A1-F18AC-NFM-500
NATOPS
POCKET CHECKLIST

F/A-18A/B/C/D
AIRCRAFT

McDonnell Douglas Corporation

THIS PUBLICATION SUPERSEDES NAVAIR A1-F18AC-NFM-500 DATED 1 SEPTEMBER 1999 WITH CHANGE 4 DATED 1 JULY 2002. THE LATEST CHANGE INFORMATION, CHANGE 5 DATED 15 NOVEMBER 2002 HAS BEEN INCORPORATED IN THIS REISSUE.

ISSUED BY AUTHORITY OF THE CHIEF OF NAVAL OPERATIONS AND UNDER THE DIRECTION OF THE COMMANDER, NAVAL AIR SYSTEMS COMMAND

1 SEPTEMBER 1999
CHANGE 5 - 15 NOVEMBER 2002

LIST OF EFFECTIVE PAGES

NOTE: Text affected by current change indicated by vertical line in outer margin.

DATES OF ISSUE FOR ORIGINAL AND CHANGED PAGES ARE:

Original. .. 0. ....1 Sep 99
Change ..... 1 ..15 Feb 00
Change ..... 2 . 15 Dec 00
Change ..... 3 ...15 Jul 01
Change ..... 4 .....1 Jul 02
Change ..... 5 .15 Nov 02

Total number of pages in this manual is 218 consisting of the following:

Page No.	Change No.	Page No.	Change No.	Page No.	Change No.
Title	5	E3 - E5	4	E50 deleted	4
A	5	E6 blank	4	E51	4
B	4	E7	0	E52 - E53	0
C	0	E8 - E9	2	E54 blank	0
1 - 2	0	E10 blank	2	E55 - E60	4
3	2	E11	0	E60A	4
4 - 10	4	E12 blank	0	E60B blank	4
11	2	E13	0	E61	4
12	0	E14	1	E62	2
13 - 14	2	E15	4	E63 - E65	4
14A blank	2	E16	0	E66	0
14B	2	E17	4	E67 - E69	4
15	0	E18 blank	4	E70	0
16	1	E18A	4	E71	4
17	0	E18B	4	E72	0
18 - 19	4	E18C	4	E73 - E74	4
20 - 23	0	E18D blank	4	E74A	4
24 - 25	1	E19	0	E74B blank	4
26 - 43	0	E20	2	E75 - E85	4
44	2	E21	4	E86	2
45	1	E22	1	E87 - E89	4
46 - 62	0	E23 - E24	0	E90	5
Flip Title	5	E25	1	E91 - E92	2
Reverse blank	5	E26 - E31	0	E93	4
Index 1 - Index 2	4	E32	4	E94 blank	4
E1	4	E33 - E46	0	E95 - E115	0
E2 blank	4	E47	4	E116 blank	0
E2A	4	E48 blank	4	E117 - E137	0
E2B	4	E49 deleted	4	E138 blank	0

INTERIM CHANGE SUMMARY

The following Interim Changes have been canceled or previously incorporated in this manual:

INTERIM CHANGE NUMBER(S)	REMARKS/PURPOSE
1 thru 50	Previously Incorporated or canceled

The following Interim Changes have been incorporated in this Change/Revision:

INTERIM CHANGE NUMBER	REMARKS/PURPOSE
51	Add GPWS Check to Start Procedures

Interim Changes Outstanding - To be maintained by the custodian of this manual:

INTERIM CHANGE NUMBER	ORIGINATOR/DATE (or PAGE/TIME GROUP)	PAGES AFFECTED	REMARKS/ PURPOSE

PAAUZYUW RULSABU1234 1742007-UUUU--RHMCSUU.
ZNR UUUUU
P 232007Z JUN 03 ZYB
FM COMNAVAIRSYSCOM PATUXENT RIVER MD//4.0P//
TO ALL HORNET AIRCRAFT ACTIVITIES
INFO CNO WASHINGTON DC/N789J//
COMNAVAIRSYSCOM PATUXENT RIVER MD//4.0P/5.0F/4.1//
PEOTACAIR PATUXENT RIVER MD//PMA265//
NAVSURVTRAINST PENSACOLA FL//025//
NAVAIRDEPOT NORTH ISLAND CA//6.2//
NAVAIRDEPOT JACKSONVILLE FL//3.3.3//
BT
UNCLAS //N03711//
MSGID/GENADMIN/COMNAVAIRSYSCOM/4.0P//
SUBJ/INTERIM CHANGES TO FA-18 ABCD AIRCRAFT NATOPS PUBLICATIONS --
/SAFETY OF FLIGHT//
REF/A/DOC/NAVAIR A1-F18AC-NFM-000/15NOV2002//
REF/B/DOC/NAVAIR A1-F18AC-NFM-500/15NOV2002//
REF/C/DOC/NAVAIR A1-F18AC-NFM-700/01JUL2002//
REF/D/LTR/NAVAIR/01JUN2002//
REF/E/EML/N780C4A/05JUN2003//
REF/F/MSG/PEOTACAIR/201740ZJUN2003//
REF/G/MSG/PEOTACAIR/201741ZJUN2003//
NARR/REF A IS F/A-18 A/B/C/D NATOPS FLIGHT MANUAL (NFM) DTD 15DEC00
WITH CHG 3 DTD 15NOV02.
REF B IS F/A-18 A/B/C/D NATOPS POCKET CHECKLIST (PCL) DTD 01SEP99
WITH CHG 5 DTD 15NOV02.
REF C IS F/A-18 A/B/C/D NATOPS FUNCTIONAL CHECKFLIGHT CHECKLIST
(FCFCL) DTD 01JUL02.
REF D IS LETTER SERIAL NUMBER AIR 4.3.2.6 / 7.0809 TO PMA265
ENTITLED CERTIFICATION OF READINESS FOR THE RELEASE OF F/A-18
A/B/C/D 10.7 FLIGHT CONTROL COMPUTER (FCC) SOFTWARE
REF E IS OPNAV FLEET RELEASE APPROVAL DATED 05JUN03.
REF F IS FLEET RELEASE MESSAGE OF FLIGHT CONTROL COMPUTER
OPERATIONAL FLIGHT PROGRAM VER 10.7.
REF G IS FA-18A/B/C/D INTERIM AIRCRAFT SOFTWARE CHANGE 139.//
RMKS/1. THIS IS INTERIM CHANGE NUMBER 79 TO REF A, INTERIM CHANGE
NUMBER 52 TO REF B, AND INTERIM CHANGE NUMBER 8 TO REF C.
2. SUMMARY. CHANGES INCORPORATE INFORMATION TO SUPPORT FLIGHT
CONTROL SOFTWARE VERSION 10.7 RELEASE AUTHORIZED BY REFS D, E, AND
F. REPLACEMENT PAGES CONTAINING THE NEW INFORMATION FOR DOWNLOAD
AND DISTRIBUTION WILL BE POSTED ON THE NATEC WEBSITE WITHIN 15 DAYS
OF RELEASE (SEE PARA 7 BELOW). REPLACEMENT PAGES CAN ALSO BE
OBTAINED BY CONTACTING THE 4.0P NATOPS OFFICE POC (SEE PARA 6
BELOW).
3. CHANGE REF A (FA-18 A/B/C/D NFM) AS FOLLOWS:
   A. REMOVE AFFECTED PAGES AND REPLACE WITH CHANGE PAGES LISTED
BELOW AND AVAILABLE FOR DOWNLOAD AT NATEC WEBSITE (SEE PARA 7
BELOW):
    PAGES I-2-48 THROUGH I-2-54A, I-2-57 THROUGH I-2-58, I-2-60
    THROUGH I-2-60A, I-2-96, I-2-102 THROUGH I-2-102A, I-2-103,
    I-2-165, I-4-4, I-4-7 THROUGH I-4-8, III-7-17, III-7-19,
    III-7-31 THROUGH III-7-32, III-8-8, III-10-11, V-12-14 THROUGH
    V-12-14A, V-12-15 THROUGH V-12-16, V-12-20 THROUGH V-12-21,
    V-15-30, V-15-37, V-15-41 THROUGH V-15-42A, V-15-43, V-15-49
    THROUGH V-15-52A, V-15-53.
   B. REMOVE CURRENT CHAPTER 11 PAGES IV-11-1 THROUGH IV-11-16 AND

REPLACE WITH NEW PAGES IV-11-1 THROUGH IV-11-16G AVAILABLE
FOR DOWNLOAD AT NATEC WEBSITE (SEE PARA 7 BELOW).
4. CHANGE REF B (F/A-18 A/B/C/D PCL) AS FOLLOWS:
   A. REMOVE AFFECTED PAGES AND REPLACE WITH CHANGE PAGES LISTED
BELOW AND AVAILABLE FOR DOWNLOAD AT NATEC WEBSITE (SEE PARA 7
BELOW):
   PAGE 6, 9, 10, E74A, E74B, E82, E82A / (E82B BLANK), E83.
5. CHANGE REF C (F/A-18 A/B/C/D FCFCL) AS FOLLOWS:
   A. REMOVE AFFECTED PAGE AND REPLACE WITH CHANGE PAGE LISTED
BELOW AND AVAILABLE FOR DOWNLOAD AT NATEC WEBSITE (SEE PARA 7
BELOW):
   PAGE 20.
6. POINTS OF CONTACT:
A. FA-18 A/B/C/D NATOPS PROGRAM MANAGER, LT DAN HERMAN,
   TEL DSN 949-1727 OR COMM (559) 998-1727,
   EMAIL DANIEL.HERMAN@NAVY.MIL
B. FA-18 CLASS DESK, CDR TOM HUFF, TEL DSN 757-7575 OR
   COMM (301) 757-7575, EMAIL HUFFTW@NAVAIR.NAVY.MIL
C. AIR-4.0P NATOPS CHIEF ENGINEER, KRISTIN SWIFT,
   TEL DSN 995-4193 OR COMM (301) 995-4193,
   EMAIL SWIFTKO@NAVAIR.NAVY.MIL.
D. INFORMATION REGARDING THE AIRWORTHINESS OFFICE AND PROCESS AS
   WELL AS 24/7 CONTACT NUMBERS CAN BE FOUND AT OURWEBSITE:
   AIRWORTHINESS.NAVAIR.NAVY.MIL. OUR GLOBAL CUSTOMER SUPPORT TEAM
   CAN BE CONTACTED AT 301-342-3276 OR BY EMAIL AT
   AIRWORTHINESS@NAVAIR.NAVY.MIL.
7. THIS IC AND THE SUBJECT REPLACEMENT PAGES WILL BE POSTED ON THE
NATEC WEBSITE, WWW.NATEC.NAVY.MIL WITHIN 15 DAYS OF RELEASE OF THIS
MESSAGE. NEW NATOPS IC MSGS MAY BE FOUND IN TWO PLACES ON THIS
WEBSITE; (1) IN THE NATOPS IC DATABASE FOUND UNDER THE TMAPS
OPTION, AND (2) IN THE AFFECTED PUBLICATION(S) JUST AFTER THE
INTERIM CHANGE SUMMARY PAGE. THEY ARE NORMALLY POSTED IN THE
DATABASE BEFORE APPEARING IN THE PUBLICATION. IF UNABLE TO VIEW
THIS MESSAGE ON THE NATEC WEBSITE, INFORM THE NAVAIR AIRWORTHINESS
CUSTOMER SUPPORT TEAM AT DSN 342-3276, COMM (301)342-3276, OR EMAIL
AT AIRWORTHINESS@NAVAIR.NAVY.MIL.//
BT
#1234
NNNN

NAVAIR A1-F18AC-NFM-500
FA-18ABCD AIRCRAFT
PILOTS POCKET CHECK LIST
INTERIM CHANGE 52
REPLACEMENT PAGES

1. New and replacement page for Interim Change Number 52 to the FA-18ABCD PPCL, NAVAIR A1-F18AC-NFM-500 dated 15 Nov 2002, are attached as follows:

Page	Page Version Marking
6	Change 4 With IC 52
9	Change 4 With IC 52
10	Change 4 With IC 52
E74A	Change 4 With IC 52
E74B	Interim Change 52
E82	Change 4 With IC 52
E82A/(E82B blank)	Interim Change 52
E83	Change 4 With IC 52

If external air start -

3. Bleed air knob - OFF

All starts -

4. Engine crank switch - R
5. Right throttle - IDLE (15 % rpm minimum)
6. GPWS Voice Alerts - CHECK
7. DDI, HI/MPCD, HUD, and UFC avionics - ON
8. EMI/IFEI - CHECK
   a. After engine start, it may be necessary to advance power above IDLE to get the ECS turbine started.

Ground idle 400 Engine -

N_2	61 - 72 %
EGT	190 - 590°C
Fuel flow	420 - 700 pph
Nozzle	73 - 84 %
Oil pressure (warm oil)	45 - 110 psi

Ground idle 402 Engine -

N_2	63 - 70 %
EGT	190 - 590°C
Fuel flow	420 - 900 pph
Nozzle	73 - 84 %
Oil pressure (warm oil)	45 - 110 psi

If APU or crossbleed start -

   b. Bleed air knob - CYCLE THRU OFF TO NORM

      The bleed air shutoff valves close during the fire warning test and the bleed air knob must be cycled thru OFF to NORM with ac power on to reset the valves.

9. Warning and caution lights - TEST
   For a crossbleed start insure APU switch is OFF and a minimum of 80 % rpm and 1,900 pph fuel flow.
10. Engine crank switch - L
11. Left throttle - IDLE (15 % RPM minimum)
12. Engine crank switch - CHECK OFF

If external air start -

   a. Bleed air switch - Return to normal

All starts -

13. EMI/IFEI - CHECK
14. External electrical power - DISCONNECT (if required)

BEFORE TAXI

1. Waypoint zero and magnetic variation - CHECK
2. Inertial navigation system - CV, GND (parking brake set) or IFA (functioning GPS)
3. Radar - OPERATE
4. Wingfold - SPREAD AND LOCK
5. FCS RESET button - PUSH
   If wings are folded, verify aileron Xs are present. With PROM 10.7, Xs will appear in CH 1/3 of the PROC row on the FCS page with the INS ATT caution set and/or the ATT switch is placed to STBY.

If no reset -

   a. T.O. trim button - PUSH (note TRIM advisory)
   b. FCS exerciser mode - INITIATE
      Lift FCS BIT consent switch and push FCS RESET button simultaneously.

If still no reset -

   c. FCS circuit breakers - PULL 4 CHANNELS
   d. Wait 10 seconds
   e. FCS circuit breakers - RESET
   f. FCS RESET button - PUSH
6. FLAPS - AUTO
7. FCS RESET button and paddle switch - ACTUATE SIMULTANEOUSLY
8. FLAPS - HALF
9. FCS INITIATED BIT - PERFORM
   If BLIN codes other than 124, 322, 336, 4124, 4263, 4322, 4336, 4522, 4526, 4527, 4773, 4774 and 70261 remain following IBIT, the

BEFORE ENGINE SHUTDOWN

1. Parking brake - SET
2. BIT Display - RECORD DEGD
3. BLIN codes - RECORD
4. Radar maintenance codes - NOTE IF PRESENT
5. INS - PERFORM POST FLIGHT UPDATE
6. INS - OFF (10 seconds before engine shutdown)
7. Standby attitude reference indicator - CAGE/LOCK
8. Sensors, radar, avionics and VTRS - OFF
9. Comm 1 and 2 - OFF
10. Exterior and interior lights - OFF

Aircraft 161353 thru 164068 -

11. Oxygen switch - OFF
12. Crypto switch - AS REQUIRED
13. Canopy - OPEN

Aircraft 164196 AND UP -

11. OBOGS control switch - OFF
12. OXY flow knob - OFF
13. Crypto switch - AS REQUIRED
14. Canopy - OPEN

ENGINE SHUTDOWN

1. Brake gage - 3,000 PSI
2. Nosewheel steering - DISENGAGE
3. Flaps - FULL
4. Throttle - OFF (alternate side)
5. Monitor engine rpm. As N2 rpm decreases below 7 %, gently pump the stick approximately ± 1 inch fore and aft at approximately 2 cycles per second, decreasing hydraulic pressure on shutdown engine below 800 psi. Ensure system pressure on operating engine remains above 1500 psi.
   (Pressure must remain below 800 psi on shutdown engine for valid test.)
6. Continue pumping stick while monitoring FCS page for FCS Xs and/or BLIN codes for 12 seconds after system pressure on shutdown engine drops below 800 psi. Record if present.
   - BLIN code 63 and/or rudder Xs indicate a malfunctioning rudder switching valve and further maintenance action is required.
   - BLIN code 66 and/or aileron Xs indicate a malfunctioning aileron switching valve and further maintenance action is required.
   - With PROM 10.7, BLIN code 67 and/or LEF Xs indicate a malfunctioning LEF switching valve and further maintenance action is required.
7. With PROM 10.5.1, if only BLIN code 67 and/or LEF Xs are present, attempt FCS RESET. Record results. (Recurring BLIN code 67 and/or LEF X's after FCS RESET indicates a malfunctioning LEF switching valve and further maintenance action is required.)
8. DDI, HI/MPCD, and HUD - OFF
9. Throttle - OFF

When amber FLAPS light illuminates -

10. Battery switch - OFF

F/A-18B/D REAR COCKPIT PROCEDURES

BEFORE ENTERING COCKPIT

1. Ejection seat safe/arm handle - SAFE & LOCKED
2. Ejection seat - PREFLIGHT PER FWD COCKPIT CHECKLIST

INTERIOR CHECK

1. Harness and rudder pedals - SECURE/ADJUST
2. Emergency brake handle - IN
3. Ejection control handle - CLEAR

Aircraft 161353 thru 164068 -

4. Oxygen - ON AND CHECK FLOW

Aircraft 164196 AND UP -

4. OXY flow knob - OFF

Left console -

1. Canopy jettison handle - OUTBOARD AND DOWN
2. Volume control panel - SET
3. Throttles - OFF

Instrument panel -

1. Emergency landing gear handle - IN
2. Emergency brake handle - IN
3. DDI/MPCD - OFF
4. Comm 1 and 2 knobs - OFF
5. Clock - CHECK AND SET
6. Standby attitude reference indicator - CAGE/LOCK

Right console -

7. Interior lights - AS DESIRED
8. NVG container - SECURE /NVG STOW (if required)

BEFORE TAXI

1. DDI/MPCD - ON
2. Fuel quantity gage - CHECK QUANTITY
3. Altimeter - SET
4. Flight controls - CYCLE
5. Standby attitude reference indicator - UNCAGE

Aircraft 164196 AND UP -

6. OBOGS - ON (Check flow)

BEFORE TAKEOFF

1. Takeoff checklist - CONFIRM COMPLETE

DESCENT/PENETRATION

1. Altimeter setting - CHECK
2. Standby instruments - CHECK

APPROACH

1. Landing checklist - CONFIRM COMPLETE

WARNING

Commanding full aft stick deflection with the ejection seat within 1-3/4 inches of the top limit can cause the lower ejection handle to snag on the air-to-air weapon select switch and result in inadvertent ejection. In particular, during stabilator braking after a full stop landing the control stick should be pulled back only the minimum required distance to command full stabilator authority. Inadvertent ejections have occurred after stabilator braking when the pilot has released full aft stick.

AFTER LANDING

When clear of active runway -

1. Ejection seat - SAFE

Before Engine Shutdown -

1. DDI/MPCD - OFF
2. Comm 1 and 2 - OFF
3. Interior lights - OFF
4. Standby attitude reference indicator - CAGE/LOCK

Aircraft 161353 thru 164068 -

5. Oxygen switch - OFF

Aircraft 164196 AND UP -

5. OXY flow knob - OFF

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
INS ATT	HUD attitude supplied by the standby attitude indicator. • W replaced -O- on the HUD. • GPS or EGI GPS function still operates • MSP codes O2F or O61 indicate that NAV data is frozen and NAV data provided to the HUD is not reliable. IFA is no longer possible. • For PROM 1O.7, if an INS ATT caution is set or the ATT Switch is placed to STBY, Xs will appear in CH 1/3 of the PROC row of the FCS Page indicating FCCs will no longer use INS data. There is no significant degradation to flying qualities, departure resistance or roll performance with these failure indications.	1. ATT/ATTD select switch – STBY 2. Verify HUD pitch ladder coincides with SARI 3. MSP codes - Check for presence of code O2F or O61 **If 02F or 061 present -** 4. INS knob - OFF **If 02F or 061 not present -** 4. Perform an inflight alignment
INS DEGD	Failure detected during periodic INS BIT.	**GROUND** 1. Secure and realign INS. **INFLIGHT if INS information is incorrect -** 1. ATTD/ATT Select Switch - STBY 2. Position keeping source - ADC 3. Perform inflight alignment.
INS VEL	INS and ADC vertical velocities do not agree.	Cross check HUD velocity vector, HUD digital vertical velocity readout and standby rate of climb indicator.

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
LADDER	Boarding ladder unlocked. • May FOD left engine.	**INFLIGHT** 1. Get visual check if practical. 2. Land as soon as practical.
MC 1	Mission computer 1 failed • Only cautions available are AUTO PILOT, MC 1, HYD 1A, HYD 1B, HYD 2A, HYD 2B. • GPS or EGI GPS function inoperable • G-limiter and Roll-limiter functions disabled • For PROM 1O.7, the presence of the MC 1 caution also indicates that the FCS will stop using INS provided data across the MUX. There is no significant degradation to flying qualities, departure resistance or roll performance with these failure indications.	1. Cycle switch **If caution remains or reappears -** 2. Use no more than 1/2 stick with roll limited stores aboard. Reduce acceleration below 7.5 g above 32,357 pounds gross weight or if unsymmetrical (rolling) 3. Land as soon as practical.
MC 2	Mission computer 2 failed. • Most weapon functionality lost.	1. Cycle switch.

FCS CAUTIONS FCS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FCES (cont)	Third like failure or flight control function lost. • ″Like″ failures for STAB and TEF are defined as Xs in 2 or more channels of the same row for the same surface. • ″Like″ failure for any other item on the FCS page is defined as an X in the same row. • Caution light backup for DDI FCS cautions.	**If no RESET and DDI warnings and cautions inoperative –** 7. FCS circuit breakers – CHECK 8. Emergency Jettison Button - PUSH (If required) 9. Flaps – HALF 10. Airspeed – 200-250 KNOTS 11. Make controllability check at safe altitude and on-speed AOA. 12. If flying qualities unacceptable, make controllability check with flaps in AUTO. 13. If controllability permits landing – short field arrestment recommended. 14. Reduce sink rate for field landing 15. Land as soon as practical.
FCS FCES Caution Light ″Flight Controls, Flight Controls″	One or more failures in flight controls. • ″Like″ failures for STAB and TEF are defined as Xs in 2 or more channels of the same row for the same surface. • ″Like″ failure for any other item on the FCS page is defined as an X in the same row. • May be a rusult of AOA failures. • For PROM 10.7: If Xs are present in CH 1/3 of the PROC row the FCC has declared INS data invalid. There is no significant degradation to flying qualities, departure resistance or roll performance with these failure indications.	1. MENU FCS – IDENTIFY FAILURE 2. FCS – RESET **If no reset and the only second ″like″ failure is PROC Xs in CH 1/3 –** 3. No action required. **If no reset and second like failure exists –** 3. Maintain 200-300 knots, minimum sideslip, AOA <10°, 2 g maximum. 4. FCS circuit breakers – CHECK 5. If CG aft of 24% or lateral asymmetry over 12,000 foot-pounds, jettison external stores as soon as practical. 6. Make controllability check. 7. Land as soon as practical. 8. If 4-channel AOA failure - execute the FLAPS SCHED procedure.

FCS CAUTIONS

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FCS HOT FCS HOT **Caution Light** **"Flight Computer Hot, Flight Computer Hot"**	Flight control computer A or right transformer-rectifier overtemperature. • FCS airscoop cannot be closed in flight.	1. Airspeed – SUBSONIC 2. AV/FCS cool switch – EMERG
FLAPS OFF FCES Caution Light FLAPS Amber "Flight Controls, Flight Controls"	Leading and/or trailing edge flaps inoperative. • Pressing FCS RESET with failed leading edge flaps may aggravate a split LEF condition. • Pressing FCS RESET with failed trailing edge flaps will not cause or aggravate a split flap condition in any case. • If fuel is a concern, selecting GAIN ORIDE with flap switch in AUTO may allow all non-failed flaps to move to a more fuel conserving 3°/3° position	**If leading edge flaps failed –** 1. Do not exceed 10° AOA with flaps AUTO. 2. Make controllability check at safe altitude. 3. Flaps – HALF FOR LANDING 4. If LEF extension less than 10°, do not exceed 7° AOA for landing. **If hydraulic failure or leak suspected –** 5. Do not press FCS reset button if HYD 1B or HYD 2A caution is displayed. **If trailing edge flaps failed –** 1. Make controllability check at safe altitude. 2. Flaps – HALF OR FULL FOR LANDING 3. Use 10° - 11° AOA for landing, if required.

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FLAP SCHED **FCES** **Caution Light** **FLAPS** **Amber** **"Flight Controls, Flight Controls"**	Flaps not scheduling properly or leading edge flap at least 10° off schedule and AOA over 12°. • For shipboard operations - notify LSO that indexers /approach light are inaccurate or inoperative. • AOA displayed to aircrew in the HUD E-bracket is FCS derived AOA. Perform AOA/airspeed check before and after going dirty.	1. Reduce AOA 2. Gain switch – ORIDE below 350 knots **For landing –** 3. If AOA failure – identify and select good AOA probe on FCS page, if available, using center (INS) AOA value. 4. Flaps – FULL at 200 knots 5. Fly onspeed approach to touchdown.
G-LIM 7.5 G "Flight Controls, Flight Controls"	G-limiter set to 7.5 g regardless of gross weight or store loading. G-limiter will not prevent an aircraft overstress at gross weights above 32,357 lb. Above 32,357 lb gross weight, pilot must limit g to prevent an overstress. • Intermittently setting of the G-LIM 7.5 cautions while on the ground with accompanying master caution tone and ''flight controls'' voice alert is a known condition. The caution usually occurs following sudden throttle retractions to idle. • For PROM 10.7 the presence of the GLIM 7.5 caution may be an indication that the FCC has declared MUX data failed. If this is the cause for the GLIM 7.5 caution, Xs will appear in CH 1/3 of the PROC row on the FCS page, as the FCS will stop using INS provided data across the MUX. There is no significant degradation to flying qualities, departure resistance or roll performance with these failure indications.	Reduce acceleration below 7.5 g above 32,357 pounds gross weight or if unsymmetrical (rolling).

FCS - G-LIM 7.5G

INTRODUCTION

Performance and BINGO Data is presented for both F404-GE-400 and F404-GE-402 engines. Pages in the Reference Data and BINGO tab sections pertaining to data not applicable to unit assigned aircraft may be removed.

NORMAL PROCEDURES

TABLE OF CONTENTS

1

EXTERIOR INSPECTION

1. Nose landing gear - CHECK
   a. Tires, wheels, and strut - CONDITION
   b. Tire pressure - 150 psi (ashore) 375 psi (afloat) (gages on some aircraft)
   c. Launch bar and holdback - CONDITION
   d. Nosewheel steering assembly - CONDITION
   e. Drag brace - PIN REMOVED
   f. Strut pressure - CHECK (two indicators)
   g. Retract actuator - CONDITION
   h. Taxi and approach lights - CONDITION
   i. Tiedown rings - SPRING CONDITION
   j. Ensure key washer not in direct contact with the wheel hub.
2. Nose wheelwell - CHECK
   a. Emergency brake accumulator pressure - CHECK (2,600 psi minimum)
   b. Digital display indicator - NO FLAGS
   c. APU emergency shutdown switch - NORMAL
   d. Doors and linkages - CONDITION
   e. BRCU - CYCLE (if applicable)
3. Nose section (left side) - CHECK
   a. Gun - PREFLIGHT
   b. U BATT/E BATT circuit breakers - CHECK
   c. Pitot static probe - CONDITION
   d. Pitot static drains (5) - CLOSED
   e. AOA probes:
      (1) Ensure smooth rotation throughout range of travel.
      (2) No bends, dents, dings, or surface discrepancies.
   f. Forward UHF antenna - CONDITION
   g. Radome - SECURE (2 points)
4. Nose section (top) - CHECK
   a. Gun blast diffuser and gun port - CLEAR
5. Nose section (right side) - CHECK
   a. Radome - SECURE (2 points)
   b. AOA probes:
      (1) Ensure smooth rotation throughout range of travel.
      (2) No bends, dents, dings, or surface discrepancies.
   c. Pitot static probe - CONDITION
   d. Refueling receptacle cover - INSTALLED (Door 8R)
6. Right Fuselage - CHECK
   a. SMS processor/SMUG - CHECK codes, door 14R closed/ secure
   b. Aft UHF antenna - CONDITION
   c. Engine intake duct - CLEAR
   d. ECS intake - CLEAR
   e. Chaff/flare dispenser - PREFLIGHT (Dispenser module (chaff/flare bucket) or access cover shall be installed)
7. External fuel tank - PREFLIGHT
   a. Refuel cap - DOWN, LOCKED, ARROW FORWARD
   b. Precheck valve - DOWN, FLUSH, ARROW UP
8. AIM-7, AIM-120, LDT strike camera, or NFLR - PREFLIGHT
9. Fuel air heat exchanger intake - CLEAR AND CONDITION
10. Right main wheelwell - CHECK
    a. Doors and linkages - CONDITION
    b. APU accumulator - PRESSURE, TEMPERATURE, PISTON POSITION

c. Landing gear downlock and retract actuators - CONDITION
d. Downlock pin - REMOVED
e. Hydraulic filter indicators - NOT POPPED
f. APU accumulator pump handle - CONDITION, SECURITY, PIN.
g. Main fuel line clamps secure and safety wires attached

11. Right main landing gear - CHECK
    a. Tire - TREAD WEAR, PRESSURE 250 PSI (ashore) 350 PSI (afloat) (gages on some aircraft)
    b. Brake wear indicator - CHECK
    c. Shrink links and planing links - CONDITION
    d. Shock strut pressure - CHECK
    e. Tiedown rings and springs - CONDITION
12. Right wing - CHECK
    a. Leading edge flap - CONDITION
    b. Pylons and external stores
        (1) Breech caps tight
        (2) Cartridge installed indicator present (protruding from breech cap w/ext stores loaded)
        (3) Retainer clip in place and horizontal to the deck
        (4) Auxiliary cap tight
    c. Navigation lights - CONDITION
    d. Wingfold area - CONDITION
    e. Wingfold lugs - CONDITION
    f. AIM-9 - PREFLIGHT
    g. Aileron - CONDITION, FAIRED WITH WINGS FOLDED
    h. Trailing edge flap - CONDITION
13. Right aft fuselage - CHECK
    a. Hydraulic reservoir gage - CHECK
    b. Vertical stabilizer and rudder - CONDITION
        (1) Navigation, formation, and strobe lights - CONDITION
        (2) Fuel vent port and dump mast - CLEAR
    c. Stabilator - CONDITION
    d. Exhaust nozzle, afterburner section, turbine blades - CONDITION
14. Arresting hook area - CHECK
    a. Arresting hook - CONDITION (pin removed)
15. Left aft fuselage - CHECK
    a. Exhaust nozzle, afterburner section, turbine blades - CONDITION
    b. Stabilator - CONDITION
    c. Vertical stabilizer and rudder - CONDITION
        (1) Fuel vent port and dump mast - CLEAR
        (2) Formation and strobe lights - CONDITION
    d. Hydraulic reservoir gage - CHECK
16. Aft fuselage underside - CHECK
    a. APU intake and exhaust - CLEAR
    b. ATS exhaust - CLEAR
17. Left wing - CHECK
    a. Trailing edge flap - CONDITION
    b. Aileron - CONDITION, FAIRED WITH WINGS FOLDED
    c. AIM-9 - PREFLIGHT
    d. Wingfold area - CONDITION
    e. Wingfold lugs - CONDITION
    f. Navigation lights - CONDITION
    g. Pylons and external stores -
        (1) Breech caps tight
        (2) Cartridge installed indicator present (protruding from breech cap w/ext stores loaded)
        (3) Retainer clip in place and horizontal to the deck
        (4) Auxiliary cap tight
    h. Leading edge flap - CONDITION

18. Left main landing gear - CHECK
    a. Tire - TREAD WEAR, PRESSURE 250 PSI (ashore) 350 PSI (afloat) (gages on some aircraft)
    b. Brake wear indicator - CHECK
    c. Shrink links and planing links - CONDITION
    d. Shock strut pressure - CHECK
    e. Tiedown rings and springs - CONDITION
19. Left main wheelwell - CHECK
    a. Doors and linkages - CONDITION
    b. Landing gear downlock and retract actuators - CONDITION
    c. Downlock pin - REMOVED
    d. Hydraulic filter indicators - NOT POPPED
    e. Main fuel line clamps secure and safety wires attached
20. Fuel air heat exchanger intake - CLEAR AND CONDITION
21. AIM-7, AIM-120 or FLIR - PREFLIGHT
22. Chaff/flare dispenser - PREFLIGHT (dispenser module (chaff/flare bucket) or access cover shall be installed)
23. Forward fuselage underside - CHECK
    a. Loose fasteners and fluid leaks - CHECK
    b. Centerline station/store - PREFLIGHT
    c. Fuselage fuel cavity drains - CHECK
24. Left fuselage - CHECK
    a. Engine intake duct - CLEAR
    b. ECS intake - CLEAR
    c. Total temperature probe - CONDITION
    d. RLCS door - CHECK

BEFORE ENTERING COCKPIT

1. Boarding ladder - SECURE (2 places)
2. Aircraft upper surfaces - CONDITION
3. Windshield - SECURE
4. Canopy jettison rocket motors - Nozzles down (F/A-18 A and C)
5. Ejection seat safe/arm handle - SAFE & LOCKED
6. Ejection seat - PREFLIGHT

For solo flight in F/A-18B/D -

7. Rear cockpit - SECURED
    a. Check ejection seat safe/arm handle in SAFE.
    b. Ensure ejection seat handle pin is removed.
    c. Ensure canopy jettison handle safety pin is removed.
    d. Secure all loose items, including harnessing.
    e. SARI - CAGE/LOCK
    f. Emergency brake handle - IN
8. Seat Caution Mode Switch (F/A-18D) - SECURED IN SOLO POSITION
9. Command selector valve - SECURED IN SOLO POSITION

INTERIOR CHECK

1. Harness and rudder pedals - SECURE/ADJUST
2. Ejection control handle - CLEAR

Aircraft 161353 thru 164068

3. Oxygen - ON AND CHECK FLOW

Aircraft 164196 AND UP

3. OBOGS control switch - OFF
4. OXY flow knob - OFF
    a. OBOGS pneumatic BIT plunger - VERIFY UNLOCKED AND FULLY EXTENDED

Left console -

1. Circuit breakers (4) - IN
2. Manual canopy handle - STOWED
3. Nuclear weapon consent switch - ENABLE

4. Mission computer and hydraulic isolate switches - NORM
5. Comm 1/IFF antennas - AUTO/ BOTH
6. Communication panel - SET
7. Volume control panel - SET
8. GEN TIE control switch - NORM (guard down, aircraft 162394 and up)
9. Gain switch - NORM
10. Refuel probe switch - RETRACT
11. External tanks switches - NORM
12. Dump switch - OFF
13. Internal wing switch - NORM
14. External lights - SET
15. Throttles - OFF
16. Parking brake - SET
17. Landing/taxi switch - OFF
18. Anti-skid switch - ON
19. Flap switch - FULL
20. Selective jettison knob - SAFE
21. Landing gear handle - DOWN
22. Landing gear handle mechanical stop - FULLY ENGAGED
23. Canopy jettison handle - FORWARD

Instrument panel -

1. Master arm switch - SAFE
2. FIRE and APU FIRE warning lights - NOT PRESSED
3. DDI, HI/MPCD, and HUD - OFF
4. Altitude source - SELECT
5. Attitude source - AUTO
6. Comm 1 and 2 knobs - OFF
7. ADF switch - OFF
8. ECM mode - OFF
9. Dispenser select knob/ dispenser switch - OFF
10. Auxiliary release switch - NORM
11. Clock - CHECK AND SET
12. Standby attitude reference indicator - CAGE/LOCK
13. IR coolant switch - OFF
14. Spin recovery switch - GUARD DOWN/OFF

Right console -

1. Circuit breakers (4) - IN
2. Arresting hook handle - UP
3. Wing fold handle - SAME AS WING POSITION
4. FCS cool switch - NORM
5. Radar altimeter - OFF
6. Generator switches - NORM
7. Battery switch - OFF
8. ECS system - SET
9. Windshield anti-ice switch - OFF
10. Interior lights - AS DESIRED
11. Sensors - OFF
12. KY-58 panel - SET
13. AN/AWB-3(V) monitor control - SET
14. NVG container - SECURE /NVG STOW (if required)

ENGINE START

Aircraft 161353 thru 161528 -

1. Battery operation - CHECK

Aircraft 161702 and up -

1. Battery status - CHECK

With external electrical power-

1. External power switch - RESET
2. Switch 1, 2, and 4 - B ON (hold for 3 seconds)
3. DDI, HI/MPCD, and HUD - ON
4. Comm 1, 2, and ADF - AS DESIRED
5. Warning and caution lights - TEST
6. Inertial navigation system - ENTER WAYPOINTS DESIRED

All starts -

1. Battery switch - ON (if not previously ON)
2. Fire warning - TEST A and B

If APU start -

3. APU ACCUM caution light - OFF
   a. APU switch - ON (READY light within 30 seconds)

If external air start -

3. Bleed air knob - OFF

All starts -

4. Engine crank switch - R
5. Right throttle - IDLE (15 % rpm minimum)
6. GPWS Voice Alerts - CHECK
7. DDI, HI/MPCD, HUD, and UFC avionics - ON
8. EMI/IFEI - CHECK
   a. After engine start, it may be necessary to advance power above IDLE to get the ECS turbine started.

Ground idle 400 Engine -

N_2	61 - 72 %
EGT	190 - 590 °C
Fuel flow	420 - 700 pph
Nozzle	73 - 84 %
Oil pressure (warm oil)	45 - 110 psi

Ground idle 402 Engine -

N_2	63 - 70 %
EGT	190 - 590 °C
Fuel flow	420 - 900 pph
Nozzle	73 - 84 %
Oil pressure (warm oil)	45 - 110 psi

If APU or crossbleed start -

   b. Bleed air knob - CYCLE THRU OFF TO NORM

      The bleed air shutoff valves close during the fire warning test and the bleed air knob must be cycled thru OFF to NORM with ac power on to reset the valves.

9. Warning and caution lights - TEST
   For a crossbleed start insure APU switch is OFF and a minimum of 80 % rpm and 1,900 pph fuel flow.
10. Engine crank switch - L
11. Left throttle - IDLE (15 % RPM minimum)
12. Engine crank switch - CHECK OFF

If external air start -

   a. Bleed air switch - Return to normal

All starts -

13. EMI/IFEI - CHECK
14. External electrical power - DISCONNECT (if required)

BEFORE TAXI

1. Waypoint zero and magnetic variation - CHECK
2. Inertial navigation system - CV, GND (parking brake set) or IFA (functioning GPS)
3. Radar - OPERATE
4. Wingfold - SPREAD AND LOCK
5. FCS RESET button - PUSH
   If wings are folded, verify aileron Xs are present.

If no reset -

   a. T.O. trim button - PUSH (note TRIM advisory)
   b. FCS exerciser mode - INITIATE
      Lift FCS BIT consent switch and push FCS RESET button simultaneously.

If still no reset -

   c. FCS circuit breakers - PULL 4 CHANNELS
   d. Wait 10 seconds
   e. FCS circuit breakers - RESET
   f. FCS RESET button - PUSH
6. FLAPS - AUTO
7. FCS RESET button and paddle switch - ACTUATE SIMULTANEOUSLY
8. FLAPS - HALF
9. FCS INITIATED BIT - PERFORM
   If BLIN codes other than 124, 322, 336, 4124, 4263, 4322, 4336, 4522, 4526, 4527, 4773, 4774 and 70261 remain following IBIT, the

aircraft requires maintenance to identify and correct failures in the flight control system.

10. TRIM - CHECK
11. T.O. trim button - PRESS UNTIL TRIM ADVISORY DISPLAYED
12. Flaps - AUTO
13. Controls - CHECK (tolerance for rudder and stabilator position is ±1°)
    a. Control stick - CYCLE
       Full aft: 24 NU stabilator
       Full fwd: 5 ND (PROM 8.5)
                 3 NU (≥ PROM 10.5.1)
       R/L Aileron:
            CHECK 20 units differential Stabilator
            CHECK differential trailing edge flaps
    b. Flaps - HALF
    c. Rudder pedals - CYCLE 30° left and right
14. Trim - SET FOR TAKEOFF
    If takeoff trim is not set, full leading edge down stabilator movement may not be available and takeoff distance will increase.
15. Air refueling probe, speed brake, launch bar, arresting hook, and pitot heat - CYCLE (Launch bar optional for shore based operations)

Aircraft 164196 AND UP -

16. OBOGS control switch - ON
17. OXY flow knob - ON

All aircraft -

18. APU - VERIFY OFF
19. Fuel - BIT/SET BINGO
20. Altimeter - SET
21. Radar altimeter - ON
22. GPWS - BOXED
23. Mission data - ENTER
24. BIT - NOTE DEGD/FAIL
25. Weapons/sensors - AS REQUIRED
26. Standby attitude reference indicator - UNCAGE
27. Attitude source - STBY
28. Attitude source - AUTO

Aircraft 164196 AND UP -

29. OBOGS system - CHECK
    Verify mask(s) on, OBOGS DEGD caution - OFF
    Momentarily press and release the OBOGS monitor pushbutton and verify:
    a. MASTER CAUTION - ON
    b. OBOGS DEGD caution - ON
    c. Helmet caution tone - ON

WARNING

Continued operation and use of the OBOGS system with an OBOGS DEGD caution may result in hypoxia.

All aircraft -

30. ID - Enter 3 digit Julian Date and Event Number via UFC
31. Canopy either full up or full down during taxi.

TAXI

1. Normal brakes - CHECK
2. Nosewheel steering - CHECK

BEFORE TAKEOFF

1. Canopy - CLOSED
2. IFF - ON
3. Inertial navigation system - CHECK
   On aircraft without GPS, after alignment is complete, NAV may be selected. On aircraft with GPS or EGI, after alignment is complete, select NAV or IFA
4. Parking brake handle - FULLY STOWED
5. MENU checklist - COMPLETE
6. Engines - MIL CHECK (if desired)

Military power - 400 engine

N_2	92 - 102 %
EGT	715 to 830°C
Fuel flow	6000 - 9000 pph
Nozzle	0 - 57 %

Military power - 400 engine

N_2	92 - 102 %
Oil pressure (warm oil)	95 - 180 psi

AB - Check if desired

Military power - 402 engine

N_2	90 - 102 %
EGT	715 - 880°C
Fuel flow	6000 - 12500 pph
Nozzle	0 - 48 %
Oil pressure (warm oil)	95 - 180 psi

AB - Check if desired

AFTER TAKEOFF

When definitely airborne -

1. Landing gear - UP
2. Flaps - AUTO

10,000 FEET

1. Cockpit altimeter - CHECK
2. Fuel transfer - CHECK
3. Radar altimeter low altitude warning setting - CHECK/SET

CRUISE CHECK

1. Cabin pressurization/ temperature - MONITOR

Aircraft Altitude	Cabin Altitude
30,000 ft	10,000 to 12,000 ft
40,000 ft	15,000 to 17,000 ft

DESCENT/PENETRATION

1. Engine anti-ice - AS DESIRED
2. Pitot heat - AUTO
3. Defog handle - HIGH
4. Windshield anti-ice/rain switch - AS DESIRED
5. Altimeter setting - CHECK
6. Radar altimeter - SET AND CHECK
7. HUD - SELECT NAV MASTER MODE, COMPARE WITH STANDBY FLIGHT INSTRUMENTS AND STANDBY COMPASS
8. NAVAIDS - CROSS CHECK
9. ARA-63 (ILS) - ON AND CHANNEL SET
10. IFF - AS DIRECTED
11. Weapons/sensors - AS REQUIRED

APPROACH

1. Landing checklist - COMPLETE

WARNING

Commanding full aft stick deflection with the ejection seat within 1-3/4 inches of the top limit can cause the lower ejection handle to snag on the air-to-air weapon select switch and result in inadvertent ejection. In particular, during stabilator braking after a full stop landing the control stick should be pulled back only the minimum required distance to command full stabilator authority. Inadvertent ejections have occurred after stabilator braking when the pilot has released full aft stick.

AFTER LANDING

When clear of active runway -

1. Ejection seat - SAFE
2. Landing gear handle mechanical stop - FULLY ENGAGED
3. Flap switch - AUTO
4. T.O. trim button - PUSH (note TRIM advisory)
5. Canopy either full up or full down.

