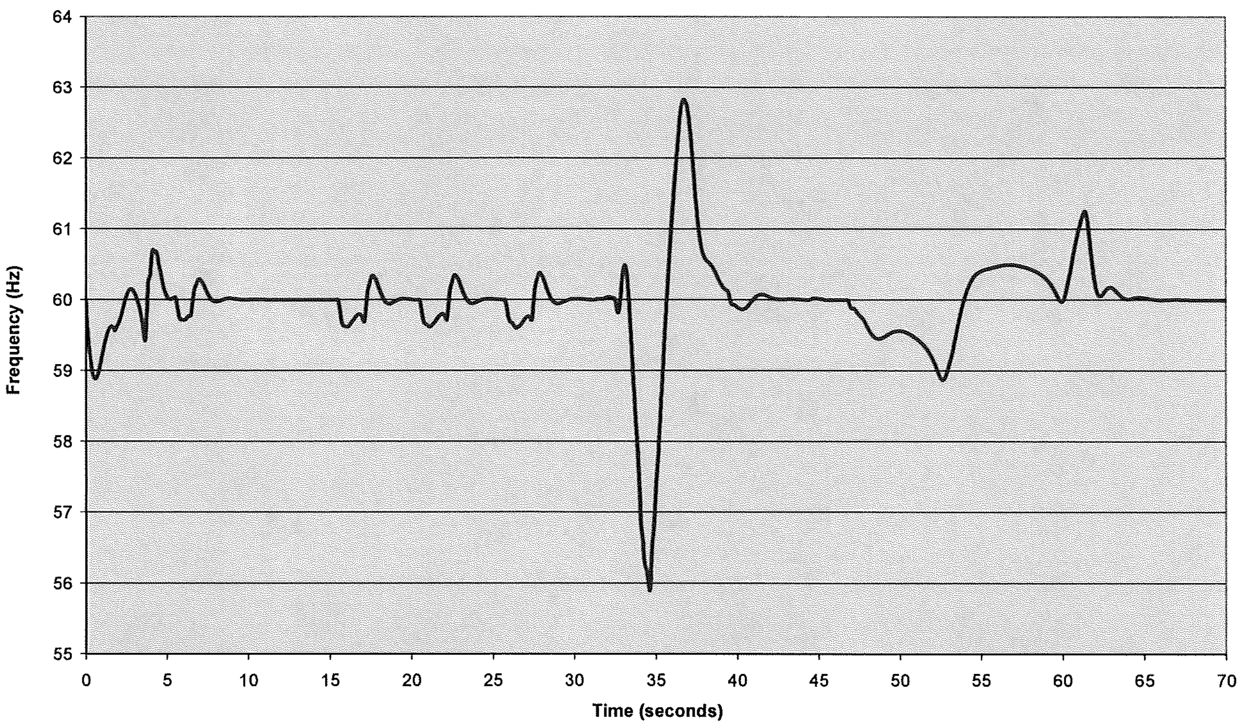
TRAIN "A" EMERGENCY DIESEL GENERATOR
VOLTAGE AND FREQUENCY PROFILES
NON-LARGE BREAK DESIGN BASIS LOSS OF COOLANT ACCIDENT
WITH LOSS OF OFFSITE POWER

2 pages follow

G-01/G-02 Voltage Profile
Non-Large Break Design Basis LOCA & LOOP



G-01/G-02 Frequency Profile
Non-Large Break Design Basis LOCA & LOOP



ATTACHMENT 3

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

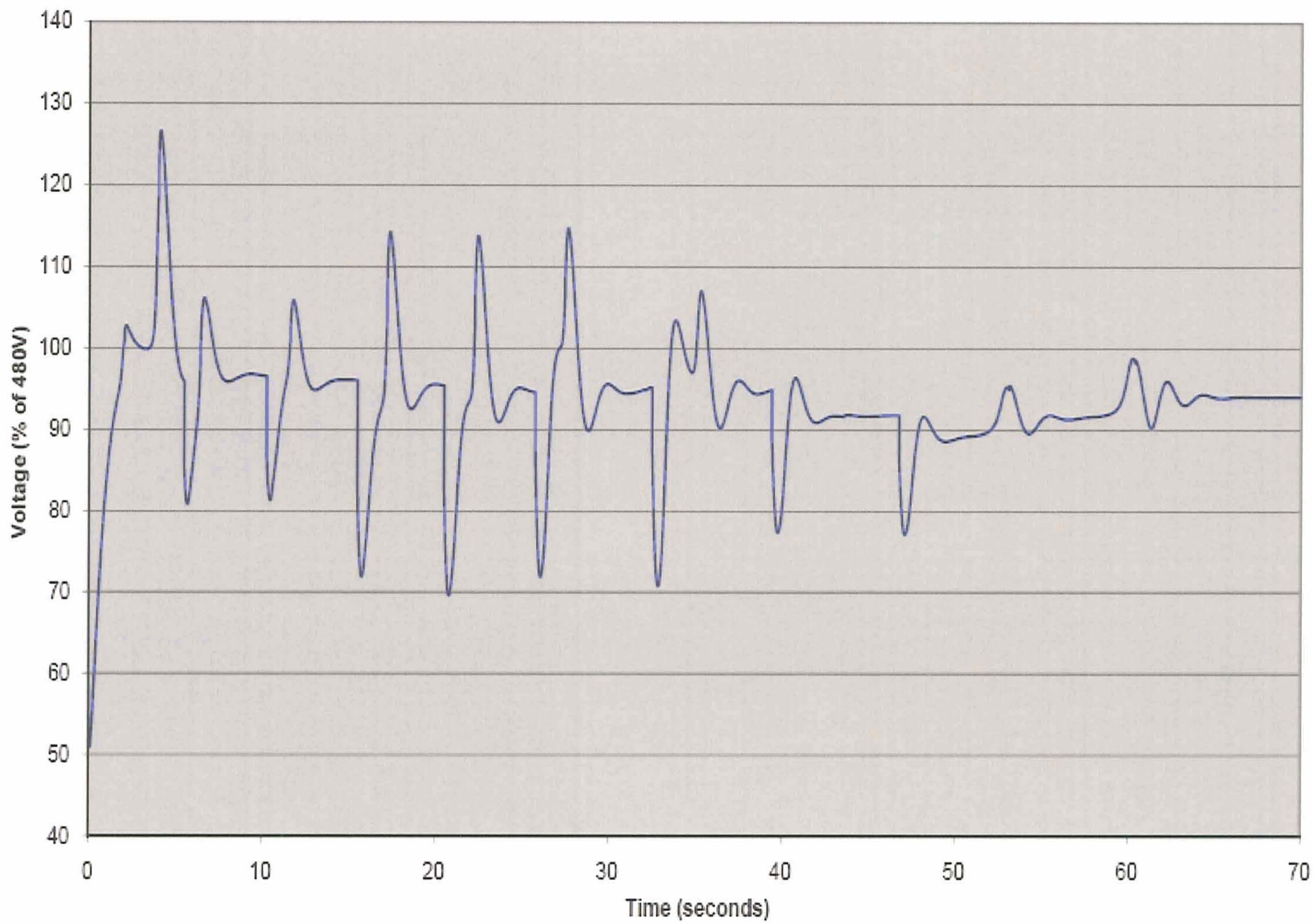
LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

TRAIN "A" DISTRIBUTION SYSTEM VOLTAGES

16 pages follow

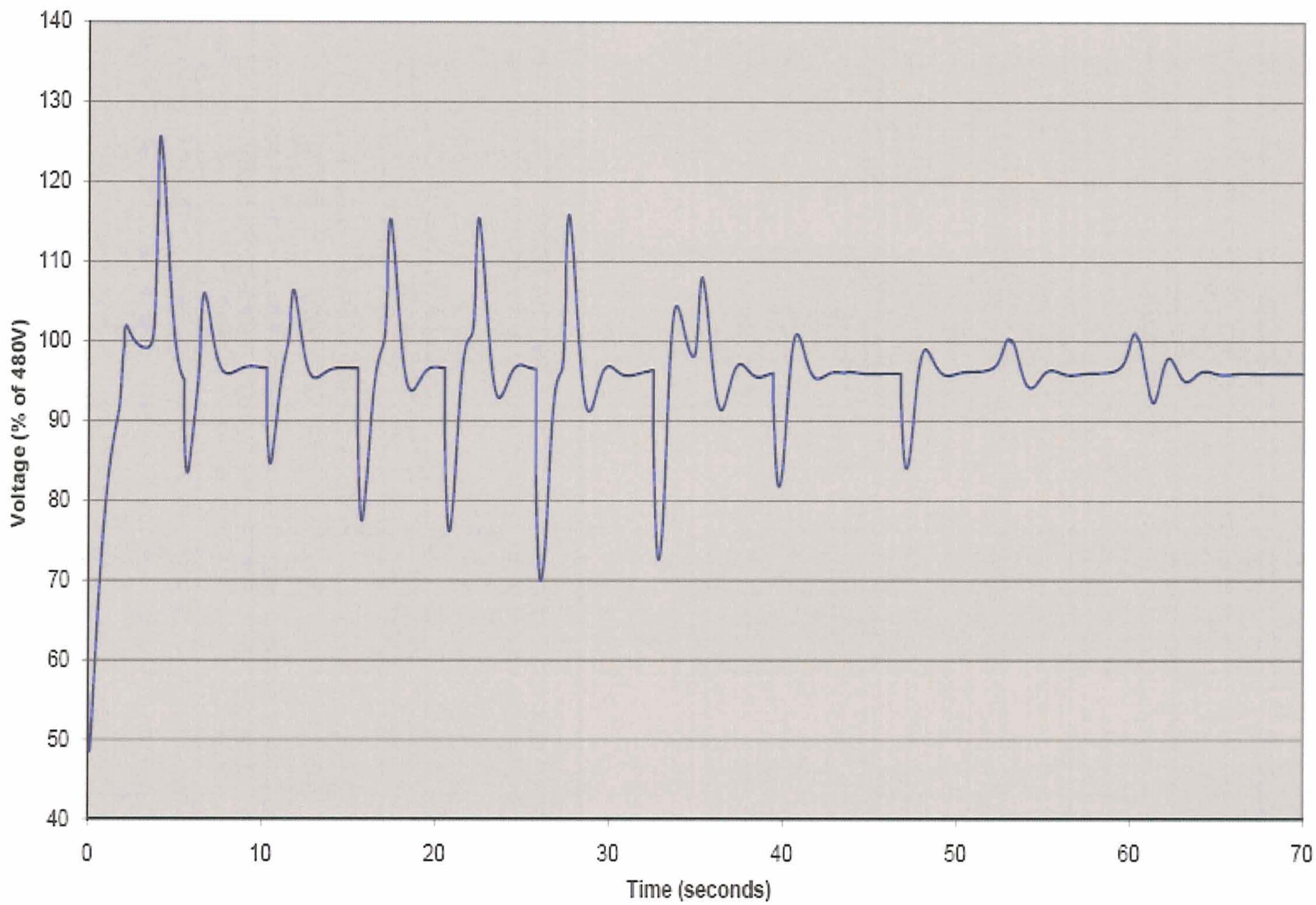

Case 8-1: 1A-05 Switchgear Voltage Profile
Voltage (% of 4160V)
140
130
120
110
100
90
80
70
60
50
40
0
10
20
30
40
50
60
70
Time (seconds)

Case 8-1: 1B-03 Switchgear Voltage Profile

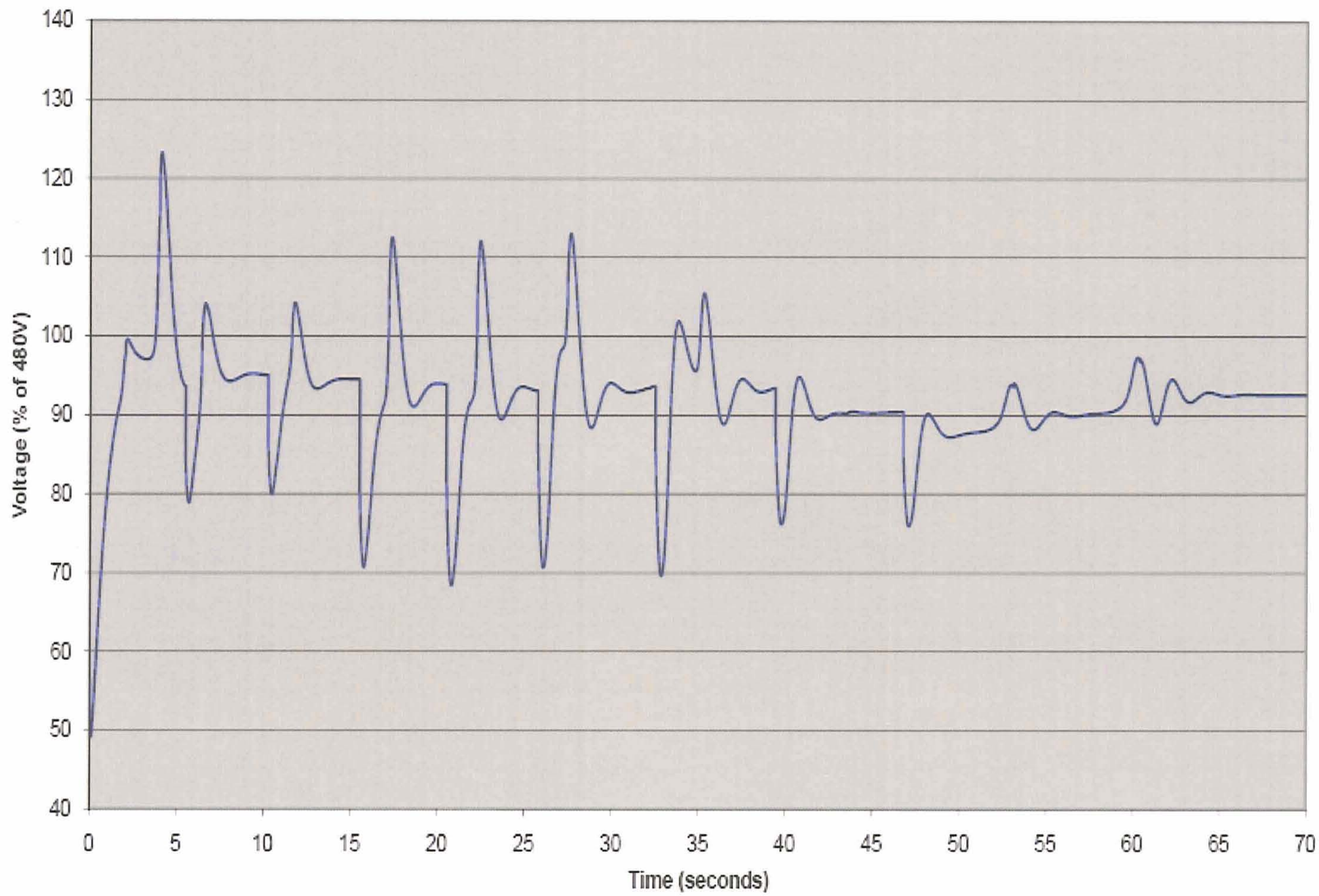



Case 8-1: 2A-05 Switchgear Voltage Profile
Voltage (% of 4160V)
140
130
120
110
100
90
80
70
60
50
40
0
10
20
30
40
50
60
70
Time (seconds)

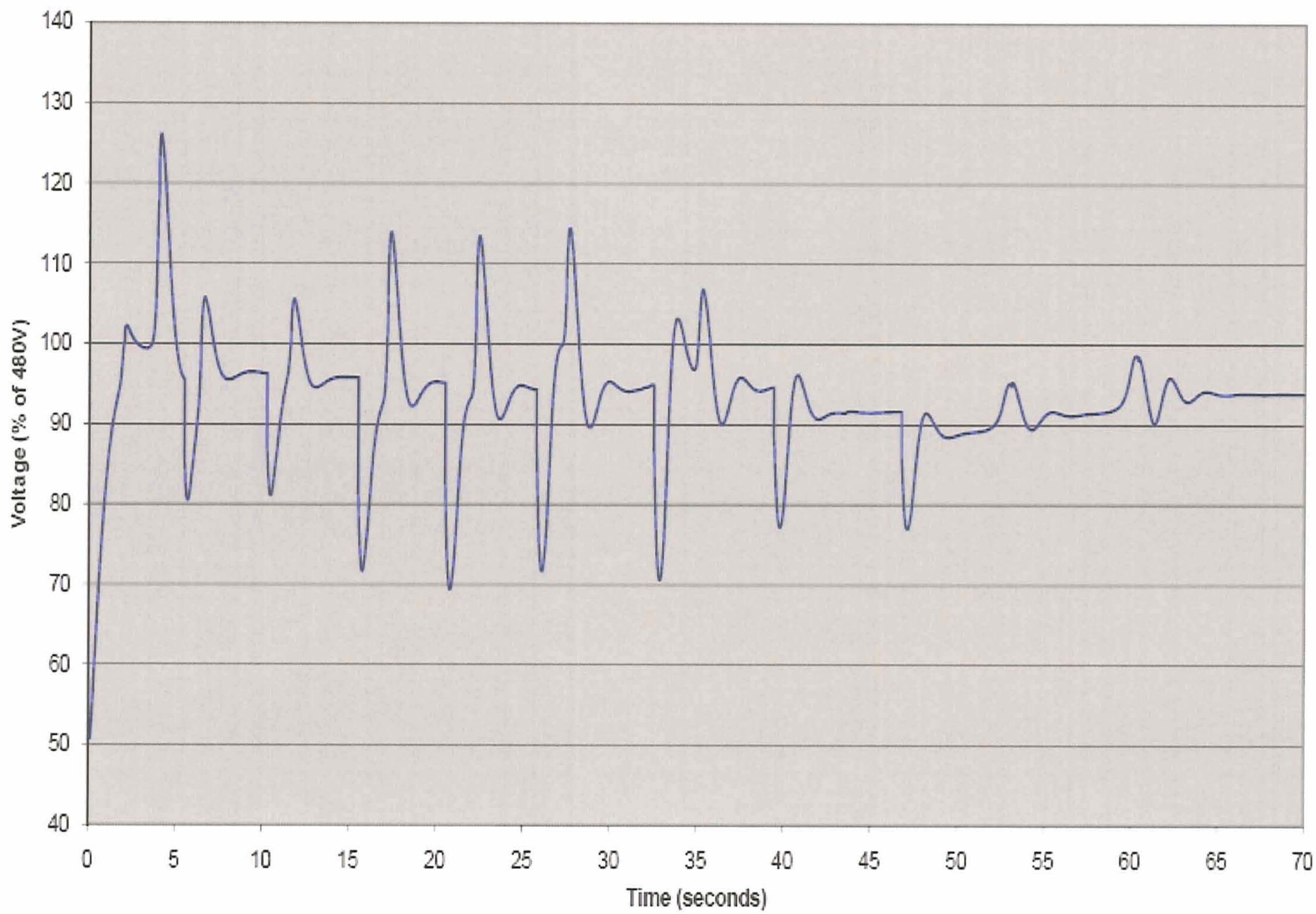
Case 8-1: 2B-03 Switchgear Voltage Profile

