TECHNICAL MANUAL

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

HEADQUARTERS, DEPARTMENT OF THE ARMY
8 MAY 1980

PIN: 045514-010

CHANGE

No. 14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 April 1996

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

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Remove pages	Insert pages
i and ii	i and ii
v and vi	v and vi
xix and xx	xix and xx
FO-98	FO-98
FO-109	FO-109

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By Order of the Secretary of the Army:

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TM 55-1520-236-23-4
C 13

CHANGE

NO. 13

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 October 1995

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

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Remove pages	Insert pages
i through vi	i through vi
vi.1/(vi.2 blank)	vi.1 and vi.2
vii and viii	vii and viii
viii.1/(viii.2 blank)	viii.1/(viii.2 blank)
ix and x	ix and x
x.1/(x.2 blank)	x.1/(x.2 blank)
xi and xii	xi and xii
- - - - - -	xii.1/(xii.2 blank)
xvii and xviii	xvii and xviii
xviii.1/(xviii.2 blank)	xviii.1 and xviii.2
xix through xxi/(xxii blank)	xix through xxii

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NO. 12

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DEPARTMENT OF THE ARMY
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Aviation Unit and Intermediate Maintenance Manual

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

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Remove pages	Insert pages
vi.1/(vi.2 blank)	vi.1/(vi.2 blank)
ix and x	ix and x
x.1 /(x.2 blank)	x.1/(x.2 blank)
xi and xii	xi and xii
xv and xvi	xv and xvi
xvii and xviii	xvii and xviii
xviii.1/(xviii. 2 blank)	xviii.1/(xviii.2 blank)
xix and xx	xix and xx
FO-42	FO-42
FO-53	FO-53
----------	FO-54.1 through FO-54.4
FO-63	FO-63
FO-82	FO-82
FO-83	FO-83
FO-85	FO-85

Remove pages	Insert pages
FO-88	FO-88
FO-98	FO-98
FO-104	FO-104
FO-112	FO-112
FO-121	FO-121
FO-130	FO-130
FO-138	FO-138

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HEADQUARTERS
DEPARTMENT OF THE ARMY
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AVIATION UNIT AND INTERMEDIATE
MAINTENANCE MANUAL

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
xvii and xviii	xvii and xviii
xviii.1/xviii.2	xviii.1/xviii.2
FO-2	FO-2
FO-20	FO-20
FO-29	FO-29
FO-104	FO-104
FO-116	FO-116
FO-129	FO-129

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 21 February 1991

AVIATION UNIT AND INTERMEDIATE
MAINTENANCE MANUAL

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
a and b	a and b
Introduction	Introduction
i through vi	i through vi
- - - - - -	vi.1/vi.2
vii and viii	vii and viii
- - - - - -	viii.1/viii.2
ix and x	ix and x
- - - - - -	x.1/x.2
xi through xvi	xi through xvi
- - - - - -	xvi.1/xvi.2
- - - - - -	xviii.1/xviii.2
xix through xxii	xix through xxi/xxii
FO-2	FO-2
FO-42	FO-42
FO-53	FO-53
FO-82	FO-82
FO-83	FO-83
FO-85	FO-85
FO-88	FO-88
FO-104	FO-104
FO-138	FO-138
Cover 1/2	Cover 1/2

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TM 55-1520-236-23-4
C 1 0

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Chief of Staff

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CHANGE NO. 9

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 24 May 1990

AVIATION UNIT AND INTERMEDIATE
MAINTENANCE MANUAL

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
FO-119	FO–119

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***U.S. GOVERNMENT PRINTING OFFICE 1990–754030/25570**

PIN: 045514–009

CHANGE
No. 8

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 29 December 1988

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

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Remove pages	Insert pages
xi and xii	xi and xii
- - -	xii.1/xii.2
xix through xxi/xxii	xix through xxi/xxii
- - -	FO-23.1

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CHANGE
No. 7

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WASHINGTON, D.C., 2 December 1988

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 6 May 1980, is changed as follows:

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Remove pages	Insert pages
c and d	c and d
- - -	FO-2.1/FO-2.2
FO- 10	FO-10
FO- 13	FO-13
FO-16	FO-16
FO-43	FO-43
FO-44	FO-44

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CHANGE NO. 6

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 18 July 1988

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

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Remove pages	Insert pages
iii through xxi/xxii	iii through xxii
FO-123	FO-123

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CHANGE NO. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 August 1987

Aviation Unit and Intermediate Maintenance Manual

ARMY MODEL
AH-1P(PROD)
AH-1E(ECAS)
AH-1F(MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

1. Title has been changed as stated above.

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Remove pages	Insert pages
FO-18	FO-18
FO-20	FO-20
- - - - -	FO-21.1
- - - - -	FO-22.1
FO-28	FO-28
FO-30	FO-30
FO-33	FO-33
- - - - -	FO-50.1
- - - -	FO-51.1
FO-52	FO-52
FO-60	FO-60
FO-68 and FO-69	FO-68 and FO-69
- - - - -	FO-81.1
FO-87	FO-87
FO-90	FO-90
FO-93	FO-93
- - - - -	FO-100.1
- - - - -	FO-101.1
- - - - -	FO-102.1
FO-103	FO-103
FO-109	FO-109
FO-115	FO-115
FO-122	FO-122
FO-124	FO-124
FO-130	FO-130
FO-138	FO-138

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CHANGE
No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 22 April 1985

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1S(PROD)
AH-1S(ECAS)
AH-1S(MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

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Remove pages	Insert pages
FO-44	FO-44
FO-46 thru FO-48	FO-46 thru FO-48
FO-50 and FO-51	FO-50 and FO-51
FO-53 thru FO-55	FO-53 thru FO-55
FO-57 thru FO-64	FO-57 thru FO-64
FO-67 and FO-68	FO-67 and FO-68
FO-70 thru FO-72	FO-70 thru FO-72

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General, United States Army
Chief of Staff

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***U.S. GOVERNMENT PRINTING OFFICE: 1985-564-030/20045**

U R G E N T

TM 55-1520-236-23-4
C3

CHANGE NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 2 November 1984

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1S(PROD)
AH-1S(ECAS)
AH-1S(MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

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Remove pages	Insert pages
c/d	c and d

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The Adjutant General

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U R G E N T

CHANGE NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 12 October 1983

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-IS (PROD)
AH-IS (ECAS)
AH-1S (MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

NOTICE

When the following list of changes on TM 55-1520-236-23-Series manuals are received and incorporated into manuals they will supersede the TM 55–1520-239-23-Series manuals.

TM 55-1520–236–23–1, Changes 1 through 13
TM 55-1520–236-23–2, Changes 1 through 3
TM 55-1520-236-23-3, Changes 1 and 2
TM 55-1520-236-23-4, Changes 1 and *2*

1. Remove and insert pages as indicated below.

	Remove pages	Insert pages
Fold Outs	FO-87	FO-87

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CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 10 September 1982

Aviation Unit and Intermediate
Maintenance Manual

ARMY MODEL
AH-1S(PROD)
AH-1S(ECAS)
AH-1S(MODERNIZED COBRA)
HELICOPTERS

TM 55-1520-236-23-4, 8 May 1980, is changed as follows:

1. Remove and insert pages as indicated below.

	Remove pages	Insert pages
Table of Contents	i thru iii/iv	i thru xxi/xxii
Fold Outs	FO-48	FO-48
	FO-66	FO-66
	FO-98	FO-98
	FO-130	FO-130
	FO-134 thru FO-136	FO-134 thru FO-136

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Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31, Organizational Maintenance Requirements for AH-1S(PROD) aircraft.

WARNING

Personnel performing operations, procedures, and practices which are included or implied in this technical manual shall observe the following warnings. Disregard of these warnings and precautionary information can cause serious injury, or death.

Warnings, cautions, and notes are used to emphasize important and critical instructions and shall be used for the following conditions:

WARNING

An operating procedure, practice, etc., which, if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operating procedure, practice, etc., which if not strictly observed, could result in damage to or destruction of equipment.

NOTE

An operating procedure, condition, etc., which it is essential to highlight.

STARTING ENGINE

Starting and Operation
of the helicopter will be performed only by
authorized personnel in accordance with AR 95-1.

HIGH VOLTAGE

The helicopter should be electrically grounded when parked.
Turn off all power switches before making electrical connections or disconnections.
Serious burns and electrical shock can result from contact
with exposed electrical wires or connectors.

RADIATION HAZARD

Self-luminous dials contain radioactive materials.
If such an instrument is broken or becomes unsealed, avoid personal contact.
Use forceps or gloves made of rubber or polyethylene to pick up' contaminated material.
Place material and gloves in a plastic bag.
Seal beg and dispose of it as radioactive waste
in accordance with AR 755-15 and TM 3-261 (TB 43-0108).
Repair procedures shall conform to requirements in AR 700-52.

DANGEROUS CHEMICALS

Exposure to high concentrations of fire extinguishing agents can cause severe irritation of eyes and nose,

Corrosive Battery Electrolyte (Potassium Hydroxide). Wear rubber gloves, apron, and face shield when handling leaking batteries, If potassium hydroxide is spilled on clothing, or other material, wash immediately with clean water. If spilled on personnel, immediately start flushing the affected area with clean water. Continue washing until medical assistance arrives.

Use solvents or chemicals in a well ventilated area.
Do not inhale vapors or allow to come in contact with skin or eyes.
Observe proper fire prevention rules.

LASER LIGHT

The laser beam is dangerous and can cause blindness if it enters the eye either directly or reflected from a shiny surface. Crewmen shall wear approved laser protective visors whenever in controlled area when laser rangefinder or laser target designators are being used. Laser shall be used only in controlled areas by qualified personnel.

NOISE LEVEL

Sound pressure levels in the helicopter during some operating conditions exceed the Surgeon Generals hearing conservation criteria as defined in TB MED 251.
Hearing, protection devices, such as the aviator helmet or ear plugs, are required to be worn by all personnel in and around the helicopter during its operation.

ASBESTOS FIBERS

Avoid creating dust, Breathing asbestos dust may cause serious bodily harm.

ARMAMENT

When working on, or near an armed helicopter, take all possible precautions to avoid accidental firing of armament.
Personnel shall not occupy possible firing pattern in front of or up to 20 feet behind rocket pods.
Munitions shall be handled by authorized personnel only.
All weapons shall be dry-fired. Only dummy ammunition with smooth cases like live ammunition shall be used.

JETTISON

All ground safety pins must be removed before flight. Failure to do so will prevent emergency jettison of stores.

Jettison circuit may be activated with BAT" switch OFF and pilot WING STORES JTSN circuit breaker OPEN. For positive deactivation of jettison circuit, open both the PLT JTSN and GNR JTSN circuit breakers located in the pilot's side console. Serious injury can result from accidental ground jettison.

SANDING DUST

Sanding on reinforced laminated glass produces fine dust that may cause skin irritations. Observe necessary protective measures.

TRANSMISSION LEVELING

Do not attempt to level transmission with "Jacks Only." Hoist must be used in conjunction with jacks while lifting transmission.

EXTERNAL STORES

Prior to any helicopter maintenance functions that require external stores be removed JETTISON cartridge shall be removed. Remove jettison cartridges from pylon stores ejection device prior to placing helicopter in a hangar, to prevent injury to personnel and damage to equipment. Exception: Removal is not necessary when helicopter is to be placed in hangar for short-term, providing both PLT JTSN and GNR JTSN circuit breakers in the pilot's side console are OPEN, and warning signs indicate that helicopter has an armed jettison system.

CANOPY REMOVAL SYSTEM

Ground safety pins must be installed in pilot and gunner arming/firing handles of canopy removal system whenever the helicopter is on the ground. Pins should be installed by crew.

CLEANING HYDRAULIC COMPONENTS

The use of any alcohol in cleaning components which contact hydraulic fluids is prohibited. Formation of a polymeric residue can result, which could impair mechanical operation of the component.

HANDLING HYDRAULIC FLUID (MIL-H-83282)

When handling hydraulic fluid (MIL-H-83282), Table 1-3, Item 61, observe the following

– Prolonged contact with liquid or mist can irritate eyes and skin.

– After any prolonged contact with skin, immediately wash contacted area with soap and water. If liquid contacts eyes, flush them immediately with clear water.

– If liquid is swallowed, do not induce vomiting get immediate medical attention.

– Wear rubber gloves when handling liquid. If prolonged contact with mist is likely, wear an appropriate respirator.

– When fluid is decomposed by heating, toxic gases are released.

EPOXY BASED ADHESIVE

Epoxy based adhesive, P/N EA934, contains an asbestos filler which could be inhaled or ingested during grinding, cutting, or sanding operations on cured epoxy material.

TOOLS

Use only chrome plated steel or unplated steel tools for disassembly or reassembly procedures described in this manual. Use of cadmium or zinc plated tools is not permitted.

GROUNDING

All aircraft parked outside will be grounded and bonded, in accordance with FM 1-500, to the aerospace ground equipment while servicing, i.e., fueling or defueling, arming (ammunition or explosives), oxygen, hydraulic fluids or any flammable liquids. Grounding is not necessary for aircraft parked outside unless one of the above is being accomplished.

INSPECTION OF REMOVED COMPONENT'S

When components are being removed from an aircraft, all inspections required by the next phase maintenance inspection must be accomplished prior to either immediate re-use or storage. Upon installation, the component will be inspected in accordance with the current phase either that phase the receiving aircraft is in or if in between phase, the last phase performed). This will ensure that a re-used component will not overfly any PM inspections, and that it will be properly interfaced with the receiving aircraft phase sequence.

*U.S. GOVERMENT PRINING OFFICE: 1989 654-030/00057

TECHNICAL MANUAL

No. 55-1520-236-23-4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 8 May 1980

Aviation Unit and Intermediate Maintenance Manual

ARMY MODEL
AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)

HELICOPTERS

NOTE

This manual is printed in five volumes, as follows:

TM 55-1520-236-23-1, consisting of Table of Contents, Preface Chapters 1 through 6.

TM 55-1520-236-23-2, consisting of Table of Contents. Chapters 7 through 17. Appendix A through C.

TM 55-1520-236-23-3, consisting of Table of Contents, Appendix D through G, and Index.

TM 55-1520-236-23-4, consisting of Table of Contents, FO-1 through FO-142.

TM 55-1520-236-23-5, consisting of Table of Contents, FO-143 through FO-145.

The Preface, Appendices and Index are applicable to all volumes.

***This manual together with TM 55-1520 -236-23-1,8 May 1980, TM 55-1520 -236-23-2,8 May 1980, TM 55-1520-236-23-3,8 May 1980, and TM 55-1520-236-23-5,31 July 1990, supersedes TM 55-1520-236-23-1,30 June 1977 and TM 55-1520-236-23-2,30 June 1977.**

TECHNICAL MANUAL

NO. 55-1520-236-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 8 May 1980

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL
ARMY MODEL

AH-1P (PROD)
AH-1E (ECAS)
AH-1F (MODERNIZED COBRA)
HELICOPTERS

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help Improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished directly to you.

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF ILLUSTRATIONS (CON'T)

LIST OF TABLES

LIST OF TABLES (CON'T)

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LIST OF TABLES (CON'T)

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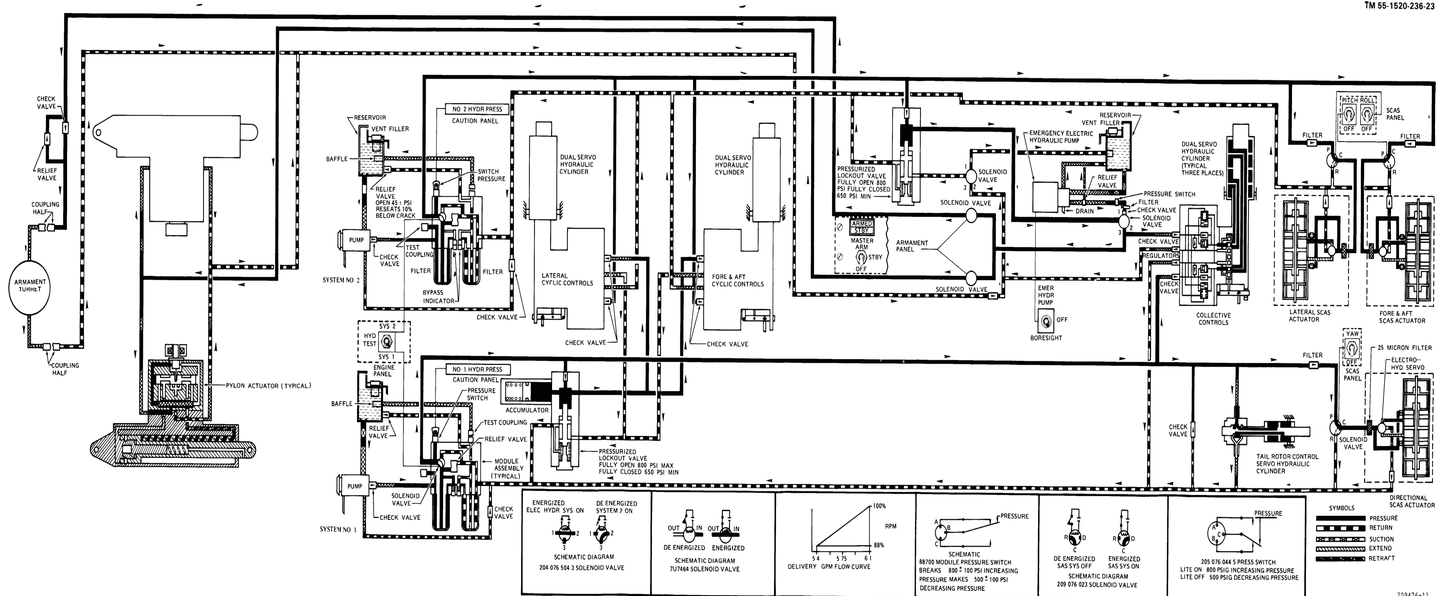
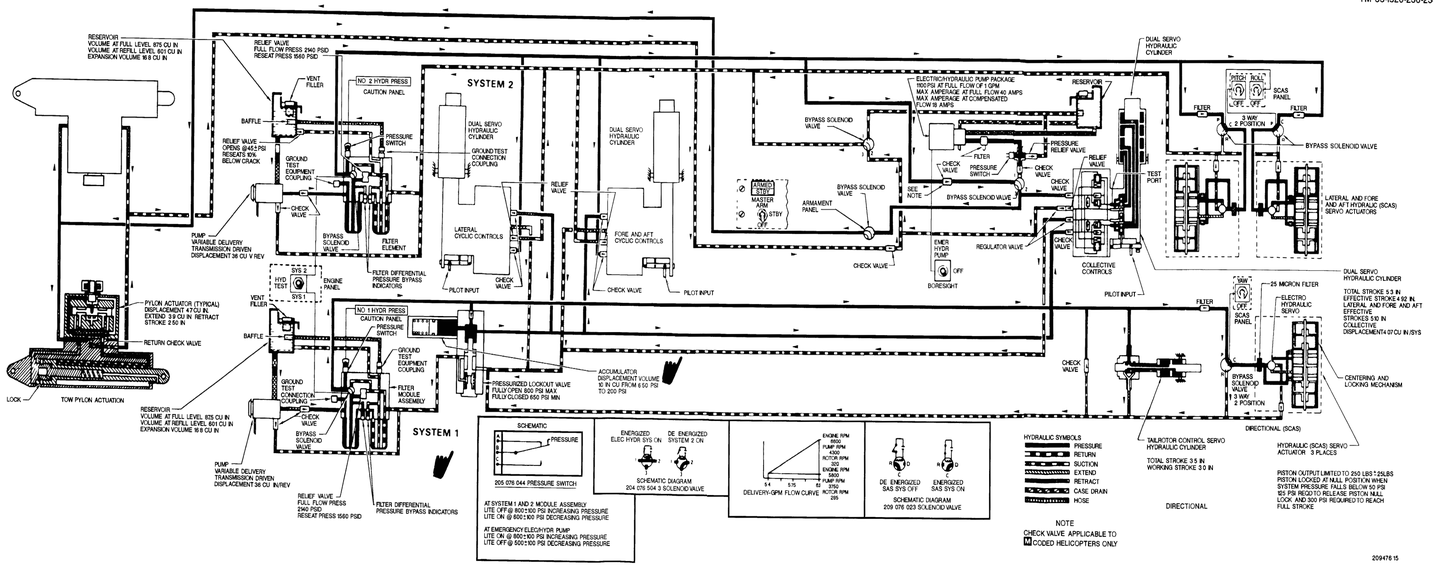
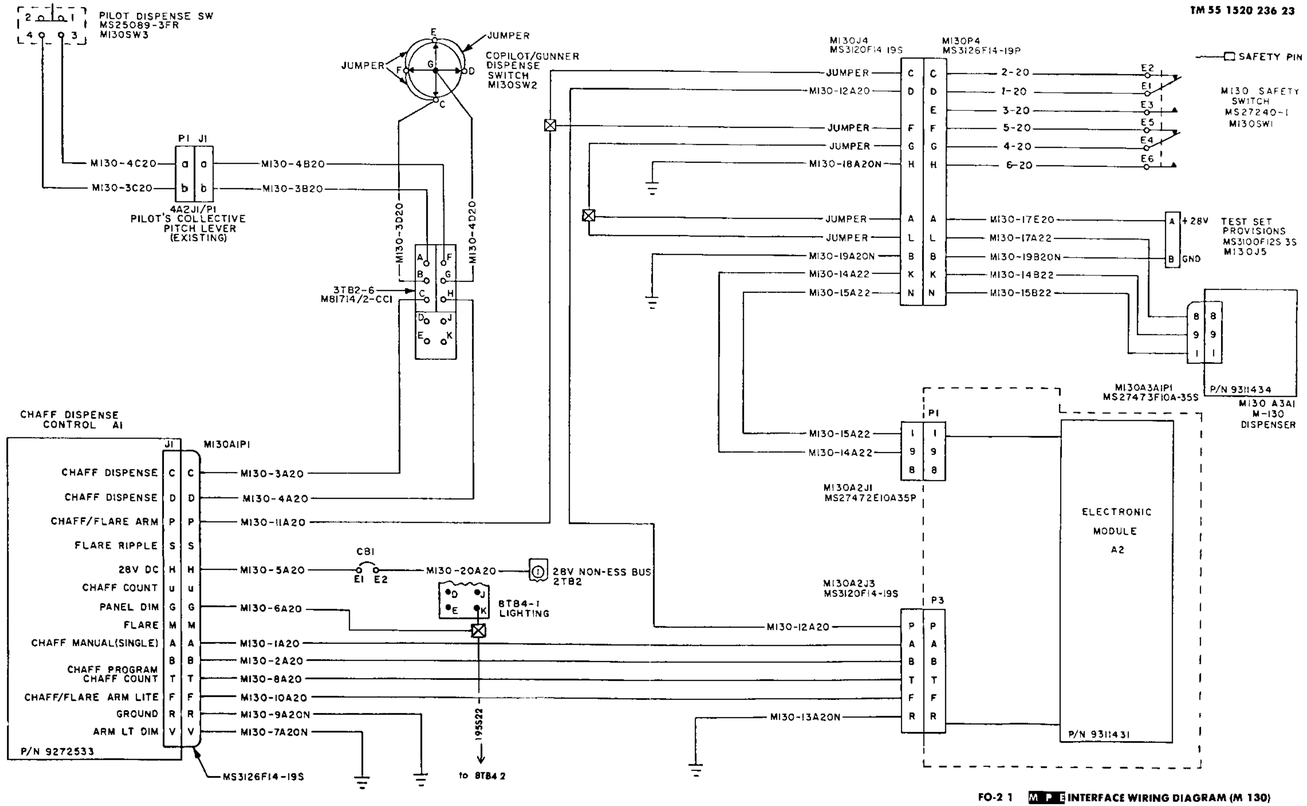


FO 1 Hydraulic System Schematic



FO-2 E M Hydraulic System Schematic



FO-2 1 **M P E INTERFACE WIRING DIAGRAM (M 130)**

MAGNETIC PICKUP

MAGNETIC PICKUP switch is set to Common for all helicopter work so that both Accelerometer inputs are referenced to the same Magnetic Pickup pulse frm the main rotor swashplate Independent is used only if two Magnetic Pickups are used as on left and right props of an airplane Then the left Accelerometer is compared to the left Magnetic Pickup and right to right

'VERIFY TUNE RPM RANGE AND RPM TUNE

The heart of the Balancer is its tuneable electronic band pass filter The Accelerometer senses not only the one per-rev of the rotor being worked but all other vibrations as well These might be from other rotors n per-rev (where n = number of blades) shafts gears bearings engine etc The Balancer s filter is tuned by means of the RPM Range switch and RPM Tune dial to the one per rev of the rotor being worked The subsequent sections of the Balancer (measuring amplitude and phase) then deal only with the one per rev all other rates having been electrically rejected

Tuning of the electronic band pass filter to the exact rotor RPM is accomplished by simple manipulation of the 'Verify Tune button and RPM Tune dial TUNING IS IMPORTANT and instructions are found elsewhere in this TM and on the Track and Balance Charts

The filter is stagger tuned which means it has a broad top and sharp skirt charactenstic This gives it considerable tolerance for RPM variation of the ship while retaining good rejection of other unwanted vibration signals When the 'Verify Tune button is pushed the filter is switched to a normal or sharp peak configuration This property is used as a part of the tuning procedure and for troubleshooting

TROUBLESHOOTING

If there is an unknown vibratory disturbance an Accelerometer is mounted in the area where the disturbance is felt Then the 'RPM Tune dial is slowly turned until the meter peaks (reads maximum) It is best to peak the meter with the 'Verify Tune button depressed because the filter is sharper The RPM or vibration rate of the disturbance is then read directly from the RPM Tune dial (and RPM Range switch)

It is obvious that if the meter reads near zero there is no vibration at the indicated rate of the point to which the Accelerometer is attached

Knowing the vibration rate the source of the disturbance can usually be located keeping in mind that it might be shaft rate blade rate or multiples thereof or gear clash rate etc

ACCELEROMETER
Senses vibration from out of track or out of balance rotors and parts

MAGNETIC PICKUP
Triggers Strobex and provides phase reference for Phazor

STROBEX RECEPTACLE

28 V D C POWER

ACCELEROMETER INPUTS

Channels A and B are identical but are used as described only to establish a convention and avoid careless errors These Accelerometer inputs are also used for troubleshooting vibrations in which case the Accelerometer may be placed wherever the vibration is felt Then the 'RPM Tune dial is adjusted until the meter peaks and the RPM (rate) of the disturbance is read directly from the dial

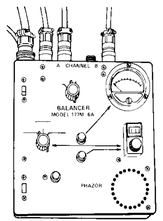
Channel A Accelerometer typically used to measure lateral one per rev for main rotor balance

Channel B Accelerometer typically used to measure vertical one per-rev for main rotor track adjustment Also used for tail rotor balancing

MAGNETIC PICKUP INPUTS

Magnetic Pickup signal from swashplate assembly is used to trigger Strobex when Function switch is set to Track and as a rotor azimuth reference against which the Clock Angle of the Accelerometer signal is measured when Function switch is set to A or B

This Magnetic Pickup receptacle is used when two pickups are in use as for left and right propellers of an airplane



INTERRUPTER LOGIC

Since the rotating swashplate is fitted with two Interrupters one of which is double the Interrupter Logic switch is set to 'Double The Phazor then responds only to the double pulse which is the one per rev phase reference needed for the Phazor

TEST BUTTON

When the Test button is pushed the Accelerometer signals are disconnected and the Magnetic Pickup signal is fed into itself This causes the 12 00 and 6 00 o clock lights to light

IMPORTANT
The 12 00 and 6 00 o clock lights must be seen or Phazor is not ready to use

PHAZOR RING OF LIGHTS

This is a phase meter which measures the Clock Angle between the rotor azimuth angle derived from the Magnetic Pickup and the oscillating Accelerometer signal This Clock Angle plotted on the Chart tells WHERE to change weight or pitch-link to smooth the rotor

NOTE

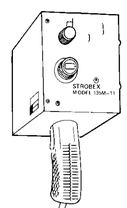
Tail rotors are not fitted with Magnetic Pickups so the Strobex is used instead of the Phazor to measure Clock Angle

METER

Meter reads vibration amplitude in IPS (Inches Per Second) This is the velocity of the measured point as it goes thru the zero crossing of its oscillatory (vibratory) motion Scale #1 reads 0 to 1 0 IPS

Push for Scale 2 button is pushed if reading is off scale Then the Balancer reads 0 to 10 IPS

Vibration amplitude plotted on the Chart tells HOW MUCH weight or track change is required to smooth the rotor



TRIGGER SWITCH
Turns DC Power on and off

STROBEX CABLE
Plugs into Strobex receptacle of Balancer

STROBEX

The Strobex Tracker model 135M 11 is a small hand held lightweight point source strobe lamp designed especially for helicopter blade tracking and balancing both on the ground and in flight It is used to illuminate retro-reflective Targets secured to blade tips for tracking or on tail rotor blade grips for balancing By virtue of the point source narrow extremely bright beam it can be used effectively day or night in all kinds of weather including bright sunlight

The 135M 11 Strobex Tracker is used with a 177M 6A Balancer for tracking and balancing It may also be used as a conventional speed measuring strobe in which case the RPM of shafts rotors and accessories may be read directly

The 135M 11 Strobex has a trigger in the pistol grip handle for DC power switching a five position mode switch and a 10 turn RPM dial to adjust the flash rate

Positions A D and E operate at low intensity and to high flash rates and B and C operate at higher intensity (about 4 times) but to lower maximum flash rates The lower intensity is adequate for viewing the reflective targets on all but the biggest helicopters in any kind of daylight

The five modes of operation are

A — — — When set to A the Strobex operates a slave mode flashing only when commanded by the Balancer and is used for main rotor tracking and tail rotor balancing

The rotating swashplate is fitted with two Interrupters (one of which is double because of the Phazor) When the Balancer is set to track the Strobex will flash twice per revolution illuminating each of the two blade tips when they pass the front of the helicopter (and also when they pass over the tailboom) Thus the two Tip Targets will be seen superimposed at the front of the helicopter (They can also be seen over the tailboom but this is not useful except for ground tracking) Since one Tip Target has a reflective horizontal bar and the other has a vertical bar the judgment of track is simple The reflective Targets face inboard so they are viewed from the cabin either on the ground or in flight

When an Accelerometer is secured on the tail rotor gearbox and connected to the Channel B input and the Balancer is switched to B the Strobex will flash once per rev in response to the vibration signal induced by the out of balance rotor

When a reflective Target secured to the rotor hub is viewed from a distance with the Strobex the Target will appear stopped at some angle This is the Clock Angle to be entered on the Balance Chart and will tell where to change weight

B — — — Position B is also used for main rotor tracking where higher intensity light is required The unique locking oscillator of position B is typically used for the larger rotors with multiple (4 5 angle) blades In those cases only one single Interrupter is secured to the rotating swashplate and the oscillator causes the Strobex to flash for the other blades By fine adjustment of the Strobex RPM control the blades may be spread for easy resolution

When applied to the two blade rotor systems (BELL) where two Interrupters are installed on the swashplate position B is used for greater light output The oscillator is set to flash at a rate slightly slower than blade rate (in accordance with the formula on the back of the Strobex RPM = blade rate X 0 4)

Then the Interrupter commands the Strobex before the oscillator and it operates as if there were no oscillator In this case the Targets cannot be spread

The oscillator may be set to double the blade rate in which case the Tip Targets will be seen at twice as many positions around the rotor disc For instance the Targets of a two blade rotor are typically seen at 12 00 and 6 00 o clock (as determined by location of Interrupters) If the oscillator is set to double the blade rate the Targets will also be seen at 3 00 and 9 00 o clock

C — — — This is a free running oscillator and is used as a tachometer for speed (RPM) measuring All external signals are disconnected and the Strobex flashes only in response to its internal oscillator Flash rate is adjustable from 100 to 1 000 RPM (flashes per minute)

D — — — This is also a free running oscillator and is used for tail rotor tracking as well as speed measuring Since there is no Magnetic Pickup mounted on the tail rotor the flash rate of the free-running oscillator is adjusted to double or four times the rotor rate (for a two blade tail rotor) so the single grip target appears as a stopped image of two or four Then by viewing the rotor disc edge on from the cabin door reflective Tip Targets can be seen superimposed for a judgment of track Flash rate from 1 000 to 10 000 RPM

E — — — This is a locking oscillator like B but operates at higher rates and is used for viewing the track of airplane propellers Requires a Magnetic Pickup input pulse

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EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	OPER TIME MIN	ELECTRICAL REQUIREMENTS PER UNIT 115 VOLTS 3 PHASE VA	WATTS	VARS	115 VOLTS 1 PHASE VA	WATTS	VARS	26 VOLTS 1 PHASE VA	WATTS	VARS
AC BUS SYSTEM TOW OFF													
26 VAC (TOW NOT ENERGIZED)													
FLIGHT INSTRUMENTS													
COURSE IND	212 070 180 3		1	15 00							9 12	1 46	9 00
RADIO NAV & COMM													
LF ADF REC	AN/ARN 89		1	15 00							4 01	2 52	3 12
VOR/LOC/GS	AN/ARN 123		1	15 00							10 40	8 32	6 24
AC POWER													
PF COR CAP	5 MFD 100V		1	15 00							8 60	1 71	8 43
115 VAC (TOW NOT ENERGIZED)													
ARMAMENT													
HELMENT ST			1	15 00				13 35	13 35	0 0			
TURRET GUN	XM 28		1	15 00				17 92	9 14	15 41			
FLIGHT XONTROLS													
STAB AUG SYS	570 947 001		1	15 00				16 59	15 21	6 62			
ENGINE INSTRUMENTS													
FUEL QTY SYS	209 060 602		1	15 00				2 92	2 91	0 26			
FUEL QTY IND			1										
FUEL QTY XMR			2										
FLIGHT INSTRUMENTS													
COMPASS SYS	AN/ASN 43		1										
DIR GYRO	CN/998( )/ASN		1	15 00				16 39	15 36	5 73			
XMTR	T 611( )/ASN		1										
SERVO AMP	AM 3209/ASN		1	15 00				12 32	12 00	-2 79			
ATT GYRO	LEAR—SIGLER 9000C		1	15 00				17 92	15 93	8 21			
RATE SW GYRO	TYPE MC I		1	15 00				4 91	1 21	-4 76			
HSI IND	209 070 660		1	15 00				25 00	20 00	15 00			
PLT ATT IND	209 076 661 1		1	15 00				10 00	9 39	3 44			
AC POWER													
MAIN INVRLY	214 075 150 1		1	15 00				5 10	5 07	0 51			
AC BUS SYSTEM TOW ON													
26 VAC (WITH TOW ENERGIZED)													
FLIGHT INSTRUMENTS													
COURSE IND	212 070 180 3		1	15 00							9 12	1 46	9 00
RADIO NAV & COMM													
LF ADF REC	AN/ARN 89		1	15 00							4 01	2 52	3 12
VOR LOC/GS	AN/ARN 123		1	15 00							10 40	8 32	6 24
AC POWER													
PF COR CAP	5 MFD 100 V		1	15 00							8 60	1 71	8 43
115 VAC (WITH TOW ENERGIZED)													
ARMAMENT													
TOW REF SI	XM 65		1	15 00	27 92	24 63	13 14						
TOW MIS SY	XM 65		1	15 00	110 64	104 23	37 11						
HELMENT ST			1	15 00				13 35	13 35	0 0			
TUR CONT 3PH	XM 28		1	15 00	17 81	9 21	15 24						
FLIGHT CONTROLS													
STAB AUG SYS	570 947 001		1	15 00				16 59	15 21	6 62			

209099-25-1

FO-4 **P AC Electrical Load Chart**

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	OPER TIME MIN	ELECTRICAL REQUIREMENTS PER UNIT								
					115 VOLTS 3 PHASE			115 VOLTS 1 PHASE			26 VOLTS 1 PHASE		
					VA	WATTS	VARS	VA	WATTS	VARS	VA	WATTS	VARS
ENGINE INSTRUMENTS													
FUEL QTY SYS	209 060 662		1	15 00				2 92	2 91	0 26			
FUEL QTY IND			1										
FUEL QTY XMR			2										
FLIGHT INSTRUMENTS													
COMP ASSY SYS	AN/ASN 43		1										
DIR GYRO	CN/998( )/ASN		1	15 00				16 39	15 36	5 73			
XMTR	T 611( )/ASN		1										
SERVO AMP	AM 3209/ASN		1	15 00				12 32	12 00	-2 79			
ATT GYRO	LEAR-SIGLER 9000C		1	15 00	17 94	15 93	8 25						
RATE SW GYRO	TYPE MC-1		1	15 00	4 89	1 20	4 74						
HSI IND	209 070 660		1	15 00				25 00	20 00	15 00			
ATT IND3PH	209 075 661 1		1	15 00				3 52	3 33	1 15			
AC POWER													
MAIN INV RLY	214 075 150 1		1	15 00				5 10	5 07	0 51			

209099-25-2

FO-5 **P AC Electrical Load Chart**

FO-

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	OPER TIME MIN	VOLTAGE MIN	VOLTAGE MAX	FREQ MIN	FREQ MAX	PWR SOR INF	PWR FACT	CONNECTED LOADS PHASE A TO B WATTS	CONNECTED LOADS PHASE A TO B VARS	CONNECTED LOADS PHASE B TO C WATTS	CONNECTED LOADS PHASE B TO C VARS	CONNECTED LOADS PHASE C TO A WATTS	CONNECTED LOADS PHASE C TO A VARS
			AC BUS SYS TOW OFF													
26 VAC (TOW NOT ENERGIZED)																
FLIGHT INSTRUMENTS																
COURSE IND	212 070 180 3		1	15 00	24 5	27 5	380	420	SPEC	0 160						
RADIO NAV & COMM																
LF ADF REC	AN-ARN 89		1	15 00	24 5	27 5	380	420	MEA	0 629			1 46	9 00		
VOR LOC DS	AN ARN 123		1	15 00	24 5	27 5	380	420	SPEC	0 800			2 52	3 12		
AC POWER													8 32	6 24		
PF COR CAP	5 MFD 100V		1	15 00	24 5	27 5	380	440	MEA	0 169						
TOTAL 26 VAC (TOW NOT ENERGIZED)													1 71	8 43		
													14 01	9 93		
													17 17 VA AT			
													0 816 PF LAG			
115 VAC (TOW NOT ENERGIZED)																
ARMAMENT																
HELMENT SI			1	15 00	107 5	119 5	380	420	MEA	1 000	13 35	0 0				
TURRET CON	XM 28		1	15 00	108 0	118 0	360	440	MEA	0 510	9 14	15 41				
FLIGHT CONTROLS																
STAB AUG SYS	570 047 001		1	15 00	108 0	118 0	380	420	MEA	0 917	15 21	8 62				
ENGINE INSTRUMENTS																
FUEL QTY SYS	208 060 602		1	15 00	107 5	119 5	360	440	MEA	0 996	2 91	0 26				
FUEL QTY IND			1													
FUEL QTY XMR			2													
FLIGHT INSTRUMENTS																
COMPASS SYS	AN-ASN 43		1													
DIR GYRO	CN-998k 1/ASN		1	15 00	108 0	118 0	380	420	MEA	0 937						
XMTR	T-611( )/ASN		1										15 36	5 73		
SERVO AMP	AM 3209 ASN		1	15 00	108 0	118 0	380	420	MEA	0 974						
ATT GYRO	LEAR SIGLER 8000C		1	15 00	108 0	118 0	380	420	MEA	0 889			12 00	2 79		
RATE SW GYRO	TYPE MC-1		1	15 00	108 0	118 0	380	420	MEA	0 247	15 93	8 21				
HSI IND	209 070 600		1	15 00	108 0	118 0	380	420	MEA	0 800	1 21	-4 76				
PLT ATT IND	209 075 661 1		1	15 00	108 0	118 0	380	420	SPEC	0 929	9 39	3 44				
AC POWER													20 00	15 00		
MAIN INV PLY	214 075 150 1		1	15 00	108 0	118 0	360	440	MEA	-0 995	5 02	-0 51				
TOTAL 115 VAC (TOW NOT ENERGIZED)											72 22	28 67	47 36	17 93		
											77 70 VA AT		50 64 VA AT			
TOTAL PER PHASE 26 VAC & 115 VAC AC BUS SYS TOW OFF											0 929 PF LAG		0 935 PF LAG			
											72 22	28 67	61 37	27 86		
TOTAL 3 PHASE AC BUS SYS TOW OFF											77 70 VA AT		67 40 VA AT			
											0 929 PF LAG		0 911 PF LAG			
													133 59	56 54		
													145 06 VA AT 0 921 PF LAGGING			

209099-25-3

FO-6 **P** **AC Electrical Load Chart**

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	OPER TIME MIN	VOLTAGE MIN	VOLTAGE MAX	FREQ MIN	FREQ MAX	PWR SOR INF	PWR FACT	PHASE A TO B WATTS	PHASE A TO B VARS	PHASE B TO C WATTS	PHASE B TO C VARS	PHASE C TO A WATTS	PHASE C TO A VARS
			AC BUS SYS TOW ON													
26 VAC (WITH TOW ENERGIZED)																
FLIGHT INSTRUMENTS																
COURSE IND 212 070 180 3			1	15 00	24 5	27 5	380	420	SPEC	0 160						
RADIO NAV & COMM													1 46	9 00		
LF ADF REC	AN/ARN 89		1	15 00	24 5	27 5	380	420	MEA	0 629						
VOR LOC GS	AN/ARN 123		1	15 00	24 5	27 5	380	420	SPEC	0 800						
													2 52	3 12		
AC POWER													8 32	8 24		
PF COR CAP	5 MFD 100V		1	15 00	24 5	27 5	360	440	MEA	0 199						
TOTAL 26 VAC (WITH TOW ENERGIZED)													1 71	8 43		
													14 01	9 93		
													17 17 VA AT			
													0 816 PF LAG			
115 VAC (WITH TOW ENERGIZED)																
ARMAMENT																
TOW REF SI	XM 65		1	15 00	108 5	117 5	380	420	MEA	-0 882	11 53	8 22				
TOW MIS SY	XM 65		1	15 00	108 5	117 5	380	420	MEA	0 942	24 29	37 01	-25 09	2 38	11 07	18 98
HELMET ST			1	15 00	107 5	119 5	380	420	MEA	1 000			32 20	24 13	47 74	24 03
TUR CONT 3PH	XM 28		1	15 00	108 0	118 0	360	440	MEA	0 517	3 07	5 08	13 35	0 0		
FLIGHT CONTROLS													3 07	5 08	3 07	5 08
STAB AUG SYS	570 947 001		1	15 00	108 0	118 0	380	420	MEA	0 917	15 21	6 62				
ENGINE INSTRUMENTS																
FUEL QTY SYS	209 060 602		1	15 00	107 5	119 5	360	440	MEA	0 996	2 91	0 26				
FUEL QTY IND			1													
FUEL QTY XMR			2													
FLIGHT INSTRUMENTS																
COMPASS SYS	AN/ASN 43		1													
DIR GYRO	CN-1098/ASN		1	15 00	108 0	118 0	380	420	MEA	0 837						
XMTR	T 611/ASN		1										15 36	5 73		
SERVO AMP	AM 3209/ASN		1	15 00	108 0	118 0	380	420	MEA	-0 974						
ATT GYRO	LEAR-SIGLER 9000C		1	15 00	108 0	118 0	380	420	MEA	0 888			12 00	-2 79		
RATE SW GYRO	TYPE MC-1		1	15 00	108 0	118 0	380	420	MEA	0 248	5 31	2 75	5 31	2 75	5 31	2 75
HSI IND	209 070 680		1	15 00	108 0	118 0	380	420	MEA	0 800	0 40	1 58	0 40	-1 58	0 40	1 58
ATT IND 3PH	209 075 681 1		1	15 00	108 0	118 0	380	420	SPEC	0 945	20 00	15 00				
AC POWER													3 33	1 15		
MAIN INV RLY	214 078 150 1		1	15 00	108 0	118 0	360	440	MEA	0 995	5 07	0 51				
TOTAL 115 VAC (WITH TOW ENERGIZED)											87 80	56 41	58 93	36 84	45 45	1 20
											104 36 VA AT		70 35 VA AT		45 47 VA AT	
											0 841 PF LAG		0 852 PF LAG		1 000 PF LAG	
TOTAL PER PHASE 26 VAC & 115 VAC AC BUS SYS TOW ON											87 80	56 41	73 94	48 77	45 45	1 20
											104 36 VA AT		87 49 VA AT		45 47 VA AT	
											0 841 PF LAG		0 845 PF LAG		1 000 PF LAG	
TOTAL 3 PHASE AC BUS SYS TOW ON													207 18	104 38		
													231 99 VA AT 0 893 PF LAGGING			

209099-25-4

FO-7 **P AC Electrical Load Chart**

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS: START AND WARM-UP 5 SEC	START AND WARM-UP 2 MIN	START AND WARM-UP 15 MIN	TAKE OFF 5 SEC	TAKE OFF 2 MIN	TAKE OFF 15 MIN
			ESSENTIAL DC BUS												
ARMAMENT															
NOSE ARMAMENT	M28A1E1		1												
GUN DRIVE MTR		6	1	60 0	0 0	24 00	28 50	SPEC	60 00						
GUN CONTROL PR			1	23 00	2 00	24 00	28 50	SPEC	23 00						
MACHINE GUN	XM 18 (7 62MM)	7	2												
MACH GUN FIRE			2	1 00	0 25	21 00	29 00	MEA	2 00						
MACH GUN BAT CHG			2	9 90	0 50	21 00	29 00	MEA	19 80						
ARM PWR RELAY	MS24183D1		1	0 40	15 00	24 00	28 50	MEA	0 40						
TOW MISSILE SYS	XM 65		1												
TOW MISSILE	XM 65	7	1	8 10	15 00	21 00	29 00	MEA	8 10						
3P/1P INV RLY	110 111 1		1	0 18	15 00	18 00	29 00	SPEC	0 18						
ROCKET LAUNCH	BHC (C INTERVAL 0)	7	2	2 50	0 0	24 00	28 50	SPEC	5 00						
SQUIB WGN ST JT	ARD863 1	1	8	1 60	0 0	21 00	29 00	MEA	12 80						
FLIGHT CONTROLS															
STAB AUG SYS	570 947 001		1												
HYD VALVE SOL	HYD RESEARCH 88700	1	2	0 92	15 00	24 00	28 50	SPEC	0 92	0 92	0 92	0 92	0 92	0 92	0 92
MAG BKE FR TRM	ABN ACC R460M15 3		3	1 10	0 0	21 00	29 00	MEA	2 20						
EMER HYD PUMP	209 076 025		1	0 35	15 00	21 00	29 00	MEA	1 05	1 05	1 05	1 05	1 05	1 05	1 05
EMER HYD SOL	204 076 504 3		1	40 00	0 0	21 00	29 00	SPEC	40 00						
EMER HYD RLY	110 127 D1		2	0 50	0 0	21 00	29 00	SPEC	1 00						
			1	0 12	0 0	21 00	29 00	SPEC	0 12						
INSTRUMENTS															
XMSN OILT/PIND	209 075 658		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
ENGINE INSTRUMENTS															
TURBINE TEMP IND	209 075 651		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
GAS PRODUCR IND	209 075 652		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
TORQ PRESS IND	209 075 653		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
TORQ PRESS IND	209 075 654		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
DUAL TACH IND	209 075 655		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
ENG OIL T/P IND	209 075 656		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
FLIGHT INSTRUMENTS															
TURN & SLIP IND	MI 7805AMS28024 3		1	0 10	15 00	24 00	28 50	SPEC	0 10	0 10	0 10	0 10	0 10	0 10	0 10
GNR ATT IND	209 075 666 1		1	0 37	15 00	21 00	29 00	SPEC	0 37	0 37	0 37	0 37	0 37	0 37	0 37
HEATING															
DEICING VALVE	VAPAIR 25830029	3	1	0 90	15 00	24 00	28 50	SPEC	0 90	0 90	0 90	0 90	0 90	0 90	0 90
ENGINE IGNITION															
IGNITOR SYSTEM	PART OF ENGINE	4	1	2 15	0 0	24 00	28 50	SPEC	2 15						
IGNITOR PACK	PART OF ENGINE	4	1												
ENG PRIM SOL	PART OF ENGINE	4	1												
ENGINE CONTROLS															
STARTER RELAY	MS24183D1	4	1	0 37	0 0	24 00	28 50	MEA	0 37						
LIGHTING															
INST & EDGE LTS	MS25237 327 LAMP		126	0 04	15 00	24 00	28 50	MEA	5 04	5 04	5 04	5 04	5 04	5 04	5 04
COCKPIT LIGHT	GRIMES 15 007 43	2	3	0 17	1 00	24 00	28 50	SPEC	0 51	0 51	0 25	0 07	0 51	0 25	0 07
PLT INST LTS	212 075 962 1		3	2 00	15 00	24 00	28 50	SPEC	6 00	6 00	6 00	6 00	6 00	6 00	6 00
CPLT INST LTS	212 075 962 1		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
POWER															
N-ESS BUS PR RLY	MS24183D1		1	0 40	15 00	24 00	28 50	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40
BATTERY CHGING	BB 649/A	5	1		15 00	24 00	28 50	SPEC		67 45	49 84	22 07	21 99	20 10	10 11
BUS CONT RLY	MS24149D1		1	0 17	15 00	24 00	28 50	SPEC	0 17	0 17	0 17	0 17	0 17	0 17	0 17
BATTERY RELAY	MS24183D1		1	0 40	15 00	18 00	29 00	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40

209099-26-1

FO-8 **P DC Electrical Load Chart**

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS START AND WARM-UP 5 SEC	START AND WARM-UP 2 MIN	START AND WARM-UP 15 MIN	TAKE OFF 5 SEC	TAKE OFF 2 MIN	TAKE OFF 15 MIN
			ESSENTIAL DC BUS												
FUEL CONTROL															
FUEL BOOST PUMP	205-060 606		1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20	3 20	3 20	3 20
FUEL SOFF VALVE	204 062 520		1	2 00	0 02	18 00	29 00	MEA	2 00	0 48	0 02	0 00			
FUEL CONT VALVE	GW LIST CECO		1	1 30	15 00	24 00	28 50	SPEC	1 30	1 30	1 30	1 30	1 30	1 30	1 30
GOV RPM ACT	204 060 762		1	0 90	1 00	24 00	28 50	SPEC	0 90	0 90	0 45	0 06			
IDLE STOP SOL	GW LISK L 2540		1	4 60	0 03	24 00	28 50	SPEC	4 60						
FUEL LOW RLY	GE 352791G200F 9	1	1	0 0	0 0	24 00	28 50	SPEC	0 0						
OIL BY PASS SOL	AV2381106B		1	2 00	0 05	24 00	28 50	SPEC	2 00	1 20	0 05	0 01			
OIL BY PASS RLY	ALLIED MHB 60	1	1	0 11	0 0	24 00	28 50	SPEC	0 11						
RADIO NAV AND COMM															
UHF AM RADIO	AN/ARC 116		1												
UHF AM RECEIVE	AN/ARC 116		1	0 80	15 00	24 00	28 50	MEA	0 80	0 80	0 80	0 80	0 80	0 80	0 80
UHF AM XMITER	AN/ARC 116	2	1	3 00	1 00	24 00	28 50	MEA	3 00	3 00	1 50	0 42	3 00	1 50	0 42
INTERCOM SYS	C6533/ARC		2	0 07	15 00	24 00	28 50	MEA	0 14	0 14	0 14	0 14	0 14	0 14	0 14
VOR LOC GS/MB	AN/ARN 123		1	0 39	15 00	24 00	28 50	SPEC	0 39	0 39	0 39	0 39	0 39	0 39	0 39
RADAR															
IFF TRANSPONDER	AN/APX 72		1	3 80	15 00	21 00	29 00	MEA	3 80	3 80	3 80	3 80	3 80	3 80	3 80
TEST SET	TS 1843/APX	8	1	0 70	15 00	21 00	29 00	MEA	0 70	0 70	0 70	0 70	0 70	0 70	0 70
COMPUTER KIT	TA/TSEC MARK XII	8	1	1 10	15 00	24 00	28 50	SPEC	1 10	1 10	1 10	1 10	1 10	1 10	1 10
RADAR ALTIMETER	AN/APN 209		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
RADAR WARNING	AN/APR 39		1	1 10	15 00	24 00	28 50	SPEC	1 10	1 10	1 10	1 10	1 10	1 10	1 10
PROX WARNING	YG 1054		1	1 50	15 00	24 00	28 50	SPEC	1 50	1 50	1 50	1 50	1 50	1 50	1 50
INVERTER															
MAIN INVERTER	209 075 572		1		15 00	24 00	28 50	SPEC		8 84	8 84	8 84	8 84	8 84	8 84
ADDTL TOW MAIN	209 075 572		1		15 00	24 00	28 50	SPEC							
MAIN INV PWR RLY	MS24140D2		1	0 36	15 00	24 00	28 50	SPEC	0 36	0 36	0 36	0 36	0 36	0 36	0 36
AC PWR CONT RLY	110 128 1		1	0 11	15 00	24 00	28 50	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
INV SELECT RLY	110 111 1		1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20
WARNING AND EMERGENCY															
CAUT LT PANEL	204 075 705		1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20
RPM LIMIT WARN	205 074 001		1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 30	0 30	0 30	0 30	0 30
FIRE DETECTION	209 075 395		1	0 07	15 00	24 00	28 50	MEA	0 07	0 07	0 07	0 07	0 07	0 07	0 07
RPM WARN LIMIT	209 075 326		1	0 98	15 00	24 00	28 50	MEA	0 98	0 98	0 98	0 98	0 98	0 98	0 98
MAST CAUT SYS	209 075 325		1	0 20	15 00	21 00	29 00	MEA	0 20	0 20	0 20	0 20	0 20	0 20	0 20
TOTAL ESSENTIAL DC BUS										119 28	97 86	68 37	71 24	67 59	56 34

209099-26-2

FO-9 **P DC Electrical Load Chart**

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS: START AND WARM-UP 5 SEC	START AND WARM-UP 2 MIN	START AND WARM-UP 15 MIN	TAKE OFF 5 SEC	TAKE OFF 2 MIN	TAKE OFF 15 MIN
NON-ESSENTIAL DC BUS															
FLIGHT INSTRUMENTS															
PITOT HEATER	AN5813 1		1	3 75	15 00	24 00	28 50	SPEC	3 75	3 75	3 75	3 75	3 75	3 75	3 75
HEATING															
ECU	209 070 403		1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 30	0 30	0 30	0 30	0 30
BLEED AIR SOL	397580 1 1		1	0 80	15 00	24 00	28 50	SPEC	0 80	0 80	0 80	0 80	0 80	0 80	0 80
RAIN REMOV SOL	JANITROL 43070		1	0 64	15 00	24 00	28 50	SPEC	0 64	0 64	0 64	0 64	0 64	0 64	0 64
HTR CONT RELAY	MS24149D1	1	1	0 20	0 0	24 00	28 50	SPEC	0 20						
TOW BLOWER	209 073 115		1	28 00	15 00	24 00	28 50	SPEC	28 00	28 00	28 00	28 00	28 00	28 00	28 00
TOW BLOWER RLY	MS24181D1		1	0 40	15 00	24 00	28 50	SPEC	0 40	0 40	0 40	0 40	0 40	0 40	0 40
LIGHTING															
SIDE POSITI LTS	AN3033 12 13		2	0 80	15 00	24 00	28 50	SPEC	1 60	1 60	1 60	1 60	1 60	1 60	1 60
SEARCH LIGHT	FSN6620 283 9767		1	16 70	5 00	24 00	28 50	SPEC	16 70						
ANTICOLLISION LT	MIL L 98085		1	2 15	15 00	24 00	28 50	SPEC	2 15	2 15	2 15	2 15	2 15	2 15	2 15
TAIL POSITION LT	GR30 0003 15 1683		2	0 90	15 00	24 00	28 50	SPEC	1 80	1 80	1 80	1 80	1 80	1 80	1 80
POS LTS FLASHER	MS24577 2		1	0 40	15 00	21 00	29 00	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40
FUEL CONTROL															
FUEL BOOST PUMP	205 060 606		1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20	3 20	3 20	3 20
RADIO NAV & COMM															
VHF FM RADIO	AN/ARC 114		1												
VHF FM RECEIVER	AN/ARC 114		1	0 70	15 00	24 00	28 50	MEA	0 70	0 70	0 70	0 70	0 70	0 70	0 70
VHF FM XMITER	AN/ARC 114	2	1	3 00	1 00	24 00	28 50	MEA	3 00	3 00	1 50	0 42	3 00	1 50	0 42
SCRAMBLER	KY 28		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
ADF RECEIVER	AN/ARN 89		1	1 40	15 00	24 00	28 50	MEA	1 40	1 40	1 40	1 40	1 40	1 40	1 40
VHF AM RADIO	AN/ARC 115		1												
VHF AM RECEIVE	AN/ARC 115		1	0 62	15 00	24 00	28 50	MEA	0 62	0 62	0 62	0 62	0 62	0 62	0 62
VHF AM XMITER	AN/ARC 115	2	1	1 79	1 00	24 00	28 50	MEA	1 79	1 79	0 89	0 25	1 79	0 89	0 25
INVERTER															
STBY INVERTER	TYPE PU 543( )/A	1	1		0 0	24 00	28 50	SPEC		0 0	0 0	0 0	0 0	0 0	0 0
STBY INV PWR RLY	MS24140D1	1	1	0 31	0 0	24 00	28 50	SPEC	0 31	0 0	0 0	0 0	0 0	0 0	0 0
CHAFF DISPENSER	M 130	1	1	1 32	0 0	24 00	28 50	SPEC	1 32	0 0	0 0	0 0	0 0	0 0	0 0
TOTAL NON ESSENTIAL DC BUS										52 55	50 15	48 43	52 55	50 15	48 43
TOTAL ESSENTIAL + NON ESSENTIAL DC BUS										171 83	148 01	116 80	123 79	117 75	104 77

209099-26-3

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CON'T LOAD	OPERATING CONDITIONS: CRUISE 5 SEC	CRUISE 2 MIN	CRUISE 15 MIN	COMBAT CRUISE 5 SEC	COMBAT CRUISE 2 MIN	COMBAT CRUISE 15 MIN
			ESSENTIAL DC BUS												
ARMAMENT															
NOSE ARMAMENT	M28A1E1		1												
GUN DRIVE MTR		6	1	60 0	0 0	24 00	28 50	SPEC	60 00						
GUN CONTROL PR			1	23 00	2 00	24 00	28 50	SPEC	23 00				23 00	23 00	3 07
MACHINE GUN	XM 18 (7 62MM)	7	2												
MACH GUN FIRE			2	1 00	0 25	21 00	29 00	MEA	2 00				2 00	0 25	0 03
MACH GUN BAT CHG			2	9 90	0 50	21 00	29 00	MEA	19 80				19 80	4 95	0 66
ARM PWR RELAY	MS24183D1		1	0 40	15 00	24 00	28 50	MEA	0 40				0 40	0 40	0 40
TOW MISSILE SYS	XM 65		1												
TOW MISSILE	XM 65	7	1	8 10	15 00	21 00	29 00	MEA	8 10				8 10	8 10	8 10
3P 1P INV RLY	110 111 1		1	0 18	15 00	18 00	29 00	SPEC	0 18				0 18	0 18	0 18
ROCKET LAUNCH	BHC I C INTERVAL 0)	7	2	2 50	0 0	24 00	28 50	SPEC	5 00						
SQUIB WGN ST JT	ARD863 1	1	8	1 60	0 0	21 00	29 00	MEA	12 80						
FLIGHT CONTROLS															
STAB AUG SYS	570 947 001		1	0 92	15 00	24 00	28 50	SPEC	0 92	0 92	0 92	0 92	0 92	0 92	0 92
HYD VALVE SOL	HYD RESEARCH 88700	1	2	1 10	0 0	21 00	29 00	MEA	2 20						
MAG BKE FR TRM	ABN ACC R460M15 3		3	0 35	15 00	21 00	29 00	MEA	1 05	1 05	1 05	1 05	1 05	1 05	1 05
EMER HYD PUMP	209 076 025		1	40 00	0 0	21 00	29 00	SPEC	40 00						
EMER HYD SOL	204 076 504 3		2	0 50	0 0	21 00	29 00	SPEC	1 00						
EMER HYD RLY	110 127 01		1	0 12	0 0	21 00	29 00	SPEC	0 12						
INSTRUMENTS															
XMSN OILT. PIND	209 075 658		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
ENGINE INSTRUMENTS															
TURBINE TEMP IND	209 075 651		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
GAS PRODUCR IND	209 075 652		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
TORQ PRESS IND	209 075 653		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
TORQ PRESS IND	209 075 654		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
DUAL TACH IND	209 075 655		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
ENG OIL T/P IND	209 075 656		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
FLIGHT INSTRUMENTS															
TURN & SLIP IND	MI 7805AMS28024 3		1	0 10	15 00	24 00	28 50	SPEC	0 10	0 10	0 10	0 10	0 10	0 10	0 10
GNR ATT IND	209 075 666 1		1	0 37	15 00	21 00	29 00	SPEC	0 37	0 37	0 37	0 37	0 37	0 37	0 37
HEATING															
DEICING VALVE	VAPAIR 25830029	3	1	0 90	15 00	24 00	28 50	SPEC	0 90	0 90	0 90	0 90	0 90	0 90	0 90
ENGINE IGNITION															
IGNITOR SYSTEM	PART OF ENGINE	4	1	2 15	0 0	24 00	28 50	SPEC	2 15						
IGNITOR PACK	PART OF ENGINE	4	1												
ENG PRIM SOL	PART OF ENGINE	4	1												
ENGINE CONTROLS															
STARTER RELAY	MS24183D1	4	1	0 37	0 0	24 00	28 50	MEA	0 37						
LIGHTING															
INST & EDGE LTS	MS25237 327 LAMP		126	0 04	15 00	24 00	28 50	MEA	5 04	5 04	5 04	5 04	5 04	5 04	5 04
COCKPIT LIGHT	GRIMES 15 007 43	2	3	0 17	1 00	24 00	28 50	SPEC	0 51	0 51	0 25	0 07			
PLT INST LTS	212 075 962 1		3	2 00	15 00	24 00	28 50	SPEC	6 00	6 00	6 00	6 00	6 00	6 00	6 00
CPLT INST LTS	212 075 962 1		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
POWER															
N ESS BUS PR RLY	MS24183D1		1	0 40	15 00	24 00	28 50	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40
BATTERY CHGING	BB 649/A	5	1		15 00	24 00	28 50	SPEC		10 07	9 17	4 78	4 77	4 44	3 09
BUS CONT RLY	MS24149D1		1	0 17	15 00	24 00	28 50	SPEC	0 17	0 17	0 17	0 17	0 17	0 17	0 17
BATTERY RELAY	MS24183D1		1	0 40	15 00	18 00	29 00	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40

209099-26-4

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS: CRUISE 5 SEC	CRUISE 2 MIN	CRUISE 15 MIN	CRUISE – COMBAT 5 SEC	CRUISE – COMBAT 2 MIN	CRUISE – COMBAT 15 MIN
			ESSENTIAL DC BUS												
FUEL CONTROL															
FUEL BOOST PUMP	205 060 606		1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20	3 20	3 20	3 20
FUEL SOFF VALVE	204 062 520		1	2 00	0 02	18 00	29 00	MEA	2 00						
FUEL CONT VALVE	GW LIST CECO		1	1 30	15 00	24 00	28 50	SPEC	1 30	1 30	1 30	1 30	1 30	1 30	1 30
GOV RPM ACT	204 060 762		1	0 90	1 00	24 00	28 50	SPEC	0 90	0 90	0 45	0 06	0 90	0 45	0 06
IDLE STOP SOL	GW LISK L 2540		1	4 60	0 03	24 00	28 50	SPEC	4 60						
FUEL LOW RLY	GE 362791G200F 9	1	1	0 0	0 0	24 00	28 50	SPEC	0 0						
OIL BY PASS SOL	AV2381106B		1	2 00	0 05	24 00	28 50	SPEC	2 00						
OIL BY PASS RLY	ALLIED MHB 60	1	1	0 11	0 0	24 00	28 50	SPEC	0 11						
RADIO NAV AND COMM			1												
UHF AM RADIO	AN ARC 116		1	0 80	15 00	24 00	28 50	MEA	0 80	0 80	0 80	0 80	0 80	0 80	0 80
UHF AM RECEIVE	AN/ARC 116		1	3 00	1 00	24 00	28 50	MEA	3 00	3 00	1 50	0 42	3 00	1 50	0 42
UHF AM XMITER	AN ARC 116	2	2	0 07	15 00	24 00	28 50	MEA	0 14	0 14	0 14	0 14	0 14	0 14	0 14
INTERCOM SYS	C6533/ARC		1	0 39	15 00	24 00	28 50	SPEC	0 39	0 39	0 39	0 39	0 39	0 39	0 39
VOR LOC GS/MB	AN/ARN 123														
RADAR															
IFF TRANSPONDER	AN APX 72		1	3 80	15 00	21 00	29 00	MEA	3 80	3 80	3 80	3 80	3 80	3 80	3 80
TEST SET	TS 1843/APX	8	1	0 70	15 00	21 00	29 00	MEA	0 70	0 70	0 70	0 70	0 70	0 70	0 70
COMPUTER KIT	TA/TSEC MARK XII	8	1	1 10	15 00	24 00	28 50	SPEC	1 10	1 10	1 10	1 10	1 10	1 10	1 10
RADAR ALTIMETER	AN/APN 209		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
RADAR WARNING	AN/APR 39		1	1 10	15 00	24 00	28 50	SPEC	1 10	1 10	1 10	1 10	1 10	1 10	1 10
PROX WARNING	YG 1054		1	1 50	15 00	24 00	28 50	SPEC	1 50	1 50	1 50	1 50	1 50	1 50	1 50
INVERTER															
MAIN INVERTER	209 075 572		1		15 00	24 00	28 50	SPEC		8 84	8 84	8 84			
ADDTL TOW MAIN	209 075 572		1		15 00	24 00	28 50	SPEC					12 88	12 88	12 88
MAIN INV PWR RLY	MS24140D2		1	0 36	15 00	24 00	28 50	SPEC	0 36	0 36	0 36	0 36	0 36	0 36	0 36
AC PWR CONT RLY	110 128 1		1	0 11	15 00	24 00	28 50	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
INV SELECT RLY	110 111 1		1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20
WARNING AND EMERGENCY															
CAUT LT PANEL	204 075 705		1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20
RPM LIMIT WARN	205 074 001		1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 30	0 30	0 30	0 30	0 30
FIRE DETECTION	209 075 395		1	0 07	15 00	24 00	28 50	MEA	0 07	0 07	0 07	0 07	0 07	0 07	0 07
RPM WARN LIMIT	209 075 326		1	0 98	15 00	24 00	28 50	MEA	0 98	0 98	0 98	0 98	0 98	0 98	0 98
MAST CAUT SYS	209 075 325		1	0 20	15 00	21 00	29 00	MEA	0 20	0 20	0 20	0 20	0 20	0 20	0 20
TOTAL ESSENTIAL DC BUS										60 22	57 11	51 08	111 93	93 05	65 79

209099-26-5

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS: CRUISE 5 SEC	CRUISE 2 MIN	CRUISE 15 MIN	CRUISE – COMBAT 5 SEC	CRUISE – COMBAT 2 MIN	CRUISE – COMBAT 15 MIN
			NON-ESSENTIAL DC BUS												
FLIGHT INSTRUMENTS															
PITOT HEATER	AN5813 1		1	3 75	15 00	24 00	28 50	SPEC	3 75	3 75	3 75	3 75	3 75	3 75	3 75
HEATING															
ECU	209 070 403		1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 30	0 30	0 30	0 30	0 30
BLEED AIR SOL	397580 1 1		1	0 80	15 00	24 00	28 50	SPEC	0 80	0 80	0 80	0 80	0 80	0 80	0 80
RAIN REMOV SOL	JANITROL 43070		1	0 64	15 00	24 00	28 50	SPEC	0 64	0 64	0 64	0 64	0 64	0 64	0 64
HTR CONT RELAY	MS24149D1	1	1	0 20	0 0	24 00	28 50	SPEC	0 20						
TOW BLOWER	209 073 115		1	28 00	15 00	24 00	28 50	SPEC	28 00	28 00	28 00	28 00	28 00	28 00	28 00
TOW BLOWER RLY	MS24181D1		1	0 40	15 00	24 00	28 50	SPEC	0 40	0 40	0 40	0 40	0 40	0 40	0 40
LIGHTING															
SIDE POSITI LTS	AN3033 12 -13		2	0 80	15 00	24 00	28 50	SPEC	1 60	1 60	1 60	1 60	1 60	1 60	1 60
SEARCH LIGHT	FSN6620 283 9767		1	16 70	5 00	24 00	28 50	SPEC	16 70	16 70	16 70	5 57			
ANTICOLLISION LT	MIL L 98085		1	2 15	15 00	24 00	28 50	SPEC	2 15	2 15	2 15	2 15	2 15	2 15	2 15
TAIL POSITION LT	GR30 0003 15 1683		2	0 90	15 00	24 00	28 50	SPEC	1 80	1 80	1 80	1 80	1 80	1 80	1 80
POS LTS FLASHER	MS24577 2		1	0 40	15 00	21 00	29 00	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40
FUEL CONTROL															
FUEL BOOST PUMP	205 060 606		1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20	3 20	3 20	3 20
RADIO NAV & COMM															
VHF-FM RADIO	AN/ARC 114		1												
VHF-FM RECEIVER	AN/ARC 114		1	0 70	15 00	24 00	28 50	MEA	0 70	0 70	0 70	0 70	0 70	0 70	0 70
VHF FM XMITER	AN/ARC 114	2	1	3 00	1 00	24 00	28 50	MEA	3 00	3 00	1 50	0 42	3 00	1 50	0 42
SCRAMBLER	KY 28		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
ADF RECEIVER	AN/ARN 89		1	1 40	15 00	24 00	28 50	MEA	1 40	1 40	1 40	1 40	1 40	1 40	1 40
VHF-AM RADIO	AN/ARC 115		1												
VHF AM RECEIVE	AN/ARC 115		1	0 62	15 00	24 00	28 50	MEA	0 62	0 62	0 62	0 62	0 62	0 62	0 62
VHF-AM XMITER	AN/ARC 115	2	1	1 79	1 00	24 00	28 50	MEA	1 79	1 79	0 89	0 25	1 79	0 89	0 25
INVERTER															
STBY INVERTER	TYPE PU 543( )/A	1	1		0 0	24 00	28 50	SPEC		0 0	0 0	0 0	0 0	0 0	0 0
STBY INV PWR RLY	MS24140D1	1	1	0 31	0 0	24 00	28 50	SPEC	0 31	0 0	0 0	0 0	0 0	0 0	0 0
CHAFF DISPENSER	M-130	1	1	1 32	0 0	24 00	28 50	SPEC	1 32	0 0	0 0	0 0	1 32	0 50	0 01
TOTAL NON-ESSENTIAL DC BUS										69 25	66 85	54 00	53 87	50 65	48 44
TOTAL ESSENTIAL + NON-ESSENTIAL DC BUS										129 47	123 97	105 07	165 80	143 71	114 23

