NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL
(TEMPORARY FORM)

CONTROL NO: 2305

FILE:

FROM: Washington Public Power Supply System Richland, Wash J.J. Stein	DATE OF DOC 2-25-75	DATE REC'D 2-28-75	LTR xxx	TWX	RPT	OTHER
TO: Mr. Edson G. Case	ORIG 1-signed	CC	OTHER	SENT AEC PDR xxx SENT LOCAL PDR xx		
CLASS	UNCLASS xxxx	PROP INFO	INPUT	NO CYS REC'D 1	DOCKET NO: 50-397	

DESCRIPTION:

Ltr furn comments on WPPSS Nuclear Project No. 2 Cooling Tower Make-up Water Intake.. ... trans the following:

Dist. Per M. Maigret

PLANT NAME: Hanford #2

ENCLOSURES: ACKNOWL...

Figure A
WNP-2 Intake Location In Columbia River

Figure B
Artist's Concept WNP-2 Intake In Columbia River

DO...

FOR ACTION/INFORMATION 3-4-75 JGB

✓BUTLER (L) W/4Copies	SCHWENCER (L) W/ Copies	ZIEMANN (L) W/ Copies	REGAN (E) W/ Copies
CLARK (L) W/ Copies	STOLZ (L) W/ Copies	DICKER (E) W/ Copies	LEAR (L) W/ Copies
PARR (L) W/ Copies	VASSALLO (L) W/ Copies	KNIGHTON (E) W/ Copies	SPELS W/ Copies
KNIEL (L) W/ Copies	PURPLE (L) W/ Copies	YOUNGBLOOD (E) W/ Copies	W/ Copies

INTERNAL DISTRIBUTION

✓REG FILE	TECH REVIEW	DENTON	LIC ASST	A/T IND
✓NRC PDR	SCHROEDER	GRIMES	R. DIGGS (L)	BRAITMAN
✓OGC, ROOM P-506A	MACCARY	GAMMILL	H. GEARIN (L)	SALTZMAN
GOSSICK/STAFF	KNIGHT	KASTNER	E. GOULBOURNE (L)	MELTZ
CASE	PAWLICKI	BALLARD	P. KREUTZER (E)	
GIAMBUSSO	SHAO	SPANGLER	J. LEE (L)	PLANS
✓BOYD	STELLO		✓M. MAIGRET (L)	MCDONALD
MOORE (L)	HOUSTON	ENVIRO	✓S. REED (E)	CHAPMAN
✓DEYOUNG (L)	NOVAK	✓MULLER	M. SERVICE (L)	DUBE (Ltr)
SKOVHOLT (L)	ROSS	DICKER	S. SHEPPARD (L)	E. COUPE
GOLLER (L) (Ltr)	IPPOLITO	KNIGHTON	M. SLATER (E)	PETERSON
P. COLLINS	✓TEDESCO	YOUNGBLOOD	H. SMITH (L)	HARTFIELD (2)
DENISE	✓LONG	✓REGAN	S. TEETS (L)	KLECKER
✓REG OPR	LAINAS	✓PROJECT LDR	G. WILLIAMS (E)	EISENHUT
FILE & REGION (2)	BENAROYA	E. Goose	V. WILSON (L)	WIGGINTON
T.R. WILSON	VOLLMER	HARLESS	R. INGRAM (L)	
STEELE	✓L. CONNELY			Misc (4)

EXTERNAL DISTRIBUTION

- ✓1 – LOCAL PDR Richland, Wash
- ✓1 – TIC (ABERNATHY) (1)(2)(10) – NATIONAL LABS
- ✓1 – NSIC (BUCHANAN) 1 – W. PENNINGTON, Rm E-201 GT
- ✓1 – ASLB 1 – CONSULTANTS NEWMARK/BLUME/AGBABIAN
- ✓1 – Newton Anderson
- ✓14 – ACRS HOLDING/SENT Category B

1 – PDR-SAN/LA/NY
1 – BROOKHAVEN NAT LAB
1 – G. ULRIKSON, ORNL
1 – AGMED (RUTH GUSSMAN) Rm B-127 GT
1 – J. D. RUNKLES, Rm E-201 GT

Washington Public Power Supply System
A JOINT OPERATING AGENCY

Regulatory File Cy.

