KEWAUNEE NUCLEAR POWER PLANT

WISCONSIN PUBLIC SERVICE CORPORATION

WISCONSIN POWER & LIGHT COMPANY

MADISON GAS & ELECTRIC COMPANY

SUBMITTAL TO NUCLEAR REGULATORY COMMISSION ON 10CFR50 APPENDIX R REQUIREMENTS

Submitted by

Wisconsin Public Service Corporation
Green Bay, Wisconsin 54305

April 9, 1981

TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 DESIGN BASES

3.0 SAFETY EVALUATION

4.0 DESCRIPTION OF PROPOSED PLANT MODIFICATIONS

5.0 SCHEDULE FOR NRC SUBMITTALS

6.0 SUMMARY

1.0 Introduction

Paragraph 50.48(b) of 10CFR Part 50, effective on February 17, 1981, requires all Nuclear Power Plants licensed to operate prior to January 1, 1979 to meet the requirements of Sections III.G, III.J, and III.O of Appendix R to 10CFR50. Paragraph 50.48(c)(5) requires that plans, schedules, and design descriptions of any modifications which are required to meet Section III G.3 of Appendix R must be submitted to the NRC by March 19, 1981 for review and approval. By letter date March 19, 1981 Wisconsin Public Service Corporation requested an extension of this date to April 9, 1981.

In response to these requirements this submittal provides a description of the modifications proposed for the Kewaunee Nuclear Plant to meet the fire protection criteria stated in Section III G.3 of Appendix R to 10CFR50.

Section 2.0 describes the method of approach used in determining modifications to the plant which will be necessary to meet the requirements of Section III G.3 of Appendix R.

Section 3.0 describes the safe shutdown analysis which identifies the systems, subsystems, and components necessary to bring the plant to the hot shutdown and cold shutdown conditions. Included in Section 3.0 is an impact statement concerning plant reliability and the fire hazards analysis.

Section 4.0 describes the proposed plant modifications. The proposed changes are listed for each floor elevation. Drawings showing existing plant arrangements along with overlays of proposed modifications are provided for plant areas containing equipment required for safe shutdown.

Section 5.0 addresses the associated schedules for submittal of additional information.

Section 6.0 provides a brief summary of this submittal.

2.0 Criteria and Methodology

2.1 Criteria

The criteria for this evaluation are listed is Section III.G of Appendix R to 10CFR50.

2.2 Method

The methods used to determine the modifications described in this report are as follows:

a. <u>Preliminary Evaluation</u>

To identify the actions needed to meet the above criteria, the following information was developed:

(1) The functions necessary for both hot and cold shutdown.

(2) Potential structural and equipment changes necessary to meet the requirements of Section III G.3 of Appendix R.

(3) Potential wiring and cable routing changes necessary to meet the requirements of Section III G.3 of Appendix R.

b. <u>System Walkdown and Review</u>

Using the above information, an onsite review was performed of current equipment locations in the effected fire zones. Photographs were taken of components, cable

trays, and other equipment in these zones and used with site layout drawings, electrical schematics, piping drawings, and instrument drawings as part of this review.

c. Safe Shutdown Analysis

Safe shutdown logic drawings were developed to define dedicated and alternate shutdown paths and the systems and components of these paths. The functions needed to achieve both hot and cold shutdown include the following:

(1) RCS Inventory Control

(2) RCS Pressure Control

(3) Short-term Reactivity Control

(4) Long-term Reactivity Control

(5) Secondary Side Pressure Control

(6) Secondary Side Inventory Control

(7) Long-term Heat Removal

(8) Emergency AC Power

These functions are described in more detail in Section 3.1, Safe Shutdown Evaluation.

d. Preliminary Fire Hazard Review

A review of the impact of the proposed modifications on the current Fire Hazards Analysis for the Kewaunee Nuclear Power Plant was performed. Further information is provided in Section 3.2, Fire Hazard Evaluation.

e. Layout Review

A review of the equipment locations in the affected fire zones outside containment was performed to determine the adequacy of existing equipment and cable layouts to meet Section III.G requirements. As a result of this reveiw, layouts were developed which show the propcsed changes to meet the requirements of Section III.G of Appendix R. Further information is provided in Section 4.

3.0 Safety Evaluation

3.1 Safe Shutdown

Section III. G. of Appendix R requires the capability to achieve both hot and cold shutdown in the event of a fire. To insure this capability, a Safety Sequence Analysis was performed for the Kewaunee Plant as referenced in Regulatory Guide 1.70, Chapter 15. This method was adopted to a Safe Shutdown Analysis using a fire as an initiating event with hot and cold shutdown as the safe conditions. A complete loss of offsite power was assumed for this analysis.

The Safe Shutdown Analysis defined those functions necessary to bring the plant to the safe shutdown condition and the various means to achieve those functions. The systems and components which provided duplicate functions were compared on plant layouts and flow diagrams; and a set of existing systems and components were then selected to form the nucleus of a dedicated shutdown system. Major modifications are necessary in terms of cable rerouting, control schemes, control stations, division of fire areas, power supplies to equipment, and instrumentation to convert this equipment into the dedicated shutdown system. Utilization of existing components to form the dedicated shutdown system offers the following advantages:

a. The ability of the system to achieve safe shutdown

has been proven by plant operation and docketed. This offers a substantial cost savings to Wisconsin Public Service Corporation in that the procurement of a multitude of components and on analysis of their ability to perform the safe shutdown function is not necessary. A substantial savings is realized by the NRC because the staff will not have to review that portion of the analysis.

b. The approval process is shortened by item "a".

c. The number of operating procedure changes brought about by this system will be greatly reduced.

d. The amount of operator retraining necessary to operate the dedicated system is greatly reduced thus retaining the high degree of proficiency of operation which has been achieved during normal shutdown for shutdown during a fire.

Items c and d above provide a high degree of assurance that the health and safety of the public will not be reduced because continuity is maintained for normal shutdowns and shutdowns during a fire.

The term Dedicated Shutdown System as used in this analysis is defined as a system which will be engineered and controlled such that it can be dedicated to the safe shutdown of the Kewaunee Nuclear Plant during a fire situation. The term dedicated does not preclude the use of

these systems and components for other functions during plant operations not involving a fire.

The term Alternate Shutdown System as used in this analysis is defined as those systems and components which can be used to bring the Kewaunee Nuclear Plant to a safe shutdown condition independent of the dedicated shutdown system in the event a fire occurs in an area which contains dedicated shutdown equipment.

