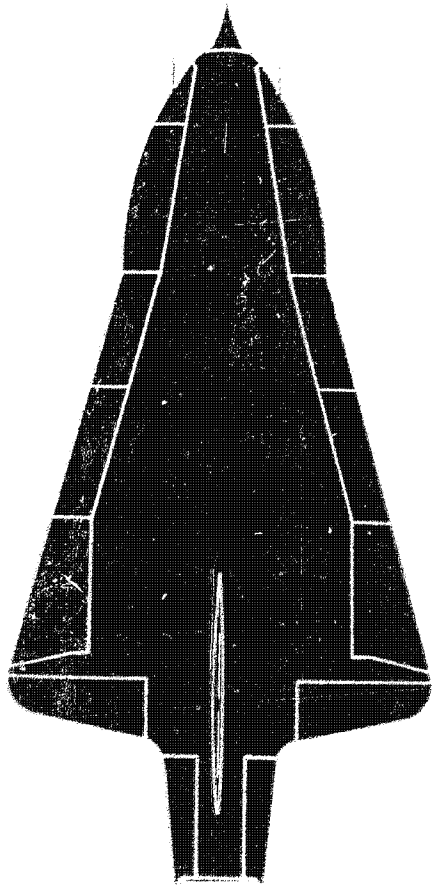


COPY 7



The D-21B

Reconnaissance System

SP 3066
10-10-68

D-21B RECONNAISSANCE VEHICLE

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NAVIGATION AND CONTROL

TELEMETRY AND COMMAND SYSTEMS

ANTI - DETECTION

RECONNAISSANCE CAMERA

MISSION CAPABILITY

HATCH PAYLOAD RECOVERY

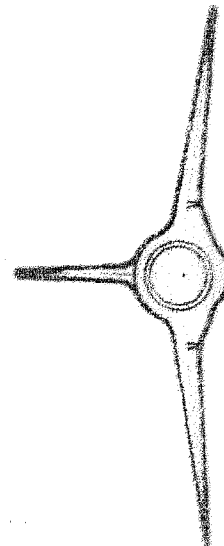
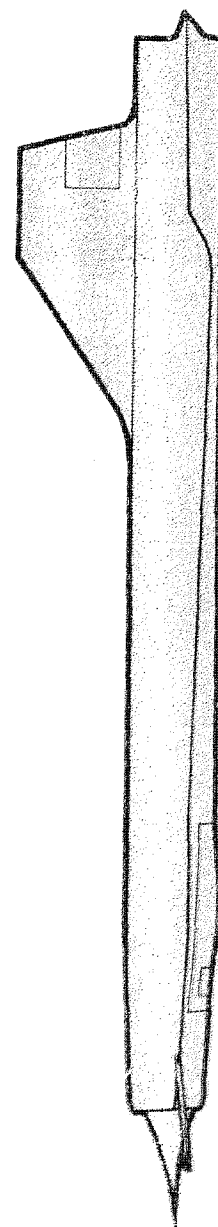
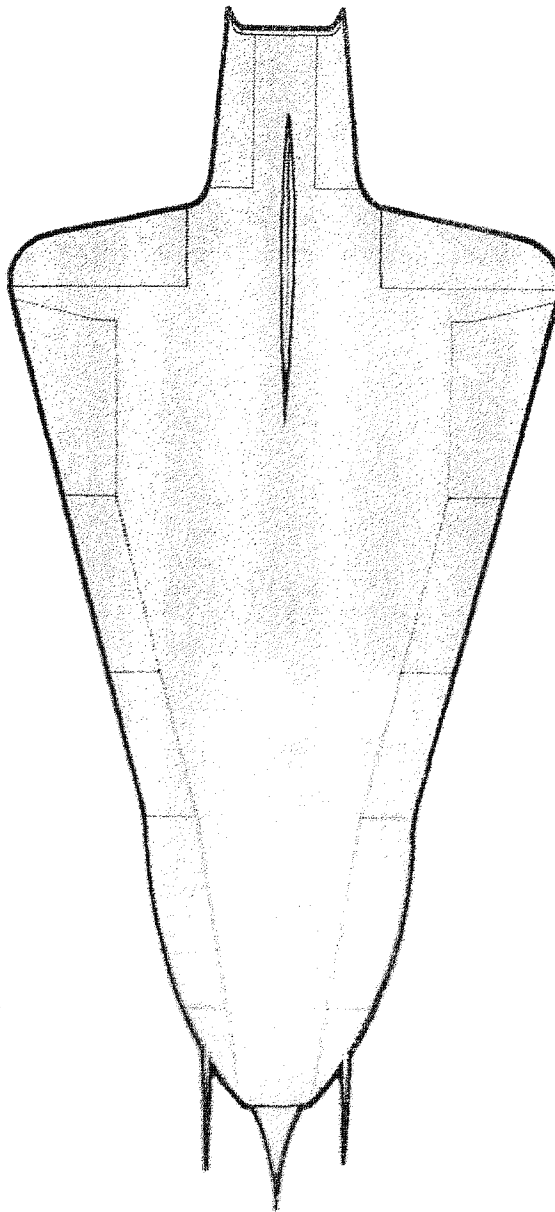
INTRODUCTION

THE D-21B RECONNAISSANCE SYSTEM IS AN ADVANCED, SPECIAL PURPOSE SYSTEM WHICH CAN PROVIDE DETAILED PHOTO RECONNAISSANCE COVERAGE OF HOSTILE TERRITORIES. THE SYSTEM IS BASED ON THE UNMANNED D-21B HIGH PERFORMANCE VEHICLE WHICH IS AIR LAUNCHED FROM A B-52H AIRCRAFT AFTER CARRY-OUT TO ANY LAUNCH DESTINATION IN THE NORTHERN HEMISPHERE. THE CAPABILITIES OF THE SYSTEM ARE MADE POSSIBLE BY THE 3000 NAUTICAL MILE RANGE OF THE D-21B AND THE B-52H EXTENDED CARRYOUT WITH INFLIGHT REFUELING.

FOLLOWING AIR LAUNCH FROM THE B-52H, THE D-21B IS ACCELERATED TO MACH 3.3+ AND AN ALTITUDE OF 80,000 FEET BY A SOLID PROPELLANT BOOSTER ROCKET. THE EXPENDED BOOSTER IS THEN JETTISONED AND THE D-21B COMMENCES A 3000 NAUTICAL MILE CRUISE OVER A COURSE WHICH IS PRE-PROGRAMMED IN THE INERTIAL GUIDANCE SYSTEM. AT THE END OF THE PRE-DETERMINED COURSE A CONTROLLED DESCENT IS MADE TO A LOWER ALTITUDE WHERE THE HATCH CONTAINING THE CAMERA IS EJECTED. THE HATCH PAYLOAD IS THEN DECELERATED AND LOWERED BY A PARACHUTE SYSTEM TO AN ALTITUDE WHERE AN AIR RETRIEVAL IS EXECUTED BY JC-130B AIRCRAFT.

THE D-21B RECONNAISSANCE SYSTEM DRAWS ON A CONSIDERABLE FUND OF EXPERIENCE ACCUMULATED ON THE U-2, A-12, YF-12A AND SR-71 PROGRAMS. THIS BACKGROUND CONTRIBUTED GREATLY TO THE DESIGN OF THE HIGH PERFORMANCE D-21B VEHICLE AND TO ITS PHOTO-RECONNAISSANCE AND ANTI-RADAR CAPABILITIES.

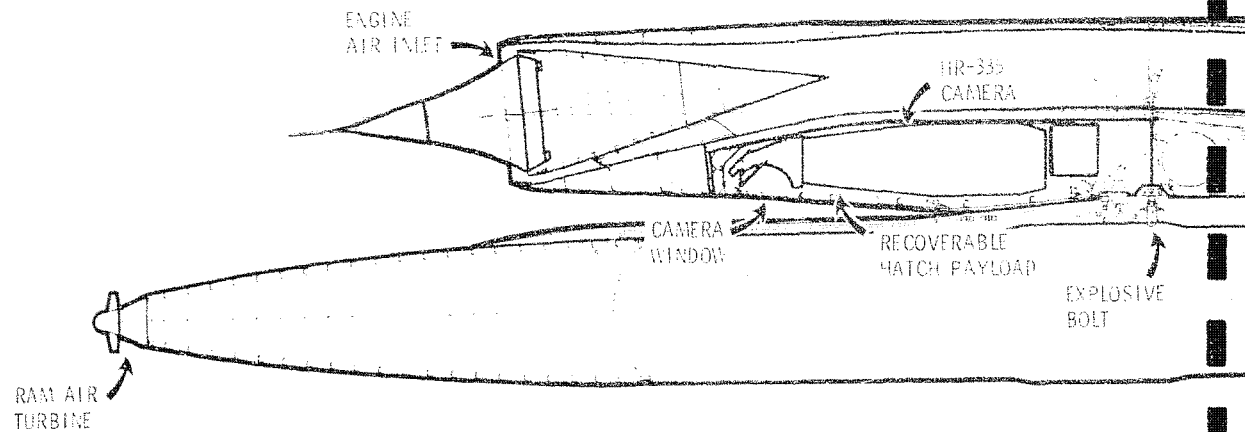
BASIC AIRPLANE



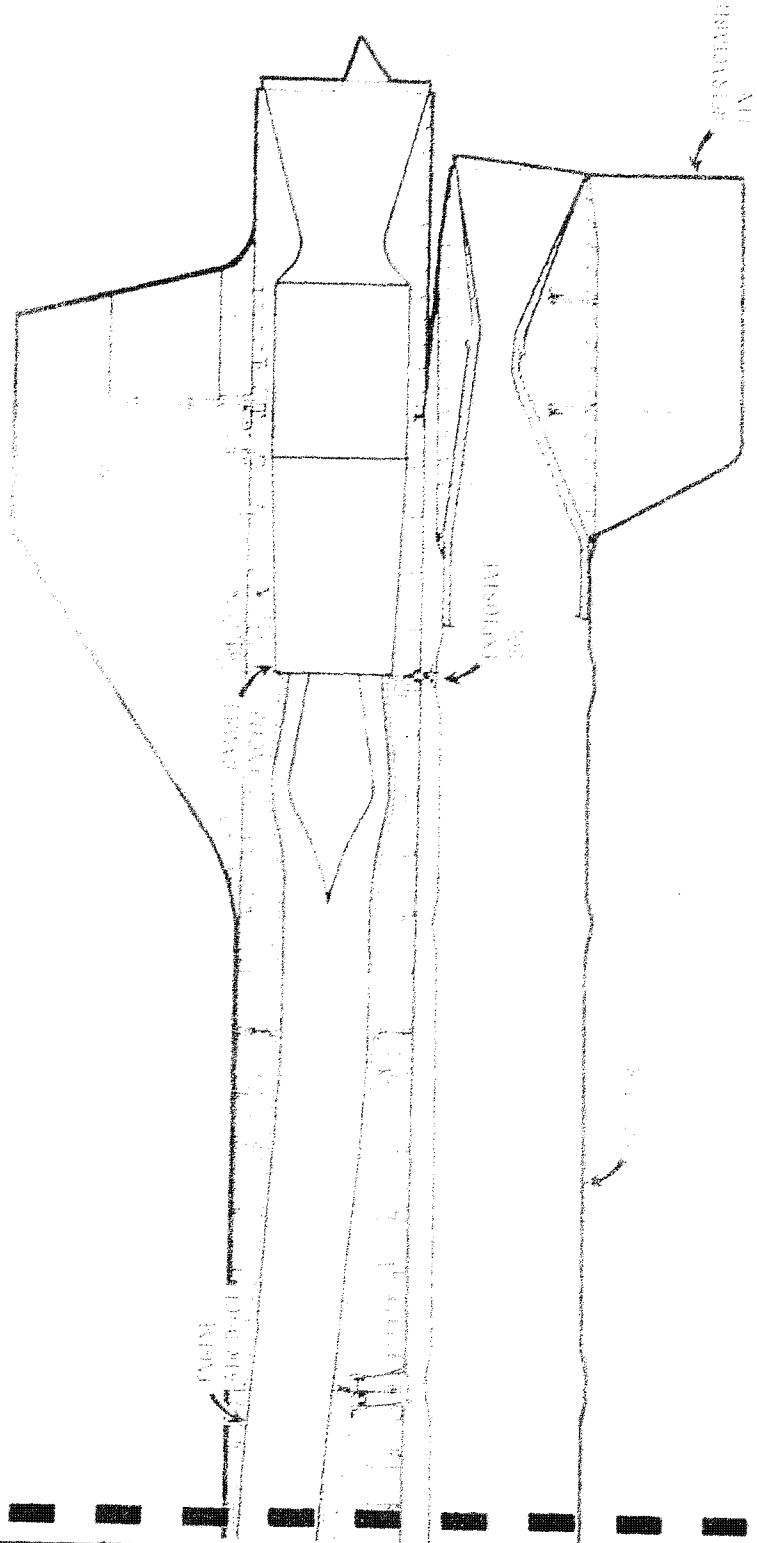
- TITANIUM CONSTRUCTION
- BARRI PROPULSION SYSTEM
- BASED TO SPEED AND ALTITUDE BY SOLID PROPELLANT ROCKET
- MOVABLE INTAKE CANOPIES
- RANG 3.5 CRUISE AT 80,000 - 95,000 FEET ALTITUDE
- SPAN OF 200 INCHES
- LENGTH 51.27 INCHES
- SPAN 228.00 INCHES
- WEIGHT 37,000 LBS
- SMALL RADAR CROSS SECTION
- GROSS WEIGHT 74,000 POUNDS

OPERATIONAL VEHICLE AND BOOSTER

- THE D21-B CONSISTS OF THREE MAJOR ELEMENTS -
- THE AIRFRAME AND ENGINE
- THE RECOVERABLE HATCH CONTAINING:
 - THE CAMERA
 - HIGH VALUE ELECTRONIC EQUIPMENT
- THE BOOSTER INCLUDING:
 - ANTENNA
 - ELECTRICAL AND HYDRAULIC POWER SYSTEMS
 - RETRACTABLE FIN



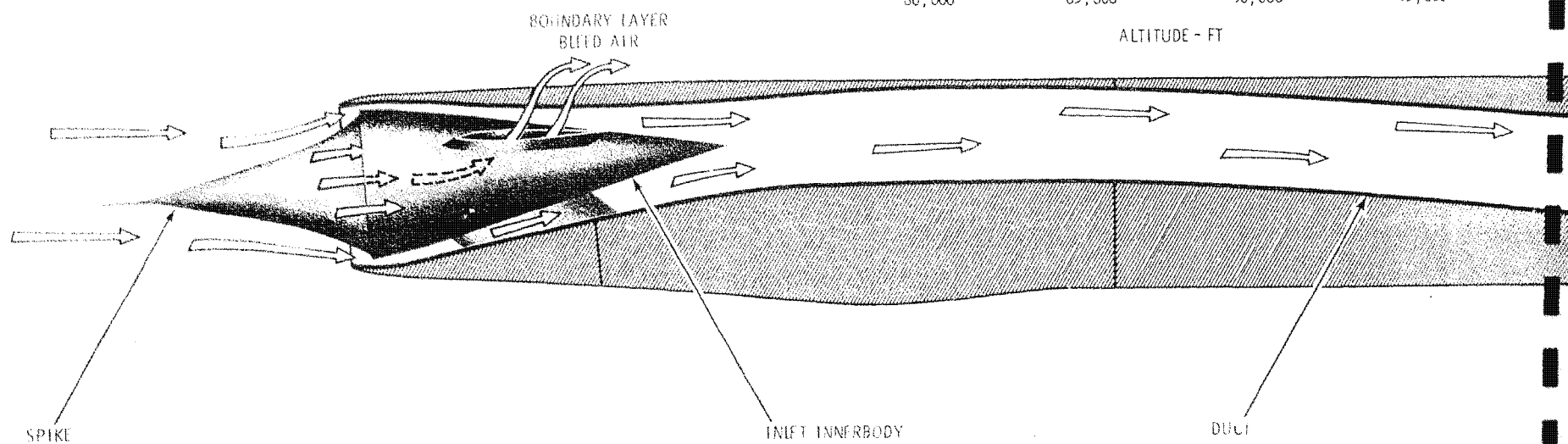
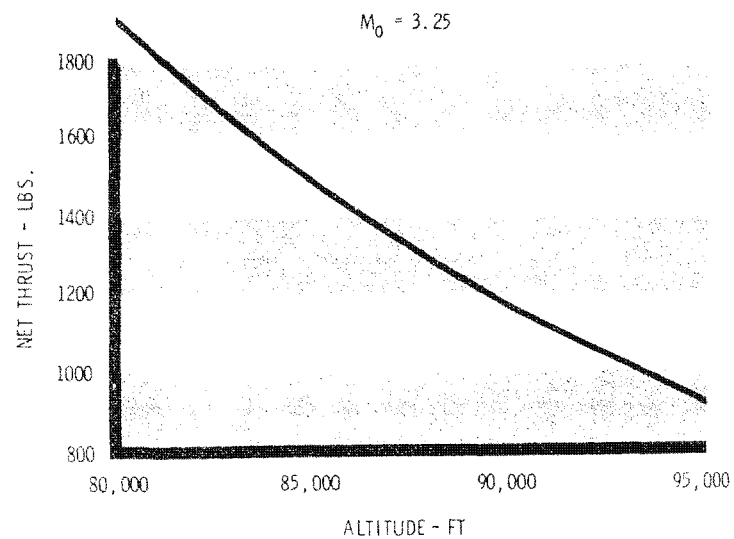
OPERATIONAL VEHICLE AND BOOSTER

