Duquesne Light Company Beaver Valley Power Station
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SUSHIL C. JAIN
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April 8, 1996

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
ISI (Inservice Inspection) Program: Relief Request

The purpose of this submittal is to request NRC review and approval of a proposed relief request applicable to the Unit No. 2 First Ten-Year Interval ISI Program. The current 10-year interval ends on November 17, 1997. The ISI Program is based on the 1983 Edition through the Summer 1983 Addenda of ASME Boiler and Pressure Vessel Code, Section XI.

Relief Request BV2-C1.30, Rev. 0 is attached for review. The examinations represented by this relief request were originally evaluated by the NRC following completion of preservice inspections. The NRC approved relief request BV2-C1.10-2 in an August 22, 1991, safety evaluation of the first ten-year interval ISI Program Plan (TAC No. 62873). Since then the component has become a significant source of radiation exposure during normal operation. It is proposed to substitute visual examinations in accordance with the attached relief request in order to reduce occupational radiation exposure. A proposed alternative to the requirements, with supporting basis is included in the attached request for relief. 10 CFR 50.55a(a)(3)(ii) provides for NRC approval of proposed alternatives to the ASME Code requirements when it can be demonstrated that compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. It is proposed that the attached relief request satisfies this acceptance criteria.

It is requested that this review be completed before July 8, 1996, in order to allow sufficient time to plan and prepare for any follow-up examinations that may be required during the sixth refueling outage tentatively scheduled to begin August 30, 1996.

150113

DELIVERING QUALITY ENERGY

Photos located in Central Files

A047

If you have any questions regarding this issue, please contact Mr. Roy K. Brosi at (412) 393-5210.

Sincerely,

Sushil C. Jain

Attachment

c: Mr. L. W. Rossbach, Sr. Resident Inspector
Mr. T. T. Martin, NRC Region I Administrator
Mr. D. S. Brinkman, Sr. Project Manager

DUQUESNE LIGHT COMPANY

Beaver Valley Power Station Unit No. 2

RELIEF REQUEST NO. BV2-C1.30, Rev. 0

COMPONENT

Regenerative Heat Exchanger (2CHS*E23) - Tubesheet to Shell Welds 2, 3, 6, 7, 10, and 11

DRAWING NO.

ISI-E-2C

SECTION XI REQUIREMENT (83S83)

Item No. C1.30 (IWC-2500-1, Category C-A) requires volumetric examination.

BASIS OF RELIEF

The general radiation levels in the area of this heat exchanger are between 500 mR/hr and 3000 mR/hr and up to 5000 mR/hr on contact (based on surveys taken in the second and fifth refueling outages). The manrem estimate to prepare, inspect, and reinsulate these six welds is 9800 mRem. This estimate is based on working space dose rates and estimated work duration as noted on the attached manrem estimate. ALARA and leak before break considerations suggest a visual examination for leakage would provide an acceptable inservice inspection for these welds.

The design and function of this component give rise to areas where "hot spots" can readily occur due to corrosion and wear products buildup. Flushing provides little benefit toward reducing radiation fields in this area. The location of the welds, between two branch connections with a welded support between the two welds, make shielding of these areas impractical. Reference attached drawing and preservice photographs.

The proposed visual examination for leakage, in this situation, is a more practical examination for monitoring the integrity of the component than the required examination. The required UT examinations are limited by component geometric restrictions. Approximately 1/3 of the required volume of each weld could not be examined in the preservice inspection due to the adjacent branch connections and the welded pad, plates and lugs of the support located between the two welds on each of the three sections of the heat exchanger. (Note: Relief Request BV2-C1.10-2 identified these limitations and was approved in the SER dated August 22, 1991.) Preservice ultrasonic examinations performed on welds 2, 3, 6, 7, and 10 had no reportable indications. Examination of weld 11 found a manufacturing defect that was subsequently repaired and reexamined satisfactorily.

Several methods are available to detect leakage from these welds if sufficient weld degradation occurred to cause a through-wall leak. Listed below are some examples:

a. The control room operators perform Operation Surveillance Test (OST) 2.6.2A "Reactor Coolant System Water Inventory Balance" every three days when the plant is operating at steady conditions. Leakage through the subject welds would be discovered by the conduct of this OST.

b. Containment airborne radiation monitors continuously sample the containment atmosphere and alarm in the control room. This method is sensitive enough to detect a 1 gpm leak in less than 1 hour.

c. Two leakage monitoring systems are available in the containment sump. One system uses the flow indication of the containment sump pumps to determine leak rates. A programmable controller monitors the flow and pump operating times so that a 1 gpm leak could be detected by this method in 1 hour. A second system uses changes in the water level of the sump to determine a leak rate. The containment sump level is continuously monitored by instruments that alarm in the control room. This system is capable of detecting a 5 gpm leak in 1 hour.

