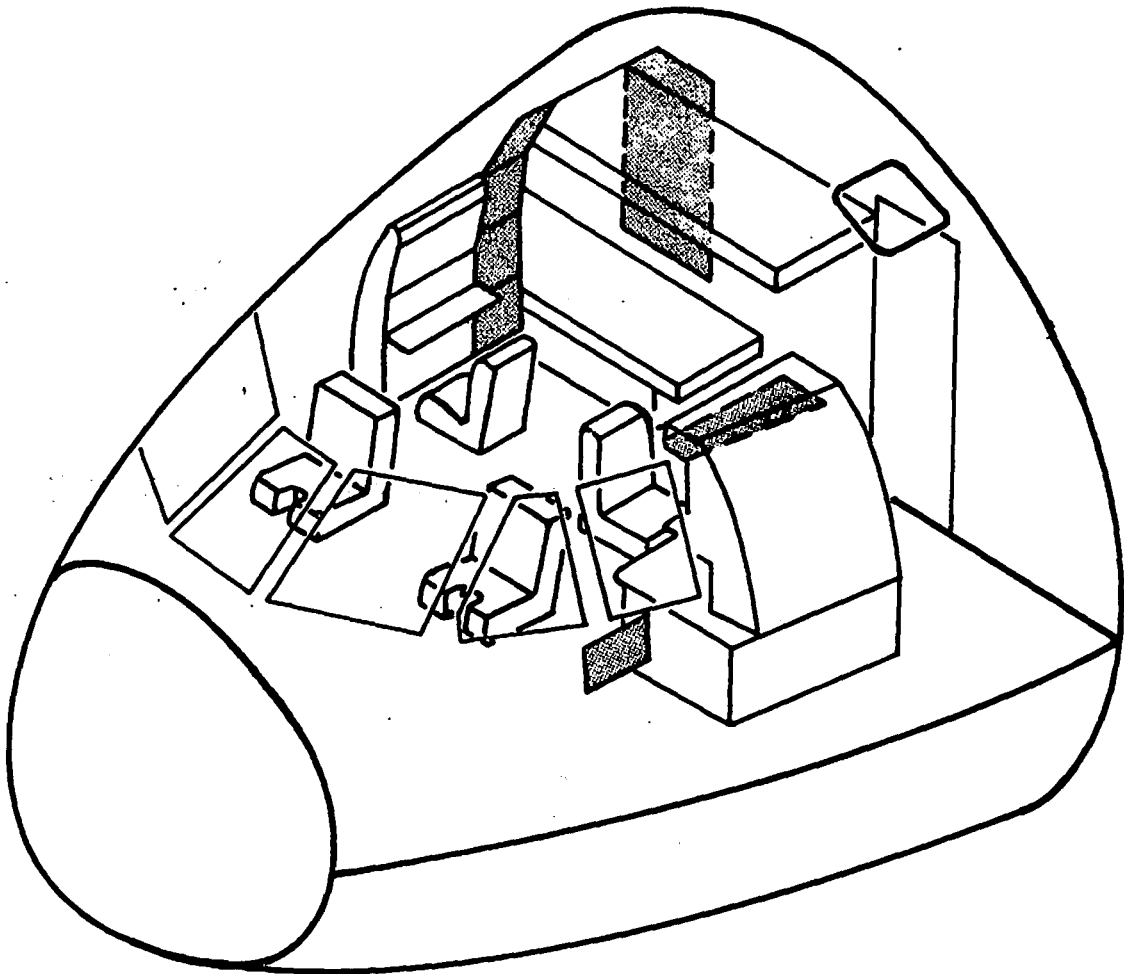


C141A



AC BUSES



443d TECHNICAL TRAINING SQUADRON
443d MILITARY AIRLIFT WING, TNG (MAC)
ALTUS AIR FORCE BASE, OKLAHOMA

FOR TRAINING PURPOSES ONLY

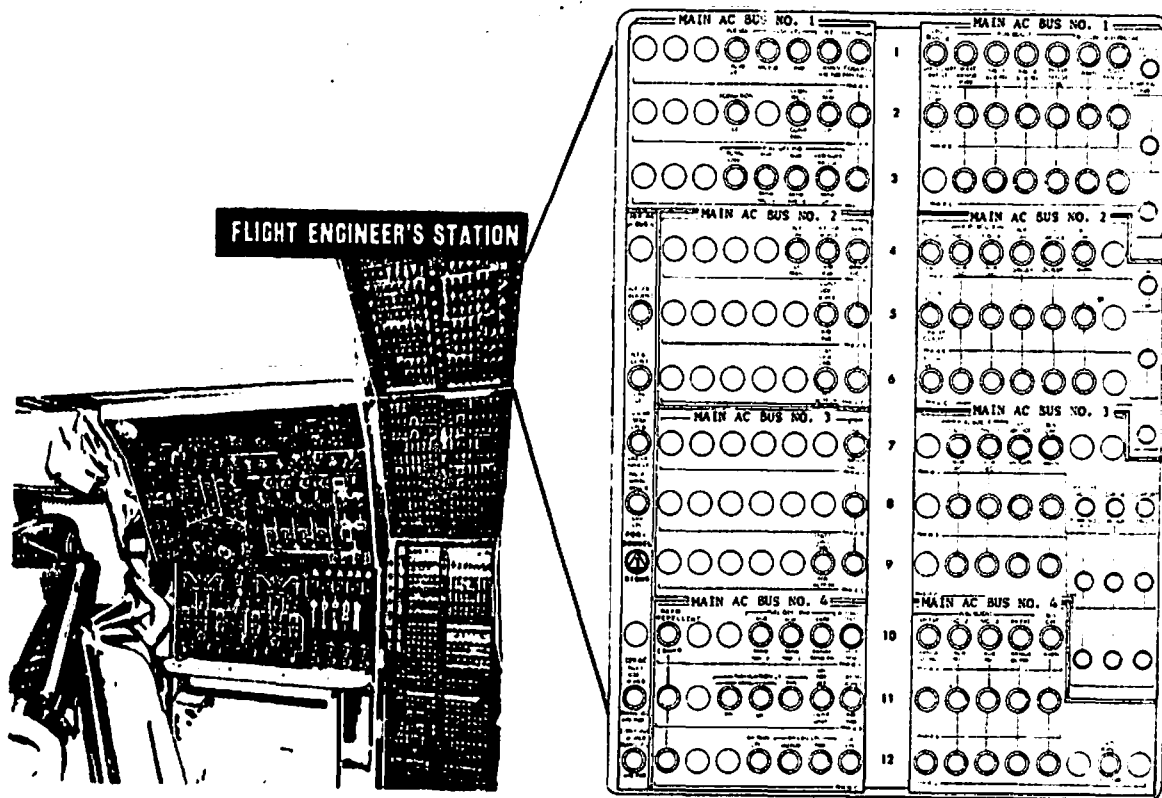
NOT NECESSARILY CURRENT AFTER DISTRIBUTION

When you have finished this program you will be able to list by name the following AC Buses and identify the location of each.

