



Entergy

Indian Point 3

AP-18.1

Attachment 1

Revision 10

Page 1 of 1

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INDIAN POINT 3
TECHNICAL SPECIFICATION BASES

INSTRUCTIONS FOR UPDATE: 08-03/28/03

REMOVE

a) List of Effective Sections;
3 pages (Rev 7)

b) Section B 3.4.9; Rev 0
5 pages

INSERT

a) List of Effective Sections;
3 pages (Rev 8)

b) Section B 3.4.9; Rev 1
5 pages

DISTRIBUTION CONTROL LIST

Document Name: ITS/BASES/TRM

CC_NAME	NAME	DEPT	LOCATION
497	L.GRANT (LRQ-OPS/TRAIN)	LRQ (UNIT 3/IPEC ONLY)	#48
498	D. PITT	TRAINING - ILO CLASSES	48-2-A
499	D. PITT	TRAINING - ILO CLASSES	48-2-A
500	C.STELLATO (NRQ-OPS TRN)	NRQ (UNIT 3/IPEC ONLY)	#48
501	C.STELLATO (NRQ-OPS TRN)	NRQ (UNIT 3/IPEC ONLY)	#48
512	C.STELLATO (NRQ-OPS TRN)	NRQ (UNIT 3/IPEC ONLY)	#48
513	C.STELLATO (NRQ-OPS TRN)	NRQ (UNIT 3/IPEC ONLY)	#48
518	DOCUMENT CONTROL DESK	NRC (ALL EP'S)	OFFSITE
527	MILIANO PATRICK	NRC/SR. PROJECT MANAGER	OFFSITE
528	GILMAN MARIE	OPS/ (1 STOP SHOP/LG.DWG)	IP2
529	DECLEMENTE VINNIE	OPS/ (TYPE A DWG LG/ONLY)	IP3/2ND FL

TECHNICAL SPECIFICATION BASES
LIST OF EFFECTIVE SECTIONS

BASES SECTION	REV	NUMBER OF PAGES	EFFECTIVE DATE
Tbl of Cn	1	4	05/18/2001
B 2.0 SAFETY LIMITS			
B 2.1.1	0	5	03/19/2001
B 2.1.2	0	4	03/19/2001
B 3.0 LCO AND SR APPLICABILITY			
B 3.0	1	15	09/30/2002
B 3.1 REACTIVITY CONTROL			
B 3.1.1	0	6	03/19/2001
B 3.1.2	0	7	03/19/2001
B 3.1.3	0	7	03/19/2001
B 3.1.4	0	13	03/19/2001
B 3.1.5	0	5	03/19/2001
B 3.1.6	0	6	03/19/2001
B 3.1.7	0	8	03/19/2001
B 3.1.8	0	7	03/19/2001
B 3.2 POWER DISTRIBUTION LIMITS			
B 3.2.1	0	7	03/19/2001
B 3.2.2	0	7	03/19/2001
B 3.2.3	0	9	03/19/2001
B 3.2.4	0	7	03/19/2001
B 3.3 INSTRUMENTATION			
B 3.3.1	1	59	09/30/2002
B 3.3.2	3	45	12/04/2002
B 3.3.3	2	19	09/30/2002
B 3.3.4	0	7	03/19/2001
B 3.3.5	0	6	03/19/2001
B 3.3.6	0	10	03/19/2001
B 3.3.7	0	6	03/19/2001
B 3.3.8	1	4	03/17/2003
B 3.4 REACTOR COOLANT SYSTEM			
B 3.4.1	0	6	03/19/2001
B 3.4.2	0	3	03/19/2001
B 3.4.3	0	9	03/19/2001
B 3.4.4	0	4	03/19/2001
B 3.4.5	0	6	03/19/2001
B 3.4.6	0	6	03/19/2001
B 3.4.7	0	7	03/19/2001
B 3.4.8	0	4	03/19/2001
B 3.4.9	1	5	03/28/2003
B 3.4.10	0	5	03/19/2001
B 3.4.11	0	8	03/19/2001
B 3.4.12	0	20	03/19/2001
B 3.4.13	2	6	11/19/2001
B 3.4.14	0	10	03/19/2001
B 3.4.15	2	7	11/19/2001
B 3.4.16	0	7	03/19/2001
B 3.5 ECCS			
B 3.5.1	0	10	03/19/2001
B 3.5.2	0	13	03/19/2001
B 3.5.3	0	4	03/19/2001
B 3.5.4	0	9	03/19/2001

