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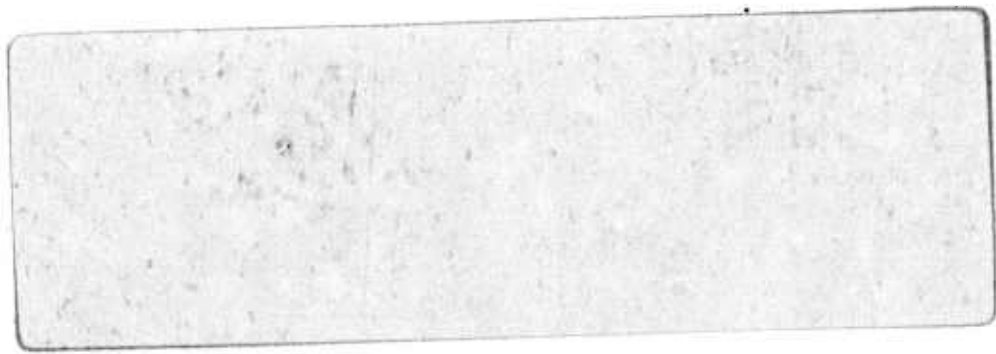
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B-1 SYSTEMS APPROACH TO TRAINING TECHNICAL MEMORANDUM SAT-2

BEHAVIORAL OBJECTIVES FOR THE PILOT, COPILOT, AND OFFENSIVE SYSTEMS OPERATOR

VOLUME 2 ✓
JULY 1975

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PREFACE

This document is one of several technical memoranda which have been delivered to the B-1 Systems Project Office (B-1 SPO) in performance of the Systems Approach to Training (SAT) Task under Contract Number F33657-75-C-0021. Each of the separate SAT documents is listed below. Additional copies may be requested from: B-1 Systems Project Office, Data Configuration Division, Wright-Patterson Air Force Base, Ohio.

<u>Technical Memoranda</u>	<u>Number</u>	<u>Author(s)</u>	<u>Date</u>
B-1 Systems Approach to Training, Final Report.	SAT- 1 Vol. 1	R. Sugarman S. Johnson W. Ring	July 1975
B-1 Systems Approach to Training, Final Report. Appendix A: Cost Details.	SAT- 1 Vol. 2	H. Reif W. Ring	July 1975
B-1 Systems Approach to Training, Final Report. Appendix B: Bibliography and Data Collection Trips.	SAT- 1 Vol. 3	A. Blair	July 1975
B-1 Systems Approach to Training, Final Report. Appendix C: Personnel Qualifications Catalog.	SAT- 1 Vol. 4	E. Weisbeck	July 1975
Behavioral Objectives for the Pilot, Copilot, and Offensive Systems Operator.	SAT- 2 Vol. 1 & 2	J. Mitchell W. Hinton S. Johnson	July 1975
Simulation Technology Assessment Report (STAR).	SAT- 3	S. Johnson J. Knight R. Sugarman	July 1975
Sorting Model for B-1 Aircrew Training Data. User's and Programmer's Guide.	SAT- 4	J. Menig T. Ranney	July 1975
Training Resources Analytic Model (TRAM). User's Manual.	SAT- 5	W. Ring G. Gaidasz J. Menig W. Stortz	July 1975
Training Resources Analytic Model (TRAM). Programmer's Manual.	SAT- 6	W. Ring G. Gaidasz J. Menig	July 1975
Task Analysis Listings.	SAT- 7	J. Mitchell T. Ranney	July 1975
Control/Display Catalog and Action Verb Thesaurus.	SAT- 8	T. Ranney A. Blair	July 1975

CALSPAN CORPORATION

July 1975
SAT-2

B-1 Aircrew Behavioral Objectives

John F. Mitchell
William M. Hinton, Jr.
Steven L. Johnson

SUMMARY

The Systems Approach to Training (SAT) for the B-1 aircrew involves the transformation of task analysis data into complete and precise statements of all behaviors necessary to carry out the B-1 mission. The resulting Behavioral Objectives delineate the "who, what, how, when and how well" of each definable behavior. A compilation of behavioral objectives for the pilot, copilot and offensive system operator is contained in this report, preceded by a brief description of the procedures for their development.

2 Volume 1 contains introductory information and Mission Segments 1-15. Volume 2 contains Mission Segment 16 and Emergency Procedures.

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MISSION SEGMENT 16

OBJECTIVE: CONFIGURE A/V GROUND REFUEL PANEL FOR REFUEL 16.1

CRITICALITY: 2 DIFFICULTY: 1

INITIAL CONDITIONS: 1. Fuel trucks or bladder tanks in position.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that with the tank fill valve switches on the GRP (Ground Refuel Panel) set to AUTO, the level control valves are automatically opened and closed by the A/V center-of-gravity management system.
2. Recall that the main tank fill valve switch on the GRP is normally set to OPEN during refueling operations.
3. Recall that with the fill control rotary selector on the GRP set to TOTAL, the fuel remaining in all A/V tanks is displayed on the upper digital quantity indicator.
4. Recall that when FUEL QUANTITY is set by the mode control rotary switch of the GRP, the quantity of fuel onboard the A/V can be read on the digital counter without energizing valves or pumps.
5. Recall that with the mode control rotary switch of the GRP set to FUEL QUANTITY, the POWER ON legend light is illuminated.
6. Recall that when the press-to-test feature of the CG FAIL legend light is exercised, it illuminates red.
7. Recall that when the press-to-test feature of the FILL V FAIL legend light is exercised, it illuminates flashing red.

ANCILLARY OBJECTIVES:

1. Recall that no AUTO position is provided for the main tank fill valve switch on the GRP because the main level control valve operation is not controlled by the center-of-gravity management system.

ANCILLARY OBJECTIVES: (continued.)

2.

2. Recall that when TOTAL is selected with the fill control rotary selector, the identifier TOT will be displayed on the upper digital readout along with the fuel remaining in all A/V tanks.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	16.1.1.1	16.1.1.2	16.1.1.5
	16.1.1.1.1	16.1.1.3	16.1.1.6
	16.1.1.1.2	16.1.1.4	

16.1.1.001.00*

SET TANK FILL VALVE SWS ON GROUND REFUEL PANEL TO 'AUTO'*

16.1.1.001.01*

SET TANK FILL VALVE SWS FOR TK 1 TK 4 AND TK 2 TO 'AUTO'

A-V
AND ICS

= READY FOR REFUEL*
= ESTABLISHED

SET

MODE CONTROL ROTARY SELECTOR
TK 4 LCV CONTROL SWITCH
TK 2 LCV CONTROL SWITCH

MODE CONTROL ROTARY SELECTOR = AUTO
AND TK 2 LCV CONTROL SWITCH = AUTO

16.1.1.001.02*

SET TANK FILL VALVE SWS FOR TK 3 WG AND ST BAY TO 'AUTO'

A-V
AND ICS

= READY FOR REFUEL*
= ESTABLISHED

SET

TK 3 LCV CONTROL SWITCH
WG LCV CONTROL SWITCH
ST BAY LCV CONTROL SWITCH

TK 3 LCV CONTROL SWITCH = AUTO
AND ST BAY LCV CONTROL SWITCH = AUTO

16.1.1.002.00*

SET MAIN TOGGLE SWITCH TO 'OPEN' POSITION

TK 3 LCV CONTROL SWITCH
AND ST BAY LCV CONTROL SWITCH

= AUTO*
= AUTO

SET

MAIN LCV CONTROL SWITCH

MAIN LCV CONTROL SWITCH = OPEN

16.1.1.003.00*

SET FILL CONTROL ROTARY SELECTOR TO 'TOTAL' POSITION

MAIN LCV CONTROL SWITCH

= OPEN

SET

TANK SELECT ROTARY CONTROL

TANK SELECT ROTARY CONTROL = TOTAL

16.1.1.004.00*

ROTATE MODE CONTROL TO 'FUEL QUANTITY' POSITION*

	LEFT RUN LIGHT	= 'L RUN'*
ROTATE	POWER CONTROL SWITCH	
	POWER CONTROL SWITCH	= FUEL QUANTITY*
	AND POWER ON ADVISORY LIGHT	= 'POWER ON'

16.1.1.005.00*

PUSH TO TEST CG FAIL LIGHT ON GROUND REFUEL PANEL*

	POWER ON ADVISORY LIGHT	= 'POWER ON'
PUSH	CG FAIL LEGEND LIGHT	
	CG FAIL LEGEND LIGHT	= 'CG FAIL'*

16.1.1.006.00*

PUSH TO TEST FILL VALVE FAIL LIGHT*

	POWER ON ADVISORY LIGHT	= 'POWER ON'
PUSH	LCV FAIL WARNING SWITCHLIGHT	
	LCV FAIL WARNING SWITCHLIGHT	= 'FILL V FAIL'*

OBJECTIVE:

DETERMINE FUEL QUANTITY ON BOARD

16.2

CRITICALITY: 1

DIFFICULTY: 1

INITIAL CONDITIONS: 1. A/V ground refuel panel configured for refueling.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that with the fill control rotary selector on the GRP set to MAIN, the fuel remaining in the left and right main tanks will be displayed on the upper and lower digital indicators, respectively.
2. Recall that with the fill control rotary selector on the GRP set to FUS 1 & 4, the fuel remaining in the fuselage 1 and 4 tanks will be displayed on the upper and lower digital indicators, respectively.
3. Recall that with the fill control rotary selector on the GRP set to FUS 2 & 3, the fuel remaining in the fuselage 2 and 3 tanks will be displayed on the upper and lower digital indicators, respectively.
4. Recall that with the fill control rotary selector on the GRP set to WG, the fuel remaining in the left and right wing tanks will be displayed on the upper and lower digital indicators, respectively.

ANCILLARY OBJECTIVES:

1. Recall that for each tank selected, the appropriate identifier (L, 1 or 2) will be displayed on the upper digital readout along with the fuel remaining.
2. Recall that for each tank selected, the appropriate identifier (R, 3 or 4) will be displayed on the lower digital readout along with the fuel remaining.

OPERATOR: P/CP

TASK ELEMENTS: 16.1.2.1 16.1.2.4
 16.1.2.2 16.1.2.5
 16.1.2.3

16.1.2.001.00*

VERIFY AND RECORD TOTAL FUEL QUANTITY ON A V

	POWER CONTROL SWITCH	= FUEL QUANTITY
CHECK	DIGITAL COUNTERS	
	DIGITAL COUNTERS	= TBD TOT*

16.1.2.002.00*

SET FILL CONTROL SELECTOR TO MAIN AND RECORD FUEL IN L AND R*

	DIGITAL COUNTERS	= TBD TOT*
	AND FUEL LOG	= TOTAL FUEL
SET	TANK SELECT ROTARY CONTROL	
	TANK SELECT ROTARY CONTROL	= MAIN*
	AND LOWER DIGITAL COUNTERS	= TBD R

16.1.2.003.00*

SET FILL CONTROL TO FUS 1 & 4 AND RECORD FUEL QUANTITIES*

	FUEL LOG	= L MAIN FUEL
	AND FUEL LOG	= R MAIN FUEL
SET	TANK SELECT ROTARY CONTROL	
	TANK SELECT ROTARY CONTROL	= FUS 1 & 4*
	AND LOWER DIGITAL COUNTERS	= TBD 4

16.1.2.004.00*

SET FILL CONTROL TO FUS 2 & 3 AND RECORD FUEL QUANTITIES*

	FUEL LOG	= FUS 1 FUEL
	AND FUEL LOG	= FUS 4 FUEL
SET	TANK SELECT ROTARY CONTROL	
	TANK SELECT ROTARY CONTROL	= FUS 2 & 3*
	AND LOWER DIGITAL COUNTERS	= TBD 3

16.1.2.005.00*

SET FILL CONTROL TO WG AND RECORD FUEL QUANTITIES*

	FUEL LOG	= FUS 2 FUEL
	AND FUEL LOG	= FUS 3 FUEL
SET	TANK SELECT ROTARY CONTROL	
	TANK SELECT ROTARY CONTROL	= WG*
	AND LOWER DIGITAL COUNTERS	= TBD R

OBJECTIVE:

SELECT FUEL QUANTITY TO BE UPLOADED

16.3

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. A/V ground refuel panel configured for refueling.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that the thumbwheels TK 1, TK 4, TK2 and TK 3 are used to select the desired quantities of fuel to be uploaded.
2. Recall that the desired quantities of fuel to be uploaded are displayed on the vertical scales above the respective thumbwheels.
3. Recall that the desired quantities of fuel to be uploaded are displayed on the digital readouts, when the fill control set test pushbutton is depressed.

ANCILLARY OBJECTIVES:

1. Recall that the actual fuel quantities are displayed on the digital readouts when the fill control set test pushbutton is released.

OPERATOR: P/CP

TASK ELEMENTS: 16.1.3.1 16.1.3.4 16.1.3.7
 16.1.3.2 16.1.3.5 16.1.3.8
 16.1.3.3 16.1.3.6 16.1.3.9

16.1.3.001.00*

SET FILL CONTROL ROTARY SELECTOR TO 'FUS 1 & 4' POSITION

	FUEL LOG	= WG L FUEL
	AND FUEL LOG	= WG R FUEL
SET	TANK SELECT ROTARY CONTROL	
	TANK SELECT ROTARY CONTROL	= FUS 1 & 4*
	AND LOWER DIGITAL COUNTERS	= TBD 4

16.1.3.002.00*

ROTATE TK1 UP OR DOWN TO MOVE POINTER TO DESIRED AMT OF FUEL*

	TANK SELECT ROTARY CONTROL	= FUS 1 & 4
ROTATE	TK 1 THUMBWHEEL	
	TK1 MOVING POINTER	= TBD*

16.1.3.003.00*

ROTATE TK4 UP OR DOWN TO MOVE POINTER TO DESIRED AMT OF FUEL

	TANK SELECT ROTARY CONTROL	= FUS 1 & 4
ROTATE	TK 4 THUMBWHEEL	
	TK4 MOVING POINTER	= TBD*

16.1.3.004.00*

PUSH FILL CONTROL SET TEST P6 TO VERIFY FUEL QTY SELECTION*

	TK1 MOVING POINTER	= TBD
	AND TK4 MOVING POINTER	= TBD
PUSH	FILL CONTROL SET TEST PSHBTN	
	DIGITAL COUNTERS	= TBD 1*
	AND LOWER DIGITAL COUNTERS	= TBD 4

16.1.3.005.00*

SET FILL CONTROL ROTARY SELECTOR TO 'FUS 2 & 3' POSITION

	DIGITAL COUNTERS	= TBD 1
	AND LOWER DIGITAL COUNTERS	= TBD 4
SET	TANK SELECT ROTARY CONTROL	
	TANK SELECT ROTARY CONTROL	= FUS 2 & 3*
	AND LOWER DIGITAL COUNTERS	= TBD 3

16.1.3.006.00*
ROTATE TK2 UP OR DOWN TO MOVE POINTER TO DESIRED AMT OF FUEL*

ROTATE TANK SELECT ROTARY CONTROL = FUS 2 & 3
 TK 2 THUMBWHEEL
 TK2 MOVING POINTER = TBD*

16.1.3.007.00*
ROTATE TK3 UP OR DOWN TO MOVE POINTER TO DESIRED AMT OF FUEL*

ROTATE TANK SELECT ROTARY CONTROL = FUS 2 & 3
 TK 3 THUMBWHEEL
 TK3 MOVING POINTER = TBD*

16.1.3.008.00*
PUSH FILL CONTROL SET TEST PB TO VERIFY FUEL QTY SELECTION*

PUSH TK2 MOVING POINTER = TBD
 AND TK3 MOVING POINTER = TBD
 FILL CONTROL SET TEST PSHBTN
 DIGITAL COUNTERS = TBD 2*
 AND LOWER DIGITAL COUNTERS = TBD 3

16.1.3.009.00*
VERIFY BY ICS THAT EACH MAN IS READY TO BEGIN REFUELING*

COMMUNICATE DIGITAL COUNTERS = TBD 2
 AND LOWER DIGITAL COUNTERS = TBD 3
 PILOT ICS
 CO-PILOT ICS
 PILOT ICS = READY FOR REFUEL*
 AND CO-PILOT ICS = READY FOR REFUEL

OBJECTIVE:

MONITOR FUEL FLOW INTO A/V

16.4

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. A/V ground refuel panel configured for refueling.
2. Fuel trucks ready to refuel A/V.

CONCURRENT TASKS:

INTERACTION TASKS: 1. Fuel truck operator monitors fuel flow into A/V.

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that with the mode control rotary selector set to REFUEL, power is applied to the GRP such that C/Ds are energized and refueling can be accomplished when flow is initiated at the fuel trucks.
2. Recall that with the fill control rotary selector on the GRP set to TOTAL, the fuel remaining in all A/V tanks is displayed on the upper digital quantity indicator.
3. Recall that the desired quantities of fuel to be uploaded are displayed on the digital readouts, when the fill control set test pushbutton is depressed.

ANCILLARY OBJECTIVES:

1. Recall that the POWER ON legend light is illuminated when the mode control rotary switch of the GRP is set to REFUEL.
2. Recall that when TOTAL is selected with the fill control rotary selector, the identifier TOT will be displayed on the upper digital readout along with the fuel remaining in all A/V tanks.
3. Recall that the actual fuel quantities are displayed on the digital readouts when the fill control set test pushbutton is released.

OPERATOR: P/CP

TASK ELEMENTS: 16.2.1.1 16.2.1.4
 16.2.1.2 16.2.1.5
 16.2.1.3

16.2.1.001.00*

SET MODE CONTROL ROTARY SELECTOR TO 'REFUEL' POSITION

	PILOT ICS	= READY FOR REFUEL
	AND CO-PILOT ICS	= READY FOR REFUEL
SET	POWER CONTROL SWITCH	
	POWER CONTROL SWITCH	= REFUEL

16.2.1.002.00*

SET FILL CONTROL ROTARY SELECTOR TO 'TOTAL' POSITION*

	POWER CONTROL SWITCH	= REFUEL*
SET	TANK SELECT ROTARY CONTROL	
	TANK SELECT ROTARY CONTROL	= TOTAL*
	AND DIGITAL COUNTERS	= TBD TOT

16.2.1.003.00*

REQUEST FUEL TANK TRUCK OPERATOR TO START FUEL FLOW*

	POWER CONTROL SWITCH	= REFUEL
COMMUNICATE	PILOT ICS	
	GROUND OBSERVER ICS	= ACKNOWLEDGED*

16.2.1.004.00*

MONITOR FUEL QTY ON DIGITAL COUNTERS AT GROUND REFUEL PANEL*

	DIGITAL COUNTERS	= TBD TOT*
MONITOR-VISUAL	DIGITAL COUNTERS	
	DIGITAL COUNTERS	= TBD TOT*

16.2.1.005.00*

PUSH FILL CONTROL SET TEST PB TO VERIFY FUEL PUMPED ONBOARD*

	DIGITAL COUNTERS	= TBD TOT*
PUSH	FILL CONTROL SET TEST PSHBTN	
	DIGITAL COUNTERS	= TBD TOT*

OBJECTIVE: CONFIGURE A/V GROUND REFUEL PANEL TO TERMINATE REFUELING 16.5

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Desired fuel quantity uploaded in A/V.

CONCURRENT TASKS:

INTERACTION TASKS: 1. Fuel truck operator stops fuel flow.

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that with the tank fill valve switches on the GRP set to CLOSE, the level control valves are closed.
2. Recall that the main tank fill valve switch on the GRP is normally left in the open position.
3. Recall that when FUEL QUANTITY is set by the mode control rotary switch of the GRP, the quantity of fuel onboard the A/V can be read on the digital counter without energizing valves or pumps.

ANCILLARY OBJECTIVES:

1. Recall that with the mode control rotary switch of the GRP set to FUEL QUANTITY, the POWER ON legend light is illuminated.

OPERATOR: P/CP

TASK ELEMENTS: 16.2.2.1 16.2.2.2
 16.2.2.1.1 16.2.2.3
 16.2.2.1.2

16.2.2.001.00*
SET TANK FILL VALVES SWS EXCEPT MAIN TANKS TO CLOSE POSITION*

DIGITAL COUNTERS = TBD TOT*

16.2.2.001.01*
SET TANK FILL VALVE SWS FOR TK 1 TK 4 AND TK 2 TO 'AUTO'

DIGITAL COUNTERS = TBD TOT

SET

MODE CONTROL ROTARY SELECTOR
TK 4 LCV CONTROL SWITCH
TK 2 LCV CONTROL SWITCH

MODE CONTROL ROTARY SELECTOR = CLOSE
AND TK 2 LCV CONTROL SWITCH = CLOSE

16.2.2.001.02*
SET TANK FILL VALVE SWS FOR TK 3 WG AND ST BAY TO 'CLOSE'

DIGITAL COUNTERS = TBD TOT

SET

TK 3 LCV CONTROL SWITCH
WG LCV CONTROL SWITCH
ST BAY LCV CONTROL SWITCH

TK 3 LCV CONTROL SWITCH = CLOSE
AND ST BAY LCV CONTROL SWITCH = CLOSE

16.2.2.002.00*
CHECK THAT MAIN LEVER LOCK SWITCH IS IN OPEN POSITION

TK 3 LCV CONTROL SWITCH = CLOSE
AND ST BAY LCV CONTROL SWITCH = CLOSE

CHECK

MAIN LCV CONTROL SWITCH

MAIN LCV CONTROL SWITCH = OPEN

16.2.2.003.00*
SET MODE CONTROL ROTARY SELECTOR TO 'FUEL QUANTITY' POSITION

MAIN LCV CONTROL SWITCH = OPEN

SET

POWER CONTROL SWITCH

POWER CONTROL SWITCH = FUEL QUANTITY

OBJECTIVE:

VERIFY FUEL QUANTITY ON A/V

16.6

CRITICALITY: 1

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Desired fuel quantity uploaded in A/V.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that with the fill control rotary selector on the GRP set to MAIN, the fuel remaining in the left and right main tanks will be displayed on the upper and lower digital counters, respectively.
2. Recall that with the fill control rotary selector on the GRP set to FUS 1 & 4, the fuel remaining in the fuselage 1 and 4 tanks will be displayed on the upper and lower digital indicators, respectively.
3. Recall that with the fill control rotary selector on the GRP set to FUS 2 & 3, the fuel remaining in the fuselage 2 and 3 tanks will be displayed on the upper and lower digital indicators, respectively.
4. Recall that with the fill control rotary selector on the GRP set to WG, the fuel remaining in the left and right wing tanks will be displayed on the upper and lower digital indicators, respectively.
5. Recall that with the mode control rotary selector set to OFF, control power to the ground refuel panel is not available.

ANCILLARY OBJECTIVES:

1. Recall that for each tank selected, the appropriate identifier (L, 1 or 2) will be displayed on the upper digital readout along with the fuel remaining.
2. Recall that for each tank selected, the appropriate identifier (R, 3 or 4) will be displayed on the lower digital readout along with the fuel remaining.
3. Recall that with the mode control rotary selector set to OFF, the POWER ON legend light will not be illuminated.

OPERATOR: P/CP

TASK ELEMENTS: 16.3.1.1 16.3.1.4
 16.3.1.2 16.3.1.5
 16.3.1.3

16.3.1.001.00*

SET FILL CONTROL SELECTOR TO MAIN AND RECORD FUEL IN L AND R

POWER CONTROL SWITCH = FUEL QUANTITY
SET TANK SELECT ROTARY CONTROL
TANK SELECT ROTARY CONTROL = MAIN*
AND LOWER DIGITAL COUNTERS = TBD R

16.3.1.002.00*

SET FILL CONTROL TO FUS 1 & 4 AND RECORD FUEL QUANTITIES*

DIGITAL COUNTERS = TBD L
AND LOWER DIGITAL COUNTERS = TBD R
SET TANK SELECT ROTARY CONTROL
TANK SELECT ROTARY CONTROL = FUS 1 & 4*
AND LOWER DIGITAL COUNTERS = TBD 4

16.3.1.003.00*

SET FILL CONTROL TO FUS 2 & 3 AND RECORD FUEL QUANTITIES*

DIGITAL COUNTERS = TBD 1
AND LOWER DIGITAL COUNTERS = TBD 4
SET TANK SELECT ROTARY CONTROL
TANK SELECT ROTARY CONTROL = FUS 2 & 3*
AND LOWER DIGITAL COUNTERS = TBD 3

16.3.1.004.00*

SET FILL CONTROL TO WG AND RECORD FUEL QUANTITIES*

DIGITAL COUNTERS = TBD 2
AND LOWER DIGITAL COUNTERS = TBD 3
SET TANK SELECT ROTARY CONTROL
TANK SELECT ROTARY CONTROL = WG*
AND LOWER DIGITAL COUNTERS = TBD R

16.3.1.005.00*

SET MODE CONTROL ROTARY SELECTOR TO 'OFF' POSITION

FUEL LOG = CHECKED*
SET POWER CONTROL SWITCH
POWER CONTROL SWITCH = OFF
AND POWER ON ADVISORY LIGHT = OFF

OBJECTIVE:

SECURE A/V AFTER REFUELING OPERATION

16.7

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Desired fuel quantity uploaded and verified on A/V.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence

ENABLING OBJECTIVES:

1. Recall that servicing nozzles are disconnected and hoses removed before disconnecting grounding wires.

ANCILLARY OBJECTIVES:

1. Recall that the A/V grounding cables are disconnected and removed after all refueling operations are completed.

OPERATOR: P/CP

TASK ELEMENTS: 16.3.2.1 16.3.2.4
 16.3.2.2 16.3.2.5
 16.3.2.3

16.3.2.001.00*

CHECK THAT SERVICING NOZZLES & GROUNDING CABLES ARE STOWED

	POWER CONTROL SWITCH	= OFF
	AND CHECKLIST	= SEQUENCE
CHECK	SERVICING NOZZLES	
	NOZZLE GROUNDING CABLES	
	SERVICING NOZZLES	= STOWED
	AND NOZZLE GROUNDING CABLES	= STOWED

16.3.2.002.00*

CHECK THAT A-V SERVICING ADAPTER COVERS ARE REPLACED

	CHECKLIST	= SEQUENCE
CHECK	A-V SERVICING ADAPTER COVERS	
	A-V SERVICING ADAPTER COVERS	= REPLACED

16.3.2.003.00*

CHECK THAT GO INTERCOM CABLES ARE DISCONNECTED AND STOWED

	CHECKLIST	= SEQUENCE
CHECK	GO INTERCOM CABLES	
	GO INTERCOM CABLES	= DISCONNECTED
	AND GO INTERCOM CABLES	= STOWED

16.3.2.004.00*

CHECK THAT FUEL TANKER TRUCK CLEAR OF AIR VEHICLE

	CHECKLIST	= SEQUENCE
CHECK	FUEL TRUCKS	
	FUEL TRUCKS	= CLEAR OF A-V

16.3.2.005.00*

CHECK THAT AIR VEHICLE GROUNDING CABLES ARE DISCONNECTED

	CHECKLIST	= SEQUENCE
CHECK	A-V GROUNDING CABLES	
	A-V GROUNDING CABLES	= DISCONNECTED

OBJECTIVE:

VERIFY A/V STATUS

16.8

CRITICALITY: 1

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Refueling operations are completed.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that the fuel vertical tape indicators display the gross fuel quantity in the individual tanks.
2. Recall that the digital displays readout the total quantity in any selected pair of fuel tanks.
3. Recall that the total fuel quantity indicator displays the sum of all fuel shown on the fuel vertical tapes, plus any fuel in the stores bay.
4. Recall that the hydraulic pressure gage pointers should indicate at the 9 o'clock position for normal operation.

ANCILLARY OBJECTIVES:

1. Recall that a single selection of the fuel tank rotary switch causes simultaneous displays of sequence pair fuel tank quantities in the digital readouts.
2. Recall that if the hydraulic fluid level in systems 1 and 4 falls below 6 gallons or below 11 gallons in systems 2 and 3, the hydraulic caution light will illuminate .
3. Recall that if any of the systems pressure falls below 2150 PSI, the hydraulic caution light will illuminate.

OPERATOR: P/CP

TASK ELEMENTS: 16.4.1.1 16.4.1.1.2
 16.4.1.1.1 16.4.1.1.3

16.4.1.001.00*

CHECK STATUS OF A-V IF CONDITIONS AND TIME PERMIT*

CHECKLIST

= SEQUENCE*

16.4.1.001.01*

CHECK FUEL QUANTITY ONBOARD AIR VEHICLE

CHECKLIST

= SEQUENCE*

CHECK

FUEL QUANTITY INDICATORS
SELECT QUANTITY DIGITAL READ
TOTAL FUEL QUANTITY INDICATOR

FUEL QUANTITY INDICATORS = CHECKED*
AND TOTAL FUEL QUANTITY INDICATOR = CHECKED

16.4.1.001.02*

CHECK WINDSHIELD AND WINDOWS FOR CLEANLINESS

CHECKLIST

= SEQUENCE

CHECK

WINDSCREEN
SIDE WINDOWS
UPPER WINDOWS

WINDSCREEN = CHECKED*
AND UPPER WINDOWS = CHECKED

16.4.1.001.03*

CHECK HYDRAULIC QUANTITY AND PRESSURE INDICATORS

CHECKLIST

= SEQUENCE

CHECK

HYDRAULIC QUANTITY INDICATORS
HYDRAULIC PRESSURE INDICATORS

HYDRAULIC QUANTITY INDICATORS = TBD*
AND HYDRAULIC PRESSURE INDICATORS = TBD

OBJECTIVE:

PERFORM WALK AROUND INSPECTION

16.9

CRITICALITY: 1

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Refueling operations are completed

CONCURRENT TASKS:

INTERACTIO. TASKS: 1. OSO performs walk around inspection.
2. DSO performs walk around inspection.

