

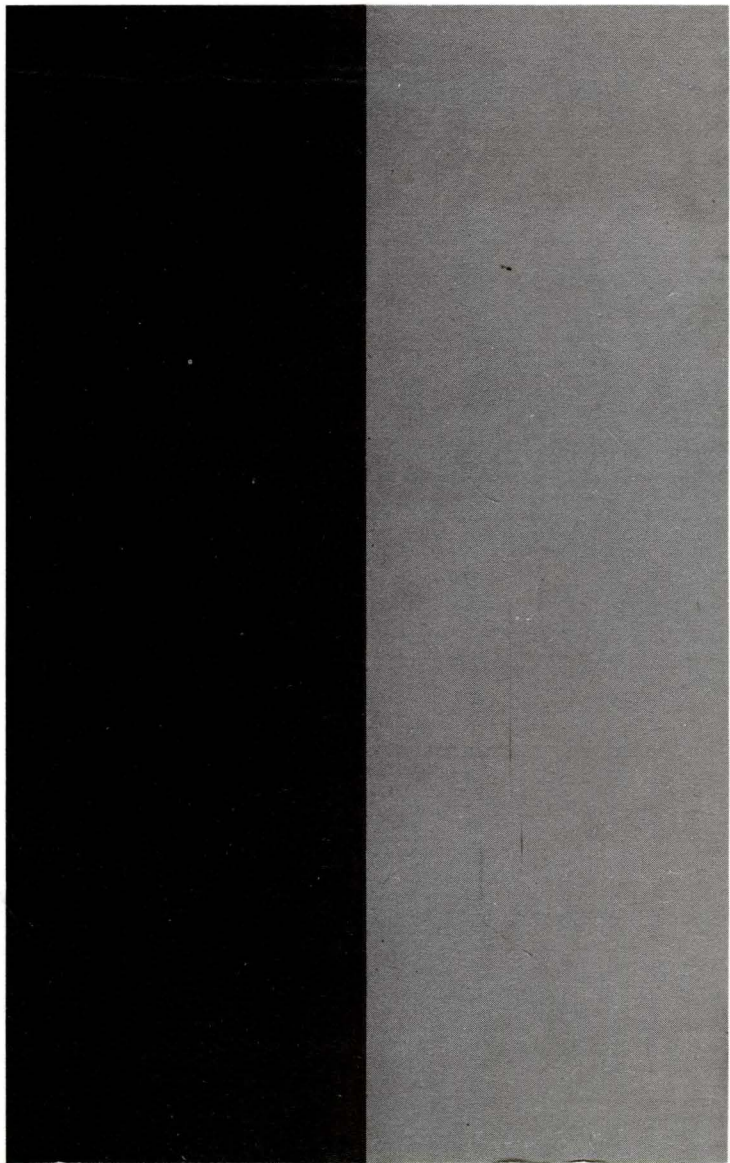
**UNIVAC**

**1106** SYSTEM

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**1108** MULTI-PROCESSOR  
SYSTEM

**UNITIZED CHANNEL  
STORAGE SUBSYSTEM**



OPERATOR  
REFERENCE

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# I. INTRODUCTION

## 1.1 GENERAL

This manual contains the information and procedures required for operation of the UNIVAC Unitized Channel Storage Subsystem for the UNIVAC 1106 and 1108 Multi-Processor Systems (hereafter referred to as the UNIVAC 1106/1108 Systems).

This manual is divided into the following basic sections:

- Operator's Responsibilities
- Controls and Indicators
- Operation, including
  - Power turn-on/off procedures
  - Recovery procedures
  - Operator performed maintenance

## 1.2 PURPOSE

The UNIVAC Unitized Channel Storage Subsystem is used to provide the UNIVAC 1106/1108 Systems with a large capacity, word-addressable, fast random access storage medium. The subsystem consists of one or two Type 5031 Control Units used with two to eight unitized storage units. Because of its very high transfer rate, a control unit is usually connected to a normal I/O channel of the central processor unit (UNIVAC 1108 System) or to an I/O channel of the input/output controller (UNIVAC 1108 System). The subsystem can be connected to a compatible channel of an 1108 CPU. The UNIVAC 1106 System does not have compatible channels. The subsystem shown in Figure 1-1 includes the Type 7013 Unitized Storage Unit and the Type 5031 Control Unit.

