

SENTRY PROGRAM MISSION

"PLAN AND CONDUCT A PROGRAM OF RESEARCH AND DEVELOPMENT LEADING TOWARD THE ULTIMATE ATTAINMENT OF A RECONNAISSANCE SYSTEM WHICH USES A SATELLITE VEHICLE AS THE DATA GATHERING MEDIUM"

P-933 (1) "S" 1/6/59
WD-59-00017 LMSD/415305 COPY "6"

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FORM 100-100-100-100-100

P-933(1)



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36 INCH LENS

17 FOOT RESOLUTION



ORIGINAL SCENE



FILM IMAGE
IN SATELLITE



IMAGE RECORDED
ON GROUND

OR 58/41/7

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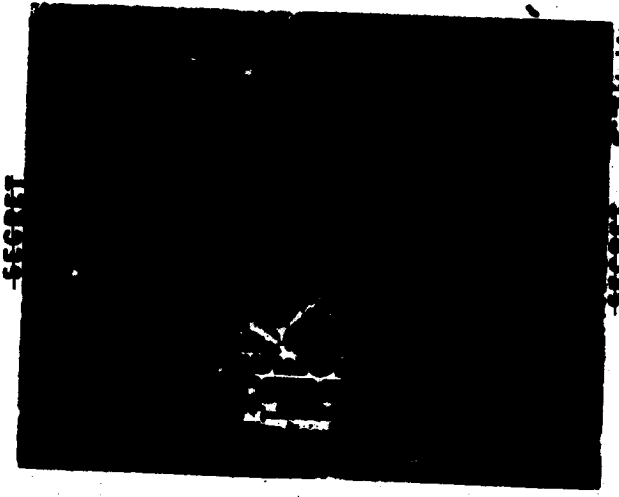
DEFENSE AIRCRAFT CORPORATION
Aircraft Division

P-5

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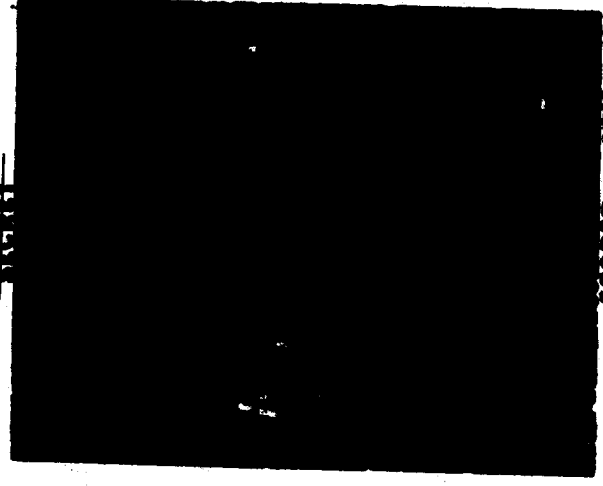
6 INCH LENS



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ORIGINAL SCENE



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~~SECRET~~ 1725 117

FILM IMAGE
IN SATELLITE



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~~SECRET~~ 1726 118

IMAGE RECORDED
ON GROUND

P22 68/4/57

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ORSHED AIRCRAFT CORPORATION
10000 AIRPORT DRIVE
MEMPHIS, TENNESSEE 38115

