2013 FERMI POWER PLANT

INITIAL LICENSE EXAMINATION

OUTLINE SUBMITTAL

Fermi 2
6400 North Dixie Hwy
Newport, MI 48166

DTE Energy

10 CFR 55.40

June 25, 2013
NRC-13-0037

Mr. Hironori Peterson
Chief, Operations Branch
Division of Reactor Safety
Region III
U. S. Nuclear Regulatory Commission
2443 Warrenville Road, Suite 210
Lisle, Illinois 60532-4352

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Fermi 2 Initial License Operator Examination Outline

Enclosed please find the proposed examination outline for the upcoming Fermi 2 Initial License Examination that is scheduled for the week of September 9, 2013:

- Examination Outline Quality Checklist (Form ES-201-2)
- Photocopies of Examination Security Agreements (Form ES-201-3)
- RO Administrative Topics Outline (Form ES-301-1)
- SRO Administrative Topics Outline (Form ES-301-1)
- RO Control Room/In-Plant Systems Outline (Form ES-301-2)
- SRO Instant Control Room/In-Plant Systems Outline (Form ES-301-2)
- SRO Upgrade Control Room/In-Plant Systems Outline (Form ES-301-2)
- Transient and Event Checklist (Form ES-301-5)
- Scenario Outlines (Form ES-D-1)
- RO BWR Examination Outline (Form ES-401-1)
- SRO BWR Examination Outline (Form ES-401-1)
- Generic Knowledge and Abilities Outline (K/As) (Form ES-401-3)
- Record of Rejected K/As (Form ES-401-4)

The examination outline was developed using the appropriate guidance contained in NUREG-1021, Revision 9, Supplement 1. These materials shall be withheld from public disclosure until after the examinations are complete.

We look forward to working with you and your examination team during the examination development and administration process. If you have any questions or comments regarding the contents of the items listed above please contact Mr. David G. Coseo, General Supervisor, Operations Training at (734) 586-4055.

Sincerely,

Zackary W. Rad
Manager - Nuclear Licensing

Enclosures

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Electronic Licensing Library (ELL) (200 TAC) [w/o Enclosures]
Information Management (140 NOC) [w/o Enclosures]
NSRG Administrator (210 NOC) [w/o Enclosures]
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ES-201 **Examination Outline Quality Checklist** **Form ES-201-2**

Facility:		Date of Examination:		
Item	Task Description	Initials a	b*	c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.			
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.			
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.			
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.			
2. SIMULATOR	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.			
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity, and ensure that each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s), and that scenarios will not be repeated on subsequent days.			
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.			
3. W/T	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.			
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations			
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.			
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.			
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.			
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.			
	d. Check for duplication and overlap among exam sections.			
	e. Check the entire exam for balance of coverage.			
	f. Assess whether the exam fits the appropriate job level (RO or SRO).			

	Printed Name/Signature	Date
a. Author	Timothy J. Barrett for T. BARRETT	6-25-2013
b. Facility Reviewer (*)	David G. Coseo	6/25/13
c. NRC Chief Examiner (#)	Carl Moore	6/27/13
d. NRC Supervisor	Bruce Palagi for HP	6/28/13

Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.
* Not applicable for NRC-prepared examination outlines

Facility: Fermi 2 Date of Examination: 09/09/13
Examination Level: RO ☑ SRO ☐ Operating Test Number: 2013-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S,D	Demonstrate the Operability of AC Sources per 24.000.01, Att. 28b. [K/A 2.1.29] 802-4101-421r2
Conduct of Operations	R,M	Perform Torus Water Average Temperature Calculation [K/A 295026 EA2.01] 802-3006-401r0
Equipment Control	S,R, D,P	Using plant drawings, identify Isolation Boundaries for a Clearance to Replace a Pump Impeller. [K/A 2.2.13] (NRC ILO 2010) 802-4101-441r1
Radiation Control		N/A
Emergency Procedures/Plan	S,R,D	Request Emergency Offsite Services for the Control Room per EP-290. [K/A 2.4.43] 831-0001-402r3

