Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Monticello Scenario No.: NRC Scenario 1 Op-Test No.: 2015301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 100% Power
1AR XFMR is OOS for an oil leak
11 Stator Cooling Pump is OOS for motor replacement
Turnover: Place the Standby RBCCW Pump in service

Event No.	Malfunction No.	Event Type*	Event Description
1	N/A	N BOP	Places the Standby (12) RBCCW Pump in service.
2	CH08B	C OATC	The In-Service CRDH Pump will trip requiring the OATC to start the standby pump.
3	AP01G	C / R / TS BOP / OATC SRO	G SRV will mechanically lift inadvertently. The BOP will take action to close the SRV and the SRV will close when the OATC reduces reactor power with recirc pumps. The CRS will evaluate TSs for an inoperable LL-SET SRV.
4	C-08-B01	C / TS BOP / SRO	The 2R XFMR will develop an oil leak that will require the BOP to perform an emergency transfer of plant Busses. The CRS will evaluate TSs for offsite power sources.
5	AP01G PC05	M CREW	G SRV will reopen and actions to close the SRV will be unsuccessful. The crew will be required to insert a manual reactor scram. Following the scram, an unisolable torus leak will occur eventually requiring the crew to perform an emergency depressurization.
6	CH02_058	C OATC	Following the scram, one control rod will fail to insert. The OATC will be required to manually insert the control rod.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): 5 **(E2-E6)**
Malfunction(s) after EOP (1-2): 1 (**E6)**
Abnormal Events (2-4): 3 (E2, **E3, E4)**
Major Transient(s) /E-Plan entry (1-2): 1 (**E5)**
EOPs (1-2**):** 2 **(1100, 1200)**
EOP Contingencies (0-2): 1 **(ED)**
Critical Tasks (2-3): 2

ES-301-5 Quantitative attributes:

BOP Normal (1/set): 1 (**E1)**
OATC Reactivity (1/set): 1 (**E3)**
BOP I/C (4/set): 2 (**E3, E4)**
OATC I/C (4/set): 2 (**E2, E6)**
SRO-I I/C (4/set incl. 2 as OATC): 5 (**E2 – E6)**
SRO Tech Spec (2/set): 2 (**E3, E4)**
ALL Major Transients (2/set): 1 (**E5)**

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Monticello Scenario No.: NRC Scenario 2 Op-Test No.: 2015301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 40% Power
HPCI OOC
11 Stator Water Cooling Pump OOC
Turnover: Place 2nd MFRV in service

Event No.	Malfunction No.	Event Type*	Event Description
1	N/A	N BOP	BOP places 2nd Main Feedwater Regulating Valve in service.
2	NI17B	I / TS OATC / SRO	RBM B will fail resulting in a Rod Block. The OATC will bypass the RBM and CRS will evaluate TS.
3	C-04-A35	C BOP / SRO	The Vessel Flange will leak due to startup activities. The BOP will take action to clear the condition.
4	CH01_-61	R / C / TS OATC / SRO	Control Rod 26-27 will begin to drift out. The OATC will take action to insert the drifting control rod. The CRS will evaluate TS.
5	EG02B	C Crew	The remaining Stator Water Cooling Pump will trip requiring the Crew to insert a Manual Scram.
6	CH22A/B	C / M CREW	Upon insertion of the Scram, a set of SDV Vent and Drain valves will fail to close resulting in a radiation release to secondary containment.
7	AP08C/D	C (Post) BOP	Two of the three ADS valves will fail to open for the Emergency Depressurization. The BOP will continue to open SRVs until 3 are verified open.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): 6 **(E2-E7)**
Malfunction(s) after EOP (1-2): 1 (**E6)**
Abnormal Events (2-4): 2 (**E4, E5)**
Major Transient(s) /E-Plan entry (1-2): 1 (**E7)**
EOPs (1-2**):** 1 **(1300)**
EOP Contingencies (0-2): 1 **(ED)**
Critical Tasks (2-3): 2

ES-301-5 Quantitative attributes:

BOP Normal (1/set): 1 (**E1)**
OATC Reactivity (1/set): 1 (**E4)**
BOP I/C (4/set): 2 (**E3, E7)**
OATC I/C (4/set): 2 (**E2, E4)**
SRO-I I/C (4/set incl. 2 as OATC): 6 (**E2 – E7)**
SRO Tech Spec (2/set): 2 (**E2, E4)**
ALL Major Transients (2/set): 1 (**E6)**

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Monticello Scenario No.: NRC Scenario 3 Op-Test No.: 2015301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 100% Power
RCIC Suction aligned to the Torus
11 CRDH Pump OOC
Turnover: Realign RCIC suction to the CSTs

Event No.	Malfunction No.	Event Type*	Event Description
1	N/A	N BOP	Realigns RCIC suction to the CSTs.
2	CH07B	C OATC	The In-Service CRDH Flow Control Valve will fail closed. The OATC will place the standby flow control valve in service.
3	RC07	C / TS BOP / SRO	A steam leak will develop in the RCIC room that requires the BOP operator to manually isolate. The CRS will declare RCIC inoperable.
4	AP07	I / TS BOP / SRO	The ADS timer will inadvertently initiate requiring the BOP operator to inhibit the system. The CRS will declare the ADS timer inoperable.
5	TU03	R OATC	Main Turbine vibrations will develop requiring the OATC to rapidly reduce power using the Recirc Pumps. The power reduction will dampen the vibrations
6	CH16	C / M CREW	Main Turbine vibrations will rise and continue to degrade requiring the crew to insert a Reactor scram. Upon the insertion of the scram, an ATWS will occur.
7	SL01	C (Post) OATC	When required to inject SBLC, the first SBLC pump will fail to start. The OATC will start the remaining pump.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): 6 **(E2-E7)**
Malfunction(s) after EOP (1-2): 1 (**E7)**
Abnormal Events (2-4): 2 (**E3, E4)**
Major Transient(s) /E-Plan entry (1-2): 1 (**E6)**
EOPs (1-2**):** 1 **(1100)**
EOP Contingencies (0-2): 1 **(ATWS)**
Critical Tasks (2-3): 2