BEFORE ENGINE SHUTDOWN

1. Parking brake - SET
2. BIT Display - RECORD DEGD
3. BLIN codes - RECORD
4. Radar maintenance codes - NOTE IF PRESENT
5. INS - PERFORM POST FLIGHT UPDATE
6. INS - OFF (10 seconds before engine shutdown)
7. Standby attitude reference indicator - CAGE/LOCK
8. Sensors, radar, avionics and VTRS - OFF
9. Comm 1 and 2 - OFF
10. Exterior and interior lights - OFF

Aircraft 161353 thru 164068 -

11. Oxygen switch - OFF
12. Crypto switch - AS REQUIRED
13. Canopy - OPEN

Aircraft 164196 AND UP -

11. OBOGS control switch - OFF
12. OXY flow knob - OFF
13. Crypto switch - AS REQUIRED
14. Canopy - OPEN

ENGINE SHUTDOWN

1. Brake gage - 3,000 PSI
2. Nosewheel steering - DISENGAGE
3. Flaps - FULL
4. Throttle - OFF (alternate side)
5. Monitor engine rpm. As N2 rpm decreases below 7%, gently pump the stick approximately ± 1 inch fore and aft at approximately 2 cycles per second, decreasing hydraulic pressure on shutdown engine below 800 psi. Ensure system pressure on operating engine remains above 1500 psi.
   (Pressure must remain below 800 psi on shutdown engine for valid test.)
6. Continue pumping stick while monitoring FCS page for FCS Xs and/or BLIN codes for 10 seconds after system pressure on shutdown engine drops below 800 psi. Record if present.
   - BLIN code 63 and/or rudder Xs indicate a malfunctioning rudder switching valve and further maintenance action is required.
   - BLIN code 66 and/or aileron Xs indicate a malfunctioning aileron switching valve and further maintenance action is required.
7. If only BLIN code 67 and/or LEF Xs are present, attempt FCS RESET. Record results. (Recurring BLIN code 67 and/or LEF X's after FCS RESET indicates a malfunctioning LEF switching valve and further maintenance action is required.)
8. DDI, HI/MPCD, and HUD - OFF
9. Throttle - OFF

When amber FLAPS light illuminates -

10. Battery switch - OFF

F/A-18B/D REAR COCKPIT PROCEDURES

BEFORE ENTERING COCKPIT

1. Ejection seat safe/arm handle - SAFE & LOCKED
2. Ejection seat - PREFLIGHT PER FWD COCKPIT CHECKLIST

INTERIOR CHECK

1. Harness and rudder pedals - SECURE/ADJUST
2. Emergency brake handle - IN
3. Ejection control handle - CLEAR

Aircraft 161353 thru 164068 -

4. Oxygen - ON AND CHECK FLOW

Aircraft 164196 AND UP -

4. OXY flow knob - OFF

Left console -

1. Canopy jettison handle - OUTBOARD AND DOWN
2. Volume control panel - SET
3. Throttles - OFF

Instrument panel -

1. Emergency landing gear handle - IN
2. Emergency brake handle - IN
3. DDI/MPCD - OFF
4. Comm 1 and 2 knobs - OFF
5. Clock - CHECK AND SET
6. Standby attitude reference indicator - CAGE/LOCK

Right console -

7. Interior lights - AS DESIRED
8. NVG container - SECURE /NVG STOW (if required)

BEFORE TAXI

1. DDI/MPCD - ON
2. Fuel quantity gage - CHECK QUANTITY
3. Altimeter - SET
4. Flight controls - CYCLE
5. Standby attitude reference indicator - UNCAGE

Aircraft 164196 AND UP -

6. OBOGS - ON (Check flow)

BEFORE TAKEOFF

1. Takeoff checklist - CONFIRM COMPLETE

DESCENT/PENETRATION

1. Altimeter setting - CHECK
2. Standby instruments - CHECK

APPROACH

1. Landing checklist - CONFIRM COMPLETE

WARNING

Commanding full aft stick deflection with the ejection seat within 1-3/4 inches of the top limit can cause the lower ejection handle to snag on the air-to-air weapon select switch and result in inadvertent ejection. In particular, during stabilator braking after a full stop landing the control stick should be pulled back only the minimum required distance to command full stabilator authority. Inadvertent ejections have occurred after stabilator braking when the pilot has released full aft stick.

AFTER LANDING

When clear of active runway -

1. Ejection seat - SAFE

Before Engine Shutdown -

1. DDI/MPCD - OFF
2. Comm 1 and 2 - OFF
3. Interior lights - OFF
4. Standby attitude reference indicator - CAGE/LOCK

Aircraft 161353 thru 164068 -

5. Oxygen switch - OFF

Aircraft 164196 AND UP -

5. OXY flow knob - OFF

SPECIAL PROCEDURES

TABLE OF CONTENTS

AIR REFUELING

BEFORE PLUG-IN

1. Radar - STBY/SILENT/ EMCOM
2. Master arm switch - SAFE
3. Internal wing fuel switch - AS DESIRED
4. External tanks - AS DESIRED
5. Air refuel probe switch - EXTEND
6. Visor - RECOMMENDED DOWN

For night air refueling -

7. Exterior lights - STEADY BRIGHT
8. Tanker lights - AS DESIRED

HOT SEAT PROCEDURE

1. Parking brake - ON
2. Nosewheel steering - OFF
3. Left throttle - OFF
4. Throttle friction - MAX
5. Avionics - AS DESIRED

CV ALIGNMENTS

INS CV ALIGNMENT (RF OR CBL) (SINS)

1. Parking brake - SET
2. ATT select switch - AUTO or INS
3. INS mode selector knob - CV

After alignment complete -

4. INS mode selector knob - NAV

INS CV ALIGNMENT (MANUAL)

1. Parking brake - SET
2. ATT select switch - AUTO or INS
3. INS mode selector knob - CV
4. HI/MPCD - PRESS MAN

On the UFC -

5. POSN option - PRESS, type N/S latitude, ENT
6. Type E/W longitude, ENT
7. CHDG option - PRESS, type true heading, ENT
8. CVEL option - PRESS, type velocity, ENT

After alignment complete -

9. INS mode selector knob - NAV

INFLIGHT ALIGNMENT

1. ATT/ATTD switch - STBY
2. NAV master mode - SELECT
3. INS knob - OFF for 5 seconds minimum for AN/ASN-139 or EGI (3 minutes for AN/ASN-130)
4. Aircraft DATA display - Check/Correct winds aloft, present position and magnetic variation.
5. Maintain straight and level unaccelerated flight for 20 seconds prior to selecting IFA.
6. INS knob - IFA. Continue to maintain straight and level unaccelerated flight for at least 30 seconds after selecting IFA.
7. HI/MPCD - If IFA RDR, select SEA or LAND (as appropriate).
8. MSP codes - Check. (If MSP code 067 is present, select NOSEC in A/C DATA sublevel display.)
9. ATT/ATTD switch - AUTO
10. HI/MPCD - Monitor alignment type throughout alignment.

If GPS Data Available During Alignment (IFA GPS)

11. Perform one gentle 90° S-turn (less than 20° AOB and ± 10° pitch) then maintain straight and level flight as much as practical.
12. HI/MPCD - Verify POS/AINS after Align complete. (GPS IFA will take approximately 10 minutes to complete.)

If No GPS Data Available During Alignment (IFA RDR)

11. Maintain straight and level flight for as much as possible during alignment. If a turn must be executed during IFA, make turn quickly, exceeding 30° AOB and returning to straight and level flight as soon as practical.
12. INS knob - NAV when OK displayed on HI/MPCD. (RADAR IFA takes approximately 20 minutes to complete.)

WARNING

Following an IFA with RADAR, make every attempt to maintain VMC with a discernible horizon. Residual attitude errors may be subtle and difficult to discern without reference to a visible horizon or the standby instruments. If velocity vector information is suspect, select STBY to the HUD.

13. Crosscheck attitudes, velocities, and position, especially when entering terminal approach phase.

KY-58 OPERATION

1. Comm 1 and Comm 2 radios - ON
2. Comm 1 and Comm 2 channels - AS DESIRED
3. Comm 1 and Comm 2 channel frequency - SET
4. CPHR option pushbutton - ACTUATE

KY-58 Cipher Mode -

5. KY-58 power knob - ON
6. KY-58 mode knob - C
7. KY-58 volume knob - ADJUST TO MAX VOLUME
8. Comm switch on inboard throttle - ACTUATE.
   A short tone is heard in the headset.

KY-58 Cipher Relay Mode -

5. KY-58 power knob - TD
   Other stations or aircraft involved in cipher relay communication must also have the KY-58 power knob in the TD position.
6. KY-58 mode knob - C
7. KY-58 volume knob - ADJUST TO MAX VOLUME
8. Comm 1 antenna select switch - AUTO
9. Relay switch - CIPHER
10. Comm 1 switch on inboard throttle - ACTUATE
    A short tone is heard in the headset.

NOTE

When entering the cipher relay mode from any plain mode, the Comm 1/Comm 2 transmit switch must be keyed twice; once to initialize the KY-58 and a second time to transmit.

INS UPDATES

RADAR

1. Master mode - NAV (RADAR SURF) or A/G
2. Radar mode - EXP 1, EXP 2, EXP 3, or MAP
3. WYPT - SELECT
4. NAV DSG - PRESS
5. TDC/DC - ASSIGN TO RADAR
6. UPDT - PRESS
7. DSG - PRESS
8. Slew cursor over waypoint and release TDC/DC.
9. Accept or reject.

HUD

1. WYPT - SELECT
2. NAV DSG - SELECT
3. TDC/DC - ASSIGN TO HUD
4. UPDT - PRESS
5. DSG - PRESS
6. Slew HUD diamond over waypoint and release TDC/DC.
7. Accept or reject.

OVFLY

1. WYPT - SELECT
2. TDC/DC - ASSIGN TO HI/MPCD
3. UPDT - PRESS
4. DSG - PRESS
5. Actuate TDC/DC when aircraft is over waypoint.
6. Accept or reject.

AUTO

1. WYPT - SELECT
2. TDC/DC - ASSIGN TO HI/MPCD
3. UPDT - PRESS
4. AUTO - PRESS
5. Actuate TDC/DC when aircraft is over waypoint.

MAP

1. WYPT - SELECT
2. UPDT - PRESS
3. Map - PRESS (automatically assigns TDC/DC to HI/MPCD)
4. Overfly desired geographical reference and actuate TDC/DC.
5. Select slew and slew map reference under aircraft symbol, release TDC/DC.
6. Accept or reject.

TACAN

(1 of 10 available TACAN stations must be in reception range.)

1. UPDT - PRESS
2. TCN - PRESS
3. Accept or reject.

VELOCITY

1. UPDT - PRESS
2. VEL - PRESS
3. Accept or reject.

INITIATED BITS

FCS BIT

1. If wings are folded verify both ailerons "X"d out.

F/A-18A/B -

2. Select MENU/BIT on right DDI
3. While simultaneously holding FCS BIT consent switch to ON, select the FCS pushbutton on the BIT display.

F/A-18C/D -

2. Select SUPT MENU/BIT/FCS-MC on right DDI
3. While simultaneously holding FCS BIT consent switch to ON, select the FCS pushbutton on the FCS-MC sublevel display.

All aircraft -

4. Release FCS button and FCS BIT switch when FCSA and FCSB BIT display status messages indicate IN TEST. At successful completion of initiated BIT, FCSA and FCSB BIT display status messages read GO. BIT requires less than 2 minutes.

INS BIT

1. Check parking brake set.
2. For ground initiated BIT insure waypoint zero is local latitude/longitude.

F/A-18A/B -

3. Select MENU/BIT/ADC/INS (or AUTO) on right DDI and TEST on INS mode switch.

F/A-18C/D -

3. Select MENU/BIT/SELBIT/NAV or MENU/BIT/NAV/INS or MENU/BIT/AUTO or MENU/BIT/NAV/ALL on the right DDI and TEST on the INS mode switch.

All aircraft -

4. Select INS LONG (if required) and GND or CV on DDI, and start clock. At successful completion of test, BIT display status message reads GO. Max time for BIT is 12 minutes, and max time for BIT and platform slew test is 45 minutes.

Center of Gravity Determination - F/A-18A

TANK 1									
	2,800	18.0	18.5	19.1	19.6	20.2	20.7	21.3	21.9
	2,500	18.7	19.3	19.8	20.3	20.9	21.5	22.0	22.6
	2,000	20.0	20.5	21.1	21.6	21.9	22.7	**23.2**	**23.8**
	1,500	21.3	21.8	22.3	22.8	**23.3**	**23.9**	**24.4**	**25.0**
	1,000	22.6	23.1	**23.6**	**24.1**	**24.6**	**25.1**	**25.6**	**26.2**
	500	23.8	**24.3**	**24.8**	**25.3**	**25.6**	**26.3**	**26.8**	**27.2**
	0	25.1	**25.6**	**26.1**	**26.5**	**27.0**	**27.5**	**28.0**	**28.5**
		0	500	1,000	1,500	2,000	2,500	3,000	3,600
		TANK 4							
		(BOLD: CG or, with MC OFP 15C, FUEL XFER CAUTION ON)							

	CG CHANGE % MAC				
GEAR (UP)	0.3				
AMMUNITION	**LOADED**			**SPENT**	
400 RDS	-1.4			-0.6	
570 RDS	-2.0			-0.9	
STORES					
AIM-9	(STA 1 or 9) 0.2 EACH				
AIM-7	(STA 4 or 6) 0.5 EACH				
AIM-120	(STA 4 or 6) 0.3 EACH				
TFLIR	0.1				
NFLIR	0.05				
LST/SCAM	0.0				
	STA 2	**STA 3**	**STA 5**	**STA 7**	**STA 8**
PYLON	0.1	0.1	-0.2	0.1	0.1
MER-7	-0.05	-0.05	-0.2	-0.05	-0.05
VER	-0.05	-0.05	-0.2	-0.05	-0.05
FUEL TANK (EMPTY)	N/A	-0.0	-0.3	-0.0	N/A
1,000 LBS (Fuel or 2,000 LBS Stores)	-0.05	-0.1	-1.2	-0.1	-0.05
	-0.1	-0.2	-2.4	-0.2	-0.1

AIRCRAFT UNIQUE C G (DD365-4) _____ % MAC

REFERENCE C G minus 22.0 % MAC

C G STORES CORRECTION (FROM ABOVE) plus _____ % MAC

C G AT FUEL STATE (FROM ABOVE) plus _____ % MAC

APPROXIMATE C G _____ % MAC

AT 3,000 LBS FUEL REMAINING, C G MOVES AFT 1% PER 1,000 LBS FUEL BURNED.

Center of Gravity Determination - F/A-18B

TANK 1	2,100	17.8	18.4	19.0	19.5	20.0	20.5	21.1	21.7
	1,500	19.2	19.7	20.2	20.5	21.2	21.8	22.3	23.0
	1,000	20.3	20.8	21.3	21.9	22.4	**22.9**	**23.4**	**24.0**
	500	21.5	22.0	22.5	**23.0**	**23.5**	**24.0**	**24.5**	**25.1**
	0	22.6	21.3	**23.6**	**24.1**	**24.6**	**25.1**	**25.6**	**26.2**
		0	500	1,000	1,500	2,000	2,500	3,000	3,600
		TANK 4 (BOLD: CG CAUTION ON)							

	CG CHANGE % MAC				
GEAR (UP)	0.3				
AMMUNITION	**LOADED**		**SPENT**		
400 RDS	-1.4		-0.6		
570 RDS	-2.0		-0.9		
STORES					
AIM-9	(STA 1 or 9) 0.2 EACH				
AIM-7	(STA 4 or 6) 0.5 EACH				
AIM-120	(STA 4 or 6) 0.3 EACH				
TFLIR	0.1				
NFLIR	0.05				
LST/SCAM	0.0				
	STA 2	**STA 3**	**STA 5**	**STA 7**	**STA 8**
PYLON	0.1	0.1	-0.2	0.1	0.1
MER-7	-0.05	-0.05	-0.2	-0.05	-0.05
VER	-0.05	-0.05	-0.2	-0.05	-0.05
FUEL TANK (EMPTY)	N/A	-0.0	-0.3	-0.0	N/A
1,000 LBS (Fuel or 2,000 LBS Stores)	-0.05	-0.1	-1.2	-0.1	-0.05
	-0.1	-0.2	-2.4	-0.2	-0.1

AIRCRAFT UNIQUE C G (DD365-4) _____ % MAC

REFERENCE C G minus 21.8 % MAC

C G STORES CORRECTION (FROM ABOVE) plus _____ % MAC

C G AT FUEL STATE (FROM ABOVE) plus _____ % MAC

APPROXIMATE C G _____ % MAC

AT 3,000 LBS FUEL REMAINING, C G MOVES AFT 1% PER 1,000 LBS FUEL BURNED.

Center of Gravity Determination - F/A-18C

TANK 1	TANK 4								
2,800	Tank 4 Full								21.5
2,500									22.1
2,300*									22.5
2,300	18.5	19.0	19.5	20.0	20.5	21.1	21.6	22.1	22.2
2,000	19.2	19.7	20.2	20.7	21.2	21.7	22.3	22.8	22.9
1,500	20.5	20.9	21.4	22.0	22.4	22.9	23.4	**23.9**	**24.0**
1,000	21.6	22.1	22.6	23.0	**23.5**	**24.0**	**24.5**	**25.0**	**25.1**
500	22.9	**23.4**	**23.8**	**24.2**	**24.7**	**25.2**	**25.6**	**26.1**	**26.2**
0	24.1	**24.5**	**25.0**	**25.4**	**25.8**	**26.3**	**26.7**	**27.2**	**27.3**
	0	500	1,000	1,500	2,000	2,500	3,000	3,500	3,600

TANK 4
(BOLD: FUEL XFER CAUTION ON)

* **Internal wing tanks full**

	CG CHANGE % MAC				
GEAR (UP)	0.3				
AMMUNITION	**LOADED**		**SPENT**		
400 RDS 570 RDS	-1.4 -2.0		-0.6 -0.9		
STORES					
AIM-9 AIM-7 AIM-120 TFLIR NFLIR LST/SCAM	(STA 1 or 9) 0.2 EACH (STA 4 or 6) 0.5 EACH (STA 4 or 6) 0.3 EACH 0.1 0.05 0.0				
	STA 2	**STA 3**	**STA 5**	**STA 7**	**STA 8**
PYLON	0.1	0.1	-0.2	0.1	0.1
MER-7	-0.05	-0.05	-0.2	-0.05	-0.05
VER	-0.05	-0.05	-0.2	-0.05	-0.05
FUEL TANK (EMPTY)	N/A	-0.0	-0.3	-0.0	N/A
1,000 LBS (Fuel or Stores)	-0.05	-0.1	-1.2	-0.1	-0.05
2,000 LBS	-0.1	-0.2	-2.4	-0.2	-0.1

AIRCRAFT UNIQUE C G (DD365-4) _____ % MAC

REFERENCE C G 21.3 (Lot 10-14)
22.3 (Lot 15 and up) minus _____ % MAC

C G STORES CORRECTION (FROM ABOVE) plus _____ % MAC

C G AT FUEL STATE (FROM ABOVE) plus _____ % MAC

APPROXIMATE C G _____ % MAC

CG CHANGE % MAC

GEAR (UP) 0.3

AT 3,000 LBS FUEL REMAINING, C G MOVES AFT 1% PER 1,000 LBS FUEL BURNED.

Center of Gravity Determination - F/A-18D

TANK 1										
	2,100	Tank 4 Full								21.2
	2,000									21.4
	1,500									22.4
	1,254*									22.8
	1,254	18.7	19.2	19.8	20.3	20.8	21.3	21.9	22.4	22.5
	1,000	19.2	19.8	20.3	20.8	21.3	21.8	22.4	22.9	23.0
	500	20.3	20.8	21.3	21.8	22.3	22.9	23.4	23.9	**24.0**
	0	21.3	21.8	22.3	22.9	23.4	23.9	**24.4**	**24.9**	**25.0**
		0	500	1,000	1,500	2,000	2,500	3,000	3,500	3,600
		TANK 4 (BOLD: FUEL XFER CAUTION ON)								

* **Internal wing tanks full**

	CG CHANGE % MAC				
GEAR (UP)	0.3				
AMMUNITION	**LOADED**		**SPENT**		
400 RDS 570 RDS	-1.4 -2.0		-0.6 -0.9		
STORES					
AIM-9 AIM-7 AIM-120 TFLIR NFLIR LST/SCAM	(STA 1 or 9) 0.2 EACH (STA 4 or 6) 0.5 EACH (STA 4 or 6) 0.3 EACH 0.1 0.05 0.0				
	STA 2	**STA 3**	**STA 5**	**STA 7**	**STA 8**
PYLON	0.1	0.1	-0.2	0.1	0.1
MER-7	-0.05	-0.05	-0.2	-0.05	-0.05
VER	-0.05	-0.05	-0.2	-0.05	-0.05
FUEL TANK (EMPTY)	N/A	-0.0	-0.3	-0.0	N/A
1,000 LBS (Fuel or Stores)	-0.05	-0.1	-1.2	-0.1	-0.05
2,000 LBS	-0.1	-0.2	-2.4	-0.2	-0.1

AIRCRAFT UNIQUE C G (DD365-4) _____ % MAC

REFERENCE C G 20.9 (Lot 10-14) 21.4 (Lot 15 and up) minus _____ % MAC

C G STORES CORRECTION (FROM ABOVE) plus _____ % MAC

C G AT FUEL STATE (FROM ABOVE) plus _____ % MAC

APPROXIMATE C G _____ % MAC

AT 3,000 LBS FUEL REMAINING, C G MOVES AFT 1% PER 1,000 LBS FUEL BURNED.

ASYMMETRY CALCULATION

MOMENT FOOT-POUNDS				
	STATIONS			
WT LBS	1(–) 9(+)	2(–) 8(+)	3(–) 7(+)	4(–) 6(+)
100	1,950	1,120	730	370
200	3,900	2,240	1,460	740
300	5,850	3,360	2,190	1,110
400	-	4,480	2,920	1,480
500	-	5,600	3,650	1,850
600	-	6,720	4,380	-
700	-	7,840	5,110	-
800	-	8,960	5,840	-
900	-	10,080	6,480	-
NOTE: For 1,000 pound increments, add a zero to both weight and moment.				

Each aircraft has a unique base weight and moment value which can vary significantly between aircraft. The above information is intended to be used as general reference material only. Refer to aircraft Weight and Balance Handbook (NAVAIR-1B-40) for specific weight and CG data for computation of aircraft weight and CG.

ALERT/SCRAMBLE LAUNCH PROCEDURES

SETTING THE ALERT

1. The alert/scramble aircraft shall be preflighted in accordance with NATOPS normal procedures every 4 hours or as local directives dictate.
2. The pre-alert turn shall consist of full Plane Captain checks and full system checks. Minimum requirements are:
   a. Radar - GO
   b. AIM-7 - TUNED (if loaded)
   c. INS - OK
   d. Comm 1 and 2 - SET TO LAUNCH FREQUENCY
   e. Launch trim - SET
3. Before engine shutdown -
   a. INS - OFF (10 seconds before engine shutdown)
   b. Crypto switch - HOLD THEN NORM
   c. Sensors, weapon systems, and UFC avionics - ON
   d. COMM 1 and 2 - ON
   e. EM CON - AS DESIRED
   f. Exterior and interior lights - SET
   g. DDIs, HI/MPCD, and HUD - ON

Aircraft 161353 thru 164068

   h. Oxygen switch - OFF

ASYM

Aircraft 164196 AND UP -

   h. OBOGS control switch and OXY flow knob - OFF

2

All aircraft -

   i. Landing gear pins - REMOVED AND STOWED
4. After engine shutdown -
   a. External power - CONNECTED (if applicable)
   b. External power switch - RESET THEN NORM
   c. Ground power switches 1, 2, 3, and 4 - OFF
   d. Battery switch - CHECK OFF
   e. SINS cable - CONNECTED (if required)

ALERT FIVE LAUNCH

If on external power -

1. Ground power switches 1B, 2B, 3B, and 4B - ON (hold 3 seconds)
2. INS - CV/GND
3. INS - STD HDG (if available)
4. Battery switch - ON
5. APU - START (READY light within 30 seconds)
6. R engine - START
7. L engine - START
8. FCS - RESET

Aircraft 161353 thru 164068 -

1. Oxygen switch - ON

Aircraft 164196 AND UP -

9. OBOGS control switch and OXY flow knob - ON

All aircraft-

10. External power - DISCONNECTED (if applicable)
11. SINS cable - DISCONNECTED (if applicable)
12. INS - NAV, IFA OR GYRO
13. Takeoff checklist - COMPLETE
14. After launch, INS - IFA (if applicable)

EXTREME WEATHER PROCEDURES

ICE AND RAIN

If icing is anticipated or encountered -

1. Perform engine detector anti-ice test.

GROUND OPERATION

If visible moisture exists and the temperature is 45° F (7° C) or less -

1. Engine anti-ice switch - ON after engine start
2. If an INLET ICE caution appears prior to takeoff, the aircraft should return to the line and have the engines inspected for possible FOD.

INFLIGHT

1. Engine anti-ice switch - ON
2. Pitot anti-ice switch - ON
3. Adjust airspeed to provide at least +5°C (+10°C preferred) INLET TEMP on the DDI engine display.

If INLET TEMP of at least +5°C not possible -

4. Climb or descend out of icing danger zone.

If penetration into known icing conditions is unavoidable -

5. Adjust airspeed to provide at least +5°C (+10°C preferred) INLET TEMP on the DDI engine display.
6. Maintain less than 6° AOA if possible.
7. Enter the cloud at the last possible moment and descend rapidly.
8. Windshield anti-ice/rain switch - AS REQUIRED

If at least +5 °C INLET TEMP cannot be maintained and/or ice accumulation visible on leading edge flaps -

9. Make a straight-in approach at 250 knots with throttles stabilized below 80 % rpm (if possible). Avoid throttle transients above 90 % rpm
10. Avoid abrupt maneuvers and bank angle over 20°
11. Reduce airspeed and transition to landing configuration at the last possible moment.

If missed approach necessary -

12. Slowly advance throttle to minimum power required for safe waveoff and raise gear and flaps as soon as possible.

If landing in heavy rain -

13. Windshield anti ice/rain switch - RAIN
14. Reduce gross weight to minimum practical.
15. ANTI-SKID switch - ON
16. Land ON-SPEED.

If directional control problems occur after touchdown -

17. Make arrested landing if possible.

REFERENCE DATA
400 ENGINE

TABLE OF CONTENTS

OPERATING LIMITATIONS

PERFORMANCE

3

OPERATING LIMITATIONS

ENGINE LIMITATIONS

RPM

COMPRESSOR (N_2) -

1. The max rpm - 102 %.
2. Ground idle - 61 to 72 %.
3. Flight idle - 68 to 73 %.
4. Max fluctuation at stabilized power - ±1 %.

FAN (N_1) -

5. The max rpm - 106 %.
6. Max fluctuation at stabilized power - ±0.5 %.

EGT

1. Max steady-state - 830°C.
2. Max transient - 852°C (during engine start - 815°C).
3. Max fluctuation at stabilized power - ±8°C.

NOZZLES

1. Maximum fluctuation - ±3 %.

OIL PRESSURE

GROUND -

1. For ambient temperatures above -18°C (0°F), oil pressure must peak below 180 psi and start to decrease within 30 seconds after reaching idle rpm and continue to decrease to steady state limits.
2. For ambient temperatures below -18°C (0°F), maximum oil pressure 2½ minutes after start is 180 psi.
3. Steady-state ground idle oil pressure limit is 45 to 110 psi (warm oil).

INFLIGHT (Steady-state) -

IDLE	55 to 110 PSI
MIL	95 to 180 PSI

CG LIMITATIONS

1. Forward limit is 17 % MAC.

NOTE

Maximum thrust field takeoffs are permissible at CG location forward to 16 % subject to air density restrictions.

2. Aft limit:
   a. FE config - 28 % MAC
   b. All other config - 27-28 % MAC (Refer to AOA limitations)

LATERAL WEIGHT ASYMMETRY LIMITS

Field takeoff	22,000 ft-lbs
Catapult takeoff	
Weight board ≤ 36,000 lbs	6,000 ft-lbs
Weight board ≥ 37,000 lbs	22,000 ft-lbs
Inflight conditions	26,000 ft-lbs

Asymmetric jettison/normal release of a store from station 2 or 8 that weighs in excess of 2330 pounds (i.e., GBU-24, MK-60, MK-65, Walleye II ER/DL) exceeds the lateral weight asymmetry limitation and is prohibited (even if this is the normal SMS release sequence, except in an emergency).

FCLP or Carrier landing with gross wt ≤ 33,000 lbs. (including wingtip AIM-9 and wing fuel)	17,000 ft-lbs
Carrier landing with gross wt > 33,000 lbs. (including wingtip AIM-9 and wing fuel)	14,500 ft-lbs
Field landing (flared) with sink rate at touchdown up to 500 fpm	26,000 ft-lbs

ANGLE-OF-ATTACK LIMITATIONS
Flaps AUTO

CONFIGURATION	AOA LIMIT (°)	CG (% MAC)
FE	Unrestricted –6° to +25°	17 to 25 % 25 to 28 %
FE plus centerline tanks/stores	Unrestricted –6° to +25°	17 to 23.5 % 23.5 to 28 %
FE plus inboard tanks/ stores (with centerline tank/stores)	–6° to +25°	17 to 27.5 %
FE plus inboard tanks/ stores (without centerline tank/stores)	–6° to +35° –6° to +25°	17 to 24 % 24 to 27.5 %
FE plus outboard tanks/ stores (centerline tank/ stores optional)	–6° to +25°	17 to 27.5 %
FE plus inboard and outboard tanks/stores (centerline tank/ stores optional)	–6° to +20°	17 to 27 %

Lateral Weight Asymmetry AOA Limits.

a. 6,000 to 12,000 ft-lbs asymmetry: –6° to +20°.
b. 12,000 to 26,000 ft-lbs asymmetry: –6° to +12°.
c. 22,000 to 26,000 ft-lbs asymmetry:
   (1) Abrupt lateral stick inputs are prohibited.
   (2) Smooth inputs up to 1/2 stick for rolling maneuvers up to a maximum of 180° bank angle change are authorized.
   (3) Rudder pedal inputs are authorized only as required to maintain balanced flight (Slip indicator ball centered).

AOA Limits Due to Mach No. (F/A-18B/D)

MACH	AOA LIMIT
0.7 to 0.8	–6° to +20°
0.8 to 0.9	–6° to +15°
above 0.9	–6° to +12°

Flaps HALF or FULL

0° to +15°AOA (transitory excursions up to +20° are allowed during catapult launch only).

WEIGHT LIMITATIONS

The maximum allowable gross weights are:

Location	Pounds
Field	
Takeoff	51,900
Landing (Flared)	39,000
FCLP/Touch-and-go/Barricade	
Before AFC 029	30,700
After AFC 029	33,000
Carrier	
Catapult	51,900
Landing	
Unrestricted	33,000
Restricted	34,000

Arrestments above 33,000 pounds are subject to the following restrictions:

(1) Arresting gear - MK 7 MOD 3 Only
(2) Glideslope - 3.5° Maximum
(3) Recovery Head Wind (RHW) -
   (a) 40 knots Minimum - Half flaps allowed
   (b) Less than 40 knots - Full flaps only
(4) Lateral Weight Asymmetry -
   14,500 ft-lb Maximum (External pylon stores, AIM-9 wing tips, and wing fuel)
(5) No MOVLAS recovery

ACCELERATION LIMITATIONS WITHOUT G LIMITER

Configuration	Symmetrical	Asymmetrical
Flaps HALF or FULL	+0.5 g to +2.0 g	+0.5 g to +1.5 g
Flaps AUTO	(32,357 pounds or less) −3.0 g to +7.5 g	(32,357 pounds or less) Aircraft thru 161924 +0.2 g to +6.0 g Aircraft 161925 and up −1.0 g to +6.0 g
Gear Retraction and/or Extension	+0.5 g to +2.0 g	+0.5 g to +1.5 g

CATAPULT THROTTLE SETTINGS

Weight Board (LBS)	Engine Power
44,000 and below	MIL MIL/MAX MAX
45,000 and above	MAX

NOTE

MIL/MAX power setting is defined as stabilizing in Military power while in catapult tension, and selecting maximum afterburner at holdback release.

CV Launch Trim

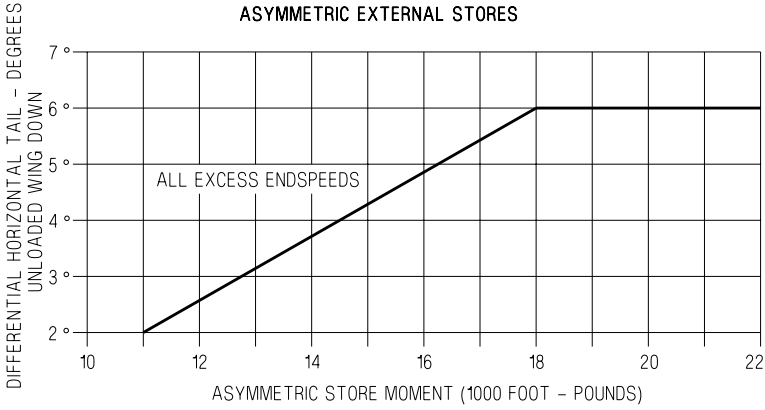
CATAPULT LONGITUDINAL TRIM

WEIGHT BOARD	NOSE UP TRIM
44,000 LBS AND BELOW	16 °
45,000 – 48,000 LBS	17 °
49,000 LBS AND ABOVE	19 °

NOTE

AIRCRAFT BEING LAUNCHED AT GROSS WEIGHTS OF 43,000 LBS AND ABOVE, SHOULD TRIM BY 3 ° NOSE UP IF ADVISED TO EXPECT 10 KNOTS OR LESS EXCESS ENDSPEED.

HALF – FLAP – MIL/MAX POWER
CATAPULT LAUNCH LATERAL TRIM REQUIREMENTS
ASYMMETRIC EXTERNAL STORES



WARNING

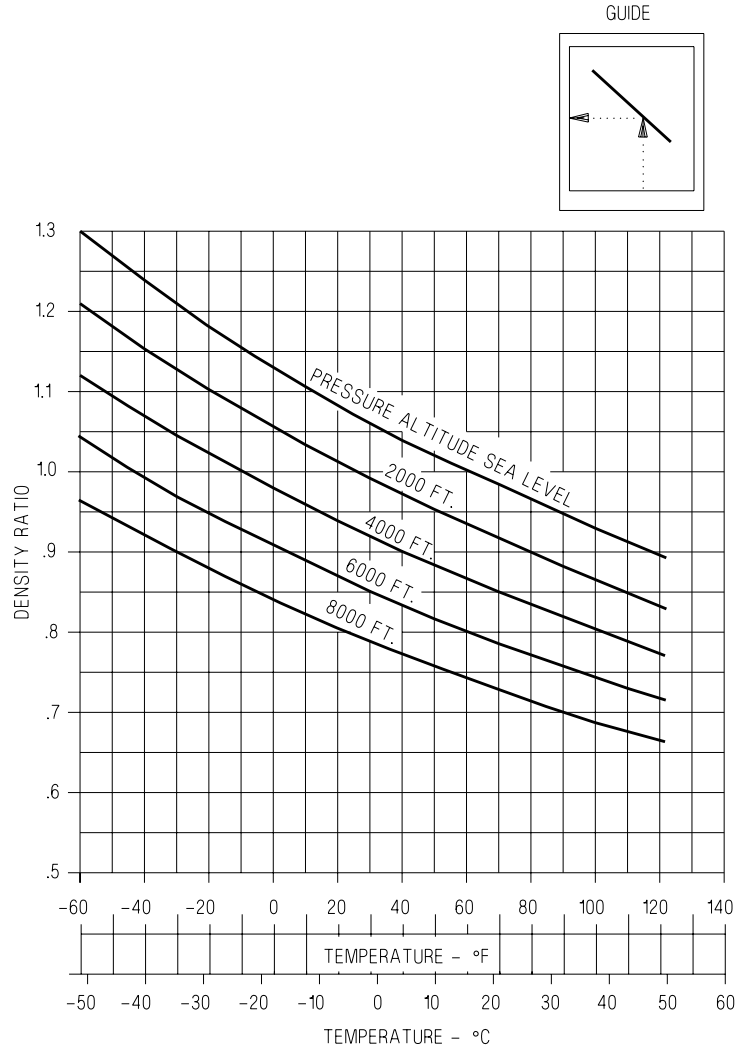
FAILURE TO INPUT DIFFERENTIAL STABILATOR TRIM FOR CATAPULT LAUNCHES WITH ASYMMETRIC STORES CAN AGGRAVATE AIRCRAFT CONTROLLABILITY.

NOTE

REDUCE DIFFERENTIAL TRIM BY 2 °
IF CARRYING A SINGLE GBU-24.

ADA524-26-1-039

Density Ratio



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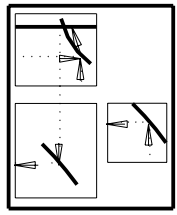
Minimum Go Speed

MAXIMUM THRUST
HARD DRY RUNWAY

REMARKS
ENGINE(S): (2)F404-GE-400

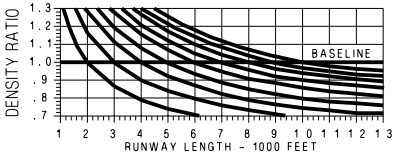
GUIDE

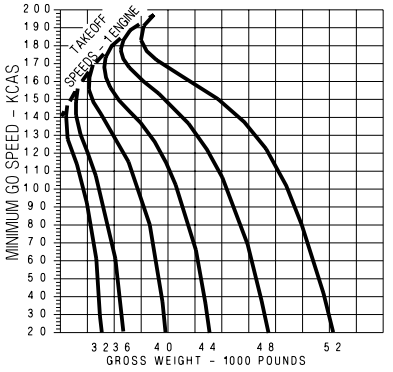


AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

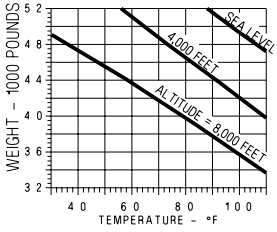
DATE: APRIL 1985
DATA BASIS: FLIGHT TEST





WARNING

WITH ONE ENGINE FAILED, AT HEAVY WEIGHT, HOT DAY CONDITIONS, EVEN THE USE OF MAXIMUM A/B THRUST ON THE OPERATING ENGINE MAY NOT PROVIDE SUFFICIENT RATE OF CLIMB CAPABILITY TO SAFELY CONTINUE THE TAKEOFF. UNLESS EXTERNAL STORES CAN BE SAFELY JETTISONED, TAKEOFFS AT THESE CONDITIONS, AS DETERMINED FROM THE CHART PRESENTED BELOW, SHOULD BE ABORTED.



Minimum Go Speed

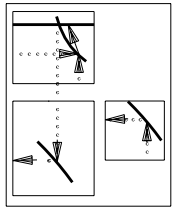
MILITARY THRUST
HARD DRY RUNWAY

REMARKS
ENGINE(S): (2)F404-GE-400

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

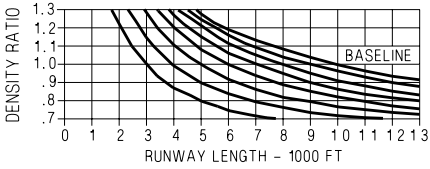
NOTE
REMAINING ENGINE AT MAXIMUM THRUST AFTER FAILURE RECOGNIZED.

GUIDE



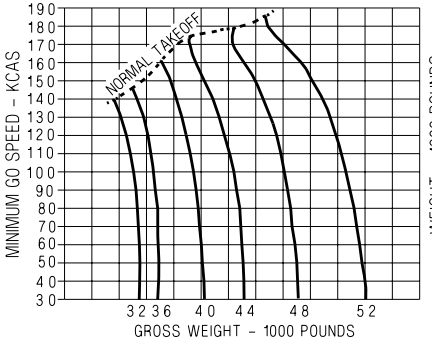
FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

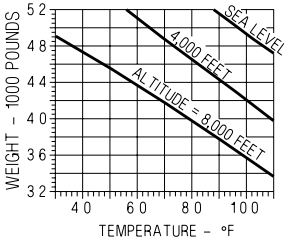
DATE: APRIL 1985
DATA BASIS:FLIGHT TEST



WARNING

WITH ONE ENGINE FAILED, AT HEAVY WEIGHT, HOT DAY CONDITIONS, EVEN THE USE OF MAXIMUM A/B THRUST ON THE OPERATING ENGINE MAY NOT PROVIDE SUFFICIENT RATE OF CLIMB CAPABILITY TO SAFELY CONTINUE THE TAKEOFF. UNLESS EXTERNAL STORES CAN BE SAFELY JETTISONED, TAKEOFFS AT THESE CONDITIONS, AS DETERMINED FROM THE CHART PRESENTED BELOW, SHOULD BE ABORTED.





ADA524-29-1-039

Maximum Abort Speed

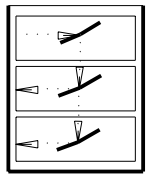
MAXIMUM THRUST

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

REMARKS
ENGINE(S): (2)F404-GE-400

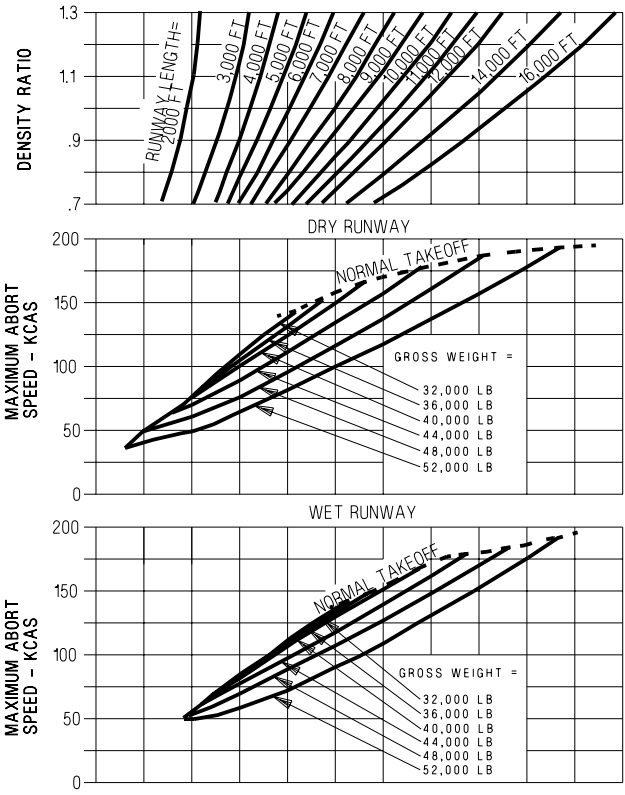
NOTE
REMAINING ENGINE AT GROUND IDLE THRUST AFTER FAILURE RECOGNIZED.

GUIDE



DATE: APRIL 1985
DATA BASIS: FLIGHT TEST

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL



Maximum Abort Speed

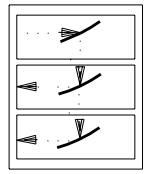
MILITARY THRUST

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

REMARKS
ENGINE(S): (2)F404-GE-400

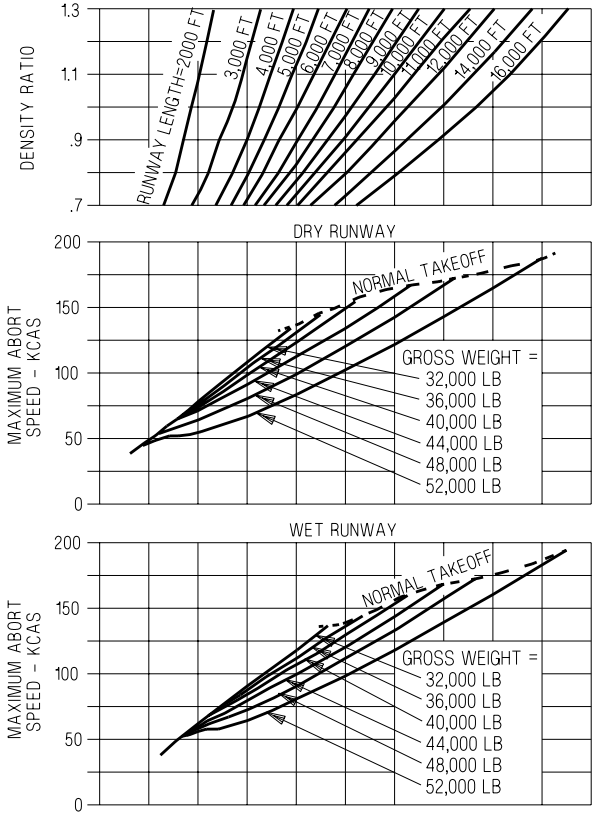
NOTE
REMAINING ENGINE AT GROUND IDLE THRUST AFTER FAILURE RECOGNIZED.

GUIDE



DATE: APRIL 1985
DATA BASIS: FLIGHT TEST

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL



ADA524-28-1-039

Takeoff Distance

MAXIMUM THRUST

HARD DRY RUNWAY

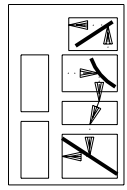
REMARKS

ENGINE(S): (2)F404-GE-400

AIRCRAFT CONFIGURATION

T.E. FLAPS 30°

GEAR DOWN



FUEL GRADE: JP-5

FUEL DENSITY: 6.8 LB/GAL

DATE: APRIL 1985

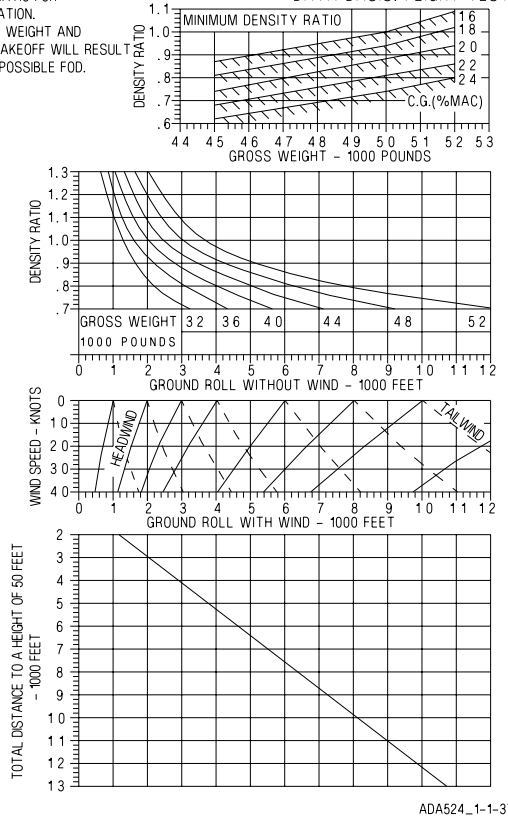
DATA BASIS: FLIGHT TEST

NOTES

- FOR TAKEOFF WEIGHTS GREATER THAN 45,000 POUNDS, 10° NOSE UP INITIAL STABILATOR TRIM IS RECOMMENDED.
- GROUND ROLL DISTANCES ARE FOR A TAKEOFF CG OF 22° MAC. FOR GROUND ROLL CORRECTION FOR OTHER CG LOCATIONS, REFER TO TAKEOFF GROUND ROLL CORRECTION FOR CG – MAXIMUM THRUST.
- CHECK FOR MINIMUM DENSITY RATIO FOR TAKEOFF WEIGHT AND CG LOCATION.
- IF MINIMUM DENSITY RATIO FOR WEIGHT AND CG IS NOT MET, ATTEMPTED TAKEOFF WILL RESULT IN NOSE TIRE OVERSPEED AND POSSIBLE FOD.