PERFORMANCE LIMITS: 1. Proper sequence

ENABLING OBJECTIVES:

1. Recall that all control surfaces should have complete freedom of movement.
2. Recall that the A/V should be inspected for fluid leakage, battle damage, foreign materials, etc.
3. Recall that all doors, panels and covers should be inspected for damage and security.
4. Recall that all engine air inlet and exhaust ducts should be inspected for fluid leakage, damage and foreign materials.

ANCILLARY OBJECTIVES:

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	16.4.1.2	16.4.1.6	16.4.1.9
	16.4.1.3	16.4.1.7	16.4.1.10
	16.4.1.5	16.4.1.8	

16.4.1.002.00*

VISUALLY INSPECT EXTERIOR OF FORWARD FUSELAGE*

INSPECT CHECKLIST = SEQUENCE
A-V FORWARD FUSELAGE
A-V FORWARD FUSELAGE = INSPECTED*

16.4.1.003.00*

VISUALLY INSPECT NOSE LANDING GEAR AND ASSOCIATED EQUIPMENT*

INSPECT CHECKLIST = SEQUENCE
A-V NOSE LDG GEAR & EQUIPMENT
A-V NOSE LDG GEAR & EQUIPMENT = INSPECTED*

16.4.1.005.00*

VISUALLY INSPECT GENERAL AREA OF FWD & INTMD FUS & WPNS BAYS*

INSPECT A-V FORWARD FUSELAGE = INSPECTED
A-V FWD & ITMD FUS & WPNS BAYS
A-V FWD & ITMD FUS & WPNS BAYS = INSPECTED*

16.4.1.006.00*

VISUALLY INSPECT LH & RH WING CARRY THRU AREAS AND WINGS*

INSPECT A-V FWD & ITMD FUS & WPNS BAYS = INSPECTED
A-V L & R WG CARRY THRU & WGS
A-V L & R WG CARRY THRU & WGS = INSPECTED*

16.4.1.007.00*

VISUALLY INSPECT ENGINE EXHAUST DUCTS*

INSPECT A-V L & R WG CARRY THRU & WGS = INSPECTED
A-V ENGINE EXHAUST DUCTS
A-V ENGINE EXHAUST DUCTS = INSPECTED*

16.4.1.008.00*

VISUALLY INSPECT EXTERIOR OF L AND R NACELLES*

INSPECT A-V ENGINE EXHAUST DUCTS = INSPECTED
A-V L & R NACELLES EXTERIOR
A-V L & R NACELLES EXTERIOR = INSPECTED*

16.4.1.009.00*

VISUALLY INSPECT ENGINE AIR INLET DUCTS*

INSPECT

A-V L & R NACELLES EXTERIOR = INSPECTED
A-V ENGINE AIR INLET DUCTS
A-V ENGINE AIR INLET DUCTS = INSPECTED

16.4.1.010.00*

VISUALLY INSPECT MLG AND ASSOCIATED EQUIPMENT*

INSPECT

A-V ENGINE AIR INLET DUCTS = INSPECTED
A-V MAIN LANDING GEAR
A-V MAIN LANDING GEAR = INSPECTED*

OBJECTIVE: PERFORM WALK AROUND INSPECTION 16.10

CRITICALITY: 1 DIFFICULTY: 1

INITIAL CONDITIONS: 1. Refueling operations are completed.

CONCURRENT TASKS:

INTERACTION TASKS: 1. P/CP perform walk around inspection.
2. DSO performs walk around inspection.

PERFORMANCE LIMITS: 1. Proper sequence.

ENABLING OBJECTIVES:

1. Recall that all control surfaces should have complete freedom of movement.
2. Recall that the A/V should be inspected for fluid leakage, battle damage, foreign materials, etc.
3. Recall that all doors, panels and covers should be inspected for damage and security.
4. Recall that all engine air inlet and exhaust ducts should be inspected for fluid leakage, damage and foreign materials.

ANCILLARY OBJECTIVES:

OPERATOR: OSO

TASK ELEMENTS: 16.4.1.2 16.4.1.6 16.4.1.9
 16.4.1.3 16.4.1.7
 16.4.1.5 16.4.1.8

16.4.1.002.00*

VISUALLY INSPECT EXTERIOR OF FORWARD FUSELAGE*

INSPECT CHECKLIST = SEQUENCE
A-V FORWARD FUSELAGE
A-V FORWARD FUSELAGE = INSPECTED*

16.4.1.003.00*

VISUALLY INSPECT NOSE LANDING GEAR AND ASSOCIATED EQUIPMENT*

INSPECT CHECKLIST = SEQUENCE
A-V NOSE LDG GEAR & EQUIPMENT
A-V NOSE LDG GEAR & EQUIPMENT = INSPECTED*

16.4.1.005.00*

VISUALLY INSPECT GENERAL AREA OF FWD & INTMD FUS & WPNS BAYS*

INSPECT A-V FORWARD FUSELAGE = INSPECTED
A-V FWD & ITMD FUS & WPNS BAYS
A-V FWD & ITMD FUS & WPNS BAYS = INSPECTED*

16.4.1.006.00*

VISUALLY INSPECT LH & RH WING CARRY THRU AREAS AND WINGS*

INSPECT A-V FWD & ITMD FUS & WPNS BAYS = INSPECTED
A-V L & R WG CARRY THRU & WGS
A-V L & R WG CARRY THRU & WGS = INSPECTED*

16.4.1.007.00*

VISUALLY INSPECT ENGINE EXHAUST DUCTS*

INSPECT A-V L & R WG CARRY THRU & WGS = INSPECTED
A-V ENGINE EXHAUST DUCTS
A-V ENGINE EXHAUST DUCTS = INSPECTED*

16.4.1.008.00*

VISUALLY INSPECT EXTERIOR OF L AND R NACELLES*

INSPECT A-V ENGINE EXHAUST DUCTS = INSPECTED
A-V L & R NACELLES EXTERIOR
A-V L & R NACELLES EXTERIOR = INSPECTED*

16.4.1.009.00*

VISUALLY INSPECT ENGINE AIR INLET DUCTS*

INSPECT

A-V L & R NACELLES EXTERIOR = INSPECTED

A-V ENGINE AIR INLET DUCTS

A-V ENGINE AIR INLET DUCTS = INSPECTED

EMERGENCY PROCEDURES

NOTE: Mission Segments end at 16. We have numbered the "Emergency Procedures" as 20.

OBJECTIVE:

PERFORM INTERNAL ENGINE FIRE PROCEDURES

20.1

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Engine start switch placed in start position

CONCURRENT TASKS:

INTERACTION TASKS: 1. Ground observer gives engine fire signal

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
2. Recall that the ADS couple switch is set to disengage only if the associated APU is not running.
3. Recall that setting the ADS couple switch to DISEN will decouple the APU from either ADG accessory drive train.
4. Recall that when the APU mode switches are set to START they are held in that position until ignition-start has taken place.
5. Recall that when the APU run light is on, the APU is up to adequate speed to accept a load.
6. Recall that when the environmental control switch on the APU control panel is set to ECS SPLY, the ECS is connected to a bleed air valve on the appropriate APU.
7. Recall that when an engine fire switchlight is depressed it latches mechanically in that position shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
8. Recall that engine motoring is permitted with the ignition switch in the off position.
9. Recall that when the alternate throttle switch is held in DECR, the engine throttle control system will decrease in proportion to the length of time that the position is maintained.
10. Recall that momentary selection of the engine start switch to START will allow the APU to dry motor the engine.

ENABLING OBJECTIVES: (continued)

11. Recall that releasing the engine start switch allows it to return to RUN.
12. Recall that the engine should be motored for a minimum of 30 seconds until the fire is out as verified by the ground crew.
13. Recall that releasing the alternate throttle switch to the main-tained center position will hold the engine power setting.
14. Recall the procedures for abandoning the A/V on the ground.

ANCILLARY OBJECTIVES

1. Recall that the master (general) warning audio tone should sound if the fire is sensed by the fire detection loops in the engine/ADG compartment.
2. Recall that the tone will continue to sound until the situation has been corrected or either MSTR AUDIO CUTOUT button has been depressed.
3. Recall that selection of the engine start switch to OFF will drive the engine power lever to off independently of flight station throttle control lever position.
4. Recall that the APU mode switches will automatically move to the RUN position after ignition-start has taken place.
5. Recall that the APU run light will illuminate when an acceptable RPM is sensed.
6. Recall that the APU's will continue to run until one of the self-contained APU parameter sensors initiate an automatic shutdown or the switches are placed in OFF or the APU STOP switch in the wheel well is depressed.
7. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
8. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.
9. Recall that once an alternate throttle switch has been actuated, the primary throttle control system can be re-engaged only by actuation of the NORM THROT RESET pushbutton.

20.1.1.001.00*

SET ENGINE START SWITCH TO 'OFF'

	WINDSCREEN	= OBSERVED*
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF*

20.1.1.002.00*

SET ADS COUPLE SWITCH TO 'DISEN'

	CHECKLIST	= SEQUENCE
SET	ADS COUPLE SWITCH	
	L ADS COUPLE SWITCH	= DISEN

20.1.1.003.00*

SET APU MODE SW FOR RECD APU TO START AND RELEASE TO RUN

	CHECKLIST	= SEQUENCE
SET	APU MODE SWITCH	
	L APU MODE SW	= START*
	AND L APU MODE SW	= RUN
	AND L RUN LIGHT	= ON - G

20.1.1.004.00*

CHECK APPROPRIATE APU ECS SUPPLY SWITCH TO 'ECS SPLY'

	CHECKLIST	= SEQUENCE
CHECK	ECS SUPPLY SW	
	L ECS SUPPLY SW	= ECS SPLY

20.1.1.005.00*

DEPRESS ENGINE FIRE SWITCHLIGHT FOR AFFECTED ENGINE

	CHECKLIST	= SEQUENCE*
DEPRESS	ENGINE FIRE SWITCHLIGHT 4	
	ENGINE FIRE SWITCHLIGHT 4	= DEPRESSED

20.1.1.006.00*

SET ENGINE IGNITION SWITCH TO 'OFF'

	CHECKLIST	= SEQUENCE
SET	ENGINE IGNITION SWITCH	
	ENGINE IGNITION SWITCH	= OFF

20.1.1.007.00*

HOLD ALTERNATE THROTTLE SW FOR AFFECTED ENG IN DECR POSITION

	CHECKLIST	= SEQUENCE
HOLD	ALTERNATE THROTTLE SWITCH 4	
	ALTERNATE THROTTLE SWITCH 4	= DECR

20.1.1.008.00*

SET ENG START SW TO START MOMENTARILY AND RELEASE TO RUN

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= START
	AND ENGINE START SWITCH 4	= RUN

20.1.1.009.00*

RELEASE ALTERNATE THROTTLE SWITCH ON AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
RELEASE	ALTERNATE THROTTLE SWITCH 4	
	ALTERNATE THROTTLE SWITCH 4	= OFF*

20.1.1.010.00*

SET ENGINE START SWITCH TO 'OFF'

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF

20.1.1.011.00*

ABANDON THE AIR VEHICLE

	WINDSCREEN	= OBSERVED
	OR L RUN LIGHT	= ON
	OR R RUN LIGHT	= ON
ABANDON	A-V CREW MODULE	
	A-V CREW MODULE	= MANNED*

ENABLING OBJECTIVES (ontinued)

10. Recall that moving the engine start switch to START will cause the hydraulic pumps to be depressurized, the non-essential loads to be cut off, ECS bleed air supply valves to be closed and the ADG (Accessory Drive Gearbox) torque converter to be filled with oil.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.1.1.1	20.1.1.4	20.1.1.7	20.1.1.10
	20.1.1.2	20.1.1.5	20.1.1.8	20.1.1.11
	20.1.1.3	20.1.1.6	20.1.1.9	

OBJECTIVE: PERFORM NACELLE FIRE-ENGINE PROCEDURES 20.2

CRITICALITY: 2 DIFFICULTY: 2

INITIAL CONDITIONS: 1. Engine fire switchlight illuminates
2. Master warning aural tone heard in headsets

CONCURRENT TASKS:

INTERACTION TASKS: 1. Ground observer confirms nacelle fire

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that when the air vehicle is on the ground and an ENG FIRE switchlight illuminates, the corresponding APU firewall fuel valve is automatically shut off.
2. Recall that when an engine fire switchlight is depressed it latches mechanically in that position shutting off the respective engine firewall fuel valve, and arming the corresponding fire extinguishing system.
3. Recall that the master (general) warning audio tone is heard when a fire is sensed by the fire detection loops in the engine/ADG compartments.
4. Recall that momentary selection of the appropriate AGENT DISCH switch to MAIN or RES will direct extinguishing agent from the main or reserve reservoir to the Engine/ADG compartment as determined by the actuated ENG FIRE switchlight.
5. Recall that the agent discharge light will illuminate when the extinguishing agent reservoir has been discharged.
6. Recall that selection of the engine start switch to OFF will drive the engine power lever to off independently of flight station throttle control lever position.
7. Recall that the reserve extinguishing agent should not be discharged until waiting approximately 30 seconds for the engine fire switchlight to go out.

ENABLING OBJECTIVES: (continued)

8. Recall that the brakes are locked in PARK by the actuation of the parking brake control switch after the toe operated brakes on the rudder pedals have been depressed.
9. Recall that the parking brake switchlight will illuminate PARKING when the parking brake is locked.
10. Recall the procedures for abandoning the A/V on the ground.

ANCILLARY OBJECTIVES:

1. Recall that switchlights on the left and right sides of the FIRE WARN & EXTG panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
2. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-actuated position.
3. Recall that the master warning audio tone will continue to sound until the situation has been corrected or either MSTR AUDIO CUTOUT button has been depressed.
4. Recall that when an ENG FIRE switchlight is depressed and the appropriate AGENT DISCH switch is actuated, extinguishing agent will be directed simultaneously into the selected Engine and ADG compartments. Also, agent will be directed into the appropriate APU compartment if the depressed ENG FIRE switchlight is for an outboard engine.
5. Recall that the agent discharge light will be extinguished 15 to 30 seconds after illumination.
6. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
7. Recall that the brakes will remain set until the toe operated brakes are depressed and then released.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.1.2.1	20.1.2.4	20.1.2.7
	20.1.2.2	20.1.2.5	20.1.2.8
	20.1.2.3	20.1.2.6	20.1.2.9

20.1.2.001.00*

DEPRESS ENGINE FIRE SWITCHLIGHT FOR AFFECTED ENGINE

	ENGINE FIRE SWITCHLIGHT 4 AND PILOT ICS	= 'ENG FIRE' = FIRE TONE
DEPRESS	ENGINE FIRE SWITCHLIGHT 4	
	ENGINE FIRE SWITCHLIGHT 4	= DEPRESSED

20.1.2.002.00*

SET AGENT DISCH SWITCH TO MAIN FOR AFFECTED ENGINE*

	CHECKLIST	= SEQUENCE
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH AND R MAIN AGENT DISCHARGE LIGHT	= MAIN = 'MAIN AGENT DISC

20.1.2.003.00*

SET ENGINE START SWITCH TO OFF FOR AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF

20.1.2.004.00*

DEPRESS MASTER AUDIO CUTOUT PUSHBUTTON

	CHECKLIST	= SEQUENCE
DEPRESS	MSTR AUDIO CUTOUT	
	MSTR AUDIO CUTOUT	= DEPRESSED

20.1.2.005.00*

ALERT TOWER OF EMERGENCY

	CHECKLIST	= SEQUENCE
TRANSMIT	COPILOTS UHF	
	COPILOTS UHF	= ENGINE FIRE

20.1.2.006.00*

SET AGENT DISCH SWITCH TO RES FOR AFFECTED ENGINE

SET

ENGINE FIRE SWITCHLIGHT 4 = 'ENG FIRE'
R AGENT DISCH SWITCH
R AGENT DISCH SWITCH = RES*
AND R RES AGENT DISCHARGE LIGHT = 'RES AGENT DISCH

20.1.2.007.00*

STOP THE AIR VEHICLE

STOP

ENGINE FIRE SWITCHLIGHT 4 = 'ENG FIRE'
A-V
A-V = STOPPED*

20.1.2.008.00*

SET PARKING BRAKES ON AIR VEHICLE

SET

A-V = STOPPED
PARKING BRAKE
PARKING BRAKE = SET

20.1.2.009.00*

ABANDON THE AIR VEHICLE

ABANDON

PARKING BRAKE = SET
A-V CREW MODULE
A-V CREW MODULE = MANNED*

OBJECTIVE: PERFORM NACELLE FIRE-APU PROCEDURES 20.3

CRITICALITY: 2 DIFFICULTY: 2

INITIAL CONDITIONS: 1. Engine fire switchlight illuminates
2. Master warning aural tone heard in headsets

CONCURRENT TASKS:

INTERACTION TASKS: 1. Ground observer confirms nacelle fire

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that when the air vehicle is on the ground and an APU FIRE switchlight illuminates, the corresponding APU firewall fuel valve will be commanded closed and the APU shut down sequence will be initiated.
2. Recall that when an APU fire switchlight is depressed it latches mechanically in that position shutting off the respective APU firewall fuel valve and arming the corresponding extinguishing system.
3. Recall that illumination of either APU switchlight also triggers a master aural tone in the crew headsets.
4. Recall that momentary selection of the appropriate AGENT DISCH switch to MAIN or RES will direct extinguishing agent from the main or reserve reservoir to the APU compartment as determined by the actuated APU FIRE switchlight.
5. Recall that the agent discharge light will illuminate when the extinguishing agent reservoir has been discharged.
6. Recall that actuation of the APU mode switch to OFF provides an electric signal to the APU control system to shut down the APU, but it leaves the inlet and exhaust doors open.
7. Recall that the reserve extinguishing agent should not be discharged until waiting approximately 30 seconds for the engine fire switchlight to go out.
8. Recall that the brakes are locked in PARK by the actuation of the parking brake control switch after the toe operated brakes on the rudder pedals have been depressed.

ENABLING OBJECTIVES: (continued)

9. Recall that the parking brake switchlight will illuminate PARKING when the parking brake is locked.
10. Recall the procedures for abandoning the A/V on the ground.

ANCILLARY OBJECTIVES:

1. Recall that switchlights on the left and right sides of the FIRE WARN & EXTG panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
2. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-actuated position.
3. Recall that the master warning audio tone will continue to sound until the situation has been corrected or either MSTR AUDIO CUTOUT button has been depressed.
4. Recall that when an APU FIRE switchlight is depressed and the appropriate AGENT DISCH switch is actuated, extinguishing agent will be directed simultaneously into the APU compartment and the outboard Engine and ADG compartment next to the affected APU.
5. Recall that the agent discharge light will be extinguished 15 to 30 seconds after illumination.
6. Recall that the APU mode switch must be pulled out in order to reposition it to the OFF position.
7. Recall that the brakes will remain set until the toe operated brakes are depressed and then released.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.1.3.1	20.1.3.4	20.1.3.7
	20.1.3.2	20.1.3.5	20.1.3.8
	20.1.3.3	20.1.3.6	20.1.3.9

20.1.3.001.00*

DEPRESS APU FIRE SWITCHLIGHT FOR AFFECTED APU

	R APU FIRE SWITCHLIGHT AND PILOT ICS	= 'APU FIRE' = FIRE TCNE
DEPRESS	R APU FIRE SWITCHLIGHT	
	R APU FIRE SWITCHLIGHT	= DEPRESSED

20.1.3.002.00*

SET AGENT DISCH SWITCH TO MAIN FOR AFFECTED APU*

	CHECKLIST	= SEQUENCE
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH AND R MAIN AGENT DISCHARGE LIGHT	= MAIN = 'MAIN AGENT DISC

20.1.3.003.00*

SET APU MODE SWITCH TO OFF FOR AFFECTED APU

	CHECKLIST	= SEQUENCE
SET	MODE SWITCHES	
	MODE SWITCHES AND R RUN LIGHT	= OFF* = OFF

20.1.3.004.00*

DEPRESS MASTER AUDIO CUTOFF PUSHBUTTON

	CHECKLIST	= SEQUENCE
DEPRESS	MSTR AUDIO CUTOFF	
	MSTR AUDIO CUTOFF	= DEPRESSED

20.1.3.005.00*

ALERT TOWER OF EMERGENCY

	CHECKLIST	= SEQUENCE
TRANSMIT	COPILOTS UHF	
	COPILOTS UHF	= NACELLE FIRE

20.1.3.006.00*

SET AGENT DISCH SWITCH TO RES FOR AFFECTED APU

	R APU FIRE SWITCHLIGHT	= 'APU FIRE'
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH	= RES*
	AND R RES AGENT DISCHARGE LIGHT	= 'RES AGENT DISCH

20.1.3.007.00*

STOP THE AIR VEHICLE

	R APU FIRE SWITCHLIGHT	= 'APU FIRE'
STOP	A-V	
	A-V	= STOPPED*

20.1.3.008.00*

SET PARKING BRAKES ON AIR VEHICLE

	A-V	= STOPPED
SET	PARKING BRAKE	
	PARKING BRAKE	= SET

20.1.3.009.00*

ABANDON THE AIR VEHICLE

	PARKING BRAKE	= SET
ABANDON	A-V CREW MODULE	
	A-V CREW MODULE	= MANNED*

OBJECTIVE:

PERFORM FIRE DETECTION SYSTEM FAILURE PROCEDURES 20.4

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Fire detection light illuminates
2. Master caution switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that the FIRE DETR light will illuminate (flashing) when any of the six LOOP A or six LOOP B lights are illuminated.
2. Recall that by depressing either MASTER CAUTION switchlight both MASTER CAUTION lights are extinguished and the FIRE DETR light changes from flashing to steady.
3. Recall that illumination of either a LOOP A or LOOP B light indicates a failure in the fire detection system.
4. Recall that selection of the non-illuminated LOOP A or LOOP B switch position extinguishes the loop light, isolates the faulty fire detection system loop and enables the remaining loop to detect a fire.

ANCILLARY OBJECTIVES:

1. Recall that a fire must be sensed both by detector LOOPS A and B before the corresponding ENG FIRE switchlight will illuminate and the master warning aural tone will sound.
2. Recall that the LOOP A and LOOP B indicator lights are illuminated when the respective fire detection loop develops a short to ground.
3. Recall that during ground operation the master warning aural tone will sound over the crew headsets to alert the crew about loss of a fire detector loop.
4. Recall that the master warning audio tone will be silenced when the non-illuminated LOOP A or LOOP B selection has been made.

OPERATOR: P/CP

TASK ELEMENTS:

20.1.4.1	20.1.4.2.2	20.1.4.3.2
20.1.4.2	20.1.4.3	20.1.4.3.3
20.1.4.2.1	20.1.4.3.1	20.1.4.3.4

20.1.4.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

	FIRE DETECTION LIGHT	= 'FIRE DETR'-FL
DEPRESS	MASTER CAUTION SWITCHLIGHT	
	MASTER CAUTION SWITCHLIGHT	= OFF

20.1.4.002.00*

DETERMINE WHICH FIRE DETR LOOP LIGHTS ARE ILLUMINATED*

CHECKLIST = SEQUENCE

20.1.4.002.01*

DETERMINE WHICH ENGINE FIRE DETR LOOP LIGHTS ARE ILLUMINATED

CHECKLIST = SEQUENCE

DETERMINE

ENGINE LOOP A LIGHT 4
ENGINE LOOP B LIGHT 4

ENGINE LOOP A LIGHT 4 = ON

20.1.4.002.02*

DETERMINE WHICH APU FIRE DETR LOOP LIGHTS ARE ILLUMINATED

CHECKLIST = SEQUENCE

DETERMINE

APU LOOP A LIGHT
APU LOOP B LIGHT

APU LOOP A LIGHT = ON

20.1.4.003.00*

POSITION AFFECTED DETR SW TO THE NON-ILLUMINATED LOOP LIGHT*

20.1.4.003.01*

POSITION AFFECTED DETR SW TO THE NON-ILLUM ENG LOOP LIGHT*

	ENGINE LOOP B LIGHT 4	= ON
POSITION	LOOP LOCKOUT SWITCH 4	
	LOOP LOCKOUT SWITCH 4	= LOOP A

20.1.4.003.02*

POSITION AFFECTED DETR SW TO THE NON-ILLUM ENG LOOP LIGHT

	ENGINE LOOP A LIGHT 4	= ON
POSITION	LOOP LOCKOUT SWITCH 4	
	LOOP LOCKOUT SWITCH 4	= LOOP B

20.1.4.003.03*

POSITION AFFECTED DETR SW TO THE NON-ILLUM APU LOOP LIGHT

	APU LOUP B LIGHT	= ON
POSITION	APU LOCKOUT SWITCHES	
	APU LOCKOUT SWITCHES	= LOOP A

20.1.4.003.04*

POSITION AFFECTED DETR SW TO THE NON-ILLUM APU LOOP LIGHT

	APU LOOP A LIGHT	= ON
POSITION	APU LOCKOUT SWITCHES	
	APU LOCKOUT SWITCHES	= LOOP B

OBJECTIVE: PERFORM EMERGENCY AIR VEHICLE BRAKING 20.5

CRITICALITY: 3 DIFFICULTY: 2

INITIAL CONDITIONS: 1. Normal braking is ineffective.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that when the emergency brake switch is set to EMERG, pressure from hydraulic accumulators power the dual braking system in addition to the regular hydraulic system.
2. Recall that the antiskid system is shut off when the emergency brake switch is set to the emergency position.
3. Recall that the antiskid light on the flight station caution panel will illuminate whenever the system is inoperative even though it has not malfunctioned.
4. Recall that the parking brake switchlight must be held depressed while the toe brakes are actuated.

ANCILLARY OBJECTIVES:

1. Recall that the accumulators for the emergency braking system provide at least 15 full brake applications independent of the air vehicle's hydraulic system.
2. Recall that the antiskid light also triggers both the pilot's and the copilot's Master Caution light.
3. Recall that the green light within the parking brake switchlight will illuminate when the parking brake is locked.

OPERATOR: P/CP

TASK ELEMENTS: 20.1.5.1 20.1.5.3
20.1.5.2 20.1.5.3.1
20.1.5.3.2

20.1.5.001.00*

RETARD THROTTLES TO IDLE

ADJUST BRAKE CONTROL PANEL = TBD
THROTTLE LEVERS
THROTTLE LEVERS = IDLE*

20.1.5.002.00*

SET EMERGENCY BRAKE SWITCH TO 'EMERG'*

SET THROTTLE LEVERS = IDLE
EMERGENCY BRAKE SWITCH
EMERGENCY BRAKE SWITCH = EMERG
AND ANTISKID CAUTION LIGHT = 'ANTISKID'

20.1.5.003.00*

DEPRESS PARKING BRAKE SWITCHLIGHT AND TOE BRAKES

SET PARKING BRAKE CONTROL SWITCHLT

20.1.5.003.01*

DEPRESS AND HOLD PARKING BRAKE SWITCHLIGHT

DEPRESS EMERGENCY BRAKING → EFFECTIVE
PARKING BRAKE CONTROL SWITCHLT
PARKING BRAKE CONTROL SWITCHLT = 'PARKING'

20.1.5.003.02*

DEPRESS TOE BRAKES

DEPRESS PARKING BRAKE CONTROL SWITCHLT = 'PARKING'
TOE BRAKES
TOE BRAKES = DEPRESSED*

OBJECTIVE:

ABANDON AIR VEHICLE ON GROUND

20.6

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Contingencies (uncontrolled fire, etc.) that require the aircrew to leave the air vehicle.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that when an engine fire switchlight is depressed it latches mechanically in that position shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
2. Recall that a pause (approximately 1 second) must be observed between actuations of fire switchlights on each side of the FIRE WARN & EXTGH panel.
3. Recall that when the battery select switch is in OFF the batteries are removed from the d c busses.
4. Recall that the brakes are locked in PARK by the actuation of the parking brake control switch after the toe-operated brakes on the rudder pedals have been depressed.
5. Recall that the parking brake switchlight will illuminate PARKING when the parking brake is locked.

ANCILLARY OBJECTIVES:

1. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
2. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.

ANCILLARY OBJECTIVES: (continued)

3. Recall that if a pause between actuations of fire switchlights on each side of the FIRE WARN & EXTGH panel is not observed, the fuel isolation/shutoff valves may not fully close.
4. Recall that if the fuel isolation/firewall shutoff valves are partially open, the engines will not shut down.
5. Recall that the fuel isolation/firewall shutoff valves may not fully close if the battery is moved to OFF without a pause after the last fire button is depressed.
6. Recall that a fuel isolation/firewall shutoff valve may not fully close if all ac power is lost after a fire button is depressed.
7. Recall that the brakes will remain set until the toe-operated brakes are depressed and then released.

OPERATOR: P/CP

TASK ELEMENTS:	20.1.6.1	20.1.6.4
	20.1.6.2	20.1.6.5
	20.1.6.3	

20.1.6.001.00*

DEPRESS ENG & APU FIRE SWITCHLIGHTS (6)*

	A-V	= STOPPED
DEPRESS	ENG FIRE SWITCHLIGHTS L APU FIRE SWITCHLIGHT R APU FIRE SWITCHLIGHT	
	ENG FIRE SWITCHLIGHTS AND L APU FIRE SWITCHLIGHT AND R APU FIRE SWITCHLIGHT	= DEPRESSED = DEPRESSED = DEPRESSED

20.1.6.002.00*

ALERT CREW USING ICS CALL BUTTON

	CHECKLIST	= SEQUENCE
COMMUNICATE	CALL SWITCH-COPILOT ICS CALL SWITCH-COPILOT ICS	
		= 'ABANDON A-V'

20.1.6.003.00*

SET BATTERY SWITCH TO 'OFF'

	CHECKLIST	= SEQUENCE
SET	BATTERY SELECT SWITCH BATTERY SELECT SWITCH	
		= OFF

20.1.6.004.00*

SET PARKING BRAKES

	CHECKLIST	= SEQUENCE
SET	PARKING BRAKE CONTROL SWITCHLT PARKING BRAKE CONTROL SWITCHLT= ON*	

20.1.6.005.00*

EXIT AIR VEHICLE

	CHECKLIST	= SEQUENCE
ABANDON	A-V CREW MODULE A-V CREW MODULE	
		= MANNED

OBJECTIVE:

ABORT TAKE OFF

20.7

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS:

1. Contingencies (acceleration check out of tolerance, etc.).

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that with the A/V on the ground all four spoilers on each wing will be extended when the speed brake switch on the #4 throttle is moved aft.
2. Recall that antiskid braking with full brake pedal deflection will give the most effective deceleration.