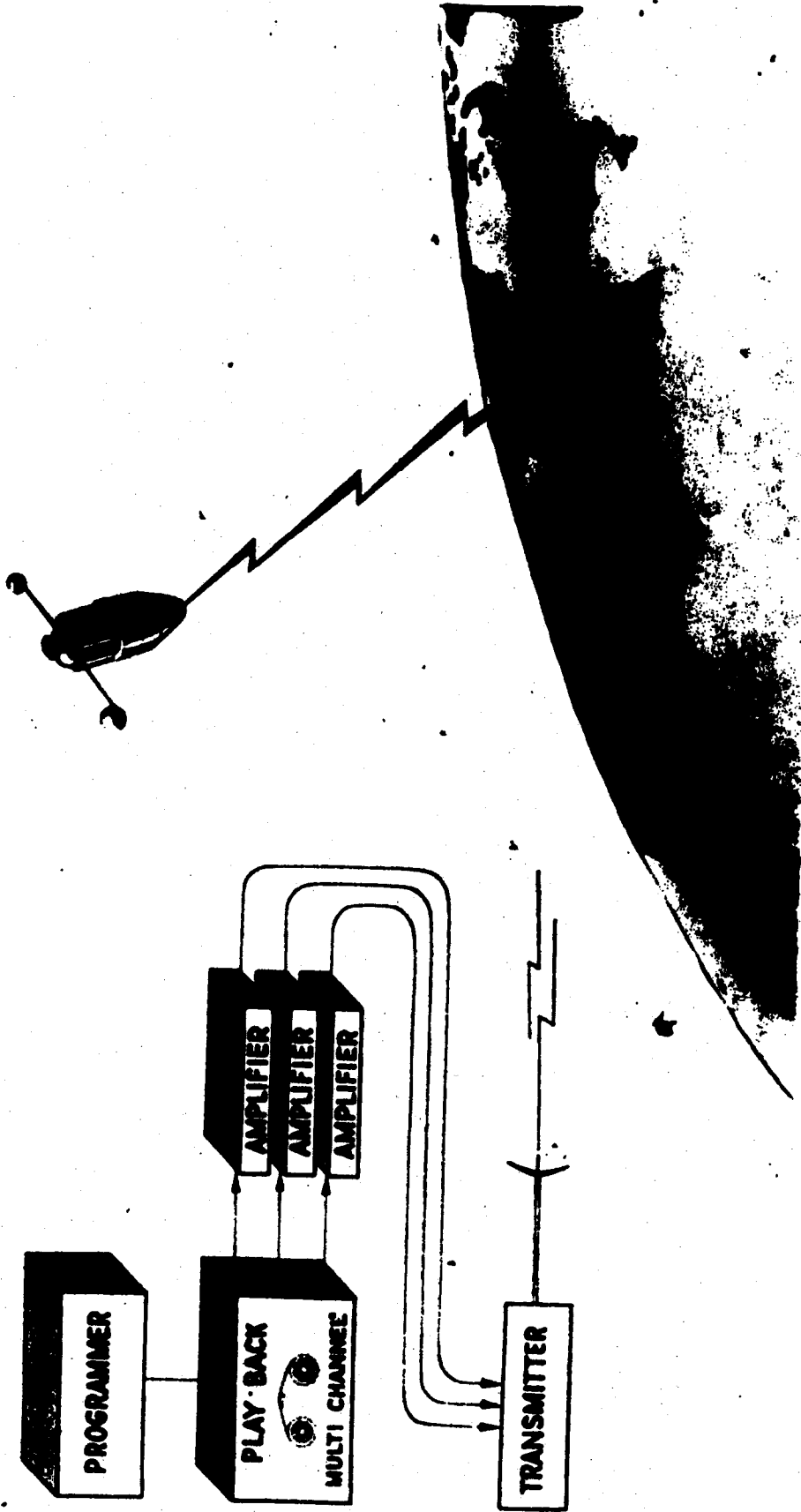
P-22

ORBITAL ENTRY ASCENT (ATLAS)



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SENTRY FERRET AIRBORNE READOUT



P119(2)SSF 2/15/59
WD-39 00852 LMSD/425128 (COPY # 7)

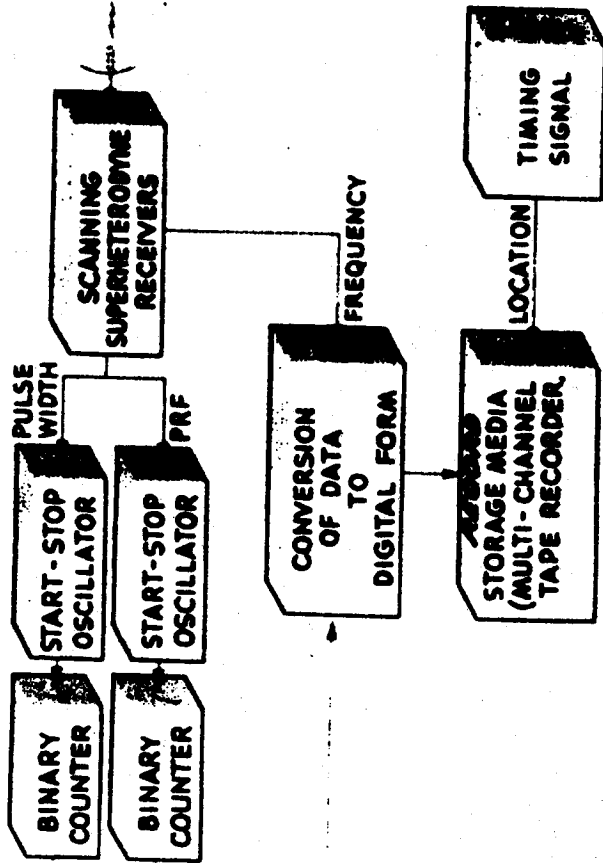
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LOCKHEED AIRCRAFT CORPORATION
MILWAUKEE, WISCONSIN

LOCKHEED AIRCRAFT CORPORATION
MILWAUKEE, WISCONSIN

P-179(2)

SAMOS FERRET AIRBORNE RECESSION



CAMOUFLAGED COMPLI



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P-182(6)



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DESIGNED FOR MAXIMUM
FLEXIBILITY, RANGE AND
ACCURACY TO ACHIEVE
SPECIFIC INTELLIGENCE
REQUIREMENTS CONTINU-
OUSLY AND EXPEDITIOUSLY



READOUT

P 18121 SST V22/58
WD-58 00001

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LOCKHEED AIRCRAFT CORPORATION
MOUNTAIN VIEW, CALIF.