CG (%C̄)	GROSS WEIGHT–1000 POUNDS		
	32	36	40
	NOSEWHEEL LIFT-OFF/TAKEOFF SPEEDS (KIAS)		
16	145/159	154/167	165/175
18	139/154	148/162	159/170
20	134/149	142/157	152/164
22	128/144	135/151	145/158
24	121/140	129/147	138/153
26	114/136	122/142	131/148

CG (%C̄)	GROSS WEIGHT–1000 POUNDS		
	44	48	52
	NOSEWHEEL LIFT-OFF/TAKEOFF SPEEDS (KIAS)		
16	176/185	183/192	193/203
18	170/179	177/186	186/196
20	162/173	170/180	180/189
22	154/167	163/173	174/182
24	147/161	156/167	167/175
26	140/155	149/160	159/168



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Takeoff Distance

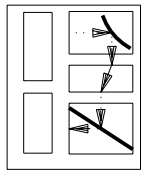
MILITARY THRUST
HARD DRY RUNWAY

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

REMARKS
ENGINE(S): (2)F404-GE-400

NOTES

- FOR TAKEOFF WEIGHTS GREATER THAN 45,000 POUNDS 10° NOSE UP STABILATOR TRIM IS RECOMMENDED.
- GROUND ROLL DISTANCES ARE FOR A TAKEOFF CG OF 22% MAC, FOR GROUND CORRECTION FOR OTHER CG LOCATIONS, REFER TO TAKEOFF GROUND ROLL CORRECTION FOR CG-MILITARY THRUST.
- USE MAXIMUM THRUST FOR C.G. LOCATIONS BETWEEN 16% $\bar{c}$ AND 18% $\bar{c}$.
- IF MINIMUM DENSITY RATIO FOR WEIGHT AND CG IS NOT MET, ATTEMPTED TAKEOFF WILL RESULT IN NOSE TIRE OVERSPEED AND POSSIBLE FOD.

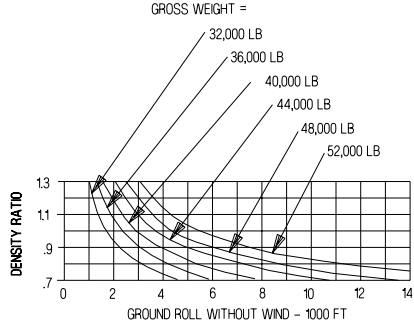


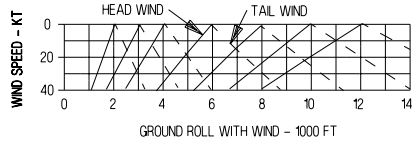
FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

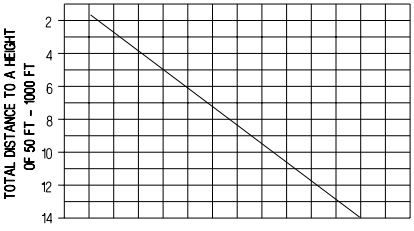
DATE: APRIL 1985
DATA BASIS: FLIGHT TEST

CG (%$\bar{c}$)	GROSS WEIGHT-1000 LB		
	32	36	40
	NOSEWHEEL LIFTOFF/TAKEOFF SPEEDS(KIAS)		
18	136/146	145/155	154/163
20	131/142	139/150	148/158
22	125/138	132/144	141/152
24	119/134	126/140	134/147
26	112/130	119/135	127/141

CG (%$\bar{c}$)	GROSS WEIGHT-1000 LB		
	44	48	52
	NOSEWHEEL LIFTOFF/TAKEOFF SPEEDS(KIAS)		
18	164/174	170/178	178/186
20	157/167	164/171	172/179
22	149/160	158/164	165/171
24	142/154	151/158	158/165
26	135/147	143/151	150/158





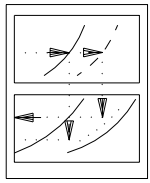


ADA524_2-1-37

Takeoff Ground Roll Correction For CG

F404-GE-400

MAXIMUM THRUST



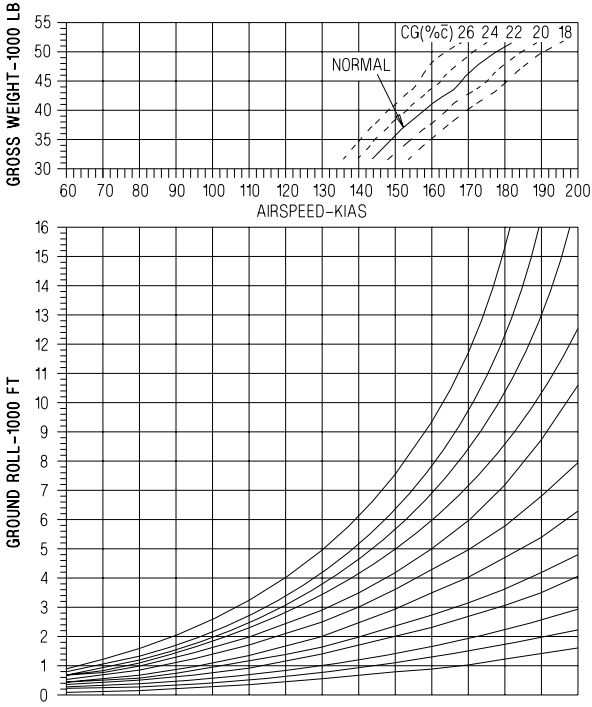
AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

REMARKS
ENGINE(S): (2)F404-GE-400

- INCREASE GROUND ROLL BY 5% PER % c̄ FORWARD OF 18% c̄ (FORWARD TO 16% c̄ ONLY).

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

DATE: JANUARY 1984
DATA BASIS: FLIGHT TEST

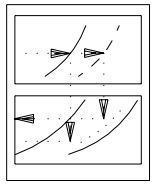


ADA524_69-1-37

Takeoff Ground Roll Correction For CG

F404-GE-400

MILITARY THRUST



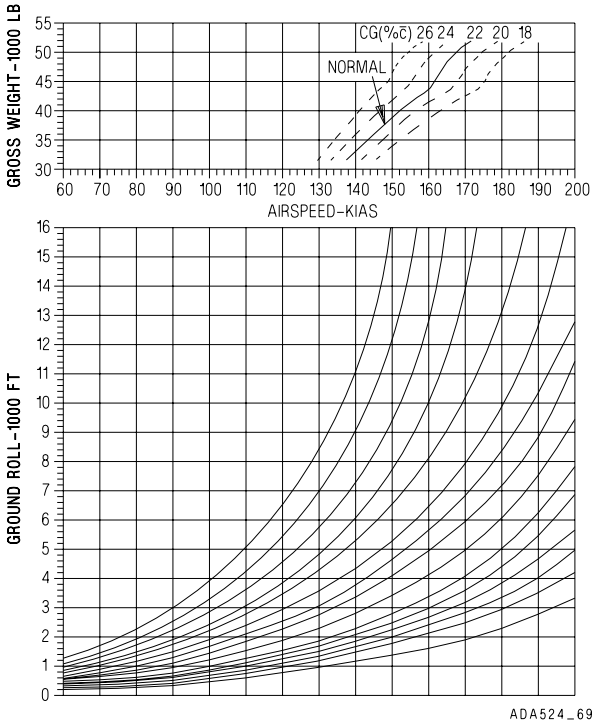
AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

REMARKS
ENGINE(S): (2)F404-GE-400

- USE MAXIMUM THRUST FOR C.G. LOCATIONS BETWEEN 16%$\bar{c}$ AND 18%$\bar{c}$.

FUEL GRADE: JP-5
FUEL DENSITY:
6.8 LB/GAL

DATE: JANUARY 1984
DATA BASIS: FLIGHT TEST



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Landing Approach Speed

AIRCRAFT CONFIGURATION

FLAPS AS NOTED
GEAR DOWN
SPEED BRAKE IN

REMARKS

ENGINE(S): (2)F404-GE-400
U.S. STANDARD DAY, 1962

NOTE

- C G AT 25% MAC. APPROACH SPEEDS INCREASE 1 KNOT FOR EACH 2% THE C G IS FORWARD OF 25% MAC AND DECREASE 1 KNOT FOR EACH 2% THE C G IS AFT OF 25% MAC.
- INCREASE APPROACH SPEED BY 2 KNOTS IF WINGTIP AIM-9'S ARE OFF
- INCREASE APPROACH SPEEDS BY 2 KNOTS IF EXTERNAL STORES ON.

DATE: DECEMBER 1984
DATA BASIS: FLIGHT TEST

LANDING APPROACH SPEED (KCAS)

LANDING CONFIGURATION		FULL FLAPS 8.1° AOA (Normal Landing)	HALF FLAPS 8.1° AOA (Normal Landing)
GROSS WEIGHT (LB)	24,000	117	126
	25,000	119	129
	26,000	121	131
	27,000	124	134
	28,000	126	136
	29,000	128	139
	30,000	130	141
	31,000	133	144
	32,000	135	146
	33,000	137	148
	34,000	139	151
	35,000	141	153
	36,000	143	155
	37,000	145	157
	38,000	147	159
	39,000	149	161

Landing Approach Speed

AIRCRAFT CONFIGURATION

FLAPS AS NOTED
GEAR DOWN
SPEED BRAKE IN

REMARKS

ENGINE(S): (2)F404-GE-400
U.S. STANDARD DAY, 1962

NOTE

- C G AT 25% MAC. APPROACH SPEEDS INCREASE 1 KNOT FOR EACH 2% THE C G IS FORWARD OF 25% MAC AND DECREASE 1 KNOT FOR EACH 2% THE C G IS AFT OF 25% MAC
- INCREASE APPROACH SPEED BY 2 KNOTS IF WINGTIP AIM- 9'S ARE OFF
- INCREASE APPROACH SPEEDS BY 2 KNOTS IF EXTERNAL STORES ON
- MAIN GEAR TIRE LIMITATION - 210 GROUNDSPEED
- NOSE GEAR TIRE LIMITATION - 190 GROUNDSPEED

DATE: DECEMBER 1984
DATA BASIS: FLIGHT TEST

LANDING APPROACH SPEED (KCAS)

LANDING CONFIGURATION		HALF FLAPS 7.0° AOA (DEL or MECH)	HALF FLAPS 7.0° AOA 0° LEF (LEF Failure)	HALF OR FULL FLAPS - 10° AOA 0° TEF (TEF Failure)	7.0° AOA 0° LEF/0° TEF (LEF/TEF Failure)
GROSS WEIGHT (LB)	24,000	131	133	161	192
	25,000	134	135	164	196
	26,000	136	135	167	200
	27,000	139	141	170	204
	28,000	141	143	173	208
	29,000	144	146	177	212
	30,000	146	148	180	215
	31,000	149	151	183	219
	32,000	151	153	186	222
	33,000	153	156	188	226
	34,000	156	158	191	229
	35,000	158	160	194	232
	36,000	160	162	197	236
	37,000	162	165	199	239
	38,000	165	167	202	242
	39,000	167	169	205	245

Landing Distance

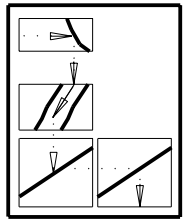
IDLE THRUST

AIRCRAFT CONFIGURATION
T.E. FLAPS 45°
GEAR DOWN

REMARKS
ENGINE(S): (2)
F404-GE-400

DATE: APRIL 1985
DATA BASIS: FLIGHT TEST

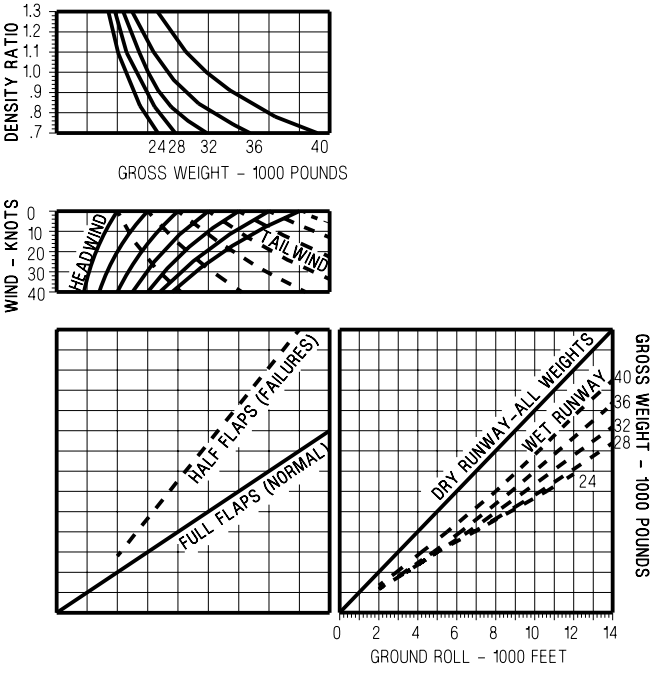
GUIDE



FUEL GRADE:JP-5
FUEL DENSITY:6.8 LB/GAL

NOTES

- LANDING GROUND ROLLS SHOWN CORRESPOND TO APPROACH SPEEDS FOR FULL FLAPS AND 8.1° AOA AS SHOWN ON THE LANDING APPROACH SPEED CHART. INCREASE LANDING GROUND ROLLS BY 1.2 % FOR EACH KNOT THAT THE APPROACH SPEED EXCEEDS THAT SHOWN (25% CG, NO STORES) ON THE LANDING APPROACH SPEED CHART.
- FOR TOTAL LANDING DISTANCE OVER A 50 FOOT OBSTACLE ADD THE FOLLOWING DISTANCE TO THE GROUND ROLL:
  - -NO FLARE,-4° GLIDE SLOPE: ADD 715 FEET
  - -NO FLARE,-3.5 GLIDE SLOPE: ADD 817 FEET
  - -WITH FLARE: ADD 1200 FEET



18AC-NFM-50_3-1-30

Recommended Maximum Single Engine Recovery Weight

REMARKS

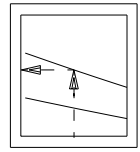
ENGINE(S): (2)404-GE-400

AIRCRAFT CONFIGURATION
HALF FLAPS
GEAR DOWN

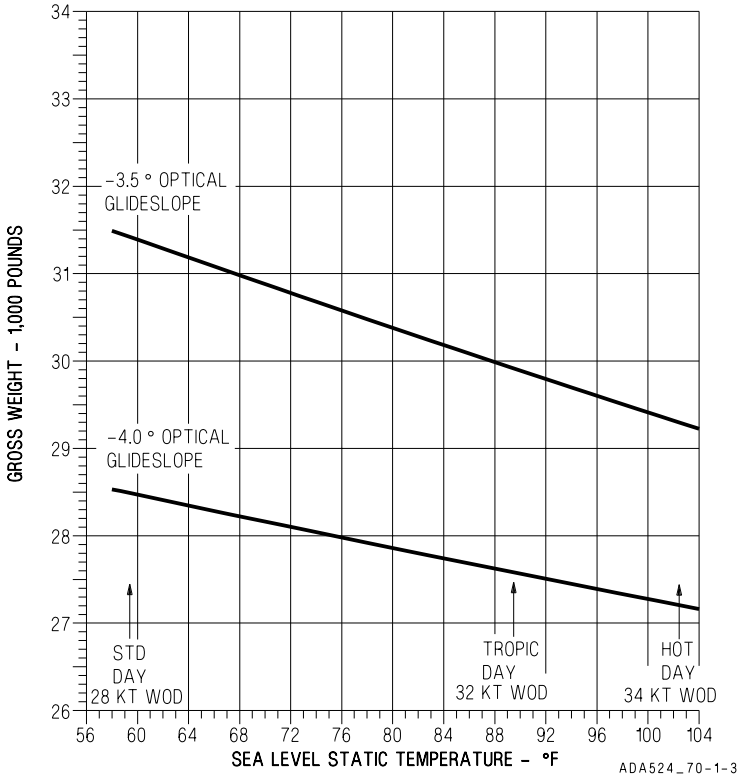
DATE: 15 JANUARY 1993
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

NOTES

- HALF FLAPS
- LANDING GEAR DOWN
- FAILED ENGINE - WINDMILLING OR SEIZED
- C.G. AT 25%MAC
- INCREASE MAX WEIGHT BY 250 LB FOR EACH 1% THE C.G. IS AFT OF 25%MAC
- DECREASE MAX WEIGHT BY 250 LB FOR EACH 1% THE C.G. IS FWD OF 25%MAC
- GREATER WOD PROVIDES IMPROVED WAVEOFF PERFORMANCE
- ADJUSTING GROSS WEIGHT AT OR BELOW THE RECOMMENDED WEIGHT ENSURES LESS THAN 50 FEET ALTITUDE LOST DURING AN ONSPEED AOA SINGLE ENGINE MILITARY POWER WAVEOFF FROM AN ONSPEED AOA/ON GLIDESLOPE CONDITION. MAXIMUM WAVEOFF ALTITUDE LOST FOR TWO ENGINE OPERATION UNDER IDENTICAL CONDITIONS IS LESS THAN 30 FEET.



FUEL GRADE: JP-5
FUEL DENSITY:
6.8 LB/GAL



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INSTRUCTIONS

ENTER THE CHART WITH THE RELATIVE BEARING. MOVE ALONG THE RELATIVE BEARING TO INTERCEPT THE WIND SPEED ARC. FROM THIS POINT, DESCEND VERTICALLY TO READ THE CROSSWIND COMPONENT, FROM THIS INTERSECTION OF BEARING AND WIND SPEED, PROJECT HORIZONTALLY TO THE LEFT TO READ HEADWIND COMPONENT.

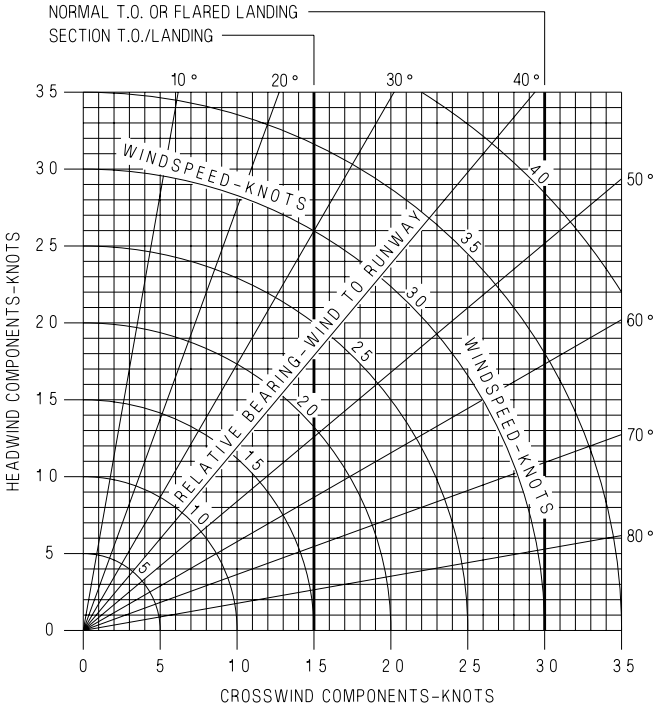
EXAMPLE

REPORTED WIND 050/35, RUNWAY HEADING 030.

A.	RELATIVE BEARING	20 °
B.	INTERSECT WINDSPEED ARC	35 KT
C.	CROSSWIND COMPONENT	12 KT
D.	HEADWIND COMPONENT	33 KT

Wind Components

CROSSWIND LIMITS:



ADA524-4-1-039

REFERENCE DATA
402 ENGINE

TABLE OF CONTENTS

OPERATING LIMITATIONS

PERFORMANCE

OPERATING LIMITATIONS

ENGINE LIMITATIONS

RPM

COMPRESSOR (N_2) -

1. The max rpm - 102 %.
2. Ground idle - 63 to 70 %.
3. Flight idle - 68 to 73 %.
4. Max fluctuation at stabilized power - ±1 %.

FAN (N_1) -

5. The max rpm - 108 %.
6. Max fluctuation at stabilized power - ±0.5 %.

EGT

1. Max steady-state:
   MILITARY - 880°C
   MAX - 920°C
2. Max transient:
   Engine Start - 815°C
   MILITARY - 902°C
   MAX - 942°C
3. Max fluctuation at stabilized power - ±8°C.

NOZZLES

1. Maximum fluctuation - ±3 %.

OIL PRESSURE

GROUND -

1. For ambient temperatures above -18°C (0°F), oil pressure must peak below 180 psi and start to decrease within 30 seconds after reaching idle rpm and continue to decrease to steady state limits.
2. For ambient temperatures below -18°C (0°F), maximum oil pressure 2½ minutes after start is 180 psi.
3. Steady-state ground idle oil pressure limit is 45 to 110 psi (warm oil).

INFLIGHT (Steady-state) -

IDLE	55 to 110 PSI
MIL	95 to 180 PSI

CG LIMITATIONS

1. Forward limit is 17 % MAC

NOTE

Maximum thrust field takeoffs are permissible at CG location forward to 16 % subject to air density restrictions.

2. Aft limit:
   a. FE config - 28 % MAC
   b. All other config - 27-28 % MAC (Refer to AOA limitations)

LATERAL WEIGHT ASYMMETRY LIMITS

Field takeoff	22,000 ft-lbs
Catapult takeoff	
Weight board ≤ 36,000 lbs	6,000 ft-lbs
Weight board ≥ 37,000 lbs	22,000 ft-lbs
Inflight conditions	26,000 ft-lbs

Asymmetric jettison/normal release of a store from station 2 or 8 that weighs in excess of 2330 pounds (i.e., GBU-24, MK-60, MK-65, Walleye II ER/DL) exceeds the lateral weight asymmetry limitation and is prohibited (even if this is the normal SMS release sequence, except in an emergency).

FCLP or Carrier landing with gross wt ≤ 33,000 lbs. (including wingtip AIM-9 and wing fuel)	17,000 ft-lbs
Carrier landing with gross wt > 33,000 lbs. (including wingtip AIM-9 and wing fuel)	14,500 ft-lbs
Field landing (flared) with sink rate at touchdown up to 500 fpm	26,000 ft-lbs

ANGLE OF-ATTACK LIMITATIONS
Flaps AUTO

CONFIGURATION	AOA LIMIT (°)	CG (% MAC)
FE	Unrestricted –6° to +25°	17 to 25 % 25 to 28 %
FE plus centerline tanks/stores	Unrestricted –6° to +25°	17 to 23.5 % 23.5 to 28 %
FE plus inboard tanks/ stores (with centerline tank/stores)	–6° to +25°	17 to 27.5 %
FE plus inboard tanks/ stores (without centerline tank/stores)	–6° to +35° –6° to +25°	17 to 24 % 24 to 27.5 %
FE plus outboard tanks/ stores (centerline tank/ stores optional)	–6° to +25°	17 to 27.5 %
FE plus inboard and outboard tanks/stores (centerline tank/ stores optional)	–6° to +20°	17 to 27 %

Lateral Weight Asymmetry AOA Limits

a. 6,000 to 12,000 ft-lbs asymmetry: –6° to +20°.
b. 12,000 to 26,000 ft-lbs asymmetry: –6° to +12°.
c. 22,000 to 26,000 ft-lbs asymmetry:
   (1) Abrupt lateral stick inputs are prohibited.
   (2) Smooth inputs up to 1/2 stick for rolling maneuvers up to a maximum of 180° bank angle change are authorized.
   (3) Rudder pedal inputs are authorized only as required to maintain balanced flight (Slip indicator ball centered).

AOA Limits Due to Mach No. (F/A-18D)

MACH	AOA LIMIT
0.7 to 0.8	–6° to +20°
0.8 to 0.9	–6° to +15°
above 0.9	–6° to +12°

Flaps HALF or FULL

a. 0° to +15° AOA (transitory excursions up to +20° are allowed during catapult launch only)

WEIGHT LIMITATIONS

The maximum allowable gross weights are:

Location	Pounds
Field Takeoff	51,900
Field landing (flared)	39,000
FCLP/Touch-and-go/ Barricade	33,000
Carrier	
Catapult	51,900
Landing	
Unrestricted	33,000
Restricted	34,000

Arrestments above 33,000 pounds are subject to the following restrictions:

(1) Arresting gear - MK 7 MOD 3 Only
(2) Glideslope - 3.5° Maximum
(3) Recovery Head Wind (RHW) -
   (a) 40 knots Minimum - Half flaps allowed
   (b) Less than 40 knots - Full flaps only
(4) Lateral Weight Asymmetry -
   14,500 ft-lb Maximum (External pylon stores, AIM-9 wing tips, and wing fuel)
(5) No MOVLAS recovery

ACCELERATION LIMITATIONS WITHOUT G LIMITER

Configuration	Symmetrical	Asymmetrical
Flaps HALF or FULL	+0.5 g to +2.0 g	+0.5 g to +1.5 g
Flaps AUTO	(32,357 pounds or less)- −3.0 g to +7.5 g	−1.0 g to +6.0 g
Gear Retraction and/or Extension	+0.5 g to +2.0 g	+0.5 g to +1.5 g

CATAPULT THROTTLE SETTINGS

Weight Board (LBS)	Engine Power
44,000 and below	MIL MIL/MAX MAX
45,000 and up	MAX

NOTE

MIL/MAX power setting is defined as stabilizing in Military power while in catapult tension, and selecting maximum afterburner at holdback release.

CV Launch Trim

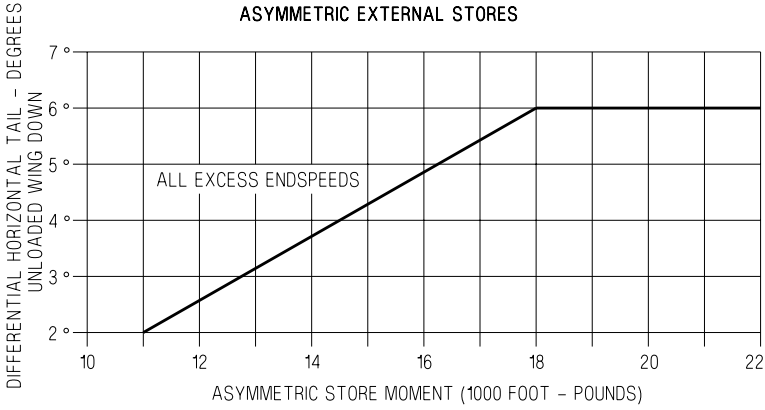
CATAPULT LONGITUDINAL TRIM

WEIGHT BOARD	NOSE UP TRIM
44,000 LBS AND BELOW	16 °
45,000 – 48,000 LBS	17 °
49,000 LBS AND ABOVE	19 °

NOTE

AIRCRAFT BEING LAUNCHED AT GROSS WEIGHTS OF 43,000 LBS AND ABOVE, SHOULD TRIM BY 3 ° NOSE UP IF ADVISED TO EXPECT 10 KNOTS OR LESS EXCESS ENDSPEED.

HALF – FLAP – MIL/MAX POWER
CATAPULT LAUNCH LATERAL TRIM REQUIREMENTS
ASYMMETRIC EXTERNAL STORES



WARNING

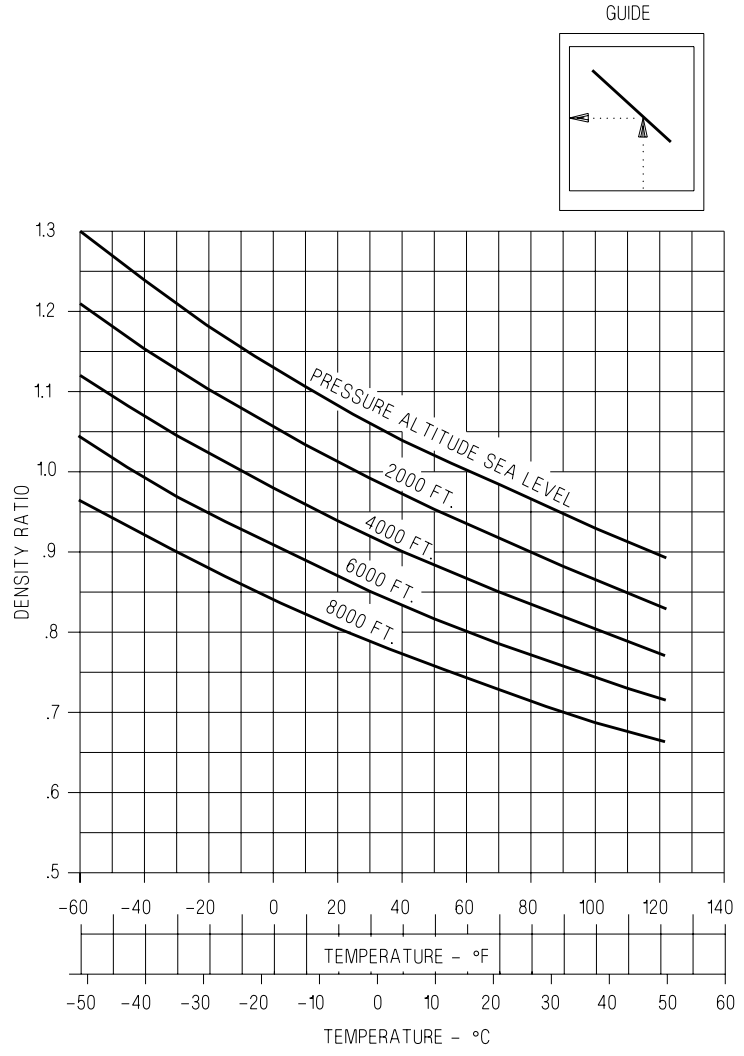
FAILURE TO INPUT DIFFERENTIAL STABILATOR TRIM FOR CATAPULT LAUNCHES WITH ASYMMETRIC STORES CAN AGGRAVATE AIRCRAFT CONTROLLABILITY.

NOTE

REDUCE DIFFERENTIAL TRIM BY 2 °
IF CARRYING A SINGLE GBU-24.

ADA524-26-1-039

Density Ratio



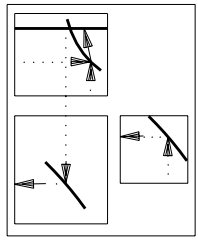
ADA524-19-1-039

Minimum Go Speed

MAXIMUM THRUST
HARD DRY RUNWAY

REMARKS
ENGINE(S): (2)F404-GE-402

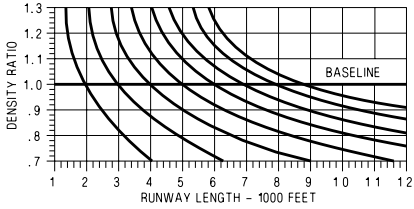
GUIDE



AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

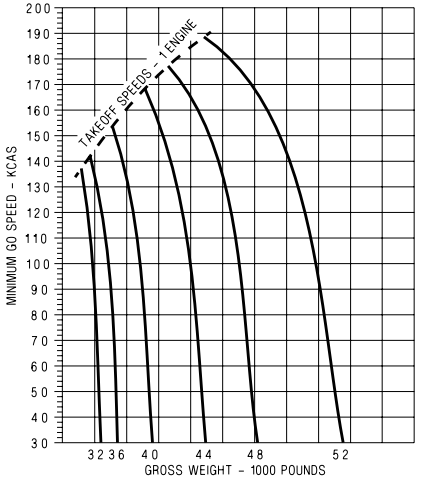
DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

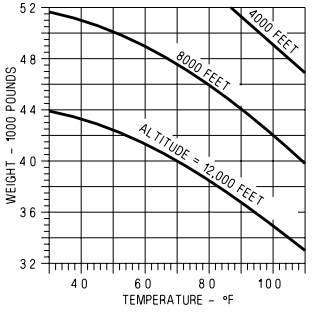
FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL



WARNING

WITH ONE ENGINE FAILED, AT HEAVY WEIGHT, HOT DAY CONDITIONS, EVEN THE USE OF MAXIMUM A/B THRUST ON THE OPERATING ENGINE MAY NOT PROVIDE SUFFICIENT RATE OF CLIMB CAPABILITY TO SAFELY CONTINUE THE TAKEOFF. UNLESS EXTERNAL STORES CAN BE SAFELY JETTISONED, TAKEOFFS AT THESE CONDITIONS, AS DETERMINED FROM THE CHART PRESENTED BELOW, SHOULD BE ABORTED.



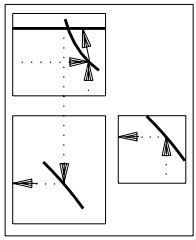


ADA524-13-1-039

Minimum Go Speed

MILITARY THRUST
HARD DRY RUNWAY

GUIDE

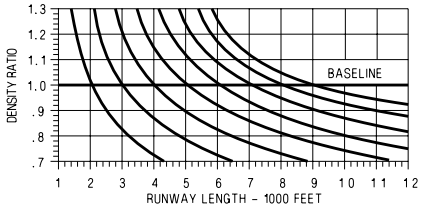


REMARKS
ENGINE(S): (2)F404-GE-402

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

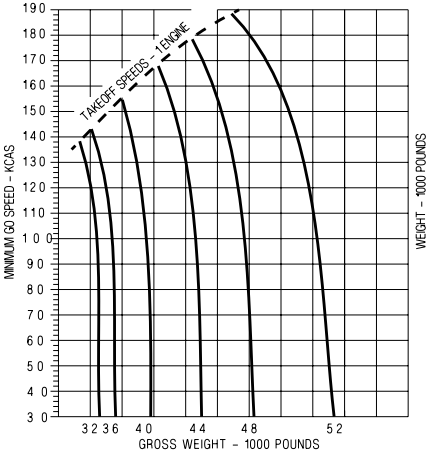
DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

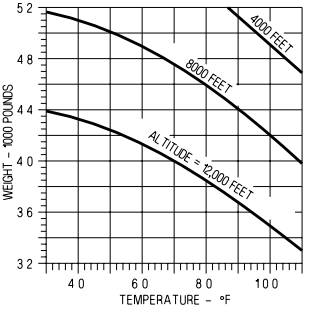
FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL



WARNING

WITH ONE ENGINE FAILED, AT HEAVY WEIGHT, HOT DAY CONDITIONS, EVEN THE USE OF MAXIMUM A/B THRUST ON THE OPERATING ENGINE MAY NOT PROVIDE SUFFICIENT RATE OF CLIMB CAPABILITY TO SAFELY CONTINUE THE TAKEOFF. UNLESS EXTERNAL STORES CAN BE SAFELY JETTISONED, TAKEOFFS AT THESE CONDITIONS, AS DETERMINED FROM THE CHART PRESENTED BELOW, SHOULD BE ABORTED.





ADA524-13-2-039

Maximum Abort Speed

MAXIMUM THRUST

REMARKS

ENGINE(S): (2)F404-GE-402

U.S. STANDARD DAY, 1962

NOTE

REMAINING ENGINE AT GROUND IDLE THRUST AFTER FAILURE RECOGNIZED.

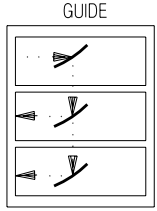
AIRCRAFT CONFIGURATION

T.E. FLAPS 30 °

GEAR DOWN

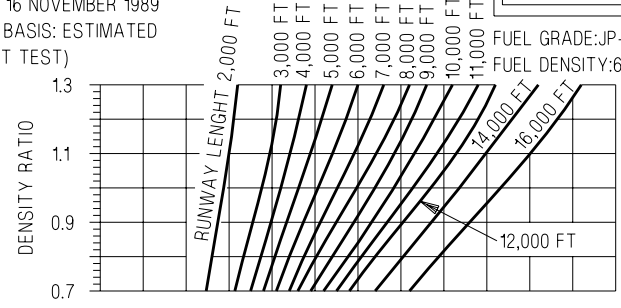
DATE: 16 NOVEMBER 1989

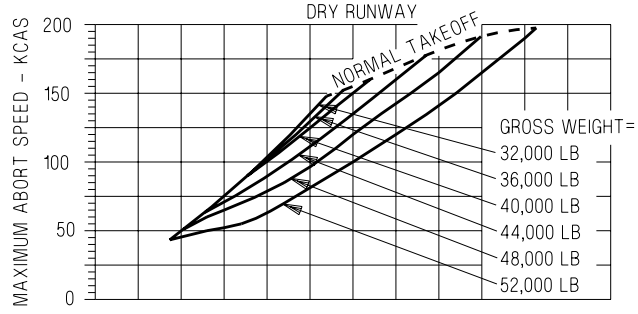
DATA BASIS: ESTIMATED (FLIGHT TEST)

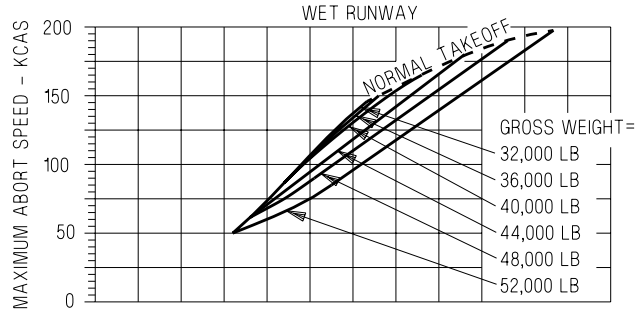


FUEL GRADE:JP-5

FUEL DENSITY:6.8LB/GAL







ADA524-14-1-039

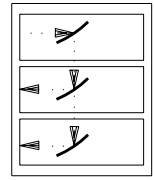
Maximum Abort Speed

MILITARY THRUST

AIRCRAFT CONFIGURATION
T.E. FLAPS 30 °
GEAR DOWN

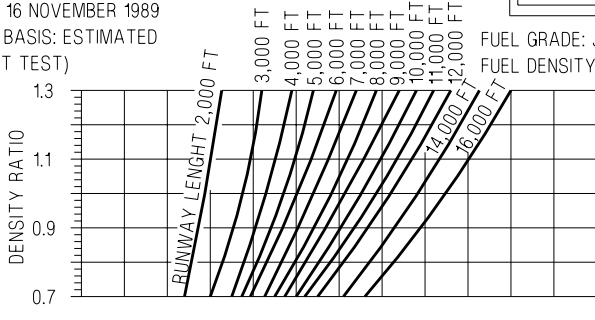
REMARKS
ENGINE(S): (2)F404-GE-402
U.S. STANDARD DAY, 1962
NOTE
REMAINING ENGINE AT GROUND IDLE
THRUST AFTER FAILURE RECOGNIZED

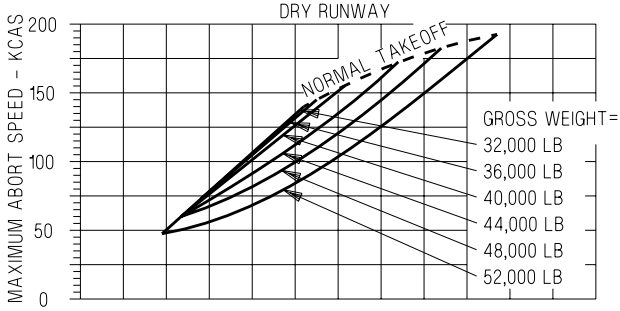
GUIDE

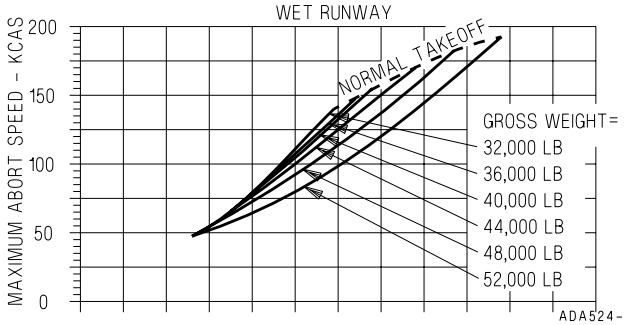


DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED
(FLIGHT TEST)

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL





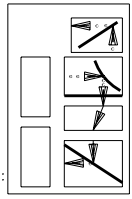


ADA524-14-2-039

Takeoff Distance

MAXIMUM THRUST
HARD DRY RUNWAY

GUIDE



AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

REMARKS

ENGINE(S): (2)F404-GE-402

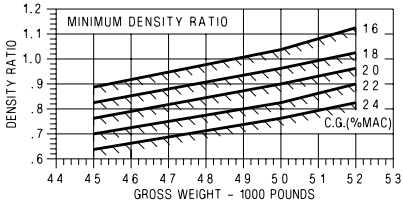
FUEL GRADE:
JP-5
FUEL DENSITY:
6.8 LB/GAL

NOTES

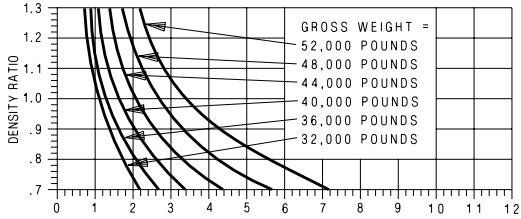
ALL TAKEOFF DISTANCES ARE FOR 10° NOSE UP INITIAL STABILATOR TRIM.

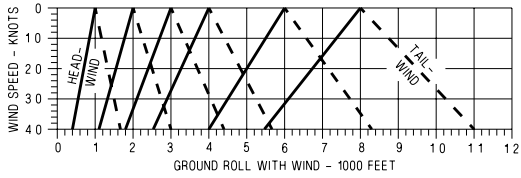
GROUND ROLL DISTANCES ARE FOR A TAKEOFF CG OF 22% MAC. FOR GROUND ROLL CORRECTION FOR OTHER CG LOCATIONS, REFER TO TAKEOFF GROUND ROLL CORRECTION FOR CG - MAXIMUM THRUST.

CHECK FOR MINIMUM DENSITY RATIO FOR TAKEOFF WEIGHT AND C.G. LOCATION.

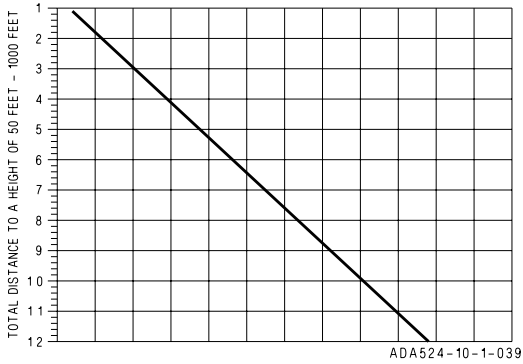


CG (%C̄)	GROSS WEIGHT - 1000 POUNDS		
	32	36	40
	NOSEWHEEL LIFT-OFF/TAKEOFF SPEEDS (KIAS)		
16	147/158	153/164	163/173
18	142/154	147/159	156/167
20	136/149	141/154	149/161
22	130/145	134/149	141/156
24	123/139	127/143	134/150
26	116/134	120/137	127/144





CG (%C̄)	GROSS WEIGHT - 1000 POUNDS		
	44	48	52
	NOSEWHEEL LIFT-OFF/TAKEOFF SPEEDS (KIAS)		
16	173/183	185/194	200/206
18	166/176	178/187	191/198
20	159/171	172/181	184/192
22	152/165	165/175	177/186
24	145/159	157/169	170/179
26	137/153	150/162	162/173



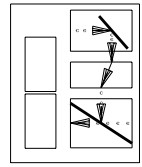
Takeoff Distance

MILITARY THRUST
HARD DRY RUNWAY

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

REMARKS
ENGINE(S): (2)F404-GE-402
U.S. STANDARD DAY, 1962

GUIDE



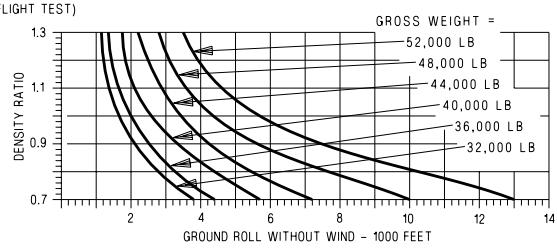
FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

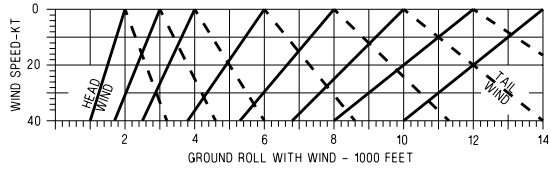
NOTES

- ALL TAKE OFF DISTANCES ARE FOR 10° NOSE UP INITIAL STABILATOR TRIM. GROUND ROLL DISTANCES ARE FOR A TAKEOFF CG OF 22% MAC.
- FOR GROUND ROLL CORRECTION FOR OTHER CG LOCATIONS, REFER TO TAKEOFF GROUND ROLL CORRECTION FOR CG-MILITARY THRUST.
- USE MAXIMUM THRUST FOR C.G. LOCATIONS BETWEEN 16% $\bar{c}$ AND 18% $\bar{c}$.

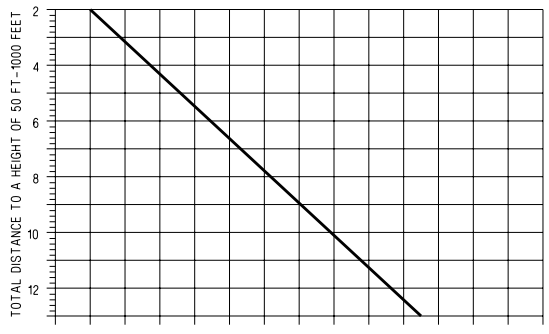
DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED (FLIGHT TEST)

CG (%$\bar{c}$)	GROSS WEIGHT - 1,000 LB		
	32	36	40
	NOSEWHEEL LIFTOFF/TAKEOFF SPEEDS - KIAS		
18	140/ 148	144/ 153	151/ 160
20	133/ 143	138/ 148	145/ 154
22	127/ 139	132/ 143	139/ 149
24	121/ 134	125/ 137	132/ 143
26	114/ 129	118/ 132	125/ 137





CG (%$\bar{c}$)	GROSS WEIGHT - 1,000 LB		
	44	48	52
	NOSEWHEEL LIFTOFF/TAKEOFF SPEEDS - KIAS		
18	161/ 169	172/ 178	183/ 188
20	154/ 163	165/ 172	176/ 182
22	148/ 157	158/ 166	170/ 175
24	141/ 151	152/ 160	163/ 169
26	134/ 144	145/ 153	156/ 163



ADA524-10-2-039

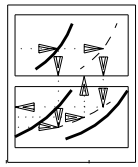
Takeoff Ground Roll Correction For CG

F404-GE-402

MAXIMUM THRUST

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

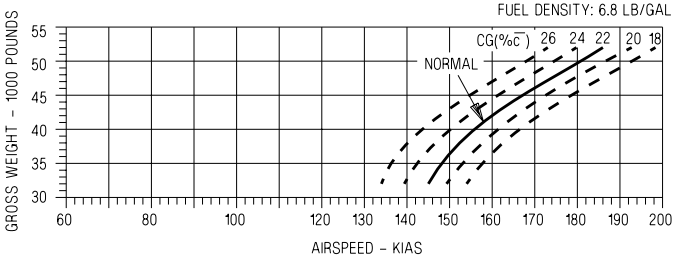
REMARKS
ENGINE(S): (2)F404-GE-402

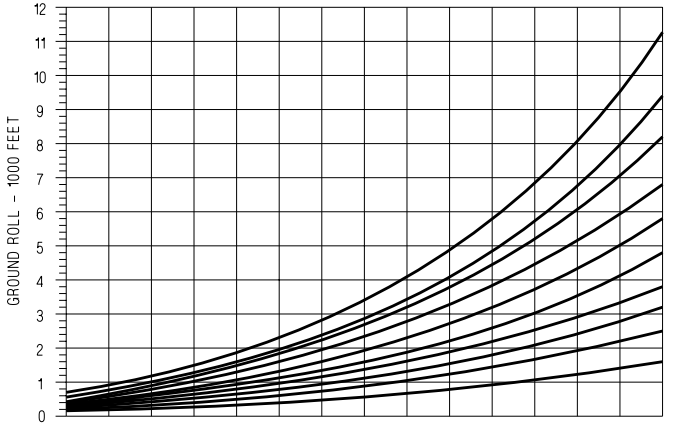


- INCREASE GROUND ROLL BY 5% PER % $\bar{c}$ FORWARD OF 18% $\bar{c}$ (FORWARD TO 16 $\bar{c}$ ONLY).

