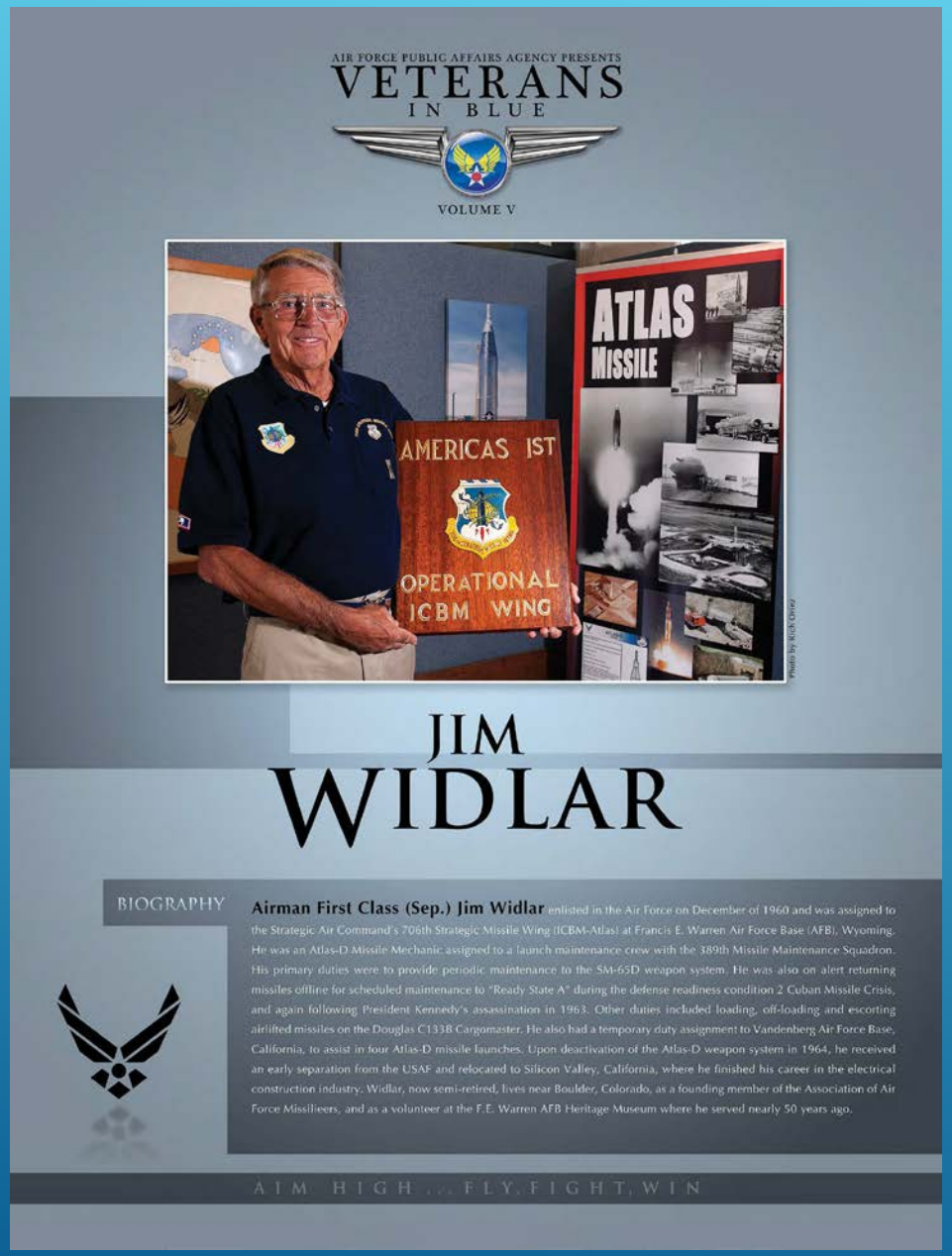
ATLAS ICBM (SM-65)

389TH STRATEGIC MISSILE WING
F.E. WARREN AFB, WYOMING

564th Strategic Missile Squadron
565th Strategic Missile Squadron
566th Strategic Missile Squadron



ATLAS-D MISSILE MECHANIC
JUNE 1961 TO OCTOBER 1964

Assigned to an APCHE Crew
in Launch Maintenance
389th Missile Maintenance Squadron
Francis E Warren AFB, Wyoming

Operational Vandenberg AFB Launches

12-May-62 * Atlas 127D * “Cannonball Flyer”
15-Jan-63 * Atlas 39D * “Big Sue”
12-Mar-63 * Atlas 64D * “Tall Tree II”
15-Mar-63 * Atlas 46D * “Tall Tree I”

ATLAS-D (SM-65) ICBM

(1) Height 82’ 5”

(2) Diameter 10”

(3) Radio-Inertial Guidance

(4) Stage and Half Propulsion System

(5) Airframe (He) Pressurized Cres 301 Stainless Steel

(5) Forward Bulk Head .010” @ Boil-Off Valve

(6) Aft Bulk Head .047”

(7) Fuel RP-1 11,500 Gal loaded in 4.5m @ 3,500 GPM

(8) Oxidizer LO_2 18,600 Gal loaded in 4m @ 5,500 GPM

(9) Empty Weight 25,000 lbs.

(10) Fueled Weight 267,000 lbs.

(11) Mass-Ratio of 10 to 1

(12) Thrust 368,000 lbs.

Atlas 34D (58-2205) * 564th SMS LSB A-3

Start of Countdown T-15

Boil-Off Valve Closed T-:32s

Lift-Off T+3s after 95% Thrust

Booster Engine Cutoff (BECO) T+2

Booster Section Jettison @ T+2:3s

Sustainer Engine Cutoff (SECO) T+5

Vernier Engine Cutoff (VECO) T+5:17s

R/V Separation T+5:35s

Apogee T+18

Over Target T+30

Atlas 71D (58-7066) on LC-11

13-OCT-60

Atlas 71D (58-7066) Suborbital

Convair Astronautics Assembly Building 5 * San Diego, CA

Convair Astronautics Assembly Building 5 * San Diego, CA

FE Warren AFB's 1st Atlas 34D (58-2205) at the Convair Astronautics San Diego, CA

Atlas 34D (58-2205), at Weight/Balance Station * 22-Sep-59

FE Warren AFB's 1st Atlas 34D (58-2205) at the Convair Astronautics San Diego, CA

28-Sep-59 * 1st Atlas 34D (58-2205) arriving in Wyoming a 5-day overland convoy from San Diego, CA

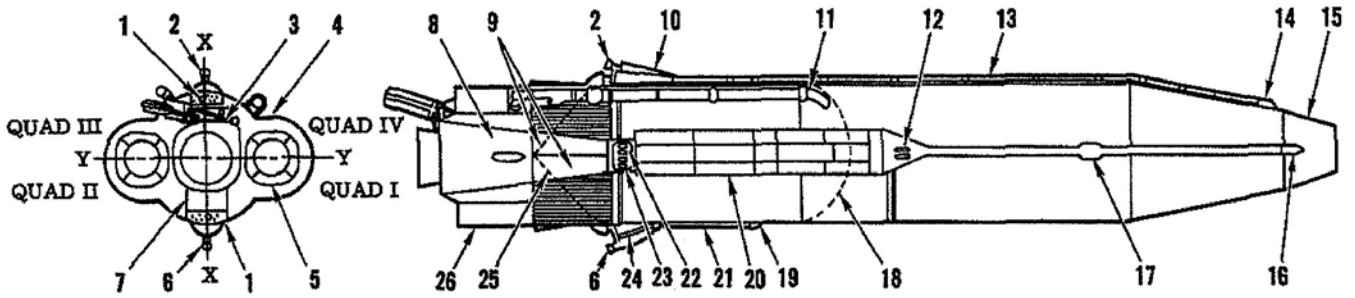
28-Sep-59 * 1st Atlas 34D in Cheyenne after a 5-day overland convoy from San Diego, CA

28-Sep-59 * 1st Atlas 34D (58-2204) arrived at Gate 2, FE Warren AFB, WY

3-Nov-59 * 1st Airlifted ICBM Atlas 35D (58-2206) from Miramar to Cheyenne Airport on C-133B Cargomaster

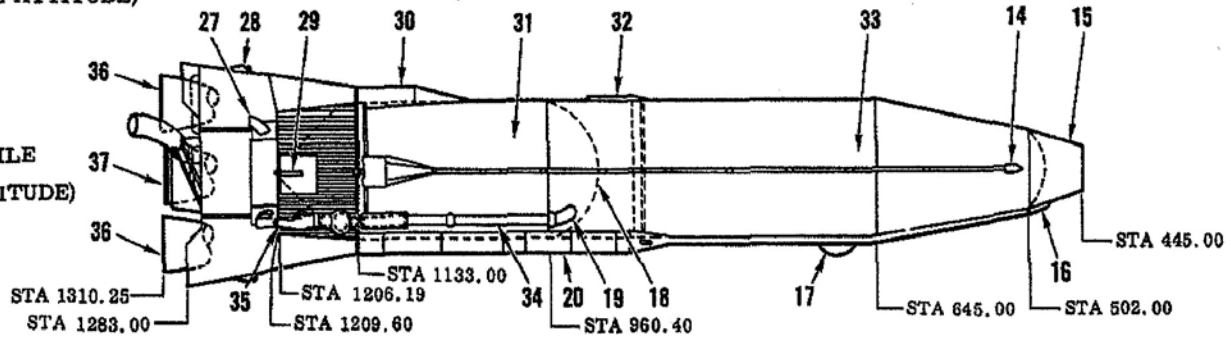
3-Nov-59 * Atlas 35D (58-2206) the second ICBM arrives at Gate 2, FE Warren AFB,WY

