

March 24, 2005

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Joe

Attached are the applicable pages for the sample plan items that have been revised since the original submittal along with a summary page.

Sincerely,

A handwritten signature in black ink, appearing to read "HKO", followed by a long horizontal line that extends to the right and ends in a small loop.

Howard K Olive II  
TMI Facility Representative

## TMI 2005 NRC EXAMINATION SAMPLE PLAN CHANGES

- Change Simulator JPM ES-301-2.d to: Initiate a natural circulation cooldown using the OTSG Atmospheric Dump Valves (ADV). **Reason:** The original JPM (take corrective action for a failure of the Main Generator to trip) could not be validated. A plant design change provides a backup method to reverse power sensing in order to ensure the generator breakers open following a turbine trip. There is no simulator malfunction that can prevent the generator breakers from opening.
- Minor change to Simulator JPM ES-301-2.f: Change voltage malfunction to frequency malfunction. **Reason:** Avoid leaving then returning to the control room to complete the JPM. SBO Diesel Generator voltage must be adjusted locally but frequency can be adjusted from the control room.
- Written Examination K/A 073 K5.03 changed to 073 K3.01. **Reason:** A question with an answer that is verifiable against plant references could not be developed using the original K/A.
- Written examination K/A 022 A2.01 changed to 022 A2.06. **Reason:** An RO-level question could not be developed using the original K/A.

| Facility:   | Three Mile Island   | Date of Examination: | 05/09/2005      |
|---|---|----------------------|-----------------|
| Exam Level (circle one):  | RO / <b>SRO(I)</b> / SRO (U)  | Operating Test No.:  |                 |
| Control Room Systems® (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U) |   |                      |                 |
| System / JPM Title  |   | Type Code*           | Safety Function |
| a.  | Transfer the Group 6 control rods from the Auxiliary Power Supply to the Normal Power Supply in accordance with (IAW) OP-TM-622-451, Transferring Rods to Auxiliary Power Supply.<br>APE 003 AA1.02 (3.6 / 3.4) | P, S                 | 1               |
| b.  | Initiate HPI/LPI IAW OP-TM-EOP-010, Emergency Rules Guides and Graphs, Guide 2 – HPI/LPI initiation.<br>006 A4.07 (4.4 / 4.4)   | A, D, S              | 2               |
| c.  | Place the Decay Heat Removal (DHR) System in operation and establish a cooldown in accordance with OP-TM-212-111, Shifting DHR Train A from DHR Standby to DHR Operating Mode.<br>005 A4.01 (3.6 / 3.4)         | M, L, S              | 4P              |
| d.  | d. Initiate a natural circulation cooldown using the OTSG Atmospheric Dump Valves (ADV).<br>041 A4.06 (2.9/3.1)   | A, N, S              | 4S              |
| e.  | Initiate RB Emergency Cooling with RR-P-1A and the "A" Cooler IAW 1104-38, Reactor Building Emergency Cooling Water System.<br>022 A4.04 (3.1 / 3.2)  | A, D, S              | 5               |
| f.  | Energize 1C 4160V Bus using the SBO Diesel IAW OP-TM 864-901, Loss of Station Power.<br>APE 056 AA2.37 (3.7 / 3.3)  | A, D, S              | 6               |
| g.  | Reset RPS Channel "A" IAW OP-TM-641-421, Tripping and Resetting RPS Channels.<br>012 A4.04 (3.3 / 3.3)  | D, S                 | 7               |
| h.  | N/A (SRO-I Candidates)  |                      |                 |

| In-Plant Systems <sup>@</sup> (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U) |   |      |    |
|---|---|------|----|
| i.  | Respond to a loss of "A" DC Distribution IAW 1202-9A, Loss of "A" DC.<br>System 063      K/A 2.1.30      (3.9 / 3.4)  | P, E | 6  |
| j.  | Terminate an approved waste gas release IAW 1102-27, Waste Disposal – Gaseous, due to an unexplained pressure drop in a tank not being released.<br>System 071      K/A 2.1.30      (3.9 / 3.4) | N, R | 9  |
| k.  | Establish 8 <sup>th</sup> stage heating following a reactor trip IAW OP-TM-421-102, Placing 8 <sup>th</sup> Stage Feedwater String A In Service.<br>System 071      K/A 2.1.30      (3.9 / 3.4) | D, L | 4S |