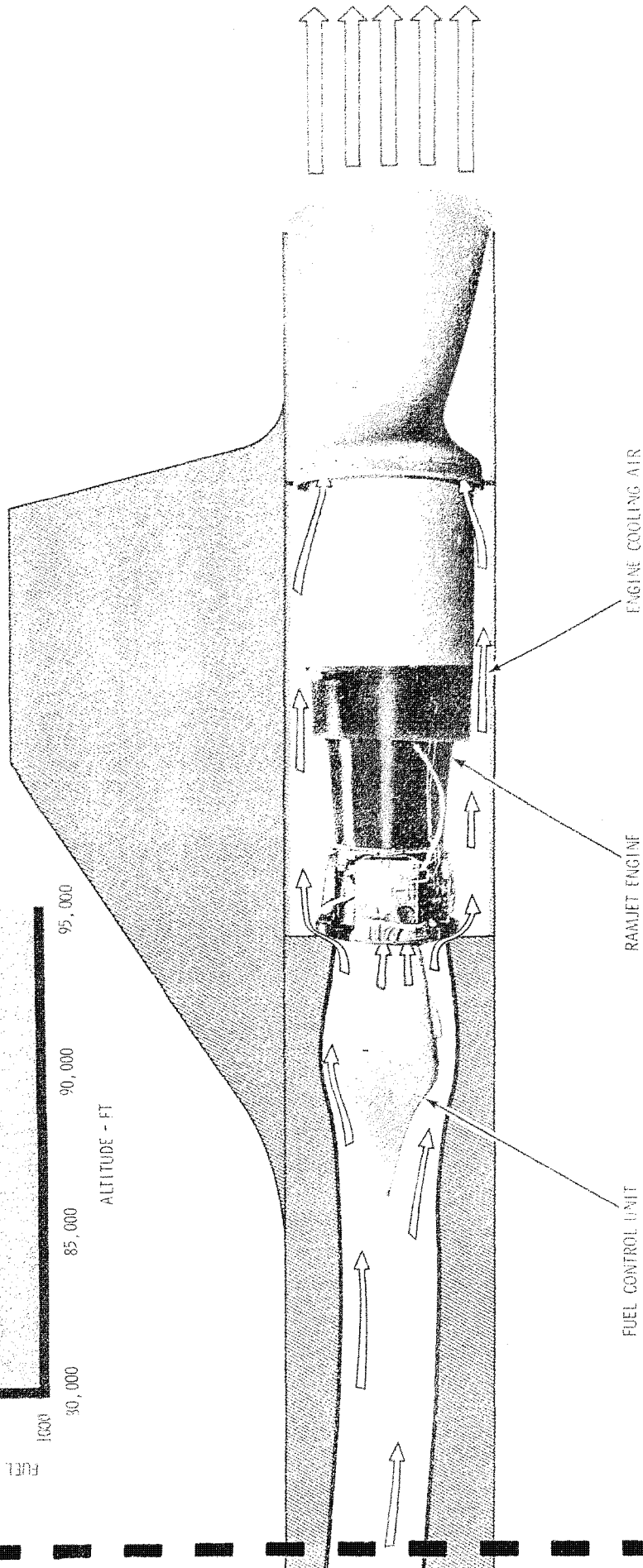
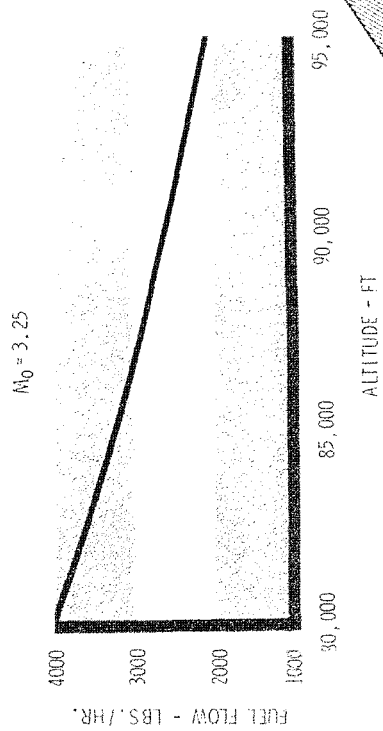


PROPULSION SYSTEM

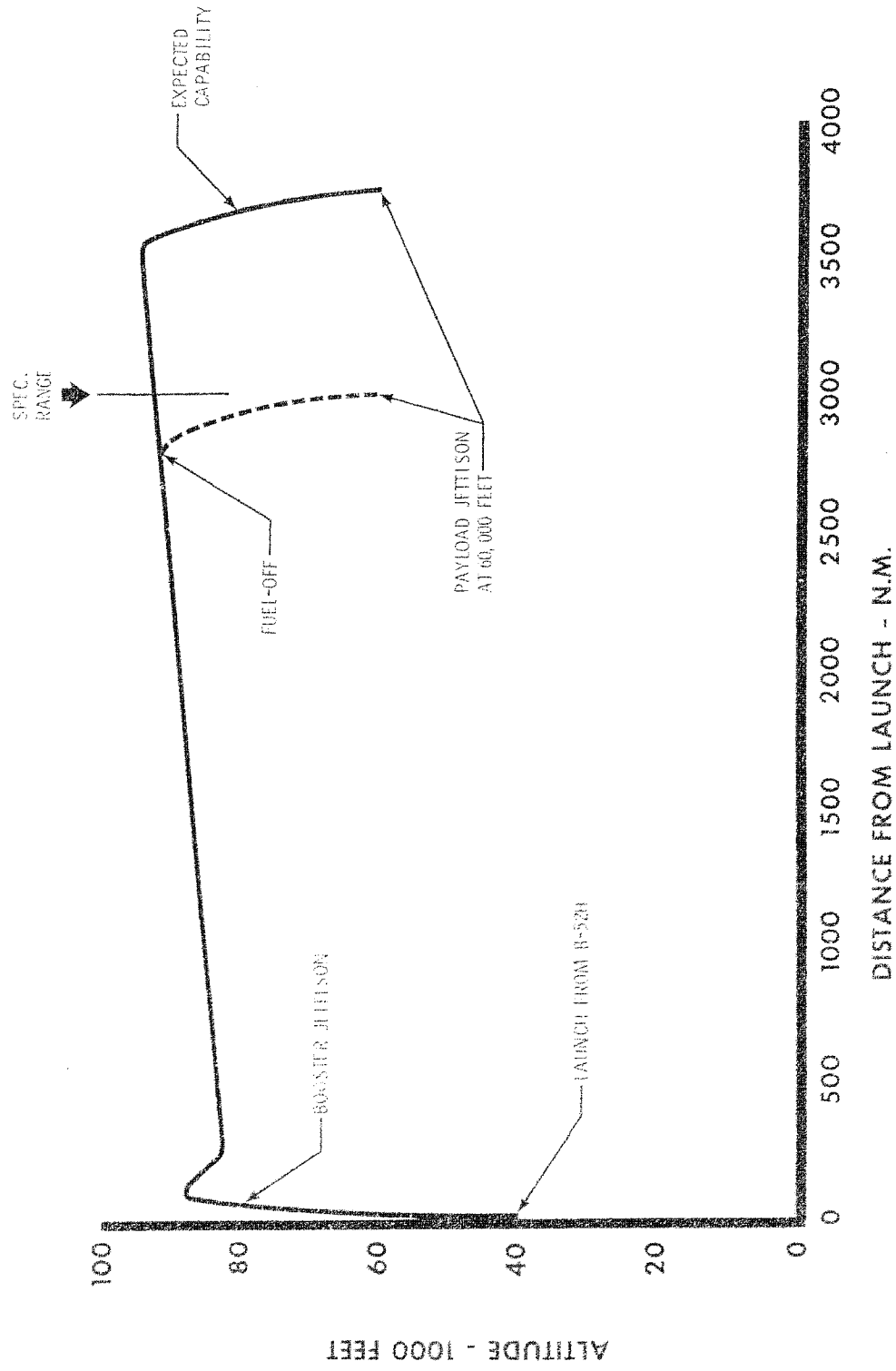
- MARQUARDT MAZOS-4 RAMJET ENGINE
- FIXED GEOMETRY (CONSTANT MACH) INLET
- RAMJET AUTOMATICALLY IGNITED DURING BOOST PHASE.
- ENGINE FUEL CONTROL POSITIONS INLET SHOCK.
- TEB IGNITION SYSTEM RELIGHTS RAMJET IN EVENT OF FLAMEOUT.

PERFORMANCE CHARACTERISTICS

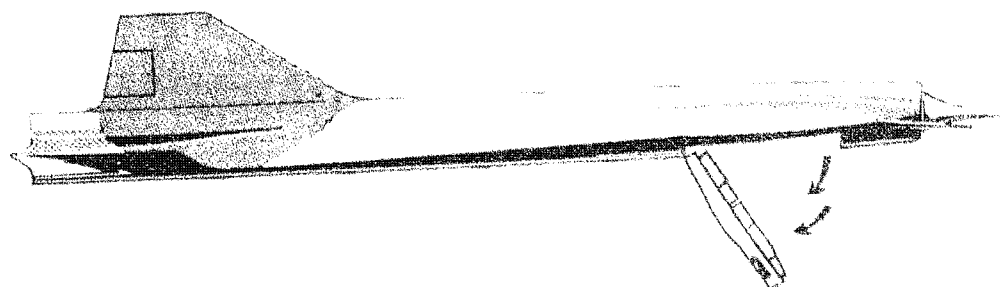




MISSION PROFILE



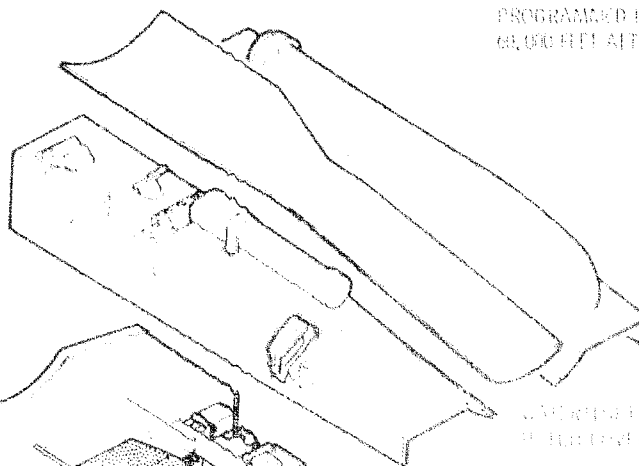
RECOVERABLE HATCH



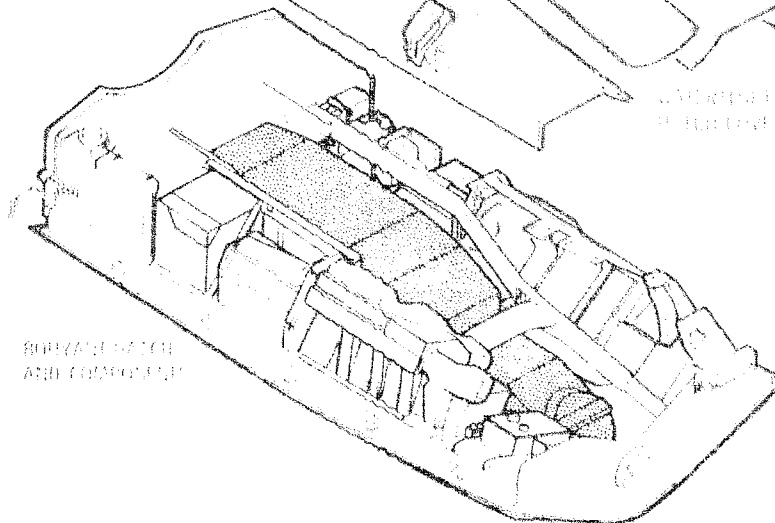
THE HATCH CONTAINS -

- THE RECONNAISSANCE CAMERA
- THE INERTIAL NAVIGATION SYSTEM
- THE AUTOMATIC FLIGHT CONTROL SYSTEM
- COMMAND AND TELEMETRY ELECTRONICS
- RECOVERY BEACONS
- RECOVERY PARACHUTE SYSTEM

PROGRAMMED HATCH EJECTION AT
60,000 FEET ALTITUDE AND MACH 1.67.

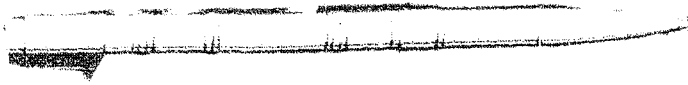


RECOVERABLE
HATCH COVER



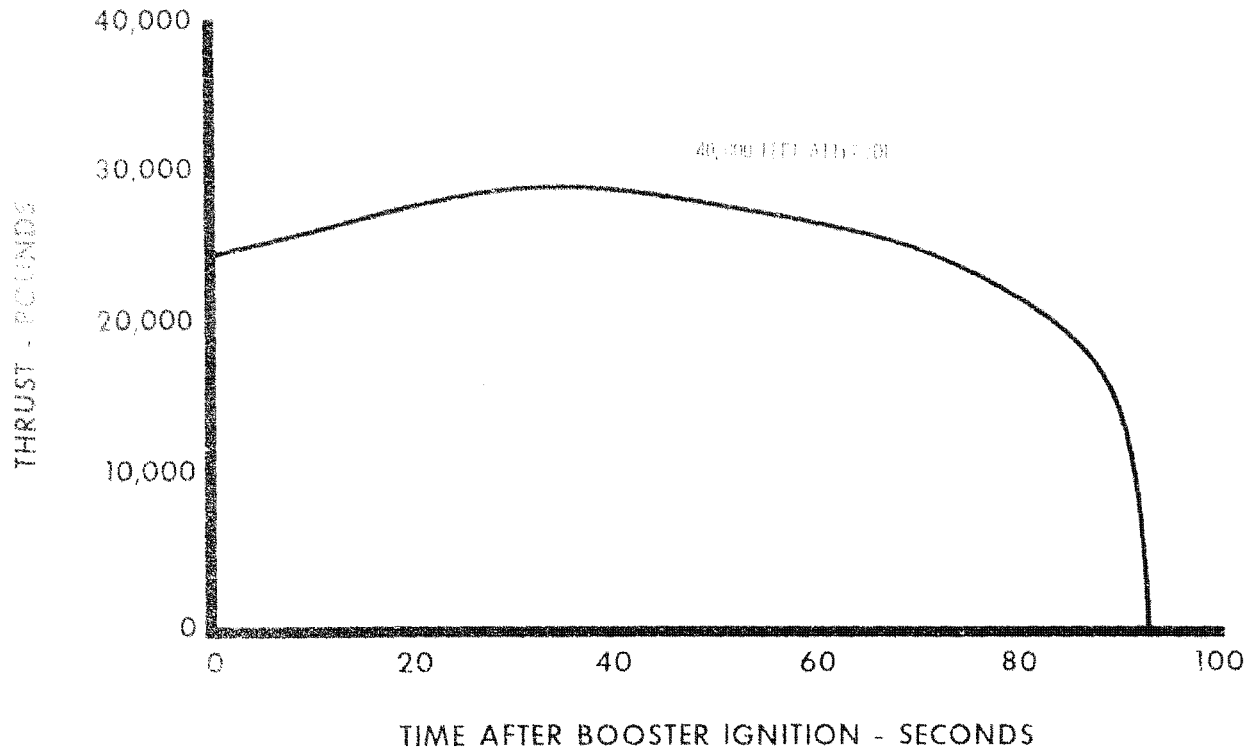
RECOVERABLE HATCH
AND COMPONENTS

BOOSTER MOTOR PERFORMANCE



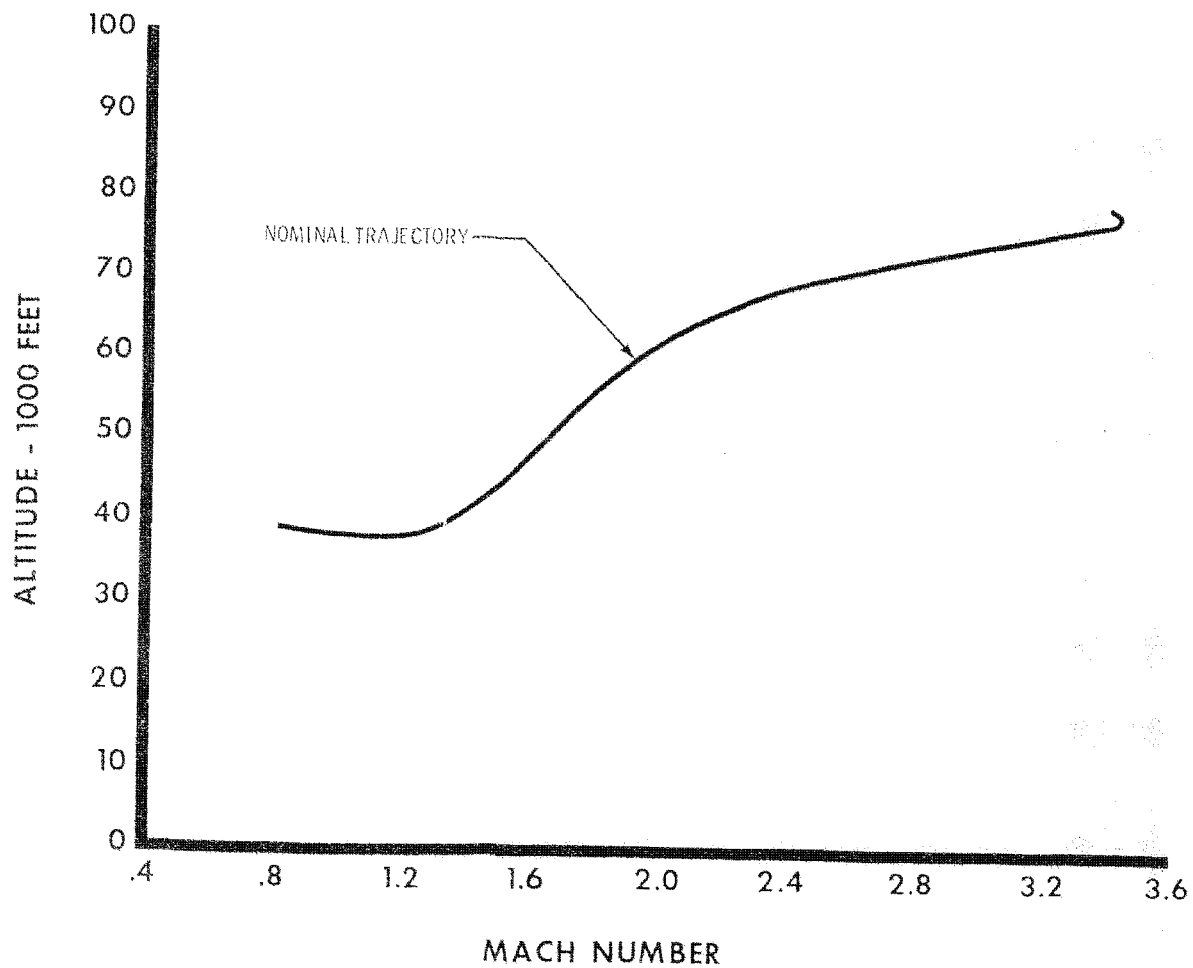
● PRINCIPAL DATA

● LENGTH (INCLUDING NOZZLE)	53.1 INCHES
● CASE DIAMETER	30.16 INCHES
● WEIGHT	13,286 POUNDS
● AVERAGE THRUST	27,300 POUNDS
● BURN TIME (Sea Level)	87.9 SECONDS
● TARE WEIGHT	2,371.68 POUNDS



