

07208-91

NINE MILE POINT NUCLEAR STATION UNIT #2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-76

PLANT COMMUNICATIONS

DATE AND INITIALS

<u>APPROVALS</u>	<u>SIGNATURES</u>	<u>REVISION 0</u>	<u>REVISION 1</u>	<u>REVISION 2</u>
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FOR INFORMATION ONLY

Summary of Pages

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<u>Page</u>	<u>Date</u>
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This procedure supersedes N2-IOP-76, Rev. 1

Periodic Review, 3/6/90, No changes
NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE USED
AFTER AUGUST 1992
SUBJECT TO PERIODIC REVIEW.

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PLANT COMMUNICATIONSA. TECHNICAL SPECIFICATIONS

3/4.9.5

B. SYSTEM DESCRIPTION

The plant communications system provides reliable means of voice communication between points inside the plant, between the plant and points outside of it (as required) for conducting plant operations under all conditions, i.e., under normal, special, and emergency conditions. Seven separate communications subsystems are provided for this plant. These are classified into two groups by function: those for intraplant communication and those for extraplant communications.

1.0 Intraplant Communications Subsystems

1.1 The Page Party/Public Address Communications Subsystem (PP/PA) enables the plant operator to broadcast a voice message plant-wide over the loudspeakers of the system. It enables the supervisory personnel in the control room to broadcast station alarms signaling various abnormal conditions and control the mode of operation of the system. Provision is made for this system to operate either merged or isolated (M/I) with the PP/PA system of Unit 1. Provision is also made for this system to operate M/I with like systems in facilities that may be added to Unit 2 in the future. A handset has six channels: one for paging, five for party line conversation, and a five-point selector switch for channel selection. Loudspeakers are clearly audible over ambient noise. In areas where there is a high level of ambient noise, the handsets of the PP/PA and the local telephone systems are provided with acoustical phone booths. The PP/PA control console is the central control station of the subsystem. It is situated in the control room. From this station, supervisory personnel can make a voice announcement to all plant personnel, monitor the status of the subsystem, and initiate the station alarm signals.

1.2 The Maintenance and Calibration (M/C) Communications Subsystem enables one or more operator personnel at work in one area of the plant, to be in voice contact with one or more personnel at work on a related task in another area of the plant. It will provide 11 separate and independent communications channels between selected points. Some of these channels will link various points inside the plant, and the rest will link points inside the plant with points outside it. The central selector switch for selecting the 11 channels is located in the auxiliary relay room.

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1.3 Dial Telephone Subsystem

This system:

- 1.3.1 Enables a caller at a handset to direct dial a call to any other handset on this system inside the plant.
 - 1.3.2 Enables a caller at a handset to dial a call to a location outside the plant via the NMPC tie lines.
 - 1.3.3 Enables a caller at a handset to page certain supervisory personnel by dialing an access number and a pertinent paging code number causing coded signal bell tones to be broadcast over the loudspeakers of the PP/PA communications system.
 - 1.3.4 Provides a direct telephone link used solely for power dispatching purposes.
- 1.4 The Hand-Held Portable Radio Communications Subsystem. This communication system enables the user to maintain voice contact with one or more similar units while moving about the plant as may be required to perform maintenance or emergency situation tasks. The portable hand-held radio system uses Lower transmitters on the VHF Band with Leaky Wire Antenna System, thereby allowing communications by walkie-talkie in all areas of the plant without interfering with sensitive plant instrumentation. This system is meant to be used by particular individuals and not by all employees and contractors. Personnel will be trained in its use.
- 1.5 The Sound-Powered (SPC) Communications Subsystem. The SPC is provided for voice communication in the event of a total loss of electric power to the PP/PA and M/C subsystems. The SPC subsystem requires no plant electrical power.

2.0 Extraplant Communications Subsystem

- 2.1 Telephone and radio links provide direct communication with special organizations and agencies such as the local law enforcement authority, local fire department, other power stations, and the commercial telephone systems.
- 2.2 Emergency Radio System will allow for communication with Niagara Mohawk Radio System and the Oswego County Fire Control. This system will be further discussed in the Emergency Plan. Each of the communications subsystems is of a different type from the others, and each subsystem is installed separately from the others. Thus, damage to or a fault on any one subsystem would not affect the operability of the others.

Most plant communication equipment is powered from the uninterruptable power supplies to ensure the continuity of service of the subsystems.