Atlas 38D (58-2209) being prepared for airlift to FE Warren AFB, WY * 10-Nov-59



C. REAR VIEW OF MISSILE
(GROUND HANDLING ATTITUDE)

A. SIDE VIEW OF MISSILE
(GROUND HANDLING ATTITUDE)

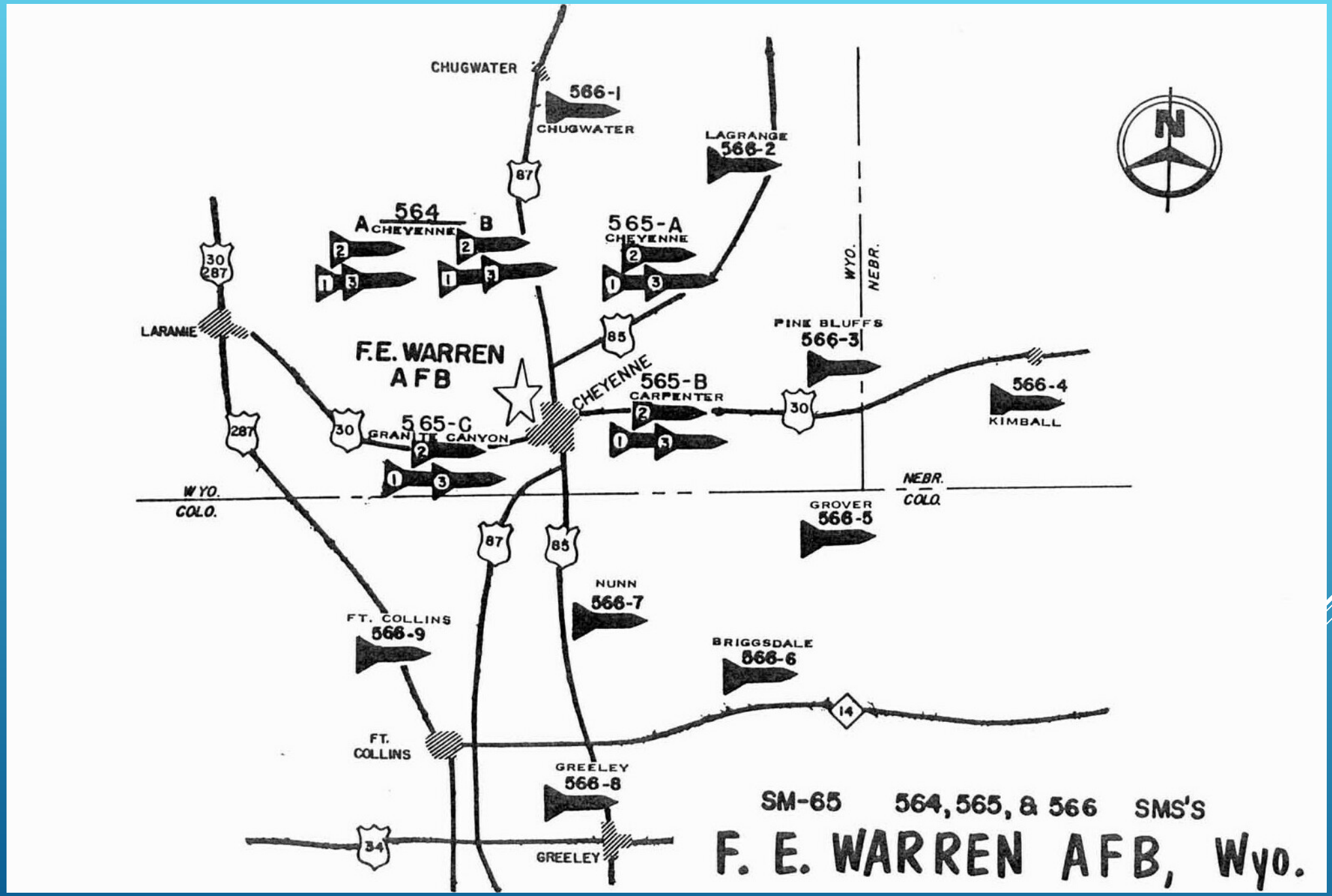


B. TOP VIEW OF MISSILE
(GROUND HANDLING ATTITUDE)

1 RISE-OFF DISCONNECT PANEL - PAINTED ALUMINUM ALLOY
2 NO. 1 VERNIER ENGINE
3 SUSTAINER ENGINE RADIATION BOOT - PAINTED FIBERGLASS CLOTH
4 BOOSTER HEAT RADIATION SHIELD - INCONEL-REFRASIL
5 BOOSTER ENGINE RADIATION BOOT - PAINTED FIBERGLASS CLOTH
6 NO. 2 VERNIER ENGINE
7 BOOSTER ACCESS DOOR - INCONEL-REFRASIL
8 AFT NACELLE - PAINTED FIBERGLASS
9 FORWARD NACELLE DOOR - PAINTED FIBERGLASS
10 NO. 1 VERNIER ENGINE FAIRING - PAINTED FIBERGLASS
11 OXIDIZER PRESSURE SUPPLY LINE ELBOW - CRES
12 RETARDING ROCKET BLOW OFF COVERS - CRES
13 OXIDIZER TANK PRESSURE SUPPLY LINE - CRES
14 OXIDIZER PRESSURE SUPPLY LINE ELBOW FAIRING - PAINTED FIBERGLASS
15 RE-ENTRY VEHICLE ADAPTER - PAINTED ALUMINUM ALLOY
16 CABLEWAY FAIRING - PAINTED FIBERGLASS
17 RATE-GYRO FAIRING - PAINTED FIBERGLASS
18 INTERMEDIATE BULKHEAD - CRES
19 FUEL TANK PRESSURE SUPPLY LINE ELBOW FAIRING - PAINTED FIBERGLASS
20 EQUIPMENT POD - ALUMINUM ALLOY
21 FUEL TANK PRESSURE SUPPLY LINE - CRES
22 UMBILICAL RECEPTACLES - PAINTED ALUMINUM ALLOY
23 EQUIPMENT POD AFT FAIRING - PAINTED FIBERGLASS
24 NO. 2 VERNIER ENGINE FAIRING - PAINTED FIBERGLASS
25 FUEL TANK AFT BULKHEAD - CRES
26 BOOSTER SECTION FAIRING - PAINTED FIBERGLASS
27 FUEL FILL-AND-DRAIN CONNECTOR - ANODIZED ALUMINUM ALLOY
28 AFT NACELLE SHOCK ABSORBER FITTING - PAINTED ALUMINUM ALLOY
29 MISSILE BALANCE FITTING - PAINTED ALUMINUM ALLOY
30 STUB POD - ALUMINUM ALLOY
31 FUEL TANK - CRES
32 ANTENNA (BUBBLE POD) FAIRING - PAINTED FIBERGLASS
33 OXIDIZER TANK - CRES
34 MAIN OXIDIZER LINE - CRES
35 OXIDIZER FILL-AND-DRAIN CONNECTOR - ANODIZED ALUMINUM ALLOY
36 BOOSTER ENGINE THRUST CHAMBER
37 SUSTAINER ENGINE THRUST CHAMBER

40.42-2B

Figure 2-1. SM-65D Missile Airframe Components, General Arrangement and Composition

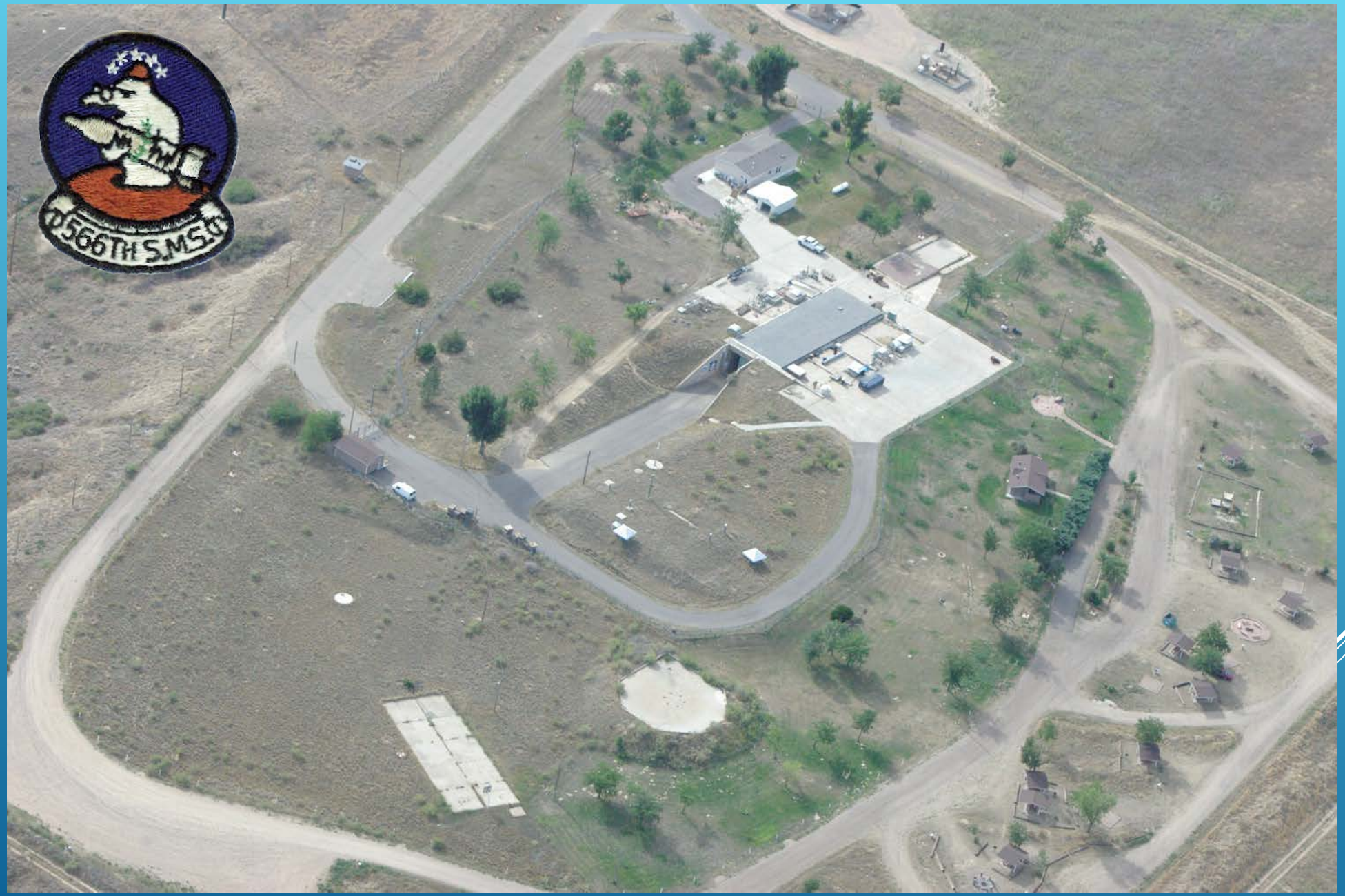

CHUGWATER
566-1
CHUGWATER
LAGRANGE
566-2
87
564
A CHEYENNE B
565-A
CHEYENNE
30
287
LARAMIE
F.E. WARREN
AFB
85
WYO.
NEBR.
PINE BLUFFS
566-3
CHEYENNE
565-B
CARPENTER
566-4
KIMBALL
565-C
GRANITE CANYON
287
30
WYO.
COLO.
NEBR.
COLO.
GROVER
566-5
87
85
NUNN
566-7
FT. COLLINS
566-9
BRIGGSDALE
566-6
14
FT.
COLLINS
GREELEY
566-8
34
GREELEY
SM-65 564, 565, & 566 SMS'S
F. E. WARREN AFB, Wyo.

