

**BUILDING AND POWER ALARMS
CENTRAL OFFICE MAINTENANCE
SWITCHING CONTROL CENTER
OPERATIONS SUPPORT SYSTEMS**

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This condition causes changes in the traditional administrative and operational techniques used to maintain SPCS entities. This practice addresses an area of SPCS control (administering building and power alarms) which requires SCC attention to reduce the probability of SPCS call processing interruptions due to building environmental and power failures. It **will not** change or supercede any outstanding practices or documents which address the SPCS-SCC controller function or any other SCC function pertaining to SPCS machine switching alarms. This practice assumes full No. 2 Switching Control Center System (SCCS) capabilities (ie, Computer Subsystem with Alarm Monitor Screens and Telemetry Subsystem with Critical Indicator Panels and Control Consoles).

1.02 Whenever this section is reissued, the reason for reissue will be stated in this paragraph.

1.03 The title for each figure contains a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

1.04 Recommendations for changes, additions, or deletions to this section should be made on Form E-3073 as specified in Section 000-010-015.

2. RECOMMENDATIONS—LOCAL IMPLEMENTATION

Building Operations Control Center (BOCC)

2.01 The procedures outlined in this document are intended to operate in harmony with operating telephone company (OTC) Building Operations Control Centers (BOCCs). Some alarms addressed in this document will (most likely) also be routed to a BOCC. OTC coordination of SCC-BOCC operations is essential to ensure efficient and

1. GENERAL

1.01 This section recommends standard procedures for Stored Program Control System (SPCS)-Switching Control Center (SCC) handling of building and power alarms. With the increase in SPCS-SCCs, there has been a corresponding increase in the number of unattended central office facilities during both normal office hours and off-hours.

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expedient handling of any common SPCS alarms routed to both SCCs and BOCCs.

2.02 It is recommended that some building alarms be routed to both the BOCC and the SCC so that the source of switching troubles can be more easily identified by SCC personnel; for example, air-conditioning or air circulation equipment failures which could result in switching machine failures. If SCC personnel are unaware of the sources of the switching failure, inappropriate actions could result.

Local Building Conditions and Policies

2.02 It is recognized that some locations may have unique building conditions and/or local policies which may dictate modification of some of the procedures contained in this practice. However, each case should be thoroughly reviewed by OTC managers to be sure that the local procedure used is **not less stringent** than the procedures outlined in this document.

3. ESTABLISHING SPCS-SCC ALARMS

3.01 SPCS-SCC managers are responsible for determining that each SPCS entity is properly alarmed for any building or power conditions which could adversely affect the switching performance of SPCS machines.

3.02 SPCS entities (ie, No. 1/1A Electronic Switching System [ESS], No. 2/2B ESS, No. 3 ESS, Traffic Service Position System [TSPS], and Automatic Intercept System [AIS]) utilize scan points. In order to recognize alarm conditions, SPCS processors scan ferrods for a saturated or unsaturated condition which indicates a normal or alarm condition. SPCS scan points are either fixed types (ie, assigned in software the same in all similar type entities) or miscellaneous, assignable types (ie, locally assigned by OTC personnel according to their particular requirements).

3.03 The following documents are suitable references for SPCS alarms.

- No. 1 ESS—SD1A272-01
 - No. 2 ESS—SD2H167-01-6A
 - No. 2B ESS—SD2H6167-01-6A
 - No. 3 ESS—Translation Guide-3, Form ESS 3506
 - AIS—SD1B252-01
 - No. 2 SCCS—FD231-190-405
 - No. 2 SCCS—PA591003
- 3.04** New SPCS entities require that OTC personnel verify all software assignments for building and power alarms and to simulate all building/power equipment failures to verify the proper operations of audible and visual alarm indicators. This verification is required for local office alarm audibles and visuals as well as the verification of proper maintenance TTY alarm messages. This verification work must be done prior to acceptance of new SPCS installations and upon completion of related growth jobs, in addition to specified ETL schedules.
- 3.05** Once the maintenance TTY channel for a new SPCS has been established at a Switching Control Center, further alarm verification work is required. The following documents should be used as required.
- (1) Section 190-110-321 for No. 2 SCCS acceptance tests
 - (2) PA1P135, Section 10 for Alerting Common
 - (3) PA5P199, Section 10 for No. 1 ESS, etc, (SC4) or the PA applicable to the SCCS generic.
- 3.06** The following items must be checked at the SPCS-SCC in order to verify that they occur as a result of an office alarm(s):
- (1) Correct TTY messages logged from the maintenance channel.
 - (2) Correct alarm monitor screen display (ie, the proper level of alarm, in the proper grid position, and the proper alarm message at the bottom portion of screen). Refer to the applicable SPCS Output Message Manual for details.
 - (3) Proper audible alarm (ie minor, major, critical) generated from **both** the SCSS alerter and telemetry control equipment.

