Design Standard Cover Sheet

Design Standard Number	Revision	Effective Date
1-2-EDS-111	**6**	9-2-09

CDI Number: ☒ N/A, Admin revision to enhance a definition 8 CTB 9/1/09

☒ Safety Related ☐ Non-Safety Related

TITLE: **Design Criteria and Documentation of Abandoned and Spare Items** LR 9-4-09

DESCRIPTION OF REVISION:

Administrative revision to:

- Sheet 2, 3.4 SPARE ITEM: Enhanced the definition of "Spare" to emphasize the point that the item shall be disconnected from all Functional Systems or Equipment to be considered as spare for safety purposes as a conservative and a prevention bubble measure.

REASON FOR CHANGE (initial or subsequent):

Prior definition although correct permitted some to believe that an item disconnected on one end only may be viewed as spare. This may have lead to an error likely and safety concern if the other end remained connected to the energy source.

AR 00850842-01

JUSTIFICATION FOR CHANGE (initial or subsequent):

☒ Changes are administrative/editorial in nature. (10 CFR 50.59 Review and design verification are not required.)

IMPLEMENTATION AND CONFIGURATION CONTROL (initial or subsequent):

Full implementation upon effective date.

New/Revised Requirements involving other department/groups and/or interfacing organizations have been reviewed and agreed to by the affected organization YES ☐ N/A ☒

APPROVAL SIGNATURES

Preparer: Colby T. Baker / Colby T. Baker 8-24-09

Reviewer(s): John P. Whitten / John P. Whitten 8-26-09

☒ Responsible Manager/Supervisor reviewed the Plant Qualification Matrix and verified that personnel performing tasks requiring PSGs are currently qualified to the appropriate PSGs.

Approved By: Print Name/Signature 8/27/09 Date

This form derived from Data Sheet 3, 12-EHP-5040-DES-005, Design Standards.

1.0 PURPOSE

1.1 THIS STANDARD PROVIDES DESIGN CRITERIA AND DOCUMENTATION OF ABANDONED AND SPARE ITEMS FOR THE COOK NUCLEAR PLANT.

2.0 SCOPE

2.1 THIS STANDARD IS APPLICABLE TO ALL SECTIONS OF THE NUCLEAR DESIGN GROUP.

3.0 DEFINITIONS

3.1 ABANDONED ITEM

AN ITEM (STRUCTURE, SYSTEM, ASSEMBLY, COMPONENT, OR PART) WHOSE INTENDED DESIGN FUNCTION HAS CEASED.

3.2 ABANDONED-IN-PLACE ITEM

AN ITEM (STRUCTURE, SYSTEM, ASSEMBLY, COMPONENT, OR PART) THAT IS NOT NEEDED FOR PLANT OPERATION OR FOR AUXILIARY FUNCTIONS EITHER NOW OR IN THE FUTURE, HAS NOT BEEN REMOVED FROM ITS INSTALLED LOCATION, AND HAS BEEN DISCONNECTED FROM ALL FUNCTIONAL SYSTEMS OR EQUIPMENT.

3.3 NON-FUNCTIONAL ITEM

AN ABANDONED ITEM WHICH HAS NOT BEEN DISCONNECTED FROM ANY FUNCTIONAL SYSTEM OR EQUIPMENT. NON-FUNCTIONAL DESIGNATION IS APPLICABLE ONLY FOR MECHANICAL DRAWINGS.

3.4 SPARE ITEM

AN ITEM WHICH IS NOT NEEDED FOR PLANT OPERATION OR ANY AUXILIARY FUNCTION; HAS BEEN DE-ENERGIZED AND DISCONNECTED AT ONE OR BOTH ENDS FROM ALL FUNCTIONAL SYSTEMS OR EQUIPMENT; AND LEFT IN PLACE WITH THE ANTICIPATION THAT IT MAY BE USED IN THE FUTURE TO PERFORM ITS INTENDED DESIGN FUNCTION. 6

4.0 COMMONLY ABANDONED-IN-PLACE AND SPARE ITEMS

4.1 IN GENERAL, FOLLOWING IS A LIST OF COMMONLY ABANDONED-IN-PLACE ITEMS WHICH CAUSE MINIMAL INTERFERENCE AND ARE NOT ECONOMICALLY JUSTIFIED FOR THEIR REMOVAL, AND SPARE ITEMS THAT ARE NORMALLY LEFT IN PLACE FOR FUTURE USE.

