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TITLE

C-141A ENGINEERING FLIGHT TEST RESULTS
OF THE AERIAL DELIVERY SYSTEM TESTS

SUBMITTED UNDER

MODEL C-141A REFERENCE

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ABSTRACT

Aerial delivery systems tests were accomplished with the C-141A, AF63-8077 (LAC 6008), at the Naval Air Facility, El Centro, California. These tests consisted of personnel delivery drops (dummy drops), extraction line length tests, extraction parachute tow tests, single package cargo drops, and multiple package cargo drops. Qualitative evaluations, airplane response parameters, and airplane loads obtained during these tests are contained in this report.

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SUMMARY

Aerial Delivery System Tests were accomplished in accordance with the requirements of Reference (1) with the C-141A, AF63-8077 (LAC 6008), at the Naval Air Facility, El Centro, California, from 22 February 1965 to 4 October 1965. Personnel delivery capabilities, extraction system capabilities, and airplane capabilities were within the scope of the test program. Airplane response parameters, and airplane flight loads measured during these tests are contained in this report.

Personnel delivery capabilities were demonstrated up to 200 KCAS for the simultaneous exit from the cargo ramp with the paratroop doors closed. Simultaneous exit from the paratroop doors and cargo ramp was demonstrated to be not feasible. Dummy retrievals were demonstrated at 130 KCAS from the paratroop doors only, and from the cargo ramp only. The dummy retrieval tests from the cargo ramp indicated a live subject would have been seriously injured, and further evaluation utilizing various pilot techniques, configuration changes, and retrieval devices is recommended.

Extraction system capabilities were shown to be deficient during the test program. The 15'D_o and the 22'D_o standard ring slot extraction parachutes were demonstrated to be satisfactory up to 150 KCAS. However, the test results indicated that the 28'D_o standard ring slot extraction parachute was not safe for use above 140 KCAS. This resulted

in a maximum drop weight restriction of 16,000 pounds over the maximum speed range (130 KCAS to 150 KCAS). Drop weights up to 25,000 pounds could be considered at 140 KCAS employing the $28'D_o$ extraction parachute. The non-standard $32'D_o$ fist ribbon and $24'D_o$ reinforced ring slot extraction parachutes were the only parachutes demonstrated to have capabilities in the 150 KCAS to 200 KCAS speed range. In addition, the present ADS modular platform was shown to be inadequate for airdropping unit loads above 25,000 pounds from the C-141A. The minimum extraction line length indicated by test results was that length which placed the connection between the extraction line and the extraction parachute risers at least 33.5' aft of the tail cone. A 140' extraction line was demonstrated to be satisfactory for use with loads located at any position in the cargo compartment.

Complete airplane capability was demonstrated to airdrop unit loads up to 25,000 pounds at speeds up to 200 KCAS, and to airdrop unit loads of 35,000 pounds at speeds up to 160 KCAS. For 35,000 pound unit loads, platform damage and possibly roller damage can be expected for extraction rates below approximately 0.8g. Complete airplane capability was also demonstrated to airdrop, sequentially at 150 KCAS, a maximum of seven loads weighing up to 71,100 pounds. Test results indicate the C-141A has capabilities to airdrop unit loads in excess of 35,000

pounds contingent upon the availability of a suitable platform and an extraction system of high reliability. The ARRAV tank mock up was successfully airdropped without any contact between it and adjacent airplane structure. Airplane response experienced during the cargo airdrops was within allowable limits. However, under the influence of reduced extraction rates, airplane response increases greatly and in some instances of extraction system failures, full down elevator was required to check the airplane pitching motion. These extraction system failures dictated the need for an extraction system of high reliability for use with 35,000 pound class unit loads. With the petal doors in the "no strake" configuration, all measured flight loads were below allowable limits with the exception of vertical acceleration @ FS 932 which reached 2.1g during drop number 40R. With the 13.5' strake installed, the petal door actuator loads exceeded design limits in compression on several low extraction rate drops, while the remainder of the measured airplane flight loads remained below allowable limits.

Petal door load survey tests demonstrated that complete removal of the petal door strake was necessary to allow for incremental petal door loads during airdrops. With the strake removed, a more closed position of the petal doors was available (from 60° to 55°). In addition, the proposed ramp air deflectors were shown to aggravate the most critical petal door loads in sideslip, and provide no significant change in passage loads during airdrops. Strake removal introduced a minor problem in that design limit loads in tension for the 38° door position were exceeded in maximum steady

sideslip for flap deflections greater tha 50% and airspeeds above approximately 180 KCAS. However, during the Aerial Delivery System Tests it became apparent that the 38° door position was of limited usefullness, and unless a three stick paratroop airdrop capability was developed, the intermediate door position would not be used. Therefore, no further tests were accomplished for the 38° door position.

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(1) Lockheed Engineering Report, ER 5453, "Engineering Flight Test Detailed Program: Volume III - Systems", revised 11-6-64.

(2) Lockheed Engineering Report, ER/S 6100, "Detail Specifications", revised 2-1-65.

(3) Lockheed Engineering Report, ER 5053, "Structural Design Criteria", revised 4-20-64.

(4) Lockheed Engineering Report, ER 5264, "C-141A Aircraft Cargo Handling And Aerial Delivery Subsystems".

1.0 INTRODUCTION

In accordance with the contractual requirements of Reference (1), one hundred thirty-three aerial delivery system tests were accomplished with the C-141A at the Naval Air Facility, El Centro, California.

Twenty-five dummy drops were performed at airspeeds ranging from 120 KCAS to 200 KCAS and pressure altitudes from 2500 to 5000 feet. Single dummies and sticks of up to seven dummies were dropped from the paratroop doors and off the ramp. In addition, simultaneous exit from the paratroop doors and ramp was tested. A summary of these tests is contained in Appendix A, Table A-1, and a qualitative evaluation of the results is available in Section 4.1 of this document.

Eight dummy parachute pack ejection tests were performed at airspeeds from 120 KCAS to 192 KCAS. These tests are summarized in Table 4-1, and a discussion of the results is contained in Section 4.2 of this report.

Seventeen extraction line length tests were accomplished at airspeeds from 120 KCAS to 200 KCAS. Line lengths of 60, 80,

105, and 145 feet were employed. These tests are summarized in Table 4-2, and the results discussed in Section 4.2 of this report.

Thirty-six extraction parachute tow tests were accomplished ranging in airspeed from 118 KCAS to 204 KCAS and in pressure altitude from 1600 to 5000 feet. Standard ring slot parachutes of 15, 22, and 28'D_o were tested. Non-standard parachutes employed during testing were a 32'D_o fist ribbon parachute, and a 24'D_o reinforced ring slot parachute. With the exception of the 28'D_o ring slot parachute, all parachutes were tested in the reefed and unreefed configurations. Testing of clusters of 2 parachutes was accomplished for each parachute size with the exception of the 24'D_o reinforced ring slot parachute. The tow tests are summarized in Table A-2 in Appendix A. Applicable time history data for the tow tests are also presented in Appendix C. A discussion of the test results is contained in Section 4.2 of this report.

Thirty-nine single package cargo drops were performed ranging in weight from 2,640 to 35,700 pounds. Airspeeds from 120 KCAS to 200 KCAS and pressure altitudes from 2500 to 20,000 feet were investigated. Airplane gross weights from 166,000 to 276,000 pounds, along with c.g. positions from 33.8% MAC to 18.7% MAC

and flap positions from 0 to 90% were tested. Peak extraction ratios encountered varied between 1.66g and 0.32g. Eight multiple package cargo drops ranging in total weight from 40,180 to 71,000 pounds were also accomplished. The cargo airdrops are summarized in Table A-3 in Appendix A. Time history data depicting airplane response and loads are presented in Appendix D and Appendix F. A discussion of the results is presented in Sections 4.3 and 4.4 of this report.

High petal door passage loads were experienced during the cargo airdrops and precipitated the need for a petal door airload survey in various configurations. The results of this survey are discussed in Section 4.3 of this report, and applicable tabular data are included in Appendix E.

Modular platform under surface damage and extraction system reliability for heavy cargos (25, to 35,000 pound range) became problem areas during the course of testing. These problem areas resulted in a temporary weight restriction of 25,000 pounds for a parachute extracted cargo airdrop. A discussion of these problem areas is presented in Section 4.3.1.2 and Section 4.5.1 of this report.

2.0 TEST EQUIPMENT

2.1 Test Airplane

2.1.1 Test Airplane Description. The C-141A is a high wing, all metal, land based cargo transport. The general external configuration plus basic aerodynamic data is depicted in Figure 2-1. The wing is swept 25° at the quarter chord line and is of a basic wing box-beam construction. Integral fuel tanks are contained in the wing. The flaps are the Lockheed-Fowler type and are located at the wing trailing edge. The four flap sections are interconnected in such a manner that they extend and retract as a single unit. Spoilers for both ground and in-flight use are located on the upper and lower wing surfaces behind the rear beam. The fuselage is of semi-monocoque construction. The cargo compartment is located in the fuselage aft of the crew compartment and is equipped with an adjustable aft ramp and pressure door assembly which permits full pressurization and air conditioning of the entire flight deck and cargo compartment. Unpressurized fairing doors (petal doors) are utilized for ground loading and may be opened in flight at airspeeds up to 200 KCAS for aerial delivery of cargo. The petal doors in the AD configuration are shown in Figure 2-2. The cargo compartment floor incorporates an integral roller and rail installation which is compatible with the 463L loading system. The empennage consists of a variable incidence horizontal stabilizer and conventional elevator assembly mounted on top

of the fin and rudder assembly. The landing gear is composed of a dual wheel steerable nose gear and two single strut four wheel bogie main gears. Landing gear doors completely fair in all gear components when in the retracted position. The C-141A is powered by four Pratt and Whitney TF 33-P-7 turbofan engines each static rated at 21,000 pounds of thrust. Each engine is enclosed in a nacelle suspended from a pylon forward and below the wing. The controls are conventional in type (elevator, rudder, ailerons and aileron tabs) and are hydraulically powered. In addition to the primary flight controls, an automatic pilot, automatic yaw damper, and Mach trim compensator are employed as supplementory flight controls.

The C-141A possesses all weather capability to operate from any established air base, and in addition it can operate on a limited basis from fields which have no ground support equipment. The various mission capabilities of the C-141A are contained in Reference (2).

2.1.2 Basic Airplane Data. In addition to the basic aerodynamic data presented on Figure 2-1, the following figures are intended as an aid in utilizing this document. Figure 2-3 represents the gross weight center of gravity envelope. Level flight design speeds are presented in Figure 2-4. Airspeed load factor envelopes are presented for the clean configuration in Figure 2-5

and for the aerial delivery configuration in Figure 2-6. Stall speed versus gross weight is presented in Figure 2-7 for the take-off and landing configuration and in Figure 2-8 for the clean configuration.

2.1.3 Aerial Delivery Subsystem - Cargo. The C-141A cargo handling and aerial delivery subsystem provides the capability to accomplish the rapid and efficient loading, restraint, off loading, and aerial delivery of bulk cargo and vehicles including the ARRAAV (Armored Reconnaissance Airborne Assualt Vehicle) rigged to Type II modular aerial delivery platforms.

The aerial delivery system consists of the following major components:

A. Conventional Tiedown Receptacles and Fittings

1. Receptacles for the installation of quick-disconnect tiedown fittings are spaced evenly in rows which run the length and width of the cargo compartment and ramp. Three types of receptacles are used: one for connecting individual 10,000-pound fittings, one for connecting individual 25,000-pound fittings, and a continuous-track type for connecting rigid troop seat fittings, and 10,000-pound fittings. The restraint rail fittings utilize the same receptacles as the 25,000-pound fittings.

B. Roller Conveyors

1. Four channels for the insertion of removable roller conveyor sections are permanently recessed into the cargo and ramp floors. The support channels are located symmetrically across the floor at left and right butt lines 15 and 51. The conveyor sections fit into the channels with the rollers above the surrounding floor level when placed for palletized cargo loading or for airdrops, but may be turned over in the channels, and locked into place with their smooth bottom surfaces flush with the surrounding floor for vehicle or troop loading. Each section contains individual bearing mounted aluminum rollers on 10 inch centers. When the conveyor is upright, the rollers project 1-1/2 inches above the floor level. Reinforced aluminum teeter rollers in steel supports are installed at the aft end of the cargo compartment, forward and aft end of the cargo ramp to support the higher loads that are incurred in these areas during cargo loading and airdrops.

C. Restraint Rails, Mechanisms and Controls

1. Retractable restraint rails are provided on both sides of the cargo compartment and ramp floor to aid in loading, restraining, and unloading palletized

cargo and airdrop platforms. Lockheed Engineering Report ER-5264, Reference (4), specifies the capabilities of the restraint rails. When fixed in position, the rails provide a continuous narrow channel down both sides of the compartment, for the entire length of the cargo compartment and ramp. These channels guide platforms and pallets in and out of the airplane, hold them down against the rollers; and with restraint mechanisms provided, prevent forward and aft movement. During airdrops, restraint mechanisms on the right rail may be set to apply a variable amount of aft restraint to the platforms.

2. The restraint rails for each side of the cargo compartment are built in ten sections. All sections forward of the troop door openings are attached to the side of the cargo floor by hinge straps and can be folded up under the side walkways when not in use. The remaining cargo compartment and all ramp restraint rails for each side of the cargo ramp are made in two sections. The aft sections flare outward to aid in funneling palletized loads or platforms into the rail system. All of the rail sections on the ramp and the aft sections in the cargo compartment are made as vertical walls with retractable lips for

vertical restraint instead of fixed lips. These lips are retracted during loading and unloading of cargo, and during aerial delivery. They are extended if needed after the load is in place.

3. All of the cargo compartment left side restraint mechanisms are identical. They consist of a detent arm with lock mechanism, a handle for manually locking or unlocking the mechanism, and a sequence selector arm and pinion for use with the remote control feature. The detent when engaged prevents forward and aft movement of the pallet. The sequence selector arms on the mechanism are geared to the restraint mechanism and to the remote control shaft. Up to nine pallets can be sequenced to lock and unlock individually. This permits the loadmaster to unlock only the aft platform or any other preselected group of platforms while maintaining the other platforms locked. If the sequence selectors on all mechanisms are set to the same number, all will lock and unlock simultaneously. Two remote control units are provided for the cargo compartment left side locks; one at the forward end and one at the aft end of the cargo compartment. The two lever-type remote controls operate independently of each other and one must be disengaged and stowed in order to operate the other. The cargo

ramp left side restraint mechanisms are the same as the cargo compartment restraint mechanisms except they do not have sequence selectors, and can be released only at the forward end of the ramp. A cable release system is used to simultaneously release the two locks.

4. Right hand restraint mechanisms forward of fuselage station 1292 are identical. Each has a retractable detent which is spring-loaded to the engaged position. When forced through the rail the detent engages one indent in the pallet or airdrop platform and, if locked, prevents forward motion of the load. If the force attempts to move aft, the detent will hold any force up to that force set on the variable restraint adjustment, and then will be forced back into the rail, releasing the load.

5. Right side remote control is located at fuselage station 482 and consists of a handle on an arm which is geared to the push-pull rods which extend the entire length of the right side restraint rail. The remote control will override the setting of the individual mechanisms and will lock in place when all detents are engaged. Markings on the push-pull rod and

an index mark on the rail located just aft of the control permits the operator to pre-position the push-pull rod for one-stroke unlocking of the detents for emergency release of aft restraint during aerial delivery. Just forward of the right remote control is a ratchet pawl which provides a holding stop for the push-pull rods when they have been actuated to the full unlock-disengaged position. When this pawl has been engaged it must be released prior to actuation of the control to engage-and-lock. Restraint mechanisms on the cargo ramp must be operated manually at the mechanism.

D. Cargo Winch Installation

1. A recessed compartment for permanently stowing a cargo winch is located at the forward end of the cargo compartment floor, beneath the flight station. The cargo winch has a retractable wheel at each corner, and may be rolled out of the compartment, and attached to standard cargo compartment floor tiedown fittings if desired. Normally the winch is operated without removing from the compartment, and snatch blocks are used to provide side pulls or multiply forces if necessary. The winch is powered from the No. 3 main

AC bus (400 cycle, 3-phase, 200-volt). A remote control on an extension cable permits freedom of movement while operating the winch. A removable cable guide roller is provided to keep the winch cable close to the compartment floor enabling it to be extended under forward pallets or platforms and winch in additional load. The cargo winch can also be used to retrieve paratroop static lines or hung paratroops.

E. Extraction Parachute Initiation Device and Control

1. A mechanism for holding the extraction parachute ready for deployment is mounted overhead in the cargo compartment between fuselage station 1338 and 1398. It consists of a support housing, a parachute holder which fits into the support housing, an uplock mechanism, which locks the holder in the support housing; an uplock indicator, which indicates the condition of the uplock; and an ADS manual armed switch, which controls indicator lights in the flight station. An opening in the top of the housing permits a cable from the hand winch to pass through the housing before attaching to the parachute holder. The release mechanism contains a manually armed release solenoid, which is operated electrically by the CHUTE RELEASE switch at the pilot's, copilot's and navigator's stations, or manually by the control at the

loadmaster's crew door station. When the solenoid is actuated it operates a release lever on the parachute holder, which drops the parachute.

2. A hand-operated winch for raising and lowering the extraction holder is mounted on the right wall of the cargo compartment opposite the parachute holder. The parachute holder uplock is checked visually locked by noting that the uplock indicator does not protrude, and that the parachute holder does not lower when the winch is backed off. An aft-facing, finger like fitting is recessed into the overhead structure, aft of the support housing, for attachment of the parachute pendulum line. This fitting is the pivot point about which the extraction parachute rotates as it drops over the ramp. A spring clip on the fitting prevents the line from slipping off inadvertantly before the extraction parachute is dropped.

3. A small fitting, the parachute extraction line restraint fitting, is used as a tie point for the line from the extraction parachute. The fitting is installed in the 10,000-pound tiedown receptacle at ramp station D-6, and keeps the extraction line taut between this tie point and the extraction parachute holder.

F. Static Anchor Line Cables

1. Components for installing anchor cables are contained on the airplane. For paratroop drops off the ramp, one inboard anchor cable is installed down each side of the cargo compartment. The aft anchor cable supports are permanently attached to the sidewalls of the unpressurized section of the fuselage just aft of the pressure door. Tripod-type forward supports capable of holding one anchor cable each are attached to sidewall brakets at fuselage station 508, and when not in use the supports are stowed on the right sidewall fuselage station 688. When the anchor cables are installed in the cargo drop, or paratroop over ramp configuration, the anchor cables have to be stowed in a notch in the sidewall bulkhead at the side of the pressure door before the pressure door can be closed. Thus, the aft anchor cable supports are hinged, electrically actuated, and are sequenced to extend after the pressure door is opened and retract prior to pressure door closing.

2.2 Instrumentation

2.2.1 General Information. Instrumentation in accordance with the requirements of Reference (1) was installed on the test airplane. The basic instrumentation consisted of one automatic observer

panel and two recording oscillographs. The recording instrumentation plus its associated signal conditioning units, power supplies, and control systems was installed in the galley and on the flight deck in order that an unobstructed cargo area could be obtained.

2.2.2 A.O. Panel. The measurements located on the A.O. panel are listed below.

1. Time of Day
2. Ten Second Sweep
3. Free Air Temperature
4. Pilots Airspeed (ships system)
5. Pilots Altitude (ships system)
6. Time Correlation Counter
7. A.O. Frame Counter
8. Flap Position Indicator
9. EPR Indicator (4 engines)
10. Horizontal Stabilizer Position Indicator
11. Oscillograph No. 1 Record Number
12. Oscillograph No. 2. Record Number
13. Event Light

2.2.3 Oscillograph Measurements. Items recorded on the oscillographs are listed below.

A. Oscillograph Number 1

1. Horizontal Stabilizer Torsion @ HBL 44L
2. Horizontal Stabilizer Bending @ HBL 44L

3. Horizontal Stabilizer Shear @ HBL 44L
4. Vertical Stabilizer Bending @ VSS 345
5. Fuselage Vertical Bending @ FS 1048
6. Fuselage Vertical Bending @ FS 1568
7. Pitch Trim Actuator Load
8. Ramp Actuator Load, R.H.
9. Ramp Actuator Load, L.H.
10. Ramp Hinge Drag Load, L.H.
11. Ramp Hinge Drag Load, R.H.
12. Ramp Hinge Vertical Load, L.H.
13. Ramp Hinge Vertical Load, R.H.
14. Ramp Hinge Total Side Load
15. Spider Arm Load R.H.
16. Spider Arm Load L.H.
17. Vertical Acceleration, F.S. 277
18. Vertical Acceleration, F.S. 1637
19. Vertical Acceleration, F.S. 932 (C.G.)
20. Longitudinal Acceleration F.S. 932 (C.G.)
21. Time Correlation

B. Oscillograph No. 2

1. Rate of Pitch
2. Angle of Sideslip
3. Elevator Stick Force

4. Aileron Wheel Force
5. Rudder Pedal Force
6. Elevator Position, (L.H. side)
7. Aileron Position. (L.H. side)
8. Rudder Position
9. Angle of Pitch
10. Angle of Bank
11. Restraint Rail Detent Release (Positions 1 thru 20)
12. Parachute Extraction Force
13. Angle of Attack
14. Photo Cell Velocity Pick-ups
    - @ FS 847
    - @ FS 932
    - @ FS 1051.5
    - @ FS 1130
    - @ FS 1244.5
    - @ FS 1393.5
    - @ FS 1435 (Ramp Lip)

2.2.4 Gun Cameras. Three 16 MM TN-9 gun cameras were installed to provide additional photographic coverage of the tests. The basic coverage afforded by these cameras was the following.

1. View looking straight aft down the centerline of the airplane, camera mounted in overhead.
2. Camera mounted on L.H. side of fuselage looking straight

aft down the canted longeron and L. H. pedal door.

3. Camera mounted on L. H. side of fuselage looking diagonally across the entire ramp area.

The gun camera locations and sightings were varied slightly at times to meet the conditions of a particular test.

2.3 Dummy Drop Equipment

Three types of dummies were used during the dummy drop tests. 1) Rope head dummy-weight 140 lbs, 2) Torso dummy 200 lbs, and 3) Sixty percentile anthoropomophic dummy-weight 160 lbs. The sixty percentile anthropomophic dummy was instrumented to measure acceleration about all three axis. Cameras were installed to give dummy position so that the acceleration could be correlated with the dummy position during recovery operation.

Standard T-10 parachutes with 15 feet static lines were used for most of the dummy drops, but some drops were made with 19' and 25' static lines.

Three dummy ejection frames, which were made locally at El Centro, were used to airdrop the dummies out the paratroop doors, and over the ramp. These ejection frames helped get the dummy out into the slip stream to simulate a paratrooper leaving the airplane.

An "A" frame was locally manufactured to assist in the retrieval of a "hung" dummy from the ramp. This "A" frame was located on the fuselage sidewall just aft of the ramp, and allowed the parachute static line to ride higher up, and keep the dummy from oscillating.

2.4 Extraction Lines And Parachutes

2.4.1 Extraction Lines. The extraction lines employed in testing consisted of the type 26 8-ply, type 26 10-ply, type 10 2-ply, type 10 6-ply and the type 10 8-ply. Line lengths of 60 feet, 80 feet, 100 feet, 120 feet, and 145 feet were utilized.

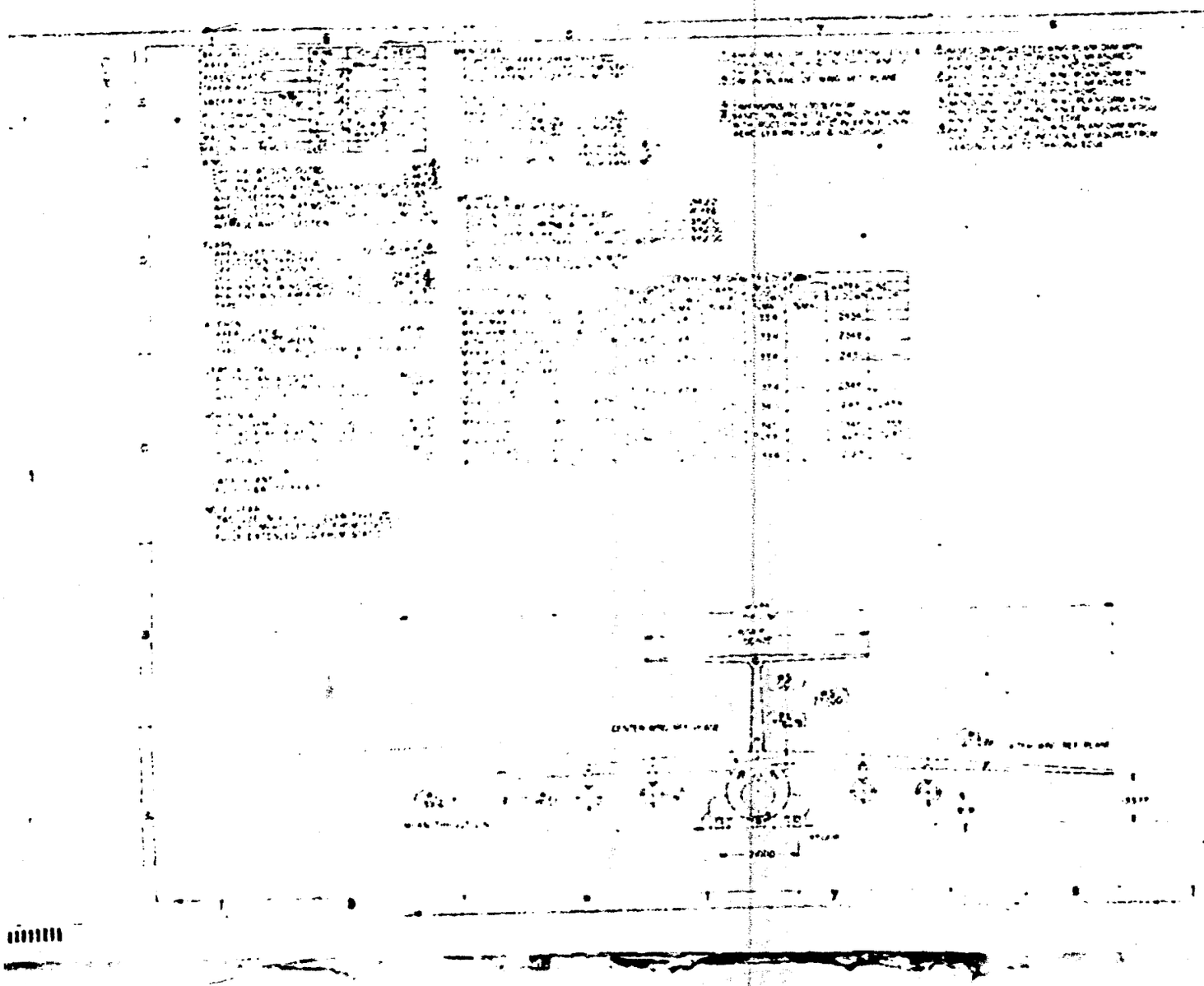
2.4.2 Extraction Parachutes. Ring slot parachutes tested consisted of a 24'D_o, 15'D_o, 22'D_o, and a 28'D_o. With the exception of the 24'D_o parachute, the above are all standard extraction parachutes. The 24'D_o ring slot parachute is a reinforced parachute which is employed on the B-58 airplane as a drag parachute. It is not a standard item in the ADS inventory but was needed for reliability on drops at speeds above 160 KCAS. Another non-standard item employed was the 32'D_o fist ribbon parachute. This parachute was employed in areas where the ability of the 28'D_o parachute to produce the desired 1.0g extraction rate was marginal.

2.5 Cargo Description

2.5.1 Cargo Components. The cargo airdrops tested were all of a similar nature with the exception of total weight. The general arrangement of components and rigging of the test loads are shown in Figure 2-9.

The weight desired was achieved by placing steel weights (each approximately 500 pounds) inside the bathtub. This assembly was then placed on the platform with sufficient shock absorbing honeycomb to prevent damage to the bathtub. The bathtub and weights were secured to the platform by means of tiedown chains rigged diagonally along each side of the tub. The cargo parachutes were attached to a plywood support assembly which was secured to the top surface of the bathtub in most cases. In some cases, the cargo parachutes were mounted directly on the platform. The extraction line was attached to a guillotine assembly on the tub. This guillotine assembly was connected by a lanyard to the static line on the left hand side of the airplane and disengaged the extraction line from the tub as the load was exiting the ramp. Simultaneously a pin was fired in the Go/No-Go clevis (attached by lanyard to the right hand static line of the airplane) which made a connecting line between the extraction line and the cargo parachutes.

The extraction parachute then deployed the cargo parachutes which lowered the load to the ground. Table A-4 in the appendix depicts a summary of all the applicable C.G. positions and weights of the loads used during the airdrops. Load profiles of each cargo airdrop are depicted by Figures B-1 through B-43D in Appendix B.



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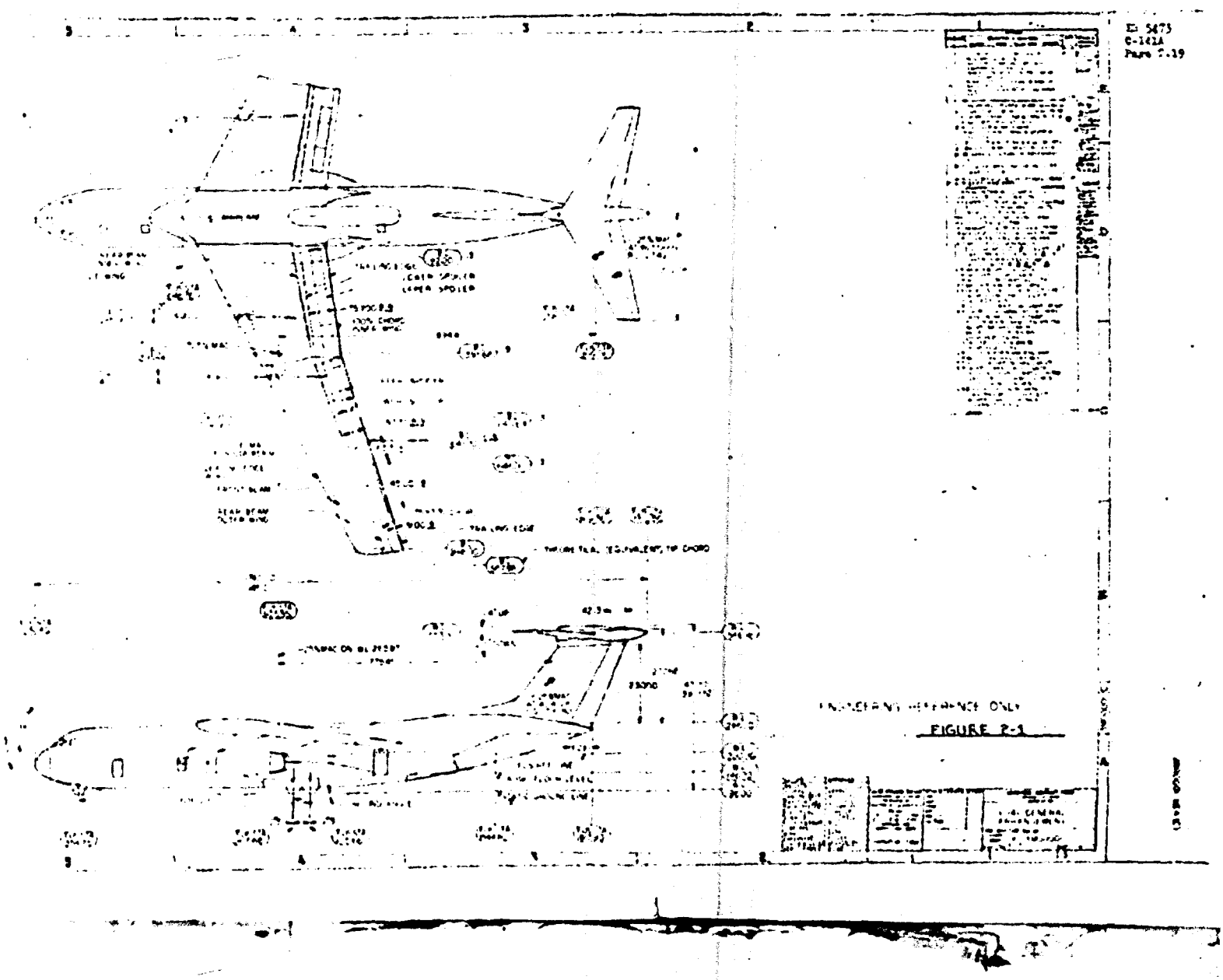


FIGURE 2-1

Best Available Copy

PETAL DOORS AND RAMP IN AIR DROP POSITION

MODEL C-141A

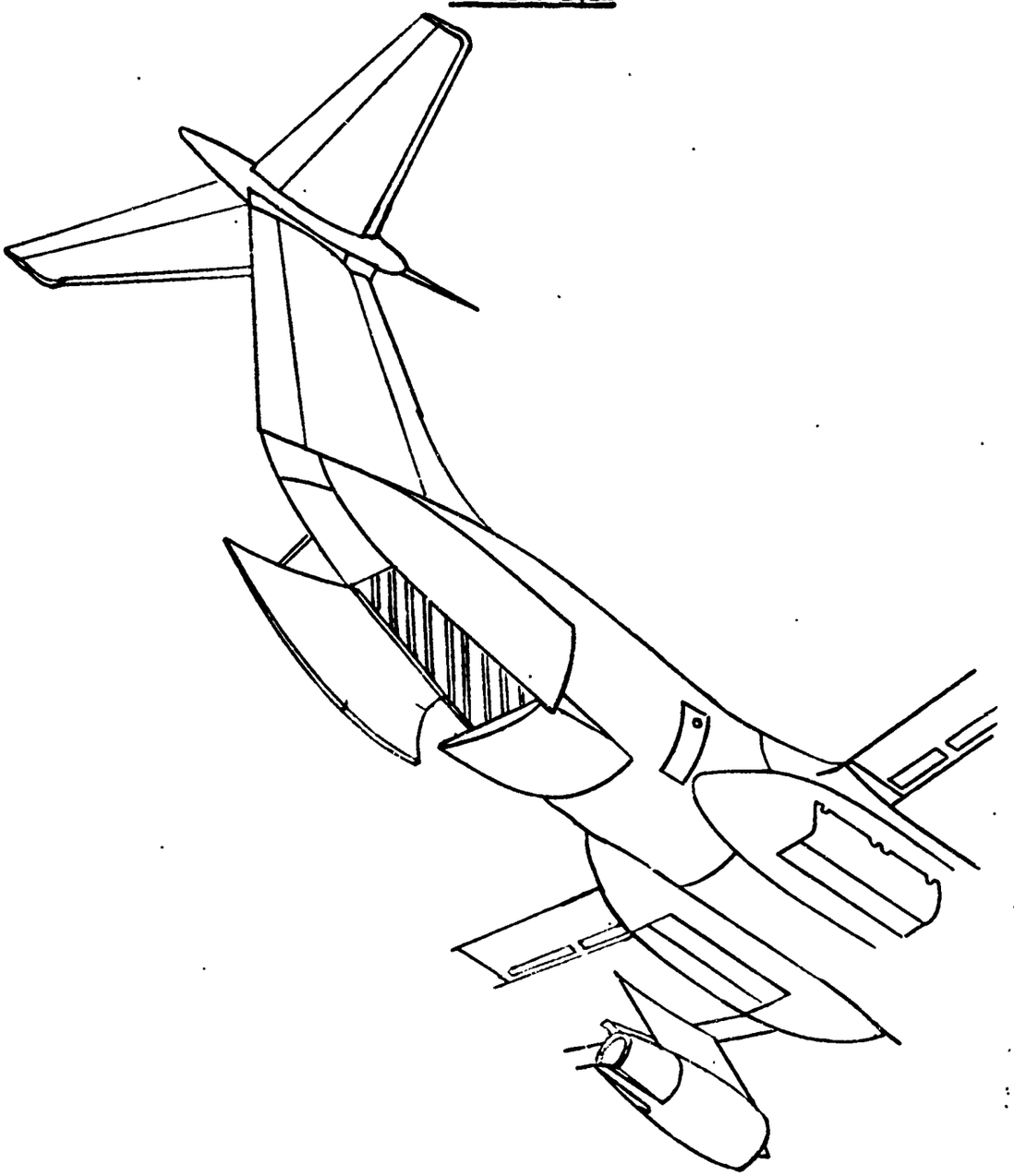


FIGURE 2-2

C-141A CENTER OF GRAVITY ENVELOPE

NOTE
1. L.E. OF MAC @ FS 858.9
2. MAC ~ 265.7 IN.

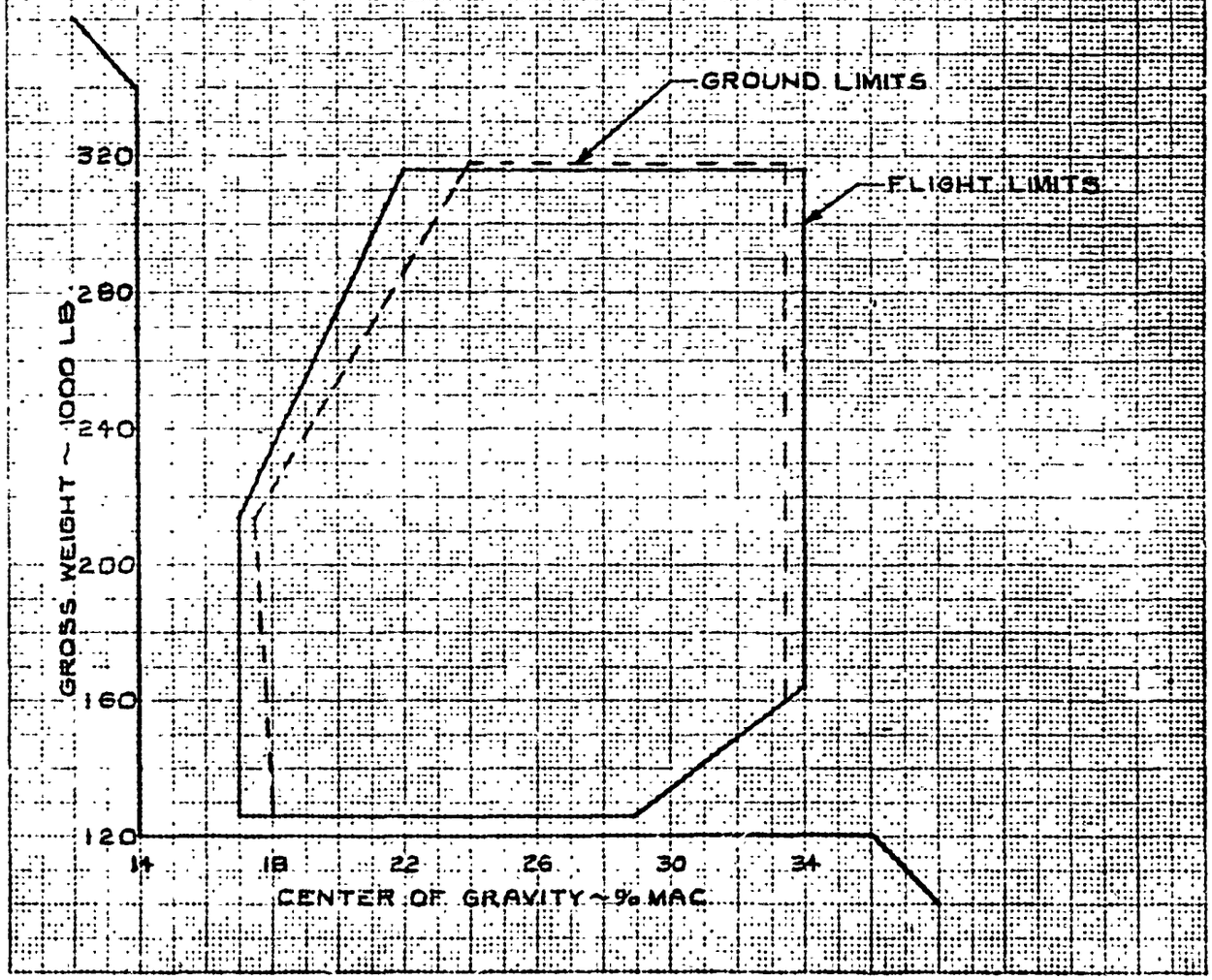


FIGURE 2-3

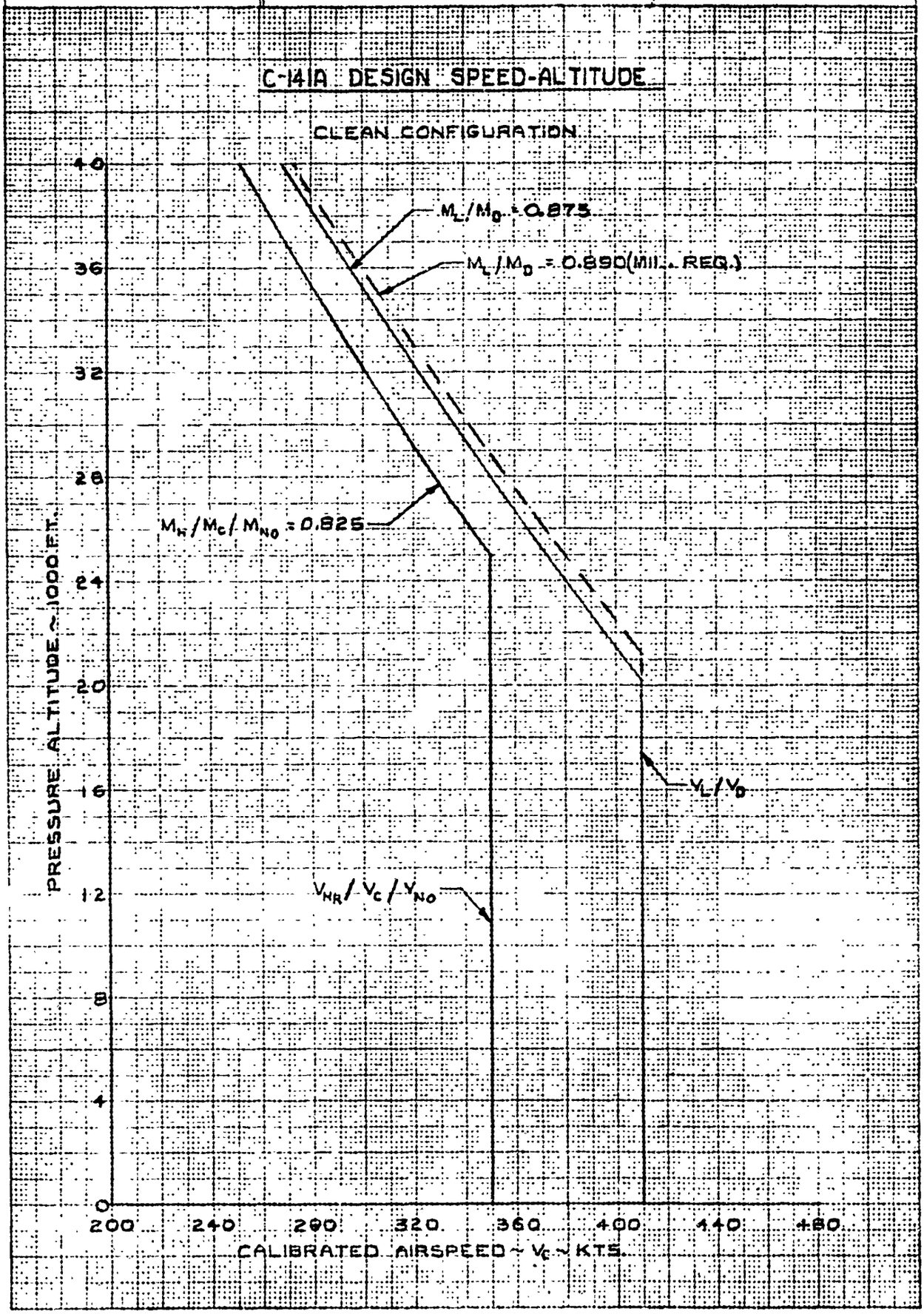

C-141A DESIGN SPEED-ALTITUDE
CLEAN CONFIGURATION
$M_L/M_D = 0.875$
$M_L/M_D = 0.890$ (MIL. REQ.)
$M_H/M_C/M_{NO} = 0.825$
V_L/V_D
$V_{HR}/V_C/V_{NO}$
PRESSURE ALTITUDE ~ 1000 F.T.
40
36
32
28
24
20
16
12
8
4
0
200
240
280
320
360
400
440
480
CALIBRATED AIRSPEED ~ V_C ~ K.T.S.