Table 3-1 is a list of the safe shutdown functions. Attachment 1 identifies those associated systems, subsystems, and components for the functions.

The Safe Shutdown Analysis is developed by use of the Safe Shutdown Diagram (SSD) (Figure 3-1). The SSD is a logic diagram that identifies those conditions necessary to achieve and maintain safe shutdown capability in the event of a fire. Figure 3-1 shows the dedicated and alternate means including auxiliary and support features, of achieving safe shutdown in their functional (not necessarily chronological) sequences following the postulated fire.

Table 3-2 explains the three-symbol format used in Figure 3-1. The first letter symbol designates a measured or sensed parameter such as pressure, temperature, or flow. This letter is subscripted with an alphabetical symbol which

designates the symbol or sensed point. The third letter symbol designates the point of actuation such as high, low, or low-low.

The abbreviations used in Figure 3-1 are explained in Table 3-2. Diagram symbology is defined in Table 3-3.

The review of the system flow diagrams, wiring diagrams, and instrument diagrams identified the components needed to establish the dedicated systems. This review was combined with a systematic evaluation of the layouts to identify those areas where a single fire may affect both the dedicated and alternate safe shutdown systems thereby providing the basis for the proposed modifications.

3.2 Fire Hazard Evaluation

Several new fire areas have been identified as a result of this evaluation. The proposed plant modifications have been qualitatively evaluated to ensure that they will not cause adverse affects on the Kewaunee Nuclear Plant's fire protection program.

The existing Fire Hazards Analysis for the Kewaunee Nuclear Power Plant will be updated following NRC approval of these proposed modifications.

3.3 Reliability, Availability, and Maintainability

During the course of developing the proposed plant

modifications every effort has been made to ensure that the proposed modifications do not reduce the plant's present reliability and to minimize the effects on availability and maintainability.

TABLE 3-1

SAFE SHUTDOWN FUNCTIONS NECESSARY FOR HOT SHUTDOWN

Safety Function
RCS Inventory Control
RCS Pressure Control
Initial Reactivity Control
Secondary System Pressure Control
Secondary System Inventory Control

SAFE SHUTDOWN FUNCTIONS NECESSARY FOR COLD SHUTDOWN

Safety Function
Long Term Heat Removal
Long Term Reactivity Control

TABLE 3-2

SYMBOLS AND ACRONYMS

FIRST LEVEL SYMBOLS

Symbol	Meanings
F	Flow
L	Level
P	Pressure
Re	Radiation
T	Temperature
V	Voltage

SUBSCRIPT SYMBOLS

Symbol	Meaning
ae	Air Ejector
ave	Average
cb	Containment Building
pzr	Pressurizer
s	Steam
sg	Steam Generator

THIRD LEVEL SYMBOLS

Symbol	Meaning
H	High
HH	High-High
L	Low
LL	Low-Low

TABLE 3-3

DIAGRAM SYMBOLOGY

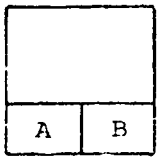
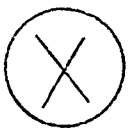
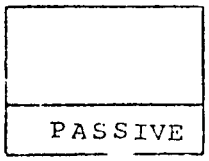
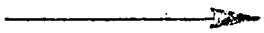
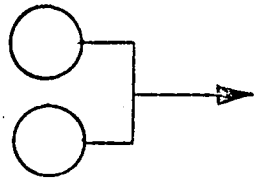
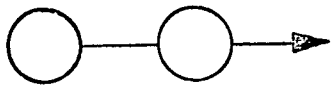
Symbol	Meaning
	SSD Function
	System having two independent "trains" of equipment or channels
	Indicates that sensed variable "x" is used for automatic action, manual action, or post-event tracking.
	System action is passive.
	Identifies the sensed variable if directed towards a system symbol.

TABLE 3-3 (cont'd)

Symbol	Meaning
	Any one of the multiple sensed variables is required to initiate system action.
	All of the multiple sensed variables are required to initiate system action.
X/Y	Indicates the logic of an input signal or a system by identifying the number of inputs required to generate an output signal/total number of channels sensing input signals.
|	Indicates the systems that are required to function in order to attain a safety or plant function.

4.0 Description of Proposed Plant Modifications

This section describes the proposed plant modifications to meet the requirements of Section III.G of Appendix R. These modifications are described in the text below and are shown graphically on Figure 4-1 and 4-2. Each figure includes a base drawing and a clear plastic overlay. The base drawing shows the existing plant arrangements and existing Fire Zones. The clear plastic overlay, shows proposed plant modifications and any new Fire Zones.

The text and the drawings are organized by plant elevation. The elevations of interest are 586' and 606' (grade elevation). The areas of the plant with existing or proposed safe shutdown equipment are:

1. Auxiliary Building
2. The Safeguards Alley--a Category I structure within the Turbine Building.
3. The Screenhouse--the circulating water, cooling water, and fire water intake structure.
4. The Technical Support Center
5. Reactor Building

The text and drawings reference Trains A and B, Safeguards 5 and 6, and the colors green and orange(red). These terms are used interchangeably as follows:

Train	Equivalence
Train A	Safeguards 5 Color: Green
Train B	Safeguards 6 Color: Orange(red)

4.1 586' Elevation (Figure 4-1)

Auxiliary Building (Figure 4-1a)

a. Construct a three-hour fire wall separating 1C charging pump from the safety injection pumps forming a new fire area AX23A, 1C charging pump room. This will prevent a single fire from affecting both the charging pumps and the safety injection pumps.

b. Reroute the power and control cables for 1C charging pump through the on site technical support center and provide protection in accordance with Section III.G of Appendix R where these cables pass through fire area AX23.

c. Provide protected cooling capability for area AX23A.

This will insure that 1C charging pump is available

for boron injection and reactor makeup in the event a fire occurs in AX23. In the event a fire occurs in AX23A either safety injection pump is available for the above functions.

Safeguards Alley and Technical Support Center (Figure 4-16).

a. Construct a three-hour fire wall in the existing safeguards alley as shown in Figure 3-1b separating Trains A and B (5 and 6). Establish two new fire zones TU 95A and TU 95B.

b. Construct a three-hour fire wall to enclose Auxiliary Feed pump 1A and establish a new fire zone TU 95C.

c. Install a new shutdown panel on the Train A side (TU 95A).

d. Remove the existing shutdown panel.

e. Install a new dedicated 480 volt Motor Control Center (MCC) stack in area TU 95A.