ELECTRICAL ITEMS

CONDUIT
CABLE
PRESSURE, TEMPERATURE AND FLOW SWITCHES AND GAUGES
LOCAL ALARMS
GROUND CONNECTIONS

MECHANICAL ITEMS

CABINETS
TUBING, RACKS, BUNDLES
INSTRUMENT STANDS AND CONNECTORS
PRESSURE AND FLOW SWITCHES
VALVES
PIPING SYSTEM
HVAC COMPONENTS

STRUCTURAL ITEMS

SUPPORTS FOR CONDUIT, TRAY, PIPE, BOX, ETC.
ANCHOR BOLTS

5.0 GENERAL

5.1 APPROPRIATE COGNIZANT DESIGN SECTION IS RESPONSIBLE FOR IDENTIFYING AND DOCUMENTING ALL ABANDONED-IN-PLACE, NON-FUNCTIONAL, AND SPARE ITEMS ON DESIGN DRAWINGS.

5.2 GENERAL CRITERIA TO BE CONSIDERED DURING THE EVALUATION PROCESS FOR REMOVAL VERSUS ABAMDONEMENT-IN-PLACE ARE AS FOLLOWS:

A. INDUSTRIAL SAFETY

ABANDONMENT-IN-PLACE MAY CONSTITUTE AN INDUSTRIAL SAFETY HAZARD DUE TO CONGESTION, INTERFERENCE WITH PERSONNEL, ETC. OR CAN CREATE A MISSILE DUE TO INADEQUATE ANCHORAGE AND SUPPORT.

B. ALARA

IF LOCATED IN A HIGH RADIATION AREA, PERSONNEL CAN BE EXPOSED TO AN EXCESSIVE RADIATION DOSE DURING REMOVAL OF ABANDONED ITEM.

C. HUMAN FACTORS

ABANDONED-IN-PLACE ITEM CAN BE MISTAKEN AS REGULAR ITEM PERFORMING ITS INTENDED DESIGN FUNCTION.

(VI=2)

D. AESTHETICS

ABANDONED-IN-PLACE ITEM MAY BE DETRIMENTAL TO THE GENERAL APPEARANCE OF THE PLANT.

E. MAINTENANCE COST

THERE ARE GENERAL UP-KEEPING REQUIREMENTS SUCH AS PAINTING, LABELING AND CLEANING OF ABANDONED-IN-PLACE ITEM.

F. COST OF REMOVAL

THE COST OF REMOVAL OF ABANDONED ITEM SHOULD BE COMPARED WITH THE SALVAGE/REUSE VALUE.

G. SPACE LIMITATION

IN AREAS WHERE SPACE IS A PREMIUM, REMOVAL OF ABANDONED ITEM MAY BE DESIRABLE TO ALLOW BETTER UTILIZATION OF THESE OCCUPIED AREAS.

H. RAD WASTE

THE COST OF REMOVAL SHOULD INCLUDE THE CLEAN-UP OR STORAGE OF THE CONTAMINATED ITEM.

I. THE COST OF ABANDONMENT WHEN DISCONNECTED, OR ABANDONED ITEMS MAY REQUIRE STRUCTURAL ANALYSIS AND ADDITIONAL SUPPORTS.

5.2.1 AESTHETICS ALONE IS NOT SUFFICIENT JUSTIFICATION FOR REMOVAL. REMOVALS MAY BE PARTIAL; E.G., AN INSTRUMENT CAN BE SELECTED FOR REMOVAL WITHOUT NECESSARILY REMOVING ITS SUPPORT.