209099-26-6

FO-13 **P DC Electrical Load Chart**

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS LAND 5 SEC	LAND 2 MIN	LAND 15 MIN	EMERGENCY 5 SEC	EMERGENCY 2 MIN	EMERGENCY 15 MIN
			ESSENTIAL DC BUS												
ARMAMENT															
NOSE ARMAMENT	M28A1E1		1												
GUN DRIVE MTR		6	1	60 0	0 0	24 00	28 50	SPEC	60 00						
GUN CONTROL PR			1	23 00	2 00	24 00	28 50	SPEC	23 00						
MACHINE GUN	XM 18 (7 62MM)	7	2												
MACH GUN FIRE			2	1 00	0 25	21 00	29 00	MEA	2 00						
MACH GUN BAT CHG			2	9 90	0 50	21 00	29 00	MEA	19 80						
ARM PWR RELAY	MS24183D1		1	0 40	15 00	24 00	28 50	MEA	0 40						
TOW MISSILE SYS	XM 65		1												
TOW MISSILE	XM 65	7	1	8 10	15 00	21 00	29 00	MEA	8 10						
3P/1P INV RLY	110 111 1		1	0 18	15 00	18 00	29 00	SPEC	0 18						
ROCKET LAUNCH	BHC (C INTERVAL 0)	7	2	2 50	0 0	24 00	28 50	SPEC	5 00						
SQUIB WGN ST JT	ARD863 1	1	8	1 60	0 0	21 00	29 00	MEA	12 80						
FLIGHT CONTROLS															
STAB AUG SYS	570 947 001		1	0 92	15 00	24 00	28 50	SPEC	0 92	0 92	0 92	0 92	0 92	0 92	0 92
HYD VALVE SOL	HYD RESEARCH 88700	1	2	1 10	0 0	21 00	29 00	MEA	2 20						
MAG BKE FR-TRM	ABN ACC R460M15 3		3	0 35	15 00	21 00	29 00	MEA	1 05	1 05	1 05	1 05	1 05	1 05	1 05
EMER HYD PUMP	209 076 026		1	40 00	0 0	21 00	29 00	SPEC	40 00						
EMER HYD SOL	204 076 604 3		2	0 50	0 0	21 00	29 00	SPEC	1 00						
EMER HYD RLY	110 127 D1		1	0 12	0 0	21 00	29 00	SPEC	0 12						
INSTRUMENTS															
XMSN OILT/PIND	209 075 658		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
ENGINE INSTRUMENTS															
TURBINE TEMP IND	209 075 651		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
GAS PRODUCR IND	209 075 652		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
TORQ PRESS IND	209 075 653		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
TORQ PRESS IND	209 075 654		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
DUAL TACH IND	209 075 655		2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22
ENG OIL T/P IND	209 075 656		1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
FLIGHT INSTRUMENTS															
TURN & SLIP IND	MI 7805AMS28024 3		1	0 10	15 00	24 00	28 50	SPEC	0 10	0 10	0 10	0 10	0 10	0 10	0 10
GNR ATT IND	209 075 666 1		1	0 37	15 00	21 00	29 00	SPEC	0 37	0 37	0 37	0 37	0 37	0 37	0 37
HEATING															
DEICING VALVE	VAPAIR 25830029	3	1	0 90	15 00	24 00	28 50	SPEC	0 90	0 90	0 90	0 90	0 90	0 90	0 90
ENGINE IGNITION															
IGNITOR SYSTEM	PART OF ENGINE	4	1	2 15	0 0	24 00	28 50	SPEC	2 15						
IGNITOR PACK	PART OF ENGINE	4	1												
ENG PRIM SOL	PART OF ENGINE	4	1												
ENGINE CONTROLS															
STARTER RELAY	MS24183D1	4	1	0 37	0 0	24 00	28 50	MEA	0 37						
LIGHTING															
INST & EDGE LTS	MS25237 327 LAMP		126	0 04	15 00	24 00	28 50	MEA	5 04	5 04	5 04	5 04	5 04	5 04	5 04
COCKPIT LIGHT	GRIMES 15 007 43	2	3	0 17	1 00	24 00	28 50	SPEC	0 51	0 51	0 25	0 07	0 51	0 25	0 07
PLT INST LTS	212 075 962 1		3	2 00	15 00	24 00	28 50	SPEC	6 00	6 00	6 00	6 00	6 00	6 00	6 00
CPLT INST LTS	212 075 962 1		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
POWER															
N-ESS BUS PR RLY	MS24183D1		1	0 40	15 00	24 00	28 50	MEA	0 40	0 40	0 40	0 40			
BATTERY CHGING	BB 649/A	5	1		15 00	24 00	28 50	SPEC		3 09	3 01	2 84			
BUS CONT RLY	MS24149D1		1	0 17	15 00	24 00	28 50	SPEC	0 17	0 17	0 17	0 17	0 17	0 17	0 17
BATTERY RELAY	MS24183D1		1	0 40	15 00	18 00	29 00	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40

209099-26-7

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS					
										LAND			EMERGENCY		
										5 SEC	2 MIN	15 MIN	5 SEC	2 MIN	15 MIN
			ESSENTIAL DC BUS												
FUEL CONTROL															
FUEL BOOST PUMP	205 060 606		1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20	3 20	3 20	3 20
FUEL SOFF VALVE	204 062 520		1	2 00	0 02	18 00	29 00	MEA	2 00						
FUEL CONT VALVE	GW LIST CECO		1	1 30	15 00	24 00	28 50	SPEC	1 30	1 30	1 30	1 30	1 30	1 30	1 30
GOV RPM ACT	204 060 762		1	0 90	1 00	24 00	28 50	SPEC	0 90						
IDLE STOP SOL	GW LISK L 2540		1	4 60	0 03	24 00	28 50	SPEC	4 60	1 65	0 07	0 01	1 65	0 07	0 01
FUEL LOW RLY	GE 352791G200F 9	1	1	0 0	0 0	24 00	28 50	SPEC	0 0						
OIL BY PASS SOL	AV2381106B		1	2 00	0 05	24 00	28 50	SPEC	2 00						
OIL BY-PASS RLY	ALLIED MHB 60	1	1	0 11	0 0	24 00	28 50	SPEC	0 11						
RADIO NAV AND COMM															
UHF AM RADIO	AN ARC 116		1												
UHF AM RECEIVE	AN/ARC 116		1	0 80	15 00	24 00	28 50	MEA	0 80	0 80	0 80	0 80	0 80	0 80	0 80
UHF AM XMITER	AN/ARC 116	2	1	3 00	1 00	24 00	28 50	MEA	3 00	3 00	1 50	0 42	3 00	1 50	0 42
INTERCOM SYS	C6533 ARC		2	0 07	15 00	24 00	28 50	MEA	0 14	0 14	0 14	0 14	0 14	0 14	0 14
VOR LOC GS MB	AN ARN 123		1	0 39	15 00	24 00	28 50	SPEC	0 39	0 39	0 39	0 39	0 39	0 39	0 39
RADAR															
IFF TRANSPONDER	AN APX 72		1	3 80	15 00	21 00	29 00	MEA	3 80	3 80	3 80	3 80	3 80	3 80	3 80
TEST SET	TS 1843 APX	8	1	0 70	15 00	21 00	29 00	MEA	0 70	0 70	0 70	0 70	0 70	0 70	0 70
COMPUTER KIT	TA TSEC MARK XII	8	1	1 10	15 00	24 00	28 50	SPEC	1 10	1 10	1 10	1 10	1 10	1 10	1 10
RADAR ALTIMETER	AN APN 209		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00
RADAR WARNING	AN/APR 39		1	1 10	15 00	24 00	28 50	SPEC	1 10	1 10	1 10	1 10	1 10	1 10	1 10
PROX WARNING	YG 1054		1	1 50	15 00	24 00	28 50	SPEC	1 50	1 50	1 50	1 50	1 50	1 50	1 50
INVERTER															
MAIN INVERTER	209 075 572		1		15 00	24 00	28 50	SPEC		8 84	8 84	8 84	8 84	8 84	8 84
ADDTL TOW MAIN	209 075 572		1		15 00	24 00	28 50	SPEC							
MAIN INV PWR RLY	MS24140D2		1	0 36	15 00	24 00	28 50	SPEC	0 36	0 36	0 36	0 36	0 36	0 36	0 36
AC PWR CONT RLY	110 128 1		1	0 11	15 00	24 00	28 50	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11
INV SELECT RLY	110 111 1		1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20
WARNING AND EMERGENCY															
CAUT LT PANEL	204 075 705		1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20
RPM LIMIT WARN	205 074 001		1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 30	0 30	0 30	0 30	0 30
FIRE DETECTION	209 075 395		1	0 07	15 00	24 00	28 50	MEA	0 07	0 07	0 07	0 07	0 07	0 07	0 07
RPM WARN LIMIT	209 075 326		1	0 98	15 00	24 00	28 50	MEA	0 98	0 98	0 98	0 98	0 98	0 98	0 98
MAST CAUT SYS	209 075 325		1	0 20	15 00	21 00	29 00	MEA	0 20	0 20	0 20	0 20	0 20	0 20	0 20
TOTAL ESSENTIAL DC BUS										53 99	50 57	49 08	50 50	47 16	45 84

209099-26-8

FO-15 **P** DC Electrical Load Chart

EQUIPMENT	PART DESIGNATION	NOTES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS 5 SEC	LAND 2 MIN	LAND 15 MIN	EMERGENCY 5 SEC	EMERGENCY 2 MIN	EMERGENCY 15 MIN
			NON ESSENTIAL DC BUS												
FLIGHT INSTRUMENTS															
PITOT HEATER	AN5813 1		1	3 75	15 00	24 00	28 50	SPEC	3 75	3 75	3 75	3 75			
HEATING															
ECU	209 070 403		1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 30	0 30			
BLEED AIR SOL	397580 1 1		1	0 80	15 00	2400	28 50	SPEC	0 80	0 80	0 80	0 80			
RAIN REMOV SOL	JANITROL 43070		1	0 64	15 00	24 00	28 50	SPEC	0 64	0 64	0 64	0 64			
HTR CONT RELAY	MS24149D1	1	1	0 20	0 0	24 00	28 50	SPEC	0 20						
TOW BLOWER	209 073 115		1	28 00	15 00	24 00	28 50	SPEC	28 00	28 00	28 00	28 00			
TOW BLOWER RLY	MS24181D1		1	0 40	15 00	24 00	28 50	SPEC	0 40	0 40	0 40	0 40			
LIGHTING															
SIDE POSITI LTS	AN3033 12 13		2	0 80	15 00	24 00	28 50	SPEC	1 60	1 60	1 60	1 60			
SEARCH LIGHT	FSN6620 283 976 7		1	16 70	5 00	24 00	28 50	SPEC	16 70	16 70	16 70	5 57			
ANTICOLLISION LT	MIL L 98085		1	2 15	15 00	24 00	28 50	SPEC	2 15	2 15	2 15	2 15			
TAIL POSITION LT	GR30 0003 15 1683		2	0 90	15 00	24 00	28 50	SPEC	1 80	1 80	1 80	1 80			
POS LTS FLASHER	MS24577 2		1	0 40	15 00	21 00	29 00	MEA	0 40	0 40	0 40	0 40			
FUEL CONTROL															
FUEL BOOST PUMP	205 060 606		1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20			
RADIO NAV & COMM															
VHF FM RADIO	AN ARC 114		1												
VHF FM RECEIVER	AN ARC 114		1	0 70	15 00	24 00	28 50	MEA	0 70	0 70	0 70	0 70			
VHF FM XMITER	AN ARC 114	2	1	3 00	1 00	24 00	28 50	MEA	3 00	3 00	1 50	0 42			
SCRAMBLER	KY 28		1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00			
ADF RECEIVER	AN ARN 89		1	1 40	15 00	24 00	28 50	MEA	1 40	1 40	1 40	1 40			
VHF AM RADIO	AN ARC 115		1												
VHF AM RECEIVE	AN ARC 115		1	0 62	15 00	24 00	28 50	MEA	0 62	0 62	0 62	0 62			
VHF AM XMITER	AN ARC 115	2	1	1 79	1 00	24 00	28 50	MEA	1 79	1 79	0 89	0 25			
INVERTER															
STBY INVERTER	TYPE PU 543( ) A	1	1		0 0	24 00	28 50	SPEC		0 0	0 0	0 0			
STBY INV PWR RLY	MS2414D01	1	1	0 31	0 0	24 00	28 50	SPEC	0 31	0 0	0 0	0 0			
CHAFF DISPENSER	**M 130**	1	1	1 32	0 0	24 00	28 50	SPEC	1 32	0 0	0 0	0 0			
TOTAL NON ESSENTIAL DC BUS										69 25	66 85	54 00			
TOTAL ESSENTIAL + NON ESSENTIAL DC BUS										123 24	117 43	103 08	50 50	47 16	45 84

209099-2F-9

NOTES

1 THIS EQUIPMENT IS NORMALLY DE ENERGIZED

2 ONE MINUTE OPERATION OUT OF EACH TEN MINUTES

3 ENERGIZED EXCEPT DURING DE ICING

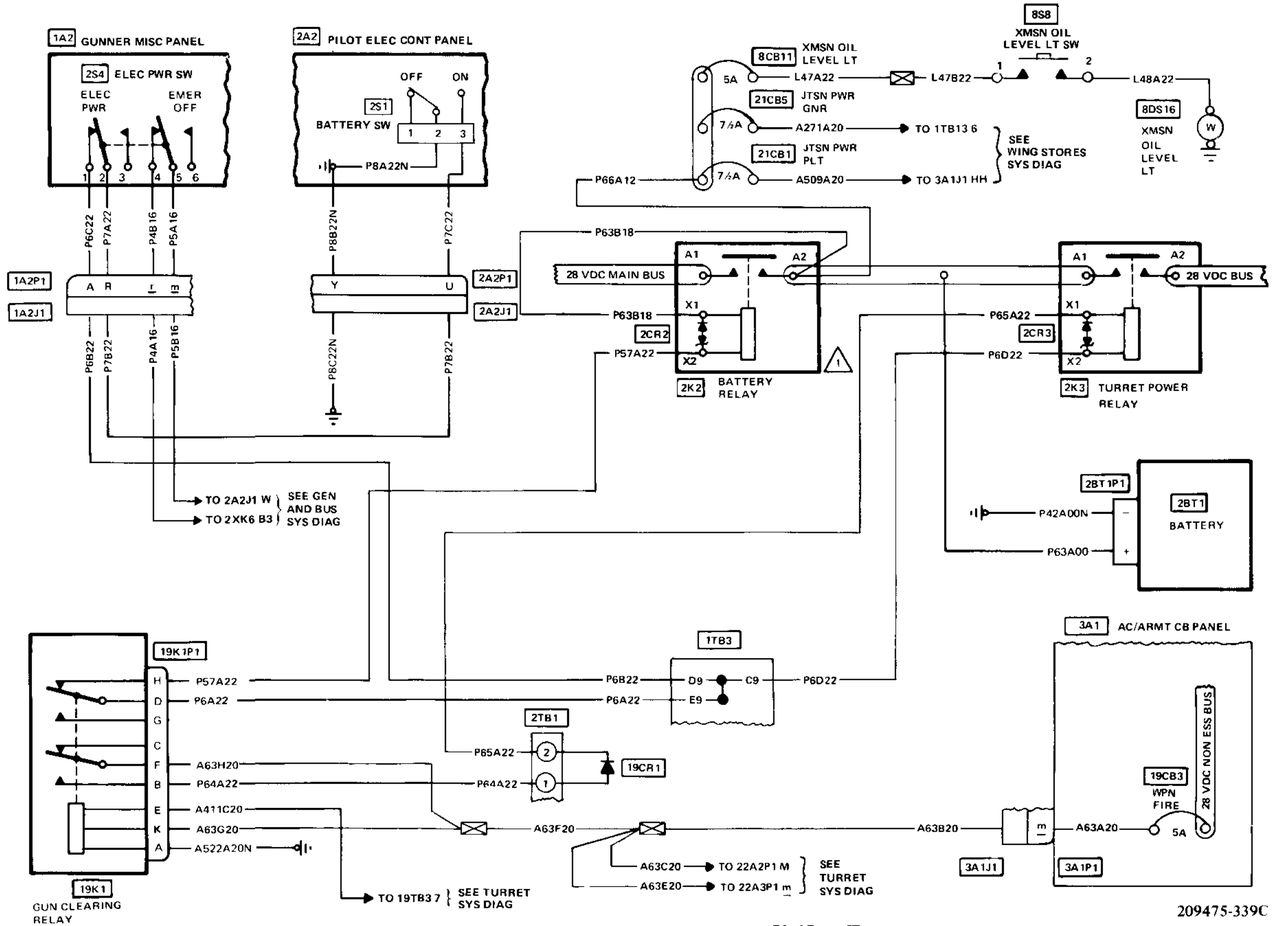
4 BATTERY LOAD DURING STARTING

5 BATTERY CHARGING VALUES CALCULATED

6 BATTERY IS REMOVED FROM MAIN DC BUS DURING FIRING TO SUPPLY GUN DRIVE POWER

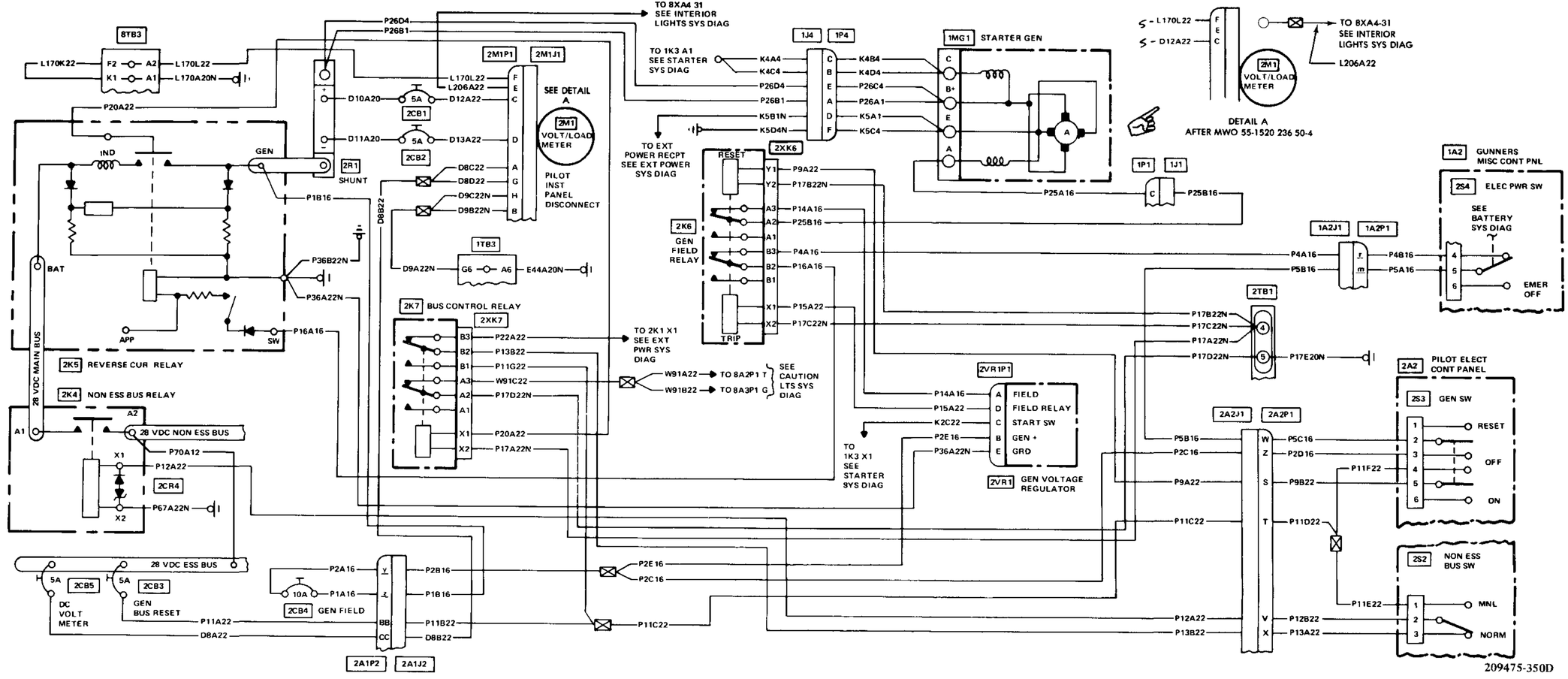
7 SEVERAL WING STORES CONFIGURATIONS ARE POSSIBLE THIS ANALYSIS IS BASED ON THE CONFIGURATION RESULTING IN THE HIGHEST DC LOAD THAT IS 2XM 18 MINI GUNS ON INBOARD STATIONS AND FOUR TOW MISSILES AT EACH OUTBOARD STATION

8 PROVISIONS ONLY



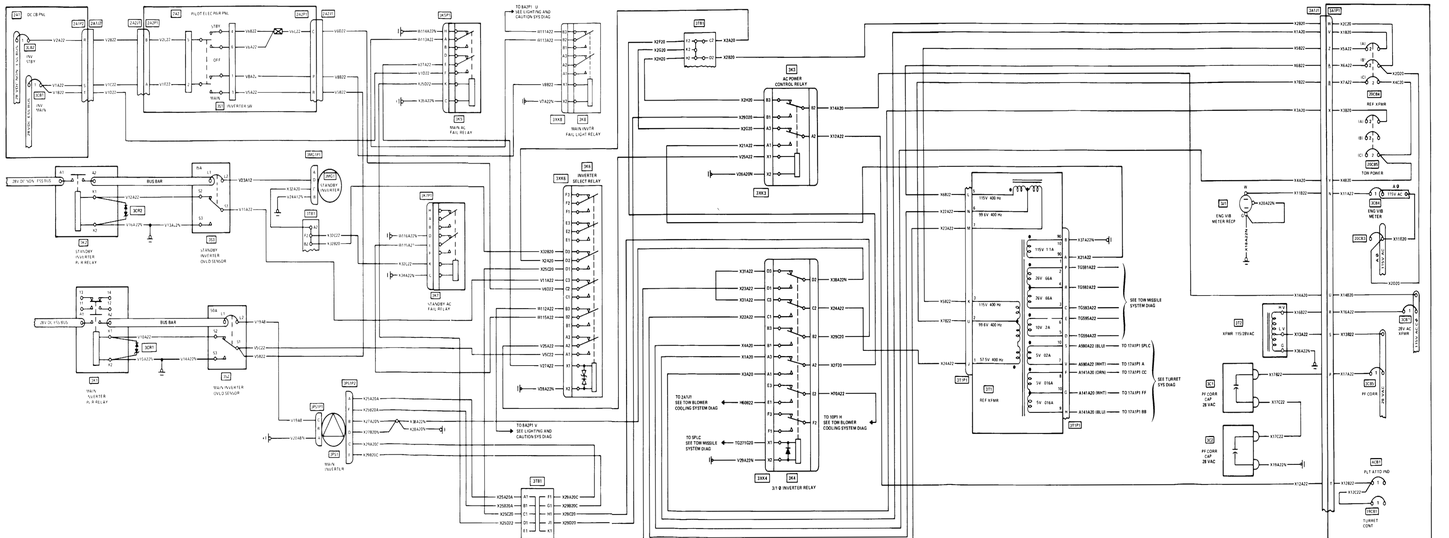
209475-339C

FO-17 P Battery System

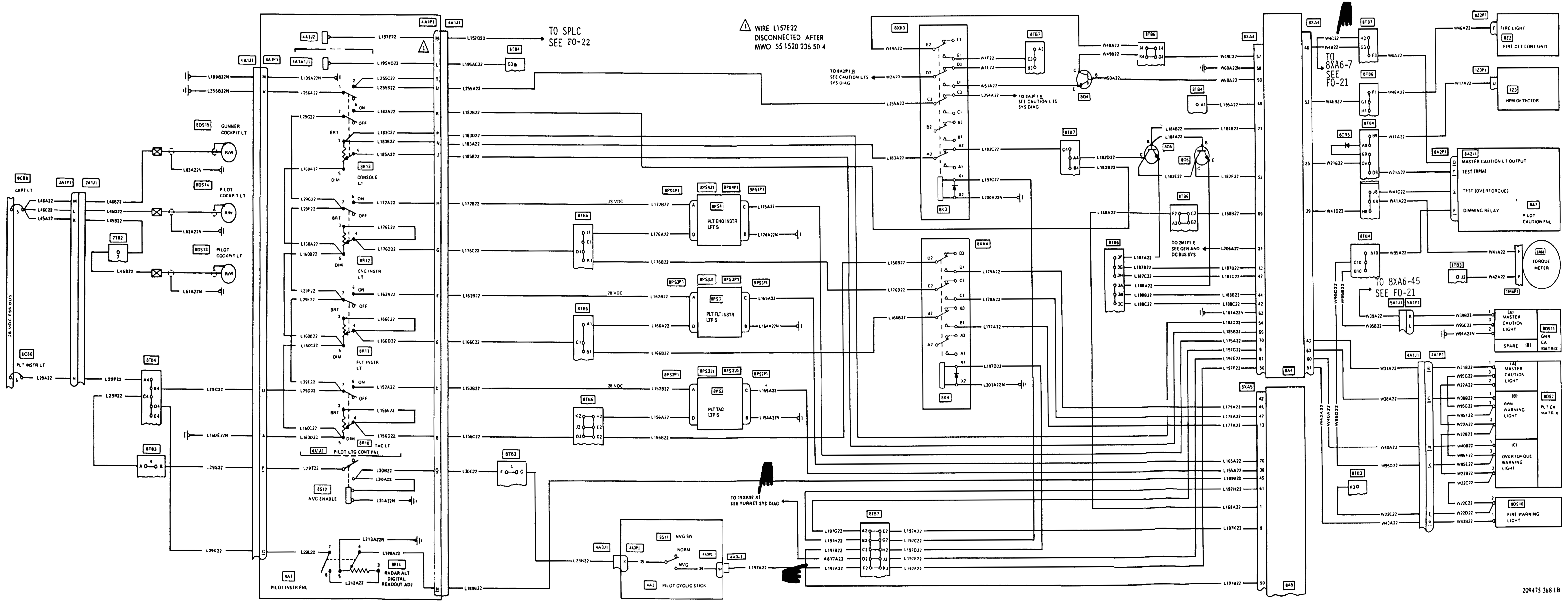


209475-350D

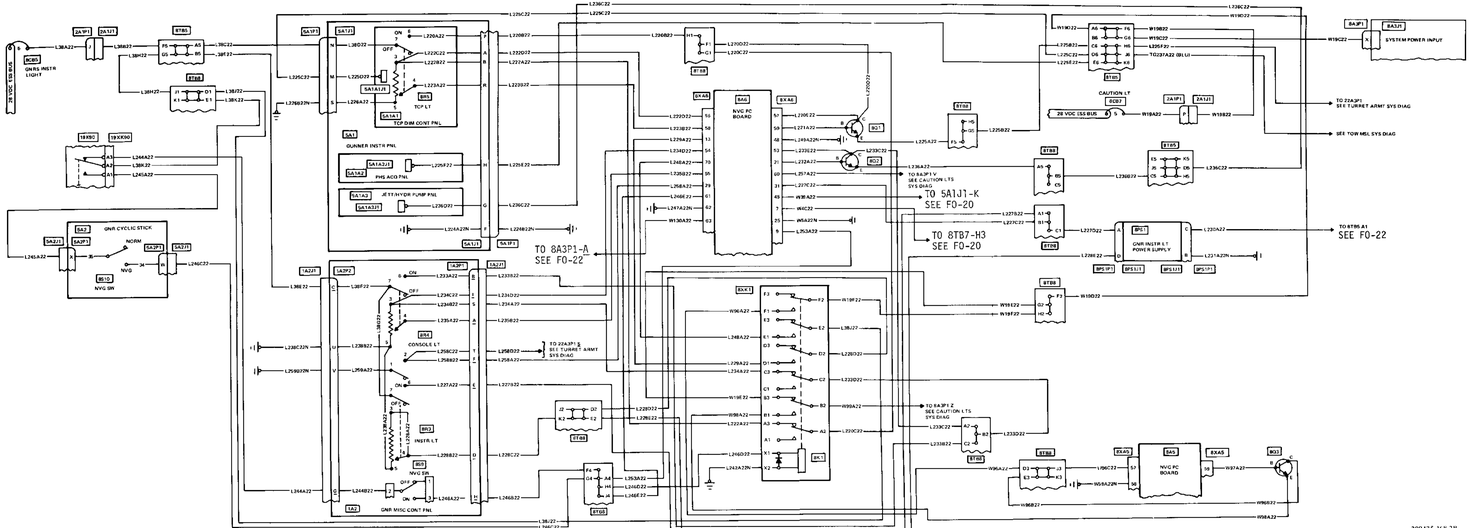
FO-18 **P** Generator and DC Bus System


DC CB PNL
PILOT ELEC PWR PNL
BUS BAR
BUS BAR
AC POWER CONTROL RELAY
3 Ø INVERTER RELAY
INVERTER SELECT RELAY
TO BASPI U SEE LIGHTING AND CAUTION SYS DIAG
TO BASPI V SEE LIGHTING AND CAUTION SYS DIAG
TO BASPI H SEE LIGHTING AND CAUTION SYS DIAG
TO 2ASPI SEE TOW BLOWER COOLING SYSTEM DIAG
TO SPLC SEE TOW MISSILE SYSTEM DIAG
TO VEPI H SEE TOW BLOWER COOLING SYSTEM DIAG
SEE TOW MISSILE SYSTEM DIAG
SEE TURRET SYS DIAG
ENG H/B METER RECP
ENG H/B METER
TOW POWER
REF 47MR
PP CONR CAP 28 VAC
TURRET CONT
209475 365B

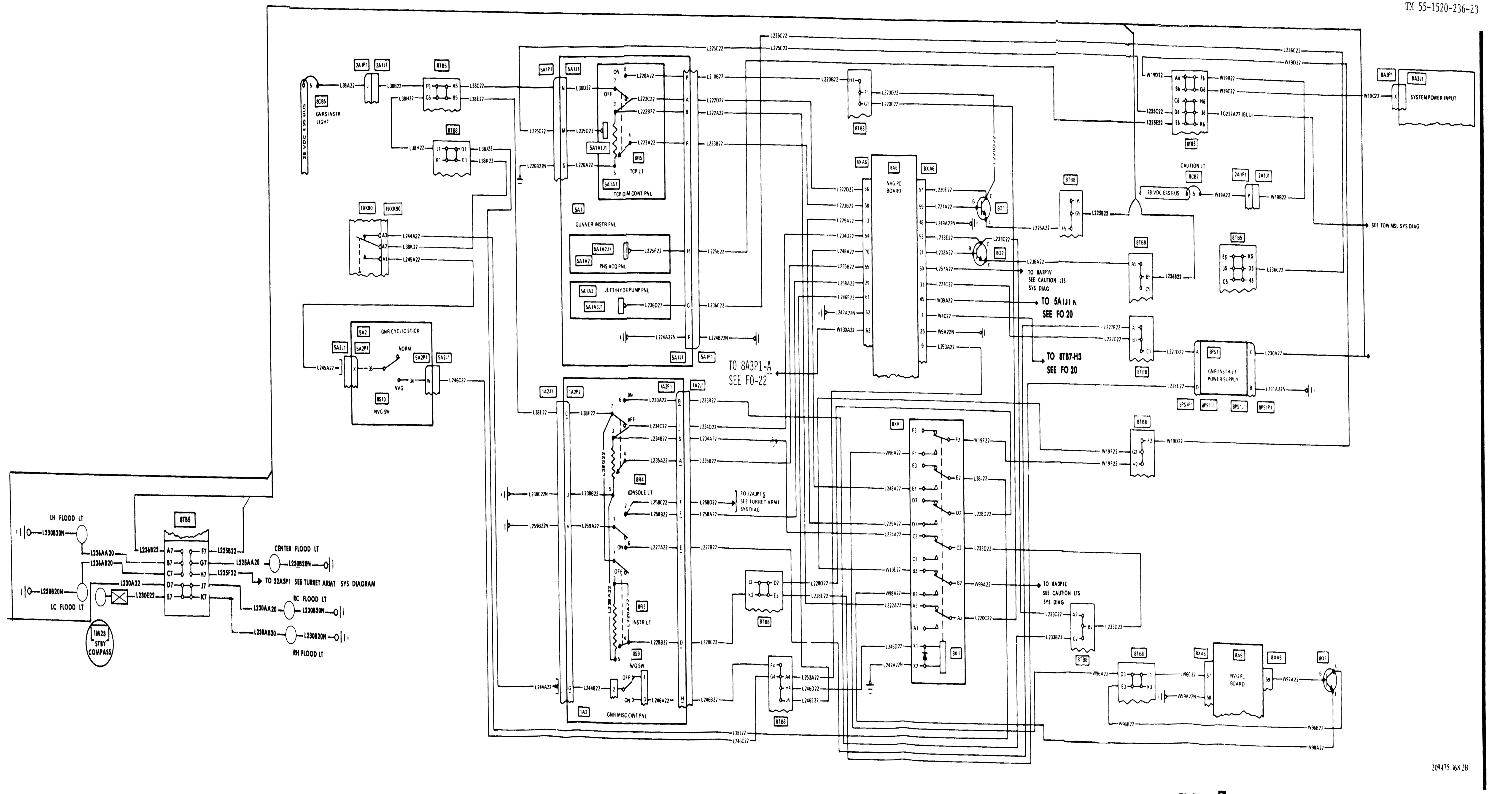
FO-19



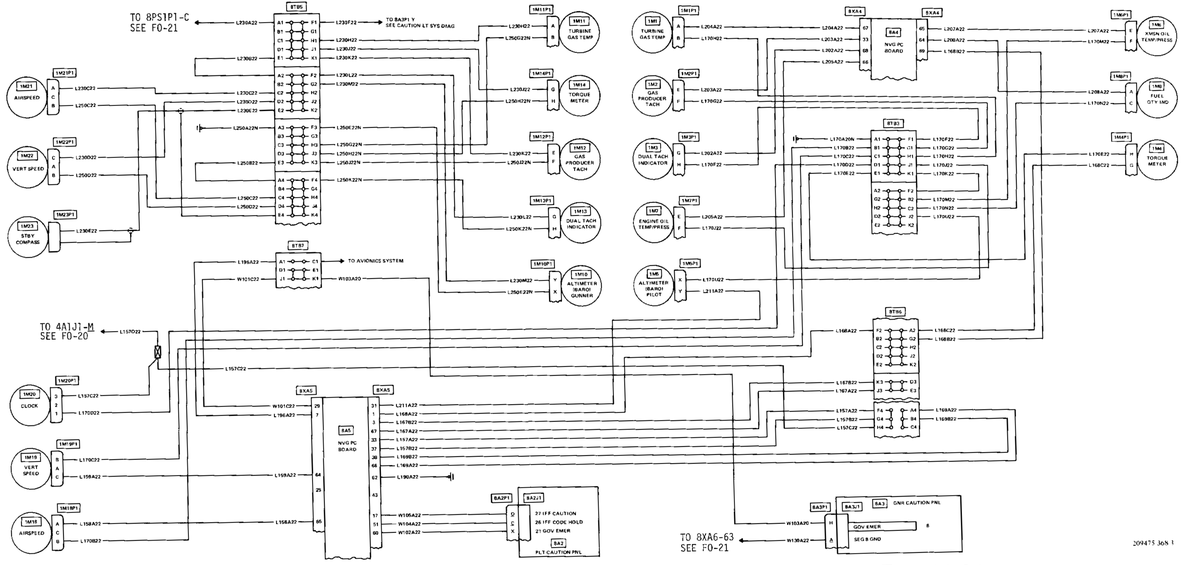
FO-20 ■ Interior Lights System



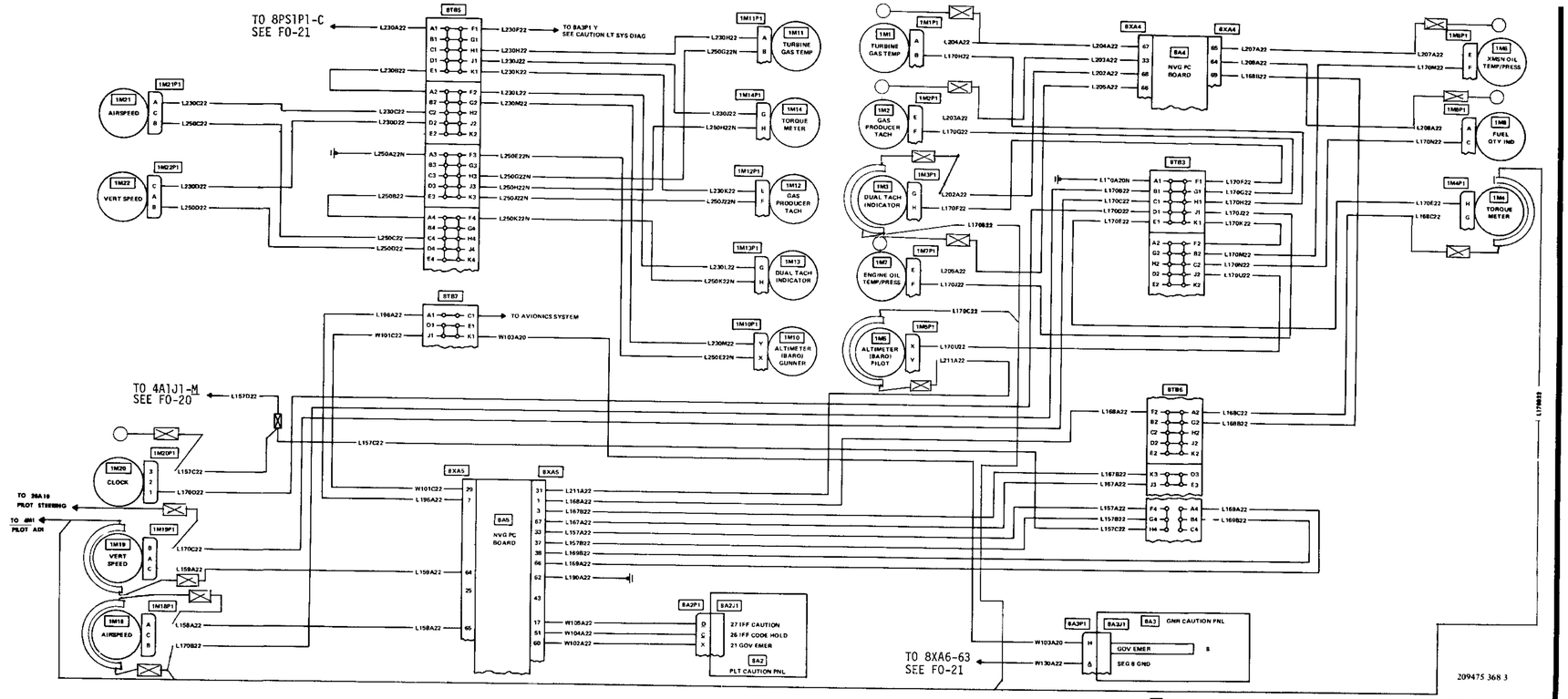
209475 368 28



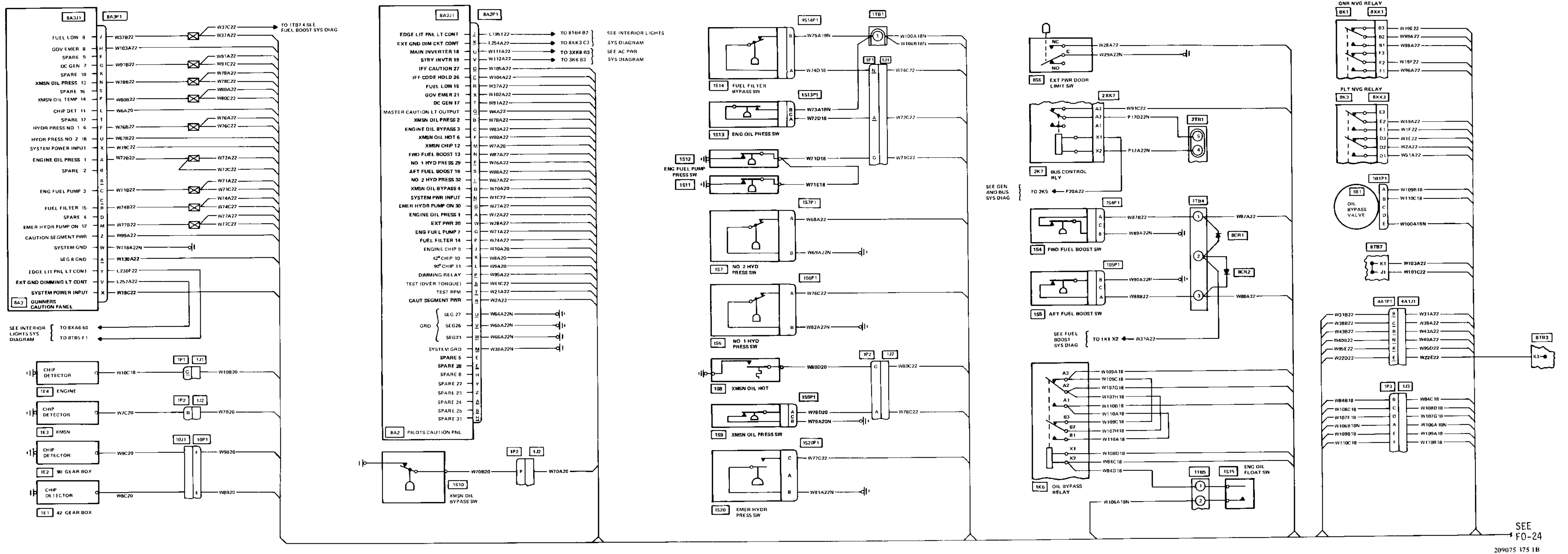
FO-21 1 P **Interior Lights System** (After MWO 55-1520-236-50-4)


TO 8PS1P1-C
SEE FO-21
TO 8A3P1 Y
SEE CAUTION LT SYS DIAG
TO AVIONICS SYSTEM
TO 4A1J1-M
SEE FO-20
TO 8XA6-63
SEE FO-21
1M1 TURB/NG GAS TEMP
1M2 GAS PRODUCER TACH
1M3 DUAL TACH INDICATOR
1M4 ENGINE G/G TEMP/PRESS
1M5 ALTIMETER (BARO) PILOT
1M6 TORQUE METER
1M7 FUEL QTY IND
1M8 ENGN G/G TEMP/PRESS
1M9 CLOCK
1M10 VERT SPEED
1M11 TURBINE GAS TEMP
1M12 GAS PRODUCER TACH
1M13 DUAL TACH INDICATOR
1M14 TORQUE METER
1M15 ALTIMETER (BARO) GUNNER
1M16 ENGN G/G TEMP/PRESS
1M17 FUEL QTY IND
1M18 TORQUE METER
1M21 AIRSPEED
1M22 VERT SPEED
1M23 STBY COMPASS
1M25 AIRSPEED
8A1 NVG PC BOARD
8A2 PLT CAUTION PNL
8A2J1 J1 I F F CAUTION
J6 I F F CODE HOLD
J1 GOV EMER
8A3 DAH CAUTION PNL
8A4 NVG PC BOARD
GOV EMER
SEG B GND

209475 368 1

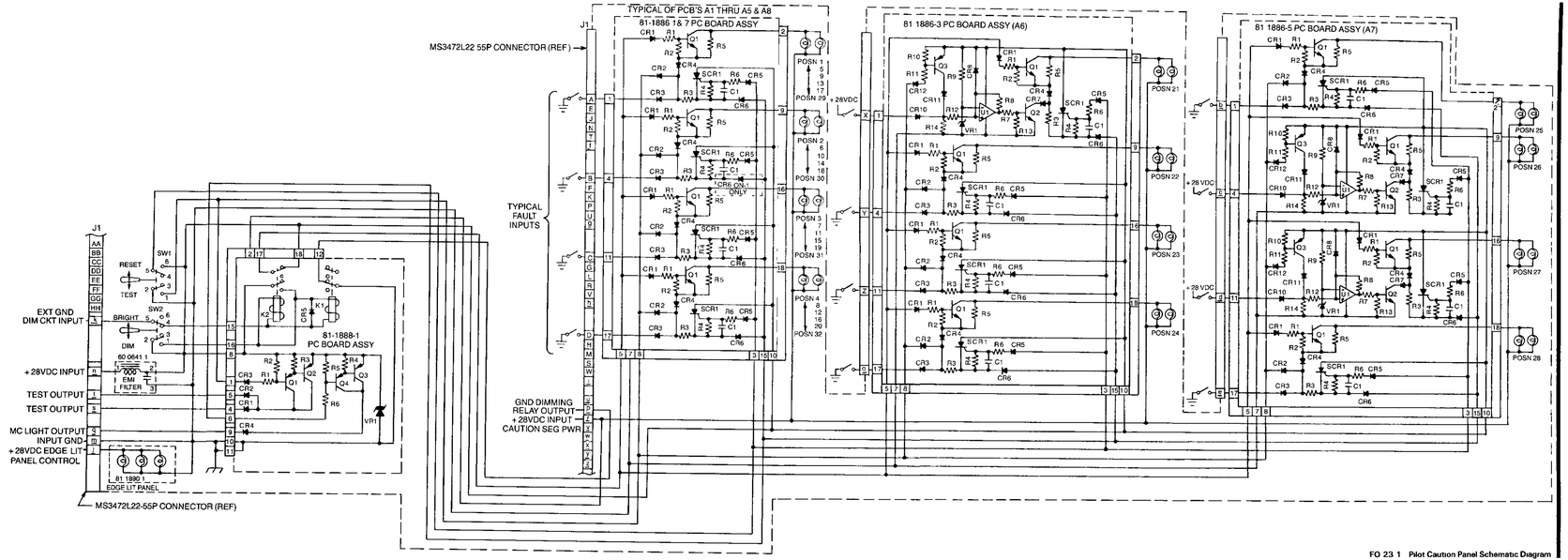


FO-22 1 **P** **Interior Lights System** (After MWO 55-1520-236-50-4)

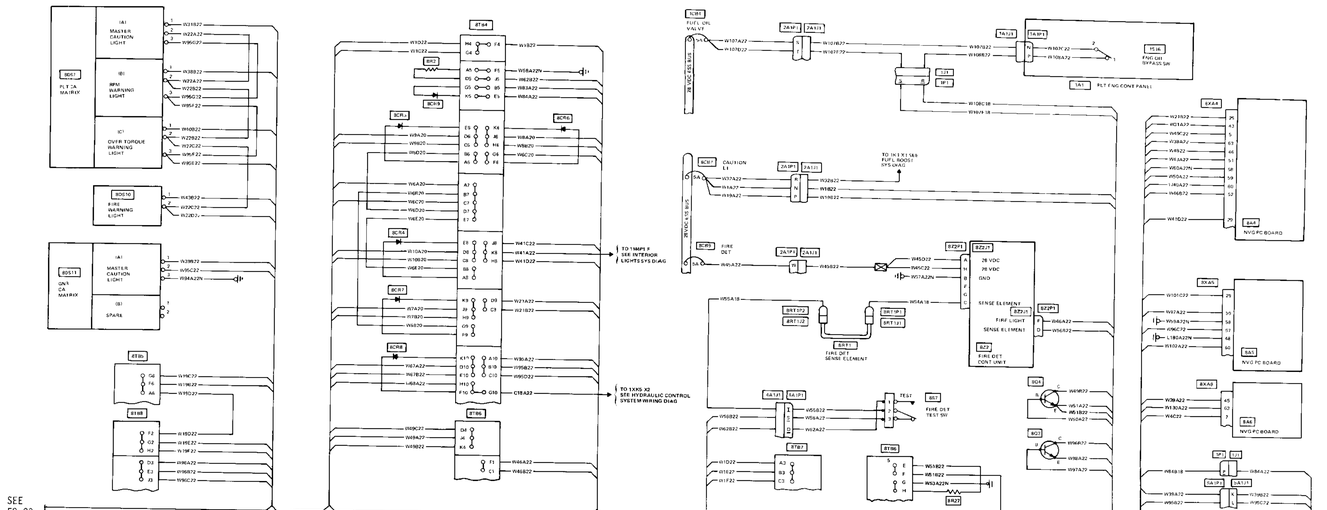


209075 175 1B

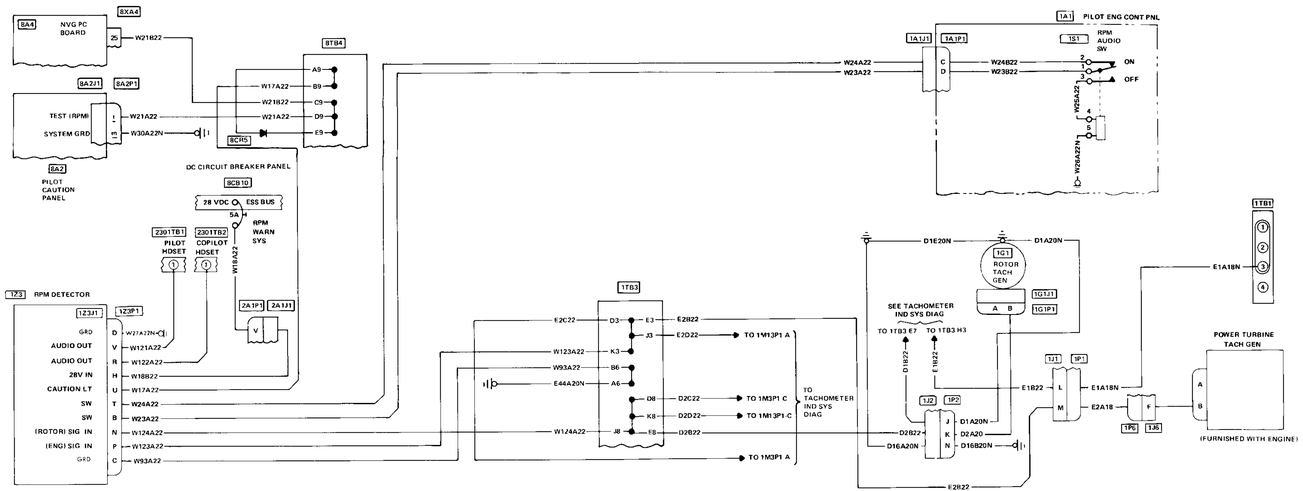
FO-23 **P** Caution Lights System



FO 23 1 Pilot Caution Panel Schematic Diagram

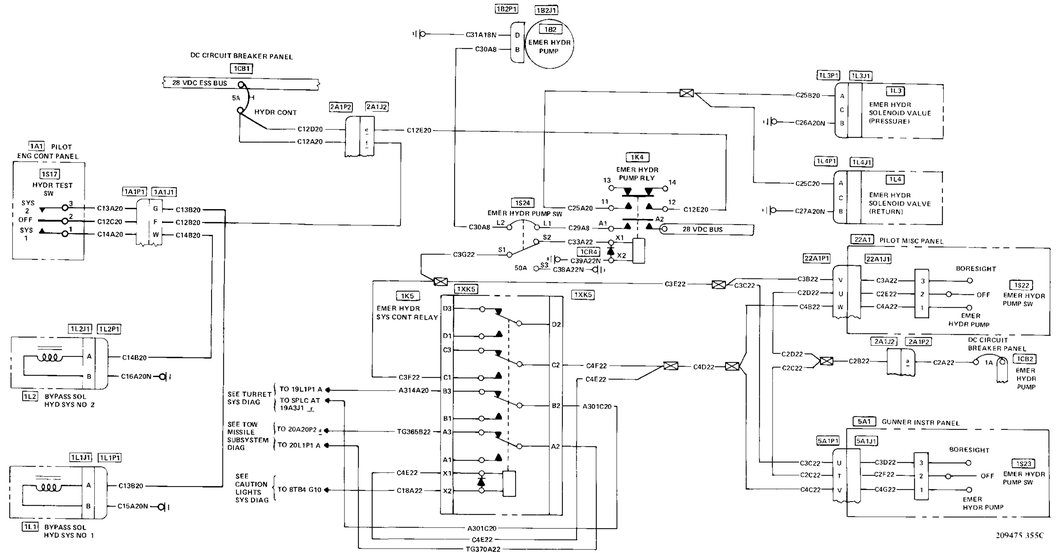


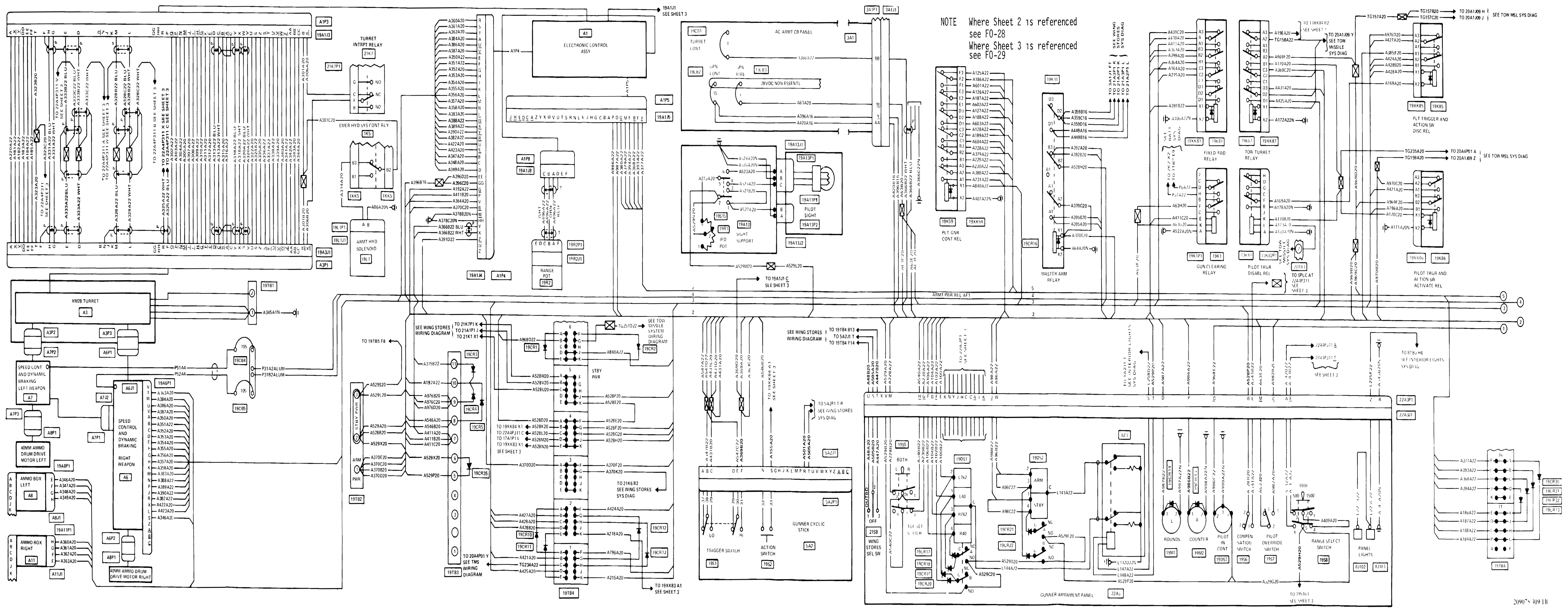
FO-24 **Caution Lights System**



209475 360D

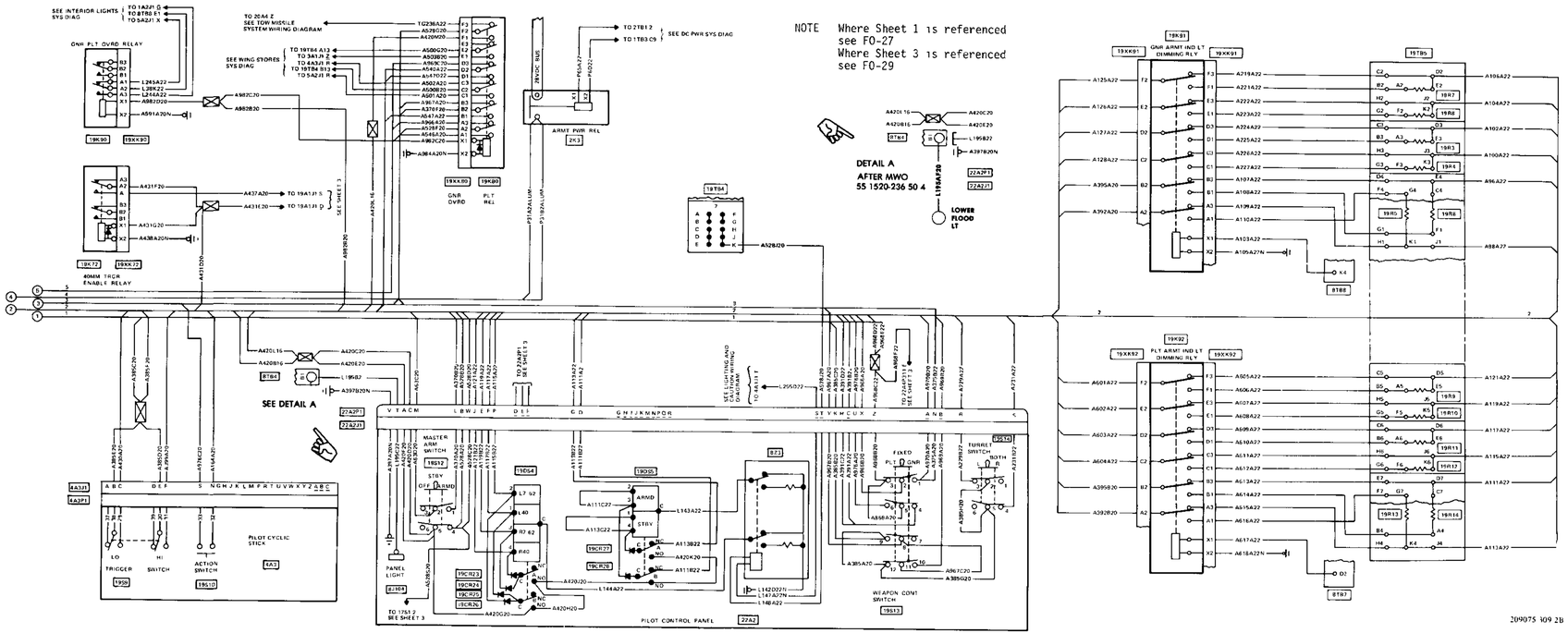
FO-25 **RPM Limit Warning System**


1B2P1
1B2J1
1B2
EMER HYDR PUMP
C31A18N
C30A8
DC CIRCUIT BREAKER PANEL
1CB1
28 VDC ESS BUS
5A
HYDR CONT
2A1P2
2A1J2
C12D20
C12A20
C12E20
1A1 PILOT ENG CONT PANEL
1S17 HYDR TEST SW
SYS 2
OFF
SYS 1
C13A20
C12C20
C14A20
1A1P1
1A1J1
G
F
W
C13B20
C12B20
C14B20
1L3P1
1L3J1
1L3
EMER HYDR SOLENOID VALVE (PRESSURE)
C25B20
C26A20N
1L4P1
1L4J1
1L4
EMER HYDR SOLENOID VALVE (RETURN)
C25C20
C27A20N
1K4
EMER HYDR PUMP RLY
13
14
11
12
A1
A2
C12E20
1S24
EMER HYDR PUMP SW
C25A20
C30A8
L2
L1
C29A8
28 VDC BUS
S2
C33A22
S1
1CR6
C29A22N
X1
X2
50A
S3
C38A22N
C3G22
C3E22
C3C22
22A1 PILOT MISC PANEL
22A1P1
22A1J1
BORESIGHT
C3B22
C2D22
C4B22
V
U
W
C3A22
C2E22
C4A22
3
2
1
OFF
1S22
EMER HYDR PUMP SW
EMER HYDR PUMP
1K5
EMER HYDR SYS CONT RELAY
1XK5
1XK5
D3
D1
C3
C1
B3
B1
A3
A1
X1
X2
D2
C2
B2
A2
C3F22
C4F22
C4E22
C4D22
2A1J2
2A1P2
DC CIRCUIT BREAKER PANEL
C2D22
C2C22
C2B22
C2A22
1A
1CB2
EMER HYDR PUMP
1L2J1
1L2P1
A
B
C14B20
C16A20N
1L2 BYPASS SOL HYD SYS NO 2
1L1J1
1L1P1
A
B
C13B20
C15A20N
1L1 BYPASS SOL HYD SYS NO 1
SEE TURRET SYS DIAG
TO 19L1P1 A
TO SPLC AT 19A3J1 J
A314A20
SEE TOW MISSILE SUBSYSTEM DIAG
TO 20A20P2 J
TO 20L1P1 A
TG365B22
SEE CAUTION LIGHTS SYS DIAG
TO 8T84 G10
C4E22
C18A22
A301C20
C4E22
TG370A22
5A1 GUNNER INSTR PANEL
5A1P3
5A1J1
BORESIGHT
C3C22
C2C22
C4C22
U
T
V
C3D22
C2F22
C4G22
3
2
1
OFF
1S23
EMER HYDR PUMP SW
EMER HYDR PUMP
209475 35SC



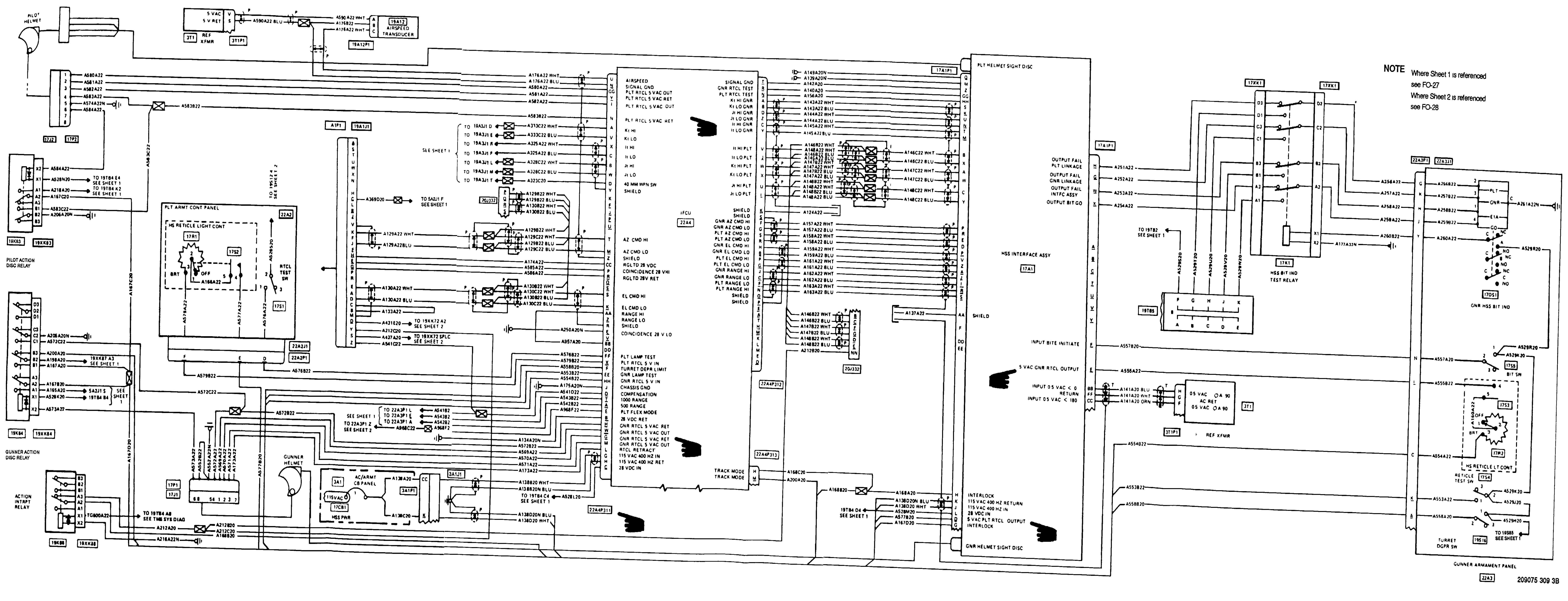
NOTE Where Sheet 2 is referenced see FO-28
Where Sheet 3 is referenced see FO-29

FO-27 Armament Turret System

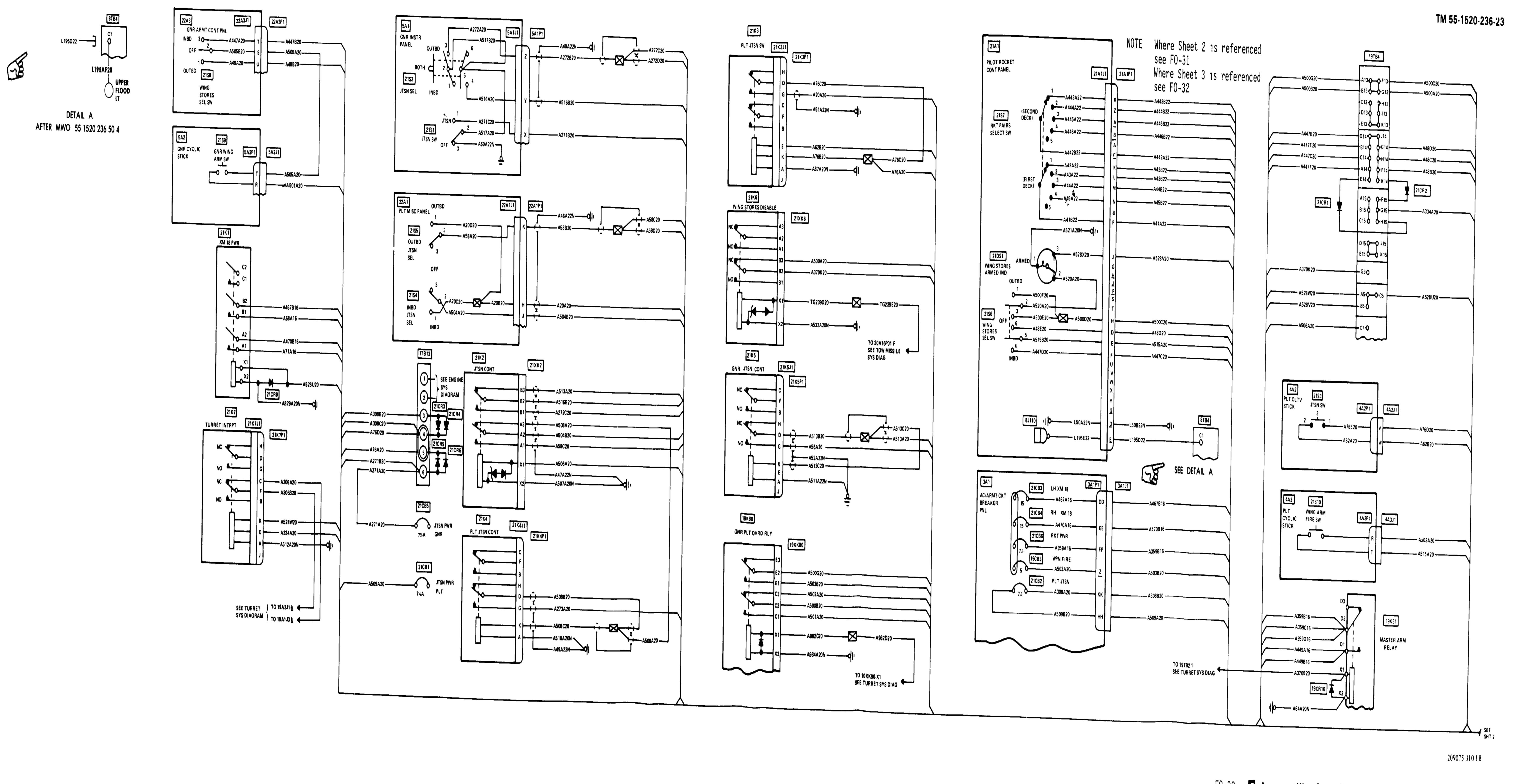


209075 109 2B

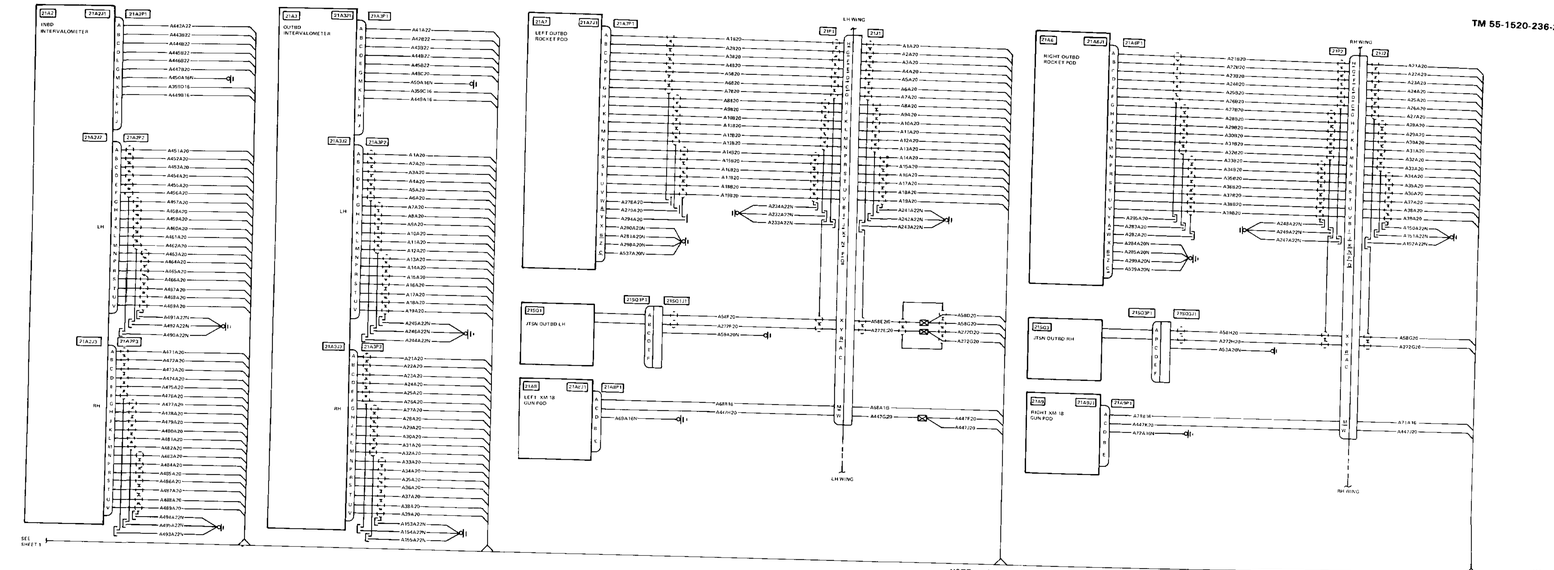
NOTE Where Sheet 1 is referenced see FO-27
Where Sheet 2 is referenced see FO-28