These modifications will result in a dedicated shutdown system control station in TU 95A. The control concept will be re-engineered and a typical design submitted in response to D. G. Eisenhut's letter of February 20, 1981.

Equipment in the dedicated system that must be repowered due to the location of existing power supplies will be powered from the new MCC stack. This equipment will be identified in respone to D. G. Eisenhut's letter of February 20, 1981. This will provide the capability to bring the plant to the safe shutdown condition in the event a fire disables alternate shutdown equipment. In the event a fire occurs in area TU 95A the control room will serve as the alternate shutdown area.

Screenhouse (Figure 4-1c)

a. Construct a three-hour fire wall in the Screenhouse separating A and B trains. Establish two new fire zones SC 70A and SC 70B.

b. One of the following modifications will be made:

- Remove safeguards Train B cable from the existing screenhouse access tunnel and reroute it to area SC 70A via a separate cable tunnel from Diesel Generator Room 1B.

- Provide a barrier for Train B cable in its existing route in accordance with Section III G of Appendix R.

These modifications will insure that a supply of service water and fire water is maintained for postulated fires in these areas. The above modifications are being evaluated and will be finalized and submitted with our respone to D. G. Eisenhut's letter of February 20, 1981.

<u>606' Elevation (Figure 4-2)</u>

Auxiliary Building (Figure 4-2a)

a. Construct a three-hour fire wall separating A and B Component Cooling Water Pumps.

b. Construct a three-hour fire wall separating 1A component cooling water pump and the component cooling water Heat Exchangers. This will establish a new Fire Area AX23B around 1A component cooling pump.

c. Provide protection for cable to component cooling outlet, valve motor CC6A, and service water inlet valve, motor SW1300A, in accordance with Section III.G of Appendix R, or construct a three-hour fire wall between A and B component cooling heat exchangers.

d. Provide protected cooling capability for fire in area AX23B.

These modifications will insure a supply of component cooling water for safe shutdown in the event of a fire area AX23.

General Modifications

The following modifications are not specific to any one fire area or plant elevation. They are necessary to establish the dedicated shutdown system.

Instrumentation

e. Purchase an instrument rack and install it in area TU 95A near the dedicated shutdown panel.

f. Establish the following instrument loops powered from the new rack and physically separate them from the existing relay room. They will be displayed at the dedicated shutdown panel.

Pressurizer Level

Reactor Coolant System Pressure

Reactor Coolant System Temperature

Steam Generator Level

Steam Generator Pressure

Service Water Header Pressure

Component Cooling Pressure

This will provide the minimum set of instrumentation necessary to establish the various shutdown modes independent of the control/relay room. Boric Acid Concentrations in the Reactor Coolant system will be taken manually from the sample room or from CVCS letdown. Procedures will be provided to accomplish the above.

Instrument Air

One of the following modifications will be made:

1. Construct a three-hour fire barrier around either 1A or 1C instrument air compressor and replace the header to those air operated components necessary for safe shutdown.

2. Provide Air Receivers on all componets necessary for safe shutdown.

These two alternates are being evaluated. A supply of instrument air may be necessary to maintain the hot or cold shutdown conditions. Further details will be submitted with our response to D. G. Eisenhut's letter of February 20,

1981.

System Components

Modifications to the control instrument and/or power cables to the following components may be necessary to meet the requirements of Section III.G of Appendix R. The following list will be finalized and submitted along with the necessary detailed information in response to D. G. Eisenhut's letter of February 29, 1981.

Reactor Makeup

1C Charging Pump

CVC 301 (32056) motor operated valve from RWST

CVC 1 (32057) VCT outlet Valve

CVC 7 (31103) air operated valve to regenerative heat exchanger

CVC 11 (31229) air operated valve charging line to cold leg B

Reactor Coolant System Letdown

LD-2 (31108) Letdown isolation valve

LD-3 (31104) Letdown isolation valve

LD-4A (31231) Letdown orifice isolation valve

LD-6 (31234) Isolation to letdown heat exchanger

LD-10 (31099) Back pressure regulator

LD-14 (31098) Letdown three-way valve to Demineralizers

LD-27 (31096) Divert valve to CVCS Holdup tanks

CC-302 (31100) Component cooling temperature control valve on letdown heat exchanger

Reactor Coolant Pump Seal Integrity

CVC 207A (31237) 1A RCP Seal Isolation

CVC 207B (31238) 1B RCP Seal Isolation

CVC 211 (32124) Seal water isolation valve

CVC 212 (32115) Seal water isolation valve

Secondary Side Inventory Control

1A Auxiliary Feedwater Pump

AFW 2A (31315) 1A Auxiliary Feedwater Pump Discharge Valve

Blowdown Valves 32077 32078

Secondary Side Pressure Control

SD 3A-31170 Power Operated Relief Valve 1A Steam Generator

Primary Side Pressure Control

RC Head Vent Valves 33658, 33663

Pressurizer Backup Heaters Group 1A

Long Term Heat Removal

Residual Heat Removal Pump 1A

RHR 1A (32116) Isolation Valve from RCS Hot Leg A

RHR 2A (32117) Isolation Valve from RCS Hot Leg A

RHR 8A (31114) 1A RHR Heat Exchanger Outlet

RHR 11 (32118) RHR Discharge to Loop B cold leg

SI 350 A 1A RHR containment sump suction
(must remain closed)

Component Cooling Pump 1A

CC 6A (32121) Component Cooling Water Heat
Exchanger 1A Outlet Valve

CC 400A (32119) Component Cooling Water Inlet valve to 1A
valve to 1A RHR Heat Exchanger

RHR Pit Fan Coil Unit 1A

Service Water System

Service Water Pump 1A1

Service Water Pump 1A2

Service Water Strainer 1A1

Service Water Strainer 1A2

SW 30A1 (33018) 1A1 Strainer Backwash Valve

SW 30A2 (33014) 1A2 Strainer Backwash Valve

SW 4A (31084) Turbine Building Header Isolation Valve

SW 3A (31038) Service Water A and B Header Isolation Valve

SW 10A (32011) Auxiliary Building Header Isolation Vlave

SW 1300A (32009) 1A Component Cooling Heat Exchanger Isolation Valve

SW 33303 RHR Pump Pit Fan Coil 1A isolation valve

SW 33271 Battery Room Fan Coil 1A Isolation Valve

SW 301A (33033) Service Water to 1A Diesel Generator

Emergency Electrical Power Supply

Diesel Generator 1A and controls

Diesel Generator 1A fuel oil transfer pump

Diesel Generator 1A Air Compressor

Diesel Generator 1A Vent Supply Fan

Diesel Room 1A Dampers 34004, 34072, 34011

Screenhouse Exhaust Fan 1A and Damper 34072

Battery Charger BRA 108 (power supply)

Battery 1A (BRA (101)

4160 Volt Bus 1-5

480 Volt Busses 1-51 and 1-52

Battery Room Fan Coil 1A

Fire Protection System

Fire Pump 1A

Cardox to Diesel Generator Room 1A

5.0 Schedule for NRC Submittals

Paragraph 50.48(c)(5) of 10CFR50 requires, that each nuclear plant licensed to operate prior to January 1, 1979, submit By March 19, 1981 plans, schedules and design descriptions of any modifications required to meet Section III.G.3 of Appendix R. On February 20, 1981 the NRC issued a letter requesting additional information to be submitted by May 19, 1981.