BOOST PHASE PERFORMANCE

- BOOST PHASE TRAJECTORY IS PRE-PROGRAMMED IN THE INERTIAL NAVIGATION SYSTEM
- BOOST PHASE TIME IS APPROXIMATELY 90 SECONDS
- MAXIMUM FORWARD ACCELERATION DURING BOOST IS 1.50 g



B-52H LAUNCH VEHICLE

BASIC AIRPLANE	2-2
DESCRIPTION	2-3
FLIGHT DECK MODIFICATIONS	2-4
SPEED - ALTITUDE BOUNDARY	2-5
B-52H CARRYOUT PERFORMANCE	2-6

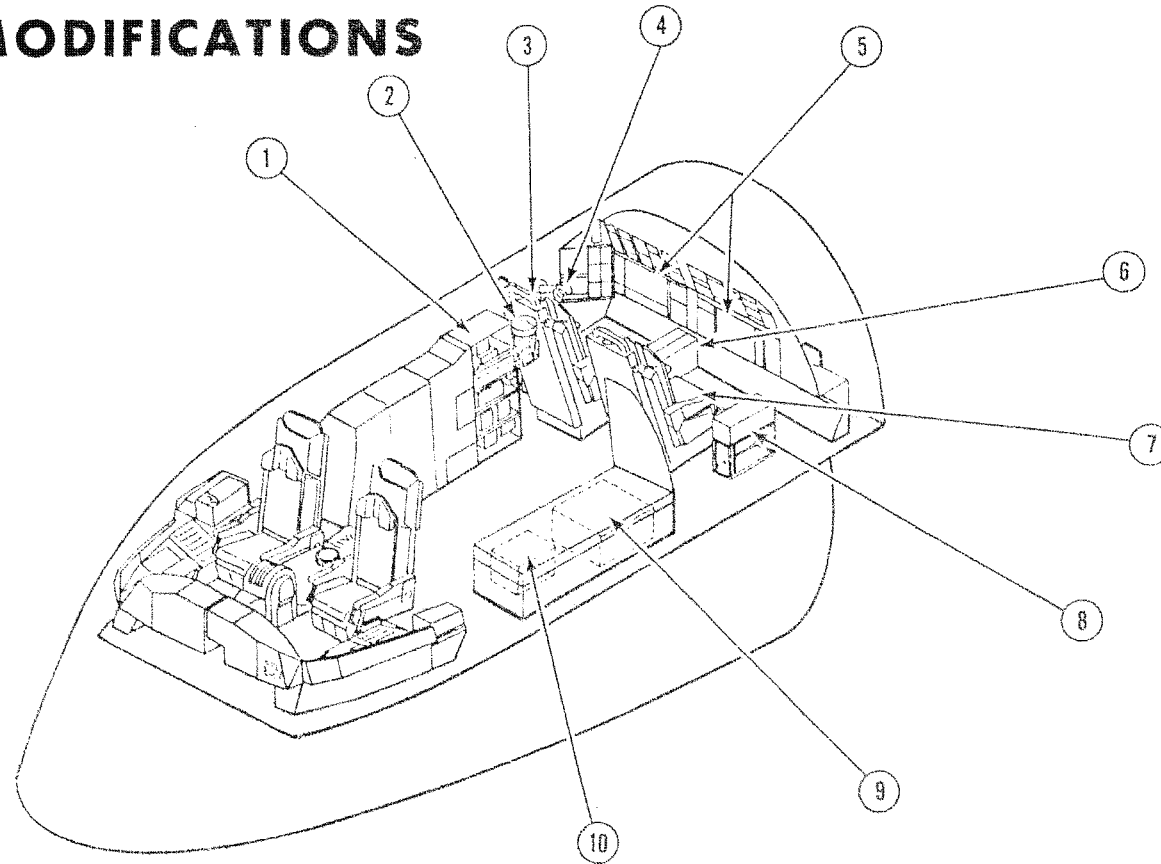


DESCRIPTION

TWO "H" MODELS OF THE B-52 HAVE BEEN MODIFIED TO PERFORM THE D-21B CARRYOUT AND LAUNCH MISSION. THE MODIFICATIONS CONSIST PRINCIPALLY OF THE FOLLOWING:

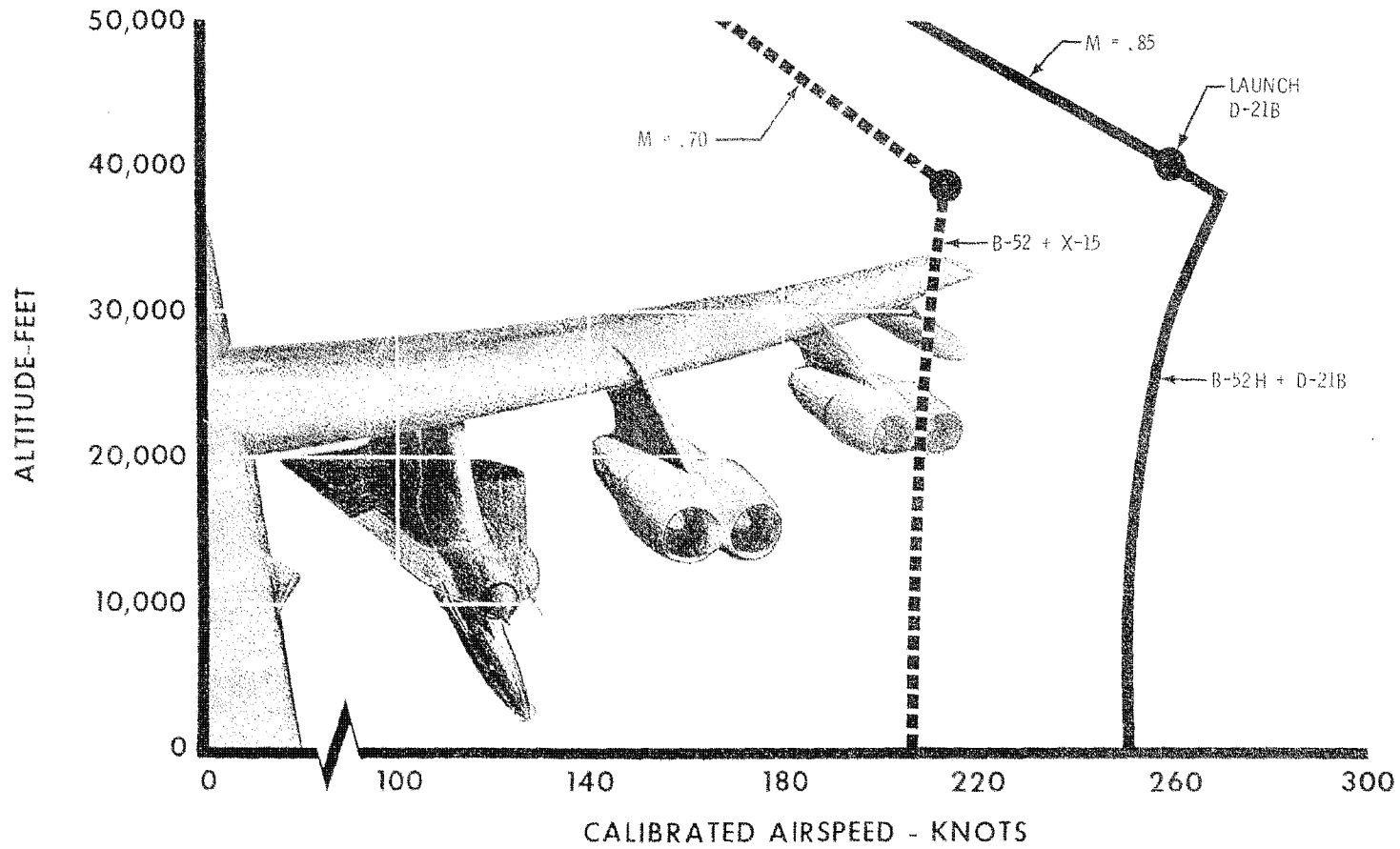
- ADDITION OF A D-21B ATTACH PYLON TO EACH WING. THE PYLONS BOUL TO THE UNDERSIDE OF THE WING AT EXISTING ATTACHMENT POINTS AND NO STRUCTURAL MODIFICATIONS TO THE B-52 ARE REQUIRED.
- ADDITION OF A STELLAR INERTIAL NAVIGATION SYSTEM AND OF TELEMETRY AND COMMAND SYSTEMS. TELEMETRY RECEIVING AND RECORDING SYSTEMS, INCLUDING ANTENNAS, ARE DESIGNED FOR RELIABILITY.
- ALTERATION OF THE FLIGHT DECK AREA TO ACCOMMODATE TWO LAUNCH CONTROL OFFICER (LCO) STATIONS. THE TWO STATIONS ARE COMPLETELY INDEPENDENT OF EACH OTHER AND ARE LOCATED IN THE AREA NORMALLY OCCUPIED BY THE FW OFFICER AND THE GUNNER.
- ADDITION OF A CONDITIONED AIR SYSTEM TO SUPPLY AIR AT THE PROPER TEMPERATURE AND PRESSURE TO THE D-21B FOR COOLING AND HEATING AND FOR DRIVING THE AUXILIARY POWER UNIT.

FLIGHT DECK MODIFICATIONS



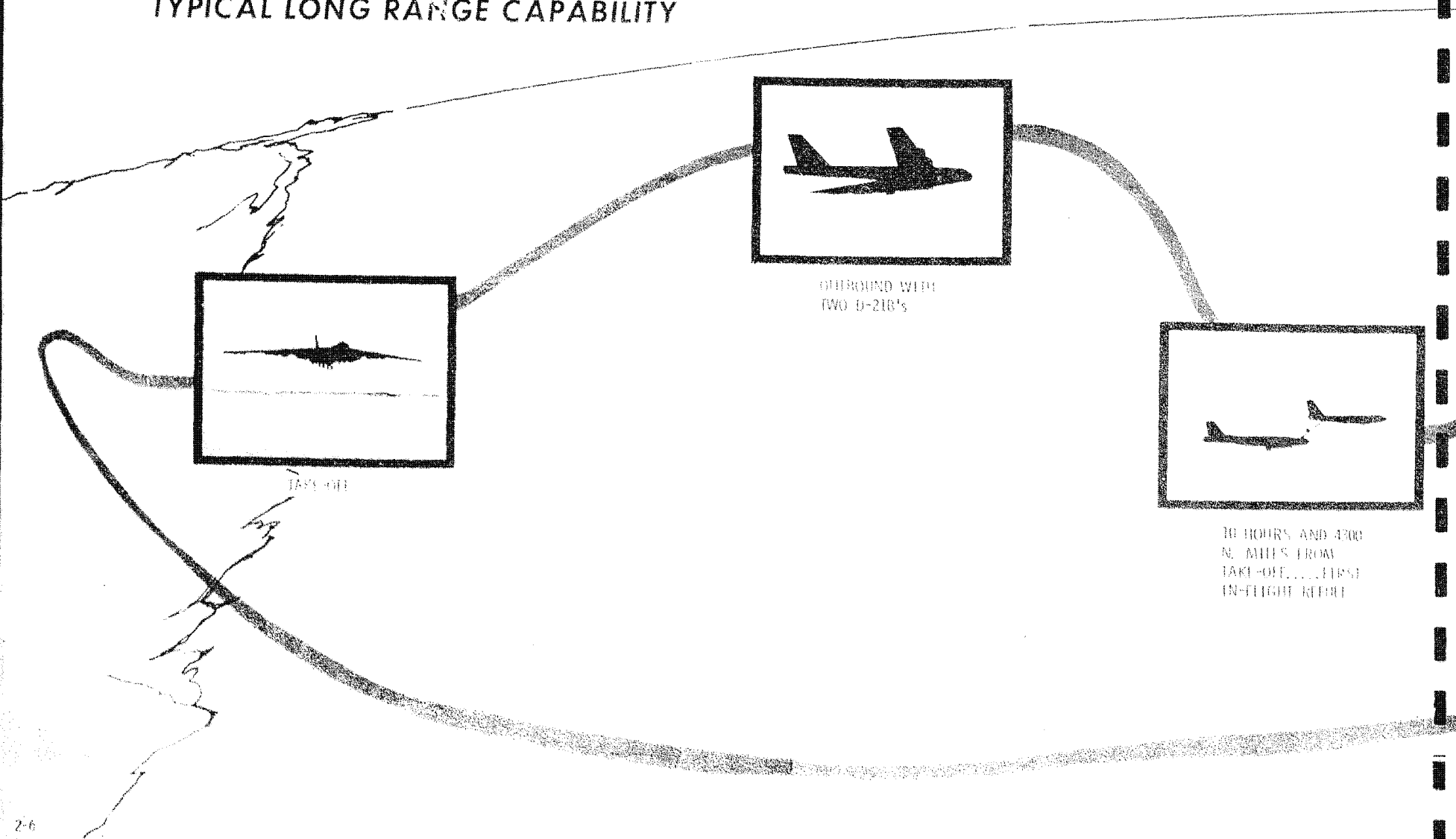
- | | |
|-------------------------------------|--------------------------|
| ① STELLAR INS RACK | ⑥ DUAL TM RECEIVERS, L/R |
| ② STAR TRACKER PLATFORM | ⑦ LCO'S SEAT, LEFT HAND |
| ③ LCO'S SEAT, RIGHT HAND | ⑧ 4-TRACK TAPE RECORDER |
| ④ PERISCOPE, D-21B OBSERVATION, L/R | ⑨ FLEXWRITER UNIT |
| ⑤ LCO CONTROL PANELS, L/R | ⑩ FLEXWRITER DRIVER UNIT |

