

APR 19 1978

MEMORANDUM FOR: S. Varga, Chief, Light Water Reactors Branch 4, DPM  
FROM: W. Kreger, Chief, Radiological Assessment Branch, DSE  
SUBJECT: WPPSS-2 ACCEPTANCE REVIEW

PLANT NAME: WPPSS Nuclear Project No. 2  
LICENSING STAGE: OL  
DOCKET NUMBER: 50-397  
MILESTONE NUMBER/BRANCH CODE: 01/33  
PROJECT MANAGER: M. Lynch  
RESPONSIBLE BRANCH: LWR-4  
REQUESTED COMPLETION DATE: 4/19/78  
DESCRIPTION OF RESPONSE: Reference to original acceptance review  
REVIEW STATUS: Acceptance review complete

The Radiation Protection Section of the Radiological Assessment Branch has reviewed Chapter 12 and information referenced in Chapter 12 of the WPPSS 2 FSAR tendered on 3/24/78. As we stated in our 4/14/77 memo to you, the FSAR provides sufficient information for us to begin our review. Requests for information called for by Regulatory Guide 1.70, Revision 2, but not included in the FSAR, were attached to the 4/14/77 memo. We have no additional requests for information, and we have attached a copy of the 4/14/77 requests for your convenience.

This review was performed by R. Emch, RPS/RAB.

Original signed by  
\_ W. E. Kreger

William E. Kreger, Chief  
Radiological Assessment Branch  
Division of Site Safety and  
Environmental Analysis

Enclosure: as stated

cc: R. Hartfield (w/o encl.)  
S. Hanauer  
H. Denton  
D. Muller  
L. Crocker  
P. Vollmer  
D. Crutchfield  
R. Boyd  
H. Lynch

D. Vassallo  
J. Collins  
T. Murphy  
R. Emch  
DISTRIBUTION  
Docket File  
DSE Reading  
RAB Reading  
W. Kreger

B605230047 780419  
PDR ADCK 05000397  
A PDR

OFFICE	RAB:DSE	RAB:DSE	RAB:DSE		773080319
SURNAME	REmch:pc	TDMurphy	WEKreger		
DATE	4/18/78	4/18/78	4/14/78		

331.0 RADIOLOGICAL ASSESSMENT

331.1  
(12.1.3) Describe how information from operating BWR experience is included in the development of the radiation protection procedures. Section 12.1.2 on design considerations specifically describes your inclusion of BWR operating experience into the plant design. However, Section 12.1.3 does not describe how BWR operating experience is included in the development of your procedures. A description similar to that presented in Section 12.1.2 will be acceptable to supply the information called for in Section 12.1.3 of Regulatory Guide 1.70, Revision 2.

331.2  
(12.2.1) Provide your analysis of the deposition and buildup of activated corrosion products (crud). Include estimates of the amount of deposited crud which may buildup over the plant life. Explain how such crud source term estimates are factored into the shielding design and expected dose rates. This information is called for in Section 12.2.1 of Regulatory Guide 1.70, Revision 2.

331.3  
(12.2.2) Provide tabulations by nuclide of the expected airborne concentrations of radioactivity in areas normally occupied by operating personnel.

Include tabulations of the expected airborne concentrations of radioactivity which result from these sources:

- 1) removal of reactor vessel head and internals.
- 2) relief valve venting.
- 3) movement of spent fuel.

Describe the models and parameters which are used in calculating these concentrations.

This information is called for by Section 12.2.2 of Regulatory Guide 1.70, Revision 2.

331.4  
(12.3.1) Describe the features and considerations included in your design to reduce radio-cobalt production and build-up. Explain what use will be made of the following methods of cobalt reduction:

- 1) The use of reduced nickel in primary coolant system alloys.
- 2) Low cobalt impurity specifications in primary coolant system alloys.

331.4  
(12.3.1)

- 3) The minimization of high cobalt, hard facing wear materials in the primary coolant system.
- 4) The use of high flow rate/high temperature filtration.
- 5) The selection of valves and packing materials to minimize crud buildup and maintenance.
- 6) Provisions for decontamination of components and systems containing buildups of cobalt.
- 7) Continuous monitoring and adjustment of oxygen concentration and pH in the coolant.

This information is called for by Section 12.3.1 of Regulatory Guide 1.70, Revision 2; this subject is an item of generic concern to the ACRS.