564th Strategic Missile Squadron Site A & B * Operational 8-Aug-60 * Off Alert 15-May-64

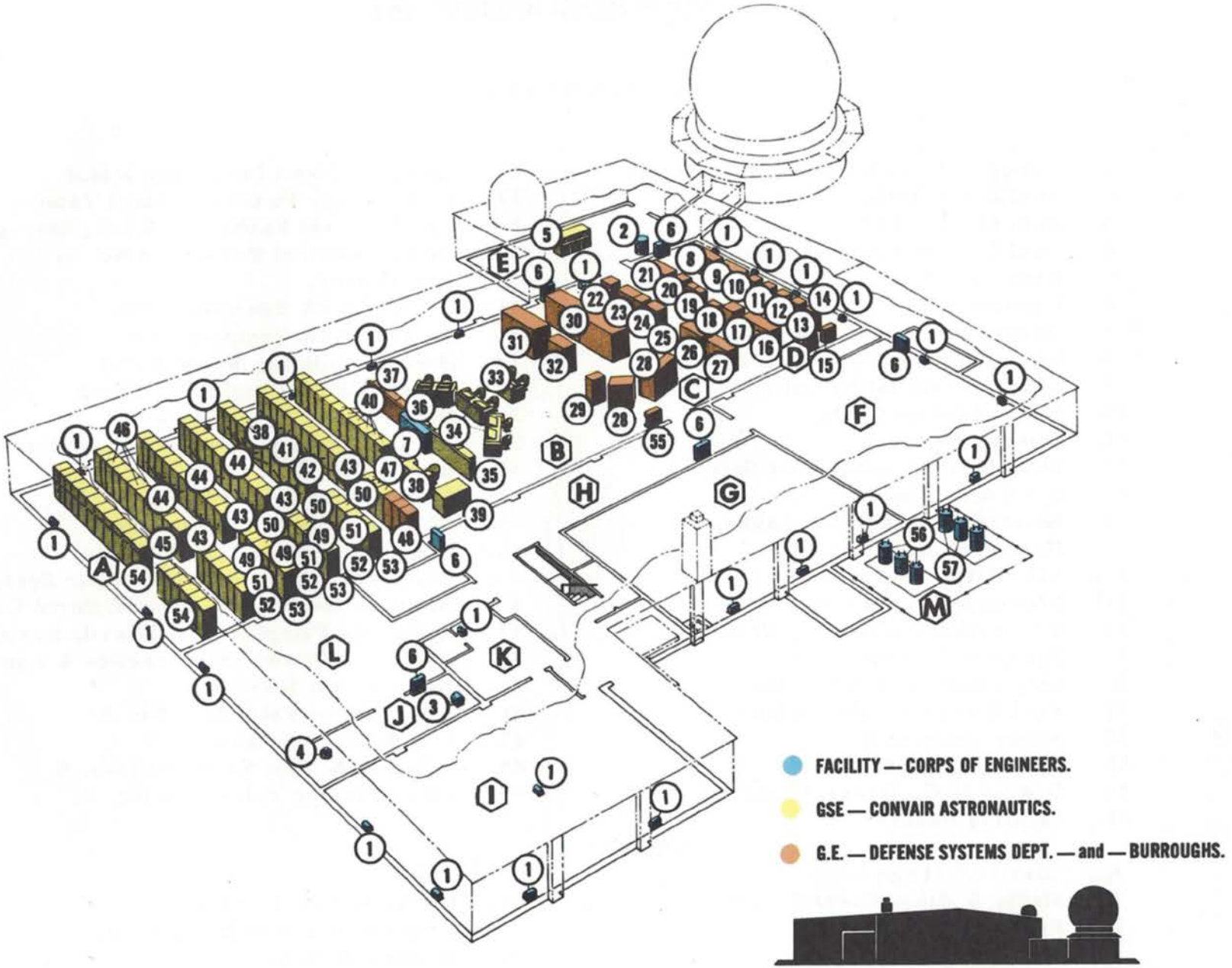
Major McGarry
565th SMS Site C
Commander
“Fort McGarry”

565th Strategic Missile Squadron * Operational 4-Mar-61 * Off Alert 1-Jul-64

549th Strategic Missile Squadron Offutt AFM, NE * Operational 30-Mar-61 * Off Alert 1-Oct-64



566th Strategic Missile Squadron * Operational 12-Dec-61 * Off Alert 3-Jan-65



FACILITY & G.S. EQUIPMENT LAYOUT-LAUNCH OPERATIONS BUILDING 1st FLOOR

LAUNCH OPERATIONS BUILDING (Type A)

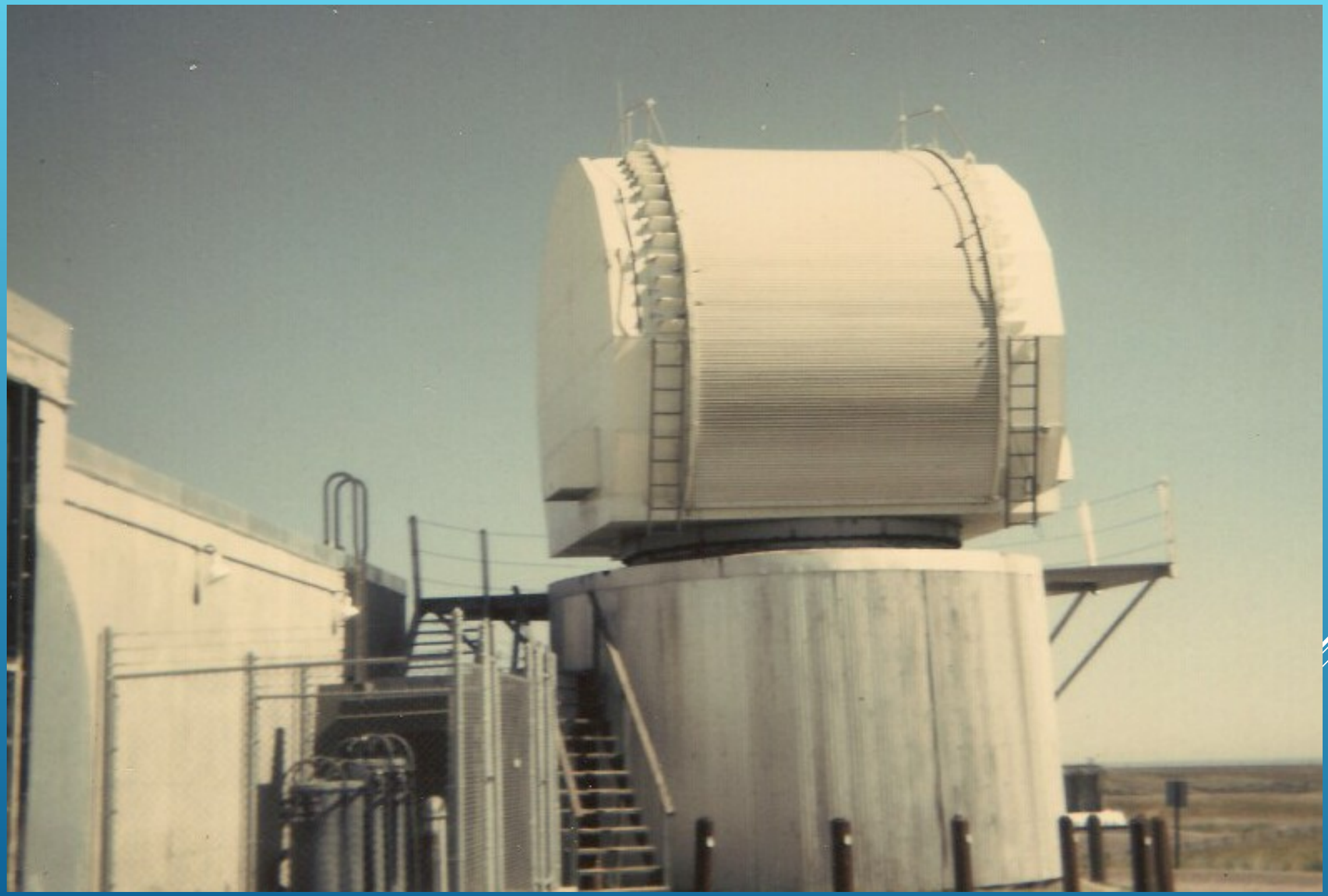
EQUIPMENT KEY.

1. Fan Motor of A/C Unit.
2. Hot Water Heater.
3. Power Roof Ventilator.
4. Cold Water Circulating Pump.
5. Status Recorder.
6. Lighting&Power Distrib. Panel.
7. Power Panel.
8. Track Transmitter.
9. Track Servo Cabinet.
10. Track Translator.
11. Track Range Angle.
12. Track Recorder.
13. Track Data Angle.
14. Track Checkout Transmitter.
15. Rate Junction Box.
16. Rate Power Distribution Unit.
17. Rate Signal Junction Box.
18. Rate Recorder.
19. Track Recorder.
20. Track Signal Junction Box.
21. Track Power Distrib. Unit.
22. Lo-Rate Power Amplifier.
23. Rate Driver.
24. Hi-Rate Power Amplifier.
25. Rate Local Oscillator.
26. Rate Doppler Simulator.
27. Rate Data Extractor.
28. Guidance System Console.
29. Printer.
30. Computer.
31. Computer Simulator.
32. Range Oscillator Test Set.
33. Launch Officer Control Console.
34. Operator & Analyst Console.
35. Standby Status Panel.
36. Facility Remote Control& Monitor.
37. Guidance Monitor.
38. APChE.
39. Card Storage Rack.
40. Time & Events Recorder.
41. Rocket Engine Simulator.
42. Guidance Checkout Test Set.
43. Checkout Switching Unit.
44. Cable Distribution Unit.
45. Key Station.
46. Power Distribution Unit.
47. Checkout Fault Location Unit.
48. Re-Entry Vehicle Pre-Launch Monitor and Control Unit.
49. Control Sequence Unit.
50. Signal Verification Unit.
51. Sequencer Unit.
52. Pressure Measuring Unit.
53. Time Sequencer Unit.
54. Terminal Cabinet.
55. Guidance Confidence Signal Cabinet.
56. 100 KVA 440V Transformers.
57. 100 KVA 208V Transformers.