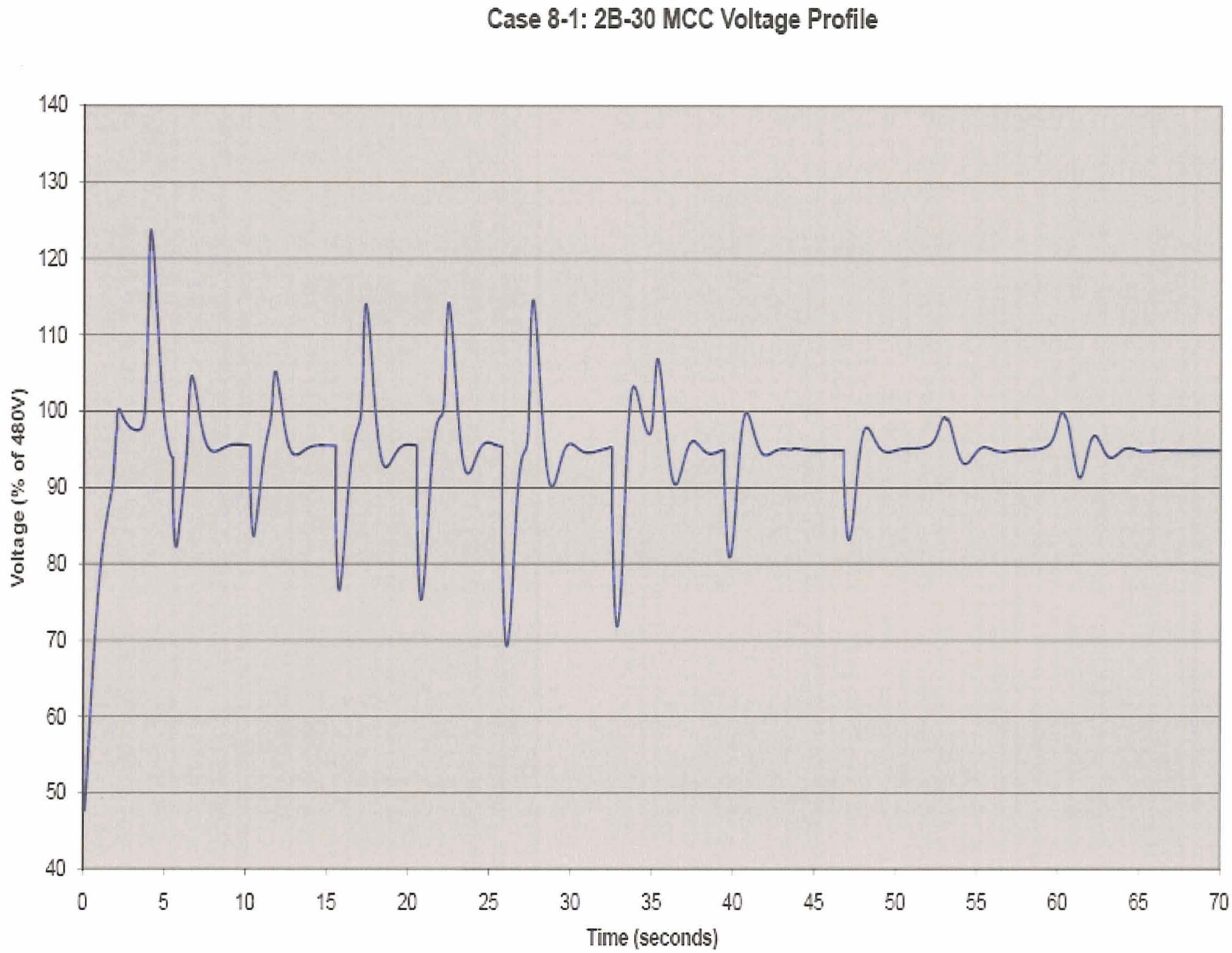


Case 8-1: 1B-30 MCC Voltage Profile

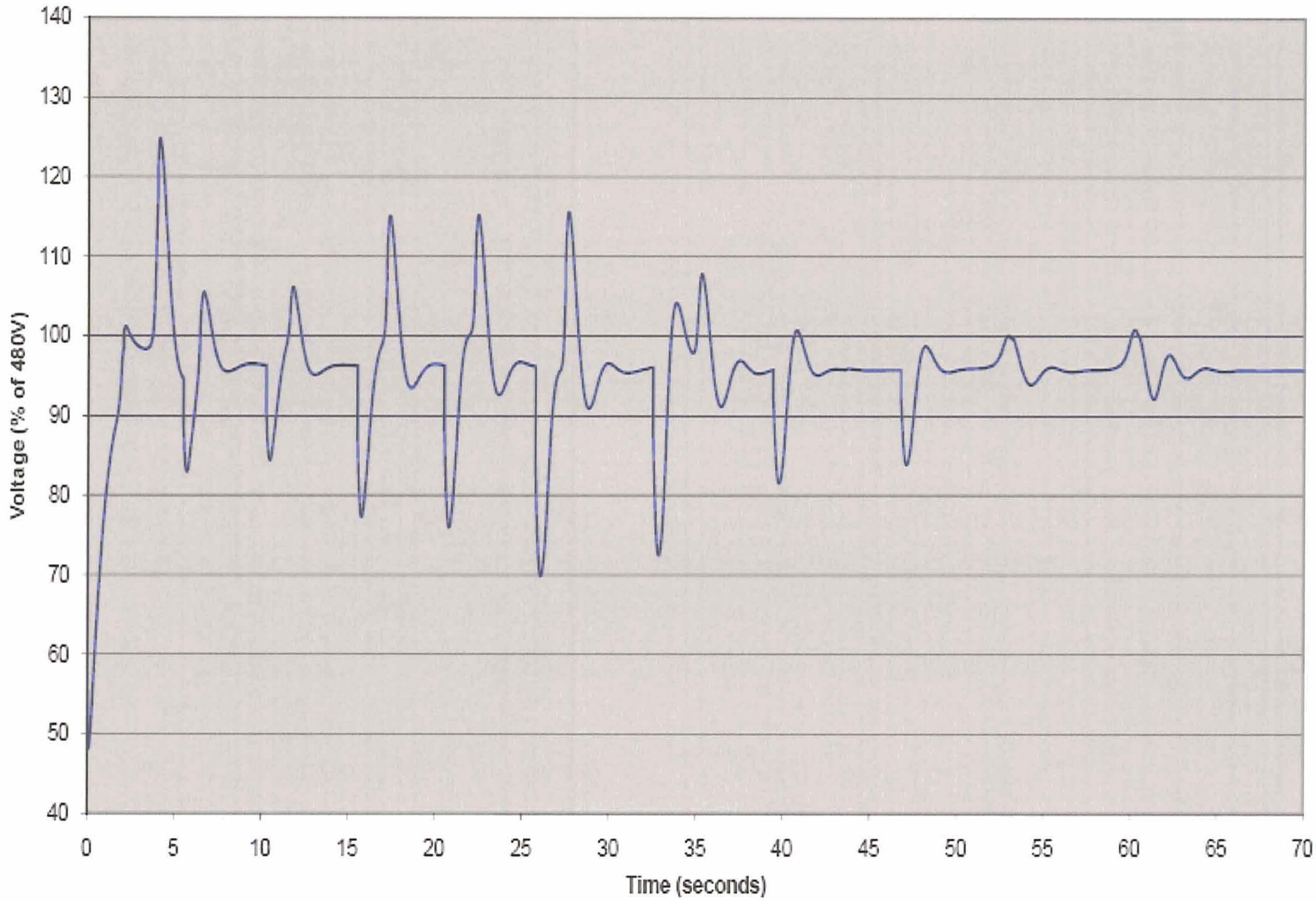


Case 8-1: 1B-32 MCC Voltage Profile

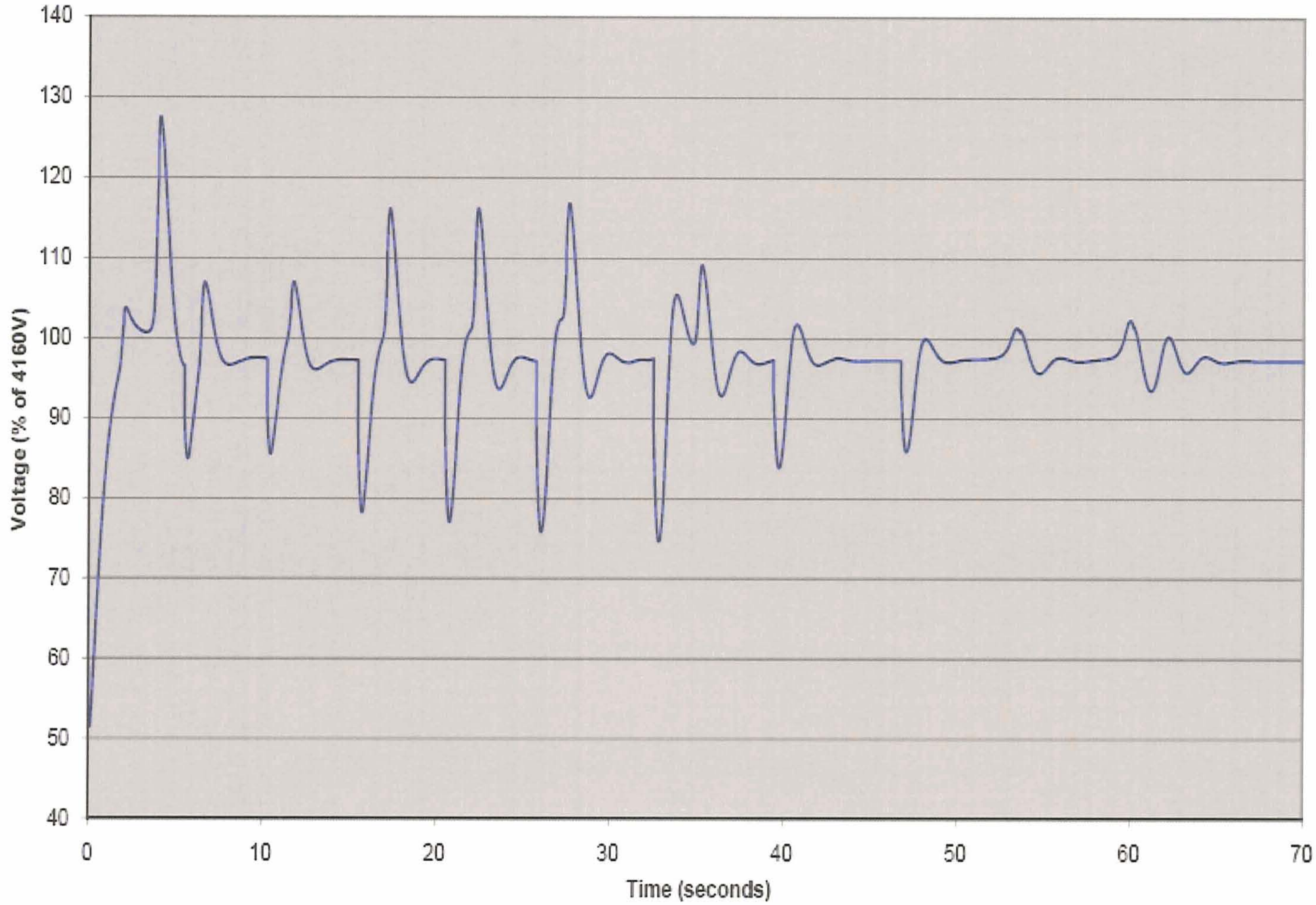



Case 8-1: 2B-30 MCC Voltage Profile
Voltage (% of 480V)
140
130
120
110
100
90
80
70
60
50
40
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)

Case 8-1: 2B-32 MCC Voltage Profile

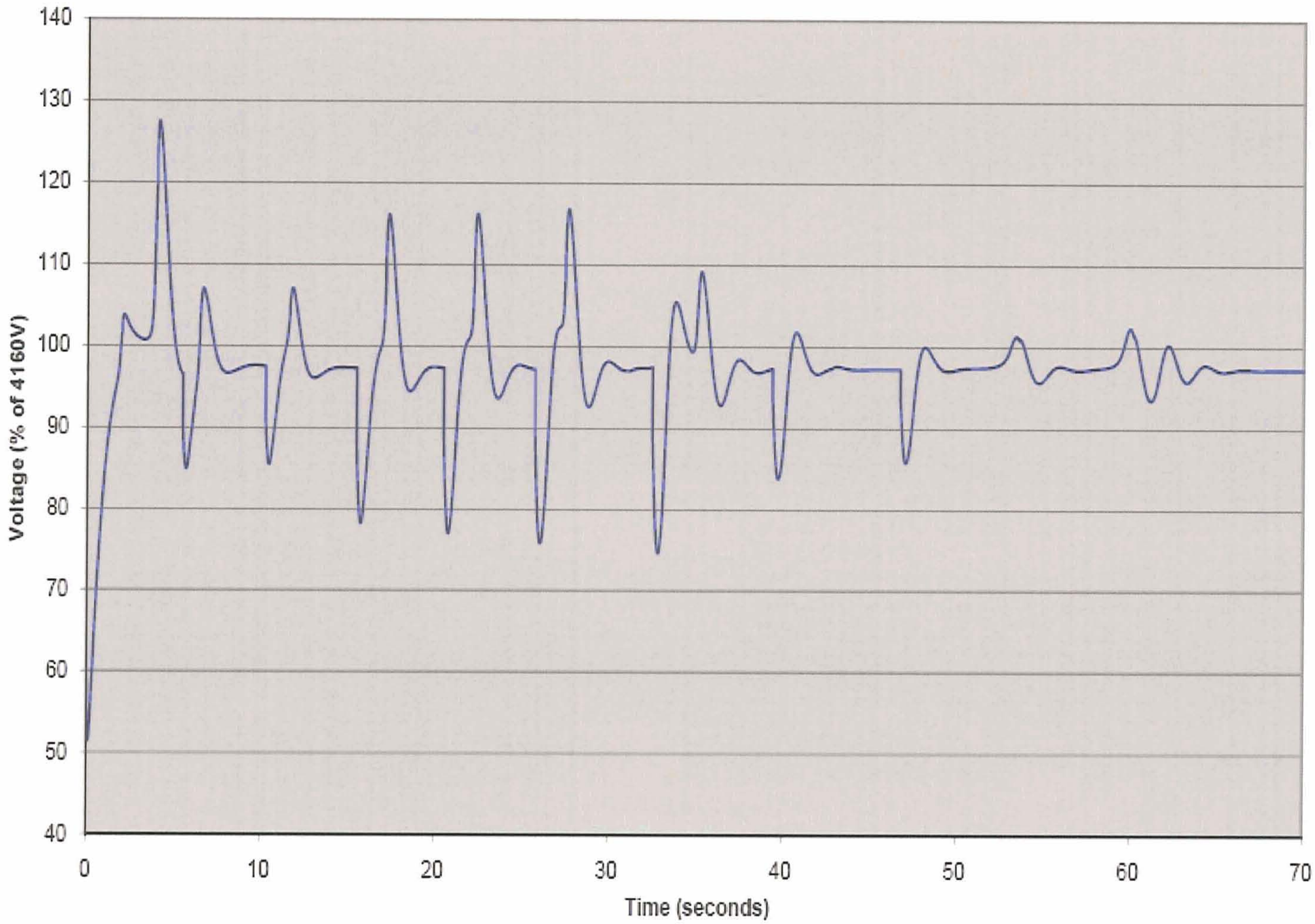


Case 9-1: 1A-05 Switchgear Voltage Profile



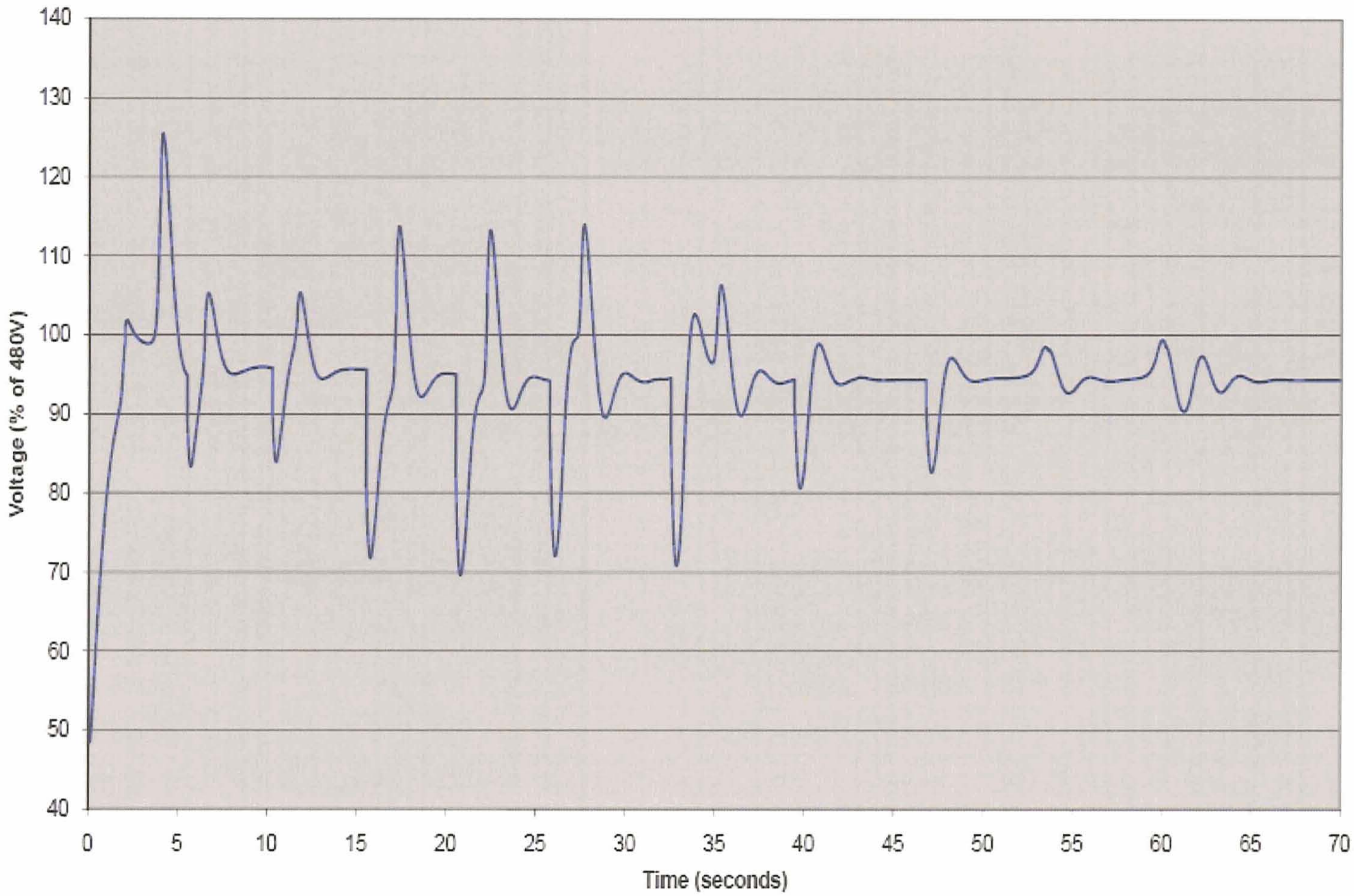

Case 9-1: 1B-03 Switchgear Voltage Profile
140
130
120
110
100
90
80
70
60
50
40
Voltage (% of 480V)
0
10
20
30
40
50
60
70
Time (seconds)