A control unit performs the following functions:

- receives function words from the processor and translates them into commands for the storage;
- assembles and disassembles data and control words for acceptance by the processor and the storage units;
- controls the orderly addressing of storage locations;
- synchronizes the flow of data between the processor and the storage units; and

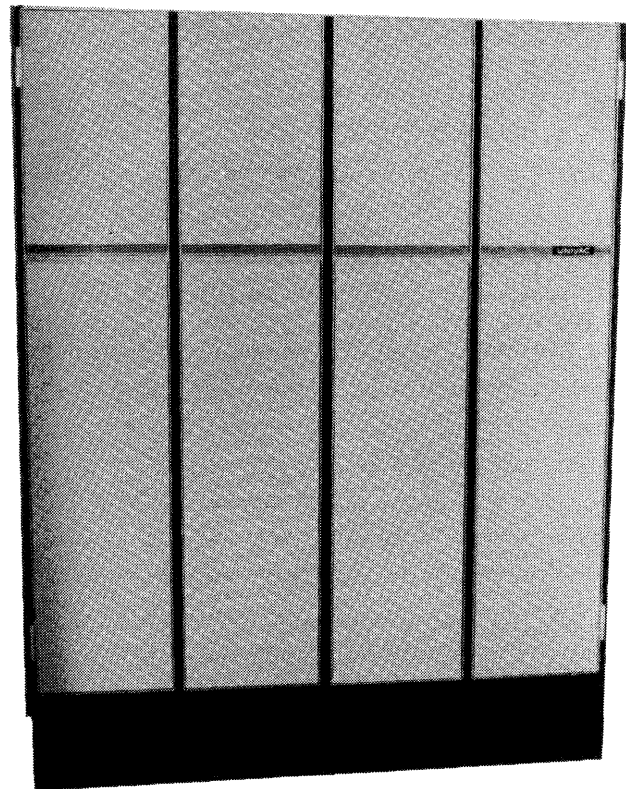
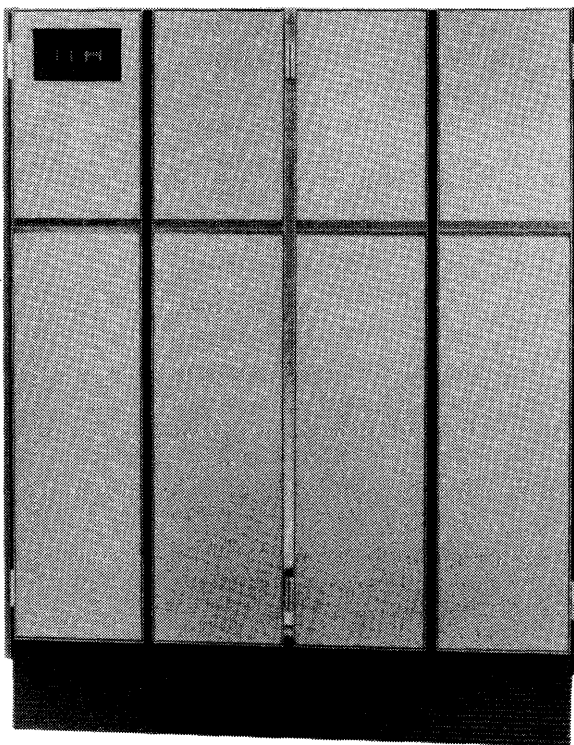
- interprets signals (both normal and abnormal) from the storage units and notifies the processor of storage unit conditions.

A storage unit performs the following functions:

- receives commands (and a storage address, if a Read, Write, or Search function word has been issued) from the control unit;
- receives data to be written from the control unit;
- sends data that has been read to the control unit; and
- signals the control unit when abnormal or error conditions exist.

The subsystem provides a nonvolatile mass storage medium having a nominal maximum transfer rate of 445,000 words (36-bits) per second, a read access time as low as 2.0 microseconds, a write access time as low as 0.6 microseconds, and a storage capacity as great as 1,040,576 data words when eight unitized storage units are used.