The Regenerative Heat Exchanger is readily isolable should a leak occur. Double valve isolation from the reactor coolant system is provided by valves 2CHS*LCV460A and 460B.

ALTERNATIVE EXAMINATION

A visual examination of these welds for leakage is performed in conjunction with the boric acid walkdown, every shutdown while the RCS and associated piping remain at operating pressure and temperature. Also, the regenerative heat exchanger is included in the Mode 3 walkdown of the RCS boundary, performed during each startup following refueling outages. Both these activities are performed by qualified VT-2 examiners. These examinations are augmented by the leakage detection methods noted above.

2CHS-E23 EXAMINATIONS
WELDS 2, 3, 6, 7, 10 and 11
MANREM ESTIMATE

2CHS-E23 Regenerative Heat Exchanger
General area radiation level: **500 mR/hr to 3000 mR/hr**
Contact radiation level: **1000 to 5000 mR/hr**

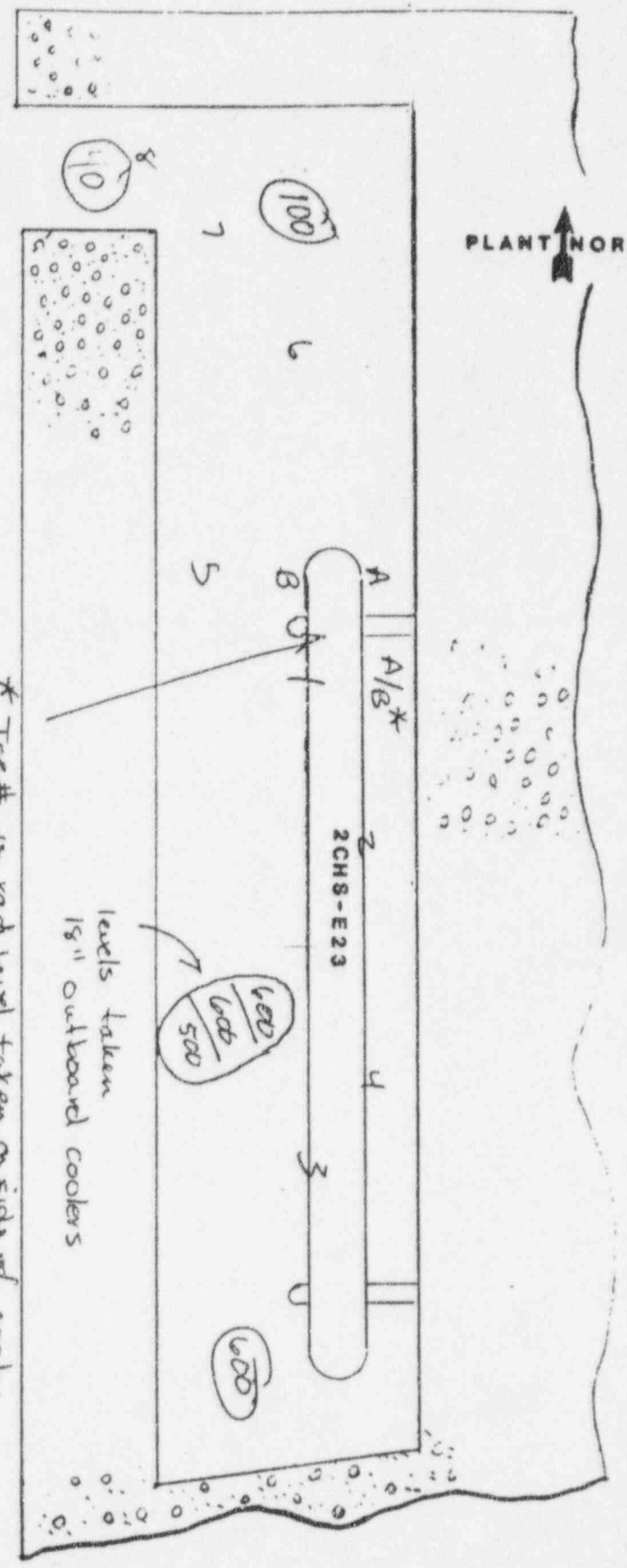
WORK TASK	# OF WORKERS AND JOB CLASS		TIME IN RAD FIELD (hrs)		EXPOSURE RATE (mR/hr)		ESTIMATED EXPOSURE (mRem)
CONSTRUCT SCAFFOLDING	(2) CARPENTERS	x	1	x	600	=	1200
REMOVE INSULATION	(2) INSULATORS	x	1	x	600	=	1200
WELD PREPARATION	(2) FITTERS	x	1	x	800	=	1600
WELD INSPECTION	(2) EXAMINERS	x	2.5	x	800	=	4000
REINSTALL INSTALLATION	(2) INSULATORS	x	1	x	600	=	1200
REMOVE SCAFFOLDING	(2) CARPENTERS	x	.5	x	600	=	600
					TOTAL FOR SIX WELDS:		**9800 mRem**

