ENCLOSURE 2

FIRE PROTECTION DESIGN

MIDLAND UNITS 1 AND 2

CONSUMERS POWER COMPANY

Presentation for NRC
Bethesda , MD
April 15,1981

AGENDA

FIRE PROTECTION DESIGN
MIDLAND UNITS 1 AND 2

APRIL 15,1981

- INTRODUCTION (D.M.BUDZIK)

- FIRE PROTECTION ANALYSIS CRITERIA (R.E.BERRY)
  - Objectives
  - Regulations and Guidelines
  - Fire Protection Analysis and Criteria
  - Criteria Within Control Room Envelope
  - Criteria External to Control Room and Reactor Buildings
  - Criteria Within Reactor Buildings

- SAFE SHUTDOWN CRITERIA AND SYSTEM DESIGN (D.T.PERRY)
  - Functions and Requirements for Safe Shutdown
  - Systems to Achieve Safe Shutdown
    - Reactivity and Inventory Control
    - Pressure Control
    - Auxiliary Feedwater
    - Others
  - Support Systems
  - Instrumentation

- DEFINITION OF CONTROL ROOM ENVELOPE (D.T.PERRY)
  - Control Room HVAC
  - Fire Barriers

- CONTROL ROOM CABLE SEPARATION ANALYSIS (R.A.POLICH)
  - Control Room and Auxiliary Shutdown Panel Arrangement
  - Transfer Switch Criteria and Function
    - Manual Switches
    - Remote Operated Switches

- CONTROL ROOM EVACUATION ACTIONS (R.A.POLICH)

(Lunch)

- CABLE SEPARATION ANALYSIS EXTERNAL TO CONTROL ROOM (R.A.POLICH)

- TYPICAL SPATIAL SEPARATION PROBLEM AREAS AND REMEDIAL ACTIONS (R.E.BERRY)
  - Service Water Structure
  - Auxiliary Shutdown Panel Areas
  - Component Cooling Water Pumps
  - Equipment Removal Hatches
  - Water-Tight Doors
  - Spatial Separation

- REACTOR COOLANT PUMP LUBE OIL (R.A.POLICH)
  - Oil Piping
  - Oil Collection Pans
  - Oil Collection Piping and Tank

- FIRE PROTECTION SCHEDULE (D.M.BUDZIK)
  - Hazards Analysis Review
  - NRC Walkdown
  - SAR Questions
  - NRC Proposed Rulemaking

no.

