Enclosure 1

to Serial No. NLS-85-114

Proposed Brunswick-1 TS Pages
(85TSB12)

(1348MAT/crs)

SUMMARY LIST OF REVISIONS
BRUNSWICK-1

Page	Description of Change
1-7	Definitions of SPIRAL RELOAD and SPIRAL UNLOAD revised to allow up to four fuel bundles to be loaded around each SRM.
3/4 9-3	Specification 3.9.2.e revised to allow 4 rather than 2 fuel bundles around each SRM.
	Administrative Change - "CONDITION" changed to "OPERATIONAL CONDITION".
3/4 9-4	Surveillance Requirement 4.9.2.b revised to allow 4 rather than 2 fuel bundles around each SRM.
B 3/4 1-1	Paragraph added to Bases 3/4.1.1 SHUTDOWN MARGIN describing SPIRAL RELOAD process.
B 3/4 9-1	Bases 3/4.9.2 revised to reflect allowance of 4 fuel bundles around each SRM.

(1348MAT/crs)

SHUTDOWN MARGIN

SHUTDOWN MARGIN shall be the amount of reactivity by which the reactor would be subcritical assuming that all control rods capable of insertion are fully inserted except for the analytically determined highest worth rod which is assumed to be fully withdrawn, and the reactor is in the shutdown condition, cold, 68°F, and Xenon free.

SITE BOUNDARY

The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee, as defined by Figure 5.1.3-1.

SOLIDIFICATION

SOLIDIFICATION shall be the conversion of wet wastes into a form that meets shipping and burial ground requirements.

SOURCE CHECK

A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to radiation.

SPIRAL RELOAD

A SPIRAL RELOAD is the reverse of a SPIRAL UNLOAD. Except for fuel bundles around each of the four SRMs, the fuel in the interior of the core, symmetric to the SRMs, is loaded first. Up to four fuel bundles may be loaded around each of the four SRMs.

SPIRAL UNLOAD

A SPIRAL UNLOAD is a core unload performed by first removing the fuel from the outermost control cells (four bundles surrounding a control blade). Unloading continues in a spiral fashion by removing fuel from the outermost periphery to the interior of the core, symmetric about the SRMs, except for fuel bundles around each of the four SRMs. Up to four fuel bundles may be left around each SRM to maintain adequate count rate.

STAGGERED TEST BASIS

A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals.

b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 During CORE ALTERATIONS, the requirements for the source range monitors (SRMs) shall be:

a. Two SRMs* shall be OPERABLE, one in the core quadrant where fuel is being moved and one in an adjacent quadrant. For an SRM to be considered OPERABLE, it shall be inserted to the normal operating level and shall have a minimum of 3 cps except as specified in d and e below.

b. The SRMs shall give a continuous visual indication in the Control Room.

c. The "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn** and shutdown margin demonstrations.

d. During a core SPIRAL UNLOAD the count rate may drop below 3 cps.

e. Prior to a core SPIRAL RELOAD, up to four fuel assemblies shall be loaded into different control cells containing control blades around each SRM to obtain 3 cps. Until these assemblies have been loaded, the 3 cps count rate is not required.

APPLICABILITY: OPERATIONAL CONDITION 5

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and fully insert all insertable control rods. The provisions of Specification 3.0.3 are not applicable.

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*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.

**Not required for control rods removed per Specifications 3.9.10.1 or 3.9.10.2.

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,

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 one is located in the adjacent quadrant,

4. During CORE ALTERATIONS, verifying that the channel count rate is at least 3 cps (except as noted in Specification 3.9.2.d and 3.9.2.e),

5. During a core SPIRAL UNLOAD or SPIRAL RELOAD, verifying that the fuel movement sheet is being followed.

b. Verifying prior to the start of a SPIRAL RELOAD that the SRMs have been raised to a count rate of at least 3 cps by the insertion of up to four fuel assemblies around each of the four SRMs.

c. Performance of a CHANNEL FUNCTIONAL TEST:

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

2. At least once per seven days.

3/4.1 REACTIVITY CONTROL SYSTEMS

BASES

3/4.1.1 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

Since core reactivity values will vary through core life as function of fuel depletion and poison burnup, the demonstration of SHUTDOWN MARGIN will be performed in the cold xenon-free condition and shall show the core to be subcritical by a least R + 0.38% delta k/k. The value of R in units of % delta k/k is the difference between the calculated value of maximum core reactivity during the operating cycle and the calculated beginning-of-life core reactivity. The value of R must be positive or zero and must be determined for each fuel loading cycle. Satisfaction of this limitation can be best demonstrated at the time of fuel loading, but the margin must be determined anytime a control rod is incapable of insertion.