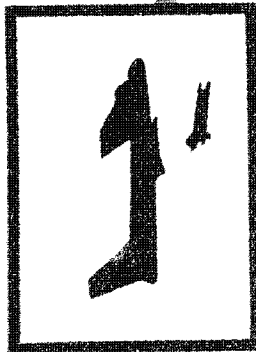
B-52H SPEED-ALTITUDE BOUNDARY MATED CONFIGURATION



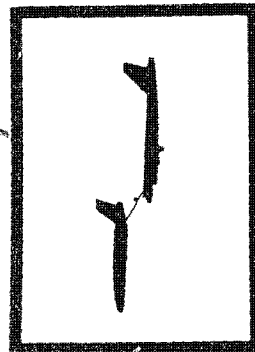
B-52H CARRYOUT PERFORMANCE

TYPICAL LONG RANGE CAPABILITY

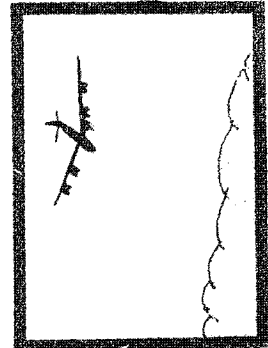




16.5 HOURS AND 7000 N.M.
FROM TAKE-OFF
LAUNCH ONE D-21B, B-52H
CONTINUES ON COURSE FOR
10 MIN. OF TELEMETRY RE-
CEPTION.



SECOND IN-FLIGHT
RE-FUEL



INBOUND WITH
ONE D-21B



INBOUND WITH
ONE D-21B

NAVIGATION AND CONTROL

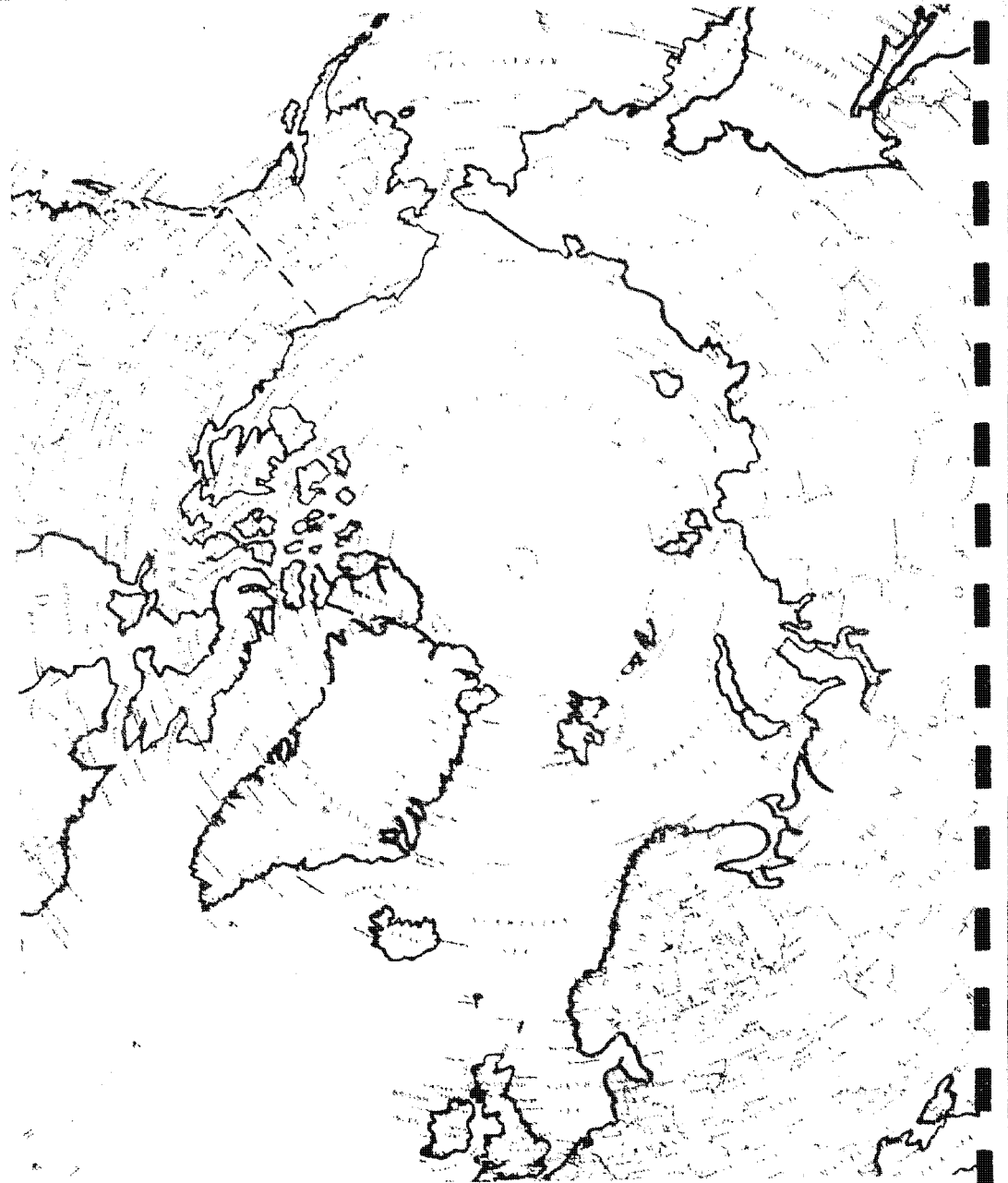
NAVIGATION _____	3-2
SYSTEM INTEGRATION _____	3-3
NAVIGATIONAL ACCURACY _____	3-4



NAVIGATION

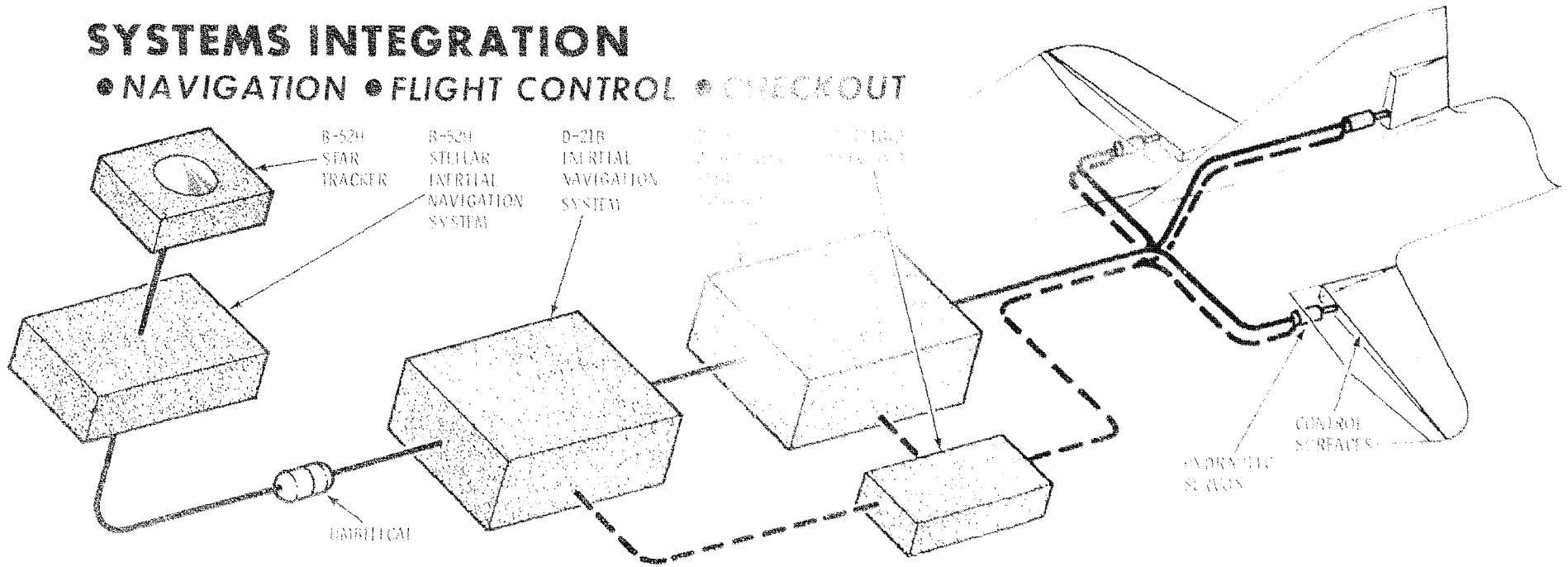
TWO SEPARATE INERTIAL NAVIGATION SYSTEMS ARE PROVIDED FOR THE D-21B MISSION; ONE IS LOCATED IN THE B-52H FOR CARRYOUT AND ONE IS INSTALLED IN THE D-21B FOR THE UNMANNED FLIGHT. THESE SYSTEMS ARE ESSENTIALLY IDENTICAL HOWEVER THE B-52H SYSTEM IS AUGMENTED BY A STAR TRACKER WHICH PROVIDES HIGHLY ACCURATE STELLAR POSITIONING. THE SYSTEMS ARE INTERCONNECTED DURING MATED CARRYOUT SO THAT THE D-21B INS CAN BE UPDATED TO THE ACCURACY OF THE B-52H STELLAR INS FROM TIME TO TIME AND PARTICULARLY JUST PRIOR TO LAUNCH.

THE B-52H NAVIGATION IS ACCOMPLISHED BY THE SINS PROVIDING LOCATION INFORMATION FOR THE PILOT TO STEER BY. THE D-21B NAVIGATION IS FULLY AUTOMATIC AND PREPROGRAMMED IN THE INS COMPUTER. STEERING SIGNALS ARE SUPPLIED TO THE AUTOMATIC FLIGHT CONTROL SYSTEM WHICH IN TURN SUPPLIES SIGNALS TO THE CONTROL SURFACE HYDRAULIC SERVO ACTUATORS.



SYSTEMS INTEGRATION

• NAVIGATION • FLIGHT CONTROL • CHECKOUT



INERTIAL NAVIGATION SYSTEM (INS)

- HONEYWELL INC. 390
- AUTOMATIC PRE-PROGRAMMED NAVIGATION
- STELLAR UPDATE FROM B-52H JUST PRIOR TO LAUNCH
- DEMONSTRATED ACCURACY OF 4.7 N.M. - CEP AFTER 18 HOUR CARRYOUT MISSION
- PROVIDES COMMANDS TO -
 - AUTOMATIC FLIGHT CONTROL SYSTEM
 - CAMERA
 - BOOSTER
 - ENGINE
 - HEAT SHIELD AND COMMAND SYSTEM

AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)

- HONEYWELL INC. DYG 914
- UTILIZES INS STEERING COMMANDS TO CONTROL VEHICLE GROUND TRACK.
- CONTROLS ROOST AND DESCENT TRAJECTORIES
- PROVIDES PITCH, ROLL AND YAW RATE STABILIZATION
- HOLDS PITCH AND ROLL ATTITUDE
- HOLDS MACH NUMBER AND MACH RATE
- CONTAINS DDC ELECTRONICS

IN-FLIGHT CHECKOUT (IFCO)

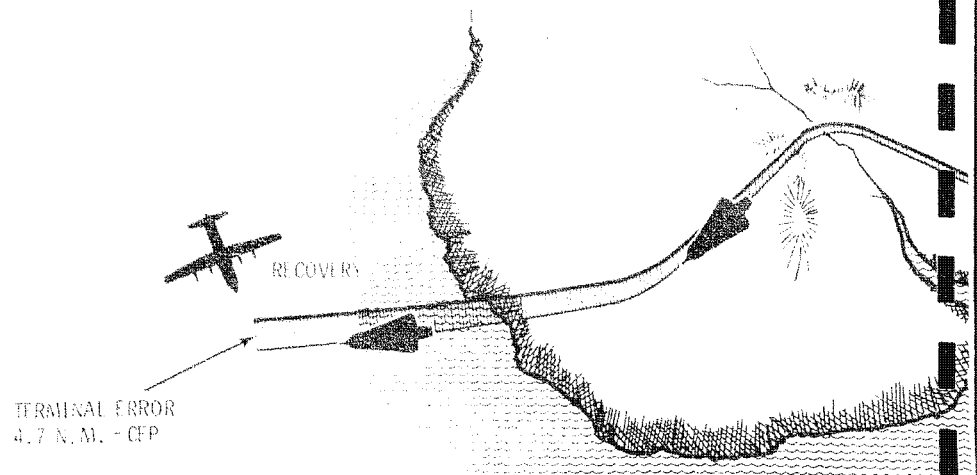
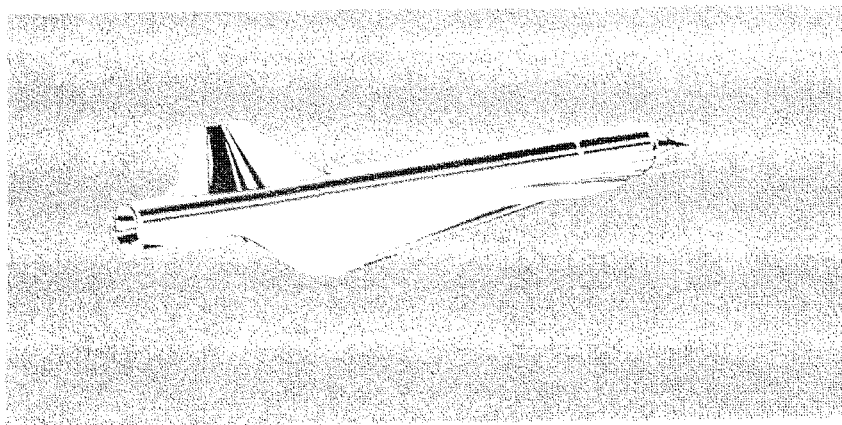
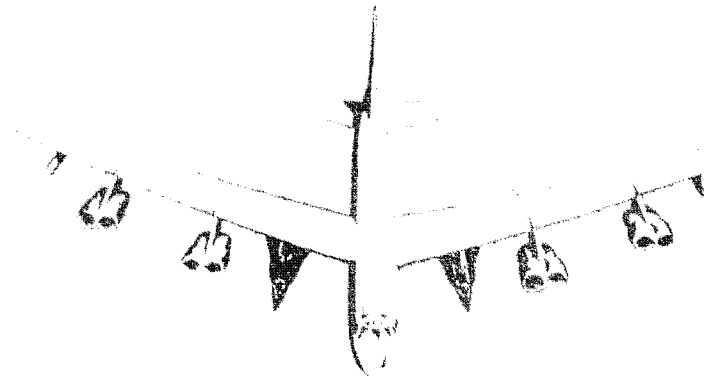
- AUTOMATICALLY PERFORMS 189 TESTS PRIOR TO LAUNCH
- COMPUTER-CONTROLLED BY THE INERTIAL NAVIGATION SYSTEM
- PROVIDES LAST MINUTE ASSURANCE THAT SYSTEMS ARE PERFORMING PROPERLY
- SYSTEMS CHECKED INCLUDE -
 - AUTOMATIC FLIGHT CONTROL SYSTEM
 - INERTIAL NAVIGATION SYSTEM
 - CAMERA
 - ELECTRICAL SYSTEMS
 - HYDRAULIC SYSTEMS

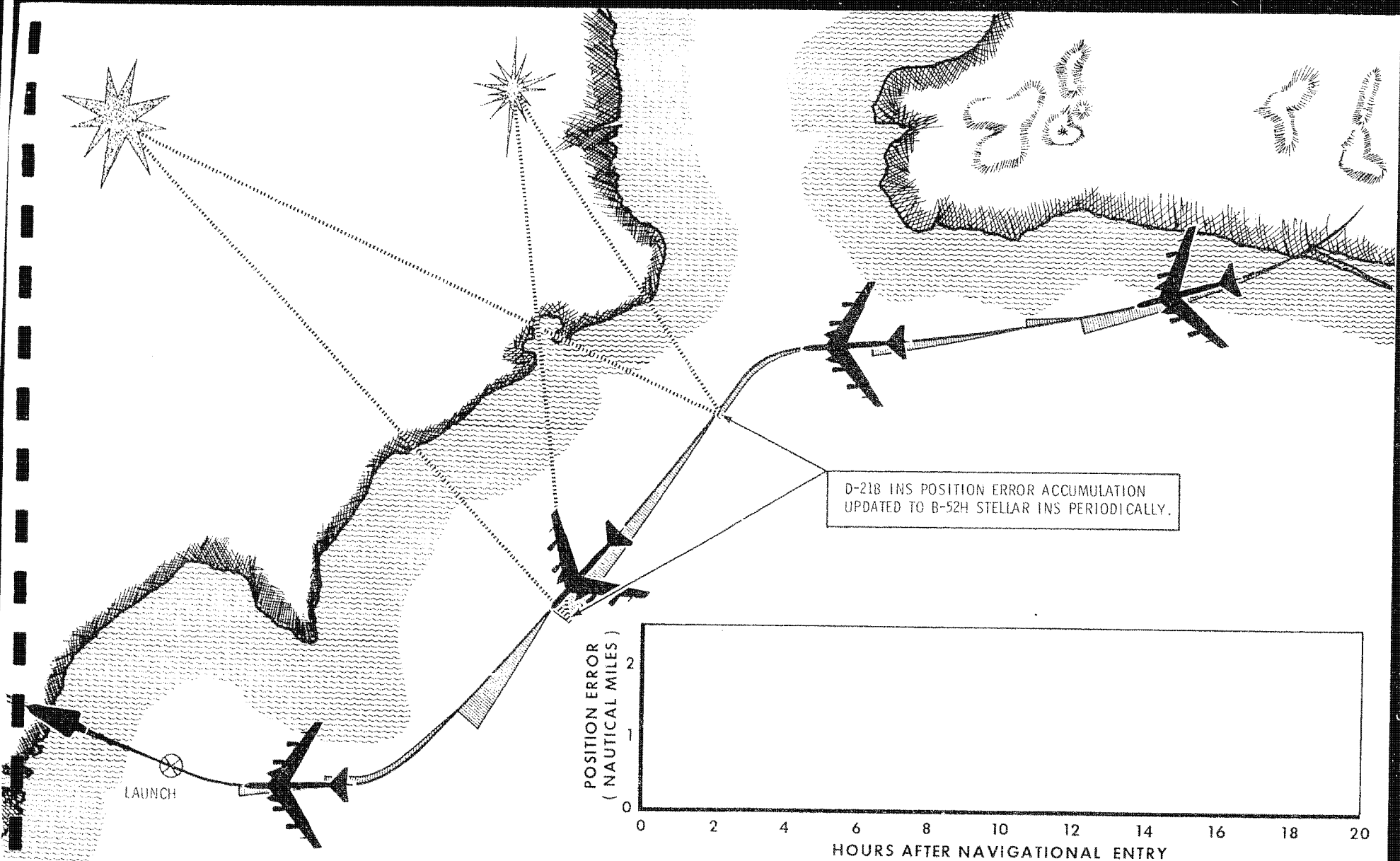
NAVIGATIONAL ACCURACY

THE D-21B INS ACCURACY IS DEPICTED RELATIVE TO THE B-52H STELLAR INS.

FIGURES SHOWN ARE FOR AN ACTUAL 18 HOUR 35 MINUTE B-52H FLIGHT.

THE ACCURACY DEPICTED FOR THE D-21B PURE INITIAL SYSTEM DURING FREE FLIGHT IS DETERMINED FROM FLIGHT TEST PERFORMANCE WITHOUT STELLAR UPDATING.