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Facility: Fermi 2 Date of Examination: 09/09/13

Examination Level: RO ☐ SRO ☑ Operating Test Number: 2013-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S,D	Perform a CRS Short-Term Relief per MOP07. [K/A 2.1.3] 802-4101-419r4
Conduct of Operations	R,M	Perform Torus Water Average Temperature Calculation [K/A 295026 EA2.01] 802-3006-401r0
Equipment Control	S,R,D	Identify less than required AC Electrical Distribution Systems Operable, and perform remedial action. [K/A 2.2.36] 802-4101-102r0
Radiation Control	R,D	Calculate Stay Time and Determine if Extension is Required [K/A 2.3.4] 802-4101-413r3
Emergency Procedures/Plan	S,R D,P	Activate ECOS per EP-290, Enclosure E. [K/A 2.4.43] (NRC ILO 2010) 802-4101-443r0

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Facility: Fermi 2 Date of Examination: 09/09/13
Exam Level: RO ☑ SRO-I ☐ SRO-U ☐ Operating Test No.: 2013-301

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

	System / JPM Title		Type Code*	Safety Function
a.	Conduct Control Rod Coupling Integrity Test [K/A 201003 A2.02]	315-0110-407r0	A,E,M,S	SF-1
b.	Transfer Feedwater control from Long Cycle Cleanup to Startup Level Control [K/A 259001 A4.05] (NRC ILO 2010)	315-0107-002r1	D,L,P,S	SF-2
c.	Control Reactor Pressure from the Remote Shutdown Panel [K/A 295016 AA1.08]	802-2001-211r5	A,D,E,S	SF-3
d.	RCIC Recovery following Manual Trip [K/A 217000 A4.02]	315-0043-005r2	D,L,S	SF-4
e.	Manually Isolate HPCI System [K/A 295032 EA1.05]	315-0139-005r1	A,D,E,EN,S	SF-5
f.	Loss of 64C with EDG-12 Failure [K/A 262001 A2.04]	315-0158-402r3	D,E,S	SF-6
g.	Control Rod Drift with RPS Failure [K/A 212000 A2.16]	802-2104-212r4	A,D,E,S	SF-7
h.	Switch Off Gas Recombiner Chains [K/A 271000 A4.09]	315-0135-002r0	A,N,S	SF-9
	In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i.	Transfer UPS from Normal to Alternate Power Supply using Static Transfer Switch [K/A 262002 A2.01] (NRC ILO 2010)	315-0262-003r1	A,D,P,R	SF-6
j.	Defeat RBCCW/EECW to Drywell Isolations [K/A 295024 EA1.07]	802-3006-321r3	D,E,L,R	SF-8
k.	Startup Fuel Pool Ventilation Exhaust Radiation Monitor [K/A 272000 A1.01]	315-0150-001r3	D,R	SF-9

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Fermi 2 Date of Examination: 09/09/13
Exam Level: RO ☐ SRO-I ☑ SRO-U ☐ Operating Test No.: 2013-301

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

	System / JPM Title		Type Code*	Safety Function
a.	Conduct Control Rod Coupling Integrity Test [K/A 201003 A2.02]	315-0110-407r0	A,E,M,S	SF-1
b.	Transfer Feedwater control from Long Cycle Cleanup to Startup Level Control [K/A 259001 A4.05] (NRC ILO 2010)	315-0107-002r1	D,L,P,S	SF-2
c.	Control Reactor Pressure from the Remote Shutdown Panel [K/A 295016 AA1.08]	802-2001-211r5	A,D,E,S	SF-3
d.	RCIC Recovery following Manual Trip [K/A 217000 A4.04]	315-0043-005r2	D,L,S	SF-4
e.	Manually Isolate HPCI System [K/A 295032 EA1.05]	315-0139-005r1	A,D,E,EN,S	SF-5
f.	Loss of 64C with EDG-12 Failure [K/A 262001 A2.04]	315-0158-402r3	D,E,S	SF-6
g.	N/A			
h.	Switch Off Gas Recombiner Chains [K/A 271000 A4.09]	315-0135-002r0	A,N,S	SF-9
	In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i.	Transfer UPS from Normal to Alternate Power Supply using Static Transfer Switch [K/A 262002 A2.01] (NRC ILO 2010)	315-0262-003r1	A,D,P,R	SF-6
j.	Defeat RBCCW/EECW to Drywell Isolations [K/A 295024 EA1.07]	802-3006-321r3	D,E,L,R	SF-8
k.	Startup Fuel Pool Ventilation Exhaust Radiation Monitor [K/A 272000 A1.01]	315-0150-001r3	D,R	SF-9