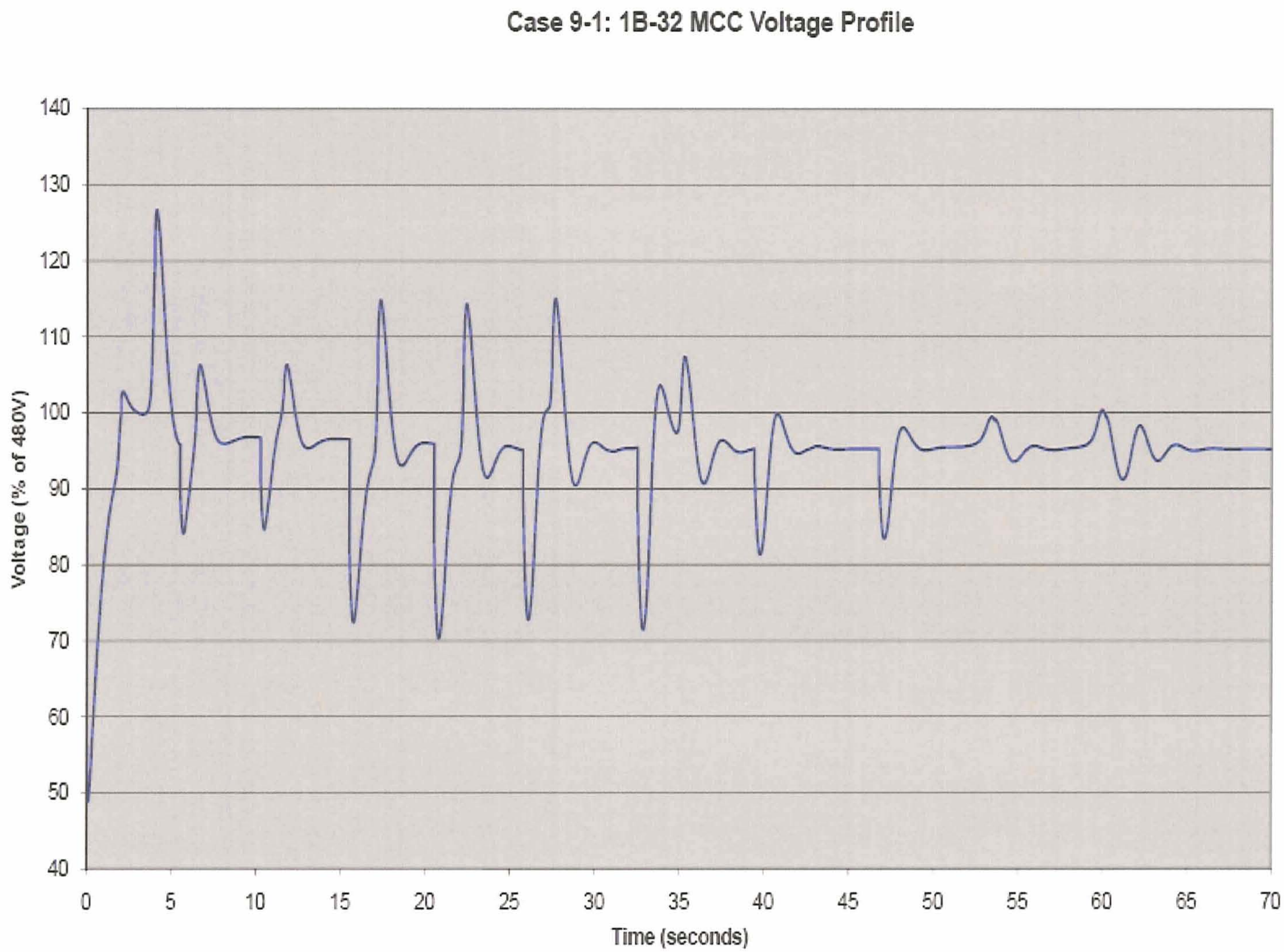
Case 9-1: 2A-05 Switchgear Voltage Profile

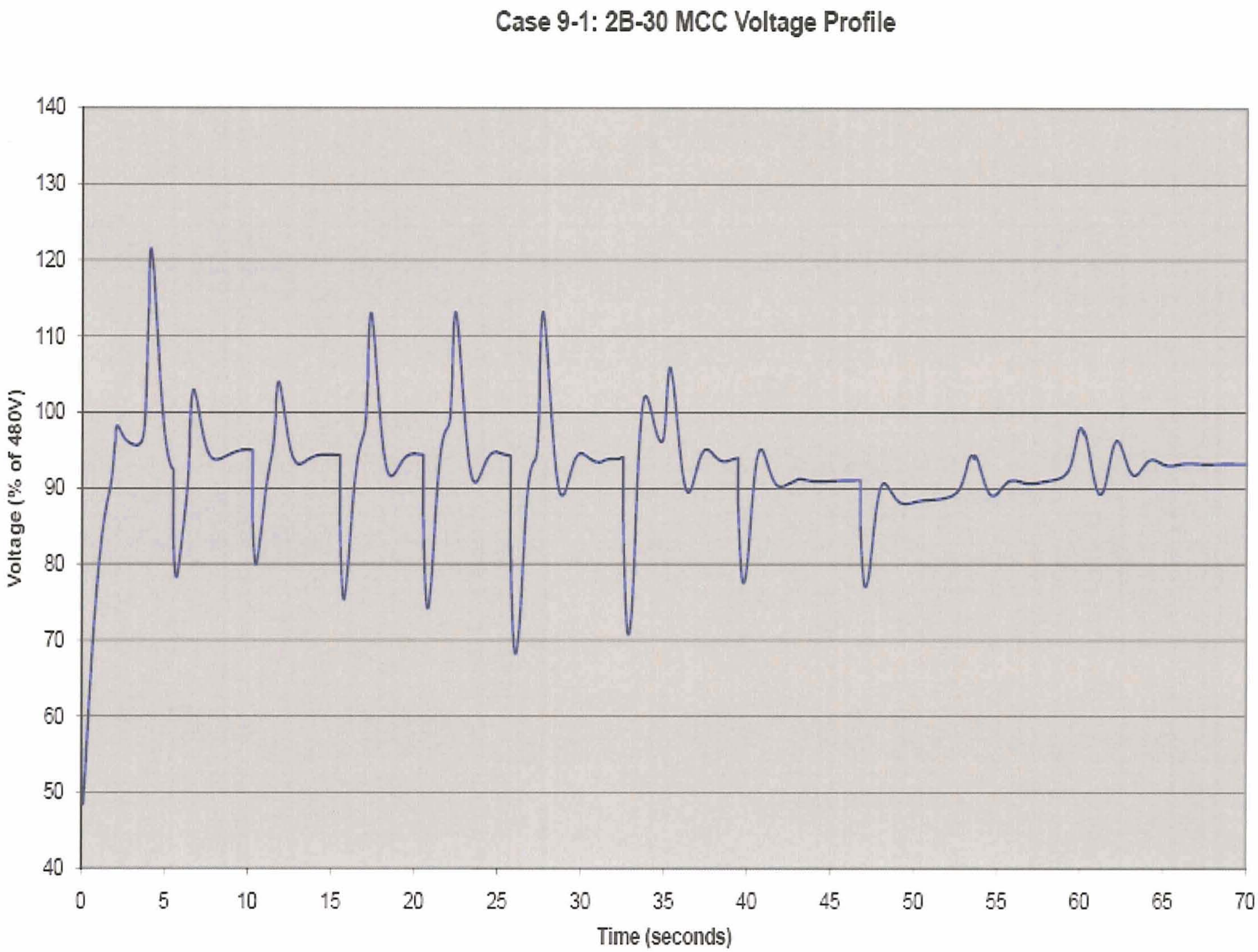



Case 9-1: 2B-03 Switchgear Voltage Profile
Voltage (% of 480V)
140
130
120
110
100
90
80
70
60
50
40
0
10
20
30
40
50
60
70
Time (seconds)

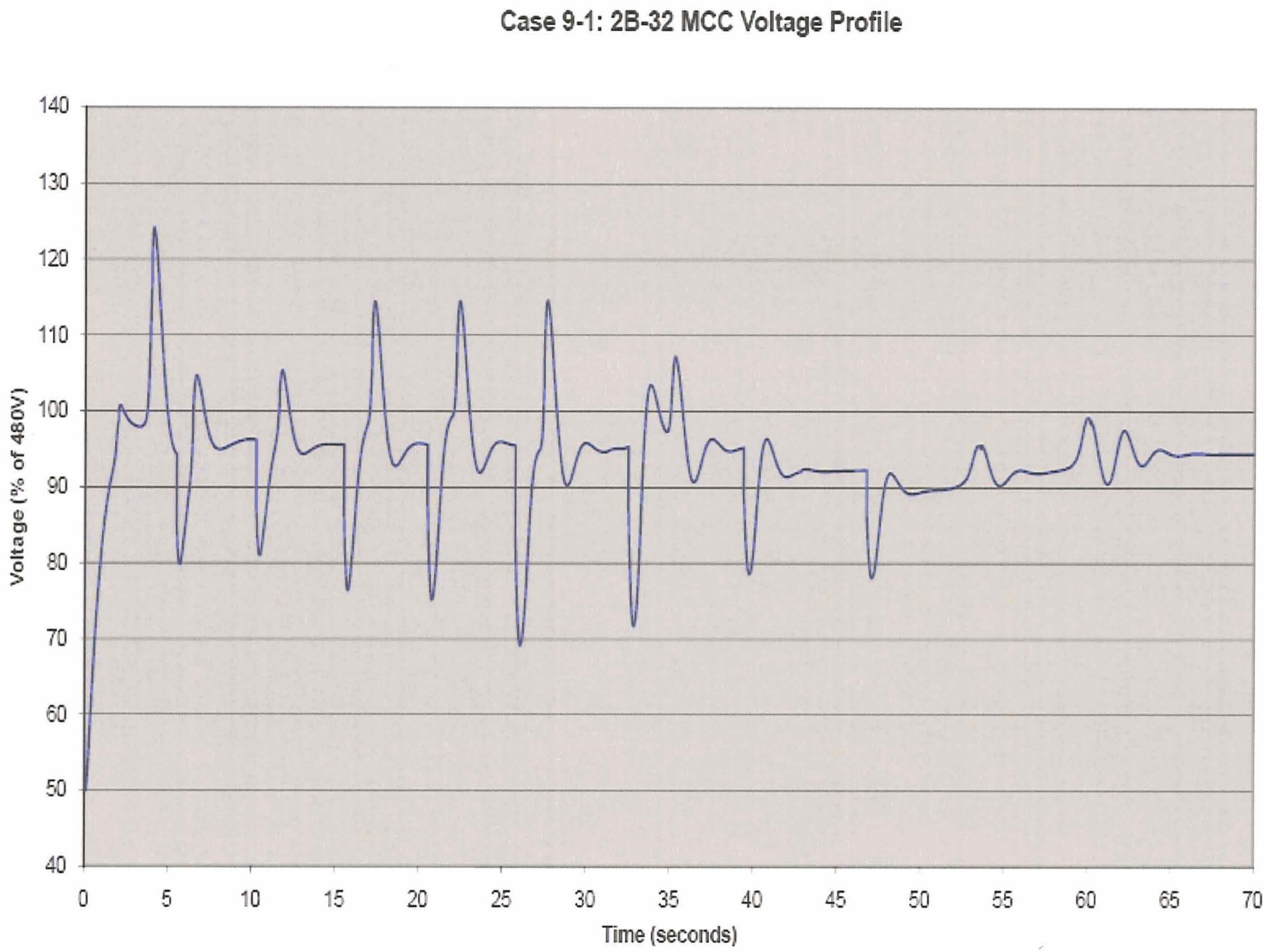
Case 9-1: 1B-30 MCC Voltage Profile




Case 9-1: 1B-32 MCC Voltage Profile
Voltage (% of 480V)
140
130
120
110
100
90
80
70
60
50
40
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)



Case 9-1: 2B-30 MCC Voltage Profile
Voltage (% of 480V)
140
130
120
110
100
90
80
70
60
50
40
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)


Case 9-1: 2B-32 MCC Voltage Profile
140
130
120
110
100
90
80
70
60
50
40
Voltage (% of 480V)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)

ATTACHMENT 4

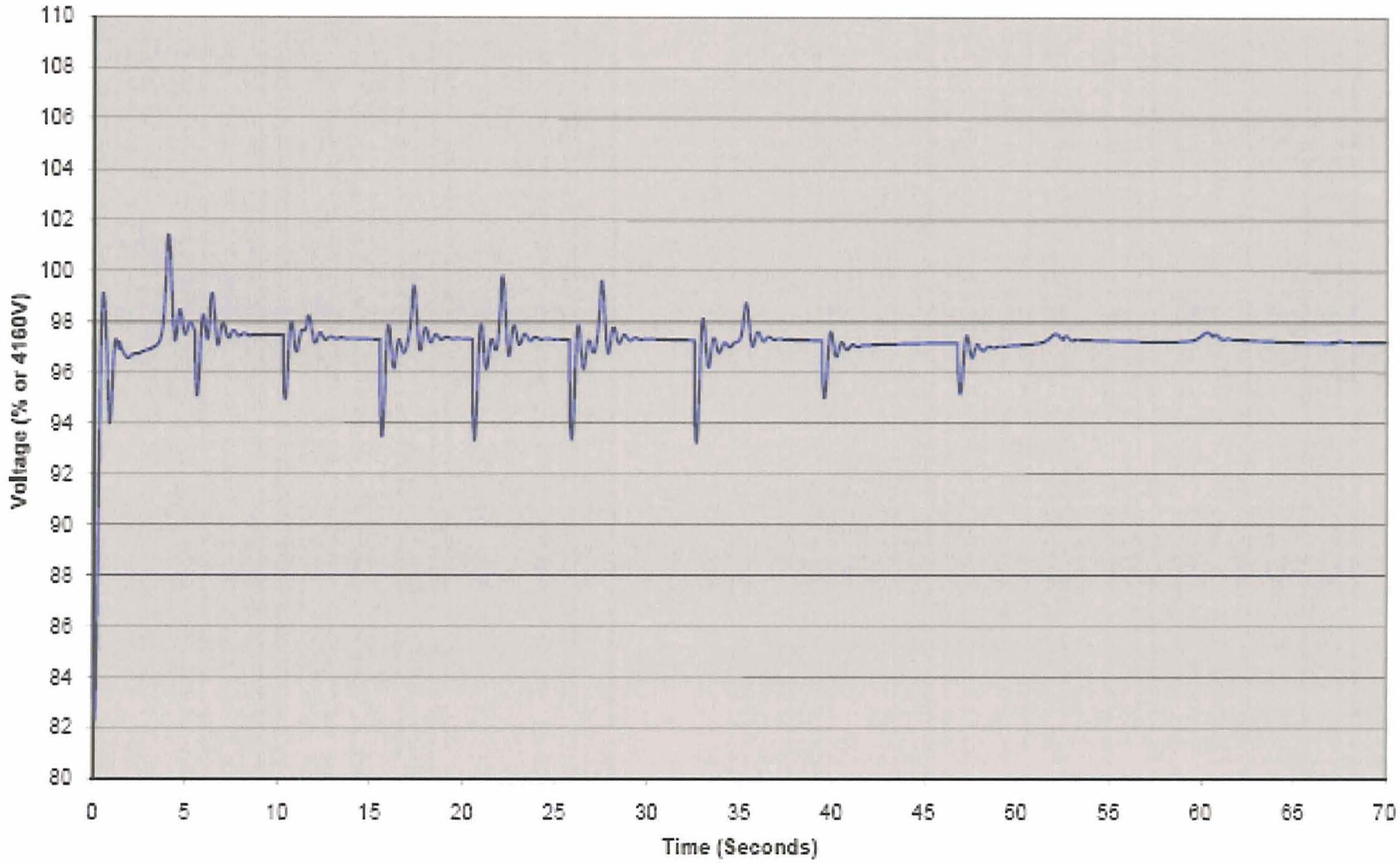
NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

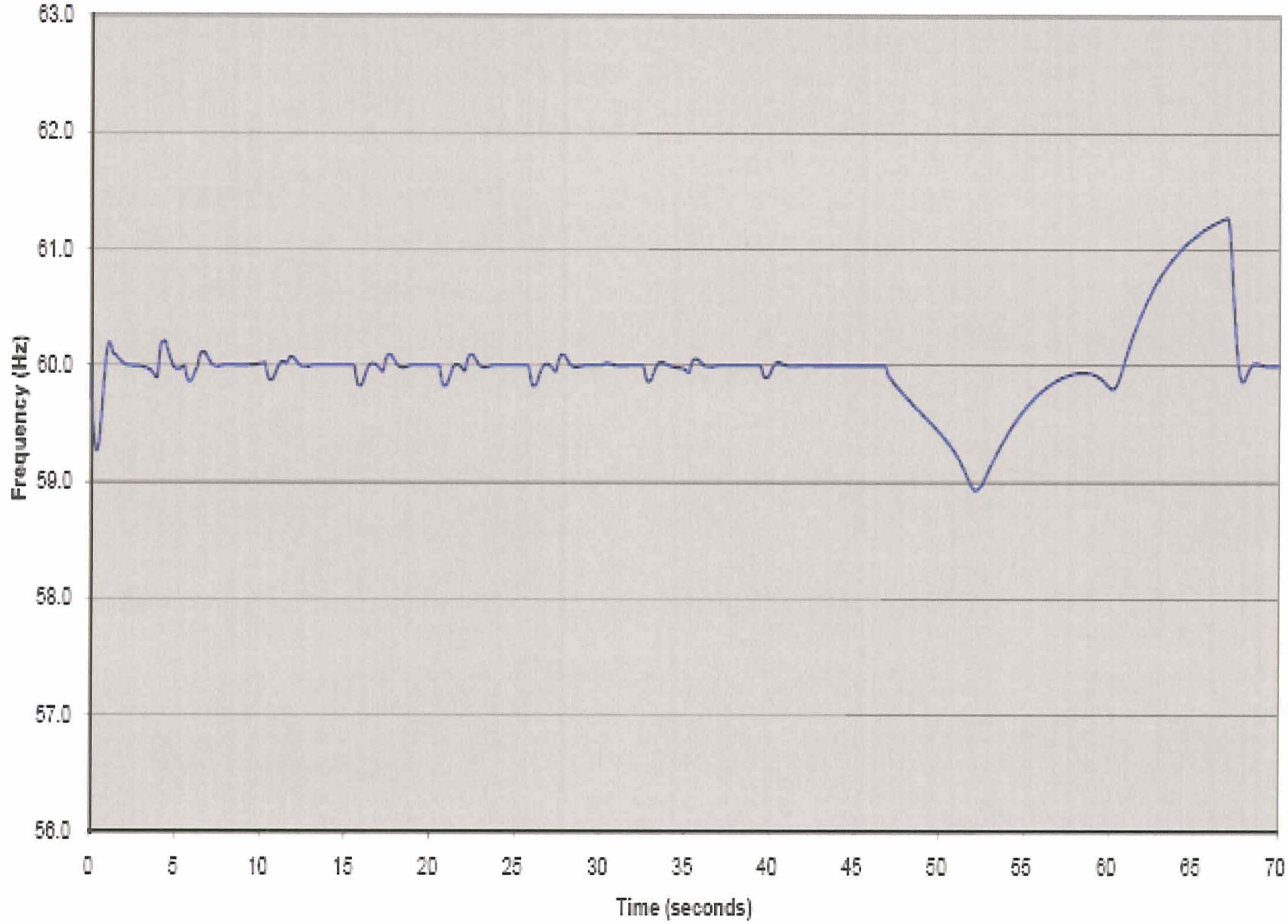
TRAIN “B” EMERGENCY DIESEL GENERATOR
VOLTAGE AND FREQUENCY PROFILES
LARGE BREAK LOSS OF COOLANT ACCIDENT
WITH LOSS OF OFFSITE POWER