BASES SECTION	REV	NUMBER OF PAGES	EFFECTIVE DATE
B 3.6 CONTAINMENT			
B 3.6.1	0	5	03/19/2001
B 3.6.2	0	9	03/19/2001
B 3.6.3	0	17	03/19/2001
B 3.6.4	0	3	03/19/2001
B 3.6.5	0	5	03/19/2001
B 3.6.6	1	13	12/04/2002
B 3.6.7	0	6	03/19/2001
B 3.6.8	0	6	03/19/2001
B 3.6.9	0	8	03/19/2001
B 3.6.10	0	12	03/19/2001
B 3.7 PLANT SYSTEMS			
B 3.7.1	1	6	12/04/2002
B 3.7.2	0	10	03/19/2001
B 3.7.3	1	7	05/18/2001
B 3.7.4	0	5	03/19/2001
B 3.7.5	0	11	03/19/2001
B 3.7.6	1	4	12/04/2002
B 3.7.7	0	4	03/19/2001
B 3.7.8	0	7	03/19/2001
B 3.7.9	1	9	09/30/2002
B 3.7.10	0	3	03/19/2001
B 3.7.11	1	9	11/19/2001
B 3.7.12	0	4	03/19/2001
B 3.7.13	1	7	03/17/2003
B 3.7.14	0	3	03/19/2001
B 3.7.15	0	5	03/19/2001
B 3.7.16	0	6	03/19/2001
B 3.7.17	0	4	03/19/2001
B 3.8 ELECTRICAL POWER			
B 3.8.1	1	32	01/22/2002
B 3.8.2	0	7	03/19/2001
B 3.8.3	0	13	03/19/2001
B 3.8.4	1	11	01/22/2002
B 3.8.5	0	4	03/19/2001
B 3.8.6	0	8	03/19/2001
B 3.8.7	0	8	03/19/2001
B 3.8.8	0	4	03/19/2001
B 3.8.9	1	14	01/22/2002
B 3.8.10	0	4	03/19/2001
B 3.9 REFUELING OPERATIONS			
B 3.9.1	0	4	03/19/2001
B 3.9.2	0	4	03/19/2001
B 3.9.3	1	8	03/17/2003
B 3.9.4	0	4	03/19/2001
B 3.9.5	0	4	03/19/2001
B 3.9.6	0	4	03/19/2001