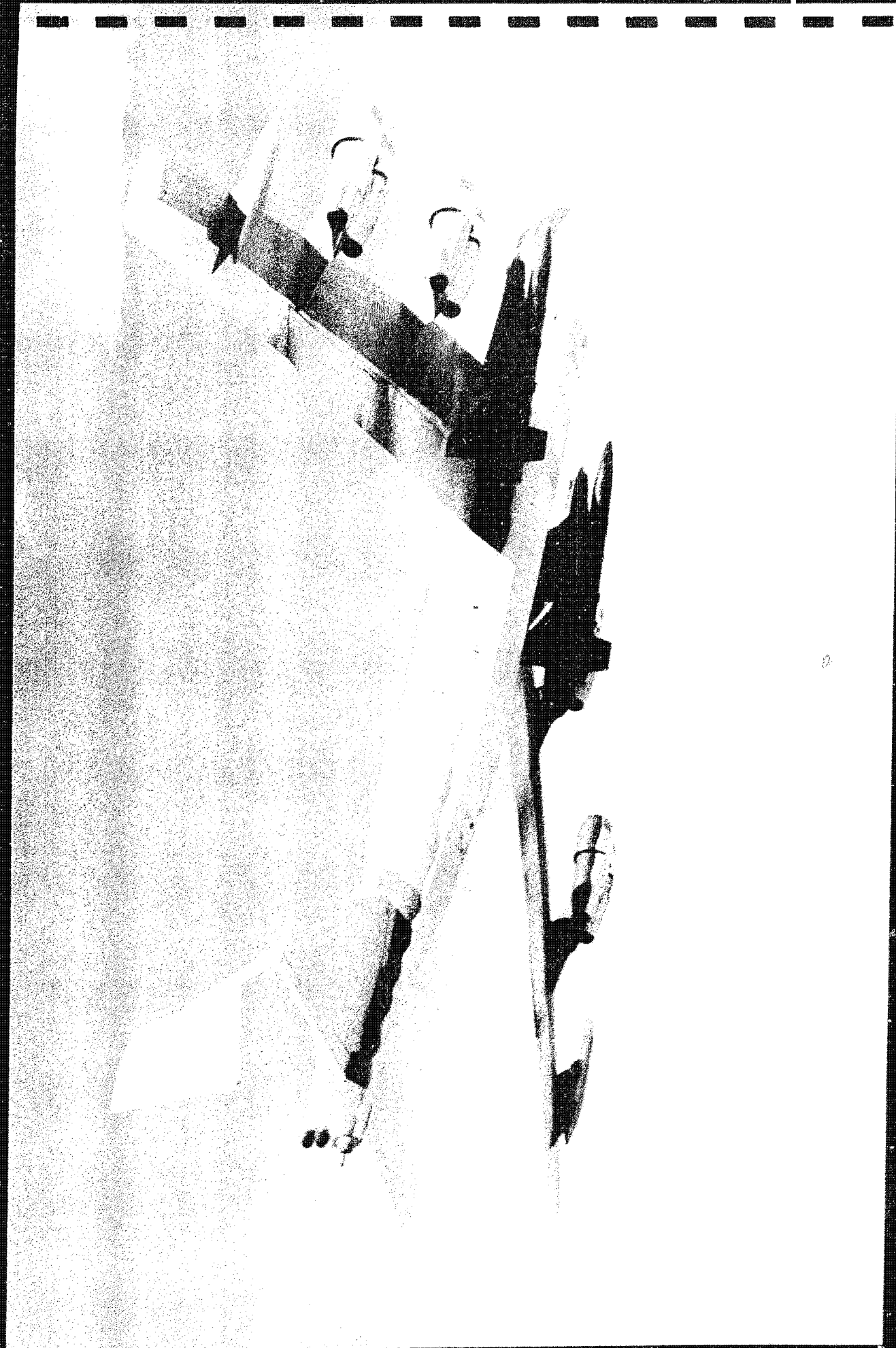


ERROR READOUT FROM B-52H FLIGHT OF MAY 14, 1968.

TELEMETRY AND COMMAND SYSTEMS

B-52H AIRPLANE INFLIGHT	4-2
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TELEMETRY SYSTEM	4-4
ANTENNA LOCATIONS	4-6
EVENTS SEQUENCE	4-7

IV



DESCRIPTION

TELEMETRY SYSTEM

THIS TELEMETRY SYSTEM PROVIDES SPACE-POSITION AND SPEED DATA TO THE LOG ABOARD THE D-50 LAUNCH VEHICLE DURING BOOST PHASE FOR THE FIRST TEN MINUTES OF CRUISE. AT THIS TIME THE TELEMETRY SYSTEM IS TURNED OFF BY AN INS DISCRETE AND THE MISSION IS FLOWN IN RADIO SILENCE. DURING THE FINAL PHASE OF THE MISSION THE TELEMETRY SYSTEM IS TURNED ON AGAIN BY AN INS DISCRETE AND THE TRANSMITTED DATA ARE RECEIVED BY THE RECOVERY AIRCRAFT.

IN ADDITION TO PROVIDING IMMEDIATE DATA TO THE LAUNCH AND RECOVERY AIRCRAFT, THE TELEMETRY SYSTEM TRANSMITS OTHER DATA, IN THE FORM OF ITEMS IN ALL, WHICH ARE RECORDED FOR POST MISSION ANALYSIS. THESE ITEMS COVER THE FOLLOWING CATEGORIES:

- ⊗ AUTOMATIC FLIGHT CONTROL MEASUREMENTS
- ⊗ PRESSURIZATION SYSTEM, FUEL SYSTEM, BOOSTER AND HYDRAULIC PRESSURES
- ⊗ ENGINE AND EQUIPMENT TEMPERATURES
- ⊗ ELECTRICAL SYSTEM VOLTAGES AND FREQUENCIES
- ⊗ D-21B MACH NUMBER, DIRECTION AND LOCATION
- ⊗ SYSTEMS EVENT MARK SIGNALS

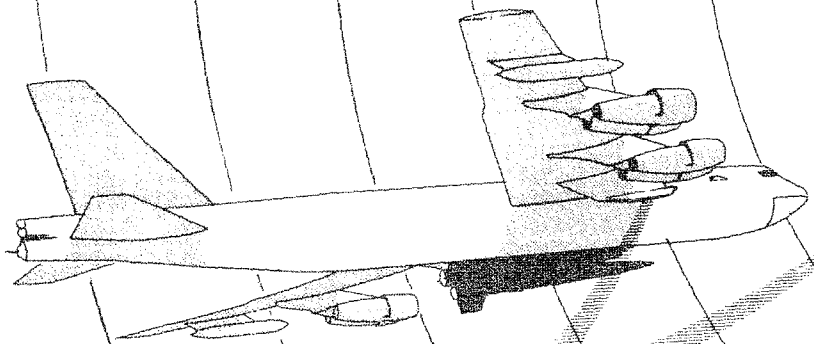
COMMAND SYSTEM

THE COMMAND SYSTEM CONSISTS OF TWO COMMAND TRANSMITTERS PLUS TWO ANTENNAS IN THE B-27A, AND ONE COMMAND RECEIVER PLUS TWO ANTENNAS IN THE D-21B. THIS SYSTEM PROVIDES THE LAUNCH AND RECOVERY VEHICLES THE MEANS TO COMMAND EIGHT POST LAUNCH FUNCTIONS WHICH ARE NORMALLY AUTOMATIC (PROGRAMMED IN THE INS) PLUS DESTRUCT CAPABILITY. THE SYSTEM PROVIDES A BACKUP IN THE EVENT OF FAILURE OF ANY OF THE PREPROGRAMMED SIGNALS AND IT AFFORDS THE MEANS TO CHANGE THE SEQUENCE OR TIMING OF THE EVENTS SHOULD THIS BECOME DESIREABLE. THE FUNCTIONS PROVIDED ARE AS FOLLOWS:

- | | |
|---------------------|--------------------|
| ⊗ FUEL SHUTOFF | ⊗ HATCH EJECT |
| ⊗ ENGINE IGNITION | ⊗ TM OFF |
| ⊗ DESTRUCT ARM | ⊗ DESTRUCT DISABLE |
| ⊗ BEACONS AND TM ON | ⊗ DESTRUCT FIRE |
| ⊗ BOOSTER JETTISON | |

TELEMETRY SYSTEM

BEGINNING OF MISSION



3000 N. M.
MISSION RANGE

TM
OFF

TELEMETRY SYSTEM TRANSMITS
SPACE-POSITION AND SPEED DATA
FOR LAUNCH CONTROL OFFICER
MONITORING DURING BOOST PHASE
AND FOR FIRST TEN MINUTES
OF FLIGHT

END OF MISSION

FUEL OFF

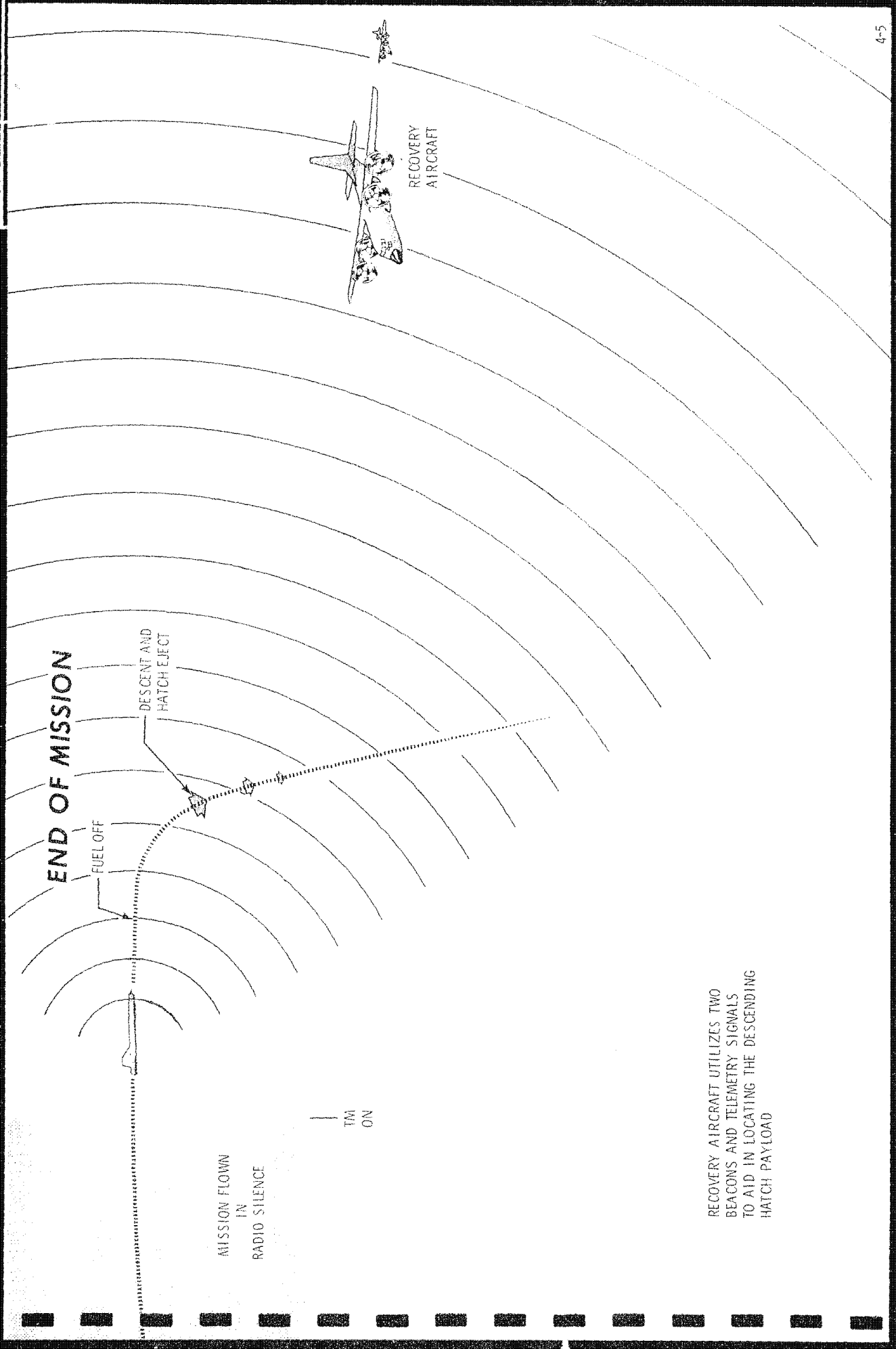
DESCENT AND
HATCH EJECT

RECOVERY
AIRCRAFT

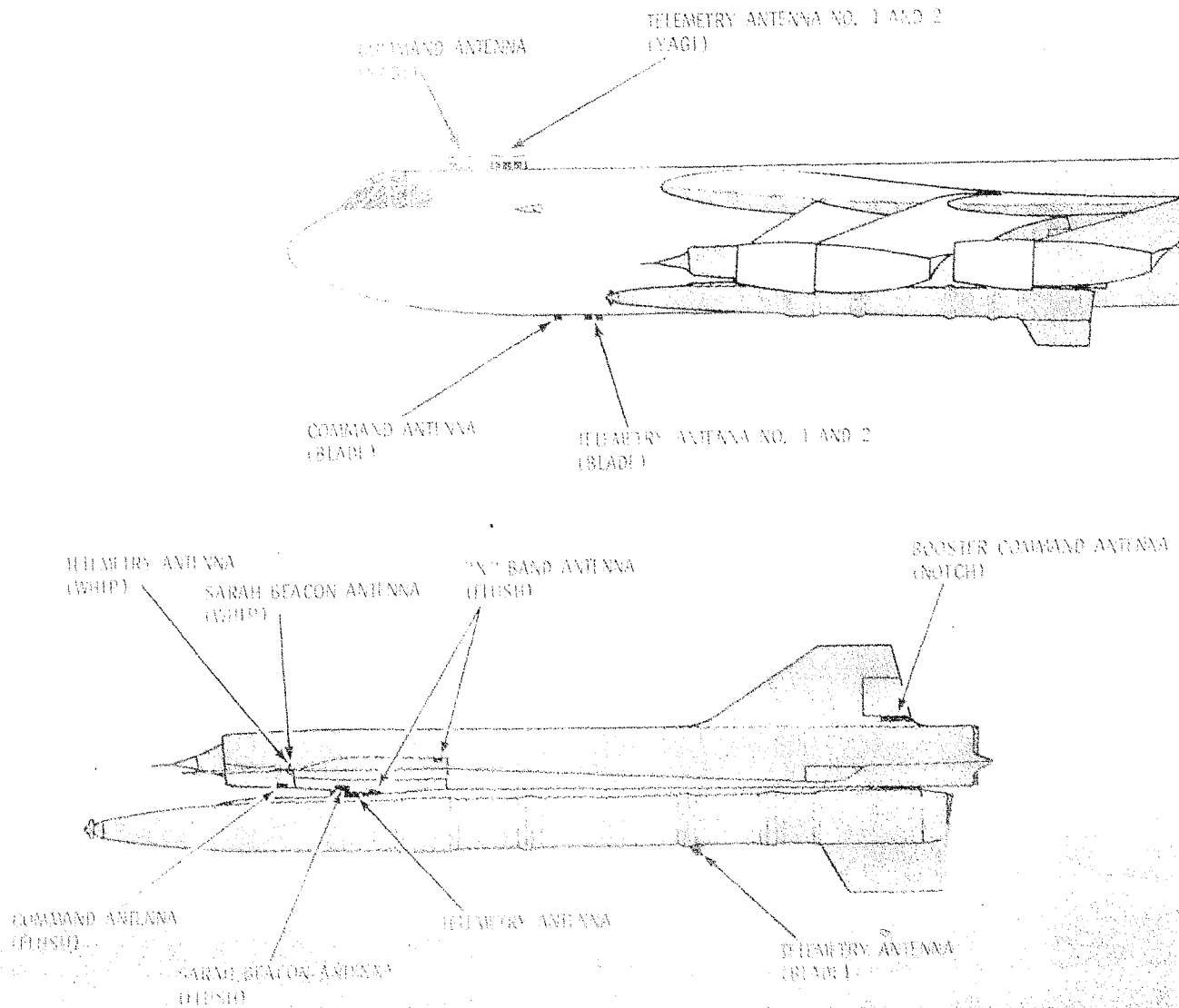
MISSION FLOWN
IN
RADIO SILENCE

TIM
ON

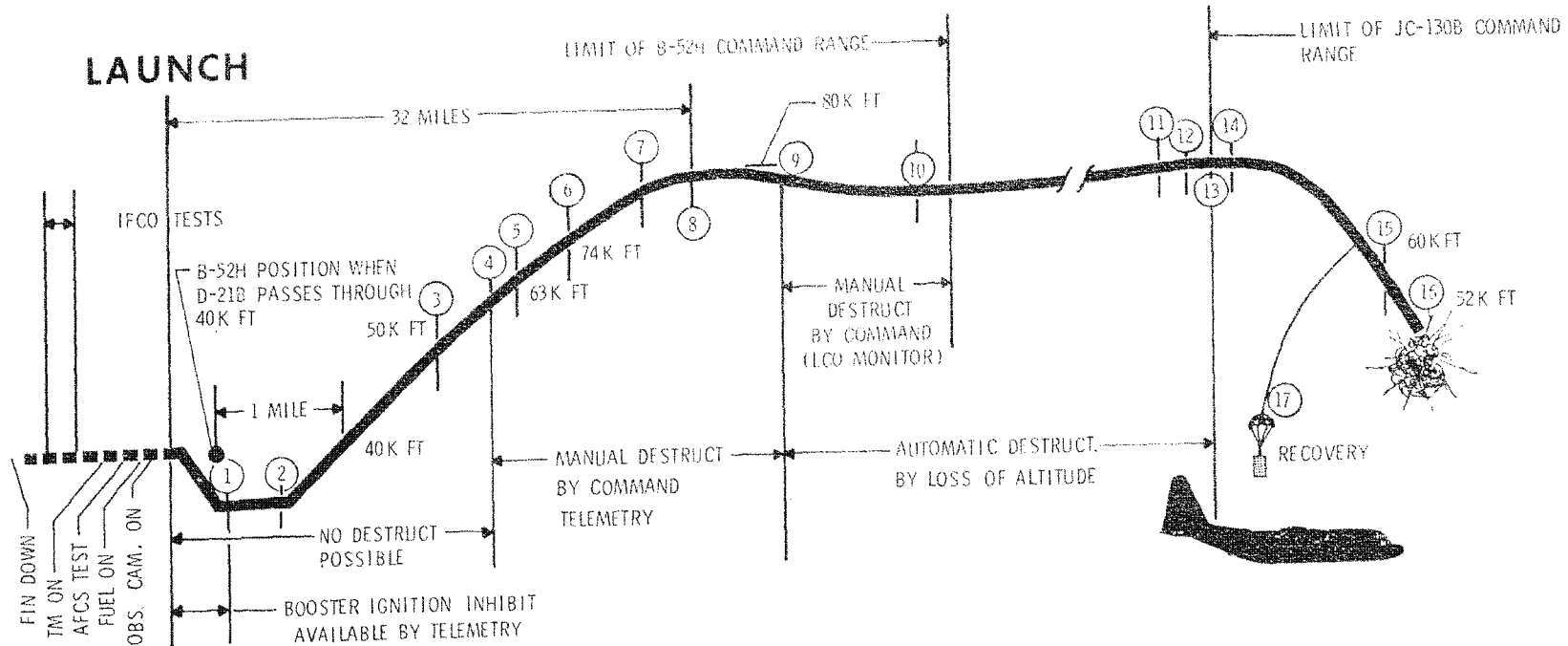
RECOVERY AIRCRAFT UTILIZES TWO
BEACONS AND TELEMTRY SIGNALS
TO AID IN LOCATING THE DESCENDING
HATCH PAYLOAD