*TYPE 5031 CONTROL UNIT*



*TYPE 7013 UNITIZED STORAGE UNIT*

*Figure 1-1. UNIVAC Unitized Storage Subsystem*

## 2. OPERATOR'S RESPONSIBILITIES

### 2.1 GENERAL

The operator of the UNIVAC Unitized Channel Storage Subsystem is responsible for the following:

- turning on and turning off the sybssystem as required; and
- observing and responding to indications on the various operator control panels described in this manual.

### 2.2 REQUIREMENTS

To assume these responsibilities the operator should be familiar with the location and use of the controls and indicators, and with the operations of the subsystem.

### 3. CONTROLS AND INDICATORS

#### 3.1 GENERAL

This section contains a description of the controls and indicators used in the operation of the UNIVAC Unitized Channel Storage Subsystem comprising the unitized storage unit and the Type 5031 Control Unit.

The control unit contains an operator's panel, DC power supply panel, storage select panel and a maintenance panel. All are accessible from the front of the cabinet, but only the operator's panel is accessible with the doors closed.

The storage unit contains an AC power control panel, DC power control panel and a maintenance panel. All are accessible from the front of the cabinet when the doors are open.

The controls and indicators for the storage and the control unit are explained in the following paragraphs.

#### 3.2 CONTROL UNIT

The control unit permits the operator or the Univac Customer Engineer to exercise offline or limited online control of the subsystem.

##### 3.2.1 OPERATOR'S CONTROL PANEL

The operator's control panel, shown in Figure 3-1, is located in the upper left-hand corner on the front of the control unit cabinet. These controls are used to turn DC power on, or off, and to monitor certain physical conditions within the control unit. The panel components are further described in Table 3-1.

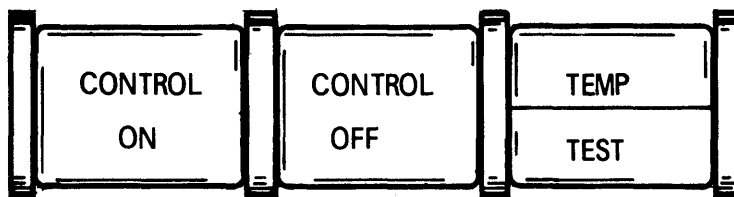


Figure 3-1. Control Unit Operator's Control Panel



SWITCH/ INDICATOR	FUNCTION
CONTROL ON	Pressing this switch applies DC power to the control unit. The indicator lights when DC power is applied to the control unit.
CONTROL OFF	Pressing this switch (indicator lights) removes DC power from the control unit. The indicator stays lit until the AC power is turned off.
TEMP/TEST	<p>This is an alternate-action switch with a dual indicator. The upper half of the indicator, labeled TEMP, lights when the temperature within the control cabinet reaches 105°F. This warning light is accompanied by an audible alarm (buzzer). Pressing this switch disables the audible alarm, but the TEMP indicator in this switch remains lit even though the over-temperature condition has been alleviated and thus permits re-use of the audible alarm for future alarm conditions.</p> <p>The lower half of the indicator, labeled TEST, lights whenever one or more of the labeled toggle switches on the right end of the control unit maintenance panel are in the up position.</p>

Table 3-1. Control Unit Operator's Control Panel Switches and Indicators

3.2.2 DC POWER CONTROL PANEL

The control unit DC power supply panel, shown in Figure 3-2, is mounted on the front of the power supply which is located at the lower left-hand side of the control unit just above the blower. The controls on this panel are used by the Univac Customer Engineer to apply and monitor primary power to the control unit. Control functions are defined in Table 3-2.

