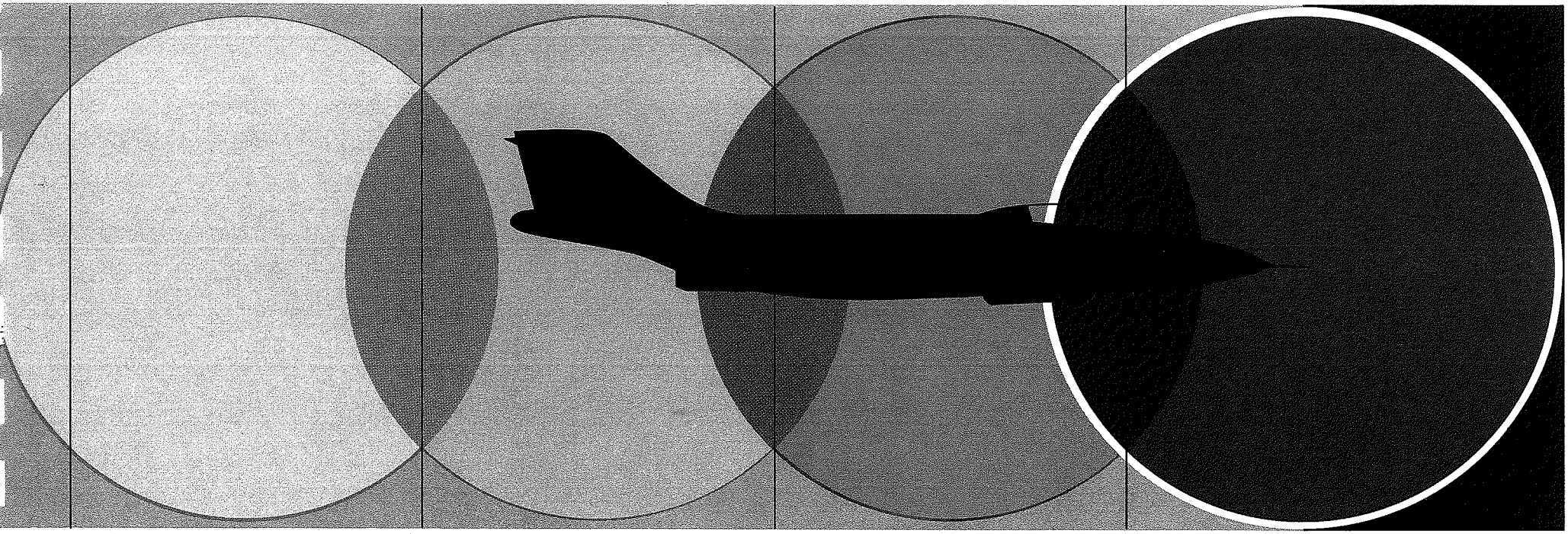
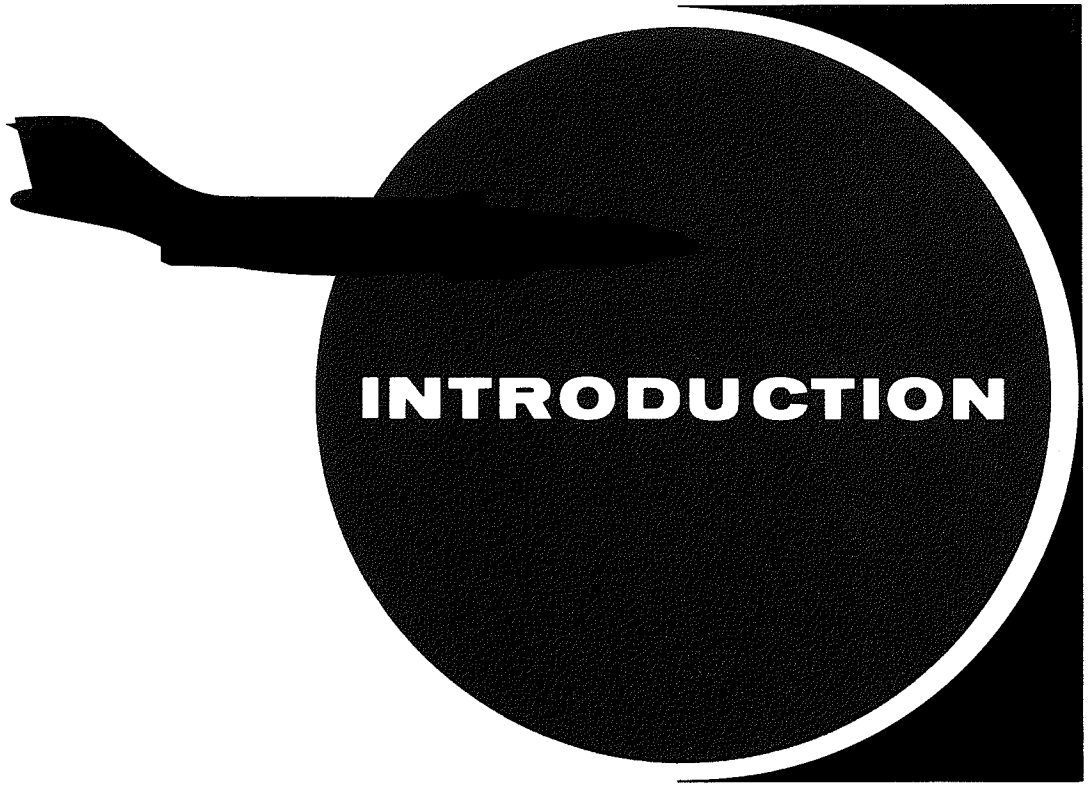
REPORT NO. G134