331.5  
(12.3.1)

Describe the features you have included in the design to ensure that occupational dose will be ALARA during decommissioning. Information submitted in response to requirements of Section 12.3.1 of Regulatory Guide 1.70 Revision 2 can be referenced or used as applicable. This subject is an item of generic concern to the ACRS.

331.6  
(12.3.1)

Provide an illustrative example of each of the following components describing how they are designed to minimize occupational dose: liquid filters, demineralizers, ventilation filter trains, recombiners, tanks, evaporators, pumps, heat exchangers, recirculation pumps, valve operating stations, sampling station, and valve galleries. Include layout drawings and diagrams of these examples showing the radiation protection design features.

This information is called for in Section 12.3.1 of Regulatory Guide 1.70, Revision 2.

331.7  
(12.3.1)

Regulatory Guide 8.8, Revision 2, recommends that either 1) there should be no field routing of piping for radioactive materials, or 2) the field routing should be accomplished under the guidance of an engineer familiar with the principles of radiation protection. Describe how you will implement this recommendation or justify your alternatives.

331.8  
(12.3.1)

Explain what use is made of these ALARA design considerations which are suggested in Regulatory Guide 8.8, C.2, Revision 2:

- 1) Sloping of piping runs and tank bottoms.
- 2) Placement of drain tap-offs at low points.

- 3) Placement of connections above the centerline of piping.
- 4) Avoidance of dead legs and low points in piping.
- 5) Avoidance of T connections in piping.
- 6) Use of large radius bends or elbows in piping.
- 7) Use of butt welding and consumable inserts.
- 8) Use of canned pumps and flushable seals.
- 9) Use of short pipe runs and large diameter piping.
- 10) Provisions for remote filter changing.
- 11) Provisions for adequate equipment laydown space inside cubicles.

331.9  
(12.3.1)

You have indicated (FSAR Section 12.1.2.1b) that you place major sources of radioactivity in individually shielded cubicles as suggested in Regulatory Guide 8.8, Revision 2. However, numerous major sources on level 437' of the radwaste building are not individually shielded. (For example, floor drain collector tank, waste collector tank, chemical waste tanks, distillate tanks, gas coolers.)

Justify the absence of individual shields for these sources in light of your commitment to keep occupational dose ALARA.

331.10  
(12.3.4)

Describe the functions which your fixed area and airborne radioactivity monitoring systems are expected to perform in the event of an accident.

This information is called for in Section 12.3.4 of Regulatory Guide 1.70, Revision 2.

331.11  
(12.3.4)

Provide an analysis of the capability of your airborne radioactivity monitoring systems to detect MPC<sub>a</sub> levels of airborne radioiodine and particulates. An acceptable analysis should explain, for example, how long the systems will take to detect MPC<sub>a</sub> levels of Iodine-131 and Cesium-137 in the rooms of lowest ventilation exhaust. The analysis should encompass areas which have the potential for airborne contamination and are normally accessed by personnel.

Section 12.3.4 of Regulatory Guide 1.70, Revision 2 calls for information on the sensitivity of monitoring systems.

331.12  
(12.4)

Provide your estimates of the man-rem doses which workers will receive. These estimates should be based on 1) the tasks to be performed during operation and anticipated occurrences, 2) the time and manpower required to perform those tasks, and 3) the expected dose rates and levels of airborne radioactivity to which workers will be exposed in performing those tasks. Evidence should be provided that your estimates are based on these factors. An acceptable method of providing such evidence is:

- 1) Present selected parts of the detailed analysis as illustrative examples.
- 2) Summarize the detailed information for all other tasks.
- 3) Present the total estimated annual occupational dose (man-rems).

This information is called for by Section 12.4 of Regulatory Guide 1.70, Revision 2.

331.13  
(12.5.2)

Describe your equipment decontamination and portable monitoring instrument calibration facilities. Also, specify the locations of these facilities on Figures 12.3-1 through 12.3-8 as you did the other health physics facilities listed in FSAR Section 12.5.2.

This information is called for by Section 12.5.2 of Regulatory Guide 1.70, Revision 2.

331.14  
(12.5.3)

Describe how you will monitor airborne iodine radioactivity using the portable air monitoring equipment specified in Table 12.5-1.

Section 12.5.3 of Regulatory Guide 1.70, Revision 2 calls for information on the methods of evaluating airborne radioactivity.