4 pages follow

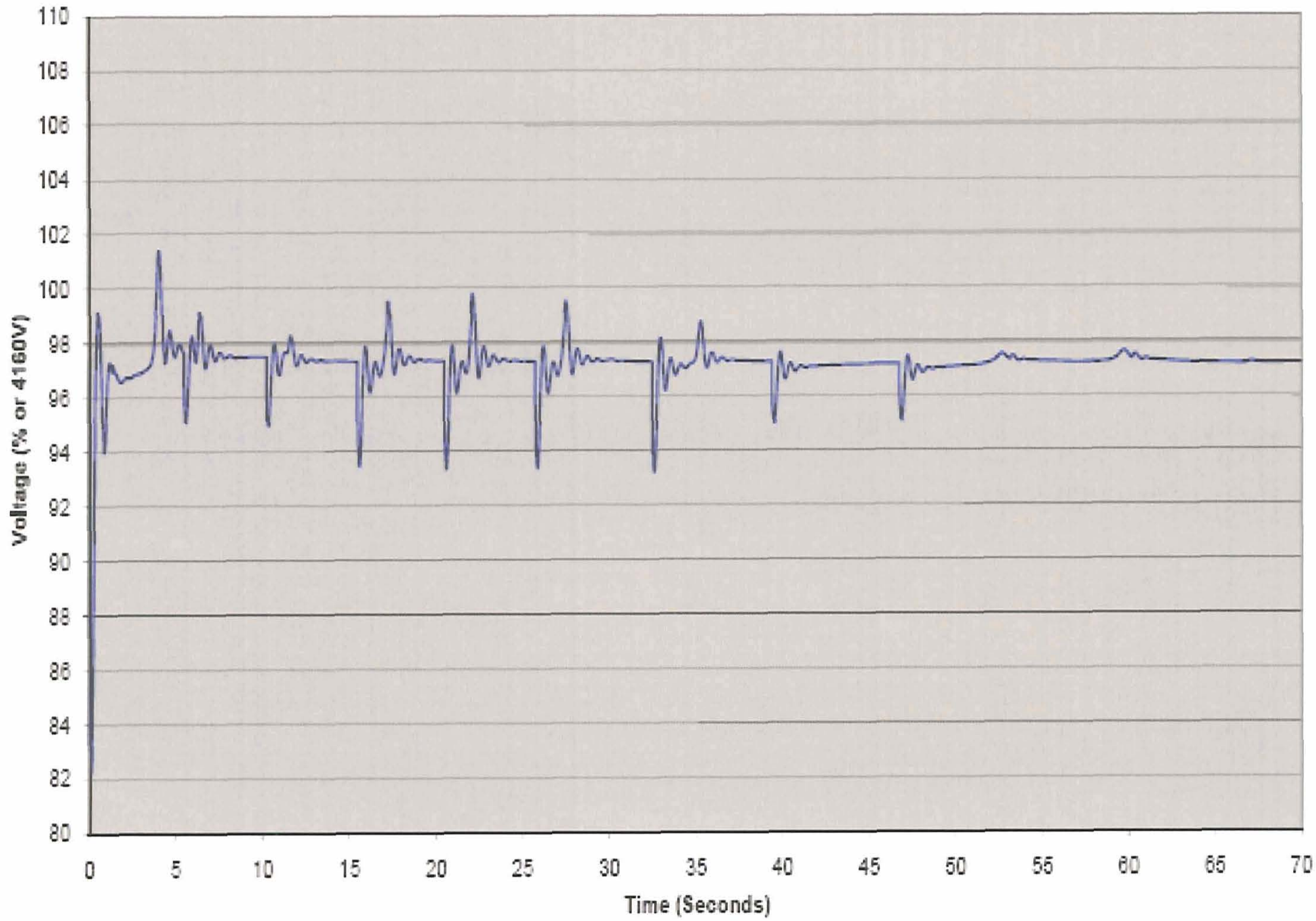
G-03/G-04 Voltage Profile
Unit 1 Design Basis Large Break LOCA & LOOP (Unit 2 LOOP Only)



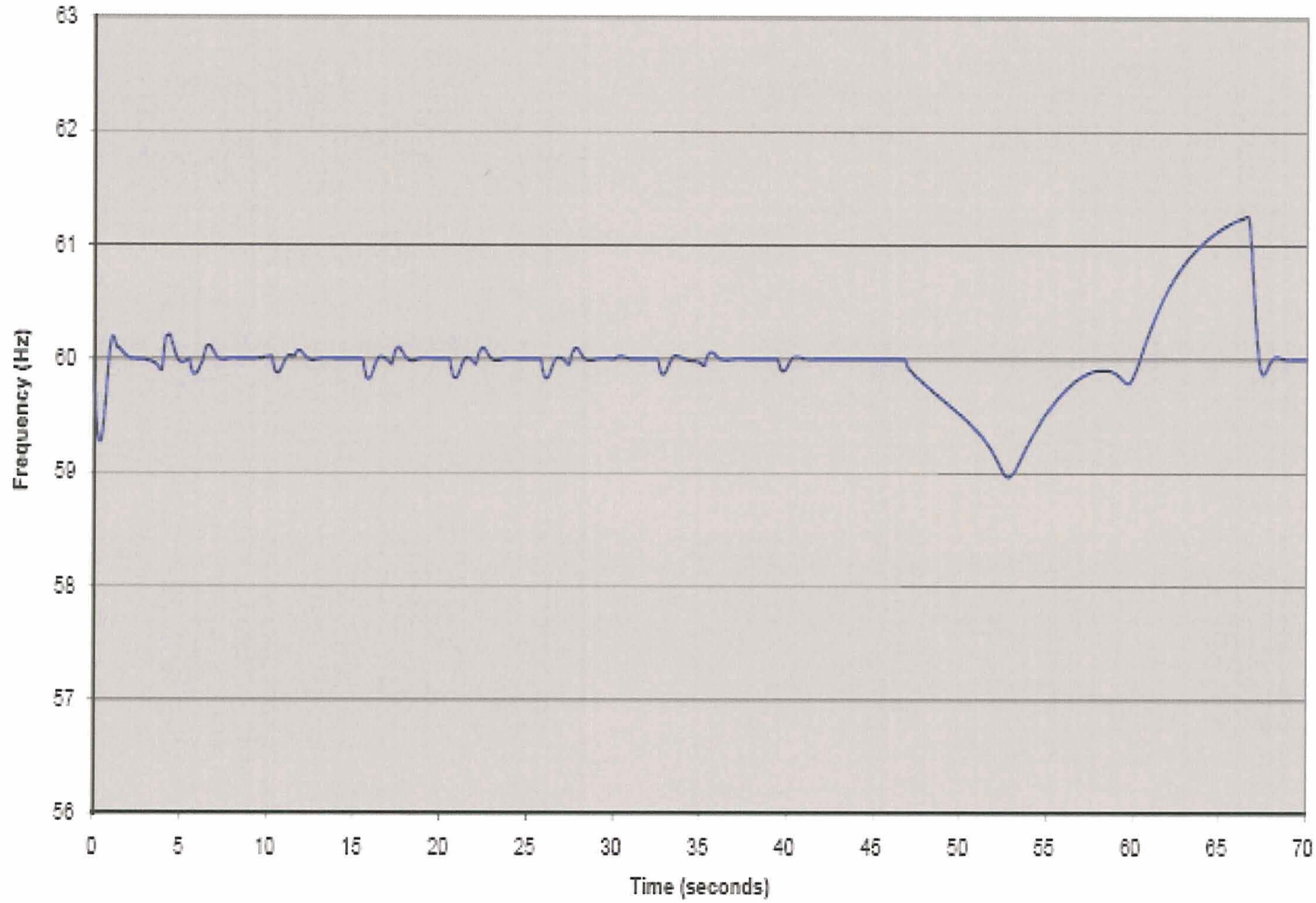
G-03/G-04 Frequency Profile
Unit 1 Design Basis Large Break LOCA & LOOP (Unit 2 LOOP Only)



G-03/G-04 Voltage Profile
Unit 2 Design Basis Large Break LOCA & LOOP (Unit 1 LOOP Only)



G-03/G-04 Frequency Profile
Unit 2 Design Basis Large Break LOCA & LOOP (Unit 1 LOOP Only)



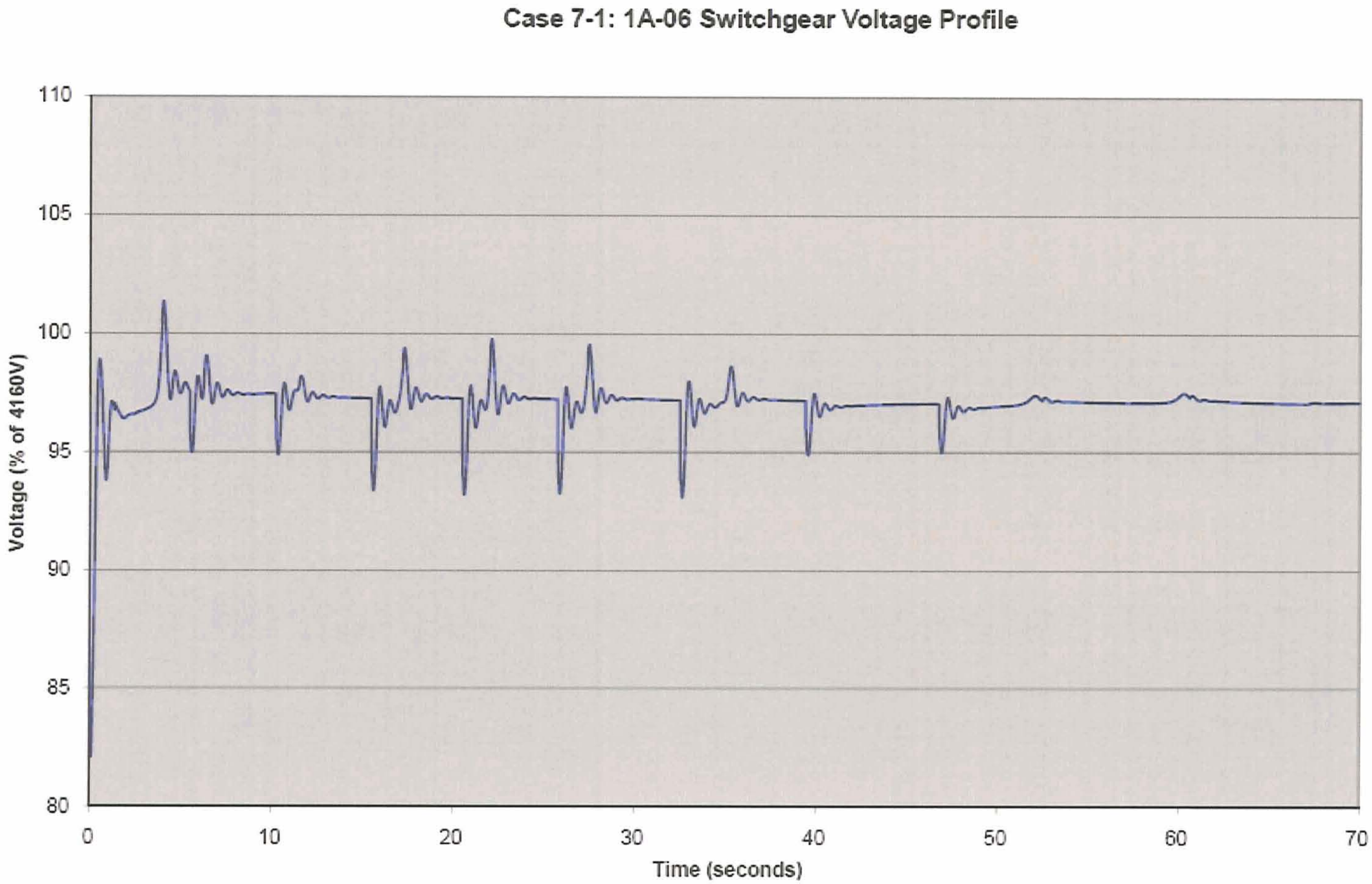
ATTACHMENT 5

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

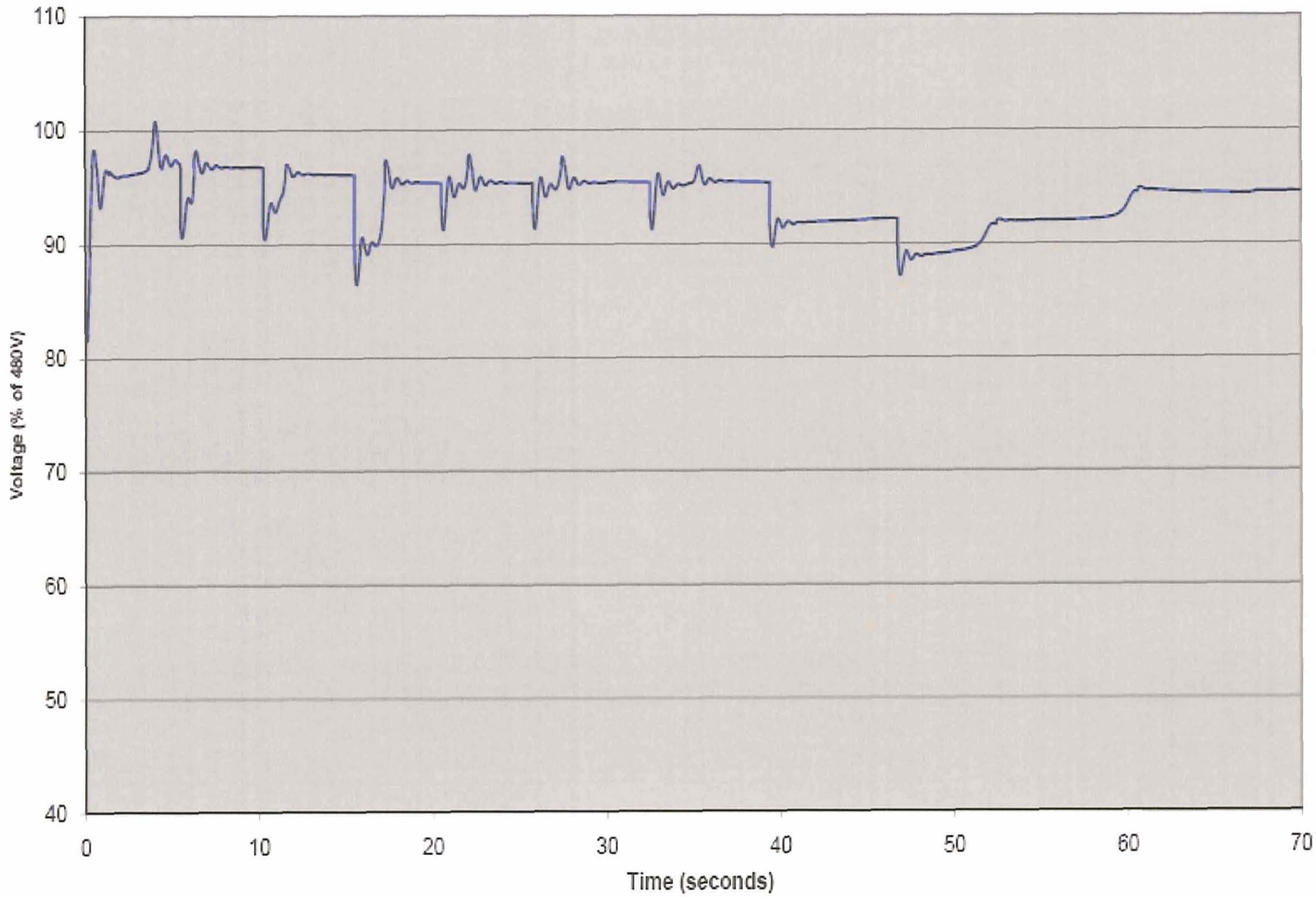
LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