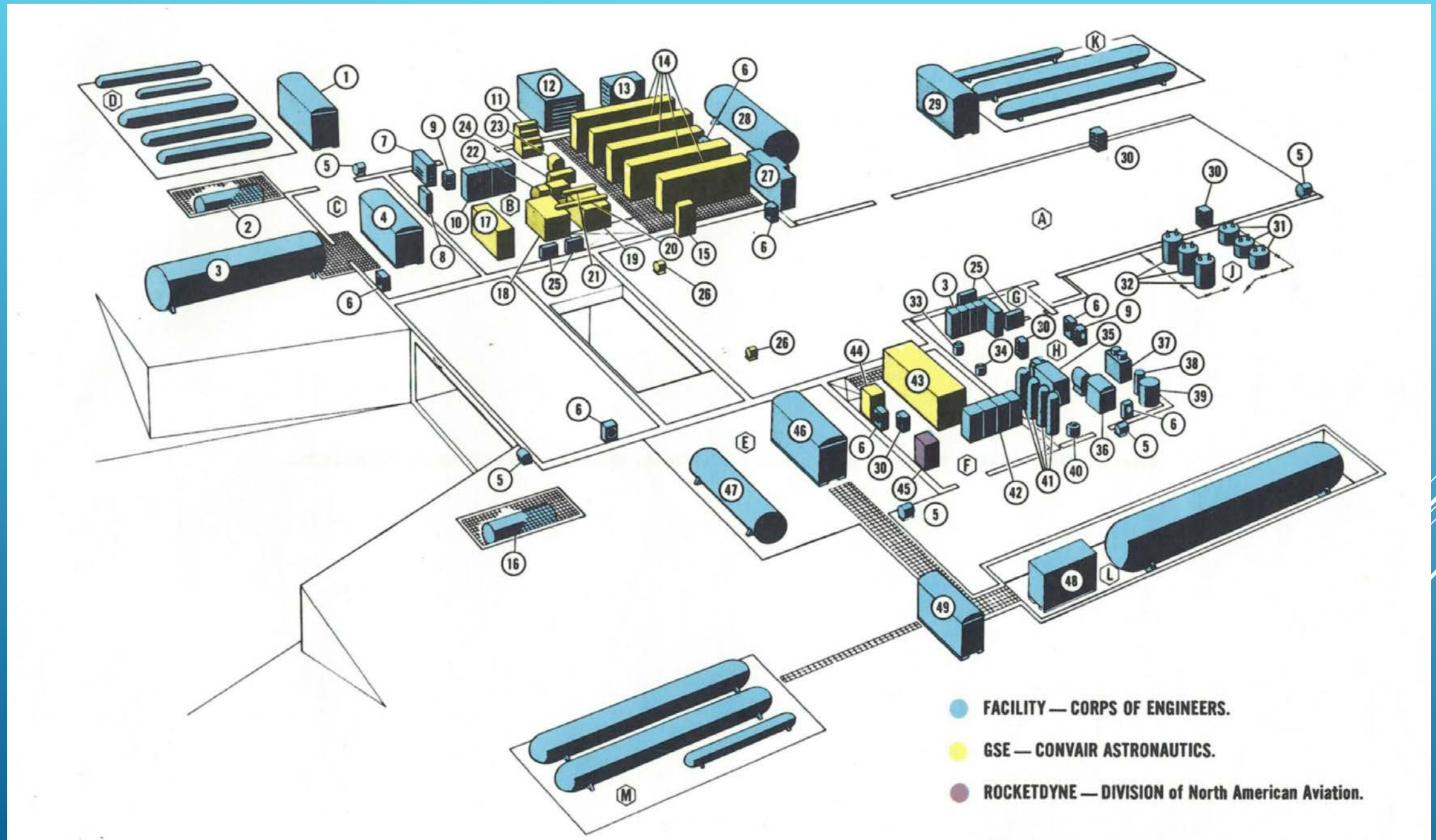
AREA KEY.

A. Launch Control & Checkout. Equipment Room.
B. Launch Operations Area.
C. Computer Area.
D. Guidance Operations.
E. Control Rate Antenna.
F. Communications Room.
G. Spares Storage Room.
H. Corridor.
I. Dormitory.
J. Kitchen.
K. Toilet.
L. Messing Room.
M. 440 208V Substation.

564th Strategic Missile Squadron * Site A Launch Operation Building



Launch Operations Building Radio-Inertial Guidance Antenna



LAUNCH AND SERVICE BUILDING EQUIPMENT LAYOUT

EQUIPMENT KEY.

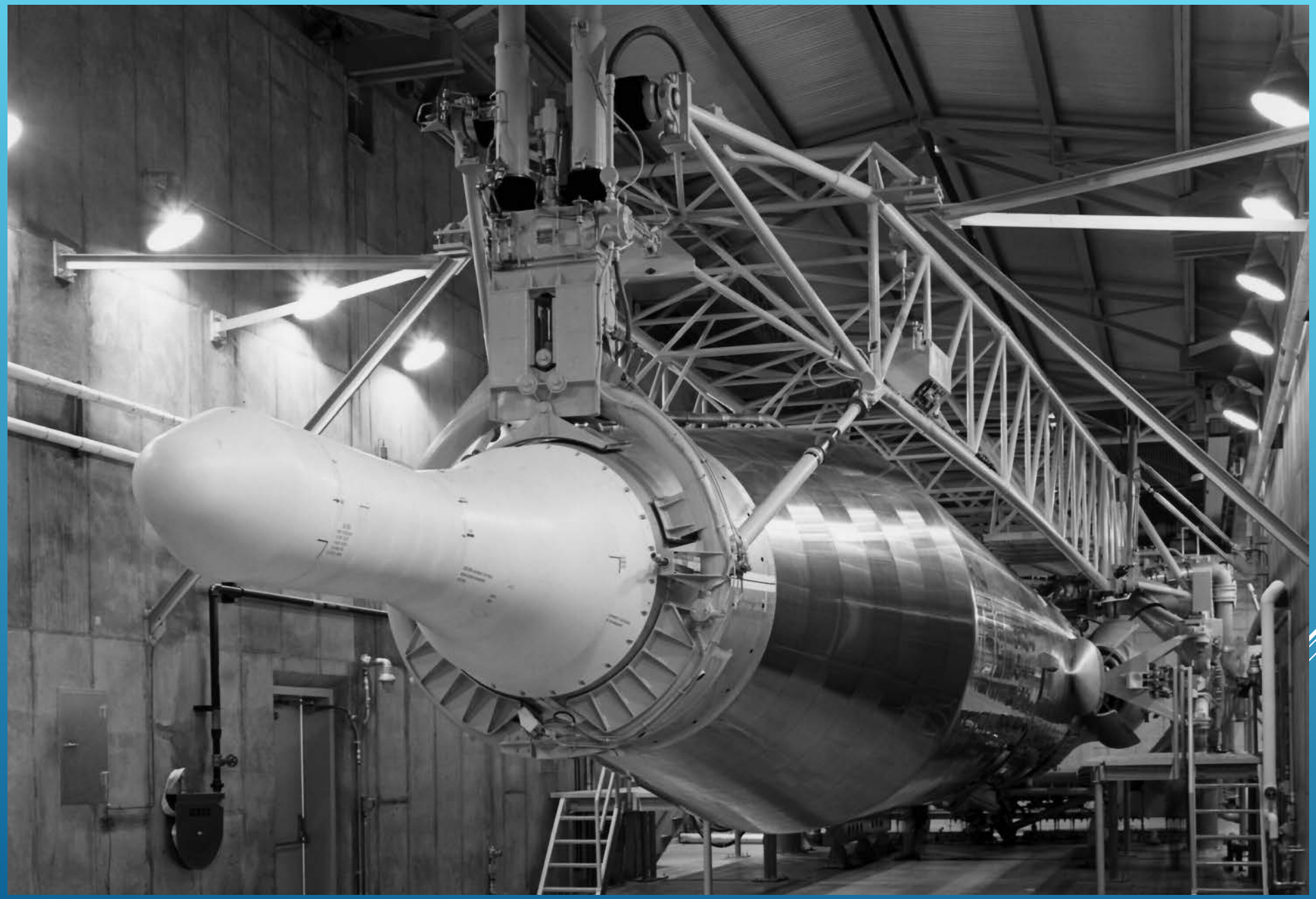
1. Nitrogen Transfer Valve Skid No. 1.
2. Fuel Catch Tank.
3. Fuel Storage Tank.
4. Fuel Control Valve Skid No. 2.
5. Door Motor.
6. Exhaust Fan.
7. Rack-Air Conditioning Unit.
8. Firm Alarm & Exit Light Panel.
9. Heating-Ventilating Unit.
10. Motor Control Center.
11. Standby Battery.
12. Missile Air Conditioning Unit.
13. Air Cooled Condenser.
14. Electronic Equipment Racks.
15. Nitrogen Charge Panel.
16. LO_2 Catch Tank.
17. Nitrogen Control Unit.
18. Pressurization Control Unit.
19. Dynamic Checkout Unit.
20. LO_2 Ullage Simulation Unit.
21. Fuel Ullage Simulation Unit.
22. Motor-Generator.
23. Battery Charger.
24. Ground D. C. Power Supply.
25. Lighting Panels.
26. Launcher Head Positioner Motor.
27. LN_2 Storage Panel & Control Valves.
28. LN_2/He Heat Exchanger & LN_2 Storage Tank.
29. Helium Control Valve Skid No. 5.
30. Unit Heater.
31. 3 37.5 KVA Transformers.
32. 3 100 KVA Transformers.
33. HWC Circulating Water Pump.
34. Reheat Circulating Water Pump.
35. Boiler.
36. Air Compressor-Control Air System.
37. Dryer-Control Air System.
38. Filter-Control Air System.
39. Receiver-Control Air System.
40. Pneumatic Water System Pump.
41. Backup GN_2 Storage-Control Air System.
42. Erection Mechanism Motor Control Center.
43. Hydraulic Pumping Unit-Missile Systems.
44. Hydraulic Power Unit-Erection & Launcher.
45. Service Unit-Solvent.
46. LO_2 Control Valve Skid No. 8.
47. LO_2 Subcooler Tank.
48. LO_2 Fill & Vent Valve Skid No. 9.
49. LO_2 Transfer Valve Skid No. 7.

AREA KEY.