<sup>@</sup> All control room (and in-plant) systems must be different and 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                     |
| (L)ow-Power                                  | ≥ 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                                  |                                     |

- a. Transfer the Group 6 control rods from the Auxiliary Power Supply to the Normal Power Supply in accordance with (IAW) OP-TM-622-451, Transferring Rods to Auxiliary Power Supply. Randomly selected repeat from the 2001 NRC Examination (B.1.c). (BANK JPM 013)
- b. Initiate HPI/LPI IAW OP-TM-EOP-010, Emergency Rules Guides and Graphs, Guide 2 HPI/LPI initiation. Alternate Path: ESAS actuation required at the component level. (BANK JPM 165)
- c. Place the Decay Heat Removal (DHR) System in operation and establish a cooldown IAW OP-TM-212-111, Shifting DHR Train A from DHR Standby to DHR Operating Mode. Candidate will place one loop of DHR in service for a normal plant cooldown. (Modified BANK JPM 015 to include cooldown initiation)
- d. Initiate a natural circulation cooldown using the OTSG Atmospheric Dump Valves (ADV). Alternate Path: ADV fails to respond to signals from normal control – candidate must utilize backup loader controller. (NEW JPM)
- e. Initiate RB Emergency Cooling with RR-P-1A and the “A” Cooler IAW 1104-38, Reactor Building Emergency Cooling Water System. Respond to rising containment temperature caused by a small steam leak. Alternate Path: MANUAL control of cooling water pressure. (BANK JPM 079)
- f. Energize 1C 4160V Bus using the SBO Diesel Generator (DG) IAW OP-TM 864-901, Loss of Station Power. Initial conditions place the candidate at the point for energizing 1C 4160V Bus. The candidate must open major load breakers, start the SBO DG, energize 1C 4160V Bus, energize 1J 480V Bus and start GN-P-1 (Seal Oil Pump). Alternate Path: MANUAL control of the SBO DG frequency/start GN-P-1. (BANK JPM 131)
- g. Reset RPS Channel ‘A’ IAW OP-TM-641-421, Tripping and Resetting RPS Channels. Given the plant in a stable condition following a reactor trip, the candidate will reset RPS Channel “A”. (BANK JPM 124)
- h. Not required – only SRO(I) candidates on this examination.
- i. Respond to a loss of ‘A’ DC Distribution IAW 1202-9A, Loss of ‘A’ DC. Perform the immediate actions of 1202-9A at the Emergency Diesel Generator. Randomly selected repeat from the 2001 NRC Examination (B.2.b). (BANK JPM 067)
- j. Terminate an approved waste gas release IAW 1104-27, Waste Disposal – Gaseous, due to an unexplained pressure drop in a tank not being released. While completing Enclosure 2 for a waste gas release, the candidate will be cued that pressure is lowering in a tank not being released. (NEW JPM)
- k. Establish 8<sup>th</sup> stage heating following a reactor trip IAW OP-TM-421-102, Placing 8<sup>th</sup> Stage Feedwater String “A” In Service. Perform the local actions to place 8<sup>th</sup> Stage Feedwater String “A” in service. (BANK JPM 099)

| Facility:   |                | Three Mile Island   |        |        |        |        |        |        |        |        |        |        | Date of Exam:   |   | 5/9/2005 |        |        |       |  |
|---|----------------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|---|----------|--------|--------|-------|--|
| Tier  | Group          | RO K/A Category Points  |        |        |        |        |        |        |        |        |        |        | SRO-Only Points |   |          |        |        |       |  |
|   |                | K<br>1  | K<br>2 | K<br>3 | K<br>4 | K<br>5 | K<br>6 | A<br>1 | A<br>2 | A<br>3 | A<br>4 | G<br>* | Total           | K | A        | A<br>2 | G<br>* | Total |  |
| 1.<br>Emergency<br>&<br>Abnormal<br>Plant<br>Evolutions | 1              | 1   | 1      | 1      |        |        |        | 7      | 7      |        |        | 1      | 18              |   |          | 4      | 2      | 6     |  |
|   | 2              | 1   | 2      | 2      |        |        |        | 2      | 1      |        |        | 1      | 9               |   |          | 2      | 2      | 4     |  |
|   | Tier<br>Totals | 2   | 3      | 3      |        |        |        | 9      | 8      |        |        | 2      | 27              |   |          | 6      | 4      | 10    |  |
| 2.<br>Plant<br>Systems                                  | 1              | 2   | 1      | 3      | 5      | 1      | 3      | 3      | 5      | 2      | 2      | 1      | 28              |   |          | 2      | 3      | 5     |  |
|   | 2              | 1   | 1      | 1      | 1      | 2      | 1      | 0      | 0      | 1      | 1      | 1      | 10              |   |          | 2      | 1      | 3     |  |
|   | Tier<br>Totals | 3   | 2      | 4      | 6      | 3      | 4      | 3      | 5      | 3      | 3      | 2      | 38              |   |          | 4      | 4      | 8     |  |
| 3. Generic Knowledge and Abilities Categories           |                |   |        |        | 1      | 2      | 3      | 4      |        |        |        |        | 10              | 1 | 2        | 3      | 4      | 7     |  |
|   |                |   |        |        | 3      | 2      | 2      | 3      |        |        |        |        |                 | 2 | 2        | 1      | 2      |       |  |
| 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 ES-401, Attachment 2, for guidance regarding 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 KAs 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.   |        |        |        |        |        |        |        |        |        |        |                 |   |          |        |        |       |  |
|   | 8.             | On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) 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. 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 10CFR55.43  |        |        |        |        |        |        |        |        |        |        |                 |   |          |        |        |       |  |