FIGURE 2-4

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

C-141A AIRSPEED-LOAD FACTOR ENVELOPE

CLEAN CONFIGURATION

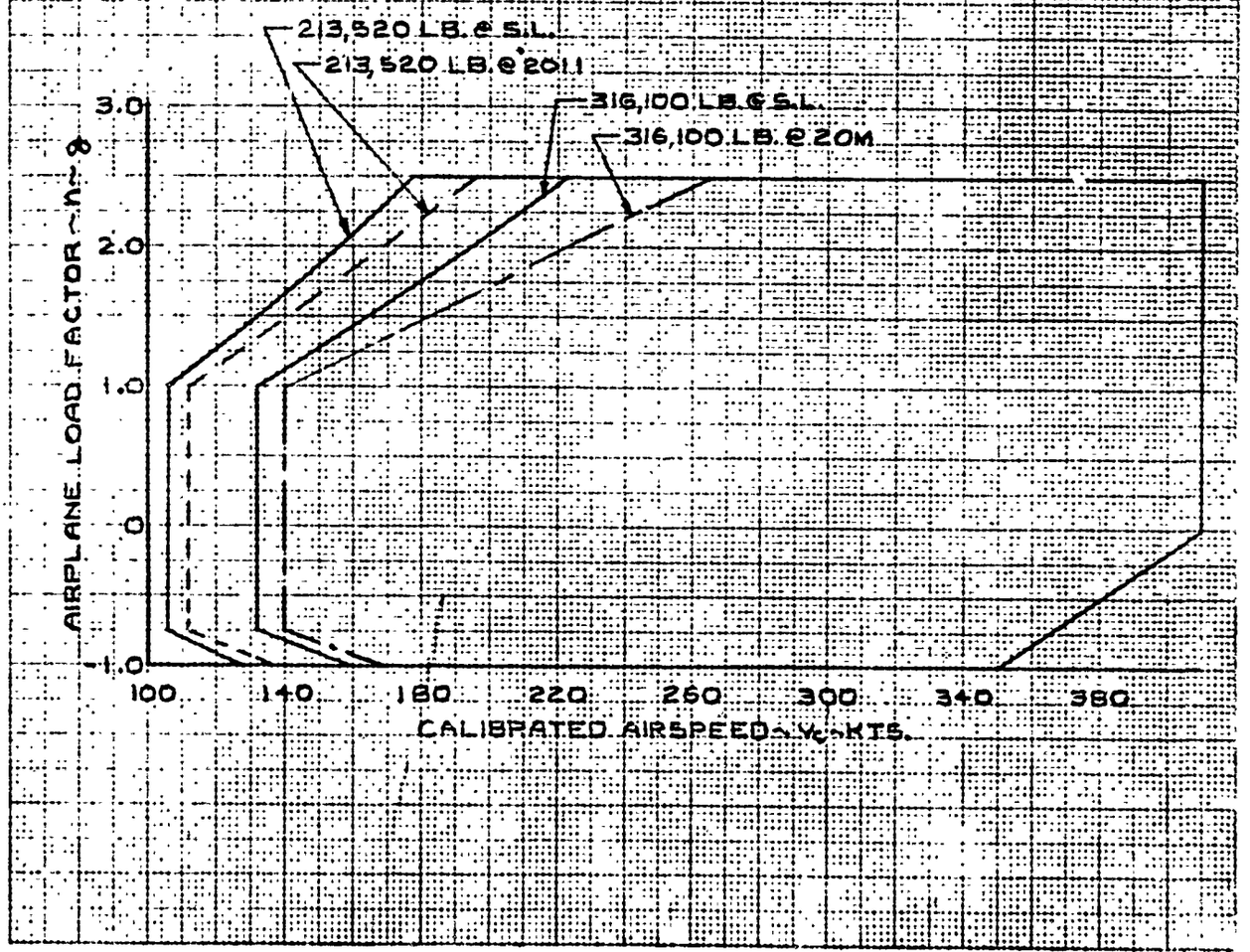
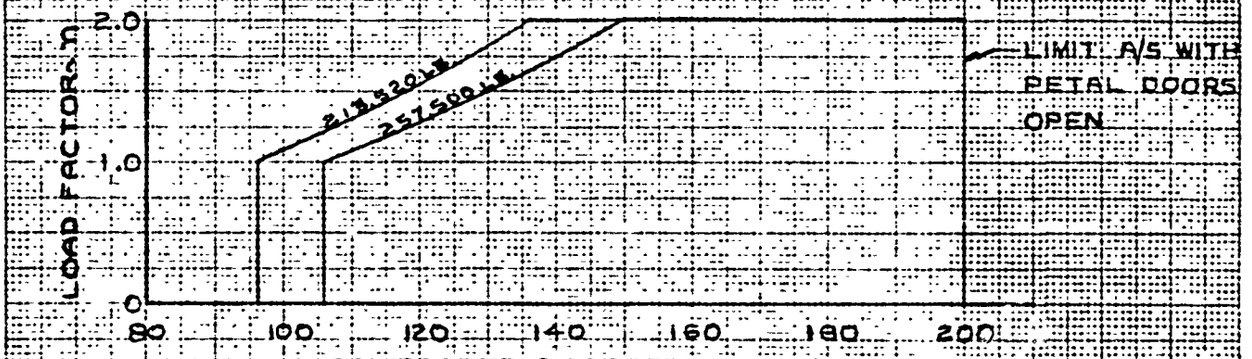
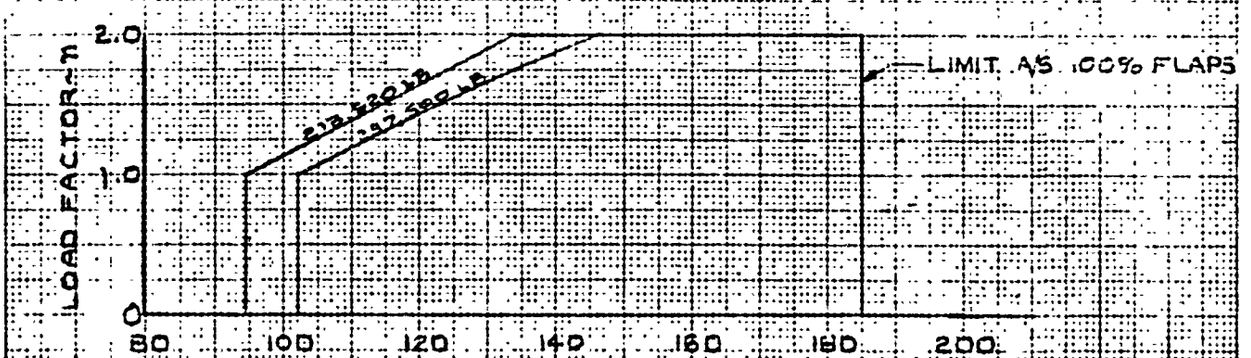


FIGURE 2-5

C-141A AIRSPEED - LOAD FACTOR ENVELOPE

CONFIGURATION
1. PETAL DOORS OPEN
2. GEAR UP
3. FLAPS DOWN





GA FORM 5566 B

FIGURE 2-6

STALL SPEED VS GROSS WEIGHT

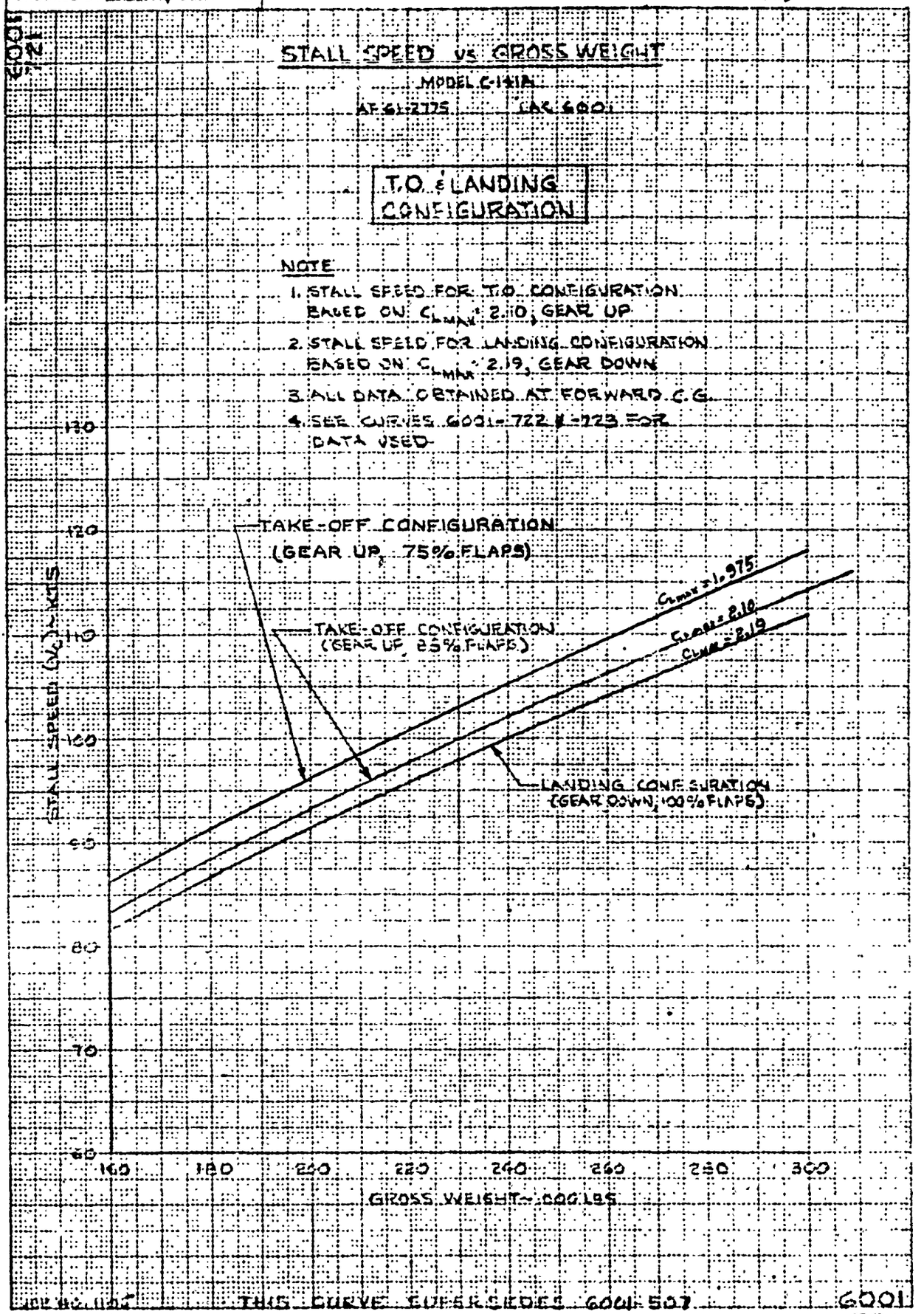
MODEL C-141A

AFGL-2175 CAC 6001

T.O. & LANDING CONFIGURATION

NOTE

1. STALL SPEED FOR T.O. CONFIGURATION BASED ON $C_{L_{MAX}} = 2.10$, GEAR UP
2. STALL SPEED FOR LANDING CONFIGURATION BASED ON $C_{L_{MAX}} = 2.19$, GEAR DOWN
3. ALL DATA OBTAINED AT FORWARD C.G.
4. SEE CURVES 6001-722 & -723 FOR DATA USED



THIS CURVE SUPERSEDES 6001-507

6001
721

FIGURE 2-7

KTS
CST
CET
DET
EST
FST
GST
HST
IST
JST

STALL SPEED VS GROSS WEIGHT

MODEL C-141A

AFGL-2275 LAF 6001

CLEAN CONFIGURATION

NOTE

DATA BASED ON ENGINE AND AIRFRAME ONLY FOR STRAIGHT FLIGHT AT 1-G WITH ENTRY RATE OF 10 FT/SEC

STALL COMPUTER G/W 275 TRANSDUCER UNIT

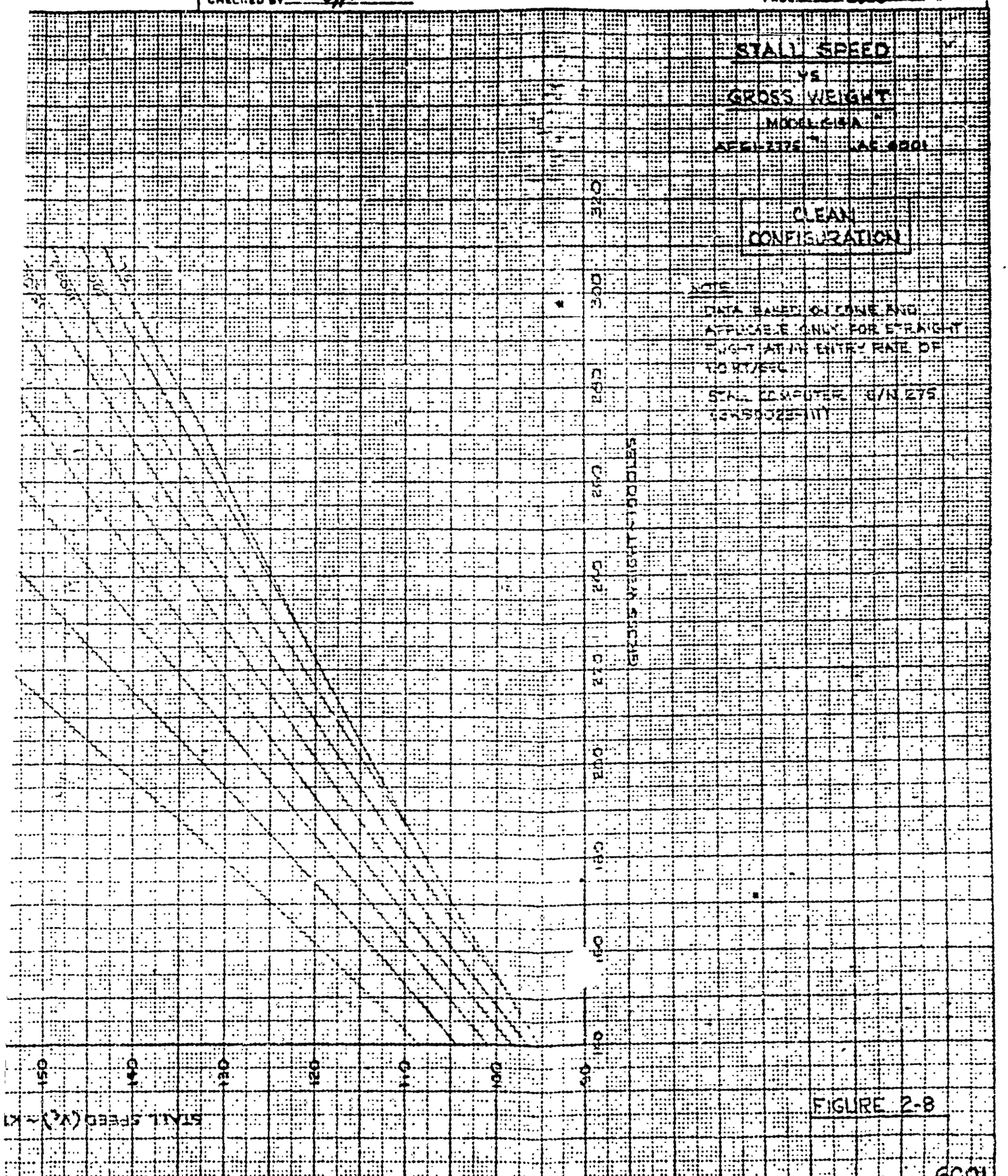
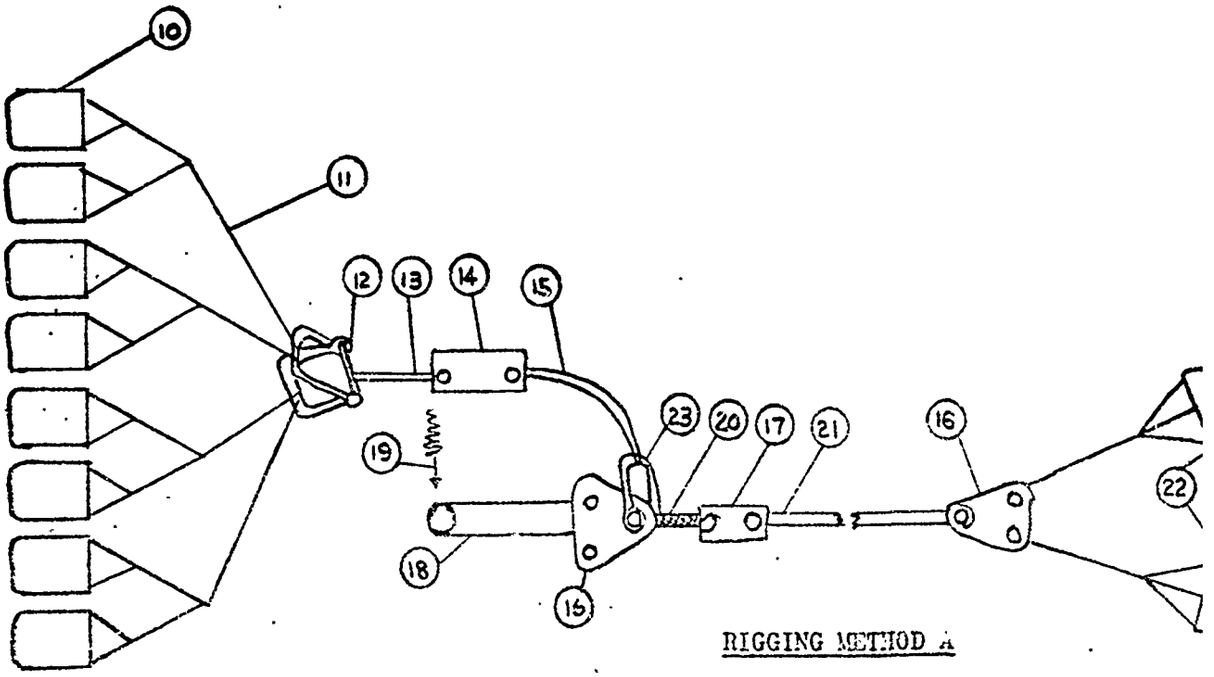
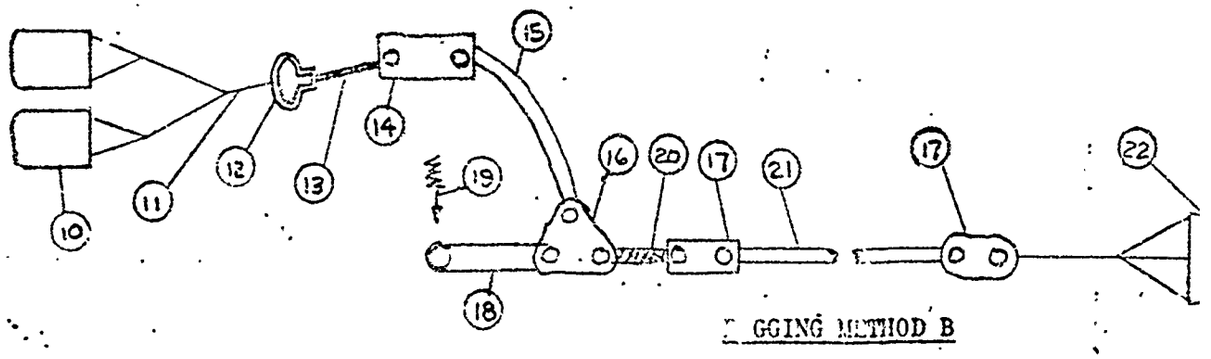


FIGURE 2-8

ADS CARGO AND RIGGING DIAGI



RIGGING METHOD A



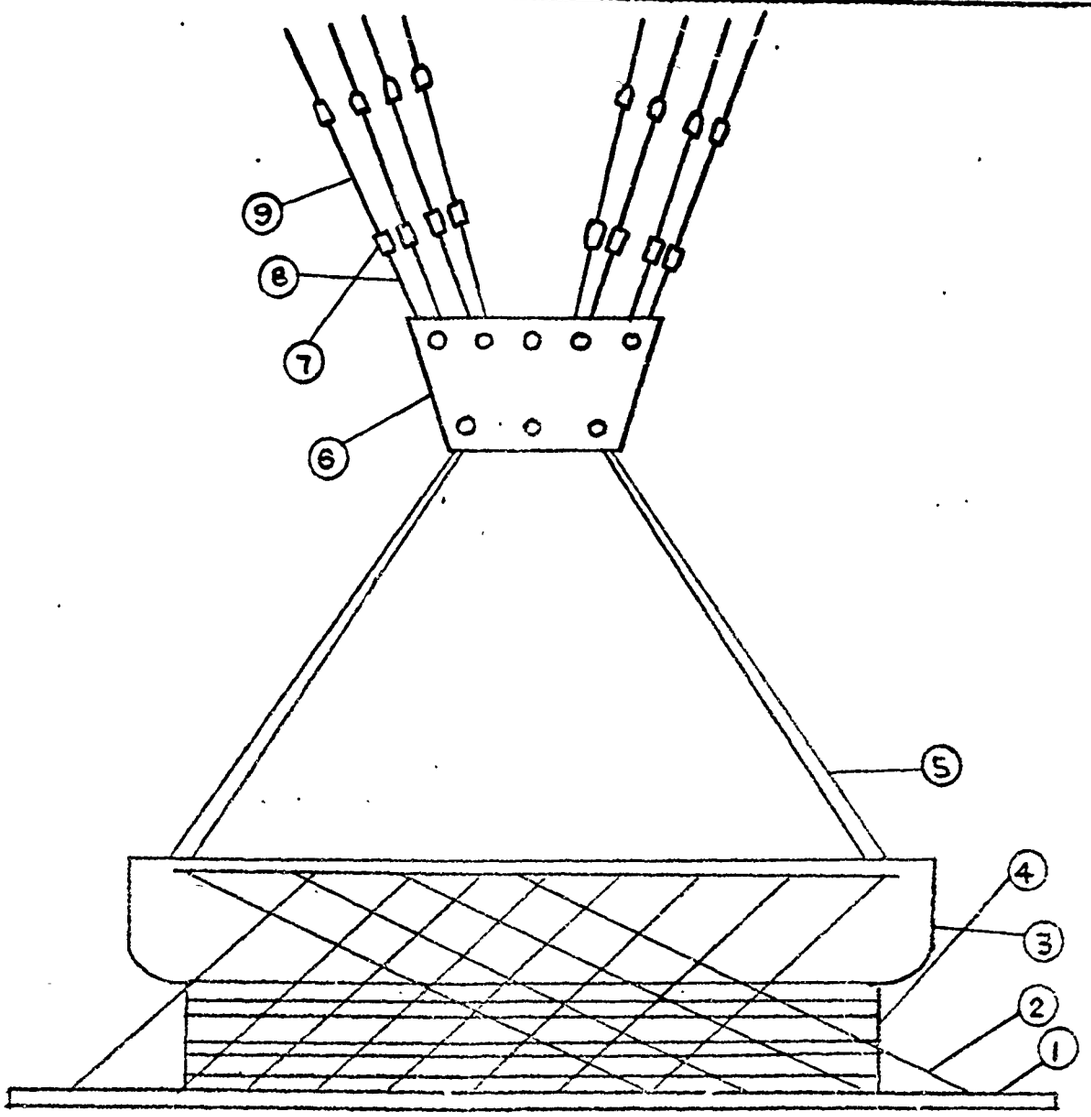
RIGGING METHOD B

CARGO AND RIGGING COMPONENTS

1. Modular Platform
2. Chains 10,000 lb. T.S.
3. Tub and Weights
4. Honeycomb
5. Suspension Risers
6. Load Coupler
7. Ground Release
8. Ground Release Riser
9. Cluster Risers
10. G-11A Cargo Chute
11. Deployment Webs
12. G-11A Cle
13. Go/No Go
14. Go/No Go
15. Deploymen
16. 3 Point C
17. 2 Point C
18. Knife Cut
19. Guillotin
20. Strain Ga
21. Extractio
22. Extractio
23. Special C

GA FORM 8276D-2

IAGRAM







Clevis (Single or Double)
Go Web
Go Clevis
ment Web
it Clevis
it Clevis
Cutter Web
otine Knife.
a Gage
ction Line
ction Parachute
al G-11A Clevis

FIGURE 2-9

3.0 TEST PROCEDURES

3.1 Dummy Drops

3.1.1 Single Dummy Drops - Paratroop Doors Only. For this series of tests, the configuration was paratroop spoilers extended, troop door jump platforms installed, static anchor line cable installed for paratroop door jumps, dummy ejection frames installed, and petal doors closed. The side of the fuselage was coated with black grease to indicate any contact with the parachutes and/or lines during the drop. The procedure employed was:

1. Stabilize airplane @ desired airspeed and altitude,
2. open paratroop doors and extend troop door spoilers,
3. install troop door jump platform,
4. install and tie down dummy ejection frame,
5. install dummy in the ejection frame and attach static line to the anchor cable,
6. push dummy out on count down from ground control.

During this series of tests, the static line retrieval test was accomplished. Three ropehead dummies, and 56 static lines (with bags attached) were employed for these tests. The first dummy static line was attached to the outboard anchor cable, then 28 static lines with bags were attached. The second dummy was attached to the inboard anchor cable along with another 28 static lines and bags. The third dummy was also attached to the inboard

anchor cable. The above were ejected in the following order: dummy #1, 28 static lines, dummy #2, 28 static lines, and dummy #3. The retriever winch was then employed to retrieve all static lines and bags.

3.1.2 Single Dummy Drops - Cargo Ramp Only. The configuration employed for these drops was paratroop doors closed, static line anchor cables installed for cargo ramp drops, petal doors open to 38° position, and ejection frames installed. The overhead area of the fuselage from just aft of the ramp to the tail cone was masked with grease covered tape strips placed about 8 to 10 inches apart. The purpose of these strips was to indicate any contact between the parachutes and adjacent airplane structure. The procedure followed was:

1. Stabilize airplane @ desired airspeed and altitude,
2. lower ramp and open petal doors to 38° position,
3. install and tiedown dummy ejection frame,
4. install dummy in ejection frame and connect static line to anchor cable,
5. rig static line retriever winch cable,
6. push dummy out on countdown from ground control.

3.1.3 Multiple Dummy Drops - Paratroop Doors Only. The configuration and procedures employed were the same as those in Section 3.1.1,

except the static line retriever winch was rigged for retrieval of static lines. A concentrated effort was made to release the dummies at one second intervals to simulate proper spacing.

3.1.4 Multiple Dummy Drops - Cargo Ramp Only. The configuration and procedures employed were the same as those in Section 3.1.2. In addition, the 60° petal door position was employed on some tests, and the dummies were released at approximately one second intervals.

3.1.5 Simultaneous Dummy Drops - Paratroop Doors And Cargo Ramp. The configuration for these tests was paratroop doors open and troop door spoilers extended, troop jump platforms installed, anchor cables installed for troop door and ramp jumps, petal doors open to 38°, and ejection frames installed. The forward edge of the petal doors, the fuselage aft of the paratroop doors, and the fuselage overhead aft of the cargo ramp were all coated with a substance to indicate any contact of the parachutes and/or static lines with the airplane. The procedure followed was:

1. Stabilize airplane @ desired airspeed and altitude,
2. open paratroop doors and extend troop door spoilers,
3. install troop jump platforms,
4. lower ramp and open petal doors to 38°,

5. install one dummy in the ejection frames at each paratroop door and at the cargo ramp,
6. simultaneously push out each dummy on countdown from ground control.

3.1.6 Dummy Retrieval Test - Paratroop Door Only. This retrieval test was accomplished with a ropehead dummy and was identical to the configuration and procedures detailed in Section 3.1.1 with the following exceptions. The static line roller bar was installed, and the static line to the dummy was intentionally rigged such that it would foul. As soon as the dummy assumed a trailing position, it was retrieved by the static line retriever.

3.1.7 Dummy Retrieval Test - Cargo Ramp Only. Two dummy retrieval tests were conducted from the cargo ramp. A ropehead dummy, and an instrumented anthropomorfic dummy were employed for these tests. The petal doors were opened to the 60° position for these tests. An additional "A" frame was installed on the right hand side of the fuselage for the anthropomorphic dummy retrieval. Aside from these exceptions, and the fact that the dummy static lines were intentionally rigged to foul, the configuration and procedures employed were the same as those outlined in Section 3.1.2.

3.2 Extraction Parachute and Line Tests

3.2.1 General Procedure. Extraction parachute tow tests were accomplished by the following general procedure.

a. Open petal doors approximately 3 minutes before parachute deployment.

b. Stabilize airplane at desired flight conditions.

c. Deploy parachute on countdown from ground control station.

d. Add power as required to maintain airspeed and altitude (4 engines).

e. Attempt to maintain level deck angle.

f. Tow parachute for 5-8 seconds.

g. Manually cut parachute away with guillotine knife.

This general procedure was ammended on several tests to investigate any jet blast effects on the extraction parachutes. During these tests, the inboard engines (No. 2 and No. 3) were cut back to flight idle after parachute deployment and all increased power application was accomplished on the outboard engines (No. 1 and No. 4).

3.2.2 Extraction Line Length Determination. Minimum extraction line lengths were established by attaching various length lines to the same fuselage station and towing under the influence of a small (4 or 8 ft. dia.) parachute. The behavior of the extraction line and its characteristics were noted and evaluated as to their suitability. No extraction forces were measured. The fuselage station of the line attachment point was moved forward and the extraction line length was increased to a value such that the extraction parachute remained in the same location relative to the airplane tail cone.

3.3 Cargo Airdrops

3.3.1 Single Package Airdrops Single package loads were airdropped in accordance with the following procedure.

a. Open petal doors approximately 5 minutes from load release and stabilize airplane on desired speed, altitude, and heading.

b. Loadmaster's final check of rigging, and area aft of load.

c. Cut safeties on guillotine knife.

d. All personnel forward of the load.

e. Unlock left hand locks at approximately 3 minutes out.

f. Arm extraction parachute at approximately 30 seconds out.

g. Release load on countdown from ground control station.

On most drops, the right hand restraint rail setting employed was 0.5 x cargo weight. However, this setting was appropriately reduced for the planned low extraction ratio drops. The airplane was allowed to respond to the influence of the load leaving and the pilot applied pitch control only when it was felt that the resultant pitch rate was becoming excessive. In each instance of pitch control, the pilots intention was merely to check the pitch rate and not to reverse pitch direction. Extraction parachute release was accomplished from the pilot's ADS panel, co-pilots ADS panel, and navigators ADS panel during the course of testing. In the majority of drops, the co-pilots ADS panel was employed for release of the extraction parachute.

3.3.2 Multiple Package Airdrops. The procedures for the sequential airdrops were similar to those described above for the single package drop. The primary difference between sequential and single package airdrops was in rigging procedure and pilot technique. For the sequential airdrops, the extraction parachute for the first load out was mounted on the extraction parachute assembly in the overhead aft of the load, then the

extraction parachute for each successive load was attached to the platform of the load preceding it out of the airplane. In addition, the pilot applied appropriate elevator inputs to dampen the rate of pitch and maintain a level deck angle.

4.0 TEST RESULTS

4.1 Dummy Drops

4.1.1 Cargo Compartment Airflow In Various Door Configurations. Tests were conducted to evaluate the resultant flight characteristics of the airplane and the airflow pattern around paratroop and cargo exits with various combinations of cargo compartment troop doors, and cargo doors open, closed, or in transit. The following configurations were tested as dictated by Reference (1).

A. Cargo Drop Configuration

Paratroop Doors Closed

Ramp Down, Petal Door Open 60°

Gear Up

Anchor Cable Installed

The cargo doors (petal doors, cargo ramp, and pressu e door) were modified to the latest configuration just prior to the Aerial Delivery System Tests. The major changes were: 1) Installation of new petal doors with strake, 2) Installation of higher torque petal door actuators, 3) Revision to petal door control switches and indicating system, 4) Modification to sloping longeron near pressure door to allow anchor cable storage with pressure door closed. During previous structural

testing of the cargo doors with the petal door strakes added, the ground rigged door open position was changed from 55° to 60° for the full open position and 38° for the intermediate position. This change was made to assure that the petal doors opening at all airspeeds up to 200 KCAS would be greater than the cargo envelope of the cargo rail system.

The cargo doors were opened to the full (60°) and intermediate positions at all airspeeds up to 200 KCAS. The petal door loads exceeded design limit in compression for the 60° door position in the 13.5" strake configuration at 200 KCAS and 0% δ_F. In this configuration, at speeds above approximately 180 KCAS, petal door blow-in was sufficient to deflect the doors such that the latches would engage and lock the petal doors before the petal door actuator rod ends were faired into the fuselage. Therefore, the petal door actuator rods and the petal door latches were put in a bind sufficient to cause difficulties in the following opening cycle of the petal doors. This locking/unlocking problem was corrected by a petal door actuator cut-off switch mounted in the hayloft. This switch was positioned such that contact with it could not be made until the petal door actuator rod ends were faired into the fuselage. In addition, it was electrically connected in series to the existing actuator cut-off switches. Thus, the petal doors had to be locked and the actuator rod ends had to be faired into the fuselage before the hydraulic actuator

received an electrical shut-off signal. Strake removal during the latter portion of the test program reduced the petal door loads at all airspeeds, and in addition it reduced the amount of petal door blow-in. The airflow aft of the ramp appeared to be less turbulent with the strakes removed. Cargo airdrops were satisfactorally performed in this configuration at airspeeds up to 200 KCAS. However, at speeds above 180 KCAS in the AD configuration, long periods of flight should be avoided due to considerable buffeting and vibration throughout the airplane. This buffeting is very pronounced during the initial opening and just prior to closing of the petal doors.

Tests were conducted to determine the airflow in the ramp area in the cargo drop configuration. Initial tests were made which indicated that only the center portion of the cargo ramp could be worked effectively above 150 KCAS due to the inflow of air around the forward portion of the ramp. In order to improve the airflow over the ramp, buffer boards similar to those used on the HC-130 airplane were installed and tested. With the buffer boards installed, the entire ramp area was workable up to 200 KCAS. Later tests were conducted with retractable buffer boards used for airdrops, and these buffer boards appeared to be as effective as the fixed boards. However, the present position of the U. S. Army is that it intends to perform no troop drops at airspeeds above

135 KCAS due to the parachute opening shock experienced by the jumper. Therefore, present plans are to delete the buffer boards from the cargo drop configuration.

B. Paratroop Drop Configuration (Paratroop Door Only)

Paratroop Doors Open (one or both)

Paratroop Spoilers Extended (one or both)

Paratroop Jump Platform Installed (one or both)

Ramp Up, Petal Doors Closed

Anchor Cables Installed

The paratroop doors were opened, paratroop spoilers extended, and paratroop jump platforms installed at airspeeds up to 200 KCAS. The only difficulty encountered during these operations was the blow-in of the paratrooper door after the door was unlocked. This blow-in is more pronounced in the flaps up configuration, and caution should be used in opening the paratroop doors above 160 KCAS. Once the initial blow-in has occurred the door can be raised without difficulty. The paratroop spoilers operated satisfactorily at all speeds tested. The paratroop jump platforms can be extended much easier after the paratroop spoilers are extended, and this procedure is recommended.

The paratroop door spoilers are effective, and the paratroop doors can be approached without difficulty at all airspeeds

through 200 KCAS. Dummies were ejected at 200 KCAS, and there did not appear to be any problems encountered during the exit. With one paratroop door open and one paratroop spoiler extended, the pilot reported a definite tendency for the airplane to yaw. Flap angles do affect the flow around the paratroop doors, but all areas of the paratroop doors are workable for all flap configurations.

C. Paratroop Drop Configuration (Paratroop Door And Cargo Ramp)

Paratroop Doors Open, Spoilers Extended

Paratroop Jump Platforms Installed

Ramp Down, Petal Doors Open

Anchor Cables Installed

The flight characteristics of the airplane are considered satisfactory in this configuration, although as previously stated in the cargo drop configuration, considerable buffeting and vibration exists above 180 KCAS. However, the airflow in the ramp area, and the center cargo compartment area just forward of the ramp and between the paratroop doors is not satisfactory at airspeeds above 140-150 KCAS with less than 80% flaps. The airflow in the ramp area can be improved to a satisfactory level by the addition of the ramp buffer boards. The buffer boards however, have no effect on the area between the aft end of the paratroop doors and the forward end of the ramp. This area does beco[illegible]kable when the flaps are down 80% or

more. This flap angle is not satisfactory for the 150-200 KCAS airspeed range due to the resultant negative deck angle. Indications were that the airflow aft of the ramp is quite turbulent in this configuration.

4.1.2 Exit From Paratroop Door Only. Individual and stick dummy drops were made from the paratroop doors only at airspeeds of 120, 135, 150, and 200 KCAS as specified in Reference (1). The lowest airspeed was increased to 120 KCAS in order to maintain a $1.3V_S$ minimum speed for dropping paratroopers and the other airspeeds were increased accordingly to cover the airspeed range for the test requirements. As previously stated in the test procedure, all paratroop drops were made at the flap angle necessary to maintain a 0 to 2° deck angle, and using an "A" frame at each paratroop door to project the dummy into the slipstream simulating a "live" paratrooper. The single simultaneous dummy drops from each paratroop door indicated that the dummies cleared the door very well, and droppped away into the slipstream. The parachute bag separated, and rose up along side the fuselage with the parachute streaming from the bag, but photographic coverage did not indicate brushing of the fuselage by the parachute. However, due to camera angles and lack of color contrast between the parachute, and airplane fuselage, the fuselage was coated with a substance that would rub off on any objects that brushed it to positively prove whether

parachutes brushed or not. The parachutes were identified prior to this test, examined, and the dummies were dropped. Post-flight examination of these parachutes did not reveal any indication of fuselage contact, and these parachutes were to be forwarded to the U. S. Army laboratory for further examination.

Stick dummy drops were made with the same airplane configuration, and with much the same results. The dummy lateral separation appeared to be satisfactory, there did not appear to be cross-over, and each parachute static line and bag appeared to rise up high on the fuselage and stabilize in this position. Recovery of the static lines presented no problem as the lines moved forward with out any large oscillations, and were pulled in through the paratroop door. Here again the parachutes did not appear to brush the fuselage. The paratroop jump platform was not evaluated as no live jumps were made during these tests. The static line retriever winches operated satisfactorily on these tests.

One dummy was intentionally "hung up" and retrieved through the left hand paratroop door. The dummy recovery was smooth as the dummy stabilized away from the fuselage, and did not strike the fuselage until the contact at the paratroop door. The "hung dummy" is recognizable as the static line of the "hung dummy" goes

to the aft lower edge of the paratroop door and remains there, but all other static lines float up to the top aft door corner and stabilize. Installation of the retriever bar required one man, and was not difficult or time consuming.

4.1.3 Exit From Ramp Only. Individual and stick drops were made from the cargo ramp with the petal doors in the intermediate position (38°) at 120, 135, and 200 KCAS, and with the petal doors in the full open position (60°) at 130 KCAS. Flap position was that flap angle necessary to give a 0° to 2° deck angle at the test airspeed.

On the individual dummy drops, the dummies cleared the ramp well, dropping down and aft with the parachute bags rising up rapidly as the parachutes separated from the bags. Here again it was extremely difficult to determine from the photographic coverage if the parachute canopies brushed the underside of the fuselage hayloft or not. The underside of the fuselage was taped, grease was rubbed on each tape strip, and dummies were dropped from the ramp. Inspection of the parachutes after the test did not indicate any brushing as no grease stains were found on the parachutes. The 15ft. static line oscillates wildly in the turbulent air aft of the fuselage, and at times tended to hang up on the petal door aft lock or the aft anchor cable support as the static line was retrieved. No dummy retrieval attempts were made with the petal doors in the intermediate position (38°).

Dummy stick drops of seven dummies were made from the ramp. The dummies cleared the ramp, and the parachute-bag separation was similar to the individual drops. The parachute static lines again rose up high against the underside of the fuselage bayloft, and then whipped about in a circular motion in the turbulent air. There were no incidents of parachutes being fouled by the parachute static lines on any of the stick drops. Recovery of the parachute static lines was accomplished, but the static line retriever winch cable whipped about the cargo compartment due to the whip of the static lines as they were being retrieved. This problem would not be as pronounced in the retrieval of a greater number of static lines due to the increased weight and drag of the lines and bags.

Two dummy retrievals were made from the ramp in the cargo drop configuration as specified in Section 4.1.1 of this report. The first dummy retrieval was made using a 140 pound rope head dummy at 130 KCAS. The retrieval of the dummy was started immediately after the stick drop was completed, and the dummy struck the right petal door several times, (the static line was attached to the L/H anchor cable) and the fuselage and ramp. Photographic coverage indicated that a paratrooper could have suffered severe injury on a recovery such as this. In order to investigate the ramp retrieval operation more fully, an anthoropomophic dummy was procured and instrumented with accelerometers in three axes. In addition, and as a result of the above test, a retrieval bar (similar in principle

to the bar presently furnished in the Paratroop Kit for use during retrievals from the troop doors) was incorporated in the rear R.H. ramp area at approximately F.S. 1438. This bar was slightly aft of the end of the ramp, located approximately seven feet high, and projected laterally inboard sixteen inches. In final form, it would be designed to fold outboard into the fuselage for clearance. In usage the anchor cable, retriever cable, and trooper's static line ride over the bar so that final position of the trooper is essentially vertical. The dummy was pushed from the ramp, and approximately four seconds later the dummy experienced "G" loads similar to a moderately hard parachute opening shock load with peak recorded accelerations of 9.0G. The dummy struck the airplane structure six times prior to being retrieved up to the ramp edge and peak accelerations of 2.10 G's to 9.91 G's were recorded. The dummy struck the edge of the ramp twice during the lifting of the dummy over the ramp edge with a peak acceleration of 10.34 G's recorded. Physiological analysis of these data indicate that head, arm, and leg injuries would be anticipated in a paratrooper retrieval under these conditions. It is felt that had proper techniques been devised and used, the dummy strikes against the ramp edge could have been prevented. Both of these tests were performed with the petal door strakes on and the petal doors in a 60° position (149.5 inches door tip to door tip). No tests were done after the petal door strakes were removed.

4.1.4 Simultaneous Exit From Ramp And Paratroop Door. Three dummy drops were made with the paratrooper doors, and cargo doors open. The first dummy drop was 1 ropehead dummy out the right hand paratroop doors with the airplane configured as in the Paratroop Drop Configuration (paratroop door and cargo ramp), as specified in Section 4.1.1 of this report. The petal doors were in the intermediate (38°) position. The dummy cleared the right hand door, and dropped away, but the parachute bag rode up, and the parachute canopy brushed against the right hand petal door leading edge, and a 12 inch slit was torn in the lip of the parachute canopy. The petal door leading edge was not damaged. Standard 15 feet static line was used on this test. Airspeed was 130 KCAS and flap position was 65%.

The second dummy drop, made with the same airplane and dummy configuration, was one ropehead dummy out each paratroop door, and one off the ramp simultaneously at 130 KCAS, flaps 65% down. All dummies cleared airplane doors, dropped away and parachutes of dummies from paratroop doors appeared to brush fuselage but did not snag on petal doors. The parachute of the dummy dropped from the ramp did not appear to brush the

fuselage. The dummy spacing behind airplane appeared to be satisfactory, and there was no parachute damage. Again these dummy drops were made with the standard 15 foot static line and T-10 parachute.

Analysis of the previous dummy drops with the paratroop and cargo doors open indicate that the 15 foot static line places the parachute bag just forward of the petal doors leading edge as the parachute separates from the bag. A standard 4 foot static line extension was procured and sewn to the 15 foot static line to increase the total static line length to 19 feet. The object was to try to move the bag aft of the petal door leading edge while the parachute was separating from the parachute bag. The third dummy drop in this configuration was one rope head dummy out each paratroop door, and one off the ramp simultaneously at 130 KCAS, 80% flaps. The dummies cleared the airplane satisfactorily, but the right door dummy parachute bag still containing the parachute, hit the right hand petal door, and made a sizable dent in it. There were no visible indications of other damage to the parachute or the airplane. However, examination of the 3 parachutes after landing revealed damage to all parachutes in the apex area.

4.2 Extraction Line And Parachute Tests

4.2.1 Dummy Parachute Pack Ejections - The dummy parachute pack ejections are summarized below in Table 4-1.

TABLE 4-1

DUMMY PARACHUTE PACK EJECTIONS

PARACHUTE SIZE	NO. OF PARACHUTES	AIRSPEED V_c -KCAS	FLAPS %
15' D_o	1	120	76
15' D_o	1	155	60
15' D_o	1	175	45
15' D_o	1	192	35
22' D_o	1	175	45
28' D_o	2	155	60
32' D_o	2	120	76
32' D_o	2	192	35

The results of these tests were satisfactory for each extraction parachute tested. All parachutes swung freely from the pendulum attachment, cleared the ramp lip, and made no contact with the aircraft structure.

4.2.2 Minimum Extraction Line Length Determination - The minimum extraction line length tests are summarized below in Table 4-2.

TABLE 4-2

MINIMUM EXTRACTION LINE LENGTH TESTS

EXTRACTION LINE LENGTH - FT.	ATTACHMENT POINT FUS. STA.	AIRSPEED V_c - KCAS	FLAPS %
60	1149	120	76
		135	65
		145	40
			50
			60
80	1149	175	45
		192	45
105	838	120	75
		135	65
		150	60
		175	45
		200	33
145	586	120	76
		135	65
		150	60
		175	45
		200	33

The results of the 60' line tests were totally unsatisfactory. In this configuration, the line was continually twisting and fraying. The 80' line produced better parachute characteristics and the extraction line remained in the center of the aft cargo opening. The line was stable and evidenced no twisting tendencies, and the tests were considered satisfactory. During the testing of the 105' and the 145' lines, there was some contact between the extraction line and the aft fuselage structure in the general area of the tail cone. This occurred predominately for airspeeds below 150 KCAS. However, this occurrance was mutually agreed by contractor and SPO personnel to be minor and due to the small (4' Dia.) parachute being towed. The results of the 105' and 145' line were therefore considered satisfactory. The minimum line length criteria resultant from these tests was a line length which placed the connection link between the extraction line and parachute at least 23.5 feet aft of the tail cone. This criteria was adhered to for the tow tests, but amended during the course of testing.

4.2.3 Extraction Parachute Tow Tests. A summary of the results of the extraction parachute tow tests plus extraction forces measured during the airdrops is shown by Figures 4-1, 4-2, 4-3, 4-4, and 4-5. Additionally, time history data for the tow tests are presented in Figures C-1A through C-17A in Appendix C. No adverse effects on the airplane were noted during the tow tests. The time histories show that the only airplane response was a slight nose down pitching

moment and a reduction in airspeed which was corrected by elevator input and power application. It was observed that the resultant extraction parachute forces were lower than predicted forces during the initial testing. The maximum difference between predicted and actual extraction forces was approximately 20%. In an effort to improve this situation, the extraction lines were increased from 80' to 100' in length. This resulted in a slight increase in the extraction forces measured. Additionally, somewhat improved parachute characteristics were noted with the longer lines. The increased line length precipitated a change in the minimum extraction line length criteria from 23.5' to 33.5' aft of the tail cone. Table 4-3 presents the criteria observed for the remainder of the program.

TABLE 4-3

MINIMUM EXTRACTION LINE LENGTHS

EXTRACTION LINE LENGTH-FT.	MOST FORWARD USEABLE FUSELAGE STATION
80	1260
100	1020
120	780
140	540

It should be noted that a 140' line length would be satisfactory for use with cargo located at any position in the cargo compartment.

Additionally, if line lengths of different sizes are linked together, they should be chosen such that the metal connector link between them is located outside the airplane. This procedure would preclude damage to the aircraft interior and associated structure resultant from extraction line whipping action. Damage of this nature did occur during the airdrop portion of the program (Flight 137 drop number 35) during which two 60' and one 20' line lengths were pieced together to form a 140' extraction line length.

Jet blast effects were investigated by cutting back the inboard engines during the tow tests. Since this procedure produced no positive results and only served to complicate the maneuver, it was not employed on the following tow tests or airdrops.

The results of the tow tests indicate that the standard extraction parachutes (15'D_o, 22'D_o, and 28'D_o) are satisfactory for safe use up to 150 KCAS. However, due to the parachute failures experienced during the cargo airdrops, the 28'D_o extraction parachute is not felt to be strong enough for use above 140 KCAS. The 32'D_o fist ribbon parachute and the 24'D_o reinforced ring slot parachute are felt to be strong enough for safe utilization at airspeeds up to 170 KCAS and 190 KCAS respectively. Use of a reefed parachute at speeds above its unreefed airspeed limit is not advisable since a malfunction of the reefing line could lead to full inflation of the parachute. This type of incident occurred

during a tow test of the 32'D_o parachute at 198.5 KCAS. A miscalculation of the reefing line length lead to full inflation of the parachute which precipitated a failure in the extraction parachute risers. The clevis fitting at the end of the extraction line was then thrown forward into the airplane causing minor damage to the rudder, and rudder boost package fairing (tail cone). It is realized that the 32' and 24' parachutes are non-standard items in the USAF ADS inventory. However, based upon the parachutes supplied to the contractor at the El Centro NAF, there exists no safe standard extraction parachute capability at speeds above 150 KCAS.

4.3 Single Package Airdrops

4.3.1 Airplane Response. Data obtained from the single package airdrops is presented in time history form by Figure D-1A through Figure D-40G in appendix D.

4.3.1.1 Cargo Drop Weight Effects. A summary plot of incremental angle of attack, pitch rate, and pitch acceleration for the single package drops is presented in Figure 4-6. Vertical acceleration data obtained at fuselage stations 277, 932, and 1637 is depicted in Figure 4-7. The above parameters plotted versus cargo drop weight demonstrate that the effect of increasing the drop weight is to increase each of the above response parameters. Furthermore, up to the maximum test drop weight of 35,700 pounds, no design limits were exceeded and the pitch rate build-up was not beyond the control of the pilot. These results indicate that the C-141A has capabilities to airdrop unit loads in excess of 35,000 pounds provided a reliable 1.0g extraction system can be obtained for heavy drop weights.

4.3.1.2 Extraction Ratio Effects. The primary effect on airplane response is that of extraction ratio (the ratio of extraction force to the cargo drop weight). Data from drops number 13,

14R, and 15 are plotted in Figure 4-8 to demonstrate the typical effect of extraction ratio on airplane response. These data show that the effect of decreasing the extraction ratio is to increase the incremental angle of attack, incremental load factor, and pitch rate. For extraction ratios below approximately 0.8g, the effect becomes significant and greatly increases the airplane response. Extraction ratios greater than 1.5g would produce roller speeds in excess of design limits.

R. H. restraint rail release forces measured during the airdrops were in most cases higher than the release loads set in the release mechanism. For example, the release force for drop number 22 (34,100 pounds) was almost 100% higher than the release force set (17,500 pounds). The release forces measured during the airdrops are contained in Table A-3 in Appendix A. The restraint rail lock setting table was revised midway through the program, and further revised at the end of the program by combining Category I and Category II test data. This final revision is felt to be satisfactory for restraint rail lock settings on the C-141A, and is shown in Table A-5 in Appendix A.

Since extraction ratios are totally dependent upon the overall extraction system, the reliability of this system is of prime concern. Section 4.5.1 more fully discusses the extraction system deficiences encountered during the test program.

However, it should be noted here, that extraction system malfunctions or failures coupled with modular platform undersurface damage will produce low extraction rates which in turn increase the airplane response. During drop number 22 (a failed extraction system drop) damage to the modular platform was so severe that damage to the inboard roller sections on the ramp occurred. In addition, the resultant airplane response under these conditions was such that full nose down elevator was required to check the airplane pitching motion. Platform damage could lead to prolonged retardation of platform movement which would lead to serious if not impossible controlability requirements under certain drop conditions.

4.3.1.3 Airspeed Effects. Figure 4-9 depicts the effects of airspeed on airplane response. The data plotted are taken from drops number 11,30, 31, and 28. These data indicate the effect of increasing airspeed is to decrease the incremental angle of attack, and increase the incremental load factor and pitch rate.