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Fermi 2 Date of Examination: 09/09/13
Exam Level: RO ☐ SRO-I ☐ SRO-U ☑ Operating Test No.: 2013-301

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

	System / JPM Title		Type Code*	Safety Function
a.	N/A			
b.	N/A			
c.	N/A			
d.	RCIC Recovery following Manual Trip [K/A 217000 A4.02]	315-0043-005r2	D,L,S	SF-4
e.	Manually Isolate HPCI System [K/A 295032 EA1.05]	315-0139-005r1	A,D,E,EN,S	SF-5
f.	N/A			
g.	N/A			
h.	Switch Off Gas Recombiner Chains [K/A 271000 A4.09]	315-0135-002r0	A,N,S	SF-9

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i.	Transfer UPS from Normal to Alternate Power Supply using Static Transfer Switch [K/A 262002 A2.01] (NRC ILO 2010)	315-0262-003r1	A,D,P,R	SF-6
j.	Defeat RBCCW/EECW to Drywell Isolations [K/A 295024 EA1.07]	802-3006-321r3	D,E,L,R	SF-8
k.	N/A			

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Fermi-2 Date of Exam: 9/9/13 Operating Test Number: 2013-1

APPLICANT	EVENT TYPE	Scenarios 1 CREW POSITION SRO	1 ATC	1 BOP	2 SRO	2 ATC	2 BOP	3 SRO	3 ATC	3 BOP	4 SRO	4 ATC	4 BOP	TOTAL	MINIMUM M(*) R	I	U
RO ☒ SRO-I ☐ SRO-U ☐	RX		2											1	1	1	0
	NOR													0	1	1	1
	I/C		4,6,8,11							2,3,9				7	4	4	2
	MAJ		7,9							4,6,8				5	2	2	1
	TS													0	0	2	2
RO ☐ SRO-I ☒ SRO-U ☐	RX													0	1	1	0
	NOR							7						1	1	1	1
	I/C					1,3,7,9		1,2,3,5,9						9	4	4	2
	MAJ					5,6		4,6,8						5	2	2	1
	TS							1,3						2	0	2	2
RO ☐ SRO-I ☒ SRO-U ☐	RX													0	1	1	0
	NOR			3	4				7					3	1	1	1
	I/C			1,6,8,10	1,2,3,7,9				1,3,5					12	4	4	2
	MAJ			7,9	5,6				4,6,8					7	2	2	1
	TS				1,3									2	0	2	2
RO ☐ SRO-I ☐ SRO-U ☒	RX	2												1	1	1	0
	NOR	3					4							2	1	1	1
	I/C	1468 10,11					2,3,9							9	4	4	2
	MAJ	7,9					5,6							4	2	2	1
	TS	4,6												2	0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions. Instant SROs must serve in both the SRO and ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an instant SRO *additionally* serves in the BOP position, one (I/C) malfunction can be credited toward the two (IC) malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility Name: Fermi 2 Date of Exam: 9/9/2013