F-101B(R) RECONNAISSANCE

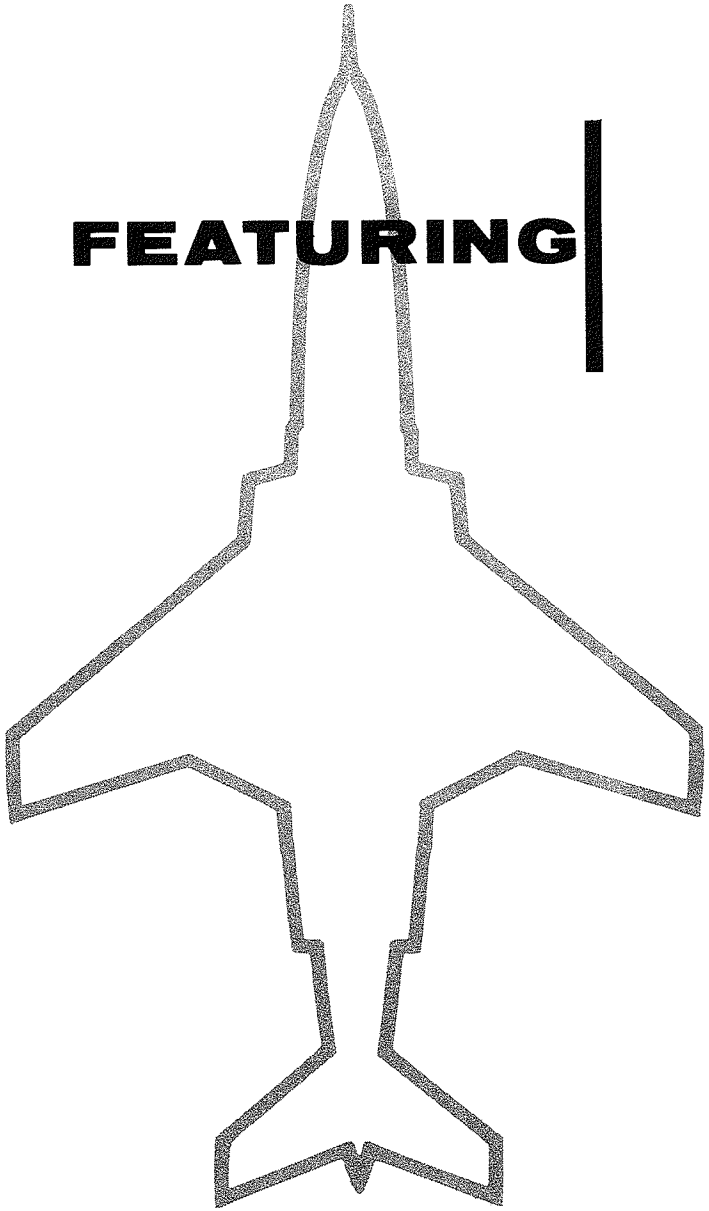


MCDONNELL DOUGLAS



INTRODUCTION

McDonnell Douglas provides this information as an alternate solution to the present considerations being made to reconfigure interceptor aircraft to a reconnaissance capability. Studies completed by MDC as to the feasibility of reconfiguration of the F-101B, where specific sensor requirements were met, lead to this relatively low cost modification. No long lead time requirements and minimal structural changes coupled with proven photographic systems, dual controls, two system in-flight refueling capability provide many economical and operational advantages.



FEATURING

A PROVEN PHOTOGRAPHIC SYSTEM

1 KS-72/KS-87 FORWARD OBLIQUE CAMERA
1 KA-56 LOW ALT. PAN CAMERA
2 KS-72's/KS-87's IN SPLIT VERTICAL ARRAY
AUTOMATIC CAMERA CONTROL SYSTEM

DUAL CONTROLS

PROBE AND FLYING BOOM INFLIGHT REFUELING

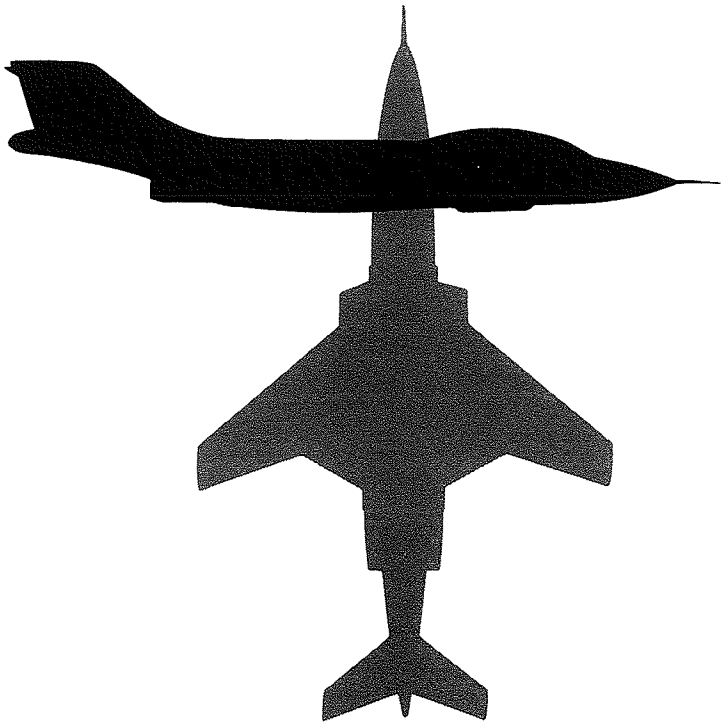
NOSE COMPARTMENT CARGO SPACE

LOW COST - BY VIRTUE OF

MINIMUM STRUCTURAL REWORK
(MOD CONFINED TO ARMAMENT BAY)
MINIMUM DEVELOPMENT REQUIREMENTS
(NO "NEW" CHANGES TO NOSE SECTION

SHORT TIME SPAN CONVERSION

(NO LONG LEAD TIME ITEMS)



1

The following illustrations reflect a Modification to the F-101B which might be considered suitable for augmentation of the USAF reconnaissance mission. Reconfiguration is based upon removal of the MG-13 Fire Control System (FCS) and weapons, and the installation of sensors with a minimum of airframe rework.