ANCILLARY OBJECTIVES:

1. Recall that all the spoiler indicators on the surface position display will show UP as soon as the spoilers move out of the fully retracted positions.
2. Recall that the control stick should be held full aft and centered while maximum braking is applied.
3. Recall that hot brakes will usually occur during any maximum braking abort on a dry or wet runway.
4. Recall that if a brake fire should occur, the A/V should be abandoned.

OPERATOR: P/CP

TASK ELEMENTS:

20.2.1.1 20.2.1.3
20.2.1.2 20.2.1.4

20.2.1.001.00*

RETARD THROTTLES TO IDLE

ADJUST

THROTTLE LEVERS

THROTTLE LEVERS

= IDLE

20.2.1.002.00*

EXTEND SPEED BRAKES

SET

CHECKLIST

= SEQUENCE

SPEED BRK CONTROL-PIL

SPEED BRK CONTROL-PIL

= CUT

20.2.1.003.00*

APPLY WHEEL BRAKES

DEPRESS

CHECKLIST

= SEQUENCE

TOE BRAKES

TOE BRAKES

= DEPRESSED

20.2.1.004.00*

NOTIFY TOWER AND REQUEST ASSISTANCE IF NEEDED

TRANSMIT

CHECKLIST

= SEQUENCE

COPILOTS UHF

COPILOTSUHF

= ABORTING TAKEOFF*

OBJECTIVE: ABORT TAKE OFF-ENGINE FAILURE

20.8

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Loss of power on engine

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that with the A/V on the ground all four spoilers on each wing will be extended when the speed brake switch on the #4 throttle is moved aft.
2. Recall that antiskid braking with full brake deflection will give the most effective deceleration.
3. Recall that nosewheel steering should be used in maintaining directional control on the runway.
4. Recall that differential braking can be used for directional control, but with a consequent increase in stopping distance.
5. Recall that when an engine fire switchlight is depressed it latches mechanically in that position, shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
6. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.

ANCILLARY OBJECTIVES:

1. Recall that all the spoiler indicators on the surface position display will show up as soon as the spoilers move out of the fully retracted positions.
2. Recall that the control stick should be held full aft and centered while maximum braking is applied.
3. Recall that hot brakes will usually occur during any maximum braking abort on a dry or wet runway.

ANCILLARY OBJECTIVES: (continued)

4. Recall that if a brake fire should occur the A/V should be abandoned.
5. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
6. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.
7. Recall that selection of the engine start switch to OFF will drive the engine power lever to off, independently of flight station throttle control lever position.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.2.2.1	20.2.2.4	20.2.2.6
	20.2.2.2	20.2.2.5	20.2.2.7
	20.2.2.3		

20.2.2.001.00*

RETARD THROTTLES TO IDLE

	CORE RPM INDICATOR	= TBD*
ADJUST	THROTTLE LEVERS	
	THROTTLE LEVERS	= IDLE

20.2.2.002.00*

EXTEND SPEED BRAKES

	CHECKLIST	= SEQUENCE
SET	SPEED BRK CONTROL-PIL	
	SPEED BRK CONTROL-PIL	= OUT

20.2.2.003.00*

APPLY WHEEL BRAKES

	CHECKLIST	= SEQUENCE
DEPRESS	TOE BRAKES	
	TOE BRAKES	= DEPRESSED

20.2.2.004.00*

MAINTAIN DIRECTION ON RUNWAY

	CHECKLIST	= SEQUENCE
TRACK	RUDDER PEDALS	
	A-V	= PROPER TRACK*

20.2.2.005.00*

DEPRESS ENG FIRE SWITCHLIGHT ON AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
DEPRESS	ENGINE FIRE SWITCHLIGHT 4	
	ENGINE FIRE SWITCHLIGHT 4	= DEPRESSED

20.2.2.006.00*

SET ENGINE START-RUN SWITCH TO OFF FOR AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF

20.2.2.007.00*

NOTIFY TOWER AND REQUEST ASSISTANCE IF NEEDED

	CHECKLIST	= SEQUENCE
TRANSMIT	COPILOTS UHF	
	COPILOTS UHF	= ABORTING TAKEOFF*

OBJECTIVE:

CONTINUE TAKE OFF-ENGINE FAILURE

20.9

CRITICALITY: 3

DIFFICULTY: 3

INITIAL CONDITIONS: 1. Loss of power on engine

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

1. Angle of attack-TBD (\pm degs) during flap and slat retraction.
2. Vertical velocity-TBD (\pm ft/min) before landing gear retracted.
3. Airspeed-TBD (\pm kts) during flap and slat retraction.
4. Proper sequence.
5. Switches in proper positions.

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain directional control and recommended climb speed.
2. Recall speed before which landing gear must be retracted.
3. Recall wing flaps limit speeds at various settings.
4. Recall the maximum slats retraction speed.
5. Recall that the recommended climb speed will normally be maintained by adjusting the pitch attitude of the A/V, since the throttles will be set for maximum thrust.
6. Recall that when an engine fire switchlight is depressed, it latches mechanically in that position, shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
7. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
8. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wingtip trailing edge.

ANCILLARY OBJECTIVES:

1. Recall that maximum thrust will be used for all normal take offs and so it will not be necessary to advance throttles when engine failure occurs.
2. Recall that wheel brakes should not be applied before or during landing gear retraction.
3. Recall that pitch attitude should be varied, so that 8.5 degrees angle-of-attack is not exceeded as the flaps are retracted.
4. Recall that maximum rudder authority will be reduced to 10 degrees after slat retraction.
5. Recall that if more than 10 degrees of rudder is being held as the slats retract, rudder limiting will not occur until the rudder deflection is reduced to less than 10 degrees.
6. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
7. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.
8. Recall that selection of the engine start switch to OFF will drive the engine power lever to off independently of flight station throttle control lever position.
9. Recall that if the engine failure can definitely be determined to be non-mechanical in origin (inlet turbulence, icing, etc.) and the engine appears otherwise normal, an air start can be attempted.
10. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
11. Recall that fuel cannot be dumped from the main tanks.
12. Recall that manual dumping of fuel requires that the transfer pumps in the tank from which fuel is to be dumped, must be turned on and all other tanks turned off.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.2.3.1	20.2.3.5	20.2.3.8
	20.2.3.2	20.2.3.6	20.2.3.9
	20.2.3.3	20.2.3.7	20.2.3.10
	20.2.3.4		

20.2.3.001.00*

ADVANCE THROTTLES TO MAX POWER

	CORE RPM INDICATOR	= TBD*
ADJUST	THROTTLE LEVERS	
	THROTTLE LEVERS	= MAX POWER

20.2.3.002.00*

MAINTAIN DIRECTIONAL CONTROL AND BEST CLIMB SPEED

	CHECKLIST	= SEQUENCE
TRACK	FLIGHT CONTROL STICK	
	RUDDER PEDALS	
	HORIZONTAL SITUATION INDICATOR= TBD	
	AND AIRSPEED-MACH NUMBER INDICATOR= TBD	

20.2.3.003.00*

RAISE LANDING GEAR HANDLE WHEN AIR VEHICLE SAFELY AIRBORNE

	A-V	= FLYING
RAISE	LANDING GEAR CONTROL	
	LANDING GEAR CONTROL	= UP
	AND GEAR WARNING LIGHT	= OFF

20.2.3.004.00*

RAISE FLAPS AS REQUIRED

	ANGLE-OF-ATTACK INDICATOR	< 8.5*
RAISE	FLAP-SLAT CONTROL HANDLE	
	FLAP-SLAT CONTROL HANDLE	= FLAP UP

20.2.3.005.00*

RAISE SLATS AS REQUIRED

	CHECKLIST	= SEQUENCE
RAISE	FLAP-SLAT CONTROL HANDLE	
	FLAP-SLAT CONTROL HANDLE	= SLAT RET*

20.2.3.006.00*

ADJUST THROTTLES TO MAINTAIN BEST FAILED ENGINE CLIMB SPEED

	CHECKLIST	= SEQUENCE
ADJUST	THROTTLE LEVERS	
	THROTTLE LEVERS	= TBD

20.2.3.007.00*

DEPRESS ENGINE FIRE SWITCHLIGHT ON FAILED ENGINE

	CHECKLIST	= SEQUENCE
DEPRESS	#4 ENGINE FIRE SWITCHLIGHT	
	ENGINE-FIRE SWITCHLIGHT 4	= DEPRESSED

20.2.3.008.00*

SET ENGINE START-RUN SWITCH TO OFF ON FAILED ENGINE

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF*

20.2.3.009.00*

DUMP FUEL AS REQUIRED

	CHECKLIST	= SEQUENCE
SET	DUMP SWITCH	
	DUMP SWITCH	= DUMP

20.2.3.010.00*

LAND AS SOON AS PRACTICAL

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: ABORT TAKE OFF - ENGINE FIRE

20.10

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Engine fire switchlight illuminates

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that when an engine fire switchlight is depressed, it latches mechanically in that position, shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
2. Recall that momentary selection of the appropriate AGENT DISCH switch to MAIN or RES will direct extinguishing agent from the main or reserve reservoir to the Engine/ADG compartment as determined by the actuated ENG FIRE switchlight.
3. Recall that the agent discharge light will illuminate when the extinguishing agent reservoir has been discharged.
4. Recall that with the A/V on the ground, all four spoilers on each wing will be extended when the speed brake switch on the #4 throttle is moved aft.
5. Recall that antiskid braking with full brake pedal deflection will give the most effective deceleration.
6. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
7. Recall that the master (general) warning audio tone is heard when a fire is sensed by the fire detection loops in the engine/ADG compartments.
8. Recall that the reserve extinguishing agent should not be discharged until waiting approximately 30 seconds for the engine fire switchlight to go out.
9. Recall that the A/V should be abandoned if fire persists, and is confirmed 30 seconds after reserve agent discharge.
10. Recall the procedures for abandoning the A/V on the ground.

ENABLING OBJECTIVES: (continued)

11. Recall that the engines and systems should be shutdown if the fire is extinguished.
12. Recall the shutdown procedures.

ANCILLARY OBJECTIVES:

1. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
2. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.
3. Recall that when an ENG FIRE switchlight is depressed and the appropriate AGENT DISCH switch is actuated, extinguishing agent will be directed simultaneously into the selected Engine and ADG compartments. Also, agent will be directed into the appropriate APU compartment if the depressed ENG FIRE switchlight is for an outboard engine.
4. Recall that the agent discharge light will be extinguished 15 to 30 seconds after illumination.
5. Recall that all the spoiler indicators on the surface position display will show UP as soon as the spoilers move out of the fully retracted positions.
6. Recall that the control stick should be held full aft and centered while maximum braking is applied.
7. Recall that hot brakes will usually occur during any maximum braking abort, on a dry or wet runway.
8. Recall that if a brake fire should occur, the A/V should be abandoned.
9. Recall that selection of the engine start switch to OFF, will drive the engine power lever to off independently of flight station throttle control lever position.
10. Recall that the master warning audio tone will continue to sound until the situation has been corrected, or either MSTR AUDIO CUTOFF button has been depressed.
11. Recall that the parking brake should not be set after a maximum braking abort.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.2.4.1	20.2.4.5	20.2.4.9
	20.2.4.2	20.2.4.6	20.2.4.10
	20.2.4.3	20.2.4.7	20.2.4.11
	20.2.4.4	20.2.4.8	

20.2.4.001.00*

RETARD THROTTLES TO IDLE*

ADJUST ENGINE FIRE SWITCHLIGHT 4 = 'ENG FIRE'
THROTTLE LEVERS
THROTTLE LEVERS = IDLE

20.2.4.002.00*

DEPRESS ENG FIRE SWITCHLIGHT ON AFFECTED ENGINE

DEPRESS PILOT ICS = 'SHUTDOWN 4'
ENGINE FIRE SWITCHLIGHT 4
ENGINE FIRE SWITCHLIGHT 4 = DEPRESSED

20.2.4.003.00*

SET AGENT DISCH SWITCH TO MAIN FOR AFFECTED ENGINE

SET PILOT ICS = 'R AGENT DISCH'
R AGENT DISCH SWITCH
R AGENT DISCH SWITCH = MAIN
AND R MAIN AGENT DISCHARGE LIGHT = 'MAIN AGENT DISC

20.2.4.004.00*

EXTEND SPEED BRAKES

SET CHECKLIST = SEQUENCE
SPEED BRK CONTROL-PIL
SPEED BRK CONTROL-PIL = OUT

20.2.4.005.00*

APPLY WHEEL BRAKES

DEPRESS CHECKLIST = SEQUENCE
TOE BRAKES
TOE BRAKES = DEPRESSED

20.2.4.006.00*

SET ENGINE START-RUN SWITCH TO OFF FOR AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF

20.2.4.007.00*

DEPRESS MASTER AUDIO CUTOFF PUSHBUTTON

	CHECKLIST	= SEQUENCE
DEPRESS	MSTR AUDIO CUTOFF	
	MSTR AUDIO CUTOFF	= DEPRESSED

20.2.4.008.00*

NOTIFY TOWER OF EMERGENCY

	CHECKLIST	= SEQUENCE
TRANSMIT	COPILOTS UHF	
	COPILOTS UHF	= ENG FIRE ON A-V

20.2.4.009.00*

SET AGENT DISCH SWITCH TO RES FOR AFFECTED ENGINE

	ENGINE FIRE SWITCHLIGHT 4	= 'ENG FIRE'
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH	= RES*
	AND R RES AGENT DISCHARGE LIGHT	= 'RES AGENT DISCH'

20.2.4.010.00*

ABANDON THE AIR VEHICLE*

	ENGINE FIRE SWITCHLIGHT 4	= 'ENG FIRE'
ABANDON	A-V CREW MODULE	
	A-V CREW MODULE	= MANNED*

20.2.4.011.00*

SHUTDOWN THE AIR VEHICLE

	ENGINE FIRE SWITCHLIGHT 4	= OFF
SHUTDOWN	A-V	
	A-V	= SHUTDOWN*

OBJECTIVE: CONTINUE TAKE OFF - ENGINE FIRE

20.11

CRITICALITY: 3

DIFFICULTY: 3

INITIAL CONDITIONS: 1. Engine fire switchlight illuminates

CONCURRENT TASKS:

INTERACTIONS:

PERFORMANCE LIMITS:

1. Angle of attack-TBD (\pm degs) during flap and slat retraction.
2. Vertical velocity-TBD (\pm ft/min) before landing gear retracted.
3. Airspeed-TBD (\pm kts) during flap and slat retraction.
4. Proper sequence.
5. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when an engine fire switchlight is depressed, it latches mechanically in that position, shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
2. Recall that momentary selection of the appropriate AGENT DISCH switch to MAIN or RES will direct extinguishing agent from the main or reserve reservoir to the Engine/ADG compartment as determined by the actuated ENG FIRE switchlight.
3. Recall that the agent discharge light will illuminate when the extinguishing agent reservoir has been discharged.
4. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
5. Coordinate control stick and rudder pedals to maintain directional control and recommended climb speed.
6. Recall speed before which the landing gear must be retracted.
7. Recall wing flaps limit speeds at various settings.
8. Recall the maximum slats retraction speed.
9. Recall that the reserve extinguishing agent should not be discharged until after waiting approximately 30 seconds for the engine fire switchlight to go out.

10. Recall that when an engine bleed air switch is set to OFF, bleed air from the specific engine to the ECS (Environmental Control System) is shut off.
11. Recall that the crewmembers should eject from the A/V if fire is confirmed and continues.
12. Recall the procedures for ejecting from the A/V.
13. Recall that fuel should be dumped and the A/V landed as soon as possible, if the fire is extinguished.
14. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wingtip trailing edge.

ANCILLARY OBJECTIVES:

1. Recall that maximum thrust will be used for all normal take-offs and so it will not be necessary to advance throttles when an engine fire light is illuminated.
2. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
3. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.
4. Recall that when an ENG FIRE switchlight is depressed and the appropriate AGENT DISCH switch is actuated, extinguishing agent will be directed simultaneously into the selected Engine and ADG compartments. Also, agent will be directed into the appropriate APU compartment, if the depressed ENG FIRE switchlight is for an outboard engine.
5. Recall that the agent discharge light will be extinguished 15 to 30 seconds after illumination.
6. Recall that selection of the engine start switch to OFF will drive the engine power lever to off independently of flight station throttle control lever position.
7. Recall that wheel brakes should not be applied before or during landing gear retraction.
8. Recall that pitch attitude should be varied so that 8.5 degrees angle-of-attack is not exceeded as the flaps are retracted.
9. Recall that maximum rudder authority will be reduced to 10 degrees after slat retraction.

10. Recall that if more than 10 degrees is being held as the slats retract, rudder limiting will not occur until the rudder deflection is reduced to less than 10 degrees.
11. Recall that the bleed air system extracts high temperature and high pressure air from a port on the interstage of each engine.
12. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
13. Recall that fuel cannot be dumped from the main tanks.
14. Recall that manual dumping of fuel requires that the transfer pumps in the tank from which fuel is to be dumped, must be turned on and all other tanks turned off.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.2.5.1	20.2.5.5	20.2.5.9	20.2.5.11.2	20.2.5.15
	20.2.5.2	20.2.5.6	20.2.5.10	20.2.5.12	
	20.2.5.3	20.2.5.7	20.2.5.11	20.2.5.13	
	20.2.5.4	20.2.5.8	20.2.5.11.1	20.2.5.14	

20.2.5.001.00*

ADVANCE THROTTLES TO MAX POWER

ADJUST ENGINE FIRE SWITCHLIGHT 4 = 'ENG FIRE'
THROTTLE LEVERS
THROTTLE LEVERS = MAX POWER

20.2.5.002.00*

DEPRESS ENG FIRE SWITCHLIGHT ON AFFECTED ENGINE

DEPRESS PILOT ICS = 'SHUTDOWN 4'
ENGINE FIRE SWITCHLIGHT 4
ENGINE FIRE SWITCHLIGHT 4 = DEPRESSED

20.2.5.003.00*

SET AGENT DISCH SWITCH TO MAIN FOR AFFECTED ENGINE

SET PILOT ICS = 'R AGENT DISCH'
R AGENT DISCH SWITCH
R AGENT DISCH SWITCH = MAIN
AND R MAIN AGENT DISCHARGE LIGHT = 'MAIN AGENT DISC

20.2.5.004.00*

SET ENGINE START-RUN SWITCH TO OFF FOR AFFECTED ENGINE

SET CHECKLIST = SEQUENCE
ENGINE START SWITCH 4
ENGINE START SWITCH 4 = OFF

20.2.5.005.00*

MAINTAIN RECOMMENDED BEST ENGINE-OUT CLIMB SPEED*

TRACK CHECKLIST = SEQUENCE
FLIGHT CONTROL STICK
RUDDER PEDALS
AIRSPEED-MACH NUMBER INDICATOR = TBD

20.2.5.006.00*

RAISE LANDING GEAR HANDLE

RAISE CHECKLIST = SEQUENCE
LANDING GEAR CONTROL
LANDING GEAR CONTROL = UP
AND GEAR WARNING LIGHT = OFF

20.2.5.007.00*

RAISE FLAPS AS REQUIRED

RAISE ANGLE-OF-ATTACK INDICATOR < 8.5*
FLAP-SLAT CONTROL HANDLE
FLAP-SLAT CONTROL HANDLE = FLAP UP

20.2.5.008.00*

RAISE SLATS AS REQUIRED

RAISE CHECKLIST = SEQUENCE
FLAP-SLAT CONTROL HANDLE
FLAP-SLAT CONTROL HANDLE = SLAT RET*

20.2.5.009.00*

SET SAME AGENT DISCH SWITCH TO RES FOR AFFECTED ENGINE

SET ENGINE FIRE SWITCHLIGHT 4 = 'ENG FIRE'
R AGENT DISCH SWITCH
R AGENT DISCH SWITCH = RES*
AND R RES AGENT DISCHARGE LIGHT = 'RES AGENT DISCH'

20.2.5.010.00*

SET ENG BLEED AIR SWITCH TO OFF FOR AFFECTED ENGINE

SET CHECKLIST = SEQUENCE
ENG BLEED AIR SWITCH 4
ENG BLEED AIR SWITCH 4 = OFF

20.2.5.011.00*

DEPRESS PREPARE TO EJECT SWITCHLIGHT AND CALL ON ICS*

20.2.5.011.01*

DEPRESS PREPARE TO EJECT SWITCHLIGHT

	CHECKLIST	= SEQUENCE
DEPRESS	PREPARE TO EJECT	
	PREPARE TO EJECT SWITCHLIGHT	= 'PREPARE TO EJECT'

20.2.5.011.02*

COPILOT GIVES 'PREPARE TO EJECT' COMMAND ON ICS

	CHECKLIST	= SEQUENCE
COMMUNICATE	CO-PILOT ICS	
	CO-PILOT ICS	= 'PREPARE TO EJECT'

20.2.5.012.00*

COMPLETE 'BEFORE EJECTION' CHECKLIST*

	CHECKLIST	= SEQUENCE
PERFORM	CHECKLIST	
	CHECKLIST	= PERFORMED*

20.2.5.013.00*

ALL CREW MEMBERS EJECT

	PREPARE TO EJECT SWITCHLIGHT	= 'PREPARE TO EJECT'
	AND CO-PILOT ICS	= 'PREPARE TO EJECT'
	AND CHECKLIST	= PERFORMED
PULL	EJECTION HANDLE	
	EJECTION HANDLE	= PULLED

20.2.5.014.00*

DUMP FUEL AS REQUIRED

	CHECKLIST	= SEQUENCE
SET	DUMP SWITCH	
	DUMP SWITCH	= DUMP*

20.2.5.015.00*

LAND AS SOON AS POSSIBLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM LOSS OF CREW COMPARTMENT PRESSURE PROCEDURES 20.12

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Cabin over 10,000 feet caution lights illuminates

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that the CAB OVER 10,000 light is illuminated flashing when the when the cabin pressure is more than the equivalent of 10,000 feet.
2. Recall that the oxygen regulator is set to EMERG to counteract the possible effects of hypoxia.
3. Recall that with the crew air source mode switch in RAM, conditioned air is shut off and the cabin is provided with air from a ram air scoop, if the A/V is below 450 KIAS and the total temperature is below 49 degrees centigrade.
4. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights are extinguished and the CAB OVER 10,000 light changes from flashing to steady.
5. Recall how to check that the oxygen mask is properly secured.
6. Recall that the A/V should be landed as soon as practicable, if the cabin altitude remains above 10,000 feet.

ANCILLARY OBJECTIVES:

1. Recall that the illumination of the CAB OVER 10,000 light triggers the illumination of the MASTER CAUTION lights.
2. Recall that the ram air scoop will not retract and structural damage and avionics overheating can occur, if the A/V is accelerated above 450 KIAS and 49 degrees total temperature.

OPERATOR: P/CP

<u>TASK ELEMENTS :</u>	20.3.1.1	20.3.1.1.4	20.3.1.5	20.3.1.5.4
	20.3.1.1.1	20.3.1.2	20.3.1.5.1	20.3.1.6
	20.3.1.1.2	20.3.1.3	20.3.1.5.2	
	20.3.1.1.3	20.3.1.4	20.3.1.5.3	

20.3.1.001.00*

SET OXYGEN REGULATOR KNOBS TO EMERG

20.3.1.001.01*

SET OXYGEN REGULATOR KNOB TO EMERG

SET

CABIN OVER 10000 CAUTION LIGHT = 'CAB OVER 10000'
DILUTER-PRESSURE DEMAND RGLTRP
DILUTER-PRESSURE DEMAND RGLTRP = EMERG

20.3.1.001.02*

SET OXYGEN REGULATOR KNOB TO EMERG

SET

PILOT ICS = 'CAB OVER 10000'
DILUTER-PRESSURE DEMAND-COP
DILUTER-PRESSURE DEMAND-COP = EMERG

20.3.1.001.03*

SET OXYGEN REGULATOR KNOB TO EMERG

SET

PILOT ICS = 'CAB OVER 10000'
DILUTER-PRESSURE DEMAND-OSO
DILUTER-PRESSURE DEMAND-OSO = EMERG

20.3.1.001.04*

SET OXYGEN REGULATOR KNOB TO EMERG

SET

PILOT ICS = 'CAB OVER 10000'
DILUTER-PRESSURE DEMAND-DSO
DILUTER-PRESSURE DEMAND-DSO = EMERG

20.3.1.002.00*

SET CREW RAM AIR SOURCE SWITCH TO RAM

SET

CHECKLIST = SEQUENCE
CREW AIR SOURCE MODE SWITCH
CREW AIR SOURCE MODE SWITCH = RAM*

20.3.1.003.00*

DESCEND A-V TO AVIONICS RAM AIR COOLING OPERATIONAL ENVELOPE

	CHECKLIST	= SEQUENCE
FLY	A-V	
	A-V	= LOWER ALTITUDE*

20.3.1.004.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

	CHECKLIST	= SEQUENCE
DEPRESS	MASTER CAUTION SWITCHLIGHT	
	MASTER CAUTION SWITCHLIGHT	= OFF

20.3.1.005.00*

CREW MEMBER STATUS CHECKED

20.3.1.005.01*

CREW MEMBER STATUS CHECKED

	CHECKLIST	= SEQUENCE
CHECK	OXYGEN MASK P	
	PILOT ICS	= OXYGEN OKAY

20.3.1.005.02*

CREW MEMBER STATUS CHECKED

	CHECKLIST	= SEQUENCE
CHECK	OXYGEN MASK C	
	CO-PILOT ICS	= OXYGEN OKAY

20.3.1.005.03*

CREW MEMBER STATUS CHECKED

	CHECKLIST	= SEQUENCE
CHECK	OXYGEN MASK O	
	OSO ICS	= OXYGEN OKAY

20.3.1.005.04*

CREW MEMBER STATUS CHECKED

	CHECKLIST	= SEQUENCE
CHECK	OXYGEN MASK D	
	DSO ICS	= OXYGEN OKAY

20.3.1.006.00*

LAND AS SOON AS PRACTICABLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM CABIN OVERHEAT PROCEDURES

20.13

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Crew discomfort because of overheat.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the crew temperature control knob is set to the full cold position, crew discomfort, because of cabin overheat should be lessened.
2. Recall that with the crew temperature mode switch in MAN, the crew compartment temperature will not be maintained at a specific temperature.
3. Recall that with the crew temperature mode switch in OFF, the heater control circuit is disabled.
4. Recall that with the crew air source switch in RAM, the source of conditioned air is shut off and the cabin is provided with air from a ram air scoop, if the air vehicle is within certain limits of altitude and speed.
5. Recall that with the stores air source switch in OFF, the flow of air from the stores coolant refrigeration package is cut off.
6. Recall that when an avionics air mode select switch is set to RAM, the specific avionics bay will not receive conditioned air from the air circulation loops.
7. Recall that the air vehicle should be landed as soon as possible, if the cabin overheat cannot be corrected.

ANCILLARY OBJECTIVES:

1. Recall that the crew temperature control knob operates in conjunction with the crew temperature mode switch.
2. Recall that the manual mode of the crew temperature control will probably require adjustments as the flight conditions change.

ANCILLARY OBJECTIVES: (continued.)

3. Recall that with the crew air source switch set in RAM, the air vehicle should be descended and decelerated, so it is within the avionics ram air cooling operational envelope.
4. Recall that the avionics air mode select switches should not be set to OFF when the air vehicle is in flight.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.3.2.1	20.3.2.5
	20.3.2.2	20.3.2.6
	20.3.2.3	20.3.2.7
	20.3.2.4	

20.3.2.001.00*

SET CREW TEMP CONTROL KNOB TO FULL COLD POSITION

SET CREW STATION = HOT*
CREW TEMP CONTROL
CREW TEMP CONTROL = COLD

20.3.2.002.00*

SET CREW TEMP SWITCH TO MAN

SET CREW STATION = HOT*
CREW TEMP MODE SWITCH
CREW TEMP MODE SWITCH = MAN

20.3.2.003.00*

SET CREW TEMP SWITCH TO OFF

SET CREW STATION = HOT*
CREW TEMP MODE SWITCH
CREW TEMP MODE SWITCH = OFF

20.3.2.004.00*

SET CREW RAM AIR SOURCE MODE SWITCH TO RAM

SET CHECKLIST = SEQUENCE
CREW AIR SOURCE MODE SWITCH
CREW AIR SOURCE MODE SWITCH = RAM*

20.3.2.005.00*

SET ST AIR SOURCE SWITCH TO OFF

SET CREW STATION = HOT*
ST AIR SOURCE CONTROL SWITCH
ST AIR SOURCE CONTROL SWITCH = OFF

20.3.2.006.00*

SET INTMD AVIONICS AIR SOURCE SWITCH TO RAM

SET CHECKLIST = SEQUENCE
INTMD AVIONICS AIR SOURCE SW
INTMD AVIONICS AIR SOURCE SW = RAM*

20.3.2.007.00*

LAND AS SOON AS PRACTICABLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM CABIN TOO COLD PROCEDURES

20.14

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Crew discomfort because of cabin too cold.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the crew temperature control knob is set to the full clockwise position, the temperature of the cabin air should increase.
2. Recall that the crew supply, cold air, foot warmer and side window outlets should be closed.
3. Recall that with the crew temperature mode switch in MAN, the crew compartment temperature will not be maintained at a specific temperature.
4. Recall that with the windshield mode select switch in ALTER DEFOG, a flow of engine bleed air is directed across the interior of both the pilot's and copilot's wind shield.
5. Recall that with the stores air source switch in OFF, the flow of air from the stores coolant refrigeration package is cut off.
6. Recall that with the crew air source switch in RAM, the source of conditioned air is shut off and the cabin is provided with air from a ram air scoop, if the air vehicle is within certain limits of altitude and speed.
7. Recall that when an avionics air mode select switch is set to RAM, the specific avionics bay will not receive conditioned air from the air circulation loops.
8. Recall that the air vehicle should be landed as soon as practical, if cabin temperature cannot be controlled.