B-52H/D-21B ANTENNA LOCATIONS



D-21B EVENTS SEQUENCE



SEQUENCE OF EVENTS

- | | | | | | | | |
|---|---|---|---|----|----------------------------------|----|--------------------|
| 1 | BOOSTER IGNITION- | 5 | DESTRUCT ALTITUDE SWITCH OPEN | 9 | AUTOMATIC DESTRUCT CIRCUITRY ARM | 14 | FUEL "OFF" |
| 2 | 5° PITCH-UP, FOLLOWED BY 1°/SEC PULL-UP | 6 | ENGINE IGNITION: AUTO DESTRUCT CIRCUIT COMPLETE | 10 | COMMAND AND T/M "OFF" | 15 | EJECT HATCH |
| 3 | TRANSITION TO FINAL CLIMB TRAJECTORY | 7 | APU LOAD TAKE-OVER | 11 | COMMAND "ON" | 16 | AUTOMATIC DESTRUCT |
| 4 | MANUAL DESTRUCT CIRCUIT COMPLETE | 8 | BOOSTER JETTISON, AFCS TO MACH HOLD | 12 | BEACONS "ON" AND T/M "ON" | 17 | HATCH RECOVERY |
| | | | | 13 | DESTRUCT DISABLE | | |

ANTI - DETECTION

ANTI - RADAR DESIGN _____ 5-2

RADAR SIZE COMPARISON _____ 5-3

V

Page Denied

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RECONNAISSANCE CAMERA

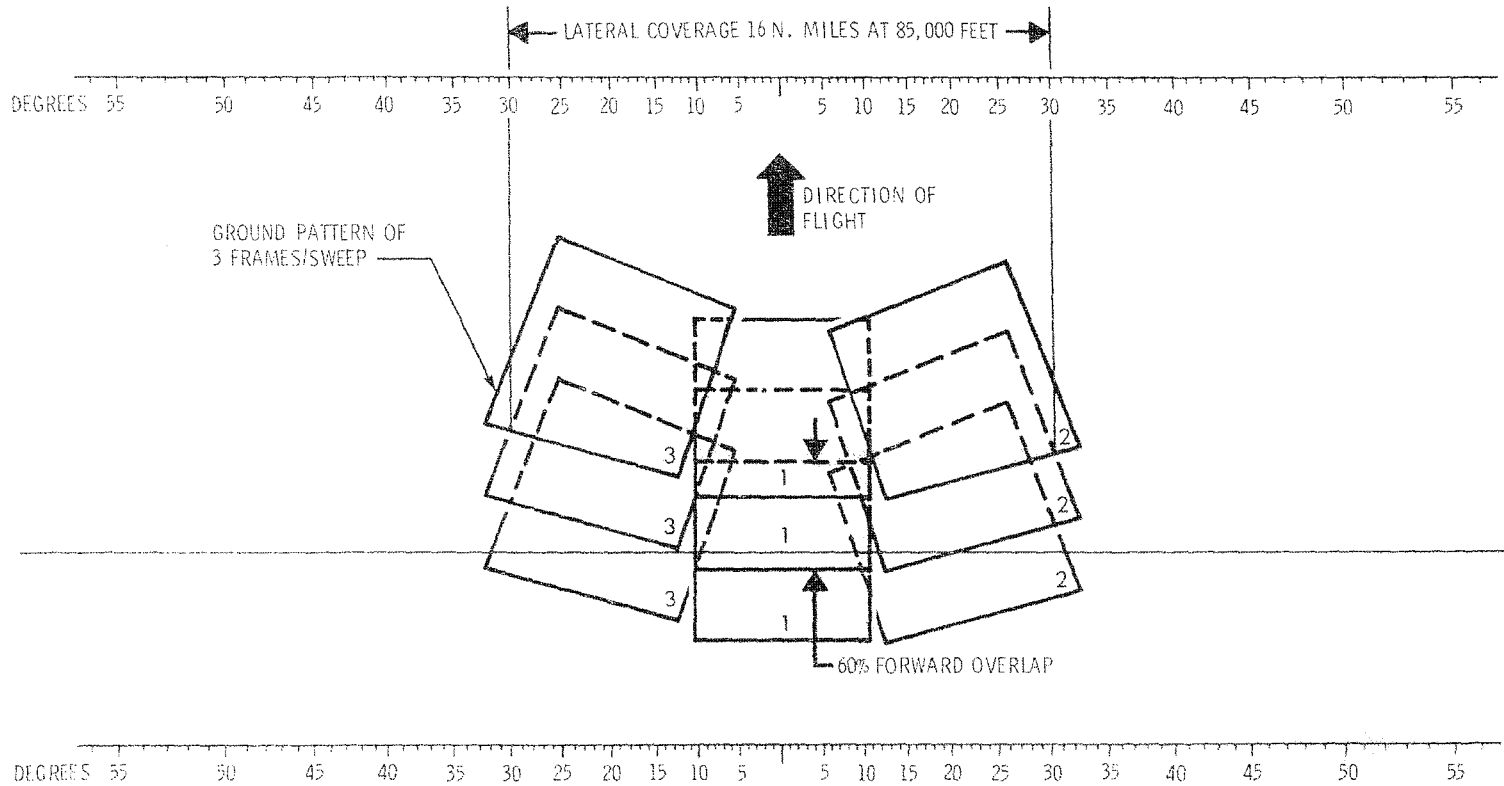
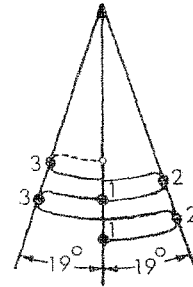
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RECONNAISSANCE CAMERA COVERAGE	6-4
FILM DATA FORMAT	6-6
HR-335 PHOTO	6-7

VI

CAMERA MODES

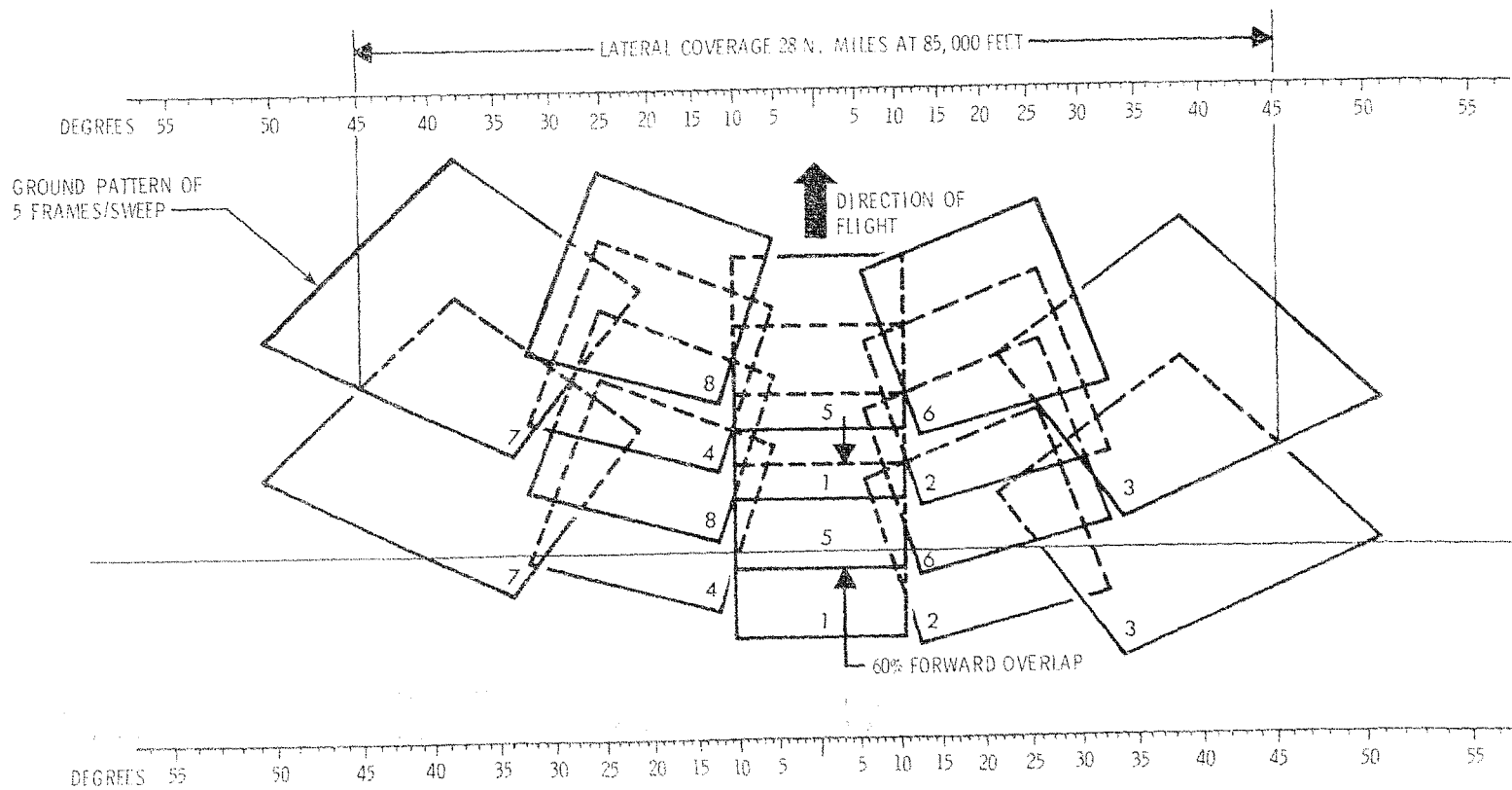
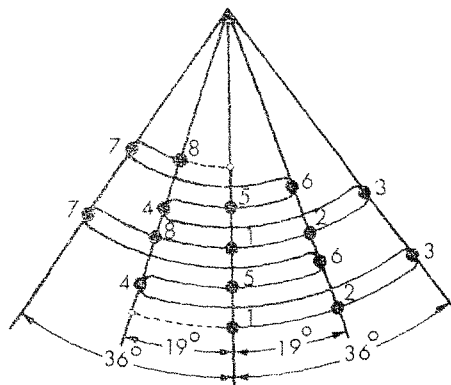
MODE 3

IN MODE 3 OPERATION THE CAMERA PROVIDES A SWEEP OF 19 DEGREES LEFT AND RIGHT OF FLIGHT PATH. THIS SWEEP MADE UP OF 3 FRAMES PROVIDES A LATERAL COVERAGE OF 16 NAUTICAL MILES FROM THE D-21B CRUISE ALTITUDE OF 85,000 FEET. EACH SWEEP OF THE CAMERA PROVIDES FORWARD OVERLAP.



MODE 5

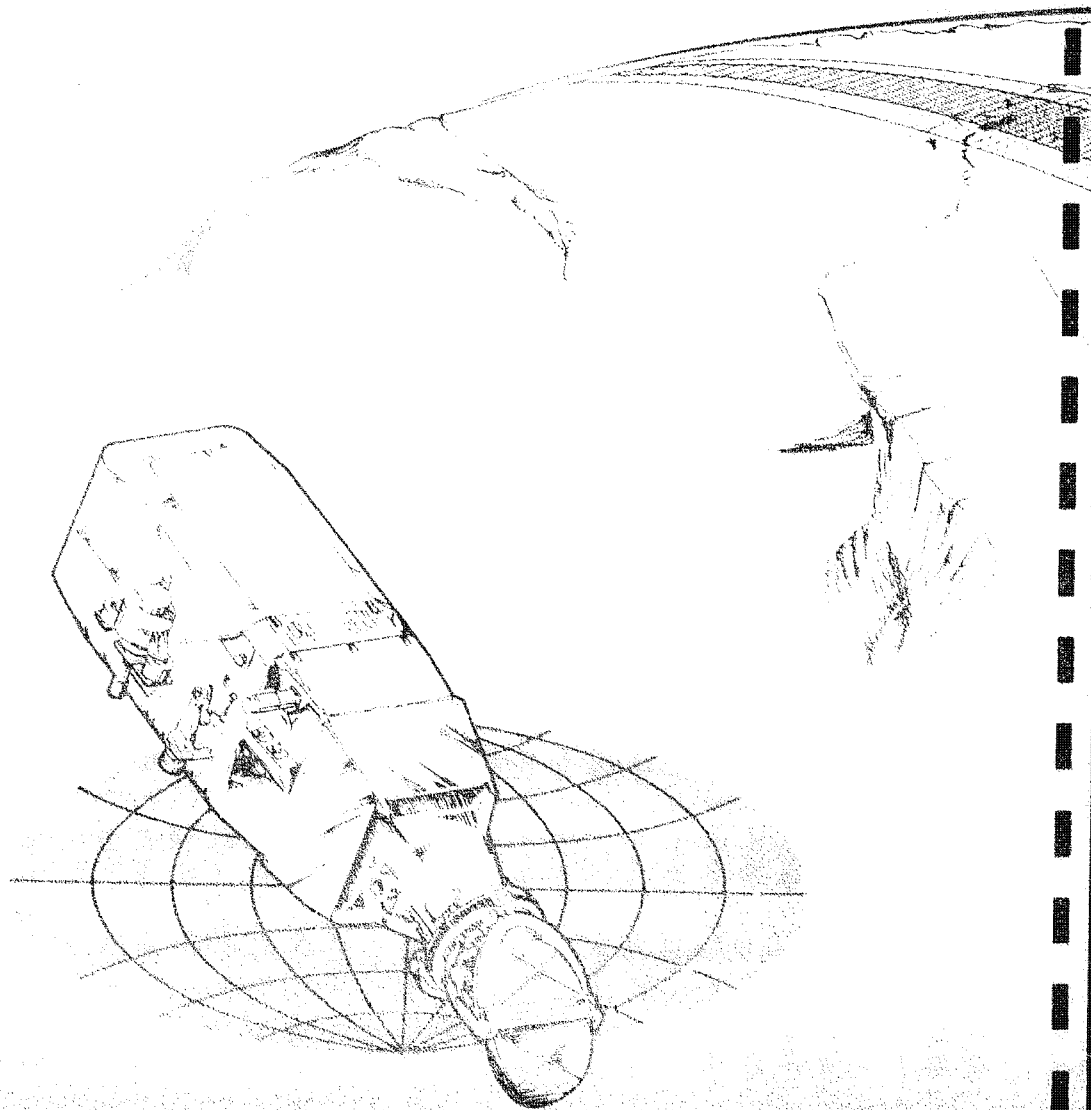
IN MODE 5 OPERATION THE CAMERA PROVIDES A SWEEP OF 36 DEGREES LEFT AND RIGHT OF FLIGHT PATH. THIS SWEEP MADE UP OF 5 FRAMES PROVIDES A LATERAL COVERAGE OF 28 NAUTICAL MILES FROM THE D-21B CRUISE ALTITUDE OF 85,000 FEET. EACH SWEEP OF THE CAMERA PROVIDES FORWARD OVERLAP.