- (4) Correct Critical Indicator Panel (CIP) lamps are lighted (BLDG/PWR Indicator).

3.07 In all cases, verification of Building/Power (BLDG/PWR) alarms must entail a simulation of an actual failure as close to the source equipment as possible (ie, removing commercial power fuses at the office house service AC switchboard to simulate a commercial power failure alarm, etc). Manually shorting or grounding of scan points or manipulating alarm relays to cause alarms **does not** constitute an adequate test.

3.08 For in-service SPCS offices, OTC craft personnel will complete the routine tests (Equipment Test Lists) as recommended in Part 5 and make required repairs, modifications or additions to the office BLDG/PWR alarm scheme.

3.09 When establishing or verifying BLDG/PWR alarms, always remember that an unattended office environment requires reliable, definitive alarm circuitry and, therefore, may require changes to previously used alarm tones and procedures.

4. HANDLING BUILDING/POWER ALARMS

4.01 This section assumes that SPCS offices are unattended. In attended offices, general OTC policy should require that all BLDG/PWR alarms be investigated by on-site technicians and that the investigation findings be reported to the SCC.

Note: The procedures outlined in this section may not be applicable to some unique OTC building environments; however, local procedures must be at least as stringent as the procedures outlined in this practice.

4.02 Efficient and correct response to alarm conditions requires that OTCs develop procedural plans to react to actual alarm occurrences. It is recommended that SPCS-SCC managers prepare and maintain the following items at the SCC.

- (1) Locally developed schematics and floor plans depicting the location of building and power equipment and circuitry (ie, control panels, fuses, switches, thermostats, etc) and a description of their proper operation. These drawings should also contain the location of maintenance tools, spare parts and the procedures for manual

starting of emergency engines, rectifiers, air handlers, etc.

(2) Readily accessible (posted) and up-to-date call out lists. These lists should include the names and telephone numbers of **all** SPCS/SCC personnel (management and craft) with each person (designated in sequential order) to be contacted in emergency situations. The lists should also include the name and telephone numbers of any BOCC, Building, Power, or outside vendors (including Commercial Power Company) who may have to be contacted in certain situations.

(3) An interdepartmental plan describing the coordination between departments (Buildings, RSB, Staff, etc) which may be involved in the resolution of SPCS BLDG/PWR alarm conditions. This will normally require meeting with managers of other departments in order to coordinate SPCS/SCC procedures with the procedures of other departments.

(4) Procedures to record and track BLDG/PWR alarm conditions. Entries in an SCC Alarm Control Log are required for all BLDG/PWR alarms which require corrective action by SCC personnel (this includes referrals to building personnel, outside vendors, etc). The Alarm Control Log (see Fig. 1 for a typical example) should reference a trouble ticket which will contain more detailed information regarding the alarm condition. When an alarm condition is cleared, the entry in the Alarm Control Log and the opened trouble ticket should be closed and the trouble should also be recorded in the SCC Trouble History record. See Fig. 2 for a flowchart depicting the recording and tracking of BLDG/PWR alarms.

(5) Procedures to follow during shift changes in order to maintain continuity in the handling of **active** BLDG/PWR alarm conditions. (Figure 3 contains a flowchart depicting the procedures to be followed during shift changes.) The procedures should require the in-coming shift Office Control person to:

- (a) Review previous shift activity with outgoing shift Office Control person; if possible (overlap).