During the SPIRAL RELOAD deviations from the scheduled core loading are permitted in order to achieve the required 3 cps needed to gain SRM operability provided the cold reactivities (zero voids) of the fuel bundles temporarily loaded around the SRMs are individually less than that of the respective bundles scheduled for those locations. The cold shutdown margin calculation performed for the scheduled core loading bounds the partially loaded core during the SPIRAL RELOAD process.

This reactivity characteristic has been a basic assumption in the analysis of plant performance and can best be demonstrated at the time of fuel loading, but the margin must also be determined anytime a control rod is incapable of insertion.

3/4.1.2 REACTIVITY ANOMALIES

Since the SHUTDOWN MARGIN requirement for the reactor is small, a careful check on actual conditions to the predicted conditions is necessary, and the changes in reactivity can be inferred from these comparisons of rod patterns. Since the comparisons are easily done, frequent checks are not an imposition on normal operations. A 1% change is larger than is expected for normal operation so a change of this magnitude should be thoroughly evaluated. A change as large as 1% would not exceed the design conditions of the reactor and is on the safe side of the postulated transients.

"During the first startup following CORE ALTERATIONS" implies that the specified surveillance should be performed upon the initial attainment of a high equilibrium power level, preferably of at least 90% of RATED THERMAL POWER, during the unit startup.

3/4.1.3 CONTROL RODS

The specifications of this section ensure that 1) the minimum SHUTDOWN MARGIN is maintained, 2) the control rod insertion times are consistent with those used in the accident analysis, and 3) the

3/4.9 REFUELING OPERATIONS

BASES

3/4.9.1 REACTOR MODE SWITCH

Locking the reactor mode switch in the refuel position ensures that the restrictions on rod withdrawal and refueling platform movement during the refueling operations are properly activated. These conditions reinforce the refueling procedures and reduce the probability of inadvertent criticality, damage to reactor internals, fuel assemblies and exposure of personnel to excessive radioactivity.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

During a SPIRAL UNLOAD, the count rate of the SRM will decrease below 3 cps before all of the fuel is unloaded. The count rate of 3 cps is not necessary since there will be no reactivity additions during the spiral unload. The SRMs will be required to be OPERABLE prior to the SPIRAL UNLOAD, and each SRM will be verified operational by raising the count rate to 3 cps prior to the SPIRAL RELOAD by inserting up to four fuel assemblies around each SRM. This will ensure that the SRMs can be relied upon to monitor core reactivity during the reload.

3/4.9.3 CONTROL ROD POSITION

The requirement that all control rods be inserted during CORE ALTERATIONS ensures that fuel will not be loaded into a cell without a control rod and prevents two positive reactivity changes from occurring simultaneously.

3/4.9.4 DECAY TIME

The minimum requirement for reactor subcriticality prior to fuel movement ensures that sufficient time has elapsed to allow the radioactive decay of the short lived fission products. This decay time is consistent with the assumptions used in the accident analyses.

3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during movement of fuel within the reactor pressure vessel.

Enclosure 2

to Serial No. NLS-85-114

Proposed Brunswick-2 TS Pages
(85TSB12)

(1348MAT/crs)

SUMMARY LIST OF REVISIONS
BRUNSWICK-2

Page	Description of Change
1-8	Definitions of SPIRAL RELOAD and SPIRAL UNLOAD revised to allow up to four fuel bundles to be loaded around each SRM.
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SPIRAL RELOAD

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a. A test schedule for n systems, subsystems trains or other designated components obtained by dividing the specified test interval into n equal subintervals.

b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

THEMAL POWER

THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

TOTAL PEAKING FACTOR

The TOTAL PEAKING FACTOR (TPF) shall be the ratio of local LHGR for any specific location on a fuel rod divided by the average LHGR associated with the fuel bundles of the same type operating at the core average bundle power.

UNIDENTIFIED LEAKAGE

UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE.

UNRESTRICTED AREA

An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purpose of protection of individuals from exposure to radiation and radioactive materials or any area within the SITE BOUNDARY used for residential quarters or industrial, commercial, institutional and/or recreational purposes.

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

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b. The SRMs shall give a continuous visual indication in the Control Room.

c. The "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn** and shutdown margin demonstrations.

d. During a core SPIRAL UNLOAD the count rate may drop below 3 cps.

e. Prior to a core SPIRAL RELOAD, up to four fuel assemblies shall be loaded into different control cells containing control blades around each SRM to obtain 3 cps. Until these assemblies have been loaded, the 3 cps count rate is not required.

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