5.3 THE PHYSICAL GROUP OF THE NUCLEAR DESIGN - ELECTRICAL SECTION SHALL MAINTAIN A LIST OF THE CURRENT SPARE CABLE AND CONDUIT IN EACH UNIT. THESE CONDUITS SHALL BE SHOWN IN A MANNER WHICH SHOULD CLEARLY IDENTIFY THEM AS DIFFERENT FROM THE ACTIVE CONDUIT ON THE DRAWING.

5.4 WHEN THE LEAD CABLE IN A SHARED CONDUIT IS MADE "SPARE", THE LOWEST ACTIVE CABLE NUMBERS SHALL BE USED TO RETAG THE CONDUIT. IF THERE ARE ANY SAFETY-RELATED CABLES IN THE CONDUIT, LEAD CABLE NUMBER SHOULD BE THE NUMBER OF LOWEST ACTIVE SAFETY-RELATED CABLE.

6.0 RECOMMENDED PRACTICES FOR ABANDONMENT

A. ALL ABANDONED MAJOR EQUIPMENT WILL GENERALLY BE REMOVED.

B. OBTRUSIVE ABANDONED HANGERS SHOULD BE REMOVED.

C. ALL ABANDONED INSTRUMENTS SHOULD BE REMOVED TO AVOID CONFUSION REGARDING THEIR STATUS BY PERSONNEL SUCH AS OPERATORS, TECHNICIANS, ETC.

D. ABANDONED CABLE AND CONDUIT RUNS UP TO 50 FEET SHOULD BE REMOVED IF THESE ARE ACCESSIBLE. ABANDONED CABLE AND CONDUIT ABOVE 50 FEET IN LENGTH SHALL BE HANDLED ON A CASE BY CASE BASIS.

E. ABANDONED CONDUIT THAT IS CONNECTED TO UNOBTRUSIVE SUPPORT EQUIPMENT SHOULD NOT BE REMOVED UNLESS IT CAUSES A PROBLEM WITH ACCESS, SAFETY, ETC.

(VI-3)

F. ABANDONED CABLES IN A CABLE TRAY SHALL BE REMOVED ON A CASE-BY-CASE BASIS. IF REMOVAL IS NOT DESIRABLE, BOTH ENDS OF THE ABANDONED CABLE SHALL BE CUT, TAGGED AND LEFT IN THE TRAY AS ABANDONED-IN-PLACE ITEM.

G. PULL BOXES AND TERMINAL BOXES, IN CONJUNCTION WITH REMOVED CABLES AND CONDUITS, SHALL ALSO BE REMOVED.

HEAT TRACING MAY ONLY BE PERMANENTLY REMOVED IN ACCORDANCE WITH PMP-5040-ECC-001, ENGINEERING CONFIGURATION CHANGES.

H. HEAT TRACING FOR ABANDONED-IN-PLACE PIPING SYSTEM SHALL BE REMOVED.

I. IT IS RECOMMENDED THAT ABANDONED HEAT TRACING (SUCH AS THAT ON SOME BORIC ACID PIPING) NOT BE REINSTALLED IF MAINTENANCE ON THE UNDERLYING COMPONENT REQUIRES THE HEAT TRACING TO BE REMOVED. HOWEVER, HEAT TRACING MAY ONLY BE PERMANENTLY REMOVED IN ACCORDANCE WITH PMP-5040-ECC-001, ENGINEERING CONFIGURATION CHANGES.

J. WHERE PIPING IS CUT TO EFFECT ABANDONMENT, THE FOLLOWING SHALL BE DONE:

1. OPEN ENDS OF ABANDONED PIPING/VALVES SHALL BE CAPPED/PLUGGED.
2. CUTS WILL BE DONE SUCH THAT THE ABANDONED AS WELL AS NON ABANDONED PIPING IS ADEQUATELY SUPPORTED.