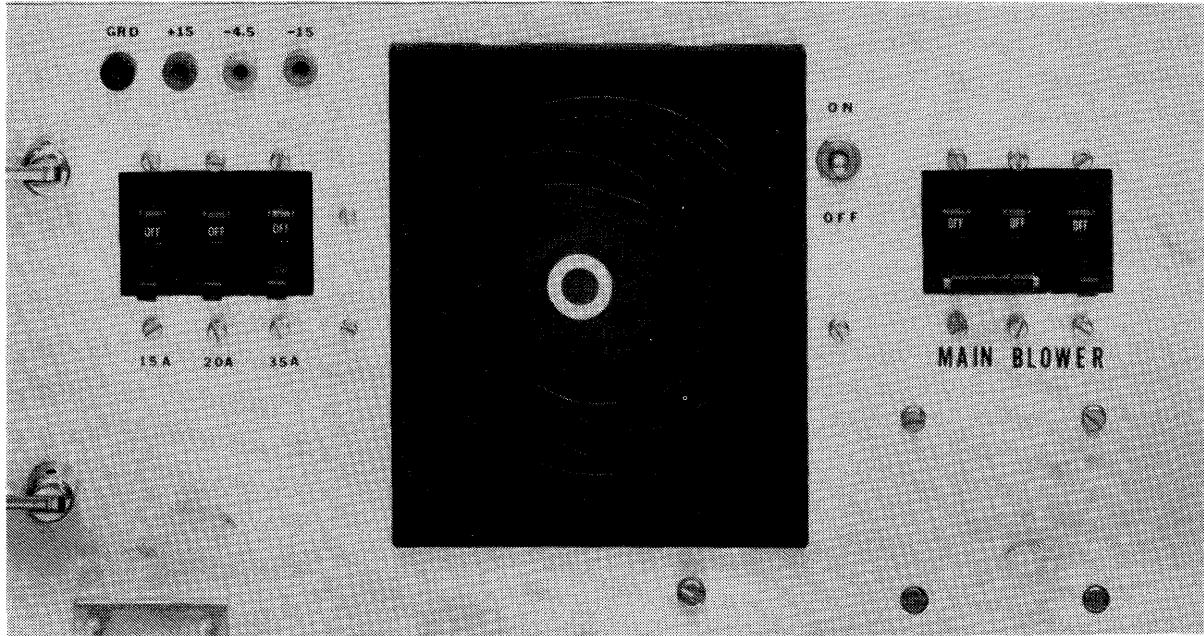


Figure 3-2. Control Unit DC Power Supply Panel

SWITCH	FUNCTION
15A CIRCUIT BREAKER*	When in the ON position, +15 volt DC power is supplied to the control unit circuitry.
20A CIRCUIT BREAKER*	When in the ON position, -4.5 volt DC power is supplied to the control unit circuitry.
35A CIRCUIT BREAKER*	When in the ON position, -15 volt DC power is supplied to the control unit circuitry.
MAIN CIRCUIT BREAKER*	When in the ON position, AC power is supplied to the power and control circuits.
BLOWER CIRCUIT BREAKER*	When in the ON position, AC power is supplied to the power supply fan, the control unit blower and the muffin fans located on deck A05.

The ON/OFF toggle switch should be in the ON position all the time. This switch enables the excessive temperature detection circuitry.

\*If the circuit breaker trips, it must be reset by placing it in the OFF position before it can again be turned ON.

*Table 3-2. Control Unit DC Power Supply Panel Controls*

### 3.2.3 STORAGE SELECT PANEL

The storage select panel, which is located inside the right-front door, is used for logical address assignments of the storage units. It is for Univac Customer Engineers use only.

### 3.2.4 MAINTENANCE PANEL

The maintenance panel is used only by the Univac Customer Engineer to control and observe subsystem operations. The maintenance panel is located at the front of the control cabinet inside the doors.

### 3.3 UNITIZED STORAGE UNIT

The unitized storage power control panels are explained in the following paragraphs.

#### 3.3.1 AC POWER CONTROL PANEL

The AC power control panel, shown in Figure 3-3, is located directly below the convenience outlet on the lower-front of the storage cabinet. It is used to apply AC power to the storage unit. Table 3-3 lists the breakers and indicators and explains their functions.

#### 3.3.2 DC POWER CONTROL PANEL

The DC power control panel, shown in Figure 3-4, is located in the upper-right corner of the storage cabinet. It is not accessible with the doors closed. These controls are used to turn DC power on, or off, and to monitor certain conditions within the storage cabinet. The panel components are further described in Table 3-4.