Wisconsin Public Service Corporation has, in this document, provided conceptual detail of the planned plant modifications which are required to meet Section III.G.3 of Appendix R. Due to the large quantity of work necessary to address the detailed information requested by the February 20, 1981 letter, Wisconsin Public Service Corporation requests a time extension for the submittal of the additional information. The following is our current schedule for response to the specific items listed in the February 20, 1981 letter.

1. Information requested in Enclosure 1 to the February 20, 1981 letter.

	Schedule Date
a. Description of the system or portions thereof used to provide the shutdown capability and modifications required to achieve the alternate shutdown capability if required.	Provided i this submitta

b. System design by drawings which show normal and alternate shutdown control and power circuits, location of components, and that wiring which is in the area and the wiring which is out of the area that required the alternative system. 5/19/81

c. Demonstrate that changes to safety systems will not degrade safety systems. e.g., new isolation switches and control switches should meet design criteria and standards in FSAR for electrical equipment in the system that the switch is to be installed; cabinets that the switches are to be mounted in should also meet the same criteria (FSAR) as other safety related cabinets and panels; to avoid inadvertent isolation from the control room, the isolation switches should be keylocked, or alarmed in the control room if in the "local" or "isolated" position; periodic checks should be made to verify switch is in the proper position for normal operation; and a single transfer switch or other new device should not be a source for a single failure to cause loss of redundant safety systems). 5/19/81

d. Demonstrate that wiring, including power sources for the control circuit an equip- 6/10/81

ment operation for the alternate shutdown method, is independent of equipment wiring in the area to be avoided.

e. Demonstrate that alternate shutdown power sources, including all breakers, have isolation devices on control circuits that are routed through the area to be avoided, even if the breaker is to be operated manually. 6/10/81

f. Demonstrate that licenseee procedure(s) have been developed which describe the tasks to be performed to effect the shutdown method. A summary of these procedures should be submitted. 6/10/81

g. Demonstrate that spare fuses are available for control circuits where these fuses may be required in supplying power to control circuits used for the shutdown method and may be blown by the effects of a cable spreading room fire. The spare fuses should be located convenient to the existing fuses. The shutdown procedure should procedure should inform the operator to check these fuses. 5/19/81

h. Demonstrate that the manpower required to perform the shutdown functions using the procedures of (f) as well as to provide 6/10/81

fire brigade members to fight the fire is available as required by the fire brigade technical specifications.

i. Demonstrate that adequate acceptance tests are performed. These should verify that: equipment operates from the local control station when the transfer or isolation switch is placed in the "local" position and that the equipment cannot be operated from the control room but cannot be operated at the local control station when the transfer or isolation switch is in the "remote" position. 6/10/81

j. Technical Specifications of the surveillance requirements and limiting conditions for operation for that equipment not already covered by existing Tech. Specs. For example, if new isolation and control switches are added to a service water system, the existing Tech. Specs. surveillance requirements on the service water system should add a statement similar to the following: 6/10/81

"Every third pump test should also verify that the pump starts from the alternate shutdown station after moving all service water system isolation switches to the

local control position."

k. Demonstrate that the systems available are adequate to perform the necessary shutdown functions. The functions required should be based on previous analyses, if possible (e.g., in the FSAR), such as a loss of normal a.c. power or shutdown on a Group I isolation (BWR). The equipment required for the alternate capability should be the same or equivalent to that relied on in the above analysis. 5/19/81

l. Demonstrate that repair procedures for cold shutdown systems are developed and material for repairs is maintained on site. 6/10/81

1. Information requested in Enclosure 2 to the February 20, 1981 letter.

	Schedule Date
Item 1. Associated Circuit Information	
a. Provide a table that lists all equipment including instrumentation and support system equipment that are required by the alternative or dedicated method of achieving and maintaining hot shutdown.	5/19/81

b. For each alternative shutdown equipment listed in 1.a. above, provide a table that lists the essential cables (instrumentation, control, and power) that are located in the fire area. 6/10/81

c. Provide a table that lists safety related and non-safety related cables associated with the equipment and cables constituting the alternative or dedicated method of shutdown that are located in the fire area. 6/10/81

d. Show that fire-induced failures of the cables listed in b and c above will not prevent operation or cause maloperation of the alternative or dedicated shutdown method. 6/10/81

e. For each cable listed in 1.b. above, provide detailed electrical schematic drawings that show how each cable is isolated from the fire area. 6/10/81

Item 2. Fire Induced LOCA Information

a. Identify each high-low pressure interface that uses redundant electrically controlled devices (such as two series motor operated valves) to isolate or preclude rupture of any primary coolant boundary. 6/10/81