4.3.1.4 Airplane Center of Gravity Effects. Airplane center of gravity effects are depicted by Figure 4-10. The data plotted are from drops number 25 and 22R. These data show that the effect of moving the c.g. aft is to decrease the incremental angle of attack, incremental load factor, and pitch rate.

4.3.1.5 Gross Weight Effects. Figure 4-11 shows the effect of airplane gross weight on the response parameters. The data, corresponding to drops number 17 and 32, indicates that the effect of increasing the gross weight is to increase the incremental angle of attack, and decrease the incremental load factor and pitch rate.

4.3.1.6 Altitude Effects. Altitude effects are depicted in Figure 4-12. Drops number 28 and 33 are plotted. Elevator input was employed on drop number 33. Taking into account the fact that this elevator input would reduce the resultant airplane response, the data indicates that incremental angle of attack and incremental load factor are increased with an increase in drop altitude. The pitch rate data is inconclusive since the elevator input caused the pitch rate to be checked before the load c.g. reached the ramp lip.

4.3.1.7 Flap Effects. Test results are lacking to fully depict any effect of flap deflection on airplane response. After review of the individual drop time history data, it is felt that the incremental airplane response is not affected to any significant degree by changes in flap deflections. However, flap deflection does have an effect on the overall ADS maneuver. For a given speed/gross weight combination flap deflection greatly influences the 1.0g trim attitude. Figure 4-13 depicts the change in 1.0g trim attitude due to flap deflection. Figure 4-14 presents an airspeed-gross weight-flap deflection schedule for a 2° nose up deck angle. Flap deflection also influences the $1.2V_S$ speed as shown in Figures 2-7 and 2-8. With flap deflections between 0% and 88%, airdrops can be performed from $1.2V_S$ to 200 KCAS, however the upper speed limit is reduced to 185 KCAS when 100% flaps are used.

4.3.1.8 Negative Deck Angles. Negative deck angles of up to -3° (drop number 36) were encountered during testing. No adverse effects on airplane response were noted due to negative deck angles. However, negative deck angles are not advisable since in the event of an extraction system failure, a negative deck angle would impart some forward acceleration on the load. In addition to this, a negative deck angle reduces the overall extraction ratio slightly.

4.3.1.9 Pilot Response Effects. The effects of pilot response are dependant upon how soon after load release and at what rate the elevator is input. In general, the test results indicate that pilot corrective action reduces the airplane response parameters. This reduction in airplane response by introducing pilot action also serves to increase the horizontal stabilizer loads and in general the cargo ramp loads. Elevator effectiveness is demonstrated by drop number 22 during which a failed extraction system produced a very low extraction rate therefore creating the need for pilot response. The pitch rate was checked and reduced by 46% before the load c.g. reached the ramp lip. On normal airdrops (nominal 1.0g extraction rates) pilot response is not necessary up to 35,000 pounds drop weights, however, for airdrops of unit loads above 20,000 pounds, it is suggested that the pilot dampen the airplane pitching motion in anticipation of an extraction system failure.

4.3.2 Airplane Loads. Airplane loads experienced during ADS System Tests are presented in time history form in Appendix D (Figures D-1A through D-40G). Summary plots of a given load versus cargo drop weight are contained as noted in this section of the report. With the exception of the petal door actuator loads, no load measured during the test program exceeded design limits.

4.3.2.1 Petal Door Actuator Loads. Incremental petal door loads due to cargo extraction were not anticipated prior to the ADS System Tests. However, incremental door loads were found to be severe during testing and resulted in net petal door loads equal to or exceeding design limit load in compression (10,000 pounds) during drops number 22, 27, and 32. Extraction system failures occurred during drops number 22 and 32, and drop number 27 was a high speed forward c.g. drop. In each of these drops, the petal doors were equipped with the 13.5' strake. The incremental loads are apparently due to the fact that as a package exits the ramp it creates a venturi effect between the petal doors. This effect produces higher airflow velocities along the inside of the petal doors creating a negative pressure surge which precipitates the incremental compressive loads reacted at the petal door actuator rod ends.

Figure 4-15 represents a summary of the net petal door actuator loads plotted versus cargo drop weight. These data do not reflect any positive effect of drop weight on the petal door loads. However, review of each individual drop does indicate a combined effect due to package size (overall length and height), extraction ratio, airspeed, and flap setting. The larger sized packages apparently intensified the venturi effect creating greater negative pressure surges. The reduced extraction rates increased the overall airplane

response thus producing larger inertia loads on the petal doors. In addition to this, the package remained between the petal doors for a longer period of time and the platform tip-up was greater for the reduced extraction rates. Airspeed and flap deflection influence the petal door loads predominantly in respect to the trim loads prior to drop. Increasing airspeed increases the petal door trim loads, and increasing the flap deflection decreases the petal door trim loads. At 200 KCAS with less than approximately 30% flaps, the petal door trim loads equaled or exceeded design compression limits with the petal doors in the 13.5' strake configuration.

Additional flight tests were initiated concurrently with the ADS System Tests to determine:

(1) If the removal of all or any portion of the petal door strake would reduce the combined flight loads and airdrop passage loads to below design limits,

(2) If there was any favorable or adverse effect of the proposed ramp air deflectors on the combined flight and passage loads and,

(3) If there was any favorable or adverse effect of reducing the petal door opening position on the combined flight and passage loads.

These tests are summarized in Table 4-4.

TABLE 4-4

EFTR PETAL DOOR TESTS

PETAL DOOR POS. - DEG.	STRAKE LENGTH	RAMP CONFIG.		CARGO AIRDROPS	DROP NUMBER
60	13.5'	RAMP SIDE PANELS	OFF	NO	
38	13.5'		↓	↓	
60	5.0'				
38	↓				
60			ON*		
38			↓		
60	0				
38					
60			OFF		
38			↓		
55				↓	
55			ON*	NO	
60			OFF	YES	22R1
55			OFF		22R2
55			ON**	↓	22R3
60	↓		ON**		22R4

The results of these tests are summarized for trim flight conditions in Figures 4-16 through 4-21. Steady sideslip results are summarized in Figures 4-22 through 4-27. Table 4-5 represents the effects of petal door position and ramp air deflectors on petal door passage loads. Tabulated data for each trim and sideslip point flown is contained in Figures E-1A through E-5A in Appendix E.

Dynamic structural petal door loads were evidenced during testing. These door buffet loads during flight were of basically two frequencies

* Plywood side panels

** Rubberized side panels

3 cps and 20 cps , with slight variations due to different flight conditions. The peak-to-peak load amplitude of the two frequencies varies with flight conditions and airplane configuration in a range from 2000 to 4500 pounds. This peak-to-peak load range is obtained from the "MAX" and "MIN" actuator loads shown in the tabulated data of Figures E-1A through E-5A. Unless specifically labeled as a "peak" load, the data herein is presented in terms of the average load level as has been the case in all previously published flight test data. The time history petal door loads data are also presented in terms of the average load level with the exception of the actual peak load.

Complete strake removal demonstrated a 50% reduction in the most critical trimmed flight petal door loads. Strake removal also reduced the most critical compressive petal door loads in sideslip to 10% of design limits. This total load is obtained by adding the average load (8,450 pounds) of Figure 4-25 (for 88% flaps, leeward actuator at 160 KEAS, ramp side panels off) to the buffet load of 1,850 pounds (Figure E-2A in Appendix E) for the same flight conditions. The passage loads appear to be reduced with strake removal, but this is inconclusive since the ARAW was not dropped under normal conditions with the petal doors in the 13.5' strake configuration. Although other influences are present, the effect of strake removal on the net petal door loads during airdrop

is demonstrated by a comparison of the results of drop number 12 and drop number 28. Drop number 28 (198.5 KCAS and a no strake) produced net petal door loads approximately equal to those of drop number 12 (142.5 KCAS and 13.5' strake), yet there was over 55 knots difference in airspeed.

Reduction in the petal door opening position from 60° to 55° lowered the trimmed flight loads by approximately 12%, but at the expense of a slight increase in incremental door loads during airdrops. The change in door position did not change the door loads during sideslip to any significant degree. Film coverage obtained during these tests indicates that the forward latch cover of the L.H. petal door did not move inside of its 55° ground-rigged position even under the most severe flight conditions for deflecting the door inward. This indicates that a further reduction in door opening (possibly 1°) may be available for compression load relief.

The ramp side panels were found to have no significant effect on the trimmed flight petal door loads. They did however, aggravate the most critical compression loads during sideslip. Although insignificant, there was a slight tendency for the ramp side panels to increase the incremental petal door loads during airdrops.

Strake removal introduced a minor problem in that design limit loads in tension for the 38° door position were exceeded in maximum steady sideslip for flap deflections greater than 50% and airspeeds above

approximately 180 KCAS. This condition is indicated in Figure 4-26 by adding approximately 1500 pounds dynamic tension load (Appendix E data) to the average load shown. However, during the Aerial Delivery System Tests, it became apparent that the 38° door position would not be used unless a three stick paratroop airdrop capability was developed. Therefore, no additional tests for the 38° door position were performed.

TABLE 4-5

EFFECTS OF PETAL DOOR POSITION AND RAMP AIR DEFLECTORS ON PETAL DOOR PASSAGE LOADS

FLIGHT NO	168	170	172	173
FLIGHT DATE	8-23-65	8-25-65	8-27-65	8-31-65
DROP NO.	22R1	22R2	22R3	22R4
GROSS WEIGHT-LBS	193,800	173,500	179,300	179,400
C.G. % MAC	33.7	32.7	32.9	32.7
AIRSPEED KEAS	153.5	154.5	152.5	153.0
ALTITUDE FT.	5,000	5,000	5,000	5,000
FLAPS %	60	60	60	60
RAMP AIR DEFLECTORS	OFF	OFF	ON	ON
PETAL DOOR POSITION DEG.	60	55	55	60
CARGO TYPE	ARAAV	ARAAV	ARAAV	ARAAV
CARGO LENGTH-FT.	24	24	24	24
CARGO WEIGHT-LBS.	35,050	19,700	19,900	19,650
PETAL DOOR ACTUATOR LOAD* (LBS)				
RH-PEAK	4,700	3,860	4,400	5,760
RH-TRIM	N.A.	1,350	1,200	2,550
RH-PASSAGE LOAD	N.A.	2,510	3,200	3,210
LH-PEAK	5,160	4,490	4,800	5,740
LH-TRIM	2,450	1,230	1,380	2,790
LH-PASSAGE LOAD	2,710	3,260	3,520	2,950

* Loads tabulated above are compression loads.

4.3.2.2 ADS Link Loads (Spider Arm Loads). Figure 4-28 presents a summary of the spider arm loads plotted versus cargo drop weight. These data indicate that the spider arm loads are increased as the cargo drop weight is increased. Reduced extraction ratios also increase the spider arm loads. An increase in airplane gross weight apparently reduces the spider arm loads, while increasing airspeed serves to increase these loads. Flap effects are insignificant, but pilot response effects tend to increase the spider arm loads since they reduce the load relief available due to airplane pitching motion. No spider arm loads obtained during the ADS System Tests were beyond the design limit load of 38,700 pounds tension.

4.3.2.3 Cargo Ramp Loads. Cargo ramp actuator and hinge loads are summarized in Figure 4-29. Net loads are presented in each case. Incremental loads for the ramp actuator are also presented for each drop in which a time history of the loads was performed. Design limit loads were not exceeded for any of the above ramp components during the ADS System Tests.

Modifications were made to the ramp actuator hydraulic system during the course of testing. The reason for this was the fact that the ramp actuators did not produce sufficient force to hold the ramp in the airdrop position at 200 KCAS. These modifications resulted in an approximate change in system pressure to the actuators from 500 psi to 1000 psi, and was sufficient to keep the ramp down at 200 KCAS. Review of the time history data shows that after the above change was made, there was a post drop compressive load in the ramp actuators greater than their original trim load prior to drop. Review of the time history data prior to this change (prior to Flight 153) shows no such post drop load. The time history data also indicates that prior to the modification of the hydraulic system, the incremental tension loads produced as the cargo c.g. passed over the actuators was equal to or greater than the incremental compressive spring-back load after the cargo c.g. passed the actuators. After system modification, the compressive spring-back loads became larger. The ramp actuator loads were affected predominantly by airspeed changes since at higher speeds, more actuator force was required to keep the ramp in the airdrop position. The resultant ramp actuator loads remained within design limits during the test program.

The ramp hinge total side load results were inconsistent with drop weight, airspeed, extraction ratio, etc. Bank angle and sideslip appeared to exert a slight tendency to increase the total side load on the ramp hinge. Both the drag and vertical loads on the ramp hinge were increased as the cargo drop weights were increased. Reduced extraction ratios also produced higher hinge loads as did elevator input.

4.3.2.4 Fuselage Loads. Net and incremental vertical bending loads measured at fuselage stations 1048 and 1568, are summarized in Figure 4-30. The net bending loads on the aft body displayed a tendency to increase in a down bending manner as the cargo drop weights were increased. In general, higher speeds and reduced extraction ratios also increased the net down bending loads. Elevator inputs were load relieving as far as the net fuselage bending loads were concerned. The effects of nose down elevator inputs were to produce large up bending incremental loads which resulted in net loads closer to zero.

The incremental loads at fuselage station 1048 were in a down bending direction due to the cargo c.g. exerting its greatest influence as it reached the ramp lip. The incremental loads at fuselage station 1568 were in an up bending direction due to the fact that in most cases the

tail loads were of a relieving nature. None of the fuselage loads obtained exceeded design limits.

4.3.2.5 Horizontal Stabilizer Loads. Net and incremental shear and bending loads at H.B.L. 44L are summarized in Figure 4-31. Horizontal stabilizer trim loads prior to airdrop were in a down load direction. As the airplane pitched nose up due to cargo being extracted, the angle of attack of the stabilizer changed such that smaller down loads were attained. In some cases where nose down elevator inputs were introduced, the net load became an up load on the horizontal stabilizer. Increasing the cargo drop weight, decreasing the extraction rate, and introducing nose down elevator inputs all served singularly or in combination to produce larger up tail load increments which resulted in net horizontal stabilizer loads lower than their trim values prior to drop.

Although not a requirement under Reference (1), a working measurement of torsion at H.B.L. 44L was achieved during the course of the program. A summary of the torsion loads measured is presented in Figure 4-32 for the drops during which the instrumentation was working. These results are inconsistent due to the variation in elevator inputs, but are useful in spotting tail loads on a design envelope. Horizontal stabilizer loads measured during the test program did not exceed design limits.

4.3.2.6 Vertical Stabilizer Net Loads. Vertical stabilizer net bending loads measured at V.S.S. 345 were of an insignificant value throughout the test program. These loads are presented only on the time history data. Sideslip was the only item affecting vertical stabilizer bending, and for the airdrop tests, sideslip was kept to a minimum.

4.3.2.7 Pitch Trim Actuator Loads. A summary of the pitch trim actuator loads is presented in Figure 4-33. The net pitch trim actuator loads displayed a slight tendency to increase with drop weight. The effect of reduced extraction ratios was to increase both the net and incremental loads. The forward c.g. drops displaying higher loads than the aft c.g. drops. Elevator input also increased the net and incremental pitch trim actuator loads. The pitch trim actuator loads did not exceed allowable limits during the test program.

4.4 Sequential Airdrops

4.4.1 Airplane Response. Airplane response parameters are presented in time history form in Figures F-1A through F-8N in appendix F. With the exception of drops number 40 and 40R, the sequential drops displayed no significant changes in the resultant airplane response. The airplane response in general was of a lesser magnitude due to the effects of increased gross weights and pilot effort. Drops number 40 and 40R both demonstrated that full elevator was required to maintain control of the airplane under the influence of a failed extraction system. However, in each case, the pitch rate was checked prior to the cargo c.g. reaching the ramp lip. Drop number 40R resulted in greater airplane response due to the fact that the extraction system failure occurred on the second load which was located at a forward c.g. position. Both drops produced severe platform damage which resulted in a further retardation of the platform movement. However, no rollers were lost during these drops even though some damage was sustained.

The results of the sequential airdrops indicate that a time delay of approximately 2 seconds between successive loads is sufficient in terms of pilot and airplane response. It was possible for the pilot to hold the airplane in its proper attitude (0° to 2° N.U.) as the airplane c.g. shifted under

the influence of cargo extraction. As an example of this c.g. shift, reference drop number 42 during which the airplane c.g. shifted from 23.3% MAC prior to drop to 11.3% MAC during the drop to 20.3% after the drop.

4.4.2 Airplane Loads. The airplane loads experienced during the sequential airdrops were not significantly different in magnitude or nature from those obtained during the single package drops. Time history data pertaining to these drops are presented in Figures F-1A through F-8N in Appendix F. During drop number 40, the left hand petal door actuator reached a peak load of 11,300 pounds compression (113% design limit) and the right hand actuator reached 11,700 pounds compression (117% design limit). However, on drop number 40R which produced more critical forcing functions on the petal doors than did drop number 40, the peak petal door loads obtained for this strake off configuration were only 76% of design limit for the L.H. door and 68% of design limit for the R.H. door. During drop number 40R, N_Z @ F.S. 932 reached a peak value of 2.1g (105% design limit). Although wing loads were not available, the flight conditions for this 5% exceedance of load factor limit preclude the possibility of wing loads exceeding design limit load levels.

4.5 Aerial Delivery System Deficiencies and Limits

4.5.1 Deficiencies. Test results show that at the present time,

there exists no reliable extraction system for use with 35,000 pound unit loads. Table 4-6 lists the extraction system malfunctions encountered during the ADS Systems Tests.

TABLE 4-6
Extraction System Malfunctions
And Failures

Flt. No.	Drop No.	Airspeed KCAS	Drop Wt.Lb.	Extr. Parachute No/Size	Remarks
121	18	152	35,540	2/28'D_o	One parachute failed
129	26	120	23,440	2/28'D_o	One parachute failed to open.
139	22	155	34,400	2/28'D_o	Premature extraction line guillotine.
144	32	153	35,335	2/28'D_o	Clevis failure
149	40	150	34,650 35,360	2/28'D_o 2/28'D_o	Extraction line failure on first load-second load not dropped
175	40R	150	35,390	2/28'D_o	Both extraction parachutes failed on second load.

Since the total number of 35,000 pound drops in the program was 15, this gives an overall system malfunction rate of 33 1/3%. The failure of drop number 22 resulted in a change in airdrop rigging procedure. The clevis failure of drop number 32 resulted in changing the clevis material from aluminum to steel. An old or understrength line combined with the use of an improper connecting link (clevis) resulted in the extraction line failure of drop number 40. Appropriate measures have been taken to preclude the

possibility of this combination of events happening again. However, a sufficient number of drops were not performed with the modified extraction system to prove reliability. It should be acknowledged that in its present configuration, any single failure (chute, clevis fittings, extraction line, etc.) can cause a total loss of extraction force.

The 28'D_o ring slot extraction parachute is another deficiency in the overall system. The airdrop test results indicate that this parachute is inadequate because of strength properties at speeds above 140 KCAS. It must be acknowledged that contractual requirements to airdrop unit loads up to 35,000 pounds are premised on a nominal 1.0g extraction rate, Reference (3). It has been pointed out to the SPO that clustered 22'D_o parachutes could be satisfactorily employed to extract unit loads up to 25,000 pounds at 150 KCAS. Another alternative indicated by the test results is the usage of either the 32'D_o or 24'D_o non-standard parachutes for 35,000 pound class loads. The final alternative is to redesign the 28'D_o parachute with strength properties sufficient to insure reliability at airspeeds of at least 160 KCAS. Even if this was done, there would still be no capability of standard extraction parachutes above 150 to 160 KCAS. The only extraction parachutes demonstrated to be satisfactory above 150 KCAS were the 32'D_o

fist ribbon and the 24'D_o reinforced ring slot parachutes. These two parachutes are felt to be satisfactory for use in the configuration and speed range noted in Section 4.2.3. Further testing and development of an extraction system capable of extracting unit loads up to 35,000 pounds at 200 KCAS is needed.

The present ADS modular platform is felt to be of insufficient strength to be used safely on unit loads above 25,000 pounds. Test results showed damage to the platforms when used with 35,000 pound loads extracted at rates as high as 0.8g. This platform damage can become quite severe with reduced extraction rates and leads to the possibility of a "hung" load during an ADS maneuver. Platform damage under low extraction rates aggravates the situation since it precipitates a further retardation of platform movement due to interaction between the rollers and platform under-surface. In the case of drop number 22, platform damage was sufficient to rip out the last two rollers of each inboard roller section on the ramp. It is the contractors understanding that the present modular platforms are designed for a maximum unit load of 28,000 pounds extracted at a nominal 1.0g rate. Platform modifications must be accomplished before any additional testing of unit loads above 25,000 pounds is initiated. The two alternatives for platform modification appear to be: (1) steel reinforcing strips in the area of

roller contact and (2) a new platform designed for unit loads of 35,000 pounds or higher. When the above is accomplished, the 25,000 pound unit load limit can be lifted, and pending extraction parachute development, further testing of 35,000 pound class loads can be considered. Under the influence of heavy drop weights and low extraction rates, severe damage and/or loss of rollers can be sustained (reference drop number 22 as a typical example). It should be acknowledged that for the nominal 1.0g extraction rate case, which is the design criteria accepted by the contractor and the SPO, the present C-141A roller conveyor system is adequate for aerial delivery of unit loads up to 35,000 pounds. All roller failures experienced during air drop testing were a "third level failure". First, the extraction system failed, and then the resultant low extraction rates produced platform undersurface damage followed by failed or damaged rollers. Structural redesign and/or beef-up of the rollers does not seem reasonable for two reasons. First, it seems unwise to increase the basic airplane weight for the small percentage of 35,000 pound air drops made operationally. Secondly, the test results do not positively indicate that the rollers would have failed had the platforms held together. Positive isolation of the roller capabilities can be achieved only during a follow-on airdrop program utilizing a platform of

strength sufficient to withstand the loading produced by a 35,000 pound load extracted at a nominal 0.25g. The contractor does not ignore the possibility of modifications to the roller conveyor system. However, these modifications would be considered only if follow-on testing positively indicates they are needed.

4.5.2 ADS Limits. Based on the results of the ADS System Tests and the present extraction system deficiencies, it is felt that the maximum unit cargo weight airdropped from the C-141A should not exceed 25,000 pounds because of insufficient platform strength. In addition, the airspeeds employed should be between 150 KCAS and 130 KCAS (or $1.3V_S$, whichever is larger). A joint contractor/SPO meeting (18 November 1965) resulted in further limitations due to extraction parachute deficiencies. It was agreed to restrict the use of the $28'D_o$ extraction parachute to 130 KCAS with a unit drop weight limit of 15,000 pounds at that speed. In addition, it was agreed that the $15'D_o$, reefed $22'D_o$, and unreefed $22'D_o$ extraction parachutes could be used up to 150 KCAS. This would result in a maximum unit drop weight of 16,000 pounds for the unreefed $22'D_o$ parachute at 150 KCAS. It should be noted that the above limits are due predominantly to extraction system deficiencies, and that the C-141A has demonstrated full airplane capabilities to airdrop unit loads of 25,000 pounds up to 200 KCAS, and to airdrop unit loads of 35,000 pounds at speeds up to 160 KCAS.

EXTRACTION PARACHUTE FORCE VS. AIRSPEED

15' D_o RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS - TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

○ - 80' LINE LENGTH @ F.S. 1271

◇ - 140' LINE LENGTH @ F.S. 1172

▽ - 140' LINE LENGTH @ F.S. 926

SYMBOLS - AIRDROPS

■ - 100' LINE LENGTH

▼ - 120' LINE LENGTH

◆ - 140' LINE LENGTH

▼ - 100' LINE LENGTH, PARACHUTES REEFED TO 12' DIA

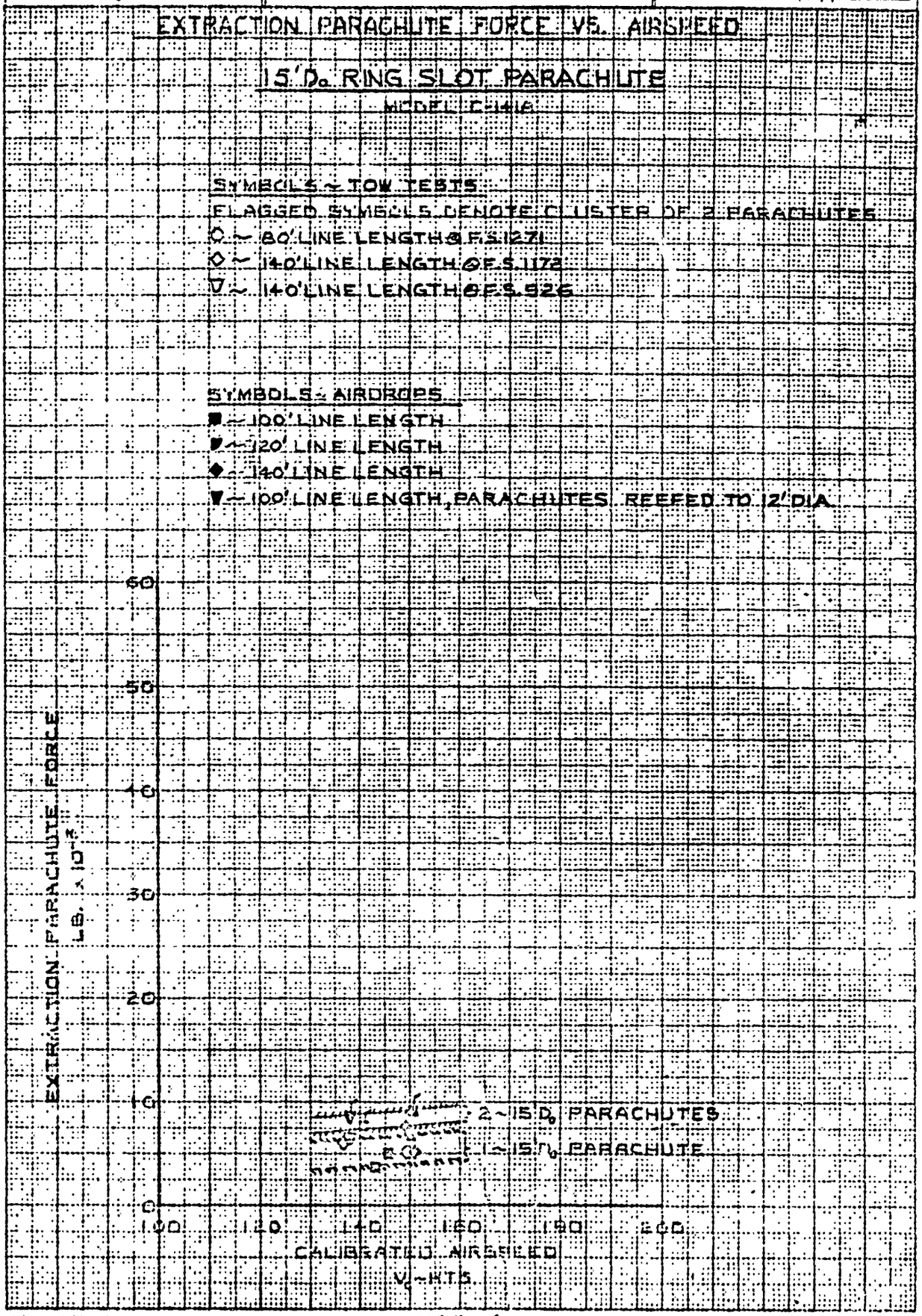


FIGURE 4.1

EXTRACTION PARACHUTE FORCE VS. AIRSPEED

22'D$_o$ RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS - TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

○ - 80' LINE LENGTH @ F.S. 1271
◑ - 80' LINE LENGTH @ F.S. 1260
□ - 100' LINE LENGTH @ F.S. 1260
◇ - 140' LINE LENGTH @ F.S. 1172
D - 80' LINE LENGTH @ F.S. 1220, PARACHUTE REEFED TO 9' DIA

SYMBOLS - AIRDROPS

● - 80' LINE LENGTH
■ - 100' LINE LENGTH
▼ - 120' LINE LENGTH
◆ - 140' LINE LENGTH

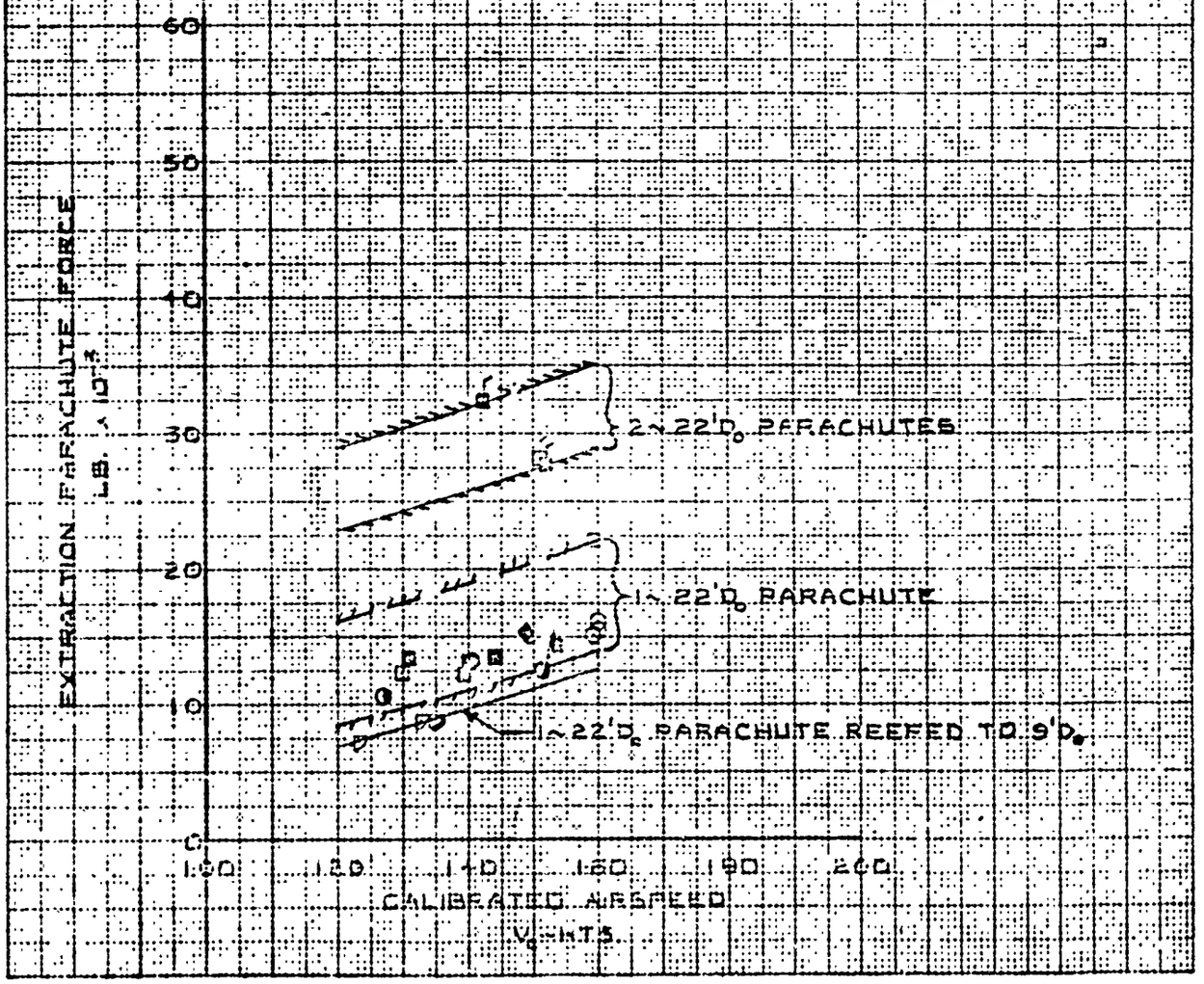


FIGURE 4-2

EXTRACTION PARACHUTE FORCE VS. AIRSPEED

28' D_o RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS - TOW TESTS:
FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES
○ - 80' LINE LENGTH @ F.S. 1271
● - 80' LINE LENGTH @ F.S. 1260
□ - 100' LINE LENGTH @ F.S. 1260
◇ - 140' LINE LENGTH @ F.S. 1172

SYMBOLS - AIRDROPS:
● - 80' LINE LENGTH
■ - 100' LINE LENGTH
▲ - 120' LINE LENGTH
◆ - 140' LINE LENGTH

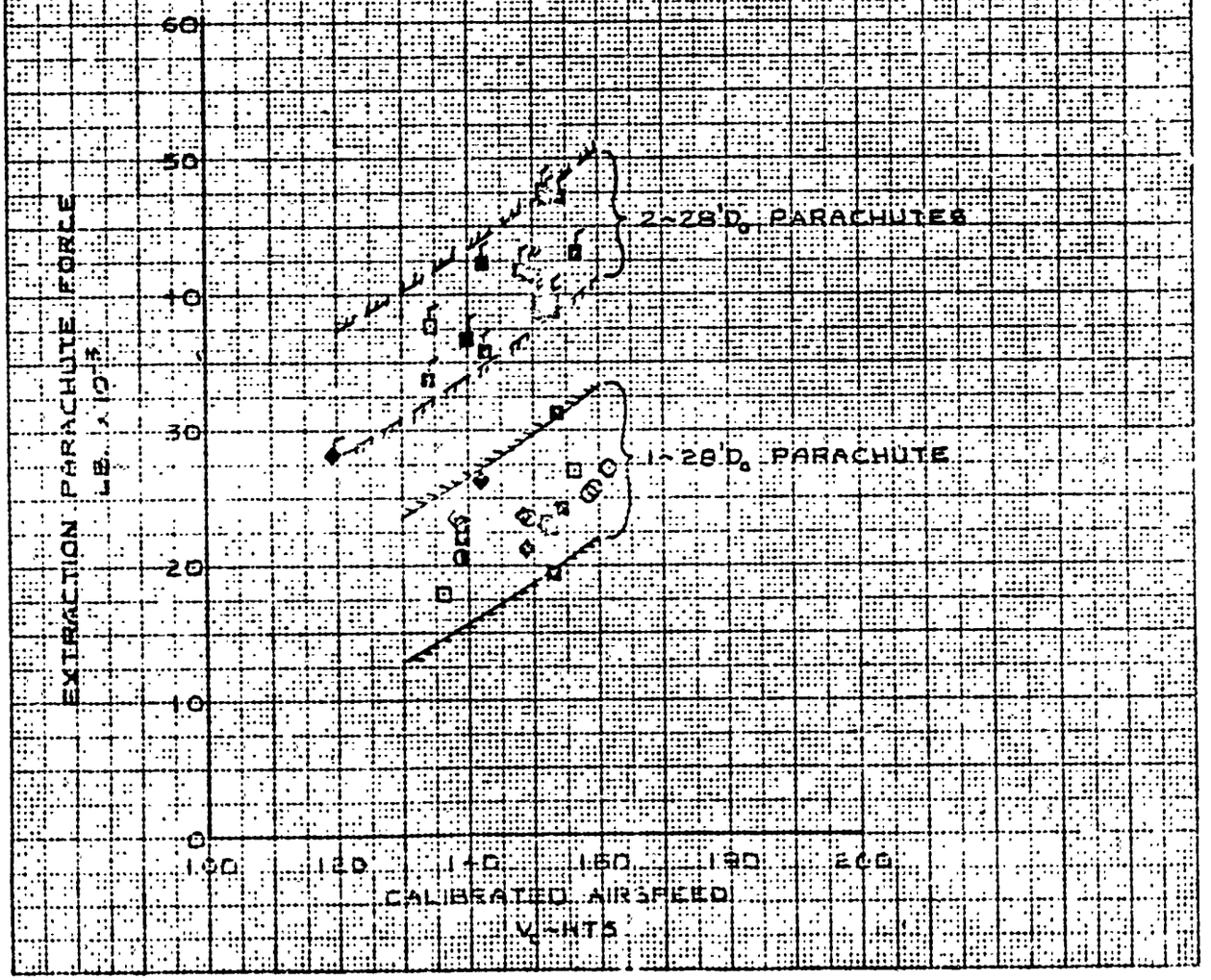


FIGURE 4-3

EXTRACTION PARACHUTE FORCE VS. AIRSPEED

32'D_o FIST RIBBON PARACHUTE

MODEL C-141A

SYMBOLS ~ TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

○ ~ 80' LINE LENGTH @ F.S. 1260

□ ~ 100' LINE LENGTH @ F.S. 1260

▽ ~ 80' LINE LENGTH @ F.S. 1260, PARACHUTE REEFED TO 24' DIA.

▷ ~ 100' LINE LENGTH @ F.S. 1260, PARACHUTE REEFED TO 24' DIA.

SYMBOLS ~ AIRDROPS

■ ~ 100' LINE LENGTH

◆ ~ 140' LINE LENGTH

▲ ~ 100' LINE LENGTH, PARACHUTE REEFED TO 24' DIA.

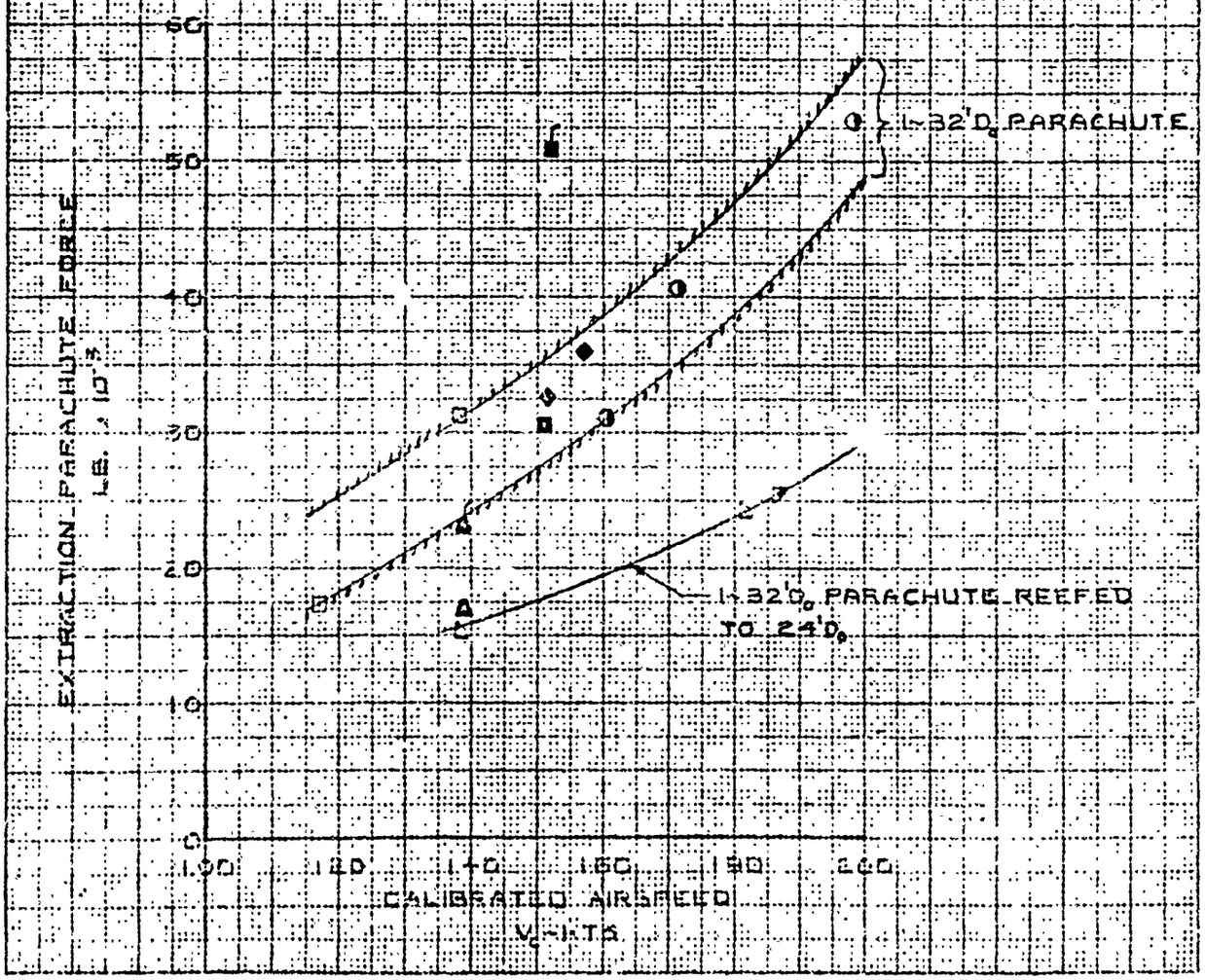


FIGURE 4-4

EXTRACTION PARACHUTE FORCE VS. AIRSPEED

24' D_o REINFORCED RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS ~ TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

C ~ 80' LINE LENGTH @ F.S. 1220

D ~ 100' LINE LENGTH @ F.S. 1220

◑ ~ 80' LINE LENGTH @ F.S. 1160, PARACHUTE REEFED TO 18' DIA.

SYMBOLS ~ AIRDROPS

E ~ 100' LINE LENGTH

◪ ~ 100' LINE LENGTH, PARACHUTE REEFED TO 18' DIA.