P-183(2)

CHARACTERISTICS

- 1. TECHNICAL INTELLIGENCE**
- 2. INCLUDES WIDE BAND ANALOG RECORDING OF SELECTED SIGNALS**
- 3. INCREASED FLEXIBILITY OF FERRET EQUIP FUNCTIONS**
- 4. INCREASED ACCURACY IN DETERMINATION OF SIGNAL PARAMETERS**
- 5. IMPROVED LOCATION ACCURACY**

P-184(s)

SENTRY VEHICLE SYSTEM

VISUAL RECONNAISSANCE MODEL

ENGINE GIMBAL LIMITS 5°
SQUARE PATTERN
ENGINE-BELL AIRCRAFT
THRUST 15,000LB ALL
180 277 SEC.
NOZZLE EXPANSION RATIO 20:1

N₂ GAS STORAGE FLASK
3000 PSI

VISUAL RECONNAISSANCE SYSTEM
CAMERA PACKAGE (EKG)
PHOTO, PROCESS, STORAGE,
ELECTRONIC READOUT

CAMERA LENS SHIELD

NOSE (JETTISONS)

ATTITUDE ROLL AND
REORIENTATION CONTROL
GAS JETS (6)

AUXILIARY POWER
SOURCE (BATTERIES)

FUEL TANK
UDMH 60 PSI

OXIDIZER
TANK (IRFNA)
60 PSI

H₂ GAS STORAGE FLASK (2)
PROPELLANT TANK
PRESSURIZATION 3000 PSI

SUBSYSTEM ELECTRONICS COMPARTMENT
AND CAMERA SUPPORT STRUCTURE
(GUIDANCE, CONTROL, ETC.)

TEMPERATURE CONTROL SHUTTERS

P232 (3)SS "A" 10/1/58
WD-58-06744 LMSD/100296-1 COPY # 7

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MEMPHIS, TENNESSEE

P-232(3)

ORION VISUAL RECONNAISSANCE MODEL

VISUAL RECONNAISSANCE MODEL

ENGINE GIMBAL LIMITS 5°
QUARE PATTERN
ENGINE - BELL AIRCRAFT
THRUST 15,000 LB ALT
I_{sp} 277 SEC
NOZZLE EXPANSION RATIO 20:1

N₂ GAS STORAGE FLASK
3000 PSI

VISUAL RECONNAISSANCE SUBSYSTEM
PHOTO, PROCESS, STORAGE,
ELECTRONIC READOUT

NOSE (JETTISONS)

ATTITUDE ROLL AND
REORIENTATION CONTF
GAS JETS (6)

AUXILIARY POWER
SOURCE (BATTERIES)

FUEL TANK
UDMH 60 PSI

OXIDIZER
TANK (IRFNA)
60 PSI

SUBSYSTEM ELECTRONICS COMPARTMENT
& PAYLOAD SUPPORT STRUCTURE
(GUIDANCE, CONTROL, ETC.)

CY'E-7

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PROVIDED BY WS-117L VEHICLE CAPABILITY

- PAYLOAD WEIGHT CAPACITY UP TO A TON (MORE FOR ADVANCED VERSIONS)
- POLAR ORBITS AVAILABLE THROUGH PERFORMANCE MARGIN AND IOC LAUNCHING SITE
- WIDE-BAND DATA LINK FOR TRANSMISSION OF INFORMATION RATES OF 5 MCS BANDWIDTH
- CAPACITY TO CARRY TWO OR MORE PAYLOADS FOR COINCIDENCE-TYPE EXPERIMENTS
- GUIDANCE ACCURACY TO PLACE VEHICLE INTO ORBITS OF AS LITTLE AS 20-MILE ECCENTRICITY
- POSSIBILITY OF SETTING UP LINKS BETWEEN TWO SATELLITES
- HIGHER ALTITUDES INCLUDING POSSIBILITY OF 70-POUND PAYLOADS AT 2700 MILES
- TRACKING SYSTEM MEASUREMENTS ANGULAR TO ± 1 MIL AND ALTITUDE TO .1 MILE
- PAYLOAD VOLUME CAPACITY UP TO 70 CUBIC FEET
- ATTITUDE ORIENTATION STABILIZATION TO ± 1 DEGREE
- NUMBER OF VEHICLES AVAILABLE, ESPECIALLY FOR SMALLER PAYLOADS (DUE TO WS-117L REQUIREMENTS AND USE OF OPERATIONAL MISSILE FOR BOOSTER)
- LONG ORBITING DURATION AFFORDED BY 300-MILE ALTITUDES OR HIGHER
- LONG PAYLOAD OPERATION WITH MODEST POWER THROUGH SOLAR OR CHEMICAL BATTERIES; OR WITH NUCLEAR AUXILIARY POWER PLANTS FOR HIGH POWER

P 236 G 7/30/57

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LOCKHEED AIRCRAFT CORPORATION
3251 WASHINGTON AVENUE

P-236

SUBSYSTEM STRUCTURE

A T E L L I T E V E H I C L E
SS "A" A I R F R A M E
SS "B" P R O P U L S I O N
SS "C" A U X . P O W E R
SS "D" G U I D A N C E & C O N T R O L



E C O N N A I S S A N C E S U B S Y S T E M S
SS "E" V I S U A L
SS "F" F E R R E T

A I D A S
SS "G"

S U P P O R T S U B S Y S T E M S &
F A C I L I T I E S
SS "H" C O M M U N I C A T I O N
SS "I" D A T A P R O C E S S I N G
SS "J" G E O P H Y S I C A L
E N V I R O N M E N T
SS "K" P E R S O N N E L
SS "L" B I O M E D I C A L

R E C O V E R Y
G R O U N D S U P P O R T E Q U I P
D A T A C O N T R O L A N D
A N A L Y S I S
C A P S U L E R E C O V E R Y