7.0 DOCUMENTATION

7.1 ABANDONED-IN-PLACE, NON-FUNCTIONAL AND SPARE ITEMS SHALL BE MARKED CLEARLY ON THE APPLICABLE DESIGN DRAWINGS (PHYSICAL, WIRING, CABLE SCHEMATIC, PIPING, ETC.) TO REPRESENT THEIR ACTUAL STATUS IN THE PLANT. IN THE PLANT THESE ITEMS SHALL BE PHYSICALLY IDENTIFIED BY ADDING INFORMATION ("SP", "ABAND", ETC.) ON EXISTING TAG PER DESCRIPTION ON THE DESIGN DRAWINGS.

7.2 ABANDONED-IN-PLACE ITEMS SHOULD NOT BE SHOWN ON ONE-LINE OR ELEMENTARY DRAWINGS. ABANDONED-IN-PLACE ITEMS SHOWN ON FLOW DIAGRAMS SHOULD BE ENCIRCLED, CROSSHATCHED AND LABLED WITH THE WORD "ABANDONED". (SEE FIGURE 6).

7.3 NON-FUNCTIONAL ITEMS SHOULD BE IDENTIFIED ON FLOW DIAGRAMS AND MECHANICAL LAYOUT DRAWINGS BY LABELING WITH THE WORD " NON-FUNCTIONAL ". (SEE FIGURE 1).

(VI=4)

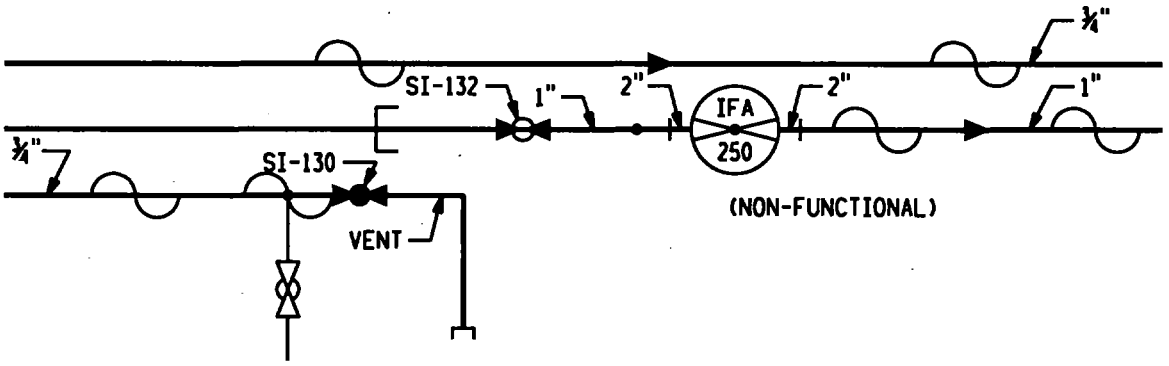


FIGURE 1
NON-FUNCTIONAL ITEM ON
A FLOW DIAGRAM

7.4 ABANDONED-IN-PLACE ITEMS SHOULD BE IDENTIFIED ON ELECTRICAL AND MECHANICAL PHYSICAL DRAWINGS, AND STRUCTURAL DRAWINGS, BY WRITING THE WORD ABANDONED OR ABAND (SEE FIGURE 2).

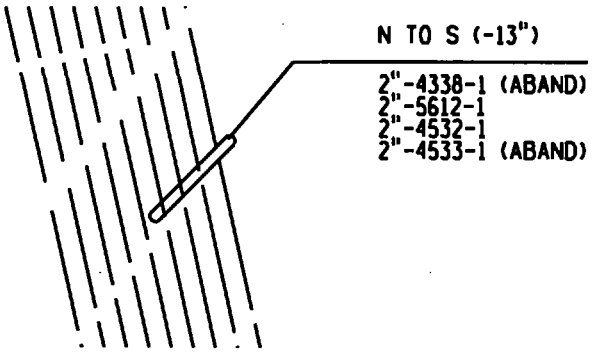
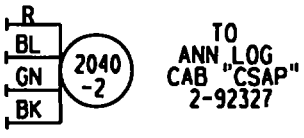


FIGURE 2
ABANDONED-IN-PLACE ITEM ON
ELECTRICAL PHYSICAL LAYOUT DRAWING

(VI=5)

7.5 SPARE ITEMS SHOULD BE IDENTIFIED ON ELECTRICAL AND MECHANICAL PHYSICAL LAYOUT DRAWINGS, STRUCTURAL DRAWINGS, FLOW DIAGRAM, ONE-LINE, ELEMENTARY AND WIRING DRAWINGS, BY WRITING THE WORD SPARE OR SP. (SEE FIGURE 3).