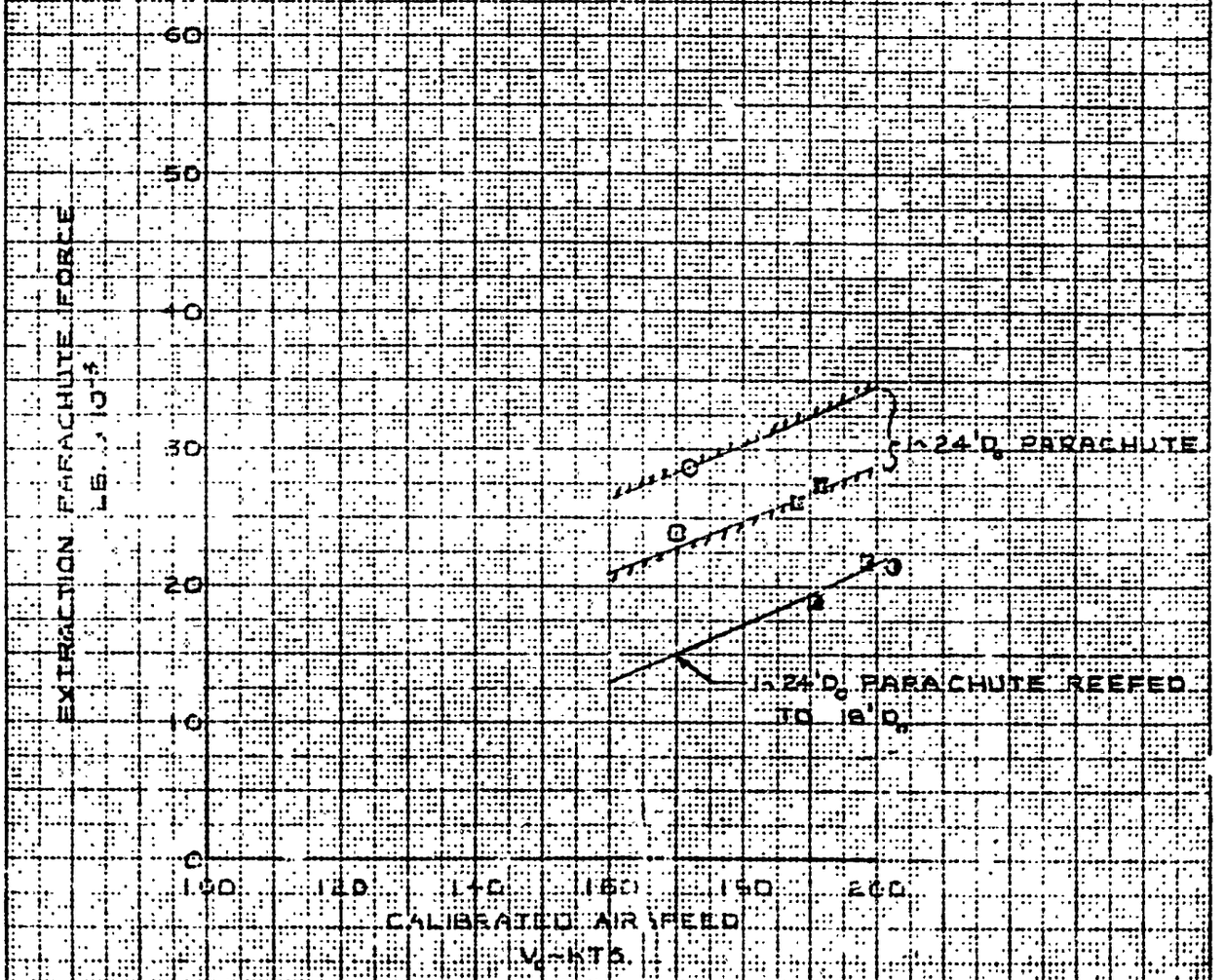


FIGURE 4-5

GA FORM 5588A-1

PEAK AIRPLANE RESPONSE DURING ADS MANEUVER

MODEL C-141A

NOTE

1. THIS CURVE SUPERCEDES ALL PREVIOUS SUMMARY PLOTS FOR A, B, AND B+.

SYMBOLS

1. FILLED SYMBOLS DENOTE EXTRACTION SYSTEM USE, ACTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP.
3. HALF SYMBOLS DENOTE ELEVATOR INPUT.
4. NOMINAL AIRSPEED

120 KCAS	△
130	◇
140	○
145	□
150	◇
155	○
170	▽
185	○
200	☆

CABIN WEIGHT, 1000 LB

FIGURE 4-6

GA FORM 558NA-1

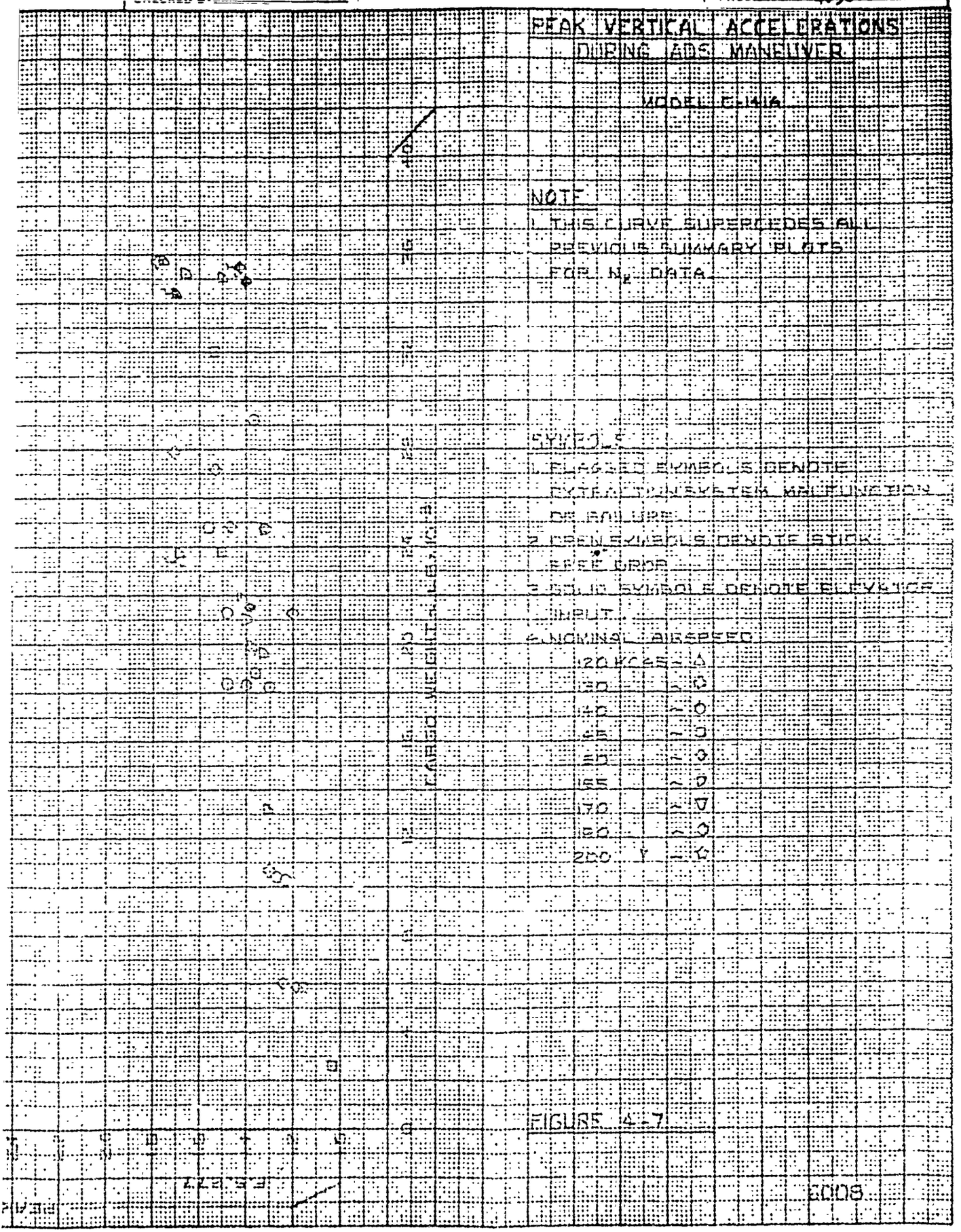

PEAK VERTICAL ACCELERATIONS
DURING ADS MANEUVER
MODEL C-141A
NOTE
1. THIS CURVE SUPERCEDES ALL PREVIOUS SUMMARY PLOTS FOR N_z DATA
SYMBOLS
1. FLAGGED SYMBOLS DENOTE SYSTEM MALFUNCTION OR INOPERATIVE
2. OPEN SYMBOLS DENOTE STICK FREE ERROR
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT
4. NOMINAL AIRSPEED
120 KCAS
130
140
150
160
170
180
200
GROSS WEIGHT - LBS. X 10³
ALTITUDE - FEET X 10³
ADS

FIGURE 4-7

PREPARED BY JWP
DATE 12-29-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
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EFFECT OF EXTRACTION RATIO ON AIRPLANE RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DROP CONDITIONS

1. CARGO WT. ~ 27500 LB.
2. AIRSPEED ~ 150 KCAS
3. ALTITUDE ~ 5000 FT.
4. G.W. ~ 168000 LB.
5. C.G. ~ 26% MAC
6. δ_F ~ 65°
7. STICK FREE

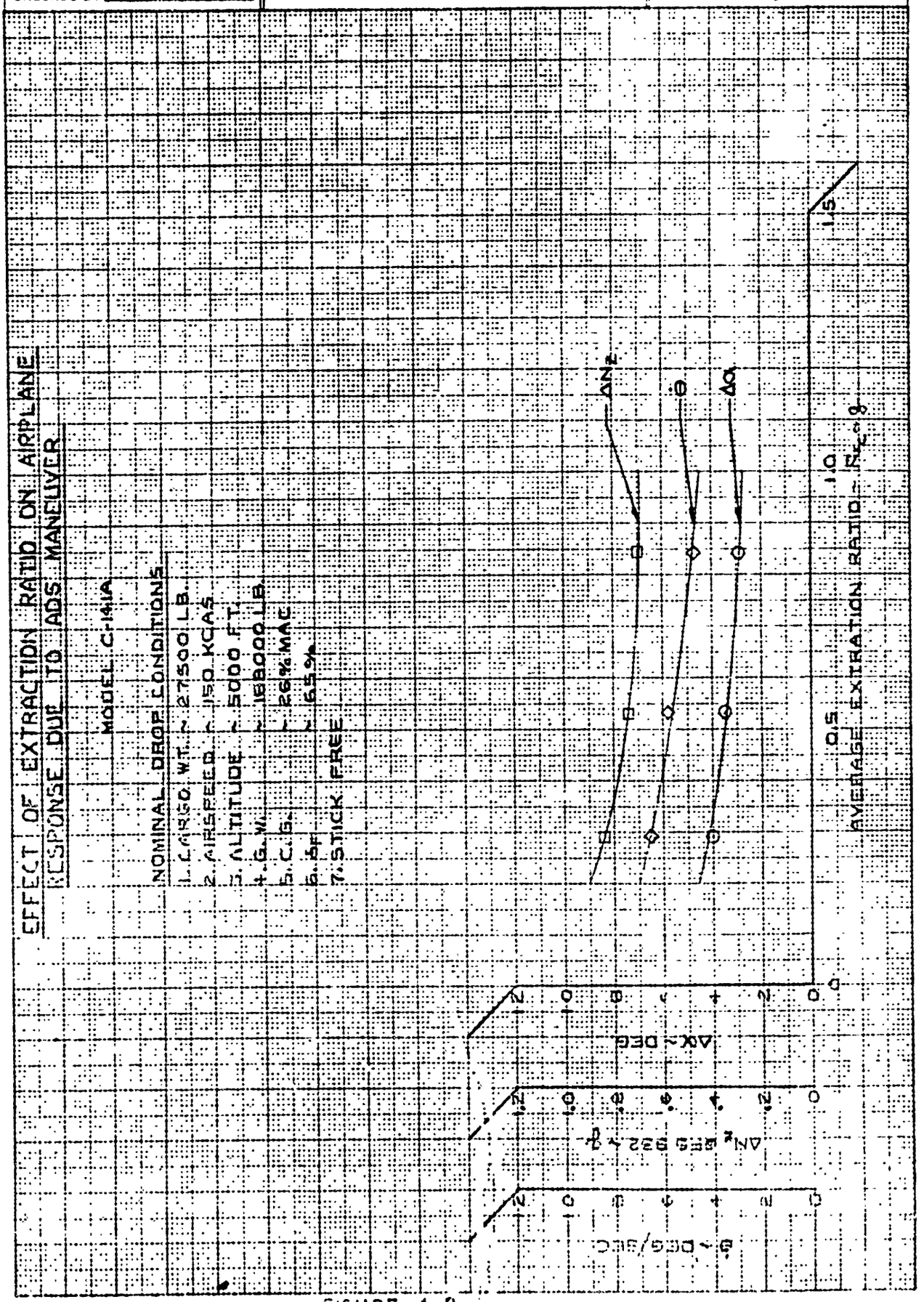


FIGURE 4-8

EFFECT OF AIRSPEED ON AIRPLANE RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DROP CONDITIONS

1. CARGO WT. ~ 22000 LB.
2. δ_f ~ 40°
3. ALTITUDE ~ 5000 FT.
4. G.W. ~ 265000 LB.
5. C.G. ~ 26.6% MAC
6. STICK FREE

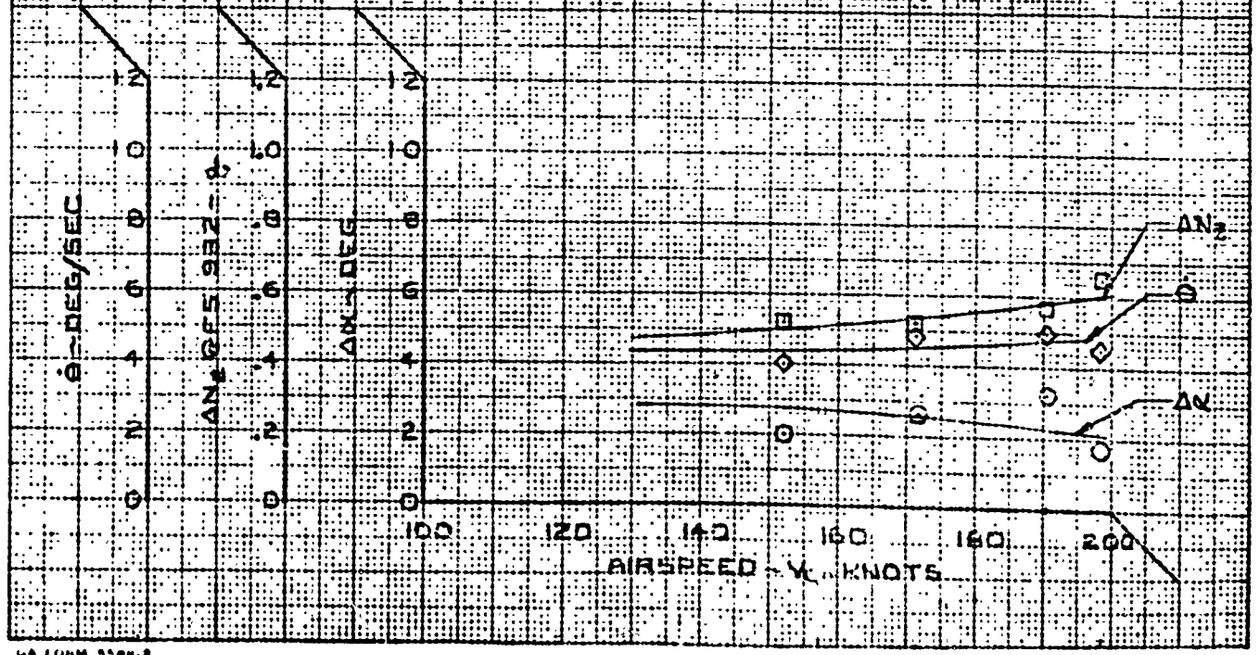


FIGURE 4-9

PREPARED BY WP
DATE 12-29-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

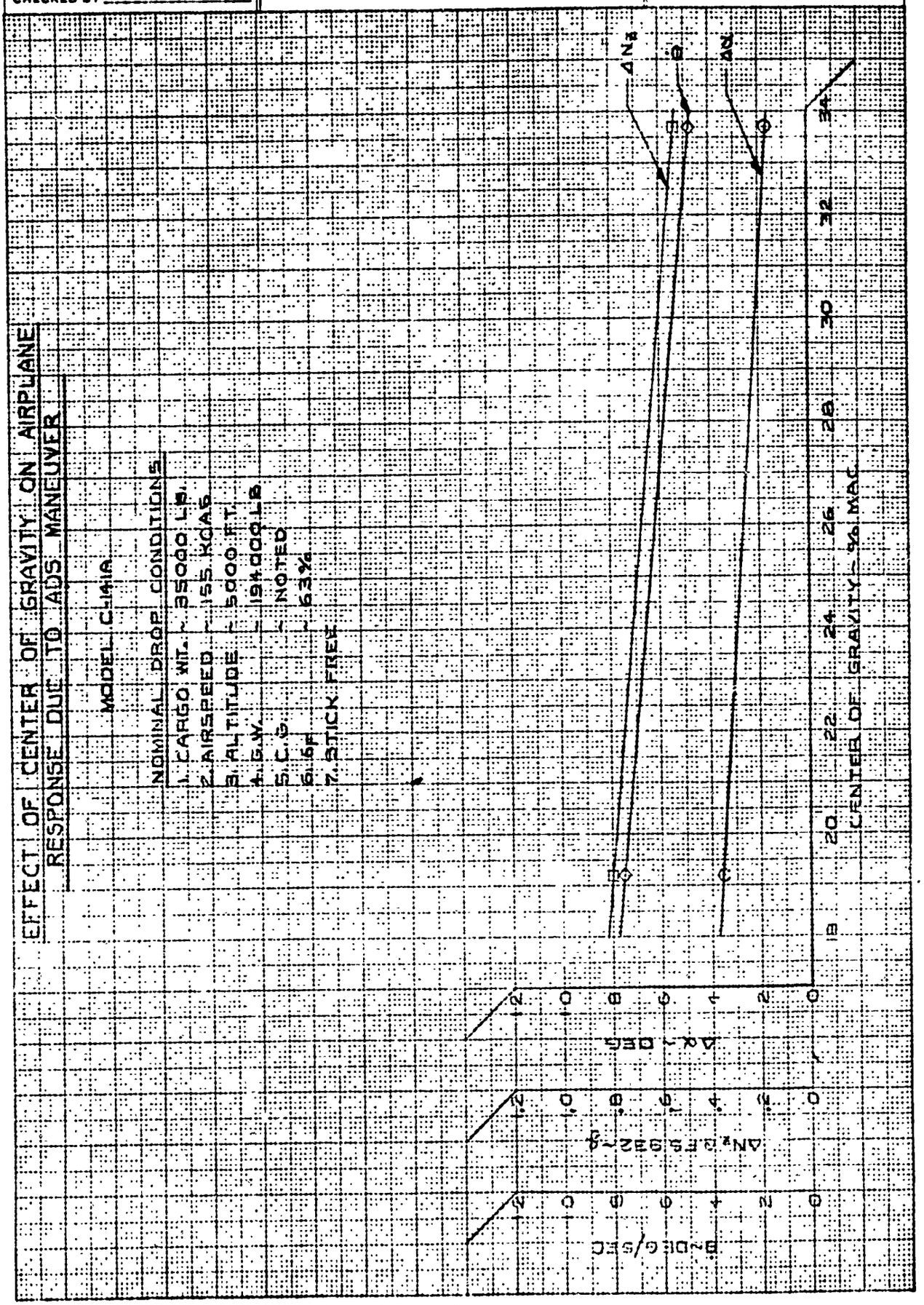
REPORT NO. ER 5473
MODEL C-141A
PAGE 4.53

EFFECT OF CENTER OF GRAVITY ON AIRPLANE RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DROP CONDITIONS

1. CARGO WT. - 35000 LB.
2. AIRSPEED - 155 KCAS
3. ALTITUDE - 5000 FT.
4. G.W. - 194000 LB
5. C.G. - NOTED
6. I_x - 63%
7. STICK FREE



GA FORM 9588 B

FIGURE 4-10

EFFECT OF GROSS WEIGHT ON AIRPLANE RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DROP CONDITIONS

1. CARGO WT. = 335000 LB.
2. AIRSPEED = 145 KCAS
3. ALTITUDE = 5000 FT.
4. C.G. = 27.5 %MAC
5. δ_H = 1.65 %
6. STICK FREE

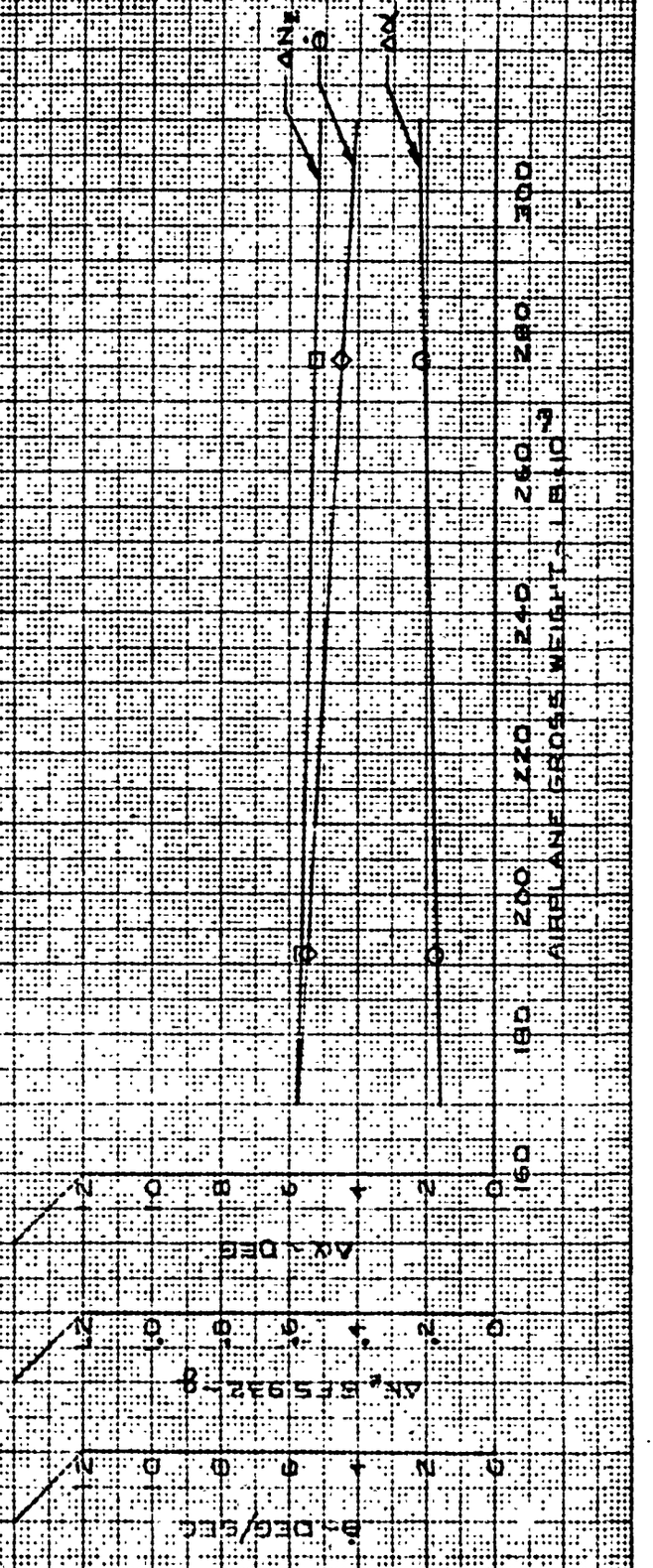


FIGURE 4-11

EFFECT OF ALTITUDE ON AIRPLANE RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DROP CONDITIONS

1. CARGO WT. = 247000 LB
2. AIRSPEED = 195 KCAS
3. G.W. = 254000 LB
4. C.G. = 25.8% MAC
5. δF = 35°

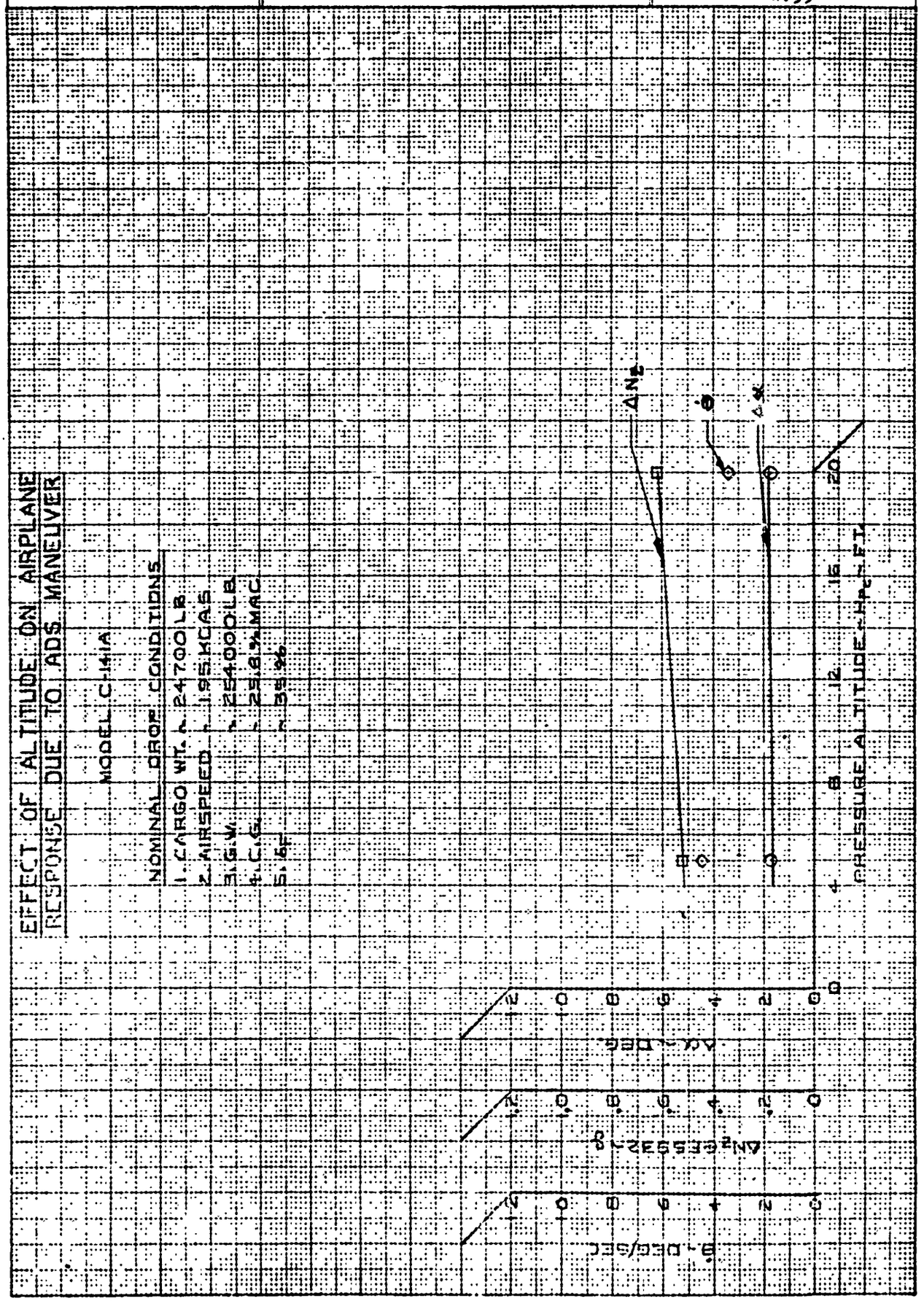


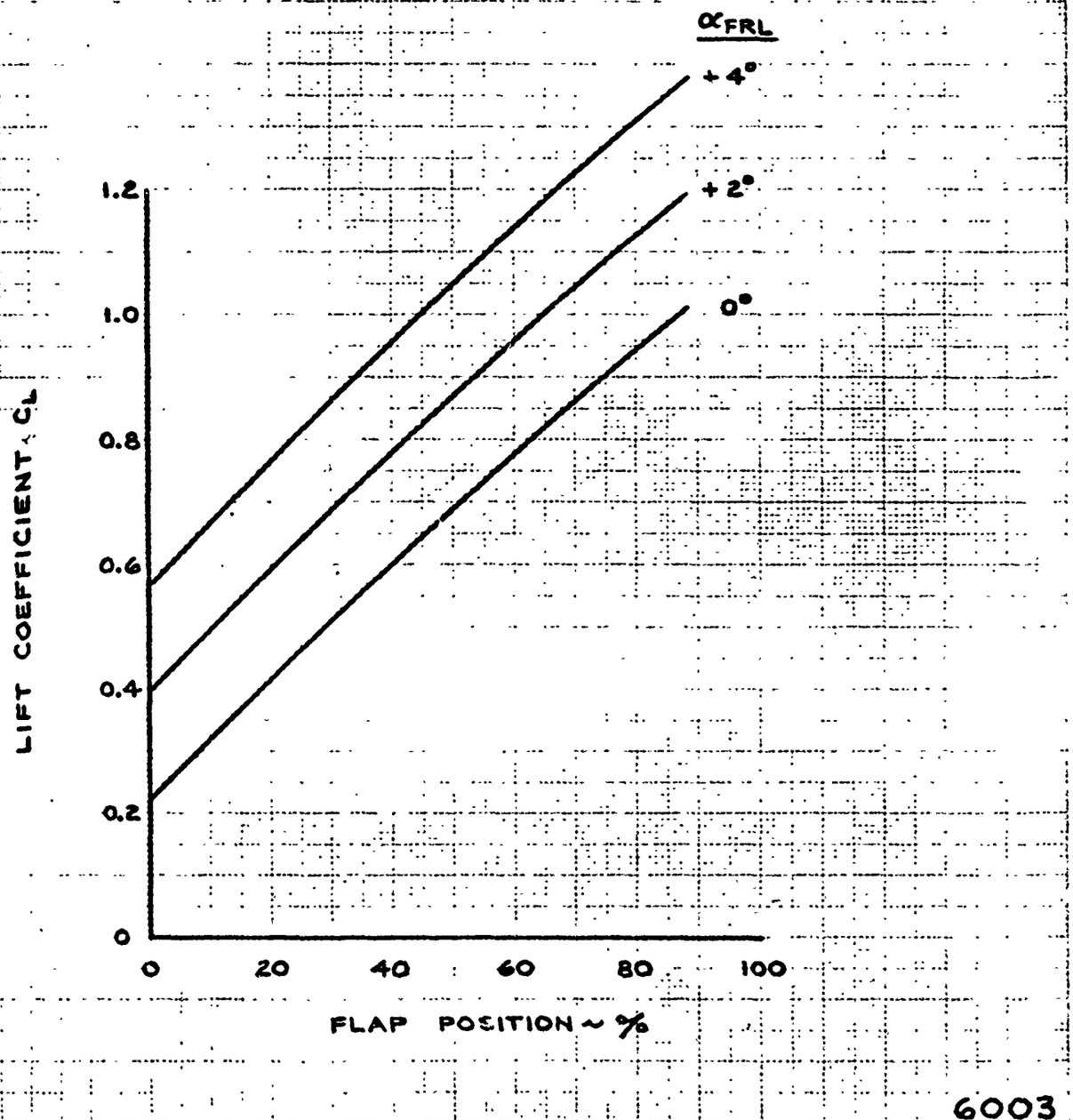
FIGURE 4-12

6003
1593

C_L VERSUS δ_F

ADS CONFIGURATION

MODEL C-141A



6003
1593

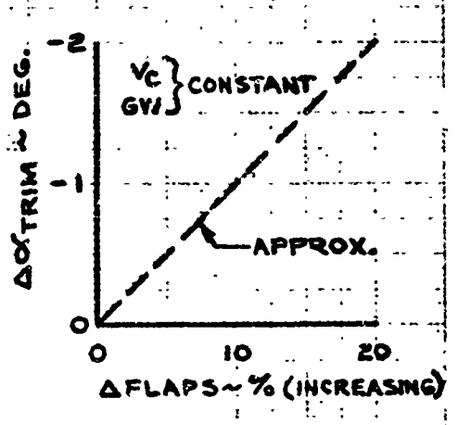
FIGURE 4-13

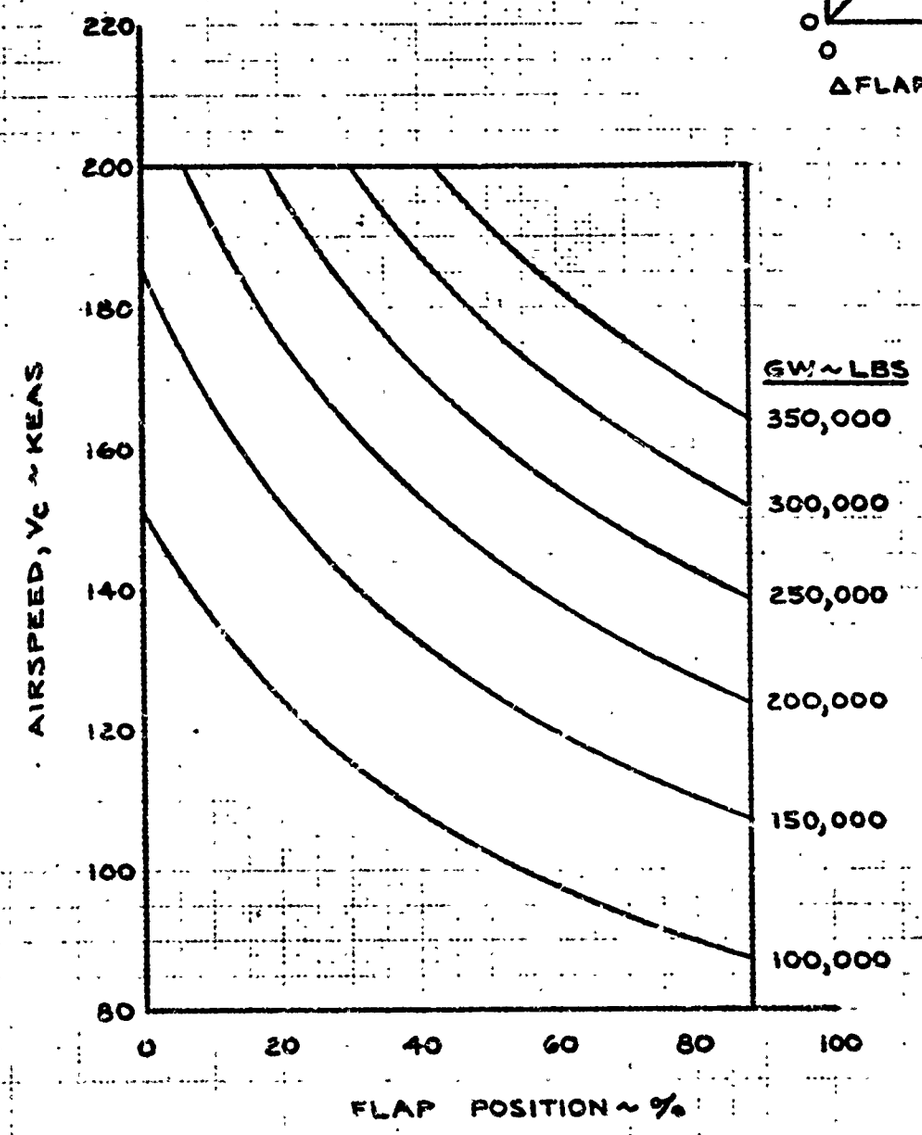
6003
1592A

FLAP POSITION FOR ADS

MODEL C-141A

2° NOSE UP DECK ANGLE





6003
1592A

FIGURE 4-14

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REPORT NO. ER 5473
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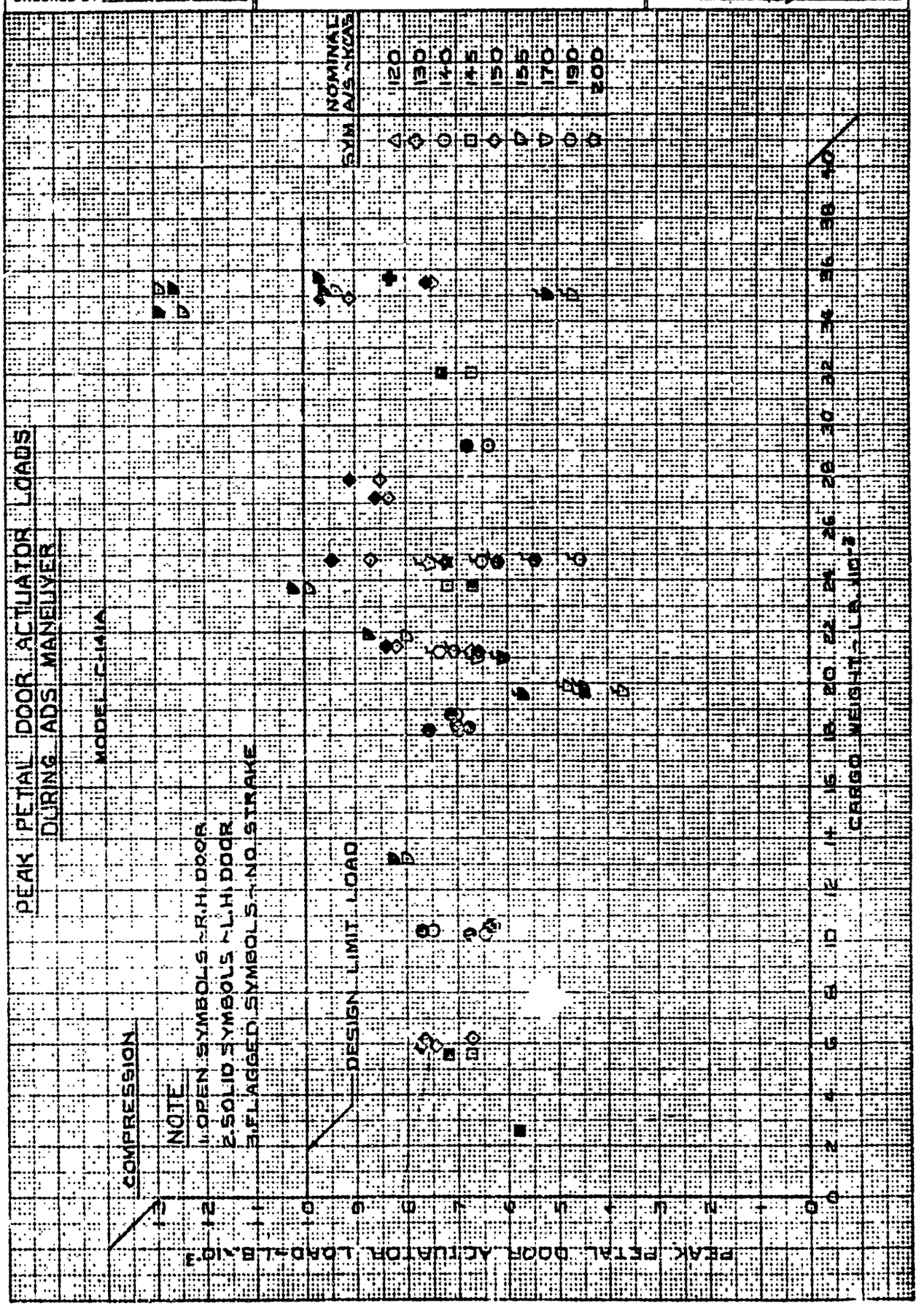


FIGURE 4-15

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DATE 8-18-65
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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE 4.59

6008 M23C

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF 63-8077 LAC 6008
FLIGHT 167 DATE: 8-17-65

RUN CONDITIONS
1. GW ~ 200,000 LBS.
2. CG ~ 24.0% MAC
3. H_p ~ 5,000 FT.

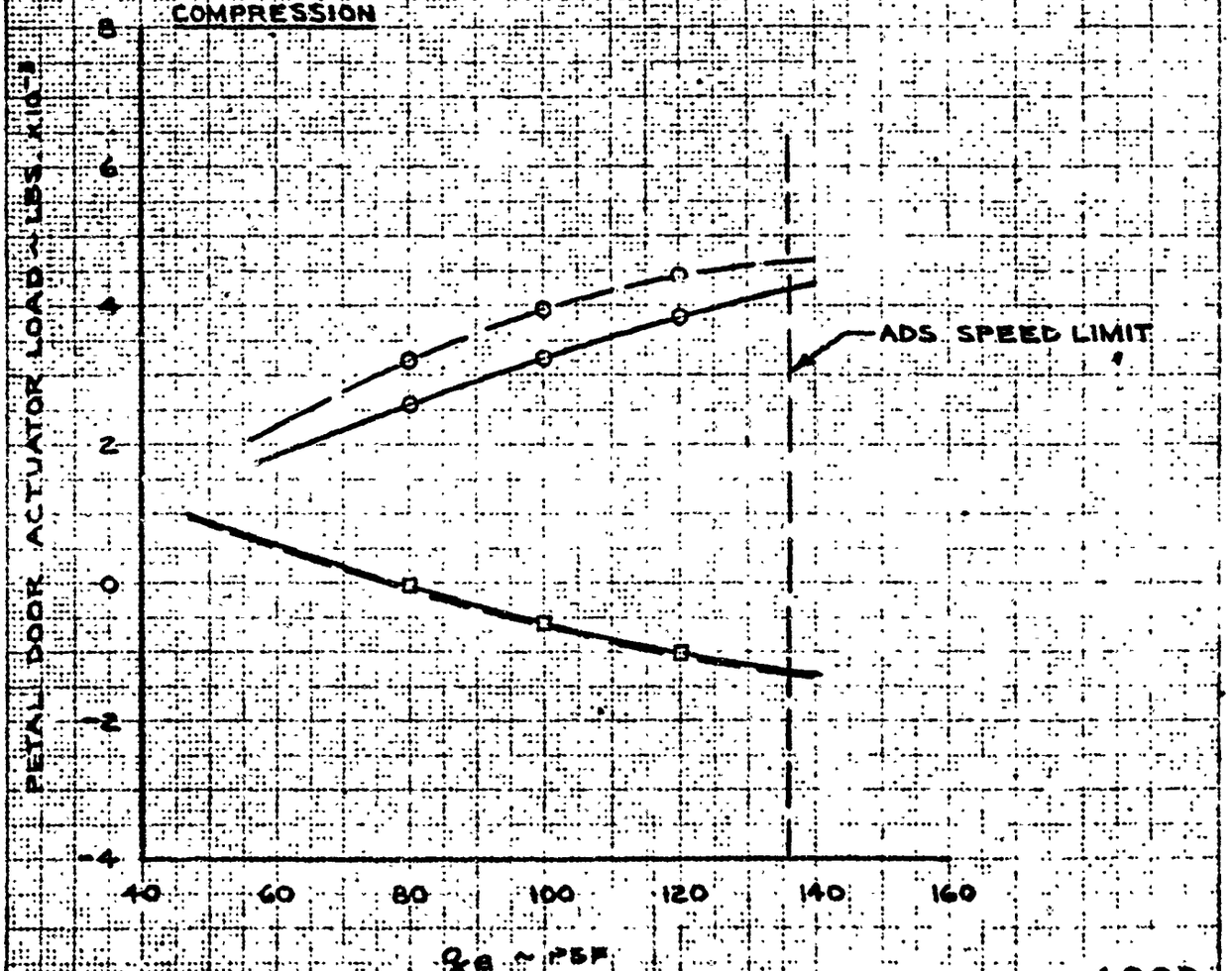
CONFIGURATION
1. STRAKE LENGTH ~ 0 FT.
2. RAMP SIDE PANELS ~ NOTED
3. TROOP DOORS ~ CLOSED
4. GEAR ~ UP

$\delta_D = 55°$
$\beta = 0°$

DASHED LINES DENOTE RAMP SIDE PANELS OFF

SYM	FLAP POS. ~ δ_F
○	0
◇	20
△	50
□	88

FLAG DENOTES LH ACT.



GA FORM 5546-2

FIGURE 4-16

6008 M23C

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PAGE 4.60

6008 M27

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF 63-8077 LAC 6008
FLIGHT 161-166 DATE: 7-30-65

RUN CONDITIONS

1. GW ~ 222,000 LBS.
2. CG ~ 26.0% MAC
3. Hp ~ 5,000 FT.

CONFIGURATION

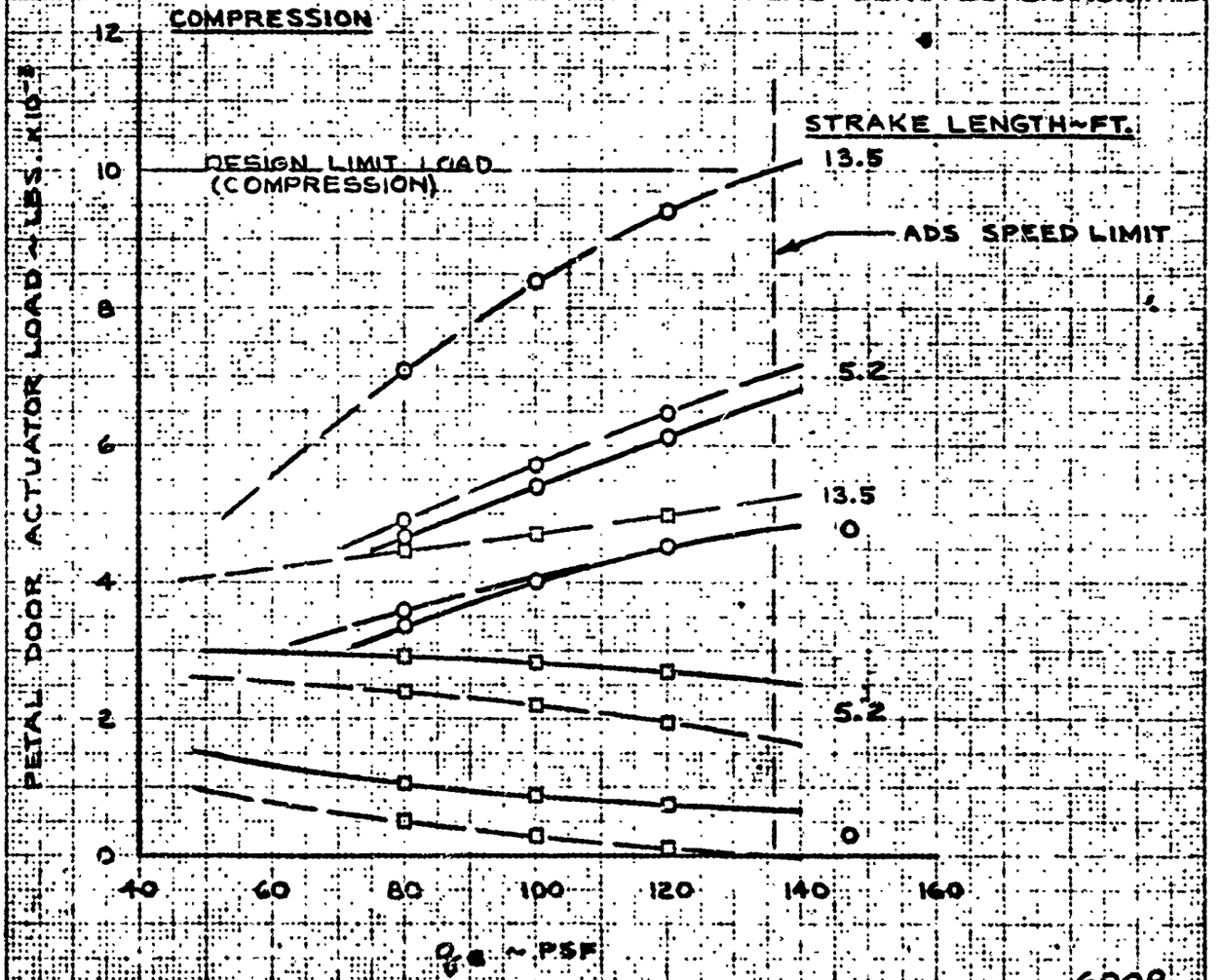
1. STRAKE LENGTH ~ NTDFT.
2. RAMP SIDE PANELS ~ NOTED
3. TROOP DOORS ~ CLOSED
4. GEAR ~ UP

$\delta_D = 60°$
$\beta = 0°$

DASHED LINES DENOTE RAMP SIDE PANELS OFF

SYM	FLAP POS. ~ %
○	0
◇	20
△	50
□	88

FLAG DENOTES LH ACT.



6008 M27

FIGURE 4-17

6008 M28

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF 63-8077 LAC 6008
FLIGHTS 162-166 DATE: 7-30-65
8-16-65

RUN CONDITIONS

1. GW ~222,000 LBS.
2. CG ~ 25.0% MAC
3. Hp ~5,000 FT.

CONFIGURATION

1. STRAKE LENGTH ~ NTD FT.
2. RAMP SIDE PANELS ~ NOTED
3. TROOP DOORS ~ CLOSED
4. GEAR ~ UP

$\delta_D = 38°$
$\beta = 0°$

DASHED LINES DENOTE RAMP SIDE PANELS OFF

SYM	FLAP POS. ~ %
○	0
◇	20
△	50
□	88

FLAG DENOTES LH ACT.