FIRE PROTECTION - SAFE SHUTDOWN ANALYSIS
CRITERIA

- SINGLE FIRE
- HOT SHORTS, OPEN CIRCUITS, SHORTS TO GROUND
- FAILURES CAUSED BY FIRE ONLY

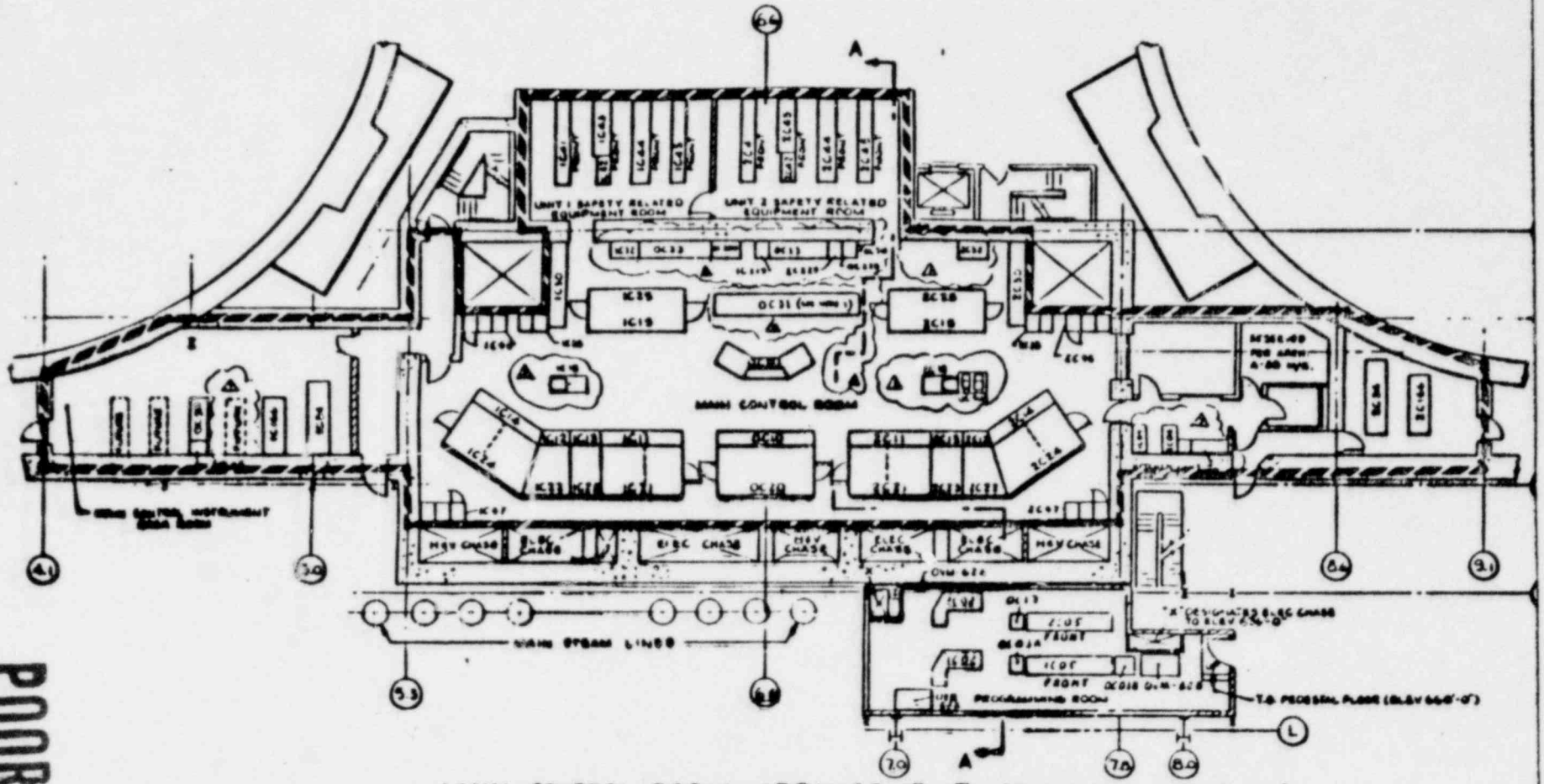
no.

FIRE PROTECTION - SAFE SHUTDOWN ANALYSIS
CRITERIA (cont'd)

- OFFSITE POWER AVAILABLE OR UNAVAILABLE
- LIMITED MANUAL ACTION INSIDE CONTROL ROOM
- EXTENSIVE MANUAL ACTION OUTSIDE CONTROL ROOM

FIRE PROTECTION - SAFE SHUTDOWN ANALYSIS

- SYSTEMS REQUIRED TO ACHIEVE AND MAINTAIN SAFE SHUTDOWN CONDITIONS
  - Makeup
  - Emergency Boration
  - Pressurizer Heaters, Safety Valves
  - Auxiliary Feedwater
  - Service Water
  - Component Cooling Water
  - Emergency Diesel Generators
  - Chilled Water - Safeguards
  - Reactor Building HVAC
  - Service Water Pump Structure HVAC
  - Control Room HVAC
  - Auxiliary Pressurizer Spray
  - Power-Operated Atmospheric Vent Valves
  - Decay Heat Removal