ANCILLARY OBJECTIVES:

1. Recall that the crew temperature control knob operates in conjunction with the crew temperature mode switch.
2. Recall that all air outlets are adjustable for direction of flow.
3. Recall that all air outlets, with the exception of the foot and side window outlets, are adjustable for rate of flow.
4. Recall that the manual mode of the crew temperature control will probably require adjustments, as the flight conditions change.
5. Recall that with the windshield mode select switch in ALTER DEFOG, a stream of engine bleed air is provided, regardless of the windshield power switch position.
6. Recall that the ram air scoops must be extended within 5 minutes of turning the stores refrigeration unit off.
7. Recall that with the crew air source switch set in RAM, the air vehicle should be descended and decelerated, so it is within the avionics ram air cooling operational envelope.
8. Recall that the avionics air mode select switches should never be set to OFF, when the air vehicle is in flight.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.3.3.1	20.3.3.5
	20.3.3.2	20.3.3.6
	20.3.3.3	20.3.3.7
	20.3.3.4	20.3.3.8

20.3.3.001.00*

SET CREW TEMP CONTROL KNOB TO HOT, FULL CW POSITION

SET CREW STATION = COLD*
CREW TEMP CONTROL
CREW TEMP CONTROL = HOT

20.3.3.002.00*

CLOSE AIR OUTLETS*

CLOSE CREW STATION = COLD
AIR OUTLETS
AIR OUTLETS = CLOSED

20.3.3.003.00*

SET CREW TEMP SWITCH TO MAN

SET CREW STATION = COLD*
CREW TEMP MODE SWITCH
CREW TEMP MODE SWITCH = MAN

20.3.3.004.00*

SET WINDSHIELD HEAT MODE SWITCH TO ALTER DEFOG

SET CREW STATION = COLD*
WINDSHIELD MODE SELECT SWITCH
WINDSHIELD MODE SELECT SWITCH = ALTER DEFOG

20.3.3.005.00*

SET ST AIR SOURCE SWITCH TO OFF*

SET CREW STATION = COLD*
ST AIR SOURCE CONTROL SWITCH
ST AIR SOURCE CONTROL SWITCH = OFF

20.3.3.006.00*

SET CREW RAM AIR SOURCE MODE SWITCH TO RAM

SET CHECKLIST = SEQUENCE
CREW AIR SOURCE MODE SWITCH
CREW AIR SOURCE MODE SWITCH = RAM*

20.3.3.007.00*

SET INTMD AVIONICS AIR SOURCE SWITCH TO RAM

SET

CHECKLIST = SEQUENCE

INTMD AVIONICS AIR SOURCE SW

INTMD AVIONICS AIR SOURCE SW = RAM*

20.3.3.008.00*

LAND AS SOON AS PRACTICABLE

LAND

CHECKLIST = SEQUENCE

A-V

A-V

= LANDED

OBJECTIVE: PERFORM AVIONICS COMPARTMENT OVERHEAT PROCEDURES 20.15

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. One of the avionics compartment hot caution lights illuminates.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights are extinguished and the CREW COMPT AVIONICS HOT light changes from flashing to steady.
2. Recall what electrical equipment is considered to be non-essential.
3. Recall that the air vehicle should be decelerated and descended if in supersonic flight, to decrease total temperature.
4. Recall that when an avionics air mode select switch is set to RAM, the specific avionics bay will not receive conditioned air from the air circulation loops.
5. Recall that with the crew air source switch in RAM, the source of conditioned air is shut off and the cabin is provided with air from a ram air scoop, if the air vehicle is within certain limits of altitude and speed.
6. Recall that non-essential electrical equipment should be turned on, one at a time, while monitoring for overheat indications.
7. Recall that the air vehicle should be landed as soon as practical, if the overheat condition persists.

ANCILLARY OBJECTIVES:

1. Recall that the avionics air mode select switches should not be set to OFF, when the air vehicle is in flight.
2. Recall that with the crew air source switch set in RAM, the air vehicle should be flown within the avionics ram air cooling operational envelope.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.3.4.1	20.3.4.4
	20.3.4.2	20.3.4.5
	20.3.4.3	

20.3.4.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

DEPRESS

AVIONICS COMPARTMENTS OVERHEAT= 'CREW COMPT AVIO*
MASTER CAUTION SWITCHLIGHT
MASTER CAUTION SWITCHLIGHT = OFF

20.3.4.002.00*

SET ALL NON-ESSENTIAL ELECTRICAL EQUIPMENT TO OFF

SET

CHECKLIST = SEQUENCE
ALL NON-ESSENTIAL ELECT EQUIP
ALL NON-ESSENTIAL ELECT EQUIP = OFF

20.3.4.003.00*

DECELERATE AND DESCEND TO SUBSONIC CRUISE CONDITIONS*

FLY

CHECKLIST = SEQUENCE
A-V
A-V = LOWER ALTITUDE

20.3.4.004.00*

SET AVIONICS AND CREW AIR SOURCE MODE SWITCH TO RAM

SET

AVIONICS COMPARTMENTS OVERHEAT= 'CREW COMPT AVIO*
R CTL AVIONICS AIR MODE SELECT
CREW AIR SOURCE MODE SWITCH
R CTL AVIONICS AIR MODE SELECT= RAM*
AND CREW AIR SOURCE MODE SWITCH = RAM

20.3.4.005.00*

TURN ON ELECTRICAL EQUIPMENT

SET

AVIONICS COMPARTMENTS OVERHEAT= OFF*
ALL NON-ESSENTIAL ELECT EQUIP
ALL NON-ESSENTIAL ELECT EQUIP = ON*

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Smoke visible in crew compartment.
 2. Fumes detected in crew compartment.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
 2. Switches in proper position.

ENABLING OBJECTIVES:

1. Recall that each crew member should connect his oxygen mask and set his oxygen regulator at 100 percent at the first evidence of smoke or fumes in the crew compartment.
2. Recall the proper manner for donning a smoke hood.
3. Recall that each engine bleed air switch should be set to OFF to isolate the source of smoke or fumes, if they are coming from the air outlets.
4. Recall that the bleed air switches for the engines that were not causing the smoke or fumes should be left ON to provide conditioned air for the ECS, etc.
5. Recall that the CAB OVER 10,000 light will illuminate flashing when the cabin pressure is more than the equivalent of 10,000 feet.
6. Recall that with the stores air source switch in OFF, the flow of air from the stores coolant refrigeration package is cut off.
7. Recall that with the crew air source switch in RAM, the source of conditioned air is shut off and the cabin is provided with air from a ram air scoop, if the air vehicle is within certain limits of altitude and speed.
8. Recall that when an avionics air mode select switch is set to RAM, the specific avionics bay will not receive conditioned air from the air circulation loops.
9. Recall what electrical equipment is considered to be non-essential.
10. Recall that non-essential electrical equipment should be turned on, one at a time and a check made for smoke or fumes until the source is determined.

ENABLING OBJECTIVES: (continued)

11. Recall that the air vehicle should be landed as soon as practical if the source of smoke or fumes can be determined and eliminated.
12. Recall that the air vehicle should be landed as soon as possible, if the source of smoke or fumes cannot be isolated and the smoke or fumes persist.

ANCILLARY OBJECTIVES:

1. Recall that the source of the smoke or fumes may be isolated to an engine by selectively closing each engine bleed air valve and waiting 30 seconds to allow time for a change to be detected.
2. Recall that illumination of the CAB OVER 10,000 light triggers the illumination of the MASTER CAUTION lights.
3. Recall that if all engine bleed air switches are turned off, total system pressure will decay and refrigeration packages will be inoperative.
4. Recall that the loss of bleed air duct pressurization may result in damage to the duct.
5. Recall that loss of pressurization in the crew compartment may cause the flight crew to experience hypoxia and decompression.
6. Recall that with the stores air source switch in OFF, the ram air scoops must be extended within 5 minutes to minimize equipment damage.
7. Recall that with the crew air source switch in RAM, the air vehicle should be descended and decelerated until it is within the avionics ram air cooling operational envelope.
8. Recall that the avionics air mode select switches should never be set to OFF when the air vehicle is in flight.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.3.5.1	20.3.5.5	20.3.5.9	20.3.5.13
	20.3.5.2	20.3.5.6	20.3.5.10	20.3.5.14
	20.3.5.3	20.3.5.7	20.3.5.11	20.3.5.15
	20.3.5.4	20.3.5.8	20.3.5.12	

20.3.5.001.00*

ATTACH OXYGEN MASKS

ATTACH

OXYGEN MASKS

OXYGEN MASKS

= ON

20.3.5.002.00*

SET OXYGEN REGULATORS AT 100 PERCENT

SET

CHECKLIST

= SEQUENCE

OXYGEN REGULATORS

OXYGEN REGULATORS

= 100

20.3.5.003.00*

PUT ON SMOKE HOODS

PLACE

CHECKLIST

= SEQUENCE

SMOKE HOODS

SMOKE HOODS

= ON

20.3.5.004.00*

CHECK SOURCE OF SMOKE FROM AIR OUTLETS OR FROM CONSOLE

CHECK

CHECKLIST

= SEQUENCE

AIR OUTLETS
CONSOLE

AIR OUTLETS

= CHECKED

20.3.5.005.00*

SET ENG BLEED AIR SWITCH TO OFF

SET

CHECKLIST

= SEQUENCE

ENG BLEED AIR SWITCH 4

ENG BLEED AIR SWITCH 4

= OFF*

20.3.5.006.00*

CHECK ALL REMAINING ENG BLEED AIR SWITCHES ARE ON

CHECK

ENG BLEED AIR SWITCH 4 = OFF*
ENG BLEED AIR 1
ENG BLEED AIR 2
ENG BLEED AIR 3
ENG BLEED AIR 1 = ON*
AND ENG BLEED AIR 2 = ON
AND ENG BLEED AIR 3 = ON

20.3.5.007.00*

MONITOR AVIONICS COMPART OVERHEAT & CREW COMPART FOR DEPRESS

MONITOR-VISUAL

CHECKLIST = SEQUENCE
AVIONICS COMPARTMENTS OVERHEAT
CABIN OVER 10000 CAUTION LIGHT
AVIONICS COMPARTMENTS OVERHEAT = OFF*
AND CABIN OVER 10000 CAUTION LIGHT = OFF

20.3.5.008.00*

SET ST AIR SOURCE SWITCH TO OFF

SET

CHECKLIST = SEQUENCE
ST AIR SOURCE CONTROL SWITCH
ST AIR SOURCE CONTROL SWITCH = OFF*

20.3.5.009.00*

SET CREW RAM AIR SOURCE MODE SWITCH TO RAM

SET

CHECKLIST = SEQUENCE
CREW AIR SOURCE MODE SWITCH
CREW AIR SOURCE MODE SWITCH = RAM*

20.3.5.010.00*

SET INTMD AVIONICS AIR SOURCE SWITCH TO RAM

SET

CHECKLIST = SEQUENCE
INTMD AVIONICS AIR SOURCE SW
INTMD AVIONICS AIR SOURCE SW = RAM

20.3.5.011.00*

LAND AS SOON AS PRACTICABLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

20.3.5.012.00*

SET ALL NON-ESSENTIAL ELECTRICAL EQUIPMENT TO OFF

	CHECKLIST	= SEQUENCE
SET	ALL NON-ESSENTIAL ELECT EQUIP	
	ALL NON-ESSENTIAL ELECT EQUIP	= OFF*

20.3.5.013.00*

TURN ON ELECTRICAL EQUIPMENT

	CHECKLIST	= SEQUENCE
SET	ALL NON-ESSENTIAL ELECT EQUIP	
	ALL NON-ESSENTIAL ELECT EQUIP	= ON*

20.3.5.014.00*

LAND AS SOON AS PRACTICABLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

20.3.5.015.00*

LAND AS SOON AS POSSIBLE IF SMOKE OR FUMES PERSIST

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM BEFORE EJECTION PROCEDURES

20.17

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Catastrophic failure of air vehicle.

CONCURRENT TASKS:

INTERACTION TASKS: 1. OSO performs before ejection procedures.
2. DSO performs before ejection procedures.

PERFORMANCE LIMITS: 1. Proper sequence.

ENABLING OBJECTIVES:

1. Recall that when an ejection is made at airspeeds below 450 KIAS, fewer injuries will be sustained because of wind blast effects.
2. Recall that when the PREP TO EJECT switchlight is depressed, all four switchlights illuminate.
3. Recall that the master control knob on the IFF panel must be pulled outward to set it to EMER.
4. Recall that the restraint harness inertia reel is locked by pushing forward on the control handle.
5. Recall that the oxygen mask should be securely attached to the helmet, so that emergency oxygen will be available during the descent after ejection.
6. Recall how the armrests are set to the normal horizontal position.

ANCILLARY OBJECTIVES:

1. Recall that if time permits after the decision is made to eject, the air vehicle should be turned toward an area where injury or damage on the ground is least likely to occur.
2. Recall that the general audio alarm will be activated and an intermittent bell tone will sound over the intercom when the PREP TO EJECT switchlight is depressed.

ANCILLARY OBJECTIVES: (continued.)

3. Recall that the armrests of the ejection seats should be set in the horizontal position and each crew member should have his arms in place on them, to attenuate the high spinal "g" loads during ejection.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.3.6.1	20.3.6.4	20.3.6.7
	20.3.6.2	20.3.6.5	20.3.6.8
	20.3.6.3	20.3.6.6	

20.3.6.007.00*

CHECK OXYGEN MASK AND FITTINGS

	CHECKLIST	= SEQUENCE
CHECK	OXYGEN MASK	
	OXYGEN MASK	= CHECKED

20.3.6.008.00*

CHECK SEAT ARMRESTS IN NORMAL HORIZONTAL POSITION

	CHECKLIST	= SEQUENCE
CHECK	SEAT ARMRESTS	
	SEAT ARMRESTS	= NORM HORIZ POSN*

OBJECTIVE:

PERFORM EJECTION

20.18

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Catastrophic failure of air vehicle.

CONCURRENT TASKS:

INTERACTION TASKS: 1. OSO performs ejection.
2. DSO performs ejection.

PERFORMANCE LIMITS:

ENABLING OBJECTIVES:

1. Recall that the ejection seat handle should be pulled and the trigger squeezed to eject the seat.

ANCILLARY OBJECTIVES:

1. Recall that injury could occur if the crew member is not in a firm upright position, with head against headrest and arms on seat armrests, when ejection is initiated.

OPERATOR: P/CP

TASK ELEMENTS: 20.3.7.1

20.3.7.001.00*

PULL EJECTION HANDLE

PULL

SEAT ARMRESTS

= NORM HORIZ POSN

EJECTION HANDLE

EJECTION HANDLE

= PULLED*

OBJECTIVE: PERFORM THROTTLE SYSTEM MALFUNCTION PROCEDURES 20.19

CRITICALITY: 3 DIFFICULTY: 1

INITIAL CONDITIONS: 1. Engine fails to respond to throttle lever movement.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that depressing the normal throttle reset button should re-engage the normal throttle system.
2. Recall that actuation of the alternate throttle system to INC or DECR will increase or decrease the engine throttle setting in proportion to the time that the switch position is maintained.

ANCILLARY OBJECTIVES:

1. Recall that the normal throttle reset button permits reengagements of primary throttle control, subsequent to actuation of any of the alternate throttle switches.
2. Recall that actuation of an alternate throttle switch will disengage the respective engine primary throttle and increase, or decrease the power level setting of the engine.
3. Recall that if the throttle system fails to respond, engine operation can be continued at the existing power level at time of failure or engine may be shut down.

OPERATOR: P/CP

TASK ELEMENTS: 20.3.8.1
 20.3.8.2

20.3.8.001.00*

DEPRESS NORM THROT RESET PUSHBUTTON

DEPRESS

POWER LEVEL INDICATOR-ENG #4 →TBD*
NORMAL THROTTLE RESET SWITCH-P
NORMAL THROTTLE RESET SWITCH-P= DEPRESSED
AND POWER LEVEL INDICATOR-ENG #4 →TBD

20.3.8.002.00*

SELECT INC OR DECR WITH THE ALTER THROT SW FOR AFFECTED ENG

SELECT

NORMAL THROTTLE RESET SWITCH-P= DEPRESSED
AND POWER LEVEL INDICATOR-ENG #4 →TBD
PIL ALT THROTTLE SWITCH 4
PIL ALT THROTTLE SWITCH 4 = INC*
OR PIL ALT THROTTLE SWITCH 4 = DECR
AND POWER LEVEL INDICATOR-ENG #4 = TBD

OBJECTIVE: PERFORM ENGINE FAILURE (NON-MECHANICAL) DURING FLIGHT PROCEDURES 20.20

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Loss of power on engine.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

1. Airspeed-TBD (\pm kts)
2. Altitude-TBD (\pm ft)
3. Proper sequence.
4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within safe limits.
2. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
3. Recall that power on the operating engines should be adjusted so as to maintain the recommended speed with one engine failed.
4. Recall that the air vehicle should be retrimmed and landed as soon as practical after engine failure.

ANCILLARY OBJECTIVES:

1. Recall that an air start may be attempted if the engine failure was non-mechanical in origin.
2. Recall that the throttle on the affected engine should be set to idle if engine shutdown is required.
3. Recall that selection of the engine start switch to OFF will drive the engine power lever to off independently of flight station throttle control lever position.
4. Recall that the engine fire button will perform the same function as turning the engine start switch to OFF, but damage may be done to the engine fuel pump and, thereby prevent subsequent engine start.

OPERATOR: P/CP

TASK ELEMENTS:

20.4.1.1
20.4.1.2
20.4.1.3

20.4.1.4
20.4.1.5
20.4.1.6

20.4.1.001.00*

MAINTAIN AIR VEHICLE ATTITUDE & AIRSPEED WITHIN SAFE LIMITS

FLY CORE RPM INDICATOR = TBD*

A-V

VSD = TBD
AND AIRSPEED-MACH NUMBER INDICATOR = TBD

20.4.1.002.00*

RETARD THROTTLE ON AFFECTED ENGINE TO IDLE

ADJUST CHECKLIST = SEQUENCE

THROTTLE LEVER 4

THROTTLE LEVER 4 = IDLE*

20.4.1.003.00*

SET ENGINE START SWITCH ON AFFECTED ENGINE TO OFF

SET CHECKLIST = SEQUENCE

ENGINE START SWITCH 4

ENGINE START SWITCH 4 = OFF*

20.4.1.004.00*

ADJUST POWER LEVEL

ADJUST CHECKLIST = SEQUENCE

THROTTLE LEVER 1
THROTTLE LEVER 2
THROTTLE LEVER 3

THROTTLE LEVER 1 = TBD
AND THROTTLE LEVER 2 = TBD
AND THROTTLE LEVER 3 = TBD

20.4.1.005.00*

RETURN AIR VEHICLE TO MAINTAIN DESIRED FLT ATTITUDE AND A-S

ADJUST CHECKLIST = SEQUENCE

CONTROL STICK TRIM SWITCH
YAW CONTROL TRIM SWITCH

FLIGHT CONTROL STICK = NEUTRAL PRESSURE
AND RUDDER PEDALS = NEUTRAL PRESSURE

20.4.1.006.00*

LAND AS SOON AS PRACTICABLE

LAND

CHECKLIST

= SEQUENCE

A-V

A-V

= LANDED

OBJECTIVE: PERFORM ENGINE FAILURE (MECHANICAL) DURING FLIGHT PROCEDURES 20.21

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Loss of power on engine.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (+ kts)
2. Altitude - TBD
3. Proper sequence.
4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within safe limits.
2. Recall that when an engine fire switchlight is depressed, it latches mechanically in that position, shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
3. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
4. Recall that power on the operating engines should be adjusted so as to maintain the recommended speed with one engine failed.
5. Recall that the air vehicle should be retrimmed and landed as soon as practical, after engine failure.

ANCILLARY OBJECTIVES:

1. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
2. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.
3. Recall that selection of the engine start switch to OFF will drive the engine power lever to off, independently of flight station throttle control lever position.
4. Recall that the throttle on the affected engine should be set to idle, if engine shutdown is required.

OPERATOR: P/CP

TASK ELEMENTS:

20.4.2.1
20.4.2.2
20.4.2.3

20.4.2.4
20.4.2.5
20.4.2.6

20.4.2.7

20.4.2.001.00*

MAINTAIN AIR VEHICLE ATTITUDE & AIRSPEED WITHIN SAFE LIMITS

	CORE RPM INDICATOR	= TBD*
FLY	A-V	
	VSD	= TBD
	AND AIRSPEED-MACH NUMBER INDICATOR	= TBD

20.4.2.002.00*

DEPRESS ENGINE FIRE SWITCHLIGHT ON AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
DEPRESS	ENGINE FIRE SWITCHLIGHT 4	
	ENGINE FIRE SWITCHLIGHT 4	= DEPRESSED*

20.4.2.003.00*

RETARD THROTTLE ON AFFECTED ENGINE TO IDLE

	CHECKLIST	= SEQUENCE
ADJUST	THRUTTLE LEVER 4	
	THRUTTLE LEVER 4	= IDLE

20.4.2.004.00*

SET ENGINE START SWITCH ON AFFECTED ENGINE TO OFF

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF

20.4.2.005.00*

ADJUST POWER LEVEL

	CHECKLIST	= SEQUENCE
ADJUST	THRUTTLE LEVER 1	
	THRUTTLE LEVER 2	
	THRUTTLE LEVER 3	
	THRUTTLE LEVER 1	= TBD
	AND THRUTTLE LEVER 2	= TBD
	AND THRUTTLE LEVER 3	= TBD

20.4.2.006.00*

RETRIM A-V TO MAINTAIN DESIRED FLIGHT ATTITUDE AND AIRSPEED

CHECKLIST

= SEQUENCE

ADJUST

CONTROL STICK TRIM SWITCH
YAW CONTROL TRIM SWITCH

FLIGHT CONTROL STICK
AND RUDDER PEDALS

= NEUTRAL PRESSURE
= NEUTRAL PRESSURE

20.4.2.007.00*

LAND AS SOON AS PRACTICABLE

CHECKLIST

= SEQUENCE

LAND

A-V

A-V

= LANDED

OBJECTIVE: PERFORM UNASSISTED (WINDMILLING) AIRSTART

20.22

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Loss of power on engine.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (\pm kts)
 2. Altitude - TBD (\pm ft)
 3. Proper sequence
 4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within the windmilling airstart envelope.
2. Recall that moving the ignition switch to MAN activates a spark plug that fires continuously.
3. Recall that when a generator is set to RESET/OFF, it is electrically disconnected from the line.
4. Recall that momentary selection of the engine start switch to START will initiate the automatic engine start sequence.
5. Recall the normal range of the engine instruments during the starting sequence.
6. Recall that when the generator mode switch is set to ON, the generator is electrically connected to its respective bus.
7. Recall that with the engine ignition switch in AUTO, high energy ignition is provided automatically for engine starts at all flight conditions.
8. Recall that the engine power level should be set as desired when the engine instruments become stabilized after start.
9. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.

ANCILLARY OBJECTIVES:

1. Recall that maintaining stabilized flight and minimizing control movements reduces hydraulic loads during airstart attempts.
2. Recall that during unassisted multi-engine airstarts involving engine #4, it should be started first because it doesn't have the drag of a primary generator.
3. Recall that the manual position of the ignition switch supplements the automatic ignition system.
4. Recall that the removal of a generator causes the specific generator light, the ELEC amber light on the flight station caution panel and both master caution lights to illuminate.
5. Recall that the engine start switch should be used only if the engine was shutdown prior to the airstart attempt.
6. Recall that releasing the engine start switch allows it to return to RUN.
7. Recall that engine acceleration from ignition to 50 percent core RPM can take as long as 3.5 minutes.
8. Recall that engine light-off is confirmed by observing a rise in engine temperature.
9. Recall that the acceleration of the engine during the start sequence should be smooth.
10. Recall that the engine ignition switch is lever-locked in the AUTO position only.
11. Recall that engine start should be terminated, if the engine temperature rises beyond 760°C, if the engine hesitates or fails to continue toward idle, or if the oil pressure is not normal at stabilized idle.
12. Recall that if repeated unassisted windmilling airstart attempts (maximum of 3) are unsuccessful, an APU assisted airstart should be used.
13. Recall that selection of the engine start switch to OFF will drive the engine power lever to off, independently of flight station throttle control lever position.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.4.3.1	20.4.3.5	20.4.3.9
	20.4.3.2	20.4.3.6	20.4.3.10
	20.4.3.3	20.4.3.7	20.4.3.11
	20.4.3.4	20.4.3.8	20.4.3.12

20.4.3.001.00*

MAINTAIN A-V ATT & A-S WITHIN WINDMILLING AIRSTART ENVELOPE*

	ENG 1 CORE RPM INDICATOR	= TBD*
FLY	A-V	
	VSD	= TBD
	AND AIRSPEED-MACH NUMBER INDICATOR	= TBD

20.4.3.002.00*

MOVE THROTTLE ON AFFECTED ENGINE TO IDLE

	CHECKLIST	= SEQUENCE
ADJUST	#1 THROTTLE LEVER	
	#1 THROTTLE LEVER	= IDLE

20.4.3.003.00*

SET ENGINE IGNITION SWITCH TO MANUAL

	CHECKLIST	= SEQUENCE
SET	IGNITION SWITCH	
	IGNITION SWITCH	= MAN
	AND ENGINE IGNITION ADVISORY LIGHT	= 'ENG IGN'

20.4.3.004.00*

SET GENERATOR ON AFFECTED ENGINE TO RESET-OFF

	CHECKLIST	= SEQUENCE
SET	#1 GENERATOR MODE SWITCH	
	#1 GENERATOR MODE SWITCH	= RESET-OFF*
	AND #1 GENERATOR CAUTION LIGHT	= '1 GEN'
	AND ELECTRICAL CAUTION LIGHT	= 'ELEC'

20.4.3.005.00*

SET ENG START-RUN SWITCH ON AFFECTED ENGINE TO START*

	CHECKLIST	= SEQUENCE
SET	ENGINE 1 START SWITCH	
	ENGINE 1 START SWITCH	= START

20.4.3.006.00*

MONITOR ENG TEMP AND CORE RPM DURING STAB

	CHECKLIST	= SEQUENCE
MONITOR-VISUAL	ENGINE 1 TEMP INDICATOR ENG 1 CORE RPM INDICATOR	
	ENGINE 1 TEMP INDICATOR AND ENG 1 CORE RPM INDICATOR	= TBD* = TBD

20.4.3.007.00*

SET GENERATOR ON AFFECTED ENGINE TO ON

	CHECKLIST	= SEQUENCE
SET	#1 GENERATOR MODE SWITCH	
	#1 GENERATOR MODE SWITCH AND #1 GENERATOR CAUTION LIGHT	= ON = OFF

20.4.3.008.00*

SET ENGINE IGNITION SWITCH TO AUTO

	CHECKLIST	= SEQUENCE
SET	IGNITION SWITCH	
	IGNITION SWITCH AND ENGINE IGNITION ADVISORY LIGHT	= AUTO = OFF

20.4.3.009.00*

SET POWER LEVEL ON AFFECTED ENGINE AS DESIRED*

	CHECKLIST	= SEQUENCE
ADJUST	#1 THROTTLE LEVER	
	POWER LEVEL INDICATOR-ENG #1	= TBD

20.4.3.010.00*

MOVE THROTTLE ON AFFECTED ENGINE TO IDLE*

	CHECKLIST	= SEQUENCE
ADJUST	#1 THROTTLE LEVER	
	#1 THROTTLE LEVER	= IDLE

20.4.3.011.00*

SET ENG START-RUN SWITCH ON AFFECTED ENGINE TO OFF*

	CHECKLIST	= SEQUENCE
SET	ENGINE 1 START SWITCH	
	ENGINE 1 START SWITCH	= OFF

20.4.3.012.00*

SET ENG START-RUN SWITCH ON AFFECTED ENGINE TO START

	CHECKLIST	= SEQUENCE
SET	ENGINE 1 START SWITCH	
	ENGINE 1 START SWITCH	= START*

OBJECTIVE: PERFORM APU-ASSISTED AIRSTART

20.23

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Loss of power on engine

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (\pm kts)
 2. Altitude - TBD (\pm ft)
 3. Proper sequence
 4. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that an APU-assisted airstart should not be attempted, if the airspeed is above 350 KIAS.
2. Recall that moving the ignition switch to MAN activates a spark plug that fires continuously.
3. Recall that when a generator is set to RESET/OFF, it is electrically disconnected from the line.
4. Recall that when the APU mode switches are set to START they are held in that position until ignition-start has taken place.
5. Recall that when the APU run light is on, the APU is up to adequate speed to accept a load.
6. Recall that momentary selection of the engine start switch to START will initiate the automatic engine start sequence.
7. Recall the normal range of the engine instruments during the starting sequence.
8. Recall that when the generator mode switch is set to ON, the generator is electrically connected to its respective bus.
9. Recall that with the engine ignition switch in AUTO, high energy ignition is provided automatically for engine starts at all flight conditions.
10. Recall that the engine power level should be set as desired when the engine instruments become stabilized, after start.

