START

0014755

ENGINEERING CHANGE NOTICE

Page 1 of //

1. ECN ~~142704~~

Proj. ECN B-714-84

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. Date
Supplemental ■ Direct Revision ☐ Change ECN ☐ Temporary ☐ Supersedure ☐ Discovery ☐ Cancel/Void ☐	H. J. Steffens, KEH, E6-33, 6-6912	03-27-91
	5. Project Title/No./Work Order No.: See Block 12	6. Bldg./Sys./Fac. No.: 218-E-16
	8. Document Number Affected (include rev. and sheet no.): See Block 12	9. Related ECN No(s).: None
		7. Impact Level: 3
		10. Related PO No.: N/A

11a. Modification Work	11b. Work Package Doc. No.	11c. Complete Installation Work	11d. Complete Restoration (Temp. ECN only)
☐ Yes (fill out Blk. 11b) ☐ No (NA Blks. 11b, 11c, 11d) UNKNOWN	UNKNOWN	Cog. Engineer Signature & Date	Cog. Engineer Signature & Date

12. Description of Change

Block 5: B-714, Grout Vault Pair (218-E-16-102 & 103)(218-E-16-104 & 105)/ER8007

Block 8: Drawings - ·H-2-77619, Sh 1, Rev 1 ·H-2-78491, Sh 1, Rev 1
·H-2-77620, Sh 1, Rev 0 ·H-2-78492, Sh 1, Rev 0
·H-2-77620, Sh 2, Rev 1 ·H-2-78492, Sh 2, Rev 1
·H-2-77641, Sh 1, Rev 1 ·H-2-78507, Sh 1, Rev 1

·Specification B-714-C2, Rev 1 (V-B714C2-003, Rev 1)

****

SEE SUCCEEDING PAGES FOR DESCRIPTION OF CHANGES

****

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
JUL 1991
RECEIVED
EDMC

13a. Justification (mark one)

Criteria Change ☐
Design Improvement ■
Environmental ☐
As-Found ☐
Facilitate Const. ☐
Const. Error/Omission ☐
Design Error/Omission ☐

13b. Justification Details

(DI): The NEC prohibits placing a junction box underground in an area that is inaccessible. Since the design was completed, a diffusion material was put in place. This is a design improvement in that it eliminates a cable connection that would cause future problems.

THIS CHANGE DOES NOT IMPACT THE INTEGRITY OF THE ORIGINAL FACILITY DESIGN.

14. Distribution (include name, MSIN, and no. of copies)

EDC

KEH DISTRIBUTION

Const Doc Cntl	E2-50
Engrg Doc Cntl	E6-52

WHC DISTRIBUTION

Project Files	R1-23
S. R. Briggs(PE)	R3-27
T. K. Cordray	S1-54
~~Gina Hill~~	~~H4-57~~
LUPE GARZA	A3-80

~~J. K. Epperley~~	~~S0-05~~
O. A. Halverson	R3-09
J. S. Hill [2]	~~H4-57~~
K. S. McCullough	N1-83
D. B. Powell [4]	R4-03
J. E. Vanbeek	R3-27
STATION 10	A3-87

DOE

A. G. Lassila	A5-18

RELEASE STAMP

OFFICIAL RELEASE BY WHC 13

DATE APR 11 1991

STATION 12

A-7900-013 (11/88)

~~ECN-714~~

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): B-714-84

15. Design Verification Required	16. Cost Impact		17. Schedule Impact (days)
	ENGINEERING	CONSTRUCTION	
☐ Yes	Additional ☒ $ 2405	Additional ☒ $ 1500	Improvement ☐ NA
■ No	Savings ☐ $	Savings ☐ $	Delay ☐

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐
Equipment Spec.	☐	Maintenance Procedure	☐	ASME Coded Item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☐	Operating Procedure	☐	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	_____	☐
Environmental Report	☐	Inspection Plan	☐	_____	☐
Environmental Permit	☐	Inventory Adjustment Request	☐	_____	☐

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision

20. Approvals

	Signature	Date
OPERATIONS AND ENGINEERING		
Cog./Project Engineer	LR Bruy	4/11/91
Cog./Project Engr. Mgr.	LRB for JE Van Dalk	4/11/91
QA	J. K. Condrey	4-11-91
Safety		
Security		
Proj.Prog./Dept. Mgr.		
Def. React. Div.		
Chem. Proc. Div.		
Def. Wst. Mgmt. Div.		
Adv. React. Dev. Div.		
Proj. Dept.		
Environ. Div.		
IRM Dept.		
Facility Rep. (Ops)		
Other		