SPARE

FIGURE 3

SPARE ITEM ON A WIRING DIAGRAM

7.6 ABANDONED-IN-PLACE OR SPARE CABLE AND CONDUIT SHALL BE IDENTIFIED ON CONDUIT AND CABLE SCHEDULE DRAWING BY MARKING WITH X UNDER "USED FOR" COLUMN. WHEN A CABLE IS REMOVED, THE ASSOCIATED CONDUIT SHOULD HAVE A LINE STRUCK THROUGH ITS ENTRY ON THE CONDUIT AND CABLE SCHEDULE DRAWINGS, AS DESCRIBED IN THE FOLLOWING EXAMPLES (FIGURE 4).

CONDUIT NO.	LENGTH OF CONDUIT	SIZE & KIND	CONDUIT & CABLE SCHEDULE			USED FOR					ITEM NO. B/M				
			FROM	VIA	TO	CONTROL	ABANDONED	SPARE	INSTRUMENTATION	A.C. POWER	3075 2/C #16STP	3120 4/C #12 C01 CODE 100B	3153 12/C #12 C01 CODE 100B	3124 4/C #10 C01 CODE 100B	
9284 G	60'	1" GT	PNL "ESW"	© 9284 G-1	WMO-703	GRN	X					65'			
~~9285 G~~	~~90'~~	~~1½" GT~~	~~PNL "HSD1"~~	~~© 9285 1~~	~~PNL "SG"~~	~~GRN~~		~~X~~	REMOVED ENTIRE CABLE					~~90'~~	
~~9285 Y~~	~~15'~~	~~1½" GT~~	CAB. NIS III	Ⓘ IV-I39 © 9285Y-1	~~WMO 702~~				YEL		~~100'~~	REMOVED CABLE AND RETAGGED CONDUIT TO 9297-Y-1			
9297 Y	15'	1½" GT	CAB. NIS III	Ⓘ IV-I38 © 9297Y-1	WMO-701				YEL		70'	RETAGGED FROM CONDUIT 9285Y-1			
9587 G	186'	2" GT	MCC 1-PS-D	Ⓘ IV-C40 © 9587G-1	~~PNL 'GRC'~~	GRN		X			~~300'~~	REMOVED CABLE FROM CONDUIT AND REUSED 20' CDT FOR 9588G-1			
9588 G	30'	2" GT	MCC 1-PS-D	Ⓘ IV-C40 © 9588G-1	PNL-'HSD1'	GRN					100'	20' OF CDT 9587G-1 USED FOR THIS CDT			

(VI=6)

FIGURE 4

ABANDONED-IN-PLACE OR SPARE ITEM
ON CONDUIT AND CABLE SCHEDULE DRAWING

THE INFORMATION ABOVE WILL REMAIN FOR HISTORICAL PURPOSES AND WILL CONTINUE TO BE USED WHEN WORKING ON SAFEGUARD SECURITY CABLE AND CONDUIT SCHEDULE DRAWINGS (REF: DRAWING SERIES 12-2132 - 12-2161). ALL OTHER CABLE AND CONDUIT SCHEDULE DRAWINGS WILL BE SUPERSEDED BY THE EDISON CABLE DATABASE. INSTRUCTIONS FOR UTILIZING THE CABLE DATABASE CAN BE FOUND IN DESK TOP GUIDES DTG-EDISON-001 AND DTG-EDISON-002.

SPARE, ABANDONED, REMOVED, DELETED, OR SUPERSEDED CABLES WILL BE INDICATED WITH THE SYSTEM (FUNCTION) CODE 98.