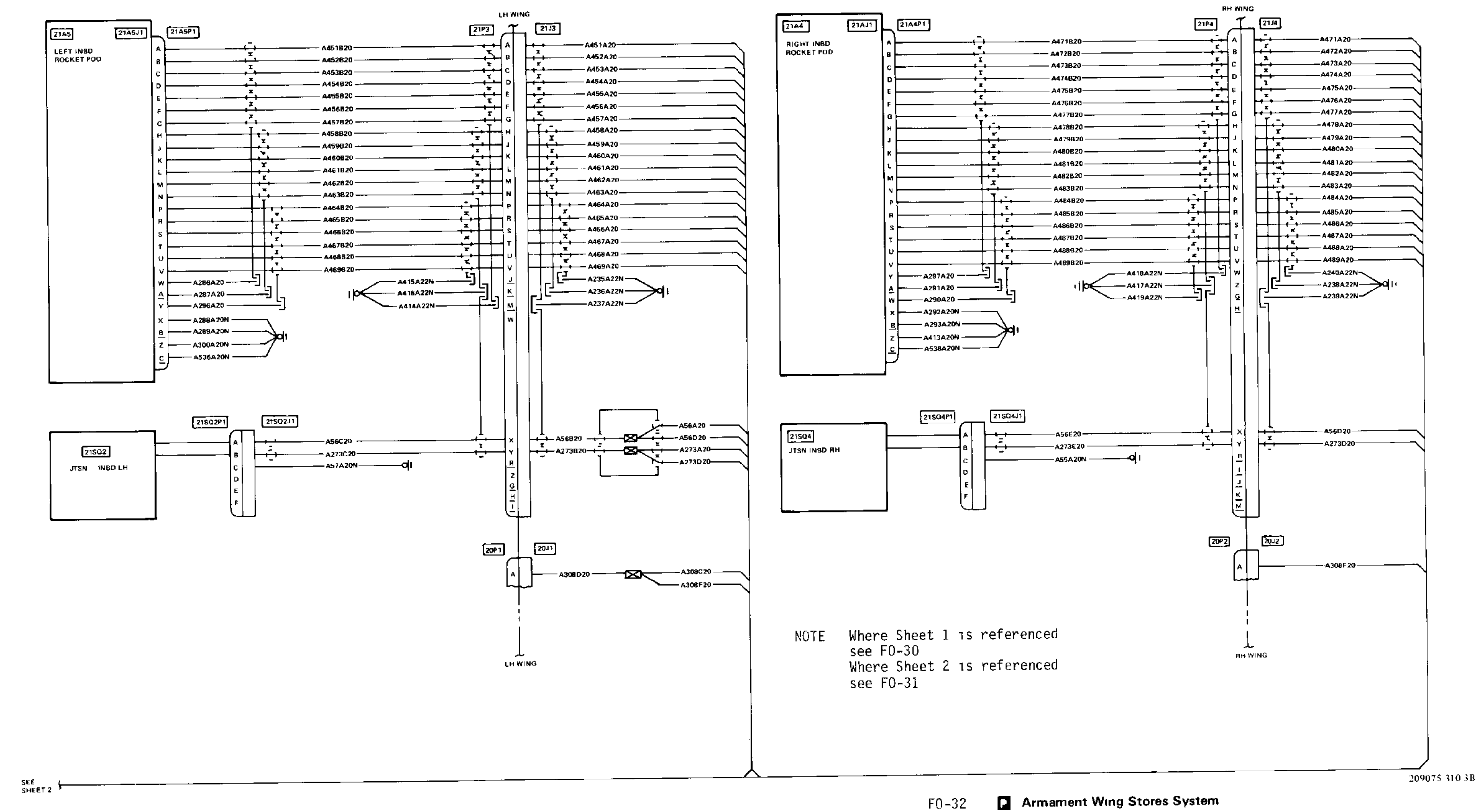


FO-29

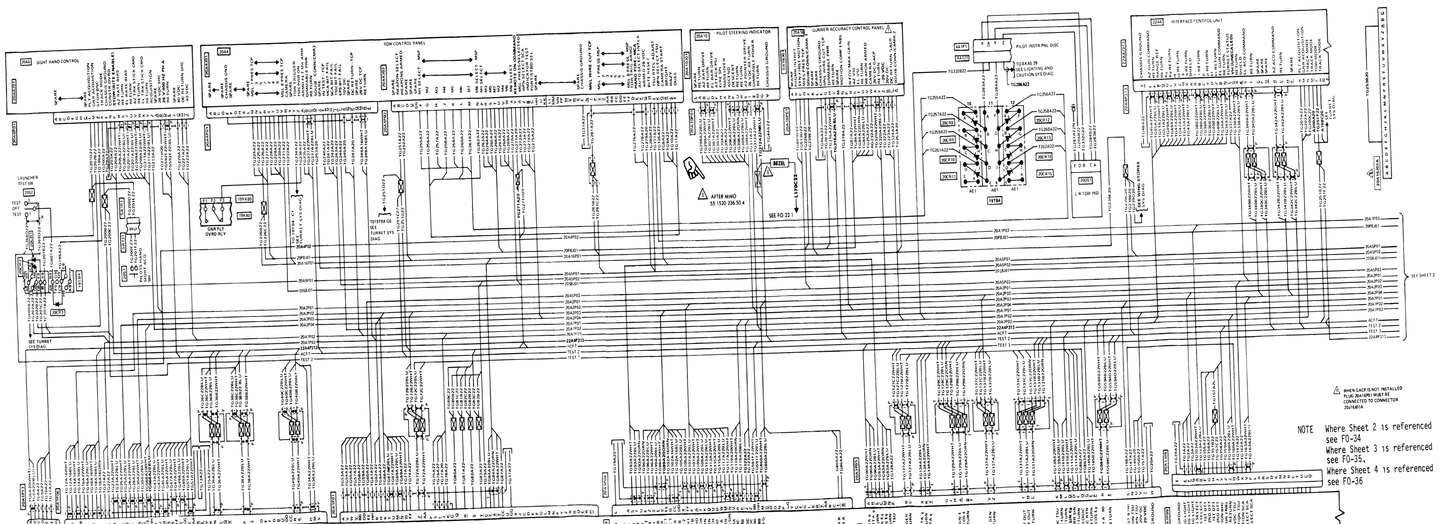


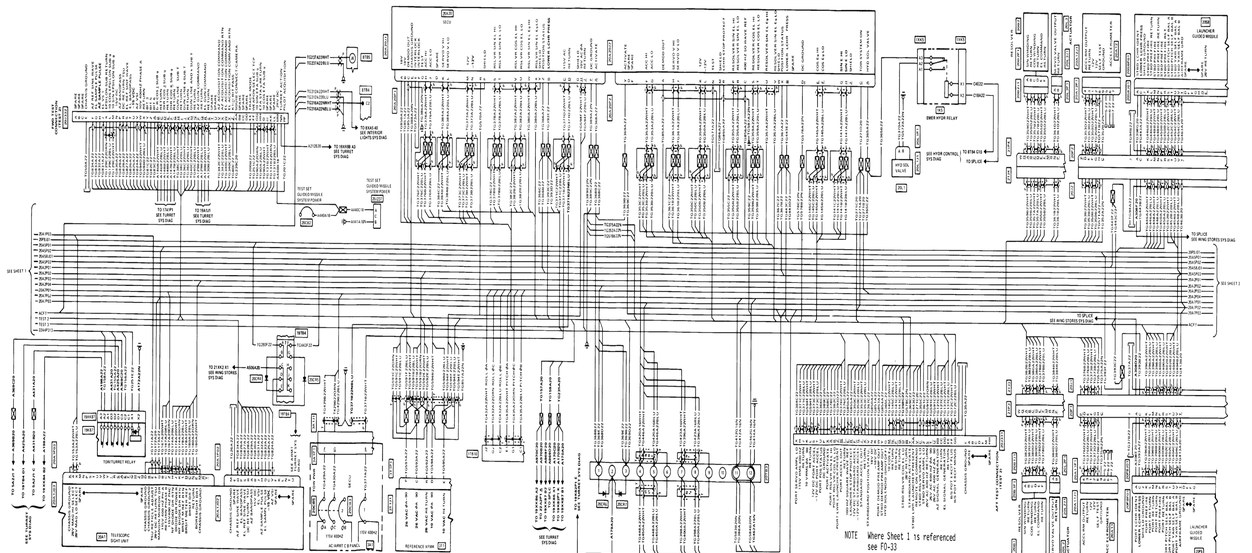
FO-30 **P** Armament Wing Stores System


21A2
HUNG INTERVALOMETER
21A2P1
21A2J1
21A3
OUTBD INTERVALOMETER
21A3P1
21A3J1
21A1
LEFT OUTBD ROCKET POD
21A1P1
21A1J1
21A4
RIGHT OUTBD ROCKET POD
21A4P1
21A4J1
21A2J2
21A2P2
21A2P3
21A2J3
21A3J2
21A3P2
21A3P3
21A3J3
21A1J2
21A1P2
21A1J3
21A4J2
21A4P2
21A4J3
21FD1
JTSN OUTBD LH
21FD2
JTSN OUTBD RH
21A5
LEFT XM-18 GUN POD
21A5J1
21A5P1
21A6
RIGHT XM-18 GUN POD
21A6J1
21A6P1
21P1
21J1
21P2
21J2
LH WING
RH WING
LH
RH
SEE SHEET 3
SEE SHEET 1
NOTE
Where Sheet 1 is referenced see FO-30
Where Sheet 3 is referenced see FO-32



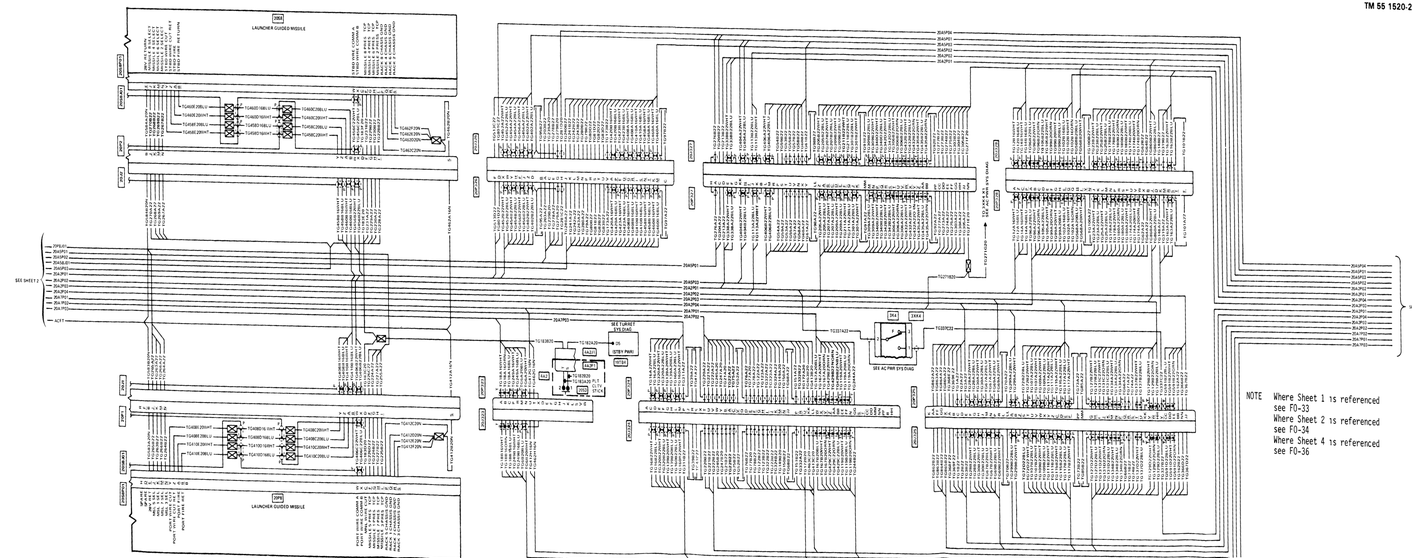
FO-32 Armament Wing Stores System

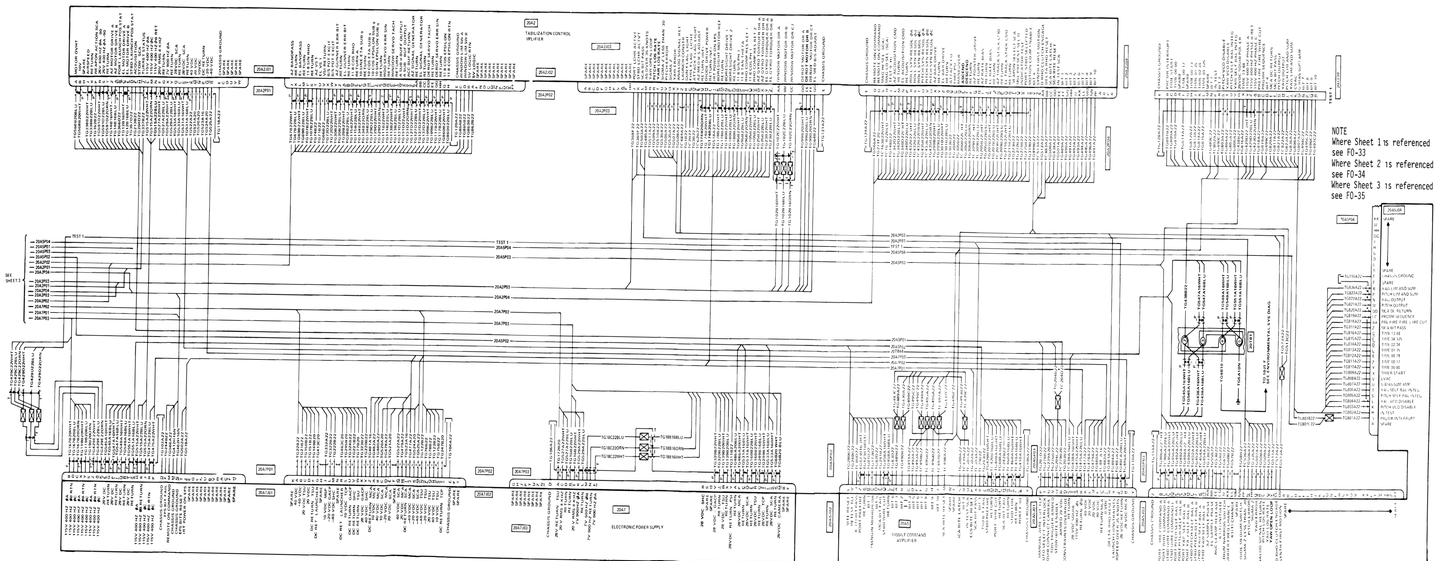

SIGHT HAND CONTROL
TOW CONTROL PANEL
PILOT STEERING INDICATOR
GUNNER ACCURACY CONTROL PANEL
PILOT INSTR PNL DISC
INTERFACE CONTROL UNIT
LAUNCHER TEST SW
TELESCOPIC SIGHT UNIT
AFTER MWO TO 1520-236-50-4
SEE FO-22-1
SEE SHEET 2
WHEN CAGE IS NOT INSTALLED PLUG 26A1NP01 MUST BE CONNECTED TO CONNECTOR 25J16A01A
NOTE Where Sheet 2 is referenced see FO-34 Where Sheet 3 is referenced see FO-35. Where Sheet 4 is referenced see FO-36
209075 311 1B



NOTE Where Sheet 1 is referenced see FO-33
Where Sheet 3 is referenced see FO-35
Where Sheet 4 is referenced see FO-36

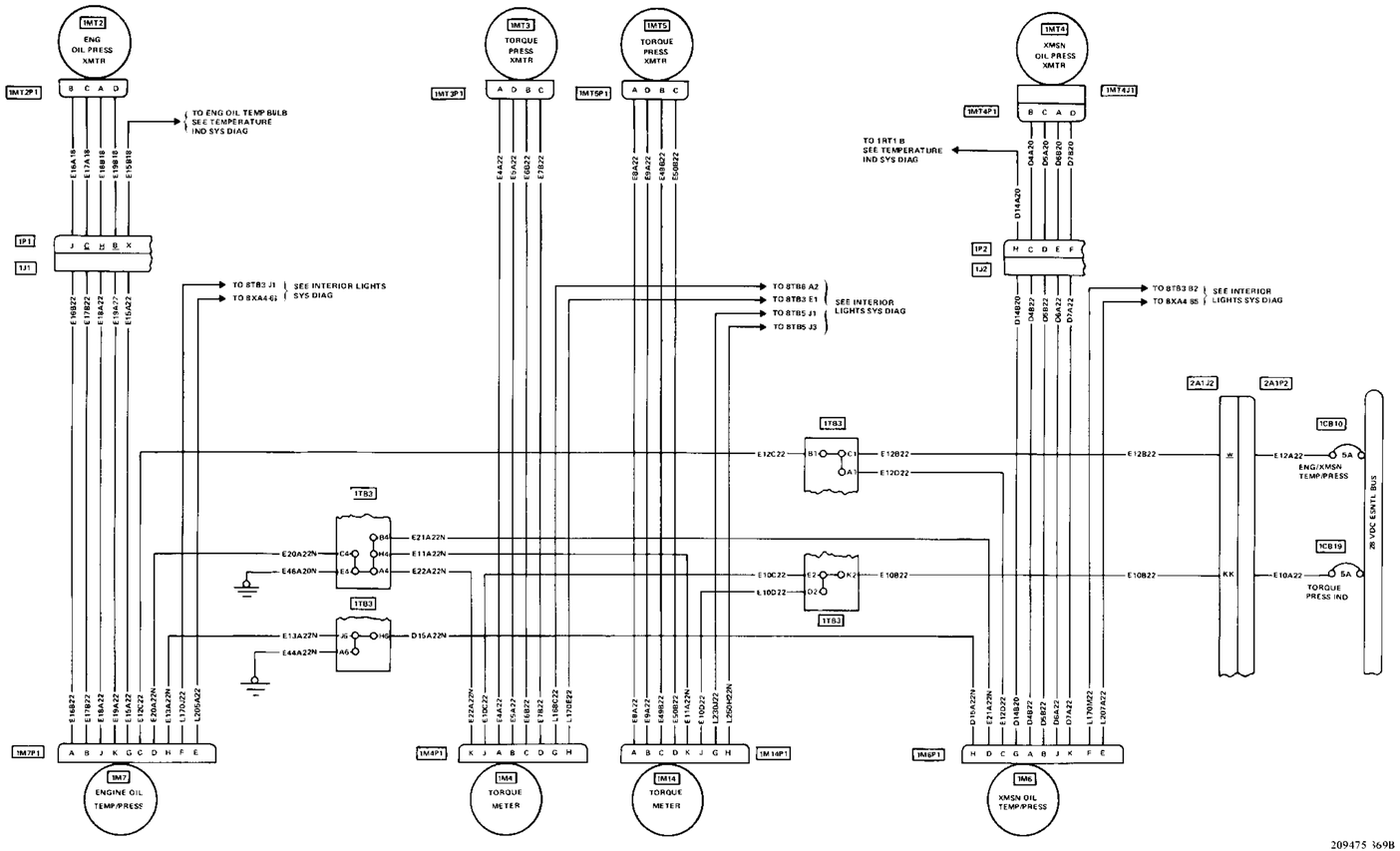
FO-34 Armament TOW Missile Wiring Diagram


LAUNCHER GUIDED MISSILE
LAUNCHER GUIDED MISSILE
SEE SHEET 3
SEE SHEET 4
SEE TURRET SYS DIAG
SEE AC PWR SYS DIAG
NOTE Where Sheet 1 is referenced see FO-33
Where Sheet 2 is referenced see FO-34
Where Sheet 4 is referenced see FO-36

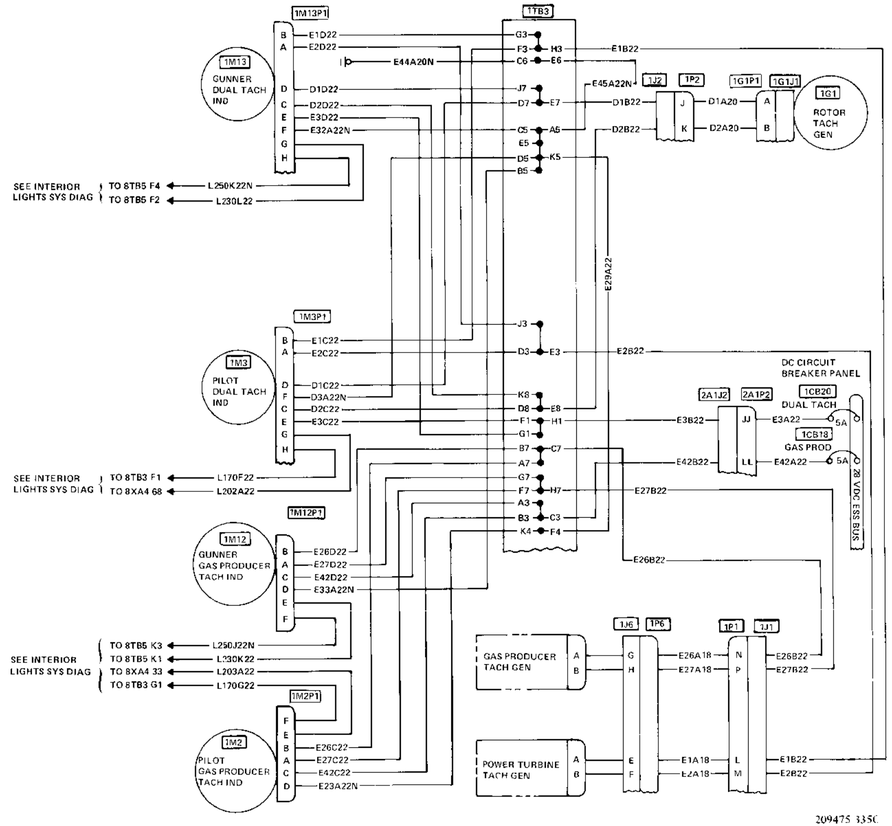


NOTE
Where Sheet 1 is referenced
see F0-33
Where Sheet 2 is referenced
see F0-34
Where Sheet 3 is referenced
see F0-35

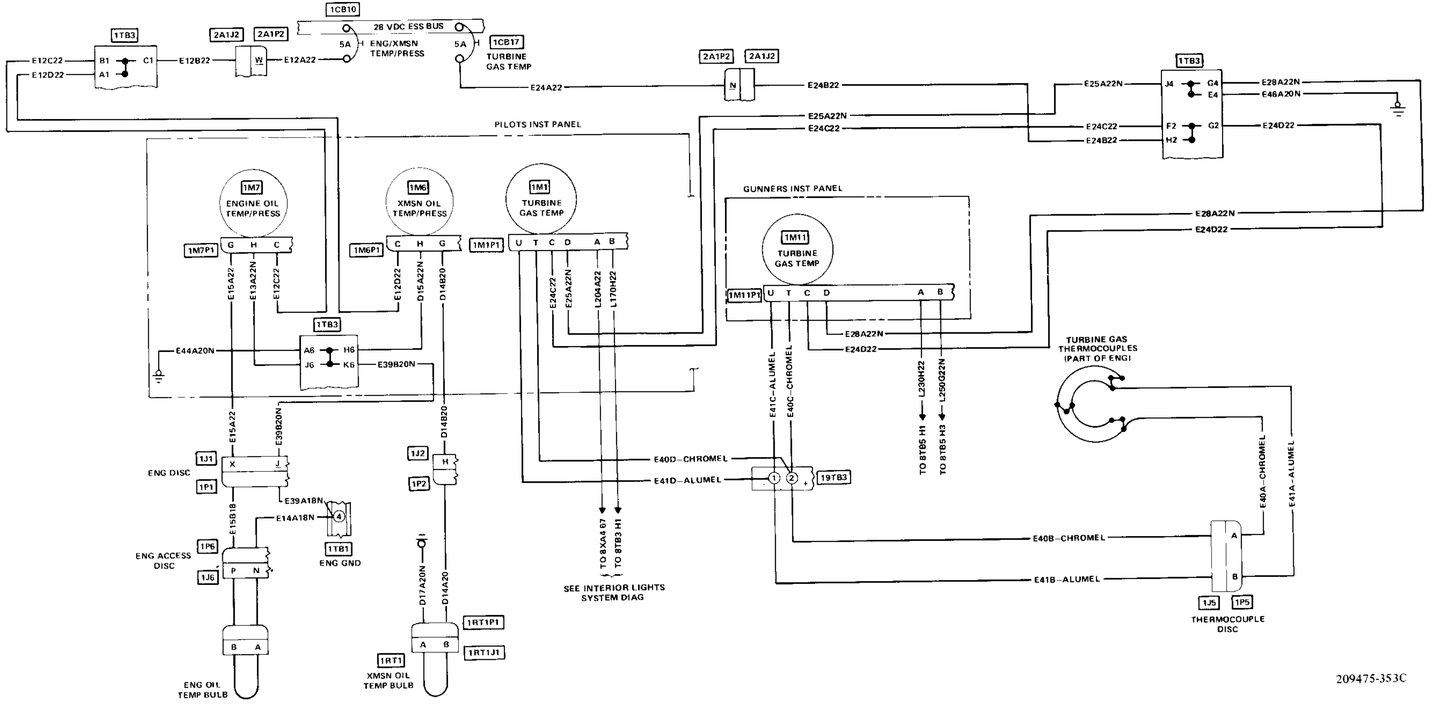
F0-36 Armament TOW Missile Wiring Diagram


1MT2
ENG OIL PRESS XMTR
1MT2P1
B C A D
TO ENG OIL TEMP BULB
SEE TEMPERATURE IND SYS DIAG
E16A18
E17A18
E18B18
E19B18
E15B18
1P1
1J1
J C H B X
E16B22
E17B22
E18A22
E19A22
E15A22
TO 8TB3 J1
TO 8XA4 6
SEE INTERIOR LIGHTS SYS DIAG
1MT3
TORQUE PRESS XMTR
1MT3P1
A D B C
E4A22
E5A22
E6B22
E7B22
1MT5
TORQUE PRESS XMTR
1MT5P1
A D B C
E8A22
E9A22
E48B22
E50B22
TO 8TB6 A2
TO 8TB3 E1
TO 8TB5 J1
TO 8TB5 J3
SEE INTERIOR LIGHTS SYS DIAG
1MT4
XMSN OIL PRESS XMTR
1MT4P1
1MT4J1
B C A D
TO 1RT1 B
SEE TEMPERATURE IND SYS DIAG
D14A20
D4A20
D5A20
D6B20
D7B20
1P2
1J2
H C D E F
D14B20
D4B22
D5B22
D6A22
D7A22
TO 8TB3 B2
TO 8XA4 B5
SEE INTERIOR LIGHTS SYS DIAG
2A1J2
2A1P2
1TB3
E12C22
B1
C1
A1
E12B22
E12D22
E12B22
W
E12A22
5A
1CB10
ENG/XMSN TEMP/PRESS
E20A22N
C4
B4
H4
E21A22N
E11A22N
E46A20N
E4
A4
E22A22N
E10C22
E2
K2
O2
E10B22
L10D22
E10B22
KK
E10A22
5A
1CB19
TORQUE PRESS IND
E13A22N
J6
H6
D15A22N
E44A22N
A6
28 VDC ESNTL BUS
1M7P1
A B J K G C D H F E
1M7
ENGINE OIL TEMP/PRESS
E16B22
E17B22
E18A22
E19A22
E15A22
E12C22
E20A22N
E13A22N
L17D22
L20SA22
1M4P1
K J A B C D G H
1M4
TORQUE METER
E22A22N
E10C22
E4A22
E5A22
E6B22
E7B22
L15BC22
L17DE22
1M14P1
A B C D K J G H
1M14
TORQUE METER
E8A22
E9A22
E48B22
E50B22
E11A22N
E10D22
L23D22
L20SH22N
1M6P1
H D C G A B J K F E
1M6
XMSN OIL TEMP/PRESS
D15A22N
E21A22N
E12D22
D14B20
D4B22
D5B22
D6A22
D7A22
L17M22
L20TA22

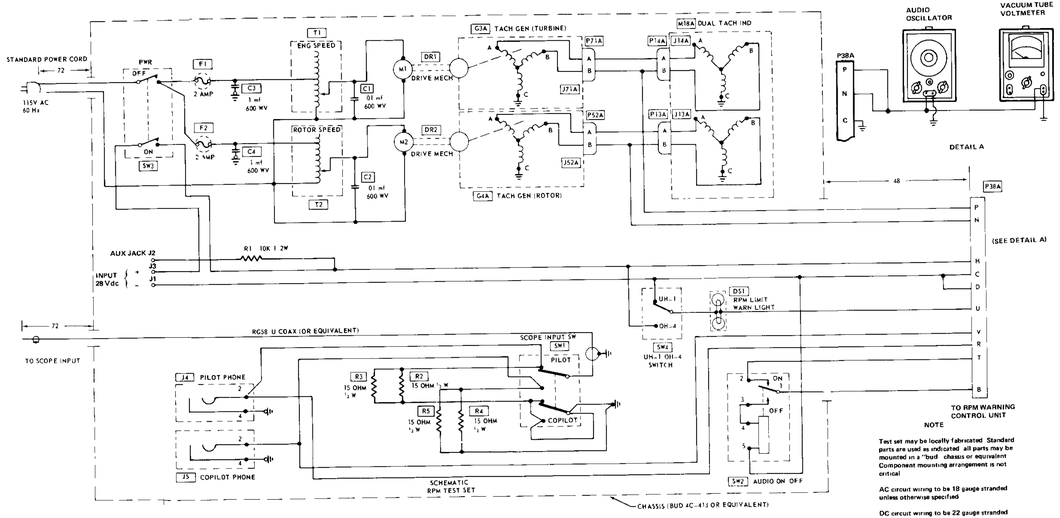
209475 369B



FO-38 **Tachometer Indicating Systems**


1CB10
28 VDC ESS BUS
5A
ENG/XMSN TEMP/PRESS
5A
1CB17
TURBINE GAS TEMP
1TB3
E12C22
E12D22
B1
C1
A1
E12B22
2A1J2
2A1P2
W
E12A22
E24A22
2A1P2
2A1J2
N
E24B22
E25A22N
E24C22
E24B22
1TB3
J4
G4
E4
F2
G2
H2
E28A22N
E46A20N
E24D22
PILOTS INST PANEL
GUNNERS INST PANEL
1M7
ENGINE OIL TEMP/PRESS
1M7P1
G H C
1M6
XMSN OIL TEMP/PRESS
1M6P1
C H G
1M1
TURBINE GAS TEMP
1M1P1
U T C D A B
E16A22
E13A22N
E12C22
E12D22
D15A22N
D14B20
E24C22
E25A22N
L204A22
L170H22
1M11
TURBINE GAS TEMP
1M11P1
U T C D A B
E28A22N
E24D22
1TB3
A6
H6
J6
K6
E44A20N
E39B20N
E41C–ALUMEL
E40C–CHROMEL
L230H22
L250G22N
TO BTB5 H1
TO BTB5 H3
TURBINE GAS THERMOCOUPLES (PART OF ENG)
E15A22
E39B20N
D14B20
1J1
X
J
ENG DISC
1P1
1J2
H
1P2
E40D–CHROMEL
E41D–ALUMEL
1
2
4
19TB3
E39A18N
E15B18
E14A18N
4
1TB1
ENG GND
1P6
1J6
P N
ENG ACCESS DISC
D17A20N
D14A20
TO 8XA4 67
TO 8TB3 H1
SEE INTERIOR LIGHTS SYSTEM DIAG
E40B–CHROMEL
E41B–ALUMEL
A
B
E40A–CHROMEL
E41A–ALUMEL
1J5
1P5
THERMOCOUPLE DISC
1RT1P1
1RT1J1
1RT1
A B
B A
ENG OIL TEMP BULB
XMSN OIL TEMP BULB

209475-353C



NOTE

Test set may be locally fabricated Standard parts are used as indicated all parts may be mounted on a "bud chassis or equivalent Component mounting arrangement is not critical

AC circuit wiring to be 18 gauge stranded unless otherwise specified

DC circuit wiring to be 22 gauge stranded unless otherwise specified

FREQ HZ	VRMS	ENG RPM	ROTOR RPM
66 5	19 5	6200	305
69 0	20 0	6400	315
73 5	22 0	6800	334
76 0	22 5	7000	--

ID CODE	NOMENCLATURE	PART NO
C1 C2	Line Filter 01 mf 600 WV	(Non Polarized)
C3 C4	Line Filter 1 mf 600 WV	(Non Polarized)
DR1 DR2	Rubber Flex Tube	Rubber Hose 1/4 I D
DS1	Korry Light (033 0861 001)	(Bell 205 074 026 1)
F1 F2	Fuse Holder	HKF
G3A	Tach Generator (MIL G26611)	Type GEU 7/A
G4A	Tach Generator (MIL G26611)	Type GEU 7/A
J1 J2 J3	Banana Jack	Standard
J4 J5	Phone Jack	092 A/U
M1 M2	Tach Gen Drive Motor - Dayton Mod 2M037 - Ball Bearing 1/4 Shaft 1/10 HP 8000 RPM 115Vac 60 Hz	
M18A	Dual Tach Indicator - GE 8DJ67FBC Sub 1	(Bell 204 070 055 1)
P13A	Plug Dual Tach Indicator	MS3106R14S 7S
P14A	Plug Dual Tach Indicator	MS3106R14S 7S
P38A	Plug Eng RPM Warning Control	MS3126F14 19S
P52A	Plug Tach Generator	MS3108R12S 3S
P71A	Plug Tach Generator	MS3108R12S 3S
R1	Resistor 10K OHM 1/2W Carbon	(Tol 5%)
R2 R3 R4 R5	Resistor 15 OHM 1/2W Carbon	(Tol 5%)
SW1	Switch Scope Input	MS24659 23G
SW2	Switch Audio On/Off (Micro)	5 ETI S
SW3	Switch Power On/Off	MS35059 22
T1 T2	Speed Control - Power Stat Superior Electric Co (0 140Vac 60 Hz)	Type 10B

205074-1004

F0-40 **RPM Limit Warning Test Set Schematic**

CODE NO	EQUIPMENT	PART DESIGNATION	CKT LTR	NOTES	NO OF UNITS	OPER TIME MIN	ELECTRICAL REQUIREMENTS PER UNIT: 115 VOLTS 3 PHASE VA	115 VOLTS 3 PHASE WATTS	115 VOLTS 3 PHASE VARS	115 VOLTS 1 PHASE VA	115 VOLTS 1 PHASE WATTS	115 VOLTS 1 PHASE VARS	26 VOLTS 1 PHASE VA	26 VOLTS 1 PHASE WATTS	26 VOLTS 1 PHASE VARS	PWR FACT	VOLTAGE MIN	VOLTAGE MAX	FREQ MIN	FREQ MAX	PWR SOR INF
						AC BUS SYS															
	26 VAC																				
	FLIGHT INSTRUMENTS		F																		
F085	COURSE IND	212 070 180 3			1	15 00							9 12	1 46	5 00	0 160	24 5	27 5	300	420	SPEC
	RADIO NAV & COMM		R																		
R053	LF/ADF REC	AN/ARN 89			1	15 00							4 01	2 62	3 12	0 629	24 5	27 5	380	420	MEA
R102	VOR/LOC/GS	AN/ARN 123			1	15 00							10 40	8 32	8 24	0 800	24 5	27 5	380	420	SPEC
	AC POWER		X																		
X023	PF CPR CAP	5 MFD 100V			1	15 00							8 60	1 71	8 43	0 199	24 5	27 5	360	440	MEA
	115 VAC																				
	FLIGHT CONTROLS		C																		
C032	SCAS SYS				1	15 00				69 00	59 34	35 21				0 860	108 0	118 0	360	440	MEA
	ENGINE INSTRUMENTS		E																		
E046	FUELGTYSYS	209 060 602			1	15 00				2 92	2 91	0 26				0 996	107 5	119 5	360	440	MEA
E040A	FUELQTYIND				1																
E040B	FUELGTYXMR				2																
	FLIGHT INSTRUMENTS		F																		
F019	COMPASSSYS	AN/ASN 43			1	15 00											108 0	118 0	380	420	MEA
F019A	DIR GYRO	IN 998 I/ASN			1					16 39	15 36	6 73				0 937					
F019B	XMTR	T 011( )/ASN			1												108 0	118 0	380	420	MEA
F025	ATT GYRO	LEAR SIGLER 9000C			1	15 00	17 94	15 93	8 25							0 888	108 0	118 0	380	420	MEA
F078	HSI IND	209 070 660			1	15 00				25 00	20 00	15 00				0 800	108 0	118 0	380	420	SPEC
F087	ATT IND/BPH	209 075 661 1			1	15 00	10 57	9 99	3 45							0 945					
	HEATING		H																		
H068	RAD CPT BL	209 073 901 1			1	15 00				2 64	2 30	1 30				0 871	107 5	119 5	360	440	MEA
	AC POWER		X																		
X025	DC PWR SUP	BENDIX 9840 1			1	15 00										0 980	108 0	118 0	360	440	CAL
						AC BUS ARMAMENT															
	115 VAC ARMAMENT																				
	ARMAMENT		A																		
A003	HELMENT ST				1	15 00				13 35	13 35	0 0				1 000	107 5	119 5	380	420	MEA
A039	TURRET SYS	M 197			1	15 00	82 88	82 73	4 97							0 998	108 5	117 5	380	420	MEA
	AC POWER		X																		
X026	DC PWR SUP	BENDIX 9840 I			1	15 00										0 980	108 0	118 0	360	440	CAL
						AC BUS TOW															
	115 VAC (WITH TOW ENERGIZED)																				
	ARMAMENT		A																		
A001	TOW REF ST	XM 65			1	15 00	27 92	-24 53	13 14							0 882	108 5	117 5	380	420	MEA
A002	TOW MIS SY	XM 65			1	15 00	110 64	104 23	37 11							0 942	108 5	117 5	380	420	MEA

POWER SOURCE COMPONENT DATA

ITEM	ALTERNATOR	STBY INVERTER	26V AC XFMR
No Units	1	1	1
Rating	10 KVA	750 VA	150 VA
Voltage	115 VAC	115 VAC	26 VAC
Frequency	400 Hz	400 Hz	400 Hz
Power Factor	0 76 Lag	0 75 Lag	
Configuration	1 0 Lag 3 Phase Wye	0 95 Lead 3 Phase Wye	
Manufacturer	Bendix		
Model No	209 075 997 1	209 075 572	209 075 363 1
Voltage Reg	+2 2% -8 7%	2 2%	
Regulator P/N	409 376 203		
Frequency Reg	420 Hz to 360 Hz	2 5%	

209475 453 1

EQUIPMENT	PART DESIGNATION	CKT LTR	NO OF TES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS: START AND WARM UP 5 SEC	START AND WARM UP 2 MIN	START AND WARM UP 15 MIN	TAKE OFF 5 SEC	TAKE OFF 2 MIN	TAKE OFF 15 MIN	CRUISE 5 SEC	CRUISE 2 MIN	CRUISE 15 MIN	CRUISE COMBAT 5 SEC	CRUISE COMBAT 2 MIN	CRUISE COMBAT 15 MIN	LAND 5 SEC	LAND 2 MIN	LAND 15 MIN	EMERGENCY 5 SEC	EMERGENCY 2 MIN	EMERGENCY 15 MIN
ESSENTIAL DC BUS																												
ARMAMENT		A																										
SOUB WNG BTJT	ARD883 1		1	4	1 60	0 0	21 00	29 00	MEA	12 80																		
STORES MANGMT	209 947 282		7	2	2 50	0 0	24 00	28 50	SPEC	5 00										0 41	0 41	0 41						
ARMT RELAY	MS24142 02			1	0 41	15 00	24 00	28 50	SPEC	0 47																		
FLIGHT CONTROLS		C																										
HYD VALVE SOL	HYD RESEARC 88700		1	2	1 10	0 0	21 00	29 00	MEA	2 20																		
NAG RKT FR TRN	ABN ACC R460M13 3			3	0 35	15 00	21 00	29 00	MEA	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05	1 05
SCAS (3 CHANNEL)				1	7 00	15 00	21 00	29 00	SPEC	7 00	7 00	7 00	7 00	7 00	7 00	00	7 00	7 00	7 00	7 00	7 00	7 00	7 00	7 00	7 00	7 00	7 00	7 00
EMER HYD PUMP	209 076 039-			1	40 00	0 0	21 00	29 00	SPEC	40 00																		
EMER HYD SOL	204 076 504-3			2	0 50	0 0	21 00	29 00	SPEC	1 00																		
EMER HYD RLY	110 127 01			1	0 12	0 0	21 00	29 00	SPEC	0 12																		
EMER HYD RLY	MS24140 02			1	0 50	0 0	24 00	28 50	SPEC	0 50																		
INSTRUMENTS		D																										
XMSN OIL T PIND	209 075 058			1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11
ENGINE INSTRUMENTS		E																										
TURBINE TEMP IND	209 075 651			2	0 11	15 00	2 00	29 00	SPEC	0 22																		
GAS PRODUCER IND	209 075 652			2	0 12	15 00	21 00	29 00	MEA	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24	0 24
TORQ PRESS IND	209 075 653			1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11
TORQUE PRESS IND	209 075 654			1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11
DUAL TACH IND	209 075 655			2	0 11	15 00	21 00	29 00	SPEC	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22	0 22
ENGOIL T PIND	209 075 656			1	0 11	15 00	21 00	29 00	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11
FLIGHT INSTRUMENTS		F																										
GNR ATT IND	209 075 666 1			1	0 37	15 00	21 00	29 00	SPEC	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37	0 37
HEATING		H																										
DEICING VALVE	FURNISHED		3	1	0 90	15 00	24 00	28 50	SPEC	0 90	0 90	0 90	0 90	0 90	0	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90
ENGINE IGNITION		J																										
IGNITOR SYSTEM	PART OF ENGINE		4	1																								
IGNITOR PACK	PART OF ENGINE		4	1	2 15	0 0	24 00	28 50	SPEC	2 15																		
ENG PRIM SOL	PART OF ENGINE		4	1																								
ENGINE CONTROLS		K																										
				1	0 90	0 20	22 00	30 00	SPEC	0 90				0 90	0 09	0 01	0 90	0 09	0 01	0 90	0 09	0 01	0 90	0 09	0 01	0 90	0 09	0 01
				1	0 04	CONT	17 00	30 00	SPEC	0 04				0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04	0 04
STARTER RELAY	MS2418301		4	1	0 37	0 0	24 00	28 50	MEA	0 37																		
LIGHTING		L																										
INST EDGE LTS	MS25237 327 LAMP		126	1	0 04	15 00	24 00	28 50	MEA	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04	5 04
PLT INST LTS	212 075 962 1			3	2 00	15 00	24 00	28 50	SPEC	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00
CPLT INST LTS	212 075 962 1			1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00
COCKPIT LIGHT	209 075 250		2	3	0 16	15 00	24 00	28 50	SPEC	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48	0 48
POWER		P																										
BATTERY CHGING	BB 649 A		5	1		15 00	24 00	28 50	SPEC		67 45	45 84	22 07	21 95	20 10	10 11	10 07	9 17	4 78	4 77	4 44	4 03	3 05	3 01	2 84			
AC SOURCE RLY	SM 1NC401			1	0 23	15 00	24 00	28 50	SPEC	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23	0 23
AC CONTROL RLY	110 127 1			1	0 12	15 00	24 00	28 50	SPEC	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12
BAT CONT RELAY	110 128			1	0 11	15 00	24 00	28 50	SPEC	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11	0 11
REV CU CTL RLY	110 111 1			1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20
ESSENTL RELAY	MS24142 02			1	0 60	15 00	24 00	28 50	SPEC	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60	0 60
BATTERY RELAY	HARTMAN A957G			1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 70	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20
FUEL CONTROL		Q																										
FUEL BOOST PUMP	206 060 606			1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20
FUEL SOL VALVE	204 062 520			1	2 00	0 02	18 00	29 00	MEA	2 00	0 48	0 02	0 00															
FUEL CONT VALVE	GW U5K C6OD			1	1 30	15 00	24 00	28 50	SPEC	1 30	1 30	1 20	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30	1 30
GOV RPM ACT	204 060 782			1	0 90	1 0	24 00	28 50	SPEC	0 90	0 90	0 45	0 08	0 90	0 45	0 08	0 90	0 45	0 08	0 90	0 45	0 08						
IDLE STOP SOL	GW U5K L 2540			1	4 50	0 60	24 00	28 50	SPEC	4 50													1 65	0 07	0 01	1 65	0 07	0 01
FUEL LOW RLY	GE3827S1G200F B		1	1	0 0	0 0	24 00	28 50	SPEC	0 0																		
OIL BY PASSOL	AV23811368		1	1	2 00	0 05	24 00	28 50	SPEC	2 00																		
OIL BY PASSRLY	ALLIED MMB 60		1	1	0 11	0 0	24 00	28 50	SPEC	0 11	1 20	0 05	0 01															
RADIO NAV & COMM		R																										
INTERCOM SYS	C6533 ARC			2	0 67	15 00	24 00	28 50	MEA	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14	0 14
VOR LOC OS MB	AN ARN 123			1	0 39	15 00	24 00	28 50	SPEC	0 39	0 39	0 39	0 39	0 39	0 39	0 38	0 39	0 39	0 39	0 39	0 39	0 39	0 39	0 39	0 39	0 39	0 39	0 39
UHF CON SYS	AN ARC 164			1																								
UHF CON REC	AN ARC 164			1	1 61	15 00	24 00	28 50	SPEC	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61	1 61
UHF CON XMIT	AN ARC 164		2	1	2 11	1 00	24 00	28 50	SPEC	2 11	2 11	1 05	0 30	2 11	1 05	0 30	2 11	1 05	0 30	2 11	1 05	0 30	2 11	1 05	0 30	2 11	1 05	0 30
RADAR		S																										
IFFTRANSPONDER	AN/APX-72			1	3 80	15 00	21 00	29 00	MEA	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80	3 80
TEST SET	TS 1843 APX	B		1	0 70	15 00	21 00	29 00	MEA	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70
COMPUTER KIT	GA/SEC MARK XII	B		1	1 10	15 00	24 00	28 50	SPEC	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10	1 10
RADAR ALTMETR	AN/APN 209			1	0 80	15 00	24 00	28 50	MEA	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80
RADAR WARNING	AN APR 38			1	0 67	15 00	24 00	28 50	MEA	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67	0 67
WARNING & EMERGENCY		W																										
CAUT LT PANEL	204 075 708			1	0 20	15 00	24 00	28 50	SPEC	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20
RPM LIMIT WARN	205 074 001			1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 20	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30
FIRE DETECTION	209 075 398			1	0 07	15 00	24 00	28 50	MEA	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07	0 07
RPM WARN LIMIT	209 075 328			1	0 98	15 00	24 00	28 50	MEA	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98	0 98
MAST CAUT SYS	209 075 325			1	0 20	15 00	21 00	29 00	MEA	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20	0 20
TOTAL ESSENTIAL DC BUS											113 02	92 30	63 31	85 92	82 18	51 33	54 90	51 88	46 07	48 03	46 28	43 70	48 63	45 10	44 03	44 43	40 88	40 08

POWER SOURCE COMPONENT DATA

ITEM	STARTER GENERATOR	TRANSFORMER RECTIFIER UNIT	BATTERY
No Units	1	1	1
Rating	300 Amps	200 Amps	22 AH
Voltage	30 VDC	28 VDC	24 VDC
Frequency			
Power Factor		0 95 Lag 0 99 Lag	
Configuration			
Manufactu		Ba dix	
Model No	204 060 200 1	209 075 999 1	BB 649 A
Voltage Reg	3 5%	6 8 9	
Regulator P N	209 075 228		
Frequency Reg			

NOTES

1 THIS EQUIPMENT IS NORMALLY DEENERGIZED

2 ONE MINUTE OPERATION OUT OF EACH TEN MINUTES

3 ENERGIZED EXCEPT DURING DEICING

4 BATTERY LOAD DURING STARTING

5 BATTERY CHARGING VALUES CALCULATED

6 GENERATOR IS REMOVED FROM ESSENTIAL DC BUS DURING ARMAMENT CONFIGURATION TO SUPPLY ARMAMENT BUS POWER

7 SEVERAL WING STORES CONFIGURATIONS ARE POSSIBLE THIS ANALYSIS IS BASED ON THE CONFIGURATIONS RESULTING IN THE HIGHEST DC LOAD THAT IS 2 XM 19 MINIGUNS ON INBOARD STATIONS AND 4 TOW M SSILES AT EACH OUTBOARD STATION

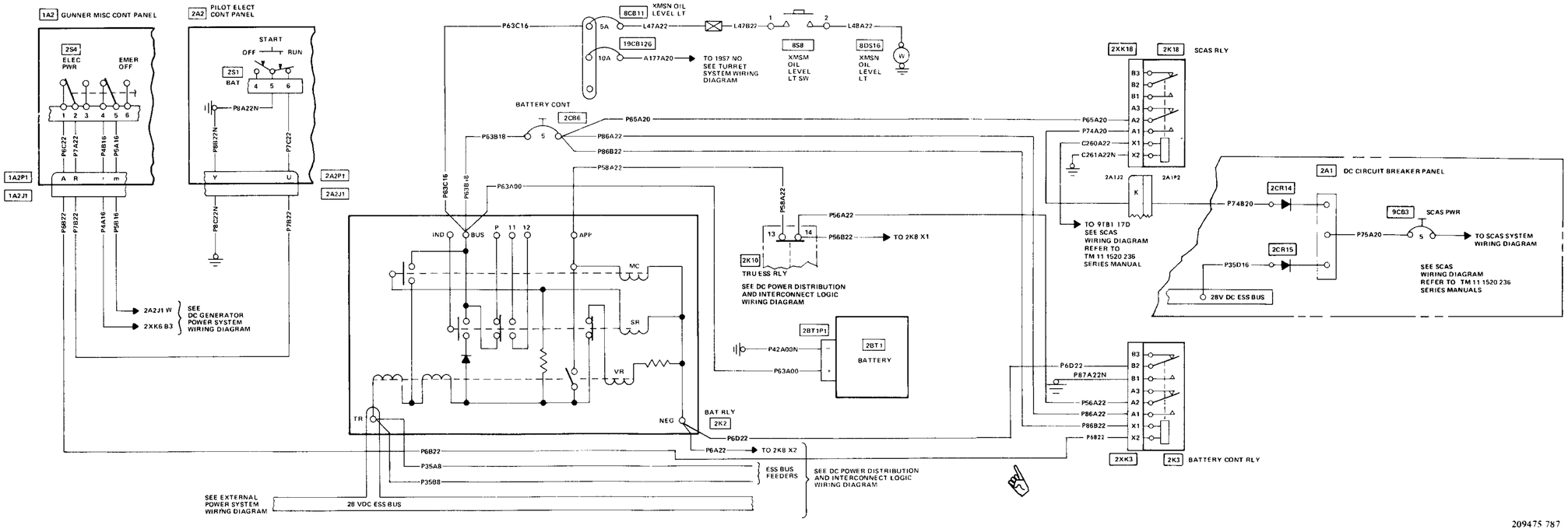
8 PROVISIONS ONLY

20475 452 1A

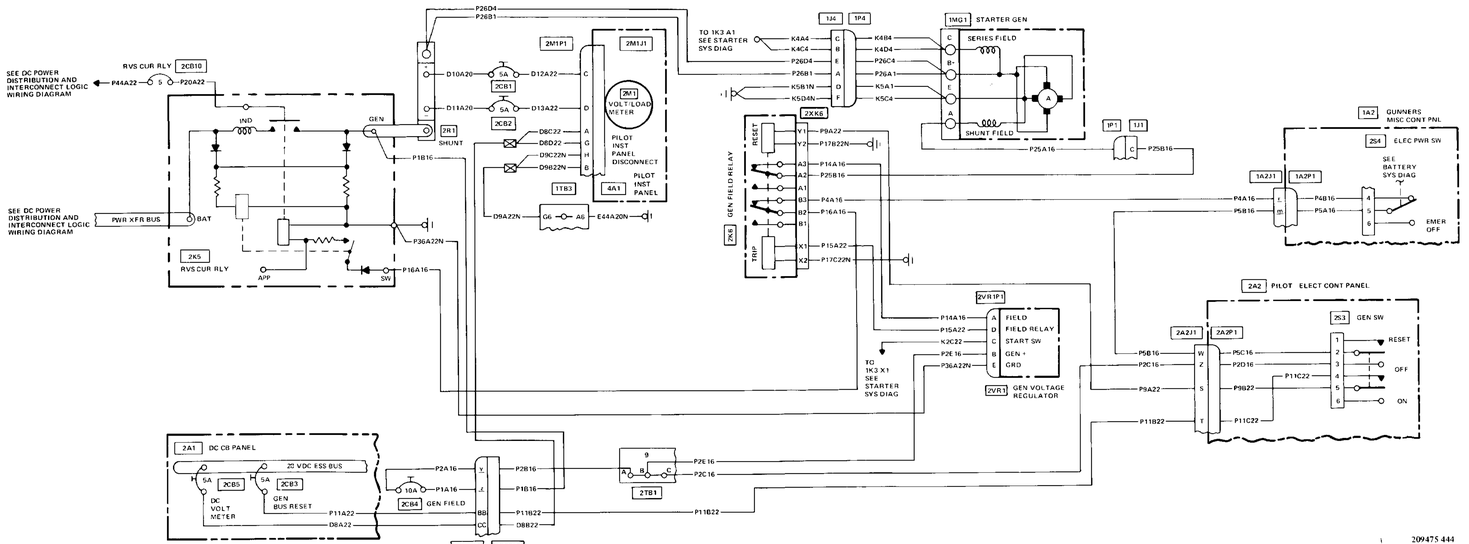
FO-42 E DC Electrical Load Chart

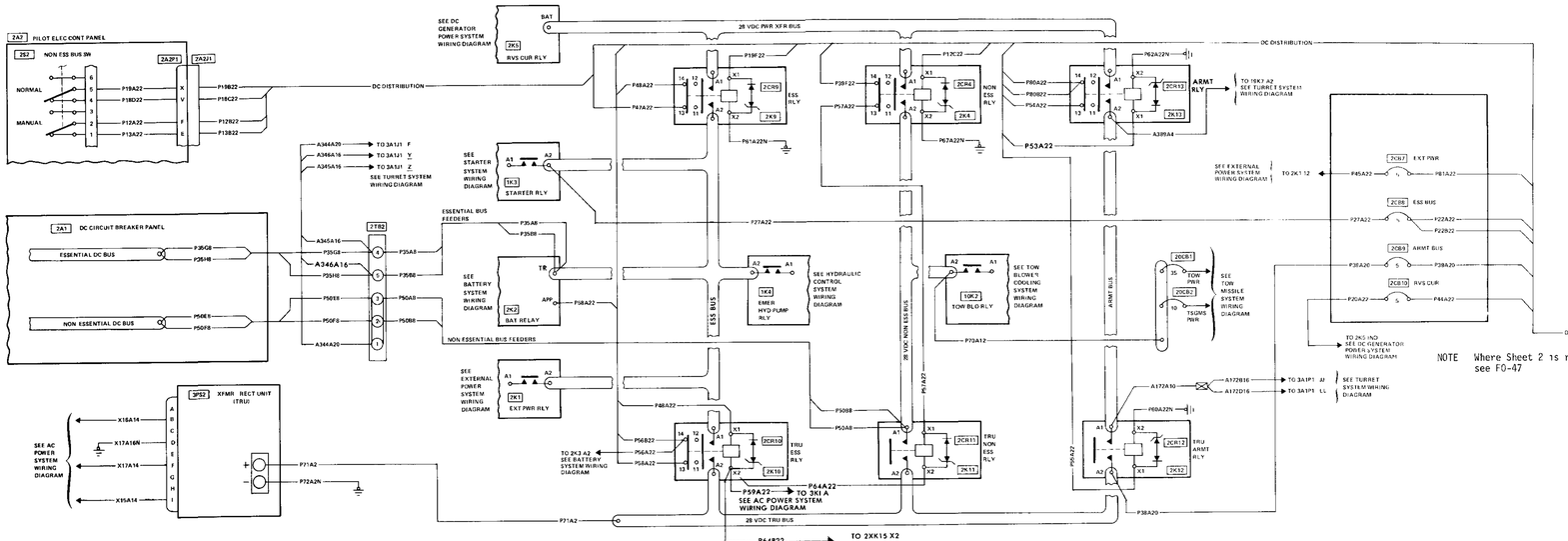
EQUIPMENT	PART DESIGNATION	CKT LTR	NO TES	NO OF UNITS	AMPS PER UNIT	OPER TIME MIN	MIN VOLT	MAX VOLT	PWR SOR INF	CONN LOAD	OPERATING CONDITIONS: START AND WARM UP 5 SEC	2 MIN	15 MIN	TAKE OFF 5 SEC	2 MIN	15 MIN	CRUISE 5 SEC	2 MIN	15 MIN	CRUISE COMBAT 5 SEC	2 MIN	15 MIN	LAND 5 SEC	2 MIN	15 MIN	EMERGENCY 5 SEC	2 MIN	15 MIN
NON ESSENTIAL DC BUS																												
ARMAMENT		AA																										
TOW MISLE SYS	XM 65			1																								
TOW MISSILE	XM 65		7	1	8 10	15 00	21 00	29 00	MEA	8 10										0 20	8 10	0 20						
ARMT CONT RLY	110 111 1			1	0 20	15 00	24 00	28 50	SPEC	0 20										8 10	0 20	8 10						
FLIGHT INSTRUMENTS		AF																										
PITOT HEATER	AN5813 1			1	3 75	15 00	24 00	28 50	SPEC	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75	3 75
HEATING		AH																										
ECU	209 070 403			1	0 30	15 00	24 00	28 50	SPEC	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30
BLEED AIR SOL	397580 1 1			1	0 80	15 00	24 00	28 50	SPEC	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80	0 80
RAIN REMOV SOL	JANITROL 43070			1	0 64	15 00	24 00	28 50	SPEC	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64	0 64
TOW BLOWER	209 073 115			1	28 00	15 00	24 00	28 50	SPEC	28 00										0 64	0 64	0 64						
TOW BLOWER RLY	MS24140 D1			1	0 50	15 00	24 00	28 50	SPEC	0 50										28 00	28 00	28 00						
HTR CONT RELAY	110 128 1		1	1	0 11	0 0	24 00	28 50	SPEC	0 11										0 50	0 50	0 50						
LIGHTING		AL																										
SIDE POS LTS	AN3033 12 13			2	0 80	15 00	24 00	28 50	SPEC	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60	1 60
ANTICOLLISION LT	MR L 58085			1	2 15	15 00	24 00	28 50	SPEC	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15
POS LTS FLASHER	MS24577 2			1	0 40	15 00	24 00	28 50	MEA	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40	0 40
NAV LIGHT TAIL	24 075 527 3			2	0 70	15 00	24 00	28 50	MEA	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40
SEARCH LIGHT	6520 00 14404687			1	16 70	5 00	24 00	28 50	SPEC	16 70										16 70	16 70	5 57				16 70	16 70	5 57
POWER		AP																										
TRU CONT RLY	110 127 1			1	0 12	15 00	24 00	28 50	SPEC	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12	0 12
TRU N ESS RLY	MS24183 D1			1	0 41	15 00	24 00	28 50	SPEC	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41	0 41
TRU ESS RELAY	MS24142 D2			1	0 60	15 00	24 00	28 50	SPEC	0 60										0 60	0 60	0 60						
FUEL CONTROL		AQ																										
FUEL BOOST PUMP	205 060 606			1	3 20	15 00	24 00	28 50	MEA	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20	3 20
RADIO NAV & COMM		AR																										
VHF FM RADIO	AN ARC 114			1																								
VHF FM RECEIVE	AN ARC 114			1	0 70	15 00	24 00	28 50	MEA	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70	0 70
VHF FM XMITER	AN ARC 114		2	1	3 00	1 00	24 00	28 50	MEA	3 00	3 00	1 50	0 42	3 00	1 50	0 42	3 00	1 50	0 42	3 00	1 50	0 42	3 00	1 50	0 42	3 00	1 50	0 42
SCRAMBLER	KY 28			1	2 00	15 00	24 00	28 50	SPEC	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00	2 00
ADF RECEIVER	AN ARN 89			1	1 40	15 00	24 00	28 50	MEA	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40	1 40
VHF AM RADIO	AN ARC 115			1																								
VHF AM RECEIVE	AN ARC 115			1	0 62	15 00	24 00	28 50	MEA	0 62	1 79	0 82	0 62	0 62	0 82	0 62	0 82	0 62	0 82	0 62	0 82	0 62	0 62	0 82	0 62	0 62	0 82	0 62
VHF AM XMITER	AN ARC 115		2	1	1 79	1 00	24 00	28 50	MEA	1 79	0 82	0 89	0 25	1 79	0 89	0 25	1 79	0 89	0 25	1 79	0 89	0 25	1 79	0 89	0 25	1 79	0 89	0 25
CHAFF DISPENSER	M 130		1	1	1 32	0 0	24 00	28 50	SPEC	1 32	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 32	0 50	0 01						
TOTAL NON ESSENTIAL DC BUS											24 28	21 88	20 16	24 28	21 88	20 16	40 98	38 58	25 73	63 00	59 78	57 57	40 98	38 58	25 73			
TOTAL ESS N ESS DC BUS											137 30	114 18	83 47	89 28	83 92	71 44	94 94	90 14	71 75	110 99	105 94	101 23	88 71	83 60	69 75	43 49	40 95	40 03
ARMAMENT DC BUS																												
ARMAMENT		AA																										
MACHINE GUN	XM 18 (7 62MM)		7	2																								
MACH GUN FIRE				2	1 00	0 25	21 00	29 00	MEA	2 00																		
MACH GUN BAT CHG				2	9 90	0 50	21 00	29-00	MEA	19 80										2 00	0 25	0 03						
TURRET ARM SYS	GTU 1A/M 197		6	1																19 80	4 95	0 66						
TUR CONT PWR	GTU 1A/M 197			1	4 70	15 00	21 00	29 00	MEA	4 70										4 70	4 70	4 70						
GUN DR MOTOR	GTU 1A/M 197			1	32 10	1 00	21 00	29 00	MEA	32 10										32 10	16 06	2 14						
BOOST MOTOR	GTU 1A M 197			1	5 70	1 00	21 00	29 00	MEA	5 70										5 70	2 85	0 38						
SYNCRO MOTOR	GTU 1A M 197			1	36 00	5 62	21 00	29 00	MEA	36 00										36 00	36 00	13 49						
TOTAL ARMANENT DC BUS																				100 30	64 80	21 40						
TOTAL ESS N ESS ARMT DC BUS											137 30	114 18	83 47	89 28	83 92	71 44	94 94	90 14	71 75	211 29	170 74	122 63	88 71	83 60	69 75	43 49	40 85	40 03

209475-452-2

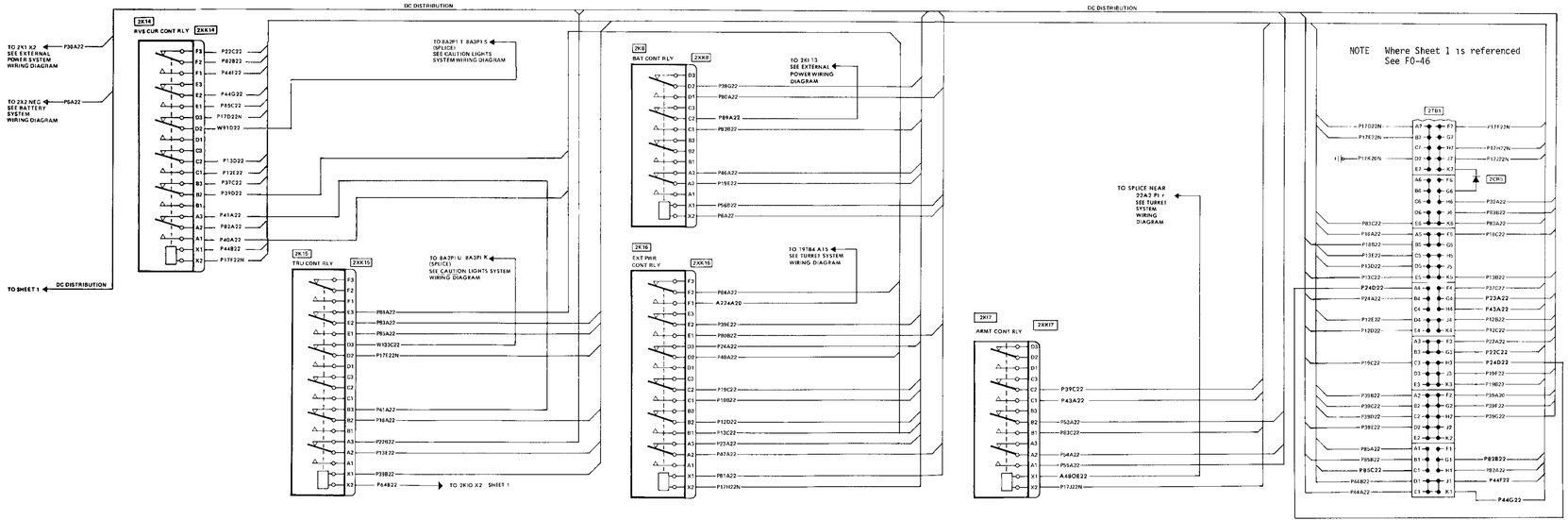

1A2 GUNNER MISC CONT PANEL
2A2 PILOT ELECT CONT PANEL
2S4 ELEC PWR
EMER OFF
1 2 3 4 5 6
P6C22
P7A22
P4B16
P5A16
1A2P1
1A2J1
A R m
START
OFF RUN
2S1 BAT
4 5 6
P8A22N
P8B22N
P7C22
P6C22N
P7B22
Y U
2A2P1
2A2J1
P6B22
P7D22
P4A16
P5B16
2A2J1 W
2XK6 B3
SEE DC GENERATOR POWER SYSTEM WIRING DIAGRAM
P63C16
8CB11 XMSN OIL LEVEL LT
5A
L47A22
L47B22
1
2
L48A22
19CB126
10A
A177A20
TO 1957 NO SEE TURRET SYSTEM WIRING DIAGRAM
8S8 XMSN OIL LEVEL LT SW
8DS16 XMSN OIL LEVEL LT
W
BATTERY CONT
2CR6
P63B18
5
P65A20
P86A22
P86B22
P58A22
P63A00
P63C16
P63B18
IND
BUS
P
11
12
APP
MC
SR
VR
TR
NEG
BAT RLY
2K2
P6D22
P6A22
TO 2K8 X2
P6B22
P35A8
P35B8
ESS BUS FEEDERS
SEE DC POWER DISTRIBUTION AND INTERCONNECT LOGIC WIRING DIAGRAM
SEE EXTERNAL POWER SYSTEM WIRING DIAGRAM
28 VDC ESS BUS
P56A22
13
14
P56B22
TO 2K8 X1
2K10
TRU ESS RLY
SEE DC POWER DISTRIBUTION AND INTERCONNECT LOGIC WIRING DIAGRAM
2BT1P1
P42A00N
P63A00
2BT1
BATTERY
2XK18 2K18 SCAS RLY
B3
B2
B1
A3
A2
A1
X1
X2
P65A20
P74A20
C260A22
C261A22N
2A1J2
2A1P2
K
TO 9TB1 17D SEE SCAS WIRING DIAGRAM REFER TO TM 11 1520 236 SERIES MANUAL
2A1 DC CIRCUIT BREAKER PANEL
2CR14
2CR15
P74B20
P35D16
28V DC ESS BUS
9CB3 SCAS PWR
5
P75A20
TO SCAS SYSTEM WIRING DIAGRAM
SEE SCAS WIRING DIAGRAM REFER TO TM 11 1520 236 SERIES MANUALS
P6D22
P87A22N
P56A22
P86A22
P86B22
P58B22
2XK3 2K3 BATTERY CONT RLY