MAP 703211 B. V. P(- UNIT 2

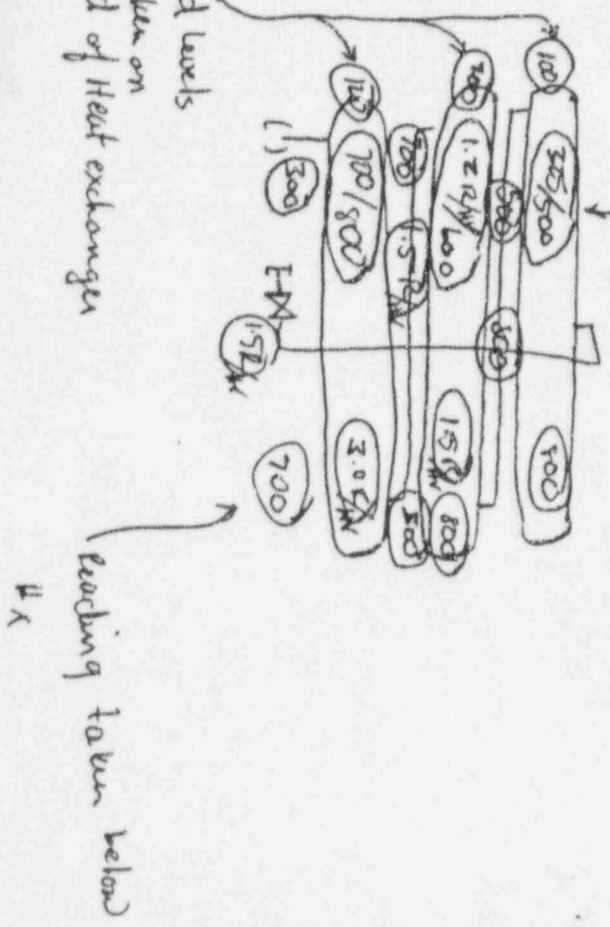
REACTOR CONTAINMENT EL. 718"6"

REGEN. HEAT EXCH.

B.V.P.S. Unit 2
Circled numbers are radiation levels in mR/hr.



ALL SMEARS ARE < 450 pCi/100 cm² EXCEPT:



REACTOR POWER Ø

SURVEY DATE 9/12/96 TIME 1000

SURVEY BY Michael A Kehl

RWP # / RACP # 16748

INST. TYPE Rog SR # 3752

INST. TYPE Telefactor SR # 63645

OTHER RM14 1121

REVIEWED BY _____ DATE 9/12/96

REACTOR CONTAINMENT EL. 718'6"