The communications subsystems were designed so that the regular inspection by station procedures can be made quickly and easily. Among the latter are the tests of the evacuation, station, and fire alarm signals performed once a week from the PP/PA central control console.

C. OPERATING REQUIREMENTS

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1.0 Prerequisites

The following systems must be operable in accordance with their particular operating procedure in order to provide unrestricted operation of plant communication equipment.

1.1 13.8KV/4160V/600V AC Distribution N2-OP-71

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1.2 Normal DC Distribution N2-OP-73A

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D. PRECAUTIONS/LIMITATIONS

1.0 Follow normal safety procedures when using phone and voice communication equipment.

2.0 Due to system overloads the Unit 1/Unit 2 merge function cannot be used.

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E. STARTUP PROCEDURE

1.0 Line up power supplies as listed on Table II

2.0 Ensure phones and loudspeakers are in good working condition

3.0 Control room operator makes test announcement to check proper operation of loudspeakers.

F. NORMAL OPERATION

1.0 Typical Application of Phone Communication Use:

1.1 A caller (the pager), at the handset in the control room or at any other handset in the plant, would turn the selector switch to the page position, call the pagee's name and instruct him/her to use one of five available channels. The pagee proceeds immediately to the nearest handset location, turns selector switch to the announced channel number, and is thereby put in communication with the pager on a person-to-person call.

1.2 The operation of both the Desk-Top Control Console Fig. 1 and the Wall Mounted Control Station Fig. 2 is the same. Each control station has the capability of initiating up to five different alarm tones. The alarm tones are designed for a priority sequence with the Evac. Alarm designated as priority one (Highest Priority), fire alarm as priority two, Station Alarm as priority three, SP-1 alarm as priority four, and SP-2 alarm as priority five (Lowest Priority). Only one alarm tone may be produced over the Page Line at any time. This means an alarm tone will override any alarm tone with a lower priority. The activation of any alarm tone will automatically merge all systems' page lines. The alarm instruction switch may be pushed if voice page instructions are required during an alarm condition. This switch will mute the alarm as long as the switch is activated and simultaneously places the control station operator on the merged page lines. The Page/Party Selector Switch does not need to be pushed when utilizing the alarm instruction switch. Releasing this switch will reactivate the alarm tone. To extinguish the alarm tone and reset the Tone Generator, push the Alarm off switch.

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- 1.3 The Red/Blue Page Switch gives each control station the capability of selectively paging either the Red or Blue System (up for Blue, down for Red). This switch is locking and the Page/Party selector switch must be pushed to page. With the Red/Blue System Page Switch in the normal (center) position, pages from the Control Station will be heard over both systems' page lines. The five party lines are tied into the plant system and are not switched to selective systems at any time.
- 1.4 The Control Stations are equipped with an outdoor speaker on/off switch. With the switch in the "On" position, the outdoor speaker amplifiers will monitor the Red System Page Line. The control stations are also equipped with switches for merging units 1 and 2 and merging NMP2 with the administration speakers. The administration speakers will monitor the Red System Page Line with the switch in the "Merge" position.
- 1.5 The "Unit 1 and 2" merge switch will merge both these areas via the existing Central Control relay Assembly (Drawing No. C-9E-107-5). Any alarm tone will automatically merge units 1 and 2 and the NMP2/Administration Speakers areas while simultaneously turning on the outdoor speakers. When an alarm condition no longer exists, these switches must be reset manually by pushing the "NMP2/Administration" and Unit 1 and 2" switches to the Isolate Position and the "O.D. Speakers" Switch to the off position.

NOTE: The system failure acknowledge switch, all alarm switches, the D.C. Supply Reset Switch, and the Alarm Instruction Switch will function if pushed in either direction (Up or Down).

Both the outdoor speakers and the administration speakers will monitor both the Red and Blue System Page Lines if their associated switches are actuated and the Red/Blue System Page Switch is in the normal (center) position. If the Red/Blue System Page Switch is in any other position than "Normal" both areas' speakers will monitor only the Red System Page Line.

- 1.6 For all Emergency Announcements or any announcements intended for the entire site, the following must be done:
- a. Place "O.D. SPKRS." in "ON" position.
 - b. Make this announcement on the Unit 2 PAGE system.
 - c. Call the Unit 1 CSO and instruct him to make the announcement on the Unit 1 PAGE system.