- A. MAIN AS BUSES 1 through 4
- B. MAIN AC TIE BUS
- C. ESSENTIAL AC BUSES 1 and 2
- D. ISOLATED AC BUS
- E. EMERGENCY AC BUS
- F. AVIONICS AC BUSES 1 and 2
- G. ISOLATED AC AVIONICS BUS
- H. NAVIGATION AC BUSES 1 and 2

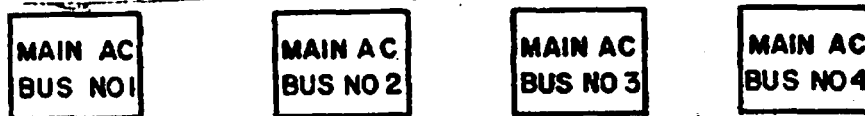
The AC Bus System can be powered by 4 engine driven Generators, the APU Generator or an External AC Power Cart. The first bus system we will discuss is the MAIN AC BUSES. These Buses are located on the FLIGHT ENGINEER'S CIRCUIT BREAKER PANEL No. 1.

Study the picture of the Flight Engineer's Circuit Breaker Panel No. 1 and determine how many MAIN AC BUSES there are.



Flight Engineer's Circuit Breaker Panel No. 1

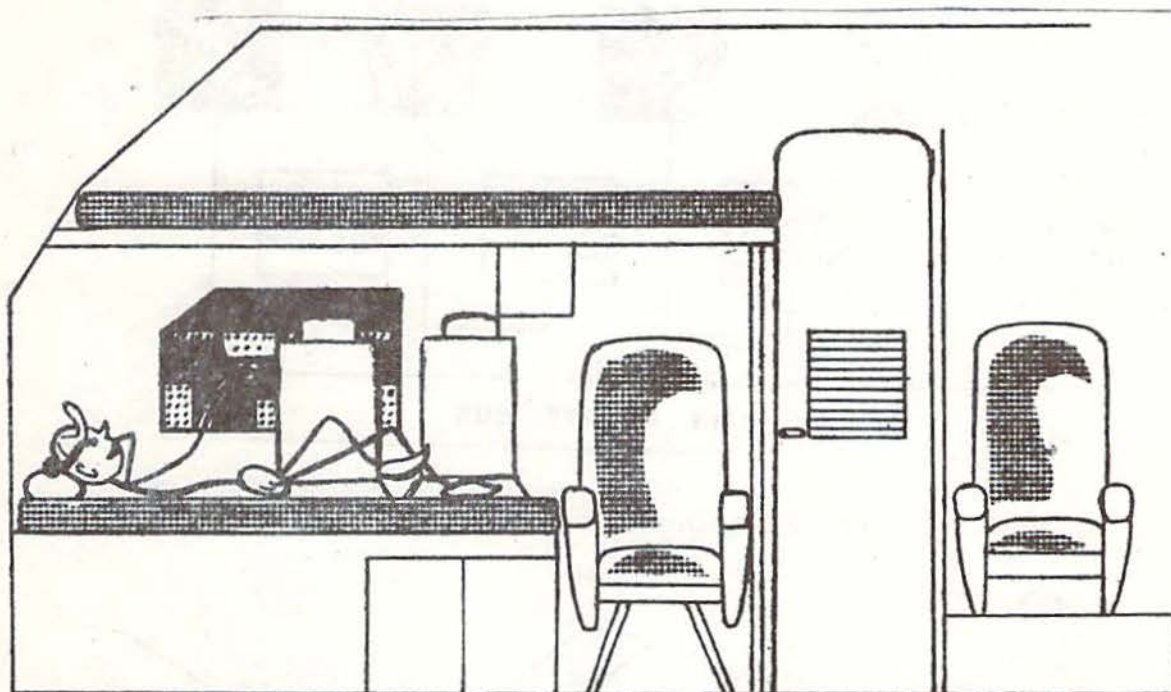
FOUR. Sure, one for each Generator, NUMBERED for the generator that powers it. Let's lay out the MAIN BUSES like this.



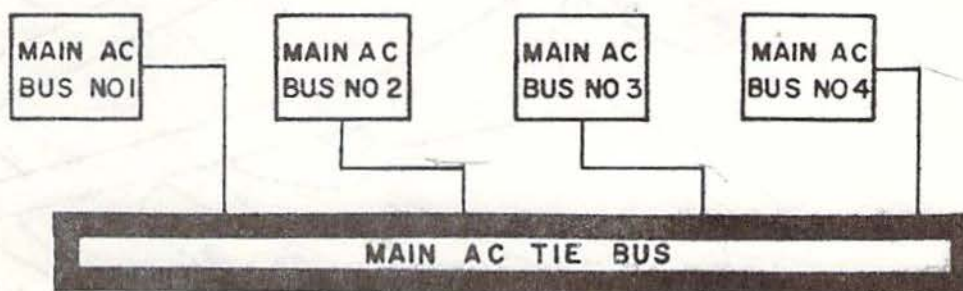
A Main AC Bus can receive power two ways, from a Generator or the Main AC Tie Bus. The MAIN AC TIE BUS is in the AC Distribution Panel LOCATED on the BULKHEAD between the Flight Station and Cargo Compartment.

The Generator or the Main AC Tie Bus can supply power to a Main AC Bus.

TRUE. Sure, the Generator or the Main AC Tie Bus can supply power to a Main AC Bus. Now let's look at the MAIN AC DISTRIBUTION PANEL in the bulkhead between the Flight Station and Cargo Compartment.