209475 787

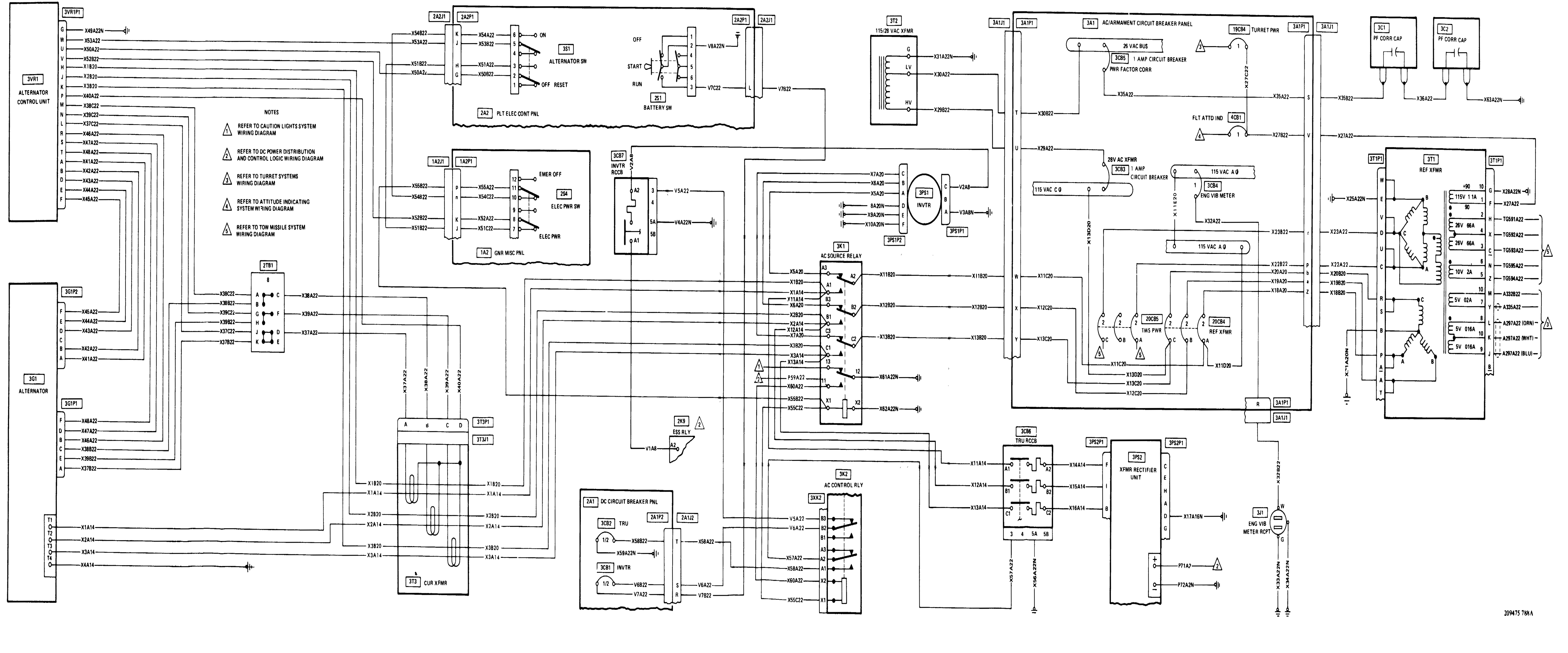

SEE DC POWER DISTRIBUTION AND INTERCONNECT LOGIC WIRING DIAGRAM
RVS CUR RLY 2CB10
P44A22
P20A22
SEE DC POWER DISTRIBUTION AND INTERCONNECT LOGIC WIRING DIAGRAM
PWR XFR BUS
BAT
IND
GEN
2R1 SHUNT
P1B16
P36A22N
2K5 RVS CUR RLY
APP
SW
P16A16
P26D4
P26B1
2M1P1
2M1J1
D10A20
5A
D12A22
2CB1
D11A20
5A
D13A22
2CB2
D8C22
D8D22
D9C22N
D9B22N
2M1 VOLT/LOAD METER
PILOT INST PANEL DISCONNECT
PILOT INST PANEL
1TB3
4A1
D9A22N
G6
A6
E44A20N
TO 1K3 A1 SEE STARTER SYS DIAG
1J4
1P4
K4A4
K4C4
P26D4
P26B1
K5B1N
K5D4N
K4B4
K4D4
P26C4
P26A1
K5A1
K5C4
1MG1 STARTER GEN
SERIES FIELD
SHUNT FIELD
2XK6
GEN FIELD RELAY
RESET
TRIP
V1
Y2
A3
A2
A1
B3
B2
B1
X1
X2
P9A22
P17B22N
P16A16
P25B16
P15A22
P17C22N
P25A16
1P1
1J1
P25B16
1A7 GUNNERS MISC CONT PNL
2S4 ELEC PWR SW
SEE BATTERY SYS DIAG
EMER OFF
1A2J1
1A2P1
P4B16
P5A16
P4A16
P5B16
2VR1P1
P16A16
P15A22
K2C22
P2E16
P36A22N
FIELD
FIELD RELAY
START SW
GEN +
GRD
2VR1 GEN VOLTAGE REGULATOR
TO 1K3 X1 SEE STARTER SYS DIAG
2A2 PILOT ELECT CONT PANEL
2S3 GEN SW
2A2J1
2A2P1
P5B16
P2C16
P9A22
P11B22
P5C16
P2D16
P9B22
P11C22
RESET
OFF
ON
2A1 DC CB PANEL
20 VDC ESS BUS
5A
2CB5
DC VOLT METER
5A
2CB3
GEN BUS RESET
P11A22
D8A22
P2A16
10A
P1A16
2CB4 GEN FIELD
P2B16
P1B16
P11B22
D8B22
2A1P2
2A1J2
9
2TB1
P2E16
P2C16
P11B22
209475 444

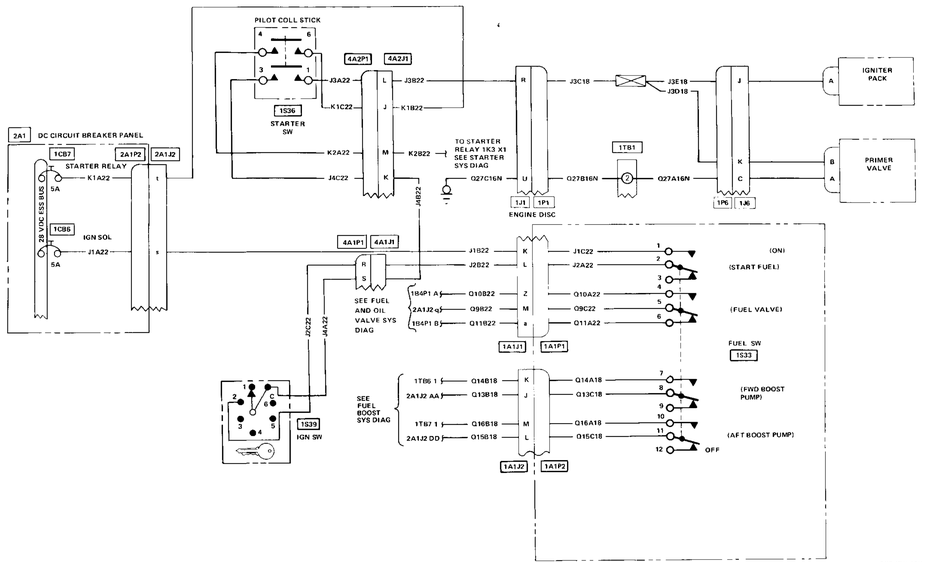


F0-46 **E** DC Power Distribution and Interconnect Logic



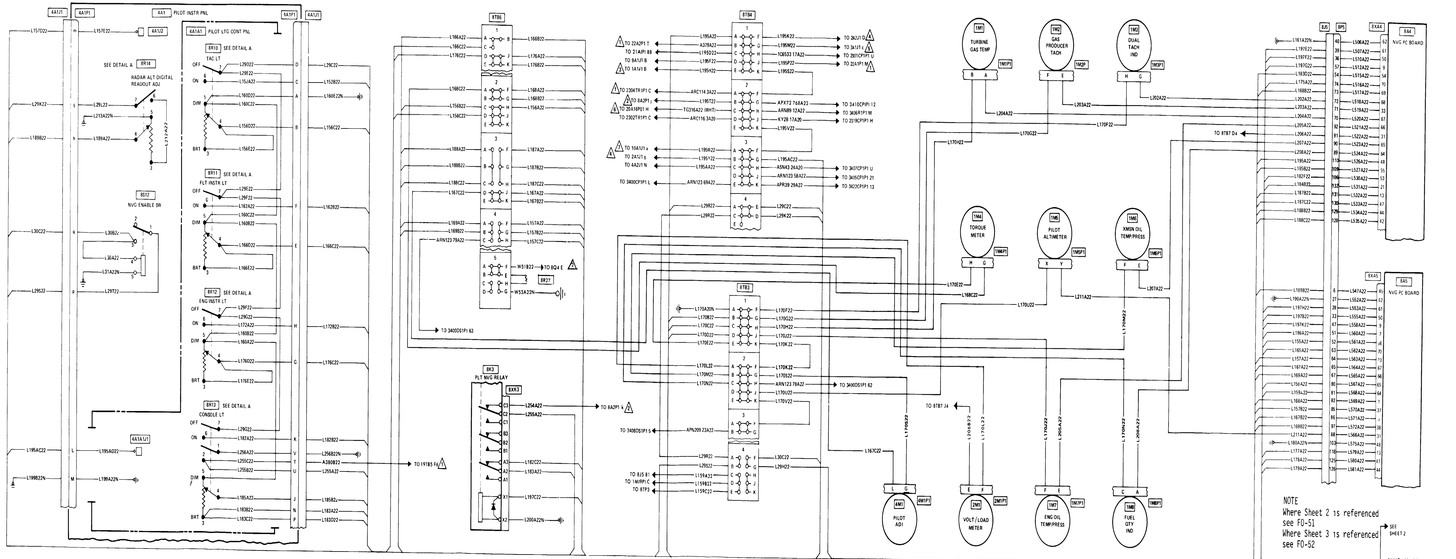
FO-47 **E** DC Power Distribution and Interconnect Logic

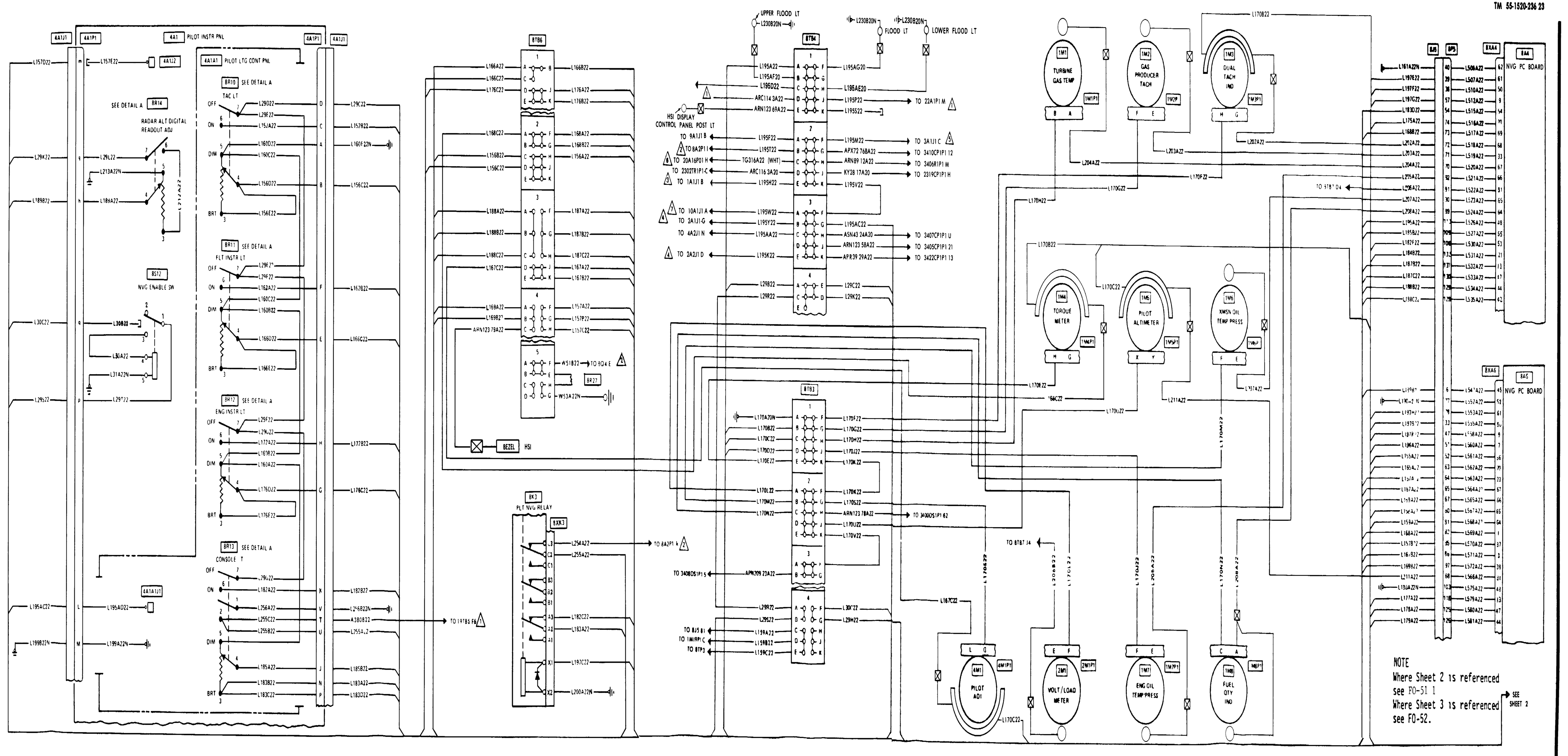

NOTES
REFER TO CAUTION LIGHTS SYSTEM WIRING DIAGRAM
REFER TO DC POWER DISTRIBUTION AND CONTROL LOGIC WIRING DIAGRAM
REFER TO TURRET SYSTEMS WIRING DIAGRAM
REFER TO ATTITUDE INDICATING SYSTEM WIRING DIAGRAM
REFER TO TOW MISSILE SYSTEM WIRING DIAGRAM
2A2 PLT ELEC CONT PNL
1A2J1
1A2P1
EMER OFF
2S4
ELEC PWR SW
ELEC PWR
1A2 GNR MISC PNL
OFF RESET
2TB1



209475 428

FO-49 E Ignition System

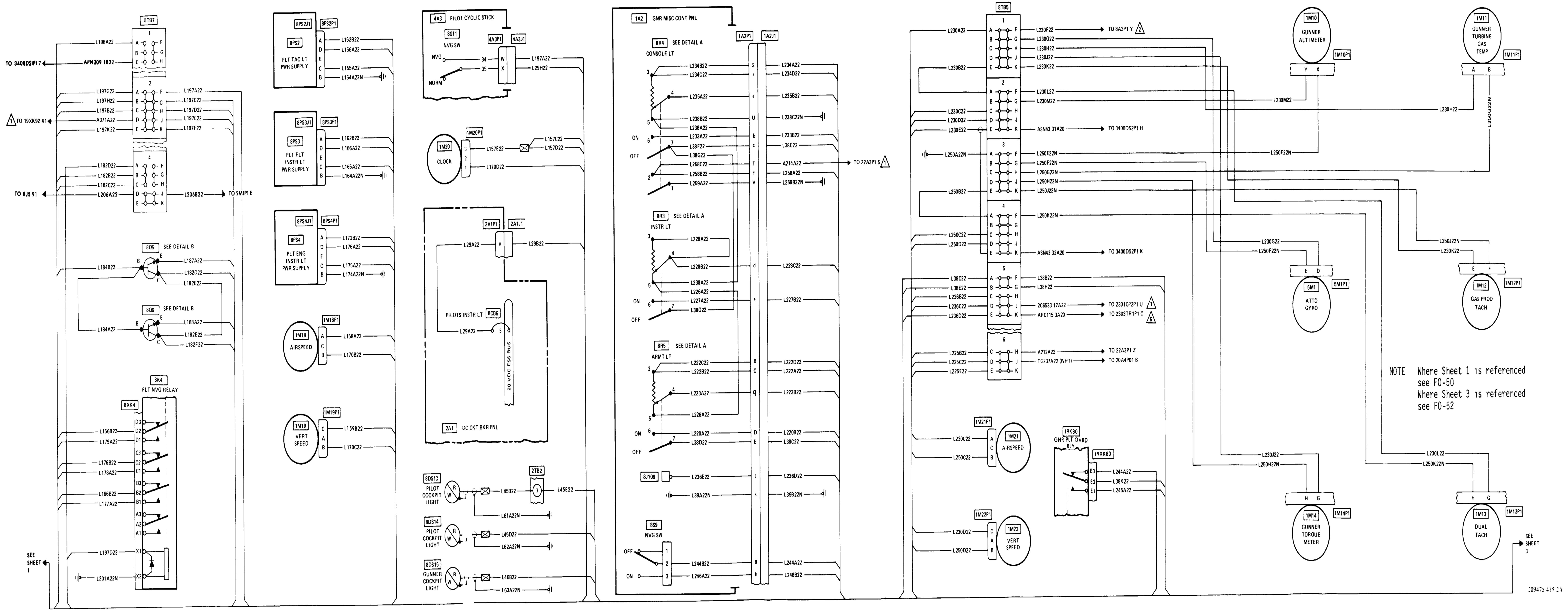

PILOT MASTER PNL
PILOT LTG CONT PNL
SEE DETAIL A
RADAR ALT DIGITAL READOUT ADJ
NVG ENABLE SW
TAC LT
FLT INSTR LT
ENG INSTR LT
CONSOLE LT
PLT NVG RELAY
TO 19185 F4
TO 3400DEP1 E2
TO 8A2P1 K
TO 3400DEP1 F5
TO 3400DEP1 B2
TO 8187 J4
TO 8187 D4
TURBINE GAS TEMP
GAS PRODUCER TACH
DUAL TACH IND
TORQUE METER
PILOT ALTIMETER
XMSN OIL TEMP/PRESS
PILOT ADI
VOLT/LOAD METER
ENG OIL TEMP/PRESS
FUEL QTY IND
NVG PC BOARD
NVG PC BOARD
NOTE
Where Sheet 2 is referenced see F0-51
Where Sheet 3 is referenced see F0-52
SEE SHEET 2



NOTE
Where Sheet 2 is referenced see FO-51 1
Where Sheet 3 is referenced see FO-52.

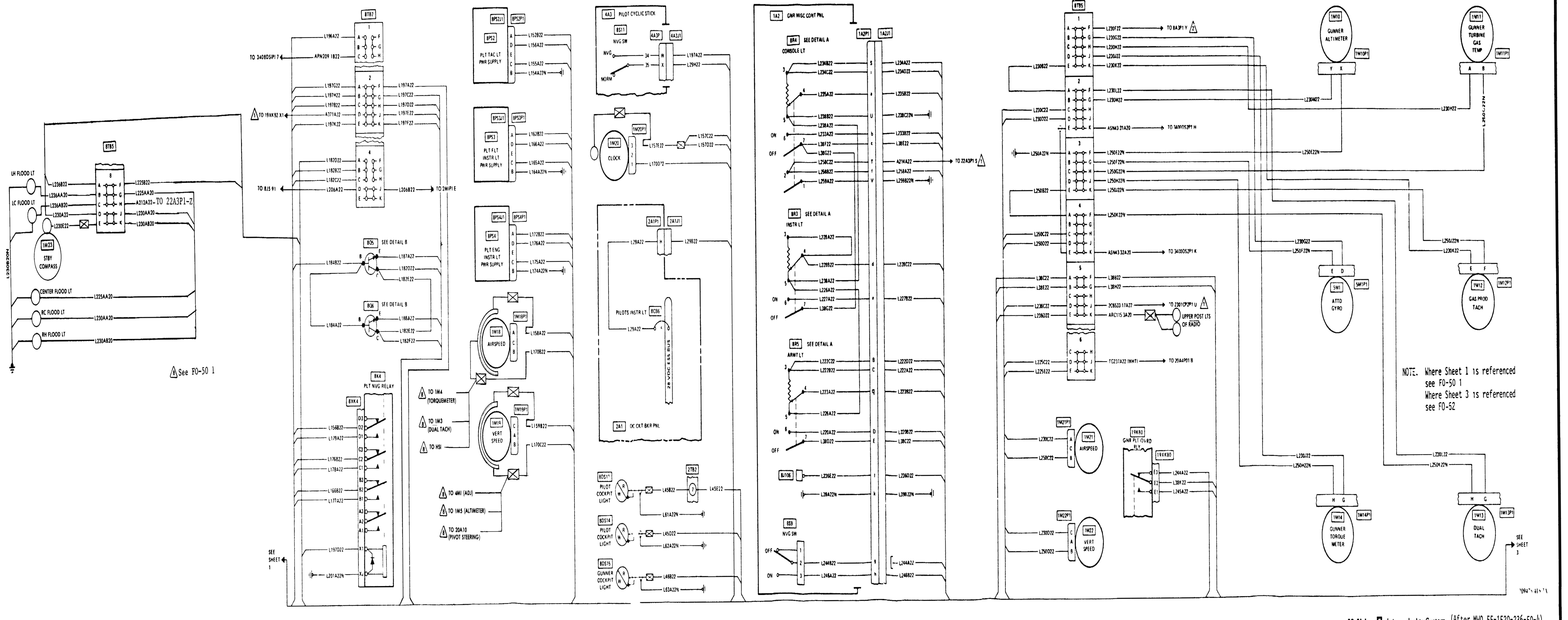
SEE SHEET 2

FO-50 1 **E Interior Lights System** (After MWO 55-1520-236-50-4)

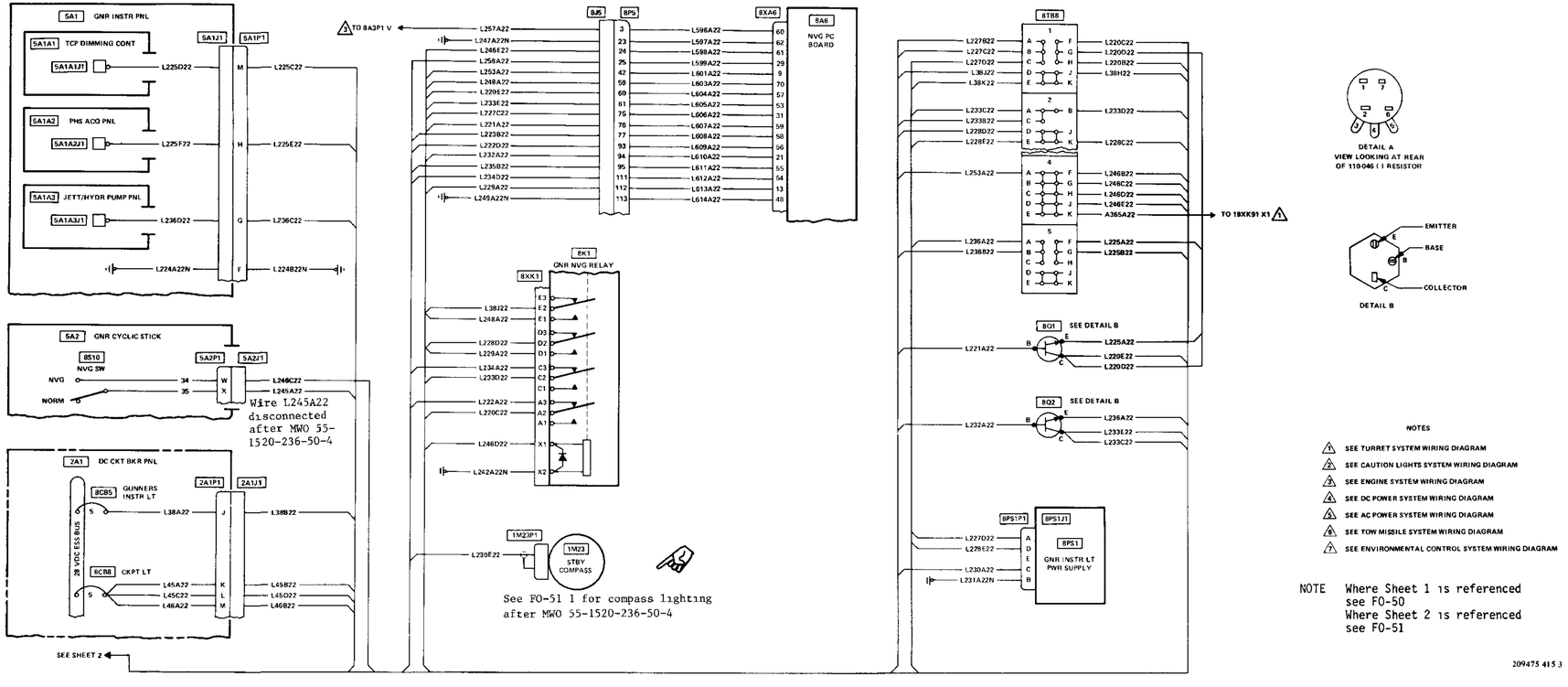


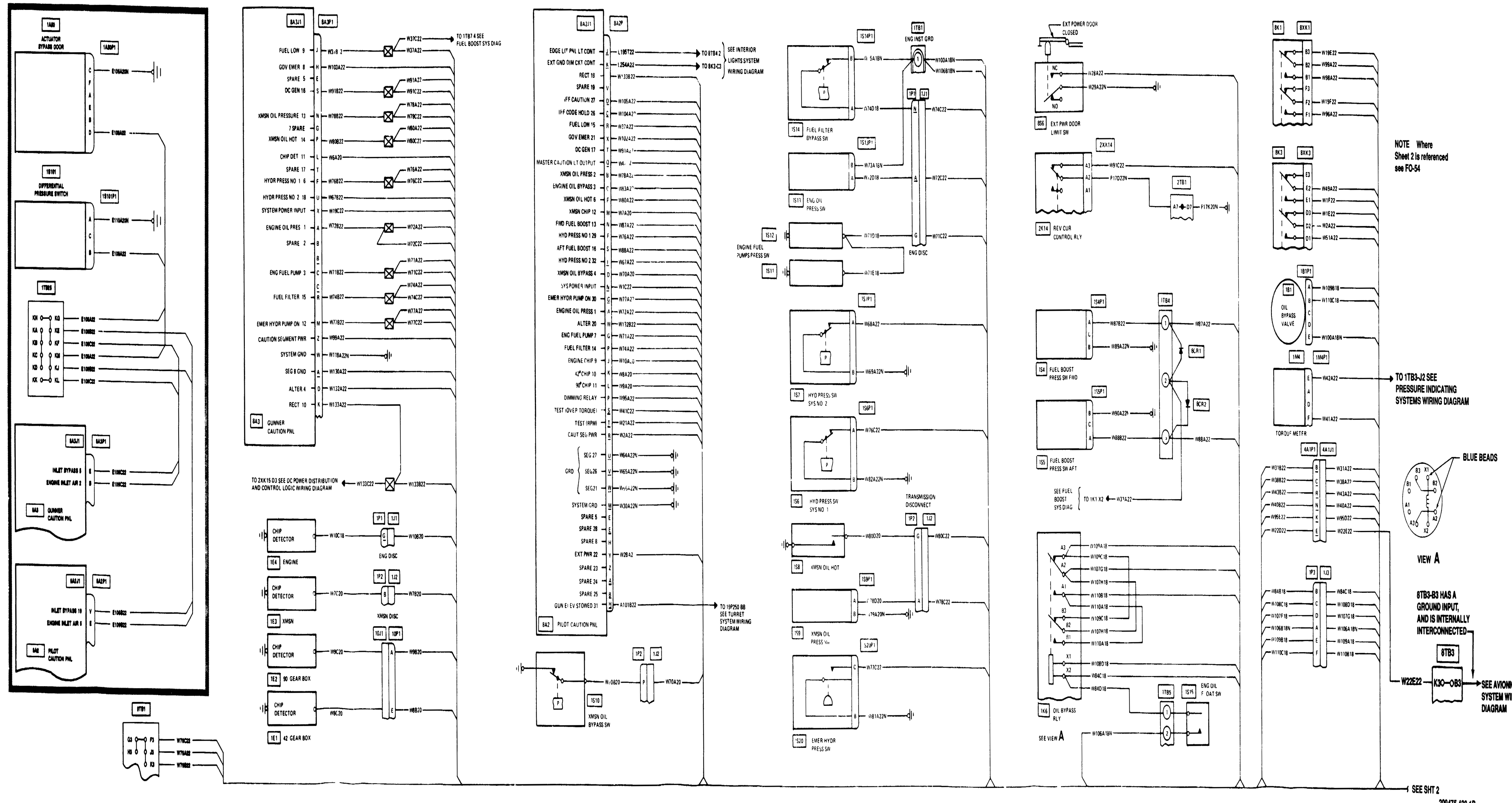
NOTE Where Sheet 1 is referenced see FO-50
Where Sheet 3 is referenced see FO-52

FO-51 E Interior Lights System



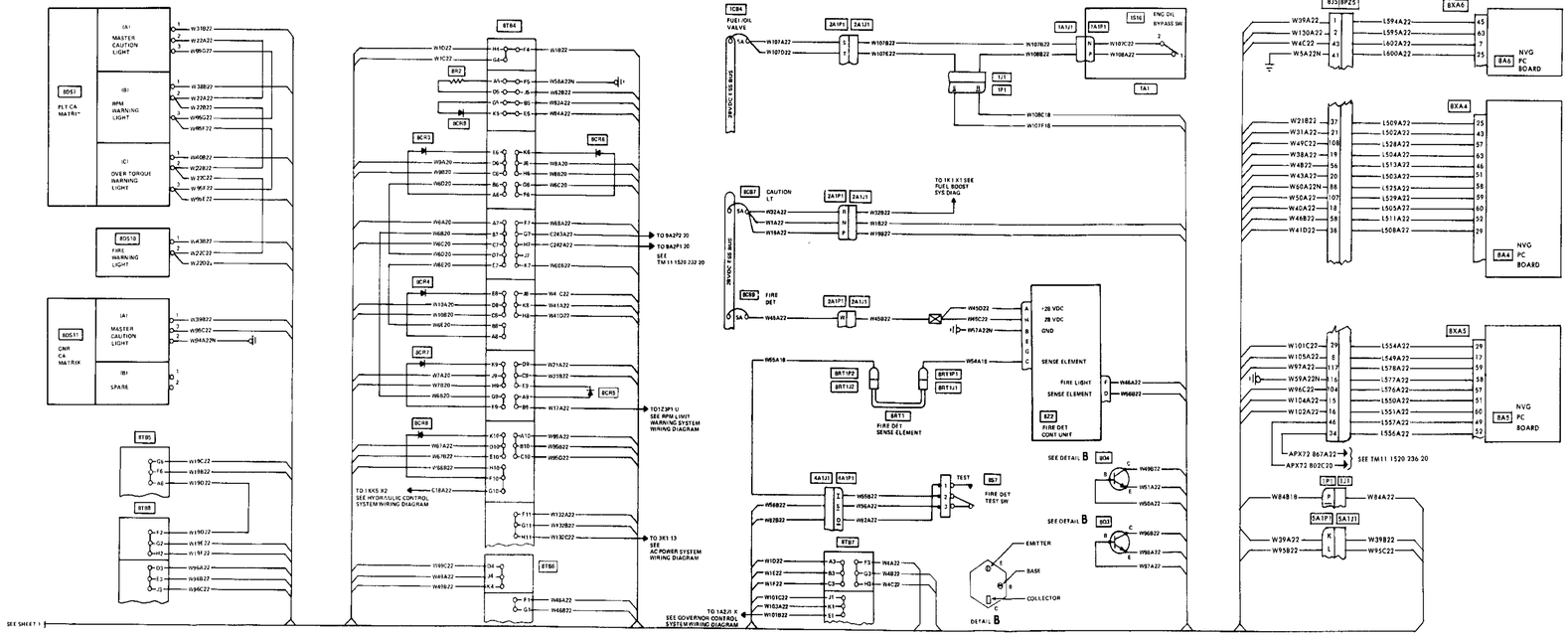
FO-51 1 E Interior Lights System (After MWO 55-1520-236-50-4)

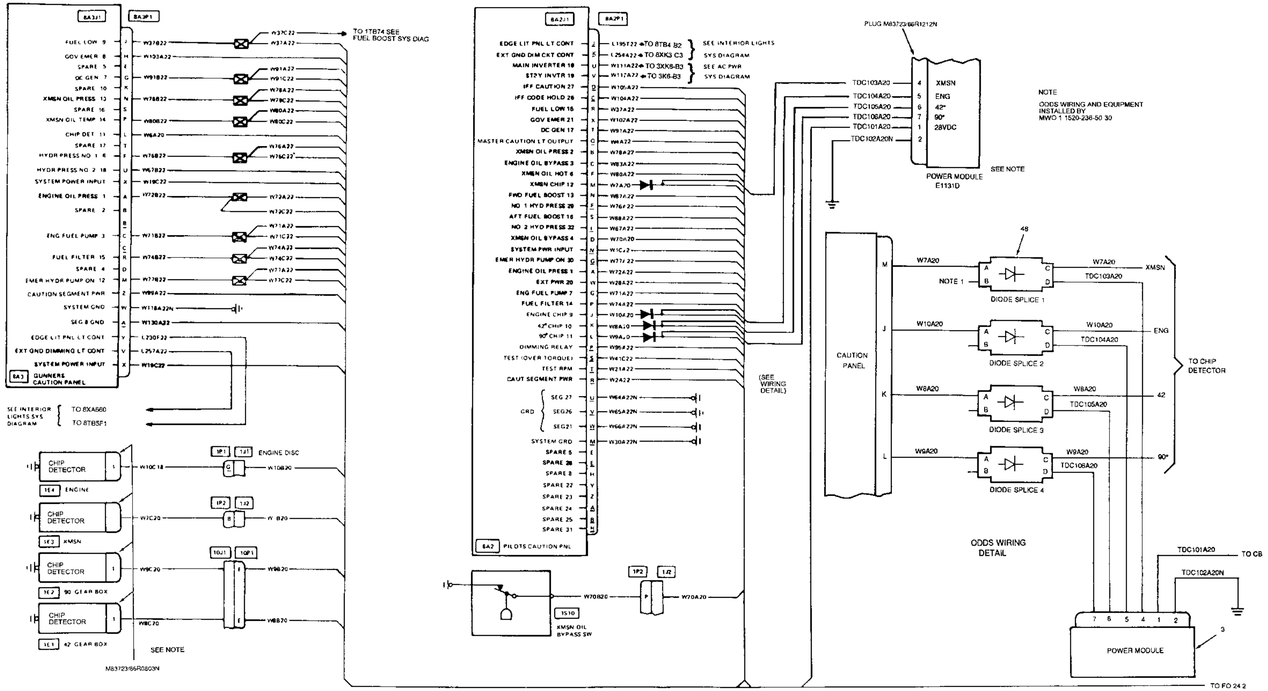

5A1 GNR INSTR PNL
5A1A1 TCP DIMMING CONT
5A1A1J1
5A1A2 PHS ACQ PNL
5A1A2J1
5A1A3 JETT/HYDR PUMP PNL
5A1A3J1
5A1J1
5A1P1
L225D22
L225F22
L236D22
L224A22N
L225C22
L225E22
L236C22
L224B22N
TO 8A3P1 V
8J5
8P5
8XA6
8A6
NVG PC BOARD
L257A22
L267A22N
L246E22
L258A22
L253A22
L248A22
L229E22
L233E22
L227C22
L221A22
L223B22
L222D22
L232A22
L235B22
L234D22
L229A22
L249A22N
L598A22
L597A22
L599A22
L601A22
L603A22
L604A22
L605A22
L606A22
L607A22
L608A22
L609A22
L610A22
L611A22
L612A22
L613A22
L614A22
8K1
GNR NVG RELAY
8XK1
L38J22
L248A22
L228D22
L229A22
L234A22
L233D22
L222A22
L220C22
L246D22
L242A22N
5A2 GNR CYCLIC STICK
8S10
NVG SW
NVG
NORM
5A2P1
5A2J1
L246C22
L245A22
Wire L245A22 disconnected after MWO 55-1520-236-50-4
2A1 DC CKT BKR PNL
28 VDC ESS BUS
8CB5 GUNNERS INSTR LT
8CB8 CKPT LT
2A1P1
2A1J1
L38A22
L45A22
L45C22
L46A22
L38B22
L45B22
L45D22
L46B22
SEE SHEET 2
1M23P1
1M23
STBY COMPASS
L230E22
See FO-51 1 for compass lighting after MWO 55-1520-236-50-4
8TB8
L227B22
L227C22
L227D22
L38J22
L38K22
L220C22
L220D22
L220B22
L38H22
L233C22
L233B22
L228D22
L228E22
L233D22
L228C22
L253A22
L246B22
L246C22
L246D22
L246E22
A365A22
TO 19XK91 X1
L236A22
L236B22
L225A22
L225B22
8Q1 SEE DETAIL B
L221A22
L225A22
L220E22
L220D22
8Q2 SEE DETAIL B
L232A22
L236A22
L233E22
L233C22
8PS1P1
8PS1J1
8PS1
GNR INSTR LT PWR SUPPLY
L227D22
L228E22
L230A22
L231A22N
DETAIL A
VIEW LOOKING AT REAR OF 110046 ( ) RESISTOR
EMITTER
BASE
COLLECTOR
DETAIL B
NOTES
1 SEE TURRET SYSTEM WIRING DIAGRAM
2 SEE CAUTION LIGHTS SYSTEM WIRING DIAGRAM
3 SEE ENGINE SYSTEM WIRING DIAGRAM
4 SEE DC POWER SYSTEM WIRING DIAGRAM
5 SEE AC POWER SYSTEM WIRING DIAGRAM
6 SEE TOW MISSILE SYSTEM WIRING DIAGRAM
7 SEE ENVIRONMENTAL CONTROL SYSTEM WIRING DIAGRAM
NOTE Where Sheet 1 is referenced see FO-50
Where Sheet 2 is referenced see FO-51
209475 415 3



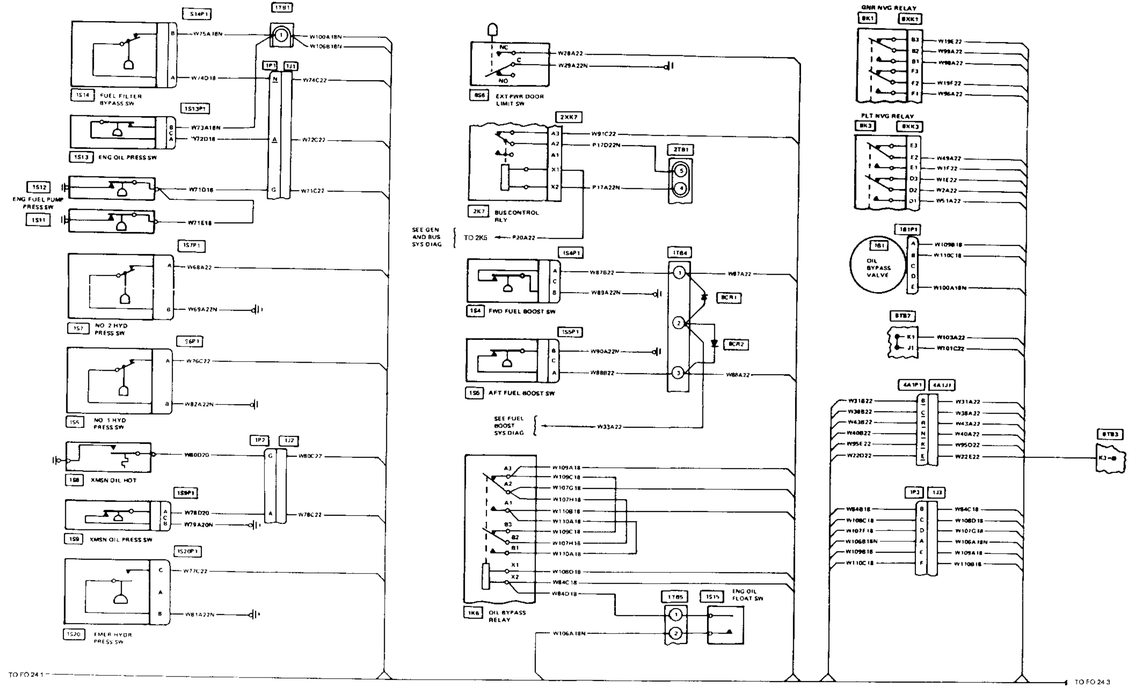
FO-53 E Caution Lights System

NOTE Where Sheet 1 is referenced see FO-53

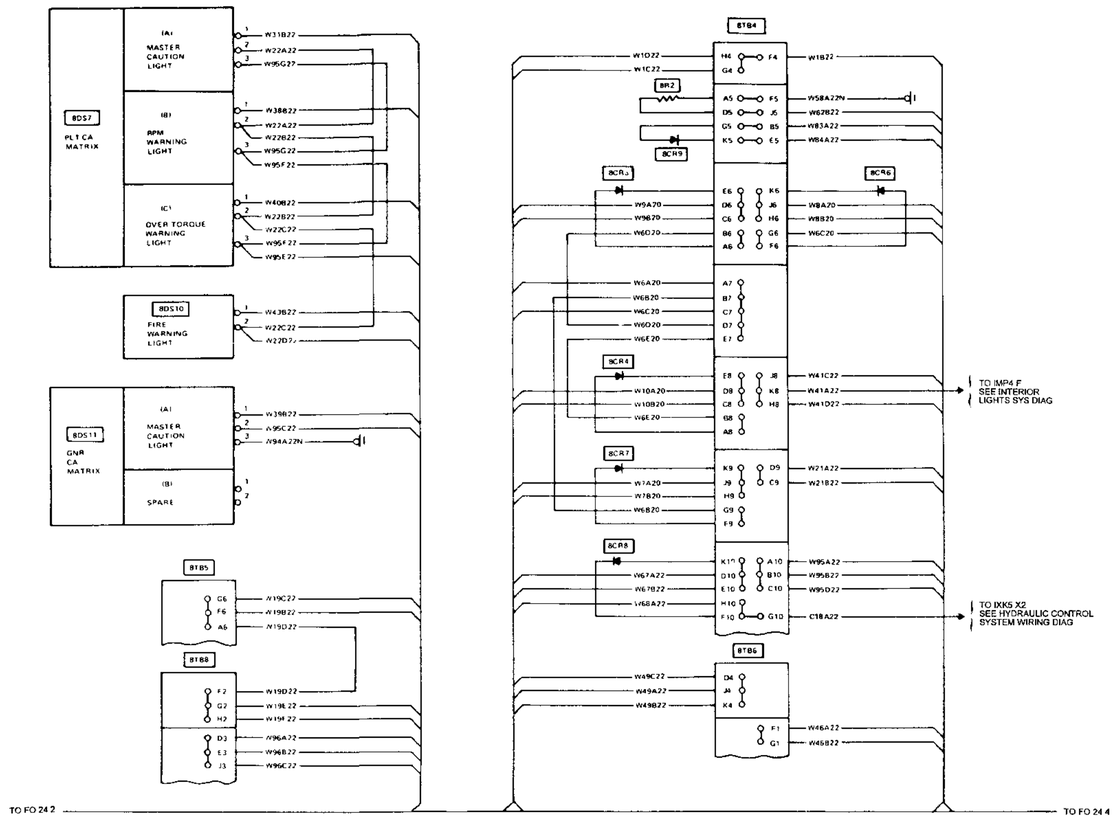




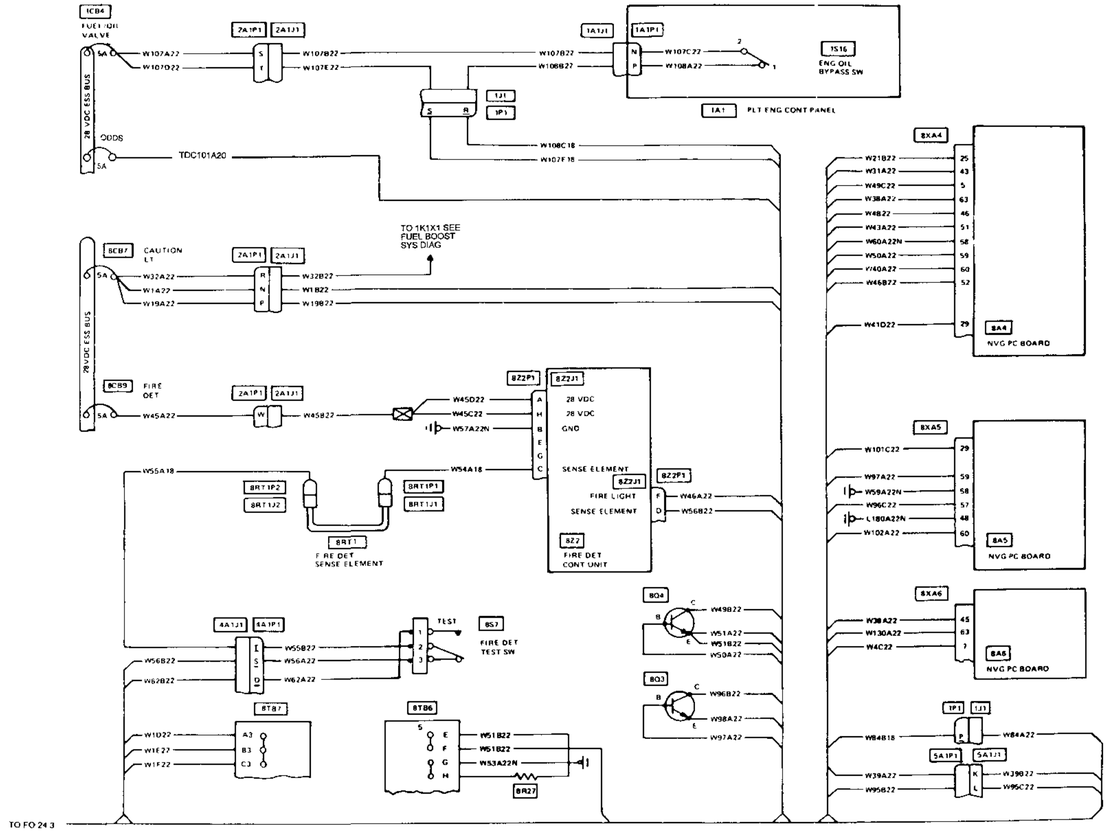
FO 54 1 Caution Lights System (After Incorporation of MWO 1-1520-236-50-30)



FO 54-2 Caution Lights System (After Incorporation of MWO 1-1520-236-50-30)



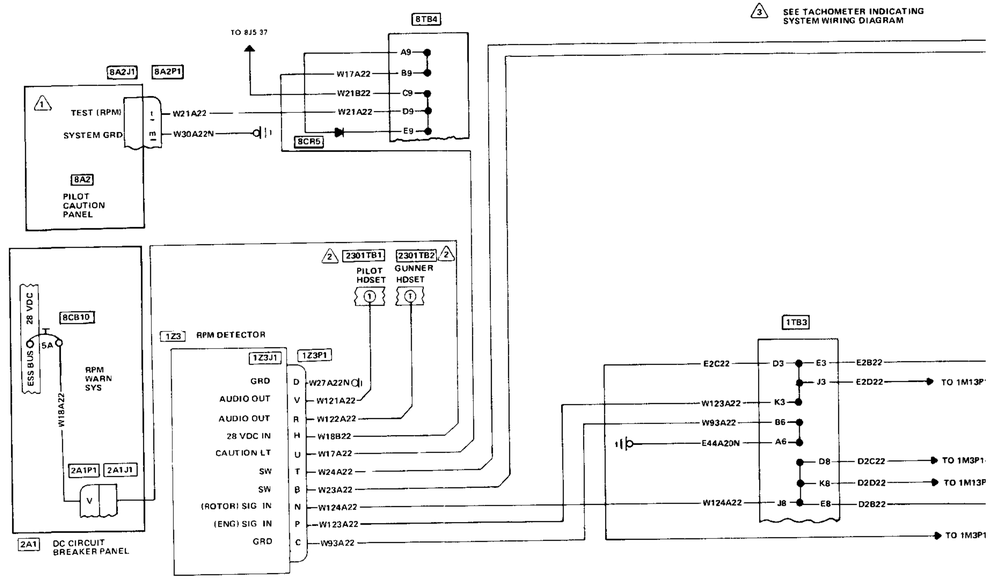
FO 54 3 Caution Lights System (After Incorporation of MWO 1-1520-236-50-30)

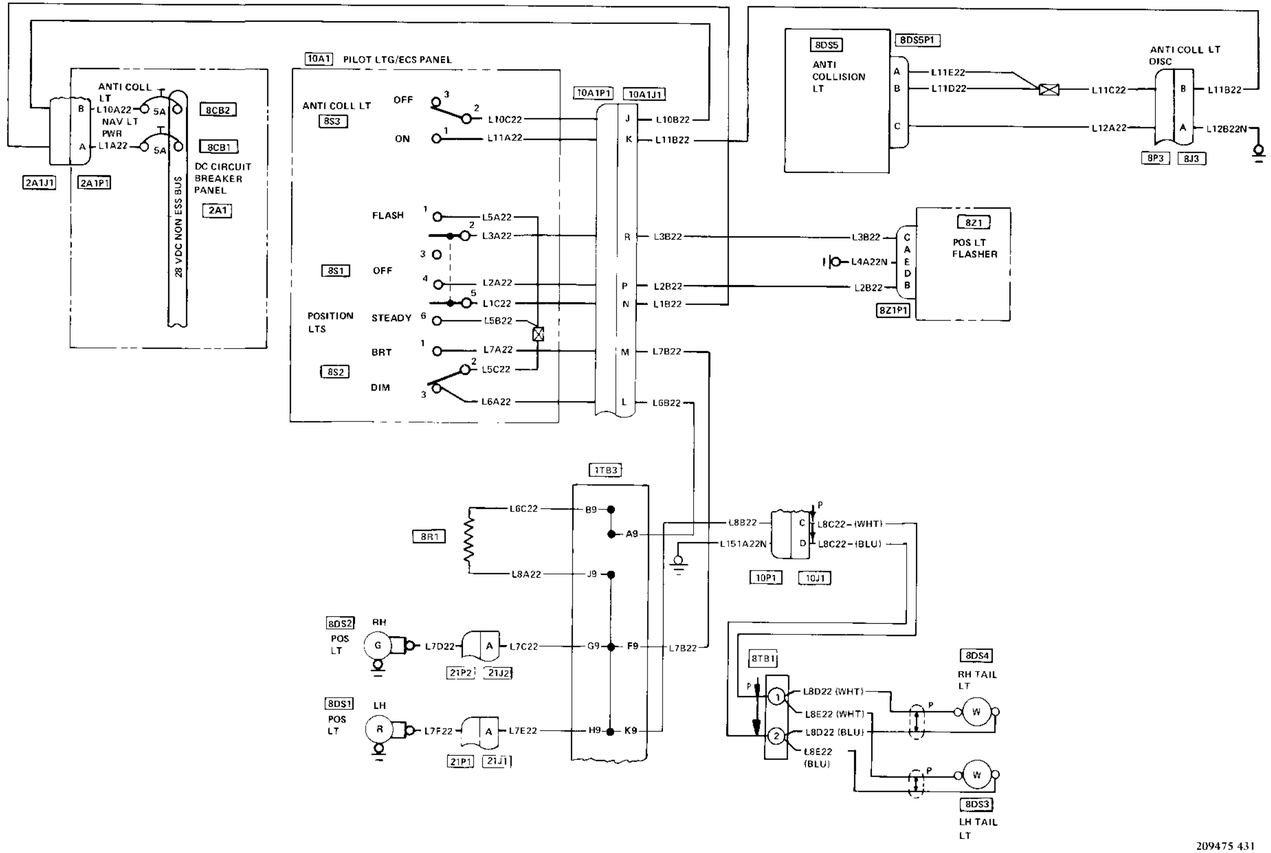


FO 54 4 Caution Lights System (After Incorporation of MWO 1-1520-236-50-30)

NOTES

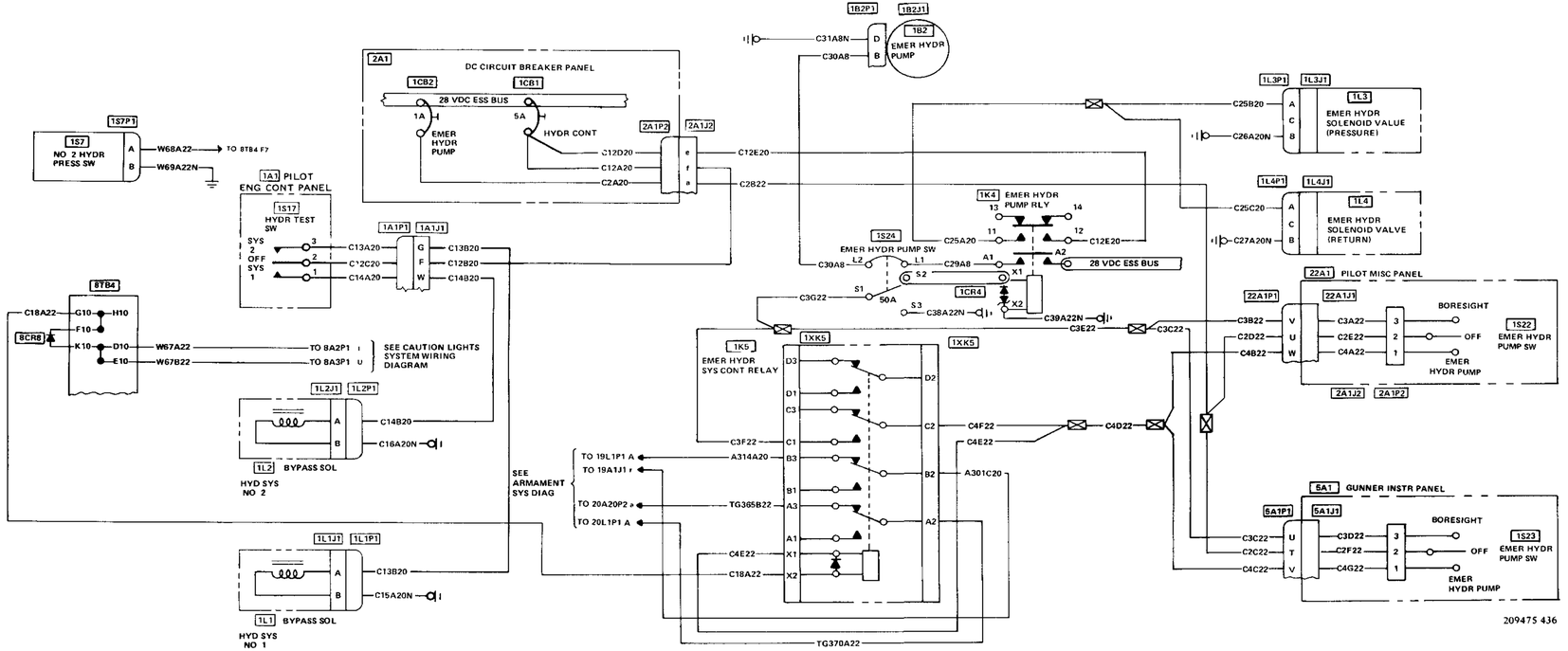
1. SEE CAUTION LIGHTS SYSTEM WIRING DIAGRAM
2. SEE TM 11 1520 236 20 ICS SYSTEM WIRING DIAGRAM
3. SEE TACHOMETER INDICATING SYSTEM WIRING DIAGRAM

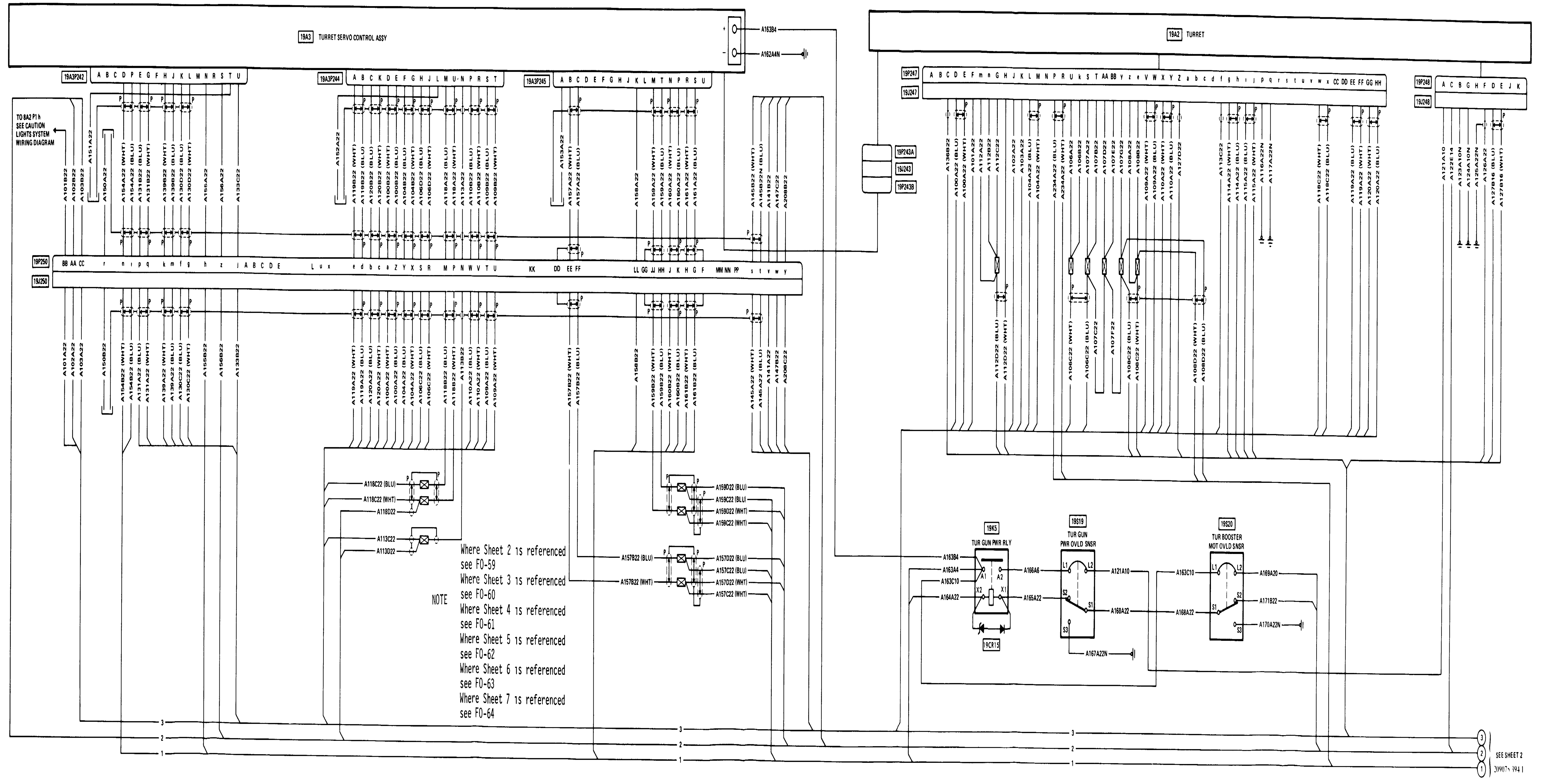




209475 431

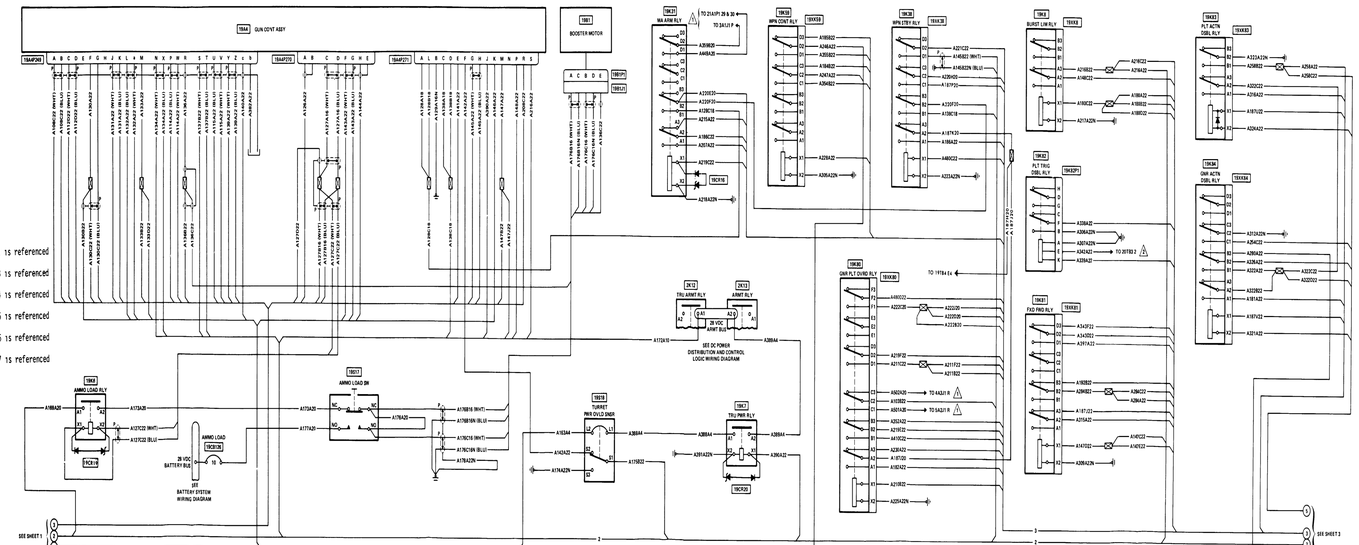
FO-56 **E** Anticollision and Position Lights System

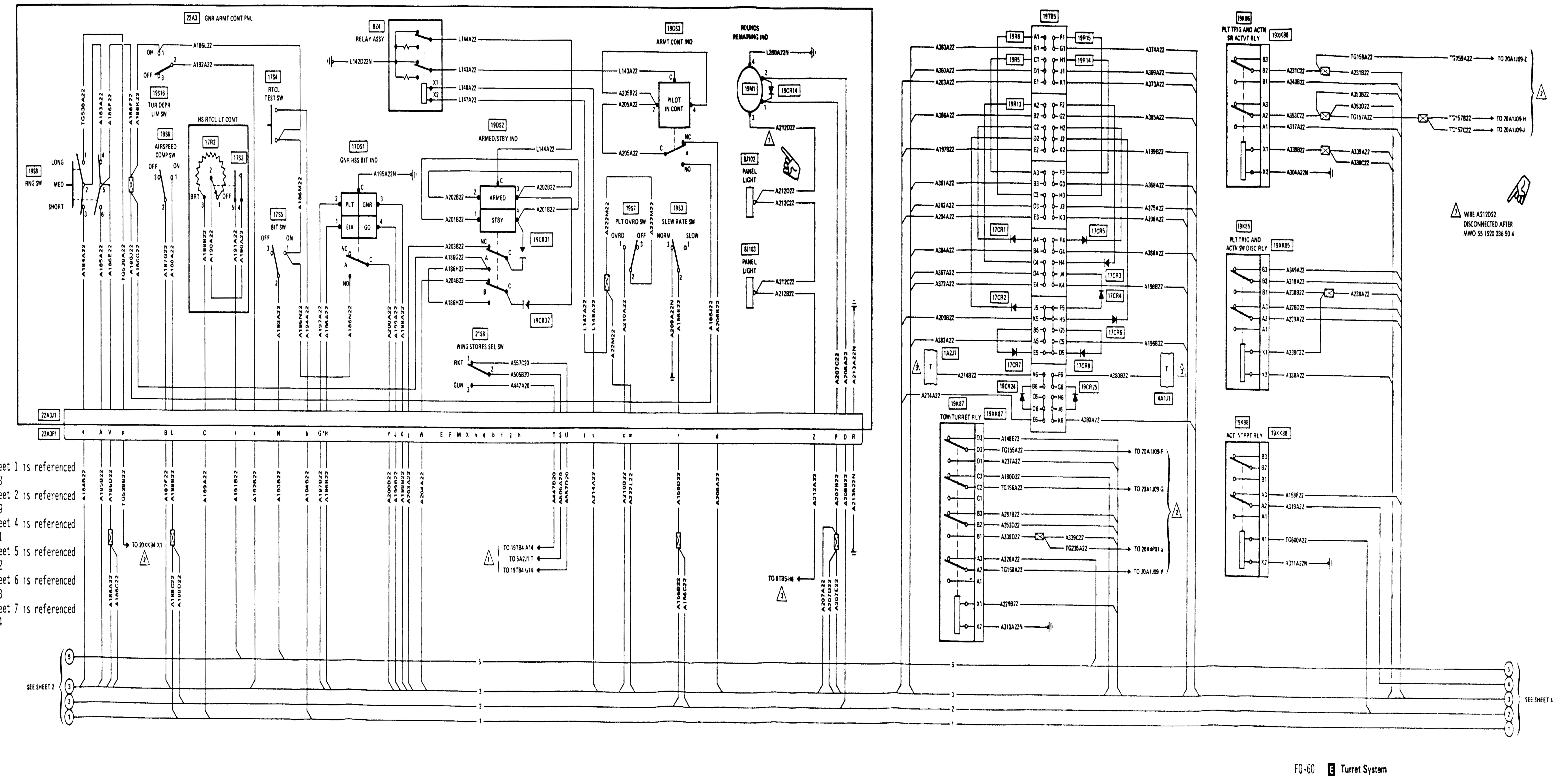

1B2P1
1B2J1
1B2
EMER HYDR PUMP
C31A8N
C30A8
2A1
DC CIRCUIT BREAKER PANEL
1CB2
1CB1
28 VDC ESS BUS
1A
5A
EMER HYDR PUMP
HYDR CONT
2A1P2
2A1J2
C12D20
C12A20
C2A20
C12E20
C2B22
1S7P1
1S7
NO 2 HYDR PRESS SW
W68A22
TO 8TB4 F7
W69A22N
1A1 PILOT ENG CONT PANEL
1S17
HYDR TEST SW
SYS 2 OFF SYS 1
1A1P1
1A1J1
C13A20
C12C20
C14A20
C13B20
C12B20
C14B20
8TB4
C18A22
G10
H10
F10
8CR8
K10
D10
E10
W67A22
W67B22
TO 8A2P1
TO 8A3P1
SEE CAUTION LIGHTS SYSTEM WIRING DIAGRAM
1L2J1
1L2P1
C14B20
C16A20N
1L2 BYPASS SOL
HYD SYS NO 2
1L1J1
1L1P1
C13B20
C15A20N
1L1 BYPASS SOL
HYD SYS NO 1
SEE ARMAMENT SYS DIAG
TO 19L1P1 A
TO 19A1J1
TO 20A20P2
TO 20L1P1 A
1K5
EMER HYDR SYS CONT RELAY
1XK5
1XK5
C3F22
A314A20
TG365B22
C4E22
C18A22
C4F22
C4E22
A301C20
TG370A22
1K4 EMER HYDR PUMP RLY
1S24
EMER HYDR PUMP SW
C25A20
C29A8
C30A8
28 VDC ESS BUS
1CR4
50A
C3G22
C38A22N
C39A22N
C3E22
C3C22
C4D22
1L3P1
1L3J1
1L3
EMER HYDR SOLENOID VALVE (PRESSURE)
C25B20
C26A20N
1L4P1
1L4J1
1L4
EMER HYDR SOLENOID VALVE (RETURN)
C25C20
C27A20N
22A1 PILOT MISC PANEL
22A1P1
22A1J1
C3B22
C2D22
C4B22
C3A22
C2E22
C4A22
BORESIGHT
OFF
EMER HYDR PUMP
1S22
EMER HYDR PUMP SW
2A1J2
2A1P2
5A1 GUNNER INSTR PANEL
5A1P1
5A1J1
C3C22
C2C22
C4C22
C3D22
C2F22
C4G22
BORESIGHT
OFF
EMER HYDR PUMP
1S23
EMER HYDR PUMP SW
209475 436



FO-58 E Turret System

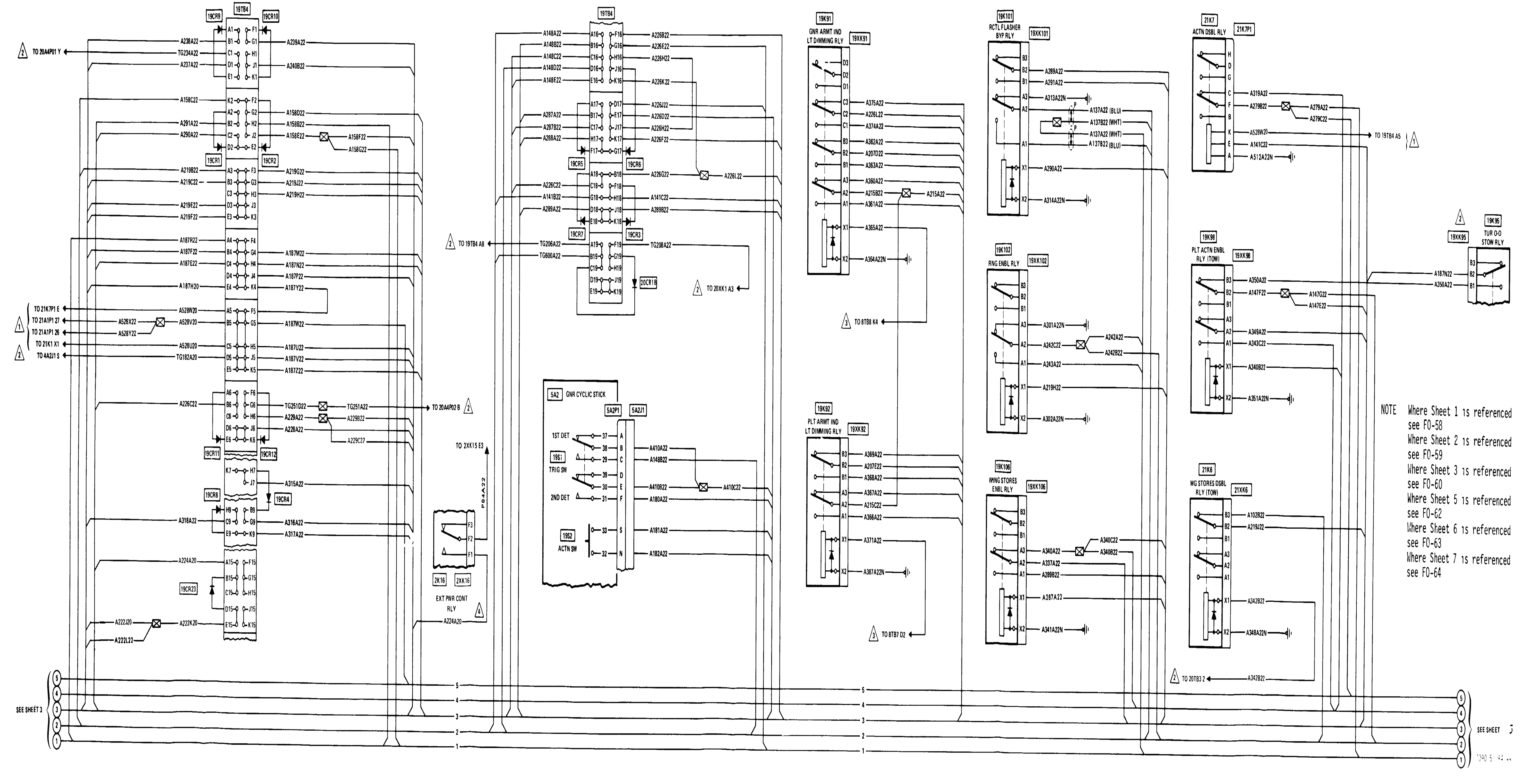
NOTE Where Sheet 1 is referenced see FO-58
Where Sheet 3 is referenced see FO-60
Where Sheet 4 is referenced see FO-61
Where Sheet 5 is referenced see FO-62
Where Sheet 6 is referenced see FO-63
Where Sheet 7 is referenced see FO-64