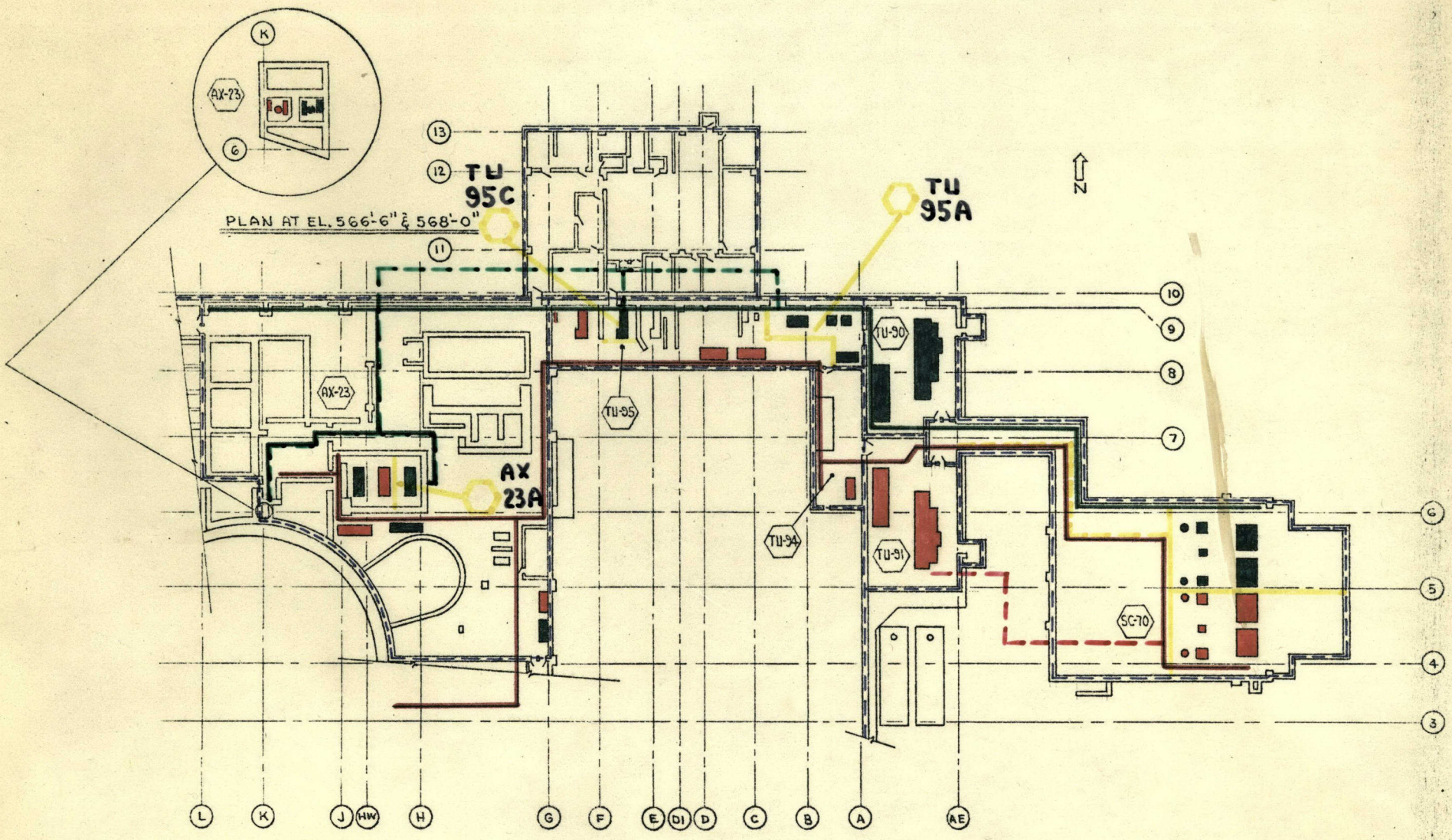
b. Identify the device's essential cabling (power and control) and describe the cable routing (by fire area) from source to termination. 6/10/81

c. Identify each location where the identified cables are separated by less than a wall having a three-hour fire rating from cables for the redundant device. 6/10/81

d. For the areas identified in item 2.c. above (if any), provide the bases and justification as to the acceptability of the existing design or any proposed modifications. 6/10/81

6.0 Summary

The safe shutdown analyses, preliminary fire hazards analysis, layout and drawing review performed by Wisconsin Public Service Corporation have resulted in the proposed modifications contained in this submittal. The Kewaunee Nuclear Power Plant will meet all the requirements of Section III.G to Appendix R with the implementation of these modifications.

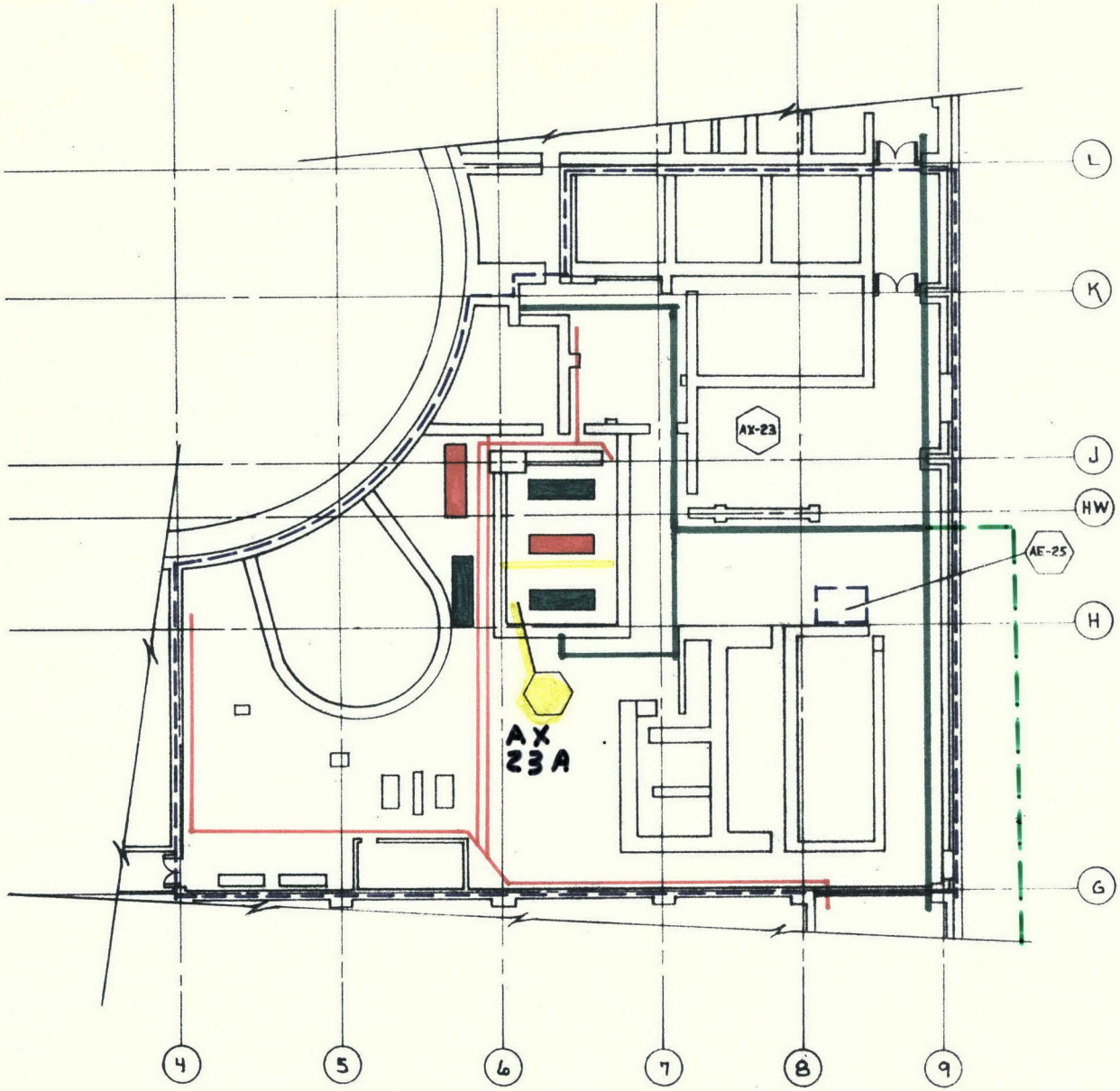


PLAN AT EL. 586.0'