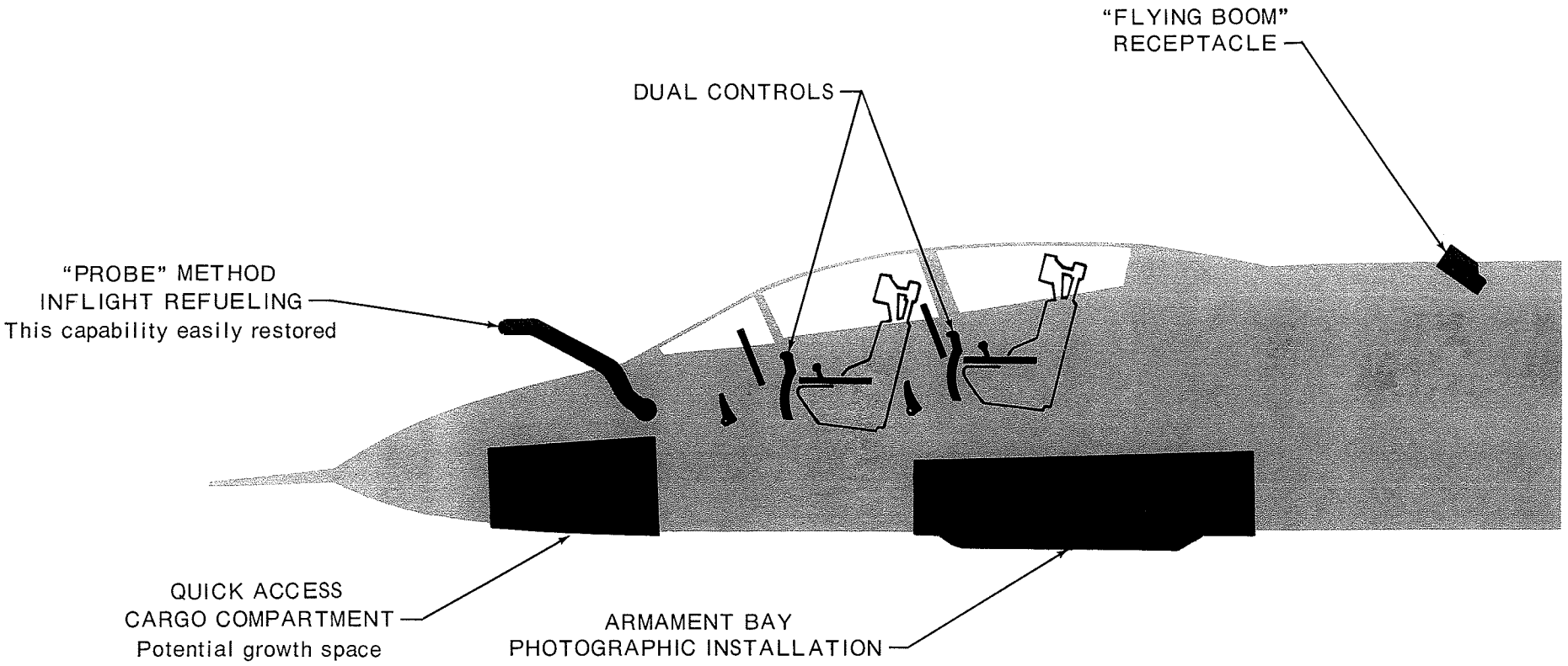
2

The Reconnaissance Conversion features a photographic system almost identical to that installed in the RF-101G/H and Dual Control capability identical to that installed in production by MDC on the F-101F's - the latter a much sought after adjunct during the transition of the ANG pilots into the RF-101G/H aircraft. As a "Reconn" aircraft it employs the same optical sensors (KS-72/87's and KA-56's) used on the RF-101's, RF-4's, RF-8's and RF-104's. Other features include: "Probe" and "Flying Boom" inflight refueling capability and a nose compartment "cargo" space. The MG-13 Infra-Red Seeker Head has been replaced with the production inflight refueling probe - thus restoring the original moldlines. (Development problems encountered previously with regard to the redesign of the nose section have been eliminated.) The space in the nose section (made available by removal of the MG-13 FCS) could be used to transport various items and would also be available for the installation of additional reconnaissance equipment at a future date. Each of the above features could be bought separately or as a combination.

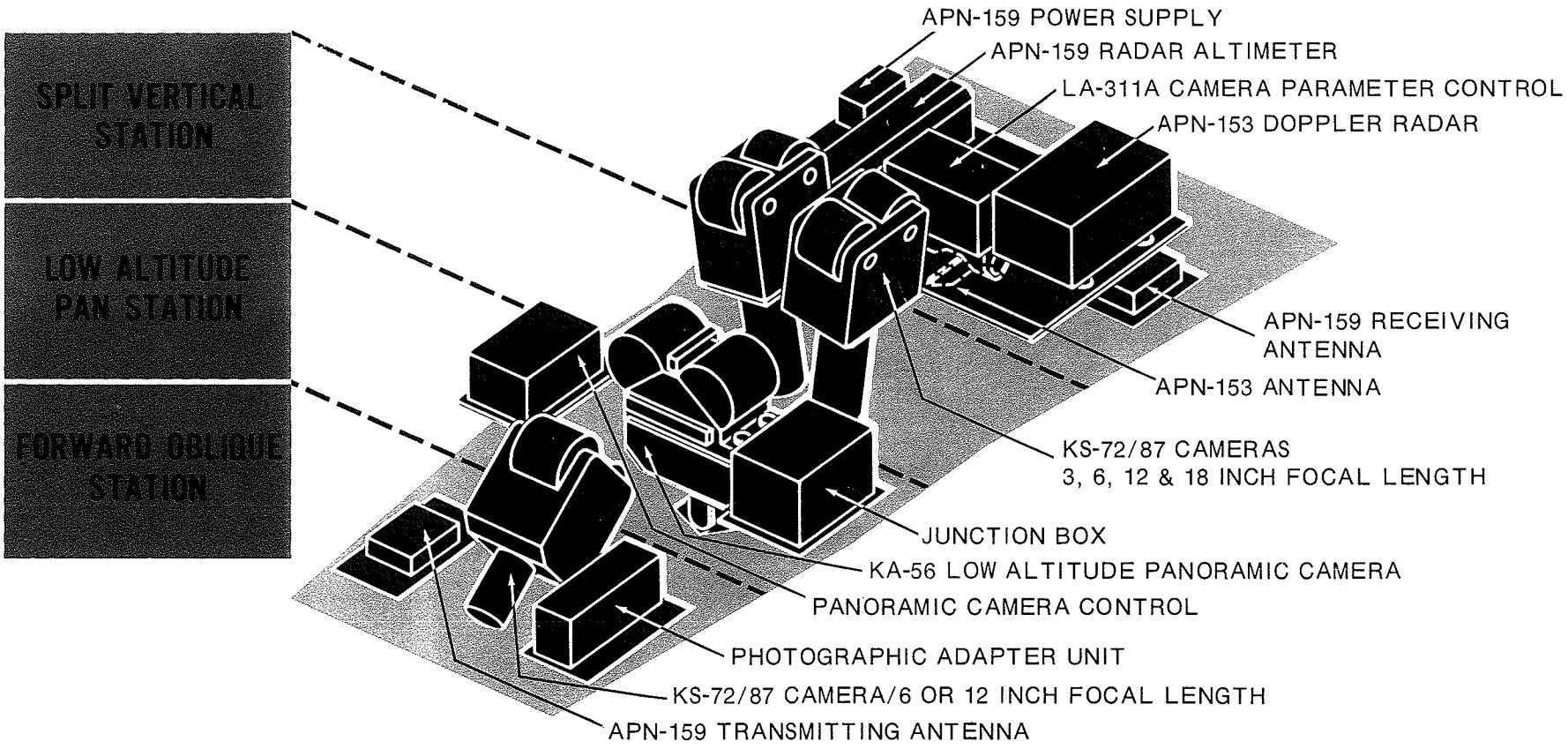
3

The use of existing photographic and navigation equipment (with existing AGE) and the simplicity of the rework which involves a minimum amount of structural modification without relocation of any major components would appear to make the modification attractive from a cost standpoint. More than ample capacity exists in the aircraft electrical and air conditioning system to support the reconnaissance equipment - a minor modification would be made to the latter to provide for camera vacuum. The armament bay does not suggest the use of long focal length cameras of conventional design; however, the standard short focal length framing cameras appear to fit nicely. Automatic camera window covers, similar to those installed on the RF-101, RA-5C or RB-66B can be designed to prevent camera window contamination due to nose wheel splash.

EQUIPMENT LOCATIONS



ARMAMENT BAY OPTICAL SYSTEM



EQUIPMENT OPTIONS

VERTICAL FRAMING CAMERA

Should a vertical framing camera be desired provisions could be made for it to be installed at the split vertical station.