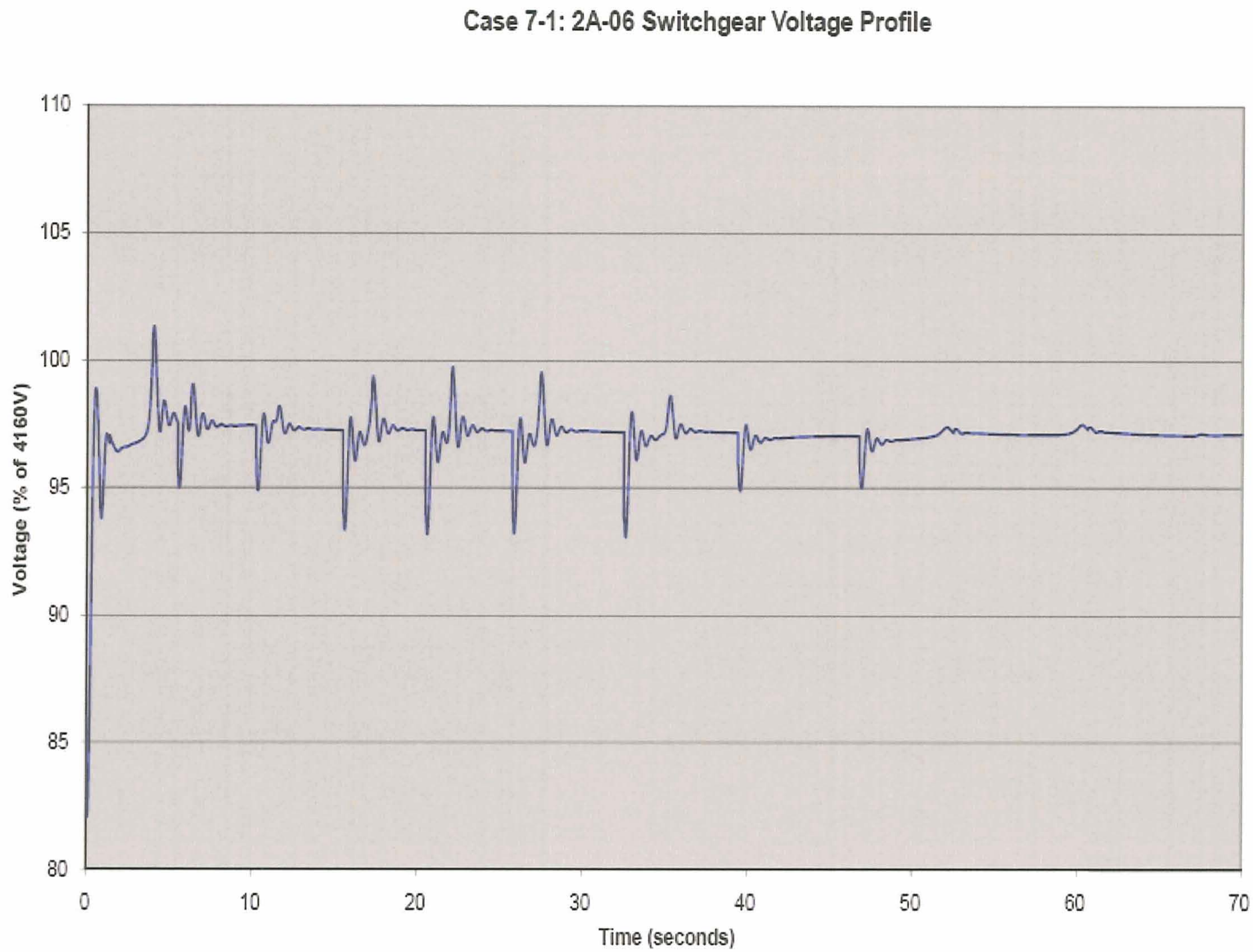
TRAIN "B" DISTRIBUTION SYSTEM VOLTAGES

16 pages follow

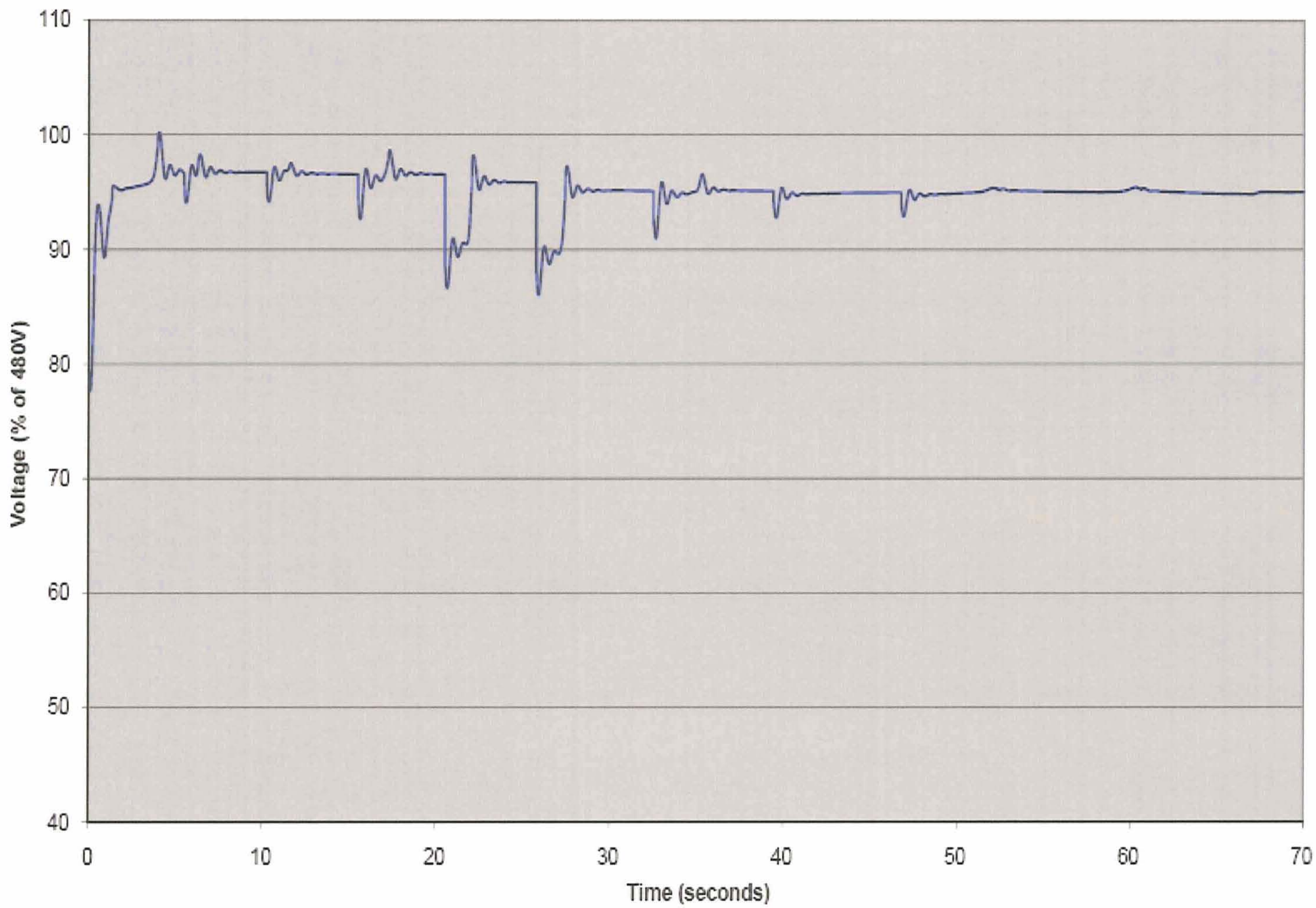

Case 7-1: 1A-06 Switchgear Voltage Profile
110
105
100
95
90
85
80
0
10
20
30
40
50
60
70
Voltage (% of 4160V)
Time (seconds)

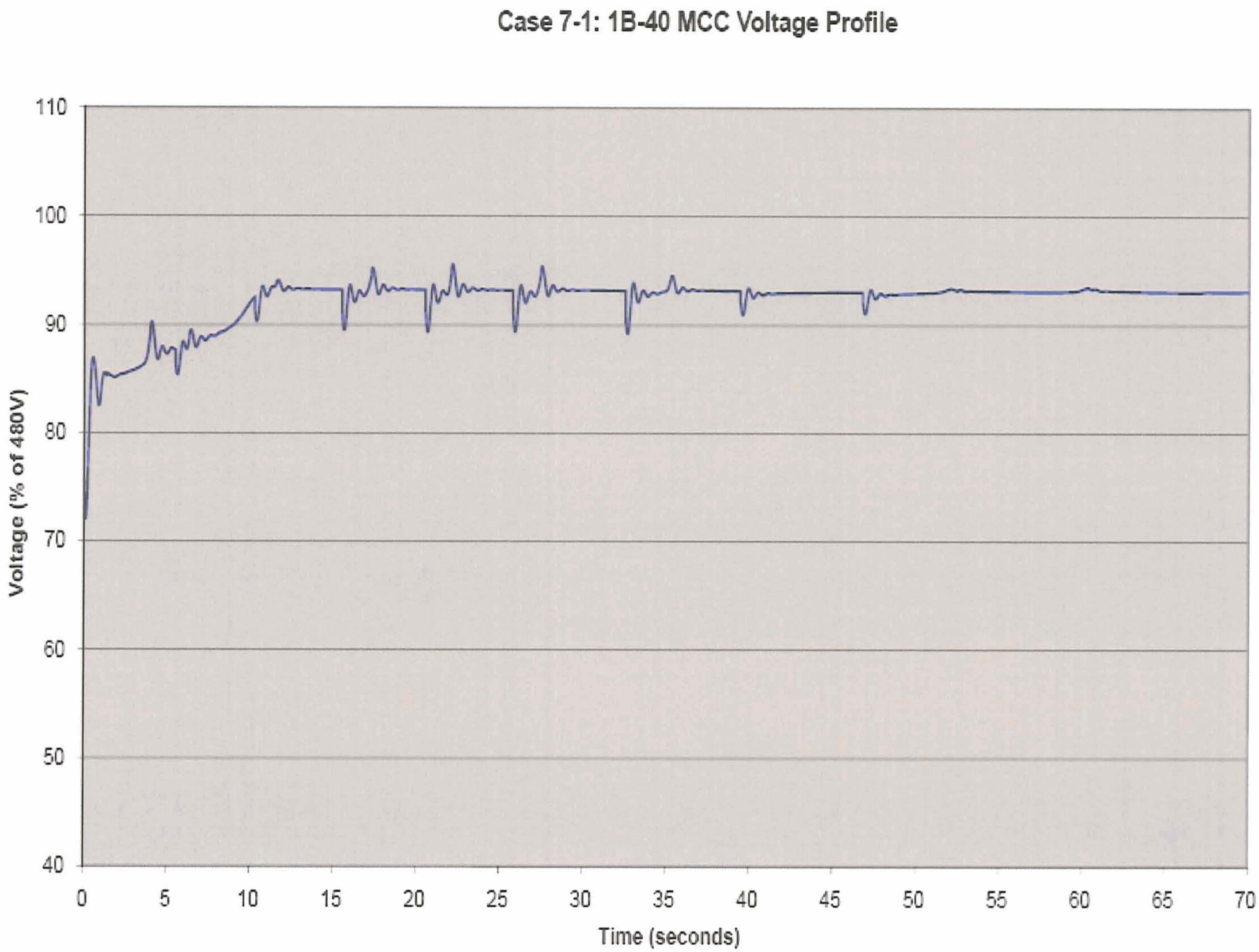
Case 7-1: 1B-04 Switchgear Voltage Profile

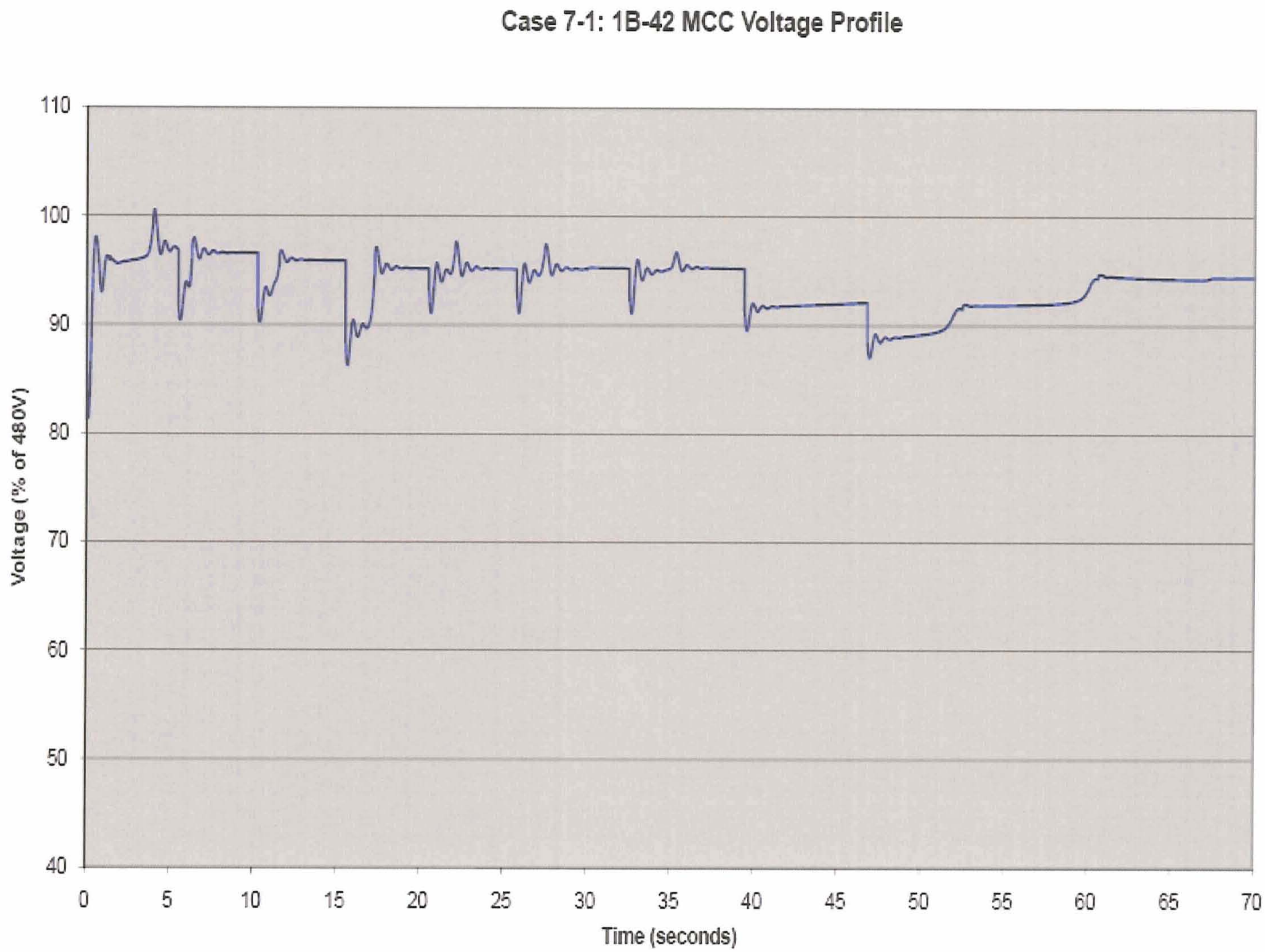


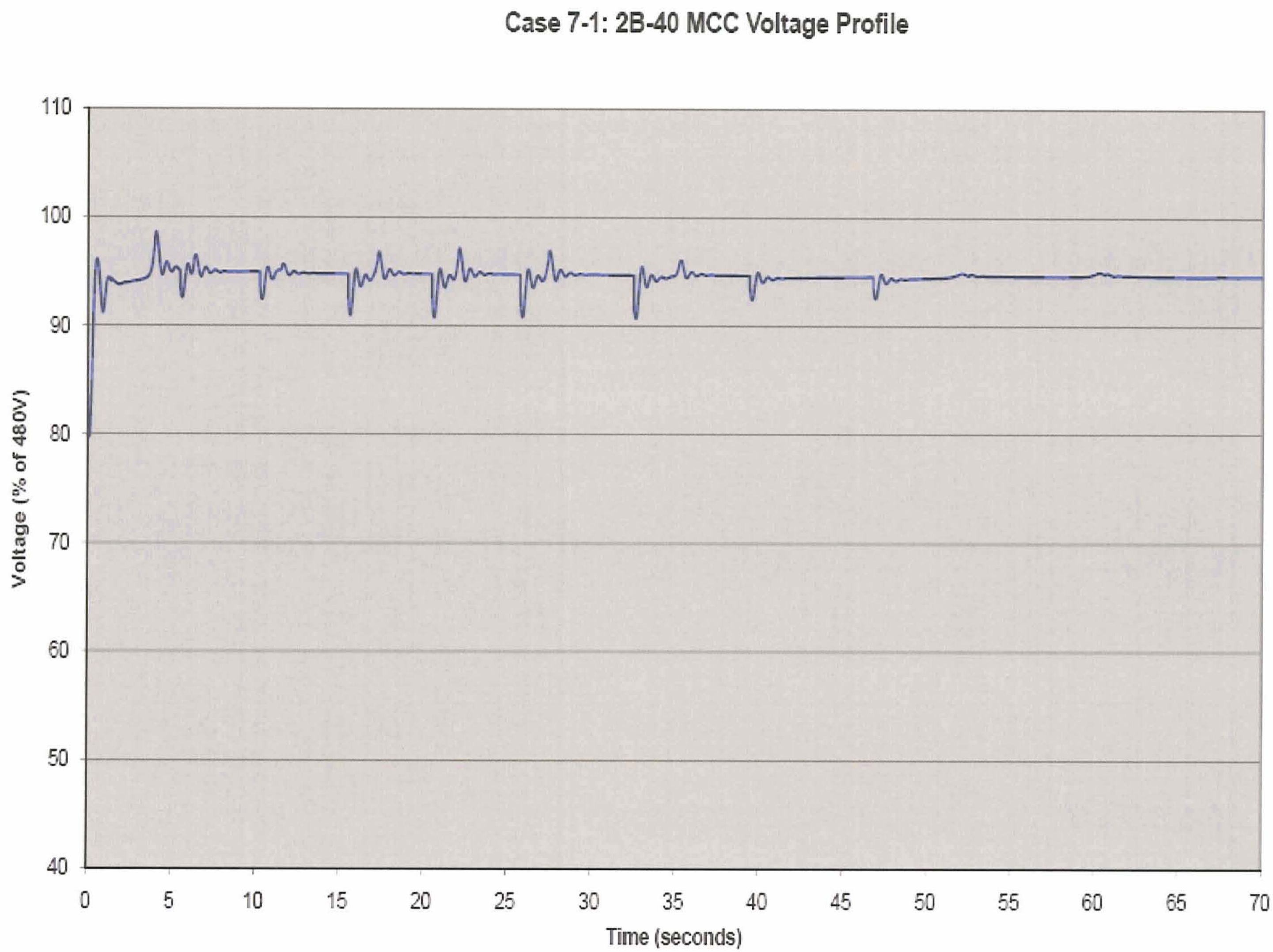

Case 7-1: 2A-06 Switchgear Voltage Profile
110
105
100
95
90
85
80
Voltage (% of 4160V)
0
10
20
30
40
50
60
70
Time (seconds)