	Signature	Date
ARCHITECT-ENGINEER		
PE	K C Bergard	4/10/91 4-11-91
QA	T D Haug	4-10-91
Safety	C.D. Eggie	4/8/91
Design	INSTM: H. Stoffers	4/5/91
Other	ELEC: A.R. Trenkel	4/5/91
	SPECS: J E Breed	4/5/91
	ENVIR: R Hellenbach	4-5-91
	PLE: [illegible]	4/10/91
DEPARTMENT OF ENERGY		
ADDITIONAL		

9112210656

Block 12: Description of Changes

INSTRUMENTATION CHANGES TO DRAWINGS

1) H-2-77619, Sh 1, Rev 1

A) **DETAIL 3 (Z E4):** Extend riser as shown on page 8 of this ECN.
B) **SECTION A (Z C6):** Modify probe assy as shown on page 9 of this ECN.
C) **NOTE 6:** Change to read as follows -
RISER #42 AND #45 MEASURED FROM BOTTOM OF CORBEL. LENGTH = 2'-11" WITH 3" EXTENSION ABOVE ROOF PANEL. RISER #43 AND #44 LENGTH = 2'-5" WITH 3" EXTENSION.

2) H-2-77620, Sh 1, Rev 0

A) **ASSEMBLY (Z E4-F5, C4):**
1. Change junction box to pull box as shown on page 10 of this ECN.
2. Change PROBE INSERTION LENGTH to read 43'-6".

B) **Change Note 3** to read THERMOCOUPLE ASSEMBLIES AS SUPPLIED BY VENDOR SHALL HAVE PROTECTION TUBE. THERMOCOUPLE PULL BOX SHALL BE SUITABLE FOR BURIAL.

C) **DELETE** Note 6 in its entirety.

3) H-2-77620, Sh 2, Rev 1

A) **ASSEMBLY (Z E4-F5, C4):**
1. Change junction box to pull box as shown on page 11 of this ECN.
2. Change PROBE INSERTION LENGTH to read 43'-6".

4) H-2-78491, Sh 1, Rev 1

A) **DETAIL 3 (Z E4):** Extend riser as shown on page 8 of this ECN.
B) **SECTION A (Z C6):** Modify probe assy as shown on page 9 of this ECN.
C) NOTE 6: Change to read as follows -
RISER #42 AND #45 MEASURED FROM BOTTOM OF CORBEL. LENGTH = 2'-11" WITH 3" EXTENSION ABOVE ROOF PANEL. RISER #43 AND #44 LENGTH = 2'-5" WITH 3" EXTENSION.

5) H-2-78492, Sh 1, Rev 0

A) **ASSEMBLY (Z E4-F5, C4):**
1. Change junction box to pull box as shown on page 10 of this ECN.
2. Change PROBE INSERTION LENGTH to read 43'-6".

B) **Change Note 3** to read THERMOCOUPLE ASSEMBLIES AS SUPPLIED BY VENDOR SHALL HAVE PROTECTION TUBE. THERMOCOUPLE PULL BOX SHALL BE SUITABLE FOR BURIAL.

C) **DELETE** Note 6 in its entirety.

6) H-2-78492, Sh 2, Rev 1

A) **ASSEMBLY (Z E4-F5, C4):**
1. Change junction box to pull box as shown on page 11 of this ECN.
2. Change PROBE INSERTION LENGTH to read 43'-6".

ELECTRICAL CHANGES TO DRAWINGS

7) H-2-77641, Sh 1, Rev 1

A) WIRE RUN LIST (Z F6-7, E6-7):

1. FROM column, GWD 57, 58, 59, 60, 73, 74, 75, & 76: Delete "JB".

2. VIA column, GWD 57, 58, 59, & 60: In descending order add the following:
   TE-102-1 PB, I24...
   TE-102-2 PB, I25...
   TE-102-3 PB, I26...
   TE-102-4 PB, I27...

3. VIA column, GWD 73, 74, 75, & 76: In descending order add the following:
   TE-103-1 PB, I28...
   TE-103-2 PB, I29...
   TE-103-3 PB, I30...
   TE-103-4 PB, I40...

