

ATTACHMENT C

Marked-Up Current Dresden Unit 2 and Quad Cities Unit 2
Technical Specifications

FOR INFORMATION ONLY

DRESDEN II

DPR-19

Amendment No. 49, 82

3.10 LIMITING CONDITIONS FOR OPERATION

REFUELING

Applicability:

Applies to fuel handling and core reactivity limitations.

Objective:

To assure core reactivity is within capability of the control rods and to prevent criticality during refueling.

Specification:

A. Refueling Interlocks

The reactor mode switch shall be locked in the "Refuel" position during core alterations and the refueling interlocks shall be operable except as specified in Specifications 3.10.D and 3.10.E.

TSUP 3.10.A

TSUP "Shutdown"

TSUP 3.10.I

TSUP 3.10.J

B. Core Monitoring

During core alterations two SRM's shall be operable, one in the core quadrant where fuel or control rods are being moved and one in an adjacent quadrant. For an SRM to be considered operable, the following conditions shall be satisfied:

1. The SRM shall be inserted to the normal

TSUP 3.10.B

TSUP 3.10.B.2

TSUP 4.10.B.1.b

4.10 SURVEILLANCE REQUIREMENTS

REFUELING

Applicability:

Applies to the periodic testing of those interlocks and instruments used during refueling.

Objective:

To verify the operability of instrumentation and interlocks used in refueling.

Specification:

A. Refueling Interlocks

Prior to any fuel handling, with the head off the reactor vessel, the refueling interlocks shall be functionally tested. They shall also be tested at weekly intervals thereafter until no longer required and following any repair work associated with the interlocks.

TSUP 4.10.A

B. Core Monitoring

Prior to making any alterations to the core the SRM's shall be functionally tested and checked for neutron response. Thereafter, the SRM's will be checked daily for response, except when the conditions of 3.10.B.2.a and 3.10.B.2.b are met.

TSUP 4.10.B.2

TSUP 4.10.B.3

FOR INFORMATION ONLY

DRESDEN II

DPR-19

Amendment No. 49, 82

3.10 LIMITING CONDITIONS FOR OPERATION (Cont'd.)

4.10 SURVEILLANCE REQUIREMENTS (Cont'd.)

operating level. (Use of special moveable, dunking type detectors during initial fuel loading and major core alterations in place of normal detectors are permissible as long as the detector is connected into the normal SRM circuit.)

TSUP 4.10.B.1.b

TSUP 3.10.B,
Applicability 3
& Note (2)

2. The SRM or dunking type detector shall have a minimum of 3 cps with all rods fully inserted in the core except when both of the following conditions are fulfilled:

TSUP 4.10.B.3

a) No more than two fuel assemblies are present in the core quadrant associated with the SRM.

TSUP 3.10.B,
Applicability 1

b) While in core, these fuel assemblies are in locations adjacent to the SRM.

TSUP 3.10.B,
Applicability 2

C. Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the fuel storage pool, the pool water level shall be maintained at a level of 33 feet.

23' over top of assemblies

TSUP 3.10.H

C. Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the fuel storage pool, the pool level shall be recorded daily.

TSUP 4.10.H

7 days

FOR INFORMATION ONLY

DRESDEN II DPR-19
Amendment No. 17, 49, 82

3.10 LIMITING CONDITIONS FOR OPERATION (Cont'd.)

D. Control Rod and Control Rod Drive Maintenance

A maximum of ~~two~~ ^{one} non-adjacent control rods separated by more than two control cells in any direction, may be withdrawn from the core for the purpose of performing control rod and/or control rod drive maintenance provided the following conditions are satisfied:

TSUP 3.10.I.5

1. The reactor mode switch shall be locked in the "re-fuel" position. The re-fueling interlock which prevents more than one control rod from being withdrawn may be bypassed for one of the control rods on which maintenance is being performed. All other re-fueling interlocks shall be operable.

TSUP 3.10.I.1
"Shutdown or refuel"

3.10.A
TSUP 3.10.I.1

2. Specification 3.3.A.1 shall be met or, the control rod directional control valves for a minimum of eight control rods surrounding each drive out of service for maintenance will be disarmed electrically and sufficient margin to criticality demonstrated.

SXS array

BUP 3.10.I.3

TSUP 3.10.I.4

4.10 SURVEILLANCE REQUIREMENTS (Cont'd.)

D. Control Rod Drive and Control Rod Drive Maintenance

TSUP 4.10.I.3

1. This surveillance requirement is the same as given in 4.10.A.

3.10.A
TSUP 3.10.I.1, 2, 3, 4 and 5

TSUP 4.10.I.2

2. Sufficient control rods shall be withdrawn prior to performing this maintenance to demonstrate with a margin of 0.25 percent delta k that the core can be made subcritical at any time during the maintenance with the strongest operable control rod fully withdrawn and all other

*Revised with change 17 to DPR-19 dated 3/17/72
Revised with change 9 to DPR-25 dated 3/17/72

FOR INFORMATION ONLY

DRESDEN II

DPR-19

Amendment No. 11, 82

3.10 LIMITING CONDITIONS FOR OPERATION (Cont'd.)

4.10 SURVEILLANCE REQUIREMENTS (Cont'd.)

3. SRM's shall be operable
(a) in each core quadrant containing a control rod on which maintenance is being performed, and (b) in a quadrant adjacent to one of the quadrants specified in 3.10.D.3.a above. Requirements for an SRM to be considered operable are given in 3.10.B.