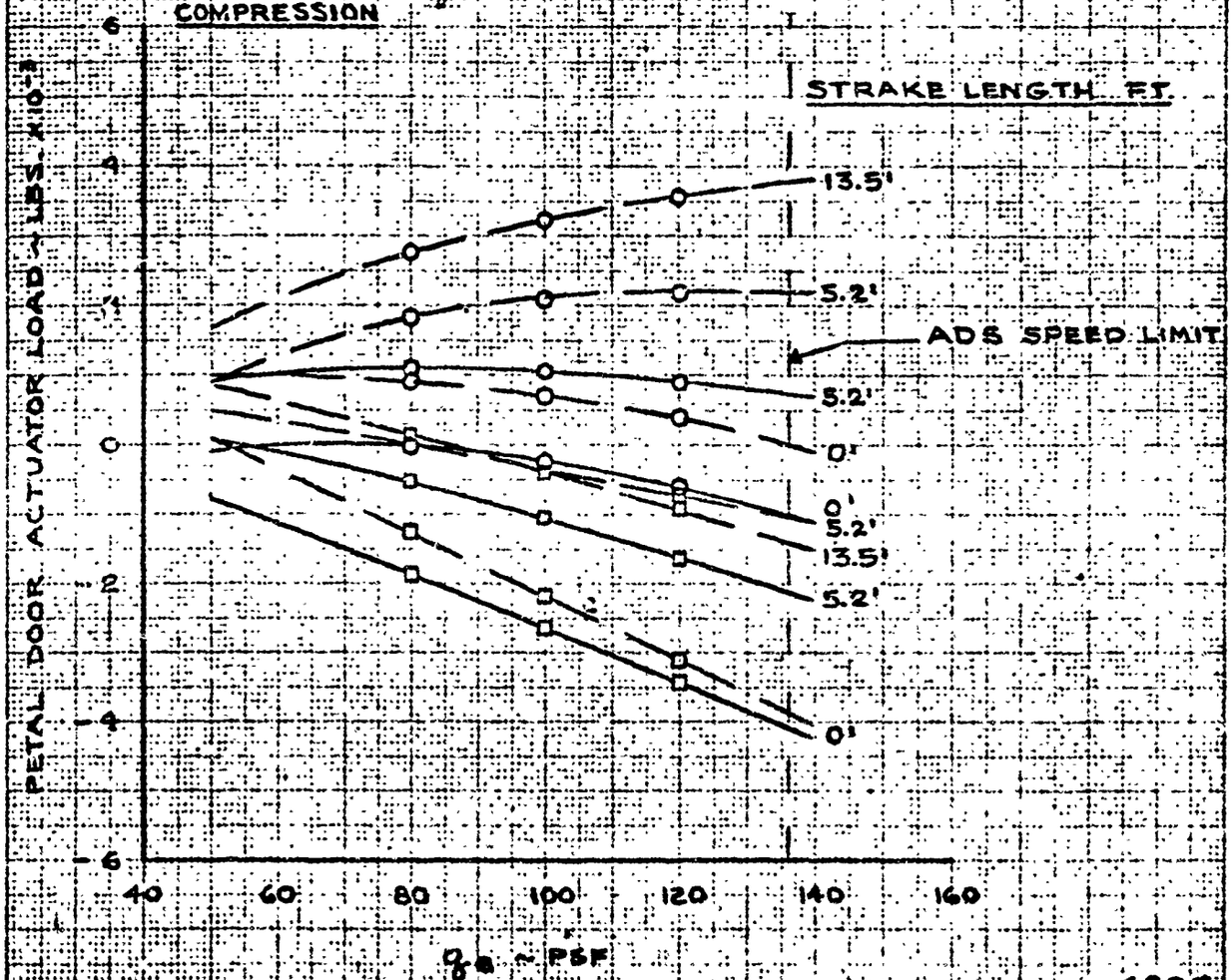


FIGURE 4-18

PREPARED BY DALTON
DATE 3-13-65
CHECKED BY

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REPORT NO ER 5473
MODEL C-141A
PAGE 4.62

6008 M29

PETAL DOOR ACTUATOR LOADS IN TRIMMED FLIGHT

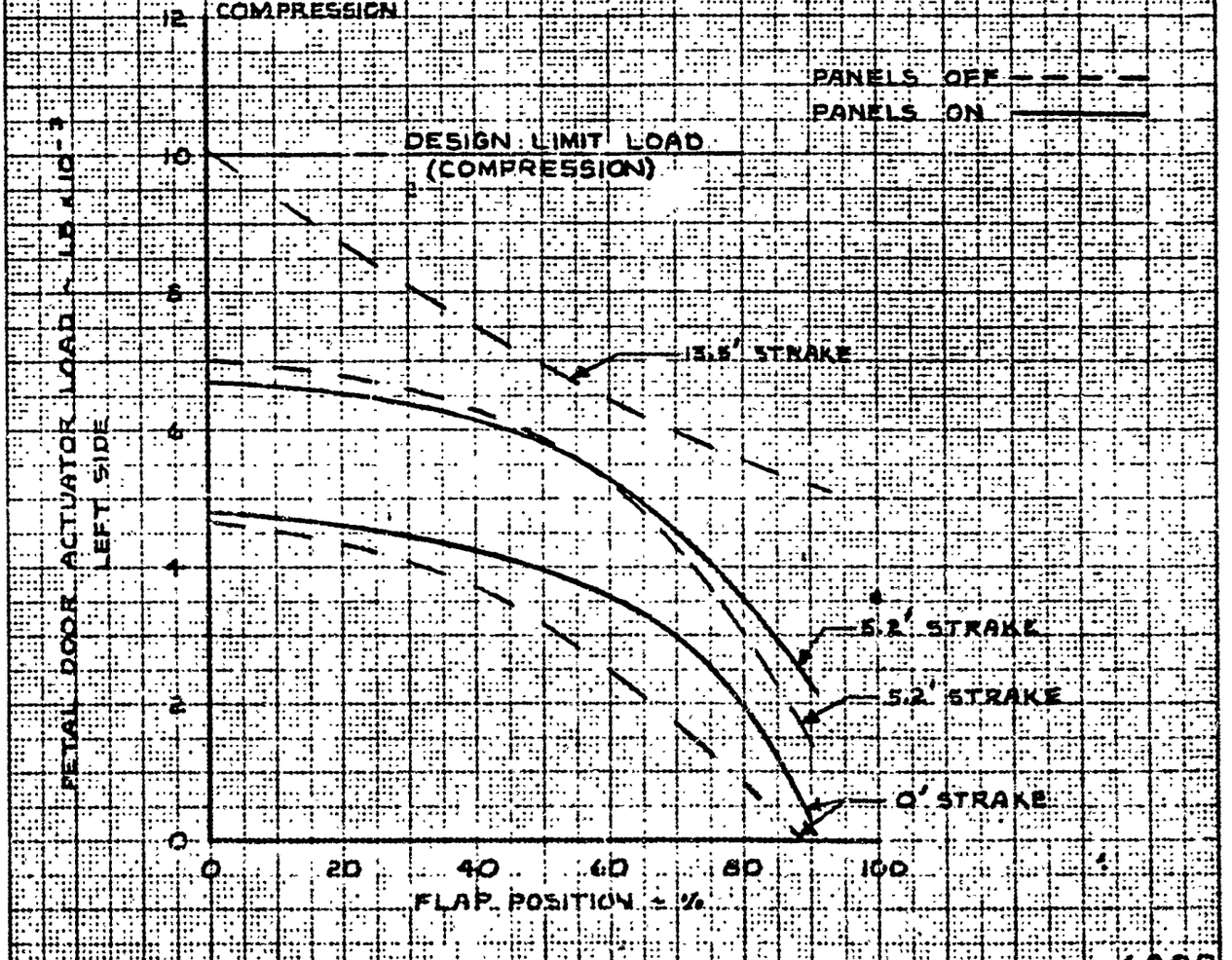
MODEL C-141A

AF 63-8077 LAC 6008

ADS CONFIGURATION

200 KEAS
5000 FT.
$\delta_e = 60°$
$\beta = 0°$

FLT	G.W. - LB	C.G. - %MAC	STRAKE LENGTH-FT	RAMP SIDE PANELS
161	228,000	22.0	13.5	OFF
163	234,400	22.5	5.2	OFF
164	245,200	25.8	5.2	ON
165	228,600	30.0	0	OFF
166	228,500	30.0	0	ON & OFF



6008 M29

GA FORM 5506 J

FIGURE 4-19

REV. VALVE JUMP

6008 M'30

PETAL DOOR ACTUATOR LOADS IN TRIMMED FLIGHT

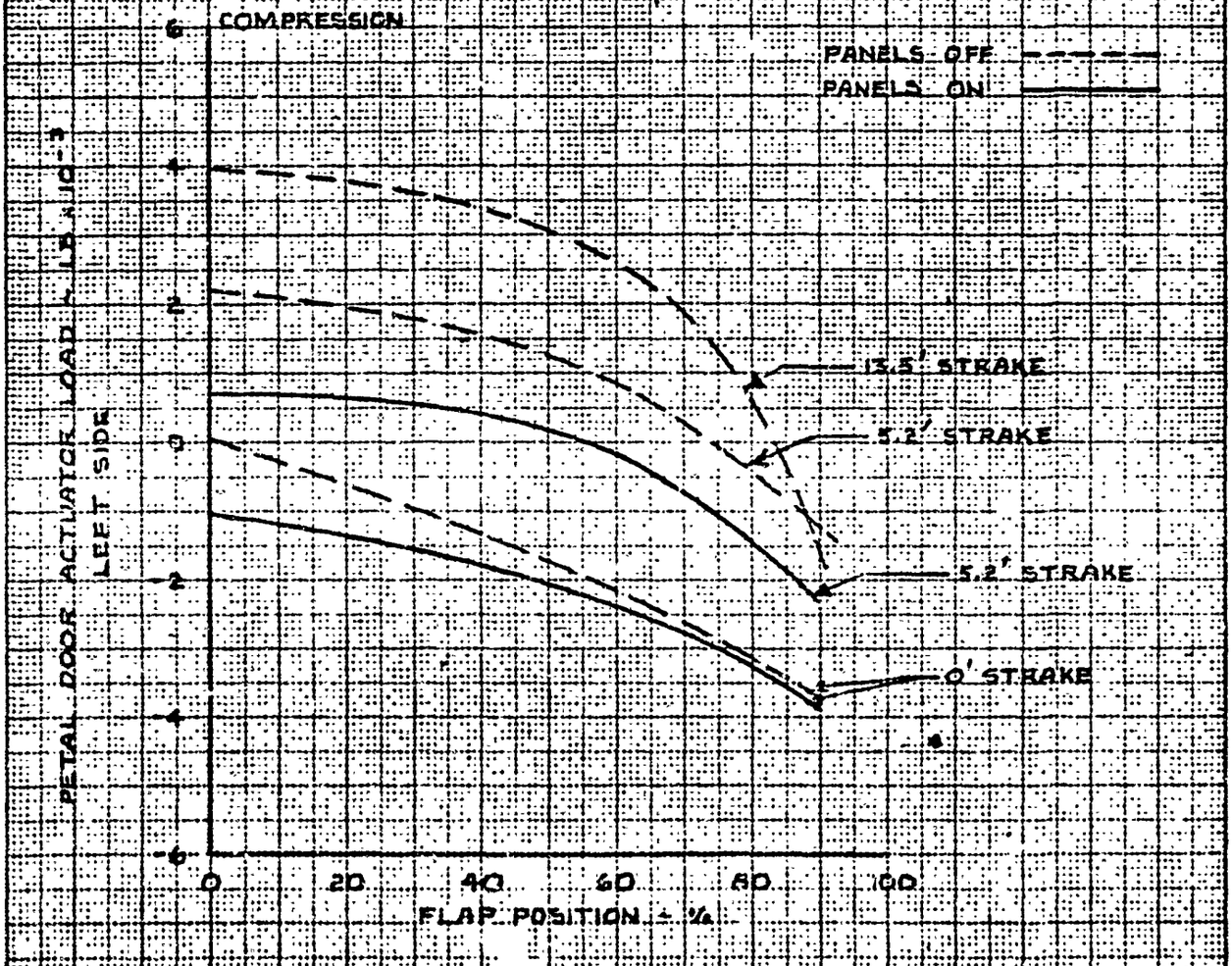
MODEL C-141A

AF 65-8077 LAC 6008

ADS CONFIGURATION

200 KEAS
5000 F.T.
$\delta_e = 38°$
$\beta = 0°$

FLT.	G.W. - LB	C.G. - %MAC	STRAKE LENGTH - FT	RAMP SIDE PANELS
162	229,000	22.0	13.5	OFF
163	221,000	21.5	5.2	OFF
164	233,200	25.0	5.2	ON
166	228,500	30.0	0	ON & OFF



6008 M'30

GA FORM 5546 B

FIGURE 4-20

6008 M35C

PETAL DOOR ACTUATOR LOADS IN TRIMMED FLIGHT

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 167 DATE: 8-17-65

ADS CONFIGURATION

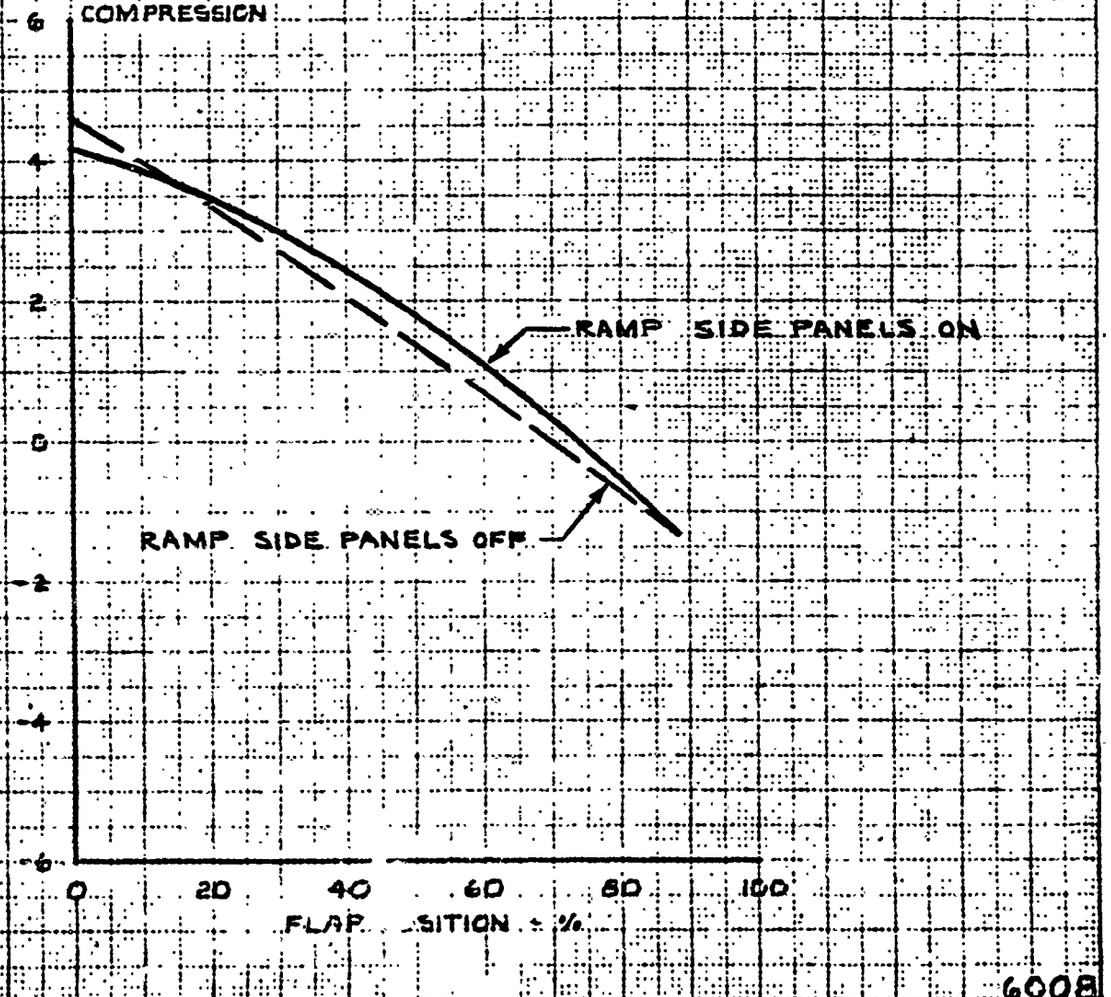
RUN CONDITIONS

1. GW ~ 200,000 LBS.
2. CG ~ 24.0 % MAC
3. H_p ~ 5,000 FT.
4. V_e ~ 200 KEAS

CONFIGURATION

1. STRAKE LENGTH ~ 0 FT.
2. TROOP DOORS ~ CLOSED
3. GEAR ~ UP

$\delta_D = 55°$
$\beta = 0°$



6008 M35C

FIGURE 4-21

6008
ELASTIC

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 16A DATE 7-30-65

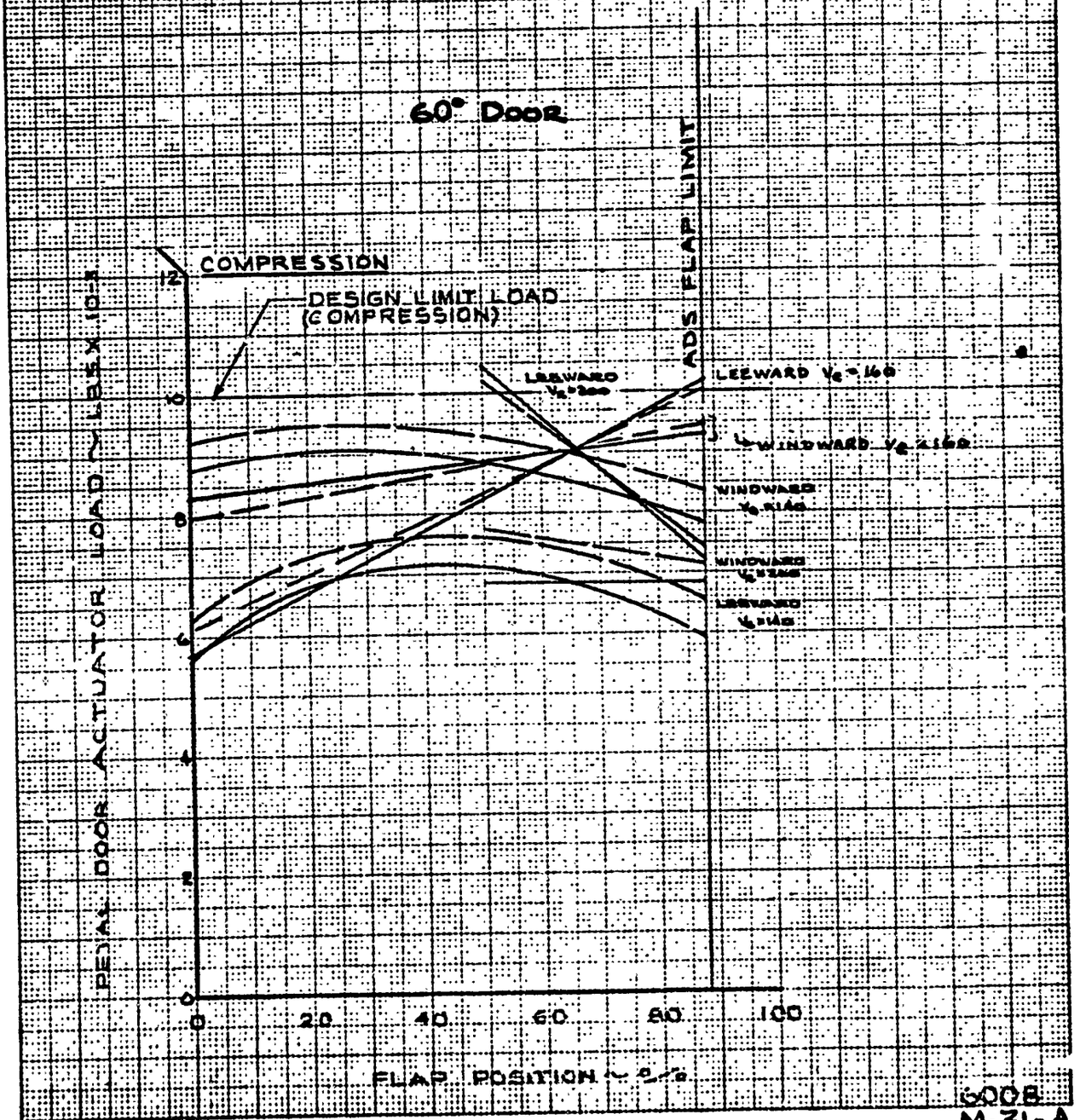
ADS CONFIGURATION

14 STRAKE
RAM SIDE PANELS OFF

LH DOOR
RH DOOR

NOTE
1. DATA AT RUDDER BOOST CUTOFF

60° Door



6008
M-31-A
Rev. 7/31/66 JHP

GA FORM 1500 E

FIGURE 4-22

PREPARED BY Frost
DATE 8-18-65
CHECKED BY

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE 4.66

6008 M31-B

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

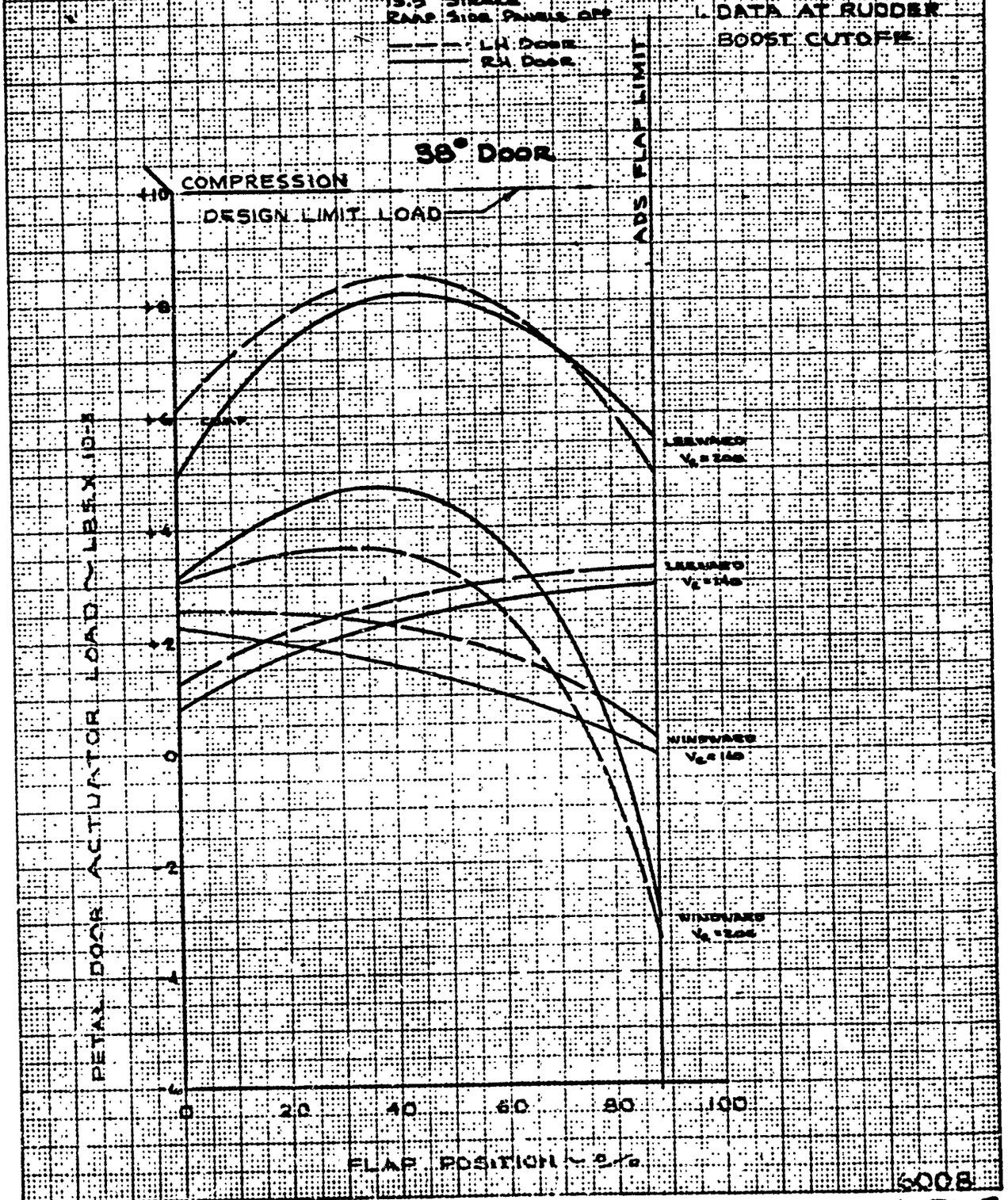
MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 162 DATE 8-3-65

ADS CONFIGURATION

NOTE
1. DATA AT RUDDER BOOST CUTOFF



6008
M 31-B
Rev V31/66 JMP

GA FORM 5580 B

FIGURE 4-13

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C-141A

AF 63-8077 LAC 6008

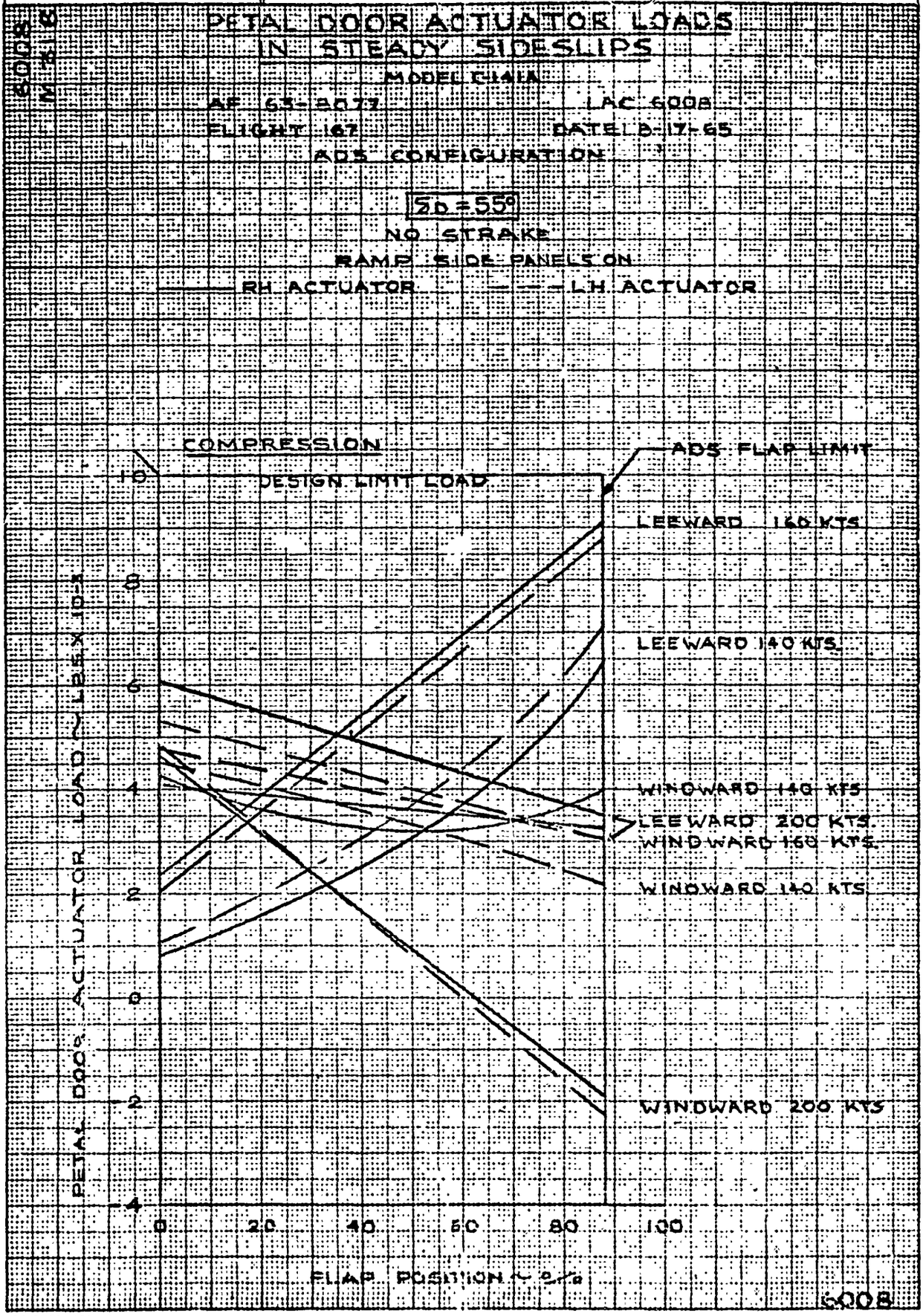
FLIGHT 167 DATE 8-17-65

ADS CONFIGURATION

$\delta_D = 55^0$

NO STRAKE

RAMP SIDE-PANELS ON



6008

GA FORM 5586 B

FIGURE 4-24

M 31-B
REV 1/31/66

PREPARED BY CTB
DATE 8-18-65
CHECKED BY

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE 4.68

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C141A

AF 63-8077 LAC 6008

FLIGHT 165, 166 DATE: 8-13, 16-65

ADS CONFIGURATION

NO STRAKE

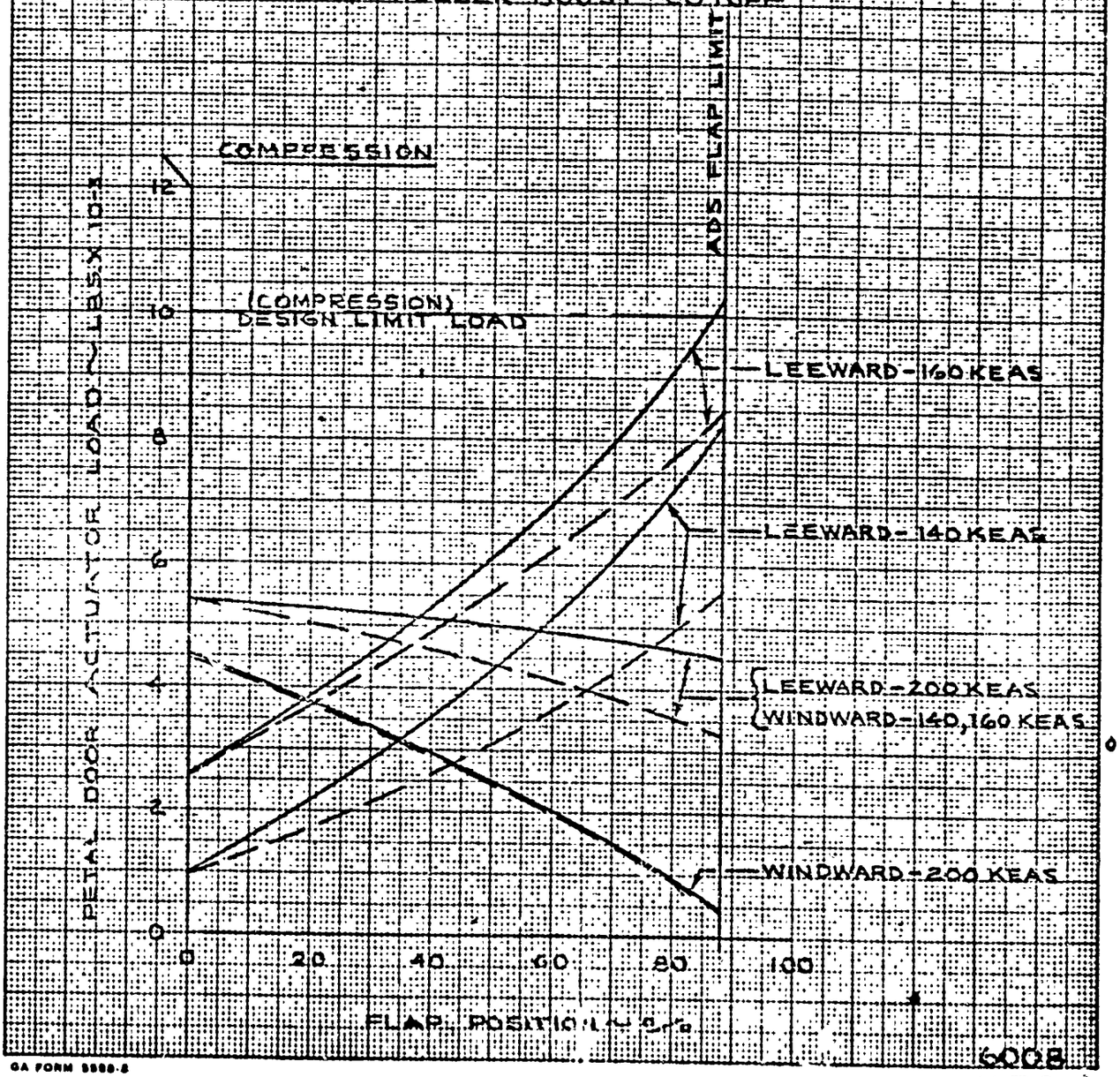
60° DOOR

——— RAMP SIDE PANELS OFF

——— RAMP SIDE PANELS ON

NOTE:

1. DATA AT RUDDER BOOST CUTOFF



6008

GA FORM 9988-8

FIGURE 1-25

M 32-A
REV V31/66 JMD

PREPARED BY BOAT
DATE 8-10-65
CHECKED BY

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

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MODEL C-141A
PAGE 4.69

DETAIL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C141A

AF 63-8077 LAC 6008

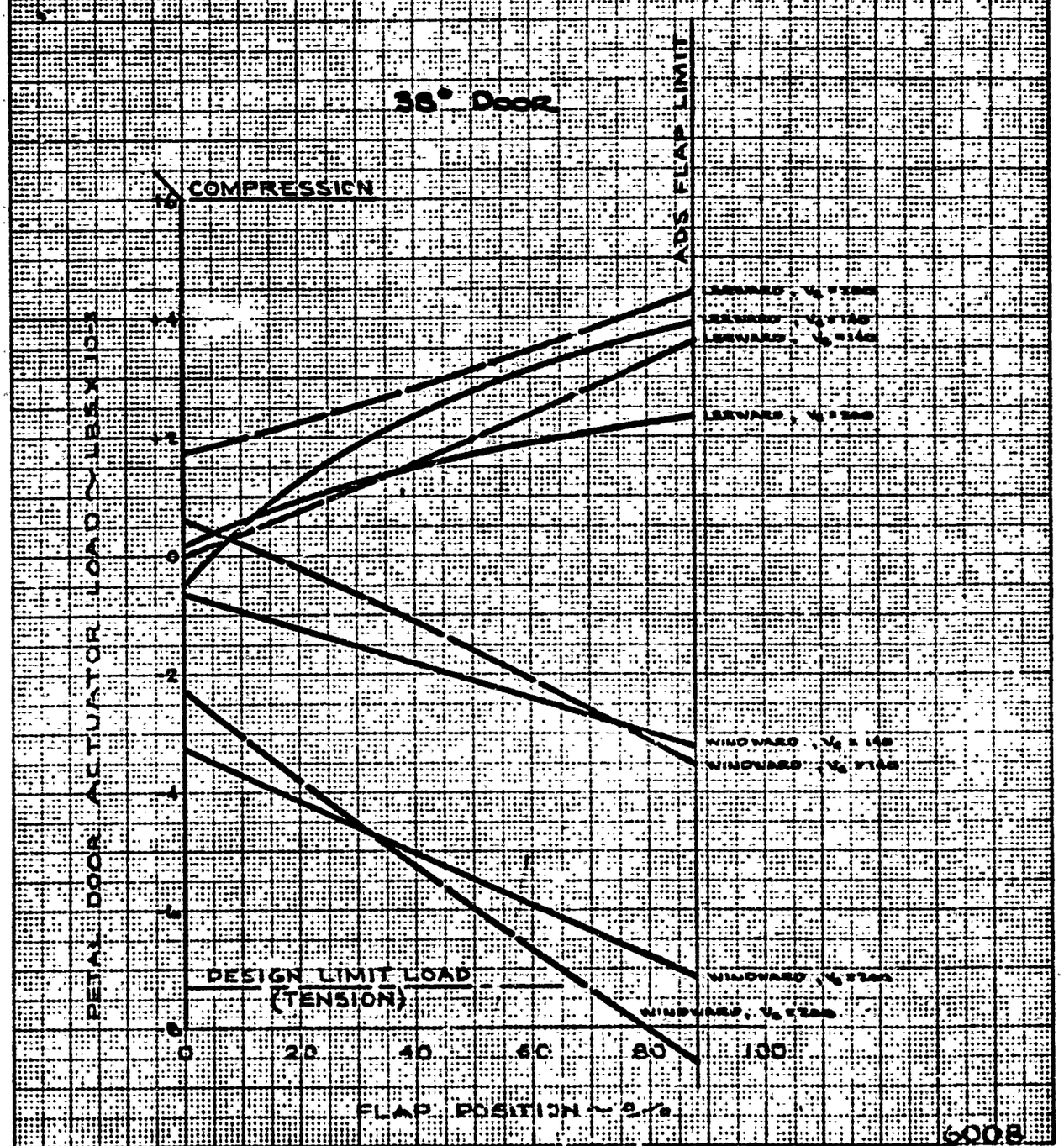
FLIGHT [illegible] DATE 6-14-65 & 8-16-65

ADS CONFIGURATION

LG STRAIGHT

RAMP SIDE PANELS OFF

NOTE:
1. DATA AT RUDDER BOOST CUTOFF



6008

M 32 B

FIGURE 4.26

PREPARED BY SA
DATE 8-20-65
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MODEL C-141A
PAGE 4-70

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C-141A

AF 65-8077 LAC 6008

FLIGHT 167 DATE 8-17-65

ADS CONFIGURATION

$\delta_D = 55°$

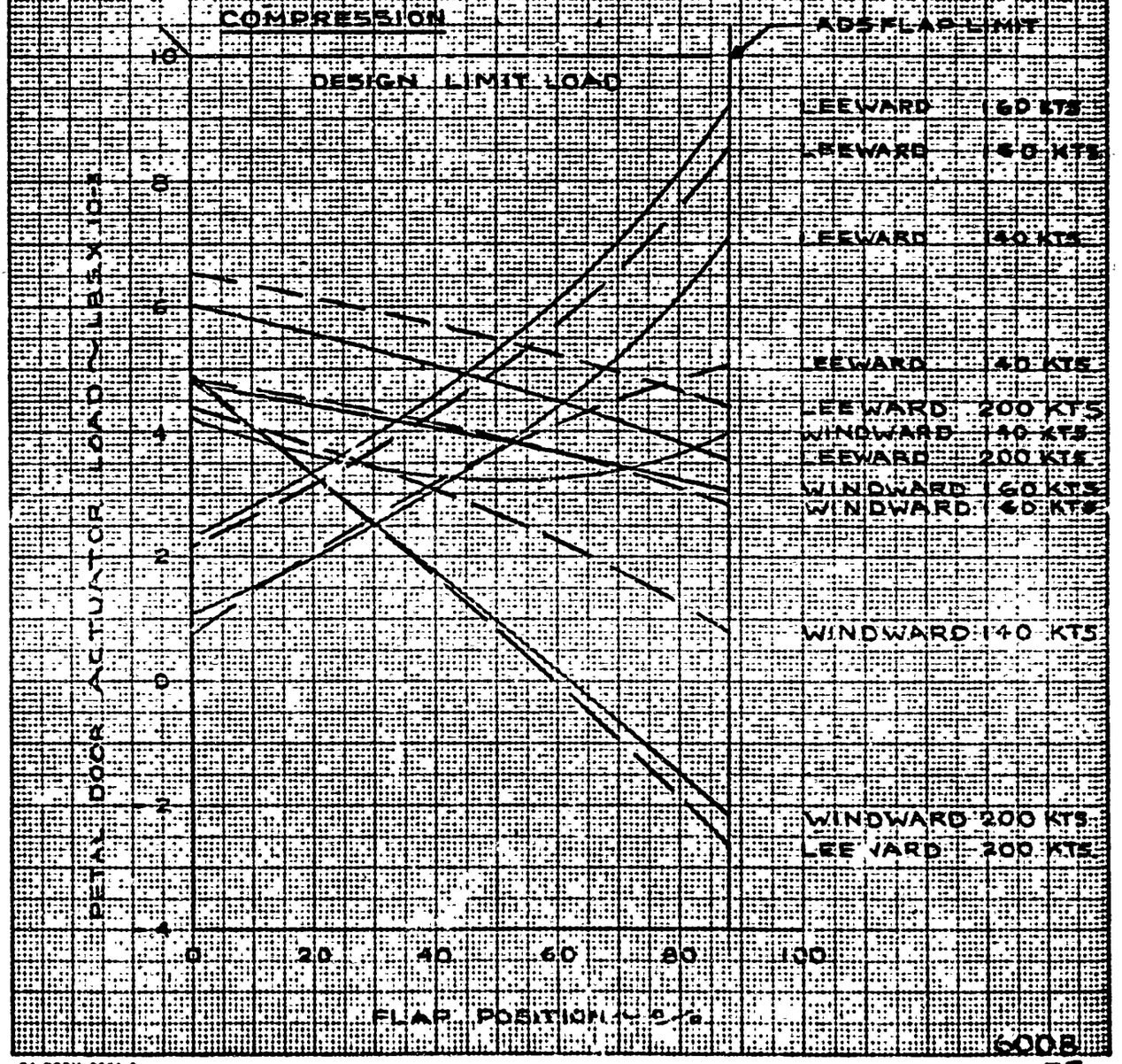
NO STRAKE

——— RAMP SIDE PANELS ON

– – – RAMP SIDE PANELS OFF

NOTE

1. DATA AT RUDDER BOOST CUTOFF



6008
M 33

CA FORM 3886-3

FIGURE 4-27

PREPARED BY MDH
DATE
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REPORT NO. ER 5473
MODEL C-141A
PAGE 4.71

6008

PEAK SPIDER ARM LOADS DURING ADS MANEUVER

MODEL C-141A

NOMINAL AS (V.I.) - KCAS	SYM
120	
130	
140	
145	
150	
155	
170	
190	
200	

NOTE
1. THIS CURVE SUPERCEDES ALL PREVIOUS SUMMARY PLOTS FOR SPIDER ARM LOADS.

SYMBOLS
1. FLAGGED SYMBOLS DENOTE EXTRACTION MALFUNCTION OR FAILURE
2. CROSSED SYMBOLS DENOTE L.H.
3. OPEN SYMBOLS DENOTE STICK FREE DROP
4. SOLID SYMBOLS DENOTE ELEVATOR INPUT
5. TENSION

SPIDER ARM LOADS - LBS X 10^{-3}

CARGO WEIGHT - LBS X 10^{3}

6008

GA FORM 9588-3

FIGURE 4.28

6008

PEAK RAMP ACTUATOR LOADS — LBS $\times 10^{-3}$

NET

INCREMENTAL

TENSION

TENSION

LOAD RIGHT

SIDE

FWD LOAD

LOADS — LBS $\times 10^{-3}$

TRAG

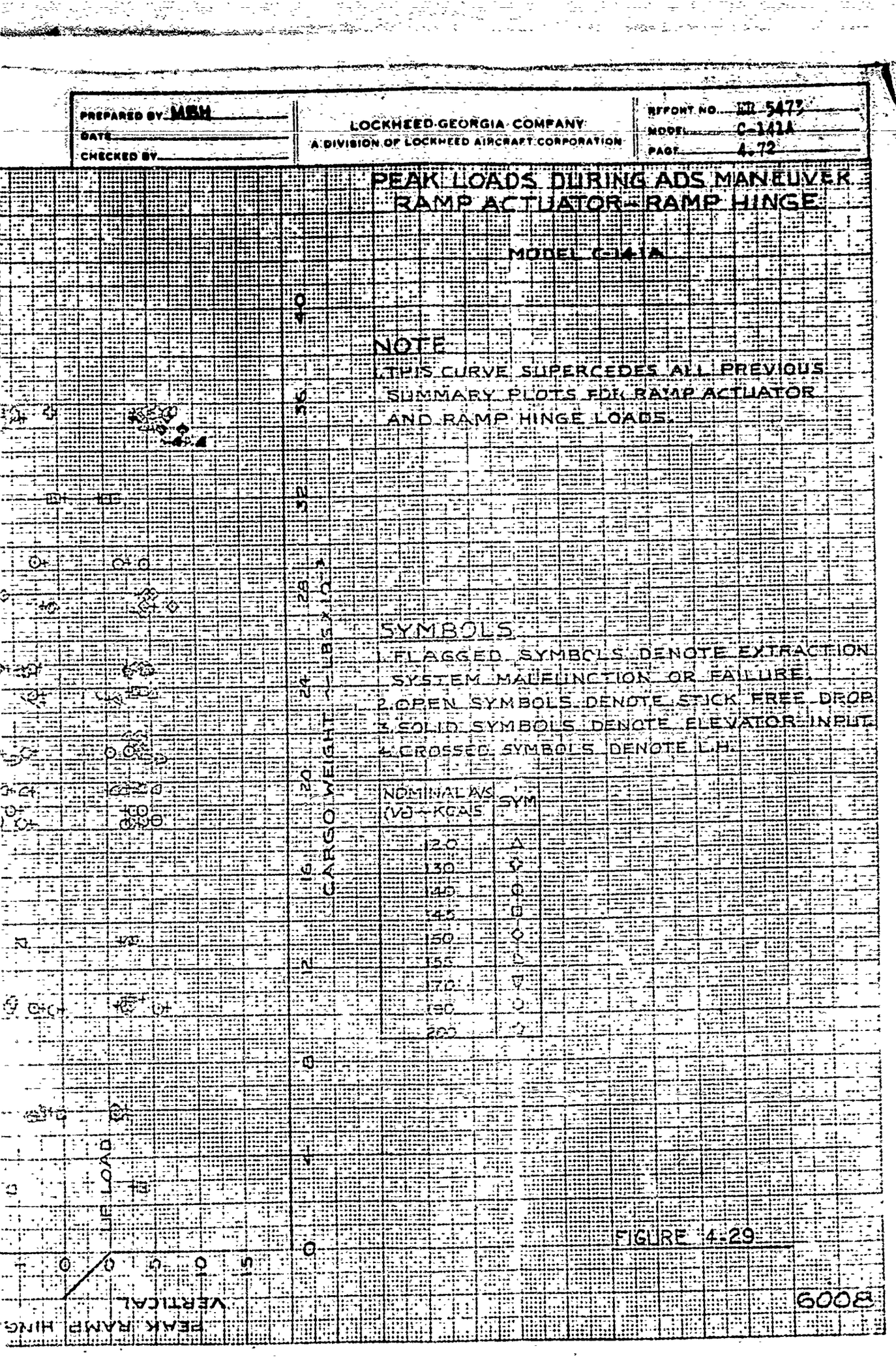
GA FORM 553HA-1

PEAK LOADS DURING ADS MANEUVER
RAMP ACTUATOR - RAMP HINGE

MODEL C-141A

NOTE

1. THIS CURVE SUPERCEDES ALL PREVIOUS SUMMARY PLOTS FOR RAMP ACTUATOR AND RAMP HINGE LOADS.



SYMBOLS

1. FLAGGED SYMBOLS DENOTE EXTRACTION SYSTEM MALFUNCTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP.
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT.
4. CROSSED SYMBOLS DENOTE L.H.

NOMINAL AVS (Vd) ~ KCAS	SYM
120	△
130	▽
140	○
145	□
150	◇
155	△
170	▽
190	○
200	▽

FIGURE 4-29

6008
BENDING AT FS 1044 - IN-LBS x 10³
INCREMENTAL
TAIL DOWN BENDING
PEAK VERTICAL BENDING AT FS 1568 - IN-LBS x 10³
NET
TAIL DOWN BENDING
INCREMENTAL
TAIL DOWN BENDING
CA FORM 6500A-1

PEAK LOADS DURING ADS MANEUVER AT FS 1048 ~ FS 1568

MODEL C-141A

NOTE

1. THIS CURVE SUPERCEDES ALL PREVIOUS SUMMARY PLOTS FOR VERTICAL BENDING AT FS 1048 AND FS 1568

SYMBOLS

1. FLAGGED SYMBOLS DENOTE EXTRACTION SYSTEM MALFUNCTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP.
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT.

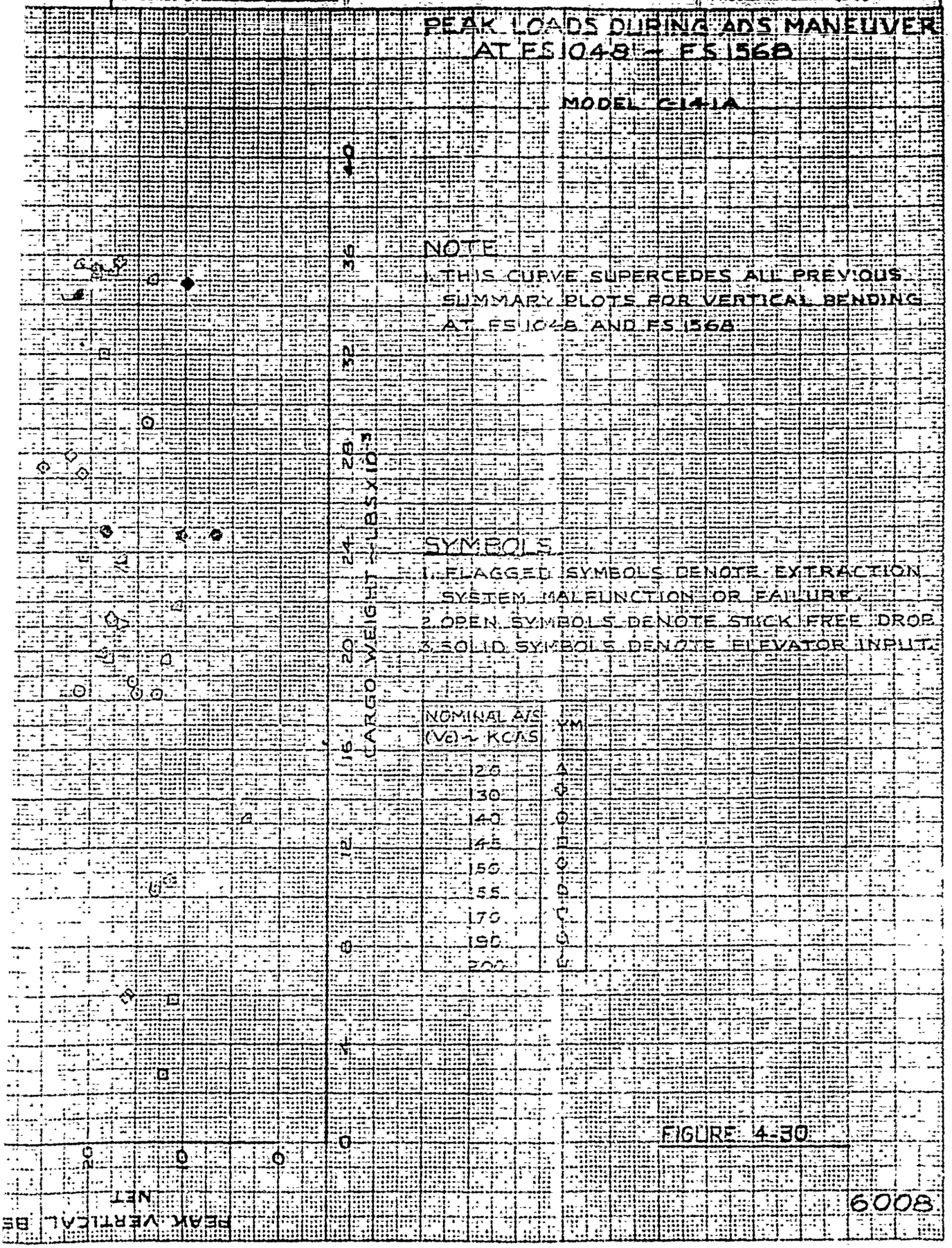


FIGURE 4-30

6008

PEAK BENDING LOADS AT $\frac{1}{4}$ NET $\frac{3}{4}$ INCREMENTAL $\frac{1}{4}$ UNLESS $\frac{1}{4}$ AT $\frac{1}{4}$ HBL $\frac{1}{4}$ $\frac{1}{4}$ $\sim$ S_2 $\sim$ LBS $\times 10^{-3}$ INCREMENTAL

UP LOAD

UP LOAD

UP LOAD

UP LOAD

CA FORM 55RHA-1

PEAK LOADS DURING ADS MANEUVER
SHEAR AT HBL 441-BENDING AT HBL 440

MODEL C-141A

NOTE

THIS CURVE SUPERCEDES ALL PREVIOUS SUMMARY PLOTS FOR SHEAR AND BENDING LOADS AT HBL 441.

SYMBOLS

1. FLAGGED SYMBOLS DENOTE EXTRACTION SYSTEM MALFUNCTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP.
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT.