DATE: 16 NOVEMBER 1989
DATE BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL





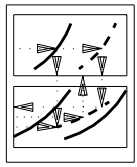
ADA524-17-2-039

Takeoff Ground Roll Correction For CG

AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

F404-GE-402
MILITARY THRUST

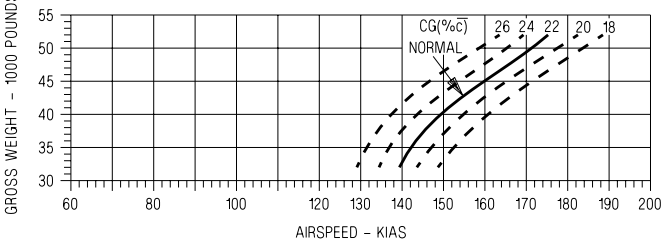
REMARKS
ENGINE(S): (2)F404-GE-402

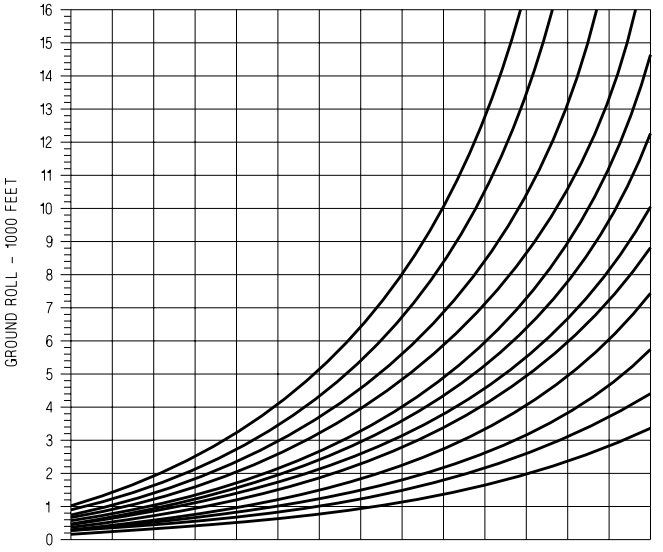


● USE MAXIMUM THRUST FOR C.G. LOCATION BETWEEN 16%$\bar{c}$ AND 18%$\bar{c}$.

DATE: 16 NOVEMBER 1989
DATE BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL





ADA524-17-1-039

Landing Approach Speed

AIRCRAFT CONFIGURATION

FLAPS AS NOTED
GEAR DOWN
SPEED BRAKE IN

REMARKS

ENGINE(S): (2)F404-GE-402
U.S. STANDARD DAY, 1962

NOTE

- C G AT 25% MAC. APPROACH SPEEDS INCREASE 1 KNOT FOR EACH 2% THE C G IS FORWARD OF 25% MAC AND DECREASE 1 KNOT FOR EACH 2% THE C G IS AFT OF 25% MAC.
- INCREASE APPROACH SPEED BY 2 KNOTS IF WINGTIP AIM-9'S ARE OFF
- INCREASE APPROACH SPEEDS BY 2 KNOTS IF EXTERNAL STORES ON.

DATE: DECEMBER 1984
DATA BASIS: FLIGHT TEST

LANDING APPROACH SPEED (KCAS)

LANDING CONFIGURATION		FULL FLAPS 8.1° AOA (Normal Landing)	HALF FLAPS 8.1° AOA (Normal Landing)
GROSS WEIGHT (LB)	24,000	117	126
	25,000	119	129
	26,000	121	131
	27,000	124	134
	28,000	126	136
	29,000	128	139
	30,000	130	141
	31,000	133	144
	32,000	135	146
	33,000	137	148
	34,000	139	151
	35,000	141	153
	36,000	143	155
	37,000	145	157
	38,000	147	159
	39,000	149	161

LANDING APPROACH SPEED

AIRCRAFT CONFIGURATION

FLAPS AS NOTED
GEAR DOWN
SPEED BRAKE IN

REMARKS

ENGINE(S): (2)F404-GE-402
U.S. STANDARD DAY, 1962

NOTE

- C G AT 25% MAC. APPROACH SPEEDS INCREASE 1 KNOT FOR EACH 2% THE C G IS FORWARD OF 25% MAC AND DECREASE 1 KNOT FOR EACH 2% THE C G IS AFT OF 25% MAC
- INCREASE APPROACH SPEED BY 2 KNOTS IF WINGTIP AIM-9'S ARE OFF
- INCREASE APPROACH SPEEDS BY 2 KNOTS IF EXTERNAL STORES ON
- MAIN GEAR TIRE LIMITATION - 210 GROUNDSPEED
- NOSE GEAR TIRE LIMITATION - 190 GROUNDSPEED

DATE: DECEMBER 1984
DATA BASIS: FLIGHT TEST

LANDING APPROACH SPEED (KCAS)

LANDING CONFIGURATION		HALF FLAPS 7.0° AOA (DEL or MECH)	HALF FLAPS 7.0° AOA 0° LEF (LEF Failure)	HALF OR FULL FLAPS - 10° AOA 0° TEF (TEF Failure)	7.0° AOA 0° LEF/0° TEF (LEF/TEF Failure)
GROSS WEIGHT (LB)	24,000	131	133	161	192
	25,000	134	135	164	196
	26,000	136	135	167	200
	27,000	139	141	170	204
	28,000	141	143	173	208
	29,000	144	146	177	212
	30,000	146	148	180	215
	31,000	149	151	183	219
	32,000	151	153	186	222
	33,000	153	156	188	226
	34,000	156	158	191	229
	35,000	158	160	194	232
	36,000	160	162	197	236
	37,000	162	165	199	239
	38,000	165	167	202	242
	39,000	167	169	205	245

Landing Distance

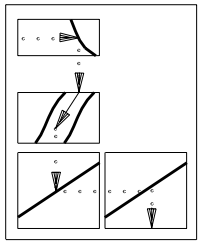
AIRCRAFT CONFIGURATION
T.E. FLAPS 30°
GEAR DOWN

IDLE THRUST

REMARKS
ENGINE(S): (2)F404-GE-402
U.S. STANDARD DAY, 1962

DATE: 15 JANUARY 1993
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

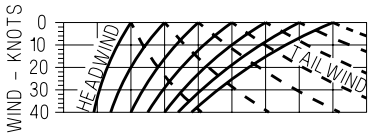
GUIDE

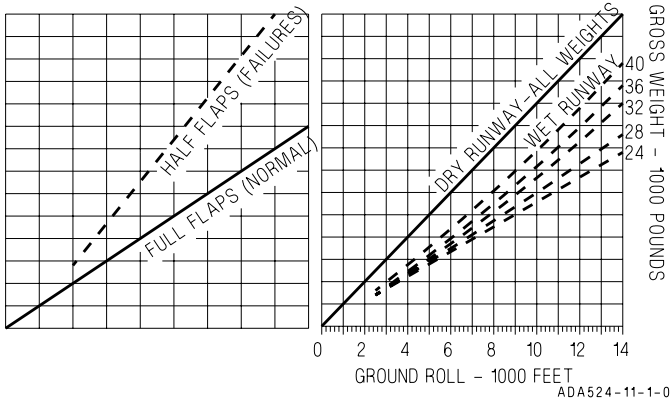


FUEL GRADE:JP-5
FUEL DENSITY:6.8 LB/GAL

NOTES

- LANDING GROUND ROLLS SHOWN CORRESPOND TO APPROACH SPEEDS FOR FULL FLAPS AND 8.1° AOA AS SHOWN ON THE LANDING APPROACH SPEED CHART. INCREASE LANDING GROUND ROLLS BY 1.6% FOR EACH KNOT THAT THE APPROACH SPEED EXCEEDS THAT SHOWN (25% CG, NO STORES) ON THE LANDING APPROACH SPEED CHART.
- FOR TOTAL LANDING DISTANCE OVER A 50 FOOT OBSTACLE ADD THE FOLLOWING DISTANCE TO THE GROUND ROLL:
  - -NO FLARE, - 4° GLIDE SLOPE: ADD 720 FEET
  - -NO FLARE, - 3.5 GLIDE SLOPE: ADD 820 FEET
  - -WITH FLARE: ADD 1200 FEET





ADA524-11-1-039

Recommended Maximum Single Engine Recovery Weight

REMARKS

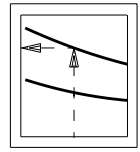
ENGINE(S): (2)404-GE-402

AIRCRAFT CONFIGURATION
HALF FLAPS
GEAR DOWN

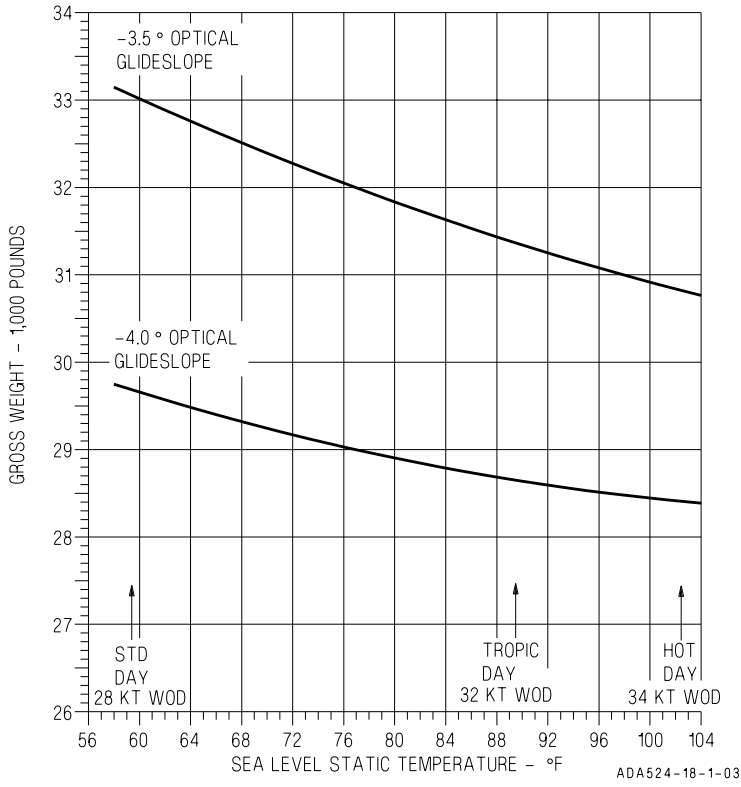
DATE: 15 JANUARY 1993
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

NOTES

- HALF FLAPS
- LANDING GEAR DOWN
- FAILED ENGINE – WINDMILLING OR SEIZED
- C.G. AT 25%MAC
- INCREASE MAX WEIGHT BY 250 LB FOR EACH 1% THE C.G. IS AFT OF 25%MAC
- DECREASE MAX WEIGHT BY 250 LB FOR EACH 1% THE C.G. IS FWD OF 25%MAC
- GREATER WOD PROVIDES IMPROVED WAVEOFF PERFORMANCE
- ADJUSTING GROSS WEIGHT AT OR BELOW THE RECOMMENDED WEIGHT ENSURES LESS THAN 50 FEET ALTITUDE LOST DURING AN ONSPEED AOA SINGLE ENGINE MILITARY POWER WAVEOFF FROM AN ONSPEED AOA/ON GLIDESLOPE CONDITION. MAXIMUM WAVEOFF ALTITUDE LOST FOR TWO ENGINE OPERATION UNDER IDENTICAL CONDITIONS IS LESS THAN 30 FEET.



FUEL GRADE: JP-5
FUEL DENSITY:
6.8 LB/GAL



INSTRUCTIONS

ENTER THE CHART WITH THE RELATIVE BEARING. MOVE ALONG THE RELATIVE BEARING TO INTERCEPT THE WIND SPEED ARC. FROM THIS POINT, DESCEND VERTICALLY TO READ THE CROSSWIND COMPONENT, FROM THIS INTERSECTION OF BEARING AND WIND SPEED, PROJECT HORIZONTALLY TO THE LEFT TO READ HEADWIND COMPONENT.

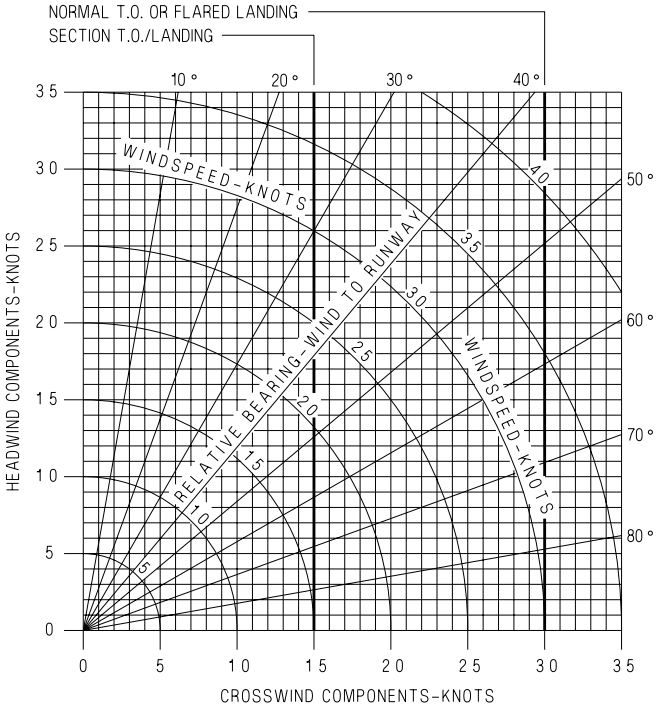
EXAMPLE

REPORTED WIND 050/35, RUNWAY HEADING 030.

A.	RELATIVE BEARING	20 °
B.	INTERSECT WINDSPEED ARC	35 KT
C.	CROSSWIND COMPONENT	12 KT
D.	HEADWIND COMPONENT	33 KT

Wind Components

CROSSWIND LIMITS:



ADA524-4-1-039

A1-F18AC-NFM-500

EMERGENCY PROCEDURES

CONFERENCE X-RAY

The telephone number for inflight emergencies is 314-232-9999.

CKPT FIRE CKPT TEMP OBOGS	1
HYDRAULIC	2
OUT-OF-CONT	3
ABORT EGRESS TO/LAND	4
GEAR TIRE BRAKE	5
ELECTRICAL	6
ENGINE FUEL	7

1 SEPTEMBER 1999
CHANGE 5 - 15 NOVEMBER 2002
FLIP TITLE

EMERGENCIES

MISCELLANEOUS

CONTINUED

WARN/CAUT/FCS/ADVIS

CKPT FIRE - OBOGS

COCKPIT SMOKE, FUMES, OR FIRE — FIRE

*1. Cabin pressure switch - RAM/DUMP
*2. Cabin temperature knob - FULL CCW
3. Maintain altitude below 25,000 feet.
4. Speed - 200 to 300 knots

If unable to clear smoke -

5. Slow and jettison canopy

If fire present -

6. All electrical equipment - OFF
7. UFC avionics - OFF
8. Required electrical equipment - ON

COCKPIT TEMPERATURE HIGH — TEMP

1. Cabin temperature knob - FULL CCW
2. ECS mode switch - MAN

If temperature still high -

3. Cabin pressure switch - RAM/DUMP
4. Maintain altitude below 25,000 feet.

If temperature not reduced -

5. Bleed air knob - OFF
6. Land as soon as practical.

OBOGS DEGD/FAILURE — OBOGS

If above 10,000 feet -

*1. Emergency oxygen green ring - PULL
*2. OXY flow knob(s) - OFF
3. OBOGS control switch - OFF
4. Maintain cabin altitude below 10,000 feet.
5. At aircrew discretion, discontinue oxygen below 10,000 feet by pressing reset lever. Remove oxygen mask.

OXYGEN LEAK

OXYGEN

1. Oxygen supply lever - OFF
2. Oxygen hose (left console) - DISCONNECT
3. Descend below 10,000 feet cockpit altitude.

HYPOXIA

OXY

HYPOX

*1. Emergency oxygen green ring - PULL
*2. Descend below 10,000 feet cabin altitude.

OBOGS Aircraft -

*3. OXY flow knob(s) - OFF
4. OBOGS control switch - OFF

1

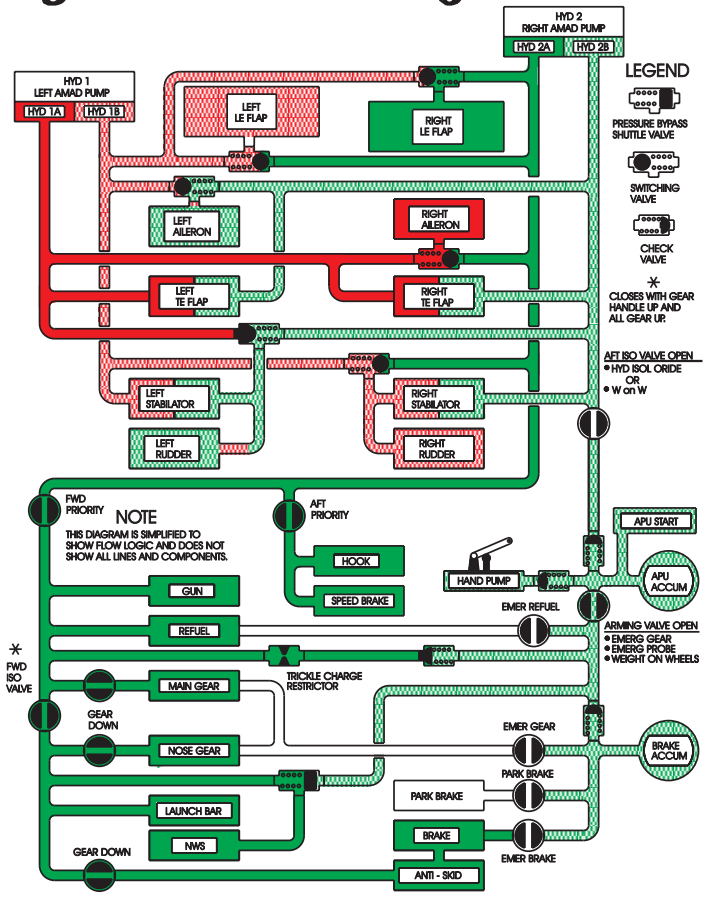
If hypoxia symptoms persist -

5. Land as soon as possible.

If hypoxia symptoms removed -

5. Maintain cabin altitude below 10,000 feet.
6. Consider removing mask and resetting emergency oxygen system once below 10,000 feet cabin altitude.
7. Land as soon as practical.

Hydraulic Flow Diagram



ADA524-8-1-039

HYD 1B FAILURE

HYD FLOW - 1B 1A+B

1. With a left LEF, CH 1 and CH 4 failure, DO NOT RESET FCS.

HYD 1A AND 1B FAILURE

CAUTION

- Prolonged use of a failed hydraulic pump without the pump shaft shearing as indicated by stabilized system pressure below 2,000 psi or fluctuations in system pressure will generate considerable heat and may result in an AMAD bay fire. Consider restarting the engine prior to landing.
- Prolonged use of a hydraulic pump without hydraulic fluid as indicated by RLS circuit caution sequencing will generate considerable heat and may result in an AMAD bay fire. Consider restarting the engine prior to landing.
- If system pressure has decreased to zero with no fluctuations, the pump shaft has probably sheared and engine shutdown is not required.
- If associated with GEN and BOOST LO cautions, may be a PTS failure

NOTE

LLEF Xs may be reset if BLIN code 67 is present in any channel.

1. Check hydraulic pressure gage.

If pressure has stabilized below 2,000 psi or is fluctuating -

OR

If failure was preceded by RLS circuit caution sequencing -

2. Left engine - OFF (If required, restart for landing.)
3. Land as soon as practical.

HYDRAULIC FAILURE (CONT) HYD

HYD 2A FAILURE

1. With a right LEF, CH 2, and CH 3 failure, do not reset FCS.
2. Select jettison all unwanted external stores prior to extending landing gear.
3. Perform emergency gear extension.
4. Refuel probe switch - EMERG EXTD (If required).
5. Make a Short Field Arrestment, if practical.

If arrested landing not practical, after landing -

6. Use Emergency Brakes.
7. Use steady brake pressure (do not pump). Consider disengaging NWS with the paddle switch on touchdown.

HYD 2A AND 2B FAILURE

CAUTION

- Prolonged use of a failed hydraulic pump without the pump shaft shearing as indicated by stabilized system pressure below 2,000 psi or fluctuations in system pressure will generate considerable heat and may result in an AMAD bay fire. Consider restarting the engine prior to landing.
- Prolonged use of a hydraulic pump without hydraulic fluid as indicated by RLS circuit caution sequencing will generate considerable heat and may result in an AMAD bay fire. Consider restarting the engine prior to landing.
- If system pressure has decreased to zero with no fluctuations, the pump shaft has probably sheared and engine shutdown is not required.
- If associated with GEN and BOOST LO cautions, may be a PTS failure.

NOTE

RLEF Xs may be reset if BLIN code 67 is present in any channel.

CONTINUED

HYD 2A AND 2B FAILURE (continued)

1. Check hydraulic pressure gage.

HYD 2A - 2A+B

If pressure has stabilized below 2,000 psi or is fluctuating -

OR

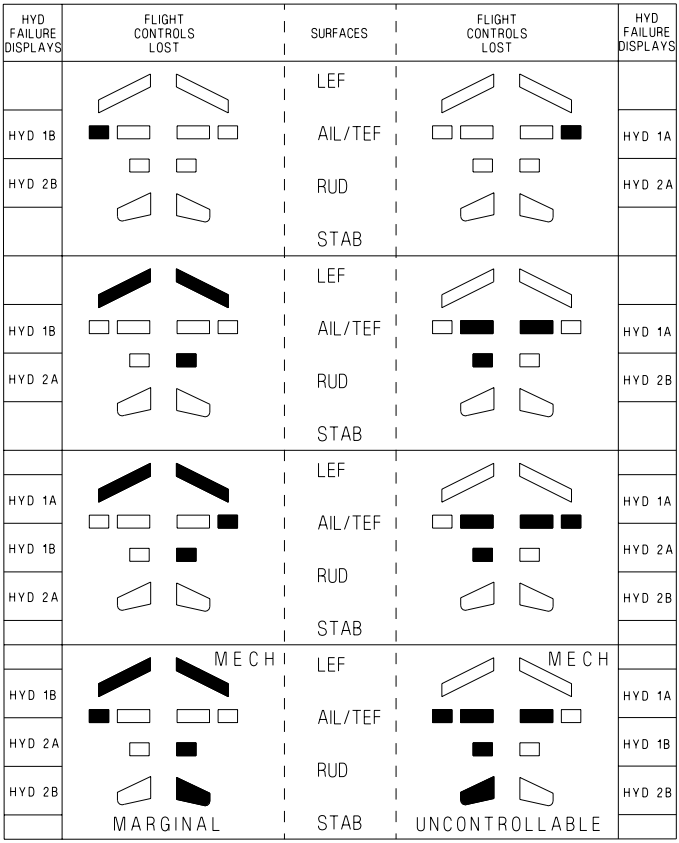
If failure was preceded by RLS circuit caution sequencing -

2. Right engine - OFF (If required, restart for landing.)
3. Select jettison all unwanted external stores prior to extending landing gear.
4. Perform emergency gear extension.
5. Make a Short Field Arrestment as soon as practical.

If arrested landing not practical, after landing -

6. Use Emergency Brakes.
7. Use steady brake pressure (do not pump). Consider disengaging NWS with the paddle switch on touchdown.

Hydraulic Subsystems Malfunction Guide



ADA524-35-1-039

OUT-OF-CONTROL CONT

RECOVERY INDICATIONS AND PROCEDURES

WARNING

Recovery is indicated when AOA and YAW rate tones are removed, side forces subside, and airspeed is accelerating above 180 knots. Failure to ensure all criteria are met may result in redeparture during recovery.

1. **''One g'' roll to the nearest horizon.**
2. **Throttles - MAX (MIL if altitude not critical)**
3. **Pull to and maintain 25° to 35° AOA until positive rate of climb established (AOA configuration dependent).**

If aircraft departs during dive recovery below 6,000 feet AGL -

4. **Eject**

DEPARTURE/FALLING LEAF RECOVERY

***1. Controls - RELEASE/FEET OFF RUDDERS/ SPEEDBRAKE IN**

If still out-of-control -

***2. Throttles - IDLE**

***3. Altitude, AOA, airspeed, and yaw rate - CHECK**

RECOV - DEPART FALL LEAF

When recovery indicated by AOA and yaw rate tones removed, side forces subsided, and airspeed accelerating above 180 knots -

***4. Recover**

Passing 6,000 feet AGL, dive recovery not initiated -

***5. Eject**

SPIN RECOVERY

Command arrow present -

*1. Lateral stick - FULL WITH ARROW

Command arrow not present -

*2. Spin recovery switch - RCVY
*3. Lateral stick - FULL WITH ARROW

When yaw rate stops -

*4. Lateral stick - SMOOTHLY NEUTRAL
*5. Spin recovery switch - CHECK NORM

SPIN RECOV - CONT CK

When recovery indicated -

*6. Recover

Passing 6,000 feet AGL, dive recovery not initiated -

*7. Eject

CONTROLLABILITY CHECK

1. Maintain 5,000 feet AGL minimum; 15,000 feet AGL if practical.
2. Consider use of half flaps.
3. Reduce speed slowly in 10 knot increments.
4. Decelerate no slower than on-speed or that speed where one-half stick or rudder deflection is required to maintain balanced flight.
5. Assess controllability.
6. Fly approach no slower than minimum controllable airspeed plus 10 knots.

UNCOMMANDED YAW/ROLL - TO/LAND CONFIG CONT

*1. RUDDER - against roll/yaw
*2. Maintain on speed AOA and balanced flight.
*3. If uncontrollable - EJECT
4. If controllable - Do not immediately reset flight controls, see applicable FCS, FCES or associated FCS caution procedures.

UNCOMMANDED PITCH AND ROLL EXCURSIONS

*1. Speedbrake - CHECK IN
*2. Decelerate slowly below 400 knots/ .8 Mach.
*3. Paddle switch - PRESS

PITCH ROLL - YAW ROLL

3

If two channel failure indications in one stabilator -

4. Pull one operating FCS channel circuit breaker.
   DO NOT RESET
5. Refer to MECH ON procedure.

If no FCS failure indications -

6. Climb to safe altitude.
7. Airspeed: below 250 knots.
8. Flaps - FULL
9. Lower gear and make controllability check.
10. If controllability permits landing - Short Field arrestment recommended.

If control unsuitable for landing -

11. Climb to safe altitude.
12. FCC circuit breakers 1, 2, and 3 - PULL
    DO NOT RESET
13. Refer to MECH ON, roll/yaw CAS inoperative procedures.

SINGLE ENGINE FAILURE IN LANDING CONFIGURATION

LAND

*1. Throttles - MIL OR MAX
*2. Maintain ON-SPEED AOA and balanced flight.
*3. Flaps - HALF
4. Make turns using shallow bank angle (less than or equal to 20°).
5. Use caution when turning into failed engine.

SINGLE ENGINE LANDING

1. Reduce gross weight.
   Refer to Recommended Maximum Single Engine Recovery Weight chart.
2. All unnecessary electrical equipment - OFF
3. When practical, maintain operating engine rpm at or above 85 % rpm. If failed engine core rotating freely, crossbleed to retain hydraulic system (failed engine feed tank fuel may not be available during crossbleed).

If LEFT ENGINE FAILED -

4. Gear - DOWN
5. Flaps - HALF
6. Land as soon as practical.

If RIGHT ENGINE FAILED and HYD 2 OPERATIVE -

4. Gear - DOWN
5. HYD ISOL switch - ORIDE FOR 10 SECONDS
6. APU - START
7. Engine crank switch - R
8. Recharge APU accumulator (hold HYD ISOL switch in ORIDE for 10 seconds after APU ACCUM caution is removed).
9. Flaps - HALF
10. Make arrested landing if practical. Do not taxi aboard ship.

CONTINUED

If arrested landing not practical -

10. Land as soon as practical.

SINGLE ENG - AUTO FLAP LAND

If RIGHT ENGINE FAILED and HYD 2 INOPERATIVE -

4. Flaps - HALF
5. Slow to 160 knots if practical
6. Gear - Emergency Extend
7. Make arrested landing, if practical. Do not taxi aboard ship.

If arrested landing not practical -

7. Land as soon as practical.
8. Use Emergency Brakes.
9. Use steady brake pressure (do not pump). Consider disengaging NWS with paddle switch on touchdown.

LANDING WITH AFT CG

If CG aft of aft CG limit -

1. Maintain airspeed below 0.7 Mach and AOA less than 10°.
2. Emergency Jettison Button - PUSH (if required)

If stores cannot be jettisoned or CG still aft of 28.0% MAC -

3. Fly straight-in ON-SPEED approach.
4. Minimize longitudinal stick motion which can result in PIO.
5. Cushion the landing with thrust if necessary.

AUTO FLAP LANDING

1. Do not exceed 10° AOA.
2. Do not slow below 154 knots.

ABORT ABORT

*1. Throttles - IDLE
*2. Speedbrake - AS DESIRED
*3. Brakes - APPLY
*4. Hook - DOWN (if required)

EGRESS EGRESS

1. Canopy - OPEN
2. Manual override handle - PRESS RELEASE BUTTON AND ROTATE AFT
3. Egress

EMERGENCY TAKEOFF T.O.

*1. Throttles - MIL or MAX
*2. Maintain ON-SPEED AOA and balanced flight
*3. Emergency Jettison Button - PUSH (If required)

EMERGENCY CATAPULT FLYAWAY

If time is available, and an emergency affecting control of the aircraft occurs during a catapult launch:
Simultaneously -

*1. Throttles - MAX
*2. Rudder - AGAINST ROLL/ YAW
*3. Emergency Jettison Button - PUSH

After rotation is complete -

*4. Maintain 10° pitch attitude with waterline symbol. Do not exceed half lateral stick deflection.

CONTINUED

WARNING

- **Lateral stick inputs in excess of half stick deflection may result in adverse yaw departure.**
- **Exceeding 10° pitch attitude may result in rapid loss of lateral-directional control. Raising flaps will result in excessive pitch attitudes and angles of attack.**

ABORT - BARR ARREST

If unable to arrest roll/yaw rates or stop settle -

***5. Eject**

WARNING

Delay in determining controllability will likely place aircraft outside the ejection envelope.

BARRICADE ARRESTMENT LAND

1. **Burn down or dump fuel as required to obtain lowest aircraft weight feasible.**
2. **External ordnance - JETTISON**
3. **External fuel tanks - JETTISON EXCEPT AS NOTED IN LANDING GEAR MALFUNCTION - LANDING GUIDE - CARRIER LANDING**
4. **Fly ON-SPEED, ON-GLIDESLOPE, ON-CENTERLINE, approach with zero drift.**
5. **At touchdown, throttles - OFF**
6. **After stop - EGRESS**

FIELD ARRESTMENT GEAR DATA

ARRESTING GEAR	AIRCRAFT GROSS WEIGHT/1000 POUNDS										MAX OFF-CENTER ENGAGEMENT (FEET)
	SHORT-FIELD LANDING (J)(K)			LONG-FIELD LANDING (L)			ABORTED TAKEOFF (A)				
	28	30	33	34	36	39	40	44	48	51.9	
	MAX ENGAGING SPEED (KNOTS GROUNDSPEED)										
E-28	175 (B)	175 (B)	175 (B)	175 (B)	175 (B)	175 (B)	175 (B)	175 (B)	175 (B)	175 (B)	40
E-28 (C)	170 (B)	170 (B)	170 (B)	170 (B)	170 (B)	170 (B)	170 (B)	170 (B)	170 (B)	160 (B)	40
M-21	150	150	150	145	145	145	135	135	135	135	10
BAK-9	160	160	160	160	160	160	160	160	160	156	30
BAK-12 (G)	160	160	160	160	160	160	160	160	159	146	50
DUAL BAK-12 (H)	152 (B)	152 (B)	152 (B)	152 (B)	152 (B)	152 (B)	152 (B)	152 (B)	152 (B)	152 (B)	30
BAK-13	160	160	160	160	160	160	160	160	160	160	40

FIELD ARREST DATA

NOTE

(A) Data provided in aborted takeoff column may be used for emergency high gross weight arrestment.

(B) Maximum engaging speed limited by aircraft limit horizontal-drag load factor (mass item limit g)

(C) Only for the E-28 systems at Keflavik and Bermuda with 920 foot tapes.

(D) Maximum engaging speed limited by arresting gear capacity, except where noted.

(E) Off center engagement into an E-5 system may not exceed 25 % of the runway span.

(F) Before making an E-5 system arrestment, the pilot must check with the air station to confirm the maximum engaging speed because of a possible installation with less than minimum required rated chain length. Chain length ratings are referenced in Flight Information Publication (IFR-SUPPLEMENT).

(G) Standard BAX-12 limits are based on 150 foot span, 1 inch cross deck pendant, 40,000 pound weight setting, and 950 foot runout. No information available regarding applicability to other configurations.

(H) Dual BAK-12 limits are based on 150 to 300 foot span, 1-1/4 inch cross deck pendant, 50,000 pound weight setting, and 1,200 foot runout. No information available regarding applicability to other configurations.

(J) Maximum of 3.0° glide slope.

(K) Consult appropriate NATOPS section for recommended approach speed.

(L) Flared or minimum rate of descent landing.

(M) The E-5 system data provided for long-field landing may be used for light weight takeoff.

Malfunction	NATOPS pages NFM-000/500	Pull Fwd	Next Avail	Normal	Divert	Notes
ENGINES						
Bleed Warning	V-12-2/ E55	X				1,2,3,9,11
Engine Fire	V-15-3/ E57	X				1,2,9,11
Runaway Engine	V-15-1/ E43	X				1,2,9,11
Single Engine	V-16-2/ E14	X				1,2,9,11
Engine Stall	V-15-3/ E45		X			1,2,9,11
AMAD Caution	V-15-25/ E60		X			10
AMAD PR Caution	V-15-25/ E60		X			
ATS	V-12-6/ E61		X			11
Bleed Off Caution	V-12-7/ E63		X			
Oil Pressure	V-12-16/ E76		X			11
Inlet Temp	V-12-13/ E74		X			
Boost Lo	V-12-8/ E64		X			10,11
FUEL						
Fuel Leak	V-15-14/ E52	X				4
Dump Open	V-15-17/ E67	X				4
Fuel Lo	V-12-10/ E69	X				4
Fuel Transfer	V-15-15/ E69		X			4
CG Caution	V-16-14/ E65		X			4
Tank Press	V-12-17/ E78			X		4
HYDRAULIC						
Single HYD system failure	V-15-9/ E3	X				1,2,9,11
2A/1B	V-15-8/ E70	X			X	1,2,7,9
APU Accum	V-12-5/ E60		X			2,9
Brake Accum	V-12-8/ E64		X			2,9
Single HYD circuit	V-15-9/ E70		X			2,9
1A/2B	V-12-12/ E70				X	1,2,7,11
ELECTRICAL						
Dual Gen fail	V-15-18/ E32	X				2,5,6,8
Single Gen	V-12-11/ E69		X			
Dual T/R failure	V-15-18/ E32		X			
ADC failure	I-2-141/ -/ -		X			
E/U BATT LO	V-12-7/ E62		X			
Caution Degd	V-12-8/ E65		X			
FCS						
FCS Hot	V-12-20/ E82	X				
Aileron/RUD Off	V-12-19/23/ E80/87		X			6,8
DEL	V-12-19,V-15-43/ E80		X			6,8
Flaps Off	V-12-21,V-15-48/ E80		X			6,7
Flap Sched	V-12-18,V-15-49/ E83		X			
MECH On	V-12-22,V-15-47/ E84				X	6,8
FCES	V-12-20/ E81		X			
FC AIR DAT	V-12-20,V-15-41/ E81		X			

Malfunction	NATOPS pages NFM-000/500	Pull Fwd	Next Avail	Normal	Divert	Notes
MISCELLANEOUS						
Blown tire	V-16-11/ E30		X			2
Birdstrike	V-15-41/-/ -		X			1,11
Launch Bar	V-14-1/ E59		X			2
Planing Link	V-13-3, V-16-6/ E21		X			2
SDC failure	I-2-107/-/ -		X			
Landing gear	V-16-7/ E23		X			
OBOGS	V-15-26/ E1		X			

NOTES :

1. Aircraft will be flying a half flap straight-in. Approach speed will be higher, therefore wind over the deck requirements will increase. Consult applicable ARB for details. Possibility of malfunction affecting other engine. Ensure all possible effort is made to recover the aircraft immediately.
2. Aircraft may require a tow out of the landing area.
3. If light extinguished when NATOPS procedures applied, recover at next available recovery.
4. Immediate tanking required if any delay in recovery exists.
5. Pilot will be unable to fold wings upon landing.
6. Fly half flap approach. Handling characteristics are severly degraded.
7. If LEF > 10 °, recover next available recovery. If LEF < 10° or TEF at 0°, excessive airspeed and/or AOA may require divert.
8. If ailerons and rudder are inoperative, aircraft must divert, or eject.
9. For HYD 2A failure, landing gear will be emergency extended and aircraft will be committed to a dirty bingo if unable to recover. Consider bingo options before extending landing gear.
10. Problem could be symptomatic of a fuel leak. If so, immediate recovery is required.
11. Consideration should be given to aircraft configuration and outside air temperature prior to recovery. In hot weather, divert should be first option due to poor hot weather single engine wave off capability.

CV Recovery Data

WARNING

The aircraft should be ditched only when ejection has failed.

Duties before impact -

1. Make radio distress call.
2. IFF - EMERGENCY
3. Emergency Jettison Button - PUSH
4. Landing Gear - UP
5. Flaps - DOWN
6. Arresting hook - DOWN
7. Visor - DOWN
8. Oxygen mask - TIGHTEN
9. Lower seat, assume position for ditching (feet on rudder pedals, knees flexed).
10. Shoulder harness - LOCK
11. Canopy - JETTISON
12. Fly parallel to swell pattern.
13. Attempt to touch down along wave crest.
14. Throttles - OFF BEFORE IMPACT

Duties after impact -

1. Manual override handle - PRESS BUTTON AND ROTATE AFT AND UP
2. Shoulder Harness - RELEASE
3. Emergency oxygen - ACTIVATE
4. Stand up straight without twisting to release survival kit sticker clips from the seat.
5. Abandon aircraft.
6. If the LPU has not automatically inflated - INFLATE
7. Deploy survival kit and inflate liferaft.

LANDING GEAR FAILS TO RETRACT

GEAR

If gear handle will not move up -

1. **Do not use override. May be an indication of a WOW system failure. Refer to WOW failure.**

If gear handle up -

1. **Gear handle - DOWN**
2. **Do not cycle landing gear.**
3. **Landing gear circuit breaker - Attempt RESET (if out)**
4. **Check for planing link failure.**

If brakes fail -

5. **Use emergency brakes.**

WOW FAILURE

CAUTION

An uncommanded pitch up after takeoff may occur if a WOW system failure results in the aircraft sensing WOW while inflight. Above 180 knots, full forward stick alone will not stop aircraft nose up rotation, so nose down trim will be required to regain control of the aircraft.

A WOW system failure resulting in the aircraft sensing WOW while inflight may also result in the following conditions:

- **Emergency and selective store jettison may be disabled.**
- **The FUEL DUMP switch may have to be manually held on to dump fuel.**
- **AOA indexer lights and approach lights may be disabled.**
- **Automatic throttle control may be disabled.**
- **The internal and external fuel tanks may be depressurized. External fuel transfer can be initiated by selecting ORIDE on the EXT TANKS switches.**

CONTINUED

- **Autopilot may be disabled.**
- **The inflight idle throttle stop may be retracted, allowing the throttles to be moved to the ground idle position.**
- **The speedbrake may not automatically retract with flaps HALF or FULL.**
- **Pitot-static and AOA probe heating may be disabled unless PITOT ANTI ICE is selected ON.**
- **Total temperature probe heating may be disabled.**

L/G NOT UP - P/LINK FAIL

PLANING LINK FAILURE

If detected on touchdown -

***1. Execute Loss Of Directional Control On Ground procedure**

2. Do not taxi

If detected airborne -

1. Do not cycle gear

2. Anti-skid - OFF

3. Make a fly-in arrestment with LSO assistance (if available)

If arresting gear not available -

3. Make a minimum sink rate landing. Avoid braking until as slow as practical or until needed to prevent loss of directional control.

4. Brake using the good gear and maintain directional control with nosewheel steering

5. Use symmetrical braking only if necessary to avoid departing the runway

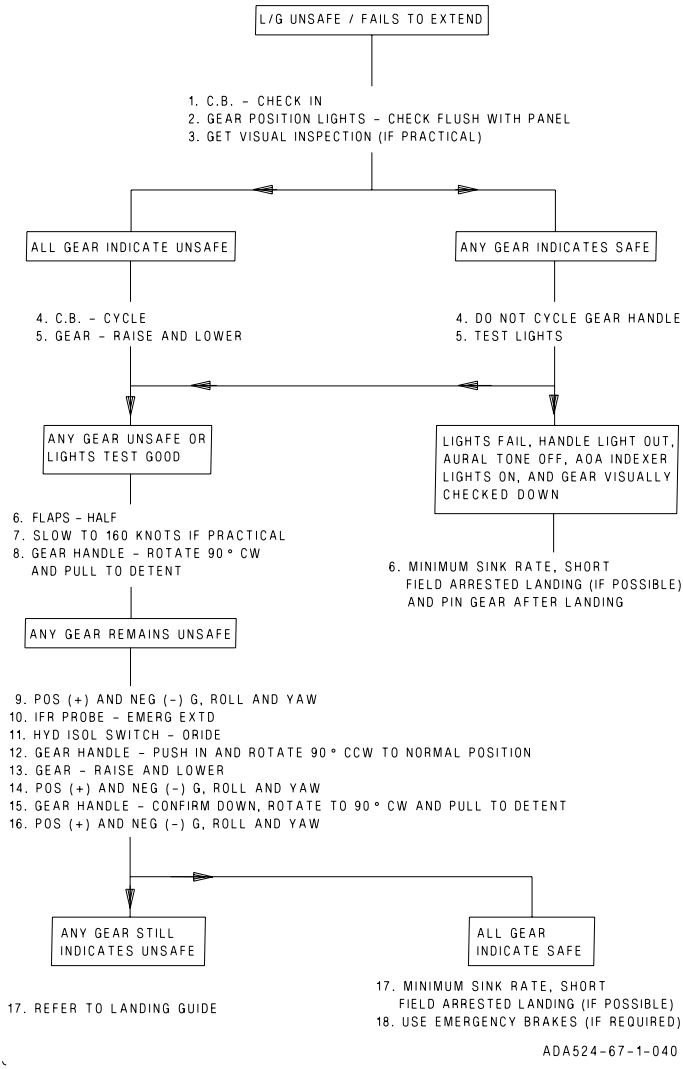
WARNING

- Use of wheel brakes with a planing link failure may cause a sudden swerve in the direction of the failed gear.

- The ability to maintain directional control with braking on the appropriate side, NWS, and rudder will rapidly decrease as the aircraft decelerates on rollout.

6. Do not taxi

Landing Gear Emergency Flow Chart



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LANDING GEAR UNSAFE/FAILS TO EXTEND

GEAR

GEAR FAIL

1. Landing gear circuit breaker - CHECK IN
2. Gear position lights - CHECK FLUSH WITH PANEL
3. Get visual inspection (if practical).

If all gear indicate unsafe -

4. Landing gear circuit breaker - CYCLE
5. Landing gear - RAISE AND LOWER

If any gear indicates safe (green position light) -

4. Do not cycle landing gear handle.
5. Lights test switch - HOLD IN TEST, VERIFY 3 GREEN, GEAR HANDLE LIGHT ON

If gear position light failed, gear handle light out, aural warning tone off, AOA indexer lights on, and all gear visually appear down -

6. Make minimum sink rate short field arrested landing (if available), pin gear after landing.

If any gear indicates unsafe or if gear lights test good -

6. Flaps - HALF
7. Slow to 160 knots if practical
8. Landing gear handle - ROTATE 90° CLOCKWISE, PULL TO DETENT

CONTINUED

LANDING GEAR UNSAFE/FAILS TO EXTEND (CONT) GEAR

If any gear remains unsafe -

9. Perform positive and negative g maneuvers and gently roll and yaw aircraft to obtain safe gear indication.
10. IFR probe switch - EMERG EXTD
11. HYD ISOL switch - ORIDE
12. Landing gear handle - PUSH IN, ROTATE 90° COUNTERCLOCKWISE TO NORMAL POSITION
13. Landing gear - RAISE AND LOWER (HYD 2A Operative)
14. Perform positive and negative g maneuvers and gently roll and yaw aircraft to obtain safe gear indication.
15. Landing gear handle - CONFIRM DOWN, ROTATE 90° CLOCKWISE, PULL TO DETENT
16. Perform positive and negative g maneuvers and gently roll and yaw aircraft to obtain safe gear indication.

If any gear still unsafe -

17. Refer to Landing Gear Malfunction - Landing Gear chart

If all gear indicate safe -

17. Make minimum sink rate short field arrested landing (if available).
18. If brakes fail, use emergency brakes.

LANDING GEAR EMERGENCY EXTENSION — GEAR

1. Flaps - HALF or FULL

To extend landing gear -

2. Slow to 160 knots if practical
3. Landing gear handle - DOWN, ROTATE 90° CLOCKWISE, PULL TO DETENT
4. Make a short Field Arrestment (if practical)

If arrested landing not practical, after landing -

EMER EXTEN - HOOK

4. Use Emergency Brakes

HOOK FAILS TO EXTEND — HOOK

If hook will not extend -

1. Hook circuit breaker - PULL

If hook still will not extend CV -

2. Divert

If arrested landing required -

2. Shut down right engine, restart for landing

Landing Gear Malfunction Landing Guide

CARRIER LANDING

- ANY GEAR NOT LOCKED DOWN SHALL BE TREATED AS THOUGH IT WERE UP.
- IF ALL GEAR UNLOCKED, RETRACT GEAR AND REFER TO ALL GEAR UP.
- WITH PLANING LINK FAILURE, DO NOT CYCLE GEAR, MAKE NORMAL ARRESTMENT.
- OBTAIN VISUAL INSPECTION FOR ALL LANDING GEAR EMERGENCIES IF POSSIBLE.