E. Extended Core Maintenance

More than two control rods may be withdrawn from the reactor core provided the following conditions are satisfied:

1. The reactor mode switch shall be locked in the "re-fuel"

3. This surveillance requirement is the same as that given in 4.10.B.

E. Extended Core Maintenance

1. This surveillance requirement is the same as that given in 4.10.A.

FOR INFORMATION ONLY

DRESDEN II DPR-19
Amendment No. 17, 22, 82

3.10 LIMITING CONDITIONS FOR OPERATION (Cont'd.)

position. The refueling interlock which prevents more than one control rod from being withdrawn may be bypassed on a withdrawn control rod after the fuel assemblies in the cell containing (controlled by) that control rod have been removed from the reactor core. All other re-fueling interlocks shall be operable.

TS UP 3.10.J
1, 3, 4, 5

2. SRM's shall be operable in the core quadrant where fuel or control rods are being moved and in an adjacent quadrant. The requirements for an SRM to be considered operable are given in 3.10.B.

TS UP
3.10.J.2

F. Spent Fuel Cask Handling

1. Fuel cask handling above the 545' elevation will be done with the reactor building crane in the RESTRICTED MODE only except as specified in 3.10.F.2.

TS UP
3.10.F

4.10 SURVEILLANCE REQUIREMENTS (Cont'd.)

TS UP 4.10.J.1.6

2. This surveillance requirement is the same as that given in 4.10.B.

F. Spent Fuel Cask Handling

1. Prior to fuel cask handling operations, the redundant crane including the rope, hooks, slings, shackles and other operating mechanisms will be inspected.

The rope will be replaced if any of the following conditions exist:

TS UP 4.10.F.2

FOR INFORMATION ONLY

DRESDEN II
Amendment No. 120

DPR-19

3.10 LIMITING CONDITIONS FOR OPERATION (Cont'd.)

4.10 SURVEILLANCE REQUIREMENTS (Cont'd.)

- a. Twelve (12) randomly distributed broken wires in one lay or four (4) broken wires in one strand of one rope lay.
- b. Wear of one-third the original diameter of outside individual wire.
- c. Kinking, crushing, or any other damage resulting in distortion of the rope.
- d. Evidence of any type of heat damage.
- e. Reductions from nominal diameter of more than 1/16 inch for a rope diameter from 7/8" to 1 1/4" inclusive.

TSUP 4.10.F.2

DELETED

- 2. Fuel cask handling in other than the RESTRICTED MODE will be permitted in emergency or equipment failure situations only to the extent necessary to get the cask to the closest acceptable stable location.

- 2. Prior to operation in the RESTRICTED MODE

- a. the controlled area limit switches will be tested;
- b. the "two-block" limit switches will be tested;

DELETED
TSUP 4.10.F.1

FOR INFORMATION ONLY

DRESDEN II
Amendment No. 120

DPR-19

3.10 LIMITING CONDITIONS FOR OPERATION (Cont'd.)

4.10 SURVEILLANCE REQUIREMENTS (Cont'd.)

3. Operation with a failed controlled area limit switch is permissible for 48 hours providing an operator is on the refueling floor to assure the crane is operated within the restricted zone painted on the floor.

But 3.10.F,
Action 1

DELETED
But 4.10.F.1

c. the "inching hoist" controls will be tested.

3. The empty spent fuel cask will be lifted free of all support by a maximum of 1 foot and left hanging for 5 minutes prior to any series of fuel cask handling operations.

But 4.10.F.3

FOR INFORMATION ONLY

DRESDEN II
Amendment No. 82, 91, 104

DPR-19

3.10 LIMITING CONDITIONS FOR OPERATION (Cont'd.)

G. Fuel Storage Reactivity Limit

1. The new fuel storage facility shall be such that the K_{eff} dry is less than 0.90 and flooded is less than 0.95.
2. Whenever a fuel assembly is stored in the spent fuel storage pool, the peak assembly reactivity in a reactor lattice distribution shall be limited to less than or equal to the following values:

Assembly Type	K_{inf}
GE 7x7	1.26
GE 8x8	1.32
ANF 8x8	1.33
ANF 9x9	1.27

Whenever storing other assembly types or fuel rods in the spent fuel storage pool, their peak reactivity shall be bounded by the most limiting K_{inf} value listed above.

H. Loads Over Spent Fuel Storage Pool

No loads heavier than the weight of a single spent fuel assembly and handling tool shall be carried over fuel stored in the spent fuel storage pool.

4.10 SURVEILLANCE REQUIREMENTS (Cont'd.)

G. Fuel Storage Reactivity Limit

1. Prior to storing Fuel in the new fuel storage facility, an analysis must be performed to demonstrate that the criteria in 3.10.G.1 are satisfied.
2. Prior to storing Fuel in the spent fuel storage pool, an analysis must be performed to demonstrate that the criteria in 3.10.G.2 are satisfied.