B) Change "TYPE OF WIRE" Note 4 to read:
THERMOCOUPLE EXTENSION CABLE PROVIDED BY THERMOCOUPLE MANUFACTURER.

8) H-2-78507, Sh 1, Rev 1

A) WIRE RUN LIST (Z F6-7, E6-7):

1. FROM column, GWD 128, 129, 130, 131, 138, 139, 140, & 141: Delete "JB"

2. VIA column, GWD 128, 129, 130, & 131: In descending order add the following:
   TE-104-1 PB, I66...
   TE-104-2 PB, I65...
   TE-104-3 PB, I64...
   TE-104-4 PB, I63...

3. VIA column, GWD 138, 139, 140, & 141: In descending order add the following:
   TE-105-1 PB, I69...
   TE-105-2 PB, I70...
   TE-105-3 PB, I71...
   TE-105-4 PB, I72...

B) Change "TYPE OF WIRE" Note 4 to read:
THERMOCOUPLE EXTENSION CABLE PROVIDED BY THERMOCOUPLE MANUFACTURER.

9) SPECIFICATION B-714-C2

A) SECTION 13440

1. Add the following reference paragraph:

1.1.1.3 American Society for Testing and Materials (ASTM)

E 235-82	Standard Specification for Thermocouples, Sheathed, Type K, for Nuclear or for Other High-Reliability Applications

2. Delete Data Sheet Y-102 and replace with new Data Sheet Y-102 as shown on page 6 & 7 of this ECN.

THERMOCOUPLE PROBE ASSEMBLY

THERMOCOUPLE

1.	Tag Numbers	See Note 1
2.	Thermocouple Conductor	Chromel-alumel (Type K), 24 AWG wire diameter
3.	Sheath	300 Series Stainless Steel
4.	Junction End	Undergrounded as shown in ASTM E 235, Figure 2, for Class 2
5.	Sheath Configuration	Enclosed
6.	Sheath Outside Diameter	0.125 inches
7.	Sheath Wall Thickness	0.015 inches (nominal)
8.	Sheath Length	See Note 2
9.	Thermocouple Tolerance	ASTM 235
10.	Thermocouple Insulation	Electrically fused, compatible magnesium oxide
11.	Limits of Error	Special limits of error shall be in accordance with ANSI MC-96.1, Paragraph 2.5 and Table 8 for thermocouples Type K
12.	Transition Joint and Cable	The thermocouple sheath shall terminate into a heavy-duty transition joint of any grade stainless steel (same as sheath). Coming out of the transition joint shall be a type KX leadwire cable with a 20 AWG yellow KPX positive insulated lead and a 20 AWG red KNX negative insulated lead. The cable length shall be as specified in NOTE 1. The cable and leadwire insulation shall have a temperature range of minus 40° F to +392° F. The overall cable and insulated leads shall be teflon or neoflon type insulation.

ECN No. B-714-84		Page 6/ 11	
Ref. Dwg. SPEC B-714-C2		Sh.	Rev. 1
Prep. By H.J. STEFFENS	Ckd. By PC BARROWS		

13.	Transition Joint Connection	Within the transition joint, the thermocouple wire shall be connected to the leadwire cable by a silver braze. The transition joint shall be silver brazed to the thermocouple sheath and be filled with epoxy at the leadwire end. The epoxy shall be a 450° F potting compound. The epoxy within the transition joint shall be free of bubbles.

PROTECTION TUBE

14.	Protection Tube	A 1 inch schedule 40S 304 grade stainless steel pipe with a closed end.
15.	Protection Tube Length	See Note 2

PULL BOX

16.	Pull Box	Mount a NEMA 4 pull box of sufficient capacity to coil the 16 leadwire cables specified in Item 12.
17.	Special Features	Protection tube to be factory sealed and attached rigidly to pull box, see Note 2.