LANDING GEAR CONFIGURATION	ACTION	NOTES
 NLG UP, STUB OR TRAILING	DIVERT OR BARRICADE	1, 2, 3
 ONE MLG RETRACTED OR TRAILING	DIVERT OR BARRICADE	1, 2, 4
 COCKED NOSE GEAR AND/OR ONE OR BOTH COCKED MAIN GEAR	NORMAL LANDING	2
 ONE OR BOTH MLG STUB	DIVERT OR BARRICADE	1, 2, 3

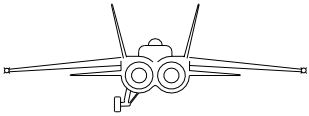
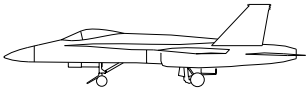
NOTES

1. JETTISON ALL EXTERNAL ORDNANCE.
2. RETAIN AND DEPRESSURIZE EMPTY EXTERNAL FUEL TANKS.
3. HOOK DOWN BARRICADE ENGAGEMENT WITHOUT CROSS DECK PENDANTS.
4. HOOK DOWN BARRICADE ENGAGEMENT WITH CROSS DECK PENDANTS.

Landing Gear Malfunction Landing Guide

CARRIER LANDING

- ANY GEAR NOT LOCKED DOWN SHALL BE TREATED AS THOUGH IT WERE UP.
- IF ALL GEAR UNLOCKED, RETRACT GEAR AND REFER TO ALL GEAR UP.
- WITH PLANING LINK FAILURE, DO NOT CYCLE GEAR, MAKE NORMAL ARRESTMENT.
- OBTAIN VISUAL INSPECTION FOR ALL LANDING GEAR EMERGENCIES IF POSSIBLE.

LANDING GEAR CONFIGURATION	ACTION	NOTES
 NLG & ONE MLG UP OR TRAILING	RETRACT ALL GEAR. IF UNABLE TO RETRACT, EJECT	
 BOTH MLG UP	DIVERT OR BARRICADE	1, 2, 4
 ALL GEAR UP	DIVERT OR BARRICADE WITH TANKS INSTALLED ONLY OR EJECT	1, 2, 4
 LAUNCH BAR DOWN OR RED LAUNCH BAR LIGHT ILLUMINATED	DIVERT OR REMOVE CDP'S 1 AND 4 AND MAKE NORMAL LANDING	

NOTES

1. JETTISON ALL EXTERNAL ORDNANCE.
2. RETAIN AND DEPRESSURIZE EMPTY EXTERNAL FUEL TANKS.
3. HOOK DOWN BARRICADE ENGAGEMENT WITHOUT CROSS DECK PENDANT.
4. HOOK DOWN BARRICADE ENGAGEMENT WITH CROSS DECK PENDANT.

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CV LAND GUIDE

Landing Gear Malfunction Landing Guide

FIELD LANDING

- ANY GEAR NOT LOCKED DOWN SHALL BE TREATED AS THOUGH IT WERE UP.
- IF ALL GEAR UNLOCKED, RETRACT GEAR AND REFER TO ALL GEAR UP.
- WITH PLANING LINK FAILURE, DO NOT CYCLE GEAR. MAKE FLY-IN ARRESTMENT.
- OBTAIN VISUAL INSPECTION FOR ALL LANDING GEAR EMERGENCIES IF POSSIBLE.
- FOR ALL EMERGENCIES, REQUEST LSO ASSISTANCE IF AVAILABLE.

LANDING GEAR CONFIGURATION	ARRESTING GEAR		NO ARRESTING GEAR	
	ACTION	NOTES	ACTION	NOTES
 NLG UP, STUB OR TRAILING	NO ARRESTED LANDING REMOVE CDP	1, 2, 3, 4, 5	LAND	1, 2, 3, 4, 5
 ONE MLG RETRACTED OR TRAILING	MAKE ARRESTED LANDING	1, 2, 3, 6	LAND	1, 2, 3, 7, 8, 9, 10
 COCKED NOSE GEAR AND/OR ONE OR BOTH COCKED MAIN GEAR	MAKE ARRESTED LANDING	2	LAND	2
 ONE OR BOTH MLG STUB	NO ARRESTED LANDING REMOVE CDP	1, 2, 3, 7, 8, 9, 10	LAND	1, 2, 3, 7, 8, 9, 10

NOTES

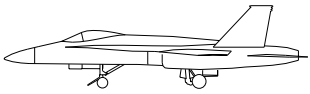
1. JETTISON ALL EXTERNAL ORDNANCE.
2. RETAIN AND DEPRESSURIZE EMPTY EXTERNAL FUEL TANKS.
3. MINIMUM DESCENT RATE LANDING.
4. LOWER NOSE GENTLY BEFORE FALL THROUGH.
5. SECURE ENGINES IF ANY GEAR RETRACTS OR COLLAPSES ON TOUCHDOWN.
6. HOLD MISSING/DAMAGED GEAR OFF DECK UNTIL ENGAGEMENT.
7. ANTI-SKID OFF.
8. LAND ON SIDE OF RUNWAY TOWARD GOOD GEAR.
9. HOLD WINGS LEVEL AS LONG AS POSSIBLE.
10. USE NOSEWHEEL STEERING AND GOOD BRAKE TO MAINTAIN TRACK.

ADA524-66-3-039

Landing Gear Malfunction Landing Guide

FIELD LANDING

- ANY GEAR NOT LOCKED DOWN SHALL BE TREATED AS THOUGH IT WERE UP.
- IF ALL GEAR UNLOCKED, RETRACT GEAR AND REFER TO ALL GEAR UP.
- WITH PLANING LINK FAILURE, DO NOT CYCLE GEAR. MAKE FLY-IN ARRESTMENT.
- OBTAIN VISUAL INSPECTION FOR ALL LANDING GEAR EMERGENCCIES IF POSSIBLE.
- FOR ALL EMERGENCIES, REQUEST LSO ASSISTANCE IF AVAILABLE.

LANDING GEAR CONFIGURATION	ARRESTING GEAR		NO ARRESTING GEAR	
	ACTION	NOTES	ACTION	NOTES
 NLG & ONE MLG UP OR TRAILING	RETRACT ALL GEAR. IF UNABLE TO RETRACT, EJECT		RETRACT ALL GEAR. IF UNABLE TO RETRACT, EJECT	
 BOTH MLG UP OR TRAILING	MAKE ARRESTED LANDING	1, 2, 5 9	LAND	1, 2, 5 9
 ALL GEAR UP	NO ARRESTED LANDING REMOVE CDP	1, 2, 5 9	LAND	1, 2, 3 5, 9
 LAUNCH BAR DOWN OR RED LAUNCH BAR LIGHT ILLUMINATED	NO ARRESTED LANDING REMOVE CDP		LAND	

NOTES

1. JETTISON ALL EXTERNAL ORDNANCE.
2. RETAIN AND DEPRESSURIZE EMPTY EXTERNAL FUEL TANKS.
3. MINIMUM DESCENT RATE LANDING.
4. LOWER NOSE GENTLY BEFORE FALL THROUGH.
5. SECURE ENGINES AT AIRCRAFT CONTACT.
6. HOLD MISSING/DAMAGED GEAR OFF DECK UNTIL ENGAGEMENT.
7. ANTI-SKID OFF.
8. LAND ON SIDE OF RUNWAY TOWARD GOOD GEAR.
9. HOLD WINGS LEVEL AS LONG AS POSSIBLE.
10. USE NOSEWHEEL STEERING AND GOOD BRAKE TO MAINTAIN TRACK.

ADA524-66-4-039

FIELD LAND GUIDE

BLOWN TIRE ON TAKEOFF/ LANDING

TIRE

*1. Execute Loss Of Directional Control On Ground procedure

If takeoff is continued -

2. Engine instruments - MONITOR
3. Refer to Landing With Blown Tire procedure

If decision to stop is made -

2. Do not retract flaps
3. Do not taxi

LANDING WITH BLOWN TIRE

1. ANTI SKID SW - OFF
2. Make a Short Field Arrestment.

EMERGENCY BRAKES

*1. Brakes - RELEASE
*2. Emergency brake handle - PULL TO DETENT
*3. Brakes - APPLY

BRAKE PROBLEM

*1. Execute Loss Of Directional Control On Ground procedure

LOSS OF DIRECTIONAL CONTROL ON GROUND

If decision to takeoff is made -

*1. Execute Emergency Takeoff procedure

If decision to stop is made -

*1. Throttles - IDLE

If nosewheel steering failure is suspected -

*2. Paddle switch - PRESS

If directional control problem remains -

*3. Nosewheel steering - ENGAGE (with rudder pedals centered)
*4. Emergency brakes - SELECT
*5. Use judicious braking on appropriate side
*6. Hook - DOWN (if required)

DOUBLE GENERATOR OR DOUBLE TR FAILURE

ELEC

***1. BATT SW caution light - CHECK ON**

If light not on -

***2. Battery switch - ORIDE**

OBOGS equipped aircraft above 10,000 ft -

***3. Emergency oxygen green ring - PULL**

***4. OXY flow knob(s) - OFF**

All aircraft -

5. Radar - OFF

6. Generator switches - CYCLE (double generator failure)

7. Conserve battery power.

8. Land as soon as possible.

9. If FCS CHAN 1 and 2 circuit breakers pulled - BEFORE LANDING RESET CIRCUIT BREAKERS SIMULTANEOUSLY - WAIT 30 SECONDS - PRESS FCS RESET BUTTON.

10. Refer to Landing Gear Emergency Extension procedure.

11. Make a Short Field Arrested Landing (if available).

12. Use emergency brakes.

CSC MUX FAILURE

The following will be lost with a CSC MUX failure:

- Radar Altimeter/GPWS
- Voice Alerts/Warnings
- Radio Control (Channel control only thru UFC backup)
- Tacan
- Radar Beacon
- SDC Reset function
- IFF (and inherently M4, i.e. reply, caution, etc.)
- Lock/Shoot lights
- TACTS functions
- ILS Control Degrade (ILS can only be selected by the ILS/DL switch on the left console)
- EMCON control (will not be able to go into EMCON)

LOSS OF D.C. ESSENTIAL BUS ELEC

A loss of the DC essential BUS will be indicated by disassociated failures and warnings of the DC essential equipment without loss of other AC/DC equipment. This failure is characterized by the following indications:

GEN LOSS - DC BUS

FCCA 1 and 2 X'd out
Fire extinguisher READY light on
L and R OIL PR cautions
UHF 1 and 2 inoperative
Fuel dump inoperative
Landing gear position lights inoperative
Hook position light inoperative
NWS caution
SPN RCVY light on
FC AIR DAT caution
BINGO caution

If a loss of the DC essential BUS is suspected -

1. **Battery switch - ORIDE (Battery remains charged)**

If DC Essential Power not restored -

2. **Battery Switch - ON**
3. **Land as soon as practical.**

NOTE

APU and crossbleed are not available

Emergency Power Distribution
BOTH GENERATORS INOPERATIVE
BATTERIES IN HIGH STATE OF CHARGE

OPERATIVE EQUIPMENT

ENGINE
- ★A/B ignition
- ★Anti-icing
- APU ready light
- APU start
- Bleed air leak detectors
- ★Engine ignition
- 9 Engine monitor indicator
- Engine start
- Fire detectors and extinguishers
- Fuel dump
- 10 Integrated Fuel Engine Indicator (RPM and EGT and Fuel quantity with MODE button pushed)
- ★Internal fuel transfer

FLIGHT CONTROLS
- CAS
- DEL (direct electrical link)
- FCS CH1 and 2
- Flaps
- Flap position indicator
- Manual flight control mode select actuator (ratio changer)
- Pitch trim actuator

FLIGHT INSTRUMENTS
- ★Standby airspeed/mach indicator(s)
- ★Standby altimeter(s)
- Standby attitude reference indicator(s)
- ★Standby rate-of-climb indicator(s)
- Standby turn needle(s)

LIGHTING EQUIPMENT
- Caution lights panel (less GEN and FUEL LO level LTS)
- 1 Emergency instrument light
- Master caution light(s)
- 11 NVG floodlights
- Utility floodlight(s)

NAVIGATION EQUIPMENT
- 6 COMM 1 R/T
- IFF (EMERG)

OTHER
- ★Arresting hook extension
- Canopy
- Emergency air refueling
- Emergency jettison
- FCS ram air selection
- 2 Intercom
- ★Landing gear (emergency system)
- Landing gear position indicator
- Voice alerts (APU fire, engine fire, bleed air)

★Equipment still operative after batteries depleted.

1 F/A-18A and FWD CKPT of F/A-18B only.
2 F/A-18B.
3 161702 AND UP.
4 161353 thru 161528.
5 Back-up mode operative only
6 Freq. selection lost. Will operate on last selected freq. Guard transmit-receive can be selected by COM G XMT switch.
7 Failure of stations 1 thru 4 will not be indicated on DDI until SMS attempts to communicate with failed stations
8 Radar cooling lost in high temp ram air flight.
9 161353 thru 163175.
10 163427 AND UP.
11 163985 AND UP.
12 161353 thru 164068.
13 164196 AND UP.
14 165171 AND UP
16 After AFC 231 or AFC 232
17 After AFC 244

Emergency Power Distribution
BOTH GENERATORS INOPERATIVE
BATTERIES IN HIGH STATE OF CHARGE

INOPERATIVE EQUIPMENT

ENGINE
- Anti-ice control
- Bleed air system
- External fuel transfer
- FUEL LO warning light
- Fuel tank pressure light
- [9] Fuel quantity
- Inlet duct doors
- Inlet ice detector
- [10] Integrated Fuel Engine Indicator (all functions except RPM, EGT, and Fuel quantity with MODE button pushed)
- Internal fuel tank pressurization
- Internal wing fuel inhibit
- N_H lockup
- Throttle boost
- Wing diverter valves

EMER PWR

FLIGHT CONTROLS
- Autopilot
- FCS CH 3 and 4
- Speedbrake
- Speedbrake advisory light

FLIGHT INSTRUMENTS
- AOA indexer lights
- HUD
- Left and right pitot heaters

LIGHTING EQUIPMENT
- Approach lights
- Caution/advisory displays
- Console lights
- Flood lights
- Formation lights
- GEN caution lights
- Instrument lights
- Landing/taxi lights
- Lights test sw
- Position lights
- Strobe lights

NAVIGATION EQUIPMENT
- ADF
- COMM 2 R/T
- [11] DMS
- [16] EGI
- RADAR altimeter
- [14] GPS
- IFF
- ILS
- INS
- KY-58
- Radar beacon
- TACAN

OTHER
- Air refueling light and normal probe extension
- Anti-skid
- Arresting hook retraction
- [17] ATARS
- Battery charger(s)
- Cabin ram air selection
- Cockpit DDI/HI's/MPCD
- Data link
- Hook warning light
- Hydraulic pressure indicator
- Landing gear (normal system)
- Landing gear (warning tone)
- Master caution tone
- Nosewheel steering
- [13] OBOGS
- [13] OBOGS monitor
- [12] Oxygen gage
- Radar
- [3] ALR-67 radar warn rcvr
- Selective jettison
- Voice alerts (altitude, bingo, check gear, engine, fuel low, flight computer hot, flight controls, mode 4 reply, power, pull up, roll out)
- [3] Video tape recorder
- Weapons fire/launch/release
- Windshield anti-ice/rain removal

Emergency Power Distribution

BOTH TRANSFORMER-RECTIFIERS INOPERATIVE
BOTH GENERATORS OPERATIVE
BATTERIES IN HIGH STATE OF CHARGE

OPERATIVE EQUIPMENT

ENGINE
- ★A/B ignition
- ★Anti-icing
- ★★APU ready light
- ★★APU start
- ★★Bleed air leak detectors
- ★Engine ignition
- 9 ★★Engine monitor indicator
- ★★Engine start
- ★★Fire detectors and extinguishers
- ★★Fuel dump
- 9 ★Fuel quantity
- 10 Integrated Fuel Engine Indicator
- ★ Internal fuel transfer

FLIGHT CONTROLS
CH 1 & 2
- ★★CAS
- ★★DEL (direct electrical link)
- ★★Flaps
- ★★Flap position indicator
- ★★Manual flight control mode select actuator (ratio changer)
- ★★Pitch trim actuator

FLIGHT INSTRUMENTS
- ★Left and right pitot heaters
- ★Standby airspeed/ mach indicator(s)
- ★Standby altimeter(s)
- ★★Standby attitude reference indicator(s)
- ★Standby rate-of-climb indicator(s)
- ★★Standby turn needle(s)

LIGHTING EQUIPMENT
- ★Caution/advisory displays
- ★★Caution lights panel (less GEN and FUEL LO level LTS)
- ★Console lights
- 1 ★★Emergency instrument light
- ★Flood lights
- ★Instrument lights
- ★★Master caution light(s) (and tone)
- 14 NVG floodlights
- ★★Utility floodlight(s)

NAVIGATION EQUIPMENT
- 5 ★★COMM 1 R/T
- ★RADAR altimeter
- ★★IFF (EMERG)
- INS

OTHER
- ★Arresting hook extension
- 3 Battery charger
- ★★Canopy
- ★Cockpit DDI/HI/MPCD
- ★★Emergency air refueling
- ★★Emergency jettison
- ★★FCS ram air selection
- ★Hydraulic pressure indicator
- 2 ★★Intercom
- ★Landing gear (emergency system)
- ★★Landing gear position indicator
- 12 ★Oxygen gage
- Voice alerts (all)

★Equipment still operative after batteries depleted.

★★On 161353 thru 161528 equipment becomes inoperative with batteries depleted. On 161702 AND UP, equipment remains operative by action of battery charger (battery switch ON).

Emergency Power Distribution

BOTH TRANSFORMER-RECTIFIERS INOPERATIVE
BOTH GENERATORS OPERATIVE
BATTERIES IN HIGH STATE OF CHARGE

INOPERATIVE EQUIPMENT

ENGINE
- Anti-ice control
- Bleed air system
- External fuel transfer
- FUEL LO warning light
- Fuel tank pressure light
- Inlet duct doors
- Inlet ice detector
- Internal fuel tank pressurization
- Internal wing fuel inhibit
- N_H lockup
- Throttle boost
- Wing diverter valves

FLIGHT CONTROLS
- Autopilot
- CH 3 & 4
- Speed brake
- Speed brake advisory light

FLIGHT INSTRUMENTS
- AOA indexer lights
- HUD

LIGHTING EQUIPMENT
- Approach lights
- Formation lights
- GEN caution lights
- Landing/taxi lights
- Lights test sw
- Position lights
- Strobe lights

NAVIGATION EQUIPMENT
- ADF
- COMM 2 R/T
- [11] DMS
- [16] EGI
- IFF
- ILS
- KY-58
- Radar beacon
- TACAN

OTHER
- Air refueling light and normal probe extension
- Anti-skid
- Arresting hook retraction
- [17] ATARS
- [4] Battery charger(s)
- Cabin ram air selection
- Data link
- Hook warning light
- Landing gear (normal system)
- Nosewheel steering
- [13] OBOGS
- [13] OBOGS monitor
- Radar
- ALR-67 radar warn rcvr
- Selective jettison
- [3] Video tape recorder
- Weapons fire/launch/release
- Windshield anti-ice/rain removal

EMER PWR

Emergency Power Distribution
LEFT GENERATOR INOPERATIVE
BUS TIE OPEN Aircraft 162394 AND UP

OPERATIVE EQUIPMENT

ENGINE
- A/B ignition
- Anti-ice control
- Anti-icing
- APU ready light
- APU start
- Bleed air leak detectors
- Bleed air system
- Engine ignition
- 9 Engine monitor indicator
- Engine start
- External fuel transfer
- 9 Fuel quantity
- Fire detectors and extinguishers
- Fuel dump
- Fuel tank pressure light
- R inlet duct door
- Inlet ice detector
- 10 Integrated Fuel Engine Indicator
- Internal fuel tank pressurization
- Internal fuel transfer
- Internal wing fuel inhibit
- N_H lockup
- Throttle boost
- Wing diverter valves

FLIGHT CONTROLS
- Autopilot
- CAS
- DEL (direct electrical link)
- Flaps
- Flap position indicator
- Manual flight control mode select actuator (ratio changer)
- Pitch trim actuator
- Speedbrake
- Speedbrake advisory light

FLIGHT INSTRUMENTS
- AOA indexer lights
- HUD
- Standby airspeed/ Mach indicator(s)
- Standby altimeter(s)
- Standby attitude reference indicator(s)
- Standby rate-of-climb indicator(s)
- Standby turn needle(s)

LIGHTING EQUIPMENT
- Approach lights
- Caution lights panel (less FUEL LO level LT)
- 1 Emergency instrument light
- Fwd console, flood, and instrument lights
- Lights test switch
- Master Caution light(s)
- 14 NVG floodlights
- Utility floodlight(s)

NAVIGATION EQUIPMENT
- ADF
- COMM 1 and 2 R/T
- 16 EGI
- 14 GPS
- IFF (less Mode 4)
- IFF (EMERG)
- KY-58
- RADAR Altimeter
- Radar beacon
- TACAN

Emergency Power Distribution
LEFT GENERATOR INOPERATIVE
BUS TIE OPEN Aircraft 162394 AND UP

OPERATIVE EQUIPMENT (CONT)

OTHER

- Anti-skid
- Arresting hook extension and retraction
- 17 ATARS
- Audio tones
- Cabin ram air selection
- Cockpit right DDI
- Canopy
- Data link
- ECS
- Emergency air refueling
- Emergency jettison
- FCS ram air selection
- Hook warning light
- 2 Intercom
- Landing gear (emergency system)
- Landing gear (normal system)
- Landing gear position indicator
- Landing gear warning tone
- Master caution tone
- Nosewheel steering
- 13 OBOGS monitor
- Selective jettison (sta 5 thru 8 only)
- Voice alerts (APU fire, engine fire, bleed air)
- Video tape recorder
- Weapons launch/release (sta 5 thru 9 only)
- Windshield anti-ice/rain removal

INOPERATIVE EQUIPMENT

ENGINE

- L inlet duct door
- FUEL LO warning light

FLIGHT INSTRUMENTS

- Left AOA probe heater
- Left pitot heater
- Total temp probe heater

LIGHTING EQUIPMENT

- AFT console, flood and instrument lights
- Caution/advisory displays
- Formation lights
- Landing/taxi lights
- Position lights
- Strobe lights

NAVIGATION EQUIPMENT

- 11 DMS
- ILS
- INS

OTHER

- Air refueling light
- ALR-67 radar warning rcvr
- Cockpit left DDI/HI/MPCD
- 13 OBOGS
- 12 Oxygen gage
- Radar
- 7 Selective jettison (Sta 2 thru 4 only)
- Voice alerts (altitude, bingo, check gear, engine, fuel low, flight computer hot, flight controls, mode 4 reply, power, pull up, roll out)
- 7 Weapons fire/launch/release (gun and Sta 1 thru 4 only

EMER PWR

Emergency Power Distribution
RIGHT GENERATOR INOPERATIVE
BUS TIE OPEN Aircraft 162394 AND UP

OPERATIVE EQUIPMENT

ENGINE
- A/B ignition
- Anti-ice control
- Anti-icing
- APU ready light
- APU start
- Bleed air leak detectors
- Bleed air system
- Engine ignition
- 9 Engine monitor indicator
- Engine start
- External fuel transfer
- Fire detectors and extinguishers
- Fuel dump
- FUEL LO warning light
- Fuel tank pressure light
- L inlet duct door
- 10 Integrated Fuel Engine Indicator
- Internal fuel tank pressurization
- Internal fuel transfer
- Internal wing fuel inhibit
- N_H lockup
- Throttle boost
- Wing diverter valves

FLIGHT CONTROLS
- Autopilot
- CAS
- DEL (direct electrical link)
- Flaps
- Flap position indicator
- Manual flight control mode select actuator (ratio changer)
- Pitch trim actuator
- Speedbrake
- Speedbrake advisory light

FLIGHT INSTRUMENTS
- Standby airspeed/mach indicator(s)
- Standby altimeter(s)
- Standby attitude reference indicator(s)
- Standby rate-of-climb indicator(s)
- Standby turn needle(s)

LIGHTING EQUIPMENT
- Aft console, flood, and instrument lights
- Caution lights panel
- Formation lights
- Landing/taxi lights
- Lights test switch
- Master Caution light(s)
- 14 NVG floodlights
- Position lights
- Strobe lights
- Utility floodlight(s)

Emergency Power Distribution

RIGHT GENERATOR INOPERATIVE
BUS TIE OPEN Aircraft 162394 AND UP

OPERATIVE EQUIPMENT (CONT)

NAVIGATION EQUIPMENT

- [5] COMM 1 and 2 R/T
- [11] DMS
- [16] EGI
- IFF (less C Mode)
- IFF (EMERG)
- ILS
- INS
- KY-58
- Radar beacon

OTHER

- Air refueling light and normal probe extension
- ALR-67 radar warning rcvr
- Anti-skid
- Arresting hook extension and retraction
- Audio tones (less Master Caution)
- Cabin ram air selection
- Canopy
- Cockpit left DDI/HI/MPCD
- Data link
- ECS (Cold cockpit, defog, and suit vent airflow)
- Emergency air refueling
- Emergency jettison
- FCS ram air selection
- Hook warning light
- [2] Intercom
- Landing gear (emerg system)
- Landing gear (normal system)
- Landing gear position indicator
- Landing gear warning tone
- Nosewheel steering
- [13] OBOGS
- [13] OBOGS monitor
- [12] Oxygen gage
- Radar
- [8] Radar coolant pump
- Voice alerts (APU fire, engine fire, bleed air)
- Windshield anti-ice/rain removal

INOPERATIVE EQUIPMENT

ENGINE

- [9] Fuel quantity
- Inlet ice detector
- R inlet duct door

FLIGHT INSTRUMENTS

- AOA indexer lights
- HUD
- Right AOA heater
- Right pitot heater

LIGHTING EQUIPMENT

- Approach lights
- FWD console, flood instrument lights

NAVIGATION EQUIPMENT

- ADF
- [14] GPS
- RADAR altimeter
- TACAN

OTHER

- [17] ATARS
- Battery charger(s)
- Cockpit right DDI
- CSC
- Interference blanker
- Hydraulic pressure indicator
- Master Caution tone
- Selective jettison
- Video tape recorder
- Voice alerts (altitude, bingo, check gear, engine, fuel low, flight computer hot, flight controls, mode 4 reply power, pull up, roll out
- Weapons fire/launch/release

ENGINE FAILS TO START/HUNG START

ENG

If no EGT rise 20 seconds after throttle advanced or rpm stabilizes below idle -

1. Throttle affected engine - OFF
2. Continue cranking for 3 minutes.
3. Throttle affected engine - IDLE

If still no start -

4. Throttle affected engine - OFF

After 3 minutes -

5. Engine crank switch - OFF
6. APU switch - OFF

HOT START

If EGT climbs rapidly thru 750° C-

*1. Throttle affected engine - OFF
2. Engine - CRANK UNTIL EGT < 200° C

If 815° C not exceeded -

3. Throttle affected engine - IDLE

If 815° C exceeded or second hot start -

3. Throttle affected engine - OFF
4. Engine - CRANK FOR 3 MINUTES
5. Engine Crank Switch - OFF
6. APU switch - OFF

LOSS OF THRUST ON TAKEOFF ENG

If decision to stop is made -

*1. Abort

If takeoff is continued -

*1. Execute emergency takeoff

RUNAWAY ENGINE/STUCK THROTTLE

If throttle stuck at high power setting -

FAILS HOT - LOSS STKTHR

1. Landing gear circuit breaker - PULL
2. Landing gear handle - DOWN
3. If throttle control returns, reset power to mid-range setting before raising landing gear handle.

If engine remains at high power setting -

4. Slow aircraft to 250 KIAS
5. Landing gear circuit breaker - RESET
6. If throttle control returns, reset power to mid-range setting before raising landing gear handle.

If engine remains at high power setting -

7. ATC - ENGAGE

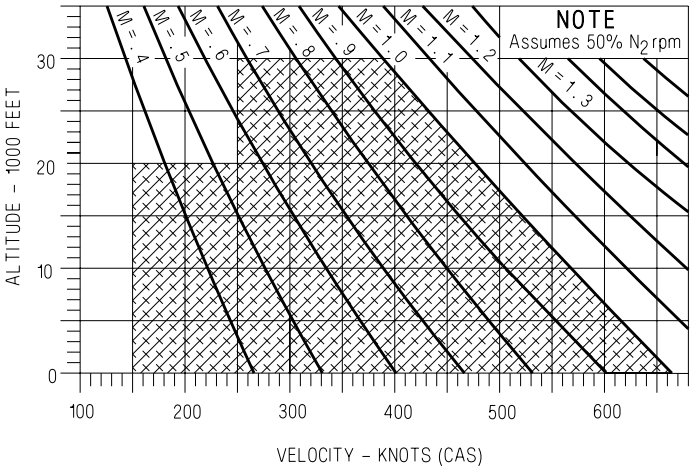
If engine still stuck and/or thrust too high for landing -

8. Throttle affected engine - OFF

If engine cannot be shut down with throttle -

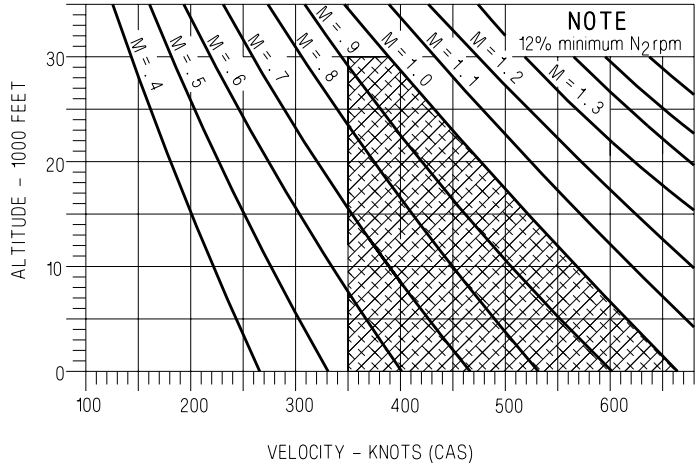
9. FIRE light affected engine - PUSH

Spooldown Restart Envelope



ADA524-36-1-039

Windmill Restart Envelope



ADA524-37-1-039

Engine stalls may be indicated by continued bangs, increasing EGT accompanied by decreasing or stabilized rpm, nonresponse to throttle movement, L/R IN TEMP, L/R FLAMEOUT, and/ or L /R STALL caution -

***1. Throttle affected engine - IDLE**

If stall does not clear -

***2. Throttle affected engine - OFF**

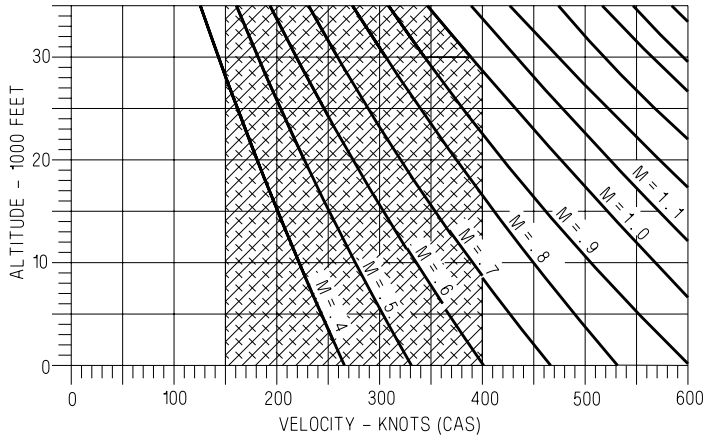
***3. FIRE light affected engine - PUSH**

If the stall clears -

2. Land as soon as practical using affected engine for approach and landing as required.

RESTRT ENV - STALL

Crossbleed Restart Envelope



NOTE: Restarts above 25,000 feet are possible, but not probable

ADA524-38-1-039

APU Start and Engine Restart Envelope

The APU start and engine restart envelope is

BELOW 10,000 feet ALTITUDE
and
BELOW 250 knots CAS.

NOTE

- **An APU restart should not be attempted except as last resort.**
- **APU start probability is improved if HYD ISOL ORIDE is selected for 10 seconds-before attempting start.**

RESTART

CAUTION

Attempting to restart an engine that has flamed out for no apparent reason may result in an engine bay fuel leak/fire.

If rpm above 30% -

1. **Throttle - ABOVE IDLE**

If rpm below 30% -

1. **Throttle other engine - 80 % MINIMUM AND FUEL FLOW 1,900 PPH MINIMUM**
2. **Engine crank switch - BAD ENGINE**
3. **Throttle BAD engine - ABOVE IDLE**

X BLEED - RSTRT

All data on page E49,E50 deleted.

FUEL TRANSFER FAILURE — FUEL

Aircraft thru 161519 before AFC 039 -

1. Use higher power on engine whose feed tank has most fuel (tank 2 feeds left engine, tank 3 feeds right engine).

Aircraft 161353 thru 161519 after AFC 039 and 161520 and up -

If tank 1 transfer failed -

1. Right throttle - REDUCE

If tank 4 transfer failed -

1. Land as soon as practical.

EXT TANK TRANSFER FAILURE

1. Hook - CONFIRM UP (F/A-18A/B)
   Fuel DDI - CHECK (F/A-18C/D)
2. External tank switch - ORIDE

If still no transfer -

3. Cycle external tank switch from ORIDE to NORM to ORIDE.
4. Bleed air knob - CYCLE THRU OFF TO NORM
5. Attempt positive and negative g's.
6. Attempt air-to-air refueling
7. Monitor fuel quantities and CG.

If external fuel not transferring or transfer complete -

8. External tank switches - NORM

FUEL XFER - EXT TK

If practical -

9. Descend below freezing level.

If CV landing required and centerline tank is still over 500 pounds -

10. Centerline tank - SELECT JETT

Before Landing -

11. External tank switches - NORM

UNCOMMANDED FUEL DUMP FUEL

1. Dump switch - CYCLE
2. Bingo Bug - SET ABOVE CURRENT FUEL STATE

If dump continues and F/A-18 A/B -

3. INTR WING SW - INHIBIT

All aircraft -

4. Land as soon as practical.

If fuel continues to dump on deck -

5. Turn aircraft into the wind.
6. Secure engines once safely stopped.

FUSELAGE FUEL LEAK FUEL

WARNING

Use of afterburner or APU may result in an engine bay fire.

*1. Afterburners - DESELECT
*2. Analyze Indications:
L/R BOOST LO CAUTION
L/R AMAD CAUTION
FEED tank fuel quantities
Engine instruments
*3. FIRE light (suspect engine) - PUSH

CAUTION

Pressing the good engine FIRE light may result in flameout of both engines.

CONTINUED

If leak continues -

4. FIRE light (suspect engine) - RESET
5. Restart dead engine.
6. FIRE light (other engine) - PUSH

If leak still continues -

7. FIRE light (other engine) - RESET
8. Restart dead engine.
9. Land as soon as possible.

WARNING

Hook sparks during arrested landing may increase the probability of fire.

After landing -

10. Turn aircraft into the wind.
11. Secure both engines using FIRE lights
12. Throttles - OFF

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
APU FIRE Warning Light ''APU Fire, APU Fire''	APU fire detected.	**In flight or on ground –** *1. APU FIRE light – PUSH *2. Fire Extinguisher READY light – PUSH **On ground –** *3. Throttles – OFF *4. Egress
Dual L BLEED and R BLEED Warning Lights (which do not go out) "Bleed Air Left (Right), Bleed Air Left (Right)"	Bleed air leak detected in common ducting • BLD OFF caution is not an indication of actual valve position. Valve could still be open allowing bleed air to leak. **If both BLD OFF cautions on -** • No OBOGS • No ECS or pressurization • Loss of anti-g protection • No external fuel transfer • No crossbleed start • No throttle boost • No windshield anti-ice/rain removal • May get AV AIR HOT during approach • To prevent canopy fogging, select OFF/RAM or RAM/DUMP and move the DEFOG handle to HIGH	*1. Throttles - Minimum practical for flight --- **OBOGS Aircraft -** * 2. Emergency oxygen green ring - PULL * 3. OXY flow knob(s) - OFF * 4. BLEED AIR knob - OFF (DO NOT CYCLE) 5. OBOGS control switch - OFF 6. Maintain altitude below 10,000 feet 7. At aircrew discretion, discontinue emergency oxygen below 10,000 feet by pressing the reset lever. Remove oxygen mask. **If lights go out -** 8. Throttles - Use as necessary 9. Land as soon as practical **If lights stay on -** 8. Hook - DOWN 9. Land as soon as possible --- **Non-OBOGS Aircraft -** * 2. BLEED AIR knob - OFF (DO NOT CYCLE) 3. Maintain aircraft altitude below 25,000 feet **If lights go out -** 4. Throttles - Use as necessary 5. Land as soon as practical **If lights stay on -** 4. Hook - DOWN 5. Land as soon as possible

APU FIRE - BLEED DUAL

WARNING WARN

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
Single L BLEED or R BLEED Warning Lights (which do not go out) "Bleed Air Left (Right), Bleed Air Left (Right)"	Bleed air leak detected on designated side. • BLD OFF caution is not an indication of actual valve position. Valve could still be open allowing bleed air to leak. **If both bleeds are secured -** • No OBOGS • No ECS or pressurization • Loss of anti-g protection • No external fuel transfer • No crossbleed start • No throttle boost • No windshield anti-ice/rain removal • May get AV AIR HOT during approach • To prevent canopy fogging, select OFF/RAM or RAM/DUMP and move the DEFOG handle to HIGH	*1. Throttle affected engine - IDLE *2. BLEED AIR knob - OFF affected engine (DO NOT CYCLE) If light still on, do the following in order until light goes out - *3. Throttle affected engine - OFF --- **OBOGS Aircraft** 4. Emergency oxygen green ring - PULL 5. OXY flow knob(s) - OFF 6. OBOGS control switch - OFF 7. BLEED AIR knob - OFF (DO NOT CYCLE) 8. Land as soon as possible 9. Perform a single engine landing **If both bleeds secured -** 10. Maintain altitude below 10,000 feet 11. At aircrew discretion, discontinue emergency oxygen below 10,000 feet by pressing the reset lever. Remove oxygen mask. **If/when light goes out -** 12. Land as soon as practical --- **Non-OBOGS Aircraft -** 4. BLEED AIR knob - OFF (DO NOT CYCLE) 5. Land as soon as possible 6. Perform a single engine landing **If both bleeds secured -** 7. Maintain altitude below 25,000 feet **If/when light goes out -** 8. Land as soon as practical

WARNING WARN

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FIRE Warning Light "Engine Fire Left (Right), Engine Fire Left (Right)"	Engine fire detected. • The probability of extinguishing a fire and preventing relights is greatly increased by immediately discharging the fire extinguisher.	**GROUND** *1. Throttles - OFF *2. FIRE light affected engine - PUSH *3. Fire extinguisher READY light - PUSH *4. Battery switch - OFF *5. Egress **ON TAKEOFF** **If decision to stop is made -** *1. Abort **If takeoff is continued -** *1. Execute Emergency Takeoff procedure. **INFLIGHT** **Dual FIRE lights -** *1 Throttles - Minimum practical for flight **If single FIRE light or confirmed engine fire -** *2. Throttle affected engine - OFF *3. FIRE light affected engine - PUSH *4. Fire extinguisher READY light - PUSH *5. Hook – DOWN **If F/A-18A/B and external fuel transfer desired -** 6. Hook circuit breaker - PULL 7. Hook handle - UP

BLEED SNGL - FIRE

WARNING WARN

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
HOOK Warning Light	Hook position does not agree with handle position.	**If hook will not extend -** 1. Hook circuit breaker - PULL **If hook still will not extend -** **CV -** 2. Divert **If divert not practical or Field Landing -** 2. Shut down right engine, restart for landing.
Landing Gear Warning Light (Light in LDG GEAR Handle)	Landing gear in transit, unsafe, or planing link, or ADC failure. --- Below 7,500 feet and below 175 knots and over 250 feet per minute descent. • Refer to Landing Gear Unsafe/Fails to Extend.	**STEADY** 1. Check gear down indicators. --- **FLASHING** 1. Gear - DOWN or 2. Increase airspeed or altitude.

WARNING WARN

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
Red L BAR Warning Light	Ground - Launch Bar Malfunction. Inflight - Launch bar not locked up. Nose gear will not retract.	**After both throttles at MIL -** 1. Launch bar switch - RETRACT **If light still on -** 2. Suspend catapult launch. **If light on after takeoff -** 1. Gear - LEAVE DOWN IF PRACTICAL 2. Launch bar switch - RETRACT 3. Launch bar circuit breaker - PULL **CV -** 4. Divert or remove CDPs 1 and 4 and make normal landing. **Ashore -** 4. Remove arresting wires.
RADAR ALT LOW LIGHT	Altitude below preset primary radar altitude.	Information
THREAT WARNINGS	Refer to A1-F18AC-TAC-100.	
UNSFE (rear cockpit)	Landing gear in transit.	Information

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
L AMAD R AMAD	AMAD oil temperature too high. • May indicate a fuselage fuel leak	**INFLIGHT** 1. Throttle affected engine – IDLE 2. Wing fuel transfer switch – NORM 3. MENU ENG – CHECK FUEL TEMP (<79°C) 4. If conditions permit, consider shutting down engine, restart for landing. **If generator drops off line –** 5. Shut down engine, restart for landing. 6. Land as soon as practical. **GROUND** 1. Shut down affected engine when practical.
L AMAD PR R AMAD PR	Loss of designated AMAD oil.	1. Generator – OFF **If more than 30 minutes to landing –** 2. Shutdown affected engine, restart for landing.
ANTI SKID	Anti skid system inoperative • Use caution during braking. • Normal braking may not be available • After cycling switch, ANTI SKID caution will not reappear and brakes may not be available for 13-1/2 seconds inflight, or 9-1/2 seconds during landing rollout, until BIT is completed.	**Airborne –** 1. ANTI SKID switch – CYCLE **If caution reappears –** 2. ANTI SKID switch – OFF **On ground or during landing –** **1.** ANTI SKID switch – OFF
AOA DEGD	A single AOA probe is selected • AOA indexers may be inaccurate.	**CV-** 1. Notify LSO approach light indications may be inaccurate.
APU ACCUM APU ACC Caution Light	APU accumulator pressure low • Possible leak in isolated HYD 2B system.	1. HYD ISOL ORIDE (1O sec max) **If caution still on or comes on again -** 2. Extend landing gear as soon as practical.

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
ASPJ AMP	BIT detected failure in Receiver RF-preamplifier	Information
ASPJ DEGD	Continuous BIT failure detected	1. Run ASPJ IBIT
ASPJ HI B	BIT detected failure in ASPJ HI-band	Information
ASPJ LO B	BIT detected failure in ASPJ LO-band	Information
ASPJ OVRHT ASPJ OH	Non safety-of-flight overheat in ASPJ	Information
ASPJ RPTF	BIT detected failure in ASPJ RF Tunable filter	Information

CAUTIONS

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
ATARS OVRHT	ATARS subsystem is overheated. • Does not include data link pod overtemp. • No data link overheat reporting is provided with ATARS switch OFF. • Electrical power is available to both RADAR and ATARS during ground operation on aircraft power, however cooling is only provided to RADAR if both systems are powered on.	**GROUND** 1. RADAR switch - OFF **INFLIGHT** 1. ATARS switch - OFF 2. CLP power knob - OFF
L ATS R ATS	Designated air turbine starter rpm too high.	**GROUND** **After engine start (other than momentary) -** 1. Shut down affected engine. **INFLIGHT** **In OBOGS equipped aircraft above 10,000 feet -** *1. Emergency Oxygen Green Ring - PULL *2. OXY flow knob(s) - OFF **All aircraft -** *3. Bleed air knob - OFF both engines (DO NOT CYCLE) **In OBOGS equipped aircraft -** 4. Descend below 10,000 feet. 5. OBOGS control switch - OFF **In non-OBOGS equipped aircraft -** 4. Descend below 25,000 feet. **All aircraft, if caution remains -** 6. Throttle affected engine - IDLE 7. Land as soon as practical
AV AIR DGD	Low avionics cooling air pressure or cabin air exit regulator controller failed.	**If ECM suite is ON or needed -** **1.** ECS Mode switch - MANUAL

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
AV AIR HOT	Avionics cooling air hot or low flow • Prolonged caution may result in loss of MC 1, MC 2, INS, HUD, DDI, etc. • If bleed air off, see remarks under L BLEED OFF/R BLEED OFF. • Monitor cabin pressure. Loss of airflow to the avionics may indicate a loss of airflow to the cockpit pressurization system.	**INFLIGHT** 1. If cabin pressurization is fluctuating - Bleed air knob – CHECK NORM 2. If no cabin pressurization - Bleed air knob – CYCLE 3. Cabin pressure - Verify 4. ECS Mode switch – MANUAL **If caution on after 1 minute –** 5. Airspeed – SUBSONIC 6. Altitude – Below 25,OOO feet 7. Unneeded avionics – OFF 8. ECS Mode switch – OFF/RAM **If caution still on after another minute –** 9. Consider selecting AV/FCS COOL switch to EMERG **If caution still on after another minute –** 1O. Consider selecting Bleed air knob - OFF **GROUND** 1. Bleed air knob – CYCLE 2. ECS Mode switch – MANUAL **If caution remains on –** 3. Either throttle – ADVANCE (about 72%)
E BATT LO U BATT LO	Emergency battery and/or utility battery charge low.	**INFLIGHT** 1. Avoid high speed. 2. Battery switch - OFF/ON FOR LANDING

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
AV AIR HOT - BLD OFF BATT SW BATT SW Caution Light	Battery switch ON without ac power on aircraft or Battery switch OFF with ac power on aircraft. • Prolonged ground operation with caution on may damage battery and dc electrical system.	**If ac power on & battery switch OFF or ORIDE –** 1. Battery switch – ON **If no internal dc power & battery switch ON or ORIDE –** 2. Refer to Double Generator Or Double Transformer - Rectifier Failure.
BINGO "Bingo, Bingo"	Fuel below bingo bug setting.	Information
L BLD OFF and R BLD OFF (dual) (Both BLEED warning lights out)	Both bleed air shutoff valves have been commanded closed. • The "Bleed Air Left/Right" voice warning may be the only indication of a bleed air leak. • BLD OFF cautions are not an indication of actual valve position. Valve(s) could still be open allowing bleed air to leak. **If both BLD OFF cautions on –** • No OBOGS • No ECS or pressurization • Loss of anti-g protection • No external tank transfer • No crossbleed start • No throttle boost • No windshield anti-ice/ rain removal • May get AV AIR HOT during approach • To prevent canopy fogging, select OFF/RAM or RAM/DUMP and move the DEFOG handle to HIGH	**If bleed air shutoff caused by L and R BLEED warning lights and/or ''Bleed Air Left/Right'' voice warnings –** 1. Refer to L and R BLEED (dual) warning. **If bleed air shutoff not caused by L and R BLEED warning -** 1. Bleed air knob - CYCLE **OBOGS Aircraft -** **If cautions remain on or return -** 2. Emergency oxygen green ring - PULL 3. OXY FLOW knob - OFF 4. OBOGS control switch - OFF 5. BLEED AIR knob - OFF (DO NOT CYCLE) 6. Maintain altitude below 10,000 feet 7. At aircrew discretion, discontinue emergency oxygen below 10,000 feet by pressing the reset lever. Remove oxygen mask. 8. Land as soon as practical **Non-OBOGS Aircraft -** **If cautions remain on or return -** 2. BLEED AIR knob - OFF (DO NOT CYCLE) 3. Maintain altitude below 25,000 feet 4. Land as soon as practical

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
L BLD OFF or R BLD OFF (single) (L/R BLEED warning light out)	Designated bleed air shutoff valve has been commanded closed. • The "Bleed Air Left/Right" voice warning may be the only indication of a bleed air leak. • BLD OFF caution is not an indication of actual valve position. Valve could still be open allowing bleed air to leak.	**If bleed air shutoff caused by a L BLEED or R BLEED warning light and/or "Bleed Air Left/Right voice warning" -** 1. Refer to appropriate L BLEED and/or R BLEED warning procedure **If bleed air shutoff NOT caused by L BLEED and/or R BLEED warnings -** 1. BLEED AIR knob - CYCLE **If caution remains on or returns -** 2. BLEED AIR knob - OFF affected engine (DO NOT CYCLE)
L BOOST LO R BOOST LO	No designated AMAD pump engine feed pressure. • May indicate fuselage fuel leak • May indicate fuel transfer failure • Afterburner may not operate above 30,000 ft • Crossfeed opens automatically • If associated with GEN and both HYD circuit cautions, may be a PTS failure.	1. Check for indications of fuselage fuel leak. 2. Monitor fuel transfer 3. Land as soon as practical.
BRK ACCUM	Brake accumulator pressure low. • Possible leak in isolated HYD 2B system. • Emergency brakes may not be available	1. Extend landing gear as soon as practical.