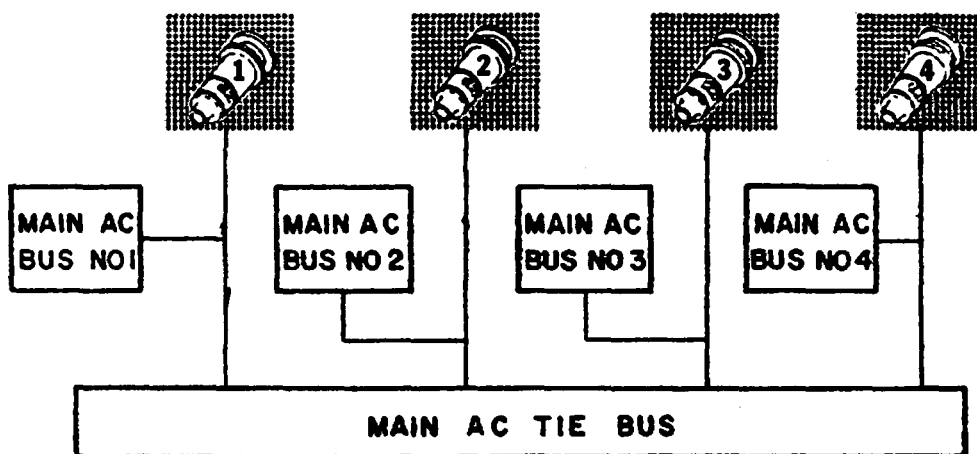


Find it? Okay, now let's add the TIE BUS to our diagram of the buses.

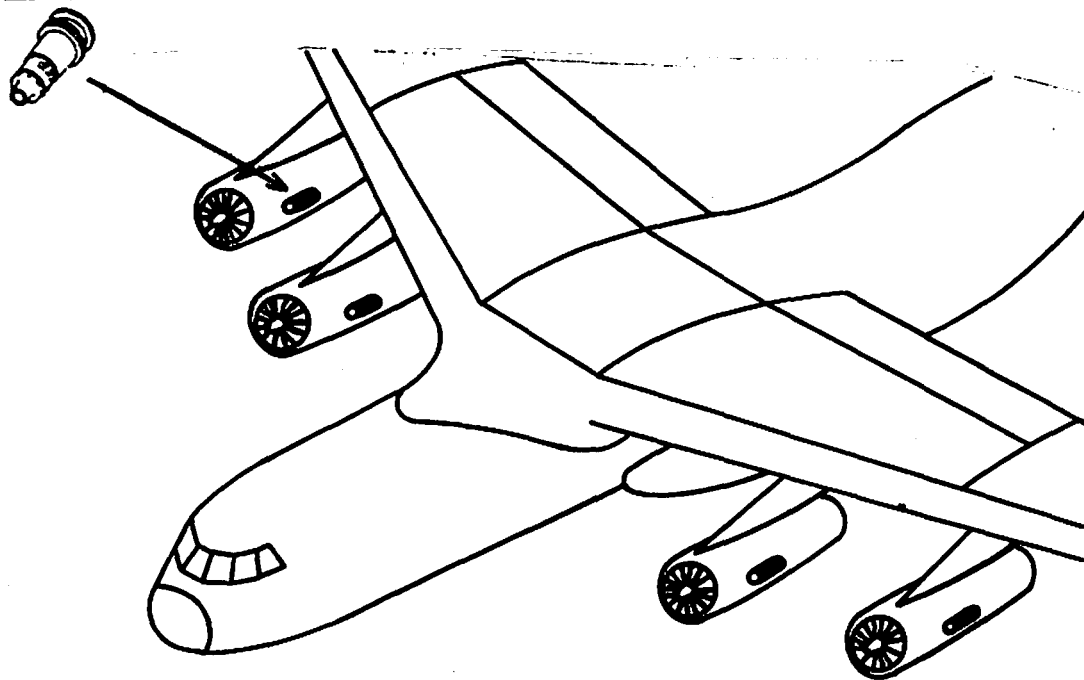


Now what was the other power source to the Main AC Buses?

GENERATORS. Sure, the four (4) Generators were the other source of power to the Main AC Buses. Let's put the GENERATORS in our diagram.

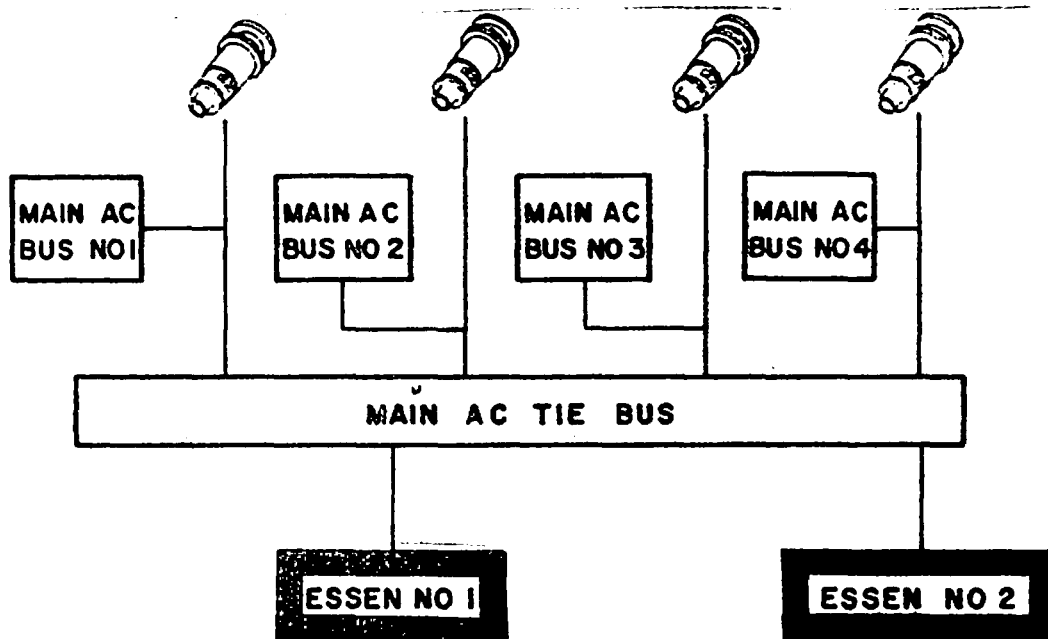


Our four (4) Generators are located on the accessory drive of each engine, like so.