Case 7-1: 2B-04 Switchgear Voltage Profile

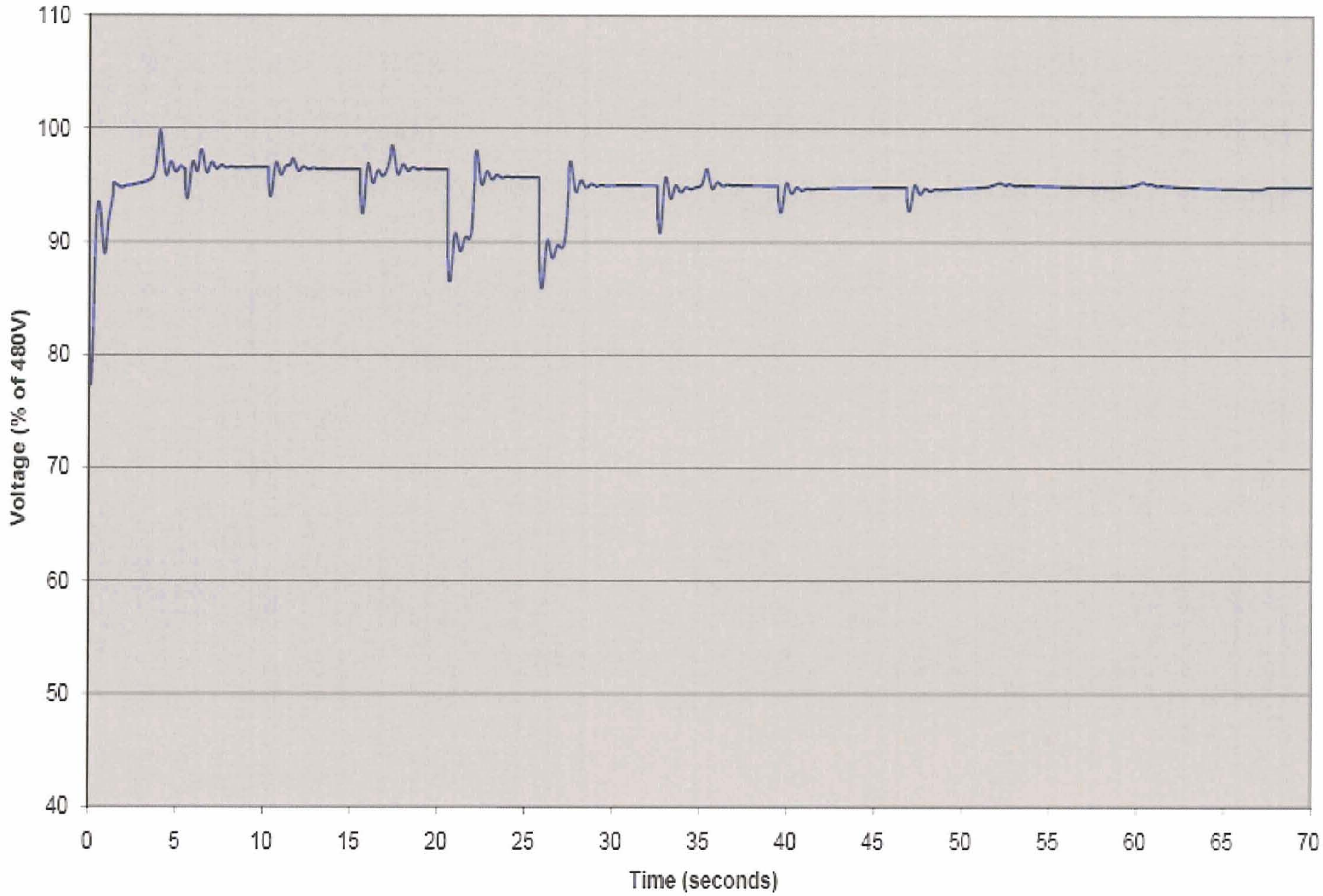



Case 7-1: 1B-40 MCC Voltage Profile
110
100
90
80
70
60
50
40
Voltage (% of 480V)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)

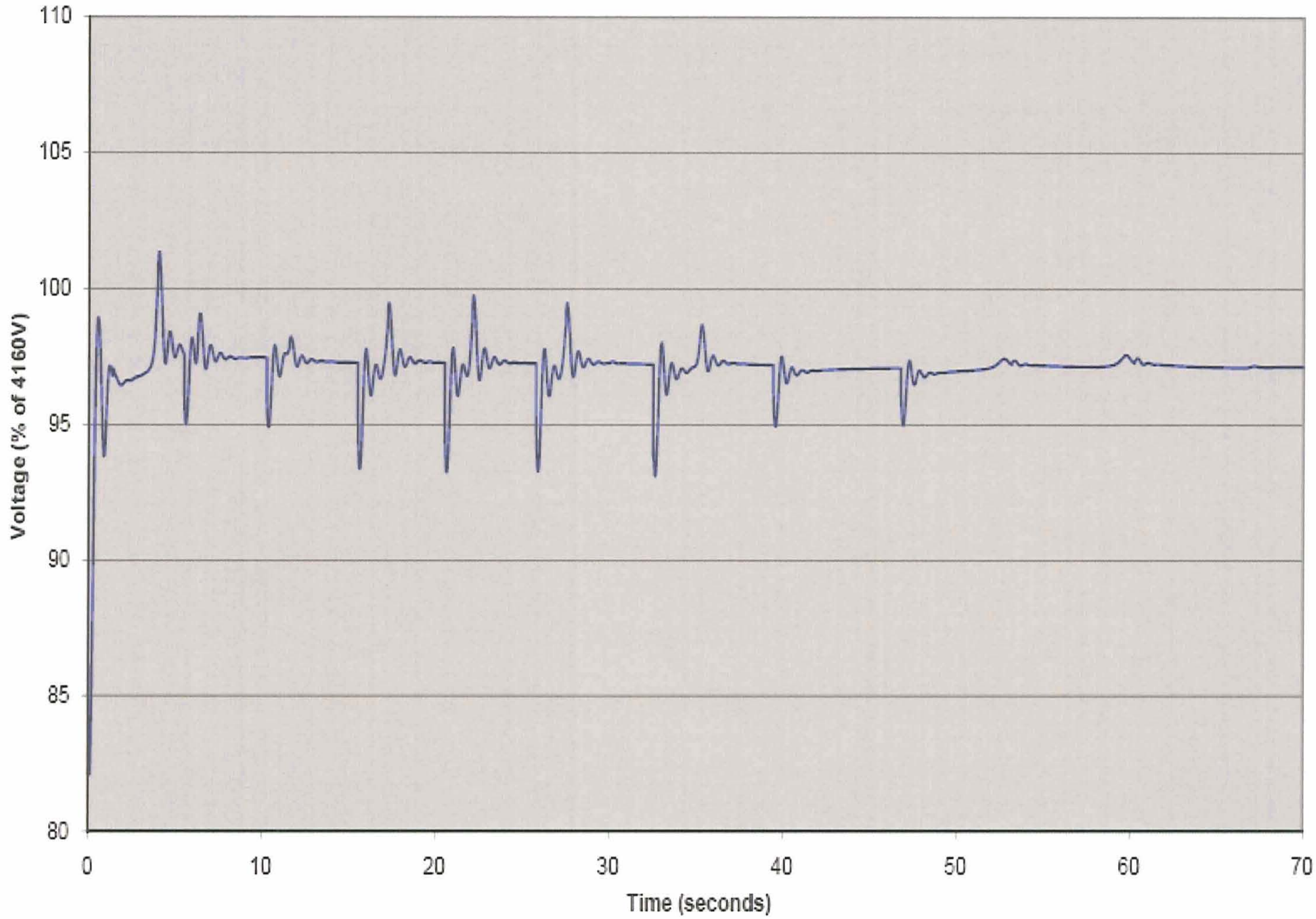

Case 7-1: 1B-42 MCC Voltage Profile
110
100
90
80
70
60
50
40
Voltage (% of 480V)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)


Case 7-1: 2B-40 MCC Voltage Profile
110
100
90
80
70
60
50
40
Voltage (% of 480V)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)