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SENTRY SUBSYSTEM "E"

OPERATIONAL OBJECTIVES

- MAPPING OF USSR AND SATELLITES
- STRATEGIC WARNING INDICATIONS
 - WEAPONS AND BASES IN BEING
 - MILITARY LOGISTICS
 - INDUSTRIAL WAR CAPABILITIES
- BOMB DAMAGE OBSERVATION
- WEATHER OBSERVATION

P 333 (1) 88-E 10/2/58
WH-88-06744

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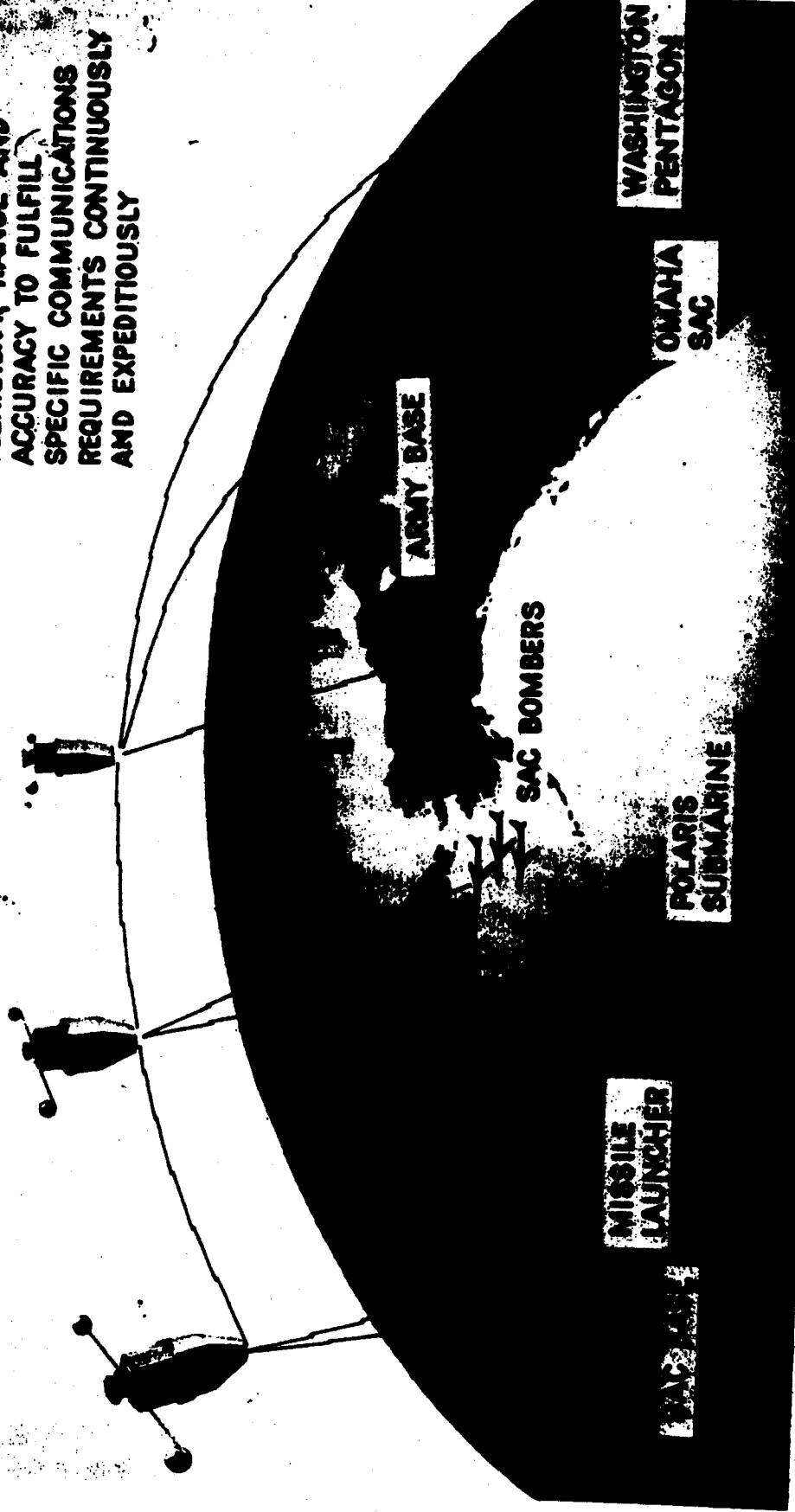
ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

P-333(1)

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DESIGNED FOR MAXIMUM
FLEXIBILITY, RANGE AND
ACCURACY TO FULFILL
SPECIFIC COMMUNICATIONS
REQUIREMENTS CONTINUOUSLY
AND EXPEDITIOUSLY



P 375 SS-F 10/14/57

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LOCKHEED AIRCRAFT CORPORATION
MISSILE SYSTEMS DIVISION

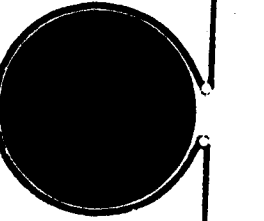
P-375

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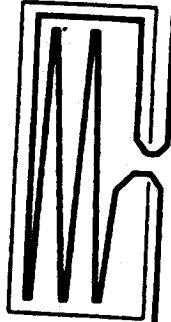
VEHICLE-BORNE PROCESSOR