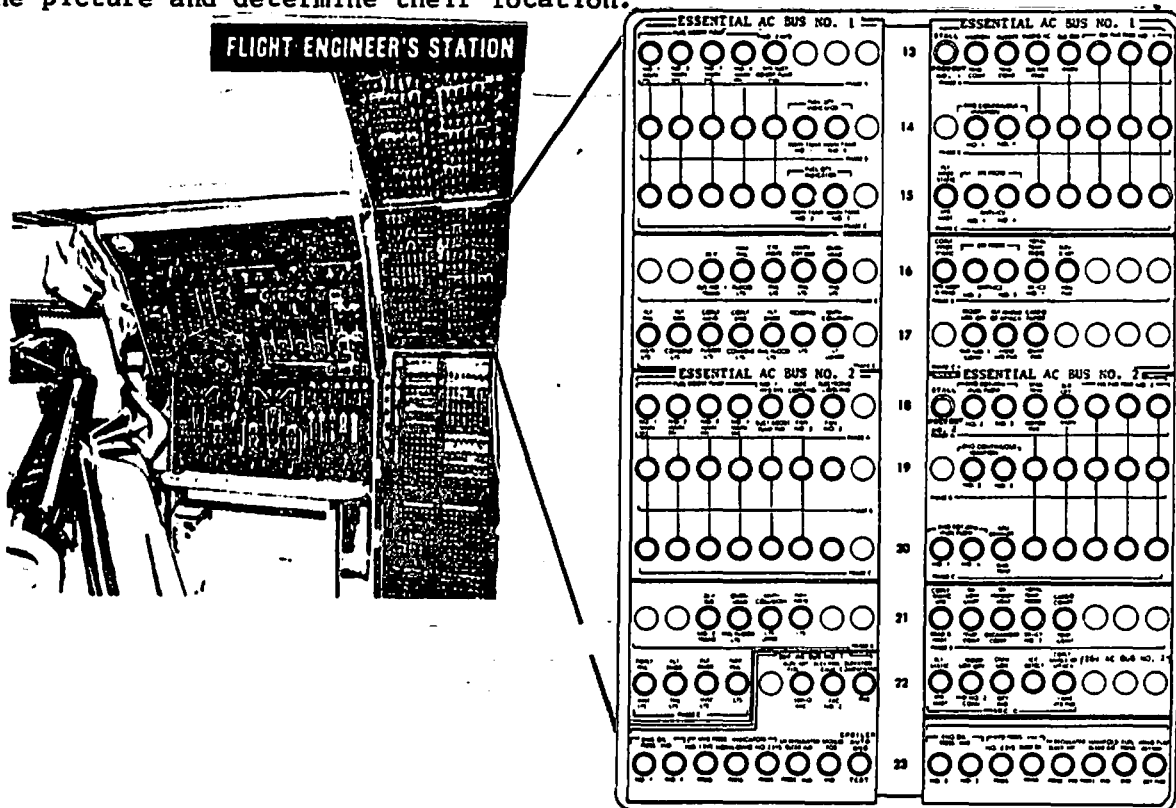


We have buses even more ESSENTIAL than the Main AC Buses and Main AC Tie Bus. For the first TWO (2) of these let's GO to Page 5.

Two of the buses that are more ESSENTIAL than the Main Buses are the ESSENTIAL AC BUSES No. 1 and No. 2. Let's fit them in our diagram.

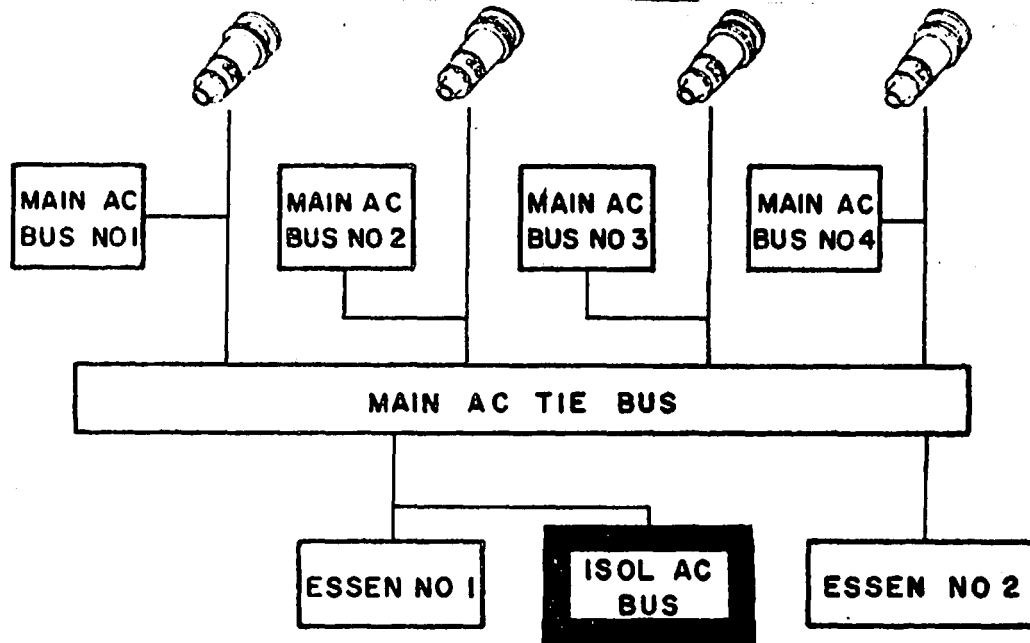


These buses are located on the Flight Engineer's Circuit Breaker Panel No. 2. Study the picture and determine their location.