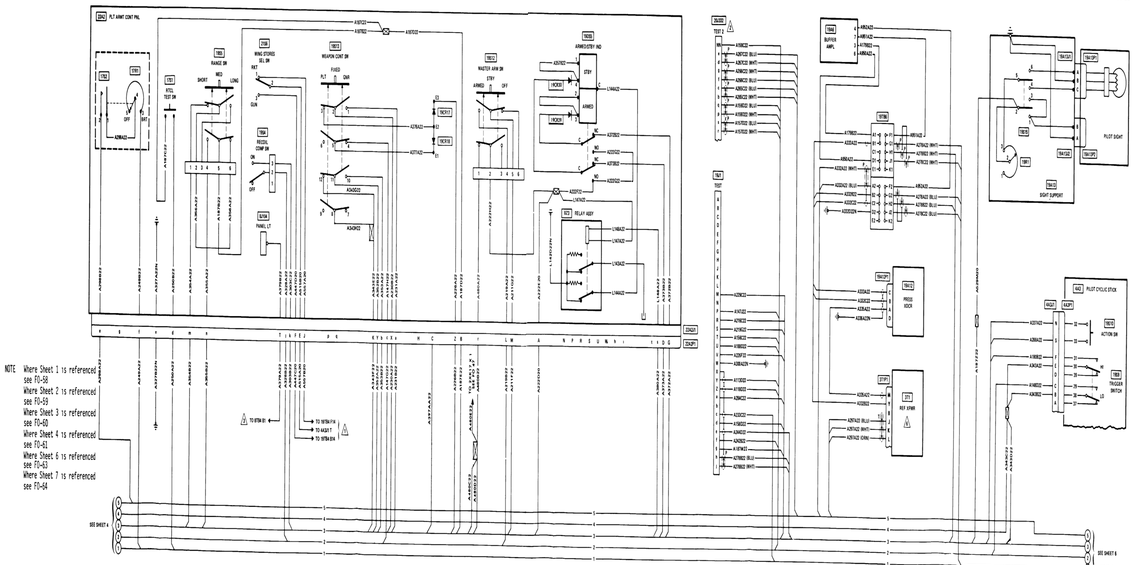
NOTE Where Sheet 1 is referenced see FO-58
Where Sheet 2 is referenced see FO-59
Where Sheet 4 is referenced see FO-61
Where Sheet 5 is referenced see FO-62
Where Sheet 6 is referenced see FO-63
Where Sheet 7 is referenced see FO-64

FO-60 E Turret System

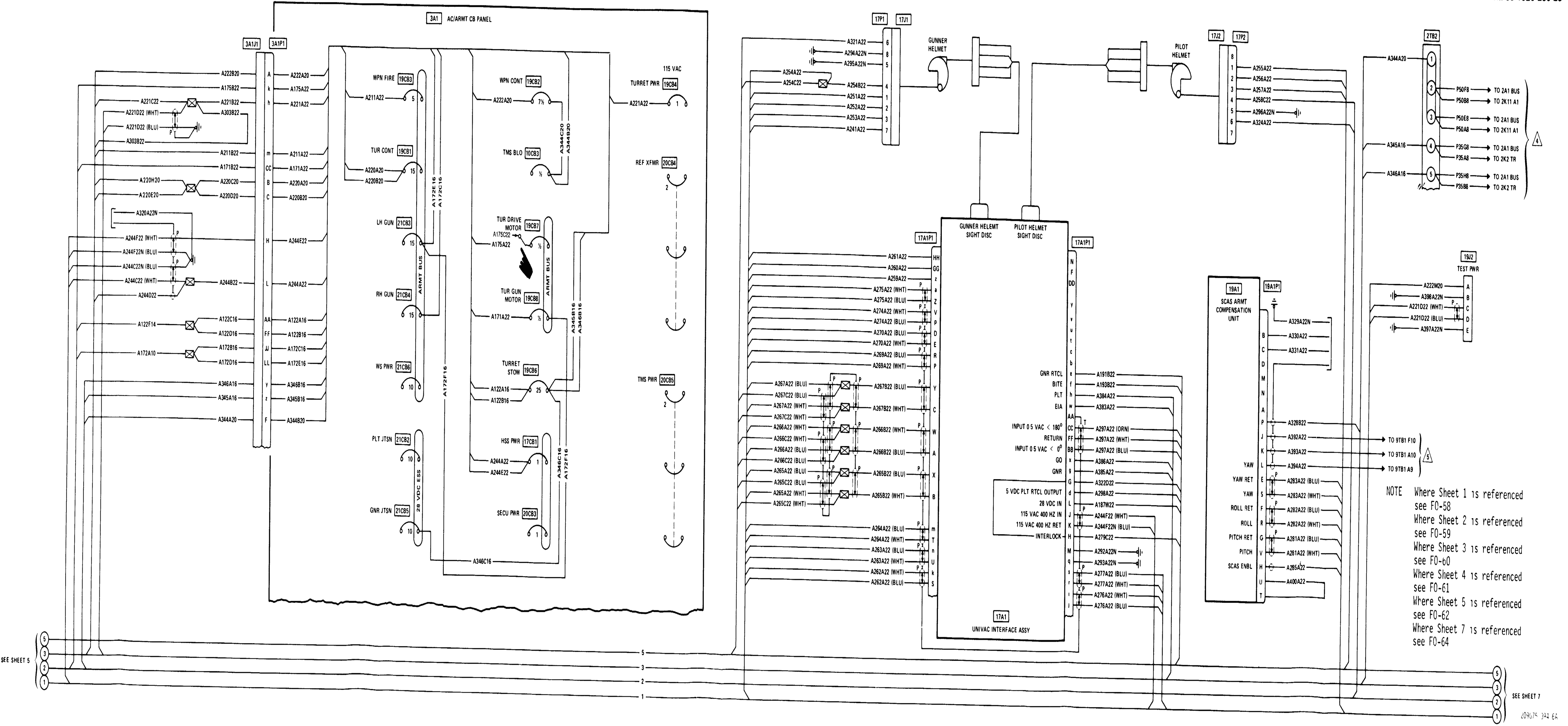


NOTE Where Sheet 1 is referenced see FO-58
Where Sheet 2 is referenced see FO-59
Where Sheet 3 is referenced see FO-60
Where Sheet 5 is referenced see FO-62
Where Sheet 6 is referenced see FO-63
Where Sheet 7 is referenced see FO-64

FO-61 **E** **Turret System**

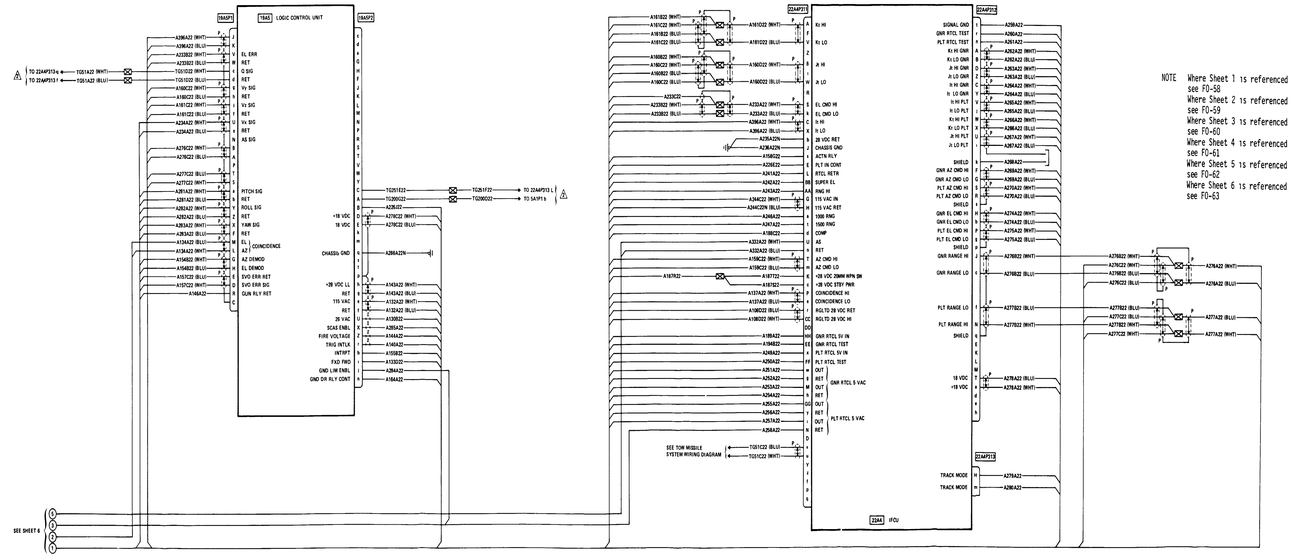


NOTE Where Sheet 1 is referenced see FO-58
Where Sheet 2 is referenced see FO-59
Where Sheet 3 is referenced see FO-60
Where Sheet 4 is referenced see FO-61
Where Sheet 6 is referenced see FO-63
Where Sheet 7 is referenced see FO-64



NOTE Where Sheet 1 is referenced see FO-58
Where Sheet 2 is referenced see FO-59
Where Sheet 3 is referenced see FO-60
Where Sheet 4 is referenced see FO-61
Where Sheet 5 is referenced see FO-62
Where Sheet 7 is referenced see FO-64

FO-63 E Turret System



NOTE Where Sheet 1 is referenced see FO-58
Where Sheet 2 is referenced see FO-59
Where Sheet 3 is referenced see FO-60
Where Sheet 4 is referenced see FO-61
Where Sheet 5 is referenced see FO-62
Where Sheet 6 is referenced see FO-63

NOTES

1. SEE WIRING STORES SYSTEM WIRING DIAGRAM
2. SEE TOW MISSILE SYSTEM WIRING DIAGRAM
3. SEE INTERIOR LIGHTS SYSTEM WIRING DIAGRAM
4. SEE DC POWER DISTRIBUTION AND CONTROL LOGIC WIRING DIAGRAM
5. SEE TM 11 1520-236-20
6. SEE AC POWER SYSTEM WIRING DIAGRAM

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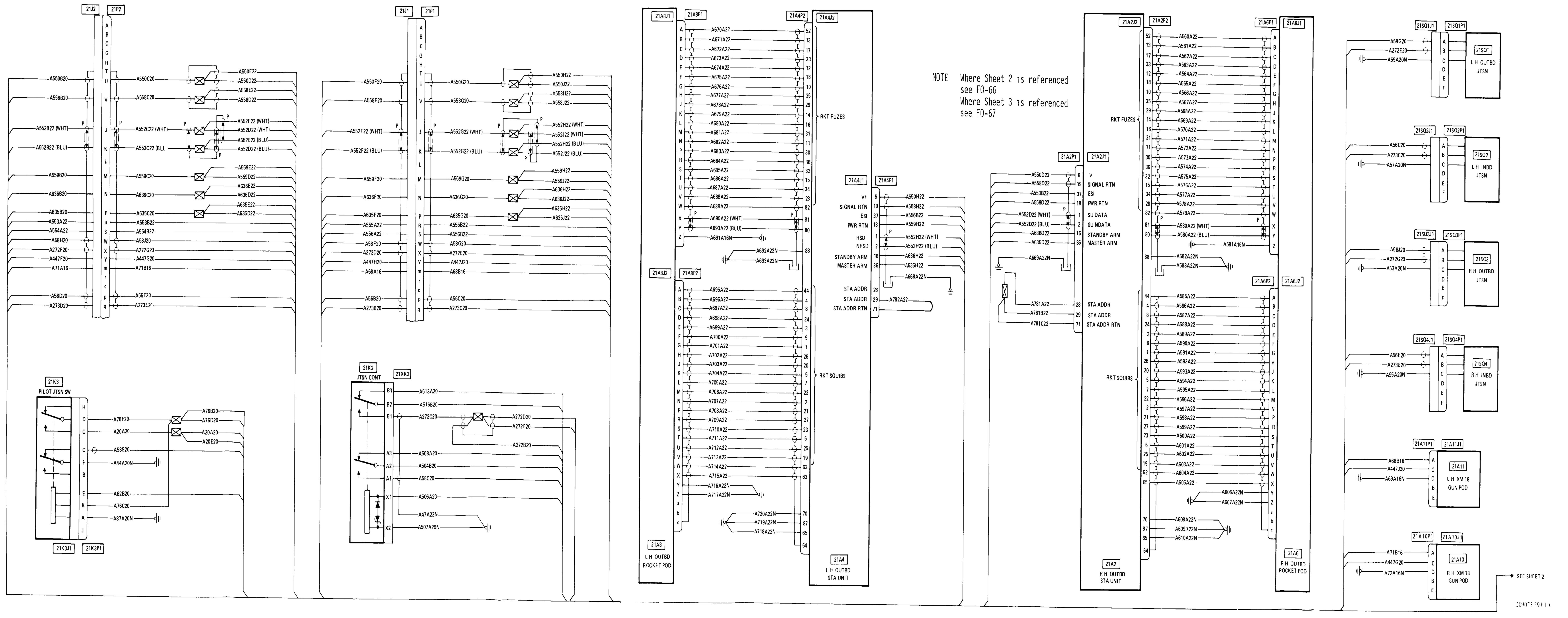
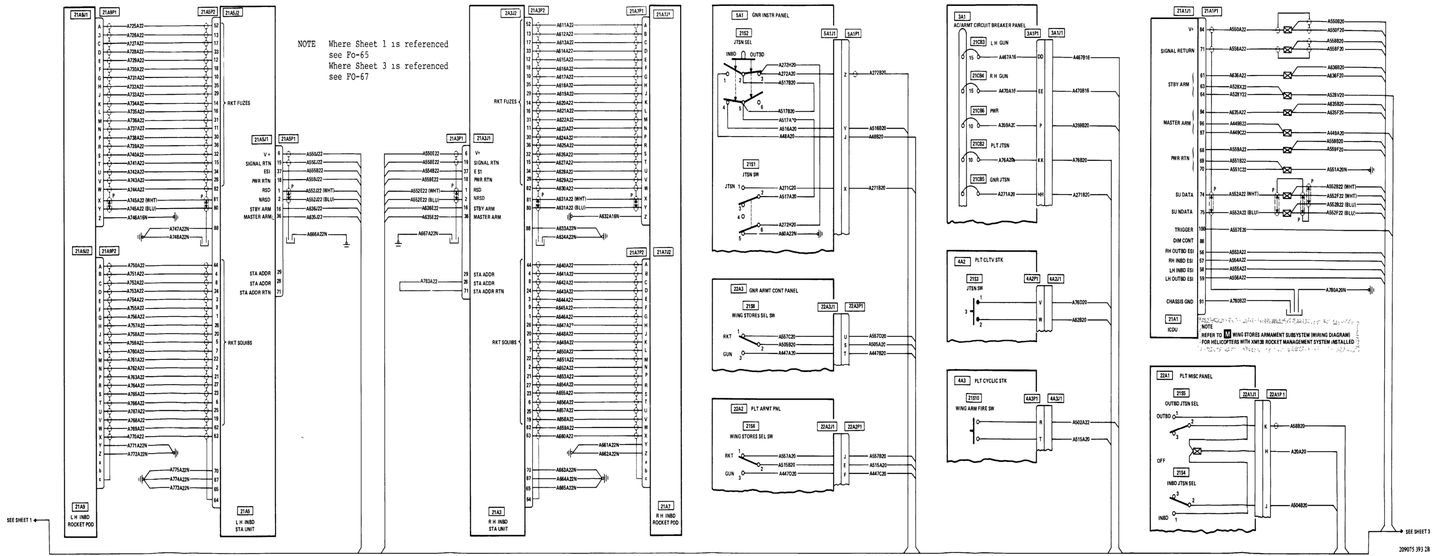
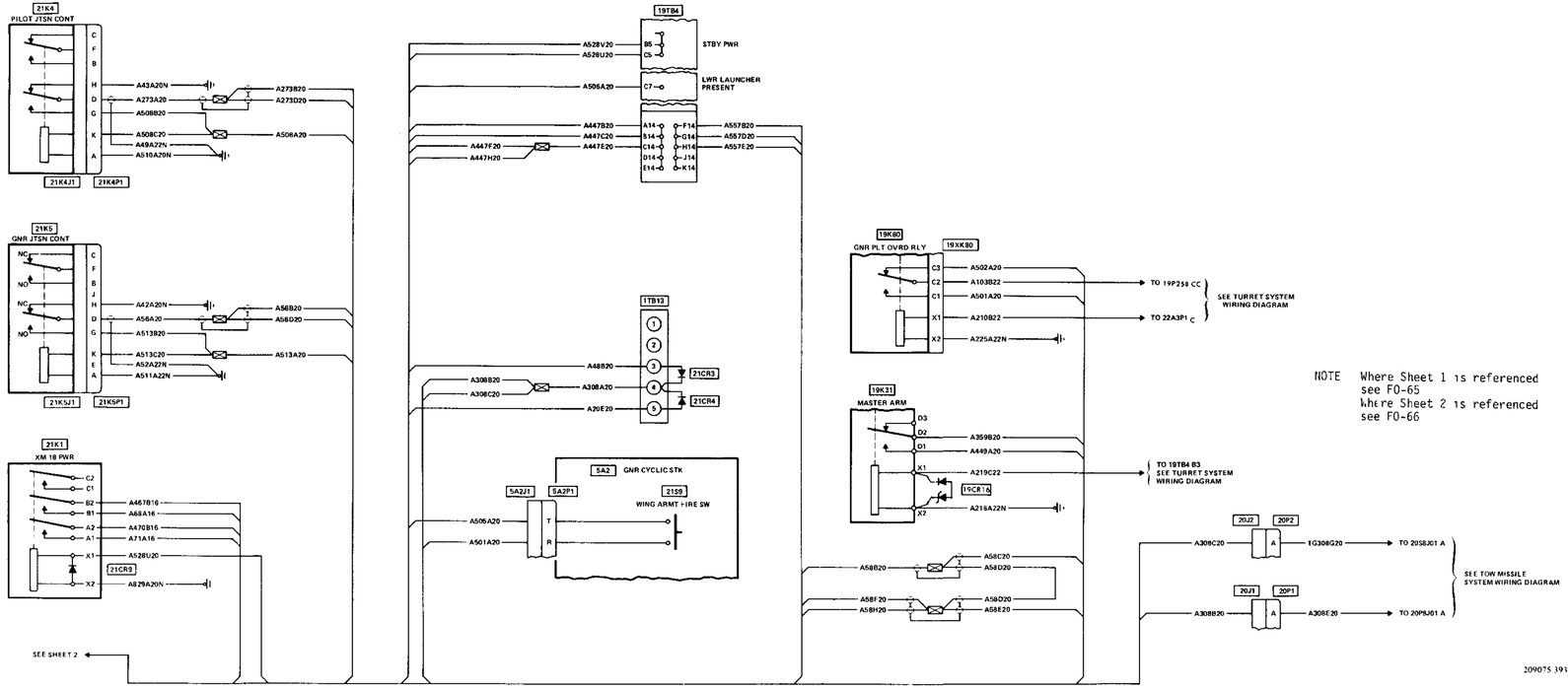


FO-65 **E** **Wing Stores System**

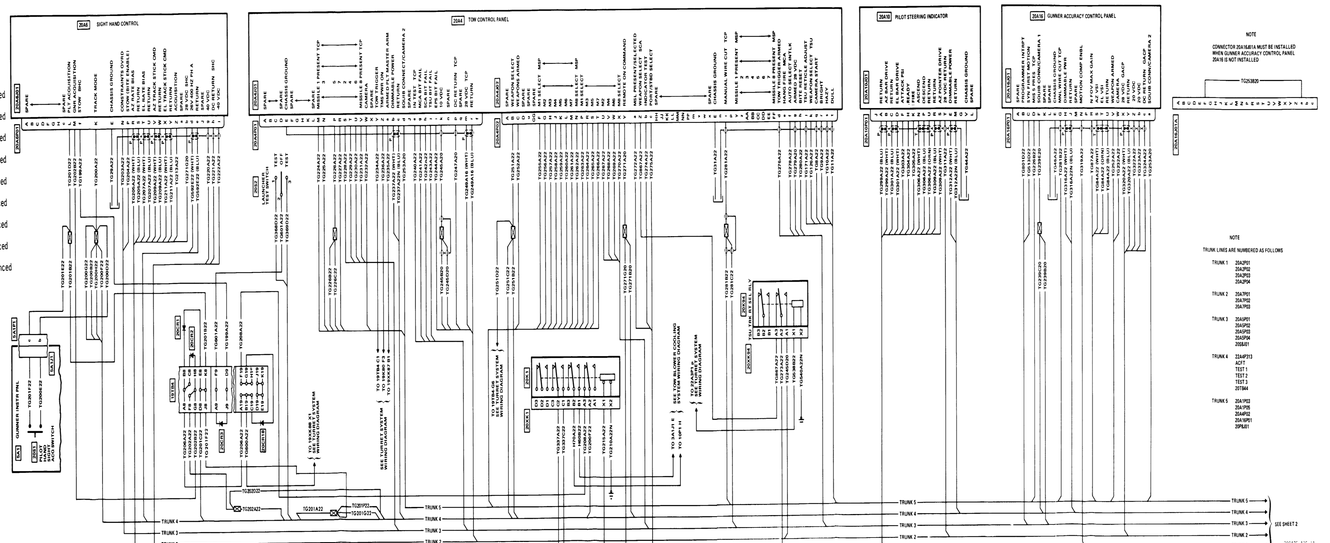

NOTE Where Sheet 1 is referenced see FO-65
Where Sheet 3 is referenced see FO-67
SEE SHEET 1
SEE SHEET 3
RKT FUZES
RKT SQUIBS
STA ADDR
STA ADDR RTN
SIGNAL RTN
ESI
PWR RTN
RSO
NRSO
STBY ARM
MASTER ARM
V+
21AB1 L H INBD ROCKET POD
21AB2 21AB3 21AB4 21AB5 21AB6 21AB7 21AB8 21AB9 21AB10 21AB11 21AB12
21AL2 L H INBD STA UNIT
21AJ2 R H INBD STA UNIT
21AJ1 R H INBD ROCKET POD
5A1 GNR INSTR PANEL
21S2 JTSN SEL
INBD OUTBD
21S1 JTSN SW
5A1J1 5A1P1
5A1 AC/ARMT CIRCUIT BREAKER PANEL
21CB1 L H GUN
21CB6 R H GUN
21CB5 PWR
21CB2 PLT JTSN
21CB3 GNR JTSN
5A1P1 5A1J1
22A3 GNR ARMT CONT PANEL
21S8 WING STORES SEL SW
RKT GUN
22A3J1 22A3P1
22A2 PLT ARMT PNL
21S6 WING STORES SEL SW
RKT GUN
22A2J1 22A2P1
4A2 PLT CLTV STK
21S3 JTSN SW
4A2P1 4A2J1
4A3 PLT CYCLIC STK
21S11 WING ARM FIRE SW
4A3P1 4A3J1
22A1 PLT MISC PANEL
21S5 OUTBD JTSN SEL
OUTBD OFF INBD
21S4 INBD JTSN SEL
INBD
22A1J1 22A1P1
21A1 KDU
21A1J1 21A1P1
V+ SIGNAL RETURN STBY ARM MASTER ARM PWR RTN SU DATA SU NDATA TRIGGER DIM CONT RH OUTBD ESI RH INBD ESI LH INBD ESI LH OUTBD ESI CHASSIS GND
NOTE
REFER TO M WING STORES ARMAMENT SUBSYSTEM (WSAS) WIRING DIAGRAMS FOR HELICOPTERS WITH HWS M ROCKET MANAGEMENT SYSTEM (MRMS) LD
209075 393 2B

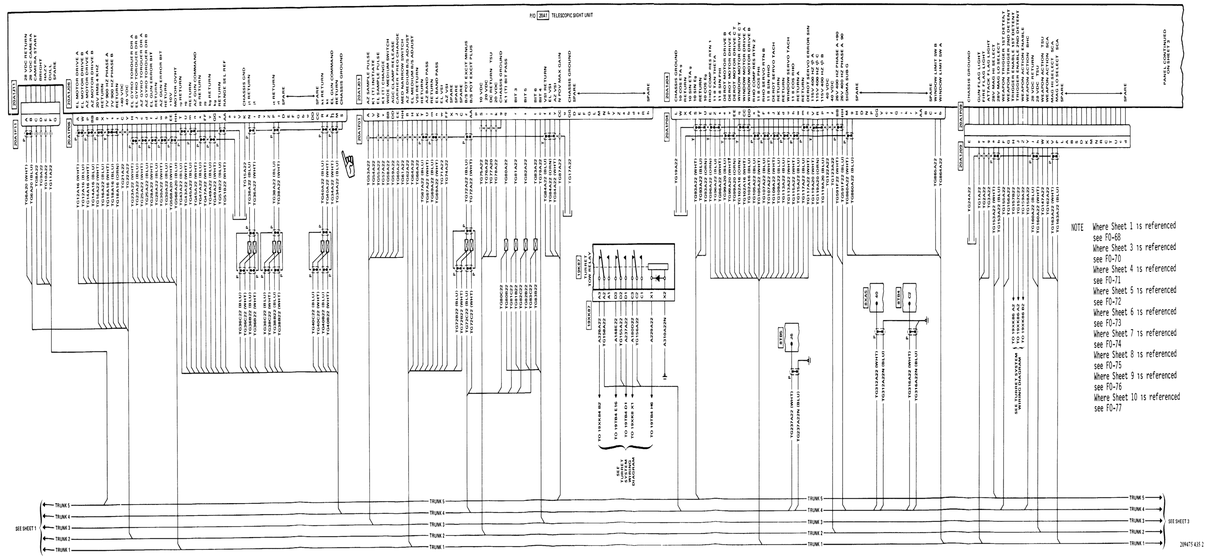


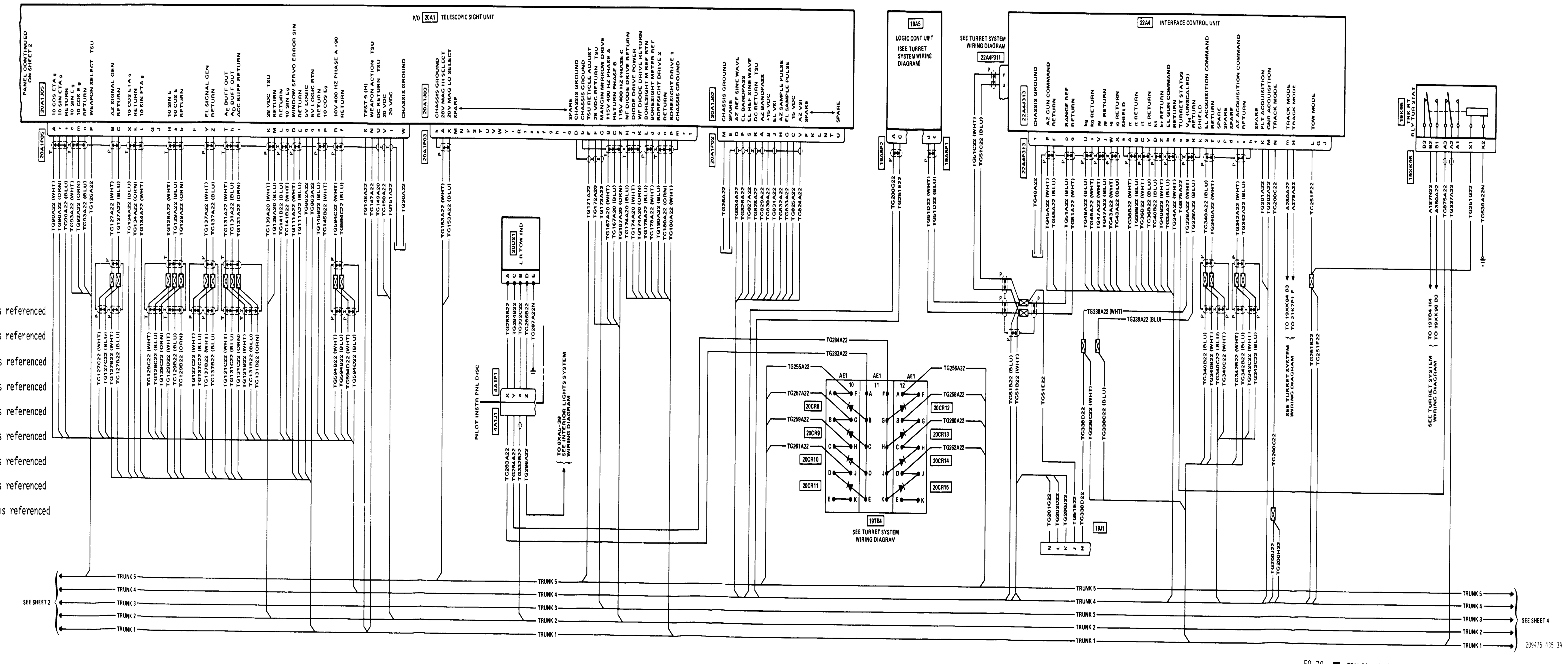
NOTE Where Sheet 1 is referenced see FO-65
Where Sheet 2 is referenced see FO-66

209075 393 3 A

NOTE Where Sheet 2 is referenced see FO-69
Where Sheet 3 is referenced see FO-70
Where Sheet 4 is referenced see FO-71.
Where Sheet 5 is referenced see FO-72
Where Sheet 6 is referenced see FO-73
Where Sheet 7 is referenced see FO-74
Where Sheet 8 is referenced see FO-75
Where Sheet 9 is referenced see FO-76
Where Sheet 10 is referenced see FO-77



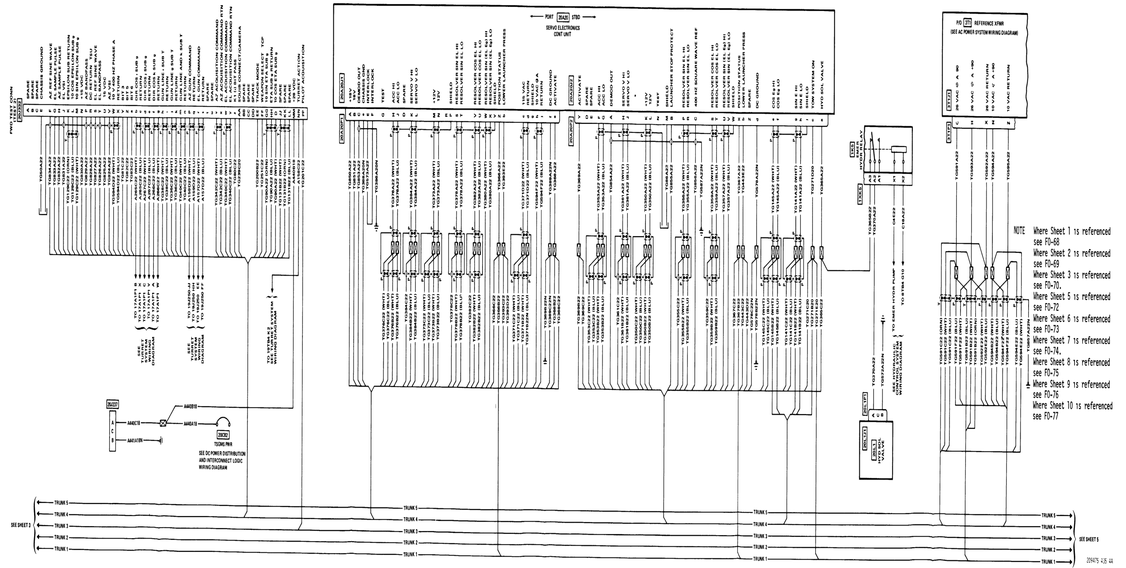

FO 2B4 TELESCOPIC SIGHT UNIT
NOTE Where Sheet 1 is referenced see FO-68
Where Sheet 3 is referenced see FO-70
Where Sheet 4 is referenced see FO-71
Where Sheet 5 is referenced see FO-72
Where Sheet 6 is referenced see FO-73
Where Sheet 7 is referenced see FO-74
Where Sheet 8 is referenced see FO-75
Where Sheet 9 is referenced see FO-76
Where Sheet 10 is referenced see FO-77
SEE SHEET 1
SEE SHEET 3
TRUNK 1
TRUNK 2
TRUNK 3
TRUNK 4
TRUNK 5
209475 439 2



NOTE

Where Sheet 1 is referenced see FO-68.
Where Sheet 2 is referenced see FO-69
Where Sheet 4 is referenced see FO-71
Where Sheet 5 is referenced see FO-72
Where Sheet 6 is referenced see FO-73
Where Sheet 7 is referenced see FO-74
Where Sheet 8 is referenced see FO-75
Where Sheet 9 is referenced see FO-76
Where Sheet 10 is referenced see FO-77

FO-70 E TOW Missile System



F0-71 TOW Missile System

NOTE Where Sheet 1 is referenced see FO-68
Where Sheet 2 is referenced see FO-69
Where Sheet 3 is referenced see FO-70
Where Sheet 4 is referenced see FO-71.
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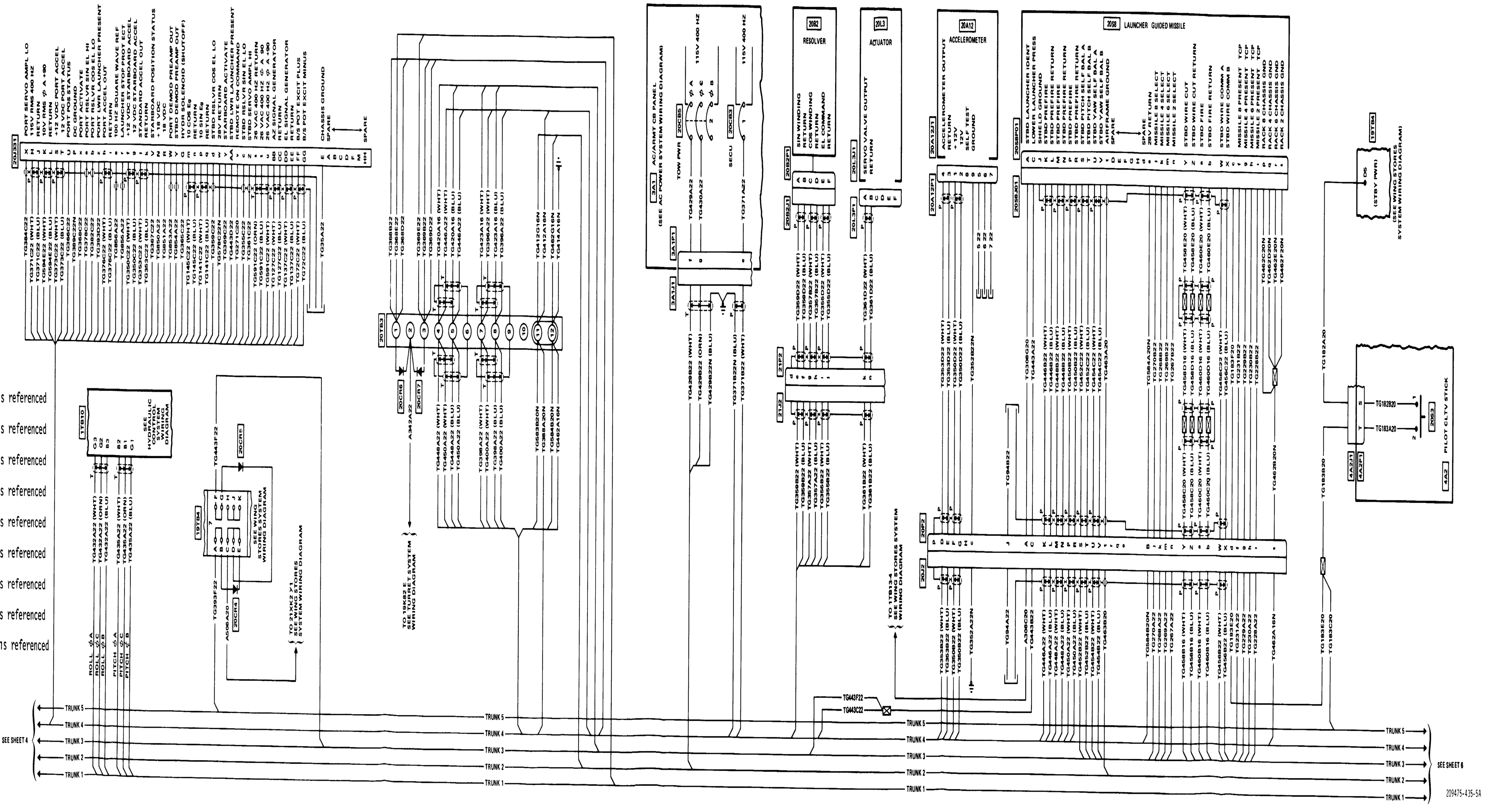
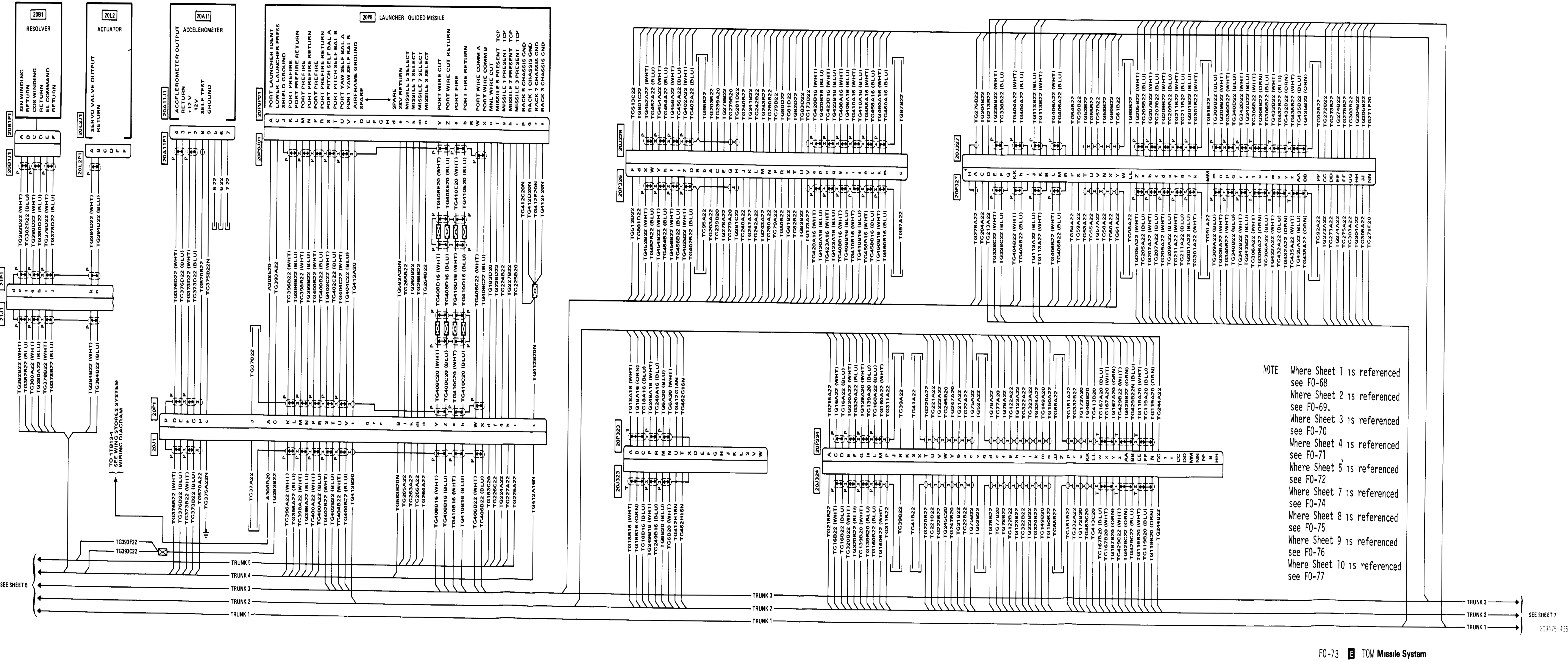
Where Sheet 9 is referenced see FO-76
Where Sheet 10 is referenced see FO-77





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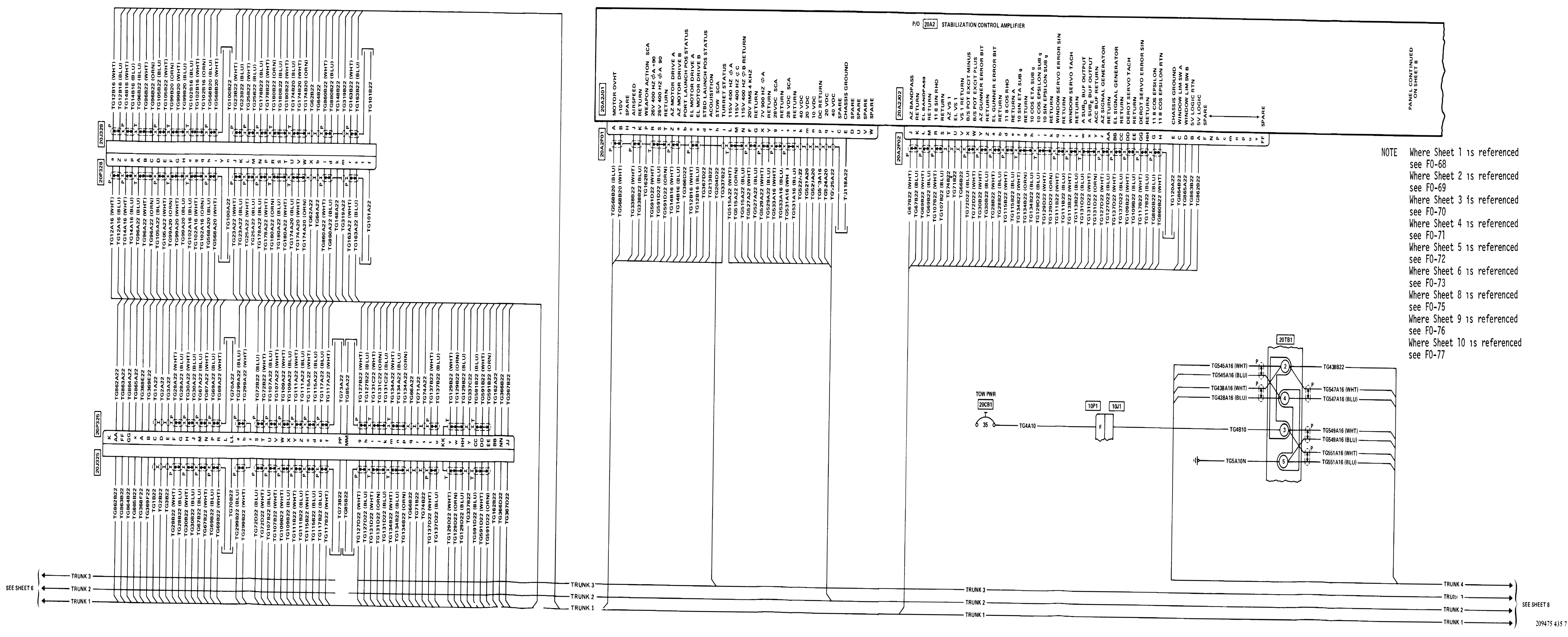
Where Sheet 10 is referenced see FO-77

FO-73 E TOW Missile System



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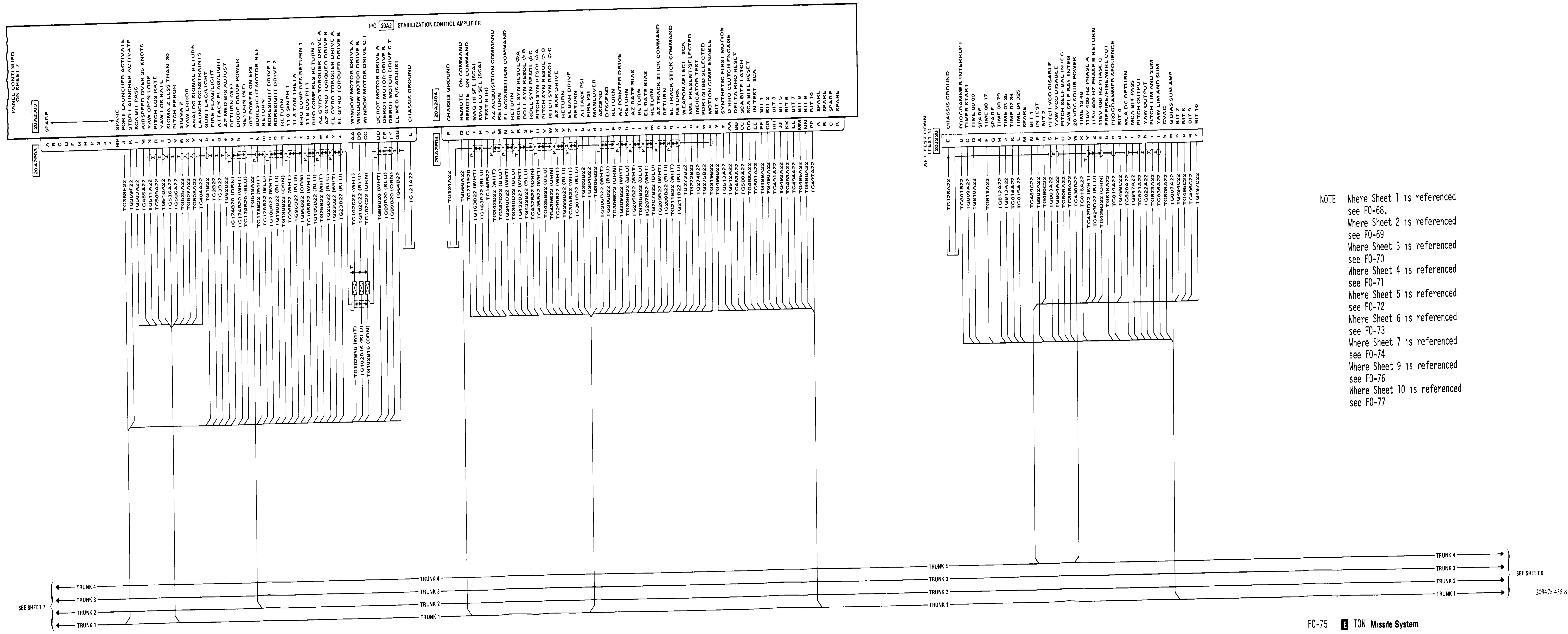
Where Sheet 10 is referenced see FO-77

FO-74 E TOW **Missile System**



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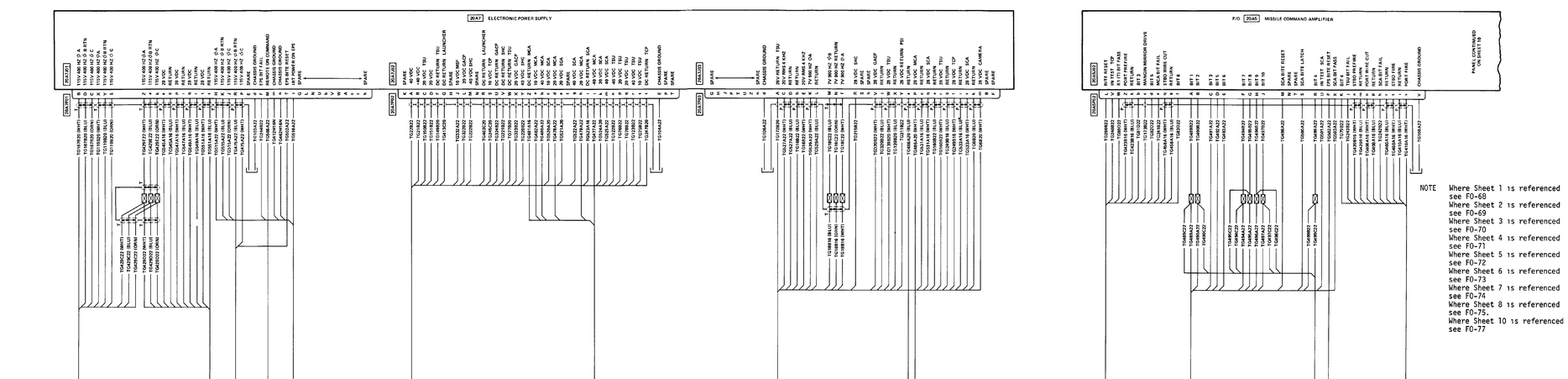
Where Sheet 10 is referenced see FO-77

FO-75 E TOW Missile System



NOTE Where Sheet 1 is referenced see F0-68
Where Sheet 2 is referenced see F0-69
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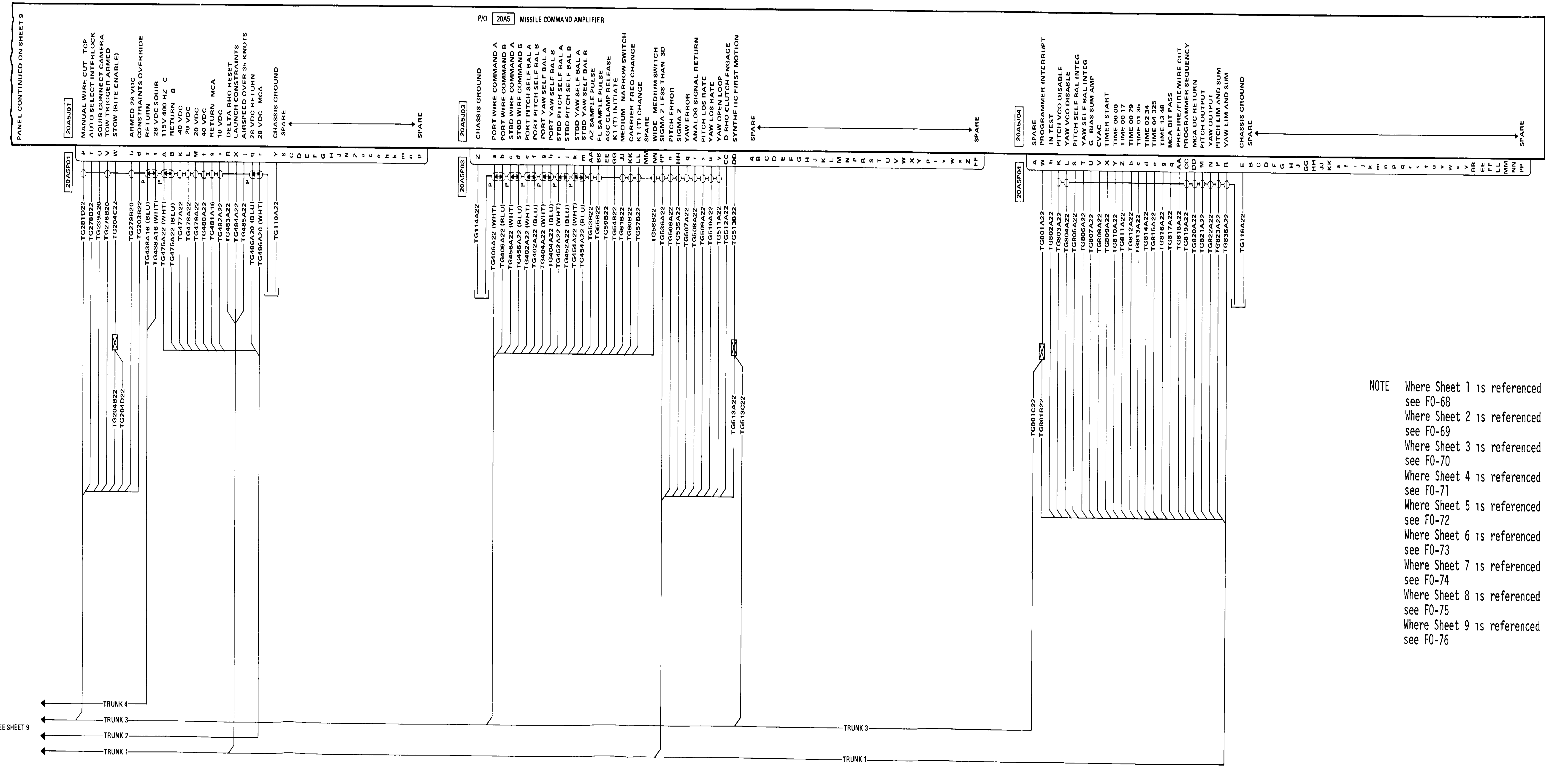
Where Sheet 8 is referenced see F0-75.
Where Sheet 10 is referenced see F0-77



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Where Sheet 6 is referenced see FO-73
Where Sheet 7 is referenced see FO-74
Where Sheet 8 is referenced see FO-75
Where Sheet 9 is referenced see FO-76

NOTE

TRUNK LINES ARE NUMBERED AS FOLLOWS

TRUNK 1 20A2P01, 20A2P02, 20A2P03, 20A2P04

TRUNK 2 20A7P01, 20A7P02, 20A7P03

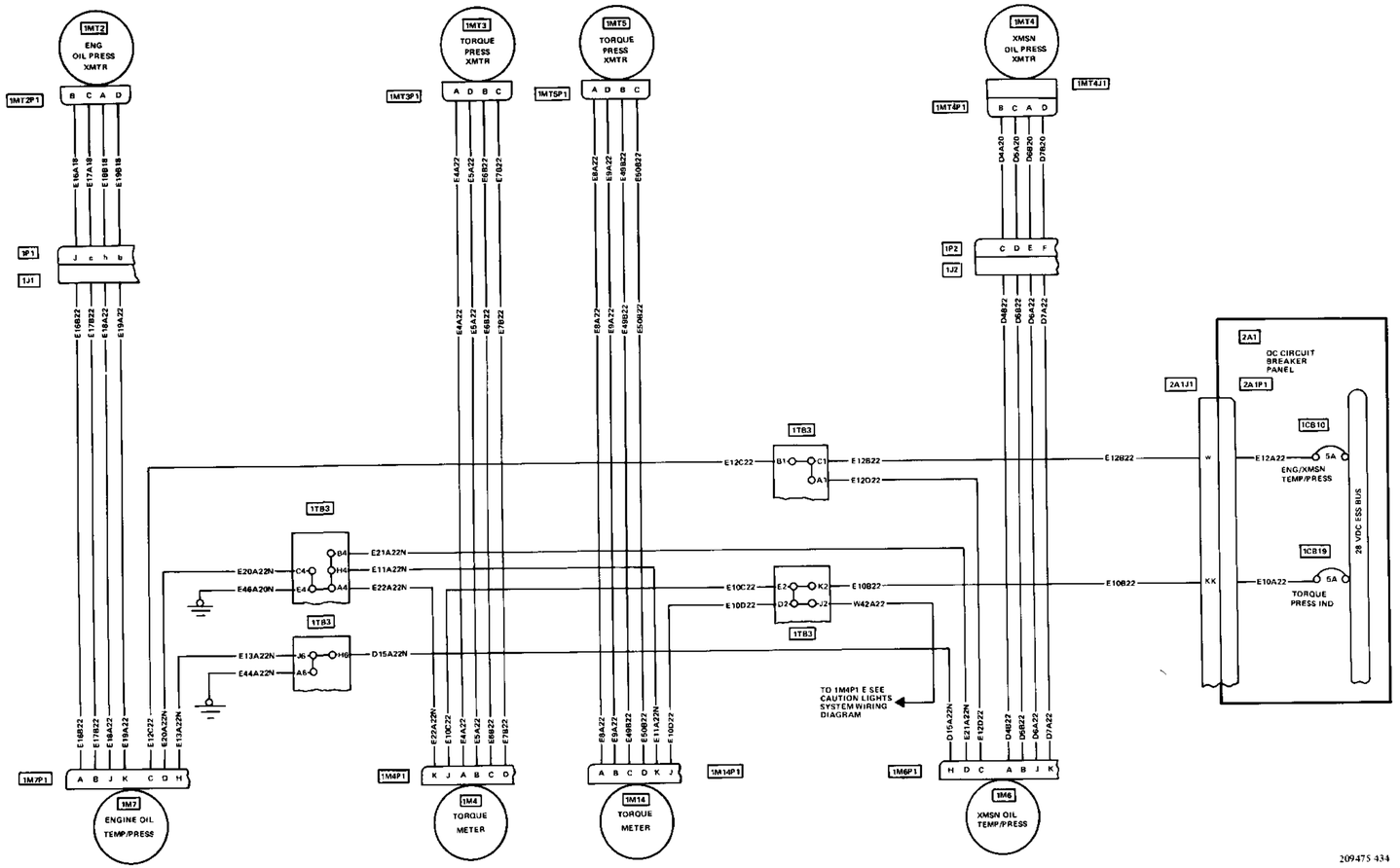
TRUNK

TRUNK 3 20A5P01, 20A5P02, 20A5P03, 20A5P04, 20S8J01

TRUNK 4 22A4P313, ACFT, TEST 1, TEST 2, TEST 3, 20TB44

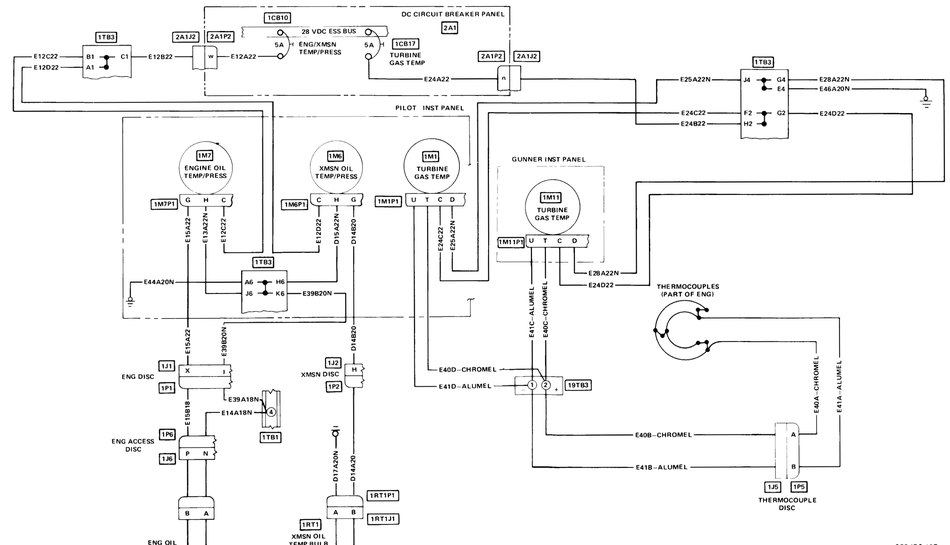
TRUNK 5 20A1P03, 20A1P05, 20A4P02, 20A16P01, 20P8J01

FO-77 E TOW Missile System



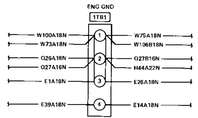
209475 434

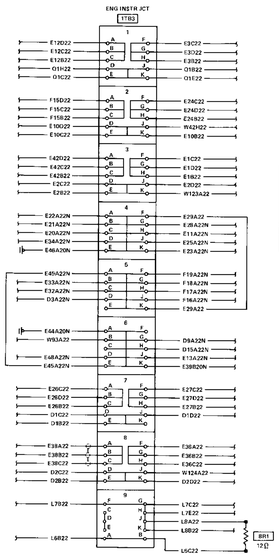
FO-78 **E** Pressure Indicating System

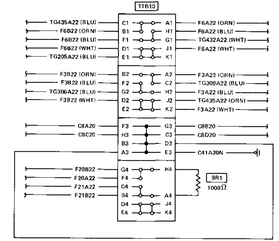


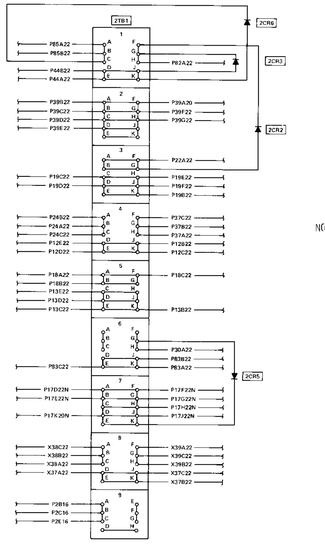
209475 437

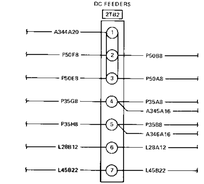
FO-79 **E Temperature Indicating Systems**











NOTE Where Sheet 2 is referenced see FO-81
Where Sheet 3 is referenced see FO-82
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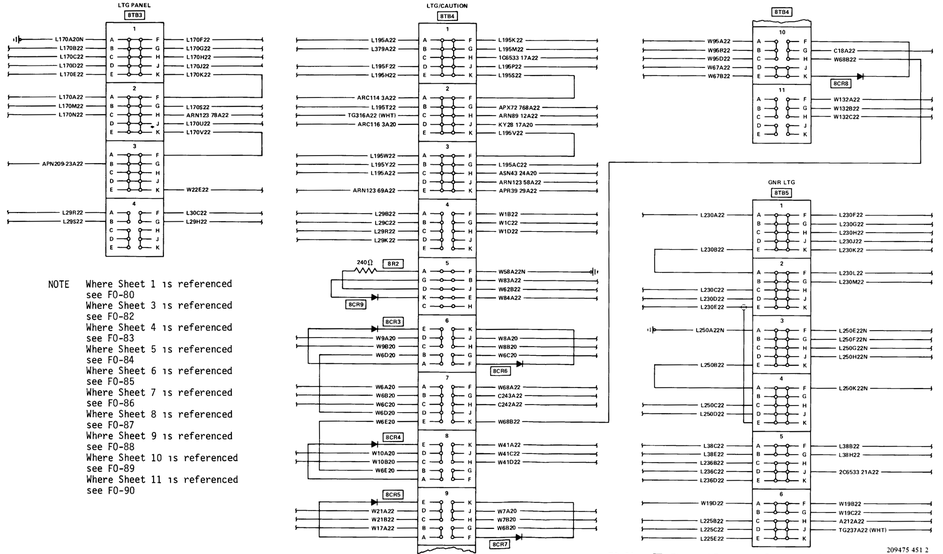
Where Sheet 11 is referenced see FO-90



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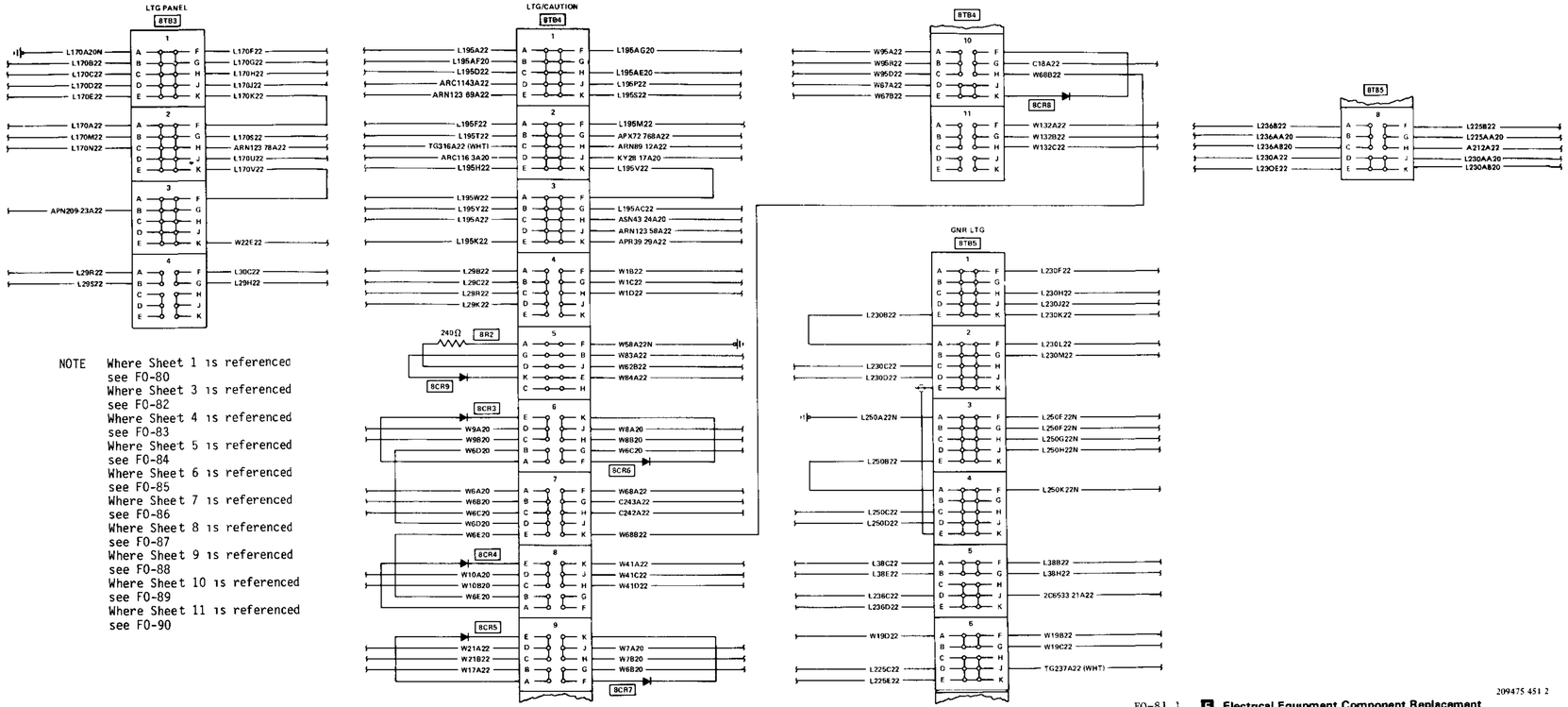
Where Sheet 11 is referenced see FO-90

209475 451 2

FO-81



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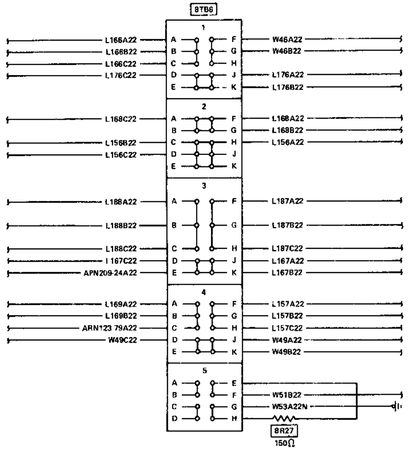
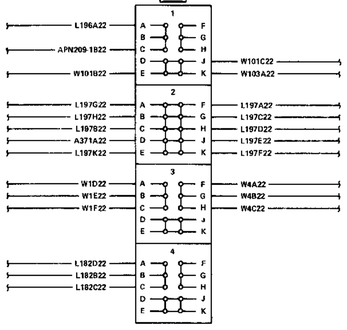
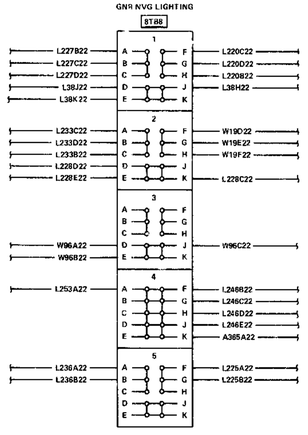
Where Sheet 11 is referenced see FO-90

209475 451 2

E Electrical Equipment Component Replacement
(After MWO 55-1520-236-50-4)







NOTE Where Sheet 1 is referenced see FO 80
Where Sheet 2 is referenced see FO 81
Where Sheet 4 is referenced see FO 83
Where Sheet 5 is referenced see FO 84
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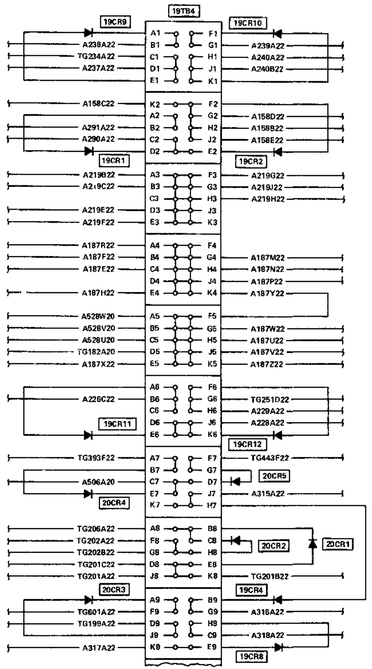
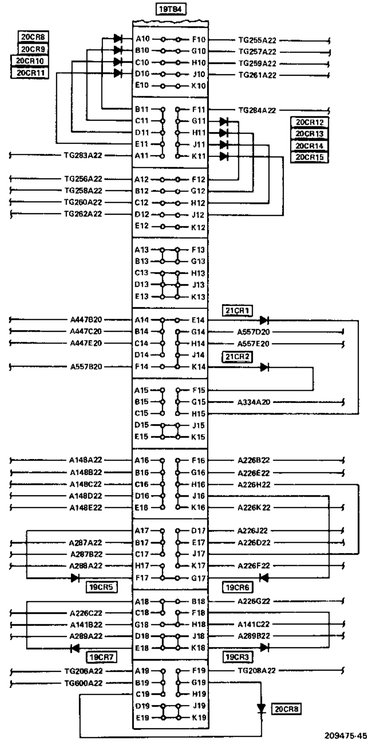
Where Sheet 9 is referenced see FO-88
Where Sheet 10 is referenced see FO 89
Where Sheet 11 is referenced see FO 90