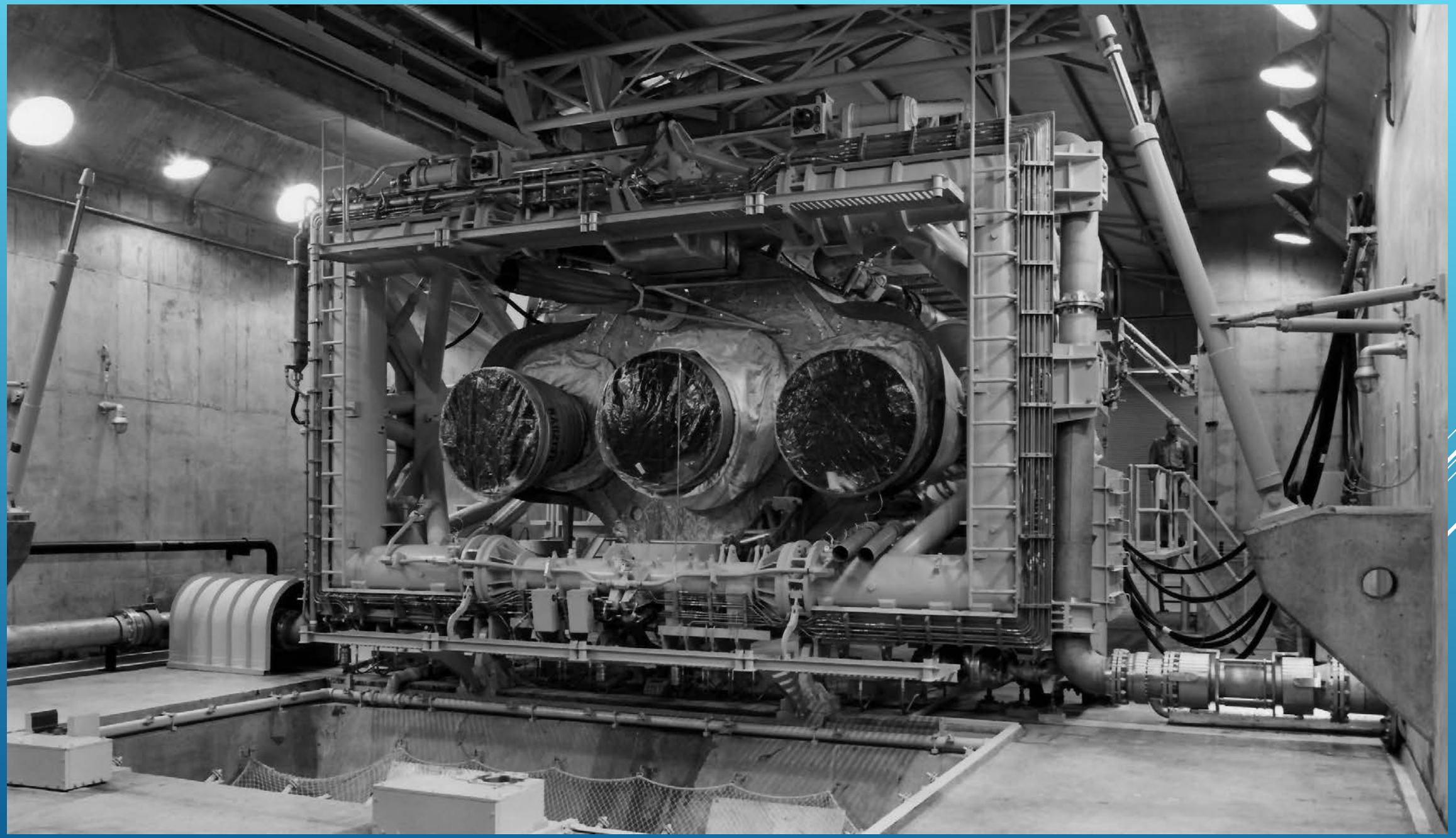
A. Missile Storage Area.
B. Mech. & Elec. Control Room.
C. Fuel Transfer Area.
D. Nitrogen Storage.
E. LO_2 Transfer Area.
F. Equipment Room.
G. Toilet.
H. Utility & Boiler Room.
J. Transformer Substation Area.
K. Helium Storage.
L. LO_2 Storage.
M. Oxygen Storage.

Launch and Service Building (LSB)

Atlas 34D (58-2204) * 564th SMS LSB A-3 * FE Warren AFB, WY



Launch and Service Building Missile Bay

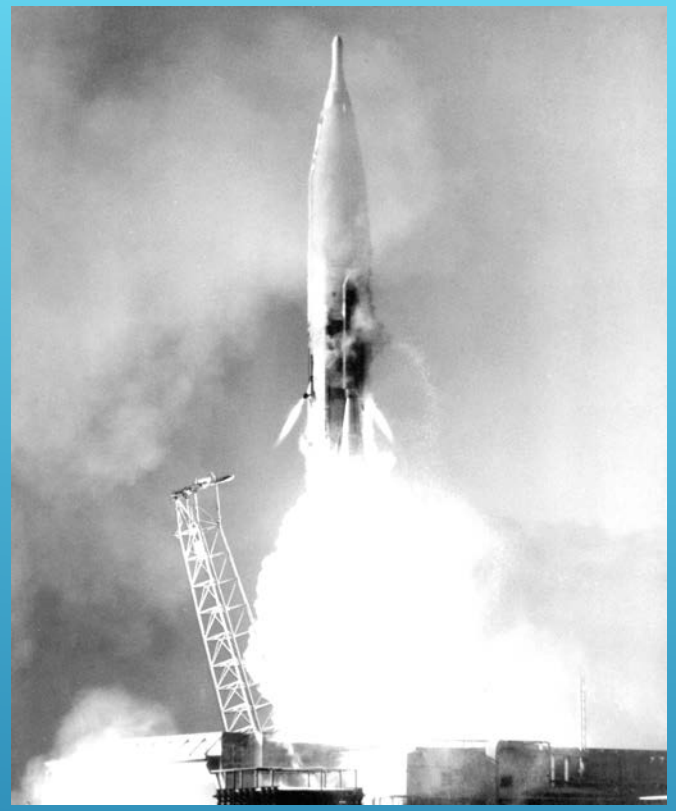


Launch and Service Building Missile Bay

Atlas 72D (58-7067) Dual Propellant Loading (DPL) Exercise

Presidential Launch

Major Simonson presenting the Guided Missile Insignia to President Kennedy after the launch of Atlas 134D (60-5476) on 23-Mar-62 @ VAFB, CA



UNCLASSIFIED

~~SECRET~~ ~~CONFIDENTIAL~~

ATLAS "CANNONBALL FLYER"

MISSILE: 127D (S/N 60-5469)

LAUNCHED: 1731:48.7 hours PDT; 11 May 1962; Pad 576-B-3

COUNTDOWN HISTORY: Terminal count started 6 minutes behind schedule at 1331 PDT, delay being attributed to confusion over termination of "minimum radiation period" between STRATAD Command Post and PMR. All systems were operating normally through fuel and LOX complete except for failure indications during loop tests with operator console readouts of Vernier #1 yaw and Sustainer yaw gimbals "red" and programmer reset "red". A second loop test was performed with identical results. LN HE was stopped and vented and LOX drained to allow red team access to LSB for trouble shooting. After 4 more unsuccessful loop tests and considerable trouble shooting at LSB, the faulting condition was traced to instrumentation wiring that had been installed during the autopilot shake test at R-40 and not subsequently removed. These wires were disconnected and the seventh loop test proved good. Terminal count was reinitiated at approximately T-15 at 1600 with LOX loading. The 99.8% LOX probe failed (console indicated wetted probe) and shut down LOX rapid and fine load simultaneously with wetting of 90% LOX probe. LOX was drained and checklist # 32 was complied with in re-wiring the AGE to the 100% Acoustica spare probe. LN2 was reserviced during this technical hold. The count was again picked up at approximately T-15 at 1716 with lift-off occurring at 1731 PDT. Technical holds totalled 3½ hours.

FLIGHT PERFORMANCE:

EVENT	NOMINAL (SECONDS)	ACTUAL
BECO	138.7	140.7
JETTISON	141.7	143.8
SECO	272.6	279.8
VECO	289.4	295.15
PRE-ARM	VECO + 12	309.85
R/V SEPARATION	SECO + 35	315.1
TIME OF FLIGHT	1655	1614

MOD III guidance acquired solid lock in the first cube at 81.9 seconds, 15 N. miles range, 0.5° high and 0.5° left of cube center. GERSIS beacon was not aboard for this mission. The lower-than-nominal trajectory explains the late BECO and short time-of-flight. Sustainer thrust measured some 5000# below nominal and caused the late SECO.

IMPACT DATA:

	SHORT	RIGHT	RADIAL
MOD III IP (N.Miles)	0.6	0.58	0.82

REMARKS: This 10th Atlas D CAT III launch was directed by MCCC Maj Flaugher and crew of 565th SMS, Warren AFB. Pad damage was very minimum and rehab was complete at 1200 hrs, 14 May (less than 3 calendar days) except for one umbilical not received in the rehab kit.

Calculated propellant residuals of 1882# LOX and 1347# fuel would provide 2433 N. Miles additional range for total ~~6618~~ N. Miles range along ~~Primeud~~ target azimuth.

