

PNPS TECHNICAL SPECIFICATIONS

List of Effective Pages

Page	Revision	Amendment	Page	Revision	Amendment
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List of Effective Pages:

LOEP-1	148	
LOEP-2	146	
LOEP-3	148	
LOEP-4	148	
LOEP-5	146	

Index of Technical Specification Changes:

i		12
ii		23
iii		37
iv		41
v		45
vi		50
vii		57
viii		66
ix		72
x		80
xi		88
xii		93
xiii	103	99
xiv	114	111
xv	123	120
xvi	133	125
xvii	141	129
xviii	148	135
xix	149	---

Index of Technical Specification Clarifications:

C-1 141

Clarification 87-01, 09/14/87 (1 Page)
 Clarification 88-01, 11/29/88 (5 Pages)
 Clarification 88-02, 12/02/88 (2 Pages)
 Clarification 89-01, 09/16/89 (2 Pages)
 Clarification 89-02, 10/02/89 (2 Pages)
 Clarification 89-03, 10/17/89 (3 Pages)
 Clarification 89-04, 11/29/89 (3 Pages)
 Clarification 89-05, 12/13/89 (2 Pages)
 Clarification 90-02, 05/16/90 (2 Pages)
 Clarification 90-03, 06/13/90 (3 Pages)

Materials License:

1	6
2	6

Revision 149

License as Amended:

1	0
2	0
3	135
4	115
5	134

Order dated 09/12/80 (6 pages)
 Order dated 01/09/81 (6 pages)
 Order dated 01/13/81 (7 pages)
 Order dated 04/08/81 (3 pages)
 Order dated 07/10/81 (10 pages)
 Order dated 01/18/82 (10 pages)
 Order dated 01/19/82 (5 pages)
 Order dated 02/16/82 (2 pages)
 Order dated 03/14/83 (10 pages)
 Order dated 06/24/83 (5 pages)
 Order dated 09/22/83 (5 pages)
 NRC Letter dated 11/08/83 (2 pages)
 NRC Letter dated 03/09/84 (2 pages)
 Order dated 06/15/84 (4 pages)
 Order dated 07/02/84 (4 pages)
 Order dated 11/27/85 (3 pages)

Technical Specifications Cover Page

Title Page

Table of Contents:

i	148	135
ii	146	133
iii	146	133

Technical Specifications:

1	146	133
2		64
3	116	113
4		15
5		0
5a	138	128
5b	138	128
6	146	133
7	146	133
8	146	133
9	146	133
10	146	133

LOEP-1

PNPS TECHNICAL SPECIFICATIONS

List of Effective Pages (continued)

<u>Page</u>	<u>Revision</u>	<u>Amendment</u>	<u>Page</u>	<u>Revision</u>	<u>Amendment</u>
185		89	206f-1	117	114
186		89	206f-2	117	114
187		89	206g	117	114
188		89	206h	117	114
189		89	206i	117	114
190		89	206i-1	117	114
191		89	206j		76
192		89	206j-1	117	114
193		89	206k		36
193a		89	206l		36
193b		89	206m	146	133
193c		89	207		91
193d		89	208	145	132
193e		89	209	145	132
193f		89	210	145	132
194	117	114	211	145	132
194A		61	212	145	132
195	136	127	213	145	132
196	136	127	214	145	132
197	136	127	215	145	132
198		0	216	146	133
199	136	127	217	146	133
200		42	217a	146	133
201	148	135	218	145	132
202		8	219	145	132
203	108		220	145	132
203a		41	221	145	132
204		0	222	145	132
204A	149	----	229		89
205	149	----	230		89
205a	146	133	231		89
205b	146	133	232		89
205c	146	133			
205d	146	133			
205e	146	133			
205f	146	133			
206	117	114			
206a	117	114			
206b	117	114			
206c	117	114			
206c-1	117	114			
206d	117	114			
206e	117	114			
206e-1	117	114			
206e-2	117	114			
206f	117	114			

3.10 BASES:

B. Core Monitoring

The SRM's are provided to monitor the core during periods of station shutdown and to guide the operator during refueling operations and station startup. Requiring two operable SRM's in or adjacent to any core quadrant where fuel or control rods are being moved ensures adequate monitoring of that quadrant during such alterations. The requirement of 3 counts per second provides assurance that neutron flux is being monitored and ensures startup is conducted only if the source range flux level is above the minimum assumed in the control rod drop accident.

The limiting conditions for operation of the SRM subsystem of the Neutron Monitoring System are derived from the Station Nuclear Safety Operational Analysis (Appendix G) and a functional analysis of the neutron monitoring system. The specification is based on the Operational Nuclear Safety Requirements in subsection 7.5.10 of the Safety Analysis Report.

A spiral unloading program is one by which the fuel is in the outermost cells (four fuel bundles surrounding a control blade) is removed first. Unloading continues by removing the remaining outermost fuel cell by cell. The center cell will be the last removed.⁽¹⁾ A spiral loading program is one by which fuel is loaded on the periphery of the previously loaded fueled region beginning around a single SRM. Spiral unloading and reloading will preclude the creation of flux traps (moderator filled cavities surrounded on all sides by fuel).

During spiral unloading, the SRM's shall have an initial count rate of ≥ 3 cps with all rods fully inserted. The count rate will diminish during fuel removal. Under the special condition of complete spiral core unloading, it is expected that the count rate of the SRM's will drop below 3 cps before all of the fuel is unloaded.

Since there will be no reactivity additions, a lower number of counts will not present a hazard. When all of the fuel has been removed to the spent fuel storage pool, the SRM's will no longer be required. Requiring the SRM's to be operational prior to fuel removal assures that the SRM's are operable and can be relied on even when the count rate may go below 3 cps.

During spiral reload, SRM operability will be verified by using a portable external source every 12 hours until the required amount of fuel is loaded to maintain 3 cps. As an alternative to the above, up to two fuel assemblies will be loaded in different cells containing control blades around each SRM to obtain the required 3 cps. Until these assemblies have been loaded, the 3 cps requirement is not necessary.

⁽¹⁾ During selected refueling outages, prior to initiating spiral unloading, the central controlled cell will be removed to facilitate inspection of the Core Spray Spargers.

3.10 BASES:

C. Spent Fuel Pool Water Level

To ensure there is adequate water to shield and cool the irradiated fuel assemblies stored in the pool, a minimum pool water level is established. The minimum water level of 33 feet is established because it would be a significant change from the normal level (-1 foot) and is well above the level to assure adequate cooling.

D. Multiple Control Rod Removal

These specifications ensure maintenance or repair of control rods or rod drives will be performed under conditions that limit the probability of inadvertent criticality. The requirement that the fuel assemblies in the cell controlled by the control rod be removed from the reactor core before the interlock can be bypassed ensures withdrawal of another control rod does not result in inadvertent criticality. Each control rod essentially provides reactivity control for the fuel assemblies in the cell associated with the control rod. Thus, removal of an entire cell (fuel assemblies plus control rod) results in a lower reactivity potential of the core.

4.10 BASES:

A. Refueling Interlocks

Complete functional testing of all refueling interlocks before any refueling outage will provide positive indication that the interlocks operate in the situations for which they were designed. By loading each hoist with a weight equal to the fuel assembly, positioning the refueling platform, and withdrawing control rods, the interlocks can be subjected to valid operational tests. Where redundancy is provided in the logic circuitry, tests can be performed to assure that each redundant logic element can independently perform its functions.

B. Core Monitoring

Requiring the SRM's to be functionally tested prior to any core alteration ensures the SRM's will be operable at the start of that alteration. The daily response check of the SRM's ensures their continued operability.