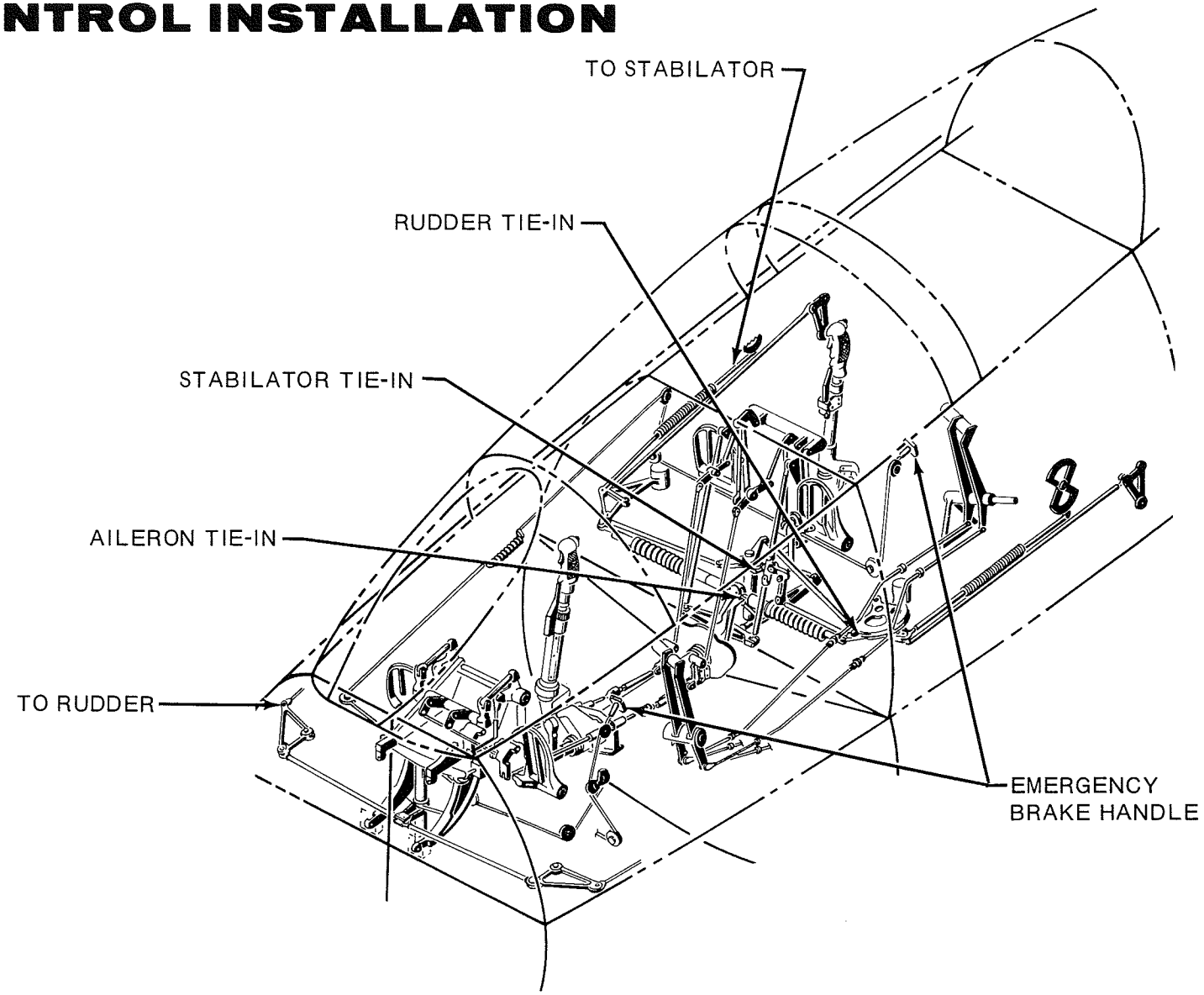
TV VIEWFINDER

A TV viewfinder can be provided. Cameras would be installed in the armament bay.

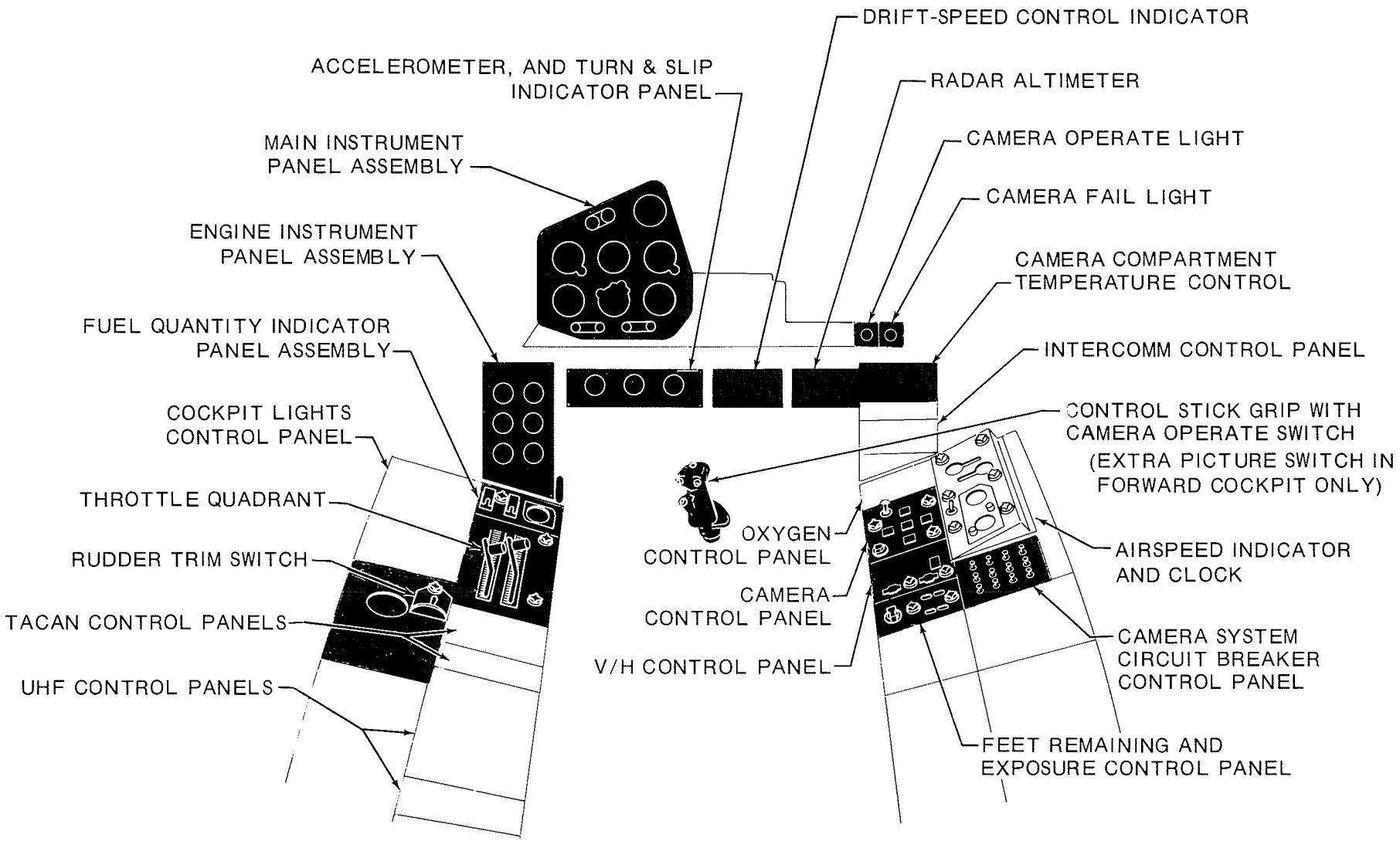
IMPROVED CLOCK

A more accurate clock can be provided. Low level reconnaissance is more easily accomplished with this equipment.

