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

Facility: Monticello Scenario No.: **1** Op-Test No.: MNGP 2013301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 100% Power
11 Core Spray Pump OOC
12 Service Water Pump OOC
Turnover: Perform RB/Torus Vacuum Breaker Test

Event No.	Malfunction No.	Event Type*	Event Description
1	C-04-B19	N / TS BOP / SRO	BOP performs RB/Torus Vacuum Breaker Test. The second vacuum breaker will fail open.
2	CH01_023	I / R / TS OATC / SRO	Control Rod 18-15 Drifts OUT. The OATC will be successful inserting the control rod and reducing Rx power < 100%.
3	SW01A	C BOP / SRO	The running RBCCW pump will trip and the standby pump will fail to auto start. The BOP will be successful in manually starting the standby pump.
4	ED05E	C BOP/ OATC / SRO	Bus 15 will lockout resulting in a loss of the running CRD pump. The OATC will be successful starting the standby pump. The BOP will take actions for loss of Bus 15.
5	CH08B	C OATC / SRO	While the BOP is taking actions for the loss of Bus 15, the remaining CRD pump will trip resulting in a complete loss of CRD and requiring a reactor scram.
6	FW16A/B, HP03, RC03	C (Post) CREW	A complete loss of high pressure feed will occur following the scram requiring alternate level control actions.
7	RR01B, RR03B	M Crew	A LOCA will begin in the Drywell which will drive RPV level to lower. Alternate level control actions will be unsuccessful which will require the crew to perform an Emergency Depressurization.

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

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): **6**
Malfunction(s) after EOP (1-2): **E6**
Abnormal Events (2-4): **E2, E3, E4, E5**
Major Transient(s) /E-Plan entry (1-2): **E7**
EOPs (1-2**): 1100 & 2002**
EOP Contingencies (0-2): **2 (ALC, ED)**
Critical Tasks (2-3): **3**

ES-301-5 Quantitative attributes:

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

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

Facility: Monticello Scenario No.: **2** Op-Test No.: MNGP 2013301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
37% Power with plant startup in progress
1AR Transformer OOC
12 Service Water Pump OOC
Turnover:
OATC to raise reactor power with recirc pumps to 40%
BOP to place B MFRV in service

Event No.	Malfunction No.	Event Type*	Event Description
1	None	R - OATC	OATC raises reactor power to 40% with recirc pumps
2	None	N - BOP	At 40%, the BOP will place the remaining MFRV in service.
3	C-04-A35	C BOP / SRO	The RPV Flange will develop a leak. The BOP will take actions to stop the leak.
4	C-05-B20	I - TS OATC / SRO	A low condenser vacuum switch will fail with RPS failing to inset a ½ scram. The OATC will need to insert a ½ scram and the CRS will address Technical Specifications
5	RC02	C - TS BOP / SRO	RCIC will inadvertently initiate requiring the BOP to secure the system. The CRS will address Technical Specifications
6	AP01B	C - BOP	SRV B will fail open. The BOP will take actions but the SRV won't close. The BOP will recognize a scram is required. The Crew will insert a scram and then the SRV will close.
7	PC05	MAJOR CREW	After the scram, a torus rupture will occur. The crew will take actions to fill the torus but eventually will need to perform an Emergency Depressurization.
8	CH02_56	C - POST OATC / SRO	When the scram is inserted, one control rod will fail to insert. This will require the OATC to take additional abnormal procedure actions to insert the control rod.

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

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): **6**
Malfunction(s) after EOP (1-2): **E8**
Abnormal Events (2-4): **E5, E6**
Major Transient(s) /E-Plan entry (1-2): **E7**
EOPs (1-2**): 1200 & 2002**
EOP Contingencies (0-2): 1 **(ED)**
Critical Tasks (2-3): **2**

ES-301-5 Quantitative attributes:

BOP Normal (1/set): **E2**
OATC Reactivity (1/set): **E1**
BOP I/C (4/set): **E3, E5, E6**
OATC I/C (4/set): **E4, E8**
SRO-I I/C (4/set incl. 2 as OATC): **E3 – E6, E8**
SRO Tech Spec (2/set): **E4, E5**
ALL Major Transients (2/set): **E7**

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

Facility: Monticello Scenario No.: **3** Op-Test No.: MNGP 2013301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
78% Power
1AR Transformer OOC
HPCI 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 address TSs.
2	CH07B	C OATC	The CRD Flow Control Valve will fail closed requiring the OATC to place the standby in service.
3	C-08-B01	C & TS BOP / CRS	The 2R XFMR will develop a severe oil leak requiring the BOP to perform an emergency transfer to the 1R XFMR. The CRS will address TSs.
4	ED05A	C & R BOP / OATC / CRS	A Bus 11 Lockout will occur requiring the BOP to take actions including for a Recirc Pump and Feed Pump Trip. The OATC will insert control rods to exit Stability Region 2.
5	RX03	C OATC / CRS	While inserting control rods, neutron flux oscillations will occur requiring the OATC to insert a manual scram.
6	CH16 & CH19	MAJOR CREW	When the reactor is scrammed, a Hydraulic ATWS will occur requiring the crew to take Failure to Scram actions.
7	SL01A/B	C (POST) OATC	While taking Failure to Scram actions the first SBLC Pump will fail to start requiring the OATC to start the other pump.

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

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): **5**
Malfunction(s) after EOP (1-2): **E7**
Abnormal Events (2-4): **E4, E5**
Major Transient(s) /E-Plan entry (1-2): **E6**
EOPs (1-2**): 1100 & 2007**
EOP Contingencies (0-2): 1 **(ATWS)**
Critical Tasks (2-3): **3**

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, 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.: **4(SPARE)** Op-Test No.: MNGP 2013301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
100% Power
12 Service Water Pump
Turnover:
BOP to shift RBCCW Pumps

Event No.	Malfunction No.	Event Type*	Event Description
1	None	N BOP	BOP will transfer to the standby RBCCW pump
2	NI14C	C & TS OATC / CRS	APRM 3 will fail upscale requiring the OATC to bypass the APRM. CRS will address TSs.
3	AP07	C & TS BOP / CRS	The ADS timer will inadvertently initiate requiring the BOP to inhibit it. The CRS will address TSs.
4	04-A2S70-04	C & R BOP / OATC / CRS	The EPR will fail upscale automatically placing the MPR in service. The BOP will be unsuccessful lowering reactor power and pressure with the MPR requiring the OATC to reduce recirc to stay below 100% power.
5	04-A2S59-02	C OATC / CRS	The MPR will fail in the lowering direction requiring the OATC to insert a manual scram.
6	CH22A/B	MAJOR CREW	When the reactor is scrammed a set of SDV vent and drain valves will fail to close. This will drive radiation levels up in the RB and require the crew to perform an ED when two max safe values are reached.
7	AP08D	C (POST) BOP	When performing actions for the ED, one SRV will fail to open. This will require the BOP to open other SRVs until a total of 3 are verified open.

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

ES-301-4 Quantitative attributes:

Total Malfunctions (5-8): **6**
Malfunction(s) after EOP (1-2): **E7**
Abnormal Events (2-4): **E3, E4, E5**
Major Transient(s) /E-Plan entry (1-2): **E6**
EOPs (1-2**): 1300 & 2002**
EOP Contingencies (0-2): 1 **(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): **E3, E4, E7**
OATC I/C (4/set): **E2, E5**
SRO-I I/C (4/set incl. 2 as OATC): **E2, E3, E4, E5**
SRO Tech Spec (2/set): **E2, E3**
ALL Major Transients (2/set): **E6**