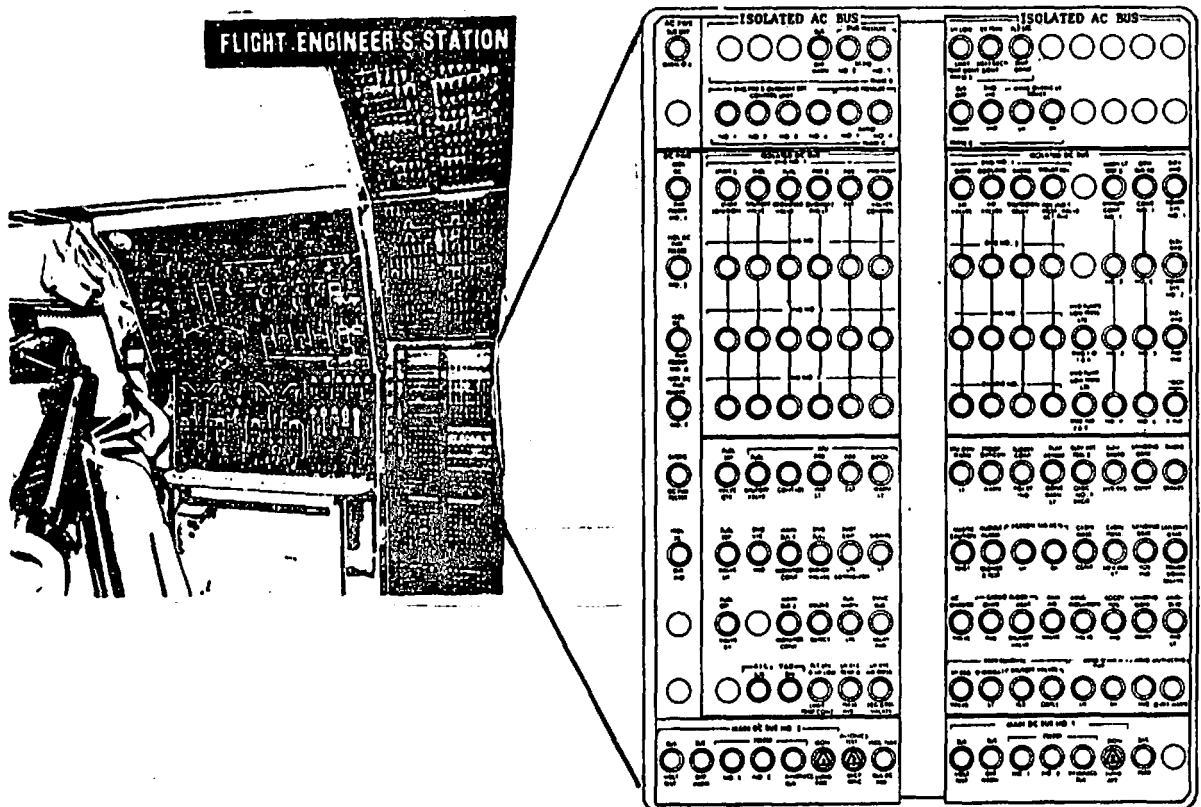


Flight Engineer's Circuit Breaker Panel No. 2

Essential AC Bus No. 1 is on the top and Essential AC Bus No. 2 is on the bottom. 100% correct! Even more important than the Essential Buses is the ISOLATED AC BUS. Let's put the ISOLATED AC BUS in our diagram.



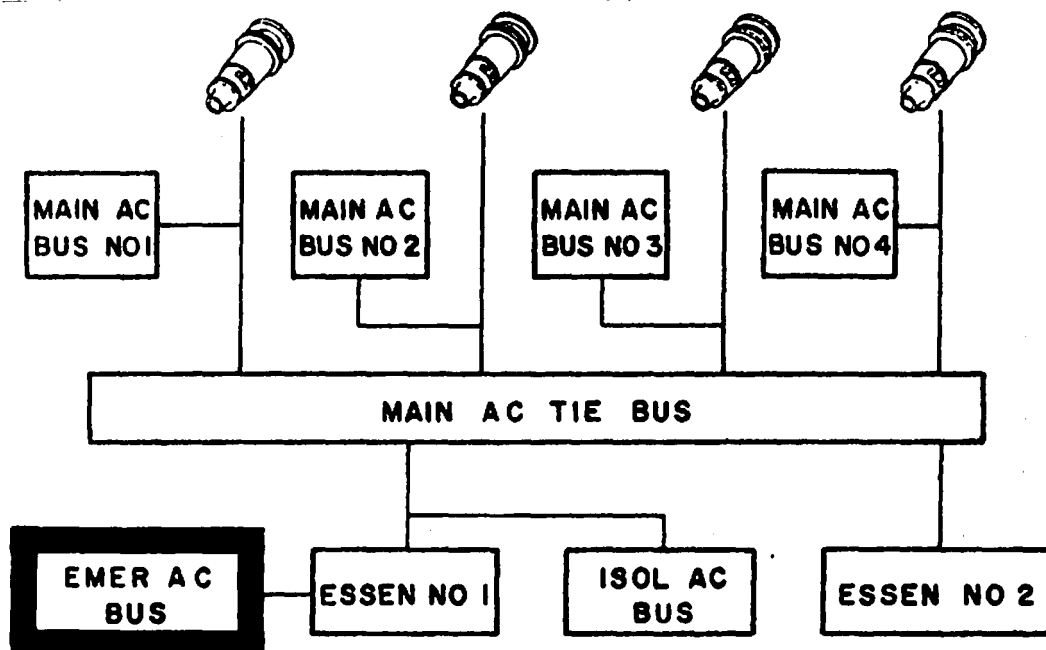
Study the picture and locate the Isolated AC Bus.



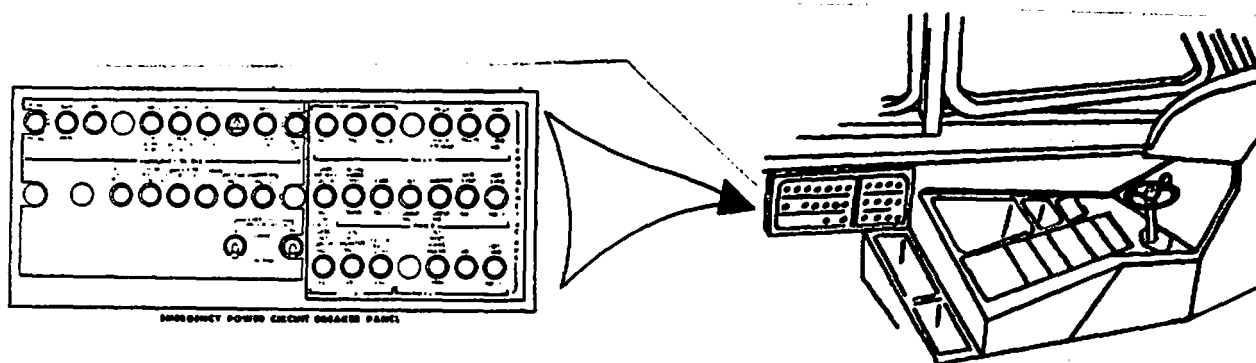
Flight Engineer's Circuit Breaker Panel No. 3

You got the picture. The Isolated AC Bus is located on the two top rows of the Flight Engineer's Circuit Breaker Panel No. 3.

The most important AC bus is the EMERGENCY AC BUS. It is normally powered by the Essential AC Bus No. 1, but in an emergency it can be powered by the Emergency Generator. Let's put the Emergency AC Bus in our diagram.



From the picture determine the location of the EMERG AC BUS.