2.0 Typical application of maintenance and calibration (M/C) communications system.

The user will locate the jacks to be used in this communication. He will select the channel to be used by:

- a. Going to the M/C panel located in the Auxiliary Relay Room on the mid portion of the North wall.

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2.0 (Cont'd)

- b. Locate the two (or more) control switches associated with the jacks, such as switch 35 for jacks (JK35A, JK35B, and, etc.), that will be used.
- c. Turn these control switches to the desired channel (1-11). If this channel is being used, the user may select an unused channel.

G. SHUTDOWN PROCEDURE

- 1.0 The PP/PA communication system is going to be in normal operation at all times. If for some reason it is required to be shutdown, de-energize power supplies as listed on Table II, except for power to M/C System.
- 1.1 The dial telephone system is going to be in normal operation at all times. If for some reason it is required to be shutdown, notification must be made to the NRC, according to NRC Bulletin 85-79.

H. OFF NORMAL PROCEDURE

- 1.0 PP/PA central control console in control room and remote shutdown room is used for plant-wide broadcast of the evacuation, station, and fire alarms. Refer to EPPS for proper use of PP/PA system during emergency.
- 1.1 The overall PP/PA system is divided into two areas, the Red System and the Blue System. Two Annunciator Panels monitor the Red and Blue System Page Lines by means of a decoder assembly. The Decoder Assemblies monitor a constant 20 KHz signal which is generated onto the Red and Blue System Page Lines control cabinet. With the 10 KHz signal present, the Decoder Assemblies will supply the Annunciator Panels with a contact closure (indicating normal operation). Loss of AC Power or a Fault on the Page Line (short or open) will be detected by the Decoder Assemblies and the Annunciator Panel will lose its contact closure for the faulty station's area. A ground on both sides of the Page Line may or may not cause the alarm to operate, however, a ground will not impair the Alarm Signal. When a fault occurs and the contact closure normally supplied to the Annunciator Panel(s) opens, a flashing light will be activated on the front of the Annunciator Panel indicating the location of the faulty station(s). At this time, an Audible Signal device will energize at both the Desk-Top Control Station Fig. 1 and the wall mounted control station Fig. 2 and the Red and/or Blue System failure lamps will illuminate. Momentarily pushing the acknowledge switch (either up or down) will extinguish the audible signal. After the system failure has been acknowledged, the Red and/or Blue System failure lamps on both control stations will remain illuminated and the flashing light(s) on the Annunciator Panel(s) will change to a constant brilliance. These lamps will remain illuminated until the fault is located and the system or station is returned to normal operation thereby giving the affected Annunciator Panel(s) its required contact closure.

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Each PP/PA Control Station is equipped with lamps indicating whether the system is operation from the normal D.C. Supply or the alternate D.C. Supply. The Desk-Top Console contains a D.C. Supply reset switch (This switch is not supplied on the Wall Mounted Control Station). The D.C. Supply switch should be pushed to reset the D.C. Power Supplies, of which there are one main supply and three back-up supplies, after initial power has been applied. This will insure that the system is operating from the Main D.C. Supply. Under normal operation, the D.C. Supply "Normal" (Green) lamp will be illuminated (indicating the Main D.C. Supply is operational). If the Main D.C. Supply should develop a fault, the system will automatically switch to the alternate supply in the main relay and Control Cabinet (Mark No. RSB-81). This switching action will extinguish the "Normal" lamp and illuminate the "Alternate" (red) lamp at the Control Stations. If the alternate supply in the Main Relay Cabinet develops a fault, the system will automatically switch to the Main D.C. Supply in the Back-Up Relay and Control Cabinet. This switching action will illuminate both D.C. Supply lamps at the Control Stations. Should the Back-up Relay and Control Cabinet Main D.C. Supply develop a fault. The system will automatically switch to the alternate D.C. Supply in the Back-Up Relay and Control Cabinet. This switching action will again illuminate only the red lamp.

The switching sequence of back-up D.C. Supplies is again as follows:

- a. Green (Normal Operation) - The Main D.C. Supply in the Main Relay and Control Cabinet is in use.
- b. Red (Main Supply in the Main Cabinet failure) - The alternate D.C. Supply is in the Main Relay and Control Cabinet is in use.
- c. Green and Red (Alternate supply in Main Cabinet failure) - The Main D.C. Supply in the Back-up Relay and Control Cabinet is in use.
- d. Red (Main supply in Back-up Cabinet failure) - The alternate supply in the Back-up Relay and Control Cabinet is in use.