PHOTOGRAPHING

PROCESSING



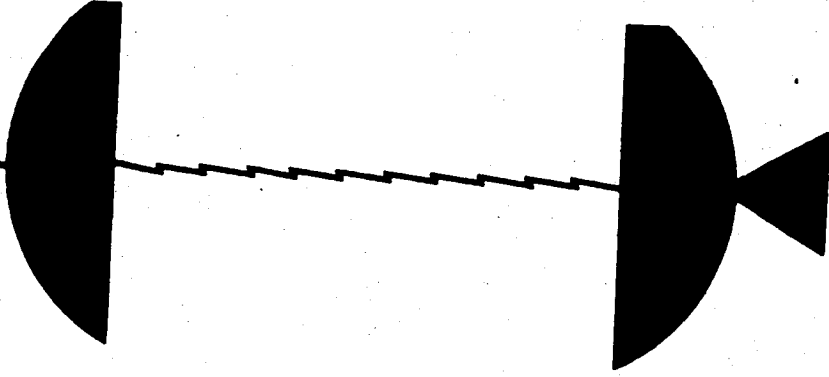
STORING



READING OUT



TRANSMITTING



GROUND

P 378 SS-E 10/21/57

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LOCKHEED AIRCRAFT CORPORATION
MISSILE SYSTEMS DIVISION

P-378

P-400B(1)



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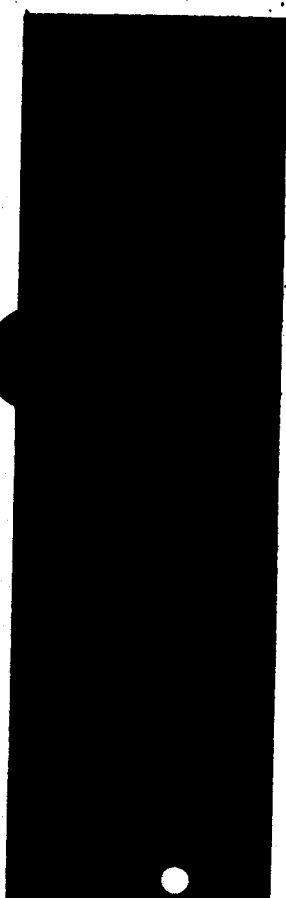
OBJECTIVE



ELECTRONIC REQUIREMENTS



USAF PRIORITIES



408 SSF 1/22/58
VD-58 00001

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LOCKHEED AIRCRAFT CORPORATION
MILWAUKEE, WISCONSIN

P-408

[Redacted]

SECRET

[Redacted]

OBJECTIVE



[Redacted]

ELECTRONIC REQUIREMENTS

[Redacted]

USAF PRIORITIES

P409 SSF 1/22/58
WD-58 00001

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LOCKHEED AIRCRAFT CORPORATION
MONTICELLO, MISSISSIPPI

P-409

[Redacted]

SECRET

OBJECTIVE

[Redacted]



ELECTRONIC
REQUIREMENTS

[Redacted]

USAF PRIORITIES

[Redacted]

SECRET

PAID SSF 1/22/58
WD-58 00001

FORM 101-1 (REV. 1-58)

P-410

[REDACTED]

SECRET

[REDACTED]

OBJECTIVE



ELECTRONIC REQUIREMENTS

[REDACTED]

USAF PRIORITIES

[REDACTED]