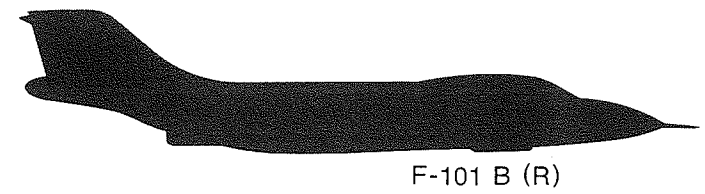
DUAL CONTROL INSTALLATION



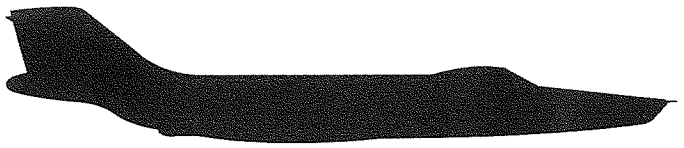
AFT COCKPIT FEATURES



OPTICAL SENSORS

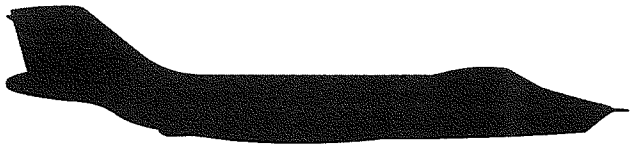


F-101 B (R)



RF-101

RF-4C



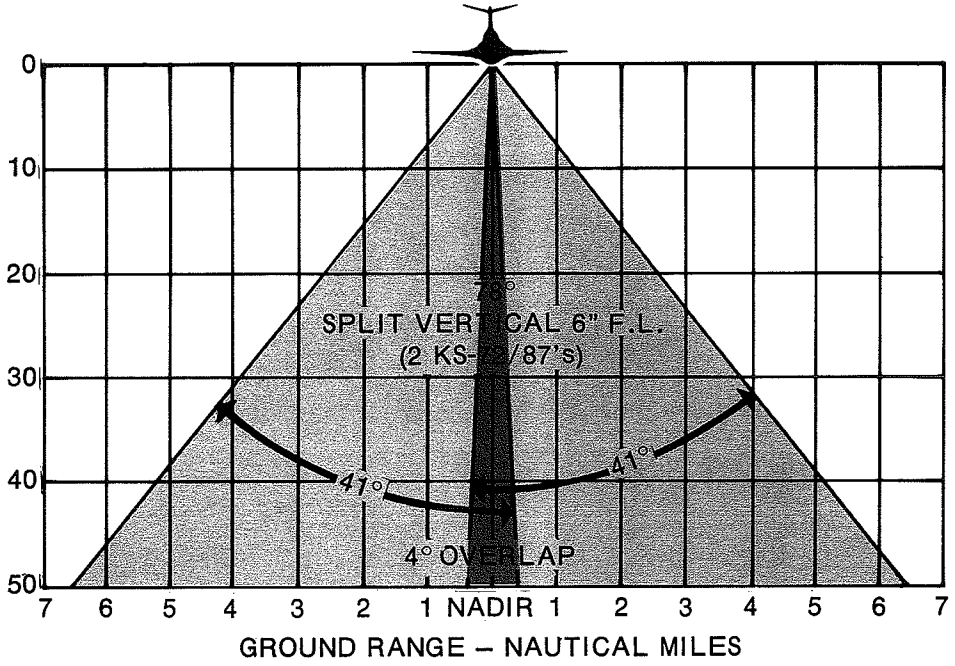
RF-101 G/H

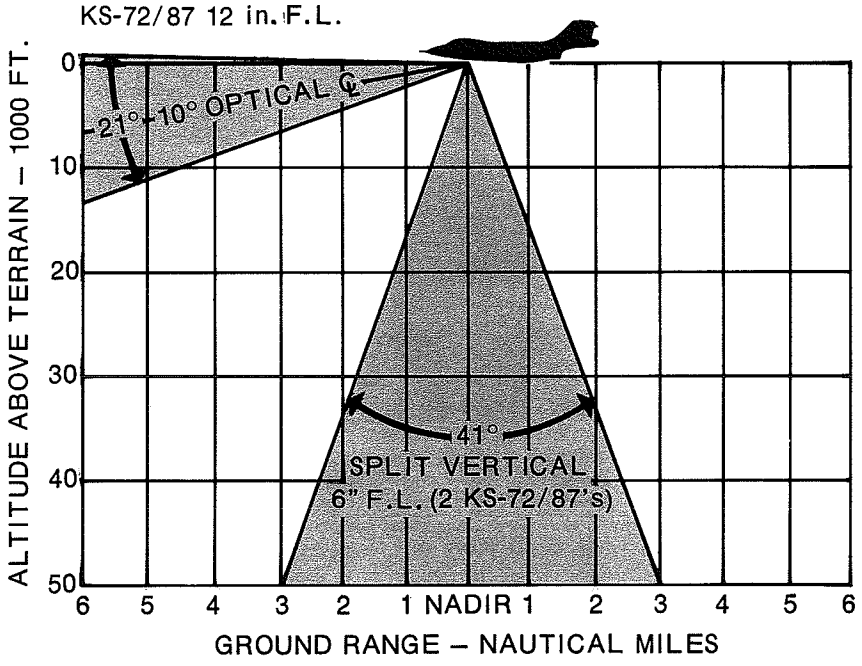
KS-72/87 Forward Oblique	KS-72/87 Split Vertical	KA-56 Low Altitude Panoramic	KA-55 High Altitude Panoramic	KA-1 High Altitude Split Vertical
●	●	●		
●	●	●		●
●	●	●	●	
●	●	●		

CAMERA UTILIZATION

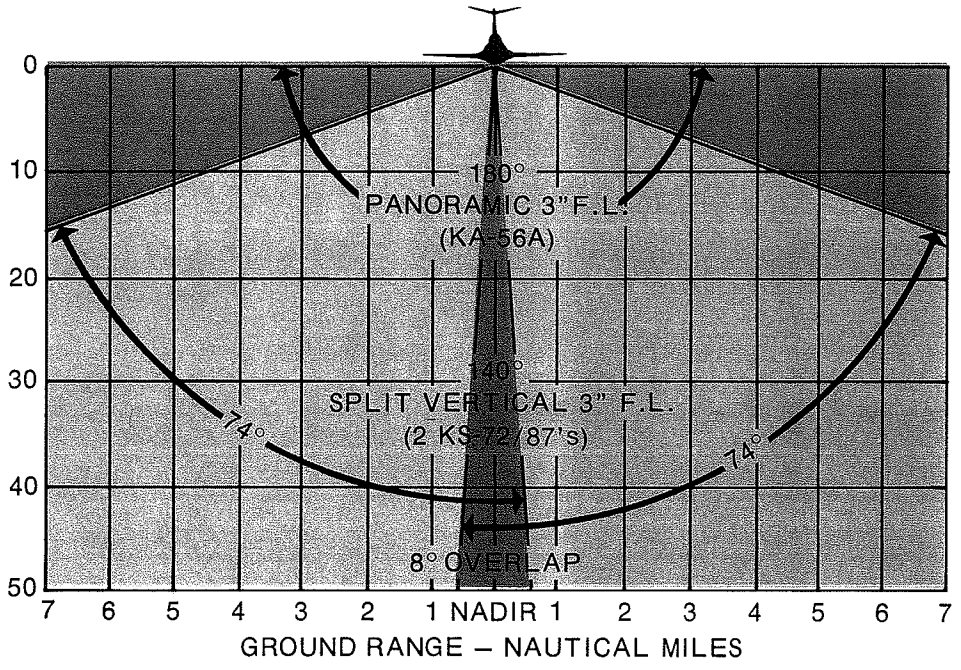
CAMERA, ATTITUDE & FOCAL LENGTH	KS-72/87 Fwd. Oblique 6''	KS-72/87 Fwd. Oblique 12''	KA-56 Low Alt. Pan 3''	KS-72/87 Split Vert 3''	KS-72/87 Split Vert 6''	KS-72/87 Split Vert 12''	KS-72/87 Split Vert 18''
MISSION	Low Day	Low Day	Low Day	Low Day	Low Day	Hi Day	Hi Day
AREA SEARCH Provide indications of enemy activity and basis for search of more selected area; provide data for updating of maps; provide data for updating orders of battle.	●	●	●	●	●	●	
ROUTE (STRIP) Provide information about a line of communication, ridge line, or shore line.	●	●	●		●	●	●
PINPOINT (POINT) Provide detail about a target with respect to hardness, capability, defenses, bomb damage assessment, or technical analysis of equipment.	●	●		●	●		●
BEACH RECONNAISSANCE Provide detailed beach intelligence and shore line water depths information for potential amphibious operations.	●	●	●	●		●	●
HELICOPTER LANDING AREA Provide aids for pilot briefings to show approaches, landing areas, retirement lines, and terrain orientation features.	●	●	●	●	●		