Tier	Group	RO K/A Category Points											SRO-Only Points						
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2		G*		Total
1. Emergency & Abnormal Plant Evolutions	1	3	4	3	N/A			3	3	N/A		4	20	3		4		7
	2	1	1	1				2	1			1	7	1		2		3
	Tier Totals	4	5	4				5	4			5	27	4		6		10
2. Plant Systems	1	2	2	2	3	3	2	3	3	2	2	2	26	3		2		5
	2	1	1	2	1	1	1	1	1	1	1	1	12	0	2	1		3
	Tier Totals	3	3	4	4	4	3	4	4	3	3	3	38	5		3		8
3. Generic Knowledge and Abilities Categories		1		2		3		4					10	1	2	3	4	7
		2		2		3		3						2	2	2	1	

Note:
1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401	BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4						01. 25	Ability to interpret reference materials, such as graphs, curves, tables, etc.	3.9	1
295003 Partial or Complete Loss of AC / 6	0 1						Effect of battery discharge rate on capacity	2.7	1
295004 Partial or Total Loss of DC Pwr / 6		0 1					Battery charger	3.1	1
295005 Main Turbine Generator Trip / 3			0 4				Main generator trip	3.2	1
295006 SCRAM / 1				0 7			Control rod position	4.1	1
295016 Control Room Abandonment / 7					0 1		Reactor power	4.1	1
295018 Partial or Total Loss of CCW / 8						01. 28	Knowledge of the purpose and function of major system components and controls.	4.1	1
295019 Partial or Total Loss of Inst. Air / 8		0 8					Plant ventilation	2.8	1
295021 Loss of Shutdown Cooling / 4			0 2				Feeding and bleeding reactor vessel	3.3	1
295023 Refueling Acc / 8				0 3			Fuel handling equipment	3.3	1
295024 High Drywell Pressure / 5					0 3		Suppression pool level	3.8	1
295025 High Reactor Pressure / 3						04. 49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6	1
295026 Suppression Pool High Water Temp. / 5	0 1						Pump NPSH	3.0	1
295027 High Containment Temperature / 5									0
295028 High Drywell Temperature / 5			0 4				Increased drywell cooling	3.6	1
295030 Low Suppression Pool Wtr Lvl / 5				0 2			RCIC: Plant-Specific	3.4	1
295031 Reactor Low Water Level / 2					0 4		Adequate core cooling	4.6	1
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1						04. 31	Knowledge of annunciator alarms, indications, or response procedures.	4.2	1
295038 High Off-site Release Rate / 9	0 2						Protection of the general public	4.2	1
600000 Plant Fire On Site / 8		0 1					Sensors, detectors and valves	2.6	1
700000 Generator Voltage and Electric Grid Disturbances / 6		0 2					Breakers, relays	3.1	1
K/A Category Totals:	3	4	3	3	3	4	Group Point Total:		20

ES-401	BWR Examination Outline								Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3	03						Loss of heat sink	3.6	1
295007 High Reactor Pressure / 3									0
295008 High Reactor Water Level / 2				04			HPCI: Plant-Specific	3.5	1
295009 Low Reactor Water Level / 2		03					Recirculation system	3.1	1
295010 High Drywell Pressure / 5						04.20	Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	1
295011 High Containment Temp / 5									0
295012 High Drywell Temperature / 5									0
295013 High Suppression Pool Temp. / 5									0
295014 Inadvertent Reactivity Addition / 1			02				Control rod blocks	3.7	1
295015 Incomplete SCRAM / 1									0
295017 High Off-site Release Rate / 9									0
295020 Inadvertent Cont. Isolation / 5 & 7									0
295022 Loss of CRD Pumps / 1									0
295029 High Suppression Pool Wtr Lvl / 5									0
295032 High Secondary Containment Area Temperature / 5									0
295033 High Secondary Containment Area Radiation Levels / 9					01		Area radiation levels	3.8	1
295034 Secondary Containment Ventilation High Radiation / 9									0
295035 Secondary Containment High Differential Pressure / 5				02			SBGT/FRVS	3.8	1
295036 Secondary Containment High Sump/Area Water Level / 5									0
500000 High CTMT Hydrogen Conc. / 5									0
K/A Category Totals:	1	1	1	2	1	1	Group Point Total:		7