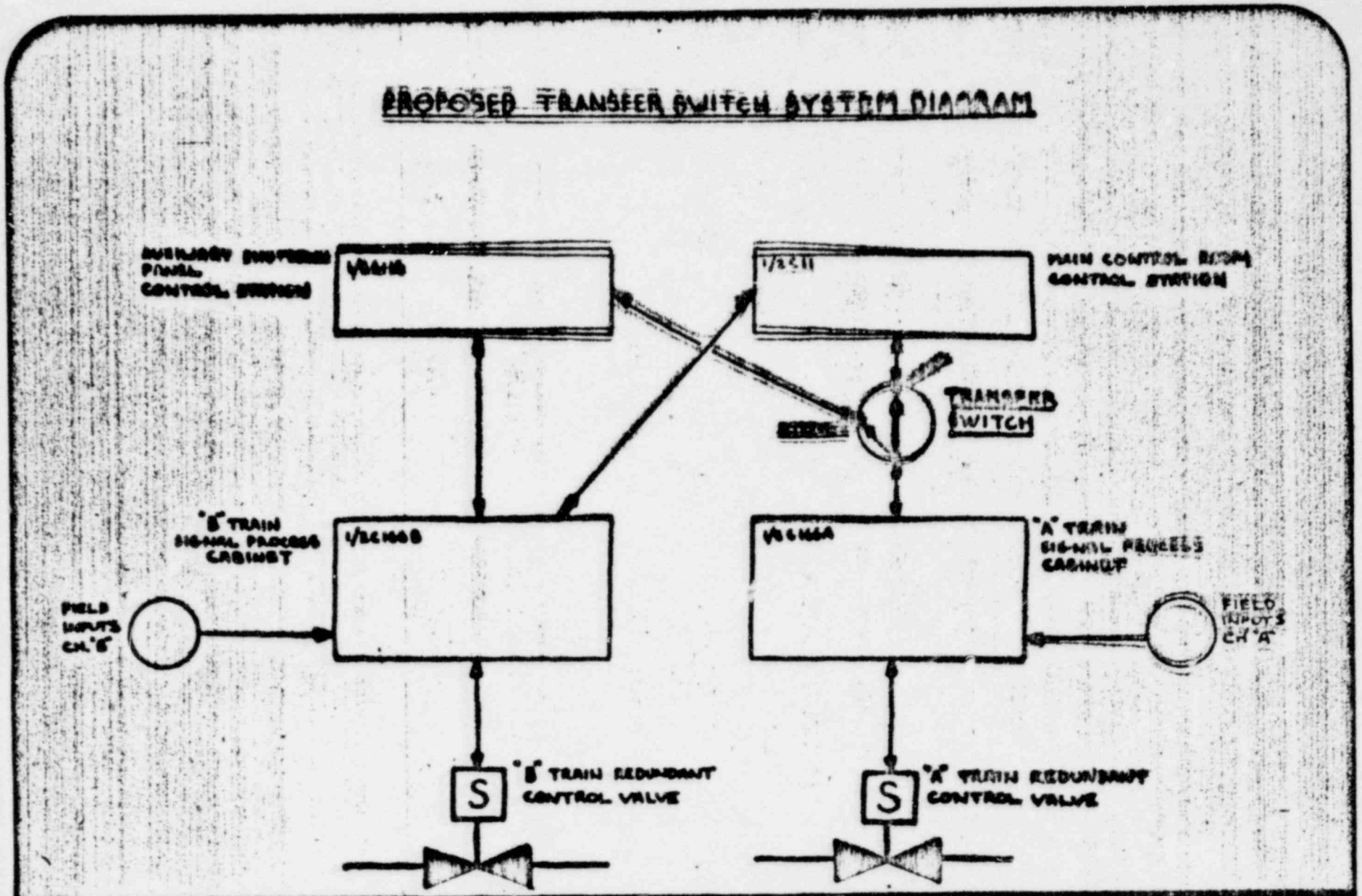


MAIN CONTROL ROOM ARRANGEMENT (FLOOR ELEV 639'-0")

SCALE: 1/8"=1'-0"