|        |   |               |
|--------|---|---------------|
| ES-401 | <b>Three Mile Island</b><br><b>PWR Written Examination Outline</b><br><b>Emergency and Abnormal Plant Evolutions – Tier 2 Group 1</b> | Form ES-401-2 |
|--------|---|---------------|

| System #/Name                            | G | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | Number | K/A Topics  | Imp. | Q# |
|--|---|----|----|----|----|----|----|----|----|----|----|--------|---|------|----|
| 008 Component Cooling Water              |   |    |    |    |    |    |    |    | X  |    |    | A2.02  | Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High/low surge tank level               | 3.2  | 9  |
| 010 Pressurizer Pressure Control         |   |    |    |    |    | X  |    |    |    |    |    | K5.02  | Knowledge of the operational implications of the following concepts as they apply to the PZR PCS: Constant enthalpy expansion through a valve   | 2.6  | 10 |
| 012 Reactor Protection                   |   |    |    |    | X  |    |    |    |    |    |    | K4.09  | Knowledge of RPS design feature(s) and/or interlock(s) Separation of control and protection circuits  | 2.8  | 11 |
| 013 Engineered Safety Features Actuation |   |    |    |    | X  |    |    |    |    |    |    | K4.13  | Knowledge of ESFAS design feature(s) and/or interlock(s) which provide for the following MFW isolation/reset  | 3.7  | 12 |
| 022 Containment Cooling                  |   |    |    |    |    |    |    |    | X  |    |    | A2.06  | Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of CCS Pump                         | 2.8  | 13 |
| 022 Containment Cooling                  |   |    |    |    |    |    |    | X  |    |    |    | A1.02  | Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCS controls including: Containment pressure   | 3.6  | 14 |
| 026 Containment Spray                    |   |    |    |    |    |    |    |    |    | X  |    | A3.01  | Ability to monitor automatic operation of the CSS, including: Pump starts and correct MOV positioning   | 4.3  | 15 |
| 026 Containment Spray                    |   | X  |    |    |    |    |    |    |    |    |    | K1.01  | Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: ECCS   | 4.2  | 16 |
| 039 Main and Reheat Steam                |   |    |    |    |    |    |    |    | X  |    |    | A2.01  | Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Flow paths of steam during a LOCA             | 3.1  | 17 |
| 059 Main Feedwater                       | X |    |    |    |    |    |    |    |    |    |    | 2.1.23 | Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.  | 3.9  | 18 |
| 061 Auxillary/Emergency Feedwater        |   |    |    |    |    |    |    |    | X  |    |    | A2.01  | Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Startup of MFW pump during AFW operation | 2.5  | 19 |

|        |   |               |
|--------|---|---------------|
| ES-401 | <b>Three Mile Island<br/>PWR Written Examination Outline<br/>Emergency and Abnormal Plant Evolutions – Tier 2 Group 1</b> | Form ES-401-2 |
|--------|---|---------------|