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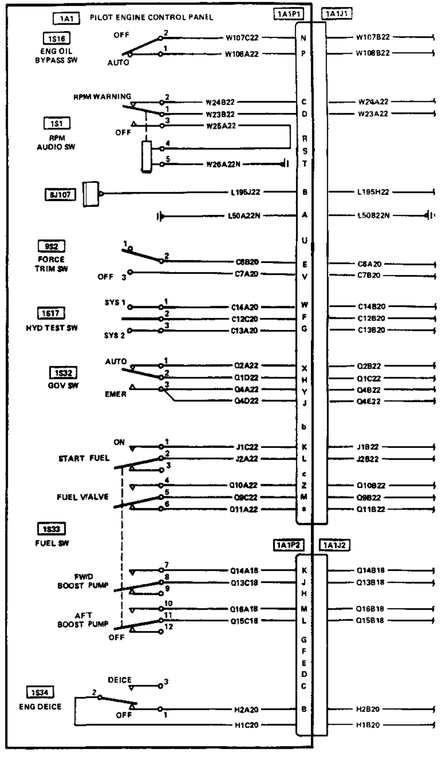
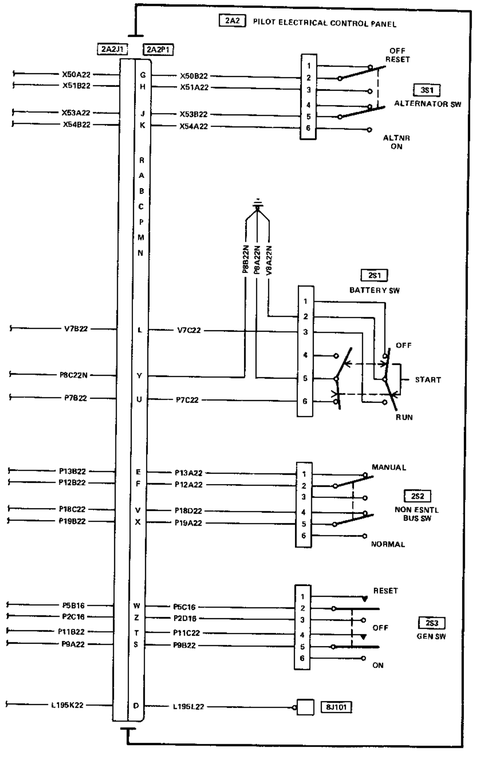
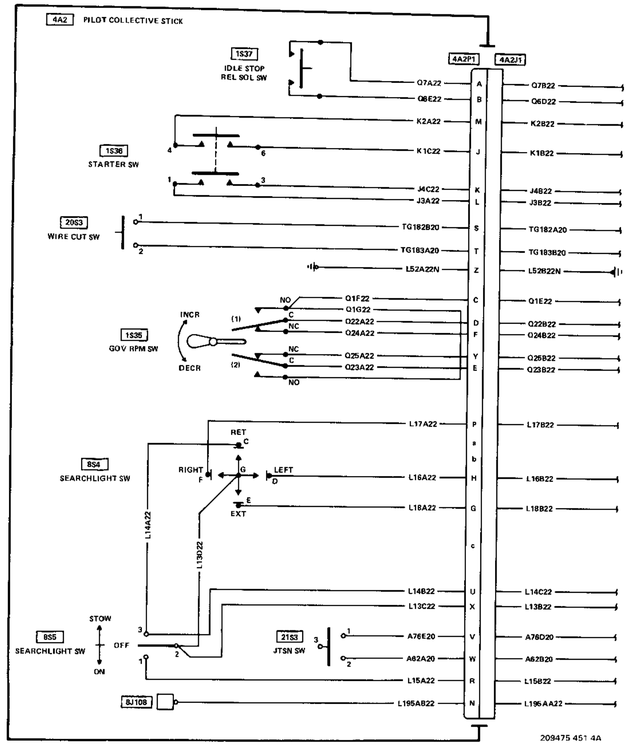
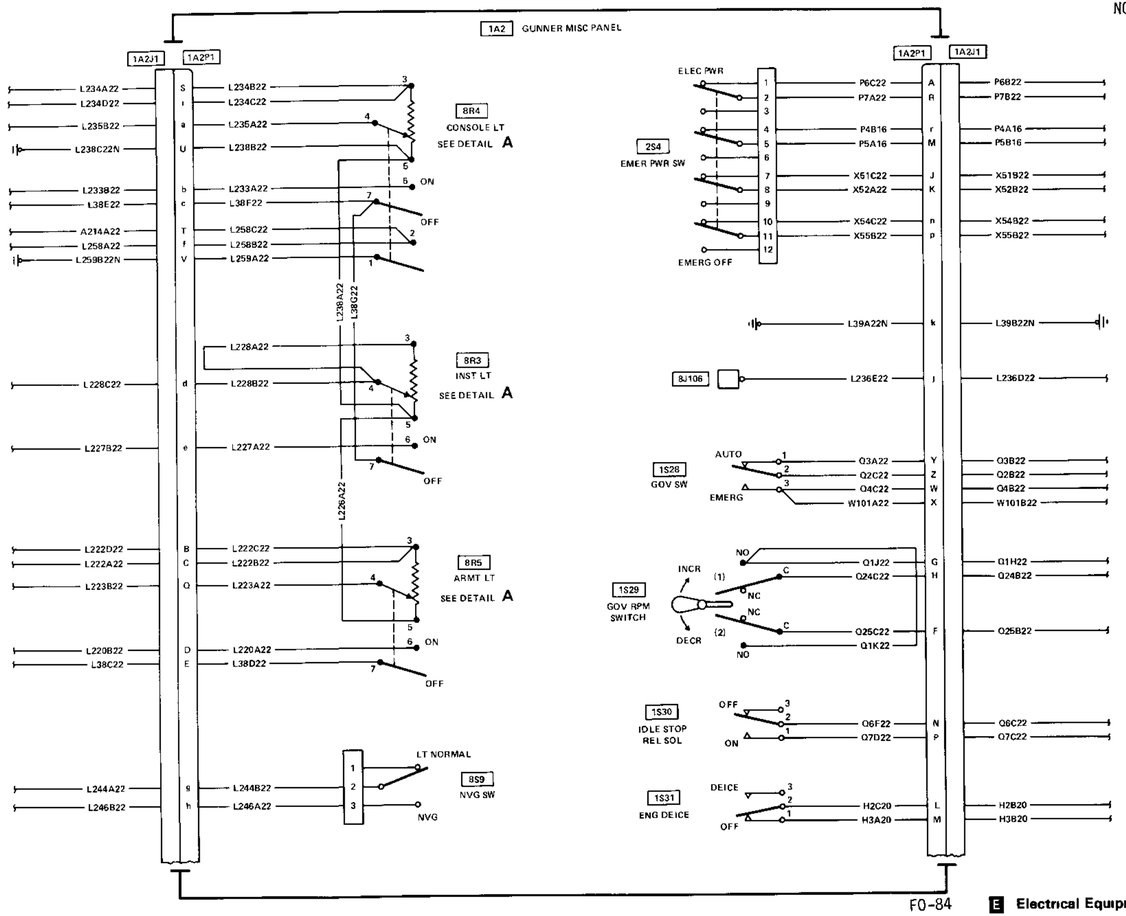






FO 83 E Electrical Equipment Component Replacement



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209475 451 5

FO-84

E Electrical Equipment Component Replacement

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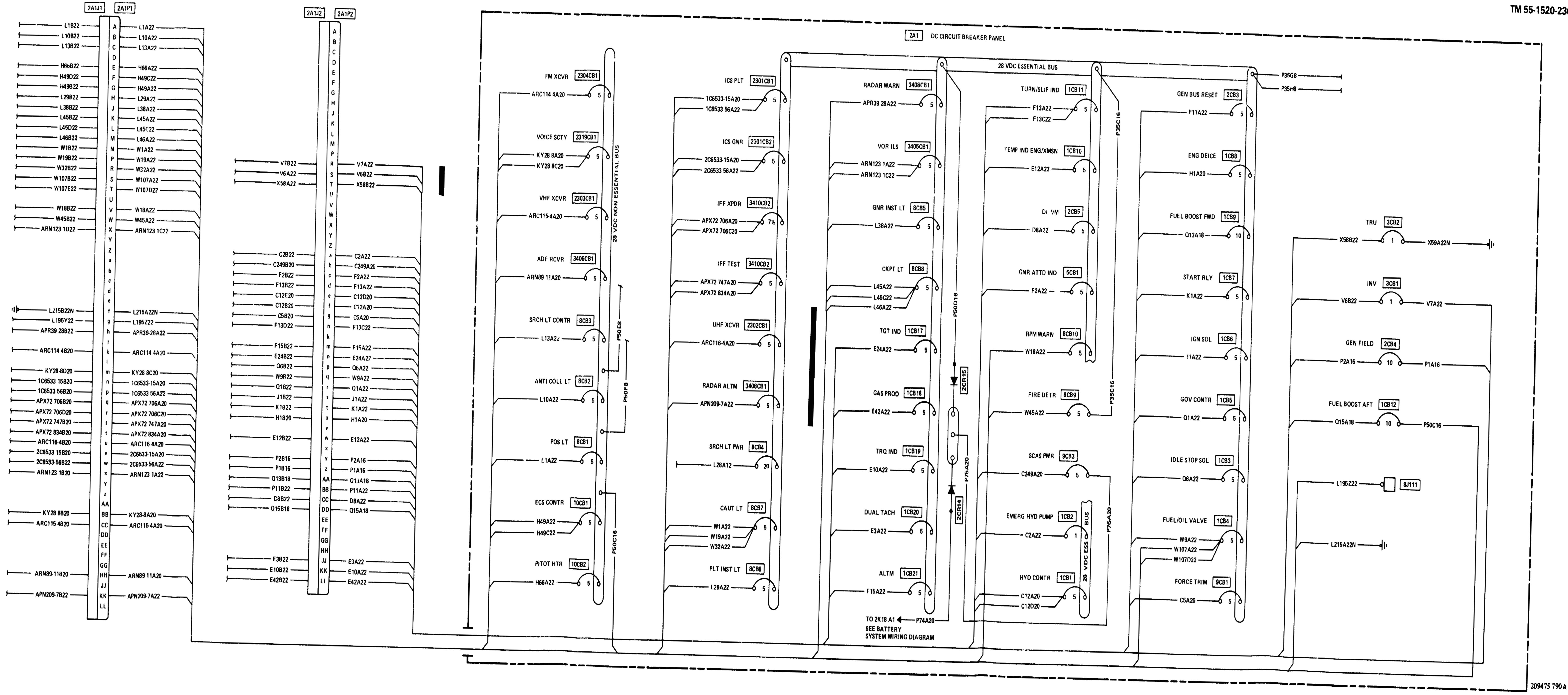
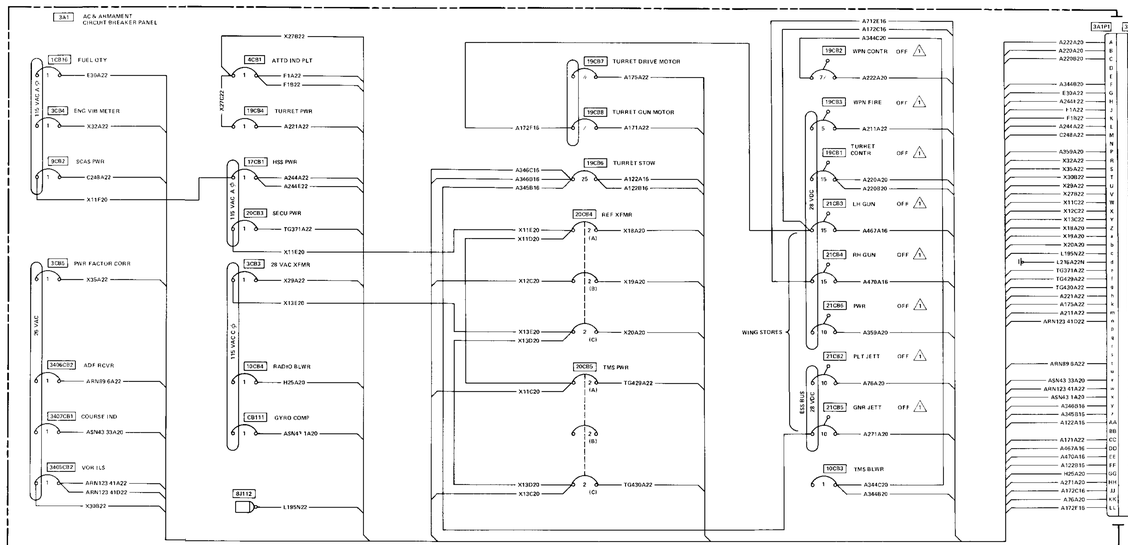


FO 85 E Electrical Equipment Component Replacement


3A1 AC & AMMAMENT CIRCUIT BREAKER PANEL
1CB16 FUEL QTY
E30A22
3CB4 ENG VIB METER
X32A22
3CB2 SCAS PWR
C248A22
X11F20
3CB5 PWR FACTOR CORR
X35A22
3436CB2 ADF RCVR
ARN59 6A22
3407CB1 COURSE IND
ASN43 33A20
3405CB2 VOR ILS
ARN123 41A22
ARN123 41B22
X33B22
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115 VAC C-O
26 VAC
X27B22
8CB1 ATTD IND PLT
F13A22
F11B22
19CB4 TURRET PWR
A221A22
17CB1 HSS PWR
A244A22
A244E22
20CB3 SECU PWR
TG371A22
X11E20
3CB3 28 VAC XFMR
X29A22
X13E20
12CB4 RADIO BLWR
H25A20
CB111 GYRO COMP
ASN41 1A20
BJ112
L195N22
19CB7 TURRET DRIVE MOTOR
A175A22
19CB8 TURRET GUN MOTOR
A171A22
A172F16
19CB6 TURRET STOW
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A346C16
A346D16
A345B16
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X11D20
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X18A20
(A)
X12E20
X19A20
(B)
X13E20
X13D20
X20A20
(C)
20CB5 TMS PWR
TG429A22
X11C20
(A)
(B)
X13D20
X13C20
TG430A22
(C)
A712E16
A172C16
A344C20
19CB2 WPN CONTR OFF
A222A20
19CB3 WPN FIRE OFF
A211A22
19CB1 TURRET CONTR OFF
A220A20
A220B20
21CB3 LH GUN OFF
A467A16
21CB4 RH GUN OFF
A478A16
21CB5 PWR OFF
A359A20
WING STORES
21CB2 PLT JETT OFF
A76A20
21CB5 GNR JETT OFF
A271A20
ESS BUS
28 VDC
10CB3 TMS BLWR
A344C20
A344B20
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A222C20
A223D20
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E30H22
A344F22 (WHT)
F14C22
F10D22
A244H22
C248B22
A359H20
X32B22
X35B22
X38A22
X28B22
X27A22
X11B22
X13B22
X13A20
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X20B20
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L216B22N
TG371B22 (WHT)
TG429B22 (WHT)
TG430B22 (DRN)
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A175B22
A211D22
ARN123 41D22
ARN89 6B22
ASN43 33B20
ARN123 41B22 (WHT)
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A122B16
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NOTE
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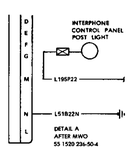
Where Sheet 11 is referenced see FO-90
NOTE
CIRCUIT BREAKER IS SWITCH TYPE WITH OFF (OPEN) IN DOWN POSITION



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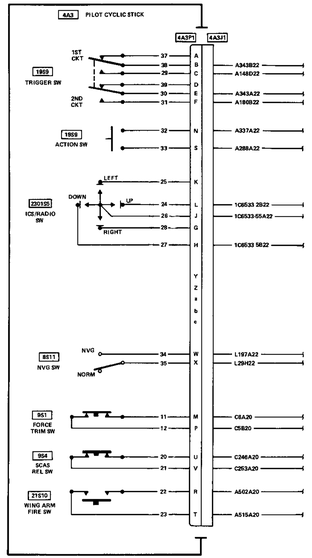
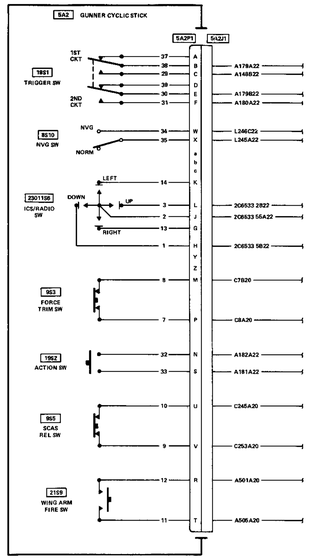
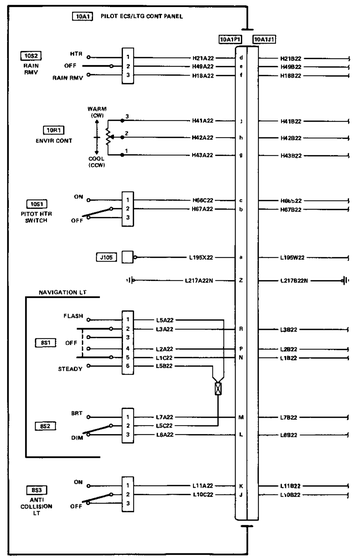
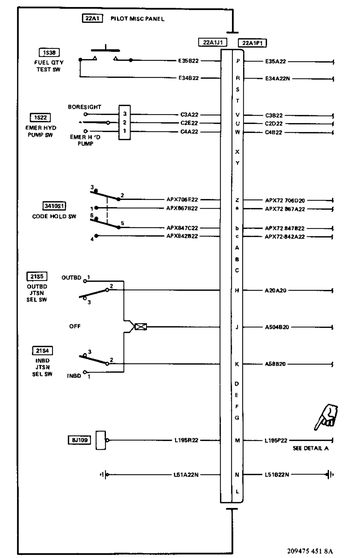
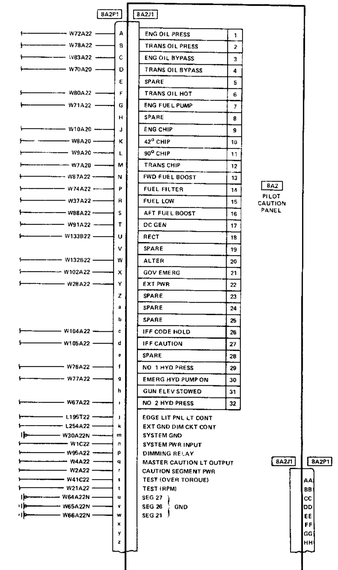




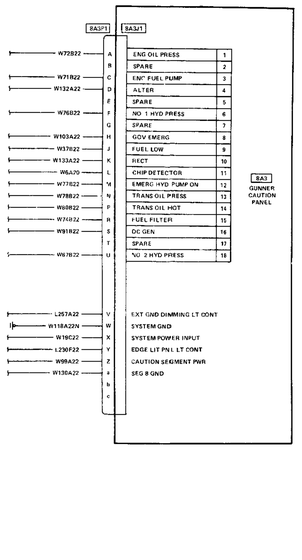




209475 451 8A

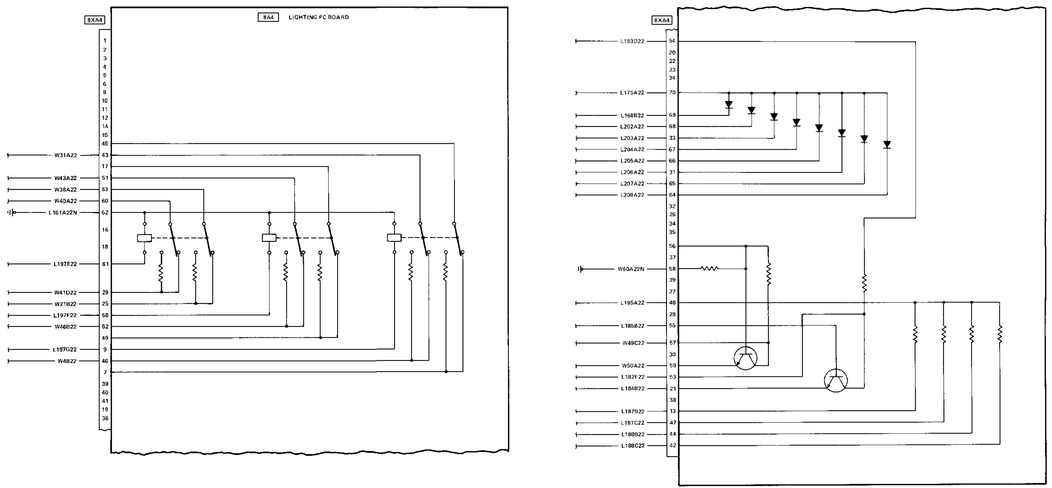


NOTE Where Sheet 1 is referenced see FO 80
Where Sheet 2 is referenced see FO 81
Where Sheet 3 is referenced see FO 82
Where Sheet 4 is referenced see FO 83
Where Sheet 5 is referenced see FO 84
Where Sheet 6 is referenced see FO 85
Where Sheet 7 is referenced see FO 86
Where Sheet 8 is referenced see FO 87
Where Sheet 10 is referenced see FO 89
Where Sheet 11 is referenced see FO 90

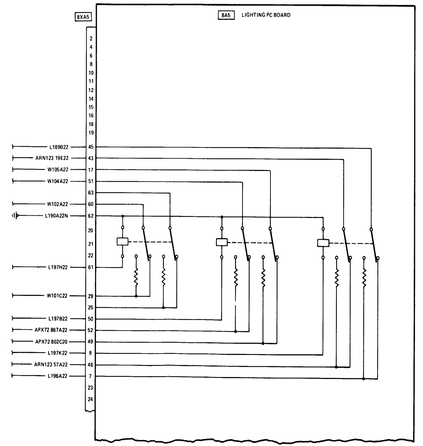


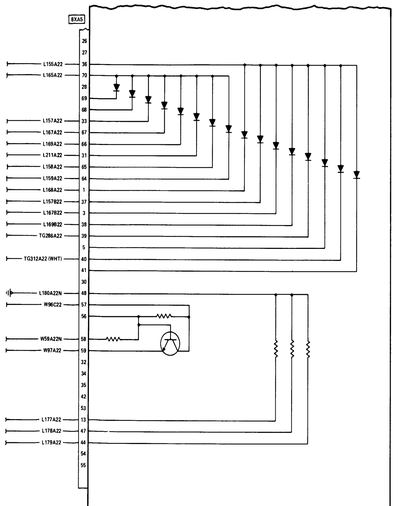
209475 451 98

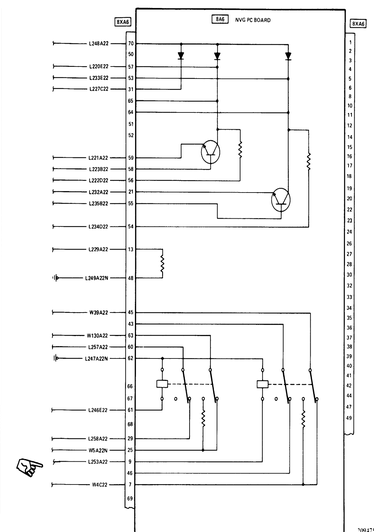
NOTE Where Sheet 1 is referenced see FO-80
Where Sheet 2 is referenced see FO-81
Where Sheet 3 is referenced see FO-82
Where Sheet 4 is referenced see FO-83
Where Sheet 5 is referenced see FO-84.
Where Sheet 6 is referenced see FO-85
Where Sheet 7 is referenced see FO-86
Where Sheet 8 is referenced see FO-87
Where Sheet 9 is referenced see FO-88
Where Sheet 11 is referenced see FO-90



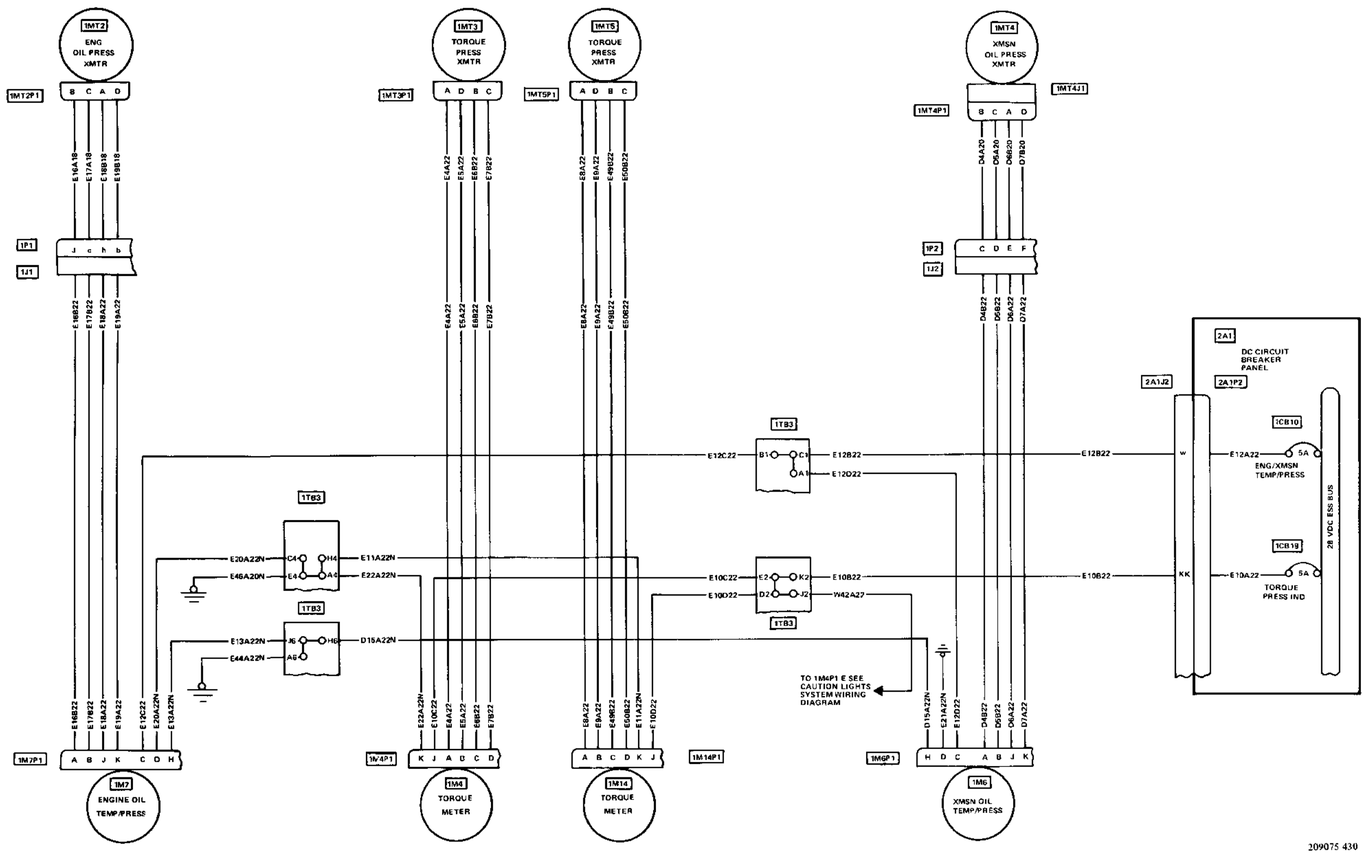
NOTE Where Sheet 1 is referenced see FO-80
Where Sheet 2 is referenced see FO-81
Where Sheet 3 is referenced see FO-82
Where Sheet 4 is referenced see FO-83
Where Sheet 5 is referenced see FO-84
Where Sheet 6 is referenced see FO-85
Where Sheet 7 is referenced see FO-86
Where Sheet 8 is referenced see FO-87
Where Sheet 9 is referenced see FO-88
Where Sheet 10 is referenced see FO-89





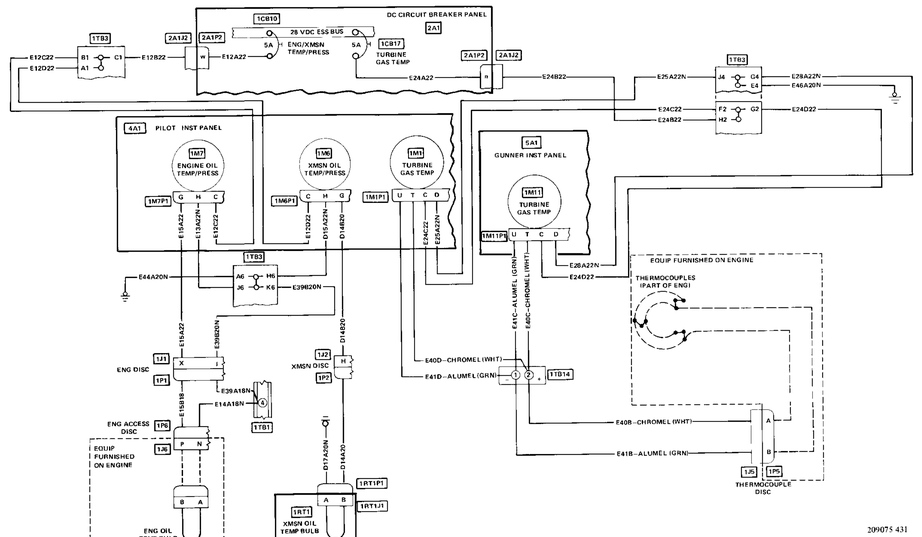


209475 4A1 11



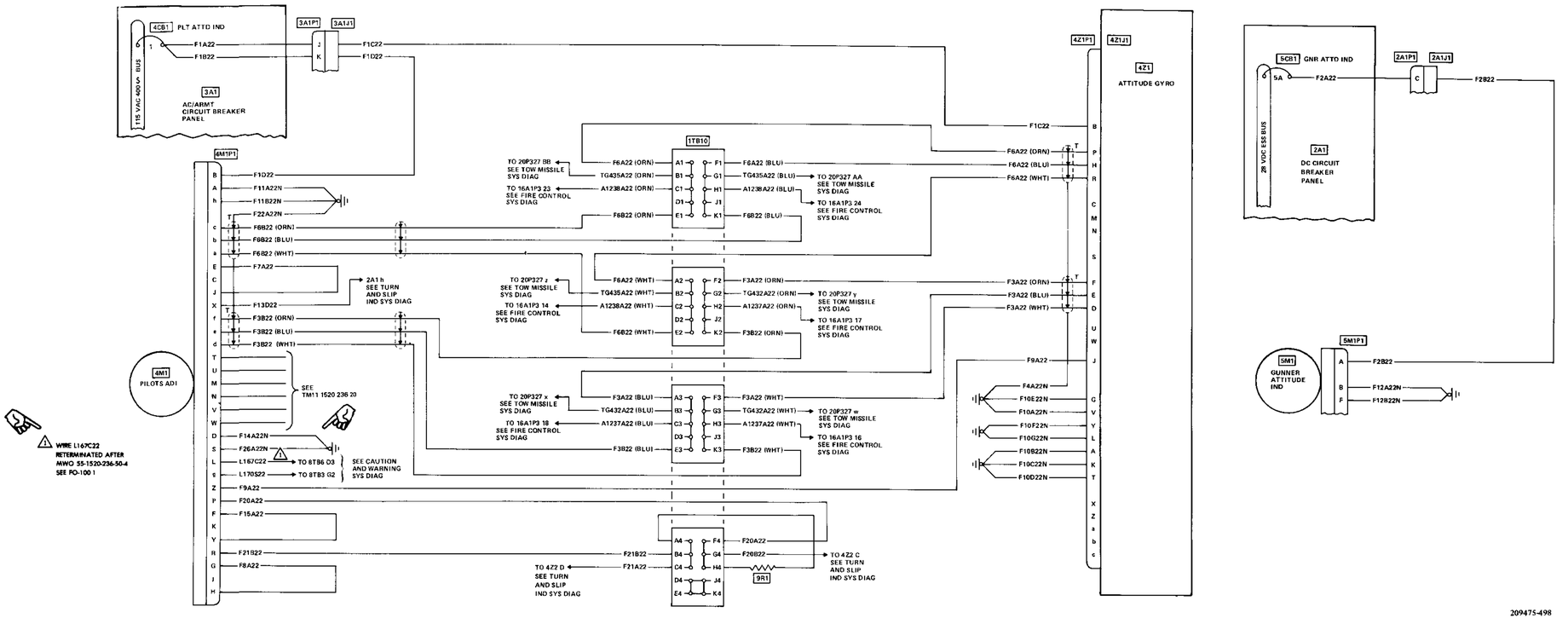
209075 430

FO-91 **M** Pressure Indicating System



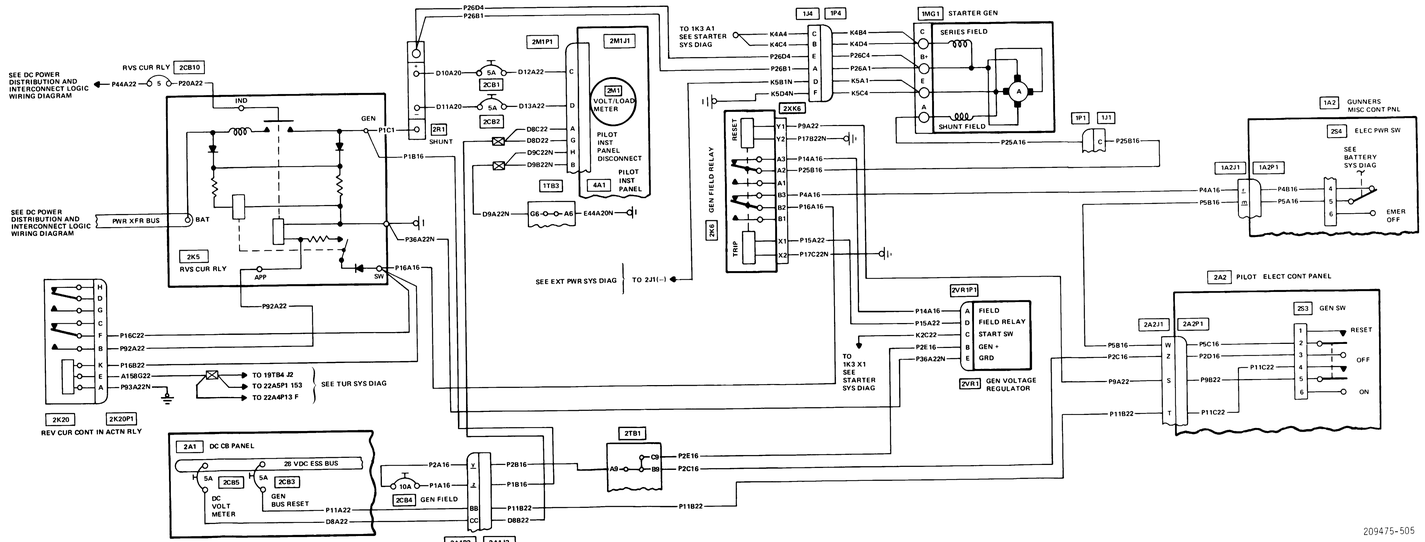
209075 431

FO-92 **M** Temperature Indicating Systems



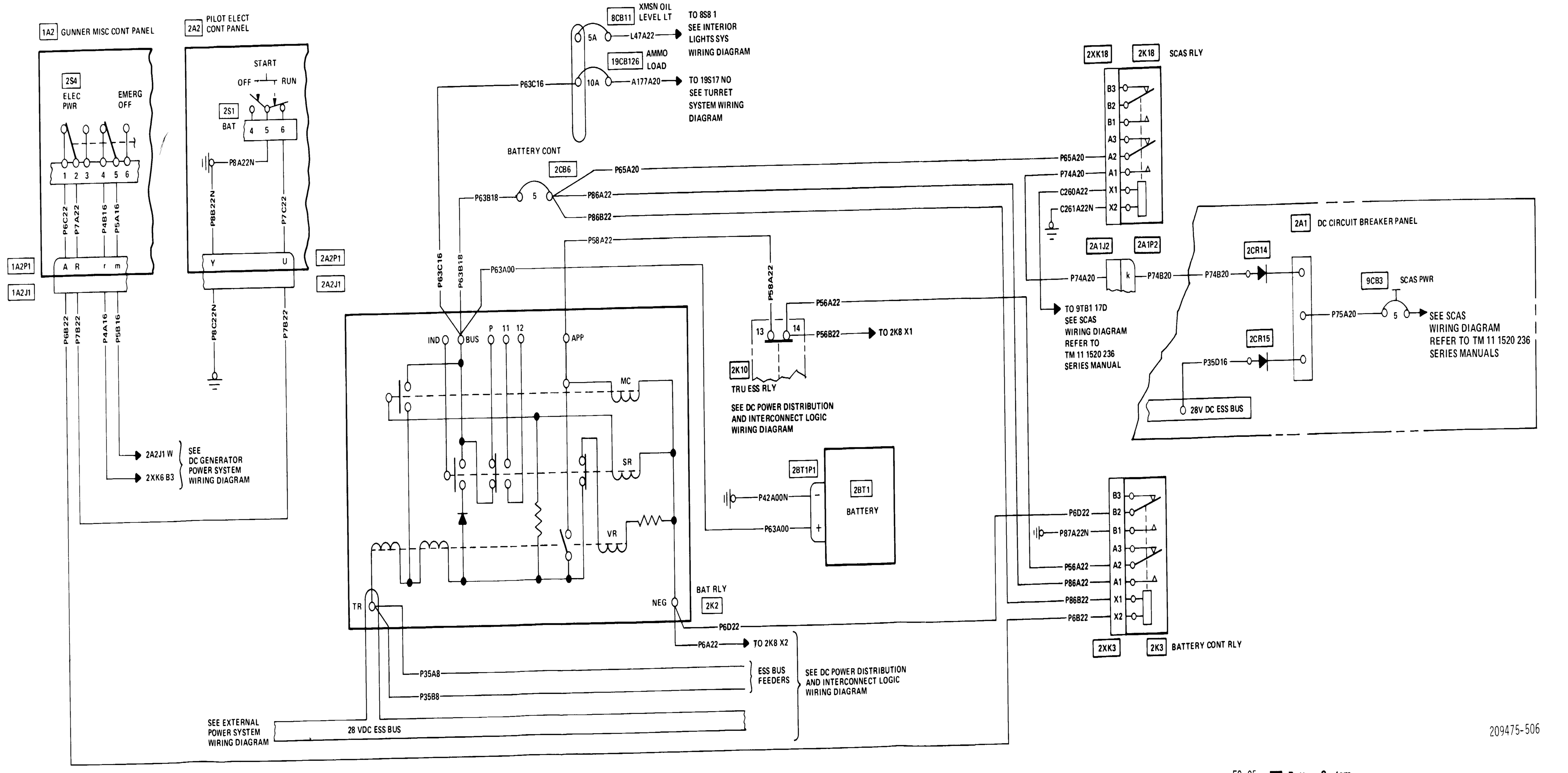
209475-498

FO-93 **M** Attitude Indicating System

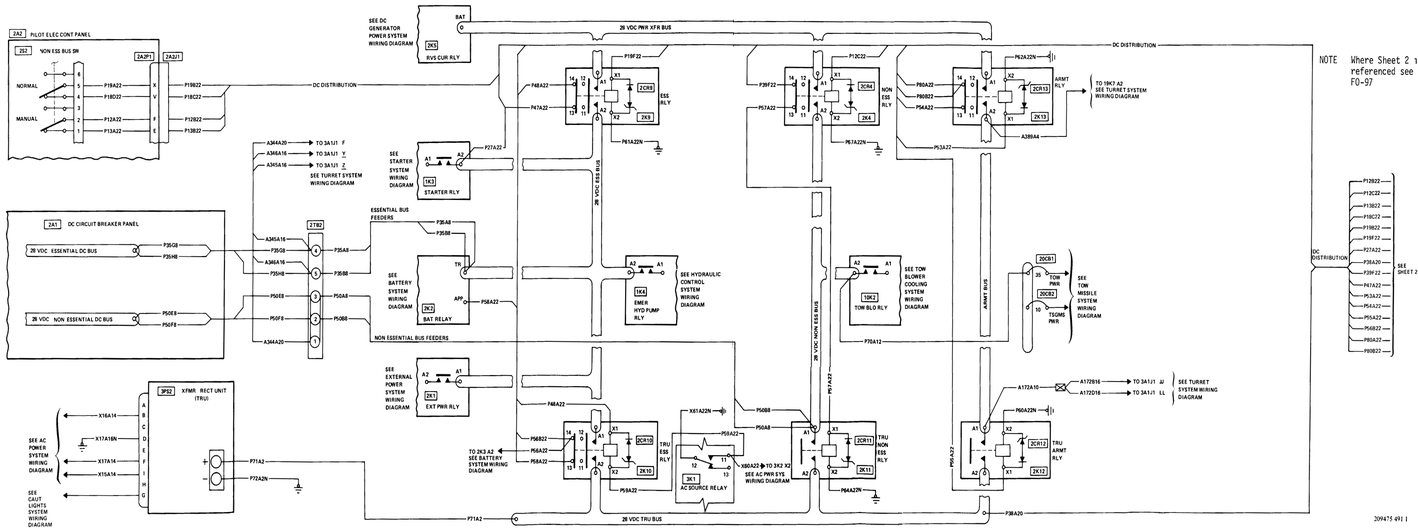


209475-505

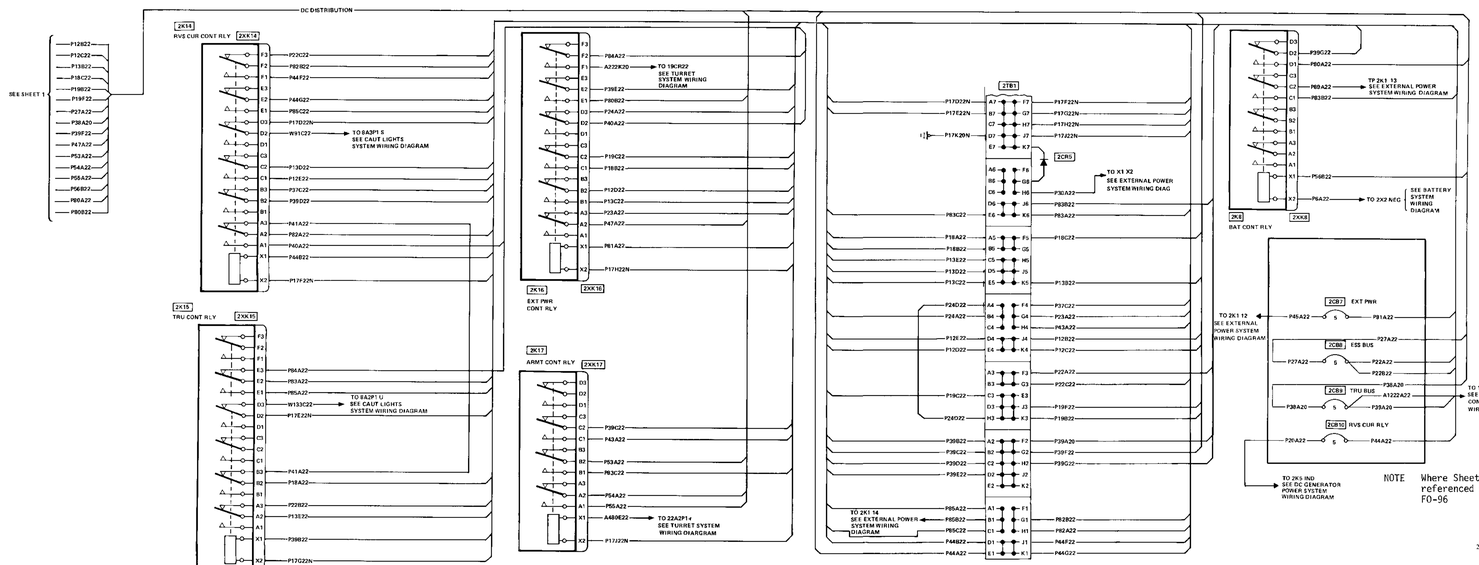
FO-94 **M** DC Generator Power System



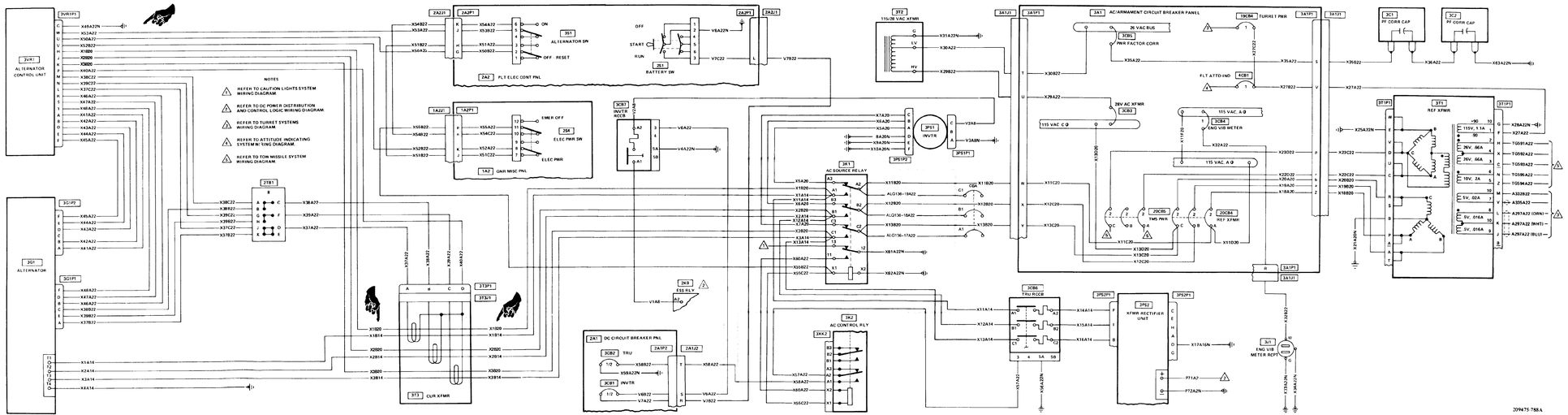
FO-95 **M** Battery System



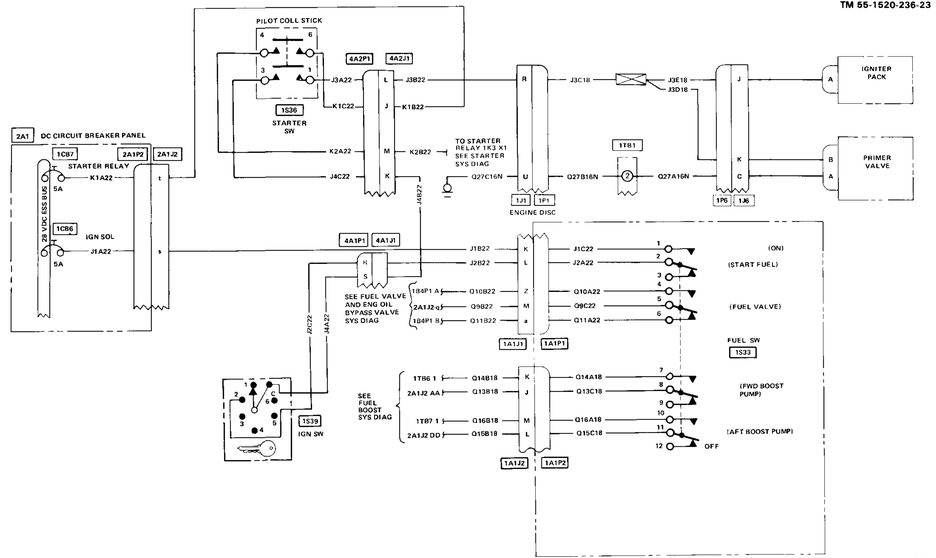
FO-96 **M** DC Power Distribution and Interconnect Logic


DC DISTRIBUTION
SEE SHEET 1
P12B22
P12C22
P13B22
P18C22
P18B22
P19F22
P27A22
P28A20
P39F22
P47A22
P52A22
P54A22
P55A22
P56B22
P56B22
P80A22
P80B22
2K14
RVS CUR CONT RLY
2XK14
P22C22
P82B22
P44F22
P46G22
P85C22
P17D22N
W91C22
TO 6A2P1 K
SEE CAUT LIGHTS
SYSTEM WIRING DIAGRAM
P13D22
P12E22
P37C22
P39D22
P41A22
P82A22
P40A22
P44B22
P17F22N
2K15
TRU CONT RLY
2XK15
P86A22
P83A22
P85A22
W133C22
TO 6A2P1 U
SEE CAUT LIGHTS
SYSTEM WIRING DIAGRAM
P17E22N
P41A22
P18A22
P22B22
P13E22
P39B22
P17G22N
P84A22
A222R20
TO 19CR22
SEE TURRET
SYSTEM WIRING
DIAGRAM
P39E22
P80B22
P24A22
P40A22
P19C22
P18B22
P13D22
P13C22
P23A22
P47A22
P81A22
P17H22N
2K16
EXT PWR
CONT RLY
2XK16
2K17
ARMT CONT RLY
2XK17
P28C22
P43A22
P53A22
P83C22
P54A22
P55A22
A480E22
TO 22A2P1 r
SEE TURRET SYSTEM
WIRING DIAGRAM
P17J22N
2TB1
P17D22N
P17E22N
P17K29N
2CR5
TO X1 X2
SEE EXTERNAL POWER
SYSTEM WIRING DIAG
P83C22
P30A32
P83B22
P83A22
P18A22
P18B22
P13E22
P13D22
P13C22
P18C22
P13D32
P24D22
P24A22
P12E22
P12D22
P37C22
P23A22
P43A22
P12B22
P12C22
P19C22
P24D32
P22A22
P22C22
P19F22
P19B32
P20B22
P38C22
P20D22
P39E22
P39A20
P39F22
P39G22
P85A22
P85B22
P85C22
P44B22
P44A22
P82B02
P82A22
P64F22
P64G22
TO 2K1 14
SEE EXTERNAL POWER
SYSTEM WIRING
DIAGRAM
P39G22
P80A22
P80B22
TP 2K1 13
SEE EXTERNAL POWER
SYSTEM WIRING DIAGRAM
P56B22
P6A22
TO 2X2 NEG
SEE BATTERY
SYSTEM
WIRING
DIAGRAM
2K8
BAT CONT RLY
2XK8
2CB7
EXT PWR
P45A22
P81A22
TO 2K1 12
SEE EXTERNAL
POWER SYSTEM
WIRING DIAGRAM
2CB8
ESS BUS
P27A22
P27A22
P22A22
P22B22
2CB9
TRU BUS
P36A20
A122D422
P28A20
P28A20
P39A20
TO 16TB1 C3
SEE F-FE
CONTROL SYSTEM
WIRING DIAGRAM
2CB10
RVS CUR RLY
P27A22
P44A22
TO 2K5 IND
SEE DC GENERATOR
POWER SYSTEM
WIRING DIAGRAM
NOTE
Where Sheet 1 is
referenced see
FO-96

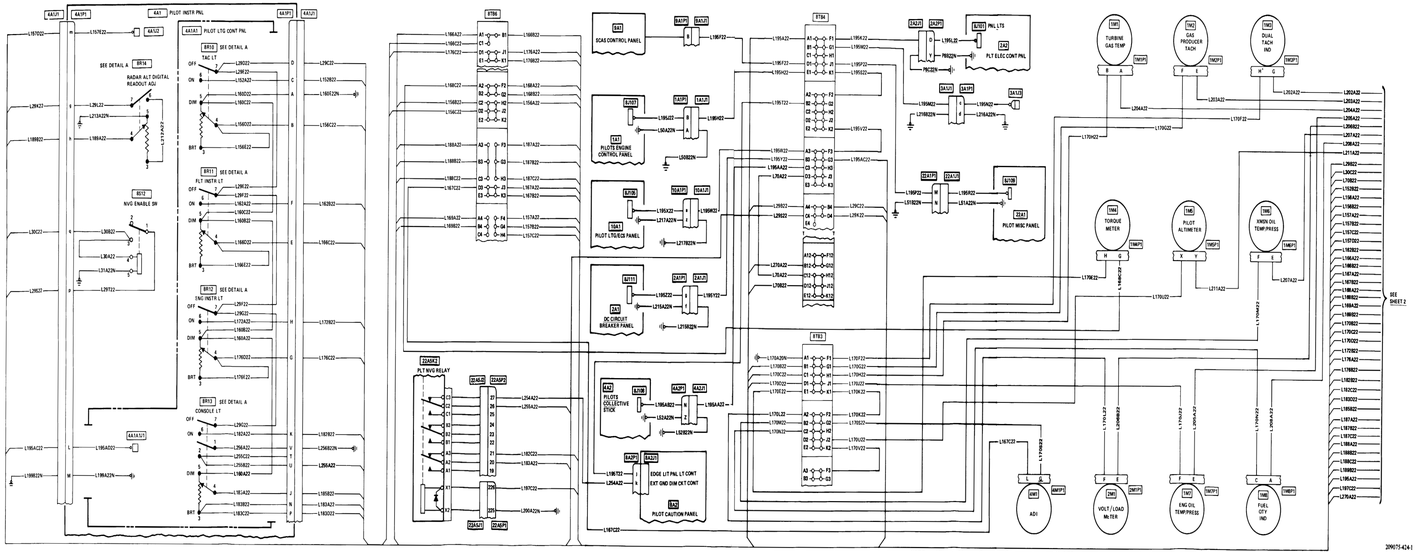
209475 491 2



FO-98 M AC Power system

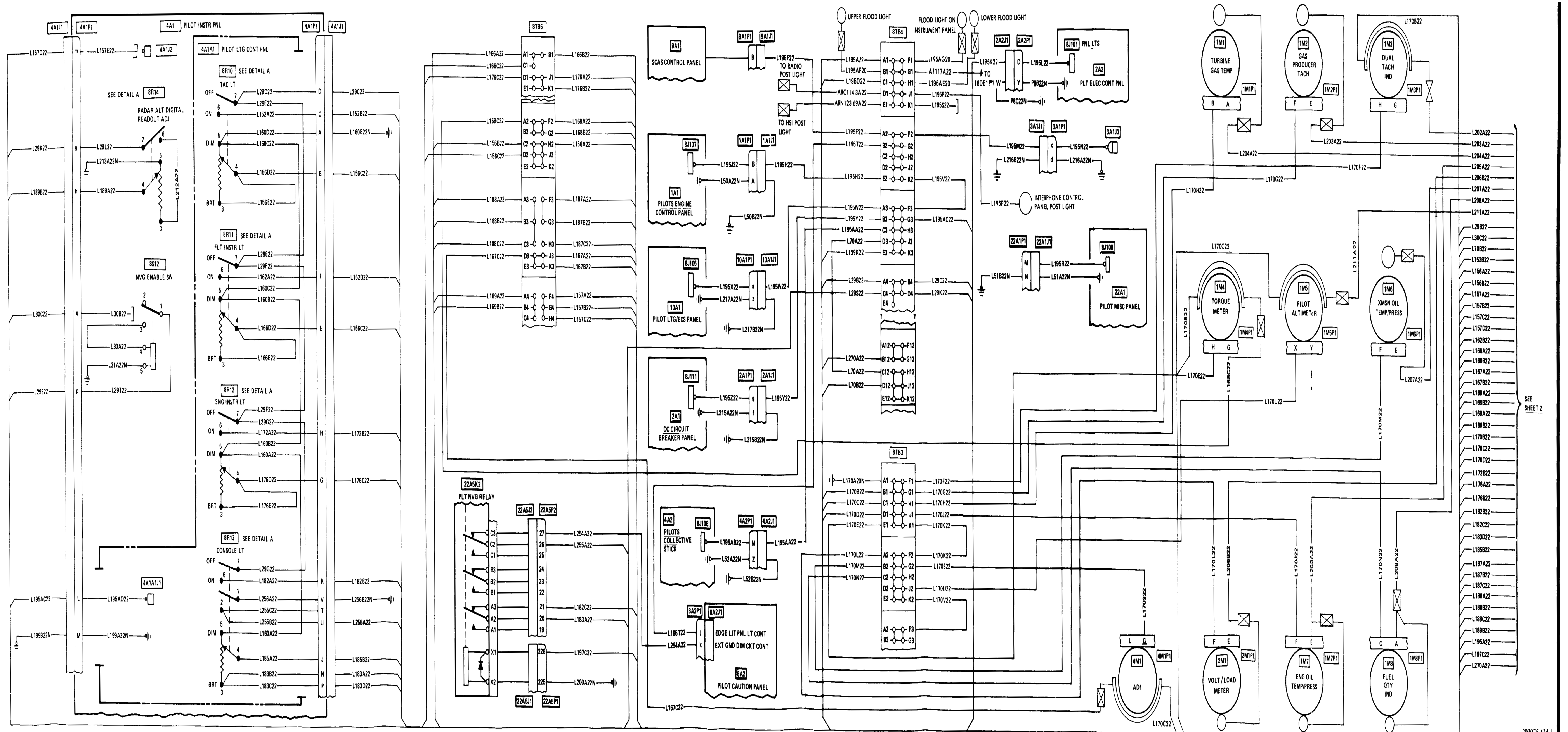

PILOT COLL STICK
4
6
3
1
1S36
STARTER SW
4A2P1
4A2J1
J3A22
K1C22
L
J
J3B22
K1B22
R
J3C18
J3E18
J3D18
A
IGNITER PLUG
2A1
DC CIRCUIT BREAKER PANEL
1C87
STARTER RELAY
2A1P2
2A1J2
K1A22
5A
28 VDC ESS BUS
1C86
IGN SOL
J1A22
5A
K2A22
J4C22
M
K
K2B22
TO STARTER RELAY 1K3 X1 SEE STARTER SYS DIAG
Q27C16N
U
Q27B16N
1T81
Q27A16N
J
K
G
B
A
PRIMER VALVE
1J1
1P1
ENGINE DISC
1P6
1J6
J4B27
4A1P1
4A1J1
J1B27
J2B22
H
S
SEE FUEL VALVE AND ENG OIL BYPASS VALVE SYS DIAG
J1C22
J2A22
Q10B22
Q9B22
Q11B22
Z
M
a
Q10A22
Q9C22
Q11A22
1A1J1
1A1P1
(ON)
(START FUEL)
(FUEL VALVE)
FUEL SW
1S33
J2C22
J4A22
1S39
IGN SW
SEE FUEL BOOST SYS DIAG
1T86 1
2A1J2 AA
1T87 1
2A1J2 DD
Q14B18
Q13B18
Q16B18
Q15B18
Q14A18
Q13C18
Q16A18
Q15C18
1A1J2
1A1P2
(FWD BOOST PUMP)
(AFT BOOST PUMP)
OFF
1A1 PILOT ENGINE CONTROL PANEL

209475-501



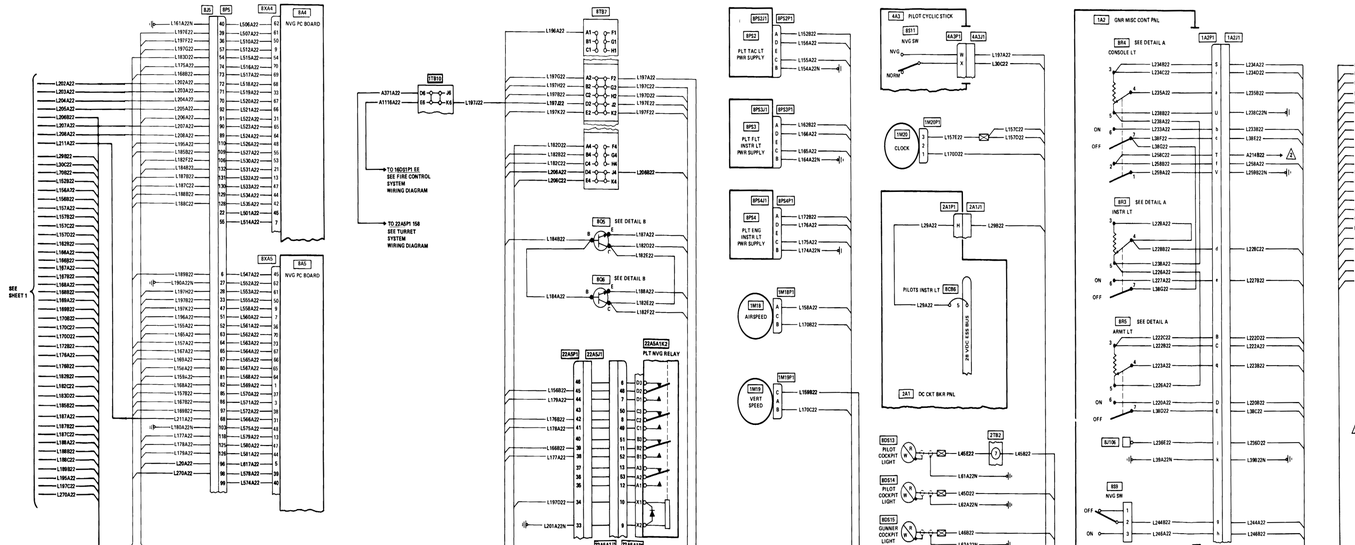
NOTE Where Sheet 2 is referenced see FO-101
Where Sheet 3 is referenced see FO-102
Where Sheet 4 is referenced see FO-103

209175-4241

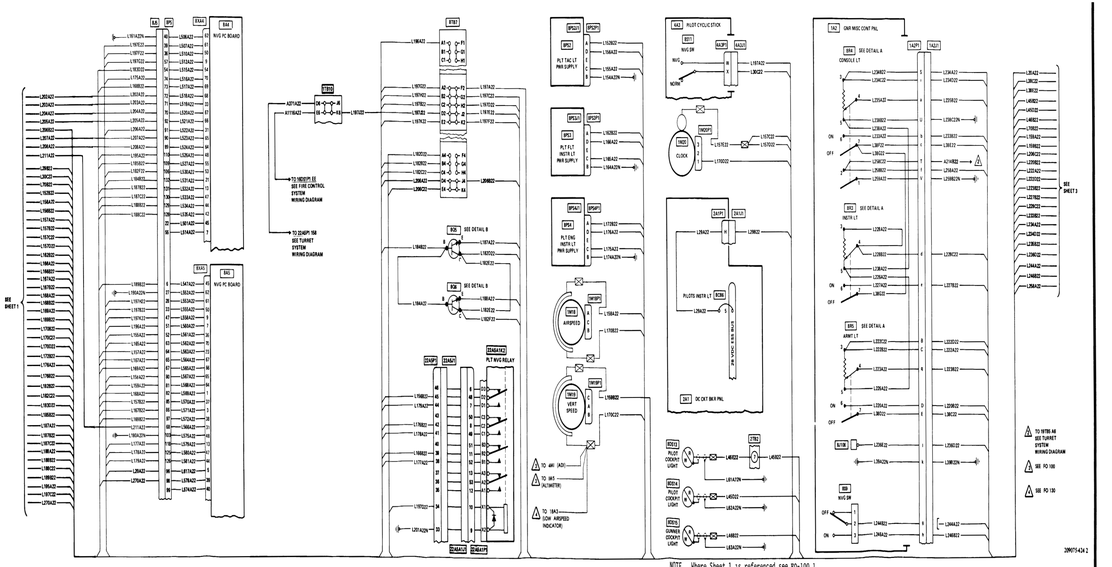


NOTE Where Sheet 2 is referenced see FO-101 1
Where Sheet 3 is referenced see FO-102 1.
Where Sheet 4 is referenced see FO-103

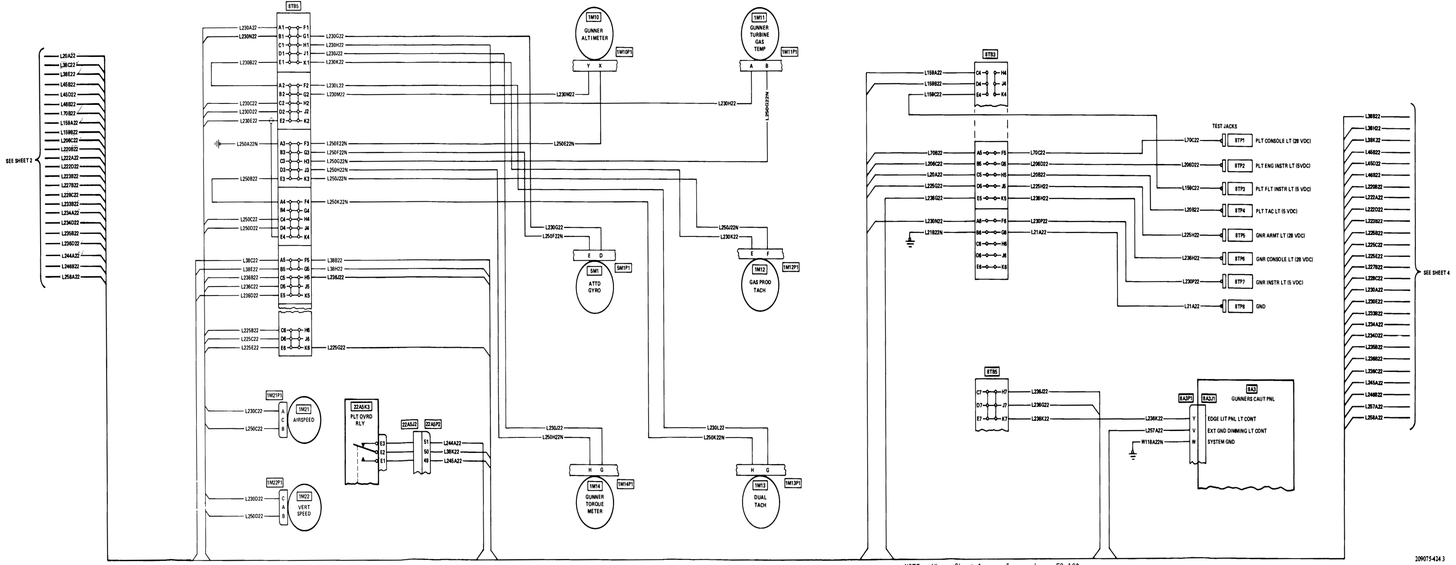
FO-100 1 **M Interior Lights System** (After MWO 55-1520-236-50-4)



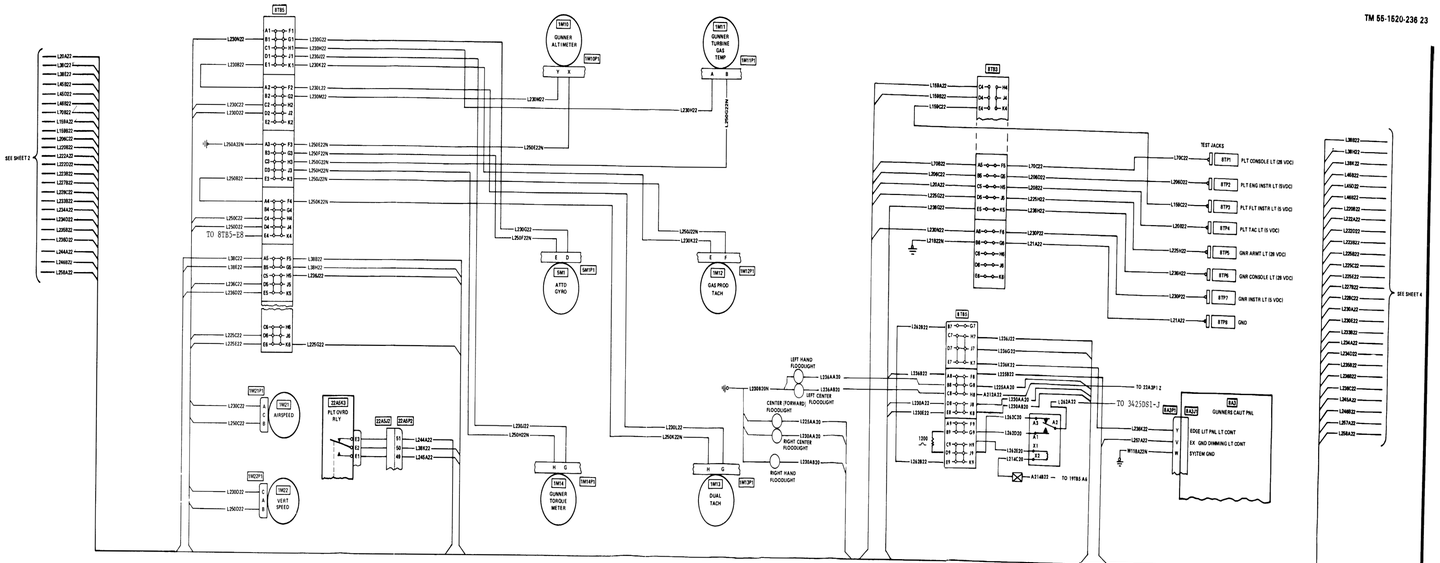
NOTE Where Sheet 1 is referenced see FO-100
Where Sheet 3 is referenced see FO-102
Where Sheet 4 is referenced see FO-103.



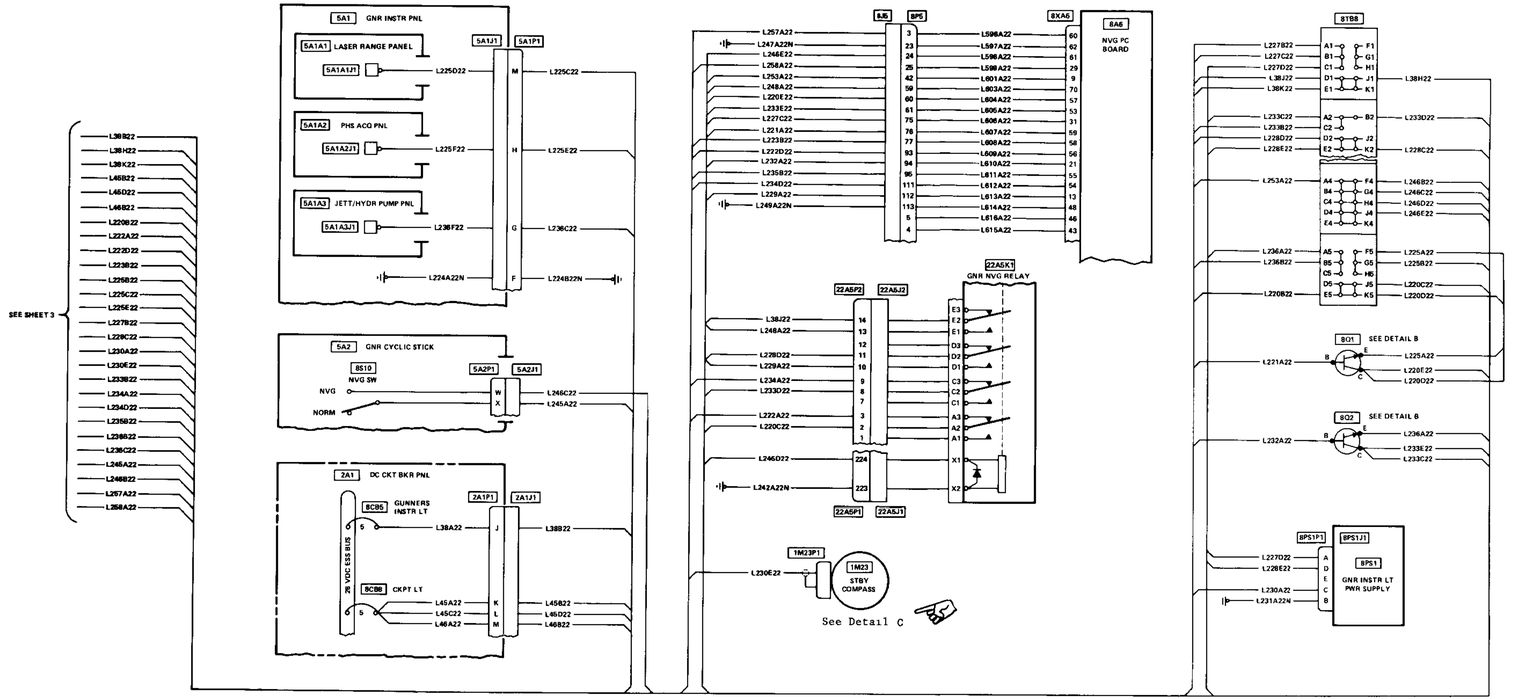
NOTE Where Sheet 1 is referenced see PO-100 1
Where Sheet 3 is referenced see PO-102 1
Where Sheet 4 is referenced see PO-103.