MOVED
TO BUL
Section 5.0

DELETED

ATTACHMENT D

Marked-Up Draft Revision 4 of the BWR/4 Standard Technical Specifications

FOR INFORMATION ONLY

3.10/4.10 REFUELING

LIMITING CONDITIONS FOR OPERATION

Applicability:

Applies to fuel handling and core reactivity limitations.

Objective:

To assure core reactivity is within capability of the control rods and to prevent criticality during refueling.

SURVEILLANCE REQUIREMENTS

Applicability:

Applies to the periodic testing of those interlocks and instruments used during refueling.

Objective:

To verify the operability of instrumentation and interlocks used in refueling.

SPECIFICATIONS

A. Refueling Interlocks

The reactor mode switch shall be locked in the Refuel position during core alterations, and the refueling interlocks listed below shall be operable except as specified in Specifications 3.10.D and 3.10.E.

1. Control Rod Blocks

- Mode switch in Startup/Hot Standby and refueling platform over the reactor.
- Fuel on any refueling hoist and refueling platform over the reactor.
- Mode switch in Refuel with one control rod withdrawal permit.

2. Refueling Platform Reverse Motion (toward reactor vessel) Block

- Mode switch in Startup/Hot Standby.
- Any control rod out and fuel on any refueling hoist.

3. Refueling Platform Hoist Blocks

- Any control rod out and fuel on any refueling hoist over the vessel.

A. Refueling Interlocks

Prior to any fuel handling, with the head off the reactor vessel, the refueling interlocks shall be functionally tested. They shall also be tested at weekly intervals thereafter until no longer required and following any repair work associated with the interlocks.

TSUP 3.10.A

TSUP Shutdown

TSUP 3.10.J

TSUP 3.10.A.2.b

3.10.I

TSUP 4.10.A.3, footnote (c)

TSUP 4.10.A

TSUP 3.10.A.2.c
2.b. & 2.2

TSUP 3.10.A.1
~~Shutdown~~
~~Refuel~~

TSUP 4.10.A.3, footnote (c)

TSUP 3.10.A.2.b
2.c

3.10.A.2.b, 2.c

TSUP 3.10.A.2.c
& 2.b

FOR INFORMATION ONLY

QUAD CITIES
DPR-30

TSUP 3.10.B

- b. Hoist overload.
- c. High position limitation.

TSUP 3.10.A. 2.c & d.

TSUP 4.10.B.2

B. Core Monitoring

During core alterations, two SRM's shall be operable, one in the core quadrant where fuel or control rods are being moved and one in an adjacent quadrant. For an SRM to be considered operable, the following conditions shall be satisfied:

1. The SRM shall be inserted to the normal operating level (use of special movable, dunking type detectors during initial fuel loading and major core alterations in place of normal detectors is permissible as long as the detector is connected into the proper circuitry which contains the required rod blocks).
2. The SRM or dunking type detector shall have a minimum of 3 cps with all rods fully inserted in the core except when both of the following conditions are fulfilled:
 - a) No more than two fuel assemblies are present in the core quadrant associated with the SRM.
 - b) While in core, these fuel assemblies are in locations adjacent to the SRM.

TSUP 3.10.B.2

BUP 4.10.B.1/b

TSUP 3.10.B. Applicability 3 Note

B. Core Monitoring

Prior to any alterations to the core, the SRM's shall be functionally tested and checked for neutron response. Thereafter, the SRM's shall be checked daily for response, except when the conditions of 3.10.B.2.a and 3.10.B.2.b are met.

TSUP 4.10.B.3

BUP 4.10.B.3

TSUP 3.10.B, Applicability 1

TSUP 3.10.B, Applicability 2

TSUP 4.10.H

C. Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the fuel storage pool, the pool water level shall be maintained at a level of at least 33 feet.

D. Control Rod and Control Drive Maintenance

A maximum of two nonadjacent control rods separated by more than two control cells in any direction may be withdrawn from the core for the purpose of performing control rod and/or control rod drive maintenance provided the following conditions are satisfied:

1. The reactor mode switch shall be locked in the Refuel position. The refueling interlock which prevents more than one control rod from being withdrawn may be bypassed for one of the control rods on which maintenance is being performed. All other refueling interlocks shall be operable.
2. Specification 3.3.A.1 shall be met, or the control rod directional control valves for a minimum of eight control rods surrounding each drive out of service for maintenance will be disarmed electrically and sufficient mar-

C. Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the fuel storage pool, the pool level shall be recorded daily.

D. Control Rod and Control Rod Drive Maintenance

1. Sufficient control rods shall be withdrawn prior to performing this maintenance to demonstrate with a margin of 0.25% Δk that the core can be made subcritical at any time during the maintenance with the strongest operable control rod fully withdrawn and all other operable rods fully inserted.

Alternately, if a minimum of eight control rods surrounding each control rod out of service for maintenance are to be fully inserted and have their directional control valves electrically disarmed, the 0.25% Δk margin will

BUP 3.10.H

23' margin of 20% or

TSUP 3.10.I.5

BUP Shutdown

TSUP 3.10.I.A & TSUP 3.10.A

TSUP 3.10.I.5

TSUP 3.10.I.3

BUP 3.10.I.4

7 days

TSUP 4.10.I.3

5x5 array

TSUP 4.10.I.4

5x5 array

FOR INFORMATION ONLY

QUAD-CITIES DPR-30

gin to criticality demonstrated.