NOMINAL A/S (V_{IAS}) KCAS	SYM
120	
130	
140	
145	
150	
155	
170	
190	
200	

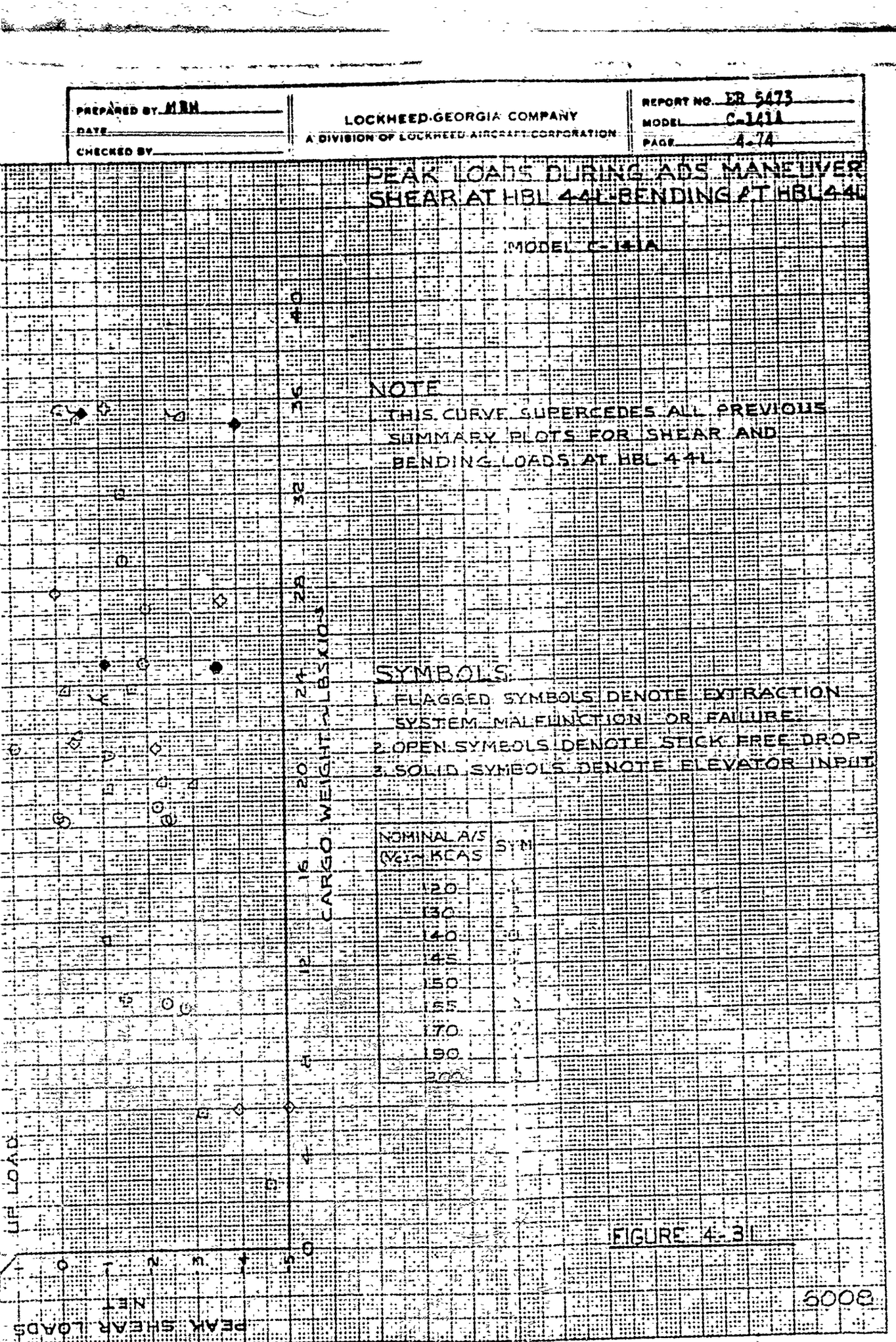


FIGURE 4-31

PREPARED BY _____
DATE _____
CHECKED BY _____

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

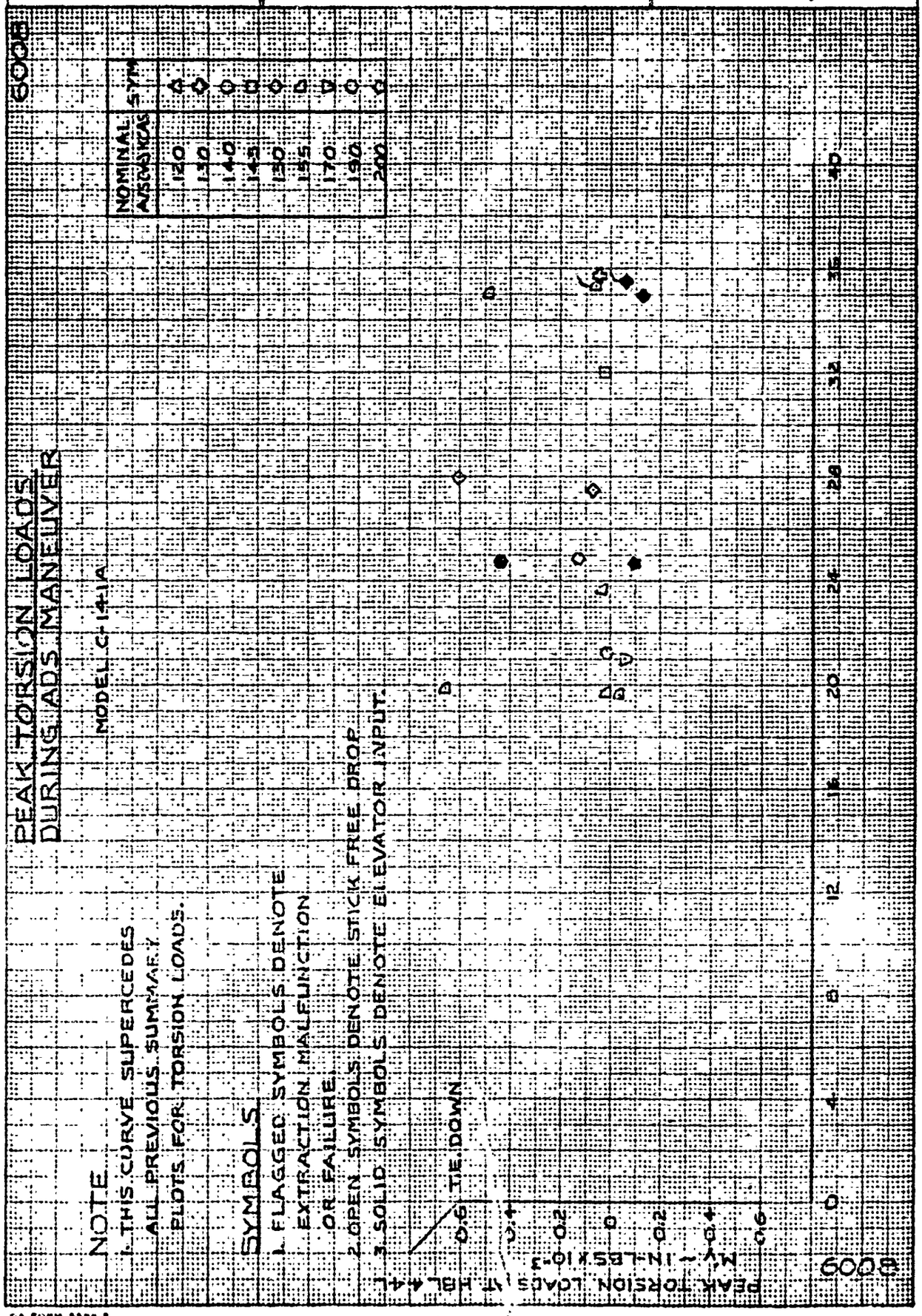
REPORT NO. ER 5473
MODEL C-141A
PAGE 4.75

6008

PEAK TORSION LOADS DURING ADS MANEUVER

MODEL C-141A

NOMINAL AS/MACH	SYM
120	◇
130	◇
140	◇
145	□
150	◇
155	□
170	□
190	○
200	○



NOTE
1. THIS CURVE SUPERCEDES ALL PREVIOUS SUMMARY PLOTS FOR TORSION LOADS.

SYMBOLS
1. FLAGGED SYMBOLS DENOTE EXTRACTION MALFUNCTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT.

GA FORM 9586-8

FIGURE 4.12

PREPARED BY JHP
DATE 1-17-66
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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE 4.76

PEAK PITCH TRIM ACTUATOR LOADS DURING ADS MANEUVER
MODEL C-141A

SYM	NOMINAL V/S-KCAS
△	120
◇	130
○	140
□	145
◇	150
△	155
◇	170
○	180
◇	200

NOTE:
1. FLAGGED SYM. EXT. SYS. FAILURE
2. SOLID SYM. ELEV. INPUT.

INCREMENTAL LOAD LBS. 10^{-3} — TENSION

PEAK LOAD LBS. 10^{-3} — TENSION

6008

GA FORM 5500 B

FIGURE 4.18

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

5.1.1 Personnel Delivery

1. The capability of simultaneous discharge of single and 7 dummies per stick from both paratroop doors has been demonstrated from 120 to 200 KCAS.
2. Retrieval of a "hung dummy" from the paratroop door using the standard retriever winch and bar has been successfully demonstrated at 130 KCAS.
3. The discharge of single and 7 dummies per stick from the cargo ramp has been demonstrated from 180 to 200 KCAS with the ramp air deflectors installed.
4. Retrieval of a "hung dummy" from the cargo ramp has been demonstrated at 130 KCAS, but results indicate a live subject would have been seriously injured in the process.
5. Simultaneous airdrop of personnel from the cargo ramp and paratroop doors is not feasible in the present configuration.

5.1.2 Extraction System

1. The minimum extraction line length should be that length which positions the connecting link between the extraction chute risers and the extraction line at least 33.5' aft of the tail cone.
2. A 140' line length would be satisfactory for use with cargos located at any position inside the cargo compartment.
3. Extraction lines should be of continuous length without metal connector links located inside the cargo compartment.
4. The 15'D_o and 22'D_o ring slot extraction parachutes are satisfactory for deployment up to 150 KCAS.
5. The 28'D_o ring slot extraction parachute is satisfactory for deployment up to 140 KCAS.
6. The 32'D_o fist ribbon parachute is satisfactory for deployment up to 170 KCAS.
7. The 24'D_o reinforced ring slot parachute is satisfactory for deployment up to 190 KCAS.
8. Extraction parachutes should not be employed in a reefed configuration at speeds above their unreefed airspeed limits.
9. A single component failure (parachute, extraction line, clevis, etc.)can precipitate total loss of extraction force

from the extraction system in its present configuration.

10. The present ADS modular platform is unsatisfactory for air dropping unit loads greater than 25,000 pounds from the C-141A.

5.1.3 Cargo Airdrops

1. Complete airplane capability has been demonstrated to
   a. airdrop unit loads up to 25,000 pounds at speeds up to 200 KCAS.
   b. airdrop unit loads up to 35,000 pounds at speeds up to 160 KCAS (platform damage can be expected for extraction rates below 0.8g and may be severe enough to cause roller damage).
   c. sequentially airdrop as many as seven seperate cargos up to a total weight of 71,100 pounds at 150 KCAS.

2. The Aerial Delivery Subsystem performed reliably. The automatic release feature employing pre-set load restraint against the extraction parachute force proved acceptable for use after the restraint lock setting chart was revised.

3. The extraction parachute initiation system was demonstrated to perform reliably.

4. The ARAV tank can be successfully airdropped from the C-141A without producing any contact with the airplane structure even under low extraction rates.

5. All airplane flight loads with the petal doors in the "no strake" configuration will be within allowable limits.

6. The C-141A has the capability to airdrop unit loads in excess of 35,000 pounds provided a suitable platform can be provided and a nominal 1.0g extraction rate can be assured.

5.1.4 Petal Door Load Survey

1. Complete removal of the petal door strake gives the optimum balance between the most critical tension and compression petal door loads.

2. Slight restrictions in flap settings and/or airspeed may be necessary for the intermediate door position with the strake removed.

3. Positioning the petal doors to a more closed position provides additional compression load relief and adequate cargo envelope clearance is available at the 55° door position with the strake removed.

4. Ramp air deflectors aggravate the most critical petal door loads in sideslip.

5.2 Recommendations

5.2.1 Personnel Delivery

1. The minimum airspeed for troop drops should be not less than $1.3V_S$, with a cargo deck angle between 0° and 4° nose up.

2. No troop jumps employing a static line should be made from the cargo ramp until additional cargo ramp dummy retrieval tests are accomplished.

5.2.2 Extraction System

1. If a standardized extraction line length is desired, it should be a continuous 140' line.
2. No metal connector links between extraction line components should be located inside the cargo compartment.
3. An extraction parachute should be developed which would be suitable for airdropping unit loads up to 35,000 pounds at airspeeds up to 160 KCAS.
4. An aerial delivery platform should be developed which would sustain without damage the loads incurred from airdropping unit loads up to 35,000 pounds at extraction rates of 0.25g.
5. Additional flight test should be conducted to demonstrate accomplishment of items 3 and 4 above.

6. The SPO should give consideration to the development of an extraction system which is not totally vulnerable to a single component failure.

5.2.3 Cargo Airdrops

1. A follow-on program should be conducted for unit loads of 35,000 pounds at speeds above 160 KCAS as soon as the present extraction system deficiencies have been corrected.

2. This follow-on program should include a consideration of low extraction rates corresponding to the abortive drop case.

3. A computer aided analysis of the data obtained during the ADS System Tests should be initiated and the results made available prior to the follow-on program.

5.2.4 Petal Door Load Survey

1. The petal door strake should be removed from all C-141A aircraft.

2. Ramp air deflectors should not be used on the C-141A aircraft.

APPENDIX A

TABLE A-1

SUMMARY of PERSONNEL DELIVERY DRO

AF 638077

FLIGHT Nº	DATE	ER5453 REF.	AIRPLANE DATA					DOOR POSITION			DUMMY CHAR	
			GW LBS	CG % MAC	Vc KCAS	Hpc FEET	FLAP POS.	PETAL DOOR POS.	PARA. DOOR POS.	PARA. SPOILER POS.	TYPE CHUTES	EXT. LINE LENGTH FEET
87	3-25-65	7.4.1a	197900	NA	120	5000	34°	CLOSED	R & L OPEN	EXTEND.	T-10 35' D.	15'
↓	↓	↓	↓	↓	135	↓	29°	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	150	↓	27°	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	200	↓	14°	↓	↓	↓	↓	↓
↓	↓	7.4.1b	↓	↓	120	↓	34°	↓	LH OPEN	↓	↓	↓
89	3-26-65	7.4.1b	197800	↓	135	↓	29°	↓	R & L OPEN	↓	↓	↓
↓	↓	7.4.2a	↓	↓	120	↓	33°	38°	CLOSED	RETRACT	↓	↓
↓	↓	↓	↓	↓	135	↓	29°	38°	CLOSED	RETRACT.	↓	↓
↓	↓	↓	↓	↓	200	↓	14°	38°	CLOSED	RETRACT.	↓	↓
90	3-29-65	7.4.1b	197900	↓	150	↓	27°	CLOSED	R & L OPEN	EXTEND	↓	15 & 25
↓	↓	7.4.2b	↓	↓	120	↓	33°	38°	CLOSED	RETRACT	↓	15
91	3-30-65	7.4.1b	197900	↓	200	↓	14°	CLOSED	R & L OPEN	EXTEND.	↓	15 & 25
↓	↓	7.4.2b	↓	↓	130	↓	29°	38°	CLOSED	RETRACT	↓	15 & 25
↓	↓	7.4.3a	↓	↓	130	↓	29°	CLOSED	LH OPEN	EXTEND	↓	15
92	3-31-65	7.4.2b	196500	↓	200	↓	14°	38°	CLOSED	RETRACT	↓	↓
↓	↓	7.4.2c	↓	↓	130	↓	29°	60°	CLOSED	RETRACT	↓	↓
↓	↓	↓	↓	↓	130	↓	29°	38°	R & L OPEN	EXTEND.	↓	↓
↓	↓	7.4.4	↓	↓	130	↓	29°	38°	R & L OPEN	EXTEND.	↓	↓
115	4-27-65	7.4.4	181500	↓	130	2500	36°	38°	R & L OPEN	EXTEND.	↓	19
↓	↓	↓	↓	↓	130	↓	36°	60°	R & L OPEN	EXTEND.	↓	19
↓	↓	↓	↓	↓	130	↓	36°	60°	R & L OPEN	EXTEND.	↓	19
116	4-28-65	7.4.1b	183200	↓	130	↓	36°	CLOSED	R & L OPEN	EXTEND.	↓	15
124	5-13-65	7.4.4b	190400	↓	140	2500	28°	60°	CLOSED	RETRACT	↓	↓
↓	↓	↓	↓	↓	140	↓	28°	60°	CLOSED	RETRACT	↓	↓
135	6-2-65	↓	176500	↓	130	↓	29°	CLOSED	R & L OPEN	EXTEND	↓	↓

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?OPS — ADS PROGRAM

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CHARACTERISTICS			DUMMIES/EXIT		TOTAL	COMMENTS
LINE GTH ET	TYPE DUMMY	WEIGHT LBS	PARA. DOOR.	RAMP	Nº DUMMIES	
'	ROPE HEAD	140	1 RH 1 LH	—	2	DUMMIES ALL FALL CLEAR OF A/C - GOOD DROPS - NO A/P RESPONSE
	"	"	"	—	2	GOOD DROP - NO CONTACT WITH A/C NO A/C RESPONSE
	"	"	"	—	2	GOOD DROP - NO A/C RESPONSE
	"	"	"	—	2	GOOD DROP - NO A/C RESPONSE
	"	"	STICK OF 5	—	5	SEQUENCE DISCHARGE OF 1 STICK OF 5 DUMMIES ALL FALL CLEAR OF A/C
	"	"	STICK OF 7 R-L	—	14	STICK DROP - ALL 7 DUMMIES FALL CLEAR OF A/C - NO CONTACT WITH A/C
	TORSO	200	—	1	1	DUMMY FALLS CLEAR OF A/C - CHUTE CLEARS A/C - NO CONTACT
	TORSO	200	—	1	1	SAME AS ABOVE
	ROPE HEAD	140	—	1	1	SAME AS ABOVE
25	"	"	STICK OF 7 R-L	—	14	ALL CLEAR A/C OKAY - NO CONTACT
5	"	"	—	STICK OF 7	7	RETRIEVAL CABLE BROKE ON RH STATIC WINCH DUMMIES CLEAR A/C OK - NO CONTACT
25	"	"	STICK OF 7 R-L	—	14	DUMMY HUNG UPON LH SIDE - RETRIEVED OK ALL OTHERS CLEAR A/C
25	"	"	—	STICK OF 7		BAGS TEND TO BUNCH TOGETHER @ LH AFT LOCK DUMMIES ALL FALL CLEAR
5	"	"	1	—	1	INTENTIONAL HANG UP - RETRIEVAL OKAY
	"	"	—	STICK OF 7	7	ALL DUMMIES FALL CLEAR - STATIC LINES SLAP (ROUGHLY) RH PETAL DOOR
	"	"	—	STICK OF 7	7	ONE HANG UP - HIT UNDERSIDE OF TAIL FAIRING LH DOOR - DUMMY UNSTABLE
	"	"	1 RH ONLY	—	1	PARACHUTE BRUSHES DOOR CORNER
	"	"	1 RH 1 LH	1	3	GOOD DROP - ALL CLEAR A/C
9	"	"	1 RH 1 LH	1	3	DUMMIES FALL CLEAR - 4' EXT. ON STND LINE RH BAGS HIT RH PETAL DOOR - DAMAGE DOOR LE.
9	"	"	1 RH ONLY	—	1	GOOD DROP - NO CONTACT - TOP 22 HOLES BLOCKED ON PARA. DOOR SPOILER
9	"	"	1 RH 1 LH	2	4	GOOD DROP - FEEL AIRFLOW MORE STRONGLY
15	"	"	STICK OF 7 R-L	—	14	STATIC LINES RUB UPPER REAR PARATROOP DOOR RADIUS
	"	"	—	1 OFF LH SIDE	1	HANG UP & RETRIEVAL - DUMMY HIT LH PETAL DOOR & UNDERSIDE OF CEILING - HITS RAMP ON RETRIEVAL
	"	"	—	1 OFF RH SIDE	1	RH SIDE SAME AS ABOVE - RETRIEVAL STARTED AFTER 10-SEC - HIT DOOR 4 TIMES, CEILING ONCE
	"	"	4 LH 56 LINES LH	—	4 DUMMIES 56 LINES	PROCEDURE: ① DISCHARGE 1 DUMMY, 28 STATIC LINES, AND A 2ND DUMMY OFF LH INBD ANCHOR LINE,
						② THEN DISCHARGE 1 DUMMY, 28 STATIC LINES, AND A SECOND DUMMY OFF LH OUTBD ANCHOR LINE.
						③ RETRIEVE ALL 56 LINES USING RETRIEVAL WINCH.
						DUMMIES ALL FALL CLEAR - LINES BUNCH TOGETHER - RIDE WELL - NOT TOO HIGH
						NO INTERFERENCE.

FIGURE A-1

TABLE A-2

SUMMARY of PARACHUTE TOW TEST

AF 63-8077

FLIGHT NR	DATE	EFF 5453 EF.	AIRPLANE DATA				EXTRACTION LINE			EXTRACTION		
			GW LBS.	C.G. % MAC	V_c KCAS	H_{pc} FEET	FWD END @ FUS. STA	LINE LENGTH FEET	LINE TYPE	NR CHUTES	SIZE CHUTE	TYPE CHUT
73	3-4-65	732.3	190000	NA	149.5	4880	1271	80	TYPE XXVI 8-PLY	1	15' D_o	RING SI
			180000		149.5	4890		80		1	22' D_o	
			175000		149.5	4940		80		1	28' D_o	
74	3-5-65		190000		160.0	4940		80		1	22' D_o	
			185000		159.5	4930		80		1	22' D_o	
			170000		160.0	4910		80		1	22' D_o	
75	3-5-65		195000		158.5	4840		80		1	28' D_o	
			193000		161.5	4900		80		1	28' D_o	
			180000		159.5	4900		80		1	28' D_o	
76	3-8-65		190000		117.0	4940	1260	100		1	32' D_o	FIS RIBE
			190000		136.0	4950		100		1	28' D_o	RING
			190000		198.5	4910		80		1	32' D_o	FIS RIBE
80	3-17-65		190000		127.0	4950		80		1	22' D_o	RING
			185000		130.0	4950		100		1	22' D_o	
			180000		159.5	5020		100		1	22' D_o	
81	3-18-65		190000		139.5	4900		80		1	28' D_o	
			190000		156.5	4940		100		1	28' D_o	
			180000		138.5	4890		100		1	32' RFD TO 24'	FIS RIBE
			170000		138.5	4930		100		1	32' D_o	
83	3-19-65		190000		160.5	4820		80		1	32' D_o	
			190000		181.5	4870		100		1	32' RFD TO 24'	
			180000		134.5	5020		100		2	28'	RING
			170000		151.0	4940		100		2	22'	RING
84	3-27-65		195000		185.5	4920		80		1	32' RFD TO 24'	FIS RIB
			190000		171.5	4910		80		1	32' D_o	FIS RIB
85	3-30-65		187000		139.0	4920		80		1	28' D_o	RING
122	5-11-65		191000		134.5	2490	1172	140	TYPE XXVI 2 PLY	1	15' D_o	
			180000		139.0	2470		140	TYPE XXVI 6 PLY	1	22' D_o	
			175000		138.0	2480		140	TYPE XXVI 8 PLY	1	28' D_o	
124	5-13-65		180000		138.0	2540	926	140	TYPE XXVI 2 PLY	1	15' D_o	
152	7-14-65		177400		170.0	2500	1220	100	TYPE XXVI 8 PLY	1	24' D_o	REIN RING
154	7-19-65		172700		172.0	2560		80		1	24' D_o	REIN RING
156	7-21-65		197000		123.5	2540		80		1	22' RFD TO 9'	RING
159	7-26-65		192000		132.5	2550		80		1	22' RFD TO 9'	RING
			190000		134.5	2550		80		1	22' RFD TO 9'	RING
187	9-28-65		195000		202.5	1720	1160	80	TYPE XXVI 10 PLY	1	24' RFD TO 16'	REIN RING

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DATA — ADS PROGRAM

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CHUTE TYPE	PEAK LOAD LBS.	FLAP POSITION	COMMENTS
RING SLOT	5350	26°	CHUTE RIDES STABLE - LINE CLEARS STRUCTURE - NO TRIM CHANGE LITTLE PWR. CHANGE
	15110	26°	CHUTE RIDES HIGHER - VERY STABLE - LINE CLEARS A/P NO CHANGE IN PITCH OR PWR
	23630	26°	NORMAL EXTRACTION - CHUTE VERY STABLE SMALL PWR. CHANGE TO HOLD A/S
	16160	26.5°	NO PWR. CHANGE - SLIGHT PITCH CHUTE VERY STABLE SLIGHT REDUCTION IN A/S
	15230	26.5°	GOOD DEPLOYMENT - CHUTE VERY STABLE, VERY LITTLE ROTATION SLIGHT HORIZ. MOVEMENT - NO PITCH DOWN FELT BY PILOT
	15700	26.5°	CHUTE RIDES VERY STABLE - NO PWR CHANGE NO PITCH. MOTION FELT BY PILOT
	25310	26.5°	NO PWR CHANGE - SLIGHT DROP IN A/S - CHUTE RIDES HIGH BUT STABLE LINES RIDE CLEAR OF A/E - SMALL ELEV. INPUT
	27240	26.0	NORMAL DEPLOY - CHUTS VERY STABLE - NO CHANGE IN PWR - SPEED REMAINS CONSTANT - SMALL ELEV INPUT
	25800	26.5°	NORMAL DEPLOY - CHUTE VERY STABLE - PWR APPLIED TO MAINTAIN A/S - SMALL ELEV. INPUT - SLIGHT PITCH DWN
FIST RIBBON	17300	35°	GOOD DEPLOYMENT - CHUTE VERY STABLE - NO PWR CHANGE SLIGHT DROP IN A/S - SMALL ELEV. INPUT - SLIGHT PITCH DOWN
RING SLOT	18000	NA	CHUTE VERY STABLE -
FIST RIBBON	53000	14.5°	CHUTE DEPLOYMENT OK - EXTRACTION LINE FAILS AND DAMAGES RUDDER AND RUDDER BOOST FAIRING - NO PWR OR SPEED CHANGE - CHUTE WAS NOT REEFED
RING SLOT	10650	29°	CHUTE VERY STABLE - RIDES HIGH - NO PWR CHANGE - SLIGHT A/S DROP
	12340	29°	NORMAL DEPLOYMENT - CHUTE VERY STABLE - NOT QUITE AS HIGH AS ABOVE NO PWR CHANGE - A/S CONSTANT - NO PITCH DOWN
	22140	24°	SAME AS ABOVE
	23100	28°	NORMAL RELEASE AND DEPLOY - CHUTE RIDES HIGH BUT STABLE - SLIGHT ELEV INPUT - NO PWR CHANGE - SLIGHT PITCH DOWN
	27050	26°	CHUTE VERY STABLE - RIDES HIGHER THAN ABOVE - NO PWR CHANGE NO PITCH DOWN - NO ELEV INPUT
FIST RIBBON	15200	29°	SAME AS ABOVE
	31300	29°	CHUTE VERY STABLE - NOTICEABLE PITCH DOWN - PWR INCREASED ON OB ENGINES.
	31100	25°	NORMAL RELEASE AND DEPLOYMENT - CHUTE RIDES HIGH BUT STABLE, PWR INCREASED ON OB ENGINES - NO EFFECT ON CHUTE STABILITY, NO PITCH DOWN
	24170	19°	CHUTE VERY STABLE - PWR HELD CONSTANT - SLIGHT PITCH DOWN SLIGHT DECREASE IN A/S
RING SLOT	37520	29°	SAME AS ABOVE CHUTE RIDES ONE ABOVE THE OTHER
RING SLOT	28310	26°	SAME AS ABOVE
FIST RIBBON	25530	17°	GOOD DEPLOYMENT - CHUTE VERY STABLE - RIDES HIGH - PILOT REPORTS SLIGHT NOSE DOWN PITCH. NO PWR CHANGE - SMALL ELEV. INPUT
FIST RIBBON	40570	19°	NORMAL DEPLOYMENT - CHUTE GORE BLEW - CHUTE RODE LOW NO PITCH DOWN NOTICED - NO PWR CHANGE - SLIGHT A/S DROP
RING SLOT	20720	29°	CHUTE STABLE - PWR INCREASED TO MAINTAIN A/S - SMALL DROP IN AIRSPEED - NO PITCH DOWN NOTICED.
	6080	28.5°	EXTRACT. LINES 60+60+20 FOOT LENGTHS - ALL LINKS OUTSIDE A/C. CHUTE VERY STABLE - RIDES HIGH - NO PWR CHANGE - SLIGHT PITCH DWN - A/S CONSTANT
	13490	28.5°	EXTRACT LINES SAME AS ABOVE - CHUTE STABLE BUT RIDES LOW SLIGHT PITCH DOWN - A/S DROPS 10 KNOTS
	23600	28.5°	EXTRACT. LINES SAME AS ABOVE - CHUTE STABLE BUT RIDES LOW NO PWR CHANGE - NO PITCH DWN - SPEED DROP OF 5 KNOTS
	6500	28.9°	EXTRACT LINE 100+40 FOOT LENGTHS - LINE HITS A/C IN TAIL AREA APPROX. 60' OUT - NO DAMAGE - CHUTE HAS SLIGHT OSCILLATIONS
REINF'D RING SLOT	23890	22.0°	
REINF'D RING SLOT	28660	19.0°	
RING SLOT	7440	32.0°	
RING SLOT	8920	32.0°	1st PASS
RING SLOT	6800	33.2°	2ND PASS
REINF'D RING SLOT	21740	32.8°	SATISFACTORY - SLIGHT ELLIPTICAL SHAPE WHEN TOWED

FIGURE A-2

TABLE A-3

SUMMARY of INDIVIDUAL CARGO DRO

AF 63-8077

C-1

FLIGHT NO	DATE	ER5453 REF.	AF DROP NO	AIRPLANE DATA BEFORE DROP				CARGO DESCRIPTION				
				GW LBS	C.G. %MAC	SPEED KCAS	Hp FEET	WEIGHT LBS	C.G. POS. FUS. STA.	AFT END FUS. STA.	LENGTH INCHES	HEIGH INCHE
93	4-1-65	7.3.1.2	0813	166100	29.6	145.5	4900	5840	864	912	96	49
94	4-2-65	7.3.1.3	0915	170500	28.5	131.0	2415	10650	832	904	144	65
95	4-6-65	7.3.1.4	0916	169200	28.0	139.0	4960	10300	851	971	240	65
96	4-6-65	7.3.1.5	0917	170620	27.4	140.5	4910	10450	824	893	144	65
98	4-9-65	7.3.1.1	0812	161800	29.8	143.0	4970	2640	912	958	96	49
99	4-12-65	7.3.1.6	0919	169300	25.8	153.5	4925	13200	812	883	144	70
100	4-13-65	7.3.1.7	1012	177970	26.2	139.0	4890	18250	835	903	192	75
101	4-14-65	7.3.1.8	1013	179190	26.7	139.0	4940	18820	847	941	192	75
102	4-15-65	7.3.1.9	1014	177700	26.6	140.0	4940	18330	847	940	192	75
103	4-16-65	7.3.1.10	1015	178270	26 2	138 0	4920	18400	847	940	192	75
108	4-20-65	7.3.1.11	1016	184200	26.4	152 5	4935	21900	858	947	192	80
111	4-21-65	7.3.1.12	1089	181050	26.3	142.5	4940	23830	866	981	240	80
112	4-22-65	7.3.1.13	1090	185300	26.2	151.5	2425	27190	873	988	240	90
117	4-30-65	7.3.1.14	1091	187900	26.8	N.A.	N. A.	27450	878	992	240	90
118	5-4-65	7.3.1.15	1329	188100	26.5	150.5	2415	27930	876	991	240	90
119	5-5-65	7.3.1.16	1205	188200	26.3	140.0	4865	29250	879	1061	288	48
120	5-6-65	7.3.1.17	1206	191600	25.9	142 5	4970	32030	877	1045	288	48
121	5-10-65	7.3.1.18	1330	191100	26.2	152.0	5000	35540	889	1055	288	48
123	5-12-65	7.3.1.21	1365	180100	33.4	148.5	4950	21350	1018	1114	192	85
127	5-17-65	7 3.1.23	1395	166900	24.0	149.5	4970	6060	537	585	96	80
128	5-18-65	7.3.1.24	1396	181500	19.5	151.5	4970	21550	699	787	192	90
129	5-19-65	7.3.1.26	1397	182600	19.5	119.5	5010	23440	887	1002	240	99
130	5-20-65	7.3.1.19	1366	195500	26.4	153.5	4925	35710	887	1055	288	58
136	6-3-65	7.3.1.34	1576	185600	27.5	149.0	4975	24830	884	1011	240	99
137	6-4-65	7.3.1.35	1575	163800	24.8	151 0	4985	5940	592	689	192	61
138	6-7-65	7.3.1.25	1546	194200	19.2	156.5	5055	35250	780	945	288	48
139	6-8-65	7.3.1.22	1543	195300	33.3	154.0	5010	34400	987	1145	288	101
141	6-14-65	7.3.1.27	1398	187,200	18.7	157.0	5025	23,750	717	831	240	94
142	6-15-65	7.3.1.20	1547	195,400	26.2	149.5	4990	34,960	881	1044	288	51
143	6-18-65	7.3.1.29	1610	195900	19.5	134.0	4950	35,700	781	916	288	90
144	6-22-65	7.3.1.32	1651	276200	28.8	153.0	5015	35335	1090	1225	288	95
145	6-24-65	7.3.1.37-2	1652	201000	33.6	148.0	5065	34800	1022	1154	288	98
		7.3.1.37-1		160200	27.8	149.0	5100	9450	813	860	96	72
146	6-28-65	7.3.1.36	1653	216900	33.8	142.0	5080	34100	1074	1239	288	88
		7.3.1.33-1		182000	24.7	142.0	5190	22450	816	908	192	80
148	6-30-65	7.3.1.31	1654	225100	33.5	151.5	5045	35530	1099	1235	288	90
				190070	23.0	151.5	5040	29600	815	929	240	85

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ROPS — ADS PROGRAM

C-141A, 6008

	CARGO CHUTE DATA		EXTRACTION CHUTE DATA				EXTRACT			
EIGHT INCHES	NO	DIA. & TYPE	EXT. LINE LENGTH FEET	EXT. LINE TYPE	NO CHUTES & DIAM.	TYPE CHUTE	PEAK FORCE LBS.	AVG. RATIO DESIRED	AVG. RATIO MEAS'D	PEAK RATIO MEAS'D
49	2	100' G11A	100	2 PLY TYPE 26	1-15'	RING SLOT	5000	1.0	0.55	0.86
65	3			8 PLY TYPE 26	1-22'		13000	1.0	0.85	1.22
65	3				1-32' REEFED 2A'	RIBBON	17100	1.5	1.00	1.66
65	3				2-15'	RING SLOT	7740	0.5	0.60	0.74
49	1			2 PLY TYPE 26	1-15'		3880	1.0	1.25	1.47
70	4			8 PLY TYPE 26	1-22'		14330	1.0	0.90	1.08
75	5				2-32' REEFED 2A'	RIBBON	24000	1.5	0.95	1.26
75	5				1-28'	RING SLOT	22050	1.0	0.85	1.17
75	5				1-22'		13120	0.5	0.61	0.72
75	5				2-15' REEFED 1E		8840	0.25	0.35	0.48
80	6				1-28'		23360	1.0	0.85	1.07
80	6				2-22'		32360	1.0	0.90	1.36
90	7				2-22'		27590	1.0	0.75	1.01
90	7				1-22'		15350	0.5	0.49	0.56
90	7				2-15'		9020	0.25	0.30	0.32
48	7				2-28'		36920	1.0	0.99	1.26
48	8				2-28'		35860	1.0	0.86	1.12
48	8				2-28'		47200	1.0	0.84	1.33
85	6		140	8 PLY TYPE 10	1-28'		23600	1.0	0.89	1.11
80	2		140	2 PLY TYPE 26	2-15'		7640	1.0	0.96	1.26
90	6		140	8 PLY TYPE 26	1-28'		23300	1.0	0.88	1.80
99	6		140	8 PLY TYPE 26	2-28'		28340	1.0	0.84	1.21
58	8		100	8 PLY TYPE 26	1-28'		31230	0.5	0.67	0.87
99	6		140	8 PLY TYPE 10	1-28'		21430	1.0	0.75	0.86
61	2		140	2 PLY TYPE 10	1-15'		5290	1.0	0.72	0.89
48	8		100	8 PLY TYPE 26	2-28'		43260	1.0	1.02	1.23
101	8		100	10 PLY TYPE 26	2-28'		47130	1.0	0.10	1.37
94	6		140	8 PLY TYPE 26	1-32'	FIST RIBBON	36000	1.0	1.19	1.52
51	3		140	8 PLY TYPE 26	1-22'	RING SLOT	N.A.	N.A.	N.A.	N.A.
90	8		100	10 PLY TYPE 26	2-28'		33800	1.0	0.73	0.95
95	8		100	10 PLY TYPE 26	2-28'		38950	1.0	0.94	1.03
98	8		100	10 PLY TYPE 26	2-28'		41720	1.0	0.91	1.25
72	3		140	8 PLY TYPE 26	1-22'		15260	1.0	1.17	1.4
88	8		100	10 PLY TYPE 26	2-28'		42450	1.0	0.13	1.7
80	6		140	8 PLY TYPE 26	1-28'		26400	1.0	0.92	
90	8		100	10 PLY TYPE 26	2-28'		47670	1.0	1.02	1.4
85	7		140	10 PLY TYPE 26	1-32'	FIST RIBBON	32750	1.0	0.85	

TABLE A-3 CONT.

SUMMARY of INDIVIDUAL CARGO DROPS

AF 63-8077 C-141A, 6

	FLIGHT NR	DATE	ER 5453 REF.	AF DROP NR	AIRPLANE DATA BEFORE DROP				CARGO DESCRIPTION				
					GW LBS	C.G % MAC	SPEED KCAS	Hp FEET	WEIGHT LBS	C.G. POS. FUS. STA.	AFT END FUS. STA.	LENGTH INCHES	HEIGH INCHES
1	149	7-2-65	7.1.3.40-2	2264	227,000	33 5	149.5	5,080	34,650	1114	1196	288	90
	"	"	-1		192,340	22.0	150	5,100	35,360	822	945	288	90
2	150	7-6-65	7.3.1.41-4	1804	195,800	33.5	139.5	4985	9,750	1147	1193	96	58
					186,050	29.5	144	5,000	10,130	1049	1094	96	85
					175,920	27.1	144	5,000	10,350	928	974	96	58
					165,570	27.2	144	5,000	9,950	819	864	96	85
3	151	7-12-65	7.3.1.42-7	2274	163810	20.3	145.5	4995	9530	537	585	96	58
			42-6		173420	19.6	148	5000	10110	649	694	96	85
			42-5		183130	11.7	148	5000	9710	757	803	96	57
			42-4		193050	11.3	148	5020	9920	868	913	96	85
			42-3		203260	13.1	143	5030	10216	985	1033	96	58
			42-2		213750	17.4	141	5060	10490	1127	1172	96	85
			42-1		223900	23.3	141	5080	10150	1247	1295	96	58
4	178	9-8-65	7.3.1.43-4	2471	163045	26.6	150	5020	5055	648	694	96	58
			43-3		183610	21.1	151	5020	20565	799	928	232	65
			43-2		218635	28.7	152	5020	35025	1041	1175	288	92
			43-1		229100	33.7	151	5030	10465	1278	1266	96	77
5	175	9-2-65	7.3.1.40R-2		190910	21.5	151	5020	35040	808	945	288	90
			40R-1		226300	33.0	151	5020	35390	1111	1284	336	50
6	168	8-23-65	7.3.1.22R	2436	193800	33.7	153.5	5030	35050	986	1126	288	100
7	170	8-25-65	7.3.1.22-2		173500	32.7	154.5	5025	19700	993	1135	288	102
8	172	8-27-65	7.3.1.22-3		179300	32.9	152.5	5030	19000	993	1135	288	101
9	173	8-31-65	7.3.1.22-4		179900	32.7	153.0	5015	19650	993	1135	288	10
10	183	9-14-65	7.3.1.30	2536	253900	20.1	171.5	5025	21050	779	925	288	46
	184	9-20-65	7.3.1.31	2527	278396	26.7	190.5	5030	21330	774		288	
	186	9-23-65	7.3.1.36	2834	269100	23.1	188.0	5060	24840	645		288	
	188	9-30-65	7.3.1.38	2902	256200	25.9	198.5	5080	24700	784		288	
	190	10-4-65	7.3.1.39	2911	252200	25.8	191.5	20035	24760	784		288	

~ ADS PROGRAM

6008

	CARGO CHUTE DATA		EXTRACTION CHUTE DATA							EXTRACTIO	
IGHT CHES	NO.	DIA. & TYPE	EXT. LINE LENGTH FEET	EXT LINE TYPE	NO CHUTES & DIAM.	TYPE CHUTE	PEAK FORCE LBS	AVG RATIO DESIRED	AVG RATIO MEAS'D	PEAK RATIO MEAS'D
90	8	100'G11A	100'	10 PLY TYPE 26	2-28'	RING SLOT	41,440	1.0	-	1.17
90	8	100'G11A	120'	10 PLY TYPE 26	2-28'	RING SLOT	——	1.0	——	——
58	3	100'G11A	100'	6 PLY TYPE T-10	1-22'	RING SLOT	12,310	1.0	1.18	1.26
85	3	100'G11A	100'	6 PLY TYPE T-10	1-22'	RING SLOT	13,670	1.0	1.11	1.35
58	3	100'G11A	120'	6 PLY TYPE T-10	1-22'	RING SLOT	N.A.	1.0	N.A.	N.A.
85	3	100'G11A	120'	6 PLY TYPE T-10	1-22'	RING SLOT	N. A.	1.0	N A	N.A.
58	3	100' G11A	120	6 PLY TYPE T-10	1-22'	RING SLOT	N.A.	1.0	N.A.	N.A.
85	3		120							
57	3		120							
85	3		100							
58	3		100							
85	3		80				N.A.		N.A.	N.A.
58	3	100'G11A	80	6 PLY TYPE T-10	1-22'	RING SLOT	13240	1.0	1.06	1.3
58	2	100'G11A	120	2 PLY TYPE T-26	1-15'	RING SLOT	6696	1.0	1.07	1.32
65	5		100	8 PLY TYPE T-26	1-32'	RIBBON	30616		1.04	1.49
92	8		100	10 PLY TYPE T-26	2-32'	RIBBON	51000		1.10	1.46
72	3	100'G11A	80	6 PLY TYPE T-26	1-22'	RING SLOT	12510	1.0	1.06	1.20
90	8	100'G11A	100	10PLY TYPE T-26	2-28	RING SLOT	39430	1.0	.38	1.12
50	8	100'G11A	80	10 PLY TYPE T-26	2-28	RING SLOT	39148	1.0	.87	1.11
100	8	100'G11A	100'	10 PLY TYPE T-26	2-28	RING SLOT	39550	1.0	.90	1.13
104	5	100'G11A	100'	6 PLY TYPE T-26	1-28	RING SLOT	24270	1.0	.89	1.24
101	5	100'G11A	100'	6 PLY TYPE T-26	1-28'	RING SLOT	23018	1.0	.83	.21
101	5	100'G11A	100'	6 PLY TYPE T-26	1-28'	RING SLOT	19450	1.0	.75	.99
44	5	100'G11A	100'	10 PLY TYPE T-26	1-24'	REINFO RING SLOT	N.A.	1.0	NA	A
	6	100'G11A	100'	10 PLY TYPE T-26	1-24' RFD 10'	REINF RING SLOT	18500	1.0	.74	
	6	100'G11A	100'	10 PLY TYPE T-26	1-24' UNREFD	REINF. RING SLOT	26100	1.0	.96	1.28
	6	100'G11A	100'	6 PLY TYPE T-26	1-24' RFD-18'	REINF. RING SLOT	21850	1.0	.74	.20
	6	100'G11A	100'	10 PLY TYPE T-26	1-24' UNREFD	REINF RING SLOT	27500	1.0	.95	1.15

ON	DATA			AIRPLANE RESPONSE						
PEAK PITCH VELOCITY FPS	RELEASE LOCK SETTING	RELEASE LOAD SETTING	RELEASE LOAD MEAS'D	FLAP POSITION °/o	TRIM α DEGREES	PEAK α DEGREES	PEAK C.G. VERTICAL ACCEL.	PEAK PLATFORM FORCE, LBS	PILOT RESPONSE	
N.A.	1.70N 1	3000	N.A.	67	0.5	1.0	1.16	5180	STICK FREE	NO LOSS IN AIR
46.3	1.9 ON 2	5000	6700	67	1.8	3.2	1.32	7600	5.5° δe 12°/SEC.	SLIGHT TRIM CI
51.2	2.80N6	20000	MANUAL RELEASE	67	1.0	2.3	1.26	4220	1° δe INPUT	MANUAL RELEAS
42.8	1.450N 2	3500	2600	67	1.0	2.3	1.33	5695	2° δe INPUT	PLATFORM NO
64.0	0.750N1	1250	1500	67	0	0.8	1.04	1230	STICK FREE	
59.5	1.90N 3	7000	6000	UP	5.5	6.1	1.37	7935		ZERO FLAPS AN
59.6	2.00N 4	9500	8000	67	1.8	4.5	1.40	10950		VERY GRADUAL
51.3	2.00N4	9500	12500	67	1.0	3.2	1.46	10500		VERY GRADUAL
41.7	2.00N4	9500	12000	67	1.5	3.5	1.49	12000		
34.7	1.90N 2	5000	6500	67	1.5	6.7	1.61	16040	8° δe 10°/SEC	CONSIDERABLY MO
51.2	2.30N4	11000	12500	33	4.2	6.1	1.55	9140	STICK FREE	MILD PITCH UP.
43.8	2.10N5	12000	24500	67	0	3.8	1.54	N.A	2° δe INPUT	EMERGENCY R
43.3	2.350N5	13500	21000	65	0.5	3.3	1.70	16560	STICK FREE	DECELERATION AN
37.0	1.950N4	9000	13500	67	0.5	4.0	1.75	21100	STICK FREE	REPEAT DROP DUE
30.8	1.550N4	7000	8030	67	1.0	5.0	1.88	25700	2° δe INPUT	PLATFORM BOTTON TRANSFER POSITIC
52.0	2.15[illegible]	14500	18500	67	3.0	4.5	1.49	15200	STICK FREE	VERY MILD PITCH
[illegible]	2.30N 6	16000	20000	67	2.5	4.2	1.56	18300	STICK FREE	L.H. RAIL UNLOCK UNLOCK [illegible] LBS
41.3	2.30N7	17500	25600	65	0	1.5	1.62	28200	7° δe 12°/SEC	ATTEMPTED FIX PEAK IN [illegible] AT C
41.0	2.20N4	10500	15360	67	0	0.8	1.29	12685	STICK FREE	EXTRACTION LIN PITCH UP NOTI
66.7	1.70N 1	3000	3450	55	1.5	3.1	1.25	4175	1° δe INPUT	EXTRACTION L SLIGHT AIRCR
56.1	2.20N4	10500	11550	67	0.5	2.0	1.49	1760	13° δe 6°/SEC.	EXTRACTION CH AFTER PACKAG
58.0	2.10N5	12000	12080	90	2.2	5.6	1.65	18480	13° δe 19°/SEC.	ONE EXT. CHUT NORMAL GRE
39.2	2.30N7	17500	23500	63	0.5	4.5	1.93	26400	STICK FREE	MODERATE P
45.5	2.10N5	12000	16800	63	0.1	2.0	1.58	13900	STICK FREE	NO NOTICEABLE
48.[illegible]	1.95CN1	3000	3570	65	1.8 ND	1.0ND	1.20	4150	STICK FREE	NO NOTICEABLE
55.[illegible]	2.30N7	17500	23200	63	0	3.3	1.87	18000	STICK FREE	SLIGHT PITCH-
10.[illegible]	2.30N7	17500	34100	67	0.5 ND	5	1.80	50700	RAPID FULL δe	ARAAV MOCK-U
66.[illegible]	2.40N4	12,000	13980	60	0.5NU	3.2	1.70	13780	STICK FREE	
33.0	2.00N3	?	N.A.	63	0.5	2.0	1.66	30190	δ_e = 14°	δ_e APPLIED
49.[illegible]	2.05 ON6	17,500	12340	70	2.5	6.0	1.79	21900	STICK FREE	NO EXT. AIRAT ALL TIME SET
2.[illegible]	2.05ON6	17500	19210	63	4.0	6.1	1.53	32560	δ_e = 4°	EXTRACTIO IMMDY. STEN
[illegible]	2.05 ON6	17,500	19[illegible]10	65	0.0	1.0	1.48	19930	STICK FREE	AFTER DRO
47.[illegible]	2.6 ON 1	5000	[illegible]	[illegible]	2.5ND	1.5ND	1.24	4040	$\delta_e \approx$ 1.0	PIT. BROKE
48.1	2.05 ON6	17500	[illegible]	65	1.25	2.0	1.35	22950	δ_e = 3.0	SECOND E
[illegible]	2.35 ON3	11500	11240	65	2.0ND	1.5NU	1.57	14860		
.12	2.4 ON 5	17500	[illegible]	6	1.7	2.3	1.41	22870	δ_e = 2.5	SECOND EX
1.[illegible]	1.9 ON 6	15000	13[illegible]	[illegible]	1.2ND	2.0	1.71	21850		BETWEEN