ENABLING OBJECTIVES: (continued)

11. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.

ANCILLARY OBJECTIVES:

1. Recall that operation of an APU at airspeeds in excess of 350 KIAS may result in APU exhaust door failure.
2. Recall that the manual position of the ignition switch supplements the automatic ignition system.
3. Recall that the removal of a generator causes the specific generator light, the ELEC amber light on the flight station caution panel and both master caution lights to illuminate.
4. Recall that the APU mode switches will automatically move to the RUN position after ignition-start has taken place.
5. Recall that the APU run light will illuminate when an acceptable RPM is sensed.
6. Recall that releasing the engine start switch allows it to return to RUN.
7. Recall that engine acceleration can take as long as 1 minute from ignition to 50 percent core RPM.
8. Recall that engine light-off is confirmed by observing a rise in engine temperature.
9. Recall that the acceleration of the engine during the start sequence should be smooth.
10. Recall that the engine ignition switch is lever-locked in the AUTO position only.
11. Recall that engine start should be terminated, if the engine temperature rises beyond 760°C, if the engine hesitates or fails to continue toward idle, or if the oil pressure is not normal at stabilized idle.
12. Recall that selection of the engine start switch to OFF will drive the engine power lever to off, independently of flight station throttle control lever position.
13. Recall that following termination of an airstart attempt, a re-attempt at airstarting may be made.
14. Recall that if an APU-assisted airstart attempt is unsuccessful due to an APU automatic overtemperature shutdown, an airstart should be attempted at a lower altitude.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.4.4.1	20.4.4.5	20.4.4.9	20.4.4.13
	20.4.4.2	20.4.4.6	20.4.4.10	20.4.4.14
	20.4.4.3	20.4.4.7	20.4.4.11	20.4.4.15
	20.4.4.4	20.4.4.8	20.4.4.12	20.4.4.16

20.4.4.001.00*

REDUCE AIRSPEED BELOW 350 KIAS*

FLY

ENG 1 CORE RPM INDICATOR = TBD*

A-V

AIRSPEED-MACH NUMBER INDICATOR < 350

20.4.4.002.00*

MOVE THROTTLE ON AFFECTED ENGINE TO IDLE

ADJUST

CHECKLIST = SEQUENCE

#1 THROTTLE LEVER

#1 THROTTLE LEVER = IDLE

20.4.4.003.00*

SET ENGINE IGNITION SWITCH TO MANUAL

SET

CHECKLIST = SEQUENCE

IGNITION SWITCH

IGNITION SWITCH = MAN
AND ENGINE IGNITION ADVISORY LIGHT = 'ENG IGN'

20.4.4.004.00*

SET GENERATOR ON AFFECTED ENGINE TO RESET-OFF

SET

CHECKLIST = SEQUENCE

#1 GENERATOR MODE SWITCH

#1 GENERATOR MODE SWITCH = RESET-OFF*
AND #1 GENERATOR CAUTION LIGHT = '1 GEN'
AND ELECTRICAL CAUTION LIGHT = 'ELEC'

20.4.4.005.00*

CHECK WING SWEEP HANDLE AT 45 DEGREES OR LESS

CHECK

CHECKLIST = SEQUENCE

PILOTS WING SWEEP HANDLE

WING SWEEP POSITION INDICATOR = 45
OR WING SWEEP POSITION INDICATOR < 45

20.4.4.006.00*

SET APPLICABLE APU MODE SWITCH TO START

	CHECKLIST	= SEQUENCE
SET	LEFT APU MODE SWITCH	
	LEFT APU MODE SWITCH	= START*
	AND LEFT APU MODE SWITCH	= RUN
	AND LEFT RUN LIGHT	= 'L RUN'

20.4.4.007.00*

SET ENG START-RUN SWITCH ON AFFECTED ENGINE TO START

	CHECKLIST	= SEQUENCE
SET	ENGINE 1 START SWITCH	
	ENGINE 1 START SWITCH	= START*

20.4.4.008.00*

MONITOR ENG TEMP AND CORE RPM DURING START

	CHECKLIST	= SEQUENCE
MONITOR-VISUAL	ENGINE 1 TEMP INDICATOR	
	ENG 1 CORE RPM INDICATOR	
	ENGINE 1 TEMP INDICATOR	= TBD*
	AND ENG 1 CORE RPM INDICATOR	= TBD

20.4.4.009.00*

SET GENERATOR FOR AFFECTED ENGINE TO ON

	CHECKLIST	= SEQUENCE
SET	#1 GENERATOR MODE SWITCH	
	#1 GENERATOR MODE SWITCH	= ON
	AND #1 GENERATOR CAUTION LIGHT	= OFF

20.4.4.010.00*

SET ENGINE IGNITION SWITCH TO AUTO

	CHECKLIST	= SEQUENCE
SET	IGNITION SWITCH	
	IGNITION SWITCH	= AUTO
	AND ENGINE IGNITION ADVISORY LIGHT	= OFF

20.4.4.011.00*

SET POWER LEVEL ON AFFECTED ENGINE AS DESIRED*

	CHECKLIST	= SEQUENCE
ADJUST	#1 THROTTLE LEVER	
	POWER LEVEL INDICATOR-ENG #1	= TBD

20.4.4.012.00*

SET APPLICABLE APU MODE SWITCH TO OFF

	CHECKLIST	= SEQUENCE
SET	LEFT APU MODE SWITCH	
	LEFT APU MODE SWITCH	= OFF
	AND LEFT RUN LIGHT	= OFF

20.4.4.013.00*

SET WING SWEEP HANDLE AS DESIRED

	CHECKLIST	= SEQUENCE
SET	PILOTS WING SWEEP HANDLE	
	WING SWEEP POSITION INDICATOR	= TBD

20.4.4.014.00*

MOVE THROTTLE ON AFFECTED ENGINE TO IDLE*

	CHECKLIST	= SEQUENCE
ADJUST	#1 THROTTLE LEVER	
	#1 THROTTLE LEVER	= IDLE

20.4.4.015.00*

SET ENG START-RUN SWITCH ON AFFECTED ENGINE TO OFF*

	CHECKLIST	= SEQUENCE
SET	ENGINE 1 START SWITCH	
	ENGINE 1 START SWITCH	= OFF

20.4.4.016.00*

SET ENG START-RUN SWITCH FOR AFFECTED ENGINE TO START*

	CHECKLIST	= SEQUENCE
SET	ENGINE 1 START SWITCH	
	ENGINE 1 START SWITCH	= START*

OBJECTIVE: PERFORM ENGINE STALL PROCEDURES

20.24

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Loss of power on engine.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (\pm kts)
 2. Altitude - TBD (\pm ft)
 3. Proper sequence
 4. Switches in proper positions

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within safe limits.
2. Recall that the engine temperature tape will show loss of power as an increase in engine temperature.
3. Recall that the core RPM for the affected engine will surge upward and then fall to a level below the stabilized value.
4. Recall that moving the throttle on the affected engine to idle may assist in clearing the engine of the stalled condition.
5. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
6. Recall that an air start should be attempted after the engine start/run switch has been set to OFF.

ANCILLARY OBJECTIVES:

1. Recall that the engine temperature tape will display exhaust gas temperature at levels below 750°C and turbine blade temperature above that value.
2. Recall that the caution light above each core RPM tape display will be energized when core RPM exceeds 107 percent.
3. Recall that some engine stalls may be self-clearing, as would be indicated by a rapid return to idle CORE RPM and normal operating procedures.
4. Recall that selection of the engine start switch to OFF will drive the engine power to off, independently of flight station throttle control lever position.

OPERATOR: P/CP

TASK ELEMENTS:

20.4.5.1
20.4.5.2
20.4.5.3

20.4.5.4
20.4.5.5

20.4.5.001.00*

MAINTAIN A-V ALTITUDE AND AIRSPEED WITHIN SAFE LIMITS

	CORE RPM INDICATOR	= TBD*
FLY	A-V	
	VSD	= TBD
	AND AIRSPEED-MACH NUMBER INDICATOR	= TBD

20.4.5.002.00*

MONITOR ENG TEMP TAPES

	CHECKLIST	= SEQUENCE
MONITOR-VISUAL	ENGINE 4 TEMP INDICATOR	
	ENGINE 4 TEMP INDICATOR	> TBD*

20.4.5.003.00*

MONITOR CORE RPM TAPES

	CHECKLIST	= SEQUENCE
MONITOR-VISUAL	CORE RPM INDICATOR	
	CORE RPM INDICATOR	> TBD*
	AND CORE RPM INDICATOR	< TBD

20.4.5.004.00*

MOVE THROTTLE ON AFFECTED ENGINE TO IDLE*

	CHECKLIST	= SEQUENCE
ADJUST	#4 THROTTLE LEVER	
	#4 THROTTLE LEVER	= IDLE

20.4.5.005.00*

SET ENG START-RUN SWITCH ON STALLED ENGINE TO OFF*

	CHECKLIST	= SEQUENCE
SET	ENGINE 4 START SWITCH	
	ENGINE 4 START SWITCH	= OFF*

OBJECTIVE: PERFORM ENGINE FIRE DURING FLIGHT PROCEDURES

20,25

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Illumination of engine fire switchlight.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (\pm kts)
2. Altitude - TBD (\pm ft)
3. Proper sequence.
4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when an engine fire switchlight is depressed, it latches mechanically in that position, shutting off the respective engine firewall fuel valve, and arming the corresponding fire extinguishing system.
2. Recall that the master (general) warning audio tone is heard when a fire is sensed by the fire detection loops in the engine/ADG compartments.
3. Recall that momentary selection of the appropriate AGENT DISCH switch to MAIN or RES will direct extinguishing agent from the main, or reserve reservoir to the Engine/ADG compartment as determined by the actuated ENG FIRE switchlight.
4. Recall that the agent discharge light will illuminate when the extinguishing agent reservoir has been discharged.
5. Recall that selection of the engine start switch to OFF will drive the engine power lever to off independently of flight station throttle control lever position.
6. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within safe limits.
7. Recall that the reserve extinguishing agent should not be discharged until waiting approximately 30 seconds for the engine fire switchlight to go out.
8. Recall that when the PREP TO EJECT switchlight is depressed, all four switchlights illuminate.

ENABLING OBJECTIVES: (continued)

9. Recall that the crewmembers should eject from the A/V if fire is confirmed and continues.
10. Recall the procedures for ejecting from the A/V.
11. Recall that the ejection seat handle should be pulled and the trigger squeezed to eject the seat.
12. Recall that power on the operating engines should be adjusted so as to maintain the recommended speed, with one engine failed.
13. Recall that when an engine bleed air switch is set to OFF, bleed air from the specific engine to the ECS (Environmental Control System) is shut off.
14. Recall that fuel should be dumped and the A/V landed as soon as possible, if the fire is extinguished.
15. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wingtip trailing edge.

ANCILLARY OBJECTIVES:

1. Recall that switchlights on the left and right sides of the FIRE WARN & EXTG panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
2. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-actuated position.
3. Recall that no attempt should be made to restart an engine which has been shut down, due to a fire warning, until the cause has been determined and appropriate action taken.
4. Recall that the master warning audio tone will continue to sound until the situation has been corrected, or either MSTR AUDIO CUTOFF button has been depressed.
5. Recall that when an ENG FIRE switchlight is depressed and the appropriate AGENT DISCH switch is actuated, extinguishing agent will be directed simultaneously into the selected Engine and ADG compartments. Also, agent will be directed into the appropriate APU compartment, if the depressed ENG FIRE switchlight is for an outboard engine.
6. Recall that the agent discharge light will be extinguished 15 to 30 seconds after illumination.

ANCILLARY OBJECTIVES: (continued)

7. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
8. Recall that when the PREP TO EJECT switchlight is depressed, all four switchlights illuminate.
9. Recall that the "Before Ejection" checklist should be accomplished, if time and/or conditions permit.
10. Recall that injury could occur if the crew member is not in a firm upright position, with head against headrest and arms on seat arm-rests, when ejection is initiated.
11. Recall that the bleed air system extracts high temperature and high pressure air from a port on the interstage of each engine.
12. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
13. Recall that fuel cannot be dumped from the main tanks.
14. Recall that manual dumping of fuel requires that the transfer pumps in the tank, from which fuel is to be dumped, must be turned on and all other tanks turned off.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.4.6.1	20.4.6.5	20.4.6.9	20.4.6.13
	20.4.6.2	20.4.6.6	20.4.6.10	20.4.6.14
	20.4.6.3	20.4.6.7	20.4.6.11	
	20.4.6.4	20.4.6.8	20.4.5.12	

20.4.6.001.00*

DEPRESS ENGINE FIRE SWITCHLIGHT FOR AFFECTED ENGINE

	ENGINE FIRE SWITCHLIGHT 4	= 'ENG FIRE'
	AND PILOT ICS	= FIRE TONE
DEPRESS	ENGINE FIRE SWITCHLIGHT 4	
	ENGINE FIRE SWITCHLIGHT 4	= DEPRESSED*

20.4.6.002.00*

SET AGENT DISCH SWITCH TO MAIN FOR AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH	= MAIN*
	AND R MAIN AGENT DISCHARGE LIGHT	= 'MAIN AGENT DISC

20.4.6.003.00*

SET ENGINE START SWITCH TO OFF FOR AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
SET	ENGINE START SWITCH 4	
	ENGINE START SWITCH 4	= OFF

20.4.6.004.00*

MAINTAIN AIR VEHICLE ATTITUDE & AIRSPEED WITHIN SAFE LIMITS

	CHECKLIST	= SEQUENCE
FLY	A-V	
	VSD	= TBD
	AND AIRSPEED-MACH NUMBER INDICATOR	= TBD

20.4.6.005.00*

DEPRESS MASTER AUDIO CUTOFF PUSHBUTTON

	CHECKLIST	= SEQUENCE
DEPRESS	MSTR AUDIO CUTOFF	
	MSTR AUDIO CUTOFF	= DEPRESSED

20.4.6.006.00*

SET SAME AGENT DISCH SWITCH TO RES FOR AFFECTED ENGINE

	ENGINE FIRE SWITCHLIGHT 4	= 'ENG FIRE **
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH	= RES
	AND R RES AGENT DISCHARGE LIGHT	= 'RES AGENT DISCH

20.4.6.007.00*

DEPRESS PREPARE TO EJECT SWITCHLIGHT

	ENGINE FIRE SWITCHLIGHT 4	= 'ENG FIRE'
DEPRESS	PREPARE TO EJECT	
	PREPARE TO EJECT SWITCHLIGHT	= ON

20.4.6.008.00*

ADVISE CREWMEMBERS OF DECISION TO EJECT

	ENGINE FIRE SWITCHLIGHT 4	= 'ENG FIRE'
COMMUNICATE	PILOT ICS	
	PILOT ICS	= PREPARE TO EJECT

20.4.6.009.00*

COMPLETE 'BEFORE EJECTION' CHECKLIST*

	CHECKLIST	= SEQUENCE
PERFORM	CHECKLIST	
	CHECKLIST	= PERFORMED*

20.4.6.010.00*

ALL CREW MEMBERS EJECT

	PREPARE TO EJECT SWITCHLIGHT	= ON
	AND PILOT ICS	= PREPARE TO EJECT
	AND CHECKLIST	= PERFORMED
PULL	EJECTION HANDLE	
	EJECTION HANDLE	= PULLED*

20.4.6.011.00*

ADJUST POWER LEVEL ON GOOD ENGINES AS DESIRED

	ENGINE START SWITCH 4	= OFF*
	AND R RES AGENT DISCHARGE LIGHT	= RES AGENT DISCH
ADJUST	THROTTLE LEVER 1	
	THROTTLE LEVER 2	
	THROTTLE LEVER 3	
	THROTTLE LEVER 1	= TBD
	AND THROTTLE LEVER 2	= TBD
	AND THROTTLE LEVER 3	= TBD

20.4.6.012.00*

SET ENG BLEED AIR SWITCH TO OFF FOR AFFECTED ENGINE

	CHECKLIST	= SEQUENCE
SET	ENG BLEED AIR SWITCH 4	
	ENG BLEED AIR SWITCH 4	= OFF

20.4.6.013.00*

DUMP FUEL AS REQUIRED

	CHECKLIST	= SEQUENCE
SET	DUMP SWITCH	
	DUMP SWITCH	= DUMP

20.4.6.014.00*

LAND AS SOON AS POSSIBLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM APU FIRE DURING FLIGHT PROCEDURES

20.26

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Illumination of APU fire switchlight

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (\pm kts).
2. Altitude - TBD (\pm ft).
3. Proper sequence.
4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when an APU fire switchlight is depressed, it latches mechanically in that position, shutting off the respective APU firewall fuel valve and arming the corresponding extinguishing system.
2. Recall that illumination of either APU switchlight also triggers a master aural tone in the crew headsets.
3. Recall that momentary selection of the appropriate AGENT DISCH switch to MAIN or RES will direct extinguishing agent from the main or reserve reservoir to the APU compartment as determined by the actuated APU FIRE switchlight.
4. Recall that the agent discharge light will illuminate when the extinguishing agent reservoir has been discharged.
5. Recall that actuation of the APU mode switch to OFF provides an electric signal to the APU control system to shut down the APU, but it leaves the inlet and exhaust doors open.
6. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within safe limits.
7. Recall that the reserve extinguishing agent should not be discharged until waiting approximately 30 seconds for the engine fire switchlight to go out.
8. Recall that the A/V should be landed as soon as practical if there is confirmation that the fire has been extinguished.

ENABLING OBJECTIVES: (continued)

9. Recall that when the PREP TO EJECT switchlight is depressed, all four switchlights illuminate.
10. Recall that the crewmembers should eject from the A/V if fire is confirmed and continues.
11. Recall the procedures for ejecting from the A/V.
12. Recall that the ejection seat handle should be pulled and the trigger squeezed to eject the seat.

ANCILLARY OBJECTIVES:

1. Recall that switchlights on the left and right sides of the FIRE WARN & EXTG panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
2. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-actuated position.
3. Recall that the master warning audio tone will continue to sound until the situation has been corrected, or either MSTR AUDIO CUTOUT button has been depressed.
4. Recall that when an APU FIRE switchlight is depressed, and the appropriate AGENT DISCH switch is actuated, extinguishing agent will be directed simultaneously into the APU compartment and the outboard Engine and ADG compartment next to the affected APU.
5. Recall that the agent discharge light will be extinguished 15 to 30 seconds after illumination.
6. Recall that the APU mode switch must be pulled out in order to reposition it to the OFF position.
7. Recall that the general audio alarm will be activated, and an intermittent bell tone will sound over the intercom, when the PREP TO EJECT switchlight is depressed.
8. Recall that the "Before Ejection" checklist should be accomplished if time and/or conditions permit.
9. Recall that injury could occur if the crew member is not in a firm upright position, with head against headrest and arms on seat armrests, when ejection is initiated.

OPERATOR: P/CP

TASK ELEMENTS:

20.4.7.1	20.4.7.5	20.4.7.10
20.4.7.2	20.4.7.6	20.4.7.11
20.4.7.3	20.4.7.8	
20.4.7.4	20.4.7.9	

20.4.7.001.00

DEPRESS APU FIRE SWITCHLIGHT FOR AFFECTED APU

	R APU FIRE SWITCHLIGHT AND PILOT ICS	= 'APU FIRE' = FIRE TONE
DEPRESS	R APU FIRE SWITCHLIGHT	
	R APU FIRE SWITCHLIGHT	= DEPRESSED*

20.4.7.002.00

SET AGENT DISCH SWITCH TO MAIN FOR AFFECTED APU

	CHECKLIST	= SEQUENCE
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH AND R MAIN AGENT DISCHARGE LIGHT	= MAIN* = 'MAIN AGENT DISC

20.4.7.003.00

SET APU MODE SWITCH TO OFF FOR AFFECTED APU*

	CHECKLIST	= SEQUENCE
SET	MODE SWITCHES	
	MODE SWITCHES AND R RUN LIGHT	= OFF* = OFF

20.4.7.004.00

MAINTAIN AIR VEHICLE ATTITUDE & AIRSPEED WITHIN SAFE LIMITS

	CHECKLIST	= SEQUENCE
FLY	A-V	
	VSD AND AIRSPEED-MACH NUMBER INDICATOR	= TBD = TBD

20.4.7.005.00

DEPRESS MASTER AUDIO CUTOUT PUSHBUTTON

	CHECKLIST	= SEQUENCE
DEPRESS	MSTR AUDIO CUTOUT	
	MSTR AUDIO CUTOUT	= DEPRESSED

20.4.7.006.00

SET SAME AGENT DISCH SWITCH TO RES FOR AFFECTED APU

	R APU FIRE SWITCHLIGHT	= 'APU FIRE'*
SET	R AGENT DISCH SWITCH	
	R AGENT DISCH SWITCH	= RES
	AND R RES AGENT DISCHARGE LIGHT	= 'RES AGENT DISCH

20.4.7.008.00

DEPRESS PREPARE TO EJECT SWITCHLIGHT

	R APU FIRE SWITCHLIGHT	= 'APU FIRE'
DEPRESS	PREPARE TO EJECT	
	PREPARE TO EJECT SWITCHLIGHT	= ON

20.4.7.009.00

ADVISE CREWMEMBERS OF DECISION TO EJECT

	R APU FIRE SWITCHLIGHT	= 'APU FIRE'
COMMUNICATE	PILOT ICS	
	PILOT ICS	= PREPARE TO EJECT

20.4.7.010.00

COMPLETE 'BEFORE EJECTION' CHECKLIST*

	CHECKLIST	= SEQUENCE
PERFORM	CHECKLIST	
	CHECKLIST	= PERFORMED*

20.4.7.011.00

ALL CREW MEMBERS EJECT

	PREPARE TO EJECT SWITCHLIGHT	= ON
	AND PILOT ICS	= PREPARE TO EJECT
	AND CHECKLIST	= PERFORMED
PULL	EJECTION HANDLE	
	EJECTION HANDLE	= PULLED*

OBJECTIVE: PERFORM LOW OIL PRESSURE/QUANTITY PROCEDURES 20.27

CRITICALITY: 2 DIFFICULTY: 1

- INITIAL CONDITIONS:
1. Engine oil pressure/quantity caution light illuminates.
 2. ENG legend light on flight station caution panel illuminates.
 3. Both MASTER CAUTION switchlights illuminate.

INTERACTION TASKS:

- PERFORMANCE LIMITS:
1. Airspeed - TBD (\pm kts).
 2. Altitude - TBD (\pm ft).
 3. Proper sequence.
 4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed, within safe limits.
2. Recall that by depressing either MASTER CAUTION switchlight both MASTER CAUTION lights and the ENG caution light will be extinguished, but the engine oil pressure/quantity will remain illuminated.
3. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
4. Recall that power on the operating engines should be adjusted so as to maintain the recommended speed with one engine failed.
5. Recall that the air vehicle should be retrimmed and landed as soon as practical after an engine has been shut down.

ANCILLARY OBJECTIVES:

1. Recall that the oil pressure/quantity caution light will be energized when oil pressures falls below 10 PSI or oil quantity falls below 30 percent of reservoir capacity.
2. Recall that the throttle on the affected engine should be set to idle if the engine shutdown is required.

ANCILLARY OBJECTIVES: (continued)

3. Recall that selection of the engine start switch to OFF will drive the engine power lever to off independently of flight station throttle control lever position.
4. Recall that the engine fire button will perform the same function as turning the engine start switch to OFF, but damage may be done to the engine fuel pump and, thereby, prevent subsequent engine start.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.4.8.1	20.4.8.5
	20.4.8.2	20.4.8.6
	20.4.8.3	20.4.8.7
	20.4.8.4	

20.4.8.001.00*

MAINTAIN AIR VEHICLE ATTITUDE & AIRSPEED WITHIN SAFE LIMITS

#4 ENG OIL PRESS CAUTION LIGHT = ON
AND ENGINE DIRECTOR CAUTION LIGHT = 'ENG'
AND MASTER CAUTION SWITCHLIGHTS = ON

FLY

A-V

VSD = TBD
AND AIRSPEED-MACH NUMBER INDICATOR = TBD

20.4.8.002.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

ENGINE DIRECTOR CAUTION LIGHT = 'ENG'*
AND MASTER CAUTION SWITCHLIGHTS = ON
AND #4 ENG OIL PRESS CAUTION LIGHT = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP = OFF
AND ENGINE DIRECTOR CAUTION LIGHT = OFF

20.4.8.003.00*

THROTTLE ON AFFECTED ENGINE TO IDLE

CHECKLIST = SEQUENCE

ADJUST

#4 THROTTLE LEVER

#4 THROTTLE LEVER = IDLE

20.4.8.004.00*

SET ENG START-RUN SWITCH ON AFFECTED ENGINE TO OFF

#4 THROTTLE LEVER = IDLE

SET

ENGINE 4 START SWITCH

ENGINE 4 START SWITCH = OFF

20.4.8.005.00*

ADJUST POWER LEVEL

CHECKLIST = SEQUENCE

ADJUST

#1 THROTTLE LEVER

#2 THROTTLE LEVER

#3 THROTTLE LEVER

#1 THROTTLE LEVER = TBD
AND #2 THROTTLE LEVER = TBD
AND #3 THROTTLE LEVER = TBD

20.4.8.006.00*

RETRIM A-V TO MAINTAIN DESIRED FLIGHT ATTITUDE AND AIRSPEED

	CHECKLIST	= SEQUENCE
ADJUST	PLT TRIM SW (ON CONTR STICK) PILOT YAW SWITCH	
	FLIGHT CONTROL STICK AND RUDDER PEDALS	= NEUTRAL PRESSURE = NEUTRAL PRESSURE

20.4.8.007.00*

LAND AS SOON AS PRACTICABLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM EXCESSIVE ENGINE VIBRATION PROCEDURES 20.28

CRITICALITY: 3 DIFFICULTY: 1

INITIAL CONDITIONS: 1. VIB HIGH caution light illuminates.
2. Both MASTER CAUTION switchlights illuminate

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (\pm kts)
2. Altitude - TBD (\pm ft)
3. Proper sequence
4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within safe limits.
2. Recall that the throttle on the affected engine should be retarded to idle to see if the VIB HIGH caution light goes out.
3. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights will be extinguished and the VIB HIGH caution light will change from flashing to steady.
4. Recall that the engine start switch must be pulled out in order to reposition it to the OFF position.
5. Recall that power on the operating engines should be adjusted so as to maintain the recommended speed, with one engine failed.
6. Recall that the air vehicle should be retrimmed and landed as soon as practical after an engine has been shut down.

ANCILLARY OBJECTIVES:

1. Recall that the engine VIB HIGH caution light will be energized when measured vibration of the respective engine exceeds preset limits.
2. Recall that the throttle on the affected engine should be set to idle if engine shutdown is required.
3. Recall that selection of the engine start switch to OFF will drive the engine power lever to off, independently of flight station throttle control lever position.

ANCILLARY OBJECTIVES: (continued)

4. Recall that the engine fire button will perform the same function as turning the engine start switch to OFF, but damage may be done to the engine fuel pump and, thereby, prevent subsequent engine start.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.4.9.1	20.4.9.5
	20.4.9.2	20.4.9.6
	20.4.9.3	20.4.9.7
	20.4.9.4	

20.4.9.001.00*

MAINTAIN AIR VEHICLE ATTITUDE & AIRSPEED WITHIN SAFE LIMITS

FLY

VIB HIGH ANNUNCIATOR-ENG #4 = '4 VIB HIGH'
AND MASTER CAUTION SWITCHLIGHTS = ON

A-V

VSD = TBD
AND AIRSPEED-MACH NUMBER INDICATOR = TBD

20.4.9.002.00*

THROTTLE ON AFFECTED ENGINE TO IDLE

ADJUST

CHECKLIST = SEQUENCE

#4 THROTTLE LEVER

#4 THROTTLE LEVER = IDLE*

20.4.9.003.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

DEPRESS

VIB HIGH ANNUNCIATOR-ENG #4 = '4 VIB HIGH'
AND MASTER CAUTION SWITCHLIGHTS = ON

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP = OFF*
AND VIB HIGH ANNUNCIATOR-ENG #4 = '4 VIB HIGH'

20.4.9.004.00*

SET ENG START-RUN SWITCH ON AFFECTED ENGINE TO OFF

SET

#4 THROTTLE LEVER = IDLE
AND VIB HIGH ANNUNCIATOR-ENG #4 = '4 VIB HIGH'

ENGINE 4 START SWITCH

ENGINE 4 START SWITCH = OFF

20.4.9.005.00*

ADJUST POWER LEVEL

ADJUST

CHECKLIST = SEQUENCE

#1 THROTTLE LEVER
#2 THROTTLE LEVER
#3 THROTTLE LEVER

#1 THROTTLE LEVER = TBD
AND #2 THROTTLE LEVER = TBD
AND #3 THROTTLE LEVER = TBD

20.4.9.006.00*

RETRIM A-V TO MAINTAIN DESIRED FLIGHT ATTITUDE AND AIRSPEED

	CHECKLIST	= SEQUENCE
ADJUST	PLT TRIM SW (ON CONTR STICK) PILOT YAW SWITCH	
	FLIGHT CONTROL STICK AND RUDDER PEDALS	= NEUTRAL PRESSURE = NEUTRAL PRESSURE

20.4.9.007.00*

LAND AS SOON AS PRACTICABLE

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM FUEL TANKS 1 AND 4 WILL NOT TRANSFER TO MAIN TANKS PROCEDURES

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Tanks 1 and 4 will not transfer to the main tanks.
2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights will be extinguished.
2. Recall that the open position is the normal operating position for the main fill valve switches.
3. Recall that the ballast tank isolation switch in the open position provides for manual control to feed ballast tanks fuel to the engines.
4. Recall that when a fill valve switch other than for the main tanks is in OPEN, the automatic fuel sequence is overridden.
5. Recall that when a transfer pump switch is set to ON, the selected tank's pumps are activated and the automatic fuel sequencing is overridden.
6. Recall that the rotary select tank switch is used to select the tank quantities to be read on the digital displays.
7. Recall that the fuel quantity in tanks 1 and 4 should decrease and the fuel quantity in the left and right main tanks should increase.
8. Recall that when a transfer pump switch is set to AUTO, the pump is turned on and off automatically to maintain proper positioning of the air vehicle's center of gravity.
9. Recall that when a fill valve switch is in AUTO, automatic control of the fill valve is provided, as required by the CG control of ballast tanks 1 and 4.
10. Recall that the ballast tank isolation switch is normally in AUTO, which provides automatic control of the isolation valve during aerial refueling, and transfer sequencing.