--- 3 hr walls

PROPOSED TRANSFER SWITCH SYSTEM DIAGRAM



NORMAL

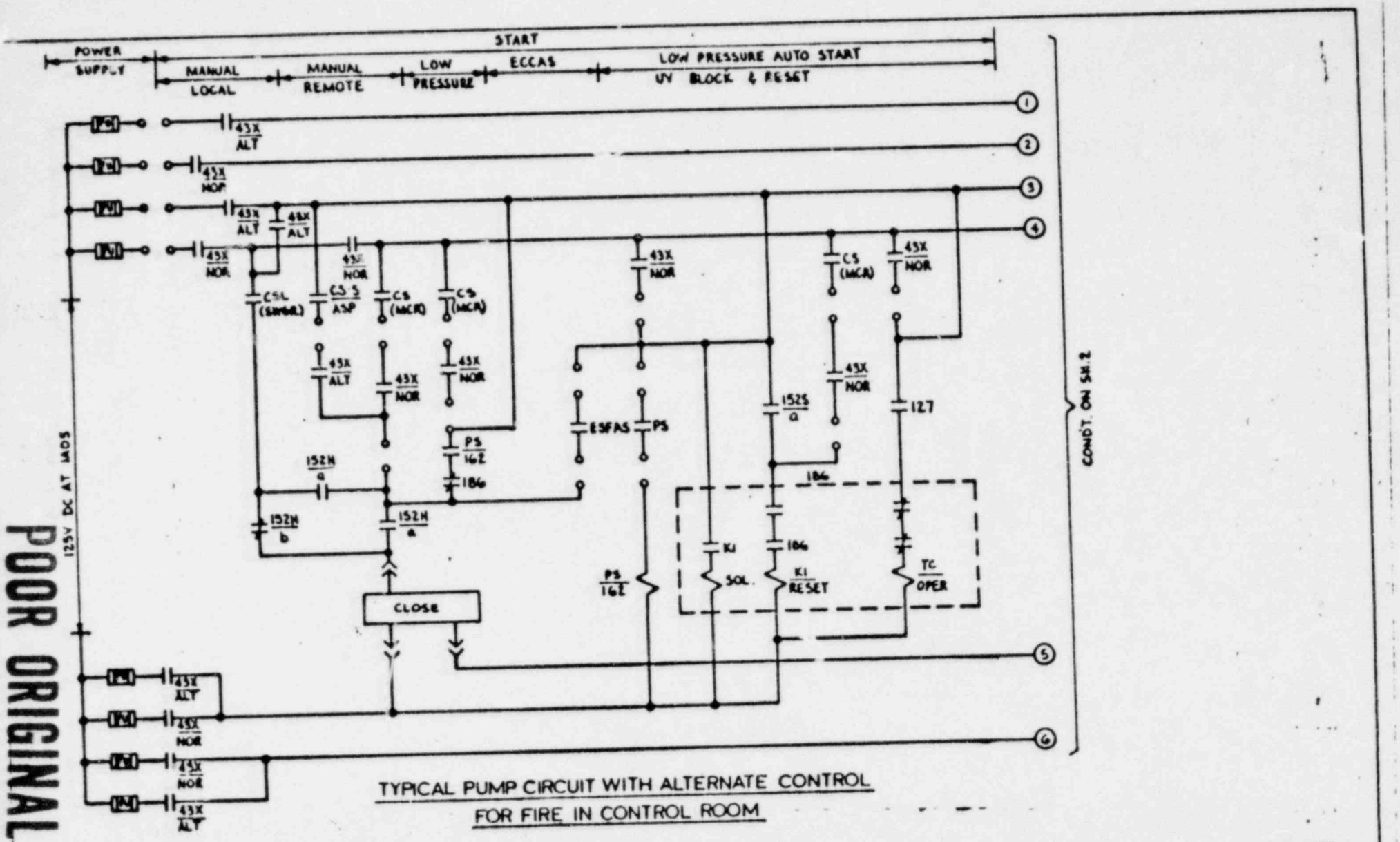
MAIN CONTROL ROOM — CHANNEL A/B OPERATIONAL

AUXILIARY SHUTDOWN PANEL — CHANNEL B OPERATIONAL

ALTERNATE

MAIN CONTROL ROOM — CHANNEL A ISOLATED

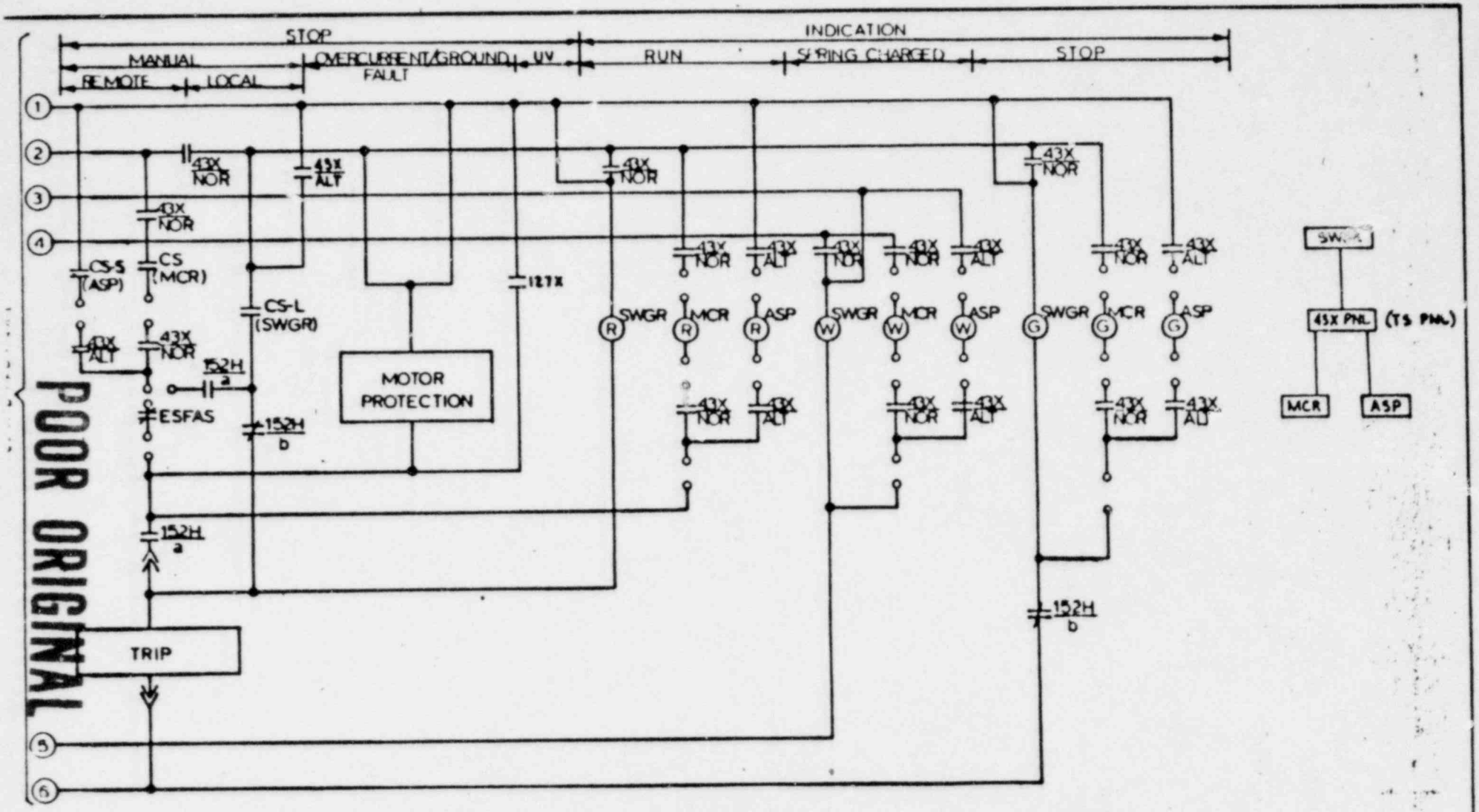
AUXILIARY SHUTDOWN PANEL — CHANNEL A OPERATIONAL



TYPICAL PUMP CIRCUIT WITH ALTERNATE CONTROL

FOR FIRE IN CONTROL ROOM

SH. 1 OF 2



TYPICAL PUMP CIRCUIT WITH ALTERNATE CONTROL
FOR FIRE IN CONTROL ROOM

SH 2 OF 2

FIRE PROTECTION - SAFE SHUTDOWN ANALYSIS

SYSTEMS USING REMOTE-OPERATED TRANSFER SWITCHES

- AUXILIARY FEEDWATER SYSTEM S.G. Level
- COMPONENT COOLING WATER SYSTEM RC Pump seals
- DIESEL GENERATOR LOOP
- SERVICE WATER SYSTEM D.G. Cooling + CCWS