GENERAL ARRANGEMENT
FIGURE 4-1

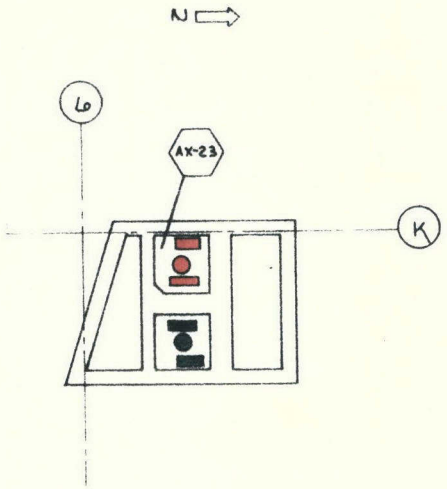
LEGEND:

- SAFEGUARD 5 EQUIPMENT & CABLE TRAYS.
- SAFEGUARD 6 EQUIPMENT & CABLE TRAYS.
- PROPOSED CABLE AND TRAY REROUTE.
- PROPOSED REMOVAL FOR REROUTE.
- PROPOSED WALL ADDITIONS.
- FIRE ZONE.



PLAN AT EL 586'-0"

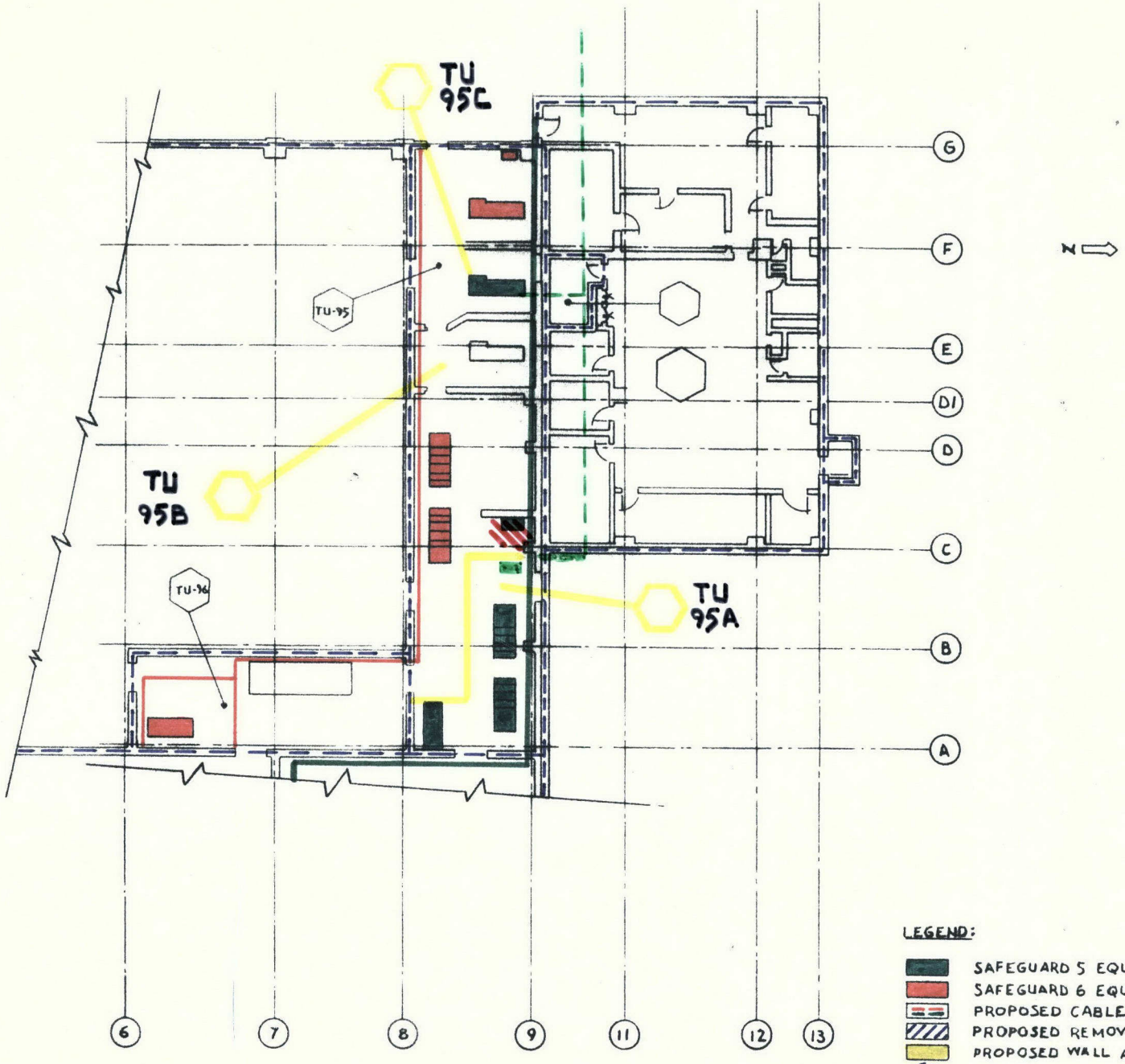
FIGURE 4-1A



PLAN AT EL 566'-6" & 568'-0"

LEGEND:

- SAFEGUARD 5 EQUIPMENT AND CABLE TRAYS
- SAFEGUARD 6 EQUIPMENT AND CABLE TRAYS
- PROPOSED CABLE AND TRAY REROUTE
- PROPOSED REMOVAL FOR REROUTE
- PROPOSED WALL ADDITIONS
- FIRE ZONE