DOWNGRADE AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

~~SECRET~~

UNCLASSIFIED

CONFIDENTIAL

8595-63-0666

5 Aug 1963

Operation “ Cannonball Flyer” Atlas 127D (60-5469) Vandenberg AFB CA 11-May-1962

Operation Tall Tree

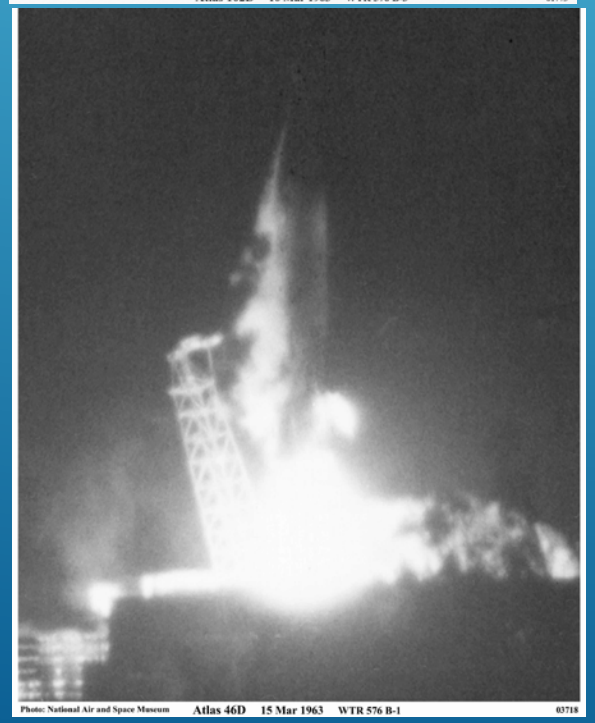
10-Mar-63 * Atlas 102D (TT III)
Pitched 340d at 3500ft
Self Destructed

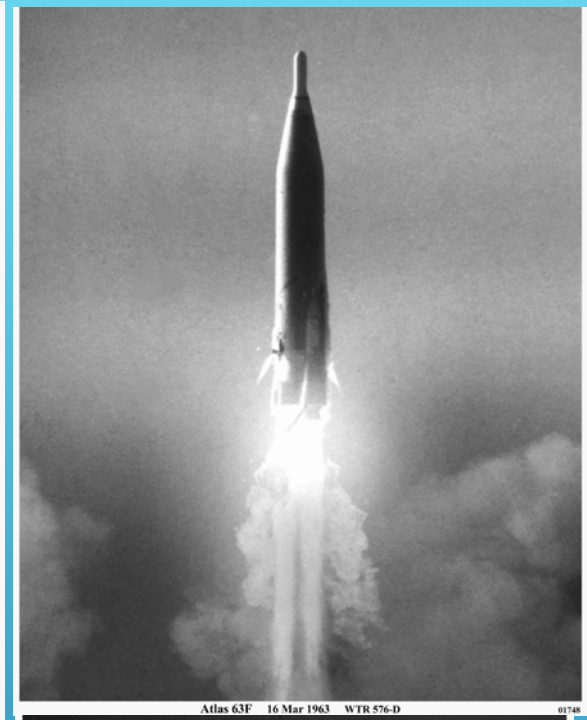
12-Mar-63 * Atlas 64D (TT II)
Success 4386nm

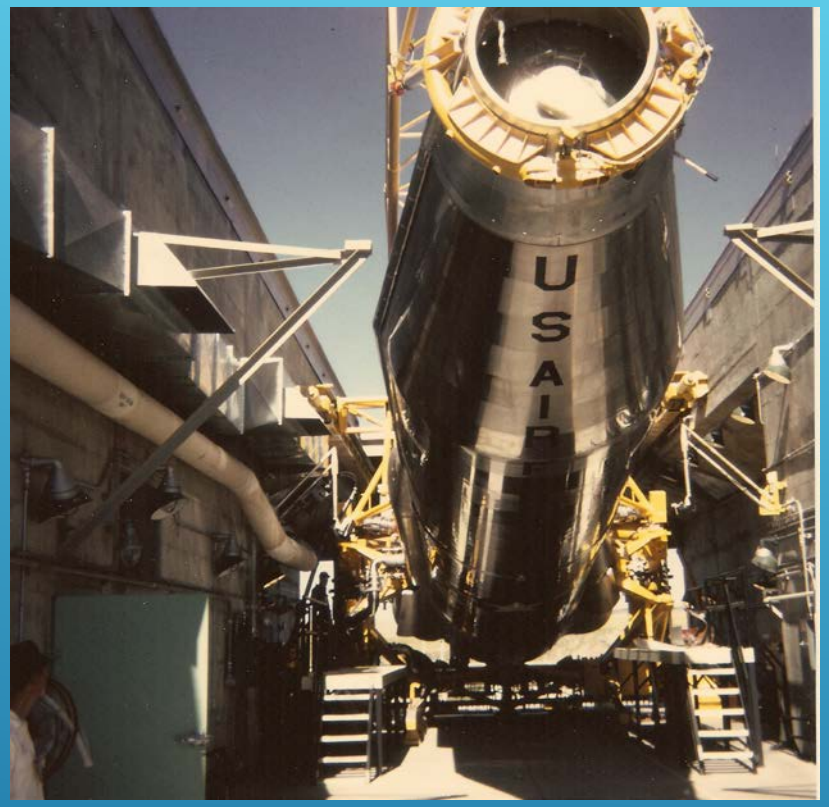
15-Mar-63 * Atlas 46D (TT I)
Failure impact 500nm downrange

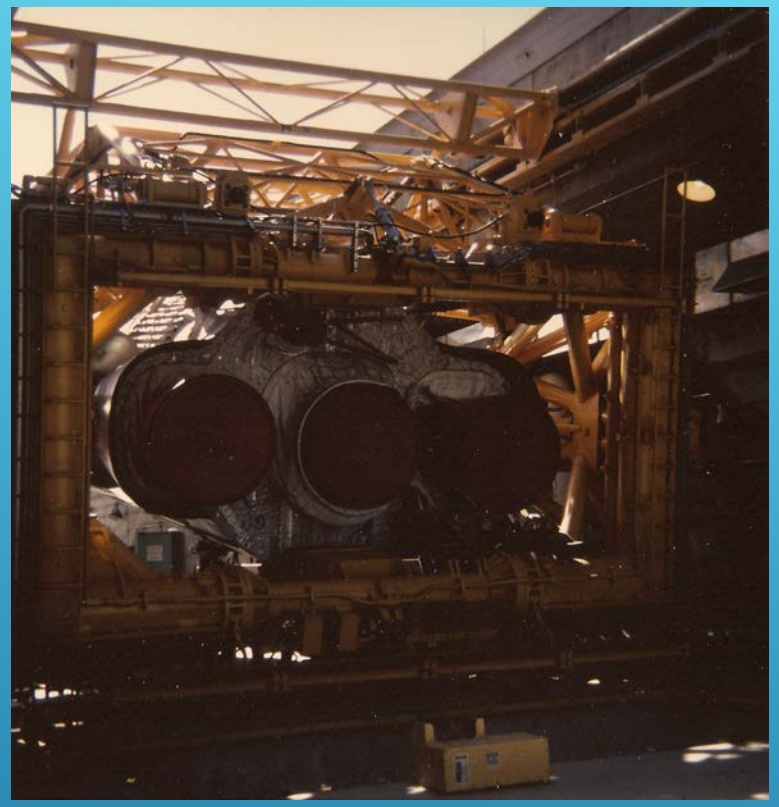
16-Mar-63 * Atlas 63F (TT V)
Success 4386nm
RV Self Destructed at 50,000'

24-Mar-63 * Atlas 52F (TT IV)
Failure Self Destruct at T+90s

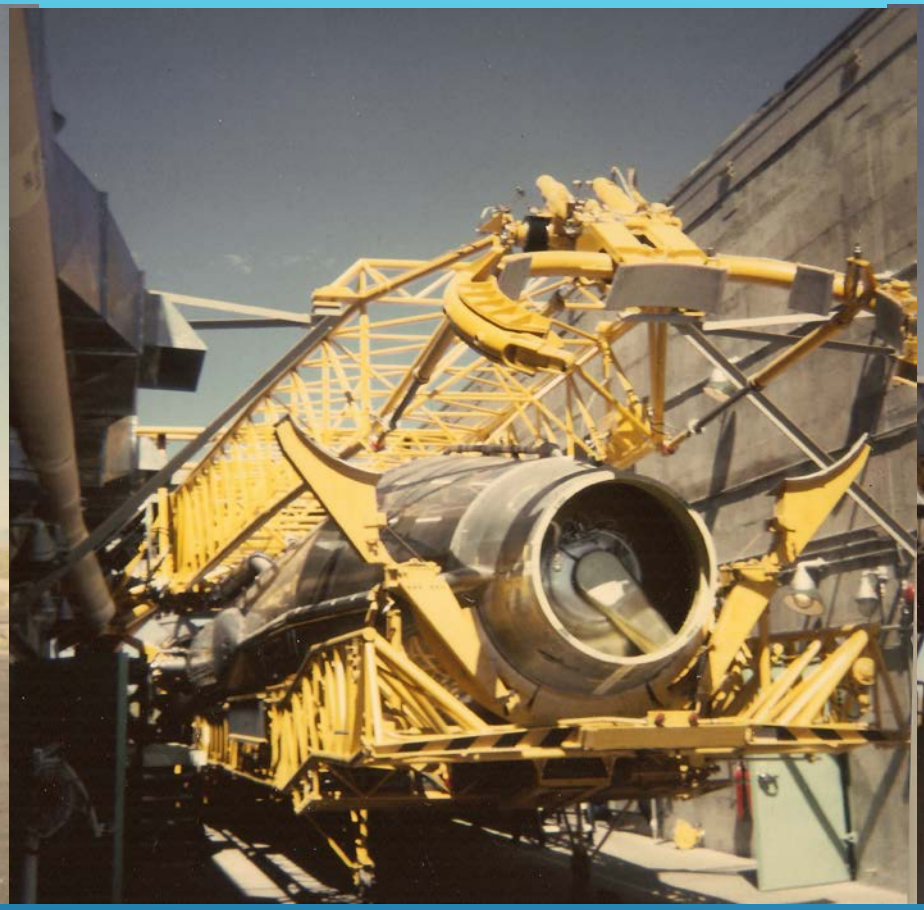
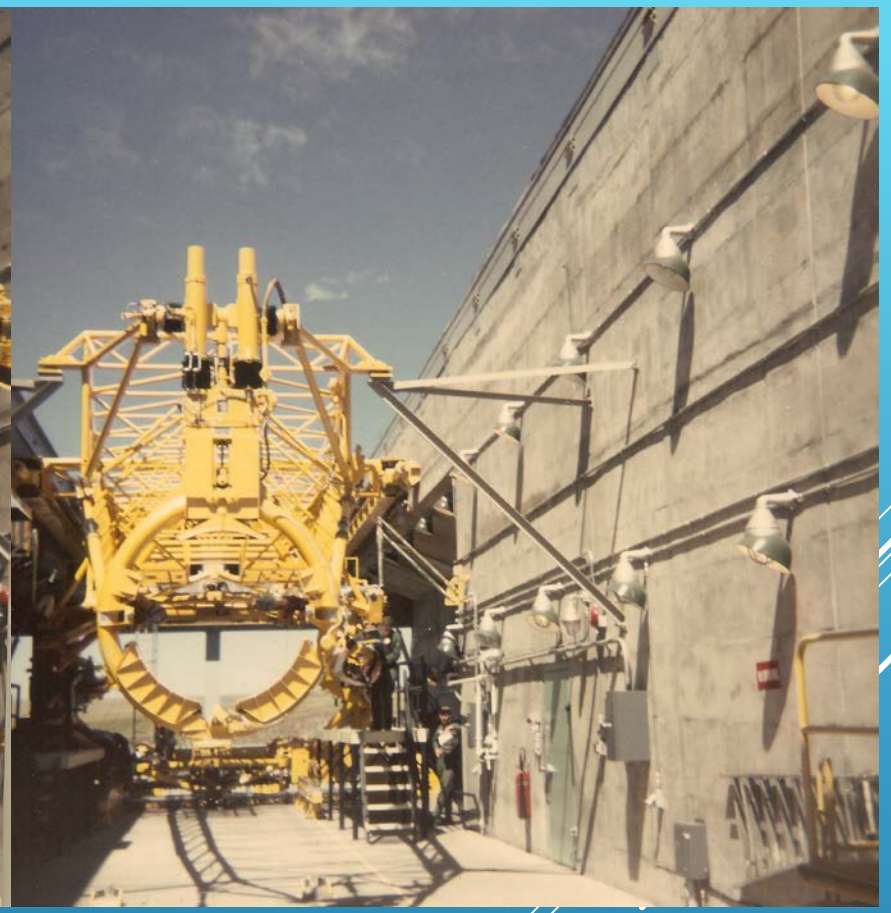