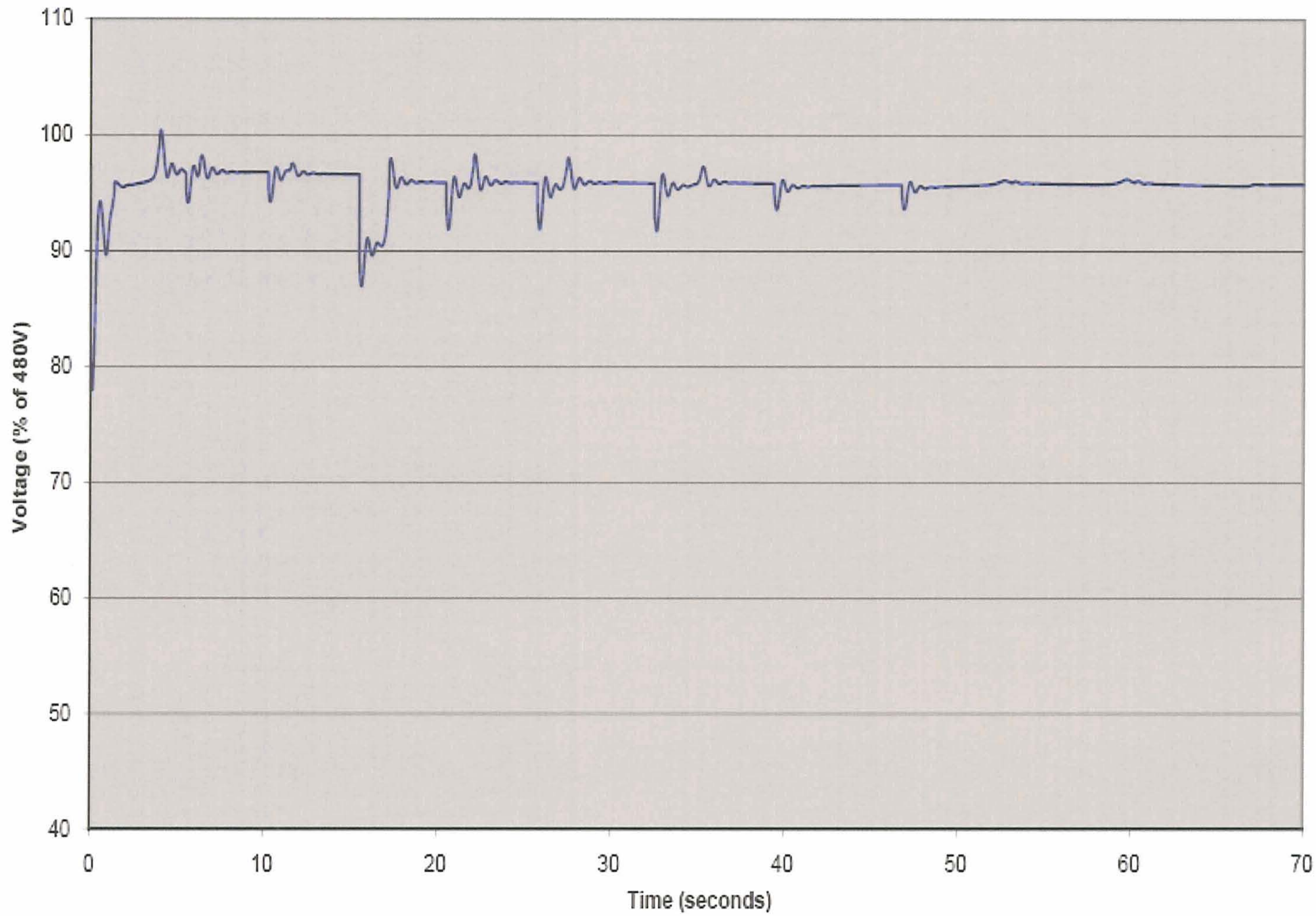
Case 7-1: 2B-42 MCC Voltage Profile



Case 10-1: 1A-06 Switchgear Voltage Profile

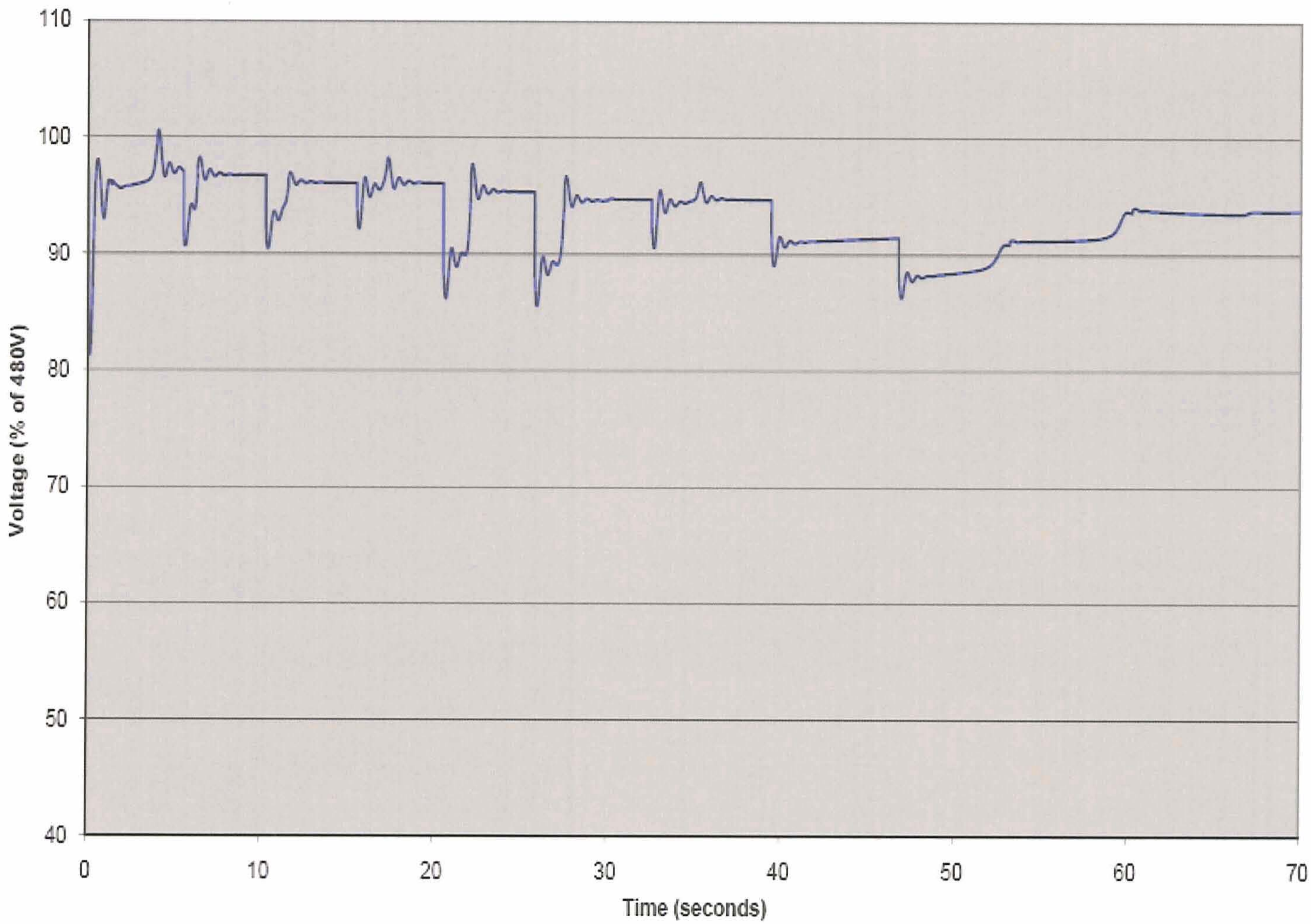


Case 10-1: 1B-04 Switchgear Voltage Profile

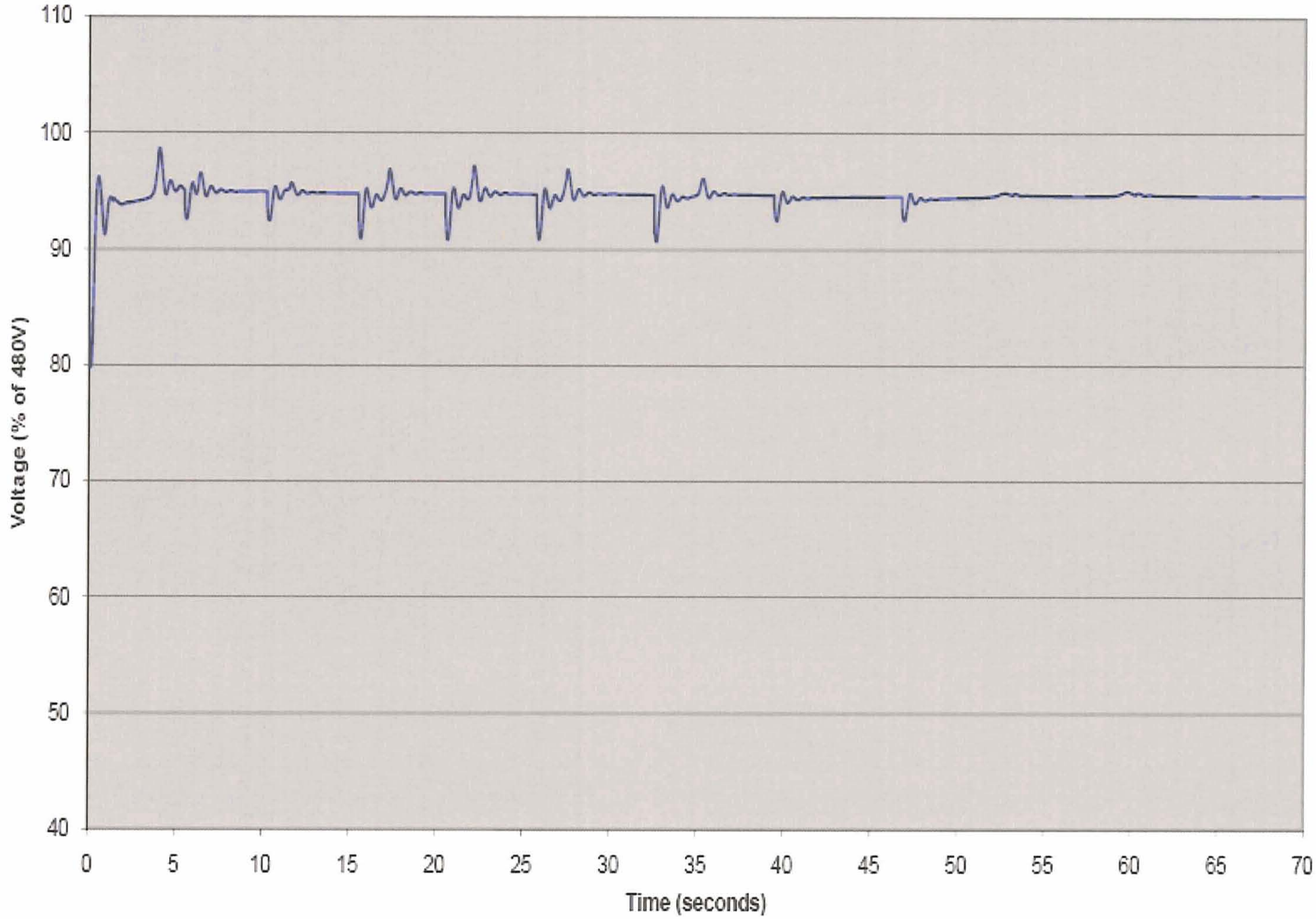


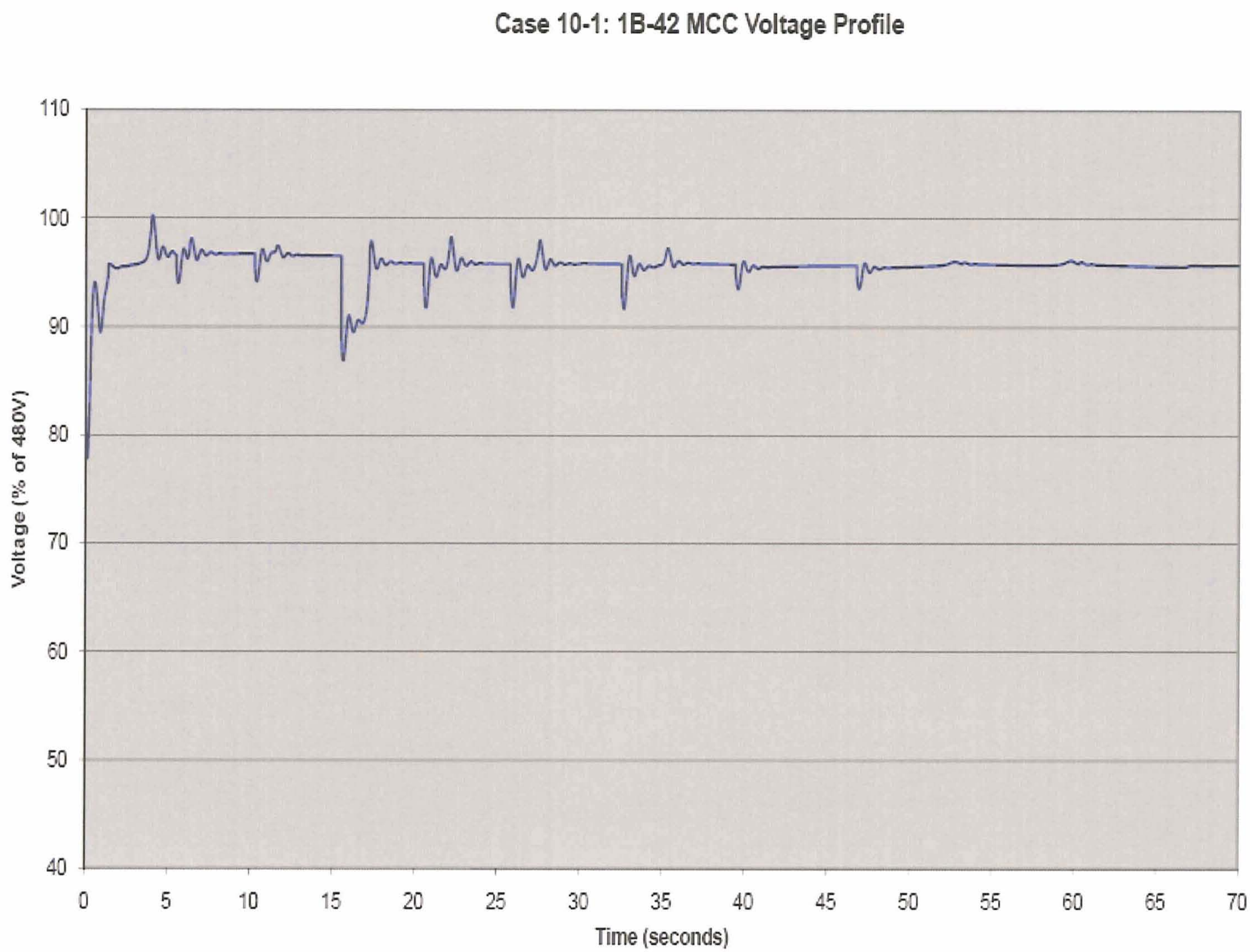

Case 10-1: 2A-06 Switchgear Voltage Profile
110
105
100
95
90
85
80
Voltage (% of 4160V)
0
10
20
30
40
50
60
70
Time (seconds)

Case 10-1: 2B-04 Switchgear Voltage Profile

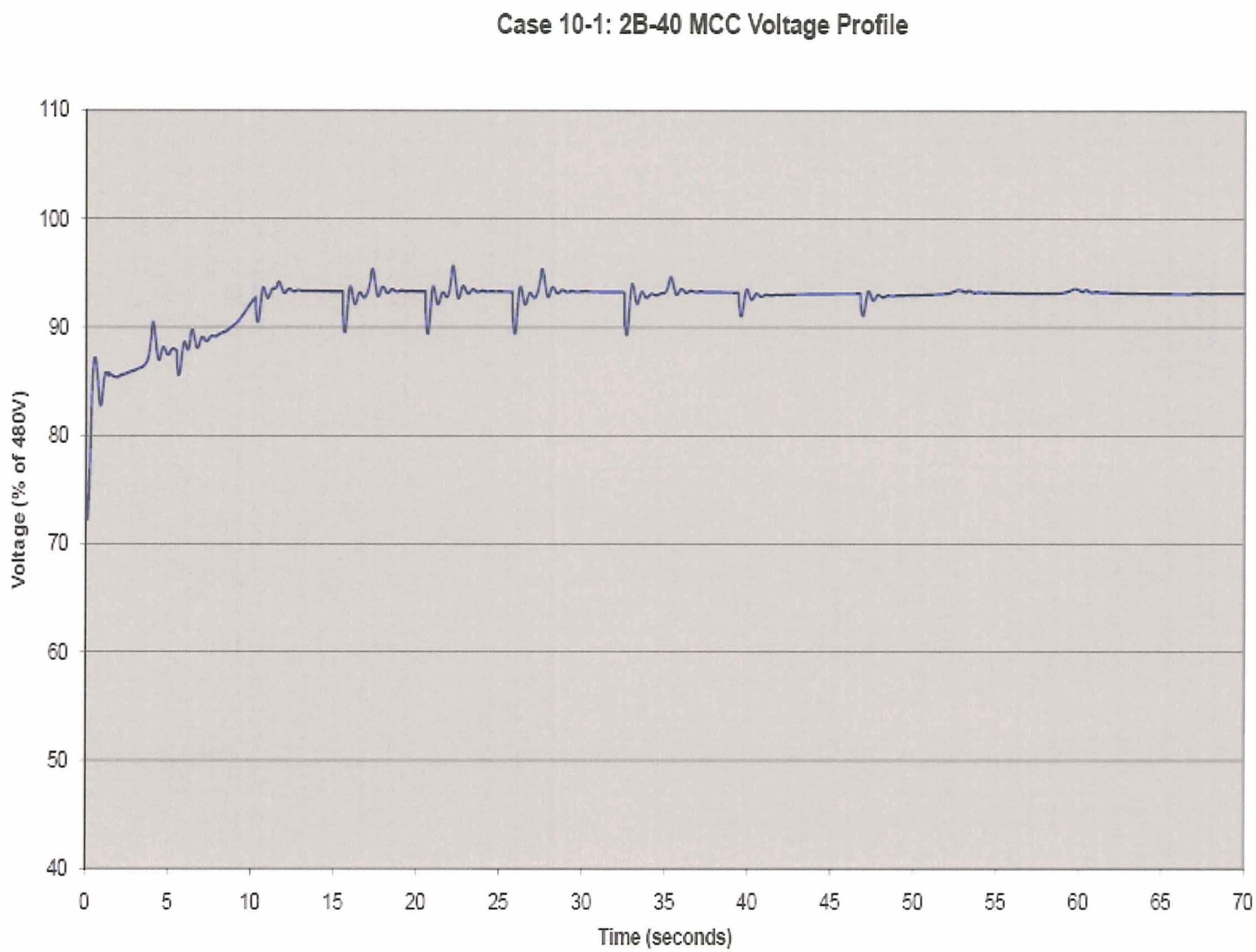


Case 10-1: 1B-40 MCC Voltage Profile



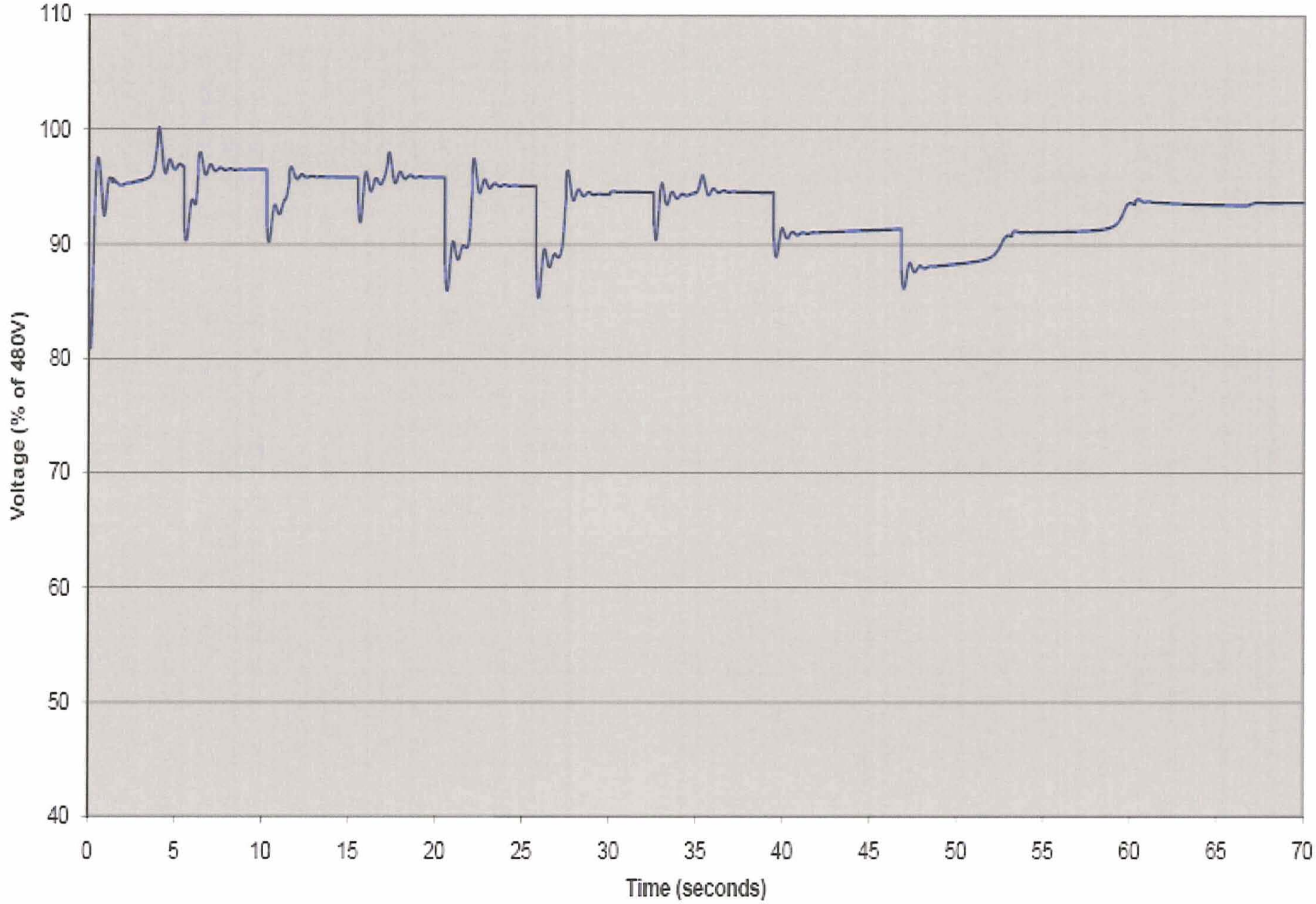


Case 10-1: 1B-42 MCC Voltage Profile
110
100
90
80
70
60
50
40
Voltage (% of 480V)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)



Case 10-1: 2B-40 MCC Voltage Profile
110
100
90
80
70
60
50
40
Voltage (% of 480V)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Time (seconds)

Case 10-1: 2B-42 MCC Voltage Profile



ATTACHMENT 6

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

MOTOR-OPERATED VALVE STROKE TIME EVALUATION

1 page follows

Train	MCC	Breaker	MOV Description	Stroke Time (seconds nameplate)	Total Stroke time including contactor dropout/motor stall (seconds)	Required Stroke Time (seconds)	Available Margin (seconds)	Total Stroke time < Required
A	1B-32	1B52-321F	1SI-852A Reactor Vessel Injection Isolation	10.56	12.86	≤ 20.00	7.14	YES
A	1B-32	1B52-321M	1SI-860A Containment Spray Isolation	11.73	15.73	≤ 16.50	0.77	YES
A	1B-32	1B52-322M	1SI-860B Containment Spray Pump Discharge Isolation	11.73	15.73	≤ 16.50	0.77	YES
A	1B-32	1B52-327C	1CV-313 Seal Leakoff Isolation	12.09	14.39	None	N/A	YES
A	1B-32	1B52-3210F	1SW-2907 Service Water From Cont Vent Clr	28.92	32.72	≤ 63.3	30.58	YES
A	1B-32	1B52-3211J	SW-2816 Aux & Serv Bldg Service Water Isolation	20.22	25.92	≤ 63.3	37.38	YES
A	1B-32	1B52-3211M	SW-2930A Service Water, SFP Heat Exchanger	19.30	23.70	≤ 63.3	39.60	YES
A	2B-32	2B52-321F	2SI-852A Low Head SI Core Deluge Isolation	10.56	12.96	≤ 20.00	7.04	YES
A	2B-32	2B52-321M	2SI-860A Containment Spray Full Flow Discharge Isol	11.73	15.73	≤ 16.50	0.77	YES
A	2B-32	2B52-322M	2SI-860B Containment Spray Pump Reduced Flow Discharge Isol	11.73	15.73	≤ 16.50	0.77	YES
A	2B-32	2B52-327C	2CV-313 Seal Leakoff Isolation	11.03	13.43	None	N/A	YES
A	2B-32	2B52-328F	SW-2927B HX-13B SFP HX SW Inlet	19.30	22.10	≤ 63.3	41.20	YES
A	2B-32	2B52-3210F	2SW-2907 HX-15A-D Cont Recirc HX Emerg FCV	28.92	31.42	≤ 63.3	31.88	YES
A	2B-32	2B52-3212D	SW-4478 WT Area Cooling coil Inlet	14.95	20.35	≤ 63.3	42.95	YES

ENCLOSURE 2

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 4
EXTENDED POWER UPRATE

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

The NRC staff determined that additional information was required (Reference 1) to enable the Electrical Engineering Branch to continue review of the auxiliary feedwater (AFW) portion of License Amendment Request (LAR) 261, Extended Power Uprate (EPU) (Reference 2). The following information is provided by NextEra in response to Question 6.

Question 6

In response to the staff's RAI dated June 2, 2009, regarding the surveillance tests for EDGs, the licensee proposed new Technical Specification Surveillance Requirement 3.8.1.7 requirement (the performance of a 24-hour endurance and load margin test of each EDG). The staff notes that the proposed EDG endurance and margin test does not envelop the accident loads for the entire duration of the 24-hr run. Specifically, EDGs G-01 and G-02 are loaded to 98.2 percent to 100.9 percent of the 2000-hour load rating for ≥ 2 hours and 90 to 100 percent of the 2000-hour load rating for the remaining 22 hours; G-03 and G-04 EDGs are loaded to 97.4 percent to 100 percent of the 200-hour load rating for ≥ 2 hours and 90 to 100 percent of the 2000-hour load rating for the remaining 22 hours with EDGs operating at the highest end of the 2-hour load range for 5 minutes. This is not consistent with RG 1.9 recommendations. The intent of the 24-hr test is to demonstrate that the EDG can operate at maximum postulated accident loads for extended duration. The 2-hour test requirement at a higher loading demonstrates design margins. Therefore, staff requests the licensee to provide basis why the proposed loading ranges are adequate to demonstrate the capability of the EDGs to operate for its intended mission time. Also, explain why EDGs designated for each unit cannot be tested during modes other than modes 1 and 2 as recommended in NUREG-1431.

NextEra Response

The proposed Technical Specification (TS) Surveillance Requirement (SR) 3.8.17 previously submitted in Reference (3) was established based on the worst case design basis emergency diesel generator (EDG) loading and provided in the NextEra response to Draft Acceptance Review Question 2 transmitted to NRC by NextEra via Reference (4).

The values provided were as follows:

	Train A		Train B	
	G-01	G-02	G-03	G-04
Worst Case Load	2801 kW	2800 kW	2877 kW	2874 kW
2000-hr rating	2850 kW	2850 kW	2848 kW	2848 kW
200-hr rating	-	-	2951 kW	2951 kW
Margin to 2000-hr rating	49 kW	50 kW	-	-
Margin to 200-hr rating	-	-	74 kW	77 kW

The test protocol requirement proposed in SR 3.8.1.7 were developed to demonstrate the capability of the EDGs to carry the loads noted above for the alternative source term (AST), EPU and AFW system upgrades without causing unnecessary wear and reduction in the long-term reliability of engine components due to testing.

To improve margin to the 2000-hour rating for the EDGs, NextEra initiated modifications to remove unnecessary loads from the EDGs. These modifications will be implemented as part of the AST modifications. The modifications will further reduce the worst case design basis loads for Train "B" EDGs as noted above. A minor increase in worst case loads for Train "A" EDGs was identified as a result of the revised calculations. This minor increase for Train "A" occurred because sufficient capacity to manually start a component cooling water pump instead of a charging pump resulted when loads were removed from Train "A". The lower power charging pump was previously available without exceeding the 2000-hour rating for the Train "A" EDGs. The modifications to remove unnecessary loads from Train "A" EDGs resulted in sufficient capacity to support starting the component cooling water pump, which might be preferred depending on operating conditions. These design modifications will result in revised EDG loading as follows:

	Train A		Train B	
	G-01	G-02	G-03	G-04
Worst Case Load	2817kW	2817 kW	2831 kW	2831 kW
2000-hr rating	2850 kW	2850 kW	2848 kW	2848 kW
Margin to 2000-hr rating	33 kW	33 kW	17 kW	17 kW

The above table provides the worst case required design basis loading on the EDGs to support mitigation of an accident during an event post AFW and AST modifications. The allowable design basis loading is 2850 kW for Train "A" EDGs and 2848 kW for Train "B" EDGs. To address the questions raised by the NRC staff, NextEra proposes to revise TS SR 3.8.1.7 previously submitted in Reference (4), as identified in Enclosure 3.

In response to the question regarding testing in MODES 1 and 2, at PBNP the EDGs are train-specific rather than unit-specific. The two Train "A" EDGs are available to supply Unit 1 and Unit 2, as are the two Train "B" EDGs. As a result, each EDG is available to be lined up to either or both units.

At least one reactor unit at PBNP is normally operating in MODE 1, although the other reactor unit may be shut down. Therefore, it is not practical to perform this surveillance on each EDG on an 18-month interval with both units shut down. PBNP has been performing 24-hour EDG load testing on a 24-month frequency safely with both units typically operating in MODE 1.

References

(1) NRC letter to NextEra Energy Point Beach, LLC, dated February 1, 2010, Point Beach Nuclear Plant, Units 1 and 2 – Request For Additional Information from Electrical Engineering Branch Re: Auxiliary Feedwater – Round 2 (TAC NOS. ME1081 and ME1082) (ML100120331)

(2) FPL Energy Point Beach, LLC letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)

(3) NextEra Energy Point Beach, LLC letter to NRC, dated June 17, 2009, License Amendment Request 261 Supplement 2, Extended Power Uprate (ML091690087)

(4) NextEra Energy Point Beach, LLC letter to NRC, dated June 17, 2009, License Amendment Request 261 Supplement 1, Extended Power Uprate (ML091690090)

ENCLOSURE 3

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

EVALUATION OF CHANGES

1. SUMMARY DESCRIPTION

2. DETAILED DESCRIPTION

3. TECHNICAL EVALUATION

4. REGULATORY EVALUATION
   - 4.1 Applicable Regulatory Requirements/Criteria
   - 4.2 Significant Hazards Consideration
   - 4.3 Conclusions

5. ENVIRONMENTAL CONSIDERATION

6. REFERENCES

8 pages follow

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, NextEra Energy Point Beach, LLC, (NextEra) proposes to revise the Technical Specifications (TS) for Point Beach Nuclear Plant (PBNP) Units 1 and 2, in support of License Amendment Request (LAR) 261 (Reference 1).