- (b) Review SCC Alarm Control Log and refer to any associated active BLDG/PWR alarm trouble tickets.
- (c) Verify that corrective action is in progress for active troubles. See Tables A and B for a listing of the common BLDG/PWR alarms and their associated responses.
- (d) Take an alarm summary of all SPCS entities connected to the SCC. Correlate all active alarms with findings from items (a) and (b) and also check for any active alarms from the previous alarm summary which were not noted in items (a) and (b).

Note: SCC operations, which *fold-down* to other SCC locations after normal business hours, must provide local procedures to transfer active BLDG/PWR alarm information to the SCC accepting control and surveillance responsibility. SPCS-SCC fold-down procedures should give particular consideration to the lack of telemetry fold-down capability and the lack of transfer capability of alerting functions (alerting transfer is available with SCCS Generic 2SC5).

- (6) Periodic review, at least every six months, of BLDG/PWR alarm handling procedures and policies with all responsible SCC personnel. SCC managers are responsible for verification of the training required by SPCS-SCC personnel on alarm handling procedures.

Note: Communication in and out of an SPCS central office during an emergency is essential. This practice assumes that in the event of an SPCS office system outage that each SPCS end office has telephone lines (ie, private lines, FX lines, etc) which are not switched by the local machine thus maintaining office communication. This line(s) from the end office should have 3-way calling capability so that SCC/maintenance/technical assistance organizations (ESAC, RTAC, PECC, BTL) can simultaneously be on the line if required.

4.03 Tables A and B list the common types of BLDG/PWR alarms and the recommended level of alarming (ie, minor, major, critical). This information is important so that miscellaneous, assignable scan points are properly defined in translations. Tables A and B also indicate whether

the alarm activates the SCC Alerter System with an audible and visual (Alarm Monitor Screen) indicator and the indication given in the SCC that will be on the Critical Indicator Panel. Finally, the tables also include recommended SCC responses to BLDG/PWR alarm conditions and some additional notes to give further information on each alarm. These tables should be used by SPCS-SCC personnel as a guide. In conjunction with the SPCS output manual, this information can be used to clearly identify the type of alarm condition and then to determine the organization responsible for reacting to the alarm condition in order to protect personnel and customer service.

Note: Environmental and power failures normally do not adversely affect SPCSs initially. However, SCC personnel should be instructed to always monitor SPCSs closely in terms of switching performance during a BLDG/PWR alarm condition. Particular attention should be given to the Alarm Monitor, especially Multiple Message Threshold (MMT) alarms which may indicate system degradation.

4.04 The alarms listed in Tables A and B may not be all-inclusive due to unique OTC building conditions and should be expanded to include local alarms if applicable. Also, these tables do not preclude the development and detailing of escalation procedures (ie, informing higher management, ESAC, etc) beyond the initial recommended action in the tables. Complete instructions on escalation procedures should be contained in the material posted at both the SCC and the end office.

Note: In an SCC environment, technicians called-out or dispatched to an office in an emergency situation may not be familiar with a given office (ie, location of equipment in a multifloor building, etc). In order to minimize potential confusion, overlooked items, etc, it is important to consider the technicians familiarity with an office when developing procedures, schematics, floor plans, and training material.

5. ROUTINE ALARM TESTING

5.01 As described in Part 3 of this section, BLDG/PWR alarms must be thoroughly tested during their installation. It is also highly recommended that scheduled testing and maintenance

of all BLDG/PWR alarms be added to office Equipment Test Lists (ETLs).

5.02 ETLs should be established for all SPCS BLDG/PWR alarms which are transmitted to SPCS-SCCs. SCC managers are responsible for the coordination and implementation of BLDG/PWR alarm ETLs.

5.03 For BLDG/PWR alarm routine testing, the ETL Class is MW (Mandatory Work) and the Frequency is 12M (12 months). The following Bell System Practices are applicable to BLDG/PWR alarm routines.

- 231-001-012 (No. 1 ESS ETL)
- 231-001-013 (No. 1 ESS ETL)
- 190-305-010 (Central Office Maintenance Management System [COMMS])
- 190-305-102 (COMMS)
- 190-305-301 (COMMS)
- 190-305-307 (COMMS)

5.04 SPCS-SCC BLDG/PWR alarm ETL work may be done in conjunction with office power

and building equipment ETLs. For example, power ETLs which call for turning down one or more rectifiers can be coupled with an SPCS-SCC BLDG/PWR alarm ETL by assigning an SCC technician to verify the SCC alarms and TTY messages when the rectifiers are turned down. Another example would be an Emergency Power test which called for operating the commercial power breaker at the office AC power panel to simulate a commercial power failure. SCC power alarms such as **Commercial Power Failure**, **Emergency Engine Running** and **Battery Drain** could be routined at this time.