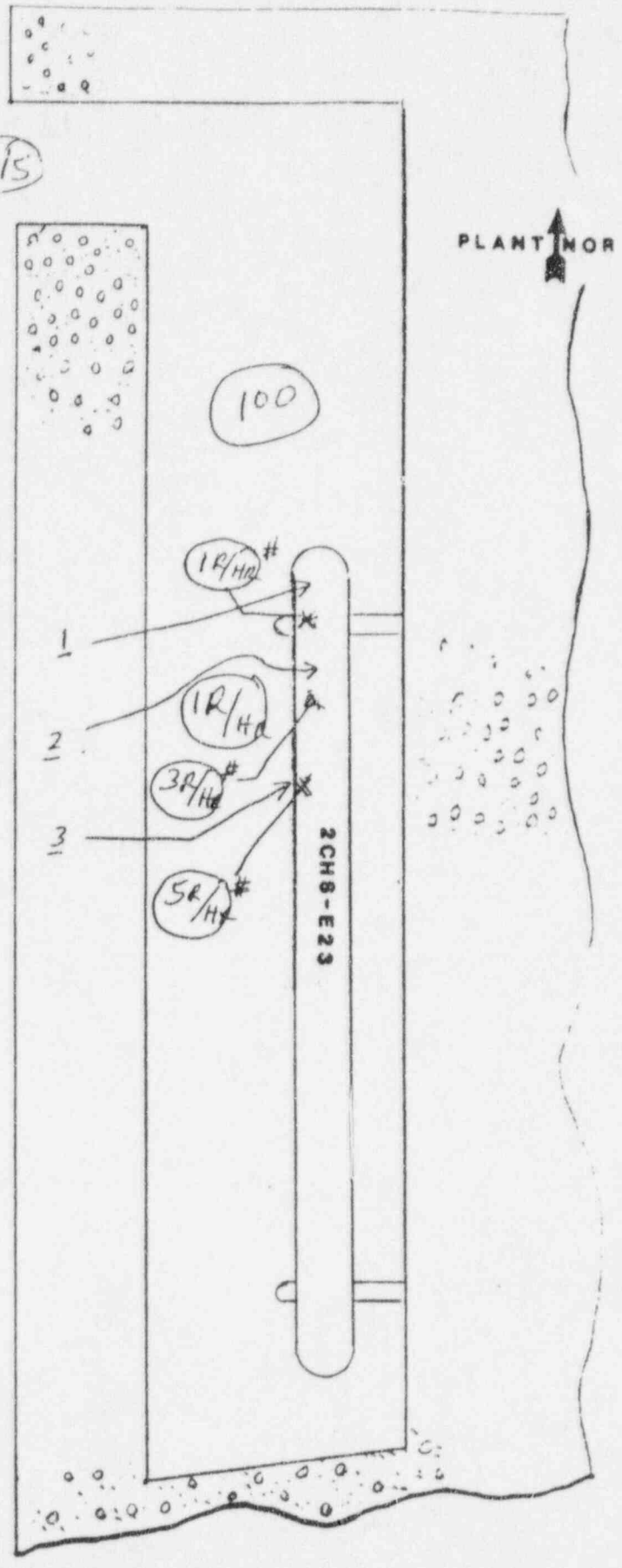
REGEN. HEAT EXCH.

B.V.P.S. Unit 2

:led numbers are radiation levels in mR/hr.

In Shell Insulation on Regen (15)
HX

ALL SMEARS ARE < ~~450 pCi/100~~ 1000 dpm/100 cm² EXCEPT:



REACTOR POWER SHUT DOWN

SURVEY DATE 4/17/95 TIME 0930

SURVEY BY DARRYL L. JAMES

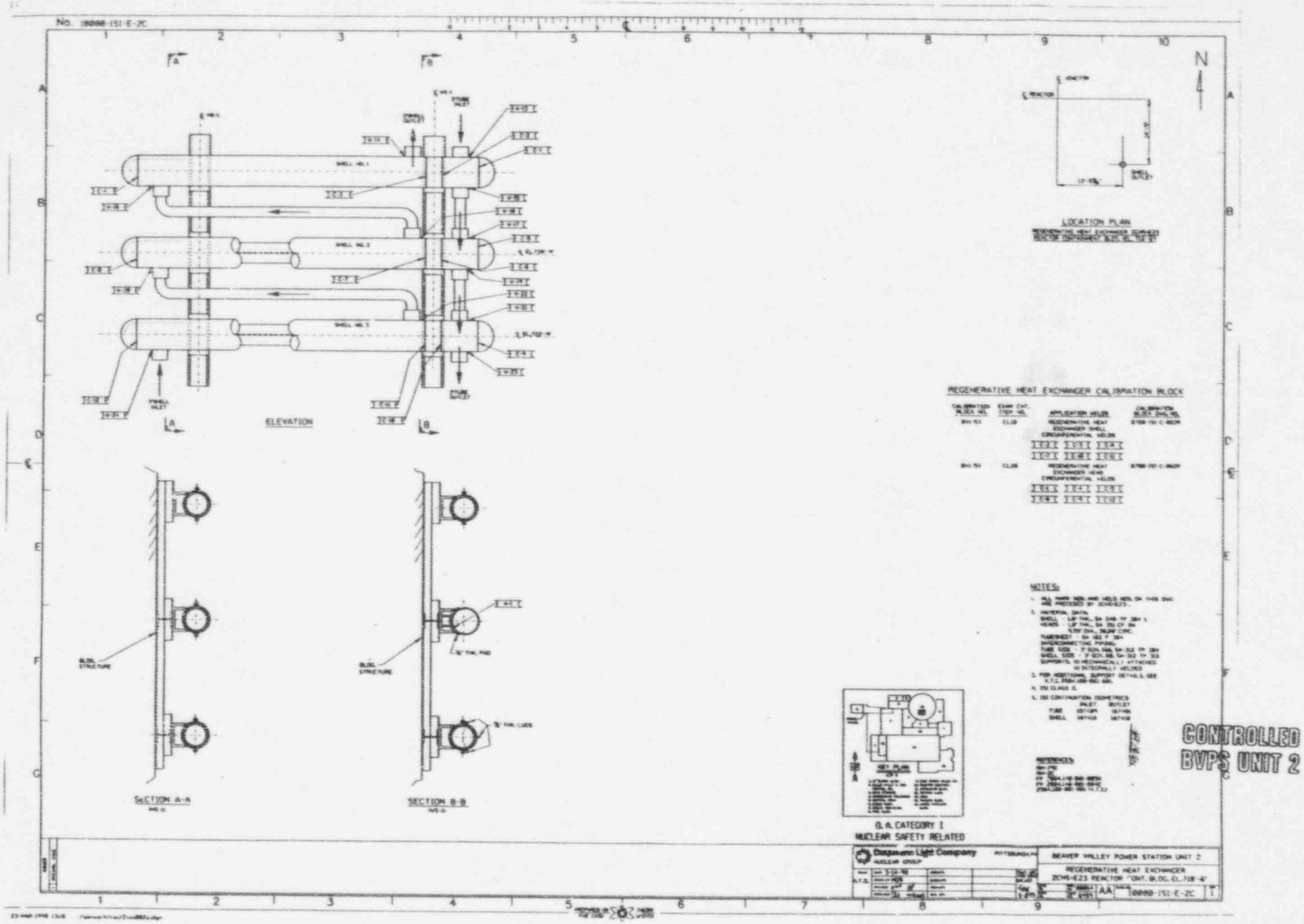
RWP # / RACP # 295-2035

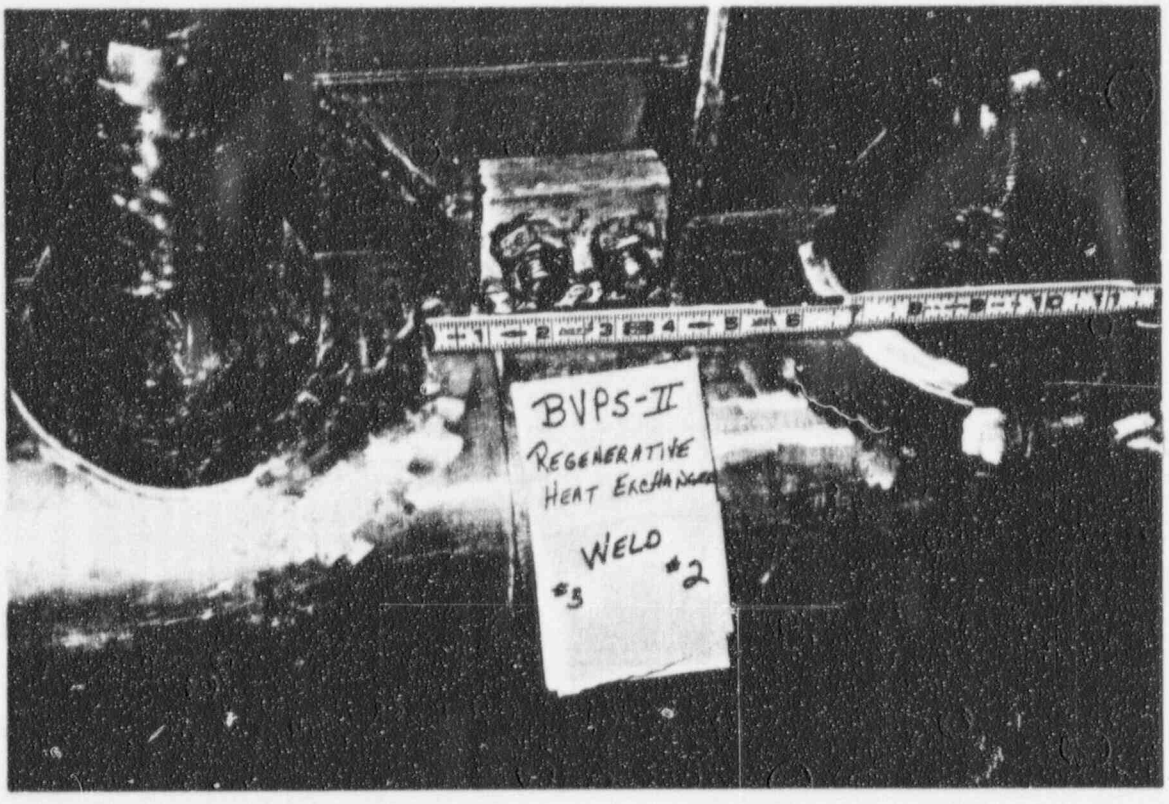
INST. TYPE RO2A SR # 3651

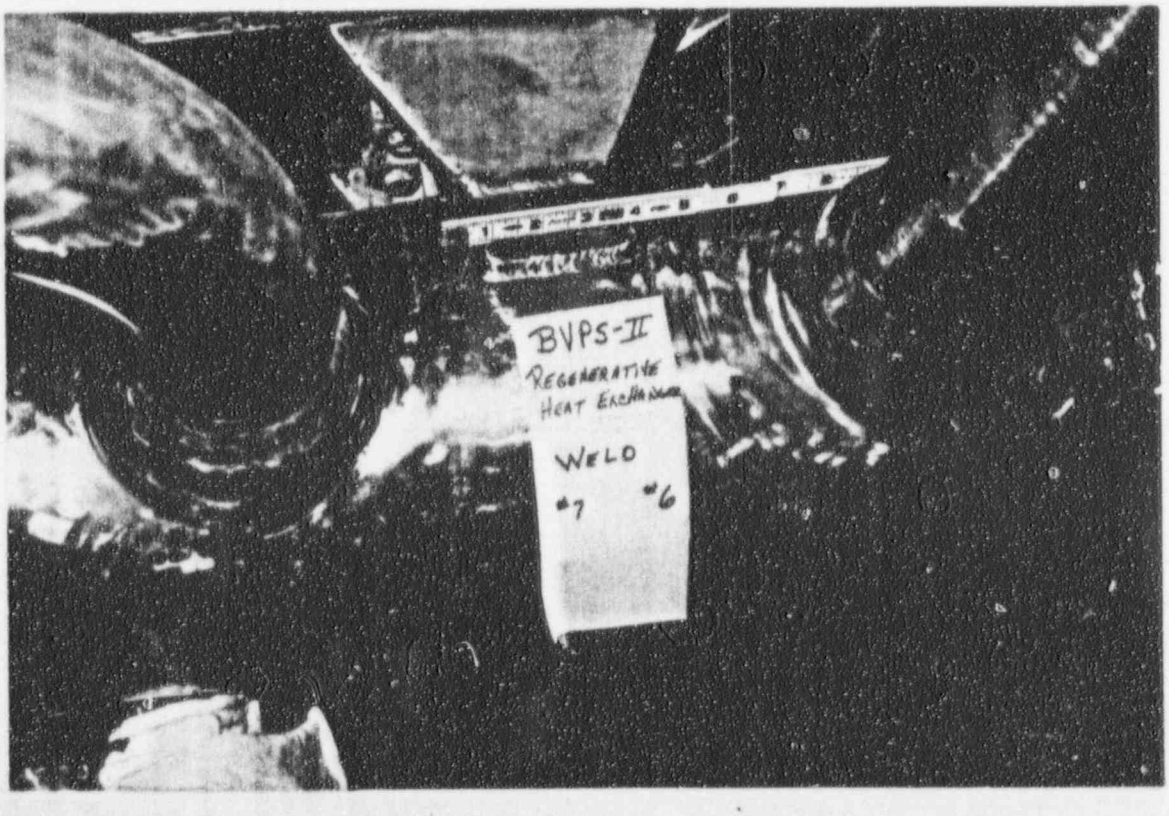