MANUFACTURER

18.	Thermocouple Probe Assembly consisting of a Protection Tube, Thermocouple and Pull Box	Similar to a product manufactured by: Thermo-Couple Products Co., Inc. Sales Aid S-126 27W 230 Beecher St. P. O. Box 457-T Winfield, IL 60190 Ph. (708) 653-1400 Attn: Kevin Hansen

NOTES:

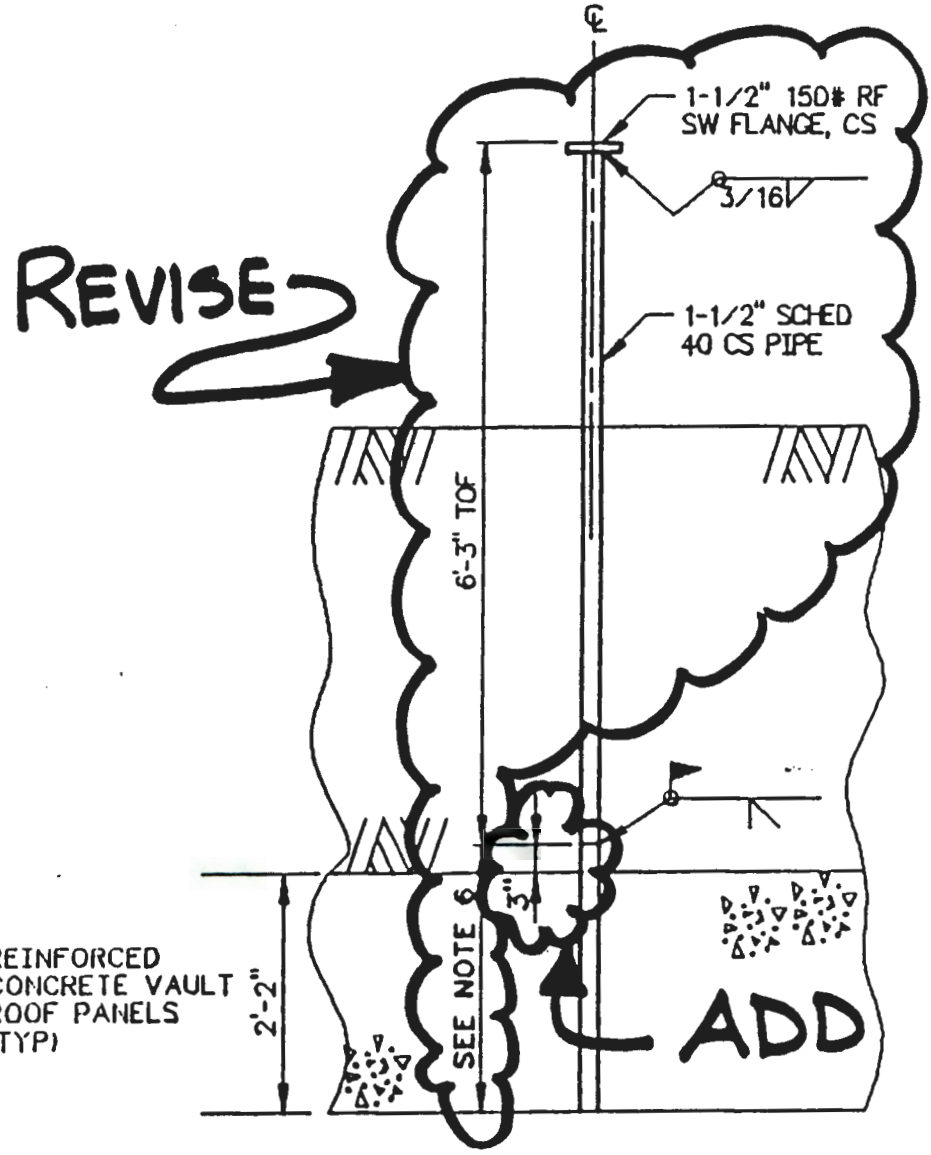
1. Tag Numbers and Cable Length
Cable Length + 12 inches, -0 inches

TE-102-1-150FT	TE-103-1-200FT
TE-102-2-150FT	TE-103-2-150FT
TE-102-3-130FT	TE-103-3-130FT
TE-102-4-130FT	TE-103-4-80FT
TE-104-1-150FT	TE-105-1-200FT
TE-104-2-150FT	TE-105-2-150FT
TE-104-3-130FT	TE-105-3-130FT
TE-104-4-130FT	TE-105-4-80FT