5.05 All SPCS-SCC BLDG/PWR alarm ETLs must be performed as close to the source equipment as possible. Manually operating alarm relays or shorting or grounding scan points do not constitute proper and thorough testing of alarm functioning.

5.06 Coordination with the Building Department will be necessary to test some building alarms. For example, smoke or heat should be applied to fire detector heads to simulate a fire while SCC technicians verify proper alarming. In some cases the assistance of outside vendor personnel will be necessary. The SPCS-SCC manager should interact with the Building Manager to establish a schedule for coordinated testing of building and environmental alarms.

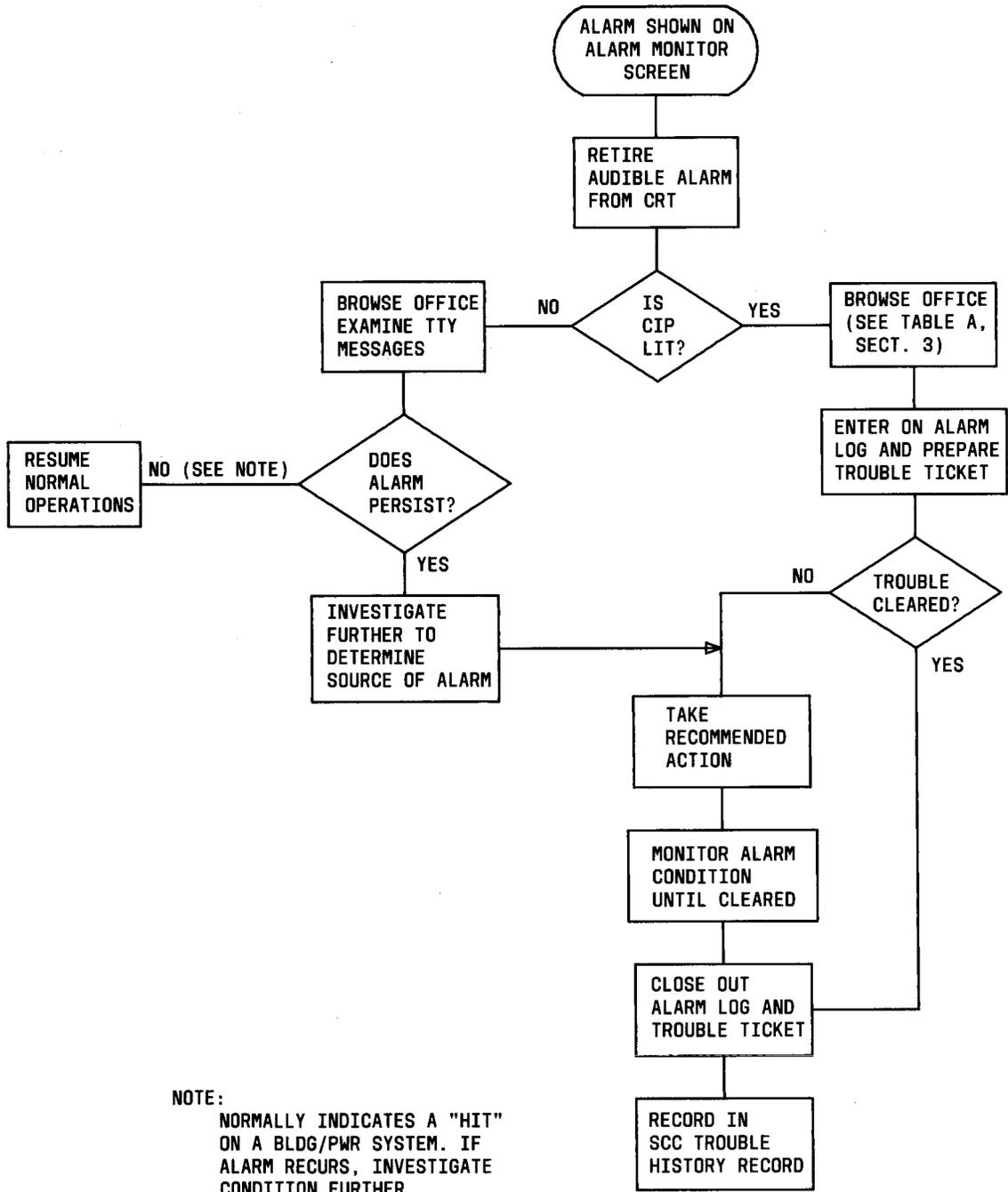


Fig. 2—SPCS-SCC Building and Power Alarms—Recording and Tracking (4.02)

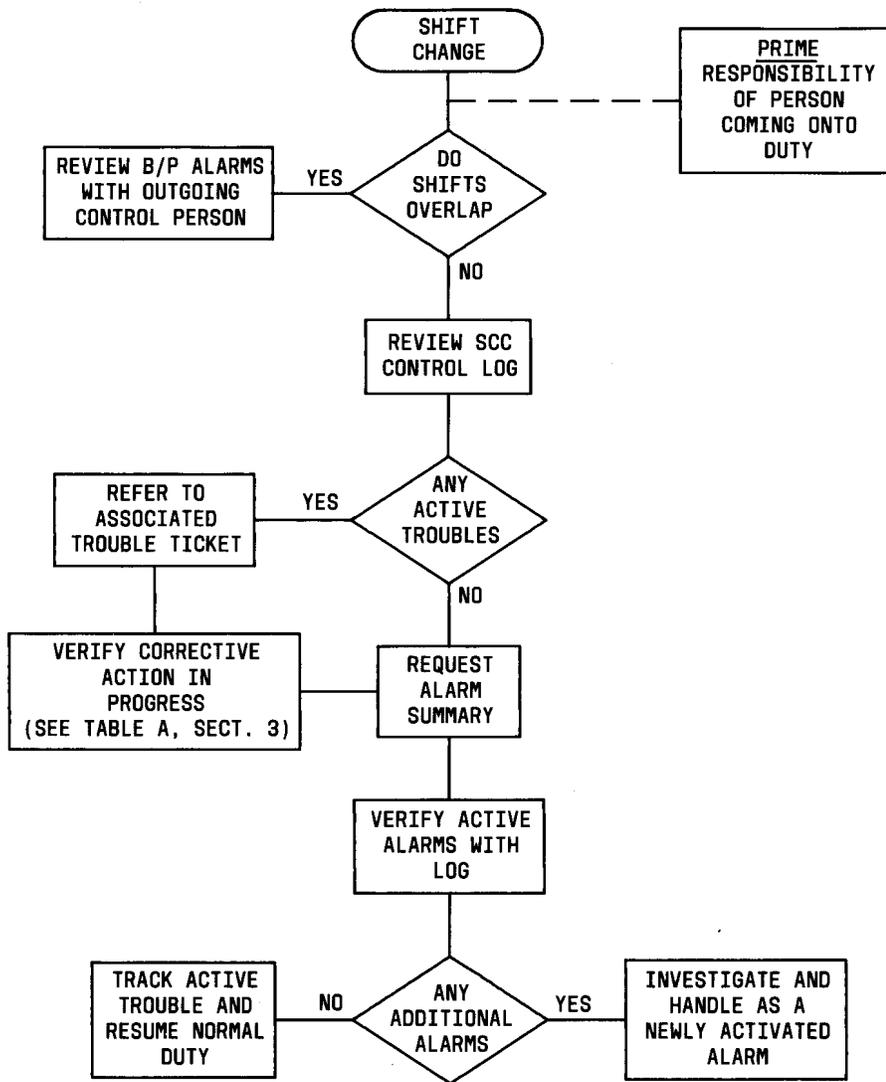


Fig. 3—SPCS-SCC Shift Change Procedures (4.02)