INST. TYPE RM-14 SR # 1950

OTHER

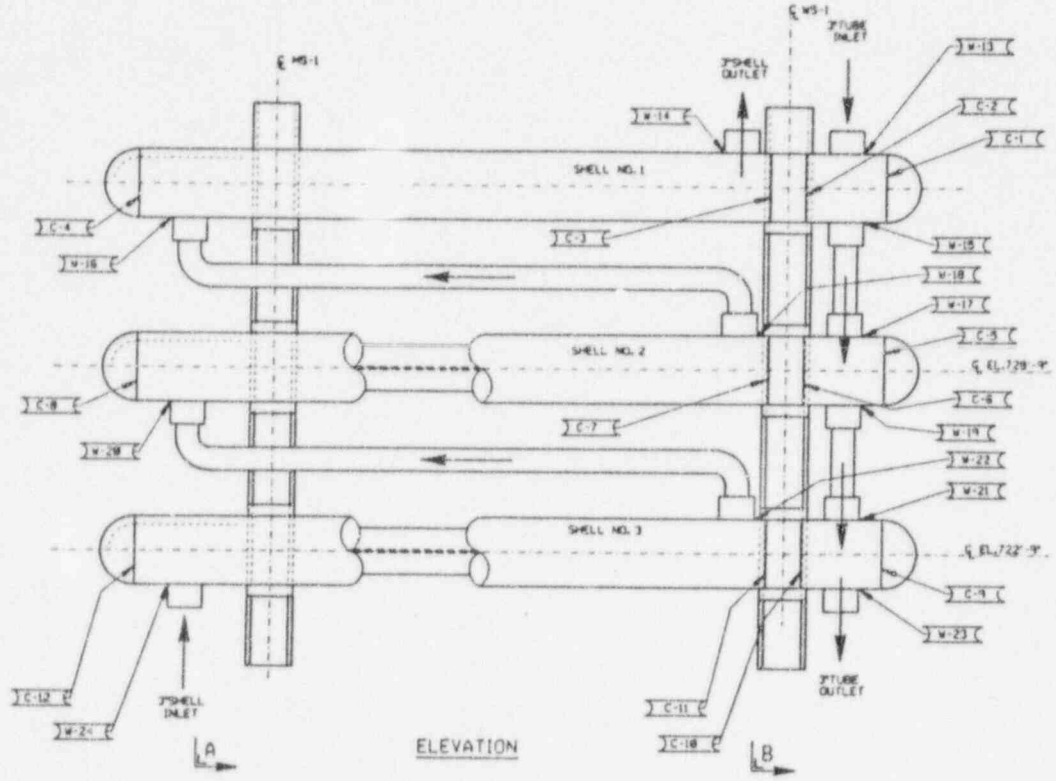
REVIEWED BY J Beletsky w6876 DATE 4-17-95


No. 18080-ISI-E-2C
ELEVATION
SHELL NO. 1
SHELL NO. 2
SHELL NO. 3
SECTION A-A
SECTION B-B
BLDG. STRUCTURE
LOCATION PLAN
REGENERATIVE HEAT EXCHANGER CALIBRATION BLOCK
NOTES:
REFERENCES:
Q.A. CATEGORY I
NUCLEAR SAFETY RELATED
Duquesne Light Company
NUCLEAR GROUP
BEAVER VALLEY POWER STATION UNIT 2
REGENERATIVE HEAT EXCHANGER
2CHS-E23 REACTOR CONT. BLDG. EL. 718'-6"
AA
18080-ISI-E-2C
CONTROLLED
BVPS UNIT 2