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
CANOPY	Canopy unlocked. • In F/A-18B/D rear seat occupant should lower seat and lean as far forward as possible.	**INFLIGHT** 1. Slow below 300 knots (200 in F/A-18B/D) if practical 2. Descend 3. Canopy switch – DOWN **If light stays on –** 4. Land as soon as practical.
CAUT DEGD	Caution indications degraded. • Cycling MC1 with an SDC failure zeroizes all fuel indications on the FUEL page. • Cautions may be false or erratic.	1. SDC (F/A-18 C/D only) - RESET 2. MC 1 – CYCLE **If caution remains or reappears -** 3. Land as soon as practical.
CG	Tanks 1 and 4 fuel distribution out of balance.	1. Stop maneuvering. 2. Check transfer tanks 1 & 4 3. Calculate CG **If CG aft of limit –** 4. Refer to Landing With Aft CG.
CHECK SEAT CK SEAT Caution Light	One or both ejection seats not armed with WOW and right throttle at MIL.	1. Check occupied seats armed.
CNI	CNI interface failure. • UFC may not operate in some or all modes.	1. Check BIT page **If CSC MUX failure -** 2. Refer to CSC MUX FAILURE
DFIR OVRHT	DFIRS reporting an overheat condition.	Information
DFIRS GONE	DFIRS inadvertently deployed.	**Unless visually confirmed intact -** 1. Land as soon as practical

BLD OFF SINGLE - DFIRS GONE

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
DL OVRHT	ATARS Data Link pod subsystem overheated	1. CLP power knob - OFF
DTR1 COLD DTR2 COLD	ATARS tape deck is cold • Usually occurs at startup • Warmup takes less than 5 minutes at 32°F • Up to 45 min warmup may be required at -40°F • Ground - Recce mode not available until both decks are warmed up • Inflight - Recce mode is available with one deck warmed up	1. ATARS switch - ON 2. ATARS preflight checks - DISCONTINUE **When caution is removed -** 3. ATARS preflight checks - CONTINUE
DTR1 SHTDN DTR2 SHTDN	ATARS tapedeck shutdown caused by cold, overtemp or condensation • Record capability is disabled • Additional information is displayed on the BIT-ATARS-MAINT page, and a condensation cue advisory is displayed on RECCE video.	1. ATARS switch - ON **If caution remains after 20 min -** 2. ATARS switch - OFF 3. CLP power knob - OFF

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
L DUCT DR R DUCT DR	Designated duct door closed above Mach 1.33 or open below Mach 1.23. • Drag is increased with door open. • At airspeeds above Mach 1.33 with door failed closed, engine inlet pressure oscillations ''inlet buzz'' will gradually increase with increasing Mach, and possibly culminate in engine stall.	1. Reduce speed below Mach 1.33.
DL OVRHT - EXT TANK DUMP OPEN	Fuel dump valve open with OFF selected. • Delaying landing until the transfer tanks are empty (3,100 pounds of fuel remaining) will prevent fuel from dumping onto hot exhaust nozzles and fouling of the landing area.	1. Dump switch – CYCLE 2. BINGO Bug - SET ABOVE CURRENT FUEL STATE **If dump continues and F/A-18A/B aircraft –** 3. INTR WING SW - INHIBIT **All aircraft -** 4. Land as soon as practical. **If fuel continues to dump on deck -** 5. Turn aircraft into the wind. 6. Secure engines once safely stopped.
L EGT HIGH R EGT HIGH "Engine Left (Right), Engine Left (Right)"	Designated exhaust gas temperature out of limits.	*1. Throttle affected engine – IDLE 2. MENU ENG – CHECK EGT **If EGT high at IDLE –** 3. Throttle affected engine – OFF
ENG MATCH	One engine is -400, other engine is -402	1. Abort
ERASE FAIL	A unit has reported a critical failure which may prevent successful erasure of stored data.	Information
EXT TANK	External tanks pressurized on ground or tanks have overpressurized.	**GROUND** 1. Do not catapult.

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
EXT XFER	External fuel available but not transferring. • On F/A-18C/D aircraft, selecting ORIDE on both EXT TANKS fuel control switches may inhibit centerline tank transfer.	1. Hook - CONFIRM UP (F/A-18A/B) Fuel DDI - CHECK (F/A-18C/D) 2. External tank switch - ORIDE **If still no transfer -** 3. Cycle external tank switch from ORIDE to NORM to ORIDE. 4. Bleed air knob - CYCLE THRU OFF TO NORM 5. Attempt positive and negative g's. 6. Attempt air-to-air refueling 7. Monitor fuel quantities and CG. **If external fuel not transferring or transfer complete -** 8. External tank switches - NORM **If practical -** 9. Descend below freezing level. **If CV landing required and centerline tank still contains over 500 lbs -** 10. Centerline tank - SELECT JETT **Before Landing -** 11. External tank switches - NORM
L FLAMEOUT R FLAMEOUT "Engine Left (Right), Engine Left (Right)"	Designated engine flamed out. • Restarting an engine that flamed out for no apparent reason may result in an engine bay fuel leak/fire.	* 1. Throttle affected engine - IDLE 2. If rpm continues to decrease - THROTTLE OFF **If flameout cause known –** 3. Refer to Engine Restart procedures **If flameout cause unknown –** 3. Do not restart the engine 4. Refer to Single Engine Landing procedures
FLIR OVRHT	FLIR internal overheat.	Information
L FUEL HOT R FUEL HOT	Designated engine fuel feed temperature too high. • Fuel temp > 79° C may cause AMAD to overheat with associated cautions.	1. Fuel flow – INCREASE (if practical) 2. Wing fuel switch – CHECK NORM 3. MENU ENG - MONITOR FUEL TEMP (<79°C)

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FUEL LO FUEL LO "Fuel low, Fuel low"	At least one feed tank below 800 pounds. • May indicate fuselage fuel leak. • No negative G. • Sideslip may be required to transfer wing fuel.	1. Fuel flow – REDUCE (if practical) 2. Refer to Fuel Transfer Failure.
FUEL XFER	Tanks 1 and 4 fuel distribution out of balance.	1. Stop maneuvering. 2. Check transfer tanks 1 & 4 3. Calculate CG **If CG aft of limit –** 4. Refer to Landing With Aft CG.
L GEN R GEN L GEN R GEN Caution Lights	Designated generator off line. • Either generator can support the total aircraft electrical load. • With both lights on - No OBOGS. • If associated with BOOST LO and both HYD circuit cautions, may be a PTS failure.	1. Generator switch – CYCLE **If generator still failed –** 2. Generator switch – OFF 3. Land as soon as practical.
GEN TIE Caution Light	115/200 volt ac bus tie open. • Resetting the GEN TIE switch may cause loss of the operating generator. • With L GEN ON - No OBOGS. • With R GEN on - No HUD. No ADC. No ADC or AOA information on HUD display if called up on Left DDI.	**With both generators operating –** 1. Generator tie control – RESET-NORM **If light remains on-** 2. Continue mission with GEN TIE on. **With L or R GEN light –** 1. Generator switch – CYCLE **If generator restored –** 2. Do not attempt to reset GEN TIE. 3. Continue mission with GEN TIE on. **If generator still failed –** 2. Generator switch – OFF 3. Land as soon as practical. 4. Refer to Emergency Power Distribution chart.

EXT XFER - GEN TIE

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
GPS DEGD	GPS approach flight phase and EHPE exceeds 108 ft. for 10 sec.	Information
GUN GAS	Gun purge air pressure low.	1. Do not fire gun even if caution clears.
HAND CNTRL	One hand controller inop.	Information
HOME FUEL	Fuel remaining sufficient to fly to home waypoint with 2,000 lbs reserve.	1. Analyze configuration, fuel flow, and profile for BINGO.
HYD 1A	Hydraulic system 1A pressure low. • No effect on system operation for single failure.	1. Refer to Hydraulic Flow diagram.
HYD 1B	Hydraulic system 1B pressure low. • No effect on systems operation for single failure.	1. With a LLEF, CH 1 and CH 4 failure, do not reset FCS. 2. Refer to Hydraulic Flow Diagram.

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
HYD 1A HYD 1B	• Prolonged use of a failed hydraulic pump without the pump shaft shearing as indicated by stabilized system pressure below 2,000 psi or fluctuations in system pressure will generate considerable heat and may result in AMAD bay fire. Consider restarting the engine prior to landing. • Prolonged use of a hydraulic pump without hydraulic fluid as indicated by RLS circuit caution sequencing will generate considerable heat and may result in AMAD bay fire. Consider restarting the engine prior to landing. • If system pressure has decreased to zero with no fluctuations, the pump shaft has probably sheared and engine shutdown is not required. • If associated with GEN and BOOST LO cautions, may be a PTS failure. • LLEF Xs may be reset if BLIN code 67 is present in any channel.	1. Check hydraulic pressure gage. **If pressure has stabilized below 2,000 psi or is fluctuating -** **OR** **If failure was preceded by RLS circuit caution sequencing -** 2. Left engine - OFF (if required, restart for landing) 3. Land as soon as practical.
HYD 1A HYD 2B	• No TE flaps. • No left rudder.	1. Refer to FLAPS OFF and RUD OFF cautions.

GPS DEGD - HYD1A HYD2B

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
HYD 2A	Hydraulic system 2A pressure low.	1. With a RLEF, CH2, and CH3 failure, do not reset FCS. 2. Select jettison all unwanted external stores prior to extending landing gear. 3. Perform emergency gear extension. 4. Refuel probe switch - EMER EXT (if needed) 5. Make a short field arrestment if practical. **If arrested landing not practical, after landing -** 6. Use emergency brakes. 7. Use steady brake pressure (do not pump). Consider disengaging NWS with the paddle switch on touchdown.
HYD 2B	Hydraulic system 2B pressure low.	1. Refer to Hydraulic Failure.

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
HYD 2A HYD 2B	• Prolonged use of a failed hydraulic pump without the pump shaft shearing as indicated by stabilized system pressure below 2,000 psi or fluctuations in system pressure will generate considerable heat and may result in AMAD bay fire. Consider restarting the engine prior to landing. • Prolonged use of a hydraulic pump without hydraulic fluid as indicated by RLS circuit caution sequencing will generate considerable heat and may result in AMAD bay fire. Consider restarting the engine prior to landing. • If system pressure has decreased to zero with no fluctuations, the pump shaft has probably sheared and engine shutdown is not required. • If associated with GEN and BOOST LO cautions, may be a PTS failure. • RLEF Xs may be reset if BLIN code 67 is present in any channel.	1. Check hydraulic pressure gage **If pressure has stabilized below 2,000 psi or is fluctuating -** **OR** **If failure was preceded by RLS circuit caution sequencing -** 2. Right engine - OFF (if required, restart for landing) 3. Select jettison all unwanted external stores prior to extending the landing gear. 4. Perform emergency gear extension. 5. Make a short field arrestment as soon as practical. **If arrested landing not practical, after landing -** 6. Use emergency brakes. 7. Use steady brake pressure (do not pump). Consider disengaging NWS with paddle switch on touch down.
IFF 4 "Mode 4 reply, Mode 4 reply"	Mode 4 OFF, ZEROIZED, not responding.	Information
IFFAI	Some interrogator operations may not function.	Information
IFF OVRHT	IFF (APX-111) overheat condition exists	Information
L IN TEMP R IN TEMP	Designated engine inlet temperature out of limits.	*1. Throttle affected engine – IDLE 2. Land as soon as practical.

HYD 2A - IN TEMP

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
INLET ICE	Engine inlet icing conditions detected. • The INLET ICE caution is designed to come on when 0.025 inch of ice has accumulated on the inlet ice detector, located in the left inlet. Any delay in activating the engine anti-ice system can result in ice accumulating rapidly on the IGVs and shedding into the engine when the system is turned on. Ice accumulation on the LEFs is similar to the inlet lip and can serve as an indication of how much ice may be on the inlet. As little as 0.5 inch of ice ingested by the engine from the inlet lip can result in compressor stalls and major FOD. • With ice clearly visible on the LEFs, reducing throttle settings below 80% N_2 rpm while descending below the freezing level should generate sufficient inlet spillage to shed inlet ice outside the inlet and not into the engine. Similarly, avoiding throttle transients above 90% N_2 rpm, abrupt maneuvers, and bank angles over 20° should help prevent ice from detaching from the inlet lip. • With no ice visible on the aircraft, an INLET TEMP of at least +5°C should provide sufficient aerodynamic heating to prevent ice accumulation on the LEFs and inlet lips.	1. ENG ANTI ICE switch – ON 2. PITOT ANTI ICE switch – ON **If ice is visible on leading edge surfaces -** 3. Throttles - Reduce below 80% N_2 (if possible). 4. Airspeed - 250 knots or greater 5. Descend below the freezing level. 6. Avoid throttle transients above 90% N_2 7. Avoid abrupt maneuvers and bank angles over 20° 8. Reduce airspeed to transition for landing at the last possible moment so that gear icing will be minimized. 9. When clear of icing conditions, turn ENG ANTI ICE switch OFF 10. If a missed approach is necessary, slowly advance throttles to the minimum power required for a safe waveoff and raise landing gear and flaps as soon as possible. **If no ice is visible on leading edge surfaces -** 3. Airspeed - Increase to at least +5°C INLET TEMP on ENG format. 4. Maintain aircraft AOA below 6°. (If possible, to prevent ice accumulation on LEX underside.) 5. Climb or descend out of the clouds. 6. When clear of icing conditions, turn ENG ANTI ICE switch OFF

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
INS ATT	HUD attitude supplied by the standby attitude indicator. • W replaced ⊣O⊢ on the HUD. • GPS or EGI GPS function still operates • MSP codes O2F or O61 indicate that NAV data is frozen and NAV data provided to the HUD is not reliable. IFA is no longer possible.	1. ATT/ATTD select switch – STBY 2. Verify HUD pitch ladder coincides with SARI 3. MSP codes - Check for presence of code O2F or O61 **If 02F or 061 present -** 4. INS knob - OFF **If 02F or 061 not present -** 4. Perform an inflight alignment
INS DEGD	Failure detected during periodic INS BIT.	**GROUND** 1. Secure and realign INS. **INFLIGHT if INS information is incorrect -** 1. ATTD/ATT Select Switch - STBY 2. Position keeping source - ADC 3. Perform inflight alignment.
INS VEL	INS and ADC vertical velocities do not agree.	Cross check HUD velocity vector, HUD digital vertical velocity readout and standby rate of climb indicator.
LADDER	Boarding ladder unlocked. • May FOD left engine.	**INFLIGHT** 1. Get visual check if practical. 2. Land as soon as practical.
MC 1	Mission computer 1 failed • Only cautions available are AUTO PILOT, MC 1, HYD 1A, HYD 1B, HYD 2A, HYD 2B. • GPS or EGI GPS function inoperable • G-limiter and Roll-limiter functions disabled	1. Cycle switch **If caution remains or reappears -** 2. Use no more than 1/2 stick with roll limited stores aboard. Reduce acceleration below 7.5 g above 32,357 pounds gross weight or if unsymmetrical (rolling) 3. Land as soon as practical.
MC 2	Mission computer 2 failed. • Most weapon functionality lost.	1. Cycle switch.

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CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
MC CONFIG	MC OFP incorrect.	1. Abort
MDL LOAD	MDL to MC loading failure	Information
MIDS OVRHT	MIDS overheat condition	Information
MU LOAD	MU not communicating on AVMUX.	1. Abort
NAV FAIL	Indicates GPS and INS and ADC failure or EGI and ADC failure	**GROUND** 1. Secure and realign INS. **INFLIGHT** 1. ATTD/ATT select switch - STBY 2. Use standby altitude/airspeed/vertical velocity indicators. 3. Position keeping source - TACAN 4. Perform inflight alignment.
NAV HVEL	• **GPS not operating** - INS and ADC velocities disagree. Can be caused by high wind velocity. • **GPS operating** - INS and GPS, ADC and GPS, or INS and ADC horizontal velocities do not agree	Information
NAV VVEL	• **GPS not operating** - INS and ADC vertical velocities do not agree. • **GPS operating** - INS and GPS vertical velocities do not agree.	Cross check HUD velocity vector, HUD digital vertical velocity readout and standby rate of climb indicator.

INLET ICE - NAV VVEL

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
NFLR OVRHT	NAVFLIR overheat.	1. NAVFLIR - OFF (if practical)
OBOGS DEGD	Oxygen concentration is below acceptable limits. • A disconnected oxygen hose or removing the oxygen mask without placing the OXY Flow knob to OFF may result in an OBOGS DEGD caution. Verify proper mask and hose integrity.	**If aircraft above 10,000 feet-** *1. Emergency oxygen green ring - PULL *2. OXY flow knob(s) - OFF 3. OBOGS control switch - OFF 4. Maintain cabin altitude below 10,000 feet 5. At aircrew discretion, discontinue emergency oxygen below 10,000 feet by pressing reset lever. Remove oxygen mask.
OCS	MC on SMS overlay halted due to run time. • Certain stores may not be available.	1. Attempt to reload overlay.
L OIL PR R OIL PR "Engine Left (Right), Engine Left (Right)"	Designated engine oil pressure out of limits.	*1. Throttle affected engine – IDLE **If caution still on –** 2. Throttle affected engine – OFF (if practical)
L OVRSPD R OVRSPD "Engine Left (Right), Engine Left (Right)"	Designated fan or compressor rpm high.	*1. Throttle affected engine – IDLE 2. MENU ENG – MONITOR RPM **If 106 % (400 engine)/ 108 % (402 engine) N_1 or 102 % N_2 rpm exceeded -** 3. Throttle affected engine – OFF (if practical)
OXY LOW	Oxygen quantity indication below 1 liter.	1. Oxygen quantity – CHECK **If under 1 liter –** 2. Maintain cabin altitude below 10,000 feet.

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
PARK BRAKE	INS ON, throttles over 80%, and parking brake set.	**GROUND** - 1. Parking brake – CHECK **INFLIGHT** - 1. Parking brake handle – CHECK 2. Make fly-in arrested landing with LSO assistance (if available) even if caution clears. 3. Immediately prior to landing – Cycle Brake Handle
L PITOT HT R PITOT HT	Designated pitot heater malfunction.	1. Pitot heat switch – ON (after landing, Pitot heat switch - OFF)
POS/ADC	EGI/GPS and INS velocity unreliable. Position keeping function supplied by ADC, however the position keeping function is unreliable.	1. Use TACAN position keeping.
PROBE UNLK	Air refueling probe not fully retracted with switch in RETRACT.	1. Slow below 300 knots. 2. Probe switch – CYCLE
RACK UNCPL	BRU-32 failed to lock or unlock during rack test. • Store may not be jettisonable.	1. Abort
S/W CONFIG	Software incompatible.	1. Abort
L STALL R STALL "Engine Left (Right), Engine Left (Right)"	Engine stall detected on designated side. • Engine stalls result from conditions which exceed the stall margin of the engine (high AOA, steam or exhaust ingestion, etc.). Engine stalls are often indicated by an audible bang, airframe vibration, and visible flames out the exhaust and/or inlet.	*1. Throttle affected engine - IDLE **If stall does not clear** - *2. Throttle affected engine - OFF *3. FIRE light affected engine - PUSH **If stall clears** - 2. Land as soon as practical using affected engine for approach and landing as required.

NFLR OVRHT - STALL

CONTINUED

CAUTIONS CAUT

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
L STALL R STALL (cont)	• Pop or surge stalls do not result in L or R STALL caution and usually self-recover. Multiple pop or surge stalls indicate the engine may not self-recover and are usually the result of engine or airplane damage. • Hung stalls result in a L or R STALL caution and are indicated by a lack of throttle response, increasing EGT, and steady or decreasing rpm. If engine rpm continues to fall, the L or R FLAMEOUT caution may also be set.	
TANK PRESS	**GROUND** Internal fuel tank pressure high. • Catapult may cause structural damage. --- **INFLIGHT** Internal fuel tank pressure low above 20,000 feet. • Possible fuel pump cavitation above 40,000 feet. • High rates of descent may damage fuel cells	**GROUND** 1. Bleed air switch – OFF 2. Abort --- **INFLIGHT** 1. Bleed air switches – CYCLE **If caution remains or reappears -** 2. Do not exceed 0.9 Mach in dive.
TK PRESS LO	**INFLIGHT** Internal fuel tank pressure low above 20,000 feet. • Possible fuel pump cavitation above 40,000 feet. • High rates of descent may damage fuel cells	**INFLIGHT** 1. Bleed air switches - CYCLE **If caution remains or reappears -** 2. Do not exceed 0.9 Mach in dive.
TK PRESS HI	**GROUND** Internal fuel tank pressurized • Catapult may cause structural damage. **INFLIGHT** Internal fuel tank pressure high • Possible exceedance of tank structural limits.	**GROUND** 1. Bleed air switch - OFF 2. Abort **INFLIGHT** 1. Bleed air switches - CYCLE **If caution remains or reappears -** 2. Maintain 0 to +2.5 g
VEL	INS velocity degraded or high wind velocity.	Information
VOICE/AUR	Voice alert or master caution aural tone inoperative EADI is unavailable if the cause is CSC failure.	1. Check BIT page **If CSC MUX failure -** 2. Refer to CSC MUX FAILURE

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
WDSHLD HOT	Windshield temperature high or sensor failed.	**If visible moisture present; either ice or rain –** 1. Anti-ice/rain removal switches – AS REQUIRED **If visible moisture not present –** 1. Anti-ice/rain removal switches – OFF 2. Power – REDUCE **If caution remains; consider –** 1. Bleed air switch – OFF 2. Land as soon as practical.
WING UNLK	Either wingfold unlocked.	1. Wingfold handle - Push in to confirm fully seated. 2. Land as soon as practical.

FCS CAUTIONS

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
AIL OFF **FCS** FCES Caution Light "Flight Controls, Flight Controls"	Either aileron off.	1. Flaps – HALF FOR LANDING 2. Fly ON-SPEED AOA
AIR DATA	MC cannot determine which source error correction (SEC) to command or ADC SEC disagrees with MC commanded SEC.	**GROUND** 1. Abort **INFLIGHT** 1. Maintain subsonic airspeed. 2. Land as soon as practical.
AUTO PILOT	Uncommanded autopilot disengage.	1. Paddle switch - PRESS
CK FLAPS	Flaps switch in AUTO position at takeoff.	1. Place FLAP switch in the correct position for takeoff.
CHECK TRIM	Trim incorrect for takeoff.	1. Set correct takeoff trim.
DEL ON **FCS** FCES Caution Light "Flight Controls, Flight Controls"	Any axis in DEL.	*1. Speedbrake - CHECK IN *2. Decelerate slowly to below 400 knots/0.8 Mach. 3. If flaps full – RAISE TO HALF 4. Do not exceed +15° AOA (+12° AOA with asymmetric wing stores). 5. MENU FCS – IDENTIFY FAILURE **If reset to CAS desired –** 6. Climb to a safe altitude. 7. Airspeed: 160-180 KNOTS - flaps HALF 200-300 KNOTS - flaps AUTO 8. FCS – RESET **If pitch axis in DEL –** 6. Do not extend speedbrake (unless required). 7. Flaps – HALF FOR LANDING

CONTINUED

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
DEL ON (cont)		8. Fly ON-SPEED AOA 9. Reduce sink rate for field landings. **If yaw and/or roll axis in DEL –** 6. External stores - JETTISON ASYMMETRIC WING STORES 7. Rudder – MINIMIZE INPUTS, IF REQUIRED USE SLOW INPUTS 8. Do not use more than ½ rudder pedal or lateral stick in flight. 9. Flaps – HALF FOR LANDING 10. Fly ON-SPEED AOA. 11. Reduce sink rate for field landings.
FC AIR DAT	L & R pitot-static probes disagree • Use flap setting which provides best handling qualities.	1. Maintain below 350 knots, minimum sideslip, AOA <10°, maximum 2 g. 2. Gain switch – ORIDE 3. Flaps – HALF OR FULL (200 knots straight and level) FOR LANDING 4. Fly onspeed approach to touchdown.
AIL OFF - FCES FCES Caution Light "Flight Controls, Flight Controls"	Third like failure or flight control function lost • "Like" failures for STAB and TEF are defined as Xs in 2 or more channels of the same row for the same surface. • "Like" failure for any other item on the FCS page is defined as an X in the same row. • Caution light backup for DDI FCS cautions.	*1. Speedbrake - CHECK IN *2. Decelerate slowly to below 400 knots/0.8 Mach. 3. If flaps full – RAISE TO HALF 4. Do not exceed +15° AOA (+12° AOA with asymmetric wing stores) 5. MENU FCS – IDENTIFY FAILURE 6. FCS – RESET

CONTINUED

FCS CAUTIONS

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FCES (cont)	Third like failure or flight control function lost. • "Like" failures for STAB and TEF are defined as Xs in 2 or more channels of the same row for the same surface. • "Like" failure for any other item on the FCS page is defined as an X in the same row. • Caution light backup for DDI FCS cautions.	**If no RESET and DDI warnings and cautions inoperative –** 7. FCS circuit breakers – CHECK 8. Emergency Jettison Button - PUSH (If required) 9. Flaps – HALF 10. Airspeed – 200-250 KNOTS 11. Make controllability check at safe altitude and on-speed AOA. 12. If flying qualities unacceptable, make controllability check with flaps in AUTO. 13. If controllability permits landing – short field arrestment recommended. 14. Reduce sink rate for field landing 15. Land as soon as practical.
FCS FCES Caution Light "Flight Controls, Flight Controls"	One or more failures in flight controls. • "Like" failures for STAB and TEF are defined as Xs in 2 or more channels of the same row for the same surface. • "Like" failure for any other item on the FCS page is defined as an X in the same row.	1. MENU FCS – IDENTIFY FAILURE 2. FCS – RESET **If no reset and second like failure exists –** 3. Maintain 200-300 knots, minimum sideslip, AOA <10°, 2 g maximum. 4. FCS circuit breakers – CHECK 5. If CG aft of 24% or lateral asymmetry over 12,000 foot-pounds, jettison external stores as soon as practical. 6. Make controllability check. 7. Land as soon as practical.
FCS HOT **FCS HOT** **Caution Light** **"Flight Computer Hot, Flight Computer Hot"**	Flight control computer A or right transformer-rectifier overtemperature. • FCS airscoop cannot be closed in flight.	1. Airspeed – SUBSONIC 2. AV/FCS cool switch – EMERG

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FLAPS OFF FCES Caution Light FLAPS Amber "Flight Controls, Flight Controls"	Leading and/or trailing edge flaps inoperative. • Pressing FCS RESET with failed leading edge flaps may aggravate a split LEF condition. • Pressing FCS RESET with failed trailing edge flaps will not cause or aggravate a split flap condition in any case. • If fuel is a concern, selecting GAIN ORIDE with flap switch in AUTO may allow all non-failed flaps to move to a more fuel conserving 3°/3° position	**If leading edge flaps failed –** 1. Do not exceed 10° AOA with flaps AUTO. 2. Make controllability check at safe altitude. 3. Flaps – HALF FOR LANDING 4. If LEF extension less than 10°, do not exceed 7° AOA for landing. **If hydraulic failure or leak suspected –** 5. Do not press FCS reset button if HYD 1B or HYD 2A caution is displayed. **If trailing edge flaps failed –** 1. Make controllability check at safe altitude. 2. Flaps – HALF OR FULL FOR LANDING 3. Use 10° - 11° AOA for landing, if required.
FLAP SCHED **FCES** **Caution Light** **FLAPS** **Amber** **"Flight Controls, Flight Controls"**	Flaps frozen and not scheduling properly (AOA or air data) or leading edge flap at least 10° off schedule and AOA over 12°. • For shipboard operations - notify LSO that indexers /approach light are inaccurate or inoperative. • AOA displayed to aircrew in the HUD E-bracket is FCS derived AOA. Perform AOA/airspeed check before and after going dirty.	1. Reduce AOA 2. Gain switch – ORIDE below 350 knots **For landing –** 3. Flaps – FULL at 200 knots 4. Fly onspeed approach to touchdown.
FCS - G-LIM 7.5G G-LIM 7.5 G "Flight Controls, Flight Controls"	G-limiter set to 7.5 g regardless of gross weight or store loading. • Intermittently setting of the G-LIM 7.5 cautions while on the ground with accompanying master caution tone and ``flight controls'' voice alert is a known condition. The caution usually occurs following sudden throttle retractions to idle.	Reduce acceleration below 7.5 g above 32,357 pounds gross weight or if unsymmetrical (rolling).

FCS CAUTIONS

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
G-LIM OVRD	G-limiter overridden • If the caution appears without pilot initiation, the paddle switch may be failed internally. The nosewheel steering and auto pilot may be commanded off without pilot action or notification.	Information
MECH ON FCES Caution Light "Flight Controls, Flight Controls"	Stabilator has reverted to mechanical control. • If aircraft experiences recurrences of MECH reversions, do not continue to reset the FCS.	*1. Speed brake – CHECK IN *2. Decelerate slowly to below 400 knots/0.8 Mach. 3. If flaps full – RAISE TO HALF 4. Do not exceed 250 knots with flaps HALF. 5. Do not exceed +15°AOA (+12° AOA with asymmetric wing stores). 6. MENU FCS – IDENTIFY FAILURE **If reset to CAS is desired –** 7. Climb to a safe altitude. 8. Airspeed: 160-180 knots – flaps HALF 200-300 knots – flaps AUTO 9. FCS – RESET 10. Takeoff trim - PUSH (recenters stick) **If RESET unsuccessful/ not desired and roll / yaw CAS functioning –** 7. Flaps – HALF FOR LANDING 8. Fly ON-SPEED AOA 9. Reduce sink rate for field landings.

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INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
MECH ON (cont)	Stabilator has reverted to mechanical control. • If aircraft experiences recurrences of MECH reversions, do not continue to reset the FCS.	**If RESET unsuccessful/ not desired and roll/yaw axis in DEL –** 7. External stores - **SHIPBASED:** JETTISON ASYM-METRIC WING STORES. **SHOREBASED:** REDUCE ASYMMETRIC STORES TO 10,000 FOOT-POUNDS MAXIMUM. 8. Rudder – MINIMIZE INPUTS 9. Do not use more than ½ rudder pedal or lateral stick in flight. 10. Flaps – HALF FOR LANDING 11. Fly ON-SPEED AOA 12. Reduce sink rate for field landings. **If RESET unsuccessful/ not desired and AIL/RUD OFF –** 7. Wing stores – JETTISON 8. Flaps – HALF FOR LANDING 9. Airspeed – 200-250 KNOTS 10. Make controllability check at safe altitude. 11. If flying qualities unacceptable, make controllability check with flaps in AUTO. 12. If controllability permits landing – Short Field arrestment recommended. 13. Reduce sink rate for field landings.

G-LIM OVRD - MECH ON

FCS CAUTIONS

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
NWS	Nosewheel steering inoperative/malfunction **Flashing (on HUD)** - loss or partial loss of HYD 2 pressure. **Steady (on DDI)** - nosewheel steering inoperative.	**If required, emergency HI gain nosewheel steering available on aircraft 161702 AND UP with failed channel (2 or 4)** - 1. Failed channel circuit breaker - PULL 2. Wings - CHECK UNLOCKED 3. NWS button - PRESS If pressing the NWS button results in an FCS caution and single X in the powered channel, emergency HI gain steering is not available.
R-LIM OFF	Roll rate limiting failed.	Use no more than ½ stick with roll limited stores aboard.

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
RUD OFF FCES Caution Light "Flight Controls, Flight Controls"	One or both rudders inoperative. • If a dual channel rudder actuator failure is reset, the failure could be triggered again and reappear with severe yaw, roll and pitch transients during critical flight phase(s). Transients occurring close to the ground could be unrecoverable. During the takeoff and landing phases, any ejection decision should be made early. • Once configured for landing, maintain on-speed and balanced flight. • Failure to maintain AOA below 10° and balanced flight may result in a departure in yaw and roll that is unrecoverable, even with full opposite rudder and stick. Because of the rate at which AOA and sideslip buildup can occur in this configuration, the safe ejection envelope can be rapidly exceeded during the takeoff and landing phases. • If single engine, departure is probable with the use of afterburner. • Lineup control is degraded with left or right rudder failed. Ensure all lineup corrections are performed slowly and smoothly. • Minimize large, rapid throttle inputs. If single engine, large throttle transients will cause significant yaw and roll, making heading control difficult. • Rudder toe-in or out will not be available for takeoff or landing. Due to a lack of rudder toe-in, bolter performance may be degraded. The autopilot will be inoperative.	1. Perform controllability check at altitude. 2. DO NOT RESET if flying qualities are acceptable for a safe recovery. 3. Perform a straight-in landing. (If practical, set flaps HALF.)

NWS - RUD OFF

ADVISORIES ADV

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
~~ALGN~~	INS/EGI switched to NAV w/o a complete alignment.	Complete alignment or switch to a GYRO mode.
AM DL	Radar hardware needed to support AMRAAM data link not installed	Information
A/P	Autopilot mode selected.	Information
ARMAMENT ADVISORIES	Refer to A1-F18AC-TAC-series.	
ATTH	Autopilot attitude hold mode selected.	Information
BALT	Autopilot barometric altitude hold mode selected.	Information
BIT	Built-in-test failure.	1. MENU BIT – CHECK **If ADC status - NOGO (A/B), MUX FAIL (C/D), or NOT RDY -** 1. Confirm airspeed box blank 2. Confirm altitude box blank or contains radar altitude (below 5000 feet AGL) 3. During CV Operations, recover early if practical 4. ATT switch - STBY 5. Use AOA E bracket for AOA control 6. Inform the LSO the indexers will be inoperative/ inaccurate 7. GPWS - Unbox
COM1H COM2H	ARC 210 COM1/ COM2 not loaded with Have Quick time	Information
COM1L COM2L	ARC 210 COM1/ COM2 not loaded with presets and EP	Information
COM1S COM2S	ARC 210 COM1/ COM2 not loaded with SINCGARS time	Information
CDATA	Unit other than MU contains classified data.	Information

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
CONFG	All systems have not been checked for configuration compatibility because one or more of the systems is not communicating.	Information
CPLD	Autopilot coupled to WYPT, OAP, SEQ#, or TCN.	Information
CRUIS	Gain switch in ORIDE and flap switch AUTO. • Leading and trailing edge flaps about 3°. • Flaps optimized for 35,000 feet, Mach 0.7, and 2° AOA.	Information
D-BAD	ALE-47 indicates a misfire	Information
DCSCS	COMSEC failure detected	Information
DISCH (FIRE EXTGH)	FIRE EXTGH pushbutton pressed	Information
D-LOW	ALE-47 indicates an expendable BINGO level reached	Information
F-QTY	Failure in fuel quantity gaging system that may affect fuel or CG display.	1. Fuel DDI display - CHECK **If all fuel quantities invalid** - 2. Signal data computer - RESET 3. Fuel BIT - PERFORM
FLAPS (Amber)	Trailing edge flaps OFF, Leading edge flaps OFF, SPIN mode ON, GAIN ORIDE selected, or FLAPS HALF/FULL over 250 knots.	Information
FPAS	Flight Performance Advisory System is unable to calculate HOME FUEL caution.	Information
FUEL	FUEL LO, BINGO, or CG caution BIT failure.	Fuel BIT – INITIATE

ADVISORIES ADV

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
FULL	Flaps switch FULL.	Information
GPS	GPS NORM flight phase mode selected and EHPE exceeds 1092 ft.	Information
GPSLD	GPS loading failure detected	Information
HALF	Flaps switch HALF.	Information
L HEAT R HEAT	Designated engine anti-ice valve open.	Information
HSEL	A/P heading hold mode selected.	Information
LAND	Gain switch in ORIDE and flap switch HALF or FULL. • Leading edge flaps 17°. • Leading edge flaps optimized for 8.1° AOA. • Trailing edge flaps 30° or 45°.	Information
L BAR (Green)	Launch bar extended on the deck.	Information
LEFT	**STEADY** - Left gear down and locked. --- **FLASHING** - Left gear planing link failed.	Information --- 1. Refer to Planing Link Failure.
~~LOAD~~	Improper weapon load or codes or incompatible fuzing. Refer to A1-F18AC-TAC-series.	Check SMS for proper configuration.
M2ID	ACL mode enabled and Mode 2 code differs from Link 4 value.	Information
M4 OK	Mode 4 valid interrogation/ reply.	Information
MIDS	MIDS function status change	1. Select MIDS from the SUPT menu
MNTCD	Maintenance card failed or not installed. AMU door open.	Information
MU FL	Memory unit memory full. Oldest stored data will be overwritten.	Information

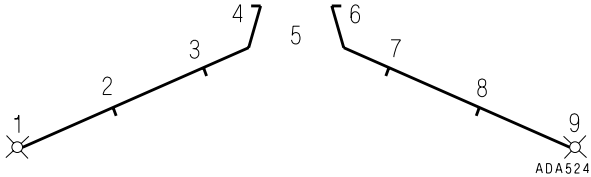
INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
NOSE	Nose gear down and locked.	Information
NOSEC	GPS operating in non-secure mode	Information
PCODE	• Keys are incorrect • Parity error detected • Keys not loaded	Information
P/INS	Satellite comm lost. INS not being updated with GPS data.	Information
RALT	Autopilot radar altitude hold mode selected.	Information
RC DL	Data link pod installed and ATARS not powered	1. ATARS switch - ON **If advisory remains -** 2. ATARS power switch - OFF 3. CLP power knob - OFF
~~RCDR~~	MU turned off	Information
READY (APU)	APU on line and ready.	Information
READY (FIRE EXTGH)	Fire extinguisher armed.	Information
RSET	Reset cleared FCS failure.	Information
~~RSET~~	Reset did not clear FCS failure.	Information
RIGHT	**STEADY** Right gear down and locked. --- **FLASHING** Right gear planing link failed.	Information --- 1. Refer to Planing Link Failure.
SKID	Gear down and anti-skid switch – OFF	Information

FULL - SKID

ADVISORIES ADV

INDICATOR	CAUSE/REMARKS	CORRECTIVE ACTION
SPD BRK	Speed brake not fully retracted.	Information
TRIM	Control surfaces trimmed: roll and yaw neutral stabilator 4° NU (8.5 PROM) or 12° NU (10.5 PROM AND UP). MECH stick position zero.	Information
VVEL	GPS not accurate enough to aid HUD velocity vector	Information
WPNS	Bulk data transfer error or JSOW overheat condition	Information
YCODE	GPS not tracking in secure mode	1. Select NOSEC GPS if required.