The proposed changes replace the markups of surveillance requirement (SR) 3.8.17 previously submitted in Reference (2). This LAR 261, Supplement 4 adds new SR 3.8.1.7 to TS 3.8.1, AC Sources-Operating, to perform a 24-hour surveillance test of each emergency diesel generator (EDG) at a frequency of once per 18 months.

As part of the NextEra response to Question 6 of Reference (3), NextEra initiated modifications to be implemented as part of alternative source term (AST) modifications. These modifications will reduce the worst case loads for Train "B" EDGs. A minor increase in worst case loads for Train "A" EDGs was identified as a result of the revised calculations. This minor load increase for Train "A" occurred because sufficient capacity to manually start a component cooling water pump instead of a charging pump resulted when loads were removed from Train "A" EDGs. The lower power charging pump was previously available without exceeding the 2000-hour rating for the Train "A" EDGs. The modifications to remove unnecessary loads from Train "A" EDGs resulted in enough capacity to support starting the component cooling water pump, which may be preferred, depending upon operating conditions.

This proposed change ensures the EDGs are tested at loads above expected worst case design basis accident loading.

2.0 DETAILED DESCRIPTION

Draft Acceptance Review Question 4 for the auxiliary feedwater (AFW) modification (Reference 4) states: "Describe the changes required for Section 3.8 of the Technical Specifications (TS) to verify the capability of the EDGs as a result of the design change. Explain why an EDG endurance and load margin test (24-hour) is not performed to demonstrate the capability of the EDGs to carry the emergency loads above the continuous rating."

As a result of the Extended Power Uprate (EPU), AST and the AFW system upgrades with installation of new, larger motor-driven auxiliary feedwater (MDAFW) pumps, the worst case loading on the Train "A" EDGs and Train "B" EDGs was re-evaluated. The reevaluation is documented in the NextEra response to NRC Question 2 of Reference (5).

NextEra determined that in response to Question 4 of Reference (4), a 24-hour capability test should be performed of the Train "A" EDGs and Train "B" EDGs to demonstrate the capability of the EDGs for these revised worst case design basis required loads. Supplement 2 to LAR 261 (Reference 2) proposed to add a new 18-month TS SR for the EDGs. However, this proposed SR would not have demonstrated that the EDG could operate at maximum postulated accident loads for extended duration. This proposed change will modify the proposed SR and will ensure that a 24-hour test is conducted to demonstrate that the standby emergency power sources can operate at the maximum postulated accident loads for extended duration.

The proposed change to TS 3.8.1, AC Sources – Operating, adds new SR 3.8.1.7 which states:

"Verify each standby emergency power source operates for ≥ 24 hours at ≥ 2850 kW (G01/G02), ≥ 2848 kW (G03/G04)."

The frequency is "18 months."

The following NOTES are added to SR 3.8.1.7:

1. Momentary transients outside the load and power factor ranges do not invalidate this test.

2. This Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

3. If performed with standby emergency power source synchronized with offsite power, it shall be performed at a power factor ≤ 0.87. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.

Basis for the Proposed Change:

The performance of a 24-hour endurance and load margin test of each EDG at 18-month intervals is consistent with industry practice for plants such as PBNP with 18-month refueling intervals. This is also consistent with NUREG-1431, Standard Technical Specifications (STS), Westinghouse Plants. The proposed new surveillance is consistent with SR 3.8.1.14 of NUREG-1431.

The NOTES for the proposed SR 3.8.1.7 are also consistent with NUREG-1431, with the exception of the first sentence of NOTE 2, which has been deleted in the proposed SR 3.8.1.7. The first sentence of NUREG-1431 SR 3.8.1.14, NOTE 2 states that: "this surveillance is normally not performed in MODES 1 or 2." At PBNP, the standby emergency power sources are train-specific rather than unit-specific. As a result, each standby emergency power source is available to be lined up to either or both units. At least one reactor at PBNP is normally operating in MODE 1, although the other reactor may be shut down. Therefore, it is not practical to perform this surveillance on an 18-month interval with both units shut down. PBNP has been performing 24-hour standby emergency power source load testing on a 24-month frequency safely with both units typically operating in MODE 1.

The test protocol requirements in proposed SR 3.8.1.7.1 were developed to demonstrate the capability of the standby emergency power sources to carry worst case loads for the EPU, AST and AFW system upgrades without causing unnecessary wear and reduction of long-term reliability of engine components due to testing. The specific test requirements are generally consistent with the requirements of NUREG-1431 SR 3.8.1.14, but reflect that the worst case loads determined for the Train "A" EDGs and Train "B" EDGs are close to the 2000-hour rating. See the Technical Evaluation below for a more detailed discussion of the test requirements, which are different for the Train "A" and Train "B" EDGs.

3.0 TECHNICAL EVALUATION

PBNP does not currently have a TS SR for demonstrating once per refueling interval that the standby emergency power sources can start and run continuously at full load capability for an interval of not less than 24 hours.

The diesel generator (DG) system at PBNP is composed of four shared EDGs that directly supply the safety-related 4160 V electrical distribution system. The DG system is divided into two trains, Train "A" and Train "B." The two Train "A" EDGs are located in separate rooms in the Seismic Class I section of the turbine building and are connected to the Train "A" 4160 V auxiliary system buses of both units. The two Train "B" EDGs are located in separate rooms in the Seismic Class I EDG building and are connected to both Train B 4160 V auxiliary system buses of both units. All four EDGs are normally available.

The two Train "A" EDGs are G-01 and G-02 and are normally aligned as standby emergency power sources to the Unit 1 and Unit 2 4160 V buses 1A-05 and 2A-05, respectively. The two Train "B" EDGs are G-03 and G-04, and are normally aligned as standby emergency power sources to Unit 1 and Unit 2, 4160 V buses 1A-06 and 2A-06, respectively. Both EDGs in each train can be cross-connected to provide power to alternate buses if one EDG is out of service.

Unintentional paralleling of two EDGs is controlled by the use of key switches for the EDG output breakers to the opposite units' same train 4160 V bus and with interlocks which prevent the automatic closure of two EDGs circuit breakers to the same 4160 V bus. Offsite power is not locked out upon emergency generator operation.

The DG system has several auxiliary support systems that must function in order to perform its safety-related function, including; diesel starting air (DA) system, engine fuel oil system (FO), engine cooling system, engine lubricating system, and room ventilation system (VNDG). Each diesel engine is independently supported by its own dedicated auxiliary systems for maintaining start readiness, starting, and continued operation to preclude any single failure from preventing the DG system from performing the intended safety function.

Each EDG is capable of supplying the power equipment of one complete set of safeguards equipment for one reactor unit and providing sufficient power to allow the second reactor unit to be placed in a safe shutdown condition. Each EDG is automatically started following receipt of a safety injection (SI) signal in either unit or loss of voltage on either of the two 4160 V buses with which the EDG is associated.

The G-01 and G-02 EDGs have a 2000-hour rating of 2850 kW, a 200-hour rating of 2963 kW, and a 4-hour rating of 3000 kW. The G-03 and G-04 EDGs have a 2000-hour rating of 2848 kW, a 200-hour rating of 2951 kW and a 4-hour rating of 2987 kW. All four EDGs are powered by General Motors Electro-Motive Division 20-645E4 engines. The postulated worst case design basis loads for G-01 and G-02 are 2817 kW and the postulated worst case design basis loads for G-03 and G-04 are 2831 kW.

In this proposed SR, the EDGs will be loaded to greater than the postulated worst case design basis loads. The test loads were selected to demonstrate the capability of the EDGs to carry the design basis loads above the continuous rating of the EDGs and to prevent routine overloading of the EDG. The postulated worst case design basis loads for G-01 and G-02 are not more than the 2000-hour load rating and the postulated worst case design basis loads for G-03 and G-04 are not more than the 2000-hour load rating

Conducting the surveillance at these power levels ensures that all components will reach long-term thermal equilibrium, equivalent to that seen under emergency conditions and sufficient to detect credible forms of degradation. Monitoring of typical engine parameters such as water temperature, oil temperature, fuel pressure and oil pressure provides assurance that support systems and components are functioning correctly for all anticipated operating conditions. Note that the actual loads are expected to be lower than the maximum design basis loads based on the significant conservatisms used to develop the worst case design basis loading.

TS Limiting Condition of Operation (LCO) 3.8.1.c requires a minimum of one standby emergency power source capable of supplying each 4160 V/480 V Class 1E safeguards bus to be OPERABLE. This LCO is applicable in MODES 1, 2, 3, and 4. With four EDGs normally available, the probability of any one EDG experiencing the maximum design basis load is reduced.

The 18-month frequency is consistent with applicable regulatory guidance and NUREG-1431 guidance, and ensures the surveillance will be performed approximately once per refueling interval consistent with other surveillance requirements.

NOTE 2 from NUREG-1431 SR 3.8.1.14, to not normally perform this surveillance in MODES 1 or 2, is not applicable. This SR may be performed in MODES 1, 2, 3, and 4, as discussed in the basis for the proposed change.

Adequate procedure responses are available to cope with transients and receipt of an auto start signal. Restrictions are in place to prevent parallel operation of the EDG when off-site power is threatened due to weather conditions or other factors. Perturbations of off-site and on-site electrical systems are minimized by procedural restrictions associated with 345 kV breaker alignment, system lineups, 13.8 kV and 4160 V switching, and coordination with the transmission line operator. Additionally, performance of this surveillance will be restricted to those times when it will not be necessary to enter the required Action of LCO 3.8.1.c. As a result, there is no reduction in plant safety when this surveillance is performed in MODES 1, 2, 3, and 4.

The surveillance will be performed with emergency power source at a power factor of ≤ 0.87. A value of ≤ 0.87 envelopes the power factor under emergency load conditions. Under certain conditions when grid voltage is high, EDG excitation may result in unacceptably high bus voltages or result in excessive EDG excitation levels to maintain a power factor of 0.87. In these cases, the power factor shall be maintained as close to 0.87 without exceeding applicable limits. This is consistent with NUREG-1431 guidance.

There is sufficient long-term loading to provide reasonable assurance that the EDGs are capable of providing the maximum design basis loads above the continuous rating. The surveillance is conducted at a frequency that is consistent with applicable regulatory guidance and NUREG-1431 guidance.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

PBNP was designed and constructed to comply with the intent of the draft AEC General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967 (ML003674718). PBNP was licensed prior to the 1971 publication of Appendix A, General Design Criteria for Nuclear Power Plants, to 10 CFR 50. As such PBNP was not licensed to 10 CFR 50, Appendix A.

The origin of the PBNP GDCs relative to the Atomic Energy Commission proposed GDC is discussed in FSAR Section 1.3.

PBNP GDC 19 and GDC 39, are comparable to Appendix A GDC 17, Electric Power Systems, and GDC 20, Protection System Functions, respectively. Therefore, the applicable regulatory requirements are:

- PBNP GDC 19, "Protection System Reliability," states,

  "Protection systems shall be designed for high functional reliability and inservice testability necessary to avoid undue risk to the health and safety of the public."

- PBNP GDC 39, "Emergency Power," states,

  "An emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning of the engineered safety features and protection systems required to avoid undue risk to the health and safety of the public. This power source shall provide this capacity assuming a failure of a single active component."

10 CFR 50.63 c(2), Alternate AC source states that:

The alternate ac power source(s), as defined in § 50.2, will constitute acceptable capability to withstand station blackout provided an analysis is performed which demonstrates that the plant has this capability from onset of the station blackout until the alternate ac source(s) and required shutdown equipment are started and lined up to operate. The time required for startup and alignment of the alternate ac power source(s) and this equipment shall be demonstrated by test. Alternate ac source(s) serving a multiple unit site where onsite emergency ac sources are not shared between units must have, as a minimum, the capacity and capability for coping with a station blackout in any of the units. At sites where onsite emergency ac sources are shared between units, the alternate ac source(s) must have the capacity and capability as required to ensure that all units can be brought to and maintained in safe shutdown (non-DBA) as defined in § 50.2. If the alternate ac source(s) meets the above requirements and can be demonstrated by test to be available to power the shutdown buses within 10 minutes of the onset of station blackout, then no coping analysis is required.

FSAR Appendix A.1 provides detail on the response of the EDGs to a Station Blackout.

NextEra has determined that the proposed changes do not require any exemptions or relief from regulatory requirements and do not affect conformance with any General Design Criterion (GDC) differently than described in the FSAR.

4.2 Significant Hazards Consideration

The proposed amendment would add an 18-month surveillance requirement (SR) to the Point Beach Nuclear Plant (PBNP) technical specifications (TS) to conduct a 24-hour endurance run of each standby emergency power source based upon plant-specific worst case design basis loading.

NextEra Energy Point Beach (NextEra) has evaluated whether or not a significant hazard is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   This supplement to License Amendment Request (LAR) 261 proposes to add an 18-month SR to conduct a 24-hour endurance test of each standby emergency power source. The proposed SR establishes loading requirements for a 24-hour operational test. The standby emergency power sources are used to support mitigation of the consequences of postulated design basis accidents in the event of loss of offsite power. However, the standby emergency power sources are not initiators of any previously evaluated accidents. The performance of this proposed SR will not increase the probability of any accident previously evaluated.

   This new surveillance demonstrates the capability of the standby emergency power sources to meet their worst case loading under postulated accident conditions and provides assurance of operability of the required standby emergency power sources. The standby emergency power sources are also available to support mitigation of previously evaluated accidents during the 24-hour performance of the new surveillance. The proposed SR will not increase the consequences of a previously evaluated accident.

   Therefore, this proposed TS change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   This supplement to LAR 261 proposes to add an 18-month surveillance to conduct a 24-hour endurance test of each standby emergency power source. The proposed SR addition sets specific loading requirements for this 24-hour operational test. The proposed TS change does not physically alter the plant (i.e., no new or different type of equipment will be installed). The proposed change does not change any parameters governing normal plant operation. The new surveillance is similar to a 24-hour EDG test currently performed as part of an emergency diesel generator (EDG) reliability program. The standby emergency power sources will be operated in the same manner as they are currently and no new accident scenarios, failure mechanisms or limiting single failures are introduced as a result of the proposed new surveillance.

Therefore the proposed Technical Specification change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

Response: No

This supplement to LAR 261 proposes to add an 18-month surveillance to conduct a 24-hour endurance test of each standby emergency power source. The proposed SR establishes loading requirements for a 24-hour operational test. This proposed new surveillance does not have any effect on the margin of safety, since it does not affect any regulatory acceptance limits. The periodic surveillance will provide reasonable assurance that the standby emergency power sources are capable of supplying the worst case design basis accident loads. The new surveillance is similar to a 24-hour EDG test currently performed as part of an EDG reliability program.

Therefore, this proposed TS change does not involve a significant reduction in the margin of safety.

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

The Plant Operations Review Committee has reviewed the proposed changes and concurs with this conclusion.

5.0 ENVIRONMENTAL CONSIDERATION

NextEra has evaluated the proposed changes and has concluded that the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. FPL Energy Point Beach, LLC, letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564).

2. NextEra Energy Point Beach, LLC, letter to NRC, dated June 17, 2009, License Amendment Request 261 Supplement 2, Extended Power Uprate (ML091690087)

3. NRC letter to NextEra Energy Point Beach, LLC, dated February 1, 2010, Point Beach Nuclear Plant, Units 1 and 2 – Request for Additional Information from Electrical Engineering Branch Re: Auxiliary Feedwater – Round 2 (TAC Nos. ME1081 and ME1082) (ML100120331)

4. NRC electronic mail to NextEra Energy Point Beach, LLC, dated June 2, 2009, Draft Questions from the Staff on missing information to the AFW modification (ML091530604)

5. NextEra Energy Point Beach, LLC, letter to NRC, dated June 17, 2009, License Amendment Request 261 Supplement 1, Extended Power Uprate (ML091690090)

ENCLOSURE 4

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261 SUPPLEMENT 4
EXTENDED POWER UPRATE

PROPOSED TECHNICAL SPECIFICATION CHANGES

1 page follows

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.6	Verify each standby emergency power source: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	18 months
SR 3.8.1.7	-------------------------NOTES------------------------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. This Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 3. If performed with the standby emergency power source synchronized with offsite power, it shall be performed at a power factor ≤ 0.87. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. -- Verify each standby emergency power source operates for ≥ 24 hours at ≥ 2850 kW (G01/G02), ≥ 2848 kW (G03/G04)	18 months

ENCLOSURE 5

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261, SUPPLEMENT 4
EXTENDED POWER UPRATE

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES

(FOR INFORMATION ONLY)

3 pages follow

SURVEILLANCE REQUIREMENTS (continued)

performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1, 2, 3 or 4. Risk insights or deterministic methods may be used for this assessment.

SR 3.8.1.6

As required by Regulatory Guide 1.9 (Ref. 4), this Surveillance ensures that the manual synchronization and load transfer from the standby emergency power source to the offsite source can be made and the standby emergency power source can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the standby emergency power source to reload if a subsequent loss of offsite power occurs. The standby emergency power source is considered to be in ready to load status when the standby emergency power source is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on bus undervoltage, and the load sequence timers are reset.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 4), and takes into consideration unit conditions required to perform the Surveillance.

SR 3.8.1.7

This SR demonstrates once per 18 months that the standby emergency power sources can start and run continuously at full load capability.

The standby emergency power sources are tested at loads greater than the maximum expected design basis loading. The maximum design basis loading remains ≤ 2850 kW for Train A and ≤ 2848 kW for Train B.

The standby emergency power source starts for this Surveillance can be performed either from standby or hot conditions. The provisions for

SURVEILLANCE REQUIREMENTS (continued)

pre-lubricating and warmup, discussed in SR 3.8.1.2 and gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

This Surveillance is modified by three Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test.

Note 2 allows the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

Note 3 ensures that the standby emergency power source is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.87. This power factor is representative of the actual inductive loading a standby emergency power source would see under design basis accident conditions.

Under certain conditions, however, Note 2 allows the Surveillance to be conducted at a power factor other than ≤ 0.87. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.87 results in voltages on the emergency buses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.87 while still maintaining acceptable voltage limits on the emergency buses.

In other circumstances, the grid voltage may be such that the standby emergency power source excitation levels needed to obtain a power factor of 0.87 may not cause unacceptable voltages on the emergency buses, but the excitation levels are in excess of those recommended for the standby emergency power source. In such cases, the power factor shall be maintained as close as practicable to 0.87 without exceeding the standby emergency power source excitation limits.

BASES

REFERENCES

1. FSAR. Section 1.3.

2. FSAR. Chapter 8.

3. FSAR. Chapter 14.

4. Regulatory Guide 1.9, Rev. 3, July 1993.

5. Regulatory Guide 1.93, Rev. 0, December 1974.

6. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.

7. Calculation 2005-0054, "Control Building GOTHIC Temperature Calculation."

8. Calculation 2004-0002, "AC Electrical System Analysis."