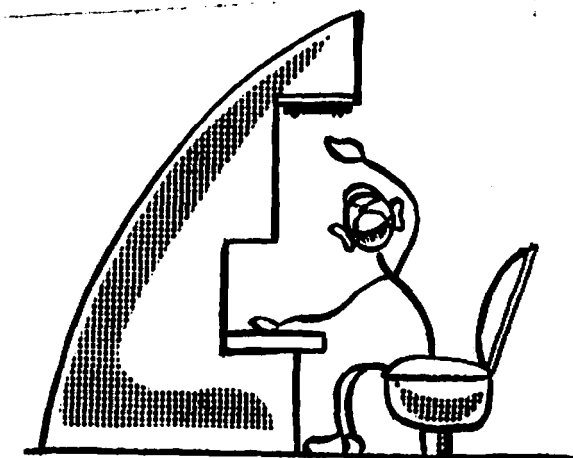


The Emergency AC Bus is located on the Emergency Circuit Breaker Panel to the left of the pilot.

TURN to Page 13.

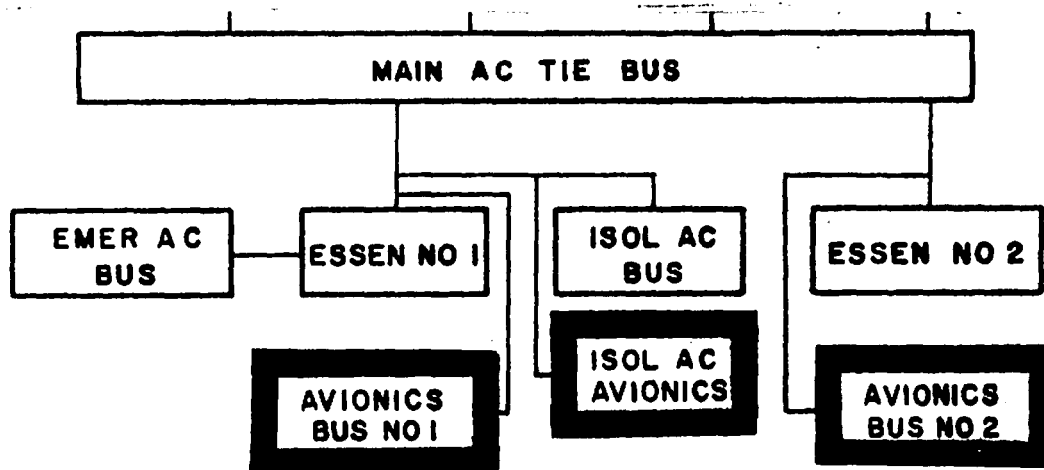
TRUE. Positively, absolutely 100% correct. The Emergency AC Bus is located on the Emergency Circuit Breaker Panel to the left of the pilot.

Now let's look ABOVE the Navigator's Station, we will find another circuit breaker panel there. It is called the AVIONICS CIRCUIT BREAKER PANEL. On this panel we will find three (3) Avionics Buses and two (2) Navigation Buses.



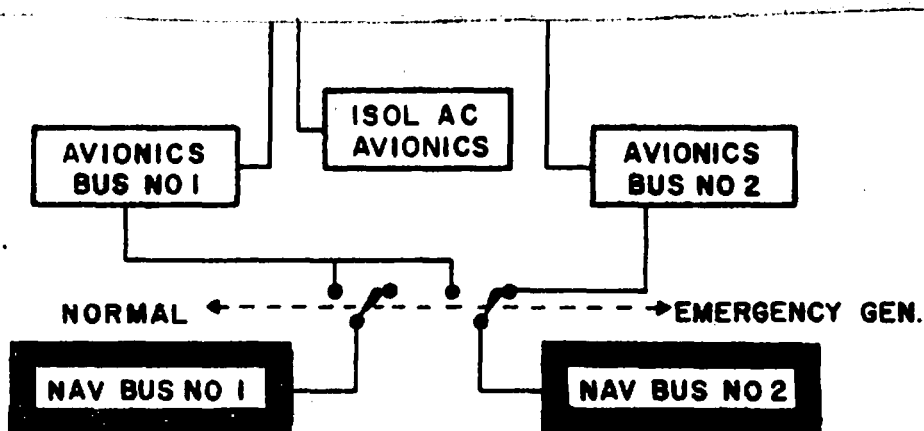
Since the AVIONICS and NAVIGATION BUSES are *essential* to safe completion of the flight, what would be the most logical power source for them?

From Essential AC Buses No. 1 and No. 2. This is correct from the information you have so far. However, let's look at the three (3) AVIONICS BUSES first. We will find that the AVIONICS AC BUS No. 1 and No. 2 are powered in parallel with the Essential Buses. The ISOLATED AC AVIONICS BUS is in parallel with the Isolated AC Bus. Now we will add the Avionics Buses to our diagram.



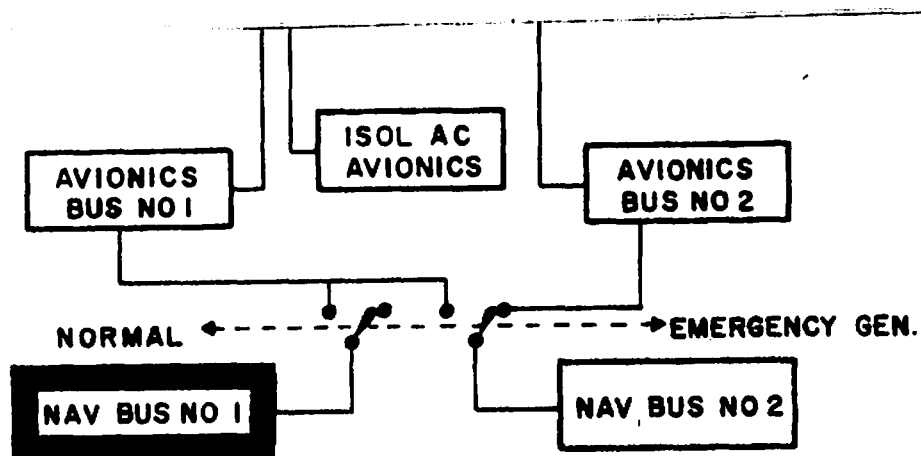
We found that the AVIONICS BUSES No. 1 and No. 2 are in parallel with the Essential Buses No. 1 and No. 2, and the ISOLATED AC AVIONICS BUS is in parallel with the Isolated AC Bus. Now, what should be the power source for the NAVIGATION BUSES?