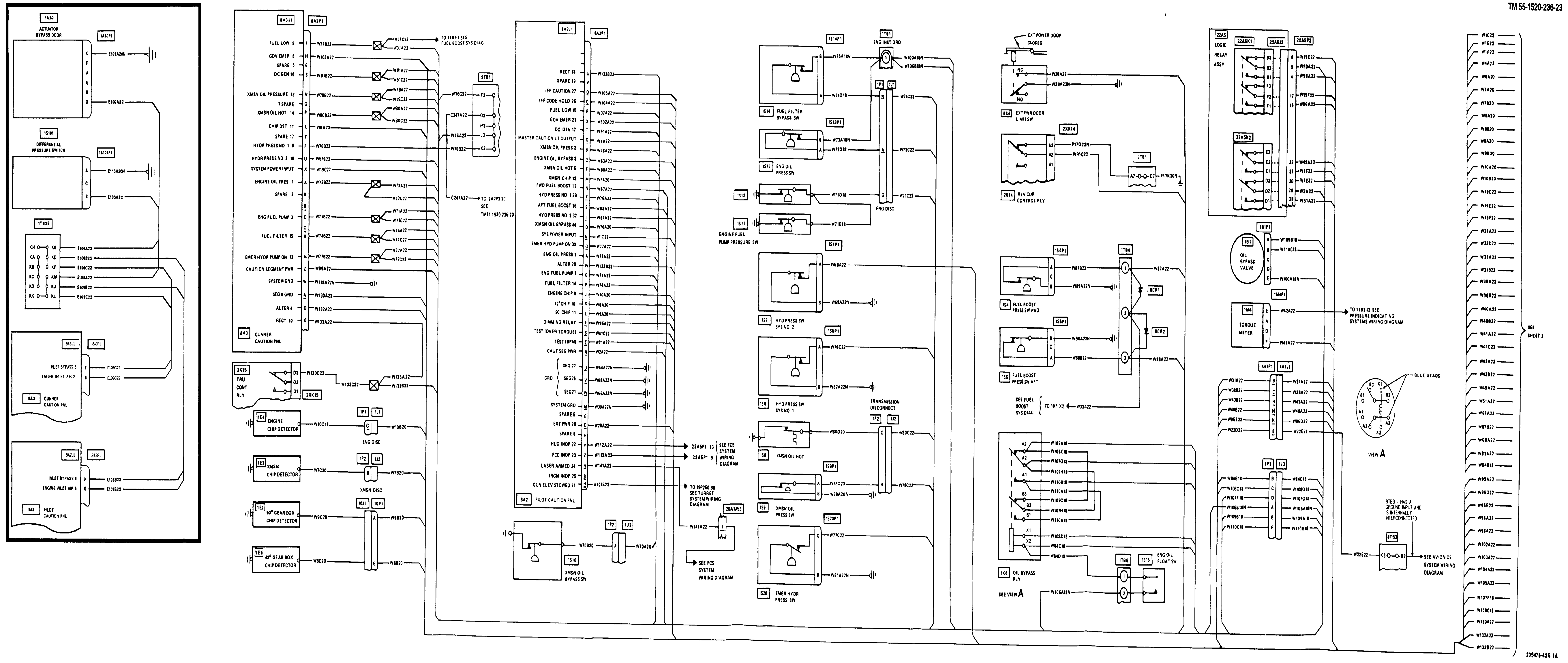
NOTE Where Sheet 1 is referenced see FO-100.
Where Sheet 2 is referenced see FO-101
Where Sheet 4 is referenced see FO-103



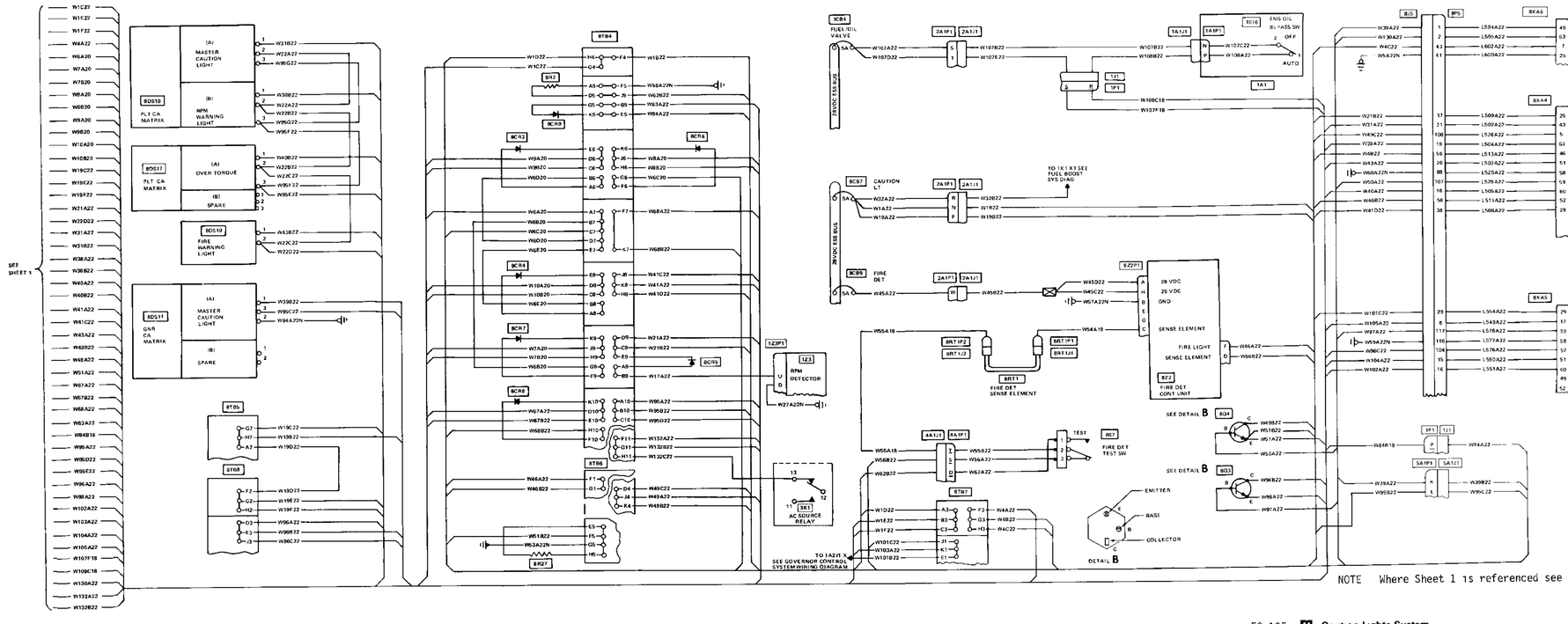
NOTE Where Sheet 1 is referenced see FO-100 1
Where Sheet 2 is referenced see FO-101 1
Where Sheet 4 is referenced see FO-103

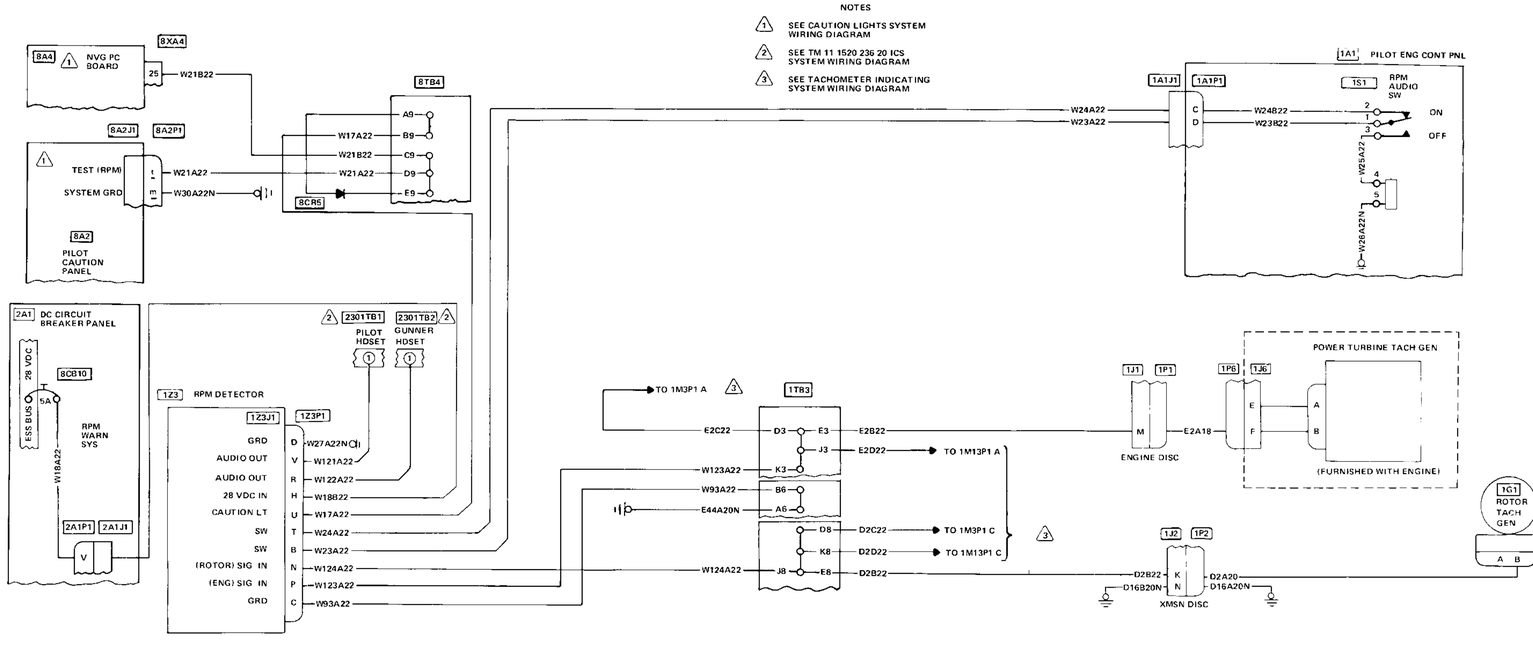


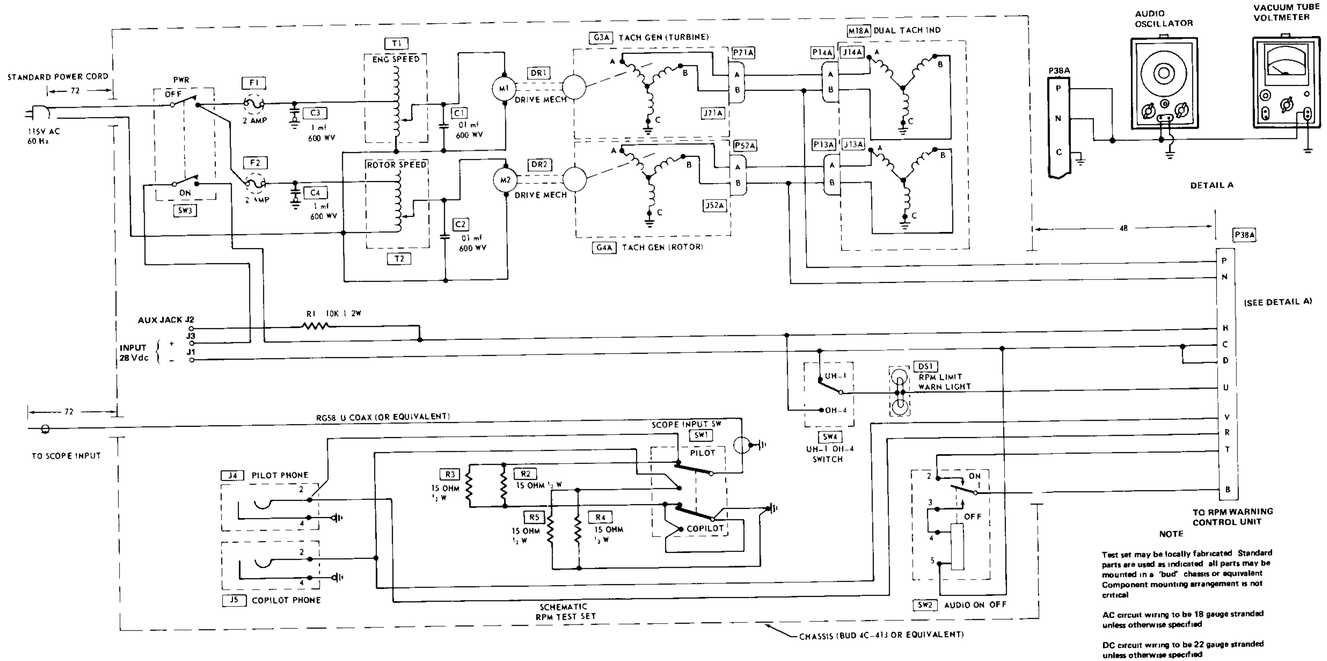
NOTE Where Sheet 1 is referenced see FO-100
Where Sheet 2 is referenced see FO-101
Where Sheet 3 is referenced see FO-102



FO 104 **M** Caution Lights System


SEE SHEET 1
BDS18
PLT CA MATRIX
(A) MASTER CAUTION LIGHT
(B) RPM WARNING LIGHT
BDS17
PLT CA MATRIX
(A) OVER TORQUE
(B) SPARE
BDS10
FIRE WARNING LIGHT
BDS11
GNR CA MATRIX
(A) MASTER CAUTION LIGHT
(B) SPARE
BT84
BR12
BR9
BR27
BCR2
BCR16
BCR4
BCR7
BCR8
BCR15
BT85
BT88
BT86
BT87
1Z3P1
1Z3
RPM DETECTOR
3K1
AC SOURCE RELAY
TO 1A2J1 X SEE GOVERNOR CONTROL SYSTEM WIRING DIAGRAM
VCB4
FUEL/OIL VALVE
5A
28VDC ESS BUS
2A1P1
2A1J1
1A1J1
1A1P1
1A1
S116
ENG OIL BY PASS SW
OFF
AUTO
TO 1X1 X1 SEE FUEL BOOST SYS DIAG
BCB7
CAUTION LT
BCB9
FIRE DET
BRT1P2
BRT1J2
BRT1P1
BRT1J1
BRT1
FIRE DET SENSE ELEMENT
1Z2P1
28 VDC
28 VDC
GND
SENSE ELEMENT
FIRE LIGHT
SENSE ELEMENT
BZ2
FIRE DET CONT UNIT
SEE DETAIL B
BQ4
BQ3
BR7
FIRE DET TEST SW
TEST
4A1J1
4A1P1
BT87
EMITTER
BASE
COLLECTOR
DETAIL B
BJ5
BP5
BXA6
BXA4
BXA5
1P1
1J1
5A1P1
5A1J1
NOTE Where Sheet 1 is referenced see


NOTES
1 SEE CAUTION LIGHTS SYSTEM WIRING DIAGRAM
2 SEE TM 11 1520 236 20 ICS SYSTEM WIRING DIAGRAM
3 SEE TACHOMETER INDICATING SYSTEM WIRING DIAGRAM
8A4 NVG PC BOARD
8XA4
25
W21B22
8TB4
A9
B9
C9
D9
E9
W17A22
W21B22
W21A22
8CR5
8A2J1
8A2P1
TEST (RPM)
SYSTEM GRD
W21A22
W30A22N
8A2
PILOT CAUTION PANEL
2A1 DC CIRCUIT BREAKER PANEL
28 VDC
8CB10
5A
ESS BUS
W18A22
RPM WARN SYS
2A1P1
2A1J1
V
2301TB1 PILOT HDSET
2301TB2 GUNNER HDSET
1Z3 RPM DETECTOR
1Z3J1
1Z3P1
GRD
AUDIO OUT
AUDIO OUT
28 VDC IN
CAUTION LT
SW
SW
(ROTOR) SIG IN
(ENG) SIG IN
GRD
D
V
R
H
U
T
B
N
P
C
W27A22N
W121A22
W122A22
W18B22
W17A22
W24A22
W23A22
W124A22
W123A22
W93A22
TO 1M3P1 A
1TB3
E2C22
D3
E3
E2B22
J3
E2D22
TO 1M13P1 A
W123A22
K3
W93A22
B6
E44A20N
A6
D8
D2C22
TO 1M3P1 C
K8
D2D22
TO 1M13P1 C
W124A22
J8
E8
D2B22
1A1 PILOT ENG CONT PNL
1A1J1
1A1P1
1S1 RPM AUDIO SW
W24A22
W23A22
C
D
W24B22
W23B22
ON
OFF
W25A22
W28A22N
1J1
1P1
M
E2A18
ENGINE DISC
1P6
1J6
E
F
A
B
POWER TURBINE TACH GEN
(FURNISHED WITH ENGINE)
1G1 ROTOR TACH GEN
A
B
1J2
1P2
K
N
D2A20
D16A20N
D2B22
D16B20N
XMSN DISC



NOTE

Test set may be locally fabricated Standard parts are used as indicated all parts may be mounted in a "bud" chassis or equivalent Component mounting arrangement is not critical

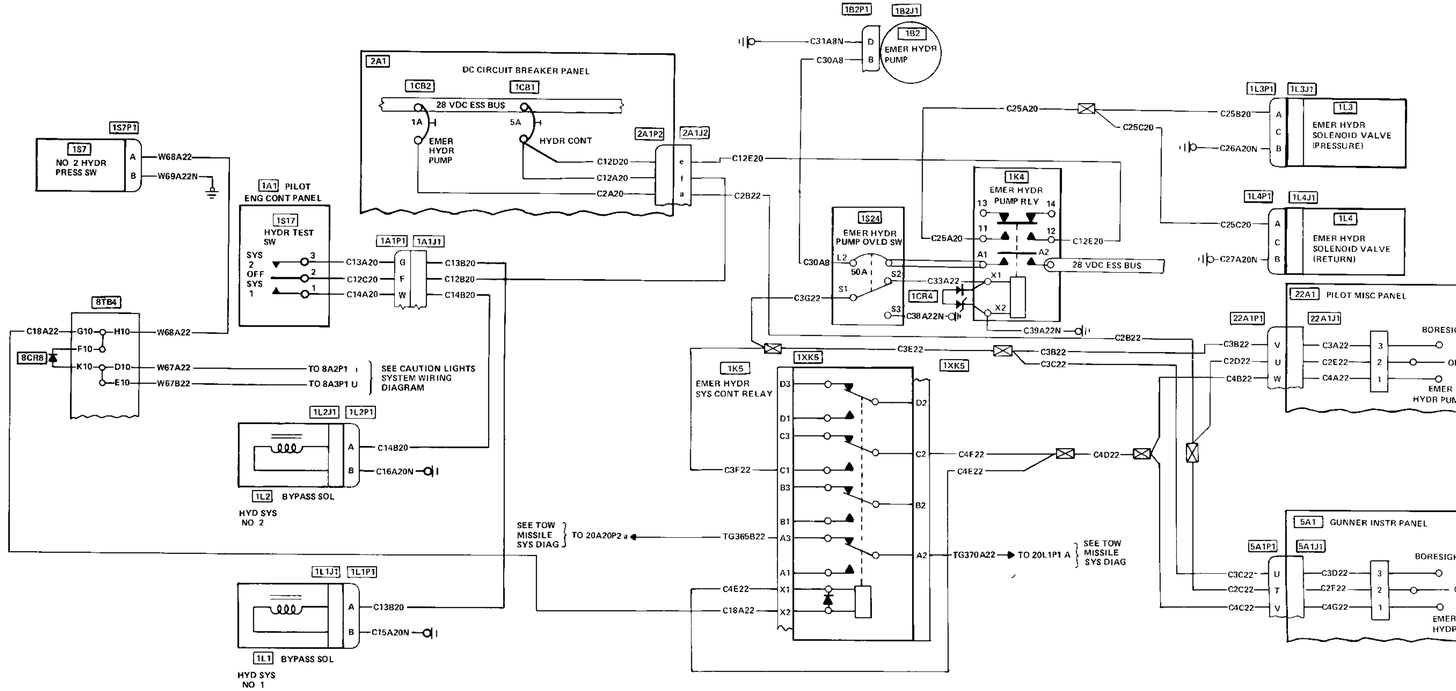
AC circuit wiring to be 18 gauge stranded unless otherwise specified

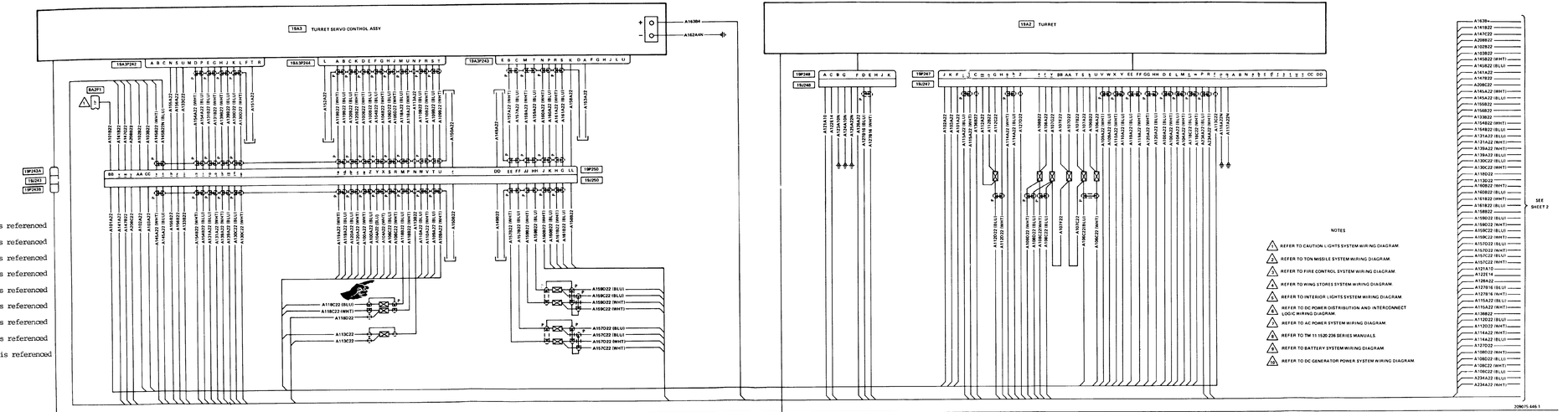
DC circuit wiring to be 22 gauge stranded unless otherwise specified

FREQ HZ	VRMS	ENG RPM	RO
66 5	19 5	6200	
69 0	20 0	6400	
73 5	22 0	6800	
76 0	22 5	7000	

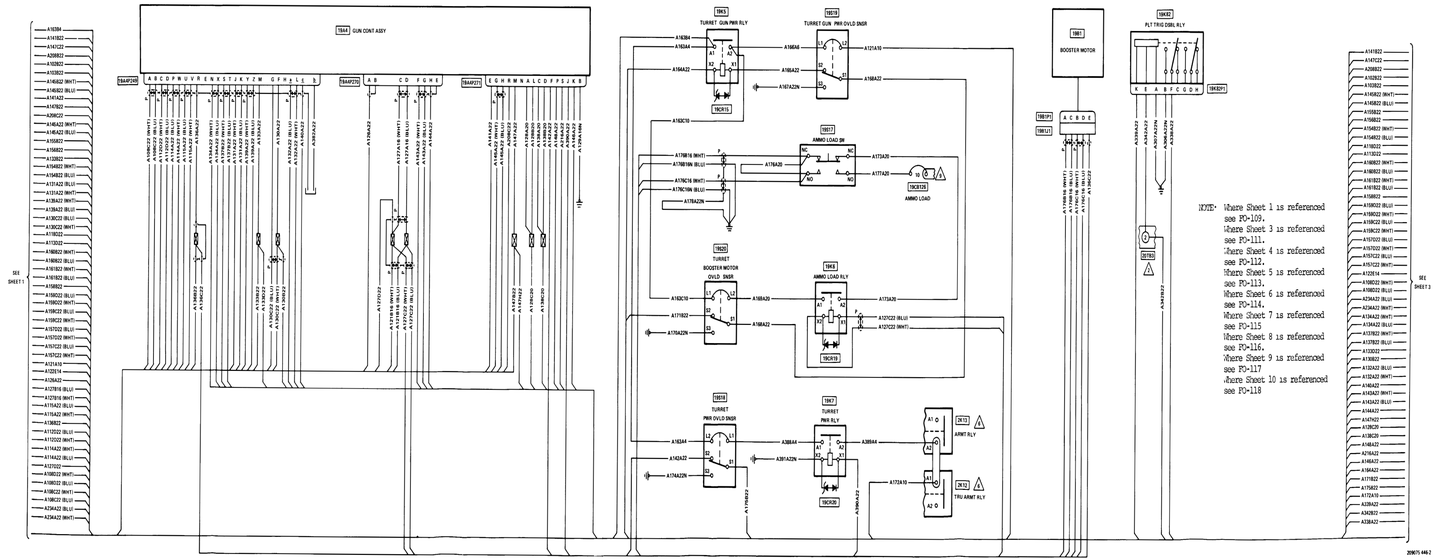
ID CODE	NOMENCLATURE
C1 C2	Line Filter 01 mf 600 WV
C3 C4	Line Filter 1 mf 600 WV
DR1 DR2	Rubber Flex Tube
DS1	Korry Light (033 0861 001)
F1 F2	Fuse Holder
G3A	Tach Generator (MIL G26611)
G4A	Tach Generator (MIL G26611)
J1 J2 J3	Banana Jack
J4 J5	Phone Jack
M1 M2	Tach Gen Drive Motor - Dayton Mod 2M037 - Ball Bearing 1/4 Shaft 1/10 HP 8000 RPM 115Vac 60 Hz
M18A	Dual Tach Indicator - GE 8DJ67HBC Sub 1
P13A	Plug Dual Tach Indicator
P14A	Plug Dual Tach Indicator
P38A	Plug Eng RPM Warning Control
P52A	Plug Tach Generator
P71A	Plug Tach Generator
R1	Resistor 10K OHM 1/2W Carbon
R2 R3	
R4 R5	Resistor 15 OHM 1/2W Carbon
SW1	Switch Scope Input
SW2	Switch Audio On/Off (Micro)
SW3	Switch Power On6Off
T1 T2	Speed Control - Power Stat Superior Electric Co (0 140Vac 60 Hz)

FO-107 **M** RPM Limit Warning Test Set Schematic

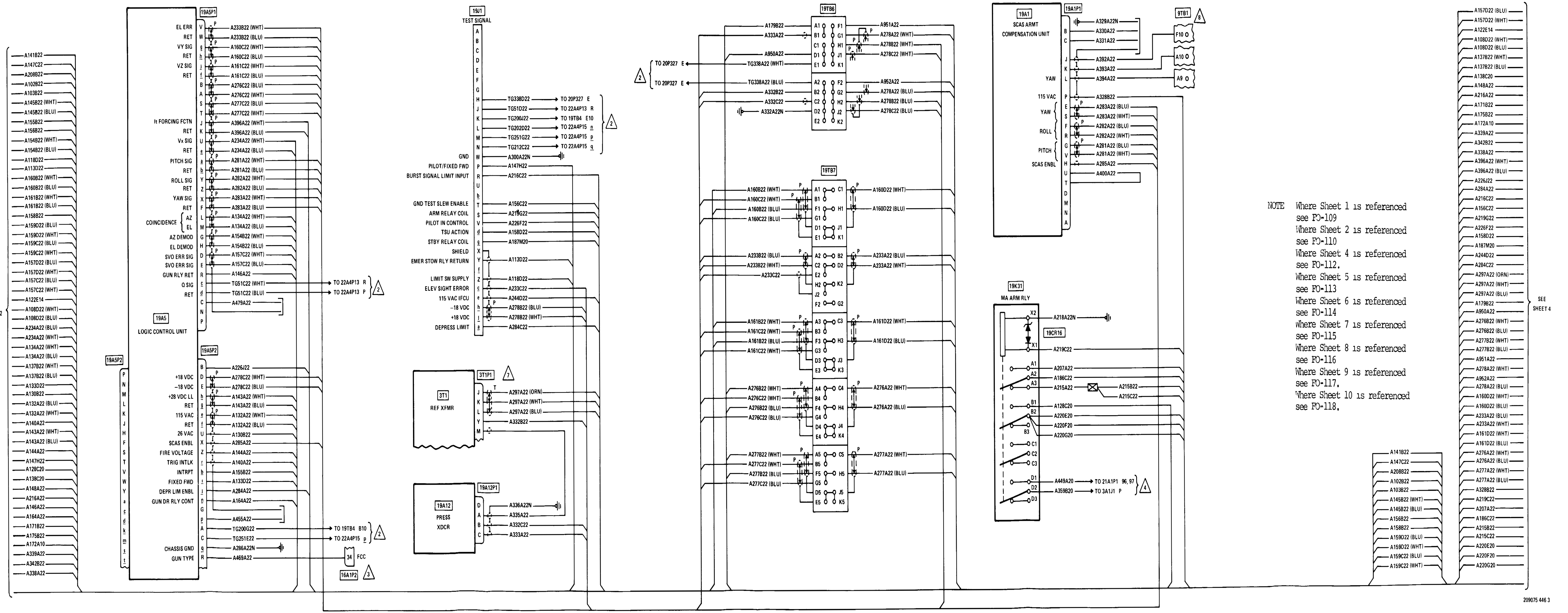

1B2P1
1B2J1
1B2
EMER HYDR PUMP
C31A8N
C30A8
2A1
DC CIRCUIT BREAKER PANEL
1CB2
1CB1
28 VDC ESS BUS
1A
5A
EMER HYDR PUMP
HYDR CONT
2A1P2
2A1J2
C12D20
C12A20
C2A20
C12E20
C2B22
1S7P1
1S7
NO 2 HYDR PRESS SW
W68A22
W69A22N
1A1 PILOT ENG CONT PANEL
1S17
HYDR TEST SW
SYS 2 OFF SYS 1
C13A20
C12C20
C14A20
1A1P1
1A1J1
C13B20
C12B20
C14B20
8TB4
C18A22
G10
H10
W68A22
8CR8
F10
K10
D10
E10
W67A22
W67B22
TO 8A2P1
TO 8A3P1 U
SEE CAUTION LIGHTS SYSTEM WIRING DIAGRAM
1L2J1
1L2P1
C14B20
C16A20N
1L2 BYPASS SOL
HYD SYS NO 2
1L1J1
1L1P1
C13B20
C15A20N
1L1 BYPASS SOL
HYD SYS NO 1
1K4
EMER HYDR PUMP RLY
13
14
11
12
A1
A2
1S24
EMER HYDR PUMP OVLD SW
L2
50A
S2
S1
S3
1CR4
X1
X2
C30A8
C3G22
C33A22
C38A22N
C39A22N
C25A20
C25C20
C12E20
28 VDC ESS BUS
1L3P1
1L3J1
1L3
EMER HYDR SOLENOID VALVE (PRESSURE)
C25B20
C26A20N
1L4P1
1L4J1
1L4
EMER HYDR SOLENOID VALVE (RETURN)
C25C20
C27A20N
22A1 PILOT MISC PANEL
22A1P1
22A1J1
C3B22
C2D22
C4B22
C3A22
C2E22
C4A22
BORESIG
EMER HYDR PUM
1K5
EMER HYDR SYS CONT RELAY
1XK5
D3
D1
C3
C1
B3
B1
A3
A1
X1
X2
D2
C2
B2
A2
C3E22
C3B22
C3C22
C3F22
C4E22
C18A22
C4F22
C4D22
C4E22
SEE TOW MISSILE SYS DIAG
TO 20A20P2 a
TG365B22
TG370A22
TO 20L1P1 A
SEE TOW MISSILE SYS DIAG
5A1 GUNNER INSTR PANEL
5A1P1
5A1J1
C3C22
C2C22
C4C22
C3D22
C2F22
C4G22
BORESIGH
EMER HYDR



NOTE: Where Sheet 2 is referenced see FO-110.
Where Sheet 3 is referenced see FO-111.
Where Sheet 4 is referenced see FO-112.
Where Sheet 5 is referenced see FO-113.
Where Sheet 6 is referenced see FO-114.
Where Sheet 7 is referenced see FO-115.
Where Sheet 8 is referenced see FO-116.
Where Sheet 9 is referenced see FO-117.
Where Sheet 10 is referenced see FO-118.



FO-110 M Unversal Turret Subsystem



NOTE Where Sheet 1 is referenced see FO-109
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Where Sheet 4 is referenced see FO-112.
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Where Sheet 6 is referenced see FO-114
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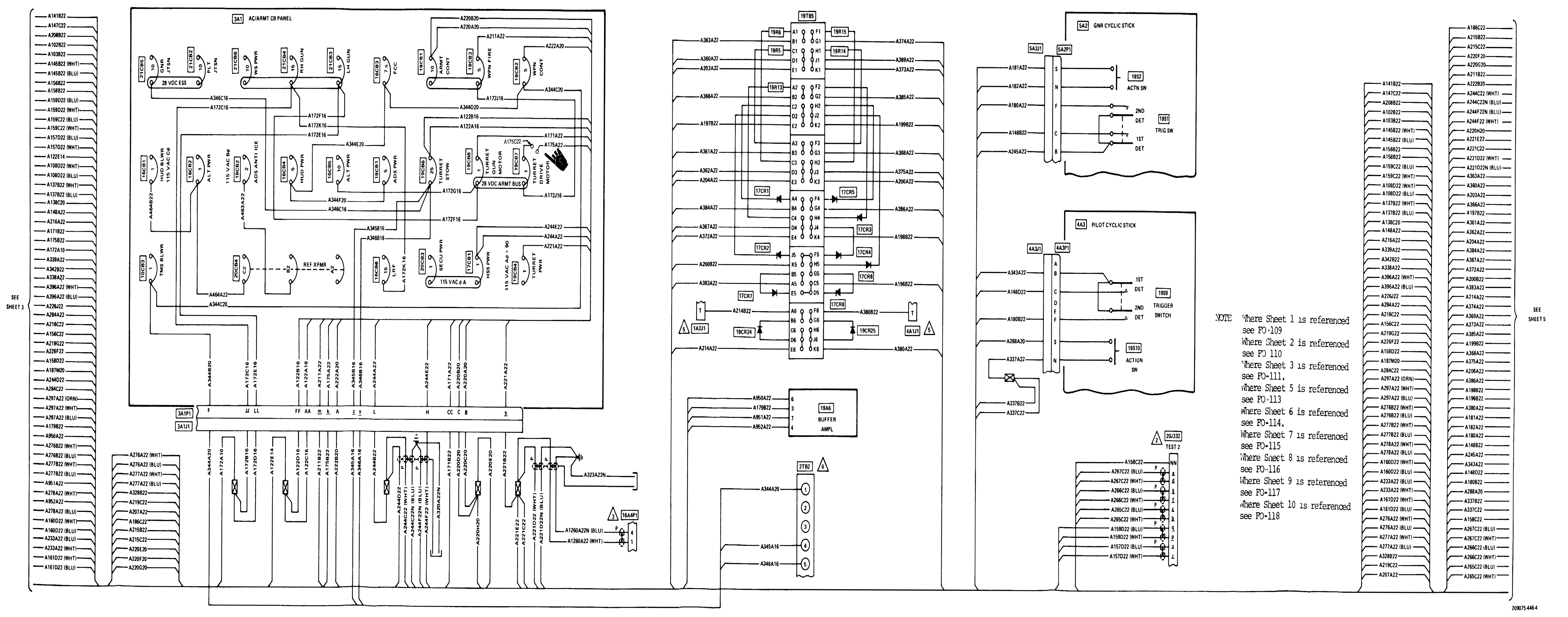
Where Sheet 9 is referenced see FO-117.
Where Sheet 10 is referenced see FO-118.

FO-111 **M** Universal Turret Subsystem



NOTE Where Sheet 1 is referenced see FO-109
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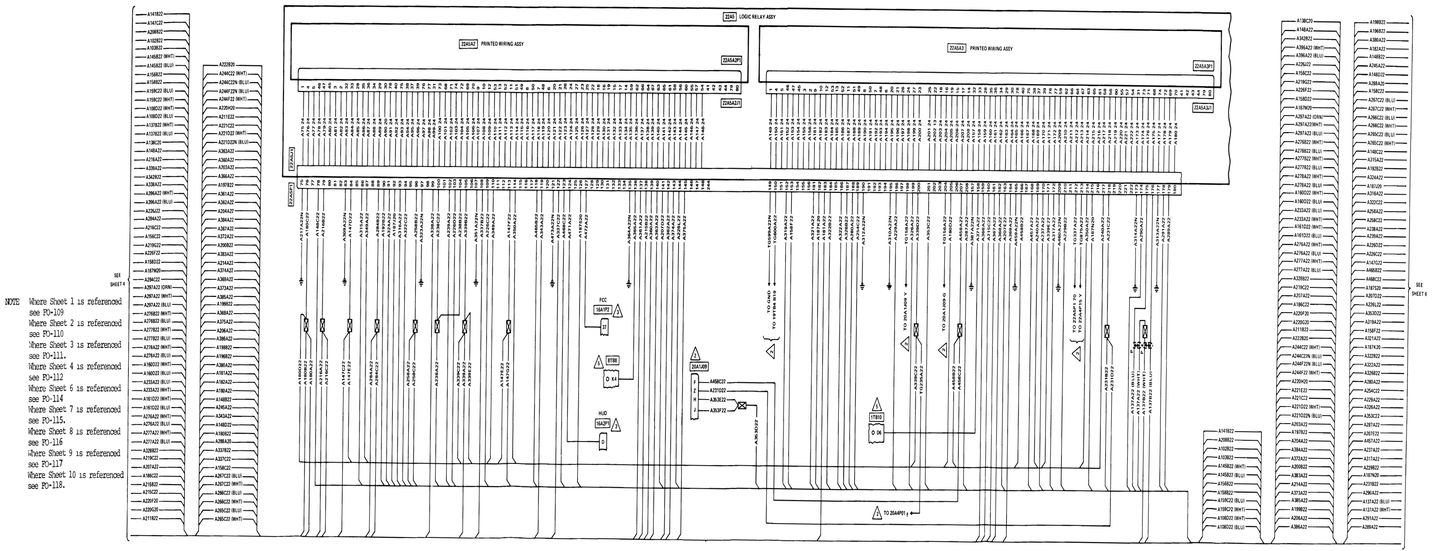
Where Sheet 6 is referenced see FO-114.
Where Sheet 7 is referenced see FO-115
Where Sheet 8 is referenced see FO-116
Where Sheet 9 is referenced see FO-117
Where Sheet 10 is referenced see FO-118

FO-112 **M** Universal Turret Subsystem



NOTE Where Sheet 1 is referenced see FO-109
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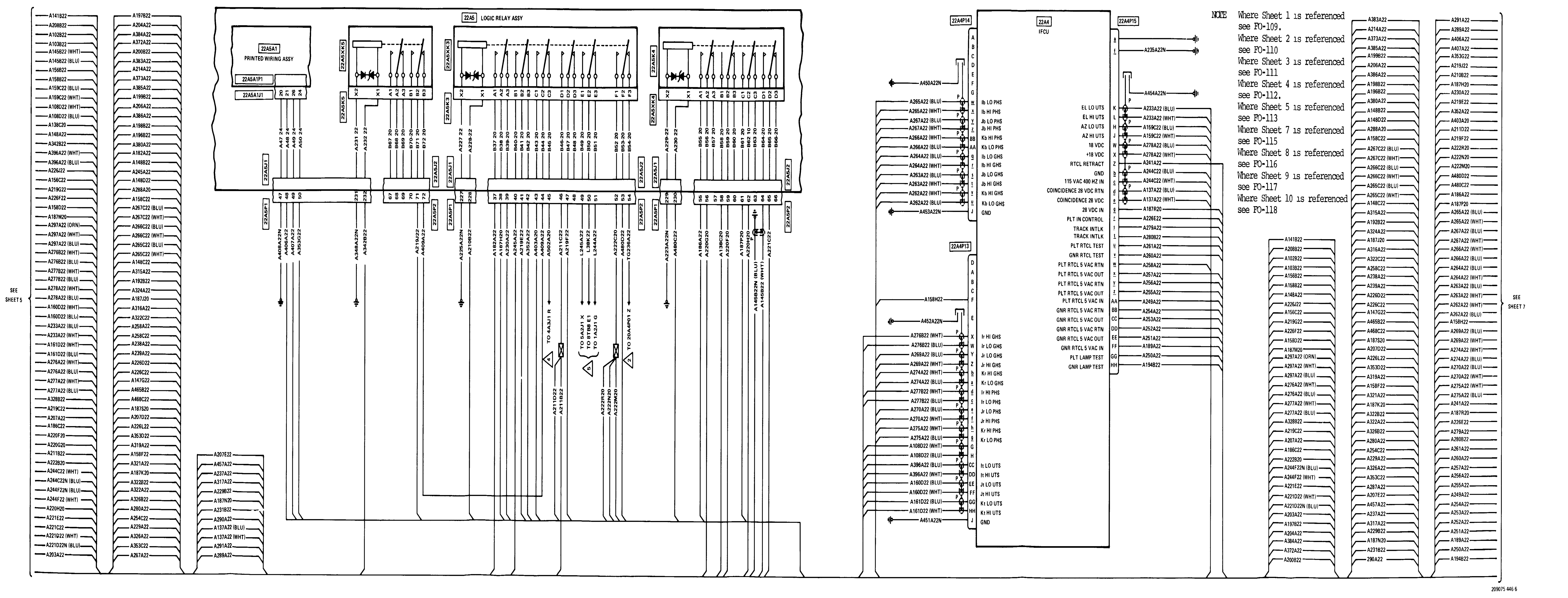
Where Sheet 10 is referenced see FO-118.



NOTE: Where Sheet 1 is referenced see FO-109.
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Where Sheet 5 is referenced see FO-113
Where Sheet 7 is referenced see FO-115
Where Sheet 8 is referenced see FO-116
Where Sheet 9 is referenced see FO-117
Where Sheet 10 is referenced see FO-118

FO-114 M Universal Turret Subsystem

NOTE Where Sheet 1 is referenced see FO-109.
Where Sheet 2 is referenced see FO-110
Where Sheet 3 is referenced see FO-111
Where Sheet 4 is referenced see FO-112
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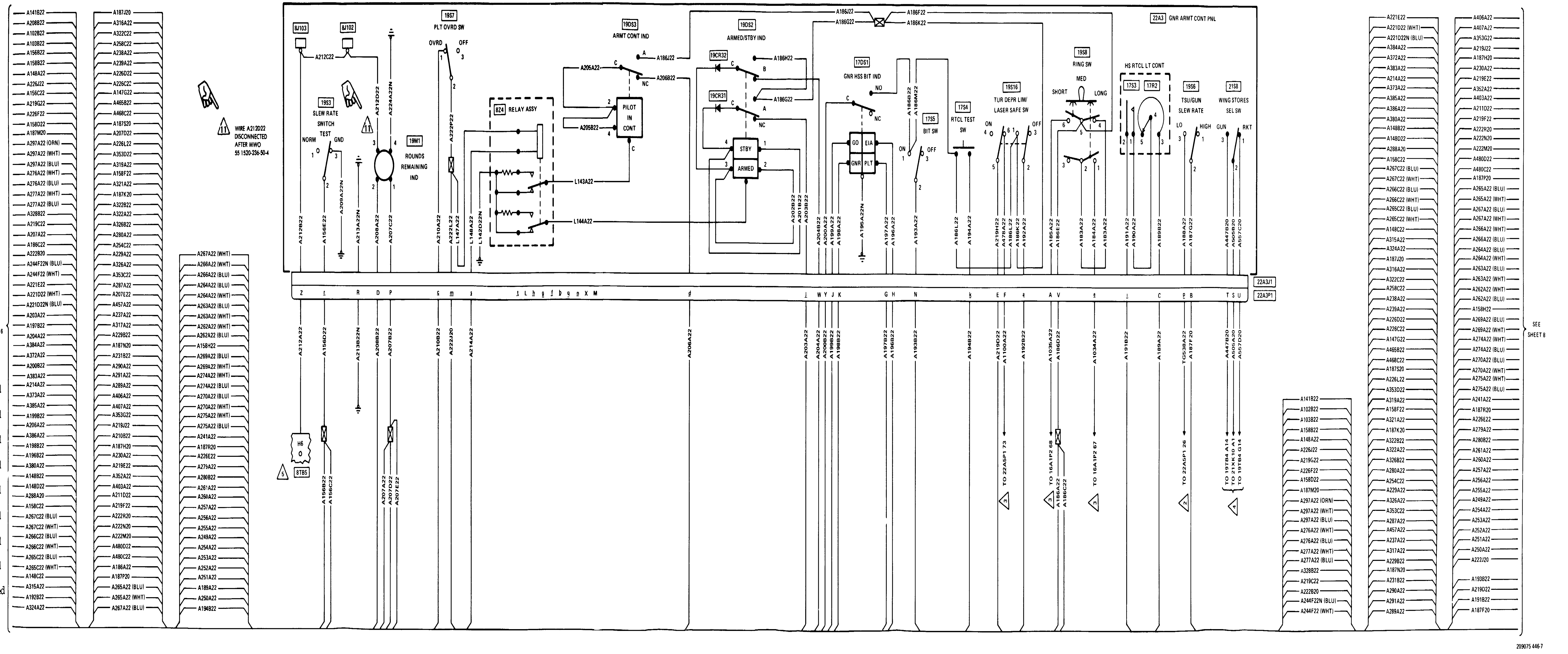
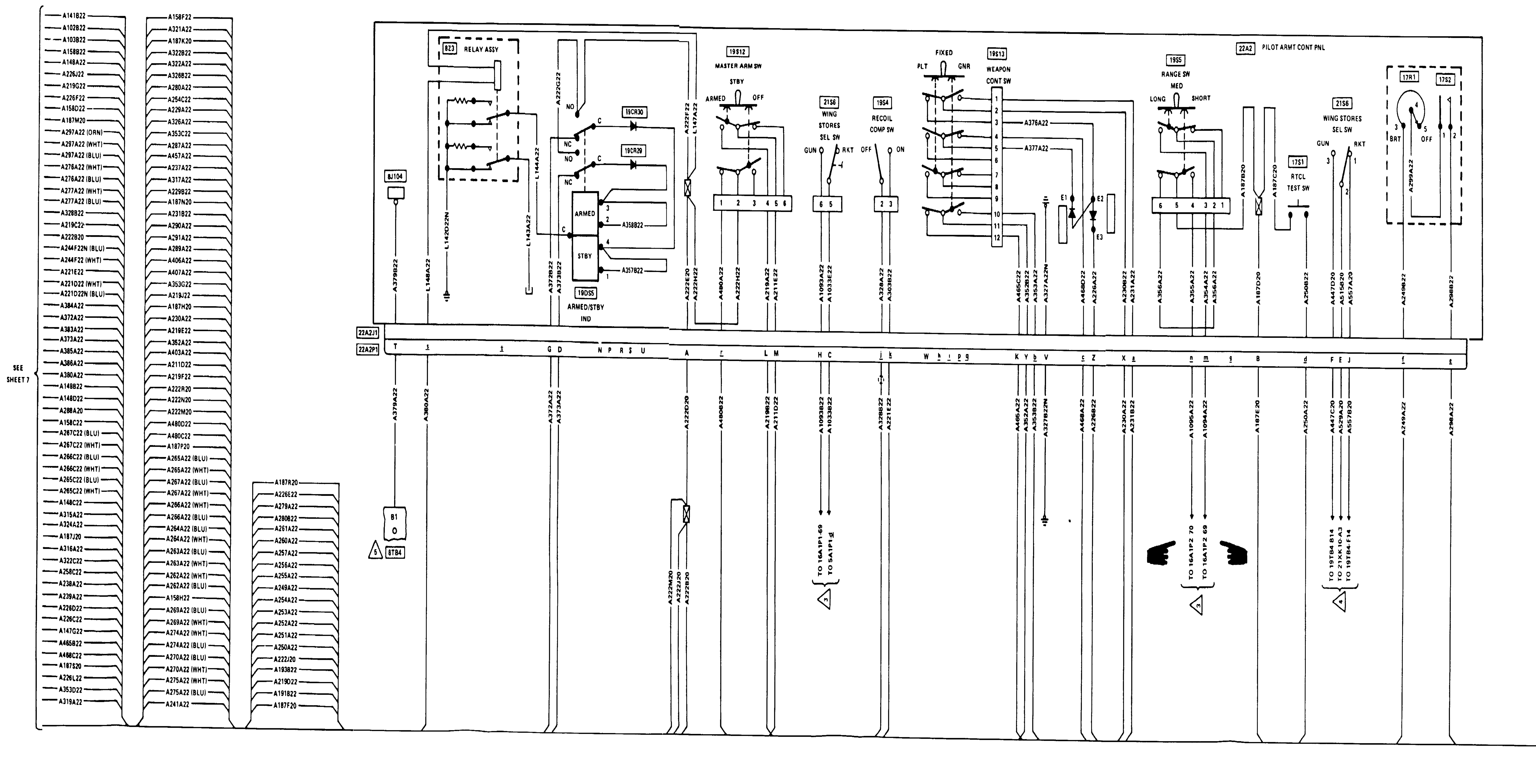
Where Sheet 9 is referenced see FO-117
Where Sheet 10 is referenced see FO-118.





NOTE Where Sheet 1 is referenced see FO 109
Where Sheet 2 is referenced see FO 110
Where Sheet 3 is referenced see FO 111
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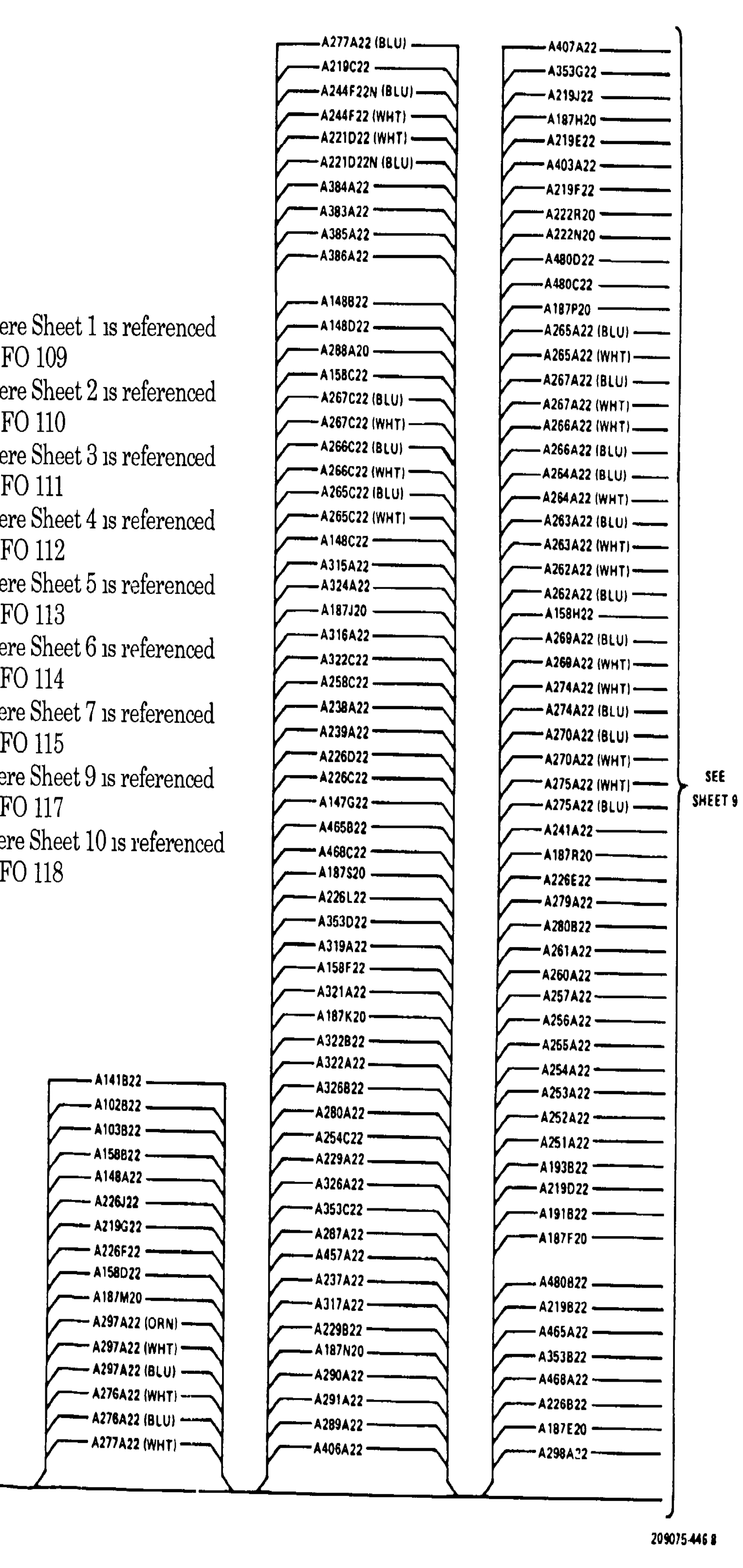
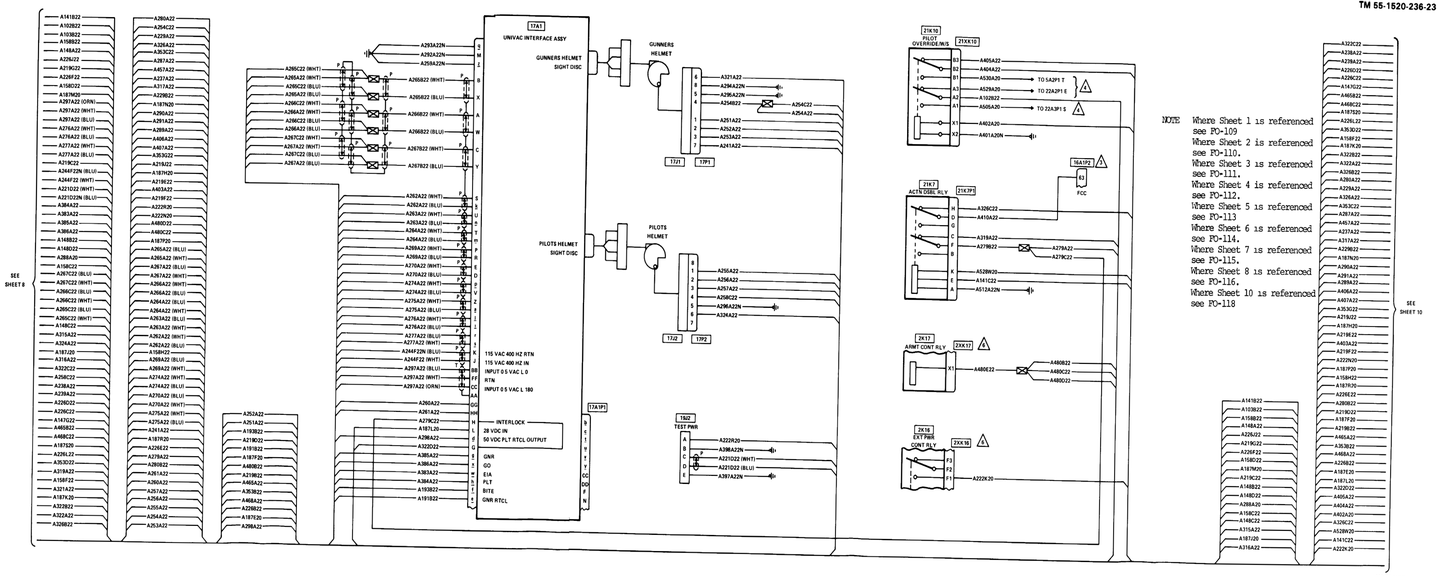
Where Sheet 7 is referenced see FO 115
Where Sheet 9 is referenced see FO 117
Where Sheet 10 is referenced see FO 118



FO-116 M Universal Turret Subsystem


17A1
UNIVAC INTERFACE ASSY
GUNNERS HELMET SIGHT DISC
PILOTS HELMET SIGHT DISC
115 VAC 400 HZ RTN
115 VAC 400 HZ IN
INPUT 0.5 VAC L 0
RTN
INPUT 0.5 VAC L 180
INTERLOCK
28 VDC IN
50 VDC PLT RTCL OUTPUT
GNR
GO
EIA
FLT
BITE
GNR RTCL
GUNNERS HELMET
PILOTS HELMET
17J1
17P1
17J2
17P2
17A1P1
18J2
TEST PWR
21K10
PILOT OVERRIDE RLY
21KX10
21K7
ACFT CONT RLY
21KX7
21K3P3
2K12
A/RMT CONT RLY
2KX17
2K10
EXT PWR CONT RLY
2KX10
16A1P2
FCC
SEE SHEET 8
SEE SHEET 10
TO 5A29P1 T
TO 22A3P1 E
TO 22A3P1 S
NOTE
Where Sheet 1 is referenced see FO-109
Where Sheet 2 is referenced see FO-110.
Where Sheet 3 is referenced see FO-111.
Where Sheet 4 is referenced see FO-112.
Where Sheet 5 is referenced see FO-113
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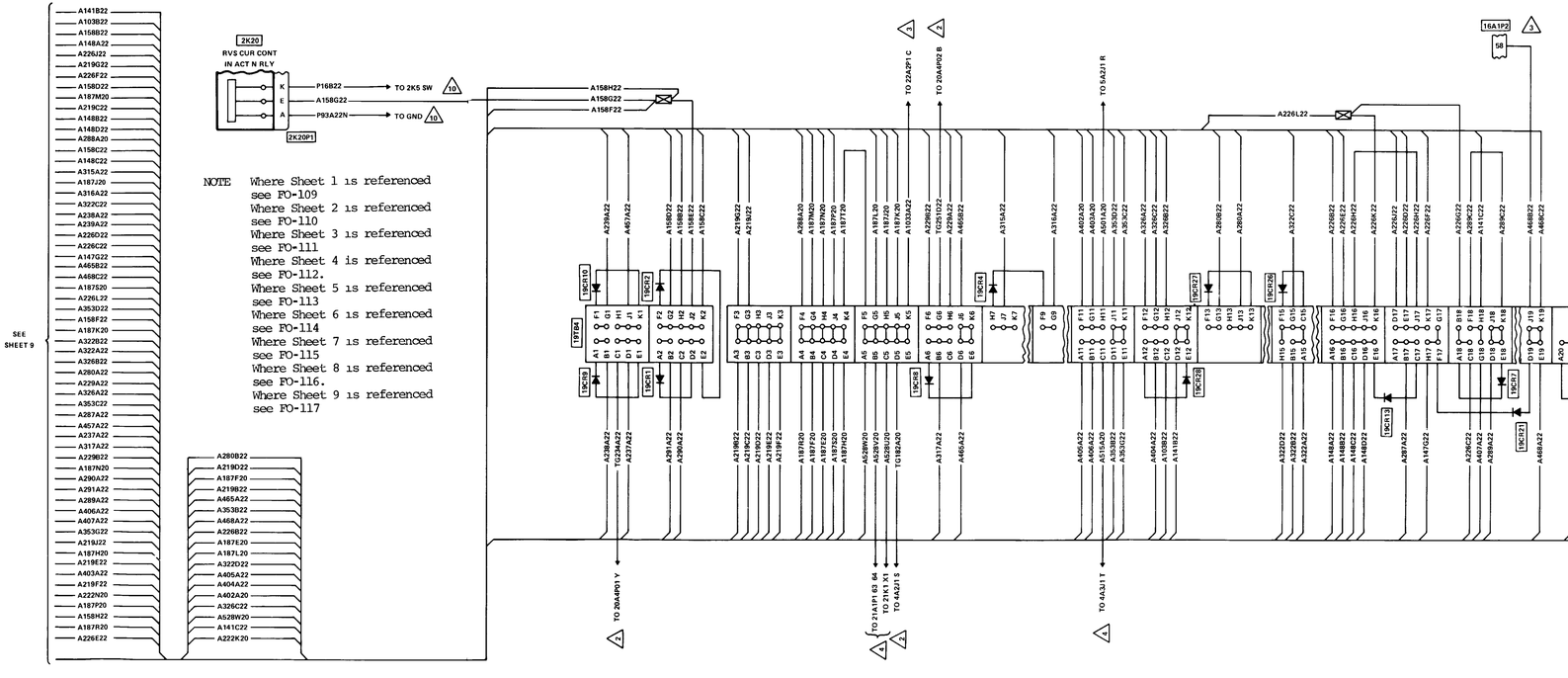
Where Sheet 10 is referenced see FO-118
209675 466 9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A103B22
A158B22
A148A22
A226J21
A219G22
A226F22
A158D22
A187M20
A219C22
A148B22
A148D22
A288A20
A158C22
A148C22
A315A22
A187J20
A316A22
A238A22
A239A22
A322C22
A226D22
A226C22
A147G22
A465B22
A468C22
A187S20
A226L22
A353D22
A158F22
A187K20
A322B22
A322A22
A326B22
A280A22
A229A22
A326A22
A353C22
A287A22
A467A22
A237A22
A317A22
A229B22
A187N20
A290A22
A291A22
A289A22
A406A22
A407A22
A353G22
A219J22
A187H20
A219E22
A403A22
A219F22
A222N20
A187P20
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A187R20
A226E22
A280B22
A219D22
A187F20
A219B22
A465A22
A353B22
A468A22
A226B22
A187E20
A187L20
A322D22
A405A22
A404A22
A402A20
A326C22
A528W20
A141C22
A222K20
2K20
RVS CUR CONT IN ACT N RLY
K
E
A
2K20P1
P16B22
P93A22N
TO 2K5 SW
TO GND
10
NOTE
Where Sheet 1 is referenced see FO-109
Where Sheet 2 is referenced see FO-110
Where Sheet 3 is referenced see FO-111
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Where Sheet 5 is referenced see FO-113
Where Sheet 6 is referenced see FO-114
Where Sheet 7 is referenced see FO-115
Where Sheet 8 is referenced see FO-116.
Where Sheet 9 is referenced see FO-117
A158H22
A158G22
A158F22
TO 22A2P1 C
TO 20A4P02 B
TO 5A2J1 R
16A1P2
5B
A226L22
19TB4
1SCR10
1SCR2
1SCR9
1SCR11
1SCR4
1SCR26
1SCR27
1SCR8
1SCR28
1SCR12
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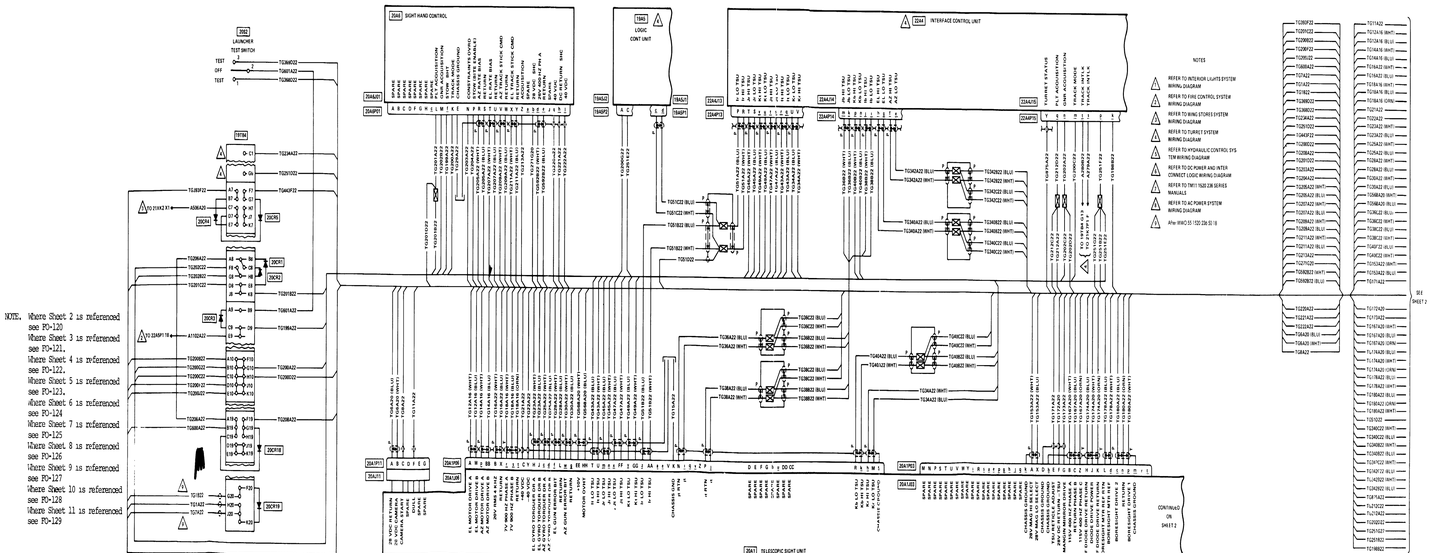
TO 20A4P01 Y
TO 21A1P1 K3 B4
TO 21K1 X1
TO 4A2J1 S
TO 4A3J1 T



NOTE. Where Sheet 2 is referenced see FO-120
Where Sheet 3 is referenced see FO-121.
Where Sheet 4 is referenced see FO-122.
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Where Sheet 7 is referenced see FO-125
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Where Sheet 9 is referenced see FO-127
Where Sheet 10 is referenced see FO-128
Where Sheet 11 is referenced see FO-129

NOTE Where Sheet 1 is referenced see FO-119.
Where Sheet 3 is referenced see FO-121
Where Sheet 4 is referenced see FO-122
Where Sheet 5 is referenced see FO-123
Where Sheet 6 is referenced see FO-124
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Where Sheet 10 is referenced see FO-128
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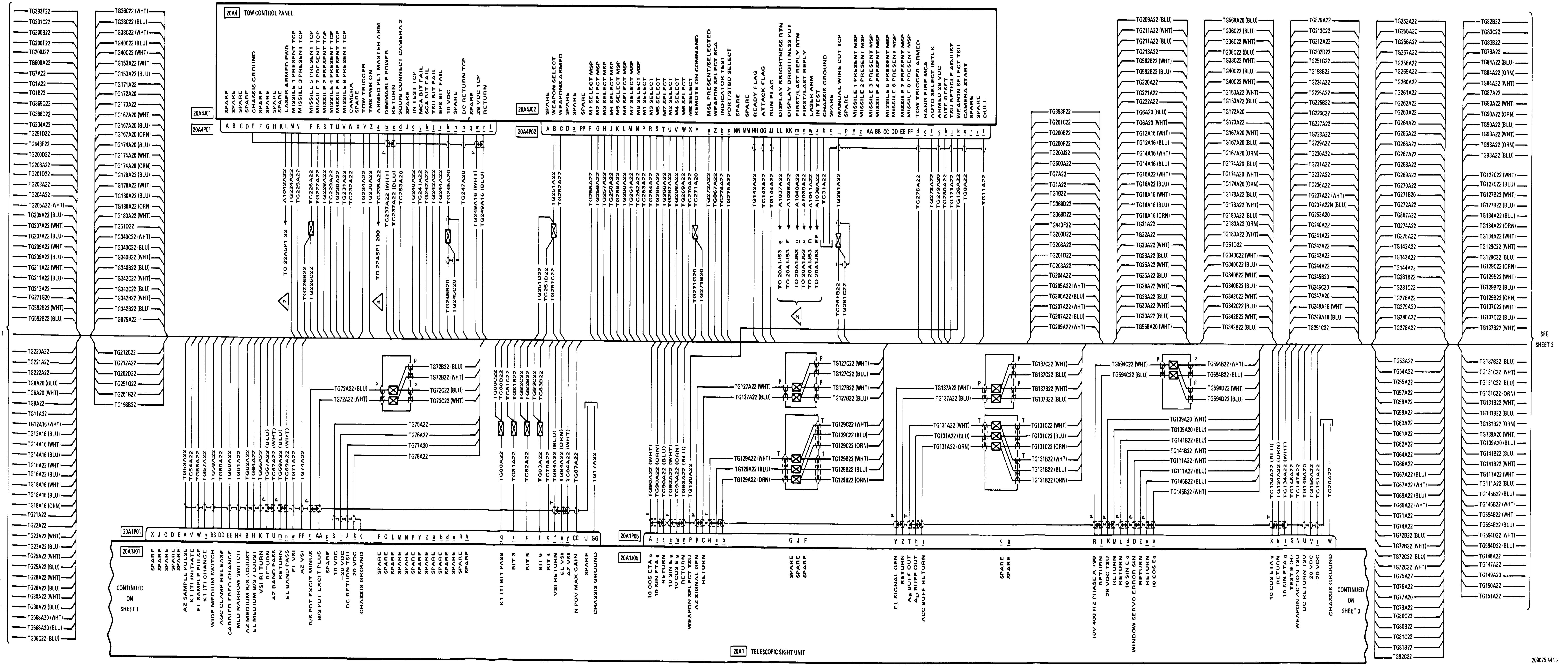
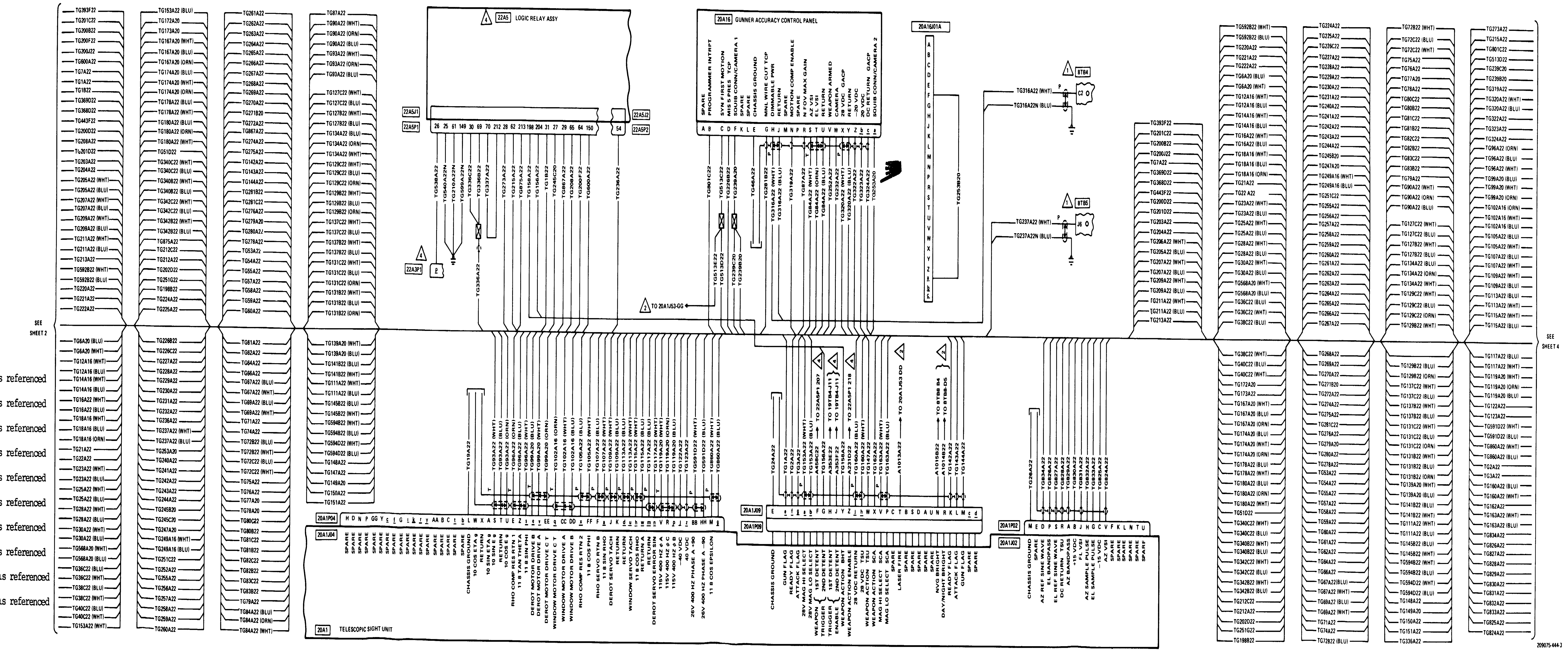


FO-120 M TOW Missile Armament Subsystem



NOTE Where Sheet 1 is referenced see FO-119.
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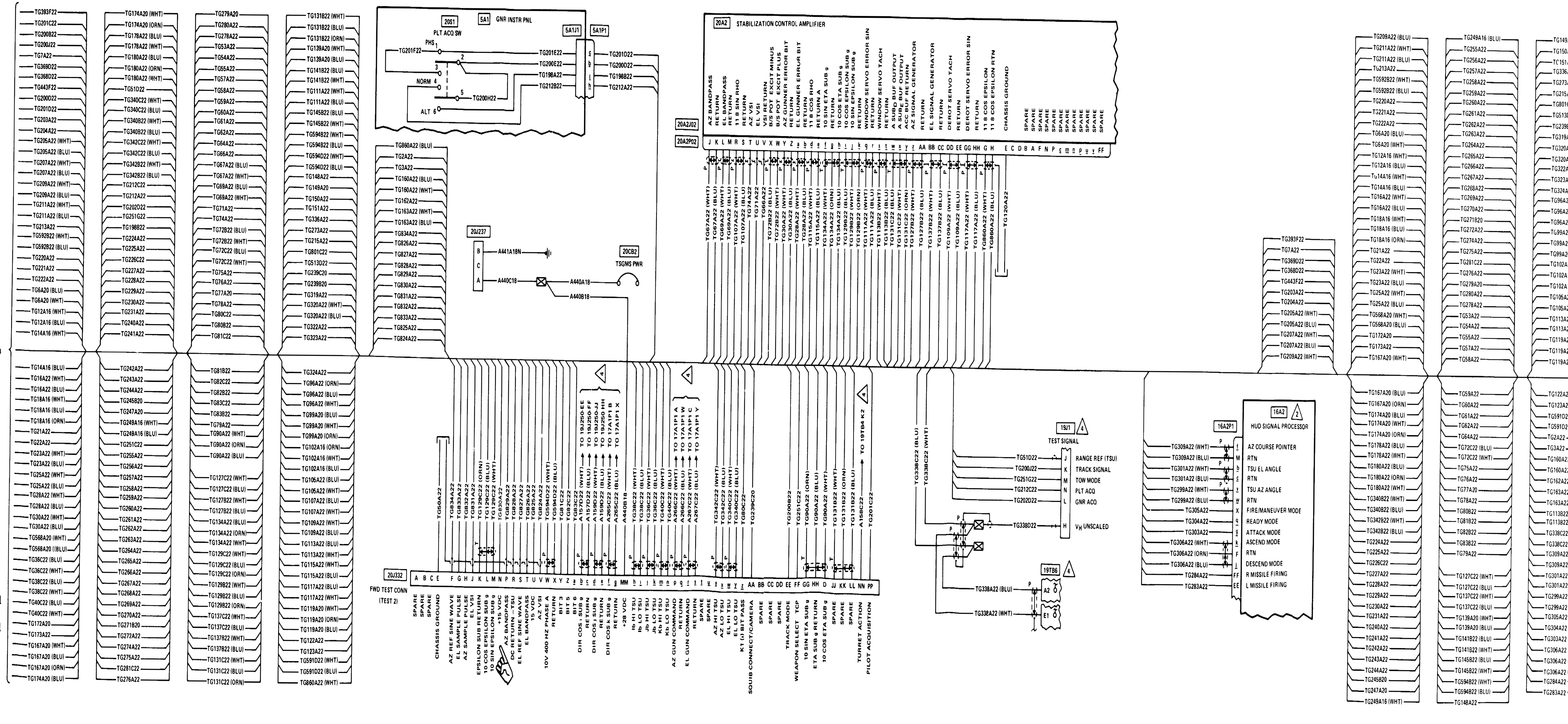
Where Sheet 4 is referenced see FO-122.
Where Sheet 5 is referenced see FO-123.
Where Sheet 6 is referenced see FO-124.
Where Sheet 7 is referenced see FO-125
Where Sheet 8 is referenced see FO-126.
Where Sheet 9 is referenced see FO-127.
Where Sheet 10 is referenced see FO-128
Where Sheet 11 is referenced see FO-129

FO-121 **M** TOW Missile Armament Subsystem



NOTE. Where Sheet 1 is referenced see FO-119.
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Where Sheet 7 is referenced see FO-125
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Where Sheet 9 is referenced see FO-127
Where Sheet 10 is referenced see FO-128
Where Sheet 11 is referenced see FO-129.