COMMENTS (INCLUDES LOADS ≥ 90% LIMIT)
AIRSPEED
1 CHANGE TO NOSE UP
EASE OF LH LOCKS AFTER FULL INFLATION OF CHUTE.
NOT RECOVERED
AND +4° DECK ANGLE
JAL, MILD PITCH UP
JAL PITCH UP
MORE PITCH UP NOTICED AT LOWER EXTRACTION RATE. RH LOCK RELEASED DURING T.O.
P. GROUND RELEASE ACTIVATED PREMATURELY
RELEASE TEST. RELEASE FORCE LESS THAN 10 LBS
AND MILD PITCH UP OF AIRCRAFT NOTICED BY PILOT
DUE TO OSCILLOGRAPH FAILURE. MILD PITCH NOTICED BY PILOT.
TOM SEVERELY CUT BY INSIDE ROLLERS. FORCE TRANSFER TO SIMULATE ARMY FORCE ITION. LOAD TUMBLED 180°. CONSIDERABLE PITCH UP NOTICED. L.H. PETAL DOOR ACT. LOAD [illegible] LBS. C
ITCH UP
OCKED AT 3 MINUTES OUT AND RELOCK AT 1 MINUTE OUT. 20 LBS. REQ'D TO BS TO RELOCK. VERY MILD PITCH UP.
FIXED ATTITUDE TECHIQUE. APPEARS TO BE SATISFACTORY FOR REDUCING T C.G. L&R SPIDERS ARM LOADS = 12500 LBS. T
LINE 60' + 60' + 20' LENGTHS + ALL LINKS OUTSIDE AIRCRAFT. VERY MILD OTICED. RAMP DOES NOT GO DOWN ALL THE WAY.
N LINE (100' + 40' LENGTHS) HIT CEILING. ALL LINKS OUTSIDE AIRCRAFT. RCRAFT ATTITUDE CHANGE NOTICED.
CHUTE RELEASE MANUALLY REQUIRING 20 LBS. FORCE. MILD PITCH NOTICEABLE KAGE CLEARS AIRCRAFT.
HUTE FAILED AFTER FULL INFLATION. LOAD DELIVERY SATISFACTORY AND REATEST PITCH UP NOTICED. HIGH ELEV. BREAKOUT FORCE CAUSES TOO RAPID INPUT.
PITCH UP NOTICED BY PILOT. L. SPIDER ARM LOAD = 12,000 LBS, R. SPIDER ARM LOAD = 11,000 LB L & R PEDAL DOOR ACT. LOADS = 9850 LBS. C
BLE PITCH-UP UNTIL PACKAGE LEFT RAMP.
LE PITCH-UP UNTIL PACKAGE LEFT RAMP. EXTRACTION LINE LINK INSIDE AIRPLANE WITH CHUTE DEPLOYED. LINE WHIPPED AND LINK DENTED CEILING.
CH-UP WHILE PACKAGE WAS INSIDE AIRPLANE. 9° PITCH-UP AFTER PACKAGE LEFT RAMP.
K-UP ~ ACCIDENTAL RELEASE of EXTRACT LINE APPROX. 0.2 SEC AFTER LOCK RELEASE.
1.5 SEC
ATION FOR LOW RELEASE LOAD - ON T.O. LATCH INDICATORS MOVED ETURNED TO 2.05
ION FORCE MEASURED FOR 1.4 SEC - EXCEEDED PETAL DOOR LOADS ENT SENSITIVITY D[illegible] LOAD ON PACKAGE 0.5 SEC - EXTR LINK BROKE EXP ZERO EXT - ONE KOMA
ROP NOTED DENT IN TAIL CONE AS IF EXTRACTION LINE OR RISER
KE BEARING ON RT. RAIL - 4 SEC BETWEEN EXTRACTIONS
EXT. CHUTE RODE LOW.
EXT. CHUTE RODE LOW - PILOT APPLIED NOSE UP ELEVATOR
LOADS

FIGURE A-3a

N	DATA			AIRPLANE RESPONSE					PILOT	
PEAK RA. VELOCITY RPS	RELEASE LOCK SETTING	RELEASE LOAD SETTING	RELEASE LOAD MEAS'D	FLAP POSITION %	TRIM @ DEGREES	PEAK @ DEGREES	PEAK C.G. VERTICAL ACCEL.	PEAK PLATFORM FORCE, LBS	RESPONSE	
17.6	2.40 ON 5	17,500	21,140	65	1.5 NU	4.4 NU	1.53	44,300	FULL DN. 12°/SEC.	INADVERTENT GRAVIT
———	2.50N 6	17,500	———	65	———	———	———	———	———	INTENTIONAL CUTAY
										DAMAGED SOME B
40.0	2.6 ON 1	5,000	8,610	63	1.3 NU	1.5 NU	1.17	5,430	2° δe MAX	
61.0	2.0 ON 1	5,000	6,540	63	1.2	1.5	1.20	7,750		
50.0	5 ON 2	5,000	N.A.	63	1.0	1.2	1.20	3,480		
78.5	1.5 ON 2	5,000	N.A.	63	0.2	1.0	1.24	4,650		
66.7	1.5 ON 2	5000	NA	63	0	0	1.10	9500	7°δe DN	WORLD RECORD
61.5	2.6 ON 1				-.5 ND	0	1.25	9800	6.5°δe DN	
57.1	1.5 ON 2				0	0	1.13	9300	5°δe DN	
53.3					.75 NU	1.0 NU	1.14	9200	2.5°δe up	
47.1					2.0 NU	1.0 NU	1.10	9200	3.0°δe UP	
40.0			NA		1.5 NU	2.0 NU	1.15	9400	3.5°δe up	
30.8	1.5 ON 2	5000	5760	63	2.0 NU	—	1.04	9400	0° δe	
61.5	1.30 N 1	2500	3453	60	.5 NU	1.0 ND	1.17	4300	5° δe (MAX)	NO RAMP SIDE CUR
64.0	2.15 ON 3	10000	10974		.5 ND	1.0 ND	1.43	19000		
52.7	2.05 ON 6	17500	26077		1.5 NU	2.0 NU	1.44	31500		
21.[illegible]	[illegible] N 2	5000	9206	60	2.0 NU	0	1.07	10600		
26.4	2.05 ON 6	17500	23935	60	0 NU	5.0 NU	2.12	50800	FULL DWN ELEV (12°/sec)	SECOND EXTRACTIO
39.4	2.05 ON 6	17500	23699	60	2.0 NU	2.0 NU	1.31	29500	5°δe	DECREASED TO C
47.0	2.05 ON 6	17500	25770	60	.0	1.8 NU	1.55	24300	STICK FREE	POSITIVE ROLLER IND.
45.0	2.15 ON 3	10000	11630	60	1.0 ND	0	1.35	17600	STICK FREE	NO RAMP SIDE CURT
47.0	2.15 ON 3	10000	10550	60	1.0 ND	0	1.43	22600	STICK FREE	FLOOR ROLLER DISC
45.0	2.15 ON 3	10000	[illegible]	60	.5 ND	.5 NU	1.35	18500	STICK FREE	RAMP SIDE CURTAIN
54.5	2.15 ON 3	10 000	NA	55	1.0 NU	4.0 NU	1.52	21050	1° δe	RAMP SIDE CURTAIN
49.1	2.15 ON 3	10,000	11500	55	.7 NU	4.0 ND	1.57	21050	STICK FREE	4° ELEV. AFTER DRO
56.0	2.00 ON 4	12,000	12150	75	3.0° ND	0° NU	1.72	29890	0.8° δe	
49.0	2.00 ON 4	12,000	13200	55	1.0° NU	2.8° NU	1.65	29800	1.0° δe	7° ELEV INPUT AFT
55.5	2.00 ON 4	12000	13200	38	.5° NU	2.0° NU	1.62	24800	1.0° δe	7° ELEV INPUT AFT

COMMENTS

AVITY DROP CAUSED BY FAILURE OF EXTRACTION LINE AT AN EXTRACTION FORCE OF 41,990 POUNDS.
ITAWAY OF 2ND PKG. EXTRACTION CHUTE AND 2ND PKG. NOT DROPPED. FIRST PKG.
E ROLLERS @ RAMP LIP. 1ST PKG. DESTROYED ON IMPACT AFTER FREE FALL.

D DROP OF 70195 LBS TOTAL - VERY SMOOTH - NO PROBLEM

URTAINS

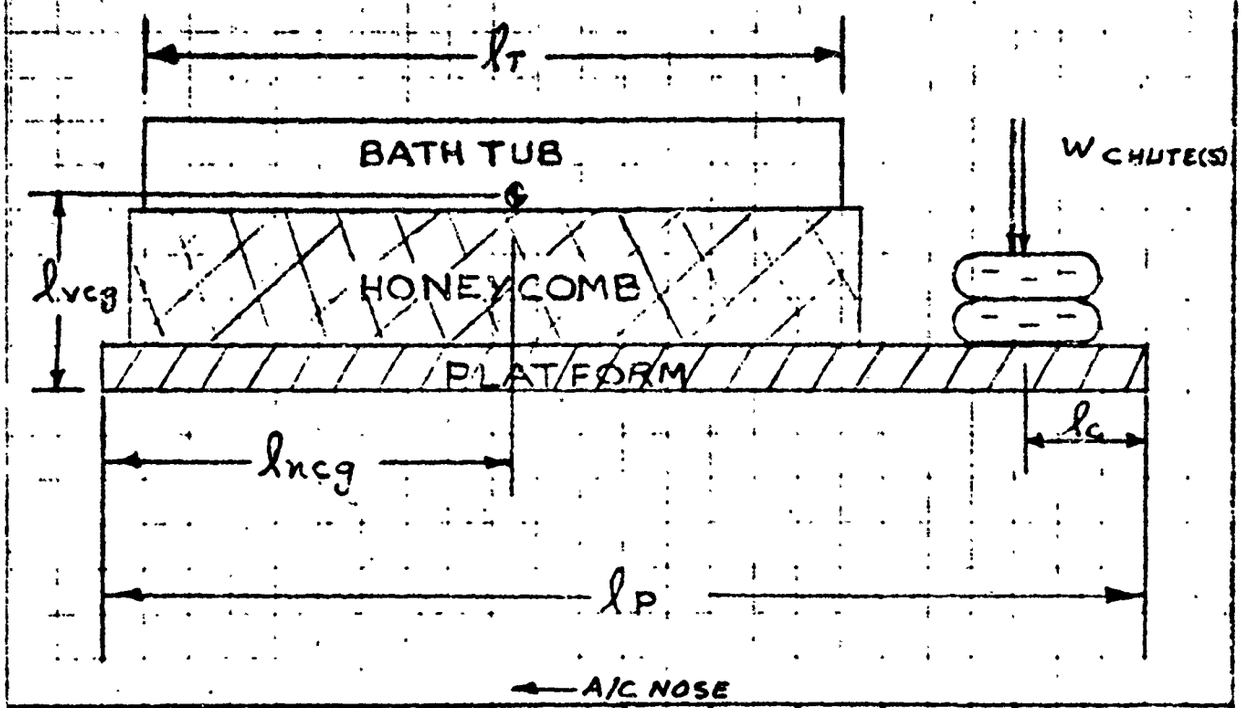
CTION CHUTE FAILED AFTER REACHING PEAK FORCE - EXTRACTION FORCE THEN
O 0.1g AND REMAINED STEADY; PITCH RATE 9°/SEC - NO DAMAGE SUSTAINED

INDENTATION FOR ENTIRE PLATFORM - MID PANELS WORSE WITH 3/32 INCH DEEP INDENTATION
URTAINS - 60 DEG. DOOR POSITION
URTAINS - 60 DEG. DOOR POSITION - POSITIVE ROLLER INDENTATION - CENTER PANELS WORSE
AMAGE EVIDENT ON MANY ROLLERS
TAINS ON - 55 DEG DOOR POSITION
TAINS ON - 60 DEG DOOR POSITION
INS OFF - 60 DEG. DOOR POSITION
DROP - NO PROBLEMS - NO DAMAGE

FTER DROP. - NO PROBLEMS
AFTER DROP - NO PROBLEMS

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PROM A-6
Checked			TITLE	Model C-141A		
Approved			TABLE - A4	Report No. ER 5477		

ADS CARGO DESCRIPTION

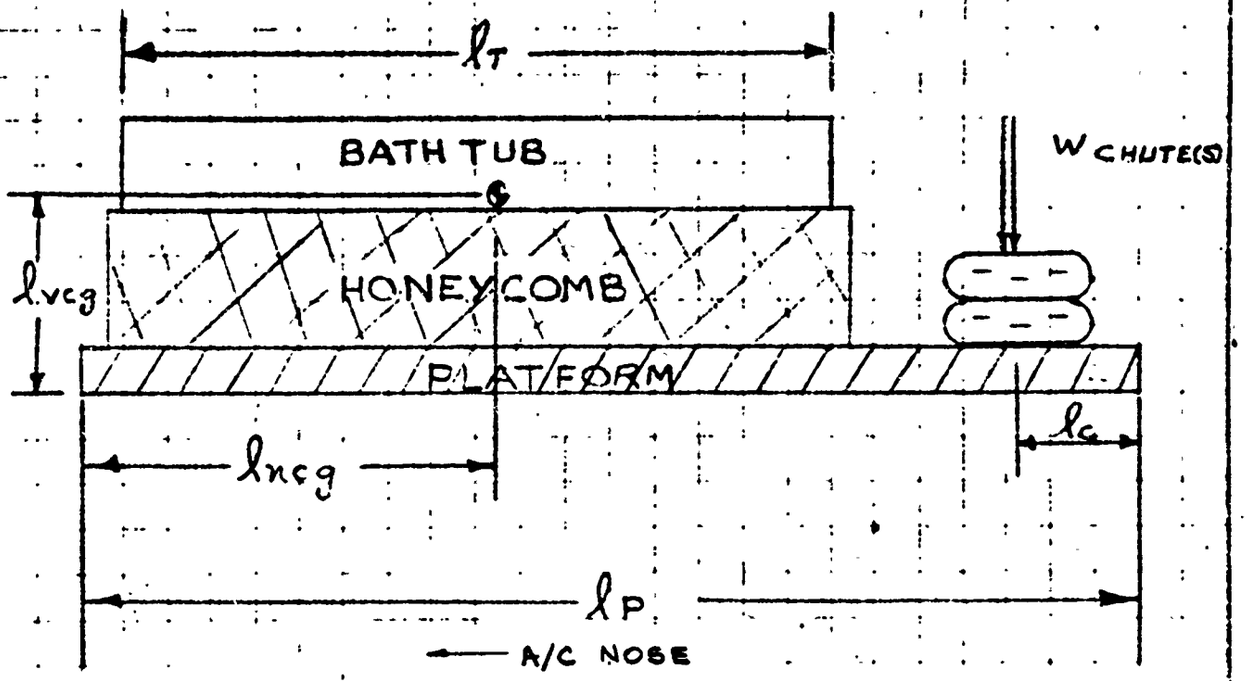


DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S.	W.L.
1	98	2640	96	84	50	22.5	50	1	908	168.5
2	93	5840	96	96	48	37	34	2	864	180
3	94	10650	144	132	74	30	70	3	832	176
4	95	10300	240	132	120	30	120	3	851	176
5	96	10450	144	132	72	30	75	3	824	176
6	99	13200	144	132	73	30	56	4	812	176
7	100	18300	240	222	129.5	30	72	5	835	177.5
8	101	18820	192	222	98	31.5	48	5	847	177.5
9	102	18330	192	222	99	31.5	24	5	847	177.5
10	103	18400	192	222	99	31.5	24	5	847	177.5
11	108	21900	192	222	103	27.5	24	6	858	173.5
12	111	23830	240	222	125	27.0	48	6	866	173
13	112	27190	240	222	125	33	42	7	876	179
14	113	27450	240	222	126	33	40	7	878	179
14R	117	27450	240	222	126	33	40	7	878	179
15	118	27930	240	222	125	33	40	7	876	179
16	119	29250	288	222	121.9	34	40	7	879	180
17	120	32030	288	222	120.5	35	40	8	877	181

FIGURE A-4a

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM A-7
Checked			TITLE TABLE - A 4	Model C-141A		
Approved				Report No. ER 5473		

ADS CARGO DESCRIPTION



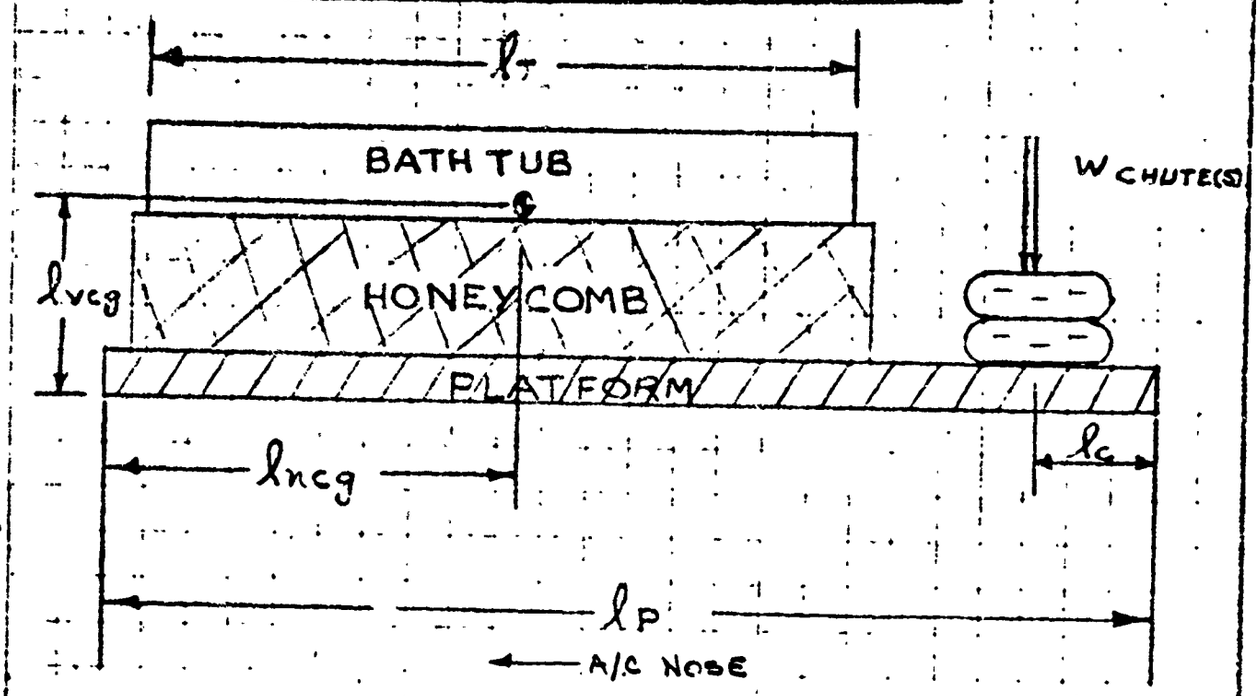
DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S.	W.L.
18	121	35540	288	222	122	35	40	8	889	181
19	130	35710	288	222	120.5	35.5	40	8	887	184.5
20	142	34960	288	222	125	38.5	40	8	891	184.5
21	123	21350	192	222	103.5	27.5	24	6	1018	173.5
22	139	34400	288	222	130	35	24	8	987	181
22R	168	35050	288	222	148	39	28	8	986	185
22R-2	170	19700	288	222	146	34	96	5	993	180
22R-3	172	19900	288	222	146	34	96	5	993	180
22R-4	173	19650	288	222	146	34	96	5	993	180
23	127	6060	96	96	50	41.5	36	2	537	187.5
24	128	21550	192	222	104	43	22	6	699	189
25	138	35250	288	222	123.5	35.5	34	8	780	181.5
26	129	23440	240	222	125.5	41.5	48	6	717	187.5
27	141	23750	240	222	126	38.5	44	6	717	184.5
28	188	24700	288	222	127	35.5	35	6	784	181.5
29	143	35700	288	222	153.5	28.5	68	8	781	174.5
30	185	21050	288	132	142	28	42	5	779	174
31	184	21330	288	222	127.5	35	32	5	774	181

GA FORM 388 A

FIGURE A-4b

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM A-8
Checked			TITLE			
Approved			TABLE - A4	Model C-141A		
				Report No. ER 5473		

ADS CARGO DESCRIPTION



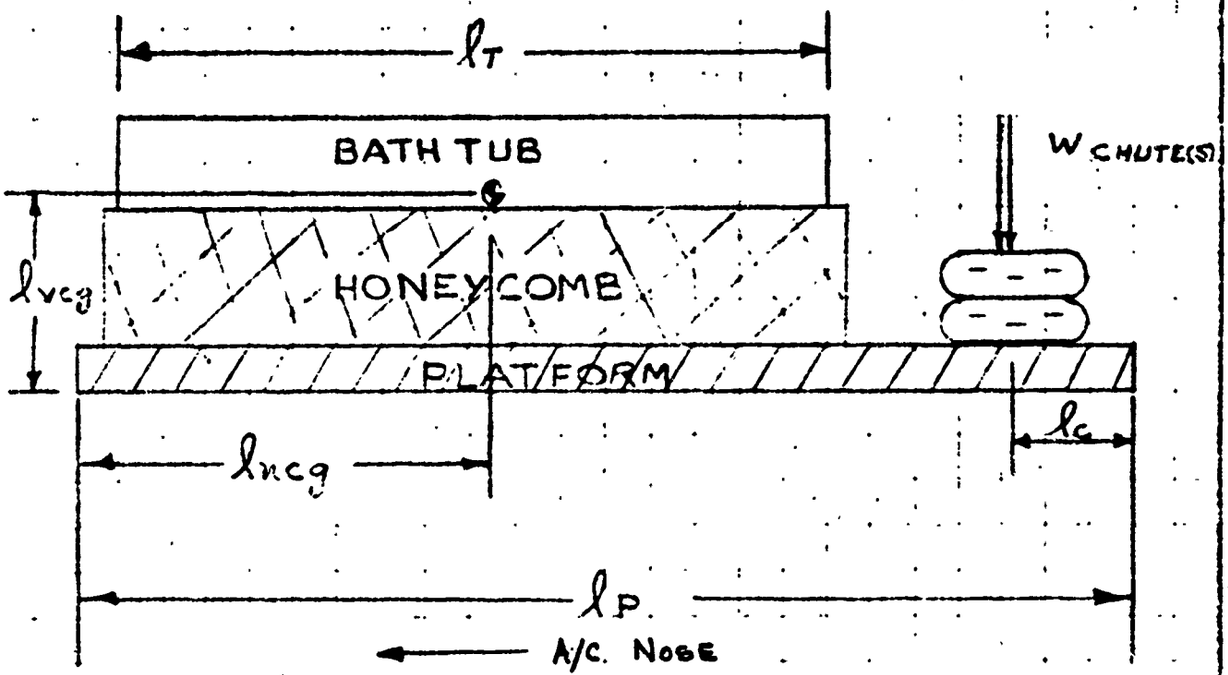
DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S.	W.L.
32	144	35335	288	222	153	28.5	70	8	1090	174.5
33	190	24760	288	222	126.5	35.5	35	6	784	181.5
34	136	24830	240	222	123	27	60	6	884	173
35	137	5940	192	132	96.5	27.5	96	2	592	173.5
36	186	24840	288	222	127.5	34.5	40	6	645	180.5
37-1	145	34800	288	222	155.5	36.5	64	8	1022	182.5
37-2	145	9450	96	96	49	29.5	24	3	813	175.5
38-1	146	34900	288	222	148	33	69	8	1074	179
38-2	146	22450	192	222	100	33	18	6	816	179
39-1	148	35030	288	222	152	33	68	8	1099	179
39-2	148	29600	240	222	125.5	29.5	48	7	815	175.5
40-1	149	35360	288	222	146	33	62	8	1114	179
40-2	149	34650	288	222	155	33	60	8	822	179
40R-1	175	35390	236	222	163	33.5	52	8	1111	179.5
40R-2	175	35040	288	222	151	36	68	8	808	182
41-1	150	9750	96	96	50	19	28	3	1147	165
41-2	150	10130	96	132	51	42.5	48	3	1049	188.5
41-3	150	10350	96	96	50	19	28	3	928	165

GA FORM 1883 B

FIGURE A-40

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	TEMP. PERM Page A-9
Checked			TITLE TABLE - A4	Model C-141A
Approved				Report No. ER 5473

ADS CARGO DESCRIPTION



DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S.	W.L.
41-4	150	9950	96	132	51	42.5	29	3	819	188.5
42-1	151	10150	↓	132	58	17.5	0	3	1247	163.5
42-2	↓	10490	↓	132	51	42.5	12	3	1127	188.5
42-3	↓	10210	↓	108	47.5	18	31	3	985	164
42-4	↓	9920	↓	132	51	42.5	12	3	868	188.5
42-5	↓	9710	↓	96	50	18	26	3	757	164
42-6	↓	10110	↓	132	51.5	44	8	3	649	190
42-7	↓	9530	↓	96	48	18	48	3	537	164
43-1	178	10465	↓	96	48	32	29	3	1228	178
43-2	↓	35025	288	222	154.5	36	68	8	1041	182
43-3	↓	20565	192	132	103.5	24	60	5	799	170
43-4	↓	5055	96	96	50	30	28	2	648	176

GA F 4M 369-2

FIGURE A-4d

TABLE A-5

C-141A CARGO RIGHT HAND RESTRAINT RAIL SETTINGS

PLATFORM WEIGHT	1 LOCK	2 LOCKS	3 LOCKS	4 LOCKS	5 LOCKS	6 LOCKS	7 LOCKS
2,500	.50						
3,000	.60						
4,000	.90	.65	.55				
5,000	1.10	.75	.65				
6,000	1.35	.85	.70	.60			
7,000	1.60	.95	.80	.70	.60		
8,000	1.85	1.10	.90	.75	.70	.60	
9,000	2.10	1.20	.95	.80	.75	.65	
10,000	2.35	1.30	1.05	.90	.80	.70	.65
11,000	2.60	1.45	1.15	.95	.85	.75	.70
12,000	2.85	1.55	1.20	1.00	.90	.80	.75
13,000	3.10	1.65	1.30	1.10	.95	.85	.80
14,000		1.75	1.40	1.15	1.00	.90	.85
15,000		1.90	1.50	1.20	1.05	.95	.90
16,000		2.00	1.55	1.30	1.10	1.00	.95
17,000		2.10	1.65	1.35	1.15	1.05	.95
18,000		2.25	1.70	1.40	1.20	1.10	1.00
19,000		2.35	1.80	1.50	1.25	1.15	1.05
20,900		2.45	1.90	1.55	1.30	1.20	1.10
21,000		2.60	2.00	1.60	1.40	1.25	1.15
22,000		2.70	2.05	1.70	1.45	1.30	1.20
23,000		2.80	2.15	1.75	1.50	1.35	1.25
24,000		2.95	2.25	1.80	1.55	1.40	1.25

FIGURE A-5a

TABLE A-5

C-141A CARGO RIGHT HAND RESTRAINT RAIL SETTINGS

PLATFORM WEIGHT	1 LOCK	2 LOCKS	3 LOCKS	4 LOCKS	5 LOCKS	6 LOCKS	7 LOCKS
25,000		3.05	2.30	1.90	1.60	1.45	1.30
26,000			2.40	1.95	1.65	1.45	1.35
27,000			2.50	2.00	1.70	1.50	1.40
28,000			2.60	2.05	1.75	1.55	1.45
29,000			2.65	2.15	1.80	1.60	1.50
30,000			2.75	2.20	1.85	1.65	1.50
31,000			2.80	2.25	1.90	1.70	1.55
32,000			2.90	2.35	2.00	1.75	1.60
33,000			3.00	2.40	2.05	1.80	1.65
34,000			3.05	2.45	2.10	1.85	1.70
35,000				2.55	2.20	1.90	1.75

FOR BEST PERFORMANCE USE VALUES IN THE SHADED PORTION OF THE TABLE; VALUES OUTSIDE OF THE SHADED PORTION MAY BE USED WHEN NECESSARY.

FIGURE A-5b

APPENDIX B

PREPARED BY Pemberton
DATE 8-11-65
CHECKED BY RID

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

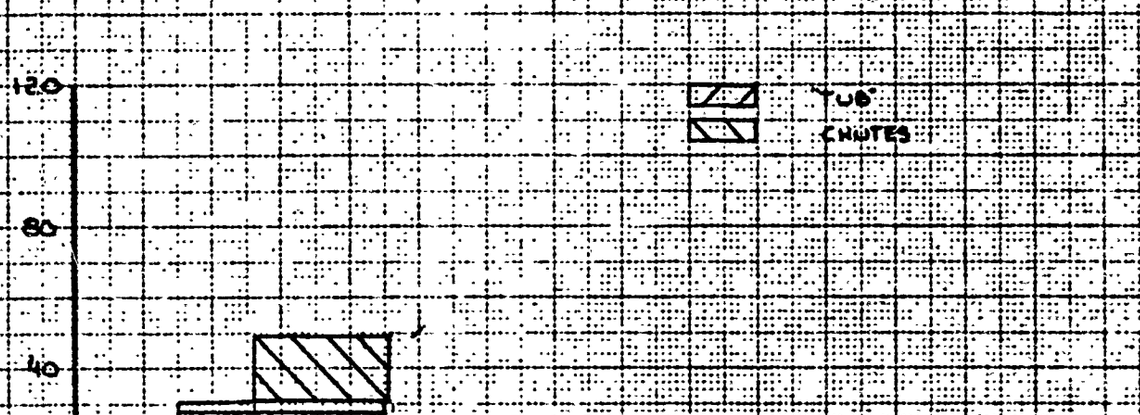
REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-2

6008
208

AERIAL DELIVERY PACKAGE DATA

FLIGHT 98
DROP 1
PKG. WT. 2,640 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

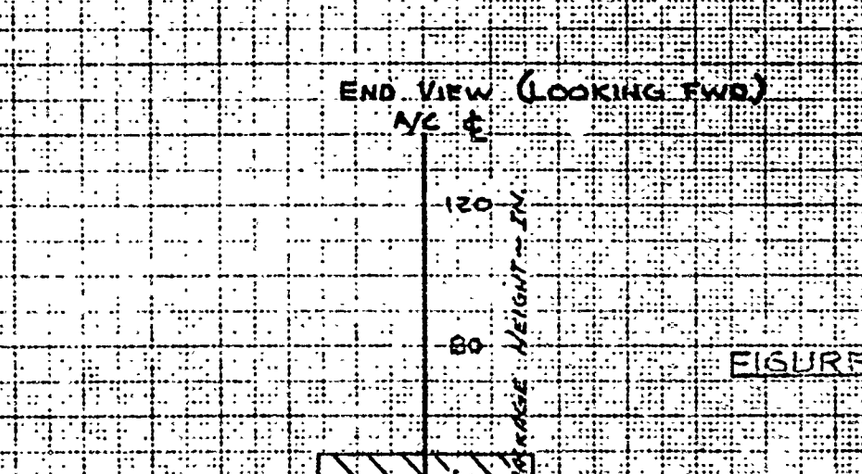


FIGURE B-1

6008
208

PREPARED BY Pemberton
DATE 8-11-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

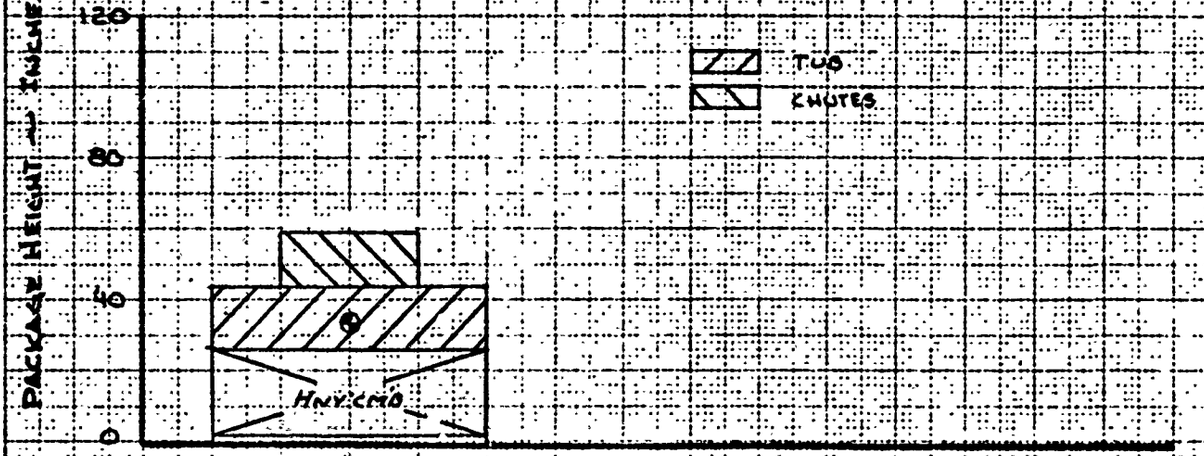
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-3

6008
209

AERIAL DELIVERY PACKAGE DATA

FLIGHT 93
DROP 2
PKG. WT. 5840 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

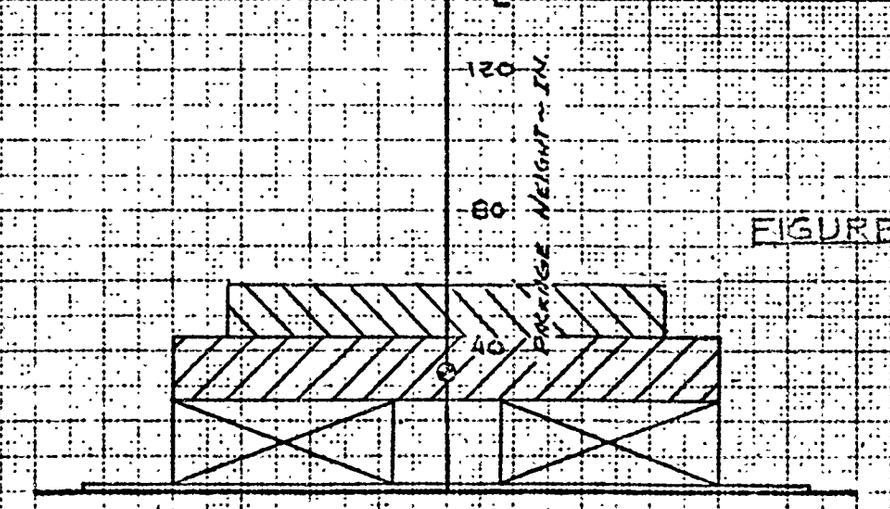


FIGURE B-2

6008
209

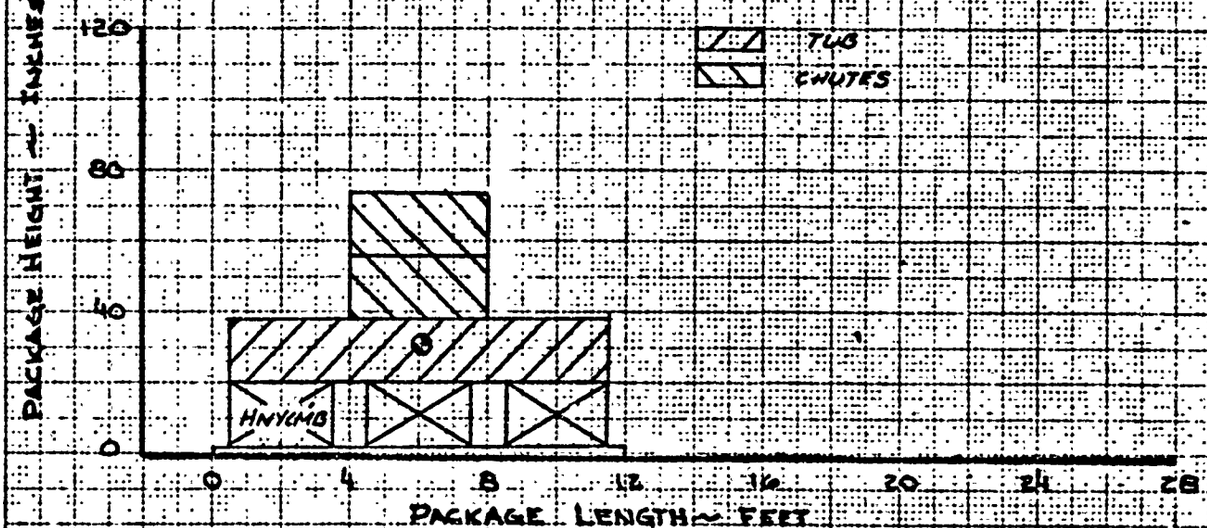
GA FORM 5508 8

6008
210

AERIAL DELIVERY PACKAGE DATA

FLIGHT 94
DROP 3
PKG. WT. 10650 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

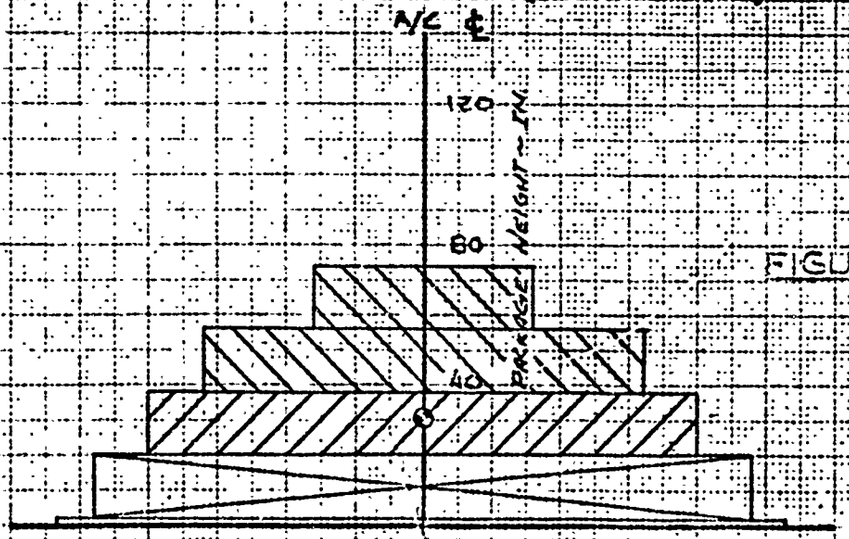


FIGURE B-3

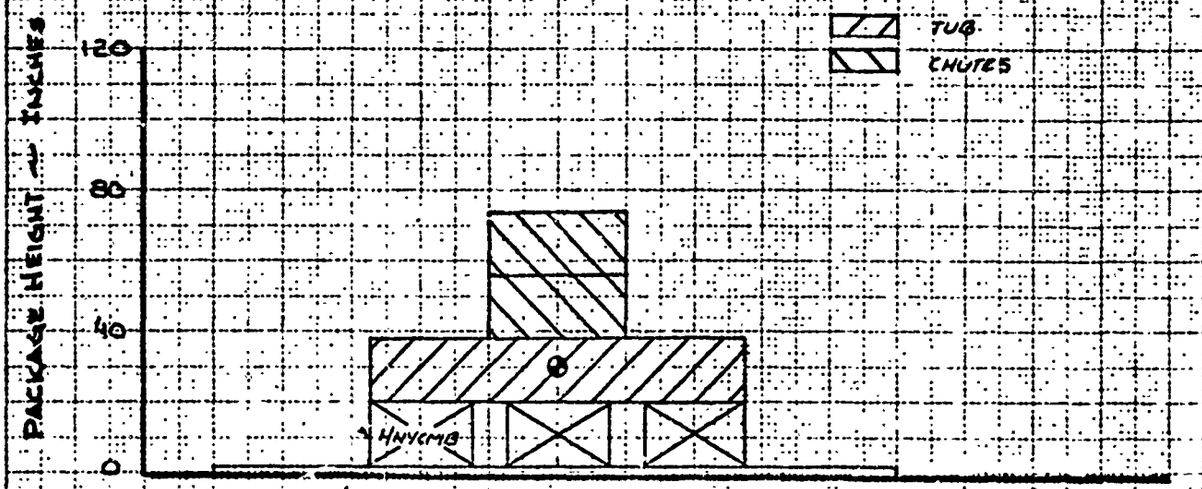
6008
210

600B 21

AERIAL DELIVERY PACKAGE DATA

FLIGHT 95
DROP 4
PKG. WT. 10,300 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

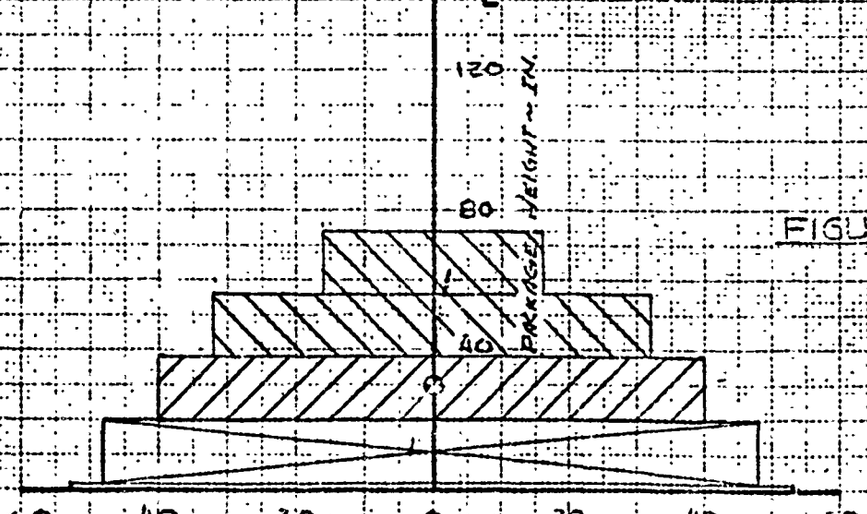


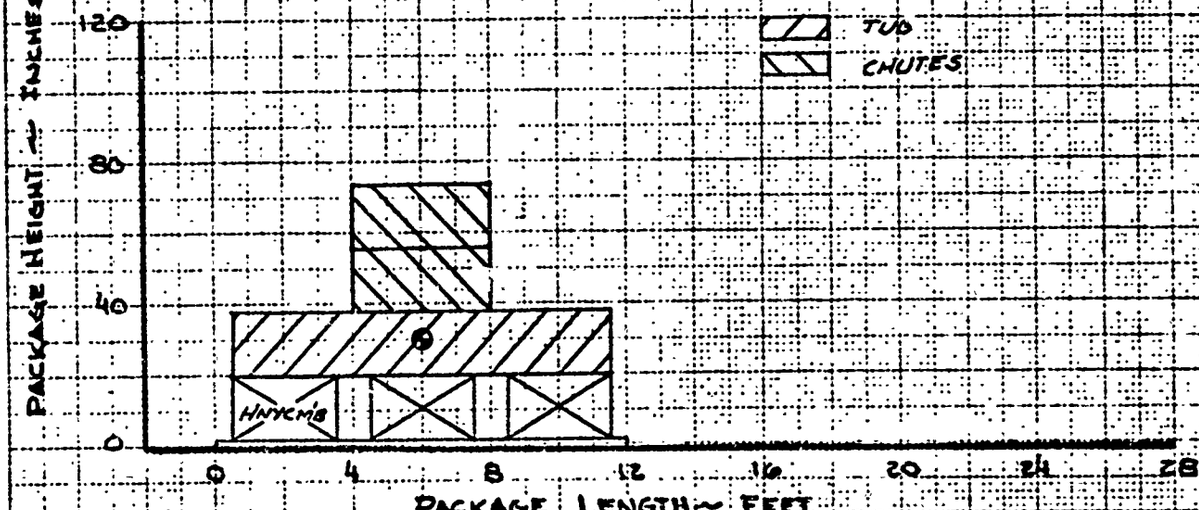
FIGURE B-4

6008
211

AERIAL DELIVERY PACKAGE DATA

FLIGHT 96
DROP 5
PKG. WT. 10,450 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

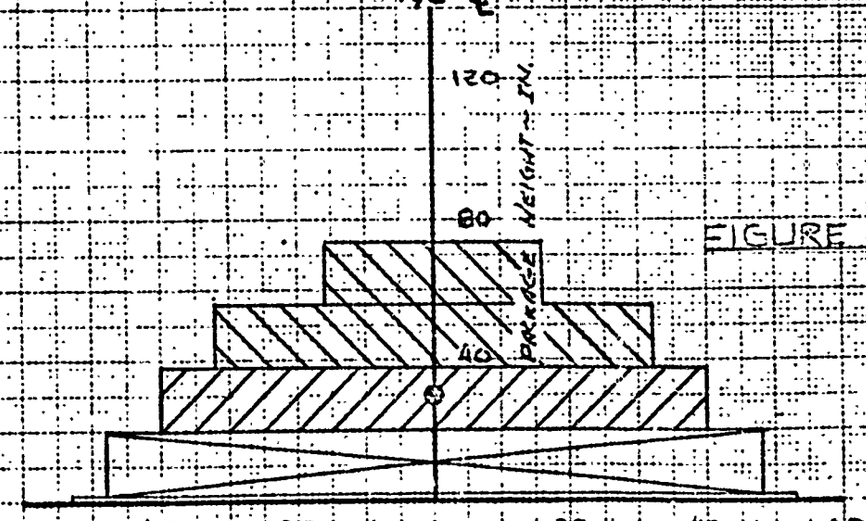


FIGURE B-5

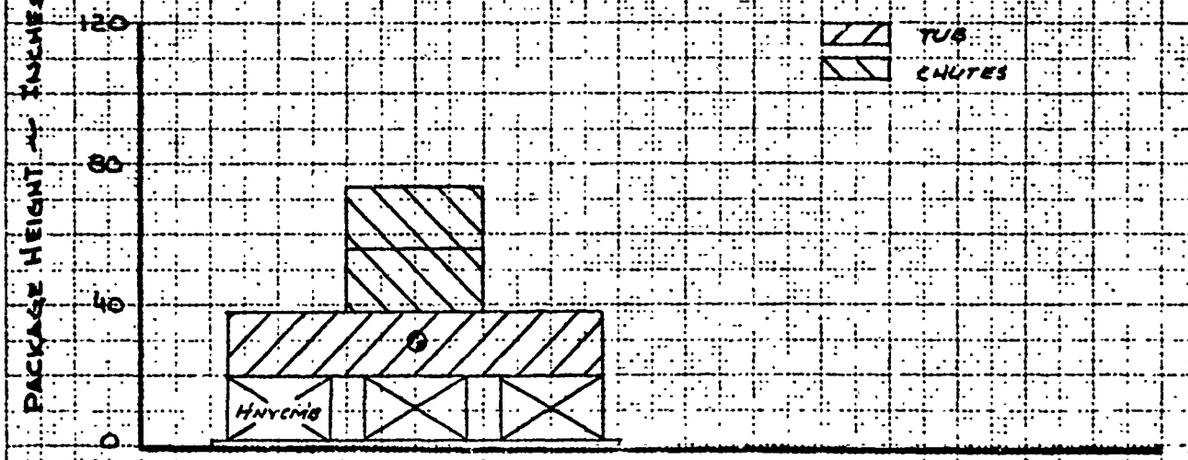
6008
212

6008
213

AERIAL DELIVERY PACKAGE DATA

FLIGHT 99
DROP 6
PKG. WT. 13,200 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