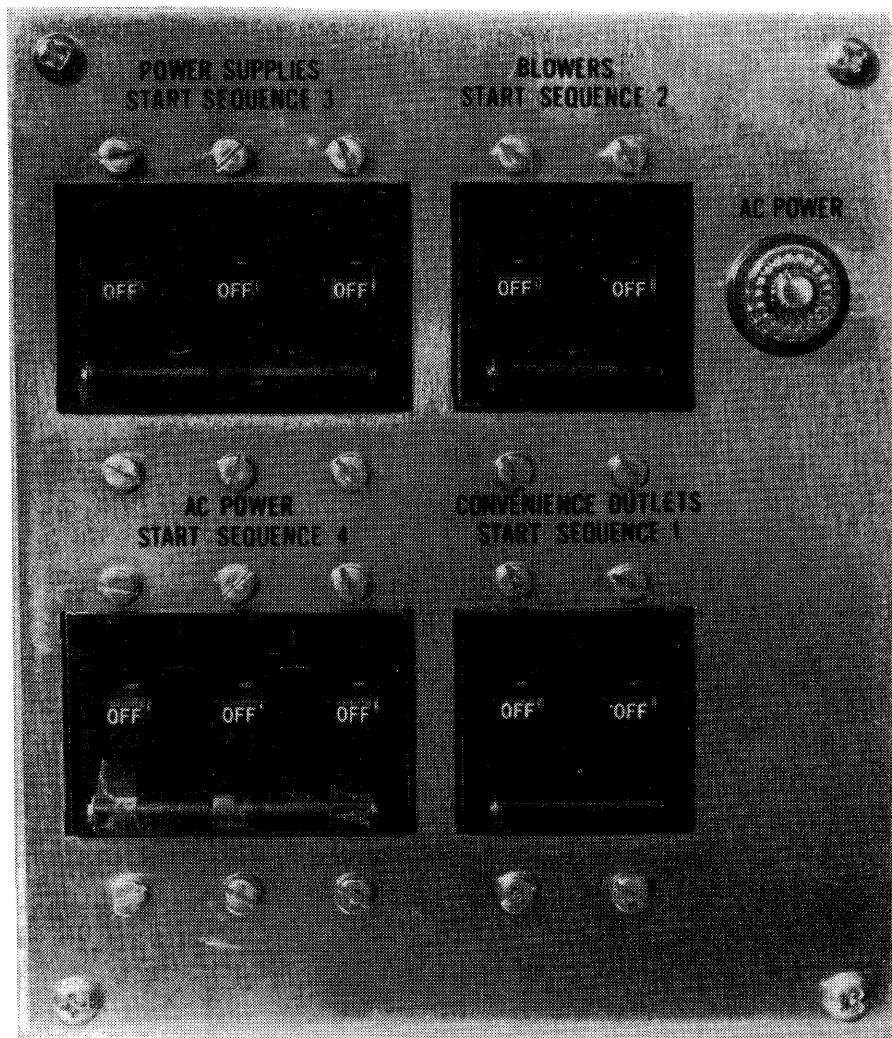


Figure 3-3. Storage AC Power Control Panel

SWITCH/INDICATOR	FUNCTION
AC POWER indicator	When lit, indicates that AC power is available to the AC power circuit breaker.
AC POWER circuit breaker	When in the ON position (up), AC power is available to the other circuit breakers.
POWER SUPPLIES circuit breaker	When in the ON position (up), AC power is available to the DC power supplies.
BLOWERS circuit breaker	When in the ON position (up), it applies AC power to the blowers which cool the logic decks and the DC power supplies.
CONVENIENCE OUTLETS circuit breaker	When in the ON position (up), AC power is available at the convenience outlets.