Avionics Buses. That's right. The NAVIGATION BUSES normally receive power from the AVIONICS AC BUS No. 1. However, if the Emergency Generator is ON, a relay shifts and connects the NAVIGATION AC BUS No. 2 to the AVIONICS AC BUS No. 2. Let's put this condition in our diagram.



Looking at the diagram, which bus will NOT receive power when the EMERGENCY GENERATOR IS "ON"?

Navigation AC Bus No. 1 is correct. When the Emergency Generator is ON, Navigation AC Bus No. 1 power is lost.



When Navigation AC Bus No. 1 is lost, you will lose such little gems as TACAN No. 1, DOPPLER RADAR, other goodies, and horrors, even the autopilot!

Now that we have discussed the Avionics and Navigation Buses do you remember their locations?

Flight Engineer's Circuit Breaker Panel. Quit kidding! The AVIONICS BUSES AND NAVIGATION BUSES are on the AVIONICS CIRCUIT BREAKER PANEL above the navigator's station. Let's take another look.

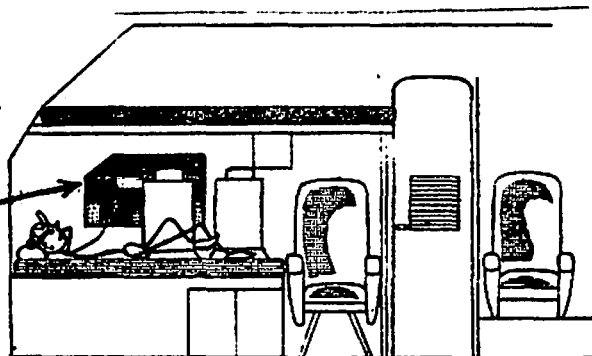


See, the Avionics Circuit Breaker Panel is over the navigator's station. Here we will find Avionics Buses No. 1 and No. 2, the Isolated AC Avionics Bus and Navigation Buses No. 1 and No. 2.

LOCATION OF PANELS

Fill in the correct name of each bus.

Main AC Power Distribution Center

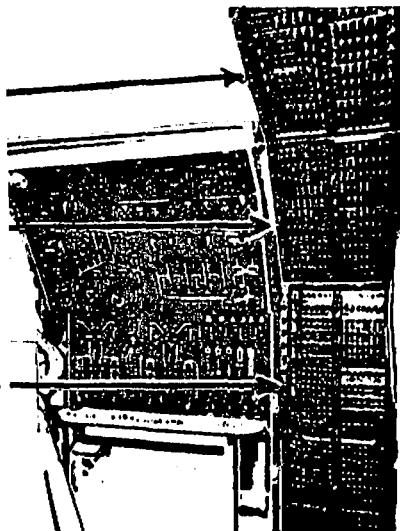


← MAIN AC Tie BUS

Flight Engineer's Circuit Breaker Panel No. 1

Flight Engineer's Circuit Breaker Panel No. 2

Flight Engineer's Circuit Breaker Panel No. 3

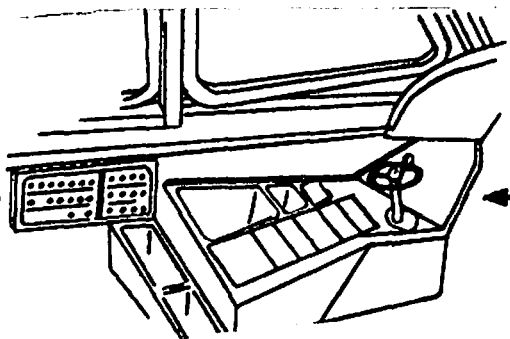


← MAIN AC Bus 1-4

← ESS AC Bus 1&2

← Iso AC Bus

Emergency Circuit Breaker Panel (Left of pilot)



← EMER AC BUS

Avionics Circuit Breaker Panel



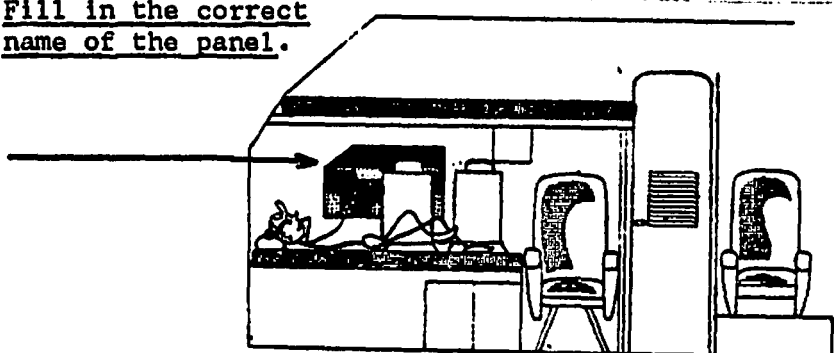
← AVIONICS BUS 1&2

←
←

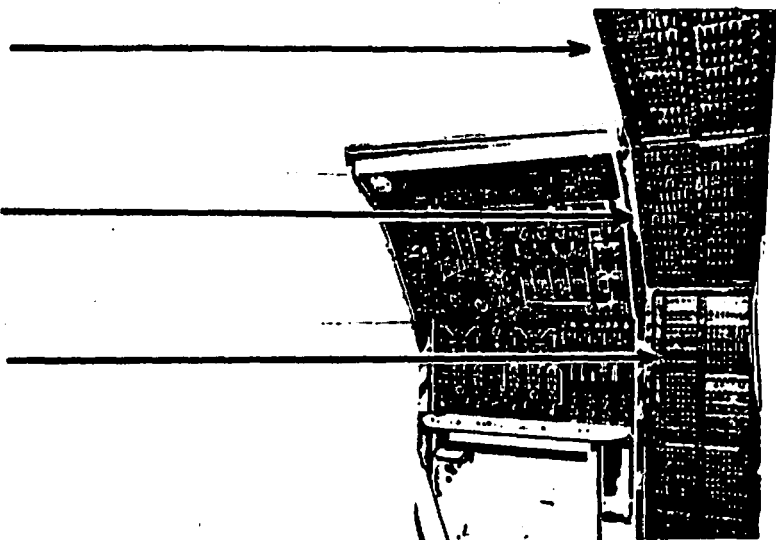
TURN to Page 14 to check your answers in the right-hand column, make any necessary corrections, and then FOLLOW the instructions on Page 14.

Fill in the correct name of the panel.