ANY NOTES REGARDING REUSE OF A PORTION OF A CABLE/CONDUIT WILL BE FOUND UNDER THE CABLE NOTES TAB IN THE DATABASE.

7.7 ABANDONED-IN-PLACE OR SPARE CABLE IN TRAY SHALL BE IDENTIFIED ON TROUGH CONTENTS LIST BY PLACING A FILLED CIRCLE. (SEE FIGURE 5).

YELLOW TROUGH 2C-I19						BLUE TROUGH 2C-I20			
CABLE NO.	B/M*	AREA	CABLE NO.	B/M*	AREA	CABLE NO.	B/M*	AREA	CABLE NO.
5587CY-2	3077	0.21	9639CY-2	3077	0.21	• 8729CB-2	3077	0.21	
5588CY-2	3077	0.21	9640CY-2	3077	0.21	• 8732CB-2	3077	0.21	
8722CY-2	3077	0.21	9641CY-2	3077	0.21	6683CB-2	3077	0.21	
8724CY-2	3077	0.21	9619CY-2	3077	0.21	6684CB-2	3077	0.21	
8721CY-2	3077	0.21	14064CY-2	3077	0.21	6686CB-2	3077	0.21	
8723CY-2	3077	0.21	20357CY	3075	0.17	20381CB-2	3075	0.17	
9600CY-2	3075	0.17	20358CY	3075	0.17	20382CB-2	3075	0.17	

FIGURE 5
ABANBONED-IN-PLACE CABLE ON TROUGH CONTENT LIST

WHEN THE LAST CABLE AND CONDUIT SCHEDULE DRAWING HAS BEEN SUPERSEDED, ASIDE FROM THE SAFEGUARD SECURITY CABLE AND CONDUIT SCHEDULE DRAWINGS REFERENCED IN NOTE 7.6, THE TROUGH CONTENTS LIST WILL BECOME OBSOLETE AND RETAINED FOR HISTORICAL REFERENCE ONLY. THE EDISON DATABASE WILL BECOME THE CONTROLLED SOURCE FOR ALL NON-SAFEGUARD/SECURITY TROUGH RACEWAY FILL.

7.8 WHEN A LARGE AREA OF THE ELECTRICAL, MECHANICAL OR STRUCTURAL DRAWING IS AFFECTED DUE TO ABANDONMENT, AND THE INFORMATION IS TO BE LEFT ON THE DRAWING, AFFECTED AREA IS TO BE ENCIRCLED, AND CROSS HATCHED WITH APPLICABLE IDENTIFICATION SUCH AS ABANDONED OR NON-FUNCTIONAL, (SEE FIGURE 6).