ANCILLARY OBJECTIVES:

1. Recall that the main fill valve switches provide for closing the fill valves in case of serious tank leakage, or to otherwise prevent fuel from transferring into the main tanks.
2. Recall that when the ballast tank isolation switch is in CLOSE, automatic control of the isolation valve is overridden and the forward and aft tanks are isolated from the engine feed fuel transfer system.
3. Recall that there are no controls for the boost pumps in the main tanks, because the pumps run continuously.
4. Recall that a single selection of the rotary tank switch simultaneously displays the sequence pair tank quantities in the digital readouts.
5. Recall that when a transfer pump switch is in AUTO, the pumps are turned off when the selected tanks are empty.
6. Recall that when a fill valve switch is in CL, fuel transfer into the selected tank is prevented and the auto control system is overridden.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.5.1.1	20.5.1.5	20.5.1.9	20.5.1.13
	20.5.1.2	20.5.1.6	20.5.1.10	20.5.1.14
	20.5.1.3	20.5.1.7	20.5.1.11	20.5.1.15
	20.5.1.4	20.5.1.8	20.5.1.12	20.5.1.16

20.5.1.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

#1 TANK TRANSFER SWITCH =TRANSFER*
AND #4 TANK TRANSFER SWITCH =TRANSFER
AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-CUP

MASTER CAUTION SWITCHLIGHT-COP= OFF

20.5.1.002.00*

CHECK L AND R MAIN FILL VALVE SWITCHES ARE OPEN

CHECKLIST = SEQUENCE

CHECK

L MAIN FILL VALVE SWITCH
R MAIN FILL VALVE SWITCH

L MAIN FILL VALVE SWITCH = OPEN
AND R MAIN FILL VALVE SWITCH = OPEN

20.5.1.003.00*

SET BALLST TANK ISLN SWITCH TO OPEN

CHECKLIST = SEQUENCE

SET

BALLAST TANK ISOLATION SWITCH

BALLAST TANK ISOLATION SWITCH = OPEN

20.5.1.004.00*

SET TANKS NO. 2 AND NO. 3 FILL VALVE SWITCHES TO OPEN

CHECKLIST = SEQUENCE

SET

#2 FILL VALVE SWITCH
#3 FILL VALVE SWITCH

#2 FILL VALVE SWITCH = OPEN
AND #3 FILL VALVE SWITCH = OPEN

20.5.1.005.00*

SET TANK NO. 1 TRANSFER PUMP SWITCH TO ON

CHECKLIST = SEQUENCE

SET

#1 TANK TRANSFER SWITCH

#1 TANK TRANSFER SWITCH = ON

20.5.1.006.00*

SET TANK NO. 2 TRANSFER PUMP SWITCH TO ON

	CHECKLIST	= SEQUENCE
SET	#2 TANK TRANSFER SWITCH	
	#2 TANK TRANSFER SWITCH	= ON

20.5.1.007.00*

SET TANK NO. 4 TRANSFER PUMP SWITCH TO ON

	CHECKLIST	= SEQUENCE
SET	#4 TANK TRANSFER SWITCH	
	#4 TANK TRANSFER SWITCH	= ON

20.5.1.008.00*

SET TANK NO. 3 TRANSFER PUMP SWITCH TO ON

	CHECKLIST	= SEQUENCE
SET	#3 TANK TRANSFER SWITCH	
	#3 TANK TRANSFER SWITCH	= ON

20.5.1.009.00*

SET SELECT TANK SWITCH TO MAIN TANKS

	CHECKLIST	= SEQUENCE
SET	SELECT TANK SWITCH	
	SELECT TANK SWITCH	= MAIN

20.5.1.010.00*

MONITOR FUEL QUANTITY IN FUEL TANKS NO. 1 AND NO. 4

	CHECKLIST	= SEQUENCE
MONITOR-VISUAL	FUS #1 QTY TAPE INDICATOR	
	FUS #4 QTY TAPE INDICATOR	
	FUS #1 QTY TAPE INDICATOR	= TBD
	AND FUS #4 QTY TAPE INDICATOR	= TBD

20.5.1.011.00*

SET TANK NO. 3 TRANSFER PUMP SWITCH TO AUTO

	CHECKLIST	= SEQUENCE
SET	#3 TANK TRANSFER SWITCH	
	#3 TANK TRANSFER SWITCH	= AUTO

20.117

20.5.1.012.00*

SET TANK NO. 4 TRANSFER PUMP SWITCH TO AUTO

CHECKLIST = SEQUENCE
SET #4 TANK TRANSFER SWITCH
#4 TANK TRANSFER SWITCH = AUTO

20.5.1.013.00*

SET TANK NO. 2 TRANSFER PUMP SWITCH TO AUTO

CHECKLIST = SEQUENCE
SET #2 TANK TRANSFER SWITCH
#2 TANK TRANSFER SWITCH = AUTO

20.5.1.014.00*

SET TANK NO. 1 TRANSFER PUMP SWITCH TO AUTO

CHECKLIST = SEQUENCE
SET #1 TANK TRANSFER SWITCH
#1 TANK TRANSFER SWITCH = AUTO

20.5.1.015.00*

SET TANKS NO. 2 AND NO. 3 FILL VALVE SWITCHES TO AUTO

CHECKLIST = SEQUENCE
SET #2 FILL VALVE SWITCH
#3 FILL VALVE SWITCH
#2 FILL VALVE SWITCH = AUTO
AND #3 FILL VALVE SWITCH = AUTO

20.5.1.016.00*

SET BLST TK ISLN SWITCH TO AUTO

CHECKLIST = SEQUENCE
SET BALLAST TANK ISOLATION SWITCH
BALLAST TANK ISOLATION SWITCH = OPEN

OBJECTIVE: PERFORM FUEL COOLING LOOP RETURN FAILURE PROCEDURES

20.30

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Illumination of the FUEL CLG LOOP RTN caution light.
2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights will be extinguished and the FUEL CLG LOOP RTN light changes from flashing to steady.
2. Recall that when the fuel cooling loop return switch is in OPEN, the relief valves in the cooling loop return lines to the main tanks are bypassed.
3. Recall that the OIL HOT caution lights may illuminate because of a fuel cooling loop return failure.

ANCILLARY OBJECTIVES:

1. Recall that the FUEL CLG LOOP RTN caution light illuminates when the fuel cooling loop return valve fails to open automatically, or when the fuel flow to any engine is below a preset valve.
2. Recall that the FUEL CLG LOOP RTN caution light goes out when the fuel cooling loop return switch is in the open position.
3. Recall that the Fuel CLG LOOP RTN caution light may go out if the engine power setting is increased to raise fuel flow.
4. Recall that if engine fuel flows above 1800 lbs per hour, the fuel cooling loop return switch should be placed in NORM.
5. Recall that the OIL HOT caution light will illuminate if the respective engine oil temperature exceeds 300F.
6. Recall that to reduce oil temperature on the affected engine, the throttle should be advanced to increase fuel flow through the oil fuel cooler.

ANCILLARY OBJECTIVES: (continued)

7. Recall that if the OIL HOT caution light stays on for two minutes, the throttle should be retarded to idle and oil pressure monitored.
8. Recall that if the OIL HOT caution light stays on for ten seconds after the throttle has been set to idle, the engine should be shutdown.

OPERATOR: P/CP

TASK ELEMENTS: 20.5.2.1
20.5.2.2
20.5.2.3

20.5.2.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

FUEL COOLING LOOP RETURN LIGHT= *FUEL CLG LOOP R*
AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-LOP= OFF
AND MASTER CAUTION SWITCHLIGHT-PIL= OFF

20.5.2.002.00*

SET FUEL COOLING LOOP RETURN SWITCH TO OPEN

CHECKLIST = SEQUENCE

SET

FUEL COOLING LOOP RETURN SW

FUEL COOLING LOOP RETURN SW = OPEN*

20.5.2.003.00*

MONITOR OIL HOT CAUTION LIGHTS

FUEL COOLING LOOP RETURN LIGHT= *FUEL CLG LOOP R*

MONITOR-VISUAL

OIL HOT ANNUNCIATORS

OIL HOT ANNUNCIATORS = ON*

OBJECTIVE: PERFORM FUEL COOLING LOOP CROSSOVER FAILURE PROCEDURES

20.31

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Illumination of the Fuel CLG LOOP CRSVR caution light.
2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights will be extinguished and the FUEL CLG LOOP CRSVR light will change from flashing to steady.
2. Recall that when the fuel cooling loop crossover switch is in OPEN, either the left or right fuel cooling loops supplies cooling fuel flow to both loops.
3. Recall that the FUEL CLG LOOP RTN caution light goes out when the fuel cooling loop return switch is in the open position.
4. Recall that reducing airspeed below 370 KIAS allows the fuel cooling ram air scoops to remain open.

ANCILLARY OBJECTIVES:

1. Recall that the FUEL CLG LOOP CRSVR caution light illuminates when the pressure rise across either the left or right cooling loop fuel pumps falls below a preset level, and the fuel cooling loop crossover valve fails to open automatically.
2. Recall that the FUEL CLG LOOP CRSVR caution light goes out when the fuel cooling loop crossover switch is in the open position.
3. Recall that with the fuel cooling ram air scoops open, a fuel-to-air heat exchanger cools the fuel before returning it to the tank.

OPERATOR: P/CP

TASK ELEMENTS: 20.5.3.1
20.5.3.2

20.5.3.3
20.5.3.4

20.5.3.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

FUEL COOLING LOOP CROSSOVER LT= 'FUEL CLG LOOP C*
AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP= OFF
AND MASTER CAUTION SWITCHLIGHT-PIL= OFF

20.5.3.002.00*

SET FUEL COOLING LOOP CROSSOVER SWITCH TO OPEN

CHECKLIST = SEQUENCE

SET

COOLING FUEL LOOP CROSSOVER SW

COOLING FUEL LOOP CROSSOVER SW= OPEN

20.5.3.003.00*

SET FUEL COOLING LOOP RETURN SWITCH TO OPEN

FUEL COOLING LOOP CROSSOVER LT= 'FUEL CLG LOOP C*

SET

FUEL COOLING LOOP RETURN SW

FUEL COOLING LOOP RETURN SW = OPEN

20.5.3.004.00*

REDUCE AIRSPEED BELOW 370 KIAS*

CHECKLIST = SEQUENCE

FLY

A-V

AIRSPEED-MACH NUMBER INDICATOR < 370

OBJECTIVE: PERFORM FUEL COOLING LOOP RAM AIR SCOOP SYSTEM FAILURE PROCEDURES 20.32

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Illumination of the FUEL CLG SCOOP caution light.
2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights will be extinguished and the FUEL CLG SCOOP light will change from flashing to steady.
2. Recall that if airspeed is above 370 KIAS and the FUEL CLG SCOOP light illuminates, the scoop has failed open.
3. Recall that fuel flow should be increased to above 17,400 lbs per hour, if the airspeed is below 370 KIAS, and the FUEL CLG SCOOP light illuminates because the scoop has failed closed.
4. Recall that the air vehicle should be landed as soon as practical, if the fuel cooling scoop has failed closed.

ANCILLARY OBJECTIVES:

1. Recall that prolonged flying at fuel flows below 17,400 lbs per hour, per nacelle, with the fuel cooling scoop failed closed, may lead to high engine oil temperatures.
2. Recall that if the fuel cooling scoops remain open after take-off, abort the mission and return to base.

OPERATOR: P/CP

TASK ELEMENTS: 20.5.4.1 20.5.4.3
 20.5.4.2 20.5.4.4

20.5.4.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

FUEL COOLING SCOOP C = 'FUEL CLG SCOOP'
AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP
MASTER CAUTION SWITCHLIGHT-COP= OFF
AND MASTER CAUTION SWITCHLIGHT-PIL= OFF

20.5.4.002.00*

REDUCE AIRSPEED BELOW 370 KIAS*

CHECKLIST = SEQUENCE

FLY

A-V
AIRSPEED-MACH NUMBER INDICATOR < 370

20.5.4.003.00*

INCREASE FUEL FLOW TO ABOVE 17400 PER HOUR PER NACELLE*

CHECKLIST = SEQUENCE

ADJUST

#3 THROTTLE LEVER
#4 THROTTLE LEVER
FUEL FLOW INDICATOR-TAPE 3 > TBD*
AND FUEL FLOW INDICATOR-TAPE 4 > TBD

20.5.4.004.00*

LAND AS SOON AS PRACTICABLE*

CHECKLIST = SEQUENCE

LAND

A-V
A-V = LANDED

OBJECTIVE: PERFORM FUEL SYSTEM OPERATION DURING EMERGENCY GENERATOR OPERATION 20.33

CRITICALITY: 2

DIFFICULTY: 1

- INITIAL CONDITIONS:
1. Generator off lights illuminate.
 2. ELEC legend light on flight station caution panel illuminates.
 3. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

- PERFORMANCE LIMITS:
1. Proper sequence.
 2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights and the ELEC caution light will be extinguished, but the generator off lights will remain illuminated.
2. Recall that when a transfer pump switch is set to AUTO, the pump is turned on and off automatically to maintain proper positioning of the air vehicle's center of gravity.
3. Recall that with a transfer pump switch in OFF, the selected tank's transfer pumps are deactivated.
4. Recall that when a fill valve switch is set to CL, fuel transfer into the selected tank is prevented.
5. Recall that when a transfer pump switch is set to ON, the selected tank's pumps are activated and the automatic fuel sequencing is overridden.

ANCILLARY OBJECTIVES:

1. Recall that when all the primary generators have failed, the three generator off lights will be illuminated.
2. Recall that when the emergency generator is on, the EMERG GEN ON light is illuminated.
3. Recall that with all primary generators off and the emergency generator on, only one fuel transfer pump will operate at a time.

ANCILLARY OBJECTIVES: (continued)

4. Recall that when a transfer pump switch is in AUTO, the pumps are turned off when the selected tanks are empty.
5. Recall that the fuel transfer pump switches are turned off if manual control of fuel transfer is desired.
6. Recall that when a fill valve switch is in CL, the auto fuel control system is overridden.
7. Recall that fuel may be transferred selectively, by manually positioning the selected tank fuel transfer pump switch on and when the transfer is complete, returning the switch to off.
8. Recall that only one fuel transfer pump can be on at any given time, or all transfer pumps will automatically shut off.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.5.5.1	20.5.5.4
	20.5.5.2	20.5.5.5
	20.5.5.3	

20.5.5.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

GENERATOR OFF LIGHTS = ON*
AND ELECTRICAL CAUTION LIGHT = 'ELEC'
AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP = OFF
AND MASTER CAUTION SWITCHLIGHT-PIL = OFF
AND ELECTRICAL CAUTION LIGHT = OFF

20.5.5.002.00*

CHECK FUEL TRANSFER PUMP SWITCHES IN AUTO

CHECKLIST = SEQUENCE

CHECK

TRANSFER PUMP SWITCHES

TRANSFER PUMP SWITCHES = AUTO*

20.5.5.003.00*

SET FUEL TRANSFER PUMP SWITCHES TO OFF

CHECKLIST = SEQUENCE

SET

TRANSFER PUMP SWITCHES

TRANSFER PUMP SWITCHES = OFF*

20.5.5.004.00*

SET FUEL FILL VALVE SWITCHES TO CLOSED

CHECKLIST = SEQUENCE

SET

FILL VALVE SWITCHES

FILL VALVE SWITCHES = CL

20.5.5.005.00*

SELECTIVELY SET TRANSFER PUMP SWITCH TO ON AND RETURN TO OFF*

CHECKLIST = SEQUENCE

SET

#4 TANK TRANSFER SWITCH

#4 TANK TRANSFER SWITCH = ON*
AND #4 TANK TRANSFER SWITCH = OFF

OBJECTIVE: PERFORM SINGLE GENERATOR FAILURE PROCEDURES 20.34

CRITICALITY: 2 DIFFICULTY: 1

INITIAL CONDITIONS:

1. 1 GEN caution light illuminates.
2. ELEC legend light on flight station caution panel illuminates.
3. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights and the ELEC caution light will be extinguished, but the 1 GEN light will remain illuminated.
2. Recall that the RESET/OFF mode electrically disconnects the respective generator from the line, and resets the system for another attempt to reconnect the generator to the line.
3. Recall that the Voltage/Frequency rotary switch provides for the selection of a generator for a readout of voltage and frequency on adjacent gages.
4. Recall that flight should be continued in spite of the following failure conditions:
 - a. any single generator,
 - b. GEN No. 1 and BT No. 2,
 - c. GEN No. 2 or 3 and BT No. 1.
5. Recall that the A/V should be landed as soon as practical, for the following failure situations:
 - a. GEN No. 1 and BT No. 2,
 - b. Both bus ties and GEN No. 1 or 2.

ENABLING OBJECTIVES: (continued)

6. Recall that the A/V should be landed as soon as possible, for the following failure situations:
 - a. GEN No. 3 and BT No. 2,
 - b. GEN No. 3 and both bus ties.

ANCILLARY OBJECTIVES:

1. Recall that the procedures for a single generator failure also apply when one or both bus ties fail, in addition to a single generator failure.
2. Recall that the generator should not be reset if the associated CSD light is illuminated.
3. Recall that the switch for a failed generator should not be returned to ON, until after a pause for a minimum of one second in the RESET/OFF position.
4. Recall that if after three attempts the generator will not reset, the failed generator switch should be turned to RESET/OFF.
5. Recall that the voltage and frequency readings are for phase "A" only.
6. Recall that no corrective action is possible in flight, for a bus tie separation.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.6.1.1	20.6.1.4
	20.6.1.2	20.6.1.5
	20.6.1.3	20.6.1.6

20.6.1.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

#1 GENERATOR CAUTION LIGHT = '1 GEN'*
AND ELECTRICAL CAUTION LIGHT = 'ELEC'
AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-CUP

MASTER CAUTION SWITCHLIGHT-CUP = OFF
AND MASTER CAUTION SWITCHLIGHT-PIL = OFF
AND ELECTRICAL CAUTION LIGHT = OFF

20.6.1.002.00*

SET SWITCH FOR FAILED GENERATOR UNIT TO RESET-OFF AND ON

#1 GENERATOR CAUTION LIGHT = '1 GEN'*
AND #1 CSD CAUTION LIGHT = '1 CSD'

SET

#1 GENERATOR MODE SWITCH

#1 GENERATOR MODE SWITCH = RESET-OFF*
AND #1 GENERATOR MODE SWITCH = ON
AND #1 GENERATOR CAUTION LIGHT = OFF

20.6.1.003.00*

SET VOLTAGE-FREQUENCY SELECTOR TO APPLICABLE GENERATOR

CHECKLIST = SEQUENCE

SET

VOLTAGE-FREQ SELECTOR SWITCH

VOLTAGE-FREQ SELECTOR SWITCH = 1 GEN*
AND VOLTAGE METER = TBD
AND FREQUENCY METER = TBD

20.6.1.004.00*

CONTINUE FLIGHT*

CHECKLIST = SEQUENCE

FLY

A-V

A-V = FLIGHT CONTINUED

20.6.1.005.00*

LAND AS SOON AS PRACTICAL*

CHECKLIST = SEQUENCE

LAND

A-V

A-V = LANDED

20.6.1.066.00*

LAND AS SOON AS POSSIBLE*

LAND	CHECKLIST	= SEQUENCE
	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM DOUBLE GENERATOR FAILURE PROCEDURES

20.35

CRITICALITY: 2

DIFFICULTY: 2

- INITIAL CONDITIONS:
1. 1 GEN caution light illuminates.
 2. 2 GEN caution light illuminates.
 3. ELEC legend light on flight station caution panel illuminates.
 4. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

- PERFORMANCE LIMITS:
1. Proper sequence.
 2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights and the ELEC caution light will be extinguished, but the 1 GEN and 2 GEN lights will remain illuminated.
2. Recall that when the emergency generator switch is turned to ON, the hydraulically-driven emergency generator is started and the essential bus is energized.
3. Recall that with the Voltage/Frequency rotary switch set to ESNTL, the voltage and frequency shown on adjacent gages is for the essential bus.
4. Recall that the RESET/OFF mode electrically disconnects the respective generator from the line, and resets the system for another attempt to reconnect the generator to the lines.
5. Recall that the emergency generator switch should be turned to AUTO when the generators have been reset successfully.
6. Recall that the A/V should be landed as soon as practical, for the following failure situations:
 - a. Double generator,
 - b. Any two generators and any one bus except the essential bus,
 - c. GEN No. 1 and GEN No. 2 and BT No. 1.
7. Recall that the A/V should be landed as soon as possible, for the following failure situations:
 - a. Any two generators and both bus ties,
 - b. Both GEN No. 1 and 2 and BT No.2,
 - c. Both GEN No. 2 and 3 and either bus tie.

ANCILLARY OBJECTIVES:

1. Recall that the procedures for a double generator failure also apply when either bus tie fails in addition to a double generator failure.
2. Recall that when the emergency generator switch is turned to ON, essential bus loads are transferred to the emergency generator and buses 1, 2, 3 and 4 are energized by the remaining primary generator.
3. Recall that the emergency generator advisory light is illuminated, whenever the emergency generator is energized.
4. Recall that the voltage and frequency readings are for phase "A" only.
5. Recall that the generator should not be reset, if the associated CSD light is illuminated.
6. Recall that the switch for a failed generator should not be returned to ON, until after a pause for a minimum of one second in the RESET/OFF position.
7. Recall that if after three attempts the generator will not reset, the failed generator switch should be turned to RESET/OFF.
8. Recall that with the emergency generator switch in AUTO automatic changeover to the emergency generator is provided upon loss of normal power on the essential bus.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.6.2.1	20.6.2.4	20.6.2.5
	20.6.2.2	20.6.2.4.1	20.6.2.6
	20.6.2.3	20.6.2.4.2	20.6.2.7
			20.6.2.8

20.6.2.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

ELECTRICAL CAUTION LIGHT = 'ELEC'*

AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP = OFF

AND MASTER CAUTION SWITCHLIGHT-PIL = OFF

AND ELECTRICAL CAUTION LIGHT = OFF

20.6.2.002.00*

SET EMERGENCY GENERATOR SWITCH TO ON

#1 GENERATOR CAUTION LIGHT = '1 GEN'

AND #2 GENERATOR CAUTION LIGHT = '2 GEN'

SET EMERGENCY GENERATOR CONTROL SW

EMERGENCY GENERATOR CONTROL SW = ON*

AND EMERG GENERATOR ADVISORY LT = 'EMERG GEN ON'

20.6.2.003.00*

SET VOLTAGE-FREQUENCY SELECTOR TO THE ESSENTIAL BUS

CHECKLIST = SEQUENCE

SET VOLTAGE-FREQ SELECTOR SWITCH

VOLTAGE-FREQ SELECTOR SWITCH = ESNTL BUS

AND VOLTAGE METER = TBD

AND FREQUENCY METER = TBD

20.6.2.004.00*

SET SWITCHES FOR FAILED GENERATORS TO RESET-OFF AND ON

SET #1 GENERATOR MODE SWITCH

#2 GENERATOR MODE SWITCH

20.6.2.004.01*

SET SWITCH FOR #1 FAILED GENERATOR TO RESET-OFF AND ON

#1 GENERATOR CAUTION LIGHT = '1 GEN'*

AND #1 CSD CAUTION LIGHT = '1 CSD'

SET #1 GENERATOR MODE SWITCH

#1 GENERATOR MODE SWITCH = RESET-OFF*

AND #1 GENERATOR MODE SWITCH = ON

AND #1 GENERATOR CAUTION LIGHT = OFF

20.6.2.004.02*

SET SWITCH FOR #2 FAILED GENERATOR TO RESET-OFF AND ON

	#2 GENERATOR CAUTION LIGHT	= '2 GEN'*
	AND #2 CSD CAUTION LIGHT	= '2 CSD'
SET	#2 GENERATOR MODE SWITCH	
	#2 GENERATOR MODE SWITCH	= RESET-OFF*
	AND #2 GENERATOR MODE SWITCH	= ON
	AND #2 GENERATOR CAUTION LIGHT	= OFF

20.6.2.005.00*

SET EMERGENCY GENERATOR SWITCH TO AUTO

	#1 GENERATOR CAUTION LIGHT	= OFF
	AND #2 GENERATOR CAUTION LIGHT	= OFF
SET	EMERGENCY GENERATOR CONTROL SW	
	EMERGENCY GENERATOR CONTROL SW	= AUTO*

20.6.2.006.00*

SET VOLTAGE-FREQUENCY SELECTOR TO THE ESSENTIAL BUS

	#1 GENERATOR CAUTION LIGHT	= '1 GEN'
	AND #2 GENERATOR CAUTION LIGHT	= '2 GEN'
SET	VOLTAGE-FREQ SELECTOR SWITCH	
	VOLTAGE-FREQ SELECTOR SWITCH	= ESNTL BUS
	AND VOLTAGE METER	= T60
	AND FREQUENCY METER	= T60

20.6.2.007.00*

LAND AS SOON AS PRACTICAL*

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

20.6.2.008.00*

LAND AS SOON AS POSSIBLE*

	CHECKLIST	= SEQUENCE
LAND	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM TRIPLE GENERATOR FAILURE PROCEDURES

20.36

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS:

1. 1 GEN caution light illuminates.
2. 2 GEN caution light illuminates.
3. 3 GEN caution light illuminates.
4. ELEC legend light on flight station.
5. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights and the ELEC caution light will be extinguished, but the 1 GEN, 2 GEN and 3 GEN lights will remain illuminated.
2. Recall that when the emergency generator switch is turned to ON, the hydraulically-driven emergency generator is started and the essential bus is energized.
3. Recall that with the Voltage/Frequency rotary switch set to ESNTL, the voltage and frequency shown on adjacent gages is for the essential bus.
4. Recall that the RESET/OFF mode, electrically disconnects the respective generator from the line, and resets the system for another attempt to reconnect the generator to the lines.
5. Recall that the emergency generator switch should be turned to AUTO when the generators have been reset successfully.
6. Recall that the A/V should be landed, as soon as possible for the following failure situations:
 - a. Triple generator,
 - b. All three generators and both bus ties.

ANCILLARY OBJECTIVES:

1. Recall that the procedures for a triple generator failure also apply when both bus ties fail in addition to the triple generator failure.
2. Recall that when the emergency generator switch is turned to ON, essential loads are transferred to the emergency generator.
3. Recall that the emergency generator advisory light is illuminated whenever the emergency generator is energized.
4. Recall that the voltage and frequency readings are for phase "A" only.
5. Recall that the generator should not be reset if the associated CSD light is illuminated.
6. Recall that the switch for a failed generator should not be returned to ON until after a pause for a minimum of one second in the RESET/OFF position.
7. Recall that if after three attempts the generator will not reset, the failed generator switch should be turned to RESET/OFF.
8. Recall that with the emergency generator switch in AUTO, automatic changeover to the emergency generator is provided upon loss of normal power on the essential bus.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.6.3.1	20.6.3.5
	20.6.3.2	20.6.3.6
	20.6.3.3	20.6.3.7
	20.6.3.4	

20.6.3.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

ELECTRICAL CAUTION LIGHT = 'ELEC'*

AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP= OFF
AND MASTER CAUTION SWITCHLIGHT-PIL= OFF
AND ELECTRICAL CAUTION LIGHT = OFF

20.6.3.002.00*

SET EMERGENCY GENERATOR SWITCH TO ON

#1 GENERATOR CAUTION LIGHT = '1 GEN'
AND #2 GENERATOR CAUTION LIGHT = '2 GEN'
AND #3 GENERATOR CAUTION LIGHT = '3 GEN'

SET

EMERGENCY GENERATOR CONTROL SW

EMERGENCY GENERATOR CONTROL SW= ON*
AND EMERG GENERATOR ADVISORY LT = 'EMERG GEN LN'

20.6.3.003.00*

SET VOLTAGE-FREQUENCY SELECTOR TO THE ESSENTIAL BUS

CHECKLIST = SEQUENCE

SET

VOLTAGE-FREQ SELECTOR SWITCH

VOLTAGE-FREQ SELECTOR SWITCH = ESNTL BUS
AND VOLTAGE METER = TBD
AND FREQUENCY METER = TBD

20.6.3.004.00*

SET SWITCHES FOR FAILED GENERATORS TO RESET-OFF AND ON

GENERATOR OFF LIGHTS = ON*

AND CSD CAUTION LIGHTS = ON

SET

GENERATOR MODE SWITCHES

GENERATOR MODE SWITCHES = RESET-OFF*
AND GENERATOR MODE SWITCHES = ON
AND GENERATOR OFF LIGHTS = OFF

20.6.3.005.00*

SET EMERGENCY GENERATOR SWITCH TO AUTO

SET GENERATOR OFF LIGHTS = OFF
EMERGENCY GENERATOR CONTROL SW
EMERGENCY GENERATOR CONTROL SW = AUTO*

20.6.3.006.00*

SET VOLTAGE-FREQUENCY SELECTOR TO THE ESSENTIAL BUS

SET GENERATOR OFF LIGHTS = ON
VOLTAGE-FREQ SELECTOR SWITCH
VOLTAGE-FREQ SELECTOR SWITCH = ESNTL BUS
AND VOLTAGE METER = TBD
AND FREQUENCY METER = TBD

20.6.3.007.00*

LAND AS SOON AS POSSIBLE*

LAND CHECKLIST = SEQUENCE
A-V
A-V = LANDED

OBJECTIVE: PERFORM SINGLE BUS TIE FAILURE PROCEDURES 20.37

CRITICALITY: 1 DIFFICULTY: 1

INITIAL CONDITIONS: 1. TIE OPEN shown on either bus tie indicator.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

ENABLING OBJECTIVES:

1. Recall that flight should be continued with a single bus tie (BT No. 1 or 2) failure.

ANCILLARY OBJECTIVES:

1. Recall that no corrective action is possible in flight for a bus tie separation.

OPERATOR: P/CP

TASK ELEMENTS: 20.6.4.1

20.6.4.001.00*

CONTINUE FLIGHT

LEFT BUS TIE EM INDICATOR
OR RIGHT BUS TIE EM INDICATOR

= 'TIE OPEN'*
= 'TIE OPEN'

FLY

A-V

A-V

= FLIGHT CONTINUED

OBJECTIVE: PERFORM BOTH BUS TIE FAILURE PROCEDURES

20.38

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. TIE OPEN shown on left bus tie indicator.
2. TIE OPEN shown on right bus tie indicator.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

ENABLING OBJECTIVES

1. Recall that flight should be continued with both bus ties (BT No. 1 and 2) failed.

ANCILLARY OBJECTIVES:

1. Recall that no corrective action is possible in flight for bus tie separations.

OPERATOR: P/CP

TASK ELEMENTS: 20.6.5.1

20.6.5.001.00*

CONTINUE FLIGHT

LEFT BUS TIE EM INDICATOR = 'TIE OPEN**'
AND RIGHT BUS TIE EM INDICATOR = 'TIE OPEN'

FLY

A-V

A-V

= FLIGHT CONTINUED

OBJECTIVE: PERFORM BUS FAILURE PROCEDURES

20.39

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. 1 BUS caution light illuminates.
2. ELEC legend light on flight station caution panel illuminates.
3. Both MASTER CAUTION switchlights illuminate.