P. O. Box 968 3000 Geo. Washington Way Richland, Washington 99352 Phone (509) 946-9681

Rec'd 2-28-75

February 25, 1975
G02-75-53

Mr. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation
Division of Reactor Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: WPPSS NUCLEAR PROJECT NO. 2
(FORMERLY HANFORD NO. 2)
COOLING TOWER MAKE-UP WATER INTAKE
DOCKET NO. 50-397

Dear Mr. Case:

In our construction permit application for WPPSS Nuclear Project No. 2 ("WNP-2", formerly Hanford No. 2), one of the principal criteria for design of the cooling tower make-up water intake was the provision of low water velocities to minimize the effect on juvenile salmonids. Initially, we expected to implement this criterion by designing and installing an infiltration bed intake system for the cooling tower make-up water. However, as was made clear during the testimony before the Atomic Safety and Licensing Board on January 26, 1973, (see e.g., P. 225 of the hearing transcript) the Supply System was then investigating the possibility of alternatives to the infiltration bed intake system. This was because of possible operational and attendant environmental disadvantages of the candidate infiltration system. As the Licensing Board found in its Initial Decision:

> "The intake and discharge systems are being designed to minimize environmental impact. The discharge design provides mixing expected to result in an insignificant impact. The Applicant is continuing its review of the design of the proposed infiltration intake system which would provide very low approach velocities (0.02 fps) but which, in view of experience at other installations, might entail turbidity and operational problems if frequent backflushing were required. The Applicant is conducting optimization studies with respect to the intake design in order to provide a final intake system design which will result in both overall minimal environmental impact and reliable operation." (Washington Public Power Supply System (Hanford No. 2 Nuclear Power Plant), LBP-73-10, Para. 55, RAI-73-3, 197, 206 (March 15, 1973))

2305

The studies referred to in the Initial Decision regarding alternative intake systems resulted in two reports which were received by the Supply System in March of 1973 (References 1 and 2). These reports recommended that the infiltration bed intake system design be abandoned for the reasons noted in the Initial Decision and that a perforated pipe located offshore in the Columbia River be used instead. These recommendations for the perforated pipe system were based upon the environmental and operational advantages of such a system.

The recommended perforated pipe system was presented to the Washington State Thermal Power Plant Site Evaluation Council ("TPPSEC") in May of 1973. In June of 1973, TPPSEC agreed that the Supply System should proceed with the detailed design and analysis of the perforated pipe intake system. Detailed model studies on the flow characteristics of the perforated pipe intake system were completed in early 1974 (Reference 3). The results of these studies were presented to TPPSEC in February and April of 1974. In conjunction with review of the Supply System's application for a Corps of Engineers permit for construction in navigable waterways, the National Marine Fisheries Service ("NMFS") of the National Oceanic and Atomospheric Administration of the United States Department of Commerce was briefed in May of 1974. Additional meetings with TPPSEC and NMFS resulted in minor modifications to the pumpwell to include additional monitoring facilities. In October of 1974, both TPPSEC and NMFS reviewed the detailed contract bid and specification plans for the intake facility. NMFS withdrew their objections to, and TPPSEC approved this intake system for WNP-2 based upon the requirement for certain monitoring to be conducted by the Supply System (References 4 and 5).

Throughout the period of these studies and discussions with other agencies, the Commission's Regulatory Staff has been kept informed on an informal basis. This letter will serve to document the selection of the intake design in accordance with the Licensing Board's Initial Decision. As noted below, the information contained herein will be appropriately reflected in the operating license stage Environmental Report.

1/ Richards, R. T., "Intake for the Makeup Water Pumping System, WPPSS Nuclear Project No. 2", Burns & Roe, Inc., March, 1973.

2/ Schreiber, D. L. et al., "Appraisal of Water Intake Systems on the Central Columbia River", Battelle Northwest, March, 1973.

3/ Adam, S. et al., "Hanford Nuclear Project No. 2, Air & Hydraulic Model Studies of the Perforated Pipe Inlet and Protective Dolphin", LaSalle Hydraulic Laboratory, February, 1974.

4/ Letter from Joseph B. Knotts, Jr. to Daniel M. Head, et al., dated November 5, 1974 (copy to Mr. Ronald Loose) and enclosed letters from WPPSS to NMFS dated October 28, 1974 and October, 1974; letter dated October 18, 1974 from NMFS to Daniel M. Head.

5/ Letter from Joseph F. Lightfoot, Executive Secretary, Thermal Power Plant Site Evaluation Council, dated November 4, 1974, subject: TTPSEC Review of Bid Specifications for Intake and Outfall Structures.