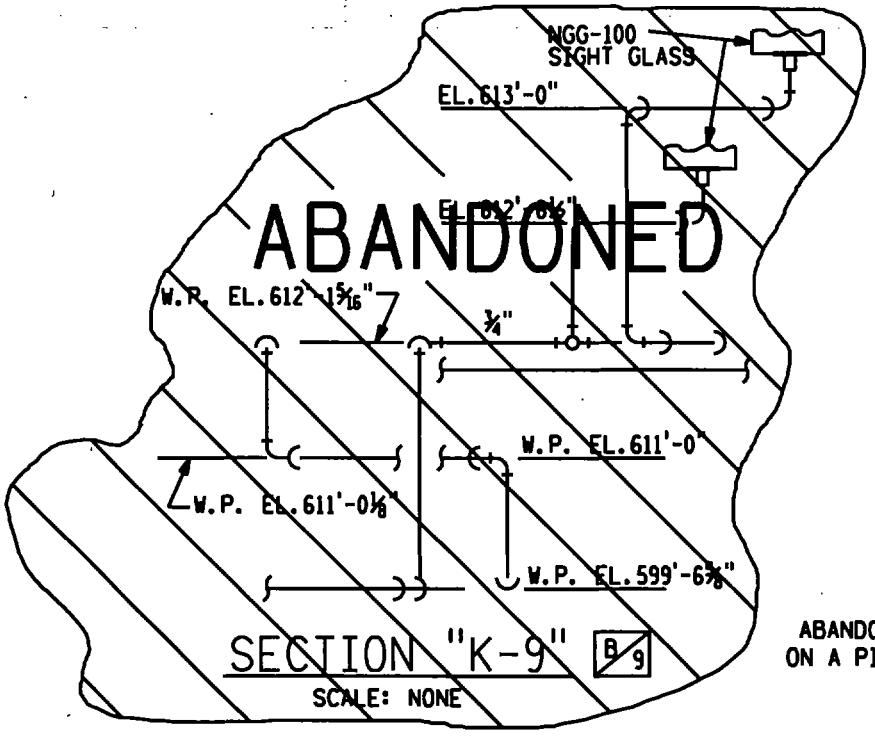


FIGURE 6
ABANDONED-IN-PLACE ITEMS ON A PIPING LAYOUT DRAWING

(VI=7)

8.0 REUSE OF SPARE CABLE AND CONDUIT

8.1 IF SPARE CABLE AND CONDUIT ARE REUSED AS PART OF A NEW CABLE RUN, THE EDISON CABLE DATEBASE AND PHYSICAL INSTALLATION DRAWINGS SHALL BE MODIFIED AS FOLLOWS:

A. A NEW CABLE AND CONDUIT NUMBER SHALL BE ASSIGNED TO THE ROUTING.

B. THE REUSED PORTION OF THE SPARE CABLE AND CONDUIT SHALL BE CROSS REFERENCED WITH THE NEW CABLE AND CONDUIT NUMBER IN THE EDISON CABLE DATABASE NOTES SECTION. THIS CROSS REFERENCE NOTE SHALL APPEAR IN THE NOTES FOR BOTH THE NEW AND OLD CABLE NUMBER.

C. THE NEW ROUTING SHALL BE ENTERED INTO THE EDISON CABLE DATABASE. IF THE CABLE AND CONDUIT SCHEDULE DRAWING HAS NOT BEEN SUPERSEDED THE DRAWING SHALL BE UPDATED ALSO.

D. ON THE PHYSICAL INSTALLATION DRAWINGS(S), THE REUSED PORTION OF THE SPARE CABLE AND CONDUIT SHALL BE RENUMBERED USING THE NEW CABLE NUMBER.

E. THE UNUSED PORTION OF THE SPARE CABLE AND CONDUIT SHALL BE INDICATED AS A SPARE ON THE PHYSICAL INSTALLATION DRAWING(S) AND IN THE EDISON CABLE DATABASE CABLE RECORD BEARING THE ORIGINAL NUMBER. IF THE CABLE AND CONDUIT SCHEDULE DRAWING HAS NOT BEEN SUPERSEDED THEN THE NOTE MUST ALSO APPEAR ON THAT DRAWING.

9.0 REFERENCES

9.1 AEP NUCLEAR ORGANIZATION POLICY "TREATMENT OF ABANDONED-IN-PLACE ITEMS", APPROVED FEBRUARY 24, 1993.

9.2 DESIGN DIVISION ORGANIZATION AND PROCEDURE MANUAL PROCEDURE NO. II-6 "TRACKING SPARE CONDUIT AND CABLE".

9.3 MINUTES OF THE ABANDONED EQUIPMENT WORKING GROUP MEETING, JULY 28, 1992.

9.4 J. J. MCDOWELL'S MEMO TO PROJECT ENGINEERING PERSONNEL, SEPTEMBER 21, 1992.

9.5 ABANDONED EQUIPMENT WORKING GROUP REPORT, JANUARY, 1993.

9.6 E-MAIL DATED AUGUST 29, 1993 FROM PAUL G. SCHOEPF TO ED A. ABSHAGEN.

9.7 CONDITION REPORT CR-01096030

9.8 ACTION REQUEST (INDUS) 850842-01; ENHANCE DEFINITION OF "SPARE"

(VI=8)

6