External Stores Jettison Chart



ADA524-5-1-039

EMERGENCY JETTISON:

HOW - 1. EMERG JETT BUTTON - PUSH
REQUIREMENTS - WEIGHT OFF WHEELS OR GEAR HANDLE UP
WHAT - - JETTISON ALL STORES/RACKS/LAUNCHERS FROM THE FIVE PYLON WEAPONS STATIONS RELEASED IN PAIRS 2&8, 3&7, AND 5.
- LOCATE BUTTON PRIOR TO EVERY TAKEOFF/CAT

SELECTIVE JETTISON:

HOW -
1. LT TEST SWITCH - TEST
2. SELECT JETT KNOB - ROTATE TO DESIRED POSITION
3. JETT STATION PUSHTILE(S) - SELECT
4. SIM - UNBOXED
5. MASTER ARM SWITCH - ARM
6. SELECT JETT BUTTON - PUSH

REQUIREMENTS - LANDING GEAR UP AND LOCKED (STATIONS 4 AND 6)
WHAT - - STORES OR STORES AND RACKS/LAUNCHERS ARE EJECTED ACCORDING TO THE POSITION OF SELECT JETT KNOB AND PUSHTILES

AUXILLARY RELEASE:

HOW -
1. LT TEST SWITCH - TEST
2. AUX REL SWITCH - ENABLE
3. SELECT JETT KNOB - ROTATE TO DESIRED POSITION
4. JETT STATION PUSHTILE(S) - SELECT
5. SIM - UNBOXED
6. MASTER ARM SWITCH - ARM
7. SELECT JETT BUTTON - PUSH

REQUIREMENTS - LANDING GEAR UP AND LOCKED
WHAT - - HUNG STORES OR STORES AND RACKS/LAUNCHERS ARE GRAVITY RELEASED FROM STATION ACCORDING TO POSITION OF SEL JETT KNOB AND PUSHTILES

AFTER TAKEOFF:

SELECT JETT KNOB - ROTATE OUT OF SAFE TO DESIRED POSITION
JETT STATION PUSHTILES - SELECT

WITH AN ENGAGEMENT:

MASTER ARM SWITCH - ON
PUSH SELECT JETT BUTTON

HARM ANTI-COMPROMISE:

PERFORM LIGHTS TEST
SELECT JETT KNOB - ROTATE TO STORES
JETT STATION PUSHTILE(S) - SELECT
SELECT JETT BUTTON - PUSH

LIMITATIONS:

	G	A/S
EMERG JETT	0.5 TO 5.0	SEE TAC MANUAL
SELECT JETT	SAME AS EMPLOY (TANKS:1.0-2.0)	SAME AS EMPLOY (TANKS: 575/ .9)
AUX RELEASE	1.0 LEVEL	SEE TAC MANUAL

DEGRADED SYSTEMS: USING AUX REL, PILOT IS ABLE TO RELEASE AN ARMED HARPOON

BINGO - 400 ENGINE

TABLE OF CONTENTS

TAB FOR BINGO

SINGLE ENGINE BINGO

NOTE

BINGO DATA BASED ON:

- INITIAL ALTITUDE IS SEA LEVEL.
- MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
- 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
- FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
- NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	505 KCAS to M = 0.86	40,000	258	73	3,090	29	4,480	279	43
	180		40,000	258	73	2,970	26	4,170	279	39
	160		40,000	258	73	2,840	24	3,880	279	34
	140		40,000	258	73	2,720	21	3,580	278	30
	120		39,000	263	71	2,600	19	3,280	278	26
	100		37,000	272	66	2,470	16	2,980	278	22
	80		33,000	280	58	2,340	14	2,680	277	17
	60		26,000	278	44	2,190	11	2,390	277	13
	40		18,000	277	30	2,010	8	2,090	277	9
	20		7,000	278	12	1,790	4	1,800	276	4
DRAG INDEX 50 COUNTS	200	475 KCAS to M = 0.82	40,000	254	65	3,270	29	4,760	275	44
	180		40,000	254	65	3,130	26	4,430	275	39
	160		40,000	253	65	2,990	24	4,100	274	35
	140		40,000	253	65	2,850	21	3,770	274	31
	120		40,000	253	65	2,710	19	3,450	274	26
	100		39,000	258	62	2,570	16	3,120	273	22
	80		33,000	268	51	2,430	13	2,800	273	18
	60		28,000	268	42	2,260	11	2,470	272	13
	40		18,000	269	27	2,070	7	2,150	272	9
	20		3,000	270	5	1,820	4	1,830	272	4
DRAG INDEX 100 COUNTS	200	450 KCAS to M = 0.78	40,000	259	57	3,470	28	5,040	271	44
	180		40,000	259	57	3,310	26	4,680	270	40
	160		40,000	259	57	3,150	23	4,330	270	36
	140		40,000	259	57	2,990	21	3,970	269	31
	120		40,000	258	57	2,830	18	3,610	269	27
	100		39,000	256	56	2,670	16	3,260	268	22
	80		35,000	259	48	2,510	13	2,910	268	18
	60		28,000	260	38	2,330	10	2,550	267	13
	40		19,000	262	25	2,120	7	2,200	267	9
	20		3,000	262	4	1,850	4	1,850	266	5
DRAG INDEX 150 COUNTS	200	330 KCAS to M = 0.76	40,000	243	52	3,660	29	5,330	266	45
	180		40,000	243	52	3,490	27	4,940	265	41
	160		40,000	243	52	3,310	24	4,550	265	36
	140		40,000	242	52	3,140	21	4,160	264	32
	120		40,000	242	52	2,960	19	3,780	264	27
	100		39,000	245	50	2,790	16	3,400	263	23
	80		35,000	248	44	2,610	14	3,020	263	18
	60		29,000	252	35	2,410	11	2,640	262	14
	40		17,000	256	20	2,160	8	2,260	262	9
	20		7,000	254	8	1,860	4	1,880	261	5

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BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	320 KCAS to M = 0.75	40,000	238	47	3,840	29	5,620	262	46
	180		40,000	238	47	3,650	27	5,200	261	41
	160		40,000	238	47	3,460	24	4,780	260	37
	140		40,000	237	47	3,260	21	4,360	260	32
	120		40,000	237	47	3,070	19	3,950	259	28
	100		40,000	237	47	2,880	16	3,540	258	23
	80		35,000	240	40	2,690	13	3,130	258	19
	60		28,000	246	31	2,470	11	2,720	257	14
	40		17,000	250	19	2,210	8	2,310	256	9
	20		7,000	250	8	1,890	4	1,910	256	5
DRAG INDEX 250 COUNTS	200	300 KCAS to M = 0.72	40,000	232	43	4,030	30	5,910	258	47
	180		40,000	232	43	3,820	27	5,450	257	42
	160		40,000	232	43	3,600	25	5,010	256	37
	140		40,000	231	43	3,390	22	4,560	256	33
	120		40,000	231	43	3,180	19	4,120	255	28
	100		38,000	229	40	2,970	16	3,680	254	24
	80		34,000	236	35	2,760	14	3,240	253	19
	60		28,000	240	29	2,530	11	2,800	253	14
	40		17,000	244	17	2,250	8	2,370	252	10
	20		7,000	245	7	1,910	4	1,940	251	5
DRAG INDEX 300 COUNTS	200	280 KCAS to M = 0.68	39,000	226	39	4,220	31	6,190	254	47
	180		39,000	226	39	3,990	28	5,710	253	43
	160		39,000	226	39	3,750	25	5,230	252	38
	140		39,000	225	39	3,520	23	4,750	252	33
	120		39,000	225	39	3,300	20	4,280	251	29
	100		38,000	225	37	3,070	17	3,810	250	24
	80		34,000	230	33	2,830	14	3,350	249	19
	60		28,000	235	26	2,590	11	2,880	248	15
	40		17,000	238	16	2,290	8	2,420	247	10
	20		7,000	241	6	1,940	5	1,960	246	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	505 KCAS to M = 0.86	40,000	262	74	3,230	29	4,610	302	40
	180		40,000	262	74	3,100	26	4,290	302	36
	160		39,000	266	72	2,960	24	3,980	301	32
	140		39,000	266	72	2,820	21	3,670	301	28
	120		38,000	271	69	2,680	19	3,360	300	24
	100		35,000	286	62	2,540	16	3,050	299	20
	80		32,000	295	56	2,400	14	2,740	299	16
	60		24,000	297	42	2,230	11	2,430	298	12
	40		17,000	294	29	2,040	8	2,120	297	8
	20		3,000	296	5	1,800	4	1,810	297	4
DRAG INDEX 50 COUNTS	200	475 KCAS to M = 0.82	40,000	256	66	3,430	29	4,920	293	41
	180		40,000	256	66	3,280	26	4,570	292	37
	160		40,000	256	66	3,120	24	4,230	291	33
	140		39,000	261	64	2,970	21	3,880	290	29
	120		38,000	286	62	2,810	19	3,540	289	25
	100		36,000	278	58	2,650	16	3,200	289	21
	80		32,000	288	50	2,490	13	2,860	288	17
	60		26,000	287	40	2,310	11	2,520	287	13
	40		18,000	285	28	2,100	7	2,180	286	8
	20		3,000	285	5	1,830	4	1,840	285	4
DRAG INDEX 100 COUNTS	200	450 KCAS to M = 0.78	40,000	253	60	3,630	29	5,220	282	43
	180		40,000	253	60	3,460	26	4,830	281	38
	160		40,000	253	60	3,280	24	4,460	280	34
	140		40,000	254	60	3,110	21	4,080	280	30
	120		40,000	254	60	2,940	19	3,710	279	26
	100		36,000	269	52	2,760	16	3,340	279	22
	80		33,000	273	47	2,580	13	2,970	279	17
	60		27,000	277	38	2,380	10	2,600	278	13
	40		18,000	278	25	2,150	7	2,230	278	9
	20		3,000	278	4	1,860	4	1,870	277	4
DRAG INDEX 150 COUNTS	200	330 KCAS to M = 0.76	40,000	259	54	3,870	29	5,520	277	43
	180		40,000	259	54	3,670	26	5,110	277	39
	160		40,000	259	54	3,480	24	4,700	276	35
	140		40,000	259	54	3,280	21	4,290	276	30
	120		38,000	258	51	3,090	19	3,890	275	26
	100		37,000	259	49	2,890	16	3,490	275	22
	80		33,000	265	43	2,690	14	3,090	274	18
	60		28,000	267	36	2,470	11	2,690	273	13
	40		14,000	274	18	2,200	8	2,290	273	9
	20		7,000	273	9	1,880	4	1,900	272	4

BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	320 KCAS to M = 0.75	40,000	243	50	4,070	29	5,820	274	44
	180		40,000	243	50	3,860	27	5,380	273	40
	160		40,000	243	50	3,640	24	4,940	272	35
	140		39,000	247	48	3,430	22	4,500	272	31
	120		38,000	250	47	3,210	19	4,070	271	27
	100		37,000	253	45	3,000	16	3,640	270	22
	80		33,000	256	40	2,770	14	3,210	270	18
	60		27,000	259	32	2,540	11	2,780	269	13
	40		14,000	266	16	2,250	8	2,350	269	9
	20		7,000	267	8	1,910	4	1,930	268	4
DRAG INDEX 250 COUNTS	200	300 KCAS to M = 0.72	39,000	242	45	4,280	30	6,120	270	45
	180		39,000	242	45	4,050	27	5,650	269	40
	160		39,000	242	45	3,810	25	5,180	268	36
	140		38,000	245	43	3,570	22	4,710	268	31
	120		38,000	245	43	3,340	19	4,240	267	27
	100		36,000	248	40	3,100	17	3,780	266	23
	80		33,000	248	37	2,860	14	3,320	266	18
	60		28,000	254	31	2,600	11	2,860	265	14
	40		14,000	261	15	2,300	8	2,410	265	9
	20		7,000	261	7	1,930	4	1,960	264	5
DRAG INDEX 300 COUNTS	200	280 KCAS to M = 0.68	37,000	240	39	4,510	31	6,410	266	45
	180		37,000	240	39	4,240	28	5,910	265	41
	160		37,000	240	39	3,980	25	5,410	265	36
	140		37,000	240	39	3,720	23	4,910	264	32
	120		36,000	241	37	3,460	20	4,420	263	27
	100		36,000	241	37	3,210	17	3,930	262	23
	80		33,000	243	34	2,940	14	3,440	262	18
	60		27,000	249	27	2,670	11	2,950	261	14
	40		15,000	255	15	2,350	8	2,470	260	9
	20		7,000	255	7	1,960	4	1,980	260	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	225 KCAS to M = 0.47	34,000	198	22	5,360	38	7,680	207	58
	180		34,000	198	22	5,020	34	7,040	207	52
	160		34,000	198	22	4,670	31	6,400	206	47
	140		34,000	198	22	4,330	27	5,770	206	41
	120		34,000	198	22	3,990	24	5,150	205	35
	100		32,000	198	20	3,660	20	4,530	205	29
	80		30,000	198	19	3,310	16	3,920	204	24
	60		28,000	197	17	2,960	13	3,310	204	18
	40		18,000	197	11	2,570	9	2,700	203	12
	20		7,000	200	4	2,090	5	2,100	203	6
DRAG INDEX 50 COUNTS	200	225 KCAS to M = 0.46	33,000	192	20	5,580	39	7,910	206	58
	180		33,000	193	20	5,200	35	7,240	205	53
	160		33,000	194	20	4,830	32	6,570	204	47
	140		33,000	194	20	4,460	28	5,920	204	41
	120		33,000	195	20	4,100	24	5,280	203	35
	100		33,000	195	20	3,740	20	4,640	203	30
	80		30,000	196	18	3,380	17	4,010	202	24
	60		27,000	195	16	3,010	13	3,370	202	18
	40		19,000	194	11	2,600	9	2,750	201	12
	20		7,000	197	4	2,110	5	2,120	201	6
DRAG INDEX 100 COUNTS	200	220 KCAS to M = 0.46	32,000	187	18	5,780	40	8,140	204	59
	180		32,000	187	18	5,390	37	7,440	203	53
	160		32,000	187	18	5,000	33	6,750	202	47
	140		32,000	187	18	4.610	29	6,080	202	42
	120		32,000	187	18	4,230	25	5,410	201	36
	100		32,000	187	18	3,850	21	4,750	201	30
	80		30,000	191	17	3,460	17	4,090	200	24
	60		27,000	190	15	3,070	13	3,440	200	18
	40		18,000	192	10	2,650	9	2,790	199	12
	20		7,000	194	4	2,130	5	2,140	199	6
DRAG INDEX 150 COUNTS	200	210 KCAS to M = 0.43	30,000	196	16	6,000	40	8,360	202	60
	180		30,000	194	16	5,580	37	7,640	201	54
	160		30,000	192	16	5,170	33	6,930	200	48
	140		30,000	190	16	4,760	29	6,230	200	42
	120		30,000	189	16	4,350	25	5,540	199	36
	100		30,000	187	16	3,940	21	4,850	199	30
	80		29,000	186	15	3,540	18	4,170	198	24
	60		27,000	186	14	3,130	13	3,500	198	18
	40		18,000	190	9	2,690	10	2,830	197	12
	20		7,000	191	4	2,160	6	2,170	197	6

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	210 KCAS to M=0.43	30,000	194	15	6,170	41	8,530	199	60
	180		30,000	192	15	5,730	37	7,840	199	54
	160		30,000	189	15	5,300	33	7,100	198	48
	140		30,000	187	15	4,880	30	6,370	198	43
	120		30,000	184	15	4,450	26	5,660	197	37
	100		30,000	182	15	4,030	22	4,960	197	31
	80		29,000	181	15	3,610	18	4,260	196	25
	60		27,000	181	14	3,180	14	3,560	195	18
	40		18,000	187	9	2,720	10	2,870	195	12
	20		7,000	189	3	2,180	6	2,190	194	6
DRAG INDEX 250 COUNTS	200	200 KCAS to M=0.43	30,000	175	15	6,360	44	8,810	197	61
	180		30,000	173	15	5,900	40	8,030	197	55
	160		30,000	173	15	5,450	36	7,270	196	49
	140		30,000	174	15	5,000	31	6,520	196	43
	120		30,000	174	15	4,560	27	5,790	195	37
	100		30,000	174	15	4,120	22	5,060	194	31
	80		29,000	175	14	3,690	18	4,340	194	25
	60		26,000	176	13	3,240	14	3,620	193	19
	40		18,000	184	9	2,770	10	2,910	192	12
	20		3,000	188	1	2,200	6	2,210	192	6
DRAG INDEX 300 COUNTS	200	200 KCAS to M=0.42	30,000	172	14	6,520	45	9,020	195	62
	180		30,000	171	14	6,050	40	8,230	194	56
	160		30,000	171	14	5,580	36	7,440	194	49
	140		30,000	171	14	5,120	32	6,670	194	43
	120		30,000	171	14	4,660	27	5,910	193	37
	100		30,000	171	14	4,210	23	5,160	192	31
	80		29,000	172	13	3,750	19	4,420	192	25
	60		26,000	173	12	3,290	14	3,680	191	19
	40		18,000	180	8	2,800	10	2,950	190	13
	20		3,000	185	1	2,220	6	2,230	190	6

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	225 KCAS to M=0.47	30,000	211	21	5,840	38	8,080	226	53
	180		30,000	210	21	5,440	35	7,400	225	48
	160		30,000	209	21	5,040	31	6,730	224	43
	140		30,000	208	21	4,640	27	6,060	222	38
	120		30,000	207	21	4,250	24	5,390	220	33
	100		30,000	206	21	3,860	20	4,730	219	27
	80		28,000	207	19	3,470	16	4,080	217	22
	60		26,000	207	18	3,070	13	3,420	215	17
	40		17,000	206	11	2,640	9	2,770	213	11
	20		4,000	213	3	2,120	5	2,140	212	6
DRAG INDEX 50 COUNTS	200	225 KCAS to M=0.46	30,000	208	20	6,040	39	8,330	224	54
	180		30,000	207	20	5,620	35	7,620	222	49
	160		30,000	206	20	5,200	31	6,920	221	44
	140		30,000	206	20	4,780	28	6,220	219	38
	120		30,000	205	20	4,370	24	5,530	217	33
	100		29,000	205	19	3,960	20	4,840	215	28
	80		27,000	206	18	3,550	17	4,160	213	23
	60		26,000	206	17	3,130	13	3,490	212	17
	40		18,000	205	12	2,680	9	2,820	210	11
	20		4,000	211	3	2,140	5	2,160	209	6
DRAG INDEX 100 COUNTS	200	220 KCAS to M=0.46	29,000	207	18	6,260	39	8,580	221	54
	180		29,000	206	18	5,810	36	7,840	219	49
	160		29,000	205	18	5,370	32	7,120	217	44
	140		29,000	205	18	4,930	28	6,390	216	39
	120		29,000	204	18	4,490	24	5,670	214	34
	100		29,000	203	18	4,060	21	4,960	212	28
	80		27,000	204	17	3,630	17	4,250	211	23
	60		24,000	204	15	3,190	13	3,550	209	17
	40		17,000	202	10	2,720	9	2,860	208	12
	20		4,000	208	2	2,170	5	2,180	207	6
DRAG INDEX 150 COUNTS	200	210 KCAS to M=0.43	28,000	202	17	6,510	41	8,830	217	55
	180		28,000	201	17	6,030	37	8,070	215	50
	160		28,000	201	17	5,560	33	7,310	213	45
	140		28,000	201	17	5,090	29	6,560	212	40
	120		28,000	201	17	4,630	25	5,810	210	34
	100		28,000	201	17	4,180	21	5,070	208	29
	80		26,000	202	15	3,720	17	4,340	207	23
	60		22,000	202	13	3,250	13	3,620	206	17
	40		18,000	201	10	2,770	9	2,910	205	12
	20		4,000	206	2	2,190	5	2,200	204	6

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	210 KCAS to M=0.43	28,000	198	16	6,710	41	9,080	213	56
	180		28,000	199	16	6,210	37	8,290	211	51
	160		28,000	199	16	5,710	33	7,500	210	46
	140		28,000	199	16	5,220	29	6,720	208	40
	120		28,000	198	16	4,740	25	5,950	206	35
	100		28,000	198	16	4,270	21	5,190	205	29
	80		26,000	200	15	3,790	17	4,430	204	24
	60		23,000	201	13	3,310	13	3,690	203	18
	40		17,000	198	9	2,800	10	2,950	202	12
	20		4,000	203	2	2,210	6	2,220	201	6
DRAG INDEX 250 COUNTS	200	200 KCAS to M=0.43	27,000	192	15	6,950	43	9,330	209	57
	180		27,000	193	15	6,430	39	8,510	207	52
	160		27,000	194	15	5,910	34	7,690	206	47
	140		27,000	195	15	5,400	30	6,880	204	41
	120		27,000	195	15	4,890	26	6,080	203	35
	100		27,000	196	15	4,390	22	5,300	202	30
	80		26,000	198	14	3,900	18	4,520	201	24
	60		22,000	199	12	3,390	14	3,750	200	18
	40		17,000	196	9	2,860	10	2,990	199	12
	20		3,000	201	2	2,240	6	2,240	198	6
DRAG INDEX 300 COUNTS	200	200 KCAS to M=0.42	26,000	189	13	7,170	44	9,570	206	58
	180		26,000	190	13	6,620	40	8,720	204	53
	160		26,000	191	13	6,080	35	7,870	202	47
	140		26,000	191	13	5,540	31	7,040	201	42
	120		26,000	191	13	5,010	27	6,220	200	36
	100		26,000	192	13	4,490	22	5,410	199	30
	80		26,000	192	13	3,970	18	4,610	198	24
	60		22,000	196	11	3,450	14	3,810	197	18
	40		17,000	194	9	2,900	10	3,030	197	12
	20		3,000	198	2	2,260	6	2,260	196	6

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	220 KCAS to M=0.52	35,000	201	24	5,140	37	7,510	218	55
	180		35,000	200	24	4,810	33	6,890	217	50
	160		35,000	199	24	4,490	30	6,270	216	45
	140		35,000	198	24	4,180	27	5,650	215	39
	120		35,000	197	24	3,860	23	5,040	214	34
	100		34,000	198	23	3,550	20	4,440	213	28
	80		32,000	199	22	3,230	16	3,840	212	23
	60		28,000	201	19	2,900	12	3,250	211	17
	40		18,000	201	12	2,520	9	2,670	210	11
	20		7,000	207	4	2,070	5	2,080	209	6
DRAG INDEX 50 COUNTS	200	220 KCAS to M=0.51	33,000	198	21	5,340	38	7,760	204	59
	180		33,000	198	21	4,990	34	7,090	209	52
	160		33,000	197	21	4,650	31	6,430	213	45
	140		33,000	196	21	4,310	27	5,800	212	40
	120		33,000	195	21	3,970	23	5,170	211	34
	100		33,000	195	21	3,630	20	4,450	210	29
	80		32,000	195	20	3,300	16	3,930	210	23
	60		28,000	197	18	2,950	13	3,320	209	17
	40		18,000	197	11	2,560	9	2,710	208	12
	20		7,000	203	4	2,090	5	2,100	207	6
DRAG INDEX 100 COUNTS	200	220 KCAS to M=0.50	33,000	194	20	5,510	39	7,940	212	57
	180		33,000	194	20	5,140	35	7,280	211	51
	160		33,000	193	20	4,780	31	6,620	211	46
	140		33,000	193	20	4,420	27	5,960	210	40
	120		33,000	192	20	4,070	24	5,310	209	34
	100		32,000	193	19	3,720	20	4,660	208	29
	80		32,000	192	19	3,360	16	4,020	207	23
	60		27,000	194	16	3,000	13	3,380	206	17
	40		18,000	194	10	2,600	9	2,750	205	12
	20		7,000	200	4	2,110	5	2,130	204	6
DRAG INDEX 150 COUNTS	200	220 KCAS to M=0.47	32,000	186	18	5,720	40	8,170	210	57
	180		32,000	186	18	5,330	36	7,480	209	52
	160		32,000	187	18	4,940	32	6,800	209	46
	140		32,000	187	18	4,560	29	6,120	208	40
	120		32,000	188	18	4,180	25	5,440	207	35
	100		32,000	188	18	3,810	21	4,770	206	29
	80		30,000	190	17	3,430	17	4,110	205	23
	60		27,000	191	15	3,050	13	3,450	204	18
	40		18,000	191	10	2,630	9	2,790	203	12
	20		7,000	197	4	2,130	5	2,150	202	6

BINGO

GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	220 KCAS to M=0.45	30,000	189	16	5,920	41	8,400	208	58
	180		30,000	189	16	5,510	37	7,680	207	52
	160		30,000	188	16	5,100	33	6,970	206	47
	140		30,000	188	16	4,700	29	6,270	206	41
	120		30,000	188	16	4,290	25	5,570	205	35
	100		30,000	187	16	3,900	21	4,880	204	29
	80		29,000	188	16	3,500	17	4,190	203	24
	60		27,000	188	14	3,100	13	3,510	201	18
	40		19,000	189	10	2,670	9	2,840	200	12
	20		6,000	194	3	2,150	6	2,170	199	6
DRAG INDEX 250 COUNTS	200	220 KCAS to M=0.45	30,000	187	15	6,100	41	8,620	205	58
	180		30,000	187	15	5,670	37	7,880	205	53
	160		30,000	187	15	5,240	33	7,150	204	47
	140		30,000	186	15	4,820	29	6,420	203	41
	120		30,000	186	15	4,400	25	5,700	202	36
	100		30,000	185	15	3,990	21	4,990	201	30
	80		29,000	186	15	3,580	17	4,280	200	24
	60		27,000	186	14	3,160	13	3,570	199	18
	40		18,000	188	9	2,710	10	2,880	198	12
	20		6,000	192	3	2,170	6	2,190	196	6
DRAG INDEX 300 COUNTS	200	220 KCAS to M=0.44	30,000	186	15	6,280	42	8,850	203	59
	180		30,000	185	15	5,840	38	8,080	202	53
	160		30,000	185	15	5,390	34	7,330	201	48
	140		30,000	184	15	4,950	30	6,580	201	42
	120		30,000	184	15	4,510	26	5,830	199	36
	100		30,000	183	15	4,080	22	5,090	198	30
	80		29,000	184	14	3,650	18	4,360	197	24
	60		26,000	184	13	3,220	13	3,640	196	18
	40		19,000	186	9	2,750	10	2,920	195	12
	20		6,000	190	3	2,190	6	2,210	194	6

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS (ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	315 KCAS to M = 0.75	33,000	275	52	3,380	31	4,210	271	44
	180		33,000	275	52	3,230	28	3,940	271	40
	160		33,000	274	52	3,080	25	3,660	270	36
	140		31,000	273	48	2,930	23	3,390	270	31
	120		28,000	272	43	2,770	20	3,120	269	27
	100		22,000	268	33	2,600	18	2,840	269	22
	80		18,000	266	27	2,410	15	2,570	269	18
	60		14,000	264	21	2,210	12	2,300	268	13
	40		9,000	264	13	2,000	8	2,040	268	9
	20		4,000	264	6	1,760	4	1,770	267	4
DRAG INDEX 50 COUNTS	200	310 KCAS to M = 0.70	30,000	263	41	3,680	32	4,500	266	45
	180		30,000	263	41	3,490	29	4,200	265	41
	160		30,000	262	41	3,310	26	3,890	265	36
	140		27,000	262	37	3,130	23	3,590	264	32
	120		23,000	261	31	2,930	21	3,290	264	27
	100		22,000	260	30	2,730	18	2,990	263	23
	80		17,000	258	23	2,520	15	2,690	263	18
	60		13,000	258	17	2,290	12	2,390	262	14
	40		9,000	257	12	2,050	8	2,090	262	9
	20		3,000	257	4	1,790	4	1,800	261	5
DRAG INDEX 100 COUNTS	200	300 KCAS to M = 0.70	23,000	254	28	4,000	34	4,800	260	46
	180		23,000	254	28	3,780	31	4,470	260	42
	160		23,000	253	28	3,560	27	4,130	259	37
	140		22,000	253	27	3,330	24	3,800	258	33
	120		21,000	253	26	3,100	21	3,460	258	28
	100		18,000	253	22	2,870	18	3,130	257	23
	80		17,000	252	21	2,630	15	2,800	257	19
	60		13,000	252	16	2,370	12	2,480	256	14
	40		8,000	251	10	2,110	8	2,150	256	9
	20		3,000	252	4	1,820	4	1,820	255	5
DRAG INDEX 150 COUNTS	200	290 KCAS to M = 0.70	20,000	248	22	4,300	36	5,110	255	47
	180		20,000	248	22	4,040	33	4,740	255	42
	160		20,000	247	22	3,780	29	4,370	254	38
	140		20,000	247	22	3,520	25	4,000	253	33
	120		19,000	247	21	3,260	22	3,640	252	29
	100		17,000	247	19	3,000	19	3,280	251	24
	80		16,000	246	18	2,730	15	2,920	250	19
	60		13,000	246	14	2,450	12	2,560	250	14
	40		8,000	245	9	2,160	9	2,210	249	10
	20		3,000	247	3	1,840	5	1,850	248	5

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	275 KCAS to M = 0.70	19,000	242	19	4,550	38	5,410	250	48
	180		19,000	241	19	4,260	34	5,000	250	43
	160		19,000	241	19	3,970	30	4,600	249	39
	140		19,000	240	19	3,690	26	4,210	248	34
	120		18,000	240	18	3,400	23	3,810	247	29
	100		17,000	240	17	3,120	19	3,420	246	24
	80		16,000	239	16	2,830	16	3,030	245	20
	60		13,000	239	13	2,530	12	2,650	245	15
	40		8,000	240	8	2,210	9	2,260	244	10
	20		3,000	242	3	1,870	5	1,880	243	5
DRAG INDEX 250 COUNTS	200	260 KCAS to M = 0.70	18,000	236	17	4,820	39	5,690	246	49
	180		18,000	236	17	4,500	35	5,260	245	44
	160		18,000	235	17	4,180	32	4,830	244	39
	140		18,000	234	17	3,860	28	4,400	244	35
	120		18,000	234	17	3,550	24	3,980	243	30
	100		18,000	233	17	3,240	20	3,560	242	25
	80		17,000	233	16	2,920	16	3,140	241	20
	60		13,000	234	12	2,600	13	2,730	240	15
	40		9,000	235	8	2,260	9	2,320	239	10
	20		3,000	237	3	1,900	5	1,910	238	5
DRAG INDEX 300 COUNTS	200	240 KCAS to M = 0.70	17,000	232	15	5,100	41	5,980	241	50
	180		17,000	231	15	4,740	37	5,510	240	45
	160		17,000	231	15	4,390	33	5,060	240	40
	140		17,000	230	15	4,050	29	4,600	239	35
	120		17,000	229	15	3,700	25	4,150	238	30
	100		17,000	229	15	3,360	21	3,700	237	25
	80		17,000	228	15	3,020	17	3,250	236	20
	60		14,000	228	12	2,680	13	2,810	235	15
	40		9,000	230	8	2,320	9	2,370	234	10
	20		3,000	232	3	1,930	5	1,930	233	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS(ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	315 KCAS to M = 0.75	30,000	295	48	3,560	31	4,380	287	42
	180		30,000	294	48	3,390	28	4,090	286	38
	160		29,000	293	46	3,220	26	3,800	285	34
	140		28,000	293	44	3,050	23	3,510	285	30
	120		23,000	288	36	2,870	20	3,220	284	25
	100		21,000	285	33	2,680	17	2,930	283	21
	80		18,000	284	28	2,480	14	2,640	283	17
	60		13,000	283	20	2,260	11	2,350	282	13
	40		8,000	282	12	2,030	8	2,070	282	9
	20		3,000	281	5	1,780	4	1,780	281	4
DRAG INDEX 50 COUNTS	200	310 KCAS to M = 0.71	26,000	278	37	3,890	32	4,700	278	43
	180		26,000	277	37	3,680	29	4,370	278	39
	160		26,000	277	37	3,470	26	4,040	277	35
	140		24,000	279	34	3,260	23	3,720	277	30
	120		22,000	278	31	3,040	20	3,400	276	26
	100		19,000	277	27	2,820	18	3,080	276	22
	80		17,000	277	24	2,590	15	2,760	275	17
	60		13,000	277	18	2,350	11	2,440	275	13
	40		9,000	276	13	2,090	8	2,130	274	9
	20		3,000	275	4	1,810	4	1,810	274	4
DRAG INDEX 100 COUNTS	200	300 KCAS to M = 0.70	21,000	272	27	4,220	34	5,020	274	44
	180		21,000	271	27	3,970	31	4,660	273	40
	160		21,000	271	27	3,720	27	4,300	273	35
	140		21,000	271	27	3,470	24	3,940	272	31
	120		19,000	270	24	3,220	21	3,590	271	27
	100		18,000	270	23	2,970	18	3,240	271	22
	80		16,000	270	20	2,700	15	2,890	270	18
	60		13,000	270	17	2,430	12	2,540	270	13
	40		8,000	270	10	2,150	8	2,190	269	9
	20		3,000	269	4	1,840	4	1,840	269	4
DRAG INDEX 150 COUNTS	200	290 KCAS to M = 0.70	19,000	264	22	4,530	35	5,340	270	45
	180		19,000	264	22	4,250	32	4,940	269	40
	160		19,000	263	22	3,960	29	4,550	268	36
	140		19,000	263	22	3,680	25	4,170	268	31
	120		18,000	263	21	3,400	22	3,780	267	27
	100		17,000	262	20	3,110	18	3,390	266	23
	80		16,000	262	19	2,820	15	3,010	266	18
	60		12,000	263	14	2,520	12	2,630	265	14
	40		8,000	264	9	2,200	8	2,250	264	9
	20		3,000	263	3	1,870	4	1,880	264	5

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	275 KCAS to M = 0.70	17,000	259	18	4,860	37	5,650	265	45
	180		17,000	259	18	4,530	34	5,230	264	41
	160		17,000	258	18	4,210	30	4,800	263	37
	140		17,000	258	18	3,890	26	4,380	262	32
	120		17,000	257	18	3,570	23	3,960	262	28
	100		17,000	257	18	3,250	19	3,550	261	23
	80		14,000	257	18	2,930	16	3,130	260	18
	60		12,000	258	13	2,600	12	2,720	260	14
	40		8,000	257	9	2,260	8	2,310	259	9
	20		3,000	256	3	1,890	4	1,900	258	5
DRAG INDEX 250 COUNTS	200	260 KCAS to M = 0.70	15,000	253	15	5,190	39	5,960	259	46
	180		15,000	253	15	4,830	35	5,500	259	42
	160		15,000	252	15	4,470	32	5,050	258	37
	140		15,000	252	15	4,110	28	4,590	257	33
	120		15,000	251	15	3,750	24	4,140	257	28
	100		15,000	250	15	3,400	20	3,700	256	23
	80		14,000	250	14	3,040	16	3,250	255	19
	60		12,000	250	12	2,690	13	2,810	254	14
	40		8,000	250	8	2,320	9	2,370	254	9
	20		3,000	251	3	1,920	5	1,930	253	5
DRAG INDEX 300 COUNTS	200	240 KCAS to M = 0.70	14,000	248	13	5,520	41	6,280	254	47
	180		14,000	247	13	5,120	37	5,790	253	43
	160		14,000	246	13	4,730	33	5,300	252	38
	140		14,000	246	13	4,330	29	4,810	251	33
	120		14,000	245	13	3,940	25	4,330	250	29
	100		14,000	245	13	3,550	21	3,850	250	24
	80		14,000	244	13	3,170	17	3,370	250	19
	60		12,000	244	11	2,780	13	2,900	248	15
	40		8,000	244	7	2,380	9	2,430	247	10
	20		3,000	246	3	1,960	5	1,960	247	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

ONE ENGINE OPERATING
GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS (ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	175 KCAS to M=0.33	13,000	197	7	6,680	52	7,430	198	61
	180		13,000	197	7	6,160	47	6,790	198	55
	160		13,000	197	7	5,640	42	6,180	197	49
	140		13,000	197	7	5,140	37	5,580	197	43
	120		13,000	197	7	4,640	32	4,980	196	37
	100		13,000	197	7	4,140	27	4,390	196	31
	80		12,000	195	7	3,640	22	3,800	195	25
	60		10,000	190	6	3,140	17	3,220	195	18
	40		7,000	189	4	2,630	12	2,640	194	12
	20		1,000	193	1	2,070	6	2,070	194	6
DRAG INDEX 50 COUNTS	200	175 KCAS to M=0.32	13,000	192	7	6,930	54	7,680	196	61
	180		13,000	193	7	6,380	48	7,020	195	55
	160		13,000	194	7	5,840	43	6,380	195	49
	140		13,000	194	7	5,310	38	5,750	194	43
	120		13,000	195	7	4,780	32	5,130	194	37
	100		13,000	195	7	4,250	27	4,510	193	31
	80		11,000	191	6	3,730	22	3,900	193	25
	60		10,000	188	5	3,210	17	3,290	192	19
	40		7,000	186	4	2,680	12	2,690	192	13
	20		1,000	190	1	2,090	6	2,090	191	6
DRAG INDEX 100 COUNTS	200	175 KCAS to M=0.32	11,000	186	6	7,270	57	7,930	193	62
	180		11,000	186	6	6,650	51	7,250	193	56
	160		11,000	186	6	6,070	45	6,570	193	50
	140		11,000	186	6	5,490	39	5,920	192	44
	120		11,000	186	6	4,930	34	5,270	191	38
	100		11,000	186	6	4,380	28	4,630	191	31
	80		10,000	186	5	3,830	23	3,990	190	25
	60		9,000	185	5	3,280	18	3,360	190	19
	40		7,000	184	4	2,720	12	2,740	189	13
	20		1,000	187	1	2,120	6	2,120	188	6
DRAG INDEX 150 COUNTS	200	175 KCAS to M=0.32	10,000	184	5	7,550	58	8,180	191	63
	180		10,000	183	5	6,860	52	7,470	191	57
	160		10,000	183	5	6,260	46	6,760	190	50
	140		10,000	183	5	5,660	40	6,080	190	44
	120		10,000	183	5	5,070	35	5,410	189	38
	100		10,000	183	5	4,490	29	4,740	188	32
	80		10,000	183	5	3,910	23	4,080	187	26
	60		9,000	182	4	3,340	18	3,430	187	19
	40		7,000	181	3	2,760	12	2,780	186	13
	20		1,000	184	0	2,140	6	2,140	185	6

BINGO

ONE ENGINE OPERATING
GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	175 KCAS to M = 0.32	9,000	189	4	7,880	57	8,430	189	64
	180		9,000	189	4	7,210	52	7,690	189	57
	160		9,000	191	4	6,510	45	6,960	188	51
	140		9,000	190	4	5,870	40	6,250	188	45
	120		9,000	190	4	5,240	34	5,550	187	39
	100		9,000	190	4	4,630	29	4,860	187	33
	80		9,000	190	4	4,020	23	4,180	188	26
	60		8,000	187	4	3,410	18	3,510	192	19
	40		6,000	180	3	2,810	12	2,840	193	13
	20		1,000	188	0	2,160	6	2,170	193	6
DRAG INDEX 250 COUNTS	200	160 KCAS to M = 0.31	9,000	188	4	8,140	59	8,670	187	64
	180		9,000	190	4	7,380	52	7,900	186	58
	160		9,000	190	4	6,710	46	7,150	186	52
	140		9,000	190	4	6,040	41	6,410	186	45
	120		9,000	190	4	5,390	35	5,690	185	39
	100		9,000	190	4	4,750	29	4,970	184	33
	80		9,000	190	4	4,110	24	4,270	181	27
	60		8,000	186	4	3,490	18	3,570	175	21
	40		6,000	176	3	2,860	13	2,880	169	14
	20		1,000	167	0	2,190	7	2,190	165	7
DRAG INDEX 300 COUNTS	200	160 KCAS to M = 0.31	9,000	175	4	8,500	64	8,890	184	65
	180		9,000	168	4	7,640	58	8,120	187	58
	160		9,000	166	4	6,890	51	7,360	192	50
	140		9,000	166	4	6,200	45	6,610	198	42
	120		9,000	168	4	5,520	38	5,860	188	38
	100		9,000	171	4	4,850	32	5,120	176	34
	80		9,000	174	4	4,190	25	4,380	165	29
	60		8,000	175	3	3,540	19	3,640	165	22
	40		6,000	172	3	2,890	13	2,920	165	15
	20		1,000	168	0	2,200	7	2,290	167	7

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

BINGO

ONE ENGINE OPERATING
GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS (ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-400

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	200 KCAS to M=0.35	14,000	197	8	6,400	51	7,250	206	58
	180		14,000	195	8	5,870	46	6,650	205	53
	160		14,000	195	8	5,390	41	5,050	204	47
	140		14,000	194	8	4,910	36	5,460	204	41
	120		14,000	194	8	4,440	31	4,880	203	36
	100		14,000	193	8	3,970	26	4,300	202	30
	80		14,000	193	8	3,510	21	3,730	201	24
	60		12,000	194	7	3,040	16	3,170	200	18
	40		8,000	191	5	2,570	11	2,610	200	12
	20		2,000	193	1	2,050	6	2,050	199	6
DRAG INDEX 50 COUNTS	200	200 KCAS to M=0.34	13,000	195	7	6,670	52	7,500	204	59
	180		13,000	194	7	6,140	47	6,880	203	53
	160		13,000	194	7	5,600	42	6,250	202	48
	140		13,000	195	7	5,090	36	5,640	201	42
	120		13,000	196	7	4,590	31	5,030	200	36
	100		13,000	197	7	4,100	26	4,430	199	30
	80		13,000	198	7	3,610	21	3,830	198	24
	60		12,000	195	7	3,110	16	3,240	198	18
	40		7,000	193	4	2,610	11	2,650	197	12
	20		2,000	195	1	2,070	6	2,070	196	6
DRAG INDEX 100 COUNTS	200	200 KCAS to M=0.31	12,000	194	7	6,960	53	7,760	202	60
	180		12,000	194	7	6,400	48	7,110	201	54
	160		12,000	195	7	5,850	43	6,460	200	48
	140		12,000	193	7	5,300	38	5,810	199	42
	120		12,000	192	7	4,760	33	5,180	198	36
	100		12,000	190	7	4,230	27	4,550	197	31
	80		12,000	189	7	3,710	22	3,920	196	25
	60		11,000	189	6	3,190	17	3,310	195	18
	40		7,000	190	4	2,650	11	2,700	194	12
	20		2,000	192	1	2,090	6	2,100	193	6
DRAG INDEX 150 COUNTS	200	195 KCAS to M=0.31	11,000	193	6	7,260	55	8,010	200	60
	180		11,000	190	6	6,640	50	7,330	199	54
	160		11,000	189	6	6,060	44	6,650	197	49
	140		11,000	188	6	5,480	39	5,980	196	43
	120		11,000	188	6	4,920	33	5,320	195	37
	100		11,000	187	6	4,360	28	4,670	194	31
	80		11,000	186	6	3,800	23	4,020	193	25
	60		11,000	185	6	3,260	17	3,380	192	19
	40		7,000	188	4	2,700	12	2,740	191	13
	20		2,000	189	1	2,110	6	2,120	190	6

BINGO

ONE ENGINE OPERATING
GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-400

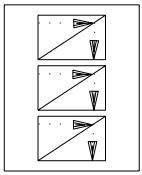
DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: INOPERATIVE ENGINE WINDMILLING FUEL DENSITY: 6.8 LB/GAL
ESTIMATED BASED ON FLIGHT TEST

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	195 KCAS to M=0.31	11,000	189	5	7,530	56	8,270	198	61
	180		11,000	187	5	6,870	51	7,560	197	55
	160		11,000	187	5	6,260	45	6,850	195	49
	140		11,000	184	5	5,640	40	6,160	194	43
	120		11,000	183	5	5,050	34	5,470	192	37
	100		11,000	182	5	4,470	28	4,780	191	31
	80		11,000	182	5	3,890	23	4,110	190	25
	60		9,000	184	4	3,330	17	3,450	188	19
	40		7,000	185	3	2,740	12	2,790	187	13
	20		2,000	186	1	2,140	6	2,140	186	6
DRAG INDEX 250 COUNTS	200	180 KCAS to M=0.31	9,000	188	4	7,880	58	8,520	196	61
	180		9,000	186	4	7,220	53	7,780	195	56
	160		9,000	185	4	6,490	46	7,050	193	50
	140		9,000	184	4	5,850	41	6,320	192	44
	120		9,000	184	4	5,230	35	5,610	190	38
	100		9,000	183	4	4,610	29	4,900	188	32
	80		9,000	182	4	4,000	24	4,200	187	26
	60		8,000	183	4	3,400	18	3,510	185	19
	40		6,000	184	3	2,790	12	2,830	184	13
	20		2,000	181	1	2,160	6	2,160	180	7
DRAG INDEX 300 COUNTS	200	165 KCAS to M=0.31	8,000	188	4	8,290	60	8,760	194	62
	180		8,000	189	4	7,530	53	8,000	193	56
	160		8,000	191	4	6,770	46	7,240	191	50
	140		8,000	191	4	6,100	41	6,490	190	44
	120		8,000	189	4	5,440	35	5,750	188	38
	100		8,000	184	4	4,780	30	5,020	186	32
	80		8,000	179	4	4,130	25	4,300	183	26
	60		7,000	178	3	3,490	19	3,590	176	20
	40		4,000	180	2	2,850	13	2,890	169	14
	20		1,000	169	0	2,190	7	2,190	165	7

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO FUEL CHART.