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights and the ELEC caution light will be extinguished but the 1 BUS light will remain illuminated.
2. Recall that the Voltage/Frequency rotary switch provides for the selection of a bus for a readout of voltage and frequency on adjacent gages.
3. Recall that the A/V should be landed as soon as practical, for any one bus failure or for failures of any one bus and either bus tie.
4. Recall that the A/V should be landed as soon as possible for a double bus failure.

ANCILLARY OBJECTIVES:

1. Recall that the procedures for a single bus failure also apply when either bus tie separates, in addition to a single bus failure.
2. Recall that the procedures for a double bus failure are the same as for a single bus failure.

OPERATOR: P/CP

TASK ELEMENTS: 20.6.6.1 20.6.6.3
 20.6.6.2 20.6.6.4

20.6.6.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

#1 BUS CAUTION LIGHT = '1 BUS'*

AND ELECTRICAL CAUTION LIGHT = 'ELEC'

AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP = OFF

AND MASTER CAUTION SWITCHLIGHT-PIL = OFF

AND ELECTRICAL CAUTION LIGHT = OFF

20.6.6.002.00*

SET VOLTAGE-FREQUENCY SELECTOR TO APPLICABLE BUS

CHECKLIST = SEQUENCE

SET

VOLTAGE-FREQ SELECTOR SWITCH

VOLTAGE-FREQ SELECTOR SWITCH = 1 BUS

AND VOLTAGE METER = TBD

OR FREQUENCY METER = TBD

20.6.6.003.00*

LAND AS SOON AS PRACTICAL*

CHECKLIST = SEQUENCE

LAND

A-V

A-V

= LANDED

20.6.6.004.00*

LAND AS SOON AS POSSIBLE*

CHECKLIST = SEQUENCE

LAND

A-V

A-V

= LANDED

OBJECTIVE: PERFORM COMPLETE LOSS OF ELECTRICAL POWER PROCEDURES 20.40

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. All lights inoperative.
 2. All electrical powered instruments inoperative.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

ENABLING OBJECTIVES:

1. Recall that all crewmembers should eject when a complete loss of electrical power occurs.

ANCILLARY OBJECTIVES:

OPERATOR: P/CP

TASK ELEMENTS: 20.6.7.1

20.6.7.001.00*

ALL CREWMEMBERS EJECT

ELECTRICAL CONTROL PANEL

→TBD*

PULL

EJECTION HANDLE

EJECTION HANDLE

= PULLED

OBJECTIVE: PERFORM HYDRAULIC PRESSURE & QUANTITY FAILURE PROCEDURES 20.41

CRITICALITY: 3 DIFFICULTY: 1

- INITIAL CONDITIONS:
1. HYD legend light on flight station caution panel illuminates.
 2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

- PERFORMANCE LIMITS:
1. Proper sequence.
 2. Switches in proper positions

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights and the HYD caution light will be extinguished.
2. Recall that the A/V should be landed as soon as practical when one or two hydraulic systems become inoperative.
3. Recall that the A/V should be landed as soon as possible when three hydraulic systems become inoperative.
4. Recall that all crewmembers should eject from the A/V when the four hydraulic systems become inoperative.
5. Recall the procedures for ejecting from the A/V.

ANCILLARY OBJECTIVES:

1. Recall that if the hydraulic fluid level in systems 1 and 4 falls below 6 gallons or below 11 gallons in systems 2 and 3, the hydraulic caution light will illuminate.
2. Recall that if any of the systems pressures fall below 2150 PSI, the hydraulic caution light will illuminate.
3. Recall that the flight control system will be inoperative and controlled flight cannot be continued after the loss of four hydraulic systems.

ANCILLARY OBJECTIVES: (continued)

4. Recall that injury could occur if the crewmember is not in a firm, upright position with head against head rest and arms on seat arm-rests when ejection is initiated.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.7.1.1	20.7.1.4	20.7.1.7
	20.7.1.2	20.7.1.5	20.7.1.8
	20.7.1.3	20.7.1.6	

20.7.1.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

	HYDRAULIC LIGHT	= 'HYD'*
	AND MASTER CAUTION SWITCHLIGHTS	= ON
DEPRESS	MASTER CAUTION SWITCHLIGHT-COP	
	MASTER CAUTION SWITCHLIGHT-COP=	OFF
	AND MASTER CAUTION SWITCHLIGHT-PIL=	OFF
	AND HYDRAULIC LIGHT	= OFF

20.7.1.002.00*

LAND AS SOON AS PRACTICAL

	#1 HYD QUANTITY INDICATOR	↔=TBD*
	OR #1 HYD PRESSURE INDICATOR	↔=TBD
LAND	A-V	
	A-V	= LANDED

20.7.1.003.00*

LAND AS SOON AS PRACTICAL

	#1 HYD QUANTITY INDICATOR	↔=TBD*
	AND #2 HYD QUANTITY INDICATOR	↔=TBD
LAND	A-V	
	A-V	= LANDED

20.7.1.004.00*

LAND AS SOON AS POSSIBLE

	#1 HYD QUANTITY INDICATOR	↔=TBD*
	AND #2 HYD QUANTITY INDICATOR	↔=TBD
	AND #3 HYD QUANTITY INDICATOR	↔=TBD
LAND	A-V	
	A-V	= LANDED

20.7.1.005.00*

DEPRESS PREPARE TO EJECT SWITCHLIGHT

	HYDRAULIC QUANTITY INDICATORS	↔=TBD*
	OR HYDRAULIC PRESSURE INDICATORS	↔=TBD
DEPRESS	PREPARE TO EJECT	
	PREPARE TO EJECT SWITCHLIGHT	= ON

20.7.1.006.00*

ADVISE CREWMEMBERS OF DECISION TO EJECT

HYDRAULIC QUANTITY INDICATORS = TBD
OR HYDRAULIC PRESSURE INDICATORS = TBD

COMMUNICATE

PILOT ICS

PILOT ICS

= PREPARE TO EJECT

20.7.1.007.00*

COMPLETE "BEFORE EJECTION" CHECKLIST*

CHECKLIST

= SEQUENCE

PERFORM

CHECKLIST

CHECKLIST

= PERFORMED*

20.7.1.008.00*

ALL CREWMEMBERS EJECT

PREPARE TO EJECT SWITCHLIGHT
AND PILOT ICS
AND CHECKLIST

= ON
= PREPARE TO EJECT
= PERFORMED

PULL

EJECTION HANDLE

EJECTION HANDLE

= PULLED*

OBJECTIVE: PERFORM LOSS OF HYDRAULIC SYSTEMS 2,3 AND 4 PROCEDURES

20.42

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. HYD legend light on flight station caution panel illuminate
2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight, both MASTER CAUTION lights and the HYD caution light will be extinguished.
2. Recall that the flight control stick disconnect handle must be unlocked before it can be pulled.
3. Recall that when the flight control sticks are disconnected, the copilot can fly the A/V electrically through the SCAS.

ANCILLARY OBJECTIVES:

1. Recall that if the hydraulic fluid level in systems 1 and 4 falls below 6 gallons or below 11 gallons in systems 2 and 3, the hydraulic caution light will illuminate.
2. Recall that if any of the systems pressures fall below 2150 PSI, the hydraulic caution light will illuminate.
3. Recall that when Hydraulic Systems 2,3 and 4 have failed, the master cylinders are inoperative in both pitch and roll.
4. Recall that the SCAS is operative when Hydraulic Systems 2,3, and 4 have failed.
5. Recall that with the loss of three hydraulic systems, continued flight can be maintained only with extreme caution.

ANCILLARY OBJECTIVES: (continued)

6. Recall that with the loss of three hydraulic systems, a safe landing under favorable conditions can be achieved, but must be at the pilot's discretion.
7. Recall that with the loss of three hydraulic systems, only necessary maneuvers should be exercised and then with extreme caution.

OPERATOR: P/CP

TASK ELEMENTS: 20.7.2.1
20.7.2.2
20.7.2.3

20.7.2.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

DEPRESS
HYDRAULIC LIGHT = 'HYD' *
AND MASTER CAUTION SWITCHLIGHTS = ON
MASTER CAUTION SWITCHLIGHT-COP
MASTER CAUTION SWITCHLIGHT-COP = OFF
AND MASTER CAUTION SWITCHLIGHT-PIL = OFF
AND HYDRAULIC LIGHT = OFF

20.7.2.002.00*

PULL FLIGHT CONTROL STICK DISCONNECT HANDLE

PULL
#2 HYD QUANTITY INDICATOR = TBD*
AND #3 HYD QUANTITY INDICATOR = TBD
AND #4 HYD QUANTITY INDICATOR = TBD
FLT CONTR STCK DISCONNECT HNDL
FLT CONTR STCK DISCONNECT HNDL = PULLED

20.7.2.003.00*

MAINTAIN CONTROL OF A-V WITH COPILOT'S STICK THROUGH SCAS

FLY
FLT CONTR STCK DISCONNECT HNDL = PULLED
A-V
A-V = CONTROLLED*

OBJECTIVE: PERFORM SMCS FAILURE PROCEDURES

20.43

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. SMCS legend light on flight station caution panel illuminated.
2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that by depressing either MASTER CAUTION switchlight both MASTER CAUTION lights will be extinguished and the SMCS legend light will change from flashing to steady.
2. Recall that the SMCS functions automatically when the SMCS switch is on.

ANCILLARY OBJECTIVES:

1. Recall that the SMCS caution light illuminates when an out-of-tolerance condition is detected.
2. Recall that the SMCS controllers are disengaged and the flight control vanes are automatically centered when an out-of-tolerance condition occurs.
3. Recall that if the SMCS caution light does not go out when the SMCS switch is moved to RESET, it should be turned off.

OPERATOR: P/CP

TASK ELEMENTS: 20.8.1.1
 20.8.1.2
 20.8.1.3

20.8.1.001.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

SMCS CAUTION LIGHT = 'SMCS'-FLASHING*
AND MASTER CAUTION SWITCHLIGHTS = ON

DEPRESS

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP= OFF
AND MASTER CAUTION SWITCHLIGHT-PIL= OFF
AND SMCS CAUTION LIGHT = 'SMCS'-STEADY

20.8.1.002.00*

SET SMCS MODE SWITCH TO RESET MOMENTARILY AND RETURN TO ON

SMCS CAUTION LIGHT = 'SMCS'-STEADY

SET

SMCS SWITCH

SMCS SWITCH = RESET
AND SMCS SWITCH = ON
AND SMCS CAUTION LIGHT = 'SMCS'-STEADY

20.8.1.003.00*

SET SMCS MODE SWITCH TO OFF

SMCS CAUTION LIGHT = 'SMCS'-STEADY

SET

SMCS SWITCH

SMCS SWITCH = OFF*

OBJECTIVE: PERFORM PITCH TRIM NORMAL SYSTEM FAILURE PROCEDURES

20.44

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. PITCH TRIM lengerd light on flight station
caution panel illuminates.
2. Both MASTER CAUTION switchlights illuminate.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Airspeed - TBD (\pm kts)
2. Attitude - TBD (\pm deg)
3. Proper sequence.
4. Switches in proper positions.

ENABLING OBJECTIVES:

1. Coordinate control stick and rudder pedals to maintain air vehicle attitude and airspeed within safe limits.
2. Recall that when the pitch trim switch is set to the ALTER mode, the pitch trim system functions the same as for the NORM mode but operating power is provided from an alternate source.
3. Recall that when the pitch trim switch is set to the STBY mode, the standby pitch trim system is activated through the SCAS.
4. Recall that selecting up or down on the standby pitch switch directs corresponding trim inputs to the pitch servos in proportion to the length of time held.
5. Recall that the A/V should be landed as soon as practical when the normal and alternate trim systems are inoperative.

ANCILLARY OBJECTIVES

1. Recall that moving the pitch trim power switch to ALTER and back to NORM is the primary method for attempting to reset the normal pitch trim system.

ANCILLARY OBJECTIVES: (continued)

2. Recall that when the pitch trim power switch is set to ALTER, the pitch trim caution light will go out and will not illuminate again in case of a malfunction in the alternate power system.
3. Recall that there will be no indication that the alternate pitch trim system has failed other than no response from the stick pitch trim system.
4. Recall that when the pitch trim switch is set to STBY, the primary pitch trim actuator system is deactivated.
5. Recall that when the pitch trim switch is set to STBY, the stick pitch trim switches are no longer operative and the standby pitch switch on the flight control trim panel should be used.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.8.2.1	20.8.2.5
	20.8.2.2	20.8.2.6
	20.8.2.3	20.8.2.7
	20.8.2.4	

20.8.2.001.00*

MAINTAIN AIR VEHICLE ATTITUDE & AIRSPEED WITHIN SAFE LIMITS

FLY

PITCH TRIM CAUTION LIGHT = 'PITCH TRIM'-FL
AND MASTER CAUTION SWITCHLIGHTS = ON

A-V

VSD = TBD
AND AIRSPEED-MACH NUMBER INDICATOR = TBD

20.8.2.002.00*

DEPRESS MASTER CAUTION SWITCHLIGHT

DEPRESS

PITCH TRIM CAUTION LIGHT = 'PITCH TRIM'-FL
AND MASTER CAUTION SWITCHLIGHTS = ON

MASTER CAUTION SWITCHLIGHT-COP

MASTER CAUTION SWITCHLIGHT-COP = OFF
AND MASTER CAUTION SWITCHLIGHT-PIL = OFF
AND PITCH TRIM CAUTION LIGHT = 'PITCH TRIM'-ST

20.8.2.003.00*

SET PITCH TRIM POWER SWITCH TO ALTER AND RETURN TO NORM

SET

PITCH TRIM CAUTION LIGHT = 'PITCH TRIM'-ST

PITCH TRIM SWITCH

PITCH TRIM SWITCH = ALTER*
AND PITCH TRIM SWITCH = NORM
AND PITCH TRIM CAUTION LIGHT = 'PITCH TRIM'-ST

20.8.2.004.00*

SET PITCH TRIM POWER SWITCH TO ALTER

SET

PITCH TRIM CAUTION LIGHT = 'PITCH TRIM'-ST

PITCH TRIM SWITCH

PITCH TRIM SWITCH = ALTER*
AND PITCH TRIM CAUTION LIGHT = OFF

20.8.2.005.00*

SET PITCH TRIM POWER SWITCH TO STBY

SET

PLT TRIM SW (ON CONTR STICK) = INOPERATIVE*
AND CPLT TRIM SW (ON CONTR STICK) = INOPERATIVE

PITCH TRIM SWITCH

PITCH TRIM SWITCH = STBY*

20.8.2.006.00*

SELECT UP OR DOWN ON PILOT'S STBY PITCH SWITCH

	PITCH TRIM SWITCH	= STBY*
SELECT	PILOT STBY PITCH SWITCH	
	PILOT STBY PITCH SWITCH	= UP*
	OR PILOT STBY PITCH SWITCH	= DN
	AND PILOT STBY PITCH SWITCH	= OFF

20.8.2.007.00*

LAND AS SOON AS PRACTICABLE

	CHECKLIST	= SEQUENCE
FLY	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM WING SWEEP RUNAWAY IN AFT DIRECTION PROCEDURES

20.45

CRITICALITY: 3

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Wings continue to sweep in aft direction.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that moving the alternate wing sweep to FWD will drive the wings forward in proportion to the length of time the switch is held in that position.
2. Recall that when the alternate wing sweep switch is in HOLD, the wing is held in the position indicated by the sweep position pointer.
3. Recall that the A/V should be landed as soon as practical, after a malfunction has occurred in the wing sweep system.

ANCILLARY OBJECTIVES:

1. Recall that the procedures for wing sweep runaway in the aft direction, also apply for failure to sweep forward in the normal mode.
2. Recall that moving the alternate wing sweep to FWD activates a rate control system which can only drive the wings in one direction.

OPERATOR: P/CP

TASK ELEMENTS: 20.8.3.1
20.8.3.2
20.8.3.3

20.8.3.001.00*

CHECK WING SWEEP HANDLES AND POSITION INDICATOR

CHECK

WING SWEEP POSITION INDICATOR = TBD*
OR WING SWEEP POSITION INDICATOR = TBD

WING SWEEP HANDLES
WING SWEEP POSITION INDICATOR

WING SWEEP HANDLES = TBL*
AND WING SWEEP POSITION INDICATOR = TBD

20.8.3.002.00*

SET ALTERNATE WING SWEEP SWITCH TO FWD AND HOLD THEN RELEASE TO HOLD

SET

WING SWEEP POSITION INDICATOR = TBD

ALTERNATE WING SWEEP SWITCH

ALTERNATE WING SWEEP SWITCH = FWD*
AND ALTERNATE WING SWEEP SWITCH = HOLD

20.8.3.003.00*

LAND AS SOON AS PRACTICAL

FLY

CHECKLIST = SEQUENCE

A-V

A-V = LANDED

OBJECTIVE: PERFORM WING SWEEP RUNAWAY IN FORWARD DIRECTION PROCEDURES 20.46

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Wings continue to sweep in forward direction.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
 2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the alternate wing sweep switch is in HOLD, the wing is held in the position indicated by the sweep position pointer.
2. Recall that the A/V should be landed as soon as practical after a malfunction has occurred in the wing sweep system.

ANCILLARY OBJECTIVES:

1. Recall that the wings cannot be swept aft with the alternate wing sweep system.

OPERATOR: P/CP

TASK ELEMENTS: 20.8.4.1
 20.8.4.2
 20.8.4.3

20.8.4.001.00*

CHECK WING SWEEP HANDLES AND POSITION INDICATORS

CHECK

WING SWEEP POSITION INDICATOR = TED*
OR WING SWEEP POSITION INDICATOR = TED

WING SWEEP HANDLES
WING SWEEP POSITION INDICATOR

WING SWEEP HANDLES = TED*
AND WING SWEEP POSITION INDICATOR = TED

20.8.4.002.00*

SET ALTERNATE WING SWEEP KNOB TO HOLD

SET

WING SWEEP POSITION INDICATOR = TED

ALTERNATE WING SWEEP SWITCH

ALTERNATE WING SWEEP SWITCH = HOLD*

20.8.4.003.00*

LAND AS SOON AS PRACTICAL

FLY

CHECKLIST = SEQUENCE

A-V

A-V = LANDED

OBJECTIVE: PERFORM WING WILL NOT MAINTAIN FULL FORWARD SWEEP PROCEDURES 20.47

CRITICALITY: 2

DIFFICULTY: 1

INITIAL CONDITIONS: 1. Wings continue to sweep in aft direction.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that moving the alternate wing sweep to FWD will drive the wings forward in proportion to the length of time the switch is held in that position.
2. Recall that when the alternate wing sweep switch is in HOLD, the wing is held in the position indicated by the sweep position pointer.
3. Recall that the A/V should be landed as soon as possible if the wing will not maintain full forward sweep.

ANCILLARY OBJECTIVES:

1. Recall that moving the alternate wing sweep to FWD activates a rate control system which can only drive the wings in one direction.

OPERATOR: P/CP

TASK ELEMENTS: 20.8.5.1
20.8.5.2

20.8.5.001.00*

SET ALTERNATE WING SWEEP KNOB TO FWD AND HOLD FOR DURATION OF FLIGHT

SET

WING SWEEP POSITION INDICATOR = TSD*

ALTERNATE WING SWEEP SWITCH

ALTERNATE WING SWEEP SWITCH = FWD*

20.8.5.002.00*

LAND AS SOON AS POSSIBLE

FLY

CHECKLIST

= SEQUENCE

A-V

A-V

= LANDED

OBJECTIVE:

PERFORM LANDING WITH THREE-ENGINES-INOPERATIVE

20.48

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Loss of power on three engines.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

1. Angle of attack - TBD (\pm degs).
2. Airspeed - TBD (\pm kts).
3. Vertical velocity - TBD (\pm ft/sec).
4. Proper sequence.
5. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wing tip trailing edge.
2. Recall that the wing sweep handles should be set forward of 45 degrees so that the approach can be made at a normal airspeed.
3. Recall that the wing sweep handles should be set at 20 degrees maximum to minimize touchdown speed.
4. Recall that additional hydraulic power can be provided with the APUs running.
5. Recall that the RESET/OFF mode electrically disconnects the respective generator from the line, and resets the system for another attempt to reconnect the generator to the line.
6. Recall that movement of the FLAP/SLAT handle 10 degrees to the gate detent will extend the slats and leave the flaps full up.
7. Recall that to by-pass the gate detent, a small finger-operated lever on the control handle must be raised.
8. Recall that movement of the FLAP/SLAT control handle off of the gate detent provides flap extension proportional to handle position.
9. Recall that the flap position indicator ranges from UP to full DOWN, which corresponds to zero and 40 degrees of flap travel.

ENABLING OBJECTIVES: (continued.)

10. Recall that the landing gear is lowered by pushing a small spring-loaded lever and then applying a downward force.
11. Recall that flying the approach at normal speed, plus 25 knots, will enhance the flying characteristics of the A/V.
12. Recall that the A/V should be landed as soon as possible to minimize the time the A/V is flying with three-engines-inoperative and the possibility of the remaining engine failing.

ANCILLARY OBJECTIVES:

1. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
2. Recall that fuel cannot be dumped from the main tanks.
3. Recall that manual dumping of fuel requires that the transfer pumps in the tank from which fuel is to be dumped must be turned on and all other tanks turned off.
4. Recall that a generator switch should not be returned to ON until after a pause for a minimum of one second in the RESET/OFF position.
5. Recall that slats can be extended and retracted at any wing sweep.
6. Recall that the barberpole on the slats position indicator is displayed when the slats are in transit or if there is a malfunction in the slat indicating system.
7. Recall that the flap position indicator gradations are provided at each one-quarter position.
8. Recall that the down position of the landing gear handle is heavily detented but not locked.
9. Recall that the DN position of the landing gear handle initiates (via EMUX) the electrical commands to the hydraulic system to open the gear doors, unlock, and extend and lock the gear in the down position and close main gear doors.
10. Recall that the red lights in the landing gear handle will illuminate when the gear is in transit. They will go out as soon as the landing gear is locked. If not out within 15 seconds, or within 30 seconds in cold weather, a landing gear malfunction is indicated.
11. Recall that three green advisory lights illuminate when each landing gear is down and locked.

OPERATOR: P/CP

TASK ELEMENTS:

20.9.1.1
20.9.1.2
20.9.1.3

20.9.1.4
20.9.1.5
20.9.1.6

20.9.1.7
20.9.1.8
20.9.1.9
20.9.1.10

20.9.1.001.00*

SET FUEL DUMP SWITCH TO DUMP

ENG 2 CORE RPM INDICATOR = TBD*
AND ENG 3 CORE RPM INDICATOR = TBD
AND ENG 4 CORE RPM INDICATOR = TBD

SET

DUMP SWITCH

DUMP SWITCH = DUMP*
AND GROSS WT DIGITAL COUNTER = TBD

20.9.1.002.00*

SET WING SWEEP HANDLES FORWARD OF 45 DEGREES

CHECKLIST = SEQUENCE

SET

WING SWEEP HANDLES

WING SWEEP HANDLES < 45
AND WING SWEEP POSITION INDICATOR = TBD

20.9.1.003.00*

CHECK BOTH APUS ARE RUNNING

CHECKLIST = SEQUENCE

CHECK

LEFT RUN LIGHT
RIGHT RUN LIGHT

LEFT RUN LIGHT = 'L RUN'
AND RIGHT RUN LIGHT = 'R RUN'

20.9.1.004.00*

SET SWITCHES FOR GENERATORS TO RESET-OFF AND ON

CHECKLIST = SEQUENCE

SET

GENERATOR MODE SWITCHES = RESET-OFF*
AND GENERATOR MODE SWITCHES = ON
AND GENERATOR OFF LIGHTS = OFF

20.9.1.005.00*

CHECK CENTER-OF-GRAVITY IS WITHIN LANDING LIMITS

CHECKLIST = SEQUENCE

CHECK

CG LIMITS CAUTION LIGHT

CG LIMITS CAUTION LIGHT = OFF

20.9.1.006.00*

SET WING SWEEP HANDLES AT 20 DEGREES MAXIMUM

	CHECKLIST	= SEQUENCE
SET	WING SWEEP HANDLES	
	WING SWEEP HANDLES	= 20
	OR WING SWEEP HANDLES	< 2
	AND WING SWEEP POSITION INDICATOR	= TBD

20.9.1.007.00*

EXTEND WING SLATS AND FLAPS FOR LANDING

	CHECKLIST	= SEQUENCE
SET	FLAP-SLAT CONTROL HANDLE	
	FLAP-SLAT CONTROL HANDLE	= TBD
	AND SLATS POSITION INDICATOR	= TBD
	AND FLAP POSITION INDICATOR	= TBD

20.9.1.008.00*

SET LANDING GEAR CONTROL HANDLE TO DOWN

	CHECKLIST	= SEQUENCE
SET	PRIMARY LANDING GEAR CONTROL	
	PRIMARY LANDING GEAR CONTROL	= DN
	AND GEAR WARNING LIGHTS	= OFF

20.9.1.009.00*

FLY THE APPROACH AT NORMAL SPEED PLUS 25 KIAS

	CHECKLIST	= SEQUENCE
FLY	A-V	
	AIRSPD-MACH NUMBER INDICATOR	= TBD

20.9.1.010.00*

LAND AS SOON AS POSSIBLE

	CHECKLIST	= SEQUENCE
FLY	A-V	
	A-V	= LANDED

OBJECTIVE: PERFORM LANDING GEAR MALFUNCTION PROCEDURES

20.49

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Landing gear warning light illuminated.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that an airspeed of 250 KIAS should not be exceeded with one or more landing gears down.
2. Recall that depressing the hydraulic quantity indicator test pushbutton will drive the indicator pointers counter-clockwise.
3. Recall that the hydraulic pressure gage pointers should indicate at the 9 o'clock position for normal operation.
4. Recall that the alternate landing gear system is actuated by pulling out on the alternate landing gear toggle lever and moving it to DN.
5. Recall that if the alternate landing gear system is used because of a malfunctioned nose gear, airspeed should be increased to assist in locking the landing gear.
6. Recall that if the alternate landing gear system is used because of a malfunctioned main landing gear, airspeed should be decreased to minimum controllable.
7. Recall that the A/V should be landed as soon as practical after the alternate landing gear system has been used.

ANCILLARY OBJECTIVES:

1. Recall that a landing gear malfunction may be indicated with the warning light in the gear handle illuminated and/or the landing gear downlock indication lights not illuminated.