To regain normal operation (Green Indicator) from any of the previously mentioned supply failure conditions, the Main D.C. Supply in the Main Relay and Control Cabinet must be restored to operating condition. When this has been accomplished, the D.C. Supply reset switch on the Desk-Top Control Console must be pushed and the system will switch back to the main supply for normal operation (regardless of which back-up D.C. Supply is in use). If A.C. Power is lost to the Main Cabinet, the Main D.C. Supply in the Back-Up Cabinet will continue to power the Main Cabinet. When A.C. Power has been restored to the Main Cabinet, push the D.C. Supply reset switch and the system will again be powered by the Main D.C. Supply for normal operation.

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1.3 The main purpose of the monitoring system is to check the integrity of the page line for fire protection purposes. It is of extreme importance that the alarm signal is heard in the event of a fire or evacuation. In order to minimize the chances of losing the alarm, the following procedures of installation and monitoring will be employed.

- a. The entire system will be wired and interspersed as though it were two systems. These systems will be tied together as one system during normal operation. The systems are designated the "red" and "blue" systems.
- b. Line monitoring locations throughout the plant will be selected with a separate pair of conductors carried back to a central point from each of the monitoring locations. Each monitor location will have a receiving device which will respond to a 20 kHz signal is present in the receiving (decoder) device, the internal relay remains closed, thus keeping the circuit going to the central annunciator closed. Loss of the 20 kHz signal at any point will trigger the appropriate annunciator lamp, sound an alarm and light a lamp on the control console located in the control room. The console will have an acknowledgment switch to silence the alarm but the lamp will remain lighted as long as the fault is present.

Switches and relays will enable an operator to separate the "red" and "blue" systems at three key points in the system. When a separation is executed, the auxiliary alarm oscillator and 20 kHz oscillator will be automatically connected to the separated portion.

- c. Either an open or short on the circuit feeding the particular monitor point will cause the loss of the 20 kHz signal, thus causing the monitor circuit to open and trigger the annunciator. Grounding of the audio circuit may or may not cause the alarm to operate, however, a ground will not impair the alarm signal. The primary concern is either an open or shorted condition.

2.0 Partial or Complete Loss of Communications

- 2.1 For loss of PP/PÁ System, Dial Telephone may be used.
 - 2.1.1 For loss of M/C control power, sound powered phone system is used. Must insure power is not applied while sound power equipment is being used on the the M/C system. (Step F.2.0)
- 2.2 If the Gaitronics becomes partially or completely out of service:
 - 2.2.1 Use dial telephone and inform Security to be on standby.
 - 2.2.2 Use dial telephone and inform Fire Department to be on standby (use hand held radio).

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2.2.3 Use dial telephone and inform NMP Unit I Control Room of loss of :
Gaitronics.

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2.2.4 Initiate an emergency Work Request to repair system.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS

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NONE

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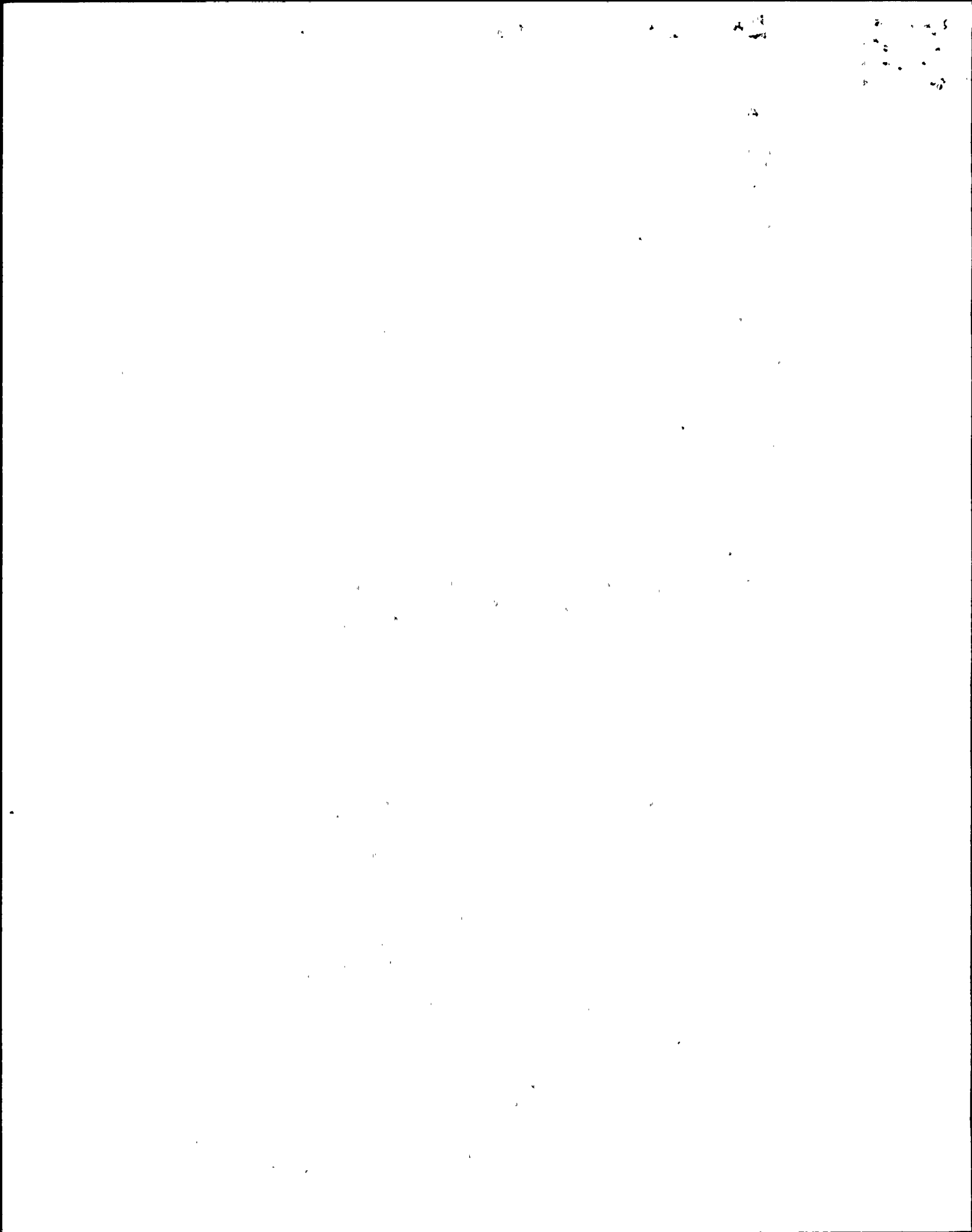
TABLE II
SYSTEM POWER SUPPLY LINEUP