| System #/Name                     | G   | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2  | A3 | A4 | Number             | K/A Topics   | Imp. | Q#          |
|-----------------------------------|-----|----|----|----|----|----|----|----|-----|----|----|--------------------|--|------|-------------|
| 061 Auxillary/Emergency Feedwater |     |    |    |    |    |    |    | X  |     |    |    | A1.01              | Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: S/G level   | 3.9  | 20          |
| 062 AC Electrical Distribution    |     |    |    |    | X  |    |    |    |     |    |    | K4.03              | Knowledge of ac distribution system design feature(s) and/or interlock(s) which provide for the following: Interlocks between automatic bus transfer and breakers  | 2.8  | 21          |
| 063 DC Electrical Distribution    |     |    |    |    |    |    |    |    |     | X  |    | A3.01              | Ability to monitor automatic operation of the dc electrical system, including: Meters, annunciators, dials, recorders, and indicating lights   | 2.7  | 22          |
| 063 DC Electrical Distribution    |     |    |    |    |    |    |    | X  |     |    |    | A1.01              | Ability to predict and/or monitor changes in parameters associated with operating the dc electrical system controls including: Battery capacity as it is affected by discharge rate  | 2.5  | 23          |
| 064 Emergency Diesel Generator    |     |    |    |    |    |    | X  |    |     |    |    | K6.07              | Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Air receivers  | 2.7  | 24          |
| 073 Process Radiation Monitoring  |     |    |    |    |    | X  |    |    |     |    |    | K3.01              | Knowledge of the effect that a loss or malfunction of the PRM system will have on the following: Radioactive effluent releases.  | 3.6  | 25          |
| 076 Service Water                 |     |    |    |    |    |    |    |    | X   |    |    | A2.01              | Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS | 3.5  | 26          |
| 078 Instrument Air                |     | X  |    |    |    |    |    |    |     |    |    | K1.04              | Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: Cooling water to compressor   | 2.6  | 27          |
| 103 Containment                   |     |    |    |    |    |    |    |    |     |    | X  | A4.04              | Ability to manually operate and/or monitor in the control room: Phase A and phase B resets   | 3.5  | 28          |
| K/A Category Point Totals:        | 1/3 | 2  | 1  | 2  | 5  | 2  | 3  | 3  | 5/2 | 2  | 2  | Group Point Total: |  |      | <b>28/5</b> |

| Tier / Group | Randomly Selected K/A | Reason for Rejection   |
|--------------|-----------------------|--|
| 2 / 1        | 059 / 2.4.30          | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 2 / 1        | 003 / K4.11           | The subject K/A isn't relevant at the subject facility.                                    |
| 2 / 1        | 004 / K2.07           | The subject K/A isn't relevant at the subject facility.                                    |
| 2 / 1        | 006 / K4.02           | Double jeopardy with audit exam item   |
| 2 / 1        | 007 / A4.01           | The subject K/A isn't relevant at the subject facility.                                    |
| 2 / 1        | 026 / A3.02           | The subject K/A isn't relevant at the subject facility.                                    |
| 2 / 1        | 059 / 2.1.30          | Topic better suited for In-Plant JPM   |
| 2 / 1        | 061 / A1.03           | The subject K/A isn't relevant at the subject facility.                                    |
| 2 / 1        | 073 / A2.01           | Double Jeopardy with audit exam question   |
| 2 / 1        | 078 / K1.03           | The subject K/A isn't relevant at the subject facility.                                    |
| 2 / 1        | 001 / K2.02           | Double jeopardy with question 29.  |
| 2 / 1        | 086 / 2.4.6           | The subject K/A isn't relevant at the subject facility.                                    |
| 2 / 2        | 028 / K1.01           | The subject K/A isn't relevant at the subject facility.                                    |
| 3 / 3        | G3 / 2.3.6            | Double jeopardy with audit exam JPM  |
| 3 / 4        | G4 / 2.4.21           | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 1 / 1        | 025 / 2.4.4           | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 1 / 1        | 027 / AA2.13          | The subject K/A isn't relevant at the subject facility.                                    |
| 1 / 1        | 025 / AK2.01          | Double jeopardy with question 5  |
| 1 / 2        | 028 / AA2.06          | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 1 / 2        | 059 / AA2.03          | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 1 / 2        | A07 / 2.1.23          | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 1 / 2        | 103 / 2.4.49          | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 2 / 2        | 071 / A2.03           | System over sampled  |
| 2 / 1        | 073 / K5.03           | It isn't possible to prepare a psychometrically sound question related to the subject K/A. |
| 2 / 1        | 022 / A2.01           | Question matching K/A could not be written for the RO level.                               |