The intake system for WNP-2 is similar to that described in the Environmental Report for the WNP-1 and 4 plants (Docket Nos. 50-460, 50-513; see ER Section 3.4). Figure A, attached hereto, shows the location of the WNP-2 perforated pipe intake. A sketch of the intake and pump house system is shown in Figure B, also attached. The perforated pipe intake consists of two "T" sections located approximately 350 feet offshore in low water. Each "T" section consists of an inner sleeve with 7% of the surface area comprising openings of 3/4 inch each, and an outer sleeve with 40% of the surface comprising openings of 3/8 inch each. The outer sleeve is designed to limit fish and trash entrainment and the inner sleeve is designed to produce uniform velocity along the entire length of the "T" section. The system withdraws water from the river through the "T" section. The water then flows by gravity to the pumpwell through two 36 inch lines. The water is then pumped from the pumpwell to the plant through a single 42 inch line. Moveable monitoring cages, which were requested by NMFS, are presently being designed to fit over the ends of the 36 inch pipes as they come into the pumpwell. These cages will be fitted with small mesh nets to collect salmonid fry, should they be entrained in the system.

This intake was selected to minimize the impact of the make-up water withdrawal from the Columbia River, with particular emphasis on salmonid fry. Two characteristics of this intake minimize fish entrainment. First, the intake location is well offshore where the number of downstream salmonid fry are expected to be relatively small. Second, the low intake approach velocities near the perforated pipe are on the order .2 - .4 feet per second.

A monitoring program will be developed in detail with TPPSEC and NMFS representatives. This program will include monitoring in the pumpwell to determine any impact of the system by entrainment of salmonid fry.

Details of this intake system will be appropriately reflected in the updating of the WNP-2 Environmental Report at the operating license stage.