ES-301-5 Quantitative attributes:

BOP Normal (1/set): 1 (**E1)**
OATC Reactivity (1/set): 1 (**E5)**
BOP I/C (4/set): 2 (**E3, E4)**
OATC I/C (4/set): 2 (**E2, E7)**
SRO-I I/C (4/set incl. 2 as OATC): 6 (**E2 – E7)**
SRO Tech Spec (2/set): 2 (**E3, E4)**
ALL Major Transients (2/set): 1 (**E6)**

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Monticello Scenario No.: NRC Scenario 4 Op-Test No.: 2015301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
79% Power
11 Core Spray OOC
12 CRDH Pump OOC
Turnover:
BOP to perform quarterly Bypass Valve Test

Event No.	Malfunction No.	Event Type*	Event Description
1	TC07D	N & TS BOP / CRS	BOP will perform quarterly Bypass Valve Test. The second bypass valve will fail to open. The CRS will evaluate TSs.
2	SW01A	C BOP	The running RBCCW pump will trip and the standby pump will fail to start. The BOP will manually start the standby pump.
3	RR05A	C & TS BOP / CRS	The 11 Recirc pump will receive a lockout. The BOP will take actions for trip of a Recirc pump. The CRS will evaluate TSs for unbalanced Recirc flows.
4	RX03	C & R OATC	The OATC will take action to reduce power to exit the unanalyzed region of the P-F map from the recirc pump trip. While inserting control rods, the Rod Control switch will fail to insert control rods. The OATC will be required to use the Emergency Rod In method.
5	03-S35-06	C OATC	After reactor power is stabilized in the allowed region of the P-F map, the second recirc pump will trip. This will require the OATC to insert a manual reactor scram.
6	RR01B	MAJOR CREW	Following the scram, a small break LOCA will occur.
7	SL01A/B	C (POST) OATC / BOP	During the LOCA, a loss of all high pressure injection systems will occur. The OATC and BOP will manually initiate RCIC and HPCI. These systems will inject initially but will eventually trip on high exhaust pressure. ED will be required.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): **6 (E2-E7)**
Malfunction(s) after EOP (1-2): **1 (E7)**
Abnormal Events (2-4): **3 (E2-E4)**
Major Transient(s) /E-Plan entry (1-2): **1 (E6)**
EOPs (1-2**): 1 (1100)**
EOP Contingencies (0-2): **2 (ALC & ED)**
Critical Tasks (2-3): **2**

ES-301-5 Quantitative attributes:

BOP Normal (1/set): **E1**
OATC Reactivity (1/set): **E4**
BOP I/C (4/set): **E2, E3, E7**
OATC I/C (4/set): **E4, E5, E7**
SRO-I I/C (4/set incl. 2 as OATC): **E2-E5 E7**
SRO Tech Spec (2/set): **E1, E3**
ALL Major Transients (2/set): **E6**

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Monticello Scenario No.: NRC Scenario 5 Op-Test No.: 2015301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
100% Power
1AR Transformer OOS
12 Service Water Pump OOS
Turnover:
BOP to place the ESOP in service

Event No.	Malfunction No.	Event Type*	Event Description
1	None	N BOP	BOP will place the ESOP in service at power.
2	RW01 & C-05-A03	C & TS OATC / CRS	A Self-Test fault will occur on the RWM causing a rod block. The OATC will bypass the RWM and the CRS will evaluate Tech Specs.
3	HP01	C & TS BOP / CRS	HPCI will inadvertently initiate resulting in reactor power exceeding 100%. The BOP will perform a rapid shutdown of HPCI and the CRS will evaluate Tech Specs.
4	MC03 & MC04B	C & R BOP / OATC	The inlet PCV to 11 SJAE will fail closed. The BOP will take action to restore the SJAE and the OATC will reduce reactor power to stabilize condenser vacuum.
5	ED12	Major Crew	A Loss of Normal Offsite Power (LONOP) will occur resulting in a reactor scram. Following the scram, a small break LOCA will occur.
6	RC01	C (POST) OATC	With the LONOP, a loss of condensate and feed will occur. RCIC will fail to automatically start and require the OATC to manually start the system to restore RPV water level.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): **5 (E2-E6)**
Malfunction(s) after EOP (1-2): **1 (E6)**
Abnormal Events (2-4): **3 (E3-E5)**
Major Transient(s) /E-Plan entry (1-2): **1 (E5)**
EOPs (1-2**): 1 (1100)**
EOP Contingencies (0-2): 1 **(ALC)**
Critical Tasks (2-3): **2**

ES-301-5 Quantitative attributes:

BOP Normal (1/set): **E1**
OATC Reactivity (1/set): **E4**
BOP I/C (4/set): **E3, E4**
OATC I/C (4/set): **E2, E6**
SRO-I I/C (4/set incl. 2 as OATC): **E2-E4 E6**
SRO Tech Spec (2/set): **E2, E3**
ALL Major Transients (2/set): **E5**