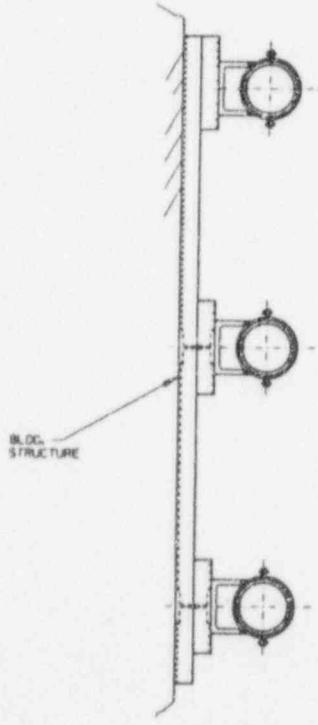

BVPS-II
REGENERATIVE
HEAT EXCHANGER
WELD
#3
#2


BVPS-II
REGENERATIVE
HEAT EXCHANGER
WELD
#7
#6

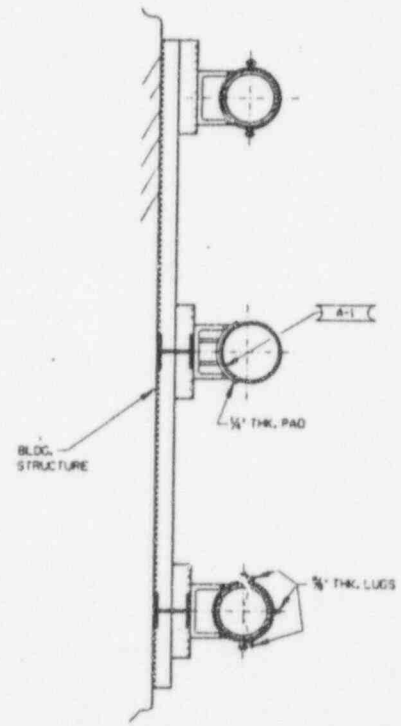
No. 10080-ISI-E-2C



ELEVATION



SECTION A-A
(MS-1)



SECTION B-B
(WS-1)

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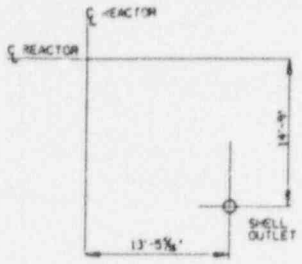
PREPARED ON THE CASU



LOCATION PLAN
REGENERATIVE HEAT EXCHANGER 2CHS-E23
REACTOR CONTAINMENT BLDG. EL. 718'-6"

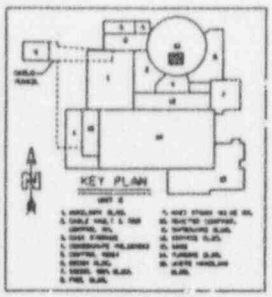
REGENERATIVE HEAT EXCHANGER CALIBRATION BLOCK

CALIBRATION BLOCK NO.	EXAM CAT. ITEM NO.	APPLICATION WELDS	CALIBRATION BLOCK DWG. NO.
BV1-54	CL.10	REGENERATIVE HEAT EXCHANGER SHELL CIRCUMFERENTIAL WELDS } C-2 { } C-3 { } C-6 { } C-7 { } C-10 { } C-11 {	8708-ISI-C-002R
BV1-54	CL.20	REGENERATIVE HEAT EXCHANGER HEAD CIRCUMFERENTIAL WELDS } C-1 { } C-4 { } C-5 { } C-8 { } C-9 { } C-12 {	8708-ISI-C-002R

NOTES:

1. ALL MARK NOS. AND WELD NOS. ON THIS DWG ARE PRECEDED BY 2CHS-E23-.
2. MATERIAL DATA:
   SHELL - 1.8" THK., SA 240 TP 304 L
   HEADS - 1.8" THK., SA 351 CF 8A
   9.55' DIA., 30.00' CIRC.
   TUBESHEET - SA 182 F 304
   INTERCONNECTING PIPING:
   TUBE SIDE - 3" SCH. 160, SA-312 TP 304
   SHELL SIDE - 3" SCH. 80, SA-312 TP 316
   SUPPORTS: (1) MECHANICALLY ATTACHED
   (1) INTEGRALLY WELDED
3. FOR ADDITIONAL SUPPORT DETAILS, SEE W.T.J. 2584.100-001-001.
4. ISI CLASS 2.
4. ISI CONTINUATION ISOMETRICS

	INLET	OUTLET
TUBE	107409	107401
SHELL	107410	107410



Q.A. CATEGORY I
NUCLEAR SAFETY RELATED

REFERENCES:
RM-79C
RM-2C
FP 2584.140-001-005A
FP 2584.140-001-004E
2584.100-001-001 (W.T.J.)

Duquesne Light Company NUCLEAR GROUP	PITTSBURGH, PA	BEAVER VALLEY POWER STATION UNIT 2	
		REGENERATIVE HEAT EXCHANGER 2CHS-E23 REACTOR CONT. BLDG. EL. 718'-6"	
		AA	10080-ISI-E-2C	1