Table 3-3. Storage AC Power Control Panel Controls and Indicators

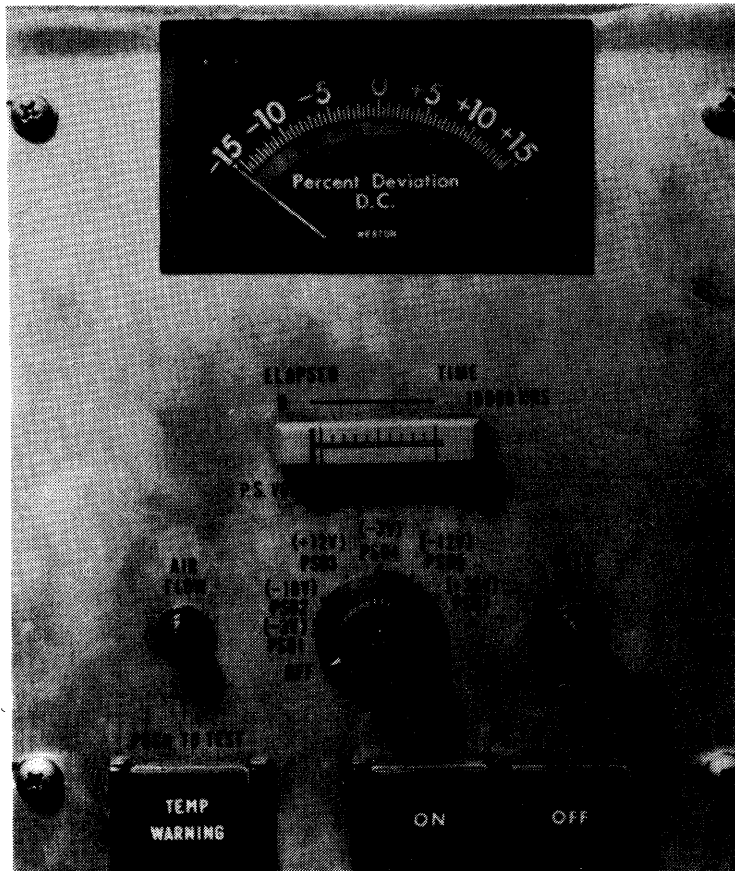


Figure 3-4. Storage DC Power Control Panel

SWITCH/INDICATOR	FUNCTION
DC POWER ON/OFF switch/	Pressing the ON (green) portion of the switch applies DC power to the storage cabinet logic. The green indicator is lit when DC power is on.
	Pressing the OFF (red) portion of the switch removes DC power from the storage cabinet logic. The red indicator is lit when DC power is off.
TEMP/WARNING switch/ indicator	This red switch/indicator tests the high temperature audible alarm and lights the indicator when pressed. Indicates a high temperature condition.
AIR FLOW indicator	When lit, this red indicator indicates a loss of cooling air. Does not drop power.
OVER TEMP indicator	When lit, this red indicator indicates an over temperature condition which drops power.
ELAPSED TIME METER	Records operating time when DC power is on.
P.S. VOLTAGE DEVIATION selector switch and PERCENT DEVIATION METER	This multiple position switch selects various voltages and their percent deviation is displayed on the percent deviation meter.

Table 3-4. Storage DC Power Control Panel Controls and Indicators

### 3.3.3 MAINTENANCE PANEL

The maintenance panel is located in the top center of the storage cabinet. It is not accessible with the doors closed. The maintenance panel is used only by the Univac Customer Engineer to control and observe subsystem operations and for offline operation and testing.

## 4. OPERATION

### 4.1 GENERAL

It is the operator's responsibility to turn power on, or off, at the various components of the UNIVAC Unitized Channel Storage Subsystem.

### 4.2 TURN-ON PROCEDURES

The procedure for turning on power for the subsystem from a complete shut-down involves applying primary AC and DC power to the control unit(s) and the storage unit(s). The following procedures must be performed exactly as stated.