TECHNICAL SPECIFICATION BASES
REVISION HISTORY

REVISION HISTORY FOR BASES

AFFECTED SECTIONS	REV	EFFECTIVE DATE	DESCRIPTION
ALL	0	03/19/01	Initial issue of Bases derived from NUREG-1431, in conjunction with Technical Specification Amendment 205 for conversion of 'Current Technical Specifications' to 'Improved Technical Specifications'.
BASES UPDATE PACKAGE 01-031901			
B 3.4.13 B 3.4.15	1	03/19/01	Changes regarding containment sump flow monitor per NSE 01-3-018 LWD Rev 0. Change issued concurrent with Rev 0.
BASES UPDATE PACKAGE 02-051801			
Table of Contents	1	05/18/01	Title of Section B 3.7.3 revised per Tech Spec Amend 207
B 3.7.3	1	05/18/01	Implementation of Tech Spec Amend 207
BASES UPDATE PACKAGE 03-111901			
B 3.3.2	1	11/19/01	Correction to statement regarding applicability of Function 5, to be consistent with the Technical Specification.
B 3.3.3	1	11/19/01	Changes to reflect reclassification of certain SG narrow range level instruments as QA Category M per NSE 97-3-439, Rev 1.
B 3.4.13 B 3.4.15	2	11/19/01	Changes to reflect installation of a new control room alarm for 'VC Sump Pump Running'. Changes per NSE 01-3-018, Rev 1 and DCP 01-3-023 LWD.
B 3.7.11	1	11/19/01	Clarification of allowable flowrate for CRVS in 'incident mode with outside air makeup.'
BASES UPDATE PACKAGE 04-012202			
B 3.3.2	2	01/22/02	Clarify starting logic of 32 ABFP per EVL-01-3-078 MULTI, Rev 0.
B 3.8.1	1	01/22/02	Provide additional guidance for SR 3.8.1.1 and Condition Statements A.1 and B.1 per EVL-01-3-078 MULTI, Rev 0.
B 3.8.4	1	01/22/02	Revision of battery design description per plant modification and to reflect Tech Spec Amendment 209.
B 3.8.9	1	01/22/02	Provide additional information regarding MCC in Table B 3.8.9-1 per EVL-01-3-078 MULTI, Rev 0.
BASES UPDATE PACKAGE 05-093002			
B 3.0	1	09/30/02	Changes to reflect Tech Spec Amendment 212 regarding delay period for a missed surveillance. Changes adopt TSTF 358, Rev 6.
B 3.3.1	1	09/30/02	Changes regarding description of turbine runback feature per EVAL-99-3-063 NIS.
B 3.3.3	2	09/30/02	Changes to reflect Tech Spec Amendment 211 regarding CETs and other PAM instruments.
B 3.7.9	1	09/30/02	Changes regarding SWN -35-1 and -2 valves per EVAL-00-3-095 SWS, Rev 0.

TECHNICAL SPECIFICATION BASES
REVISION HISTORY

AFFECTED SECTIONS	REV	EFFECTIVE DATE	DESCRIPTION
BASES UPDATE PACKAGE 06-120402			
B 3.3.2	3	12/04/02	Changes to reflect Tech Spec Amendment 213 regarding 1.4% power uprate.
B 3.6.6	1		
B 3.7.1	1		
B 3.7.6	1		
BASES UPDATE PACKAGE 07-031703			
B 3.3.8	1	03/17/2003	Changes to reflect Tech Spec Amendment 215 regarding implementation of Alternate Source Term analysis methodology to the Fuel Handling Accident
B 3.7.13	1		
B 3.9.3	1		
BASES UPDATE PACKAGE 08-032803			
B 3.4.9	1	03/28/2003	Changes to reflect Tech Spec Amendment 216 regarding relaxation of pressurizer level limits in MODE 3.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.9 Pressurizer

BASES

BACKGROUND

The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation, and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during normal load transients.

The pressure control components addressed by this LCO include the pressurizer water level, the required heaters, and emergency power supplies. Pressurizer safety valves and pressurizer power operated relief valves are addressed by LCO 3.4.10, "Pressurizer Safety Valves," and LCO 3.4.11, "Pressurizer Power Operated Relief Valves (PORVs)," respectively.

The intent of the LCO is to ensure that a steam bubble exists in the pressurizer prior to power operation to minimize the consequences of potential overpressure transients. The presence of a steam bubble is consistent with analytical assumptions. Relatively small amounts of noncondensable gases can inhibit the condensation heat transfer between the pressurizer spray and the steam, and diminish the spray effectiveness for pressure control.

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. A minimum required available capacity of pressurizer heaters ensures that the RCS pressure can be maintained. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of reactor coolant. Unless adequate heater capacity is available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling

(continued)

BASES

BACKGROUND
(continued)

margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single phase natural circulation and decreased capability to remove core decay heat.