FO-122 M TOW Missile Armament Subsystem

NOTE· Where Sheet 1 is referenced see FO-119
Where Sheet 2 is referenced see FO-120
Where Sheet 3 is referenced see FO-121
Where Sheet 4 is referenced see FO-122.
Where Sheet 6 is referenced see FO-124
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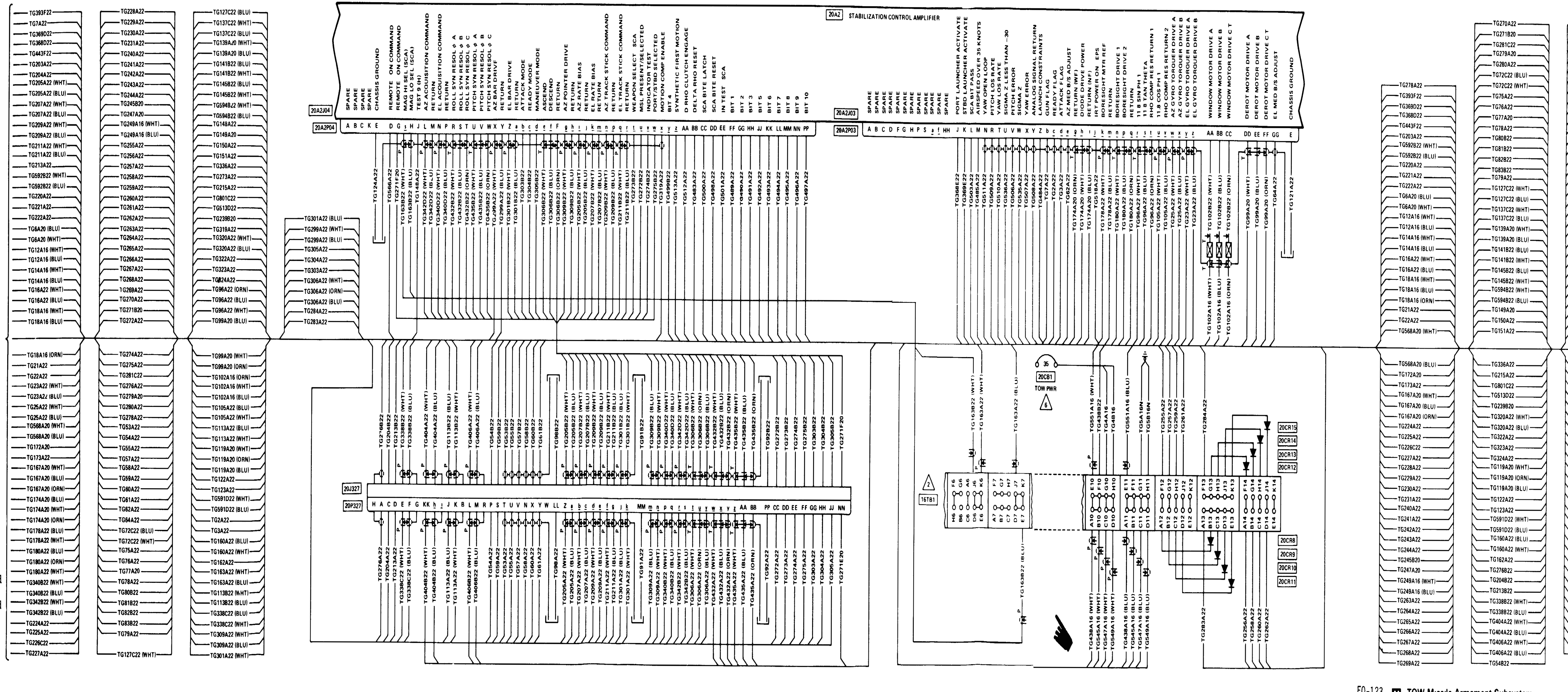
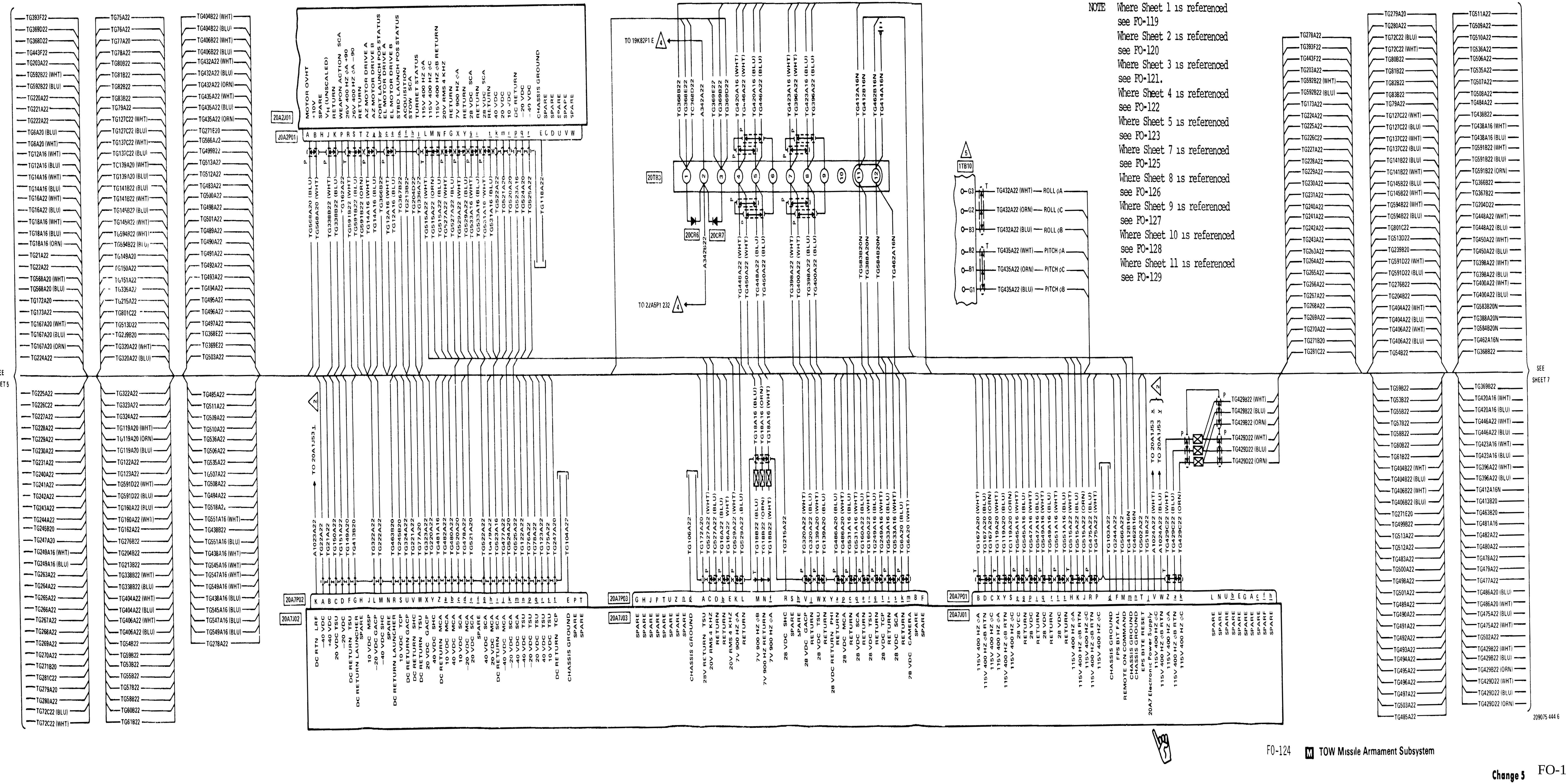
Where Sheet 11 is referenced see FO-129





NOTE Where Sheet 1 is referenced see FO-119
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Where Sheet 3 is referenced see FO-121.
Where Sheet 4 is referenced see FO-122
Where Sheet 5 is referenced see FO-123
Where Sheet 7 is referenced see FO-125
Where Sheet 8 is referenced see FO-126
Where Sheet 9 is referenced see FO-127
Where Sheet 10 is referenced see FO-128
Where Sheet 11 is referenced see FO-129

FO-124 **M** TOW Missile Armament Subsystem

NOTE Where Sheet 1 is referenced see FO-119.
Where Sheet 2 is referenced see FO-120
Where Sheet 3 is referenced see FO-121
Where Sheet 4 is referenced see FO-122.
Where Sheet 5 is referenced see FO-123
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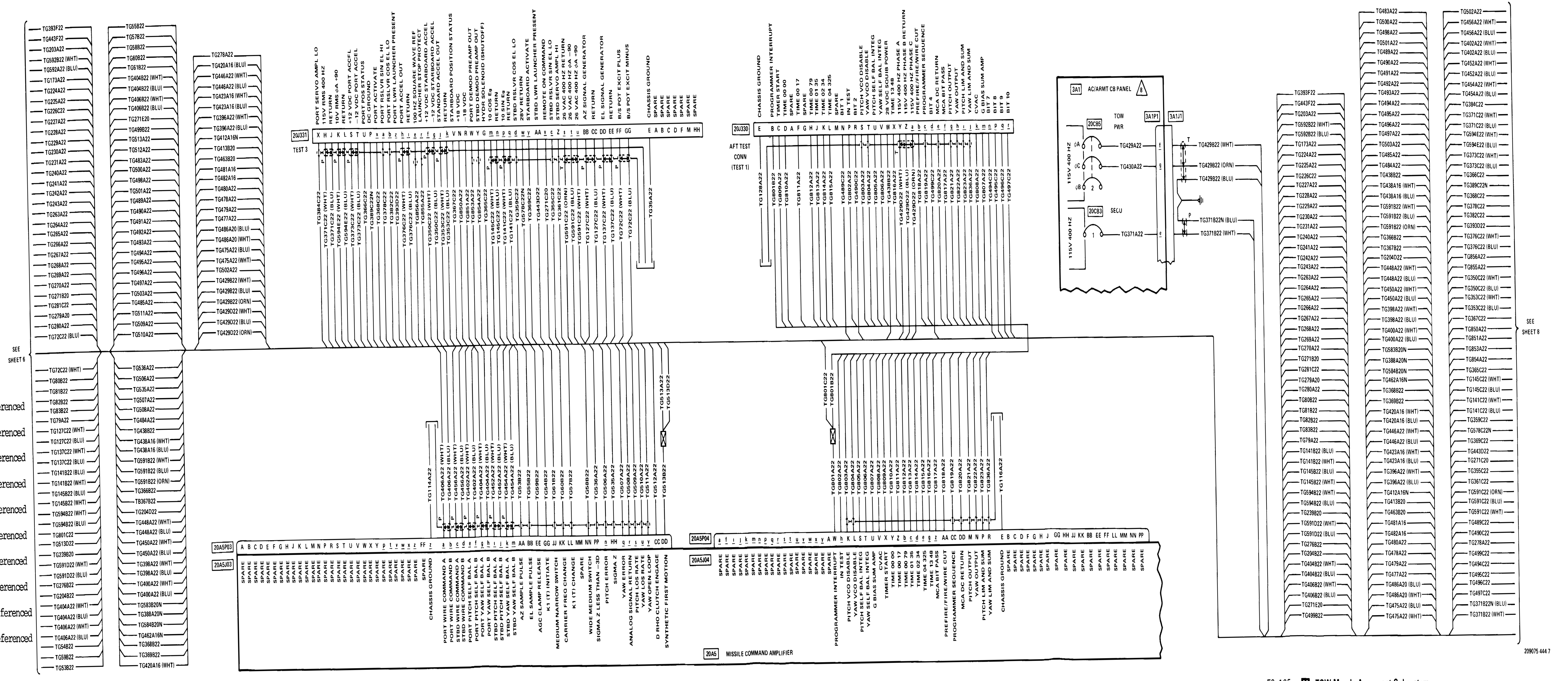
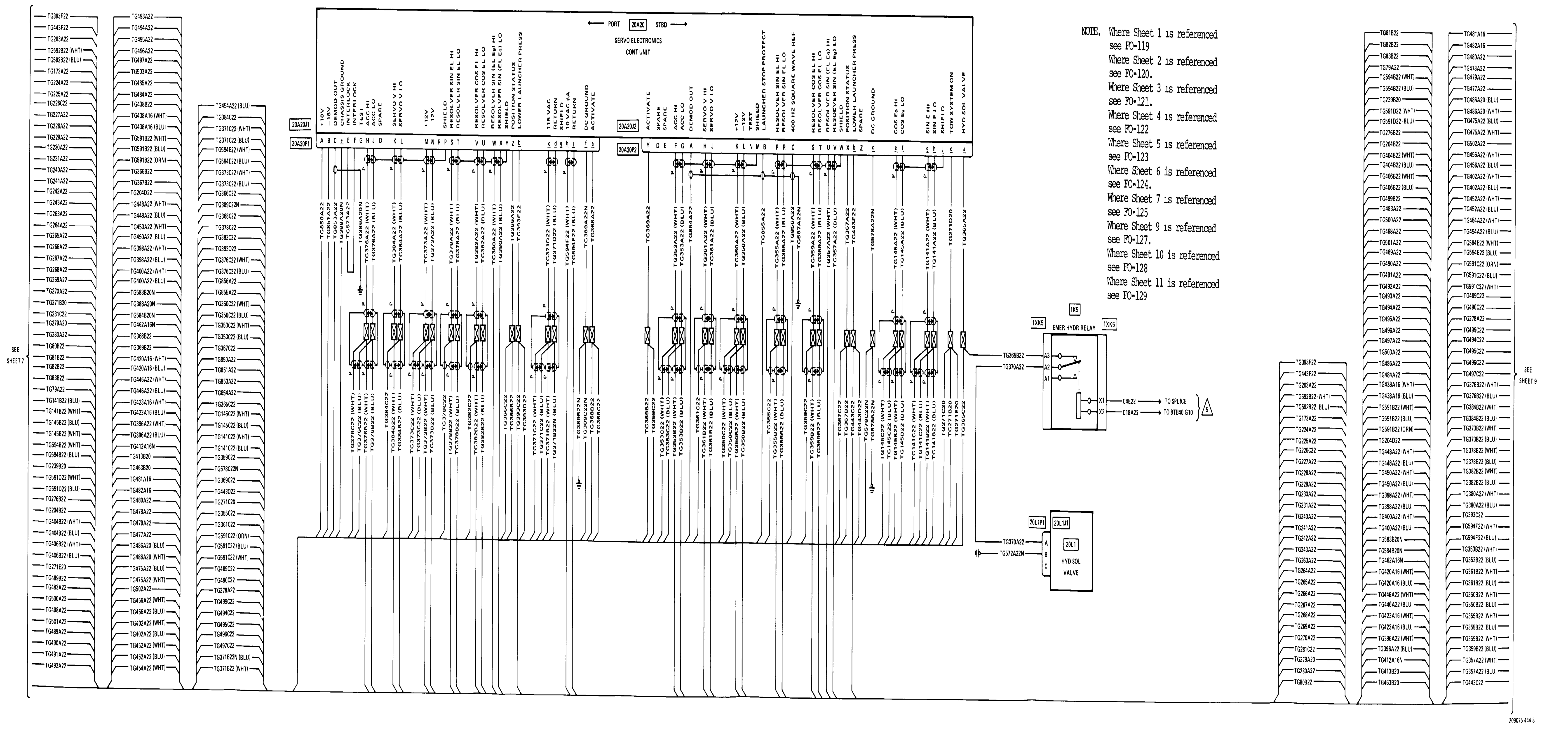


FO-125 TOW Missile Armament Subsystem



NOTE. Where Sheet 1 is referenced see FO-119
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Where Sheet 6 is referenced see FO-124.
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Where Sheet 9 is referenced see FO-127.
Where Sheet 10 is referenced see FO-128
Where Sheet 11 is referenced see FO-129

FO-126 M TOW Missile Armament Subsystem

NOTE· Where Sheet 1 is referenced see FO-119
Where Sheet 2 is referenced see FO-120
Where Sheet 3 is referenced see FO-121
Where Sheet 4 is referenced see FO-122.
Where Sheet 5 is referenced see FO-123
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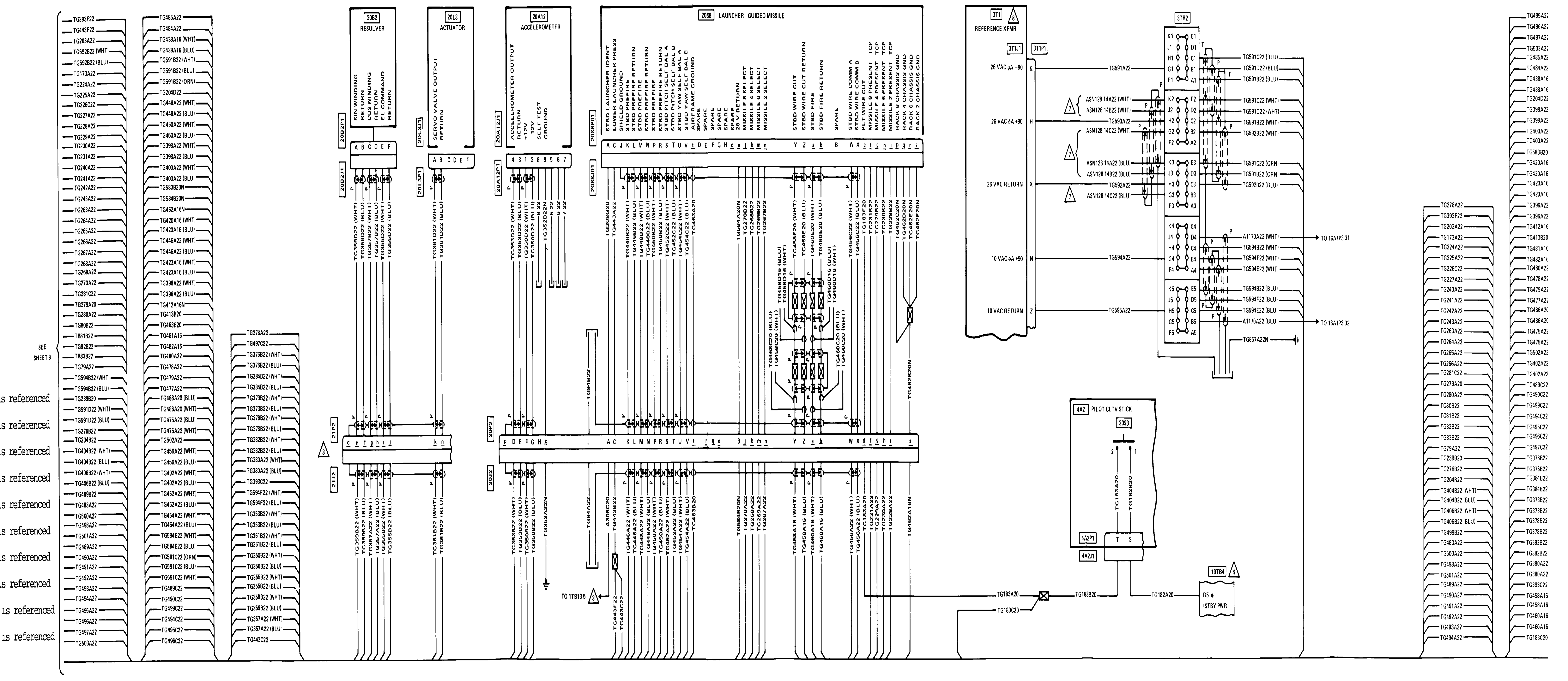

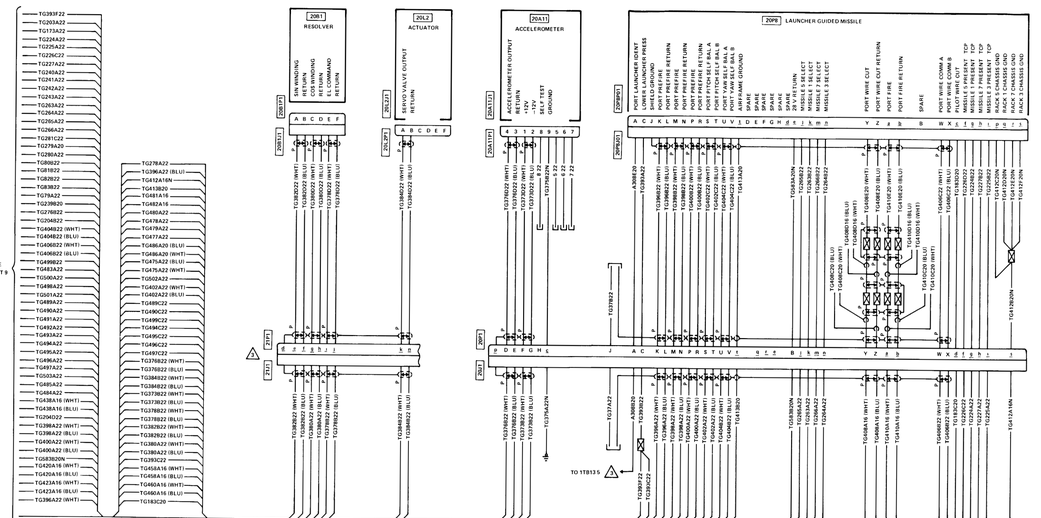

NOTE

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Where Sheet 3 is referenced see FO-121.
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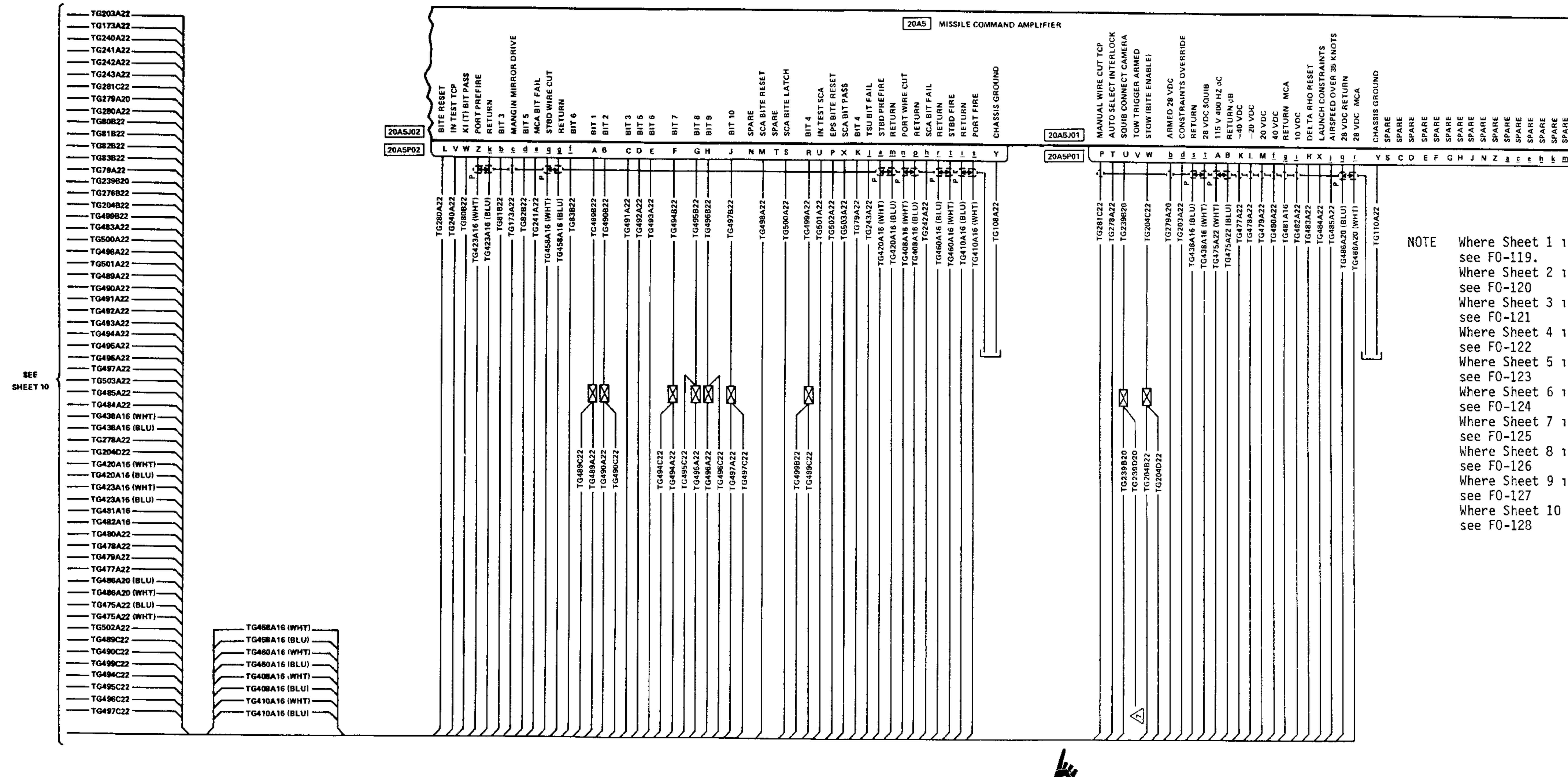
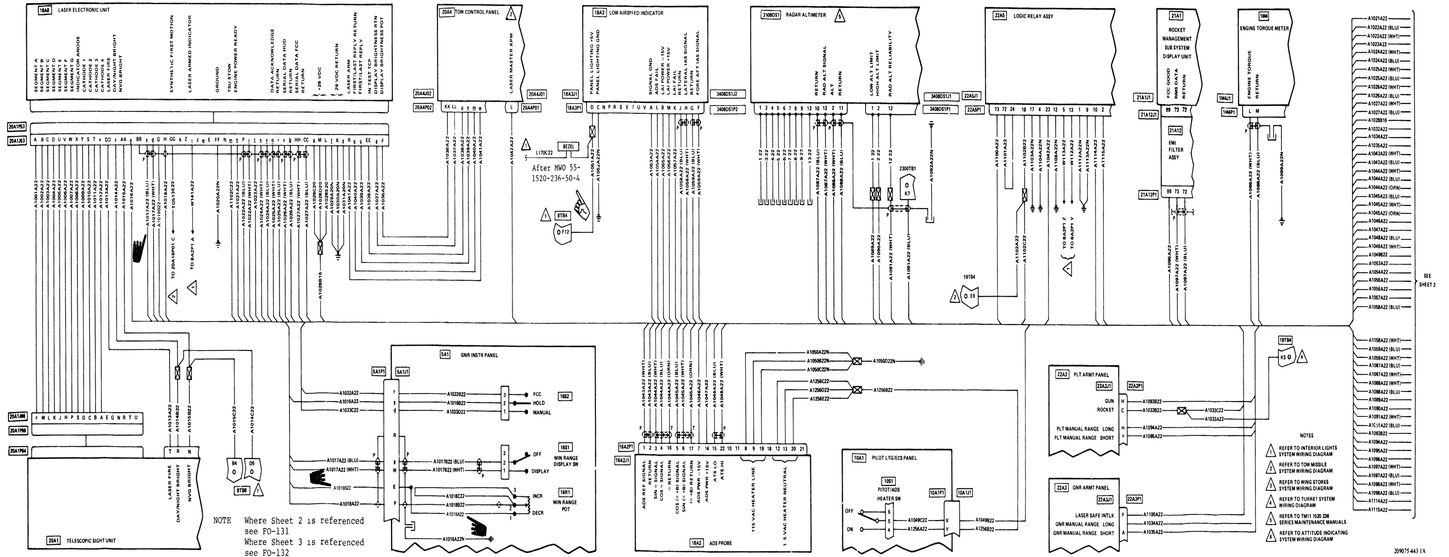
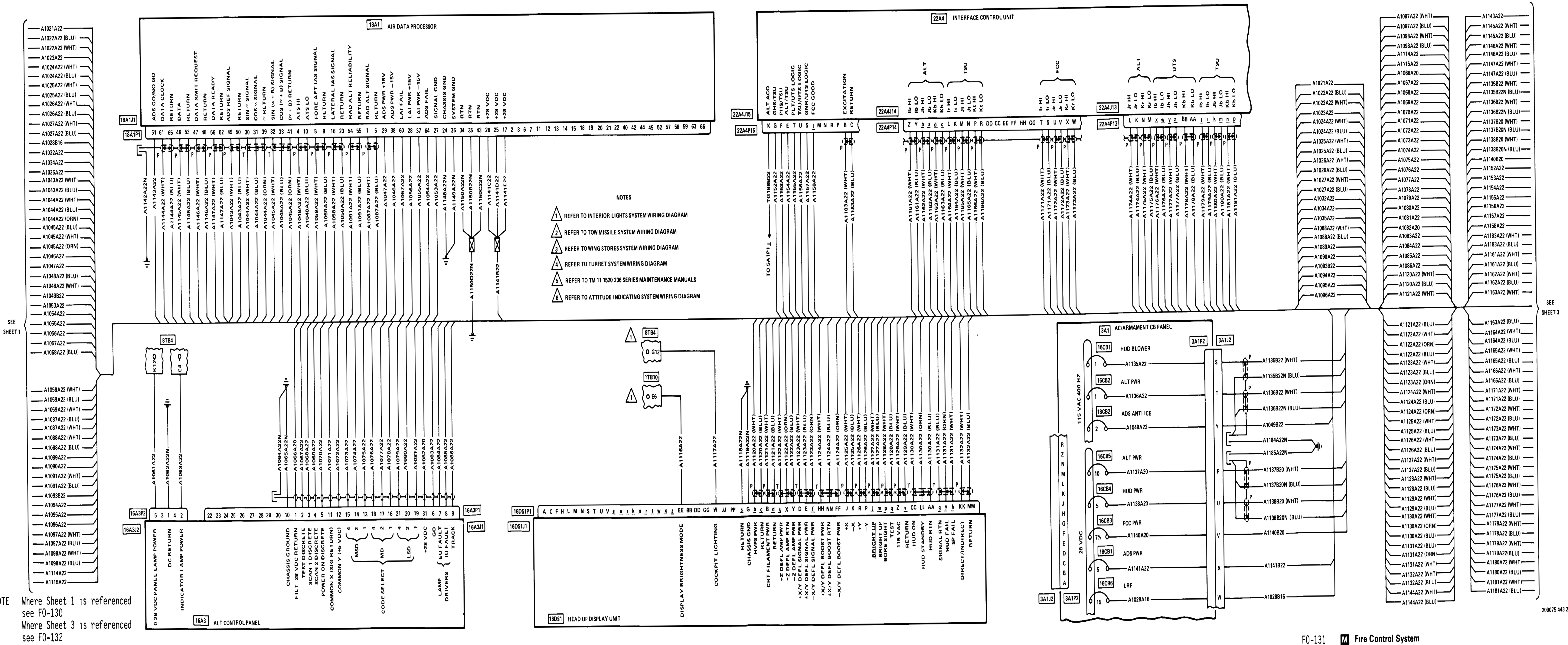


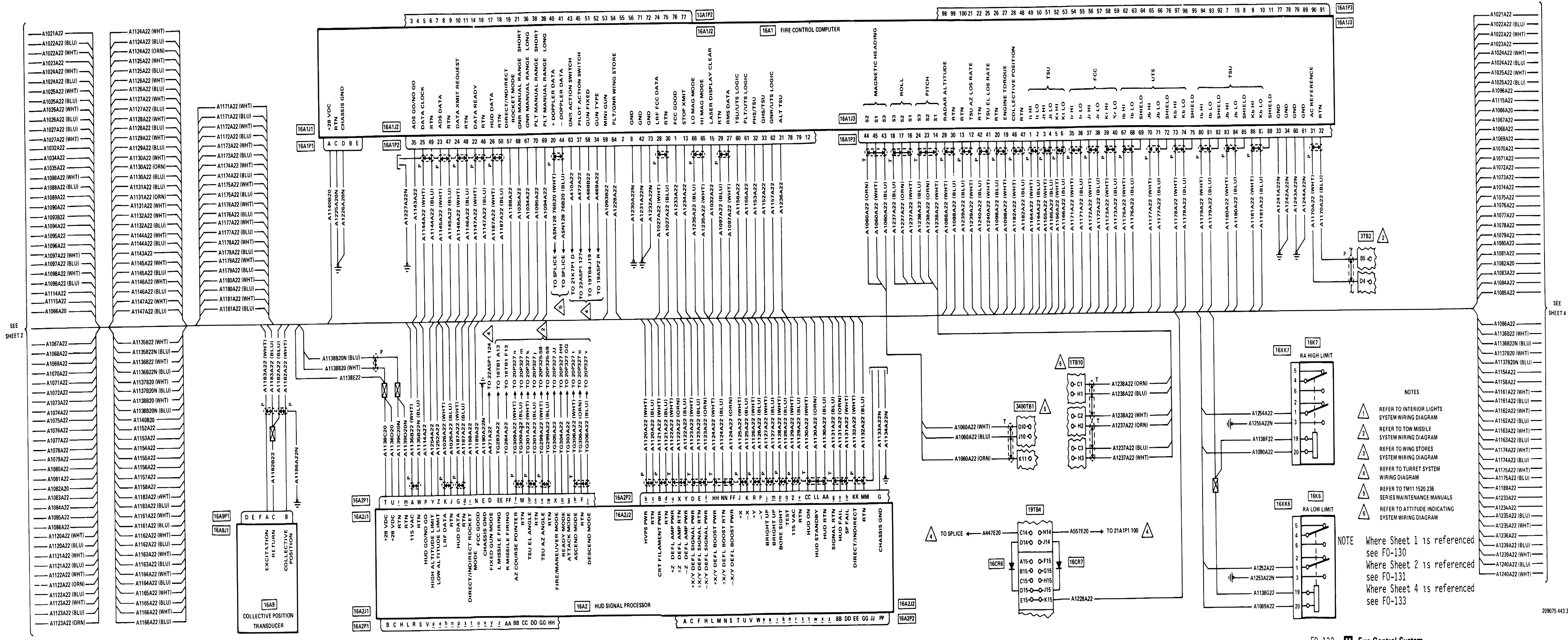
NOTE Where Sheet 1 i
see FO-119.
Where Sheet 2 i
see FO-120
Where Sheet 3 i
see FO-121
Where Sheet 4 i
see FO-122
Where Sheet 5 i
see FO-123
Where Sheet 6 i
see FO-124
Where Sheet 7 i
see FO-125
Where Sheet 8 i
see FO-126
Where Sheet 9 i
see FO-127
Where Sheet 10
see FO-128

FO-129 **M** TOW Missile Armament Subsystem

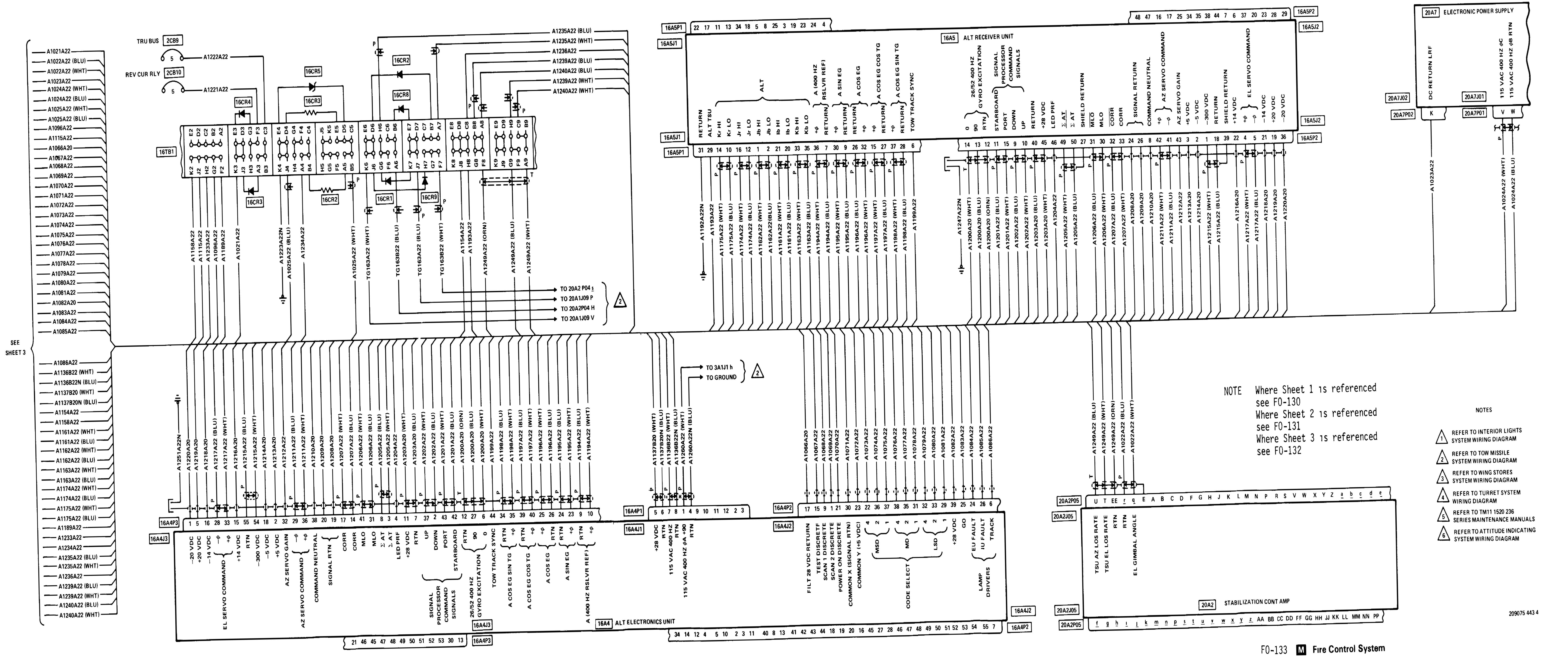

1BA8 LASER ELECTRONIC UNIT
2BA7 TOW CONTROL PANEL
1BA2 LOW AIRSPEED INDICATOR
2AB2 RADAR ALTIMETER
2AA5 LOGIC RELAY ASSY
21A1 ROCKET MANAGEMENT SUB SYSTEM DISPLAY UNIT
1BA3 ENGINE TORQUE METER
2BA1 TELESCOPIC SIGHT UNIT
1AA1 QNR INSTR PANEL
1BA2 ADS PROBE
1BA1 PILOT LTG/ECS PANEL
2AA2 PLT ARMT PANEL
2AA3 QNR ARMT PANEL
After MWO 55-1520-236-50-4
NOTE Where Sheet 2 is referenced see FO-131 Where Sheet 3 is referenced see FO-132 Where Sheet 4 is referenced see FO-133
NOTES
REFER TO INTERIOR LIGHTS SYSTEM WIRING DIAGRAM
REFER TO TOW MISSILE SYSTEM WIRING DIAGRAM
REFER TO WING STORES SYSTEM WIRING DIAGRAM
REFER TO TURRET SYSTEM WIRING DIAGRAM
REFER TO TM11 1520 236 SERIES MAINTENANCE MANUALS
REFER TO ATTITUDE INDICATING SYSTEM WIRING DIAGRAM
SEE SHEET 2
209075 443 1A



NOTE Where Sheet 1 is referenced see FO-130
Where Sheet 3 is referenced see FO-132
Where Sheet 4 is referenced see FO-133



FO-132 M Fire Control System



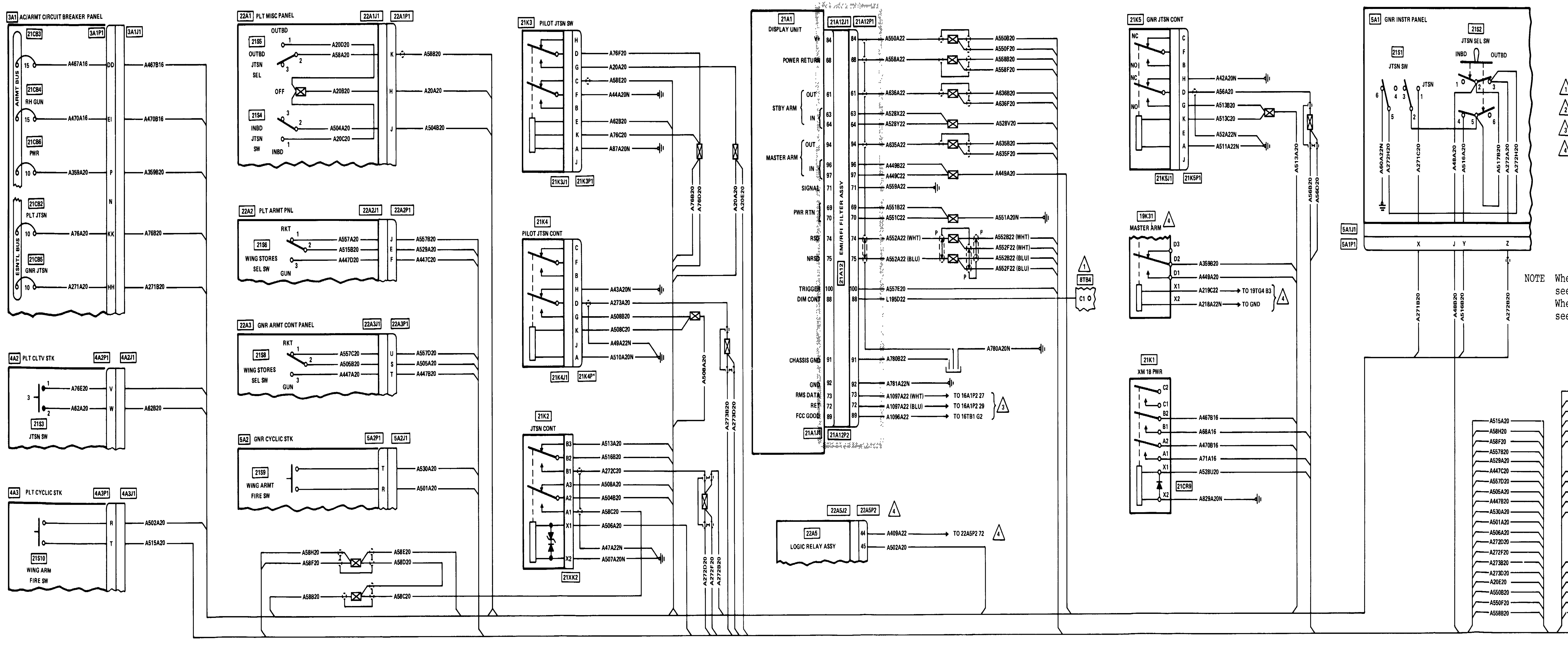
NOTE Where Sheet 1 is referenced see FO-130
Where Sheet 2 is referenced see FO-131
Where Sheet 3 is referenced see FO-132

NOTES

1. REFER TO INTERIOR LIGHTS SYSTEM WIRING DIAGRAM
2. REFER TO TOW MISSILE SYSTEM WIRING DIAGRAM
3. REFER TO WING STORES SYSTEM WIRING DIAGRAM
4. REFER TO TURRET SYSTEM WIRING DIAGRAM
5. REFER TO TM11 1520 236 SERIES MAINTENANCE MANUALS
6. REFER TO ATTITUDE INDICATING SYSTEM WIRING DIAGRAM

209075 443 4

FO-133 M Fire Control System

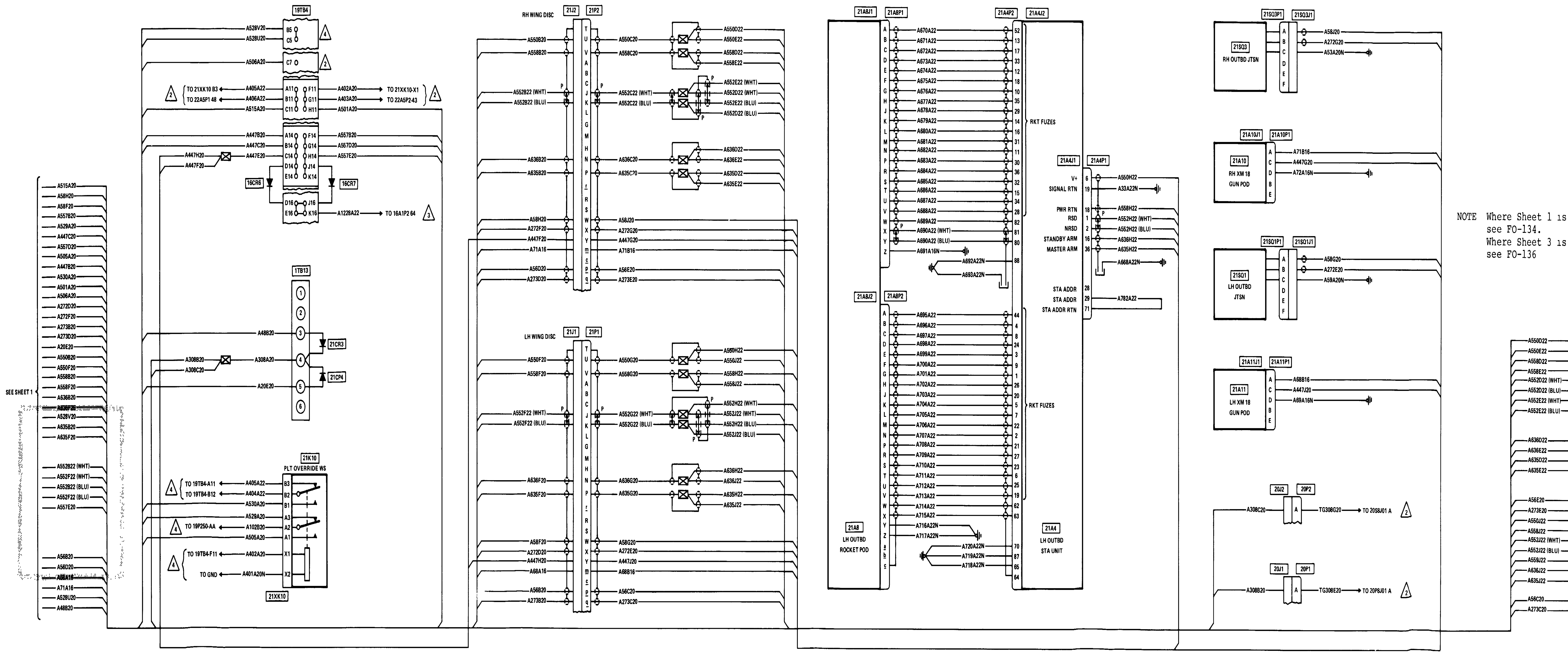


NOTES

1. SEE INTERIOR LIGHTS SYSTEM WIRING DIAGRAM
2. SEE TOW MISSILE SYSTEM WIRING DIAGRAM
3. SEE FIRE CONTROL SYSTEM WIRING DIAGRAM
4. SEE TURRET SYSTEM WIRING DIAGRAM

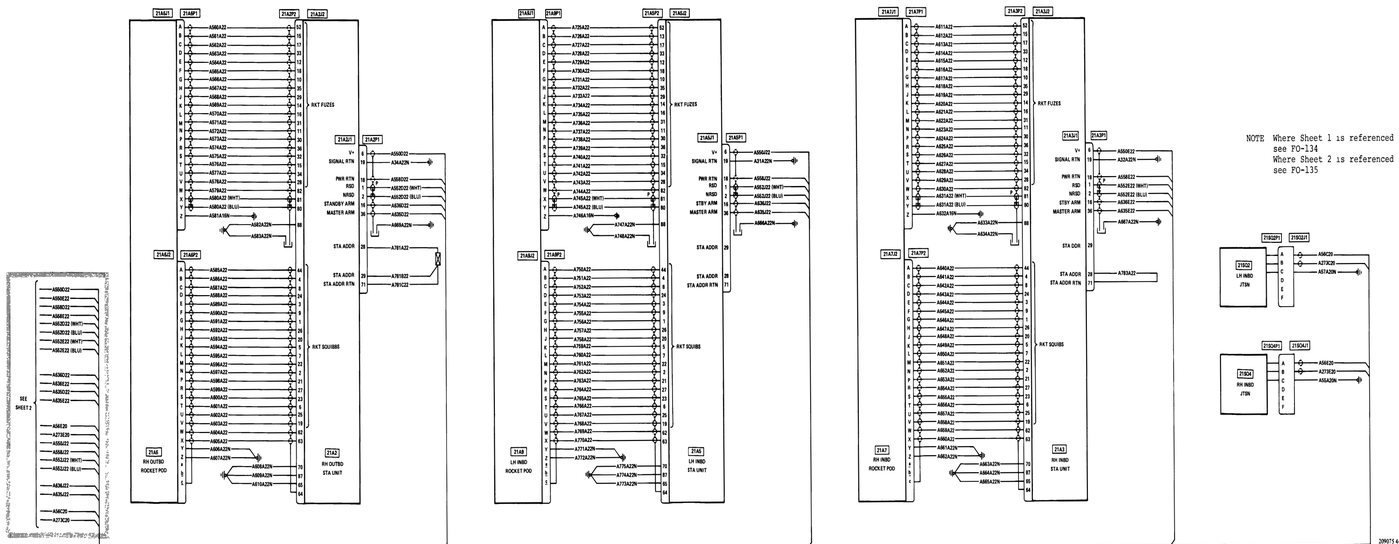
NOTE Where Sheet 2 is referenced see FO-135
Where Sheet 3 is referenced see FO-136

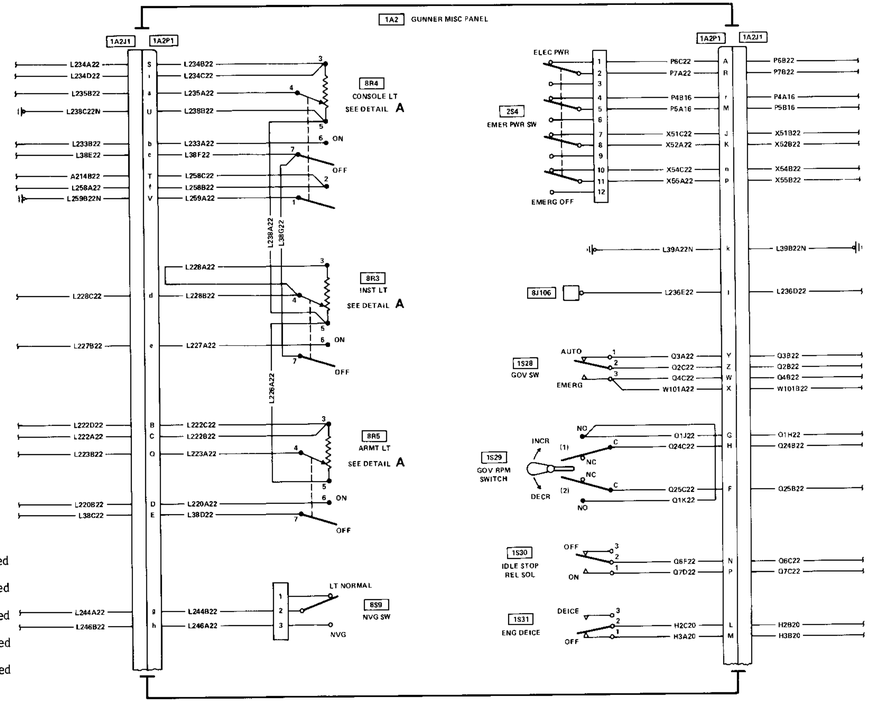
FO-134 **M** Wing Stores Armament Subsystem



NOTE Where Sheet 1 is referenced
see FO-134.
Where Sheet 3 is referenced
see FO-136

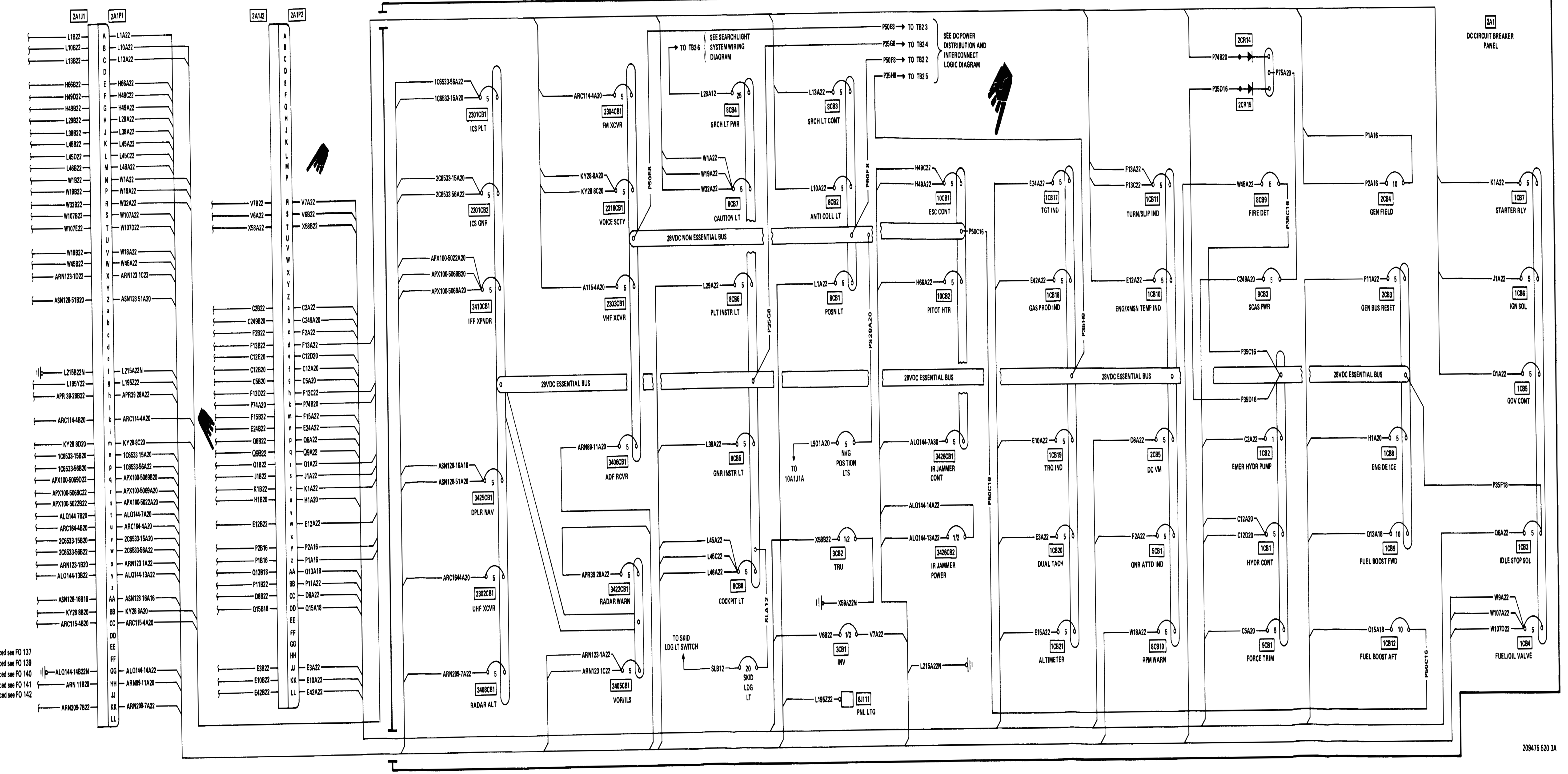
FO-135 M Wing Stores Armament Subsystem


SEE SHEET 2
21A1
RH INBD STA UNIT
21A2
RH OUTBD STA UNIT
21A3
RH INBD ROCKET POD
21A4
RH OUTBD ROCKET POD
21A5
LH INBD STA UNIT
21A6
LH OUTBD STA UNIT
21A7
LH INBD ROCKET POD
21A8
LH OUTBD ROCKET POD
21A1P1
21A1P2
21A2P1
21A2P2
21A3P1
21A3P2
21A4P1
21A4P2
21A5P1
21A5P2
21A6P1
21A6P2
21A7P1
21A7P2
21A8P1
21A8P2
RKT FUZES
RKT SQUIBS
STA ADDR
STA ADDR RTN
STA DOR
STBY ARM
MASTER ARM
SIGNAL RTN
PWR RTN
RSD
NRSD
V+
21G2
LH INBD JTSN
21G1
RH INBD JTSN
21G2P1
21G2J1
21G1P1
21G1J1
NOTE Where Sheet 1 is referenced see FO-134 Where Sheet 2 is referenced see FO-135
209075 445 3A



NOTE Where Sheet 2 is referenced see FO-138
Where Sheet 3 is referenced see FO-139
Where Sheet 4 is referenced see FO-140
Where Sheet 5 is referenced see FO-141
Where Sheet 6 is referenced see FO-142

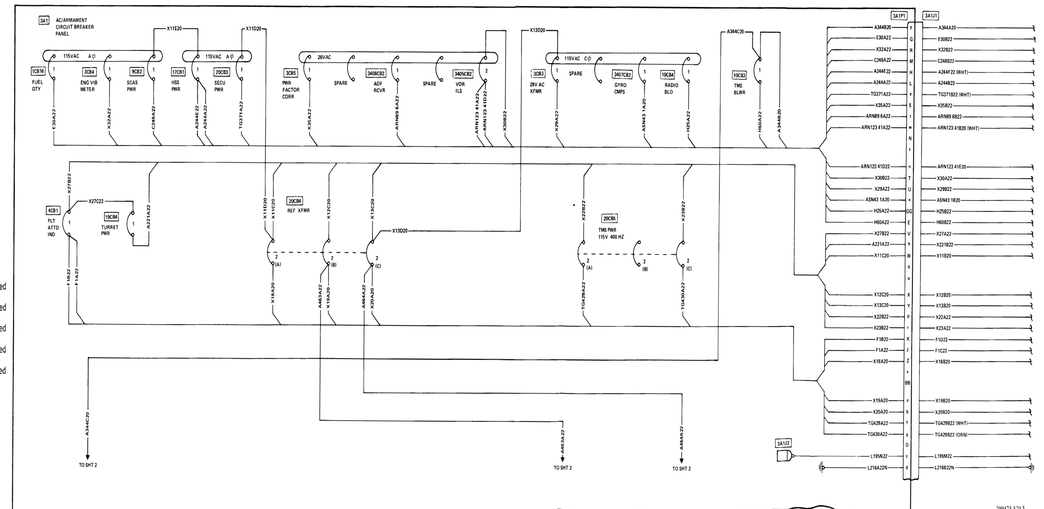
NOTE Where Sheet 1 is referenced see FO 137
Where Sheet 3 is referenced see FO 139
Where Sheet 4 is referenced see FO 140
Where Sheet 5 is referenced see FO 141
Where Sheet 6 is referenced see FO 142



FO-138 M Electrical Equipment Component Replacement

☆U.S. GOVERNMENT PRINTING OFFICE 1991 554-122/21090

NOTE Where Sheet 1 is referenced see FO-137
Where Sheet 2 is referenced see FO-138
Where Sheet 4 is referenced see FO-140
Where Sheet 5 is referenced see FO-141
Where Sheet 6 is referenced see FO-142



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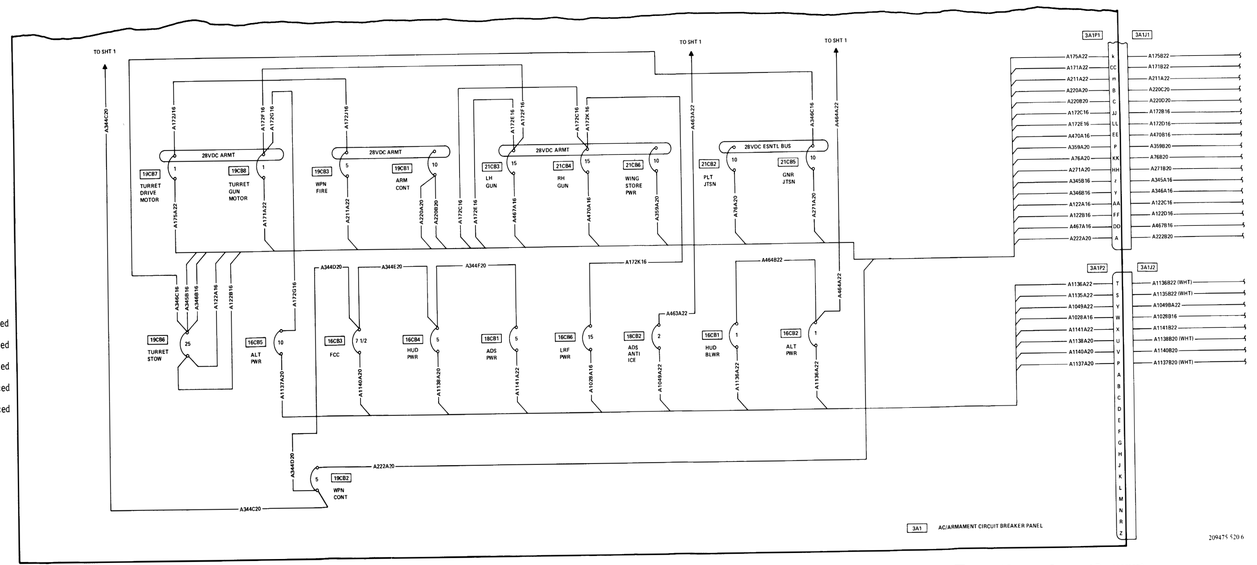
Where Sheet 3 is referenced see FO-139
Where Sheet 5 is referenced see FO-141
Where Sheet 6 is referenced see FO-142



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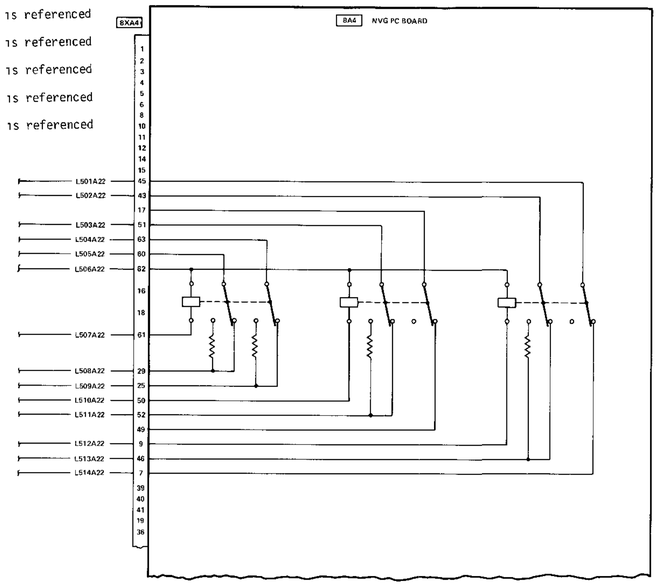

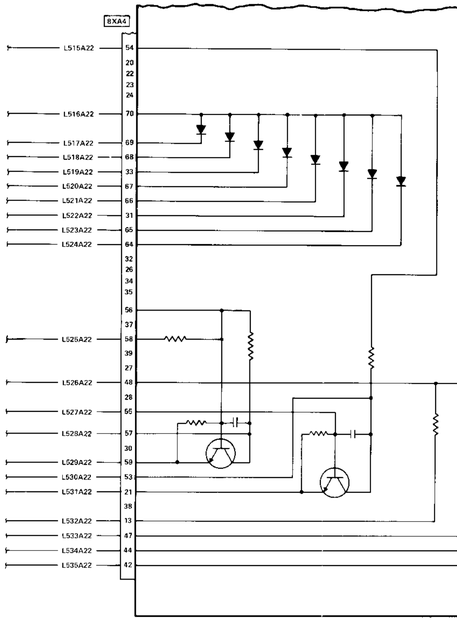

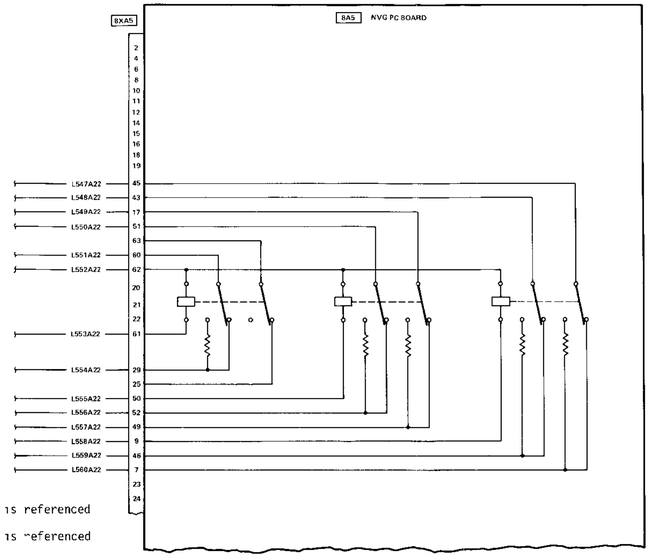

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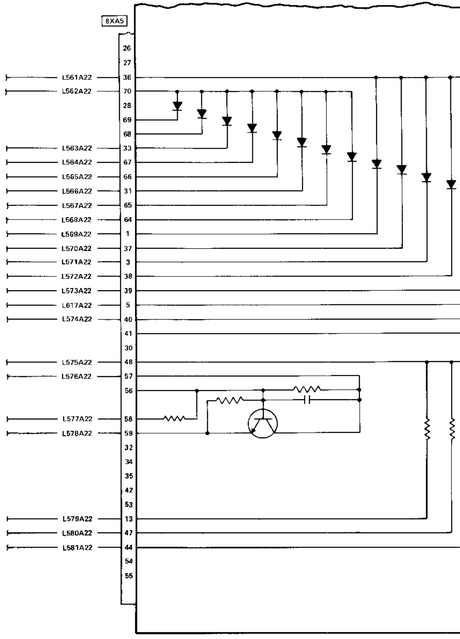

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL MANUALS

SOMETHING WRONG WITH THIS MANUAL?

THEN. . .JOT DOWN THE DOPE ABOUT IT ON THIS FORM, TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

FROM: (YOUR UNIT'S COMPLETE ADDRESS)
PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEONARD WOOD MO 63108

DATE

PUBLICATION NUMBER	DATE	TITLE
TM 55-1520-236-23-4	8 May 1980	AVIM/AVUM Maint Manual - AH-1S (PROD), (ECAS), (MODERNIZED COBRA)

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARAGRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.
81		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In the key to fig. 4-3, item 16 is called a shim. Please correct one or the other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered so the NSN is wrong. Please give me a good NSN.

SAMPLE

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE:
John Doe

TEAR ALONG DOTTED LINE

DA FORM 1 AUG 74 2028-2

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DRSTS-M Overprint 1, 1 Nov 78

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimenter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 38.82 fl. ounces
1 dekaliter = .10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimenter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.365	metric tons	short tons	1.102
pound-inches	newton-meters	.11375			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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