#### 4.2.1 CONTROL UNIT TURN-ON PROCEDURE

The control unit turn-on procedure is as follows:

- (1) The following steps are performed at the DC power supply panel, see Figure 3-2.
  - (a) Place the ON/OFF toggle switch in the ON position.
  - (b) Set the BLOWER circuit breaker to the ON position (up). The power supply fan, the muffin fans and the blower should start.
  - (c) Set the MAIN circuit breaker to the ON position (up).
  - (d) Set the 20A, 15A, and 35A circuit breakers to the ON position (up).
- (2) The following steps are performed at the operator's control panel, see Figure 3-1.
  - (a) The CONTROL OFF indicator should be lit.
  - (b) The TEMP indicator should not be lit. This indicates that there is no over-temperature condition.
  - (c) The TEST indicator should not be lit. If the TEST indicator is lit, check the toggle switches on the control unit maintenance panel. All the switches should be placed in the OFF position (down), and the TEST indicator should turn off.

- (d) Press the CONTROL ON switch. The indicator lights when DC power is applied to the control unit.

#### 4.2.2 STORAGE UNIT TURN-ON PROCEDURE

The storage unit turn-on procedure is as follows:

- (1) The following steps are performed at the AC power control panel, see Figure 3-3.
  - (a) The AC POWER indicator should be lit. This indicates that AC power is connected to the storage cabinet.
  - (b) Set the CONVENIENCE OUTLETS, BLOWERS, and POWER SUPPLIES circuit breakers to the ON position (up).
  - (c) Set the AC POWER circuit breaker to the ON position (up). The blowers should start.
- (2) The following steps are performed at the DC power control panel, see Figure 3-4.
  - (a) Set the +36V power supply circuit breakers to the ON position (up). These are located at the rear of the storage cabinet.
  - (b) Press the DC ON switch. The indicator lights when DC power is applied to the storage unit.
  - (c) The AIR FLOW and OVER TEMP indicators should not be lit. These indicate that there is no loss of air flow or over-temperature conditions.
  - (d) Press the TEMP WARNING switch/indicator to insure that the audible high temperature alarm is functioning properly.

### 4.3 TURN-OFF PROCEDURES

#### 4.3.1 CONTROL UNIT TURN-OFF PROCEDURES

The control unit turn-off procedure is as follows:

- (1) The following steps are performed at the operator's control panel, see Figure 3-1.
  - (a) Press the CONTROL OFF switch. The indicator lights when DC power is removed from the control unit. The unit is now in a standby condition.
- (2) The following steps are performed at the DC power supply panel, see Figure 3-2.

- (a) Set the 35A, 15A, and 20A circuit breakers to the OFF position (down).
- (b) Set the MAIN circuit breaker to the OFF position (down).
- (c) Set the BLOWER circuit breaker to the OFF position (down), the blowers stop.

#### 4.3.2 STORAGE UNIT TURN-OFF PROCEDURE

The storage unit turn-off procedure is as follows:

- (1) The following steps are performed at the DC power control panel, see Figure 3-4.
  - (a) Press the DC OFF switch. The indicator lights when DC power is removed from the storage unit.
- (2) The following steps are performed at the AC power control panel, see Figure 3-3.
  - (a) Set the AC POWER circuit breaker to the OFF position (down).
  - (b) The AC POWER indicator will remain lit until the AC input power is disconnected.

#### 4.4 RECOVERY PROCEDURES

The operator would not normally be responsible for recovering, by himself, from any type of error which might occur. He would, instead, notify a Univac Customer Engineer who would assume the responsibility for subsystem recovery. Some, but not all, of the reasons for subsystem failure are listed below.

- (1) Priority error (channel priority).
- (2) Address parity error.
- (3) Write control parity error.
- (4) Input data parity error.
- (5) Output data parity error.
- (6) Over temperature.

If the stop switches on the maintenance panel for any of the errors listed in 1 through 5 are set, the subsystem will stop when that error occurs.

If the stop switches are not set, the subsystem attempts to recover by itself. If the recovery attempt fails, the subsystem proceeds to the next operation and notifies the processor, which was active when the error occurred, of the type of error.



The subsystem will always stop when an over-temperature condition occurs. The blowers and air filters must be checked and any obstructions to the air flow must be cleared. Also, the doors must be kept closed. These actions might be taken by the operator, but it is the Univac Customer Engineer's responsibility to see that the problem is corrected.

#### **4.5 OPERATOR PERFORMED MAINTENANCE**

The operator would not normally perform any maintenance.