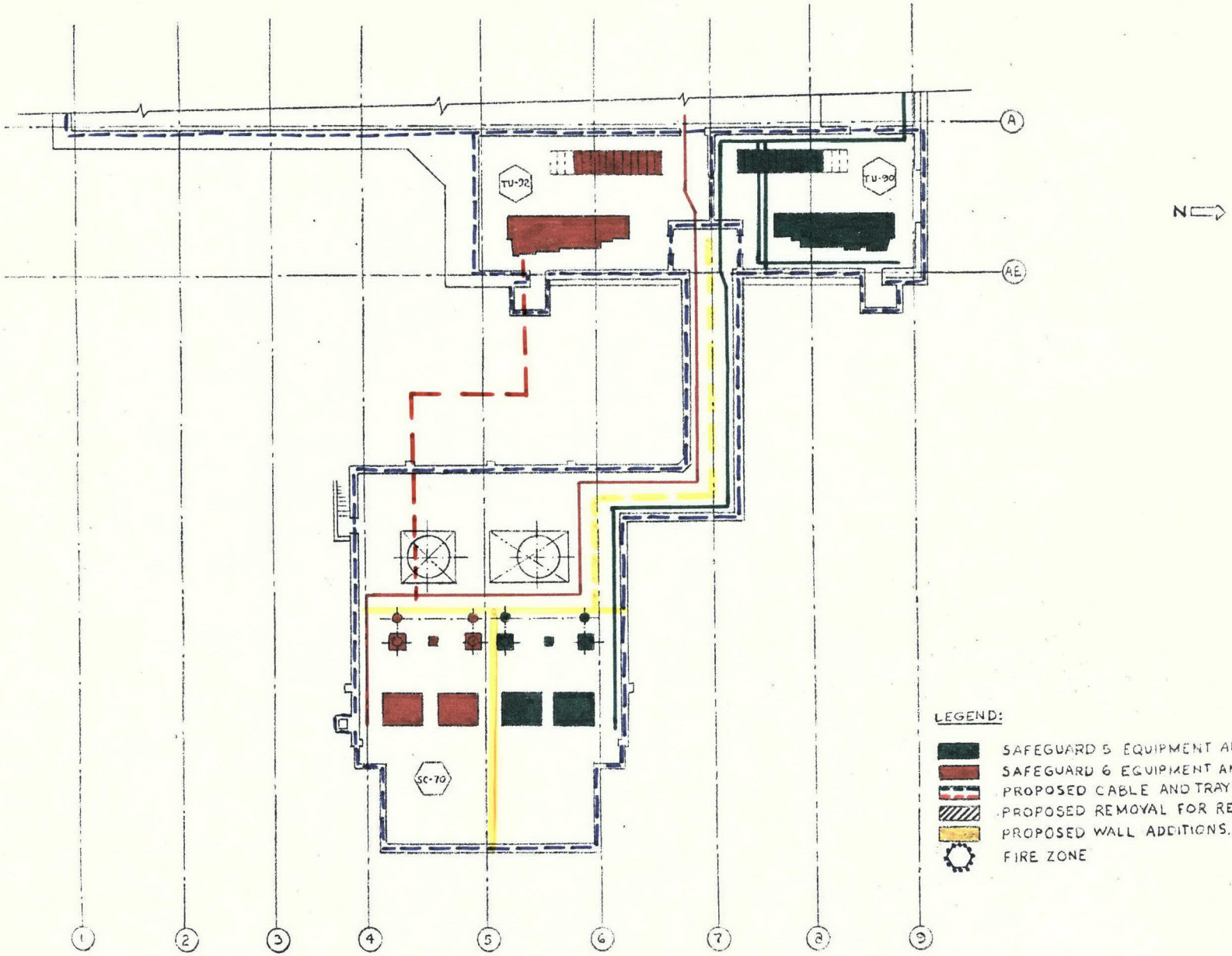


LEGEND:

- SAFEGUARD 5 EQUIPMENT AND CABLE TRAYS.
- SAFEGUARD 6 EQUIPMENT AND CABLE TRAYS.
- PROPOSED CABLE AND TRAY REROUTE.
- PROPOSED REMOVAL FOR REROUTE.
- PROPOSED WALL ADDITIONS.
- FIRE ZONE.

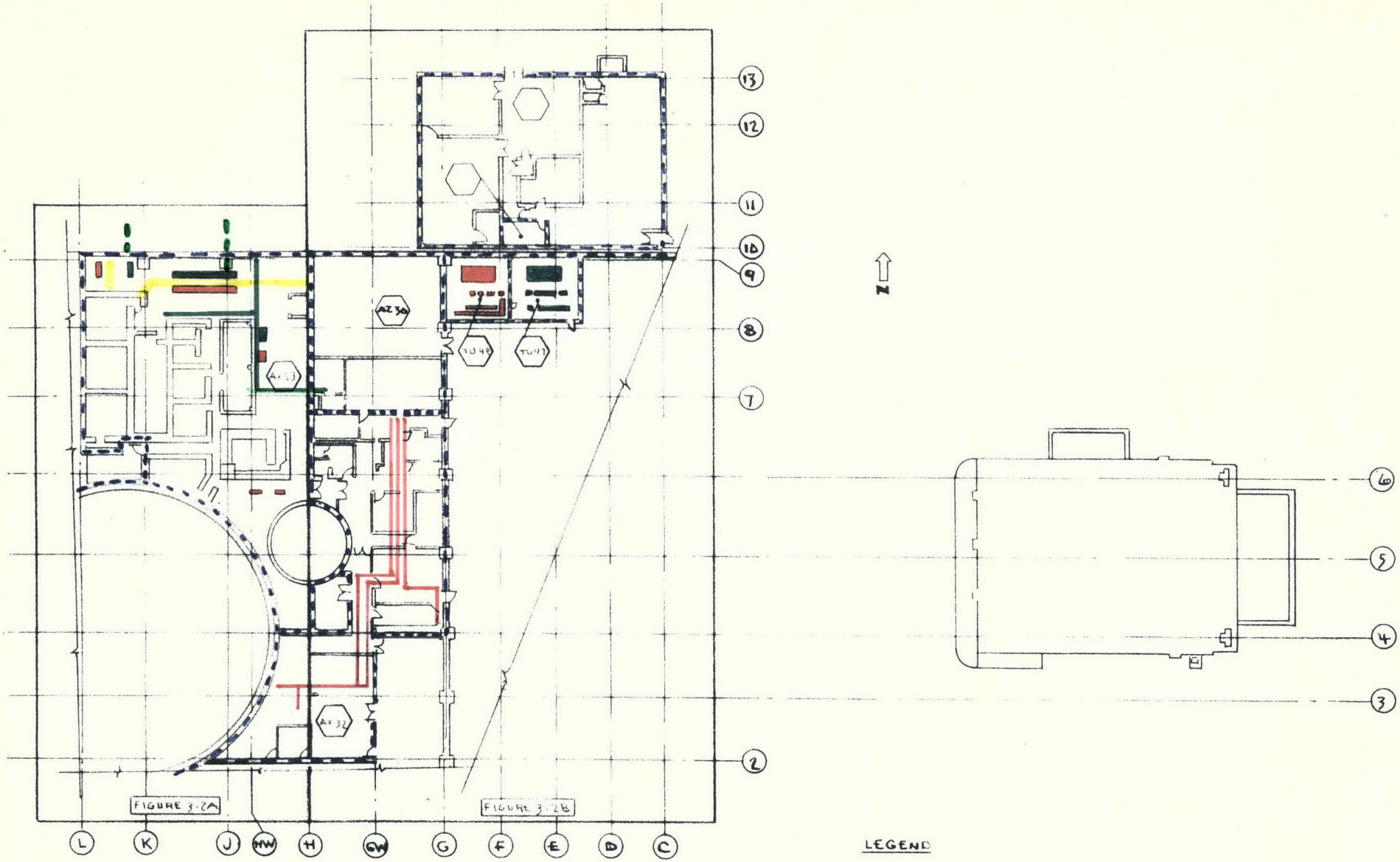
PLAN AT EL 586'-0"