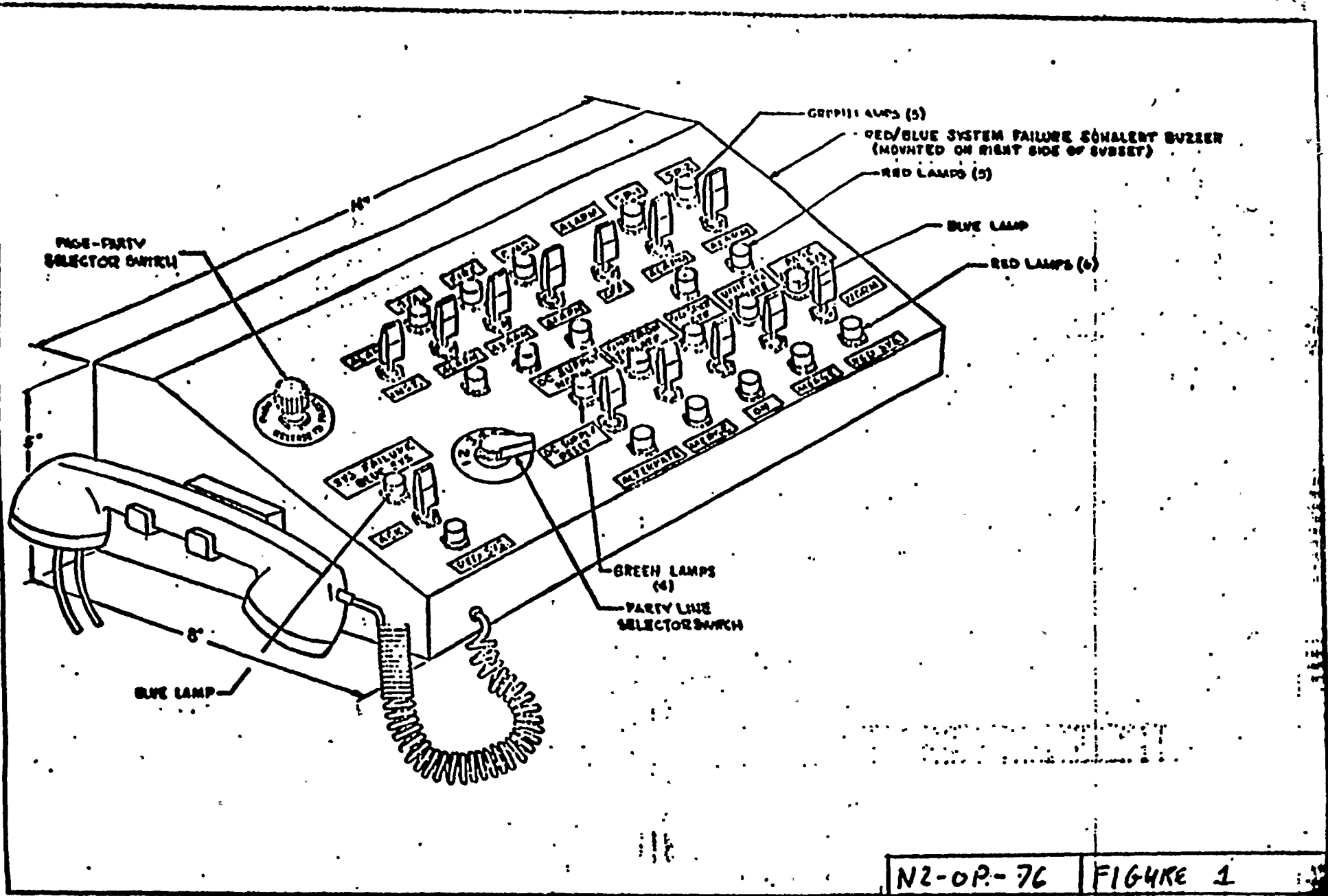
COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number - Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
	Main Comm Console Pwr	2LAC PNL U03 CKT 19	On			
	Control Bldg. Comm Pwr	2LAC PNL U04 CKT 10	On			
	Control Bldg. Comm Pwr	2LAC PNL U02 CKT 36	On			
	Control Bldg. Comm Pwr	2LAC PNL U01 CKT 24	On			
	Control Bldg. Comm Pwr	2LAC PNL U02 CKT 37	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U03 CKT 29	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U01 CKT 35	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U02 CKT 36	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U04 CKT 20	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U03 CKT 27	On			
	Primary Containment Comm Pwr	2LAR PNL U01 CKT 15	On			TCN-2
	Reactor Bldg. Comm Pwr	2LAR PNL U06 CKT 21	On			
	Reactor Bldg. Comm Pwr	2LAR PNL U05 CKT 19	On			
	Reactor Bldg. Comm Pwr	2LAR PNL U02 CKT 7	On			
	Primary Containment Comm Pwr	2LAR PNL U03 CKT 12	On			TCN-2
	Radwaste Bldg. Comm Pwr	2LAN PNL U01 CKT 16	On			

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TABLE II
SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number - Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
	Radwaste Bldg. Comm Pwr	2LAN PNL U01 CKT 18	On			
	Radwaste Bldg. Comm Pwr	2LAX PNL U01 CKT 27	On			
	Radwaste Bldg. Comm Pwr	2LAX PNL U01 CKT 28	On			
	Screenwell Bldg.	2LAW PNL U01 CKT 36	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U01 CKT 37	On			
	Control Bldg. Comm Pwr	2LAC PNL U04 CKT 11	On			
	Screen House Bldg. Comm Pwr	2LAK PNL N03 CKT 42	On			
	M/C Power Supply	2LAC PNL N04 CKT 4	On			
	Control Bldg. Comm Pwr	2LAC PNL U02 CKT 37	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U03 CKT 29	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U01 CKT 36	On			
	Turbine Bldg. Comm Pwr	2LAT PNL U01 CKT 37	On			
	Cooling Tower Comm Pwr	2LAH PNL N01 CKT 42	On			
	Reactor Bldg. Comm Pwr	2LAR PNL U01 CKT 14	On			TCN-2
	Reactor Bldg. Comm Pwr	2LAR PNL U03 CKT 13	On			TCN-2





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