3. SRM's shall be operable (a) in each core quadrant containing a control rod on which maintenance is being performed, and (b) in a quadrant adjacent to one of the quadrants specified in Specification 3.10.D.3.(a) above. Requirements for an SRM to be considered operable are given in Specification 3.10.B.

E. Extended Core Maintenance

More than two control rods may be withdrawn from the reactor core provided the following conditions are satisfied:

1. The reactor mode switch shall be locked in the Refuel position. The refueling interlock which prevents more than one control rod from being withdrawn may be bypassed on a withdrawn control rod after the fuel assemblies in the cell containing (controlled by) that control rod have been removed from the reactor core. All other refueling interlocks shall be operable.
2. SRM's shall be operable in the core quadrant where fuel or control rods are being moved and in an adjacent quadrant. The requirements for an SRM to be considered operable are given in Specification 3.10.B.

F. Spent Fuel Cask Handling

1. Fuel cask handling above the 623' level of the Reactor Building will be done with the reactor building crane in the RESTRICTED MODE only, except as specified in 3.10.F.2.
2. Fuel cask handling in other than the RESTRICTED MODE will be permitted in emergency or equipment failure situations only to the extent necessary to get the cask to the closest acceptable stable location.

be met with the strongest control rod remaining in service during the maintenance period fully withdrawn.

E. Extended Core Maintenance

Prior to control rod withdrawal for extended core maintenance, that control rod's control cell shall be certified to contain no fuel assemblies.

F. Spent Fuel Cask Handling

1. Prior to fuel cask handling operations, the redundant crane including the rope, hooks, slings, shackles and other operating mechanisms will be inspected.

The rope will be replaced if any of the following conditions exist:

- a. Twelve (12) randomly distributed broken wires in one lay or four (4) broken wires in one strand of rope lay.
- b. Wear of one-third the original diameter or outside individual wire.
- c. Kinking, crushing, or any other damage resulting in distortion of the rope.

FOR INFORMATION ONLY

QUAD-CITIES
DPR-30

3. Operation with a failed controlled area limit switch is permissible for 48 hours providing an operator is on the refueling floor to assure the crane is operated within the restricted zone painted on the floor.

TSUP 3.10.F.
Action 1

TSUP 4.10.F.2

- d. Evidence of any type of heat damage.
e. Reductions from nominal diameter of more than 1/16 inch for a rope diameter from 7/8" to 1 1/4" inclusive.

2. Prior to operations in the RESTRICTED MODE

- a. the controlled area limit switches will be tested;
b. the "two-block" limit switches will be tested;
c. the "inching hoist" controls will be tested.

3. The empty spent fuel cask will be lifted free of all support by a maximum of 1 foot and left hanging for 5 minutes prior to any series of fuel cask handling operations.

TSUP 4.10.F.3

ATTACHMENT D

Marked-Up Draft Revision 4 of the BWR/4 Standard Technical Specifications

10
3/4.9 REFUELING OPERATIONS

10 A
3/4.9.1 REACTOR MODE SWITCH

FOR INFORMATION ONLY

LIMITING CONDITION FOR OPERATION

10 A
3.9.1 The reactor mode switch shall be OPERABLE and locked in the Shutdown or Refuel position. When the reactor mode switch is locked in the Refuel position:

- 1 → a. A control rod shall not be withdrawn unless the Refuel position one-rod-out interlock is OPERABLE.
- 2 → b. CORE ALTERATIONS shall not be performed using equipment associated with a Refuel position interlock unless at least the following associated Refuel position interlocks are OPERABLE for such equipment.
 1. All rods in.
 2. Refuel platform position.
 3. Refuel platform hoists fuel-loaded.
 4. Fuel grapple position.
 5. Service platform hoist fuel-loaded.

APPLICABILITY: OPERATIONAL CONDITION 5

ACTION:

- 1 → a. With the reactor mode switch not locked in the Shutdown or Refuel position as specified, suspend CORE ALTERATIONS and lock the reactor mode switch in the Shutdown or Refuel position.
- 2 → b. With the one-rod-out interlock inoperable, lock the reactor mode switch in the Shutdown position.
- 3 → c. With any of the above required Refuel position equipment interlocks inoperable, suspend CORE ALTERATIONS with equipment associated with the inoperable Refuel position equipment interlock.

(2) * See Special Test Exceptions 3.10.1 and 3.10.3.

- (b) * The reactor shall be maintained in OPERATIONAL CONDITION 5 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.

SURVEILLANCE REQUIREMENTS

10.A.1 4.9.1.1 The reactor mode switch shall be verified to be locked in the Shutdown or Refuel position as specified:

a. Within 2 hours prior to:

1. Beginning CORE ALTERATIONS, and
2. Resuming CORE ALTERATIONS when the reactor mode switch has been unlocked.

10.A.2 b. At least once per 12 hours.

10.A.3 4.9.1.2 Each of the above required reactor mode switch Refuel position interlocks* shall be demonstrated OPERABLE by performance of a CHANNEL FUNCTIONAL TEST within 24 hours prior to the start of and at least once per 7 days during control rod withdrawal or CORE ALTERATIONS, as applicable.