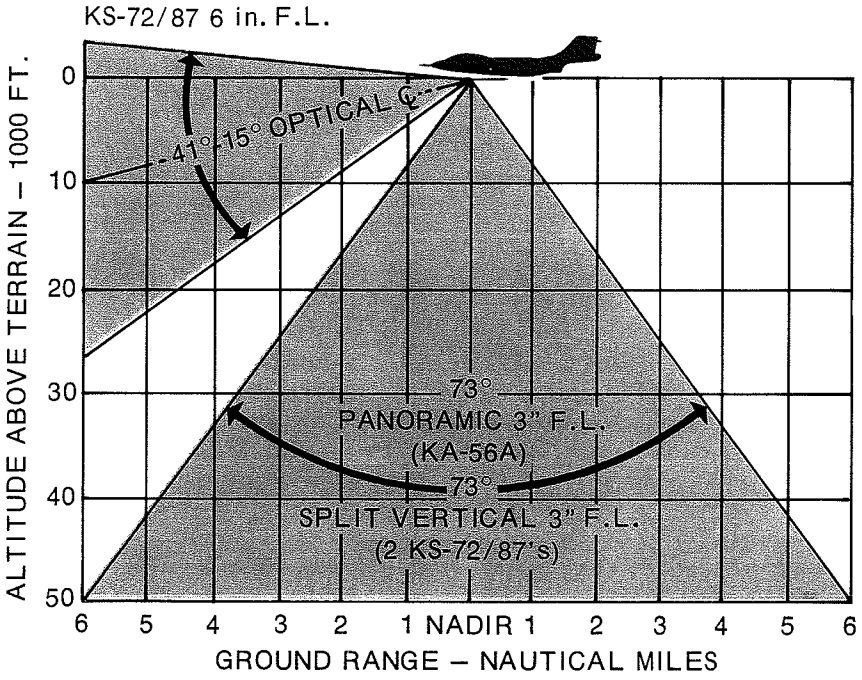
CAMERA AREA COVERAGE



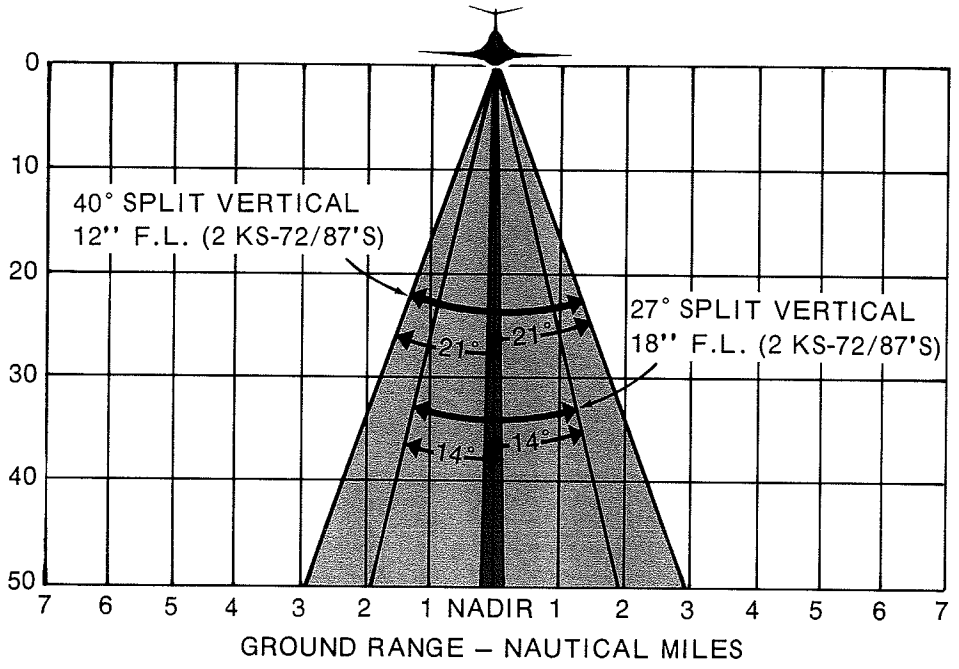


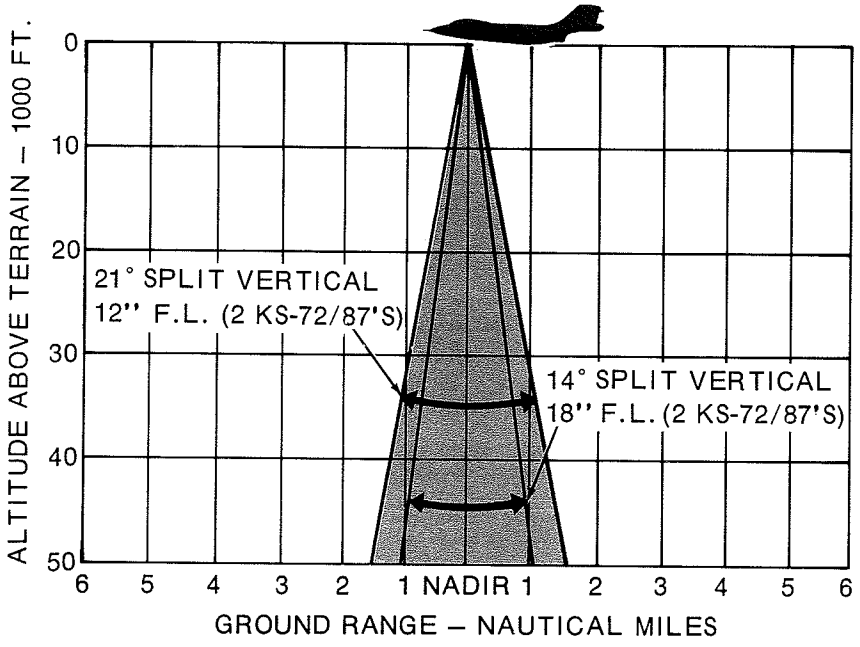
CAMERA AREA COVERAGE





CAMERA AREA COVERAGE





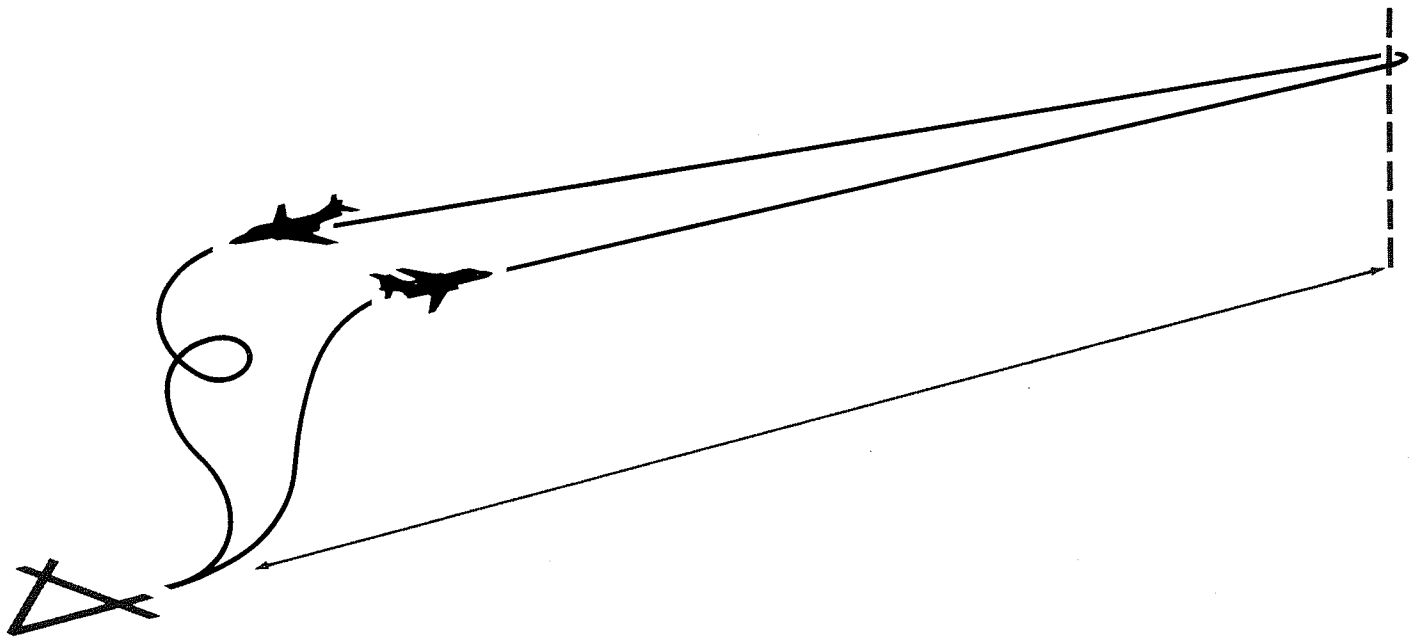
(2) J57-P-55 ENGINES
(2) 450 GALLON TANKS
TAKE-OFF GROSS WEIGHT = 50,300 POUNDS
INTERNAL FUEL = 2084 GALLONS
(13,546 POUNDS)
EXTERNAL FUEL = 900 GALLONS
(5850 POUNDS)

NOTE: FUEL TANKS RETAINED

MISSION HIGH-HIGH

RADIUS = 773 NA. MI.

A. MAXIMUM POWER TAKE-OFF AND MILITARY POWER ACCELERATION (1000 LBS. FUEL)
B. MILITARY POWER CLIMB TO OPTIMUM CRUISE ALTITUDE
C. CRUISE OUT AT OPTIMUM CRUISE ALTITUDE