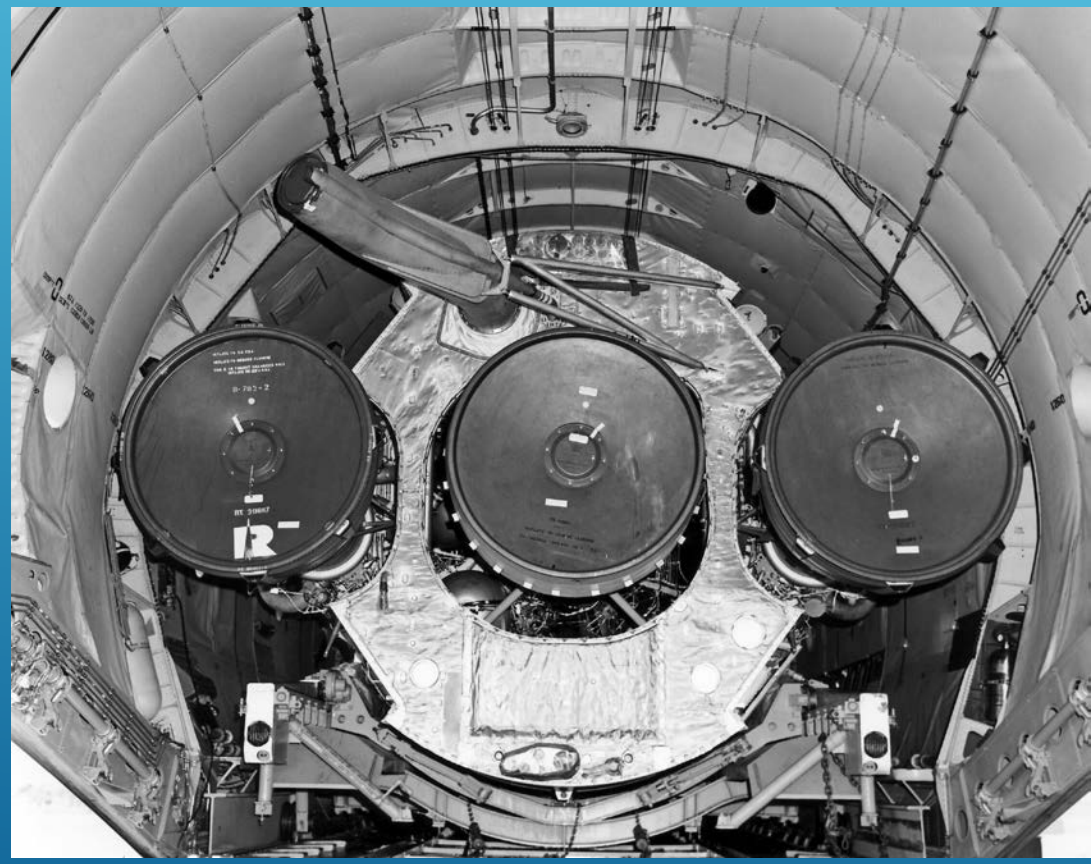


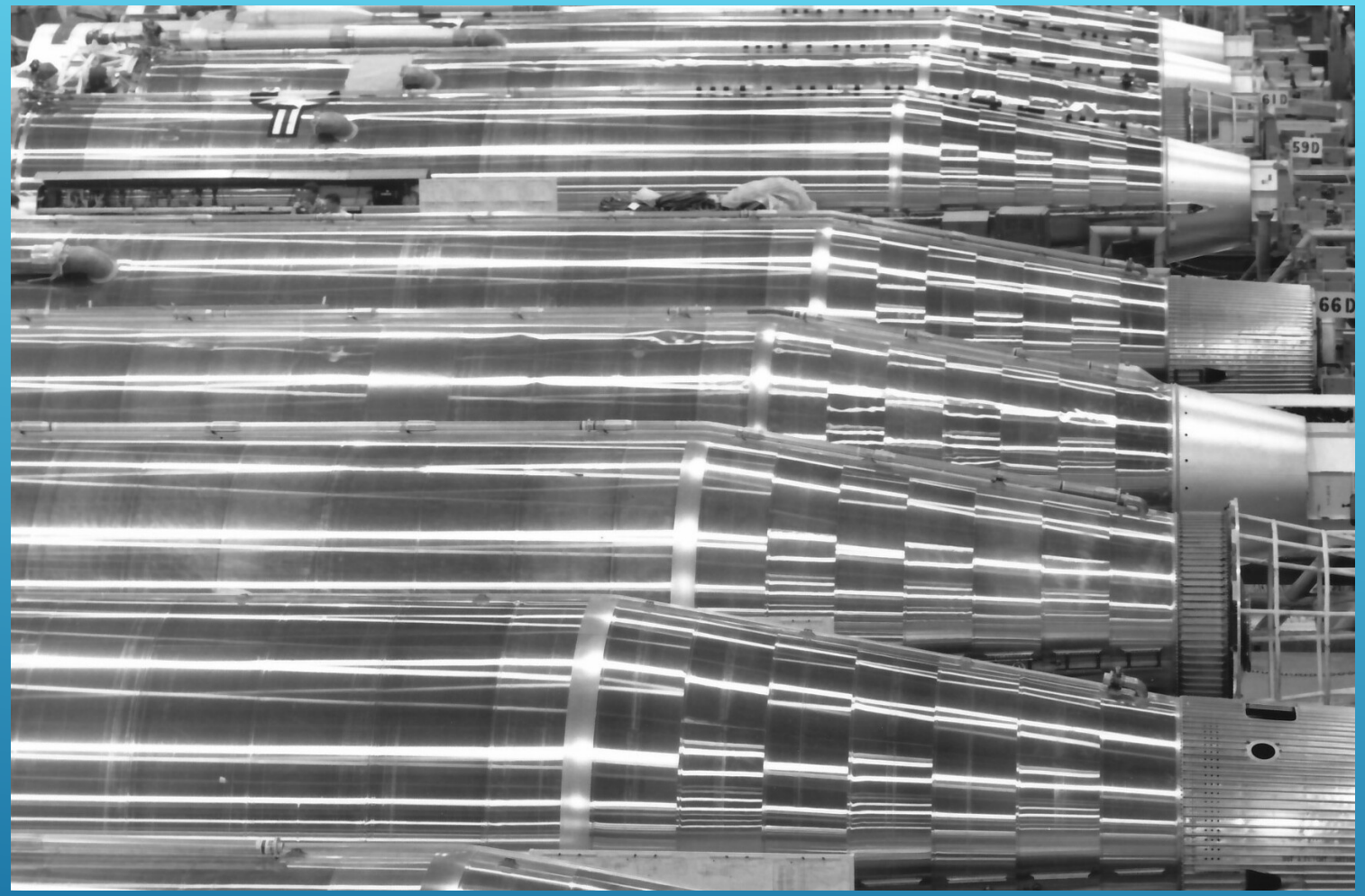
MARCH 4, 1961 * 565C ACCEPTED BY STRATEGIC AIR COMMAND (SAC)
JULY 1, 1964 * 565C RELIEVED OF EMERGENCY WAR ORDERS
JULY 27,1964 * 565C LAST MISSILES REMOVED

LAST MISSILE ATLAS 59D (58-2230) REMOVED FROM LAUNCH & SERVICE BUILDING C-2

Atlas ICBMs airlifted by C-133B Cargomaster





ATLAS 59D (58-2230) GD/A FACTORY SAN DIEGO CA

ATLAS 59D VANDENBERG AFB, CA

Decommissioned Atlas ICBMs in storage at San Bernardino Air Material Area (SBAMA) Norton AFB, CA

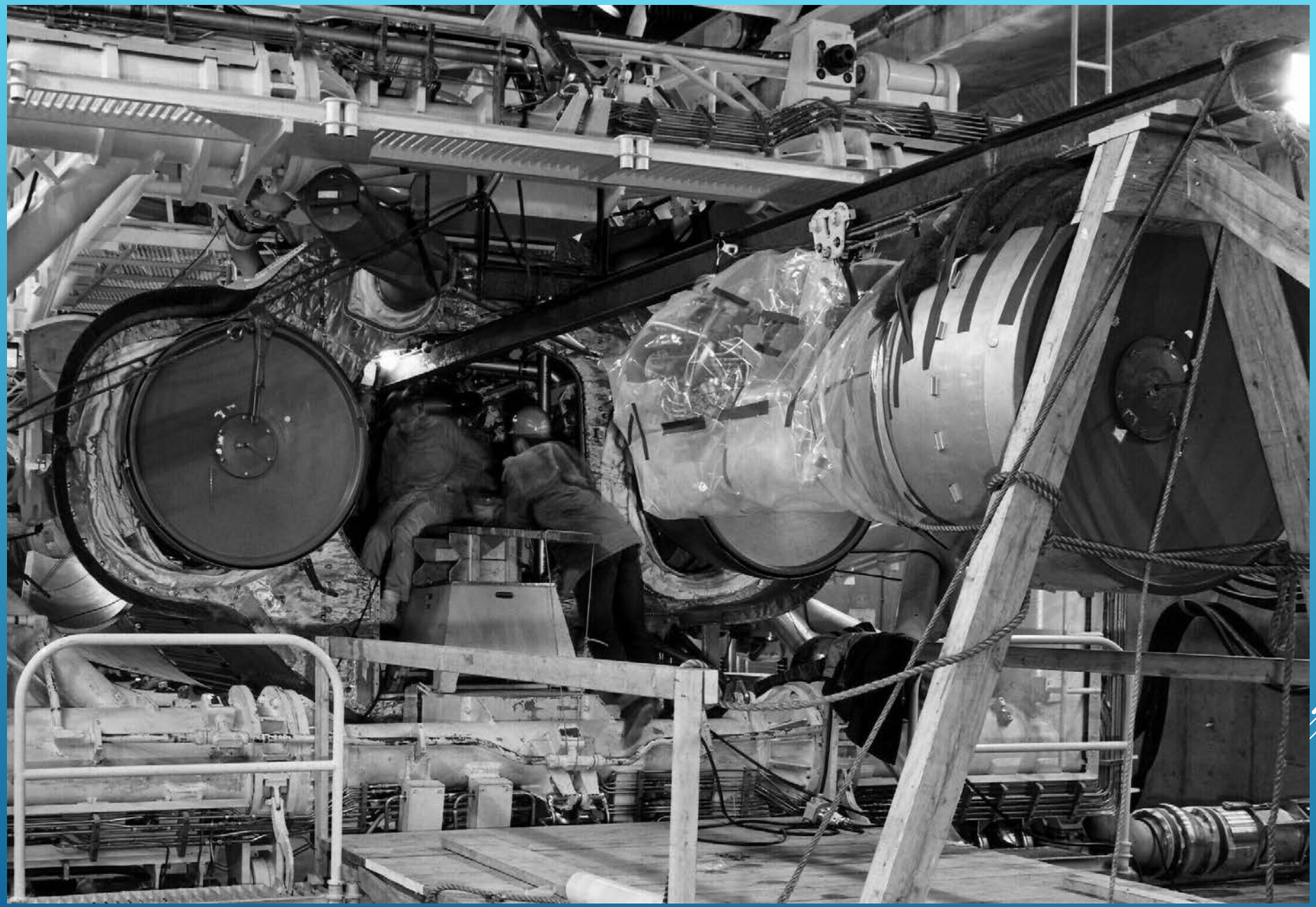
Decommissioned Atlas ICBMs at San Bernardino Air Material Area (SBAMA) Norton AFB, CA