10.A.3 4.9.1.3 Each of the above required reactor mode switch Refuel position interlocks* that is affected shall be demonstrated OPERABLE by performance of a CHANNEL FUNCTIONAL TEST prior to resuming control rod withdrawal or CORE ALTERATIONS, as applicable, following repair, maintenance or replacement of any component that could affect the Refuel position interlock.

(c) * The reactor mode switch may be placed in the Run or Startup/Hot Standby position to test the switch interlock functions provided that all control rods are verified to remain fully inserted by a second licensed operator or other technically qualified member of the unit technical staff.

individual

REFUELING OPERATIONS

FOR INFORMATION ONLY

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 At least 2 source range monitor* (SRM) channels shall be OPERABLE and inserted to the normal operating level with:

- (1) a. Continuous visual indication in the control room,
- b. At least one with audible indication in the control room and on the refueling floor,
- (2) c. One of the required SRM detectors located in the quadrant where CORE ALTERATIONS are being performed and the other required SRM detector located in an adjacent quadrant, and
- d. The "shorting links" removed from the RPS circuitry prior to and during the time any control rod is withdrawn and shutdown margin demonstrations are in progress.

APPLICABILITY: OPERATIONAL CONDITION 5, ^{MODE}

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS** and insert all insertable control rods.

unless the following conditions are met:
1. No more than two fuel assemblies are present in each core quadrant associated with an SRM.
2. While in the core, these 2 fuel assemblies are in locations adjacent to the SRM, and
3. In the case of movable detectors, each group of assemblies shall be separated by at least 2 fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.9.2 Each of the above required SRM channels shall be demonstrated OPERABLE by:

- a. At least once per 12 hours:
 1. Performance of a CHANNEL CHECK,
 2. Verifying the detectors are inserted to the normal operating level, and
 3. During CORE ALTERATIONS, verifying that the detector of an OPERABLE SRM channel is located in the core quadrant where CORE ALTERATIONS are being performed and another is located in an adjacent quadrant.

(2) ^{neutron} The use of special movable detectors during CORE ALTERATIONS in place of the normal SRM nuclear detectors is permissible as long as these special detectors are connected to the normal SRM circuits.

**Except movement of IRM, SRM or special movable detectors.

(b) Not required for control rods removed per Specification 3.9.10.1 and 3.9.10.2.

SURVEILLANCE REQUIREMENTS (Continued)

② → b. Performance of a CHANNEL FUNCTIONAL TEST:

a → 1. Within 24 hours prior to the start of CORE ALTERATIONS, and

b → 2. At least once per 7 days.

③ → c. Verifying that the channel count rate is at least 3 cps:

a → 1. Prior to control rod withdrawal,

b → 2. Prior to and at least once per 12 hours during CORE ALTERATIONS, and

3. At least once per 24 hours.

④ → d. Verifying, within 8 hours prior to and at least once per 12 hours during, that the RPS circuitry "shorting links" have been removed during:

1. The time any control rod is withdrawn, ^(b) ~~##~~ or *

2. Shutdown margin demonstrations ^{act} per 3.3.A and the one rod out ^{unless} has been ^{interlock has been demonstrated} operable per Spec 3.10.A

⑥ → ~~##~~ Not required for control rods removed per Specification 3.9.10.1 or 3.9.10.2.

+ ... subject to ... provided the ...
... 22

REFUELING OPERATIONS

3/4.9.3 CONTROL ROD POSITION

FOR INFORMATION ONLY

LIMITING CONDITION FOR OPERATION

3.9.3 All control rods shall be inserted. ^{fully} (b)

APPLICABILITY: OPERATIONAL CONDITION 5, during CORE ALTERATIONS. ^{MODE} ** (b)

ACTION:

With all control rods not ^{fully} inserted, suspend all other CORE ALTERATIONS, except that one control rod may be withdrawn under control of the reactor mode switch Refuel position one-rod-out interlock.

SURVEILLANCE REQUIREMENTS

4.9.3 All control rods shall be verified to be ^{fully} inserted, except as above specified:

a. Within 2 hours prior to:

1. The start of CORE ALTERATIONS.

2. The withdrawal of one control rod under the control of the reactor mode switch Refuel position one-rod-out interlock.

b. At least once per 12 hours.

- (a) * Except control rods removed per Specification 3.9.10.1 or 3.9.10.2. ^{10.1} ^{10.2}
- (b) ** See Special Test Exception 3.10.3. ^{12.B}

or one control withdrawn under control of the reactor mode switch refuel position one rod-out interlock.

REFUELING OPERATIONS

FOR INFORMATION ONLY

10.D 3/4 9.4 DECAT TIME

LIMITING CONDITION FOR OPERATION

10.D 3.9.4 The reactor shall be subcritical for at least (24) hours.

APPLICABILITY: OPERATIONAL ^{MODE} CONDITION 5, during movement of irradiated fuel in the reactor pressure vessel.

ACTION:

With the reactor subcritical for less than (24) hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel.

SURVEILLANCE REQUIREMENTS

10.D 4.9.4 The reactor shall be determined to have been subcritical for at least (24) hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.