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)												Form ES-401-1	
System # / Name	K	K	K	K	K	K	K	A	A	A	A	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection Mode						02							Core cooling methods	3.5	1
205000 Shutdown Cooling							05						Component cooling water systems	3.2	1
206000 HPCI									16				High drywell pressure: BWR-2, 3, 4	4.0	1
207000 Isolation (Emergency) Condenser															0
209001 LPCS		01						04					Pump power ; Reactor pressure	3; 3.7	2
209002 HPCS															0
211000 SLC				07						03			RWCU isolation ; Explosive valves indicating lights: Plant-Specific	3.8; 3.8	2
212000 RPS					02						05		Specific logic arrangements ; Reactor power	3.3; 4.3	2
215003 IRM												01. 20	Ability to interpret and execute procedure steps.	4.6	1
215004 Source Range Monitor	01												Reactor protection system	3.6	1
215005 APRM / LPRM		02			05								APRM channels; Core flow effects on APRM trip setpoints	2.6; 3.6	2
217000 RCIC			01										Reactor water level	3.7	1
218000 ADS				03									ADS logic control	3.8	1
223002 PCIS/Nuclear Steam Supply Shutoff						05	02						Containment instrumentation; Valve closures	3; 3.7	2
239002 SRVs							09						Indicated vs. actual steam flow: Plant-Specific	3.1	1
259002 Reactor Water Level Control								06					Loss of controller signal output	3.3	1
261000 SGTS										03			Valve operation	3.0	1
262001 AC Electrical Distribution											01		All breakers and disconnects (including available switch yard): Plant-Specific	3.4	1
262002 UPS (AC/DC)												02. 37	Ability to determine operability and/or availability of safety related equipment.	3.6	1
263000 DC Electrical Distribution	01												A.C. electrical distribution	3.3	1
264000 EDGs			03										Major loads powered from electrical buses fed by the emergency generator(s)	4.1	1
300000 Instrument Air				02									Cross-over to other air systems	3.0	1
400000 Component Cooling Water								03					High/low CCW temperature	2.9	1
															0
K/A Category Totals:	2	2	2	3	3	2	3	3	2	2	2		Group Point Total:		26

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO)												Form ES-401-1	
System # / Name	K	1K	2K	3K	4K	5K	6A	1A	2A	3A	4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic															0
201002 RMCS															0
201003 Control Rod and Drive Mechanism									01				Control rod position	3.7	1
201004 RSCS															0
201005 RCIS															0
201006 RWM			01										Reactor manual control system: P-Spec(Not-BWR6)	3.2	1
202001 Recirculation					03								Pump/motor cooling: Plant-Specific	2.7	1
202002 Recirculation Flow Control															0
204000 RWCU								10					Valve closures	2.7	1
214000 RPIS	01												RWM: Plant-Specific	3.0	1
215001 Traversing In-core Probe															0
215002 RBM															0
216000 Nuclear Boiler Inst.										01			Recorders	3.3	1
219000 RHR/LPCI: Torus/Pool Cooling Mode															0
223001 Primary CTMT and Aux.															0
226001 RHR/LPCI: CTMT Spray Mode												01.27	Knowledge of system purpose and/or function.	3.9	1
230000 RHR/LPCI: Torus/Pool Spray Mode															0
233000 Fuel Pool Cooling/Cleanup															0
234000 Fuel Handling Equipment															0
239001 Main and Reheat Steam				07									Over pressure control	3.7	1
239003 MSIV Leakage Control															0
241000 Reactor/Turbine Pressure Regulator															0
245000 Main Turbine Gen. / Aux.			05										Reactor feedwater pump: Plant-Specific	2.7	1
256000 Reactor Condensate															0
259001 Reactor Feedwater															0
268000 Radwaste															0
271000 Offgas							13						Hydrogen gas concentration	3.2	1
272000 Radiation Monitoring															0
286000 Fire Protection		02											Pumps	2.9	1
288000 Plant Ventilation															0
290001 Secondary CTMT															0
290003 Control Room HVAC															0
290002 Reactor Vessel Internals						03							Recirculation system	3.1	1
															0
K/A Category Totals:	1	1	2	1	1	1	1	1	1	1	1		Group Point Total:		12