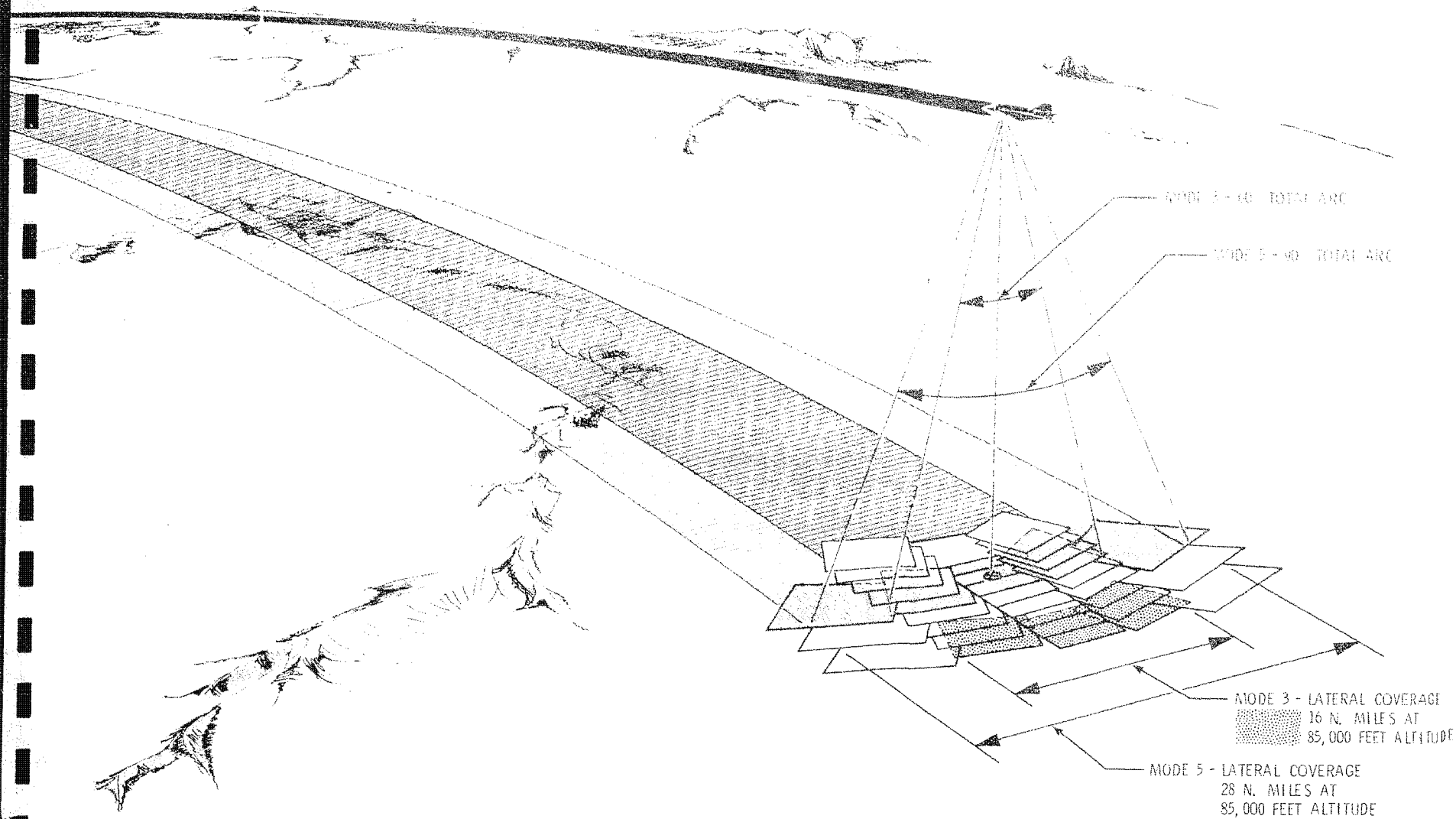


RECONNAISSANCE CAMERA COVERAGE

● HYCON MODEL HR-335

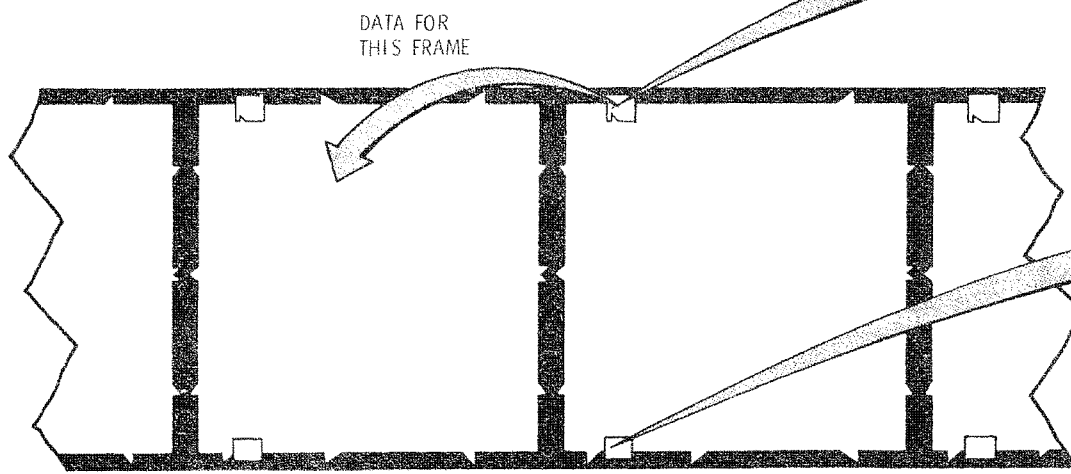
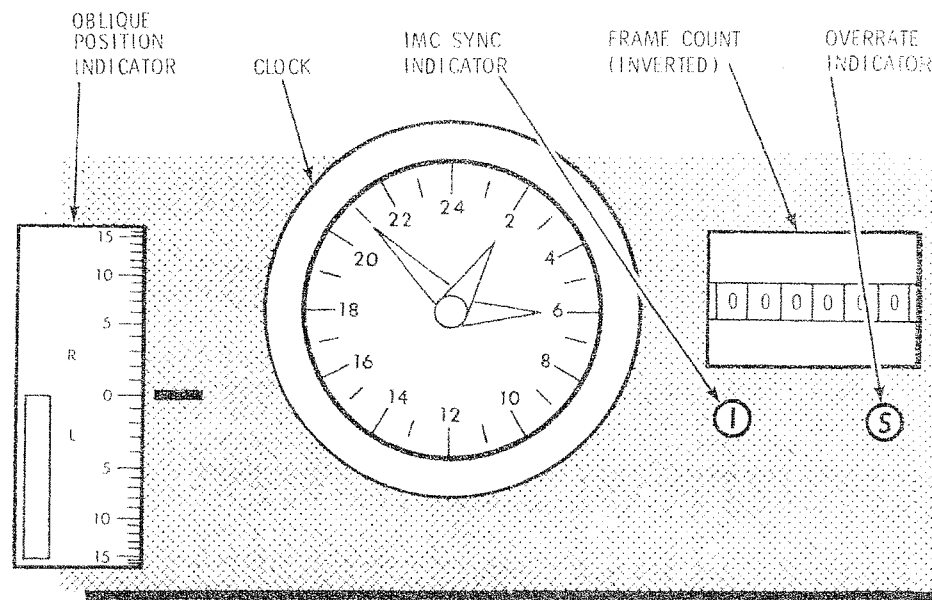
- f/5.6, 24 INCH FOCAL LENGTH
- RESOLUTION - 2 FEET AT 85,000 FEET ALTITUDE
- 2 MODES - 3 FRAMES ACROSS; 5 FRAMES ACROSS
- 60% FORWARD OVERLAP BETWEEN VERTICAL FRAMES
- IMAGE MOTION COMPENSATION FOR AIRCRAFT FORWARD MOTION.
- GYRO STABILIZED IN PITCH AND ROLL
- 5300 FRAMES OF FILM WITH A 9 X 9 INCH FORMAT.
- FILM CAPACITY PROVIDES 75,000 SQUARE NAUTICAL MILES OF COVERAGE.
- PERTINENT DATA RECORDED ON EACH FRAME.



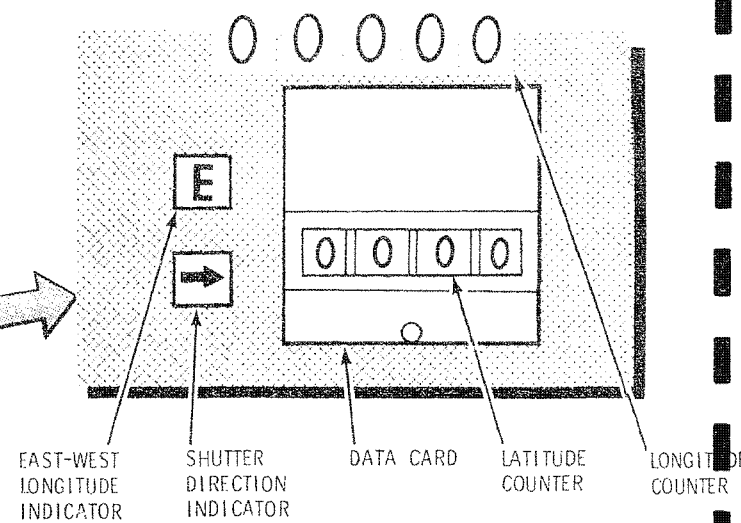


FILM DATA FORMAT

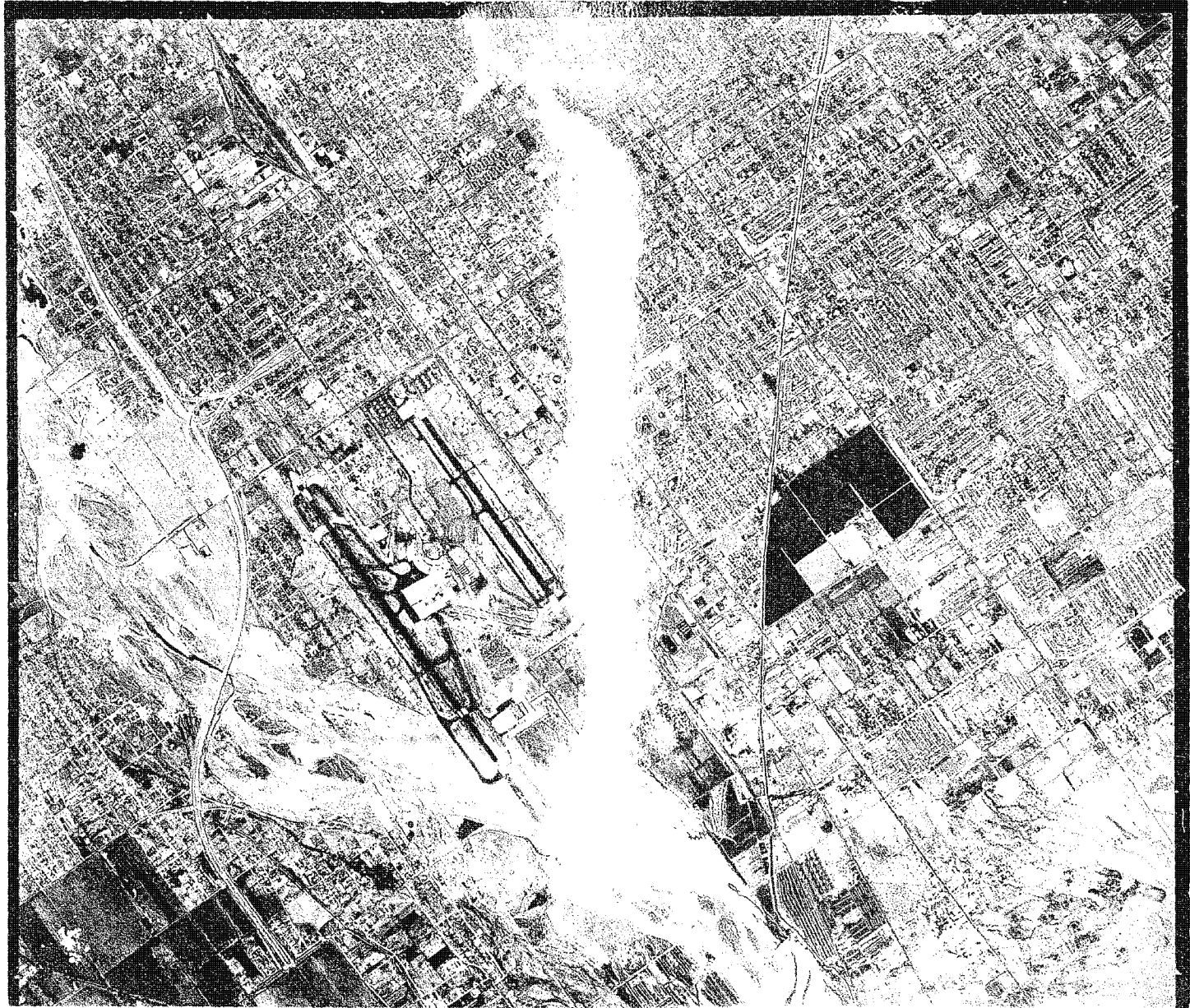
DATA PERTINENT TO THE FRAMES ARE IMAGED ON EACH EXPOSURE AS AN INTEGRAL PART OF THE PHOTO COVERAGE. DATA INCLUDES LATITUDE AND LONGITUDE, SIDE POINTING ANGLE (INCLUDING AIRCRAFT ROLL ANGLE), TIME AND FRAME NUMBER. THE IMC ERROR INDICATES A MALFUNCTION IN THE FORWARD MOTION COMPENSATION SYSTEM AND OVERRATE ERROR INDICATES THAT THE CAMERA STABILIZATION SYSTEM WAS UNABLE TO CORRECT FOR VEHICLE PITCH AND ROLL.