NAME OF BUS



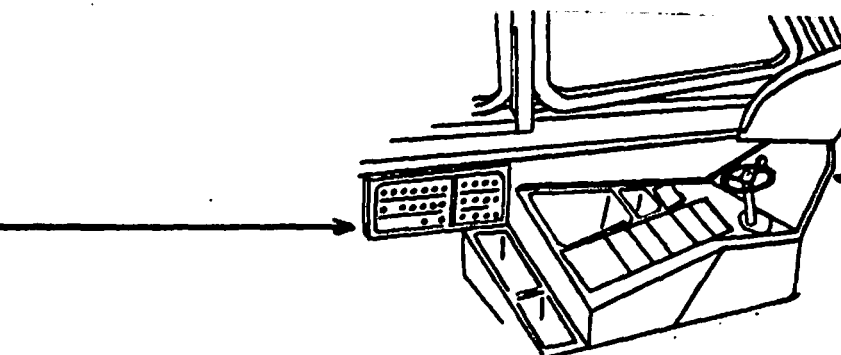
Main AC Tie Bus



Main AC Buses 1 through 4

Essential AC Buses 1 and 2

Isolated AC Bus



Emergency AC Bus

Avionics Buses 1 and 2

Isolated AC Avionics Bus

Navigation Buses 1 and 2

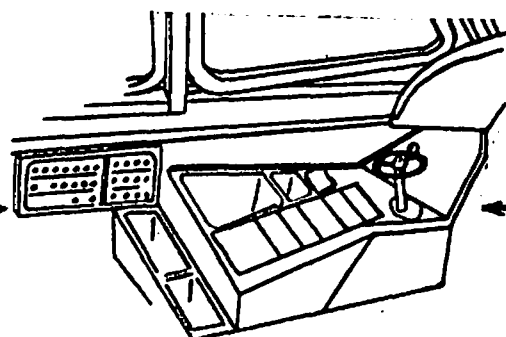
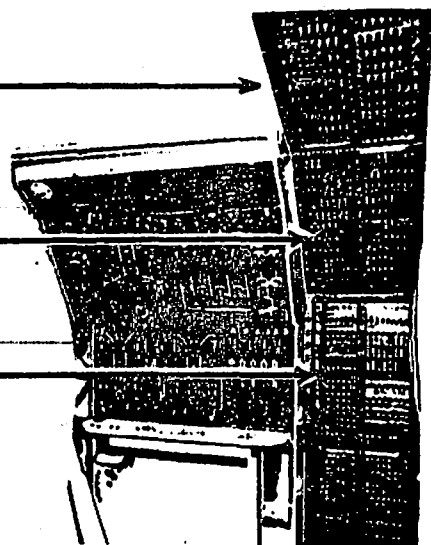
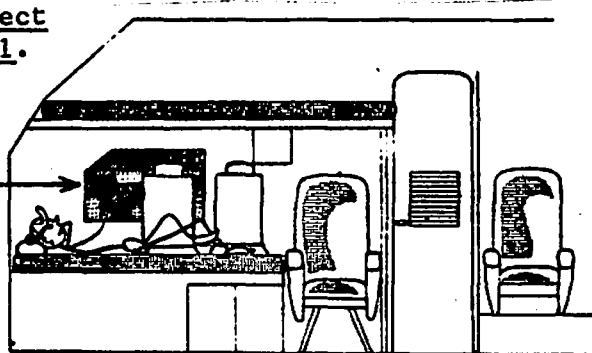
CHECK your answers
above with those on
Page 13



Now GO to the TOP LEFT of
this page and fill in the
locations.

Fill in the correct name of the panel.

Fill in the correct name of the bus.

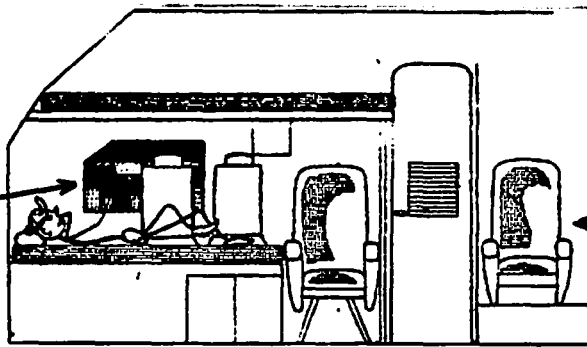


TURN to Page 16 to check your answers and correct any errors.

PANEL NAMES

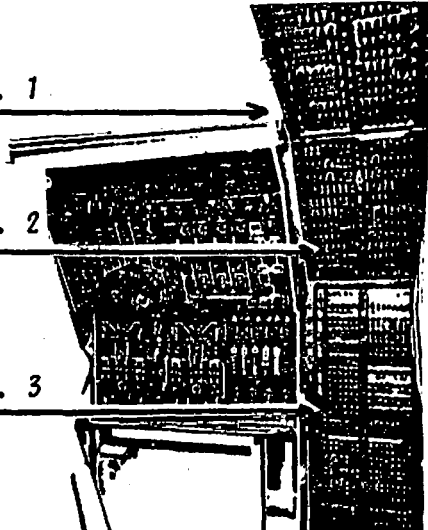
BUS TITLES

Main AC Power
Distribution
Center



Main AC Tie Bus

Flight Engineer's
Circuit Breaker Panel No. 1



Main AC Buses 1 through 4

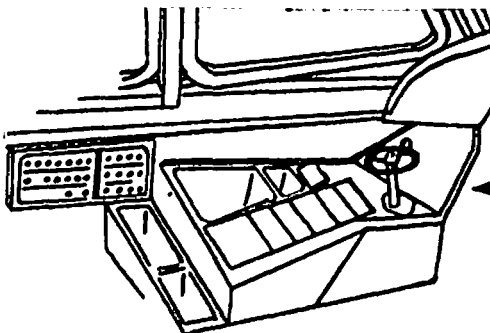
Flight Engineer's
Circuit Breaker Panel No. 2

Essential AC Buses 1 and 2

Flight Engineer's
Circuit Breaker Panel No. 3

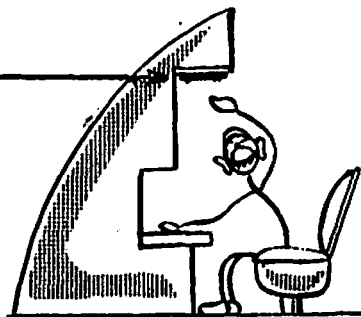
Isolated AC Bus

Emergency Circuit Breaker
Panel (Left of pilot)



Emergency AC Bus

Avionics Circuit
Breaker Panel



Avionics Buses 1 and 2

Isolated AC Avionics Bus

Navigation Buses 1 and 2

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