D. CRUISE IN AT OPTIMUM CRUISE ALTITUDE
E. RESERVE (1200 LBS. FUEL)



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(13,546 POUNDS)
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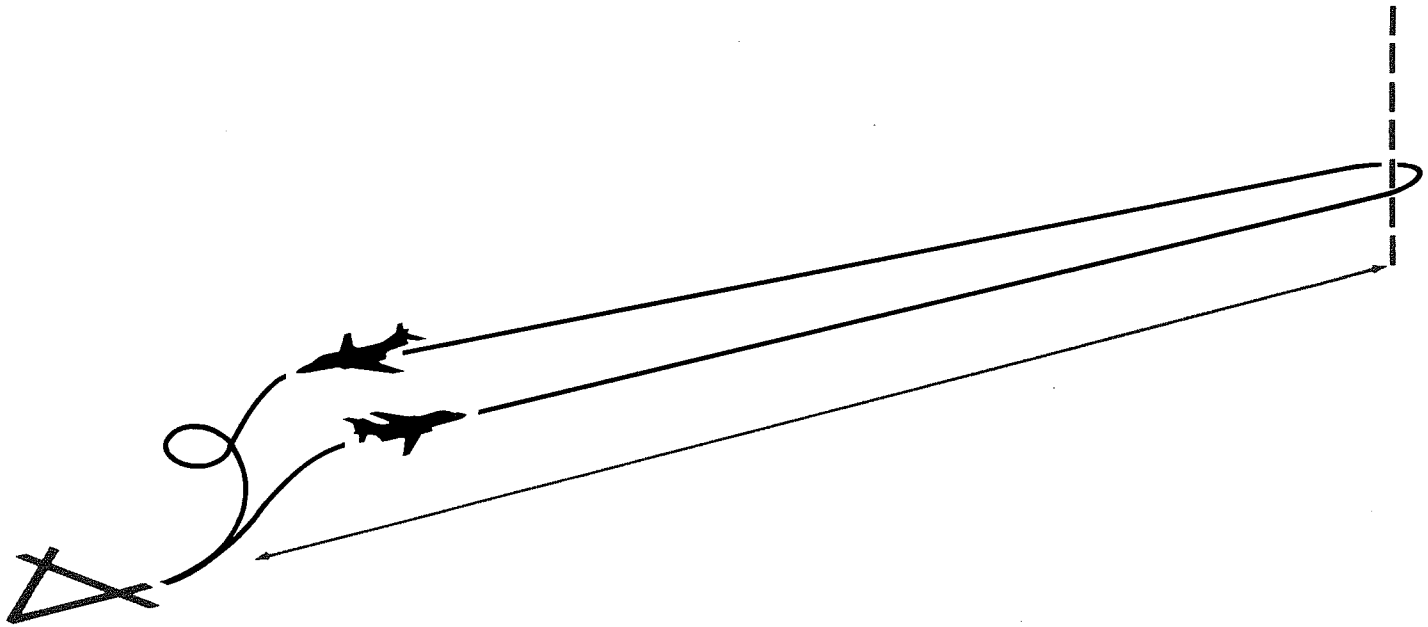
(5850 POUNDS)

NOTE: FUEL TANKS RETAINED

MISSION LOW-LOW-LOW-LOW

RADIUS = 372 NA. MI.

A. MAXIMUM POWER TAKE-OFF AND MILITARY POWER ACCELERATION (1000 LBS. FUEL)
B. OPTIMUM CRUISE OUT AT SEA LEVEL, SINGLE ENGINE
C. DASH-OUT 50 NA. MI. AT SEA LEVEL AT M=0.8
D. DASH-IN 50 NA. MI. AT SEA LEVEL AT M=0.8
E. OPTIMUM CRUISE IN AT SEA LEVEL, SINGLE ENGINE
F. RESERVE (1200 LBS. FUEL)