Pressurizer heaters are powered from either the offsite source or the diesel generators (DGs) through the four 480V vital buses as follows: bus 2A (DG 31) supports 485 kW of pressurizer heaters; bus 3A (DG 31) supports 555 kW of pressurizer heaters; bus 5A (DG 33) supports 485 kW of pressurizer heaters; and, bus 6A (DG 32) supports 277 kW of pressurizer heaters.

APPLICABLE SAFETY ANALYSES

In Modes 1, 2, and 3, the LCO requirement on pressurizer water level ensures that a steam bubble exists in the pressurizer. In addition, the safety analyses for loss of load and for loss of normal feedwater include an analytical limit of 58.3% as an initial condition assumption. The analyses assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensable gases normally present. The limiting scenario for these accident analyses is with the plant at full power. Therefore, the LCO requirement specified for MODE 1 ensures that the pressurizer initial condition assumption remains valid. An additional margin on the analytical limit must be allowed for instrument error.

Safety analyses presented in the FSAR (Ref. 1) do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

The maximum pressurizer water level limit, which ensures that a steam bubble exists in the pressurizer, satisfies Criterion 2 of 10 CFR 50.36. Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG-0737 (Ref. 2), is the reason for providing an LCO.

(continued)

BASES

LCO

The LCO requirement for the pressurizer to be OPERABLE with water level less than or equal to 58.3% (for MODES 1 and 2) or less than or equal to 90% (for MODE 3) ensures that a steam bubble exists. The required pressurizer level of $\leq 58.3\%$ is the analytical limit used as an initial condition in the accident analysis. An additional margin of approximately 7% must be allowed for instrument error (i.e., the indicated level should not exceed 51.3%, for MODES 1 and 2 or 83%, for MODE 3).

Limiting the LCO maximum operating water level preserves the steam space for pressure control. The LCO has been established to ensure the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity ≥ 150 kW, capable of being powered from either the offsite power source or the emergency power supply. Each of the 2 groups of pressurizer heaters should be powered from a different DG to ensure that the minimum required capacity of 150 kW can be energized during a loss of offsite power condition assuming the failure of a single DG. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide margin to subcooling can be obtained in the loops. The value of 150 kW is sufficient to maintain pressure and is dependent on the heat losses.

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature, resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, applicability has been designated for MODES 1 and 2. The applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup.

When RCS temperature is below 411 °F, administrative controls in the Technical Requirements Manual (Ref. 3) are used to limit the potential for exceeding 10 CFR 50, Appendix G limits.

In MODES 1, 2, and 3, there is need to maintain the availability of pressurizer heaters, capable of being powered from an

(continued)

BASES

APPLICABILITY
(continued)

emergency power supply. In the event of a loss of offsite power, the initial conditions of these MODES give the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODE 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Residual Heat Removal (RHR) System is in service, and therefore, the LCO is not applicable.

ACTIONS

A.1 and A.2

Pressurizer water level control malfunctions or other plant evolutions may result in a pressurizer water level above the nominal upper limit, even with the plant at steady state conditions.

If the pressurizer water level is not within the limit, action must be taken to place the plant in a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3, with the reactor trip breakers open, within 6 hours and to MODE 4 within 12 hours. This takes the unit out of the applicable MODES.

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

B.1

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering that the redundant heater group is still available and the low probability of an event during this period. Pressure control may be maintained during this time using remaining heaters.

C.1 and C.2

If one group of pressurizer heaters are inoperable and cannot be restored in the allowed Completion Time of Required Action B.1, the plant must be brought to a MODE in which the LCO does not

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The Frequency of 12 hours has been shown by operating practice to be sufficient to regularly assess level for any deviation and verify that operation is within safety analyses assumptions of ensuring that a steam bubble exists in the pressurizer. Alarms are also available for early detection of abnormal level indications.

SR 3.4.9.2

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. This may be done separately by testing the power supply output and by performing an electrical check on heater element continuity and resistance. The Frequency of 24 months is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.

REFERENCES

1. FSAR, Section 14.
 2. NUREG-0737, November 1980.
 3. IP3 Technical Requirements Manual.
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