2. See Drawings

3. Thermocouple Probe Assembly shall have a minimum service life of 30 years under normal use.

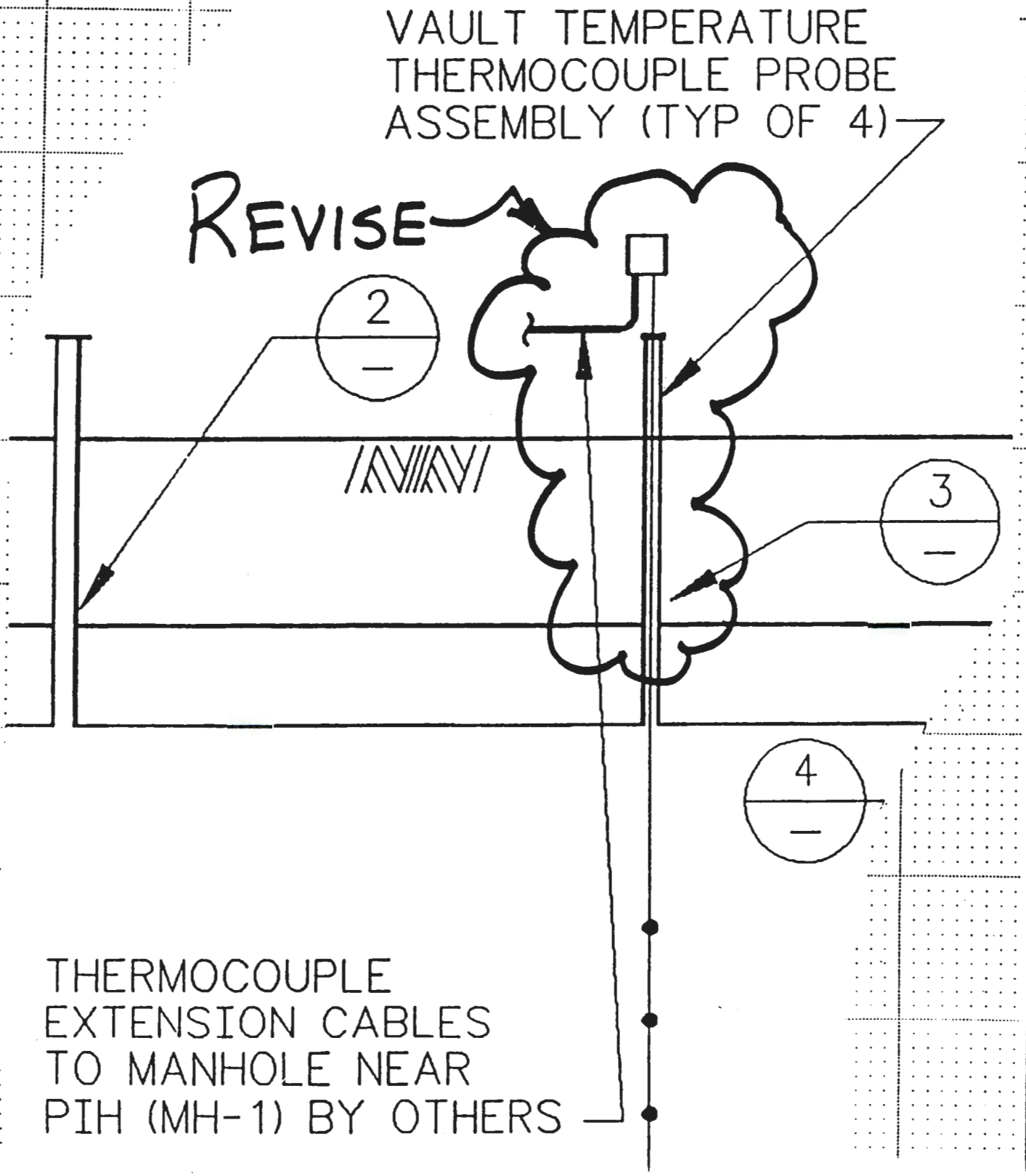
KAISER ENGINEERS HANFORD	ENGINEERING CHANGE NOTICE SKETCH					
Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77619	1	1	TK EHRHARD	PC BARROWS	B-714-84	8/11
H-2-78491	1	1				