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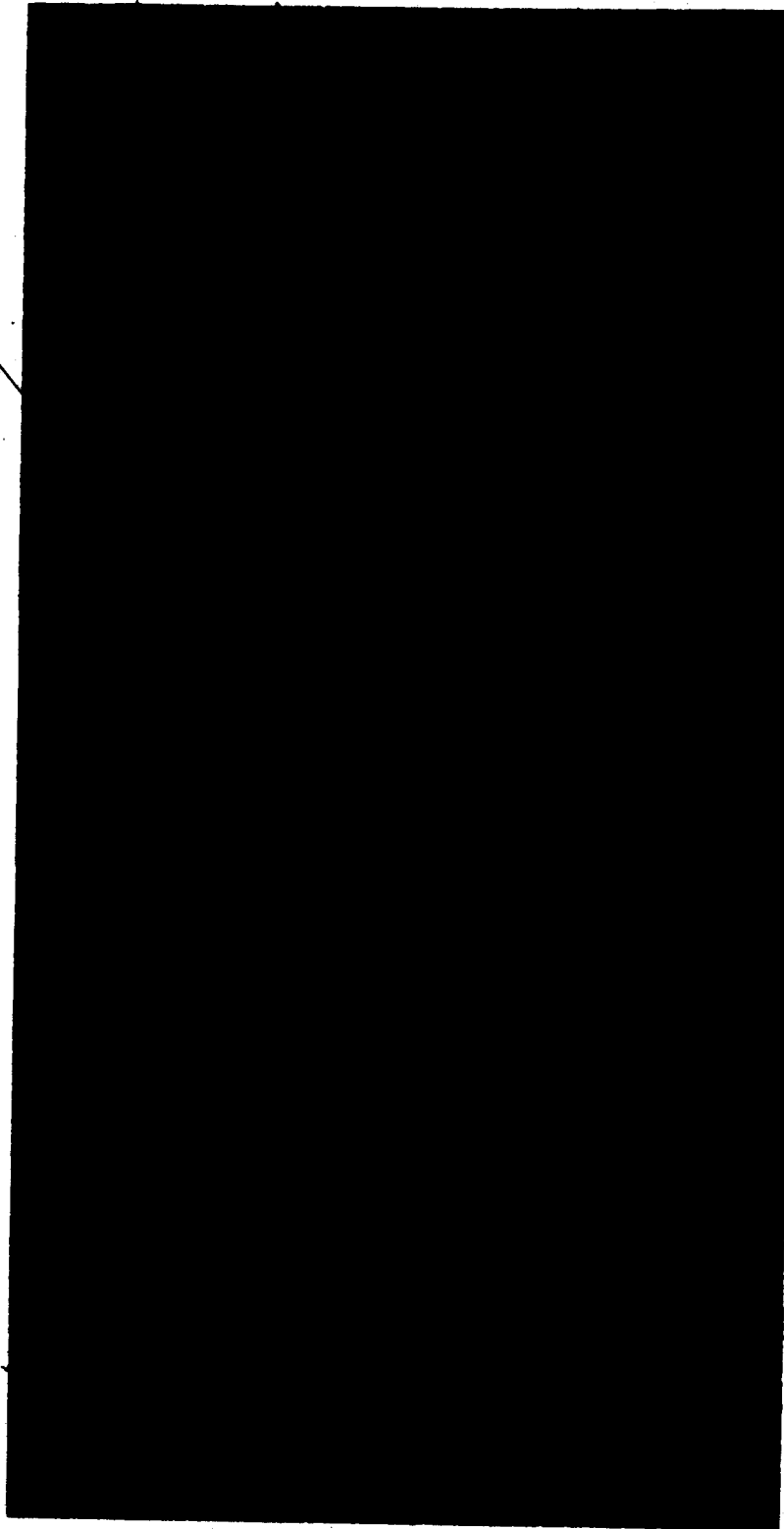
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LOCKHEED AIRCRAFT CORPORATION
MILWAUKEE, WISCONSIN

P-411

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OPERATIONAL LIFE VS PAYLOAD POWER CONSUMPTION



LIFETIME IN DAYS

44
40
36
32
28
24

2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.0

PAYLOAD POWER CONSUMPTION - KW - HRS/DAY

P413 55F 1/22/58
WD-58 00001

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LOCKHEED AIRCRAFT CORPORATION
AERIAL SYSTEMS DIVISION

P-413



P453 (1) 'M' 6/27/58
WD-58-02843

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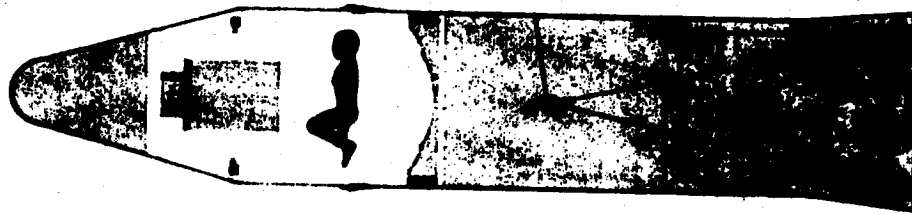
NOSE CONE

REACTION CONTROL JET

SEP. JOINT

CAPSULE SEP. DEVICE

WS117L PROPULSION SYST.



NOSE CONE JETT. DEVICE

RECOVERY CAPSULE

EXPLOSIVE BOLT

CENTER OF GRAVITY

RETRO-THRUST ROCKET

NOSE CONE JETT. DEVICE

REACTION CONTROL JET

EXPLOSIVE BOLT

WS117L PROPULSION SYST.



NOSE CONE

RECOVERY CAPSULE

SEP. JOINT

CAPSULE SEP. DEVICE

CENTER OF GRAVITY

RETRO-THRUST ROCKET

SMALL ANIMAL

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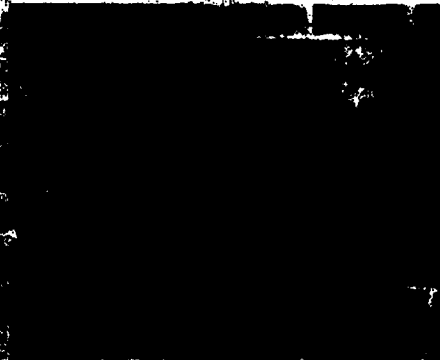
P 475 S 4/30/58

LOCKHEED AIR RESEARCH CORPORATION
WALTON LITTLETON, DENVER

P-475

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STACKING & ALIGNMENT



LMSD, SUNNYVALE
21, JUNE 1958

94-0007 87A 10/1/58
WD-55-0594-4 LMSD/10-306

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LOCKED MISSILE SYSTEMS GROUP

P-6 40(1)