Headwind Effects on Bingo Fuel

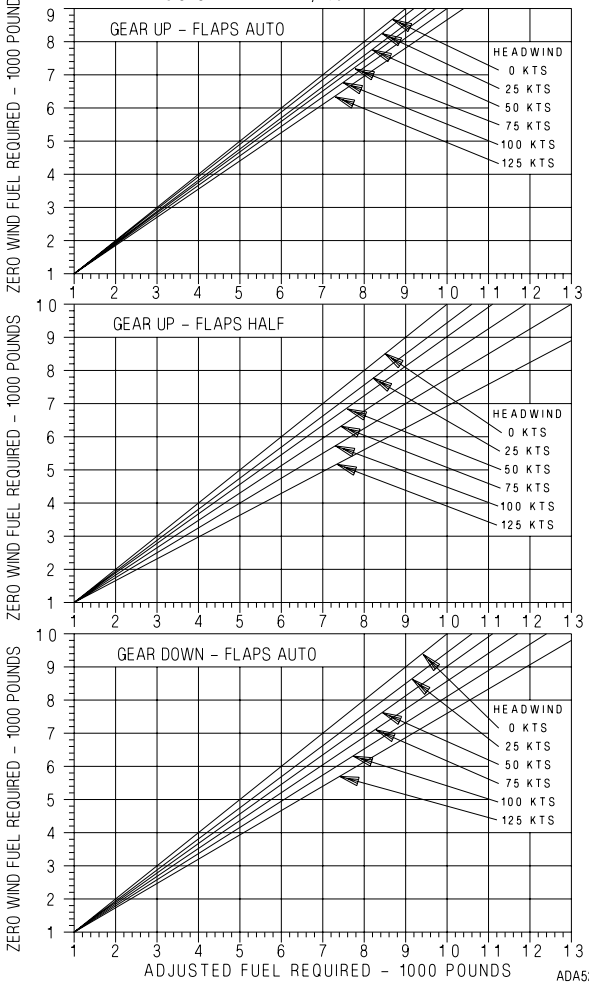


CRUISE AT BEST ALTITUDE

DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

REMARKS
ENGINE(S): (2)F404-GE-400
U.S. STANDARD DAY, 1962

FUEL GRADE:
JP-5
FUEL DENSITY:
6.8 LB/GAL



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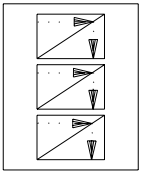
Headwind Effects on Bingo Fuel

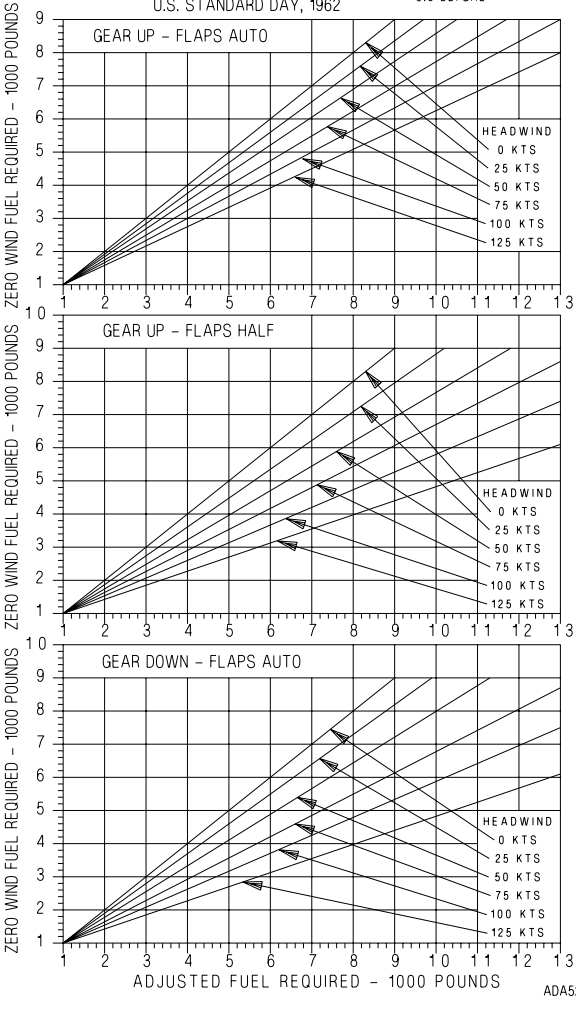


CRUISE AT SEA LEVEL

DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

REMARKS
ENGINE(S): (2)F404-GE-400
U.S. STANDARD DAY, 1962

FUEL GRADE:
JP-5
FUEL DENSITY:
6.8 LB/GAL



ADA524_68-2-37

BINGO - 402 ENGINE

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TAB FOR BINGO

NOTE

BINGO DATA BASED ON:

- INITIAL ALTITUDE IS SEA LEVEL.
- MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
- 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
- FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
- NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 15 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	515 KCAS to M = 0.85	40,000	258	73	3,070	29	4,500	279	43
	180		40,000	258	73	2,940	26	4,190	279	39
	160		40,000	258	73	2,820	24	3,890	279	34
	140		40,000	258	73	2,700	221	3,590	278	30
	120		40,000	258	73	2,570	19	3,290	278	26
	100		40,000	258	73	2,450	16	2,990	277	22
	80		35,000	279	61	2,320	14	2,690	277	17
	60		27,000	279	46	2,160	11	2,390	277	13
	40		19,000	278	32	1,990	8	2,090	277	9
	20		9,000	278	15	1,780	4	1,800	276	4
DRAG INDEX 50 COUNTS	200	490 KCAS TO M = 0.83	40,000	253	64	3,260	29	4,780	275	44
	180		40,000	253	64	3,120	26	4,450	275	39
	160		40,000	253	64	2,980	23	4,120	274	35
	140		40,000	253	64	2,830	21	3,790	274	31
	120		40,000	253	64	2,700	18	3,460	273	26
	100		40,000	253	64	2,560	16	3,130	273	22
	80		35,000	268	54	2,410	13	2,800	273	18
	60		27,000	270	41	2,243	11	2,480	272	13
	40		19,000	270	28	2,050	8	2,150	272	9
	20		8,000	268	11	1,820	4	1,820	271	4
DRAG INDEX 100 COUNTS	200	470 KCAS TO M = 0.80	40,000	251	57	3,450	28	5,070	270	44
	180		40,000	251	57	3,290	26	4,700	270	40
	160		40,000	251	57	3,130	23	4,340	269	36
	140		40,000	251	57	2,970	21	3,980	269	31
	120		40,000	250	57	2,820	18	3,630	269	27
	100		40,000	250	57	2,660	16	3,270	268	22
	80		35,000	260	48	2,490	13	2,910	268	18
	60		27,000	260	36	2,320	11	2,560	267	13
	40		18,000	263	24	2,110	7	2,200	267	9
	20		7,000	259	9	1,850	4	1,852	266	5
DRAG INDEX 150 COUNTS	200	380 KCAS TO M = 0.80	40,000	243	52	3,660	29	5,350	266	45
	180		40,000	243	52	3,480	26	4,960	265	41
	160		40,000	242	52	3,310	24	4,570	265	36
	140		40,000	242	52	3,130	21	4,180	264	32
	120		40,000	242	52	2,960	18	3,790	264	27
	100		40,000	242	52	2,780	16	3,410	263	23
	80		35,000	248	44	2,600	13	3,020	263	18
	60		27,000	253	33	2,410	11	2,640	262	14
	40		17,000	256	20	2,170	8	2,260	262	9
	20		7,000	254	8	1,860	4	1,880	261	5

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BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	310 KCAS TO M = 0.79	40,000	237	47	3,860	29	5,650	262	46
	180		40,000	237	47	3,670	27	5,220	261	41
	160		40,000	237	47	3,470	24	4,800	261	37
	140		40,000	237	47	3,280	21	4,380	260	32
	120		40,000	237	47	3,090	19	3,960	259	28
	100		40,000	237	47	2,900	16	3,550	259	23
	80		34,000	241	39	2,700	13	3,140	258	19
	60		23,000	250	25	2,470	11	2,720	257	14
	40		16,000	250	18	2,210	8	2,320	256	9
	20		7,000	250	8	1,890	4	1,910	256	5
DRAG INDEX 250 COUNTS	200	305 KCAS TO M = 0.75	40,000	231	43	4,040	30	5,930	258	47
	180		40,000	231	43	3,820	27	5,480	257	42
	160		40,000	230	43	3,610	24	5,030	257	37
	140		40,000	230	43	3,400	22	4,580	256	33
	120		40,000	230	43	3,190	19	4,130	255	28
	100		39,000	230	42	2,980	16	3,690	254	24
	80		34,000	236	35	2,770	14	3,250	254	19
	60		23,000	245	23	2,530	11	2,810	253	14
	40		16,000	244	16	2,250	8	2,370	252	10
	20		7,000	245	7	1,910	4	1,930	251	5
DRAG INDEX 300 COUNTS	200	305 KCAS TO M = 0.71	40,000	225	40	4,220	31	6,220	254	47
	180		40,000	225	40	3,980	28	5,730	253	43
	160		40,000	225	40	3,750	25	5,250	253	38
	140		40,000	224	40	3,520	22	4,770	252	33
	120		39,000	225	39	3,300	19	4,300	251	29
	100		38,000	226	37	3,070	16	3,820	250	24
	80		34,000	230	33	2,830	14	3,360	249	19
	60		23,000	240	21	2,600	11	2,890	248	15
	40		16,000	237	15	2,290	8	2,420	247	10
	20		7,000	241	6	1,940	4	1,960	246	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	515 KCAS to M = 0.85	40,000	262	74	3,210	29	4,630	302	40
	180		40,000	262	74	3,070	26	4,310	301	36
	160		40,000	262	74	2,930	24	4,000	301	32
	140		40,000	262	74	2,790	21	3,680	300	28
	120		40,000	262	74	2,660	19	3,370	299	24
	100		39,000	266	72	2,520	16	3,060	299	20
	80		33,000	292	58	2,370	14	2,740	298	16
	60		26,000	298	45	2,210	11	2,430	297	12
	40		18,000	295	31	2,020	8	2,120	297	8
	20		9,000	293	16	1,800	4	1,810	296	4
DRAG INDEX 50 COUNTS	200	490 KCAS TO M = 0.83	40,000	256	66	3,410	28	4,942	292	41
	180		40,000	256	66	3,260	26	4,590	291	37
	160		40,000	256	66	3,100	23	4,250	290	33
	140		40,000	256	66	2,950	21	3,900	290	29
	120		40,000	256	66	2,790	19	3,550	289	25
	100		39,000	261	64	2,630	16	3,210	288	21
	80		33,000	284	52	2,470	13	2,860	287	17
	60		26,000	287	40	2,290	11	2,520	287	13
	40		18,000	285	28	2,080	7	2,180	286	8
	20		9,000	285	12	1,830	4	1,840	285	4
DRAG INDEX 100 COUNTS	200	470 KCAS TO M = 0.80	40,000	253	60	3,610	28	5,240	282	43
	180		40,000	253	60	3,440	26	4,860	281	38
	160		40,000	253	60	3,270	23	4,470	280	34
	140		40,000	253	60	3,090	21	4,100	280	30
	120		40,000	253	60	2,920	18	3,720	279	26
	100		38,000	263	56	2,750	16	3,350	279	22
	80		33,000	273	47	2,560	13	2,980	278	17
	60		26,000	278	36	2,370	10	2,600	278	13
	40		18,000	279	25	2,140	7	2,240	277	9
	20		7,000	279	10	1,860	4	1,870	277	4
DRAG INDEX 150 COUNTS	200	380 KCAS TO M = 0.80	40,000	251	54	3,870	29	5,540	277	43
	180		40,000	251	54	3,660	26	5,130	277	39
	160		40,000	251	54	3,470	23	4,720	276	35
	140		40,000	251	54	3,270	21	4,310	276	31
	120		40,000	251	54	3,080	18	3,900	275	26
	100		38,000	256	51	2,880	16	3,500	274	22
	80		33,000	266	43	2,680	13	3,100	274	18
	60		26,000	268	33	2,470	10	2,690	273	13
	40		17,000	273	21	2,210	8	2,290	273	9
	20		7,000	273	9	1,880	4	1,900	272	4

BINGO

GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

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DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	310 KCAS TO M = 0.79	40,000	243	50	4,090	29	5,850	273	44
	180		40,000	243	50	3,870	27	5,400	273	40
	160		40,000	243	50	3,650	24	4,960	272	35
	140		40,000	243	50	3,440	21	4,520	272	31
	120		39,000	246	48	3,230	19	4,080	271	27
	100		38,000	250	47	3,010	16	3,650	270	22
	80		33,000	257	39	2,790	14	3,210	270	18
	60		23,000	262	27	2,540	11	2,780	269	13
	40		17,000	267	20	2,250	8	2,350	269	9
	20		7,000	267	8	1,910	4	1,930	268	4
DRAG INDEX 250 COUNTS	200	305 KCAS TO M = 0.75	38,000	244	43	4,290	30	6,140	270	45
	180		38,000	244	43	4,050	27	5,670	269	40
	160		38,000	244	43	3,810	24	5,200	268	36
	140		38,000	244	43	3,580	22	4,730	268	31
	120		38,000	244	43	3,340	19	4,260	267	27
	100		37,000	246	42	3,110	16	3,790	266	23
	80		33,000	249	36	2,870	14	3,330	266	18
	60		23,000	258	25	2,600	11	2,870	265	14
	40		17,000	262	18	2,300	8	2,410	265	9
	20		7,000	261	7	1,930	4	1,950	264	5
DRAG INDEX 300 COUNTS	200	305 KCAS TO M = 0.71	37,000	240	39	4,500	31	6,440	266	45
	180		37,000	240	39	4,230	28	5,930	265	41
	160		37,000	240	39	3,970	25	5,430	265	36
	140		37,000	240	39	3,714	22	4,930	264	32
	120		37,000	240	39	3,460	19	4,430	263	27
	100		36,000	241	37	3,200	16	3,940	263	23
	80		33,000	244	34	2,940	14	3,440	262	18
	60		23,000	253	23	2,670	11	2,950	261	14
	40		17,000	256	17	2,340	8	2,470	260	9
	20		7,000	255	7	1,960	4	1,980	260	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	205 KCAS TO M = 0.45	33,000	199	21	5,420	39	7,720	208	59
	180		33,000	199	21	5,070	35	7,070	207	52
	160		33,000	199	21	4,720	31	6,420	206	47
	140		33,000	199	21	4,370	28	5,800	206	41
	120		33,000	199	21	4,030	24	5,170	205	35
	100		32,000	199	20	3,690	20	4,550	205	29
	80		31,000	198	19	3,340	17	3,930	204	23
	60		27,000	198	17	2,980	13	3,320	204	18
	40		17,000	198	10	2,590	10	2,710	204	12
	20		3,000	203	2	2,100	6	2,100	203	6
DRAG INDEX 50 COUNTS	200	205 KCAS TO M = 0.45	32,000	195	19	5,620	49	7,950	206	58
	180		32,000	195	19	5,240	36	7,270	205	53
	160		32,000	195	19	4,870	32	6,600	204	47
	140		32,000	195	19	4,500	28	5,950	204	41
	120		32,000	195	19	4,130	24	5,300	203	35
	100		32,000	195	19	3,770	21	4,660	203	30
	80		31,000	196	18	3,410	19	4,020	202	24
	60		27,000	195	16	3,030	13	3,380	202	18
	40		17,000	196	10	2,620	10	2,750	202	12
	20		3,000	200	2	2,120	6	2,120	201	6
DRAG INDEX 100 COUNTS	200	205 KCAS TO M = 0.45	32,000	185	18	5,810	41	8,180	204	59
	180		32,000	185	18	5,410	37	7,480	203	53
	160		32,000	186	18	5,020	33	6,780	203	47
	140		32,000	186	18	4.630	29	6,100	202	42
	120		32,000	187	18	4,250	25	5,430	201	36
	100		32,000	187	18	3,860	21	4,770	201	30
	80		30,000	191	17	3,480	17	4,100	200	24
	60		27,000	190	15	3,090	13	3,450	200	18
	40		17,000	194	9	2,660	10	2,790	199	12
	20		3,000	197	2	2,140	6	2,140	199	6
DRAG INDEX 150 COUNTS	200	205 KCAS TO M = 0.45	31,000	186	17	6,010	41	8,410	202	60
	180		31,000	185	17	5,590	37	7,680	201	54
	160		31,000	184	17	5,170	33	6,960	201	48
	140		31,000	183	17	4,760	29	6,250	200	42
	120		31,000	183	17	4,350	25	5,560	199	36
	100		31,000	182	17	3,950	21	4,870	199	30
	80		30,000	185	16	3,550	17	4,190	198	24
	60		27,000	186	14	3,140	13	3,510	198	18
	40		17,000	191	9	2,700	10	2,840	197	12
	20		3,000	194	2	2,160	6	2,170	197	6

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	205 KCAS TO M = 0.44	30,000	175	15	6,180	44	8,630	199	60
	180		30,000	175	15	5,750	39	7,880	199	54
	160		30,000	176	15	5,310	35	7,130	198	48
	140		30,000	177	15	4,880	31	6,400	198	42
	120		30,000	178	15	4,460	26	5,690	197	37
	100		30,000	179	15	4,040	22	4,980	197	31
	80		29,000	180	15	3,620	18	4,270	196	24
	60		27,000	182	14	3,190	14	3,570	196	18
	40		17,000	189	8	2,730	10	2,880	195	12
	20		3,000	191	1	2,180	6	2,190	194	6
DRAG INDEX 250 COUNTS	200	205 KCAS TO M = 0.43	30,000	174	15	6,350	44	8,850	197	61
	180		30,000	173	15	5,890	40	8,070	197	55
	160		30,000	173	15	5,440	36	7,310	196	49
	140		30,000	173	15	5,000	31	6,655	196	43
	120		30,000	173	15	4,560	27	5,810	195	37
	100		30,000	173	15	4,120	22	5,080	195	31
	80		29,000	174	14	3,680	18	4,350	194	25
	60		27,000	176	13	3,240	14	3,630	193	19
	40		17,000	186	8	2,770	10	2,920	193	12
	20		3,000	188	1	2,200	6	2,210	192	6
DRAG INDEX 300 COUNTS	200	205 KCAS TO M = 0.42	30,000	171	14	6,520	45	9,070	195	62
	180		30,000	171	14	6,040	40	8,270	195	56
	160		30,000	171	14	5,580	36	7,480	194	49
	140		30,000	171	14	5,110	32	6,700	194	43
	120		30,000	170	14	4,660	27	5,940	193	37
	100		30,000	170	14	4,200	23	5,180	193	31
	80		29,000	171	13	3,750	18	4,440	192	25
	60		26,000	173	12	3,290	14	3,690	191	19
	40		17,000	183	8	2,810	10	2,960	191	13
	20		3,000	185	1	2,220	6	2,230	190	6

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	205 KCAS TO M = 0.45	30,000	211	21	5,900	38	8,120	226	53
	180		30,000	210	21	5,500	35	7,430	225	48
	160		30,000	209	21	5,090	32	6,760	224	43
	140		30,000	208	21	4,690	28	6,080	223	38
	120		30,000	207	21	4,300	24	5,420	221	33
	100		29,000	207	20	3,910	21	4,750	219	27
	80		27,000	207	18	3,510	17	4,090	217	22
	60		24,000	208	16	3,100	13	3,430	215	17
	40		17,000	206	11	2,660	9	2,780	213	11
	20		3,000	213	2	2,130	5	2,140	212	6
DRAG INDEX 50 COUNTS	200	205 KCAS TO M = 0.45	30,000	208	20	6,100	39	8,360	224	54
	180		30,000	207	20	5,670	35	7,650	222	49
	160		30,000	206	20	5,240	32	6,950	221	43
	140		30,000	206	20	4,830	28	6,250	219	38
	120		30,000	205	20	4,410	24	5,550	217	33
	100		29,000	205	19	4,000	21	4,860	215	28
	80		27,000	206	18	3,580	19	4,180	214	22
	60		24,000	206	16	3,160	13	3,500	212	17
	40		17,000	204	11	2,700	9	2,820	211	11
	20		3,000	211	2	2,150	5	2,160	209	6
DRAG INDEX 100 COUNTS	200	205 KCAS TO M = 0.45	30,000	206	19	6,280	40	8,620	221	54
	180		30,000	205	19	5,840	36	7,880	219	49
	160		30,000	205	19	5,400	32	7,150	218	44
	140		30,000	204	19	4,960	28	6,420	216	39
	120		30,000	203	19	4,520	25	5,690	214	34
	100		29,000	203	18	4,090	21	4,980	212	28
	80		27,000	204	17	3,660	17	4,270	211	23
	60		24,000	204	15	3,210	13	3,560	209	17
	40		17,000	202	10	2,740	9	2,870	208	12
	20		3,000	208	2	2,170	6	2,180	207	6
DRAG INDEX 150 COUNTS	200	205 KCAS TO M = 0.45	29,000	200	17	6,490	41	8,870	217	55
	180		29,000	200	17	6,020	37	8,100	216	50
	160		29,000	200	17	5,560	33	7,340	214	45
	140		29,000	200	17	5,090	29	6,590	212	40
	120		29,000	200	17	4,640	25	5,840	210	34
	100		29,000	200	17	4,190	21	5,090	209	29
	80		27,000	201	16	3,730	17	4,360	207	23
	60		24,000	202	14	3,270	13	3,630	206	17
	40		17,000	200	10	2,780	10	2,910	205	12
	20		3,000	206	2	2,190	6	2,200	204	6

BINGO

GEAR UP - HALF FLAPS
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	205 KCAS TO M = 0.44	29,000	197	17	6,680	41	9,120	214	56
	180		29,000	197	17	6,190	37	8,330	212	51
	160		29,000	197	17	5,710	33	7,540	210	46
	140		29,000	197	17	5,230	29	6,750	208	40
	120		29,000	197	17	4,750	25	5,970	207	35
	100		29,000	197	17	4,280	21	5,210	205	29
	80		27,000	199	15	3,810	17	4,450	204	24
	60		23,000	201	13	3,330	13	3,700	203	18
	40		17,000	197	9	2,820	10	2,960	202	12
	20		3,000	203	2	2,220	6	2,220	201	6
DRAG INDEX 250 COUNTS	200	205 KCAS TO M = 0.43	28,000	184	15	6,930	43	9,370	210	57
	180		28,000	184	15	6,410	39	8,540	208	52
	160		28,000	184	15	5,890	35	7,720	206	47
	140		28,000	184	15	5,380	31	6,910	205	41
	120		28,000	184	15	4,880	27	6,110	203	35
	100		28,000	184	15	4,390	22	5,320	202	30
	80		26,000	194	14	3,890	18	4,530	201	24
	60		23,000	197	12	3,390	14	3,760	200	18
	40		17,000	196	9	2,860	10	3,000	199	12
	20		3,000	201	2	2,240	6	2,240	199	6
DRAG INDEX 300 COUNTS	200	205 KCAS TO M = 0.42	27,000	182	14	7,140	44	9,620	206	58
	180		27,000	182	14	6,590	40	8,760	204	53
	160		27,000	183	14	6,050	36	7,910	203	47
	140		27,000	184	14	5,520	31	7,070	201	42
	120		27,000	184	14	5,000	27	6,240	200	36
	100		27,000	185	14	4,480	22	5,430	199	30
	80		27,000	186	14	3,970	18	4,620	198	24
	60		23,000	196	12	3,440	14	3,820	197	18
	40		17,000	194	9	2,900	10	3,040	197	12
	20		3,000	198	2	2,260	6	2,270	196	6

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMEBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5

DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	240 KCAS TO M = 0.54	35,000	201	24	5,120	36	7,540	218	55
	180		35,000	200	24	4,800	33	6,920	217	50
	160		35,000	199	24	4,480	29	6,300	216	44
	140		35,000	198	24	4,160	26	5,680	215	39
	120		35,000	198	24	3,840	23	5,060	214	34
	100		34,000	198	23	3,530	19	4,450	213	28
	80		33,000	199	22	3,210	15	3,850	212	23
	60		29,000	201	19	2,890	12	3,260	211	17
	40		18,000	201	12	2,520	9	2,670	210	11
	20		7,000	207	4	2,070	5	2,080	210	6
DRAG INDEX 50 COUNTS	200	235 KCAS TO M = 0.51	34,000	198	22	5,310	38	7,770	215	56
	180		34,000	197	22	4,970	34	7,110	214	51
	160		34,000	196	22	4,630	30	6,460	213	45
	140		34,000	195	22	4,290	27	5,830	212	40
	120		34,000	194	22	3,950	23	5,190	212	34
	100		33,000	195	21	3,620	20	4,570	211	28
	80		32,000	195	20	3,280	16	3,940	210	23
	60		28,000	197	17	2,940	12	3,330	209	17
	40		18,000	197	11	2,560	9	2,712	208	12
	20		7,000	203	4	2,090	5	2,100	207	6
DRAG INDEX 100 COUNTS	200	230 KCAS TO M = 0.49	33,000	195	20	5,510	39	7,980	212	57
	180		33,000	194	20	5,140	35	7,310	212	51
	160		33,000	194	20	4,780	31	6,650	211	46
	140		33,000	193	20	4,420	27	5,980	210	40
	120		33,000	192	20	4,060	24	5,330	209	34
	100		33,000	192	20	3,710	20	4,680	208	29
	80		31,000	193	19	3,360	16	4,030	207	23
	60		28,000	194	17	2,990	13	3,390	206	17
	40		18,000	194	10	2,600	9	2,760	205	12
	20		7,000	200	4	2,110	5	2,130	204	6
DRAG INDEX 150 COUNTS	200	230 KCAS TO M = 0.48	32,000	185	18	5,730	40	8,210	210	57
	180		32,000	185	18	5,330	36	7,520	210	52
	160		32,000	186	18	4,940	32	6,830	209	46
	140		32,000	187	18	4,560	28	6,140	208	40
	120		32,000	187	18	4,180	24	5,460	207	34
	100		32,000	188	18	3,810	20	4,790	206	29
	80		31,000	189	18	3,430	17	4,120	205	23
	60		28,000	191	16	3,050	13	3,460	204	18
	40		18,000	192	10	2,640	9	2,800	203	12
	20		6,000	197	3	2,130	5	2,150	202	6

BINGO

GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989 U.S. STANDARD DAY, 1962 FUEL GRADE: JP-5
DATA BASIS: **ESTIMATED BASED ON FLIGHT TEST** FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	220 KCAS TO M = 0.47	30,000	189	16	5,920	41	8,440	208	58
	180		30,000	189	16	5,510	37	7,720	207	52
	160		30,000	188	16	5,100	33	7,010	207	46
	140		30,000	188	16	4,700	29	6,300	206	41
	120		30,000	188	16	4,300	25	5,590	205	35
	100		30,000	188	16	3,900	21	4,900	204	29
	80		30,000	187	16	3,510	17	4,210	203	24
	60		27,000	188	14	3,110	13	3,520	202	18
	40		18,000	190	9	2,680	10	2,840	201	12
	20		6,000	194	3	2,150	6	2,170	199	6
DRAG INDEX 250 COUNTS	200	210 KCAS TO M = 0.46	30,000	187	15	6,110	41	8,670	206	58
	180		30,000	187	15	5,680	37	7,920	205	53
	160		30,000	186	15	5,250	33	7,180	204	47
	140		30,000	186	15	4,830	29	6,450	203	41
	120		30,000	186	15	4,410	25	5,730	202	36
	100		30,000	185	15	4,000	21	5,010	201	30
	80		30,000	185	15	3,590	17	4,290	200	24
	60		27,000	186	14	3,170	13	3,580	199	18
	40		18,000	188	9	2,720	10	2,880	198	12
	20		4,000	193	2	2,170	6	2,190	197	6
DRAG INDEX 300 COUNTS	200	205 KCAS TO M = 0.44	30,000	186	15	6,300	42	8,890	203	59
	180		30,000	185	15	5,850	38	8,120	203	53
	160		30,000	185	15	5,410	34	7,360	202	48
	140		30,000	184	15	4,960	30	6,600	201	42
	120		30,000	184	15	4,530	26	5,850	200	36
	100		30,000	183	15	4,090	22	5,110	198	30
	80		29,000	183	14	3,670	18	4,380	197	24
	60		27,000	184	13	3,230	14	3,650	196	18
	40		18,000	186	9	2,760	10	2,920	195	12
	20		4,000	191	2	2,200	6	2,210	194	6

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS (ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	315 KCAS TO M = 0.80	33,000	275	52	3,390	30	4,230	271	44
	180		33,000	274	52	3,240	28	3,950	271	40
	160		33,000	274	52	3,090	25	3,670	270	36
	140		28,000	273	43	2,940	23	3,400	270	31
	120		27,000	271	41	2,770	20	3,130	269	27
	100		22,000	268	33	2,600	18	2,850	269	22
	80		18,000	267	27	2,410	15	2,580	269	18
	60		16,000	265	24	2,220	11	2,310	268	13
	40		11,000	264	16	2,000	8	2,040	268	9
	20		4,000	264	6	1,760	4	1,770	267	4
0DRAG INDEX 50 COUNTS	200	310 KCAS TO M = 0.70	30,000	263	41	3,660	32	4,520	266	45
	180		30,000	263	41	3,470	29	4,210	265	41
	160		30,000	262	41	3,290	26	3,910	265	36
	140		28,000	262	38	3,110	23	3,600	264	32
	120		27,000	262	37	2,920	20	3,300	264	27
	100		22,000	260	30	2,730	18	3,000	263	23
	80		18,000	259	24	2,520	15	2,700	263	18
	60		16,000	258	21	2,300	11	2,400	262	14
	40		11,000	258	15	2,060	8	2,100	262	9
	20		4,000	256	5	1,790	4	1,800	261	5
DRAG INDEX 100 COUNTS	200	280 KCAS TO M = 0.70	26,000	252	32	3,940	34	4,820	260	46
	180		26,000	252	32	3,720	31	4,480	260	42
	160		26,000	251	32	3,500	27	4,150	259	37
	140		24,000	252	29	3,280	25	3,810	259	33
	120		23,000	252	28	3,060	21	3,480	258	28
	100		22,000	252	27	2,840	18	3,140	257	23
	80		18,000	253	22	2,610	15	2,810	257	19
	60		16,000	253	19	2,370	12	2,480	256	14
	40		11,000	252	13	2,110	8	2,150	256	9
	20		4,000	251	5	1,820	5	1,830	255	5
DRAG INDEX 150 COUNTS	200	280 KCAS TO M = 0.70	22,000	248	24	4,250	36	5,130	255	47
	180		22,000	248	24	3,990	32	4,760	255	42
	160		22,000	247	24	3,740	29	4,390	254	38
	140		22,000	247	24	3,490	25	4,020	253	33
	120		21,000	247	23	3,230	22	3,650	252	29
	100		19,000	247	21	2,980	19	3,290	251	24
	80		17,000	247	19	2,720	15	2,930	251	19
	60		14,000	246	15	2,450	12	2,570	250	14
	40		11,000	246	12	2,160	8	2,210	249	10
	20		3,000	247	3	1,850	5	1,860	248	5

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	270 KCAS TO M = 0.70	20,000	241	20	4,521	37	5,430	250	48
	180		20,000	241	20	4,230	34	5,020	250	43
	160		20,000	240	20	3,950	30	4,620	249	39
	140		20,000	240	20	3,670	26	4,220	248	34
	120		20,000	239	20	3,390	23	3,830	247	29
	100		19,000	239	19	3,100	19	3,430	246	24
	80		17,000	239	17	2,820	16	3,040	246	20
	60		14,000	239	14	2,530	12	2,650	245	15
	40		11,000	240	11	2,220	9	2,270	244	10
	20		3,000	242	3	1,870	5	1,880	243	5
DRAG INDEX 250 COUNTS	200	260 KCAS TO M = 0.70	19,000	235	18	4,800	39	5,720	246	49
	180		19,000	234	18	4,490	35	5,280	245	44
	160		19,000	234	18	4,170	31	4,850	244	39
	140		19,000	233	18	3,860	27	4,420	244	34
	120		19,000	232	18	3,550	24	4,000	243	30
	100		18,000	233	17	3,230	20	3,573	242	25
	80		17,000	232	16	2,920	16	3,150	241	20
	60		14,000	233	13	2,600	13	2,740	240	15
	40		9,000	235	8	2,270	9	2,320	239	10
	20		3,000	237	3	1,900	5	1,910	238	5
DRAG INDEX 300 COUNTS	200	250 KCAS TO M = 0.70	17,000	232	15	5,110	41	6,000	241	50
	180		17,000	231	15	4,760	37	5,540	240	45
	160		17,000	230	15	4,410	33	5,080	240	40
	140		17,000	229	15	4,060	29	4,620	239	35
	120		17,000	229	15	3,710	25	4,160	238	30
	100		17,000	228	15	3,370	21	3,710	237	25
	80		16,000	228	14	3,030	17	3,260	236	20
	60		14,000	228	12	2,680	13	2,820	235	15
	40		9,000	231	8	2,320	9	2,380	234	10
	20		3,000	232	3	1,930	5	1,940	233	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS (ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	315 KCAS TO M = 0.80	31,000	291	49	3,570	30	4,400	287	42
	180		31,000	291	49	3,400	28	4,110	286	38
	160		28,000	292	44	3,230	25	3,810	285	34
	140		28,000	292	44	3,050	23	3,520	285	30
	120		23,000	288	36	2,870	20	3,230	284	25
	100		22,000	287	34	2,680	17	2,940	283	21
	80		18,000	284	28	2,480	14	2,650	283	17
	60		14,000	283	22	2,270	11	2,360	282	13
	40		8,000	282	12	2,030	8	2,070	282	9
	20		3,000	281	5	1,780	4	1,790	281	4
DRAG INDEX 50 COUNTS	200	310 KCAS TO M = 0.70	27,000	280	38	3,860	32	4,720	278	43
	180		27,000	280	38	3,660	29	4,390	278	39
	160		27,000	279	38	3,450	26	3,450	277	35
	140		27,000	279	38	3,250	23	3,730	277	30
	120		23,000	278	33	3,040	20	3,410	276	26
	100		22,000	278	31	2,820	17	3,090	275	22
	80		17,000	278	24	2,590	15	2,770	275	17
	60		14,000	277	20	2,350	11	2,450	275	13
	40		8,000	276	11	2,090	8	2,130	274	9
	20		3,000	274	4	1,810	4	1,820	274	4
DRAG INDEX 100 COUNTS	200	280 KCAS TO M = 0.70	23,000	271	30	4,190	34	5,040	274	44
	180		23,000	271	30	3,940	31	4,676	273	40
	160		23,000	271	30	3,690	28	4,320	273	35
	140		22,000	270	28	3,440	25	3,960	272	31
	120		21,000	270	27	3,200	22	3,600	272	27
	100		21,000	270	27	2,950	18	3,250	271	22
	80		17,000	270	22	2,690	15	2,890	270	18
	60		14,000	270	18	2,430	12	2,540	270	13
	40		7,000	270	10	2,150	8	2,190	269	9
	20		3,000	269	4	1,840	4	1,850	269	4
DRAG INDEX 150 COUNTS	200	280 KCAS TO M = 0.70	20,000	262	23	4,510	35	5,360	270	45
	180		20,000	262	23	4,220	32	4,960	269	40
	160		20,000	262	23	3,940	29	4,570	268	36
	140		20,000	261	23	3,660	25	4,180	268	31
	120		20,000	261	23	3,380	22	3,790	267	27
	100		18,000	261	21	3,090	19	3,400	266	23
	80		17,000	261	20	2,810	15	3,020	266	18
	60		14,000	262	16	2,520	12	2,640	265	14
	40		8,000	264	9	2,210	8	2,260	265	9
	20		3,000	263	3	1,870	4	1,880	264	5

BINGO

ONE ENGINE OPERATING
GEAR UP - FLAPS AUTO
WEIGHT - 30,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	270 KCAS TO M = 0.70	18,000	258	19	4,840	37	5,680	264	45
	180		18,000	258	19	4,520	33	5,250	264	41
	160		18,000	257	19	4,200	30	4,820	263	37
	140		18,000	257	19	3,880	26	4,400	262	32
	120		18,000	256	19	3,560	23	3,980	262	28
	100		18,000	255	19	3,250	19	3,560	261	23
	80		17,000	255	18	2,930	16	3,140	260	18
	60		13,000	257	14	2,600	12	2,730	260	14
	40		8,000	257	9	2,260	9	2,320	259	9
	20		3,000	256	3	1,900	4	1,910	258	5
DRAG INDEX 250 COUNTS	200	260 KCAS TO M = 0.70	17,000	249	17	5,160	39	5,990	259	46
	180		17,000	249	17	4,800	35	5,520	258	42
	160		17,000	249	17	4,440	31	5,070	258	37
	140		17,000	249	17	4,090	27	4,610	257	33
	120		17,000	248	17	3,740	24	4,160	256	28
	100		17,000	248	17	3,390	20	3,710	256	23
	80		16,000	248	16	3,050	16	3,260	255	19
	60		13,000	249	13	2,690	12	2,820	254	14
	40		8,000	250	8	2,320	9	2,370	254	9
	20		3,000	251	3	1,930	5	1,940	253	5
DRAG INDEX 300 COUNTS	200	250 KCAS TO M = 0.70	15,000	245	14	5,500	40	6,310	253	47
	180		15,000	245	14	5,100	36	5,820	252	43
	160		15,000	244	14	4,710	32	5,320	251	38
	140		15,000	244	14	4,320	29	4,830	251	34
	120		15,000	243	14	3,930	25	4,350	250	29
	100		15,000	243	14	3,550	21	3,860	249	24
	80		14,000	242	13	3,170	17	3,380	248	19
	60		13,000	242	12	2,780	13	2,910	248	15
	40		8,000	243	7	2,380	9	2,430	247	10
	20		3,000	246	3	1,960	5	1,970	246	5

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

ONE ENGINE OPERATING
GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS (ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	165 KCAS TO M = 0.32	15,000	192	9	6,670	53	7,470	198	61
	180		15,000	192	9	6,160	48	6,830	197	55
	160		15,000	191	8	5,660	42	6,210	197	49
	140		15,000	191	9	5,160	37	5,600	196	43
	120		15,000	191	9	4,670	32	5,000	196	37
	100		13,000	191	7	4,170	27	4,410	195	31
	80		11,000	190	6	3,670	22	3,820	195	25
	60		10,000	189	7	3,160	17	3,230	194	19
	40		2,000	192	1	2,650	12	2,650	194	12
	20		S.L.	194	0	2,070	6	2,070	194	6
DRAG INDEX 50 COUNTS	200	165 KCAS TO M = 0.31	14,000	193	8	6,940	53	7,730	195	62
	180		14,000	191	8	6,400	48	7,060	195	55
	160		14,000	190	8	5,860	43	6,410	194	49
	140		14,000	189	8	5,330	38	5,780	194	43
	120		14,000	189	8	4,800	33	5,150	193	37
	100		13,000	189	7	4,280	28	4,530	193	31
	80		11,000	188	6	3,760	23	3,910	192	25
	60		10,000	187	5	3,230	17	3,300	192	19
	40		3,000	188	2	2,690	12	2,700	191	13
	20		S.L.	191	0	2,100	6	2,100	191	6
DRAG INDEX 100 COUNTS	200	160 KCAS TO M = 0.31	13,000	189	7	7,280	56	7,980	192	62
	180		13,000	189	7	6,670	50	7,290	192	56
	160		13,000	189	7	6,090	44	6,610	192	50
	140		13,000	189	7	5,530	39	5,950	191	44
	120		13,000	187	7	4,960	34	5,290	191	38
	100		12,000	186	6	4,410	28	4,650	190	32
	80		10,000	185	5	3,850	23	4,010	190	25
	60		10,000	185	5	3,300	18	3,370	189	19
	40		3,000	184	2	2,740	13	2,740	188	13
	20		S.L.	188	0	2,120	6	2,120	188	6
DRAG INDEX 150 COUNTS	200	155 KCAS TO M = 0.31	12,000	180	6	7,530	58	8,240	190	63
	180		12,000	180	6	6,920	52	7,510	190	57
	160		12,000	180	6	6,310	46	6,810	189	51
	140		12,000	179	6	5,710	41	6,110	189	44
	120		12,000	179	6	5,110	35	5,440	188	38
	100		11,000	181	5	4,530	29	4,770	187	32
	80		10,000	183	5	3,950	24	4,100	187	26
	60		9,000	182	4	3,380	18	3,440	186	19
	40		3,000	181	1	2,780	13	2,790	185	13
	20		S.L.	184	0	2,140	7	2,140	184	7

BINGO

ONE ENGINE OPERATING
GEAR UP - HALF FLAPS
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 15 JULY 1986
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	155 KCAS TO M = 0.30	12,000	177	6	7,770	59	8,480	188	64
	180		12,000	177	6	7,130	53	7,740	188	58
	160		12,000	177	6	6,500	47	7,000	187	51
	140		12,000	177	6	5,870	41	6,280	187	45
	120		12,000	177	6	5,260	36	5,580	186	39
	100		11,000	178	5	4,650	30	4,880	185	32
	80		10,000	181	6	4,050	24	4,200	184	26
	60		8,000	179	4	3,450	18	3,520	183	20
	40		3,000	178	1	2,830	13	2,840	182	13
	20		S.L.	181	0	2,170	7	2,170	181	7
DRAG INDEX 250 COUNTS	200	155 KCAS TO M = 0.30	11,000	175	5	8,060	60	8,730	186	65
	180		11,000	175	5	7,380	54	7,960	185	58
	160		11,000	175	5	6,710	48	7,200	185	52
	140		11,000	175	5	6,050	42	6,450	185	45
	120		11,000	175	5	5,400	36	5,740	184	39
	100		11,000	175	5	4,760	30	5,030	183	33
	80		10,000	179	4	4,140	24	4,310	182	26
	60		8,000	177	4	3,510	19	3,600	181	20
	40		3,000	176	1	2,870	13	2,890	181	13
	20		S.L.	180	0	2,190	7	2,190	180	7
DRAG INDEX 300 COUNTS	200	155 KCAS TO M = 0.30	10,000	178	4	8,320	62	8,980	183	65
	180		10,000	178	4	7,600	55	8,190	183	59
	160		10,000	178	4	6,900	48	7,420	183	52
	140		10,000	178	4	6,210	42	6,660	183	46
	120		10,000	178	4	5,540	36	5,900	182	40
	100		10,000	177	4	4,870	30	5,150	182	33
	80		10,000	177	4	4,220	24	4,400	181	27
	60		8,000	174	3	3,570	19	3,660	180	20
	40		3,000	173	1	2,910	13	2,930	179	13
	20		S.L.	178	0	2,210	7	2,210	178	7

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

BINGO

ONE ENGINE OPERATING
GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS (ZERO FUEL WEIGHT)

REMARKS

ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 0 COUNTS	200	190 KCAS TO M = 0.34	15,000	195	9	6,380	51	7,280	205	58
	180		15,000	195	9	5,890	46	6,680	205	53
	160		15,000	194	9	5,410	41	6,080	204	47
	140		15,000	194	9	4,930	36	5,490	203	41
	120		15,000	193	9	4,460	31	4,900	202	36
	100		15,000	192	9	3,990	26	4,320	202	30
	80		14,000	193	8	3,530	21	3,750	201	24
	60		12,000	194	7	3,060	16	3,180	200	18
	40		8,000	195	5	2,580	11	2,612	199	12
	20		1,000	198	1	2,050	6	2,050	198	6
DRAG INDEX 50 COUNTS	200	180 KCAS TO M = 0.34	14,000	192	8	6,650	52	7,550	203	59
	180		14,000	192	8	6,140	47	6,910	202	53
	160		14,000	191	8	5,630	42	6,290	202	48
	140		14,000	190	8	5,130	37	5,670	201	42
	120		14,000	190	8	4,630	32	5,050	200	36
	100		14,000	189	8	4,130	27	4,440	199	30
	80		14,000	189	8	3,640	22	3,840	198	24
	60		12,000	190	7	3,140	16	3,250	197	18
	40		6,000	193	3	2,630	12	2,660	196	12
	20		1,000	195	0	2,080	6	2,080	195	6
DRAG INDEX 100 COUNTS	200	180 KCAS TO M = 0.32	13,000	192	7	6,990	53	7,810	201	60
	180		13,000	191	7	6,430	48	7,150	200	54
	160		13,000	190	7	5,870	43	6,490	199	48
	140		13,000	189	7	5,320	38	5,840	198	42
	120		13,000	188	7	4,780	33	5,200	197	37
	100		13,000	188	7	4,250	27	4,570	196	31
	80		13,000	187	7	3,720	22	3,940	195	25
	60		12,000	187	7	3,210	17	3,320	194	19
	40		6,000	190	3	2,670	12	2,710	193	12
	20		1,000	192	1	2,100	6	2,100	192	6
DRAG INDEX 150 COUNTS	200	180 KCAS TO M = 0.31	12,000	188	6	7,250	56	8,070	199	60
	180		12,000	187	6	6,660	50	7,380	198	55
	160		12,000	187	6	6,080	44	6,700	197	49
	140		12,000	186	6	5,500	39	6,020	195	43
	120		12,000	186	6	4,930	33	5,350	194	37
	100		12,000	185	6	4,380	28	4,690	193	31
	80		12,000	184	6	3,820	23	4,040	192	25
	60		11,000	185	6	3,280	17	3,390	191	19
	40		6,000	188	3	2,720	12	2,750	190	13
	20		1,000	189	1	2,120	6	2,120	189	6

BINGO

ONE ENGINE OPERATING
GEAR DOWN - FLAPS AUTO
WEIGHT - 26,000 POUNDS
(WEIGHT = ZERO FUEL WEIGHT)

REMARKS
ENGINE(S): (2)F404-GE-402

DATE: 16 NOVEMBER 1989
DATA BASIS: **ESTIMATED**
BASED ON FLIGHT TEST

U.S. STANDARD DAY, 1962
INOPERATIVE ENGINE WINDMILLING

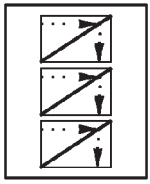
FUEL GRADE: JP-5
FUEL DENSITY: 6.8 LB/GAL

		CLIMB	CRUISE		DESCEND			SEA LEVEL CRUISE		
	INBD DIST	MACH OR KCAS	ALT	SPEED CAS	DIST	FUEL REQD	TIME REQD	FUEL REQD	SPEED CAS	TIME REQD
	NM		FEET	KNOTS	NM	LB	MIN	LB	KNOTS	MIN
DRAG INDEX 200 COUNTS	200	175 KCAS to M = 0.31	11,000	187	5	7,550	56	8,330	197	61
	180		11,000	186	5	6,920	50	7,610	196	55
	160		11,000	186	5	6,300	45	6,900	194	49
	140		11,000	185	5	5,700	39	6,190	193	44
	120		11,000	184	5	5,100	34	5,500	191	38
	100		11,000	183	5	4,510	29	4,810	190	32
	80		11,000	182	5	3,930	23	4,130	189	25
	60		11,000	181	5	3,360	17	3,460	187	19
	40		6,000	185	3	2,770	12	2,800	186	13
	20		1,000	185	1	2,150	6	2,150	185	6
DRAG INDEX 250 COUNTS	200	170 KCAS TO M = 0.31	10,000	186	5	7,840	57	8,580	195	62
	180		10,000	185	5	7,180	51	7,830	194	56
	160		10,000	185	5	6,530	46	7,100	192	50
	140		10,000	184	5	5,890	40	6,370	191	44
	120		10,000	183	5	5,260	35	5,640	189	38
	100		10,000	182	5	4,640	29	4,930	187	32
	80		10,000	181	5	4,030	24	4,230	186	26
	60		8,000	182	4	3,430	18	3,540	184	20
	40		6,000	183	3	2,810	12	2,850	183	13
	20		1,000	182	0	2,170	7	2,170	182	7
DRAG INDEX 300 COUNTS	200	165 KCAS TO M = 0.31	10,000	184	4	8,120	59	8,830	193	62
	180		10,000	183	4	7,420	53	8,060	192	56
	160		10,000	182	4	6,750	47	7,290	190	50
	140		10,000	181	4	6,090	41	6,530	189	45
	120		10,000	181	4	5,440	35	5,780	187	39
	100		10,000	180	4	4,790	30	5,040	185	32
	80		10,000	179	4	4,150	24	4,320	183	26
	60		7,000	181	3	3,510	18	3,600	182	20
	40		5,000	182	2	2,860	12	2,890	181	13
	20		1,000	181	0	2,190	7	2,190	181	7

DATA BASED ON:

1. INITIAL ALTITUDE IS SEA LEVEL.
2. MILITARY THRUST CLIMB TO INDICATED ALTITUDE.
3. 250 KCAS IDLE THRUST DESCENT TO SEA LEVEL (SPEEDBRAKE RETRACTED).
4. FUEL REQUIRED INCLUDES 1,500 POUNDS RESERVE FUEL.
5. NO WIND. REFER TO HEADWIND EFFECTS ON BINGO CHART.

HEADWIND EFFECTS ON BINGO FUEL



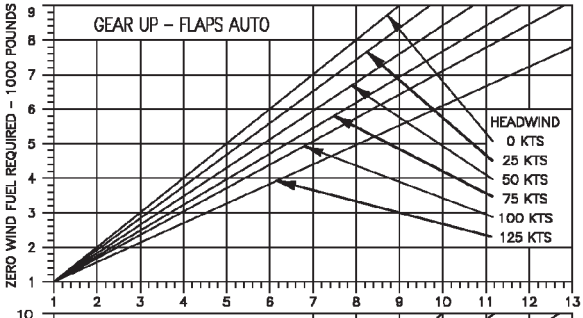
CRUISE AT SEA LEVEL

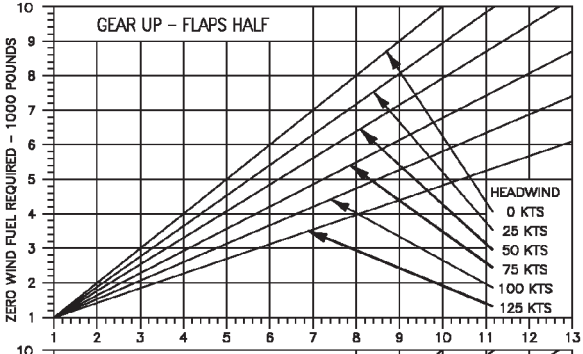
REMARKS

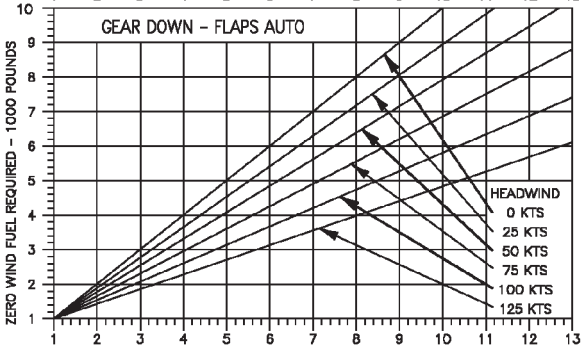
DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

ENGINE(S): (2)F404-GE-402
U.S. STANDARD DAY, 1962

FUEL GRADE:
JP-5
FUEL DENSITY:
6.8 LB/GAL







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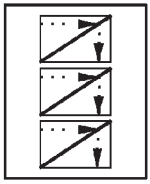
HEADWIND EFFECTS ON BINGO FUEL

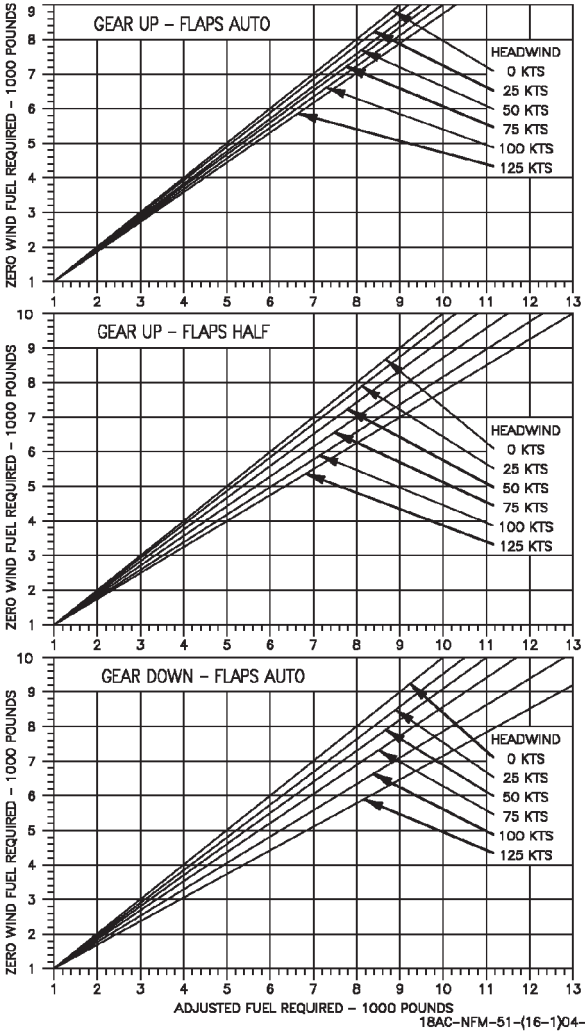
CRUISE AT BEST ALTITUDE

DATE: 16 NOVEMBER 1989
DATA BASIS: ESTIMATED
(BASED ON FLIGHT TEST)

REMARKS
ENGINE(S): (2)F404-GE-402
U.S. STANDARD DAY, 1962

FUEL GRADE:
JP-5
FUEL DENSITY:
6.8 LB/GAL





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