REFUELING OPERATIONS

FOR INFORMATION ONLY

10.E
3/4 9.5 COMMUNICATIONS

LIMITING CONDITION FOR OPERATION

10.E
3.9.5 Direct communication shall be maintained between the control room and refueling ((platform)) ((floor)) personnel.

APPLICABILITY: OPERATIONAL CONDITION 5, during CORE ALTERATIONS. * (a)

ACTION:

When direct communication between the control room and refueling ((platform)) ((floor)) personnel cannot be maintained, immediately suspend CORE ALTERATIONS. *

SURVEILLANCE REQUIREMENTS

10.E
4.9.5 Direct communication between the control room and refueling ((platform)) ((floor)) personnel shall be demonstrated within one hour prior to the start of and at least once per 12 hours during CORE ALTERATIONS. *

*Except movement of incore instrumentation and control rods with their normal drive system.

REFUELING OPERATIONS

3/4.9.6 REFUELING PLATFORM

N/A to
D/Q

FOR INFORMATION ONLY

LIMITING CONDITION FOR OPERATION

3.9.6 The refueling platform shall be OPERABLE and used for handling fuel assemblies or control rods within the reactor pressure vessel.

APPLICABILITY: During handling of fuel assemblies or control rods within the reactor pressure vessel.

ACTION:

With the requirements for refueling platform OPERABILITY not satisfied, suspend use of any inoperable refueling platform equipment from operations involving the handling of control rods and fuel assemblies within the reactor pressure vessel after placing the load in a safe condition.

SURVEILLANCE REQUIREMENTS

4.9.6 Each refueling platform crane or hoist used for handling of control rods or fuel assemblies within the reactor pressure vessel shall be demonstrated OPERABLE within 7 days prior to the start of such operations with that crane or hoist by:

- a. Demonstrating operation of the overload cutoff on the main hoist when the load exceeds (1200 ± 50) pounds.
- b. Demonstrating operation of the overload cutoff on the frame mounted and monorail hoists when the load exceeds (500 ± 50) pounds.
- c. Demonstrating operation of the uptravel mechanical stop on the frame mounted and monorail hoists when uptravel brings the top of (active) fuel assembly to (8) feet below the (normal fuel storage pool) water level.
- d. Demonstrating operation of the downtravel mechanical cutoff on the main hoist when grapple hook down travel reaches (4) inches below fuel assembly handle.
- e. Demonstrating operation of the slack cable cutoff on the main hoist when the load is less than (50 ± 10) pounds.
- f. Demonstrating operation of the loaded interlock on the main hoist when the load exceeds (485 ± 50) pounds.
- g. Demonstrating operation of the redundant loaded interlock on the main hoist when the load exceeds (550 ± 50) pounds.

REFUELING OPERATIONS

FOR INFORMATION ONLY

3/4.9.7 CRANE TRAVEL-SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

3.9.7 Loads in excess of (1100) pounds shall be prohibited from travel over fuel assemblies in the spent fuel storage pool racks. .

APPLICABILITY: With fuel assemblies in the spent fuel storage pool racks.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.7 Crane interlocks and physical stops which prevent crane travel with loads in excess of (1100) pounds over fuel assemblies in the spent fuel storage pool racks shall be demonstrated OPERABLE within 7 days prior to and at least once per 7 days during crane operation.

See D/Q. BWP 3/4.10.F

REFUELING OPERATIONS

FOR INFORMATION ONLY

3/4 9.8 WATER LEVEL - REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

10.6 3.9.8 At least (23) feet of water shall be maintained over the top of the reactor pressure vessel flange.

APPLICABILITY: During handling of fuel assemblies ^{MODE} or control rods within the reactor pressure vessel while in OPERATIONAL CONDITION 5 when the fuel assemblies being handled are irradiated or the fuel assemblies ^{or control rods} seated within the reactor vessel are irradiated.

ACTION:

With the requirements of the above specification not satisfied, suspend all operations involving handling of fuel assemblies or control rods within the reactor pressure vessel after placing all fuel assemblies and control rods in a safe condition.

SURVEILLANCE REQUIREMENTS

10.6 4.9.8 The reactor vessel water level shall be determined to be at least its minimum required depth within 2 hours prior to the start of and at least once per 24 hours during handling of fuel assemblies or control rods within the reactor pressure vessel.

REFUELING OPERATIONS

FOR INFORMATION ONLY

3/4.9.9 WATER LEVEL - SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

10.H 3.9.9 At least (23) feet of water shall be maintained over the top of irradiated fuel assemblies seated in the spent fuel storage pool racks.

APPLICABILITY: Whenever irradiated fuel assemblies are in the spent fuel storage pool.

ACTION:

With the requirements of the above specification not satisfied, suspend all movement of fuel assemblies and crane operations with loads in the spent fuel storage pool area after placing the fuel assemblies and crane load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

10.H 4.9.9 The water level in the spent fuel storage pool shall be determined to be at least at its minimum required depth at least once per 7 days.

REFUELING OPERATIONS

FOR INFORMATION ONLY

3/4 9.10 CONTROL ROD REMOVAL

SINGLE CONTROL ROD REMOVAL

LIMITING CONDITION FOR OPERATION

10.1 3.9.10.1 One control rod and/or the associated control rod drive mechanism may be removed from the core and/or reactor pressure vessel provided that at least the following requirements are satisfied until a control rod and associated control rod drive mechanism are reinstalled and the control rod is fully inserted in the core.