TABLE A
BUILDING ALARMS

TYPE	LEVEL	SCC ALERTER	CIP (Note 1)	RESPONSE	NOTES
Smoke Det. (Note 2)	CRIT	YES	BLDG/PWR	Dispatch to investigate and notify supervision	Monitor office until alarm condition terminates
Smoke Det. Trbl.	MAJOR	YES	BLDG/PWR	Refer to Buildings Dept./BOCC	Request feedback from Buildings
High Temp.	MAJOR	YES	BLDG/PWR	Dispatch and notify Buildings	Monitor office until alarm condition terminates
Low Temp.	MAJOR	YES	BLDG/PWR	Dispatch and notify Buildings	Dispatch may be determined by: 1. Adverse equipment reaction. 2. Travel time to office.
High Humidity	MINOR	YES	None	Refer to Buildings	Scan for other indicators which will influence action
Low Humidity	MINOR	YES	None	Refer to Buildings	Scan for other indicators
Intrusion	MAJOR	YES	BLDG/PWR	Attempt contact w/office Notify supervision Notify security	Generic 4 (SCCS) will allow selective door alarm inhibit
High Water (Sump)	MAJOR	YES	BLDG/PWR	Notify Buildings	Monitor office
Sump Trbl.	MINOR	YES	None	Notify Buildings	Monitor office
Gas (Cable Vault)	MAJOR	YES	BLDG/PWR	Notify Cable Department and Buildings	Monitor office
Fan Shutdown	MINOR	YES	None	Notify Buildings	

Note 1: Building Alarms may also be assigned to appear on lamps designated A through F on the control console. This would help to further identify the CIP BLDG/PWR indications.

Note 2: Travel time to office will influence decision when to notify local fire dept. Local procedure required by OTCs.

TABLE B
POWER ALARMS

TYPE (Note 1)	LEVEL	SCC ALERTER	CIP (Note 2)	RESPONSE	NOTES
Low Fuel (Emergency Engine)	MINOR	YES	None	Note and refer to day supervisor	If planned or probable commercial power shut-down, notify supervisor as soon as possible.
Fuel Leak	MAJOR	YES	BLDG/PWR	Notify Buildings and power maintenance supervision	
Emergency Generator Running	MINOR	YES	BLDG/PWR	Investigate for cause (Power Failure, Test, Malfunction, etc). React to type of finding.	
Rectifier Failure	MINOR	YES	BLDG/PWR	Monitor office for battery drain condition. Dispatch if batteries are draining.	Try restart of rectifier if attended office
Battery Drain	MINOR; then after 15 minutes MAJOR. Repeat every 30 minutes	YES **REPT CO BAT DISCHRG.	BLDG/PWR	Dispatch and notify responsible supervision	Track number of repeat alarms to determine duration of drain. Compare with estimated battery reserve.
Commercial Power Fail	MAJOR	YES	BLDG/PWR	Contact Power Company. Monitor office to assure adequate power supply (battery or emergency AC). (Assumes automatic start of backup supply.)	
Power Room	MINOR	YES	BLDG/PWR	Monitor office performance. Look for battery drain indication.	<u>MASKS</u> 1. Rectifier failure 2. Converter low voltage 3. Impending emergency engine failure 4. Inverter fault minor

TABLE B (Contd)

POWER ALARMS

TYPE (Note 1)	LEVEL	SCC ALERTER	CIP (Note 2)	RESPONSE	NOTES
Power Room	MAJOR	YES	BLDG/PWR	Dispatch to investigate. Browse office for machine failures.	<u>MASKS</u> 1. Blown discharge fuses 2. High Voltage and Low Voltage 2 3. Emergency engine failure 4. Inverter fault failure
Alarm Battery	MAJOR	YES	BLDG/PWR	Dispatch immediately; browse office	Office alarms are disabled. Vulnerable to equipment failures without indication.

Note 1: Some SPCSs report BLDG/PWR alarms with a common English phrase (eg, MI SY MISC for No. 2/2B) and a coded data field. These messages must be decoded to the type alarms shown in this table. Therefore, accurate records of scan point assignments along with the system type output manual must be maintained at SCCs for expeditious decoding of coded BLDG/PWR alarm messages.

Note 2: Building alarms may also be assigned to appear on lamps designated A through F on the control console. This will help to further identify the CIP BLDG/PWR indications.