SENTRY VISUAL RECONNAISSANCE TASK

IN SPACE

- ACQUIRE VISUAL INFORMATION
- PROCESS AND STORE
- CONVERT PHOTO TO VIDEO

ON THE GROUND

- CONVERT VIDEO TO PHOTO
- PROCESS FILM RECORD
- PROVIDE PERTINENT DATA
- PROVIDE QUALITY CONTROL FUNCTIONS

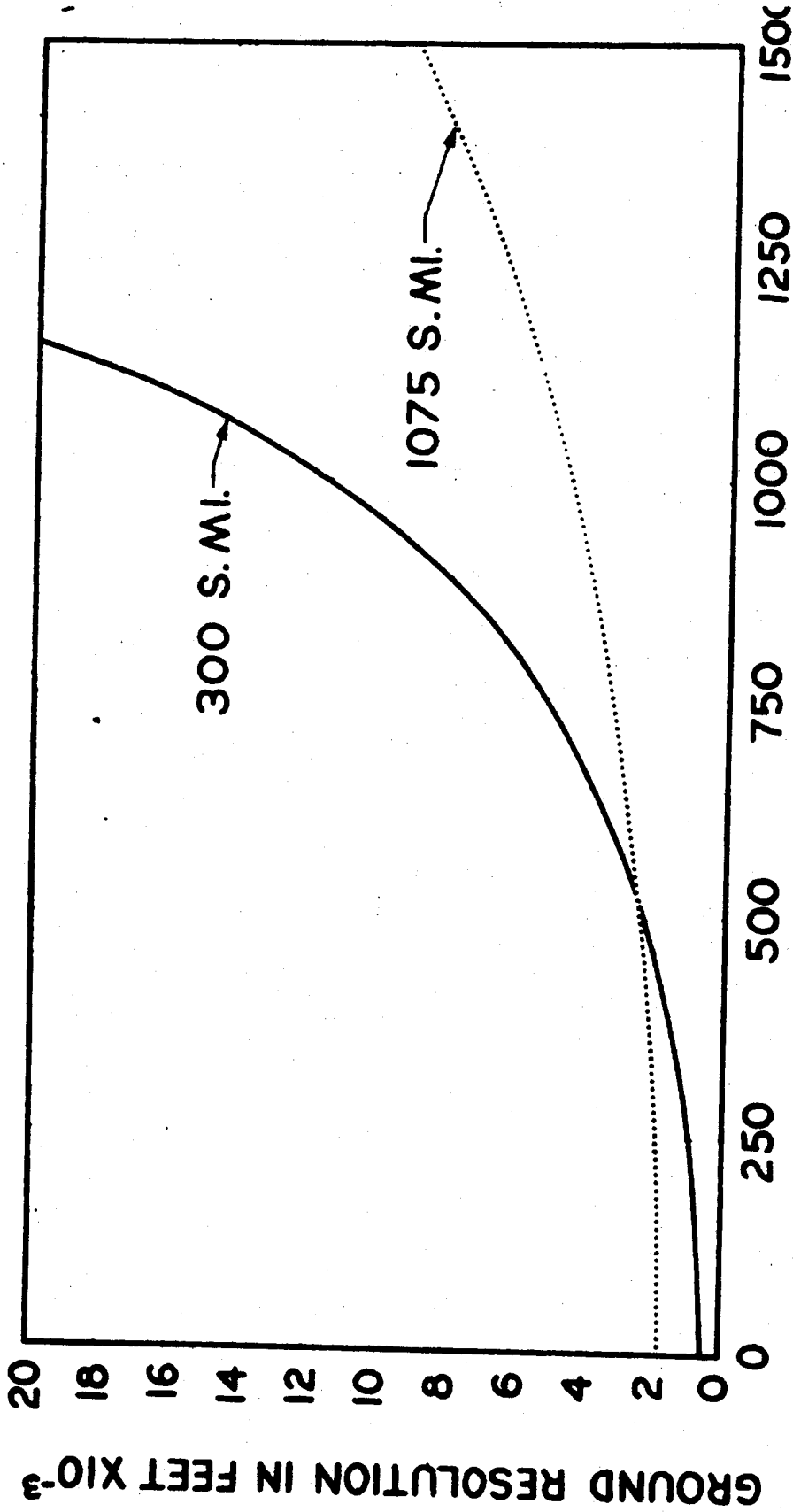
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LOCKHEED MISSILES AND SPACE DIVISION

P-687(2)

GROUND RESOLUTION VS DISTANCE



DISTANCE ON EARTH'S SURFACE FROM GROUND ZERO-S.M.I.