1 → a. The reactor mode switch is OPERABLE and locked in the Shutdown position or in the Refuel position per Table 1.2 and Specification 3.9.1.

2 → b. The source range monitors (SRM) are OPERABLE per Specification 3.9.2.

3 → c. The SHUTDOWN MARGIN requirements of Specification 3.1.1 are satisfied, except that the control rod selected to be removed;

2 → 1. May be assumed to be the highest worth control rod required to be assumed to be fully withdrawn by the SHUTDOWN MARGIN test, and

6 → 2. Need not be assumed to be immovable or untrippable. *unscramble*

4 → d. All other control rods in a five-by-five array centered on the control rod being removed are fully inserted and electrically or hydraulically disarmed or the four fuel assemblies surrounding the control rod or control rod drive mechanism to be removed from the core and/or reactor vessel are removed from the core cell.

5 → e. All other control rods are inserted.

APPLICABILITY: OPERATIONAL ^{MODES} CONDITIONS 4 and 5.

ACTION:

With the requirements of the above specification not satisfied, suspend removal of the control rod and/or associated control rod drive mechanism from the core and/or reactor pressure vessel and initiate action to satisfy the above requirements.

ACTION

SURVEILLANCE REQUIREMENTS

10.1 4.9.10.1 Within 4 hours prior to the start of removal of a control rod and/or the associated control rod drive mechanism from the core and/or reactor pressure vessel and at least once per 24 hours thereafter until a control rod and associated control rod drive mechanism are reinstalled and the control rod is inserted in the core, verify that:

1. a. The reactor mode switch is OPERABLE per Surveillance Requirement 4.3.1.1 or 4.9.1.2, as applicable, and locked in the Shutdown position or in the Refuel position with the "one rod out" Refuel position interlock OPERABLE per Specification 3.9.1. *4.10.4.2* *4.1.1.1* *Sully*
2. b. The SRM channels are OPERABLE per Specification 3.9.2. *3.10 A* *3.10 B*
3. c. The SHUTDOWN MARGIN requirements of Specification 3.1.1 are satisfied per Specification 3.9.10.1.c. *3.3 A* *3.10 I.3*
4. d. All other control rods in a five-by-five array centered on the control rod being removed are inserted and electrically or hydraulically disarmed or the four fuel assemblies surrounding the control rod or control rod drive mechanism to be removed from the core and/or reactor vessel are removed from the core cell. *Sully*
5. e. All other control rods are inserted. *Sully*

REFUELING OPERATIONS

MULTIPLE CONTROL ROD REMOVAL

FOR INFORMATION ONLY

LIMITING CONDITION FOR OPERATION

10.5 3.9.10.2 Any number of control rods and/or control rod drive mechanisms may be removed from the core and/or reactor pressure vessel provided that at least the following requirements are satisfied until all control rods and control rod drive mechanisms are reinstalled and all control rods are inserted in the core.

- ① → a. The reactor mode switch is OPERABLE and locked in the Shutdown position or in the Refuel position per Specification 3.9.1, except that the Refuel position "one-rod-out" interlock may be bypassed, as required, for those control rods and/or control rod drive mechanisms to be removed, after the fuel assemblies have been removed as specified below. 3.10-A
- ② → b. The source range monitors (SRM) are OPERABLE per Specification 3.9.2. 3.10-B
- ③ → c. The SHUTDOWN MARGIN requirements of Specification 3.1.1 are satisfied. 3.3.4
- ④ → d. All other control rods are either ^{fully} inserted or have the surrounding four fuel assemblies removed from the core cell.
- ⑤ → e. The four fuel assemblies surrounding each control rod or control rod drive mechanism to be removed from the core and/or reactor vessel are removed from the core cell.

APPLICABILITY: OPERATIONAL CONDITION 5.

ACTION:

With the requirements of the above specification not satisfied, suspend removal of control rods and/or control rod drive mechanisms from the core and/or reactor pressure vessel and initiate ~~action~~ ^{ACTION} to satisfy the above requirements.

SURVEILLANCE REQUIREMENTS

10.5.1
4.9.10.2.1 Within 4 hours prior to the start of removal of control rods and/or control rod drive mechanisms from the core and/or reactor pressure vessel and at least once per 24 hours thereafter until all control rods and control rod drive mechanisms are reinstalled and all control rods are inserted in the core, verify that:

- 4.10 A.2 fully 4.1.4.1
- The reactor mode switch is OPERABLE per Surveillance Requirement 4.3.1.1 or 4.9.1.2, as applicable, and locked in the Shutdown position or in the Refuel position per Specification 3.9.1. 3.10 A
 - The SRM channels are OPERABLE per Specification 3.9.2. 3.10 B
 - The SHUTDOWN MARGIN requirements of Specification 3.1.1 are satisfied. 3.3 A
 - All other control rods are either ^{fully} inserted or have the surrounding four fuel assemblies removed from the core cell.
 - The four fuel assemblies surrounding each control rod and/or control rod drive mechanism to be removed from the core and/or reactor vessel are removed from the core cell.