DIRECTION OF FILM TRAVEL



HR 335 PHOTO



PHOENIX ARIZONA AREA

MISSION CAPABILITY

FLIGHT OF D-21B S/N 505	7-2
FLIGHT OF D-21B S/N 512	7-3
TYPICAL MISSIONS	7-4

VII

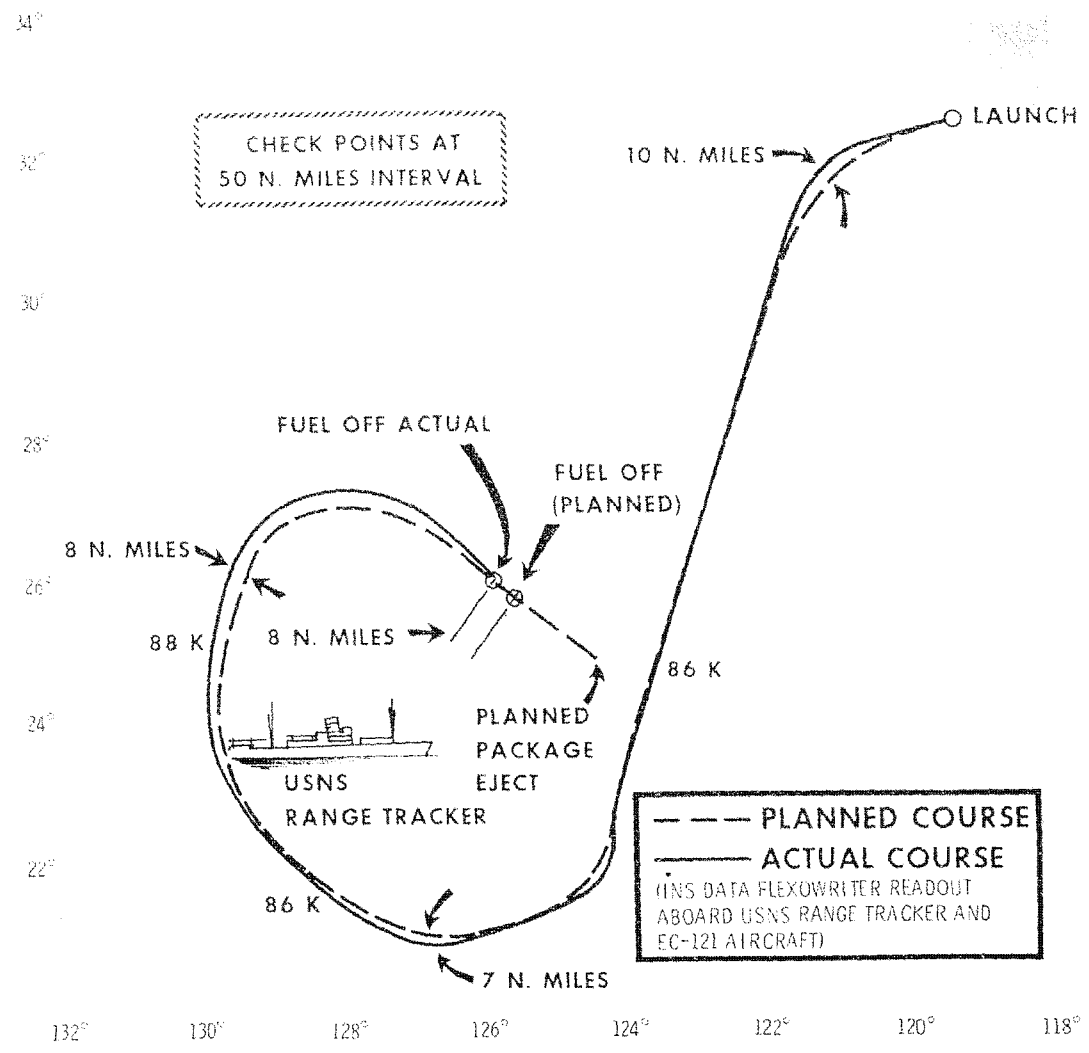
FLIGHT OF D-21B S/N 505

LAUNCHED 6-16-66
 MAX. MACH 3.30
 MAX. ALT. 89,000 FT
 LAUNCH WT. 7822 LB
 FLIGHT DURATION

48 MIN. 26 SEC.

PLANNED RANGE 1539 N.M.
 (GROUND DISTANCE)
 LAUNCH TO FULL SHUTOFF

ACTUAL RANGE 1550 N.M.
 (AIR DISTANCE)
 LAUNCH TO FULL SHUTOFF



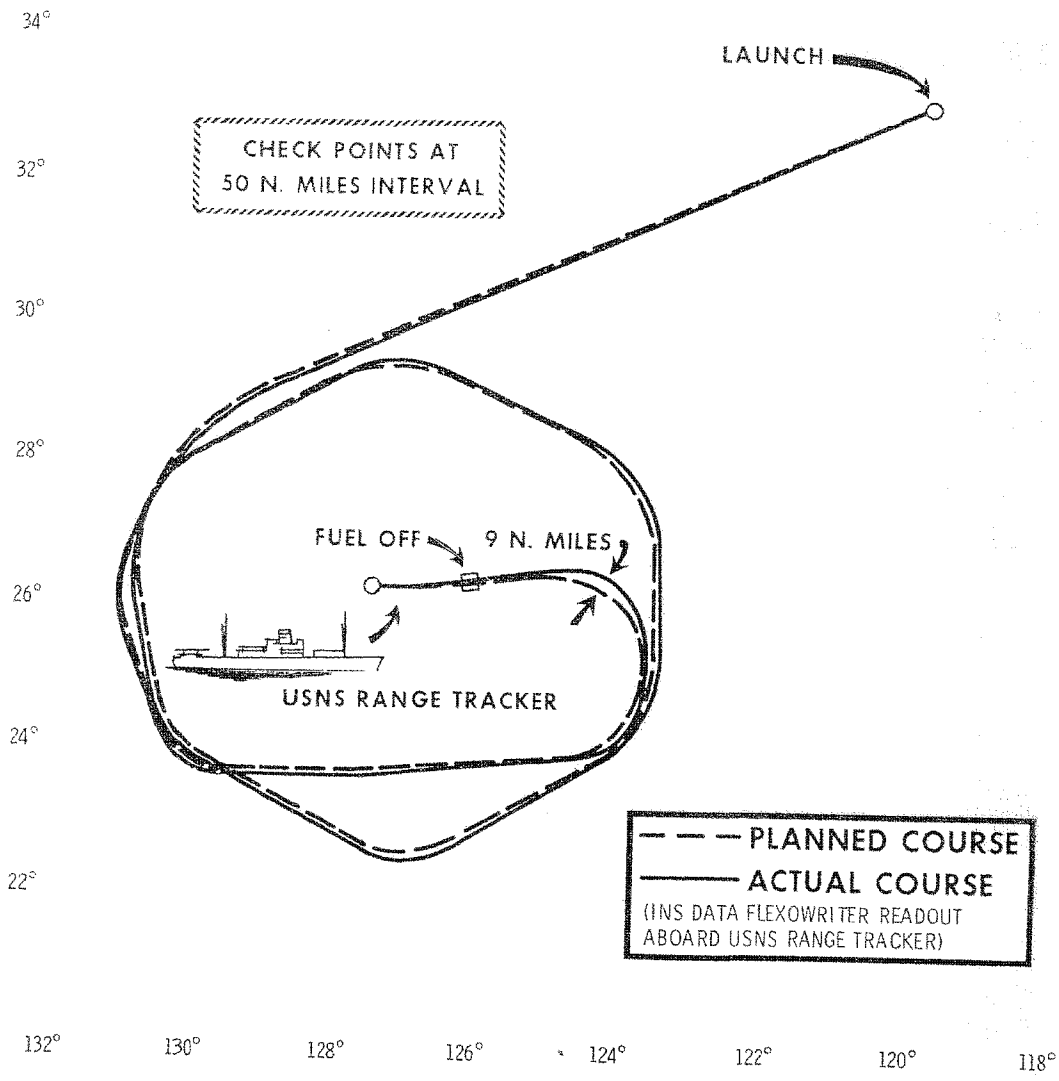
FLIGHT OF D-21B S/N 512

LAUNCHED 6-16-68
MAX. MACH 3.25
MAX. ALT. 91,700 FT
LAUNCH WT.
 D-21B 10,746 LB
 BOOSTER 13,119 LB
 TOTAL 23,865 LB

FLIGHT DURATION
 87 MIN. 39 SEC.

PLANNED RANGE 2745 N.M.
 (GROUND DISTANCE)
 LAUNCH TO FUEL SHUTOFF

ACTUAL RANGE 2745 N.M.
 (AIR DISTANCE)
 LAUNCH TO FUEL SHUTOFF

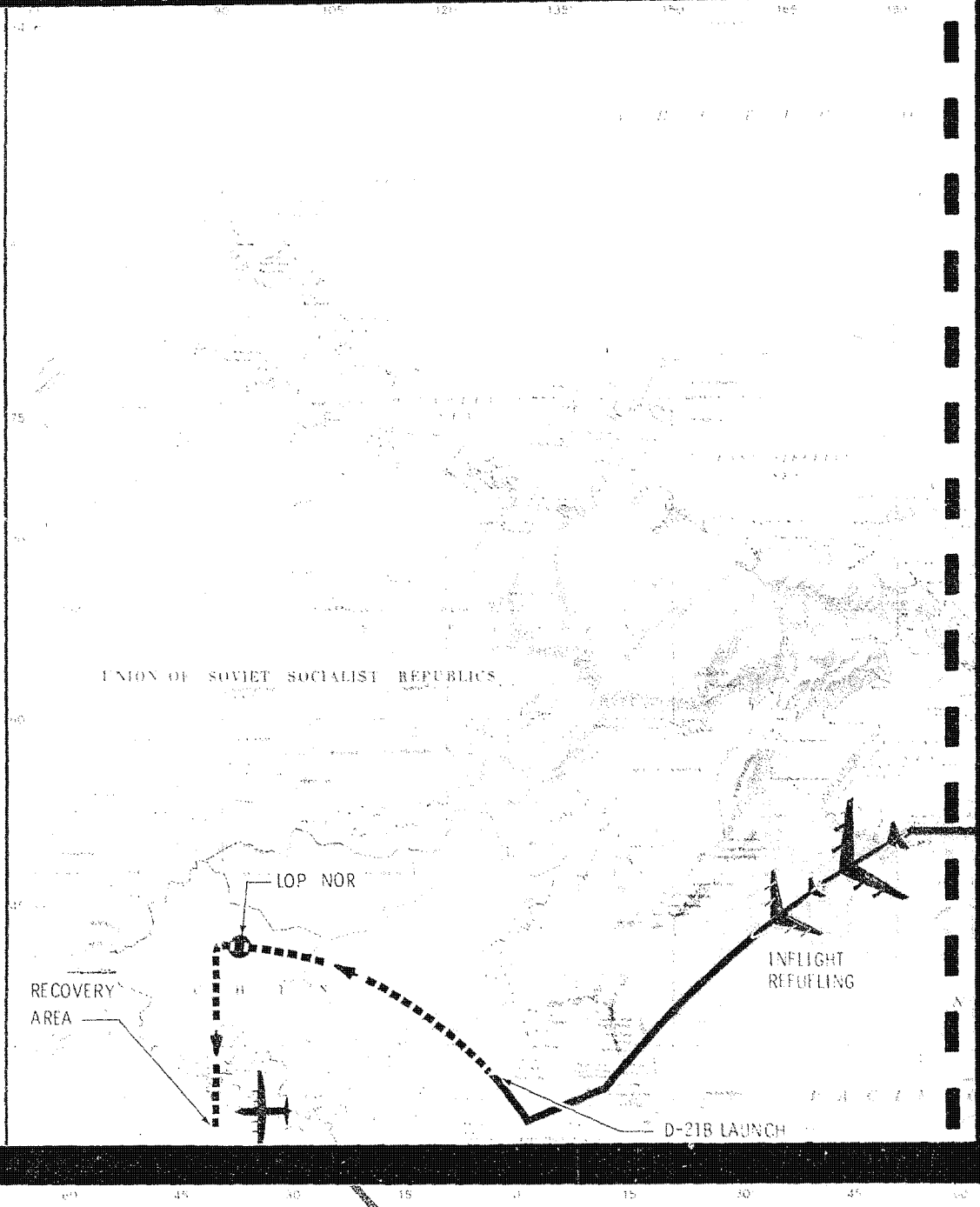


- - - PLANNED COURSE
 ——— ACTUAL COURSE
 (INS DATA FLEXOWRITER READOUT
 ABOARD USNS RANGE TRACKER)

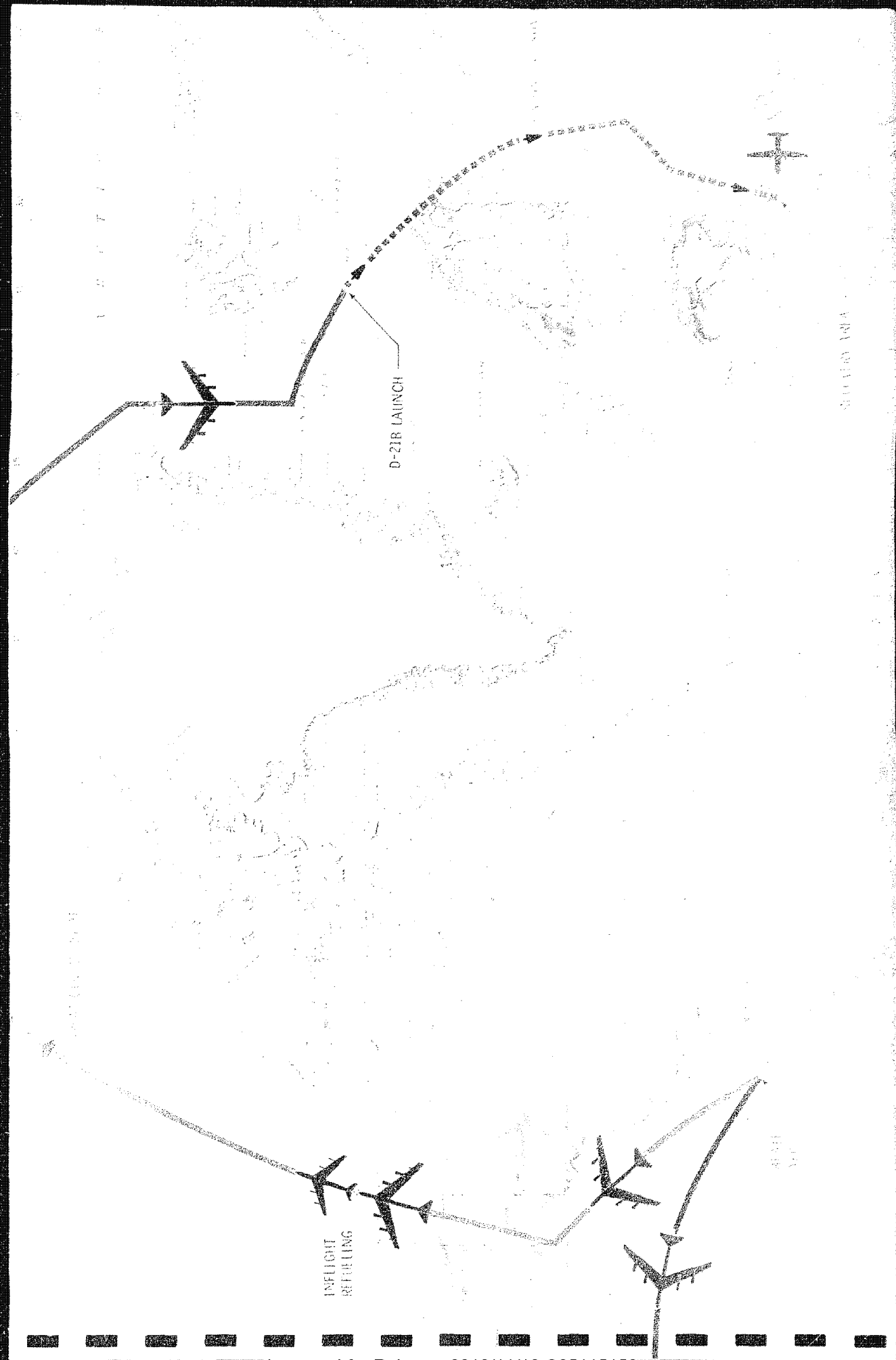
TYPICAL MISSIONS

MISSIONS ARE DESIGNED BY COMPUTERIZED
ROUTE PLANNING PROGRAM

- B-52H CHINA ROUND TRIP 12000 N. M.
- D-21B CHINA MISSION 3000 N. M.
- B-52H RUSSIA ROUND TRIP 9200 N. M.
- D-21B RUSSIA MISSION 2700 N. M.



GREAT CIRCLE ROUTE



HATCH PAYLOAD RECOVERY

RECOVERY SEQUENCE _____ 8-2

VIII

RECOVERY SEQUENCE

THE AERIAL RECOVERY SYSTEM EMPLOYED FOR THE D-21B HATCH PAYLOAD RETRIEVAL IS A BASIC SYSTEM WHICH HAS BEEN IN USE FOR SOME YEARS. THE JC-130B IS EMPLOYED AS THE PICKUP AIRCRAFT WITH SEVERAL SUCH AIRCRAFT BEING UTILIZED IN THE OPERATION SO AS TO PROVIDE BACKUP.

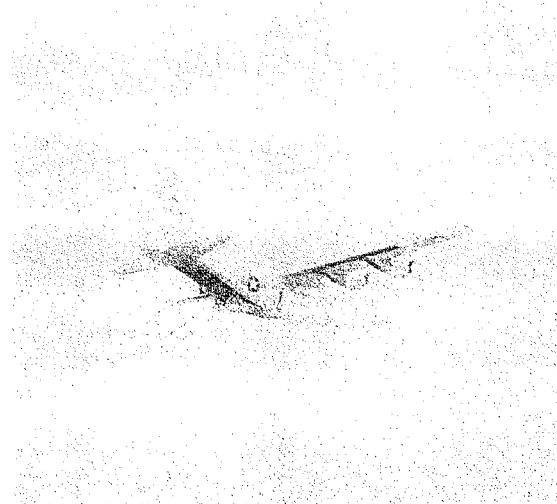
TWO BEACONS AND THE TELEMETRY SYSTEM BROADCAST FROM THE HATCH DURING DESCENT AS AN AID TO THE RECOVERY AIRCRAFT IN LOCATING THE TARGET.

THE RECOVERY OPERATION BEGINS WHEN THE HATCH REACHES 20,000 FEET ALTITUDE AFFORDING THE RECOVERY AIRCRAFT SEVEN TO NINE PASSES AT THE TARGET. THIS INSURES A HIGH PROBABILITY OF AERIAL PICKUP SUCCESS AS DEMONSTRATED DURING THE USAF TRAINING PROGRAM WHEN OUT OF 70 AERIAL RECOVERIES ATTEMPTED, 65 WERE SUCCESSFUL.

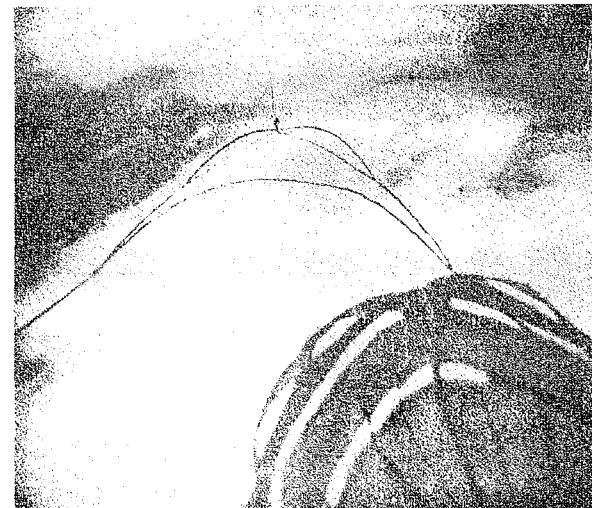
- 1 DROGUE GUN SLUG FIRES 2 SECONDS AFTER HATCH EJECTION AND DEPLOYS PILOT CHUTE WHICH DEPLOYS -
- 2 THE DECELERATION CHUTE WHICH REMAINS FOR 10 SECONDS AT WHICH TIME IT IS RELEASED AND UPON RELEASE IT DEPLOYS -
- 3 THE AIR PICKUP CHUTE WHICH IN TURN DEPLOYS -
- 4 THE MAIN CHUTE WHICH REMAINS REEFED FOR 8 SECONDS WHEREUPON IT DISREEFS AND BECOMES FULLY INFLATED.
- 5 A BAROMETRIC ACTUATOR RELEASES STABILIZATION CHUTE AT 20,000 FEET WHICH AIDS BOARDING OF HATCH BY JC-130B.

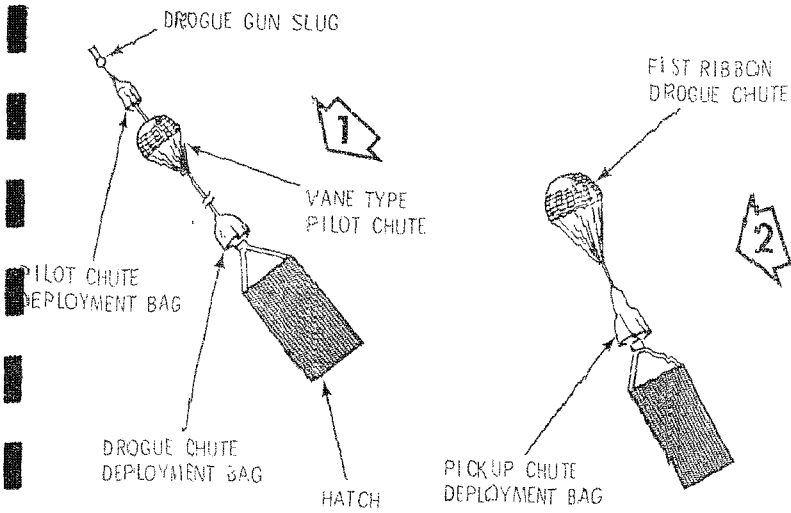
IF AIR RETRIEVAL IS NOT MADE, HATCH WILL FLOAT AND CAN BE SEA RECOVERED.

RECOVERY AIRCRAFT



AIR PICKUP CHUTE AT INSTANT OF ENGAGEMENT





AIR PICKUP CHUTE ENGAGED