FIGURE 4-1B



PLAN AT EL 586'-0"

FIGURE 9-1C

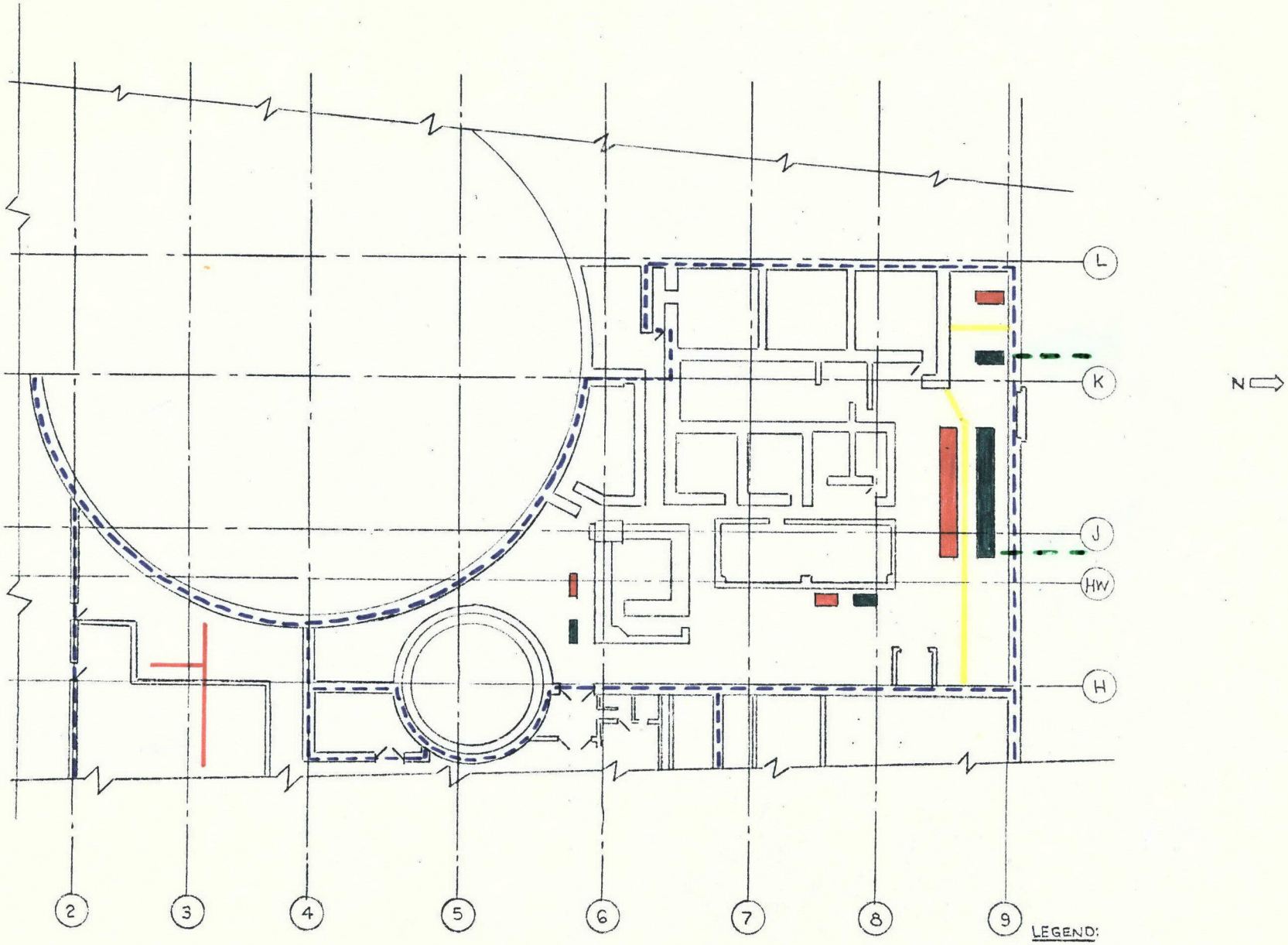


PLAN AT EL. 606'-0"

GENERAL ARRANGEMENT
FIGURE 3-2

LEGEND

- SAFEGUARD 5 EQUIPMENT AND CABLE TRAYS.
- SAFEGUARD 6 EQUIPMENT AND CABLE TRAYS.
- PROPOSED CABLE AND TRAY REROUTE.
- PROPOSED REMOVAL FOR REROUTE.
- PROPOSED WALL ADDITIONS
- FIRE ZONE.



PLAN AT EL 606'-0"
FIGURE 4-2A

LEGEND:

- SAFEGUARD 5 EQUIPMENT AND CABLE TRAYS.
- SAFEGUARD 6 EQUIPMENT AND CABLE TRAYS.
- PROPOSED CABLE AND TRAY REROUTE.
- PROPOSED REMOVAL FOR REROUTE.
- PROPOSED WALL ADDITIONS.
- FIRE ZONE