P 785 SS'E' 8/8/58
WN-5A-051A3 LMSD/100353

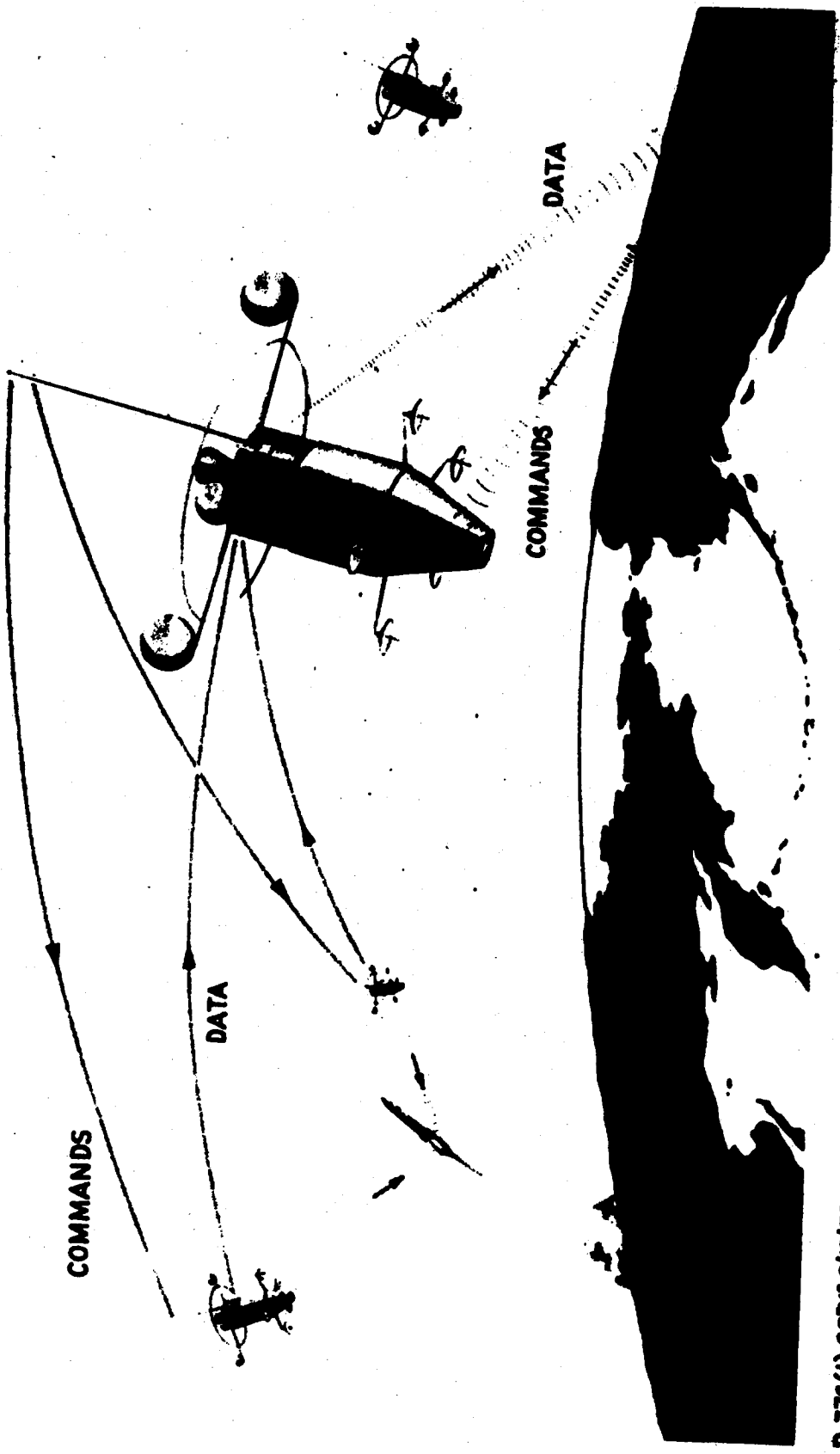
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P-785

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SENTRY DATA RELAY CONCEPT



P 776(1) 8574 8/19/58
WD-58-05183 LMSD 100286

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SECURITY INFORMATION

P-776(1)

SENTRY ADVANCED VEHICLE

VISUAL SURVEILLANCE

AVERAGE POWER REQUIRED-WATTS
160

WEIGHT-LBS
1400-2100

EQUIPMENT
DATA SENSING

HIGH RESOLUTION CAMERA 500-1200
MEDIUM RESOLUTION CAMERA 300
LOW RESOLUTION CAMERA 300
HIGH RESOLUTION I.R. 300

COMMUNICATIONS

4 WIDE BAND DATA LINKS 800
3 NARROW BAND DATA LINKS 300
ON BOARD PROGRAMING EQUIP. 250

1350

120

GUIDANCE & CONTROL

M. L.T. GUIDANCE 315
ATTITUDE STABILIZATION 85
ORBIT ADJUSTMENT 150

550

100

APU (SOLAR COLLECTORS)

600

PAYLOAD SUPPORT STRUCTURE

600

TOTAL

4500-5200

380

P 787 S 8/8/58
WD-58-05183 LMSB/109273

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P-787

SENTRY OPERATIONAL OBJECTIVES

VISUAL RECONNAISSANCE

- MAPPING OF USSR AND SATELLITES
- * STRATEGIC WARNING INDICATIONS
 - WEAPONS AND BASES IN BEING
 - MILITARY LOGISTICS
 - INDUSTRIAL WAR CAPABILITIES

• OPEN SKY NATIONAL OBJECTIVES

- NUCLEAR DETONATION DETECTION
- WEATHER OBSERVATION

ELECTRONIC RECONNAISSANCE

- * DETECT & OBTAIN INFORMATION ON ELECTRONIC EMITTERS IN AREAS OF USSR & SATELLITES NOT NOW AVAILABLE

INFRARED RECONNAISSANCE

- ICBM ATTACK WARNING

COMMUNICATIONS

- * SATELLITE LINKS FOR SECURE & RAPID GLOBAL COMMUNICATIONS

P 799

8/8/58

WD 58 05183

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P-799