ANCILLARY OBJECTIVES: (continued)

2. Recall that the lack of counter-clockwise motion during testing of the hydraulic quantity gages denotes a faulty indicator.
3. Recall that if the hydraulic fluid level in systems 1 and 4 falls below 6 gallons, or below 11 gallons in systems 2 and 3, the hydraulic caution light will illuminate.
4. Recall that if any of the systems pressures fall below 2150 PSI, the hydraulic caution light will illuminate.
5. Recall that actuation of the alternate landing gear system deactivates the normal landing gear control.
6. Recall that airspeed should not exceed 340 KIAS in attempting to lock the nose gear in the down position.
7. Recall that the minimum airspeed for controlling the A/V should be consistent with the existing configuration and gross weight.
8. Recall that if the A/V is yawed to assist in locking a main landing gear, the yaw limits for the A/V configuration and gross weight must be observed.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.9.2.1	20.9.2.4	20.9.2.7
	20.9.2.2	20.9.2.5	20.9.2.8
	20.9.2.3	20.9.2.6	20.9.2.9

20.9.2.001.00*

CHECK AIRSPEED IS BELOW 250 KIAS

GEAR WARNING LIGHT = ON*
OR GEAR WARNING LIGHTS = ON
AND GEAR WARNING LIGHTS = ON

CHECK

AIRSPEED-MACH NUMBER INDICATOR

AIRSPEED-MACH NUMBER INDICATOR < 250*

20.9.2.002.00*

CHECK HYDRAULIC SYSTEMS PRESSURE

CHECKLIST = SEQUENCE

CHECK

HYDRAULIC PRESSURE INDICATORS

HYDRAULIC PRESSURE INDICATORS = TBD

20.9.2.003.00*

OBTAIN VISUAL CONFIRMATION OF LGG GR BY CHASE PLANE OR TOWER

CHECKLIST = SEQUENCE

MONITOR-VISUAL

WINDSCREEN

LANDING GEAR CONTROL PANEL = DOWN

20.9.2.004.00*

CHECK AIRSPEED IS BELOW 190 KIAS

CHECKLIST = SEQUENCE

CHECK

AIRSPEED-MACH NUMBER INDICATOR

AIRSPEED-MACH NUMBER INDICATOR < 190

20.9.2.005.00*

SET ALTERNATE LANDING GEAR CONTROL SWITCH TO THE DOWN POSN

CHECKLIST = SEQUENCE

SET

ALTERNATE LANDING GEAR CONTROL

ALTERNATE LANDING GEAR CONTROL = DN
AND NOSE GEAR ADVISORY LIGHT = 'NOSE'

OBJECTIVE: PERFORM LANDING WITH ANY GEAR RETRACTED OR UNLOCKED 20.50

CRITICALITY: 3 DIFFICULTY: 2

INITIAL CONDITIONS: 1. Both nose and main gear are retracted, or
2. Both main gear are retracted, or
3. The nose gear is retracted.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Angle of attack - TBD (\pm degs).
2. Airspeed - TBD (\pm kts).
3. Vertical velocity - TBD (\pm ft/sec).
4. Proper sequence.
5. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that the A/V should be "belly landed" if none of the landing gears can be extended.
2. Recall that the A/V should be landed with a minimum sink rate if the nose gear is down and locked but both main gear are retracted.
3. Recall that the airspeed should be decreased below 190 KIAS prior to actuating the alternate landing gear system if either main landing gear is retracted.
4. Recall that the alternate landing gear system is actuated by pulling out on the alternate landing gear toggle lever and moving it to DN.
5. Recall that if the alternate landing gear system is used because of a malfunctioned main landing gear, airspeed should be decreased to minimum controllable.
6. Recall that the extended main landing gear should be retracted if the faulty main landing gear cannot be extended with the primary or alternate landing gear system.
7. Recall that the A/V should be "belly landed" when all the landing gear have been retracted.
8. Recall that a touch-and-go landing should be performed on the extended main landing gear if it will not retract.

ENABLING OBJECTIVES: (continued)

9. Coordinate control stick and rudder pedals to maintain directional control while keeping wingtip high during touchdown.
10. Recall that the A/V should be landed with a minimum sink rate if both main landing gear are down and locked but the nose gear is retracted.
11. Recall that the A/V. should be landed as soon as practical when a landing gear malfunction has been rectified, with all three landing gear down and locked.

ANCILLARY OBJECTIVES:

1. Recall that actuation of the alternate landing gear system deactivates the normal landing gear control.
2. Recall that the minimum airspeed for controlling the A/V should be consistent with the existing configuration and gross weight.
3. Recall that if the A/V is yawed to assist in locking a main landing gear, the yaw limits for the A/V configuration and gross weight must be observed.
4. Recall that the wingtip should be kept high after touchdown by using opposite braking and nosewheel steering when landing with the nose gear and one main landing gear extended.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.9.3.1	20.9.3.5	20.9.3.9
	20.9.3.2	20.9.3.6	20.9.3.10
	20.9.3.3	20.9.3.7	20.9.3.11
	20.9.3.4	20.9.3.8	20.9.3.12

20.9.3.001.00*

BELLY LAND AIR VEHICLE

NOSE GEAR ADVISORY LIGHT →= 'NOSE' *
AND LEFT GEAR ADVISORY LIGHT →= 'L' *
AND RIGHT GEAR ADVISORY LIGHT →= 'R' *

FLY

A-V

A-V

= BELLY LANDED*

20.9.3.002.00*

FLY A STRAIGHT-IN PATTERN AND TOUCHDOWN AT MINIMUM SINK RATE

NOSE GEAR ADVISORY LIGHT = 'NOSE' *
AND LEFT GEAR ADVISORY LIGHT →= 'L' *
AND RIGHT GEAR ADVISORY LIGHT →= 'R' *

FLY

A-V

A-V

= LANDED*

20.9.3.003.00*

CHECK AIRSPEED IS BELOW 190 KIAS

NOSE GEAR ADVISORY LIGHT = 'NOSE' *
AND LEFT GEAR ADVISORY LIGHT →= 'L' *
OR RIGHT GEAR ADVISORY LIGHT →= 'R' *

CHECK

AIRSPEED-MACH NUMBER INDICATOR

AIRSPEED-MACH NUMBER INDICATOR < 190

20.9.3.004.00*

SET ALTERNATE LANDING GEAR CONTROL SWITCH TO THE DOWN POSN

CHECKLIST = SEQUENCE

SET

ALTERNATE LANDING GEAR CONTROL

ALTERNATE LANDING GEAR CONTROL = DN*
AND LEFT GEAR ADVISORY LIGHT →= 'L' *
OR RIGHT GEAR ADVISORY LIGHT →= 'R' *

20.9.3.005.00*

REDUCE AIRSPEED TO MINIMUM FOR CONTROLLING THE AIR VEHICLE*

LEFT GEAR ADVISORY LIGHT →= 'L' *
OR RIGHT GEAR ADVISORY LIGHT →= 'R' *

FLY

A-V

AIRSPEED-MACH NUMBER INDICATOR = TBD

20.9.3.006.00*

YAW A-V IN DIRECTION OF MAIN GEAR THAT IS NOT ON & LOCKED

	CHECKLIST	= SEQUENCE
FLY	A-V	
	A-V	= YAWED*
	AND LEFT GEAR ADVISORY LIGHT	= 'L'
	OR RIGHT GEAR ADVISORY LIGHT	= 'R'

20.9.3.007.00*

SET LANDING GEAR CONTROL TO THE UP POSITION

	CHECKLIST	= SEQUENCE
SET	PRIMARY LANDING GEAR CONTROL	
	PRIMARY LANDING GEAR CONTROL	= UP*
	AND GEAR WARNING LIGHTS	= OFF

20.9.3.008.00*

BELLY LAND AIR VEHICLE

	PRIMARY LANDING GEAR CONTROL	= UP*
	AND GEAR WARNING LIGHTS	= OFF
FLY	A-V	
	A-V	= BELLY LANDED

20.9.3.009.00*

FLY TOUCH-AND-GO LANDING ON EXTENDED GEAR

	NOSE GEAR ADVISORY LIGHT	= 'NOSE'
	AND LEFT GEAR ADVISORY LIGHT	= 'L'
	OR RIGHT GEAR ADVISORY LIGHT	= 'R'
FLY	A-V	
	A-V	= T & G PERFORMED*
	AND LEFT GEAR ADVISORY LIGHT	= 'L'
	OR RIGHT GEAR ADVISORY LIGHT	= 'R'

20.9.3.010.00*

FLY A STRAIGHT-IN PATTERN AND TO KEEPING WINGTIP HIGH

	LEFT GEAR ADVISORY LIGHT	= 'L'
	OR RIGHT GEAR ADVISORY LIGHT	= 'R'
FLY	A-V	
	A-V	= LANDED*

20.9.3.011.00*

FLY A STRAIGHT-IN PATTERN AND TOUCHDOWN AT MINIMUM SINK RATE

NOSE GEAR ADVISORY LIGHT = 'NOSE' *
AND LEFT GEAR ADVISORY LIGHT = 'L'
AND RIGHT GEAR ADVISORY LIGHT = 'R'

FLY

A-V

A-V

= LANDED

20.9.3.012.00*

LAND AS SOON AS PRACTICAL

NOSE GEAR ADVISORY LIGHT = 'NOSE' *
AND LEFT GEAR ADVISORY LIGHT = 'L'
AND RIGHT GEAR ADVISORY LIGHT = 'R'

FLY

A-V

A-V

= LANDED

OBJECTIVE: PERFORM NOSEWHEEL STEERING SYSTEM FAILURE PROCEDURES

20.51

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. A/V. cannot be steered with nosewheel steering system.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that the nosewheel steering caution light illuminates when the steering system automatically disengages.
2. Recall that holding the nosewheel steering switch in the engage position overrides the failsafe lockout circuit and holds the steering engaged.
3. Recall that differential braking should be used to steer the A/V after landing if the nosewheel steering system is inoperative.
4. Recall that the nosewheel steering switch should be held in the disengage position if directional control is lost.
5. Recall that if the Ready/NWS light is out, the copilot's nosewheel steering switch should be held in the disengage position.

ANCILLARY OBJECTIVES:

1. Recall that the READY/STEER annunciator light will illuminate when nose gear steering is engaged, the nose gear load switch is made, and hydraulic power is available for steering.

OPERATOR: P/CP

TASK ELEMENTS:

20.9.4.1	20.9.4.4	20.9.4.7
20.9.4.2	20.9.4.5	20.9.4.8
20.9.4.3	20.9.4.6	20.9.4.9
		20.9.4.10

20.9.4.001.00*

CHECK NOSEWHEEL STEERING CAUTION LIGHT

	A-V	= STEERED*
MONITOR-VISUAL	NOSEWHEEL STEERING CAUTION LT	
	NOSEWHEEL STEERING CAUTION LT = 'NWS'	

20.9.4.002.00*

MOVE NOSEWHEEL STEERING ENGAGE SWITCH TO ENGAGE AND HOLD

	NOSEWHEEL STEERING CAUTION LT = 'NWS'	
DEPRESS	STEER ENGAGE-DISENGAGE SWITCH	
	STEER ENGAGE-DISENGAGE SWITCH = ENGAGE*	
	AND A-V	= STEERED

20.9.4.003.00*

USE DIFFERENTIAL BRAKING AND STOP THE AIR VEHICLE

	A-V	= STEERED*
TRACK	A-V	
	A-V	= DIFF BRAKED
	AND A-V	= ALIGNED ON RNWY

20.9.4.004.00*

DEPRESS NOSEWHEEL STEERING ENGAGE SWITCH TO DISENG AND HOLD

	A-V	= ALIGNED ON RNWY
DEPRESS	STEER ENGAGE-DISENGAGE SWITCH	
	STEER ENGAGE-DISENGAGE SWITCH = DISENG*	

20.9.4.005.00*

USE DIFFERENTIAL BRAKING AS REQUIRED

	STEER ENGAGE-DISENGAGE SWITCH = DISENG*	
TRACK	A-V	
	A-V	= DIFF BRAKED

20.9.4.006.00*

CHECK THAT READY-NWS LIGHT IS OUT

CHECKLIST = SEQUENCE
CHECK READY-NWS ADVISORY LIGHT
READY-NWS ADVISORY LIGHT = 'READY-STEER'

20.9.4.007.00*

DEPRESS COPILOT NWS ENGAGE SWITCH TO DISENGAGE AND HOLD

DEPRESS READY-NWS ADVISORY LIGHT = 'READY-STEER'
STEER ENGAGE-DISENGAGE SWITCH
STEER ENGAGE-DISENGAGE SWITCH = DISENG*

20.9.4.008.00*

USE DIFFERENTIAL BRAKING AS REQUIRED AND STOP THE AIR-VEH

STOP STEER ENGAGE-DISENGAGE SWITCH = DISENG*
A-V
A-V = DIFF BRAKED
AND A-V = STOPPED

20.9.4.009.00*

DEPRESS NOSEWHEEL STEERING SWITCH TO ENGAGE AND HOLD

DEPRESS NOSEWHEEL STEERING CAUTION LT = 'NWS'
STEER ENGAGE-DISENGAGE SWITCH
STEER ENGAGE-DISENGAGE SWITCH = ENGAGE*

20.9.4.010.00*

USE DIFFERENTIAL BRAKING AND STOP THE AIR VEHICLE

STOP STEER ENGAGE-DISENGAGE SWITCH = ENGAGE*
A-V
A-V = DIFF BRAKED
AND A-V = STOPPED

OBJECTIVE: PERFORM ANTISKID SYSTEM FAILURE PROCEDURES

20.52

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Antiskid caution light is illuminated.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that the antiskid caution light illuminates when a malfunction is automatically sensed in the antiskid system.
2. Recall that the antiskid caution light illuminates when the emergency brake system is activated.
3. Recall that the A/V should be braked cautiously after touchdown, since antiskid protection may not be available on one or more wheels.

ANCILLARY OBJECTIVES:

1. Recall that the antiskid caution light should not illuminate after the landing gear has been extended.
2. Recall that illumination of the antiskid light cautions the pilot of loss of skid protection on one or more wheels.
3. Recall that the antiskid caution light also illuminates when the parking brake system remains in the park mode after an unpark command has been initiated.
4. Recall that the antiskid light triggers both MASTER CAUTION lights.
5. Recall that very light braking should be used initially, increasing to moderate as the A/V slows.

OPERATOR: P/CP

TASK ELEMENTS: 20.9.5.1
20.9.5.2
20.9.5.3

20.9.5.001.00*

CHECK ANTISKID SWITCH IS ON

CHECK	ANTISKID CAUTION LIGHT	= 'ANTISKID'*
	ANTISKID TEST SWITCH	
	ANTISKID TEST SWITCH AND ANTISKID CAUTION LIGHT	= ON = 'ANTISKID'

20.9.5.002.00*

CHECK EMERGENCY BRAKE SWITCH IS OFF

CHECK	ANTISKID CAUTION LIGHT	= 'ANTISKID'
	EMERGENCY BRAKE SWITCH	
	EMERGENCY BRAKE SWITCH	= OFF

20.9.5.003.00*

LAND AIR VEHICLE AND BRAKE CAUTIOUSLY

FLY	ANTISKID CAUTION LIGHT	= 'ANTISKID'
	A-V	
	A-V	= LANDED*
	AND A-V	= BRAKED

OBJECTIVE: PERFORM NOSE GEAR TIRE FAILURE LANDING

20.53

CRITICALITY: 2

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Nose gear tire failed.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Proper sequence.
2. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wingtip trailing edge.
2. Recall that when the CG is at the maximum aft position, the nose gear can be held off the runway until a lower airspeed has been attained.
3. Recall that the CG set mode select switch is active when the cruise mode select switch is in SET.
4. Recall that less damage will be sustained to the nose gear strut and supporting structure if the nose gear can be held off the runway as long as possible.
5. Recall that holding the nosewheel steering switch in the engage position overrides the failsafe lockout circuit and holds the steering engaged.
6. Recall that differential braking should be used to steer the A/V after landing if the nosewheel steering system is inoperative.

ANCILLARY OBJECTIVES:

1. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
2. Recall that fuel cannot be dumped from the main tanks.
3. Recall that manual dumping of fuel requires that the transfer pumps in the tank from which fuel is to be dumped must be turned on and all other tanks turned off.

ANCILLARY OBJECTIVES: (continued)

4. Recall that the CG LIMITS caution light will illuminate when the CG exceeds either the forward or aft limits.
5. Recall that a normal approach and touchdown should be made for a nose gear tire failure.
6. Recall that as the nose gear touches down, the nosewheel steering engage switch should be placed at steer engage and held in that position.
7. Recall that the READY/STEER annunciator light will illuminate when nose gear steering is engaged, the nose gear load switch is made, and hydraulic power is available for steering.
8. Recall that wheel braking should be minimum consistent with the remaining runway distance to help minimize damage to the nosewheel strut.
9. Recall that after clearing the active runway, the A/V should be stopped and not taxied.

OPERATOR: P/CP

TASK ELEMENTS: 20.9.6.1 20.9.6.4
 20.9.6.2 20.9.6.5
 20.9.6.3

20.9.6.001.00*

SET FUEL DUMP SWITCH TO DUMP

	NOSE GEAR TIRE	= FAILED
SET	DUMP SWITCH	
	DUMP SWITCH	= DUMP*
	AND GROSS WT DIGITAL COUNTER	= TBD

20.9.6.002.00*

SET CG MODE SELECT SW TO MAXIMUM AFT ALLOWABLE POSITION

	CHECKLIST	= SEQUENCE
SET	SET MODE % MAC SELECTOR SW	
	SET MODE % MAC SELECTOR SW	= TBD*
	AND PERCENT MAC INDICATOR	= TBD

20.9.6.003.00*

LAND A-V AND HOLD NOSE GEAR OFF RUNWAY AS LONG AS POSSIBLE

	CHECKLIST	= SEQUENCE
FLY	A-V	
	A-V	= LANDED*

20.9.6.004.00*

DEPRESS NOSEWHEEL STEERING ENGAGE SWITCH TO ENGAGE AND HOLD

	CHECKLIST	= SEQUENCE
DEPRESS	STEER ENGAGE-DISENGAGE SWITCH	
	STEER ENGAGE-DISENGAGE SWITCH	= ENGAGE*

20.9.6.005.00*

USE NOSEWHEEL STEERING AND DIFFERENTIAL BRAKING

	STEER ENGAGE-DISENGAGE SWITCH	= ENGAGE*
TRACK	A-V	
	A-V	= NW STEERED*
	AND A-V	= DIFF BRAKED

OBJECTIVE: PERFORM MAIN GEAR TIRE FAILURE LANDING

20.54

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. Main gear tire failed.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Runway alignment - TBD (\pm ft).
2. Proper sequence.
3. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wingtip trailing edge.
2. Recall that a normal approach should be made, but the touchdown should be made holding opposite stick to minimize weight on the landing gear with the failed tire.

ANCILLARY OBJECTIVES:

1. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
2. Recall that fuel cannot be dumped from the main tanks.
3. Recall that manual dumping of fuel requires that the transfer pumps in the tank from which fuel is to be dumped must be turned on and all other tanks turned off.
4. Recall that after touchdown, the nose gear should be lowered to the runway as soon as practical, and nosewheel steering used to keep A/V on the runway.
5. Recall that after clearing the active runway, the A/V should be stopped and not taxied.

OPERATOR: P/CP

TASK ELEMENTS: 20.9.7.1
20.9.7.2

20.9.7.001.00*

SET FUEL DUMP SWITCH TO DUMP

	MAIN GEAR TIRE	= FAILED
	OR MAIN GEAR TIRES	= FAILED
SET	DUMP SWITCH	
	DUMP SWITCH	= DUMP*
	AND GROSS WT DIGITAL COUNTER	= TBD

20.9.7.002.00*

USE NORMAL APPROACH & LAND A-V BUT DO NOT DEPLOY SPD BRAKES

	CHECKLIST	= SEQUENCE
FLY	A-V	
	A-V	= LANDED*
	AND SPOILER INDICATORS	= 'UP'

OBJECTIVE:

PERFORM BELLY LANDING

20.55

CRITICALITY: 3

DIFFICULTY: 2

INITIAL CONDITIONS: 1. All three landing gears are retracted.

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS:

1. Angle of attack - TBD (\pm degs).
2. Airspeed - TBD (\pm kts).
3. Vertical velocity - TBD (\pm ft/sec).
4. Proper sequence.
5. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wingtip trailing edge.
2. Recall that when an APU fire switchlight is depressed, it latches mechanically in that position, shutting off the respective APU firewall fuel valve and arming the corresponding extinguishing system.
3. Recall that the touchdown angle should be kept to a minimum to lessen pitchdown at nacelle contact.
4. Recall that when an engine fire switchlight is depressed, it latches mechanically in that position, shutting off the respective engine firewall fuel valve and arming the corresponding fire extinguishing system.
5. Recall that when the battery switch is set to OFF, the batteries are removed from the dc busses.
6. Recall that each window and escape hatch is removed by lifting the cover guard, actuating the "press-to-release" safety lock and pulling the handle to its maximum extension.
7. Recall that escape ropes should be used when abandoning the A/V through the window and escape hatches.

ANCILLARY OBJECTIVES:

1. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
2. Recall that fuel cannot be dumped from the main tanks.
3. Recall that manual dumping of fuel requires that the transfer pumps in the tank from, which fuel is to be dumped, must be turned on and all other tanks turned off.
4. Recall that fuel should be dumped to reduce A/V weight and touch-down speed.
5. Recall that both APU fire buttons should be depressed prior to landing.
6. Recall that switchlights on the left and right sides of the FIRE WARN & EXTGH panel are interlocked, respectively, so that only one of the switches on either side will remain depressed at the same time.
7. Recall that operation of any of the three switchlights on either side of the FIRE WARN & EXTGH panel will cause a depressed switchlight to return to its un-activated position.
8. Recall that the fire buttons on either side of the test switch must be pushed one at a time with a pause between each button activation or the fuel shutoff valves may not fully close.
9. Recall that external controls are provided for each window and escape hatch to permit emergency ingress for rescue operations.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.9.8.1	20.9.8.4	20.9.8.7
	20.9.8.2	20.9.8.5	20.9.8.8
	20.9.8.3	20.9.8.6	20.9.8.9

20.9.8.001.00*

SET FUEL DUMP SWITCH TO DUMP

NOSE GEAR ADVISORY LIGHT
AND LEFT GEAR ADVISORY LIGHT
AND RIGHT GEAR ADVISORY LIGHT

= "NOSE"
= "L"
= "R"

SET

DUMP SWITCH

DUMP SWITCH
AND GROSS WT DIGITAL COUNTER

= DUMP*
= TGD

20.9.8.002.00*

DEPRESS APU FIRE SWITCHES

CHECKLIST

= SEQUENCE

DEPRESS

APU FIRE SWITCHLIGHTS

APU FIRE SWITCHLIGHTS
AND LEFT RUN LIGHT
AND RIGHT RUN LIGHT

= DEPRESSED*
= "L RUN"
= "R RUN"

20.9.8.003.00*

SET THE ENGINES IGNITION SWITCH TO OFF

CHECKLIST

= SEQUENCE

SET

IGNITION SWITCH

IGNITION SWITCH

= OFF

20.9.8.004.00*

FLY A STRAIGHT-IN PATTERN AND TOUCHDOWN AT MINIMUM SINK RATE

CHECKLIST

= SEQUENCE

FLY

A-V

A-V

= LANDED*

20.9.8.005.00*

DEPRESS ENGINE FIRE SWITCHLIGHTS AFTER TOUCHDOWN

A-V

= LANDED

DEPRESS

ENGINE FIRE SWITCHLIGHTS

ENGINE FIRE SWITCHLIGHTS

= DEPRESSED*

20.9.8.006.00*

SET GENERATOR SWITCHES TO OFF

CHECKLIST = SEQUENCE

SET GENERATOR MODE SWITCHES
EMERGENCY GENERATOR CONTROL SW

GENERATOR MODE SWITCHES = OFF
AND EMERGENCY GENERATOR CONTROL SW = OFF

20.9.8.007.00*

SET BATTERY SWITCH TO OFF

CHECKLIST = SEQUENCE

SET BATTERY SELECT SWITCH

BATTERY SELECT SWITCH = OFF

20.9.8.008.00*

PULL WINDOW AND ESCAPE HATCH SEVERANCE HANDLES AS REQUIRED

CHECKLIST = SEQUENCE

PULL LEFT WINDOW SEVERANCE HANDLE
RIGHT WINDOW SEVERANCE HANDLE
ESCAPE HATCH SEVERANCE HANDLE

LEFT WINDOW SEVERANCE HANDLE = PULLED*
AND RIGHT WINDOW SEVERANCE HANDLE = PULLED
AND ESCAPE HATCH SEVERANCE HANDLE = PULLED

20.9.8.009.00*

ABANDON THE AIR VEHICLE

CHECKLIST = SEQUENCE

ABANDON A-V CREW MODULE

A-V CREW MODULE = MANNED

OBJECTIVE: PERFORM DITCHING OF THE AIR VEHICLE

20.56

CRITICALITY: 3

DIFFICULTY: 3

INITIAL CONDITIONS: 1. A/V in emergency configuration.
2. Water landing is unavoidable

CONCURRENT TASKS:

INTERACTION TASKS:

PERFORMANCE LIMITS: 1. Angle of attack - TBD (\pm degs).
2. Airspeed - TBD (\pm kts).
3. Vertical velocity - TBD (\pm ft/sec).
4. Proper sequence.
5. Switches in proper positions.

ENABLING OBJECTIVES:

1. Recall that when the fuel dump switch is set to DUMP, fuel will be jettisoned at each wingtip trailing edge.
2. Calculate the optimum wing sweep angle for ditching.
3. Recall that movement of the FLAP/SLAT handle 10 degrees to the gate detent will extend the slats and leave the flaps full up.
4. Recall that to by-pass the gate detent, a small finger-operated lever on the control handle must be raised.
5. Recall that movement of the FLAP/SLAT control handle off of the gate detent provides flap extension proportional to handle position.
6. Recall that the flap position indicator ranges from UP to full DOWN, which corresponds to zero and 40 degrees of flap travel.
7. Recall that each window and escape hatch is removed by lifting the cover guard, actuating the "press-to-release" safety lock, and pulling the handle to its maximum extension.
8. Recall that escape ropes should be used when abandoning the A/V through the window and escape hatches.

ANCILLARY OBJECTIVES:

1. Recall that the fuel jettison capability is provided by the fuel transfer system and dump valves and outlets.
2. Recall that fuel cannot be dumped from the main tanks.
3. Recall that manual dumping of fuel requires that the transfer pumps in the tank from which fuel is to be dumped must be turned on and all other tanks turned off.
4. Recall that fuel should be dumped to reduce A/V weight and touch-down speed.
5. Recall that slats can be extended and retracted at any wing sweep.
6. Recall that the barberpole on the slats position indicator is displayed when the slats are in transit or if there is a malfunction in the slat indicating system.
7. Recall that the flap position indicator gradations are provided at each one-quarter position.
8. Recall that the recommended configuration for ditching is with the landing gear retracted and the flaps/slats set as for a normal landing.
9. Recall that the A/V should not be flared but a constant angle-of-attack maintained to touchdown.
10. Recall that external controls are provided for each window and escape hatch to permit emergency ingress for rescue operations.

OPERATOR: P/CP

<u>TASK ELEMENTS:</u>	20.9.9.1	20.9.9.4	20.9.9.7	20.9.9.10
	20.9.9.2	20.9.9.5	20.9.9.8	20.9.9.11
	20.9.9.3	20.9.9.6	20.9.9.9	20.9.9.12

20.9.9.001.00*

ALERT CREW USING ICS CALL BUTTON

	A-V	= EMERG CONFIG*
COMMUNICATE	CALL SWITCH-PILOT ICS	
	CALL SWITCH-PILOT ICS	= 'DITCHING A-V'

20.9.9.002.00*

SET FUEL DUMP SWITCH TO DUMP

	CHECKLIST	= SEQUENCE
SET	DUMP SWITCH	
	DUMP SWITCH	= DUMP*
	AND GROSS WT DIGITAL COUNTER	= TBD

20.9.9.003.00*

CHECK OXYGEN MASKS ON AND OXYGEN REGULATORS AT 100 PER CENT

	CHECKLIST	= SEQUENCE
CHECK	OXYGEN MASK	
	OXYGEN REGULATOR	
	OXYGEN MASK	= CHECKED
	AND OXYGEN REGULATOR	= 100

20.9.9.004.00*

SET WING SWEEP HANDLES TO OPTIMUM ANGLE FOR PITCHING

	CHECKLIST	= SEQUENCE
SET	WING SWEEP HANDLES	
	WING SWEEP POSITION INDICATOR	= TBD

20.9.9.005.00*

EXTEND SLATS BY POSITIONING HANDLE TO 1ST DETENT*

	CHECKLIST	= SEQUENCE
EXTEND	FLAP-SLAT CONTROL HANDLE	
	FLAP-SLAT CONTROL HANDLE	= SLAT EXD
	AND SLATS POSITION INDICATOR	= 'EXD'

20.9.9.006.00*

EXTEND FLAPS BY RELEASING LOCK LEVER UNDER HANDLE TOP

	CHECKLIST	= SEQUENCE
EXTEND	FLAP-SLAT CONTROL HANDLE	
	FLAP-SLAT CONTROL HANDLE	= TBD*
	AND FLAP POSITION INDICATOR	= TBD

20.9.9.007.00*

CHECK LANDING GEAR HANDLE IS UP

	CHECKLIST	= SEQUENCE
CHECK	PRIMARY LANDING GEAR CONTROL	
	PRIMARY LANDING GEAR CONTROL	= UP

20.9.9.008.00*

ESTABLISH AN ANGLE OF ATTACK FOR MINIMUM SINK RATE

	CHECKLIST	= SEQUENCE
FLY	A-V	
	ANGLE-OF-ATTACK INDICATOR	= TBD

20.9.9.009.00*

NOTIFY CREW 5 SECONDS BEFORE IMPACT OF IMPACT WARNING

	CHECKLIST	= SEQUENCE
COMMUNICATE	PILOT ICS	
	PILOT ICS	= 'BRACE FOR IMPAC*

20.9.9.010.00*

MAINTAIN CONSTANT ANGLE OF ATTACK TO TOUCHDOWN

	CHECKLIST	= SEQUENCE
FLY	A-V	
	ANGLE-OF-ATTACK INDICATOR	= TBD*

20.9.9.011.00*

PULL WINDOW AND ESCAPE HATCH SEVERANCE HANDLES AS REQUIRED

PULL

CHECKLIST = SEQUENCE

LEFT WINDOW SEVERANCE HANDLE
RIGHT WINDOW SEVERANCE HANDLE
ESCAPE HATCH SEVERANCE HANDLE

LEFT WINDOW SEVERANCE HANDLE = PULLED*
AND RIGHT WINDOW SEVERANCE HANDLE = PULLED
AND ESCAPE HATCH SEVERANCE HANDLE = PULLED

20.9.9.012.00*

ABANDON THE AIR VEHICLE

ABANDON

CHECKLIST = SEQUENCE

A-V CREW MODULE

A-V CREW MODULE → MANNED