ES-401	BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4									0
295003 Partial or Complete Loss of AC / 6					01		Cause of partial or complete loss of A.C. power	3.7	1
295004 Partial or Total Loss of DC Pwr / 6						02.42	Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	4.6	1
295005 Main Turbine Generator Trip / 3					02		Turbine vibration	2.7	1
295006 SCRAM / 1									0
295016 Control Room Abandonment / 7									0
295018 Partial or Total Loss of CCW / 8						02.25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	1
295019 Partial or Total Loss of Inst. Air / 8									0
295021 Loss of Shutdown Cooling / 4									0
295023 Refueling Acc / 8									0
295024 High Drywell Pressure / 5						01.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	1
295025 High Reactor Pressure / 3									0
295026 Suppression Pool High Water Temp. / 5					01		Suppression pool water temperature	4.2	1
295027 High Containment Temperature / 5									0
295028 High Drywell Temperature / 5									0
295030 Low Suppression Pool Wtr Lvl / 5									0
295031 Reactor Low Water Level / 2						04.11	Knowledge of abnormal condition procedures.	4.2	1
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1									0
295038 High Off-site Release Rate / 9									0
600000 Plant Fire On Site / 8									0
700000 Generator Voltage and Electric Grid Disturbances / 6									0
K/A Category Totals:	0	0	0	0	3	4	Group Point Total:		7

ES-401	BWR Examination Outline								Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3									0
295007 High Reactor Pressure / 3									0
295008 High Reactor Water Level / 2									0
295009 Low Reactor Water Level / 2									0
295010 High Drywell Pressure / 5									0
295011 High Containment Temp / 5									0
295012 High Drywell Temperature / 5									0
295013 High Suppression Pool Temp. / 5						04. 18	Knowledge of the specific bases for EOPs.	4.0	1
295014 Inadvertent Reactivity Addition / 1									0
295015 Incomplete SCRAM / 1					0 1		Reactor power	4.3	1
295017 High Off-site Release Rate / 9									0
295020 Inadvertent Cont. Isolation / 5 & 7									0
295022 Loss of CRD Pumps / 1									0
295029 High Suppression Pool Wtr Lvl / 5									0
295032 High Secondary Containment Area Temperature / 5									0
295033 High Secondary Containment Area Radiation Levels / 9									0
295034 Secondary Containment Ventilation High Radiation / 9						01. 07	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	1
295035 Secondary Containment High Differential Pressure / 5									0
295036 Secondary Containment High Sump/Area Water Level / 5									0
500000 High CTMT Hydrogen Conc. / 5									0
K/A Category Totals:	0	0	0	0	1	2	Group Point Total:		3

ES-401	BWR Examination Outline													Form ES-401-1	
	Plant Systems - Tier 2/Group 1 (SRO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)		IR	#
203000 RHR/LPCI: Injection															0
205000 Shutdown Cooling Mode															0
206000 HPCI															0
207000 Isolation (Emergency) Condenser															0
209001 LPCS															0
209002 HPCS															0
211000 SLC															0
212000 RPS															0
215003 IRM															0
215004 Source Range Monitor											02, 39	Knowledge of less than or equal to one hour Technical Specification action statements for systems.		4.5	1
215005 APRM / LPRM															0
217000 RCIC							07					Loss of lube oil		3.1	1
218000 ADS											01, 32	Ability to explain and apply system limits and precautions.		4.0	1
223002 PCIS/Nuclear Steam Supply Shutoff															0
239002 SRVs							02					Leaky SRV		3.2	1
259002 Reactor Water Level Control															0
261000 SGTS							09					Plant air system failure		2.6	1
262001 AC Electrical Distribution															0
262002 UPS (AC/DC)															0
263000 DC Electrical Distribution															0
264000 EDGs															0
300000 Instrument Air															0
400000 Component Cooling Water															0
															0
K/A Category Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Total:			5