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INTERNAL FUEL = 2084 GALLONS
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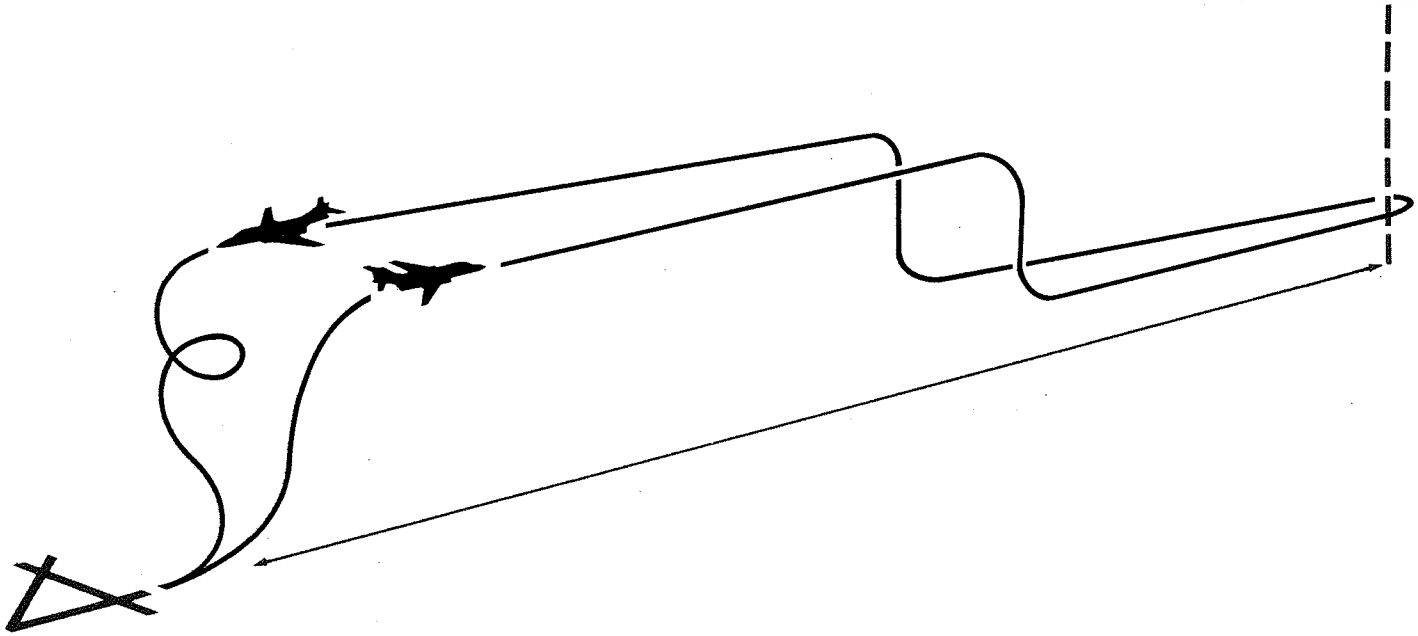
(5850 POUNDS)

NOTE: FUEL TANKS RETAINED

MISSION HIGH-LOW-LOW-HIGH

RADIUS = 655 NA. MI.

A. MAXIMUM POWER TAKE-OFF AND MILITARY POWER ACCELERATION (1000 LBS. FUEL)
B. MILITARY POWER CLIMB TO OPTIMUM CRUISE ALTITUDE
C. CRUISE OUT AT OPTIMUM CRUISE ALTITUDE
D. DESCENT TO SEA LEVEL AND DASH-OUT 50 NA. MI. AT M=0.8
E. DASH-IN AT SEA LEVEL, 50 NA. MI. AT M=0.8
F. MILITARY POWER CLIMB TO OPTIMUM CRUISE ALTITUDE
G. CRUISE HOME AT OPTIMUM CRUISE ALTITUDE
H. RESERVE (1200 LBS. FUEL)



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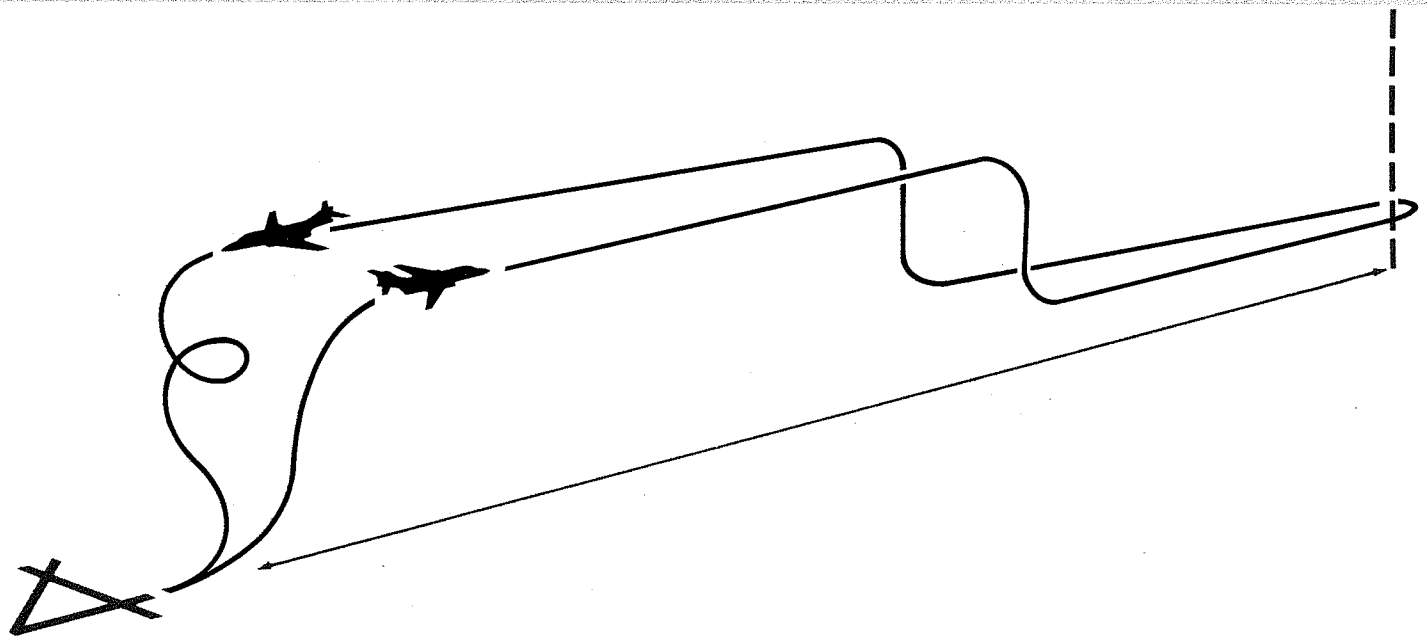
(5850 POUNDS)

NOTE: FUEL TANKS RETAINED

MISSION HIGH-LOW-LOW-HIGH

RADIUS = 655 NA. MI.

A. MAXIMUM POWER TAKE-OFF AND MILITARY POWER ACCELERATION (1000 LBS. FUEL)
B. MILITARY POWER CLIMB TO OPTIMUM CRUISE ALTITUDE
C. CRUISE OUT AT OPTIMUM CRUISE ALTITUDE
D. DESCENT TO SEA LEVEL AND DASH-OUT 50 NA. MI. AT M=0.8
E. DASH-IN AT SEA LEVEL, 50 NA. MI. AT M=0.8
F. MILITARY POWER CLIMB TO OPTIMUM CRUISE ALTITUDE
G. CRUISE HOME AT OPTIMUM CRUISE ALTITUDE
H. RESERVE (1200 LBS. FUEL)



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NOTE: FUEL TANKS RETAINED

FERRY RANGE

RANGE = 1546 NA. MI.

A. MAXIMUM POWER TAKE-OFF AND MILITARY POWER ACCELERATION (1000 LBS. FUEL)
B. MILITARY POWER CLIMB TO OPTIMUM CRUISE ALTITUDE
C. CRUISE OUT AT OPTIMUM CRUISE ALTITUDE
D. RESERVE (1200 LBS. FUEL)