DETAIL 3/—

SCALE: 3/4"=1'-0"
THERMOCOUPLE PROBE PENETRATION RISER
SEE NOTE 2 & 3

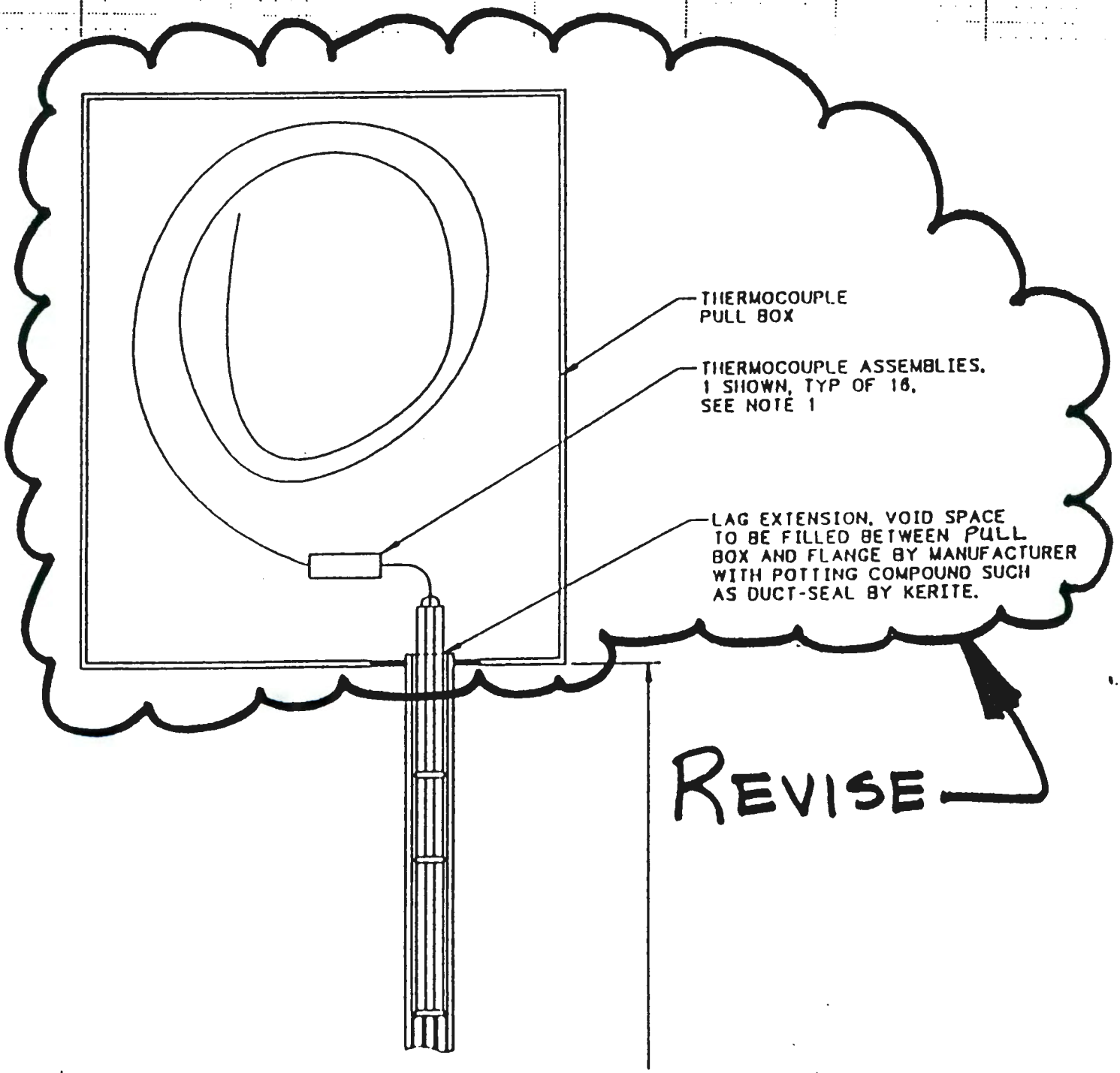
KAISER ENGINEERS HANFORD	ENGINEERING CHANGE NOTICE SKETCH					
Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77619	1	1	TK EHRHARD	PC BARROWS	B-714-84	9/11
H-2-78491	1	1				



KAISER ENGINEERS
HANFORD

ENGINEERING CHANGE NOTICE SKETCH

Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77620	1	0	GF MCKEE	PC BARROWS	B-714-84	10/11
H-2-78492	1	0				



KAISER ENGINEERS HANFORD	ENGINEERING CHANGE NOTICE SKETCH					
Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77620	2	1	GF MCKEE	PC BARROWS	B-714-84	11/11
H-2-78492	2	1				

REVISE