ES-401	BWR Examination Outline													Form ES-401-1		
	Plant Systems - Tier 2/Group 2 (SRO)															
System # / Name	K	1K	2K	3K	4K	5K	6A	1A	2A	3A	4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic															0
201002 RMCS															0
201003 Control Rod and Drive Mechanism															0
201004 RSCS															0
201005 RCIS															0
201006 RWM															0
202001 Recirculation															0
202002 Recirculation Flow Control								04					Recirculation pump speed mismatch between loops: Plant-Specific	3.2	1
204000 RWCU															0
214000 RPIS															0
215001 Traversing In-core Probe															0
215002 RBM															0
216000 Nuclear Boiler Inst.															0
219000 RHR/LPCI: Torus/Pool Cooling Mode															0
223001 Primary CTMT and Aux.															0
226001 RHR/LPCI: CTMT Spray Mode															0
230000 RHR/LPCI: Torus/Pool Spray Mode															0
233000 Fuel Pool Cooling/Cleanup															0
234000 Fuel Handling Equipment															0
239001 Main and Reheat Steam															0
239003 MSIV Leakage Control															0
241000 Reactor/Turbine Pressure Regulator															0
245000 Main Turbine Gen. / Aux.															0
256000 Reactor Condensate								06					Low hotwell level	3.2	1
259001 Reactor Feedwater												02.44	Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions	4.4	1
268000 Radwaste															0
271000 Offgas															0
272000 Radiation Monitoring															0
286000 Fire Protection															0
288000 Plant Ventilation															0
290001 Secondary CTMT															0
290003 Control Room HVAC															0
290002 Reactor Vessel Internals															0
															0
K/A Category Totals:	0	0	0	0	0	0	0	2	0	0	1		Group Point Total:		3

Facility Name:Fermi 2 Date of Exam:9/9/2013

Category	K/A #	Topic	RO IR	RO #	SRO-Only IR	SRO-Only #
1. Conduct of Operations	2.1 14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.	3.1	1		
	2.1 19	Ability to use plant computers to evaluate system or component status.	3.9	1		
	2.1 39	Knowledge of conservative decision making practices.			4.3	1
	2.1 05	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.			3.9	1
	Subtotal			2		2
2. Equipment Control	2.2 14	Knowledge of the process for controlling equipment configuration or status.	3.9	1		
	2.2 06	Knowledge of the process for making changes to procedures.	3.0	1		
	2.2 20	Knowledge of the process for managing troubleshooting activities.			4.5	1
	2.2 38	Knowledge of conditions and limitations in the facility license.			3.8	1
	Subtotal			2		2
3. Radiation Control	2.3 11	Ability to control radiation releases.	3.8	1		
	2.3 05	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	1		
	2.3 07	Ability to comply with radiation work permit requirements during normal or abnormal conditions.	3.5	1		
	2.3 04	Knowledge of radiation exposure limits under normal or emergency conditions.			3.7	1
	2.3 14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.			3.8	1
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4 16	Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.	3.5	1		
	2.4 25	Knowledge of fire protection procedures.	3.3	1		
	2.4 14	Knowledge of general guidelines for EOP usage.	3.8	1		
	2.4 44	Knowledge of emergency plan protective action recommendations.			4.4	1
	Subtotal			3		1
Tier 3 Point Total				10		7

Facility: Fermi 2 **Scenario No.** 1 **Op-Test No:** 2013-1

Examiners: C. Moore, D. McNeil, C. Phillips **Operators:** _____

Initial Conditions: IC-20, MOL, 100% Rx. Power

Turnover: The plant has been operating at 100 % Reactor power for the last 205 days. #2 GSW is OOS for motor replacement. Expected return to service is two weeks. "B" CRD Pump is OOS for oil replacement on gear reducer. Return to service is expected tomorrow.