10.5.2
4.9.10.2.2 Following replacement of all control rods and/or control rod drive mechanisms removed in accordance with this specification, perform a functional test of the "one-rod-out" Refuel position interlock, if this function had been bypassed.

All fuel handling operations are suspended until all control rods are inserted in the core.

DRESDEN ONLY

REFUELING OPERATIONS

SHUTDOWN COOLING

3/4.9.11 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

HIGH WATER LEVEL

FOR INFORMATION ONLY

LIMITING CONDITION FOR OPERATION

3.9.11.1 At least one shutdown cooling mode loop of the residual heat removal (RHR) system shall be OPERABLE and in operation* with at least:

- ① a. One OPERABLE RHR pump, and
- ② b. One OPERABLE RHR heat exchanger.

APPLICABILITY: OPERATIONAL CONDITION 5, when irradiated fuel is in the reactor vessel and the water level is greater than or equal to (23) feet above the top of the reactor pressure vessel flange.

ACTION:

- ① a. With no RHR shutdown cooling mode loop OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal. Otherwise, suspend all operations involving an increase in the reactor decay heat load and establish SECONDARY CONTAINMENT INTEGRITY within 4 hours.
- ② b. With no RHR shutdown cooling mode loop in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature at least once per hour.

and verify reactor coolant circulation at least once per 12 hours

SURVEILLANCE REQUIREMENTS

4.9.11.1 At least one shutdown cooling mode loop of the residual heat removal system or alternate method shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

② The shutdown cooling pump may be removed from operation for up to 2 hours per 8-hour period.

REFUELING OPERATIONS

LOW WATER LEVEL

FOR INFORMATION ONLY

DRESDEN
ONLY

LIMITING CONDITION FOR OPERATION

10 L 3.9.11.2 Two shutdown cooling mode loops of the residual heat removal (RHR) system shall be OPERABLE and at least one loop shall be in operation, with each loop consisting of at least:

- (SDC) 9
- a. One OPERABLE RHR pump, and
 - b. One OPERABLE RHR heat exchanger.

APPLICABILITY: OPERATIONAL CONDITION 5, when irradiated fuel is in the reactor vessel and the water level is less than (23) feet above the top of the reactor pressure vessel flange.

ACTION:

1 a. With less than the above required shutdown cooling mode loops of the RHR system OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal for each inoperable RHR shutdown cooling mode loop.

2 b. With no RHR shutdown cooling mode loop in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature at least once per hour.

and verify reactor coolant recirculation at least once per 12 hours

SURVEILLANCE REQUIREMENTS

10 L 4.9.11.2 At least one shutdown cooling mode loop of the residual heat removal system or alternate method shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

(a) The shutdown cooling pump may be removed from operation for up to 2 hours per 8-hour period.

REFUELING OPERATIONS

QUAD CITIES
ONLY

3/4 9.11 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

HIGH WATER LEVEL

FOR INFORMATION ONLY

LIMITING CONDITION FOR OPERATION

10. K 3.9.11.1 At least one shutdown cooling mode loop of the residual heat removal (RHR) system shall be OPERABLE and in operation* with at least:

1. a. One OPERABLE RHR pump, and
2. b. One OPERABLE RHR heat exchanger.

APPLICABILITY: OPERATIONAL CONDITION 5, when irradiated ^{MADE} fuel is in the reactor vessel and the water level is greater than or equal to (23) feet above the top of the reactor pressure vessel flange.

ACTION:

- a. With no RHR shutdown cooling mode loop OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal. Otherwise, suspend all operations involving an increase in the reactor decay heat load and establish SECONDARY CONTAINMENT INTEGRITY within 4 hours.
- b. With no RHR shutdown cooling mode loop in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature at least once per hour.

SURVEILLANCE REQUIREMENTS

10. K 4.9.11.1 At least one shutdown cooling mode loop of the residual heat removal system or alternate method shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

2. Monitor the reactor coolant temperature at least once per hour.

capable of

* The shutdown cooling pump may be removed from operation for up to 2 hours per 8-hour period.

*Residual Heat Removal and
Coolant Circulation -*

REFUELING OPERATIONS

LOW WATER LEVEL

FOR INFORMATION ONLY

*QUAD CITIES
ONLY*

LIMITING CONDITION FOR OPERATION

10.2 3.9.11.2 Two shutdown cooling mode loops of the residual heat removal (RHR) system shall be OPERABLE and at least one loop shall be in operation,* with each loop consisting of at least:

- a. One OPERABLE RHR pump, and
- b. One OPERABLE RHR heat exchanger.

mode
APPLICABILITY: OPERATIONAL CONDITION 5, when irradiated fuel is in the reactor vessel and the water level is less than (23) feet above the top of the reactor pressure vessel flange.

ACTION:

- a. With less than the above required shutdown cooling mode loops of the RHR system OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal for each inoperable RHR shutdown cooling mode loop.
- b. With no RHR shutdown cooling mode loop in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature at least once per hour.

SURVEILLANCE REQUIREMENTS

10.2.1 4.9.11.2 At least one shutdown cooling mode loop of the residual heat removal system or alternate method shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

2. Monitor the reactor coolant temperature at least once per hour.

*The shutdown cooling pump may be removed from operation for up to 2 hours per 8-hour period.