FE Warren's 1st Atlas 34D arrived 25-Sep-58 launched 5-Oct-65 "Operation Seething City" the Earth orbit of OV1-2

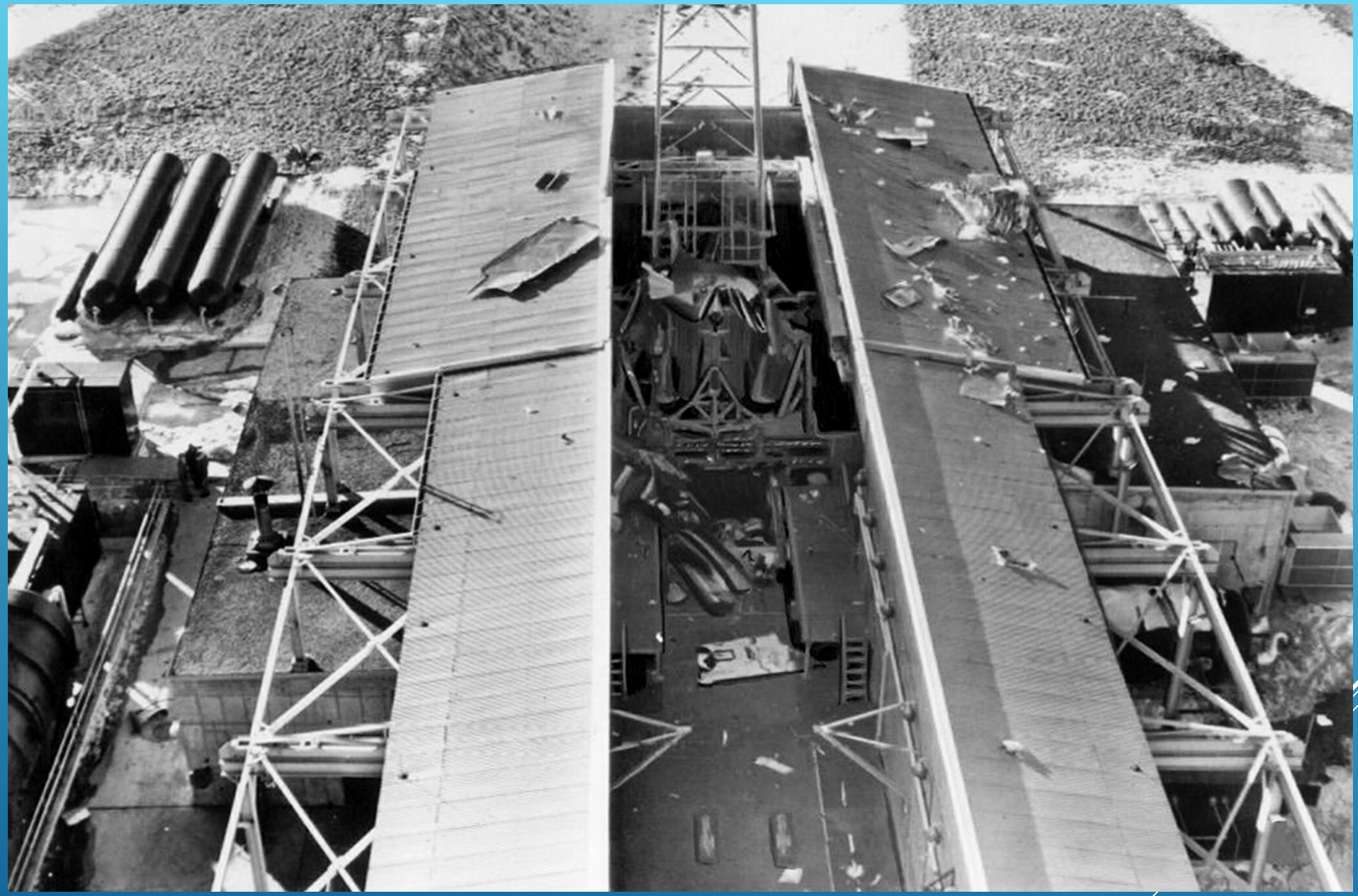
FE Warren's Atlas 53E arrived 5-Jul-61 launched 29-Nov-91 500th Atlas launched

FE Warren's last Atlas 34E that arrived 12-Apr-61 was launched from Vandenberg, AFB 9-Aug-93

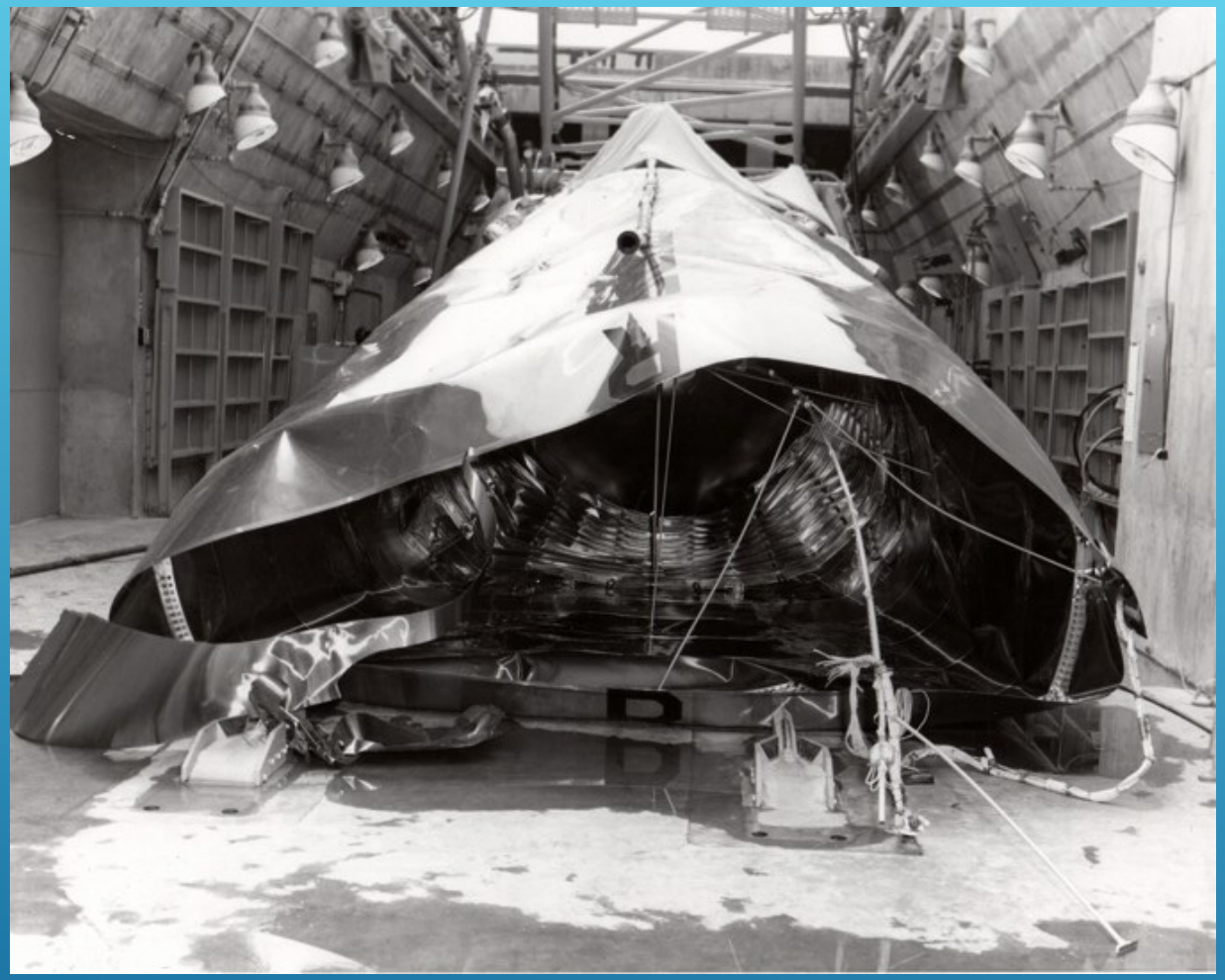
Atlas 69D (58-7064) * 549th SMS LSB A-2 * Mead , NE
3000 PSI Helium line in Booster section ruptured causing LO2 Tank depressurization.



Atlas 94D (58-7089) * 549th SMS LSB-C-3 *Council Bluff, ID
Sustainer engine removed in LSB to repair reversal of intermediate bulkhead.



Atlas 78D (58-7073) * 549th SMS LSB A-1 * Mead, NE
Lag in pressure sensing at the PCU resulting in over pressurization of the missile fuel tank.



Atlas 47E (60-5505) * 566th SMS Site-7 * Nunn, CO
Missile dropped during troubleshooting of erection system.

FE Warren AFB, WY
July 1964

FE Warren AFB, WY
July 2014