Event No.	Malf. No.	Event Type*	Event Description
1	NGADN302 1C002TVSP	C(BOP) C(SRO)	#2 TCV Unitized Actuator Failure (Oil Leak) – 4D2
2		R(ATC) R(SRO)	Reduce Reactor Power < 93% to lock down #2 TCV
3		N(BOP) N(SRO)	Lock Down #2 TCV - 23.109, Main Turbine
4	C11MF1106	C(ATC) C(SRO)	CR 58-39 Individual SCRAM from half scram during #2TCV lockdown and blown fuse. Disarm CR due to badly damaged fuse clip. CRS enter TS 3.1.3, Control rod operability – one rod inop and inserted.
5	C93RF0001 C97MF1087	NA	Earthquake - AOP 20.000.01 – AOP Actions
6	E51MF0010 EOPRF0024 EOPRF0025	C(All)	RCIC Steam Leak. Auto Isolation Fails. Manual isolation Successful. EOP 29.100.01 Sheet 5 **(CT 1)** CRS enter TS 3.5.3, RCIC
7	N20MF0023 N20MF0024 N20MF0025	M(All)	Loss of Feedwater – AOP 20107.01 – Mode Switch to S/D EOP 29.100.01 Sheet 1 - RPV Control
8	E41MF0011 N21MF0011 N21MF0038	C(All)	Loss of High Pressure Feed Sources – Lower RPV pressure to feed with HFP. Inhibit ADS **(CT -2)**

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

Facility: Fermi 2 **Scenario No.** 1 **Op-Test No:** 2013-1

Examiners: C. Moore, D. McNeil, B. Palagi **Operators:**

Initial Conditions: IC-20, MOL, 100% Rx. Power

Event No.	Malf. No.	Event Type*	Event Description
9	B31MF0066	M(All)	Leak in drywell – EOP 29.100.01 Sheet 2 – Primary Containment Control Emergency Depressurization EOP 29.100.01 Sheet 3 – **(CT-3)**
10	E21RF0005	C(BOP) C(SRO)	Auto Start Failure – Div. 1 Core Spray
11	E11MF0016	C(ATC) C(SRO)	Containment Spray Valve Failure E1150-F016A Spray Drywell **(CT 4)**

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

Facility: Fermi 2 **Scenario No.** 2 **Op-Test No:** 2013-2

Examiners: C. Moore, D. McNeil, C. Phillips **Operators:** _____

Initial Conditions: IC-15 (55% Power)

Turnover: Reactor power is 55%. A plant startup is in progress following a planned shutdown for repairs to Main Transformer 2A. The startup is currently on hold, awaiting chemistry results on heater drains. CW Pump #5 is OOS for motor replacement

Event No.	Malf. No.	Event Type*	Event Description
1	C102C11_PS_N001A_STFCLOSE C11MF1117	C(ATC) C(SRO)	Trip of A CRD Pump (B CRD Fails) AOP 20.106.01 - restart A CRD. TS 3.1.5
2	TEAJSPECIFIC_F788753TFF	C(BOP) C(SRO)	High Vibration/High Amps #6 Drywell Cooling Fan – 8D45 – Shutdown Fan
3	B21MF0025	C(All)	C SRV Open – AOP 20.000.02 - SRV closes when fuses pulled TS 3.4.3
4		N(BOP) N(SRO)	Torus Cooling - 23.205
5	NMRDFU_11CC	M(All)	Loss of Steam Jet Air Ejectors/Loss of Vacuum – AOP 20.125.01 Mode Switch to Shutdown
6	C11MF0001 C71MF0006	M(All)	ATWS – EOP 29.100.01 Sheet 1 and 1A Inhibit ADS **(CT 1)** Terminate and Prevent **(CT 2)**
7	C41MF0003 C41MF0004	C(ATC) C(SRO)	SLC Pumps Trip 29.ESP.02 – Alternate Boron Injection
8	EOPRF0007 thru EOPRF0014	NA	Insert Control Rods **(CT 3)** 29.ESP.10 29.ESP.11
9	B21MF0102 B21MF0028	C(All)	Spurious MSIV Closure F SRV fails Open - EOP 29.100.01Sheet 2 – High Torus Temp

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