Very truly yours,

J. J. Stein

J. J. STEIN
Managing Director

JJS:WWW:slc

Enclosures

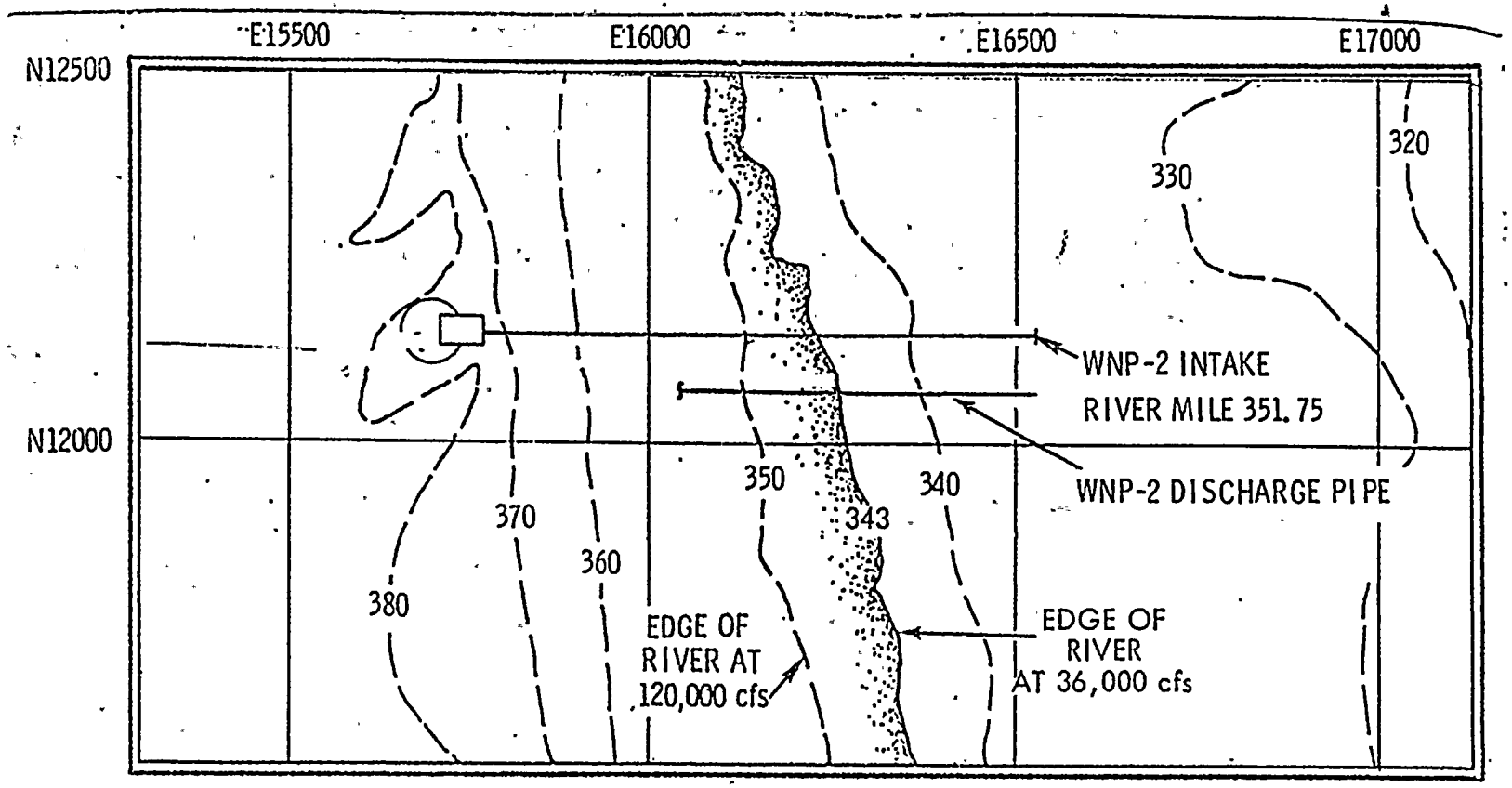

FIGURE A

WNP-2 INTAKE LOCATION
IN COLUMBIA RIVER

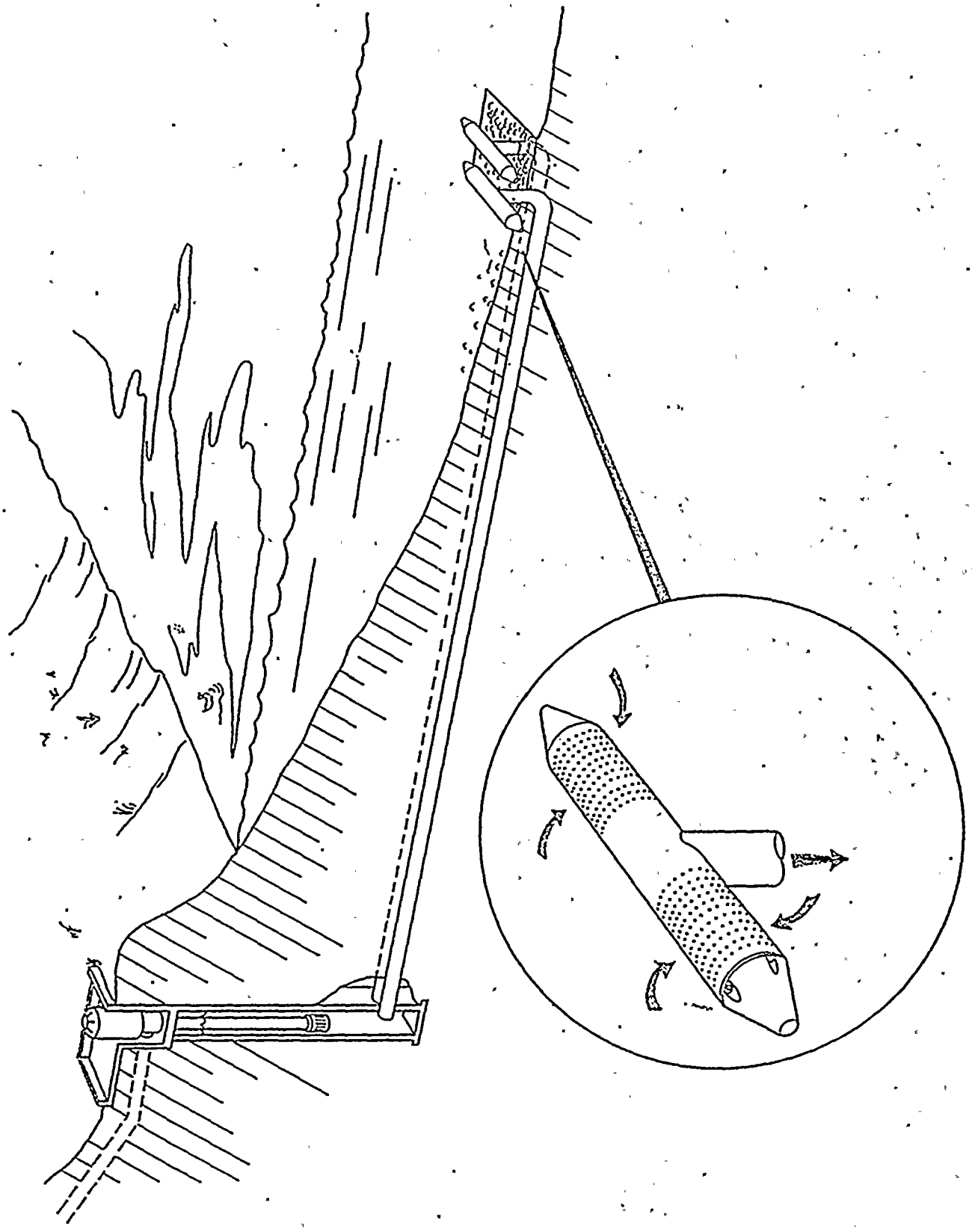

FIGURE B

ARTIST'S CONCEPT
WNP-2 INTAKE IN COLUMBIA RIVER