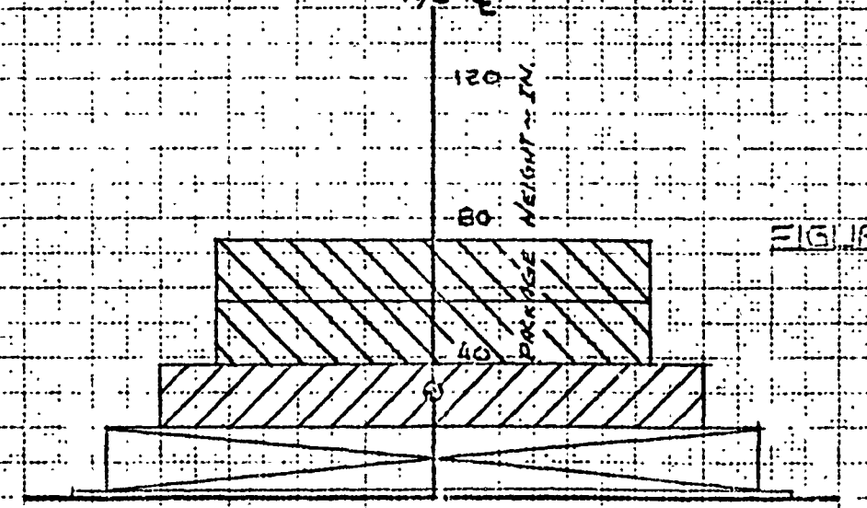


FIGURE B-6

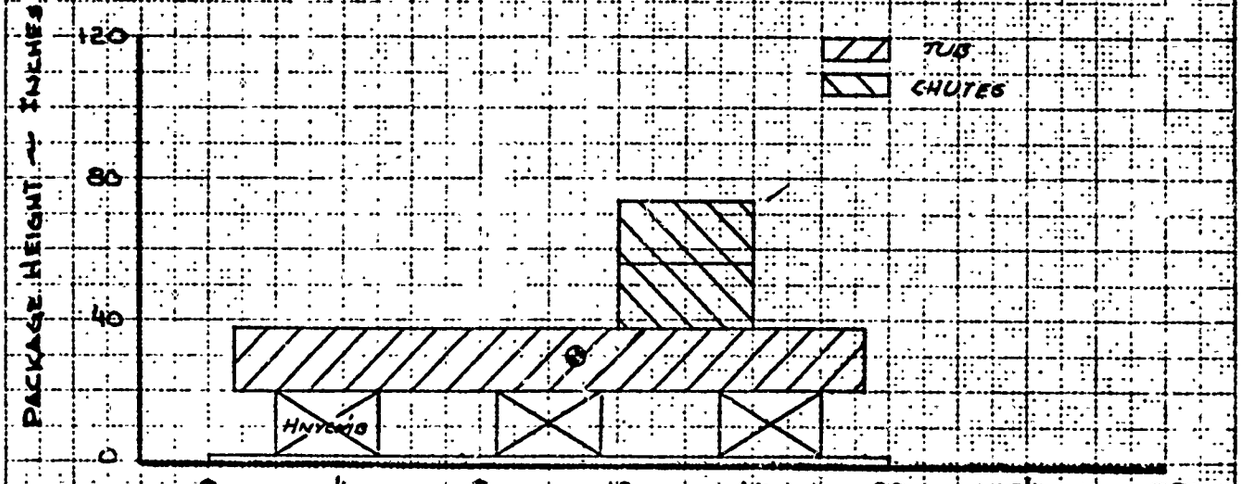
6008
213

6008 214

AERIAL DELIVERY PACKAGE DATA

FLIGHT 100
DROP 7
PKG. WT. 18,300 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

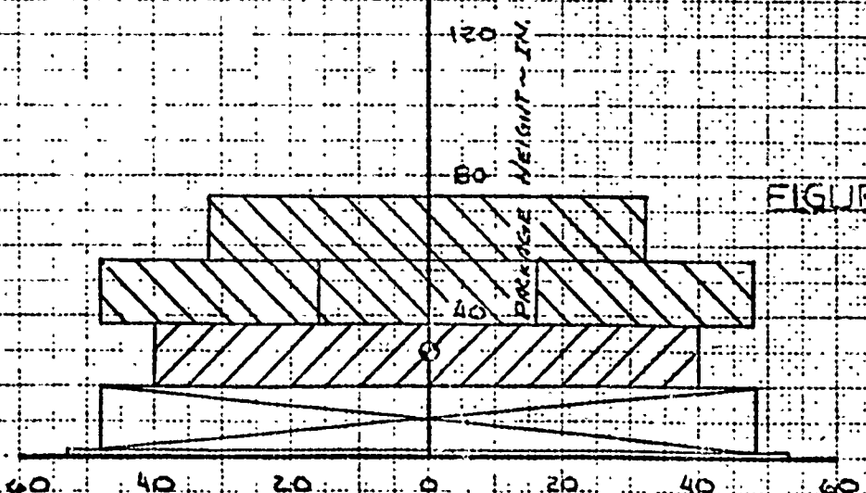


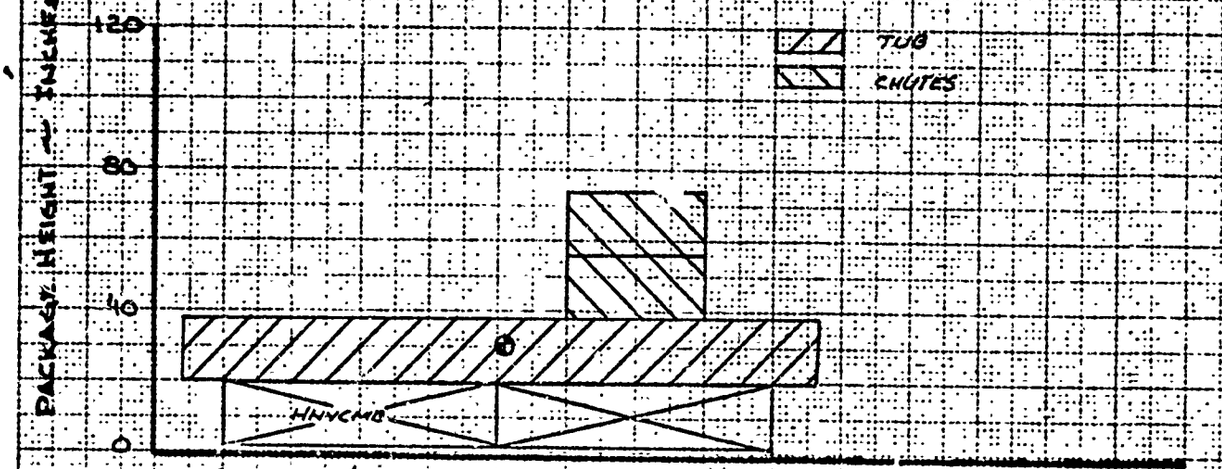
FIGURE B-7

6008
215

AERIAL DELIVERY PACKAGE DATA

FLIGHT 101
DROP 8
PKG. WT. 18,820 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

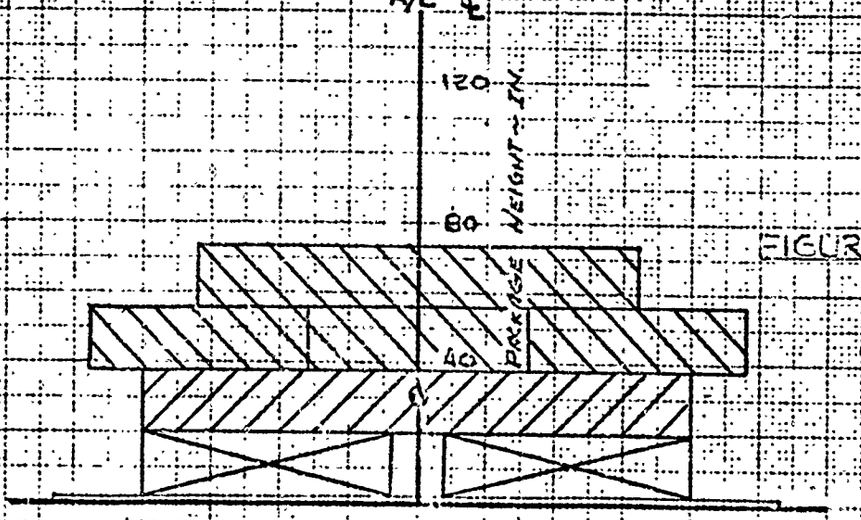


FIGURE B-8

6008
215

PREPARED BY Pemberton
DATE 8-11-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

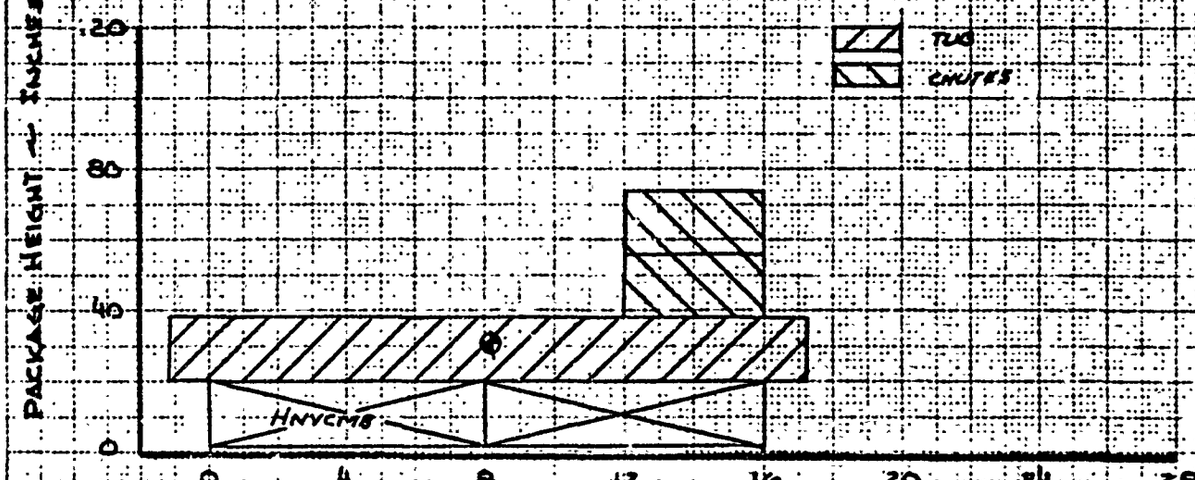
REPORT NO. ER-5473
MODEL C-141A (600B)
PAGE B-10

600B 216

AERIAL DELIVERY PACKAGE DATA

FLIGHT 102
DROP 9
PKG. WT. 18,330 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

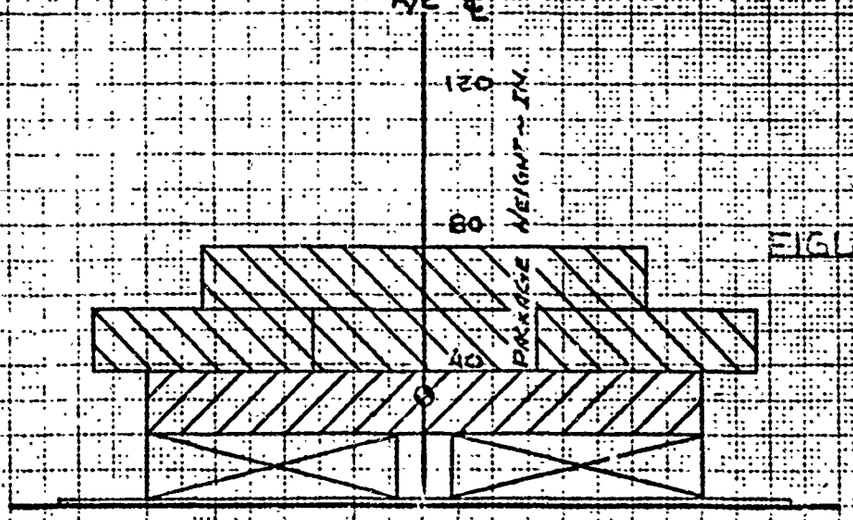


FIGURE B-9

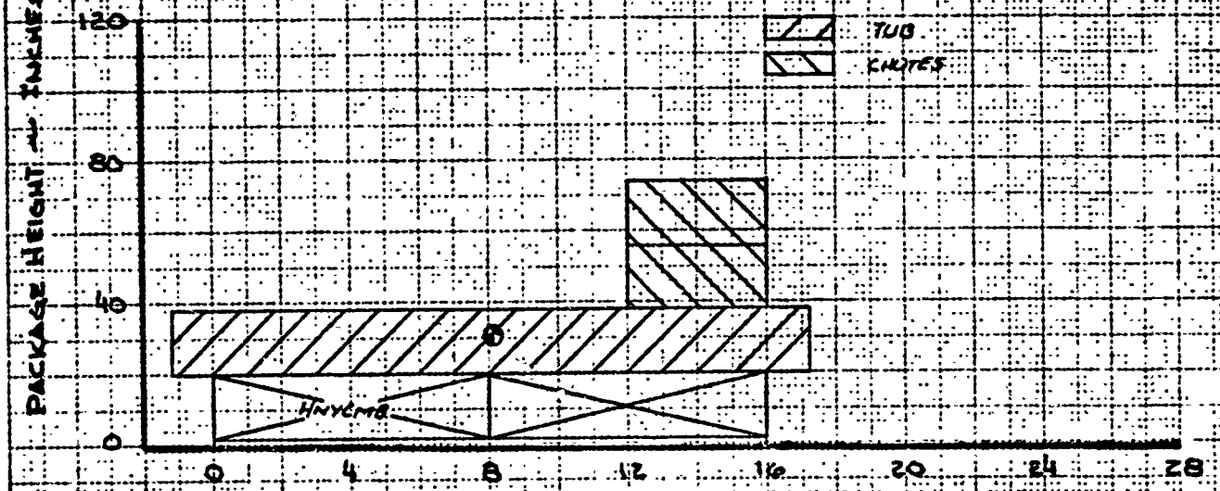
600B 216

6008
217

AERIAL DELIVERY PACKAGE DATA

FLIGHT 103
DROP 10
PKG. WT. 13,400 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

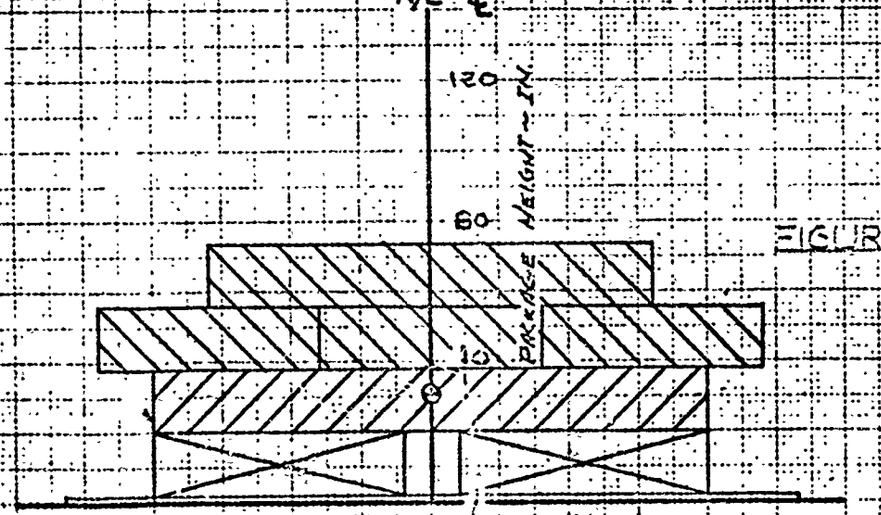


FIGURE B-0

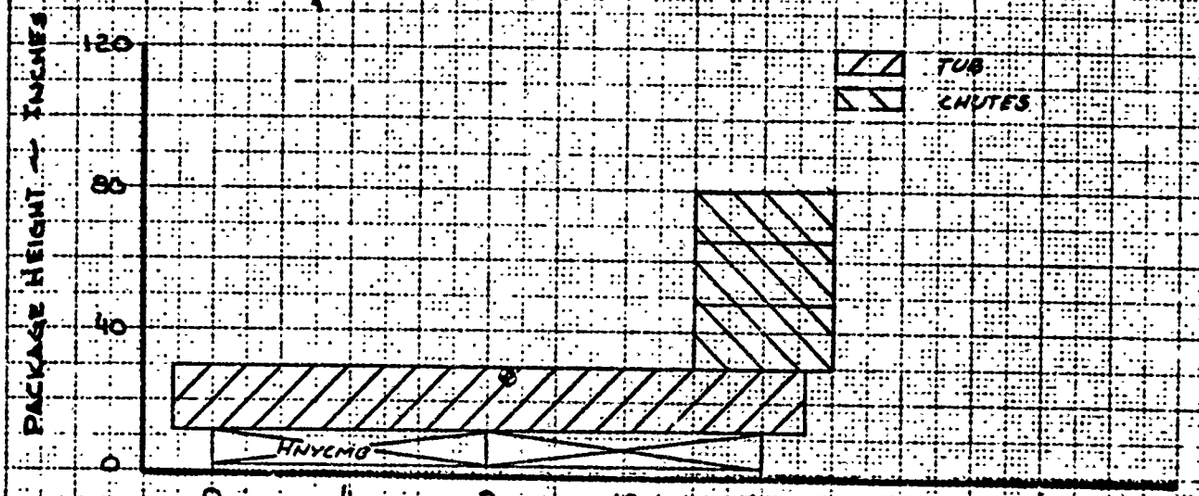
6008
217

6008
218

AERIAL DELIVERY PACKAGE DATA

FLIGHT 108
DROP 11
PKG. WT. 21,900 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

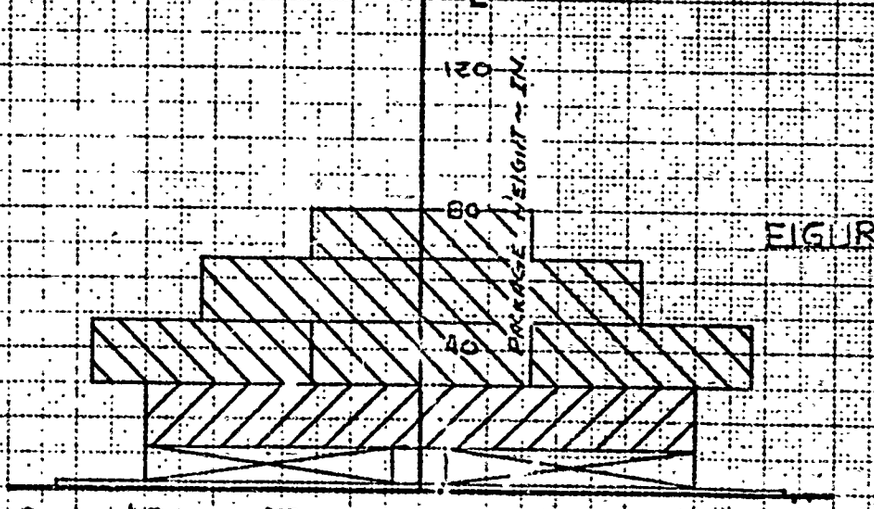


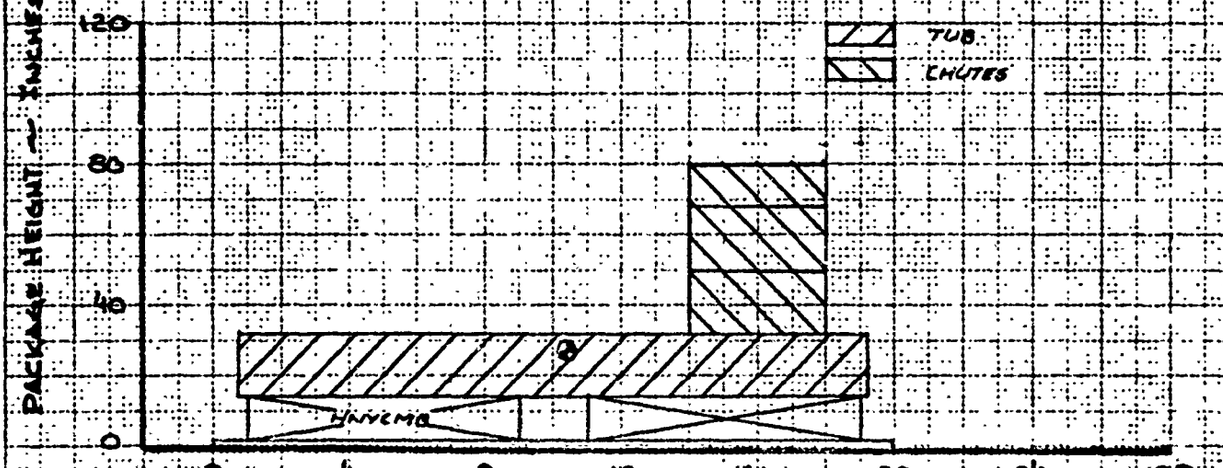
FIGURE B-11

6008
219

AERIAL DELIVERY PACKAGE DATA

FLIGHT 111
DROP 12
PKG. WT. 23,830 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

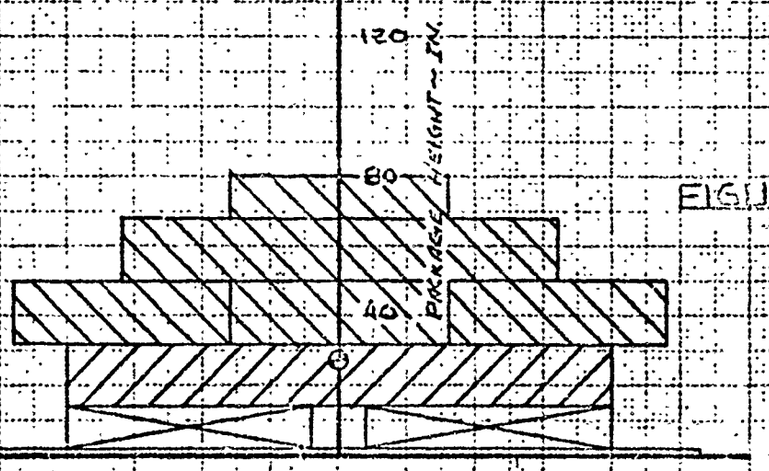


FIGURE B-12

6008
219

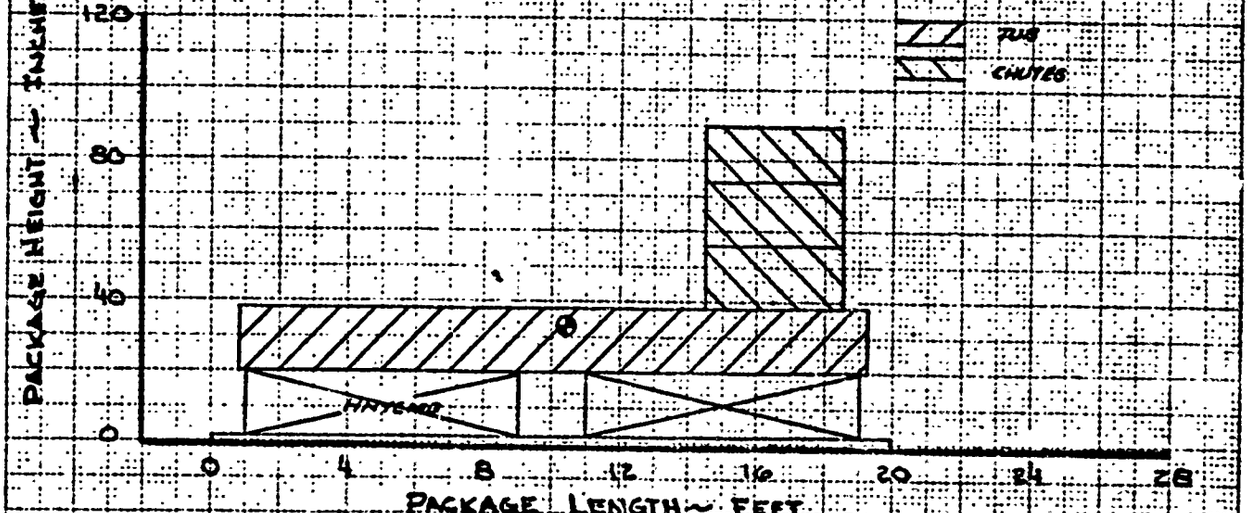
GA FORM 5740-2

6008
220

AERIAL DELIVERY PACKAGE DATA

FLIGHT 112
DROP 13
PKG. WT. 27,190 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
℄

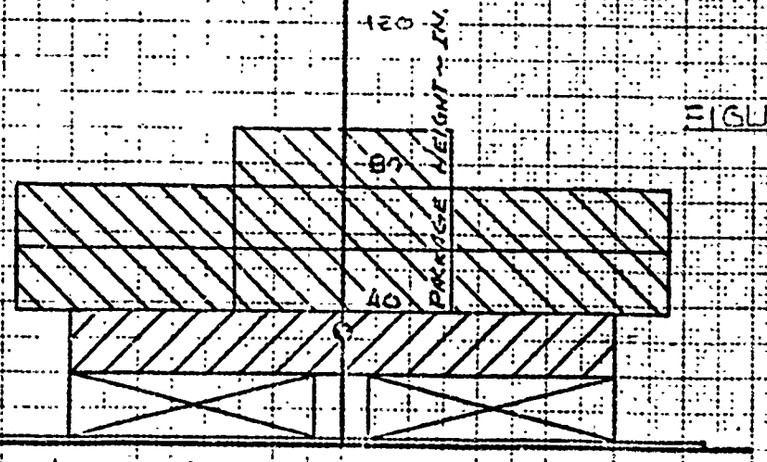


FIGURE B-13.

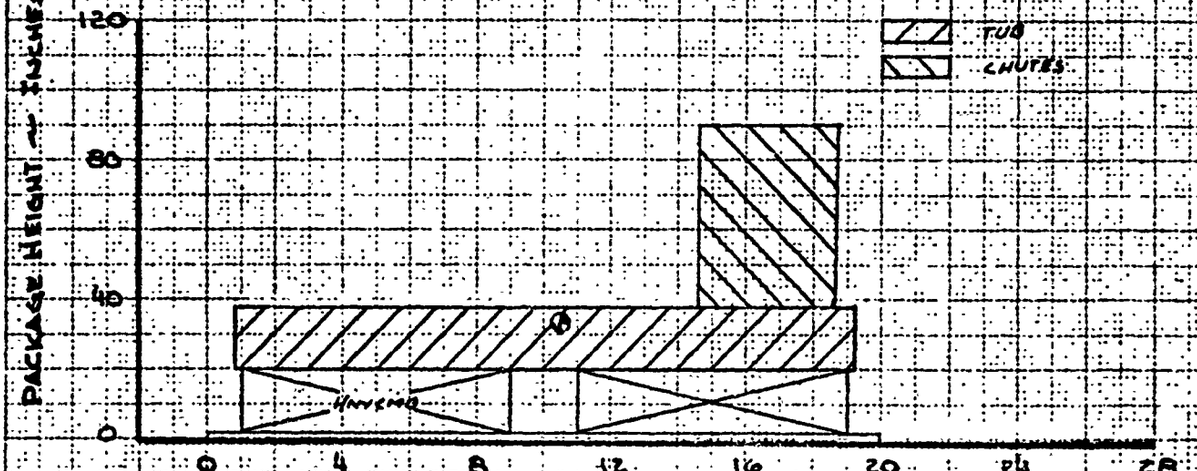
6008
220

6008
221

AERIAL DELIVERY PACKAGE DATA

FLIGHT 113 + 117
DROP 14 + 14R
PKG. WT. 27,450 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

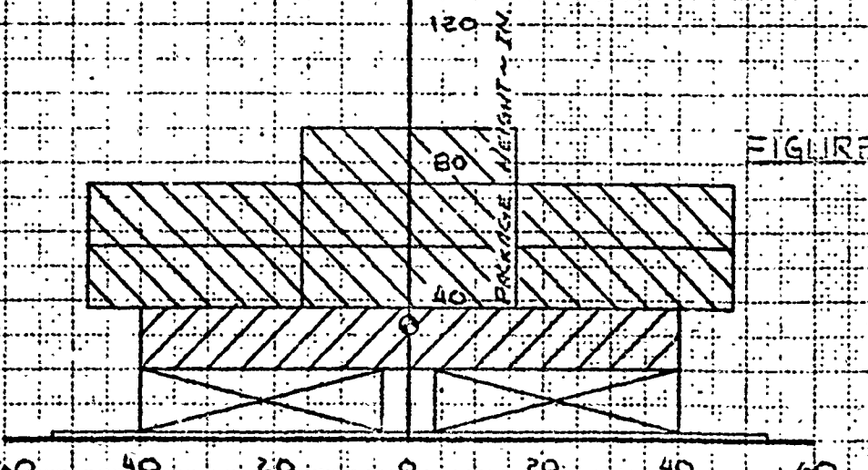


FIGURE P-14

PREPARED BY Pemberton
DATE 8-12-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

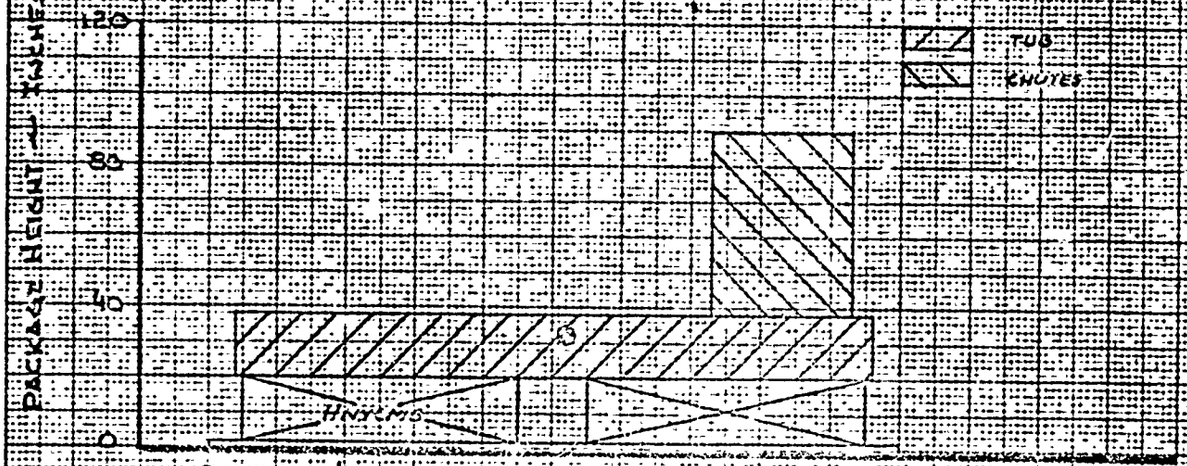
REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-16

V-600B 222

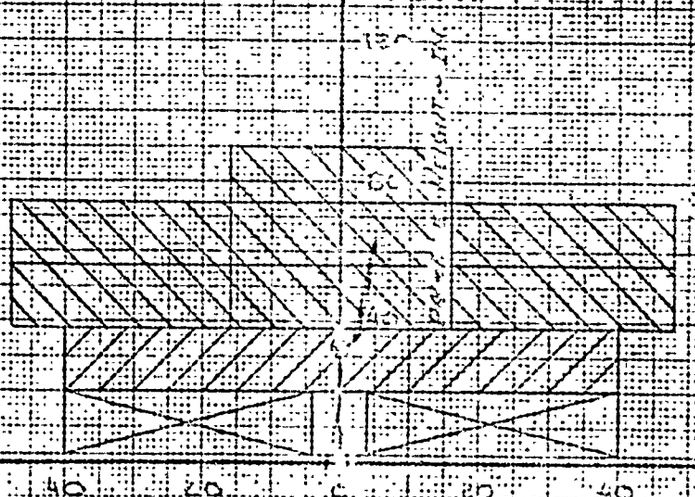
AERIAL DELIVERY PACKAGE

FLIGHT 172
DROP 15
PKG. WT. 27,920 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ↓



600B
222

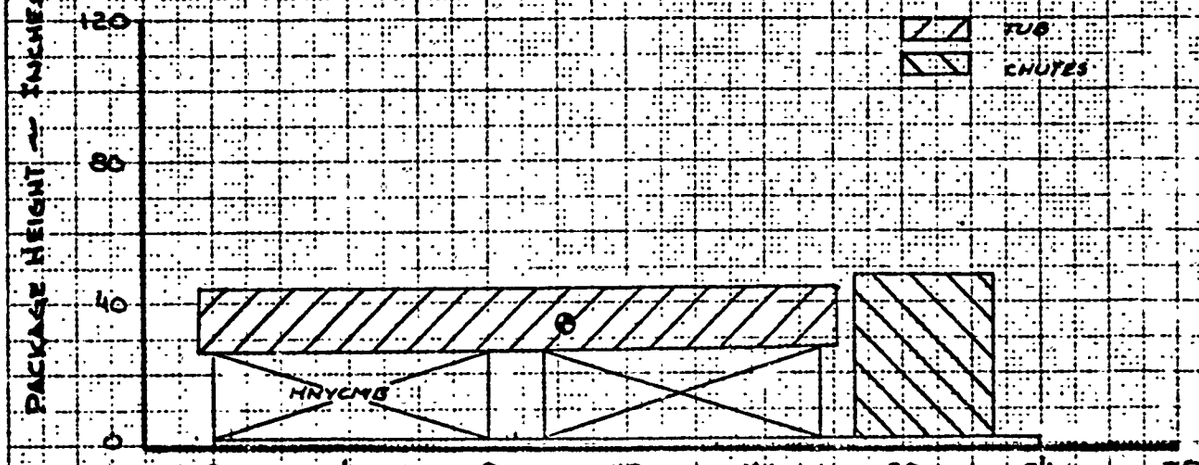
GA FORM 9588-B

6008 223

AERIAL DELIVERY PACKAGE DATA

FLIGHT 119
DROP 16
PKG. WT. 29,250 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

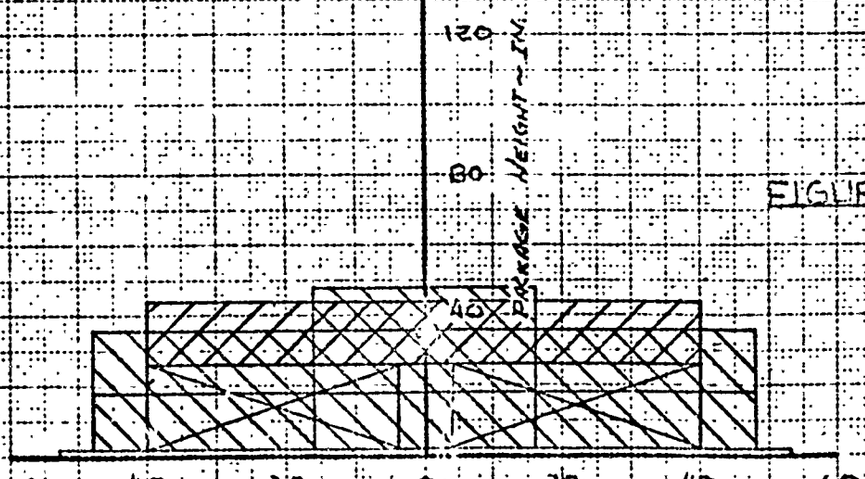


FIGURE B-16

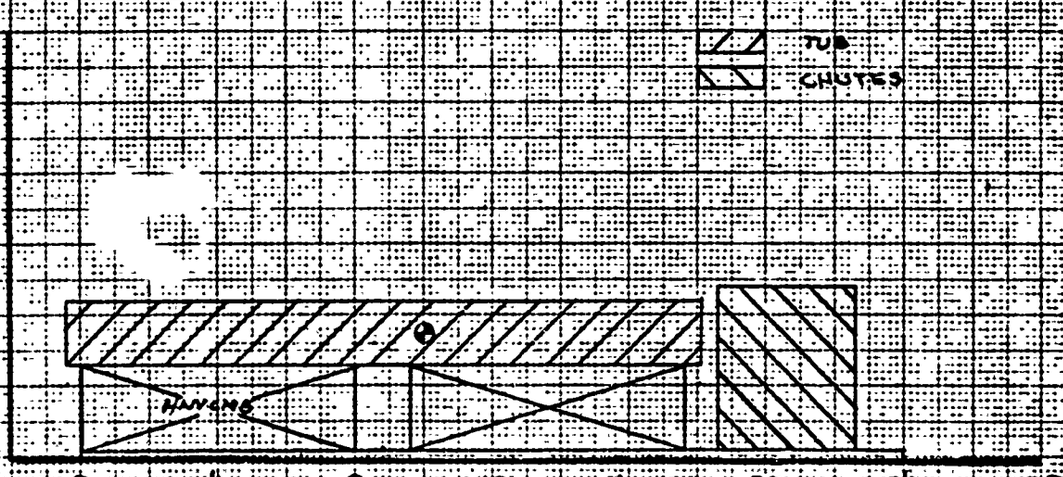
6008
223

6008
224

AERIAL DELIVERY PACKAGE DATA

FLIGHT 120
DROP 17
PKG. WT. 32,030 LBS.

SIDE VIEW (FWD ON A/C ←→)



END VIEW (LOOKING FWD)
A/C ℄

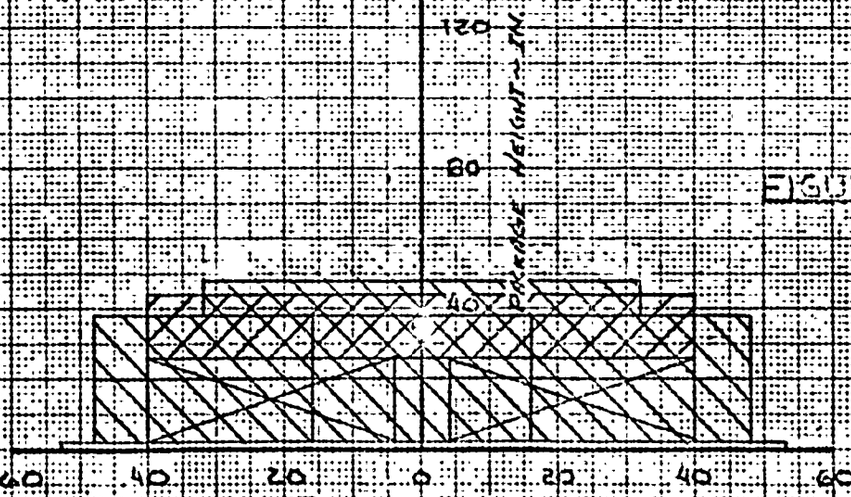


FIGURE B-17

6008
224

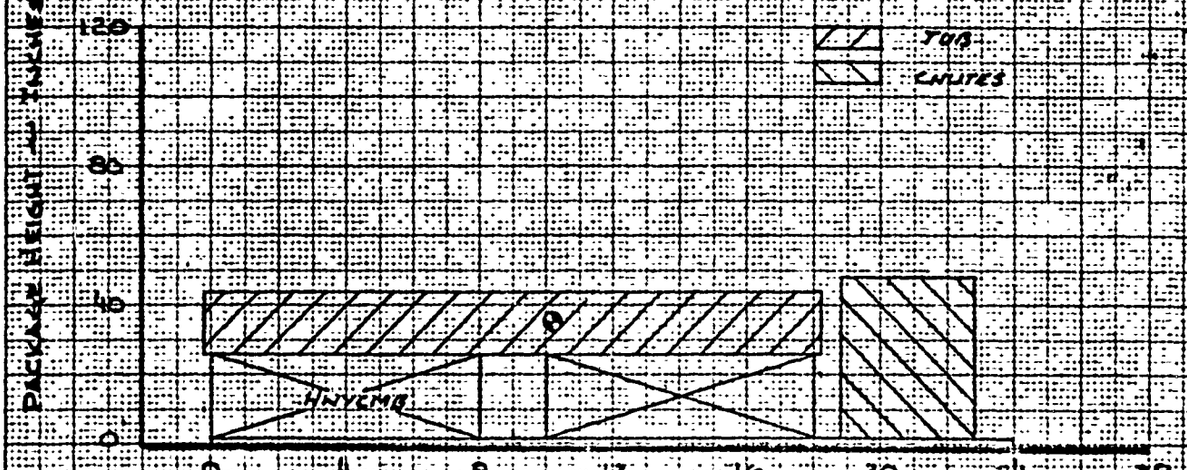
GA FORM 5888-8

6008
225

AERIAL DELIVERY PACKAGE DATA

FLIGHT 121
DROP 18
PKG. WT. 35,540 LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C ℄

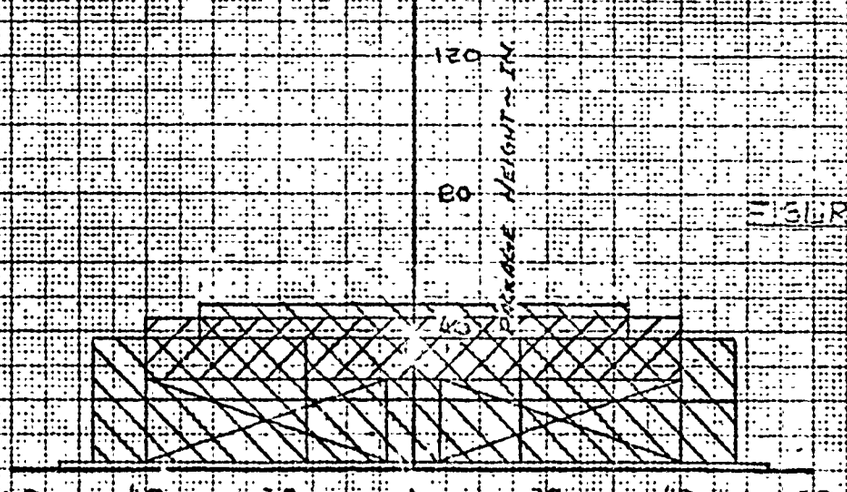


FIGURE B-8

6008
225

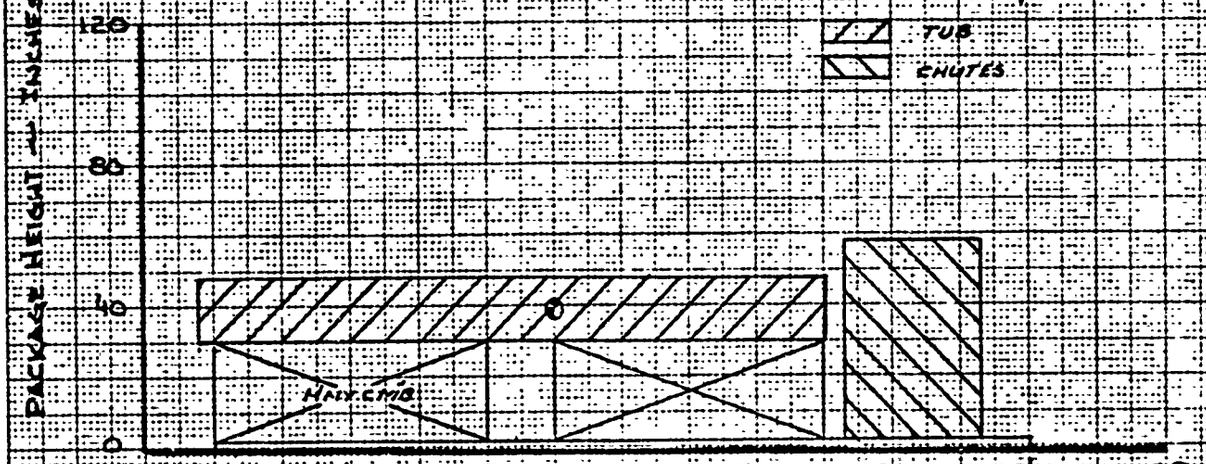
GA FORM 8588 2

6008
226

AERIAL DELIVERY PACKAGE DATA

FLIGHT 130
DROP 19
PKG. WT. 35,710 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)

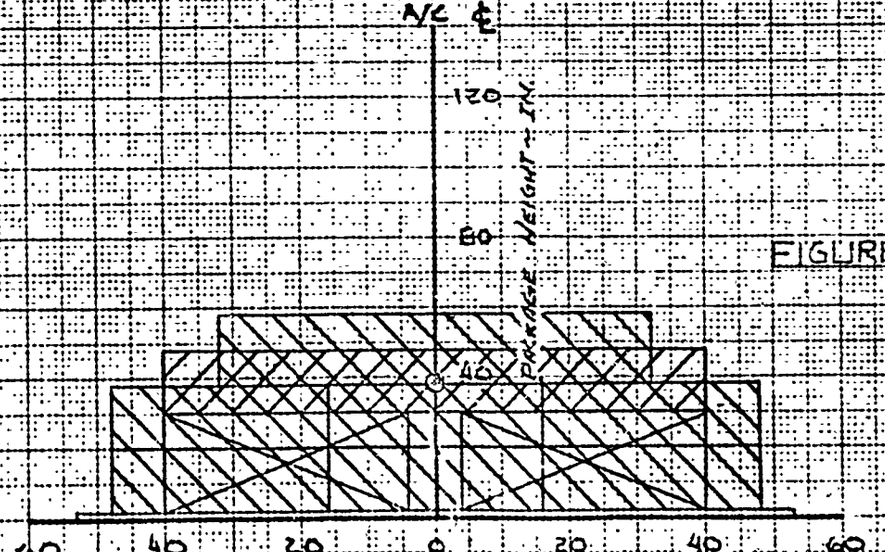


FIGURE B-19

6008
226

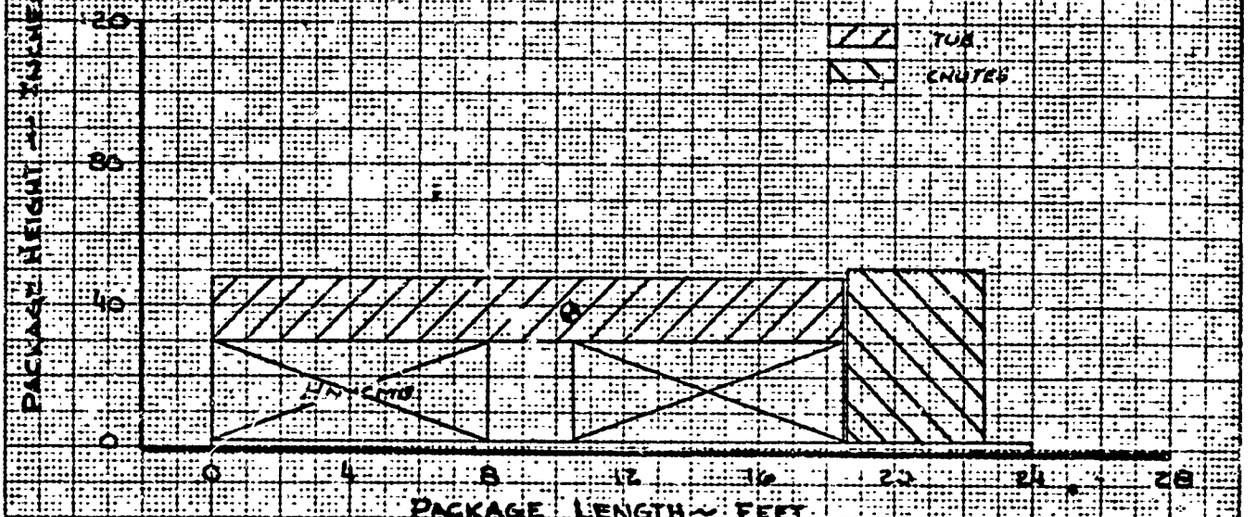
GA FORM 5488-2

6008
227

AERIAL DELIVERY PACKAGE DATA

FLIGHT 142
DROP 20
PKG. WT. 34,960 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

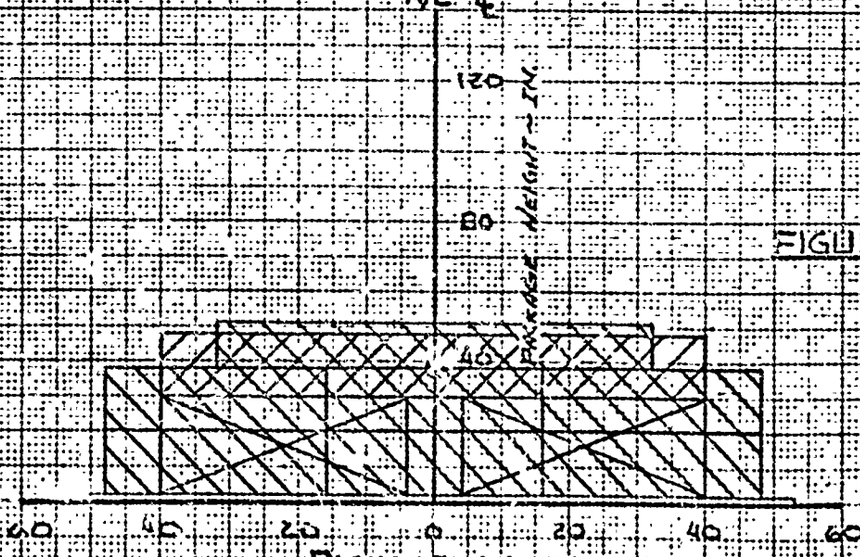


FIGURE B-20

6008
227

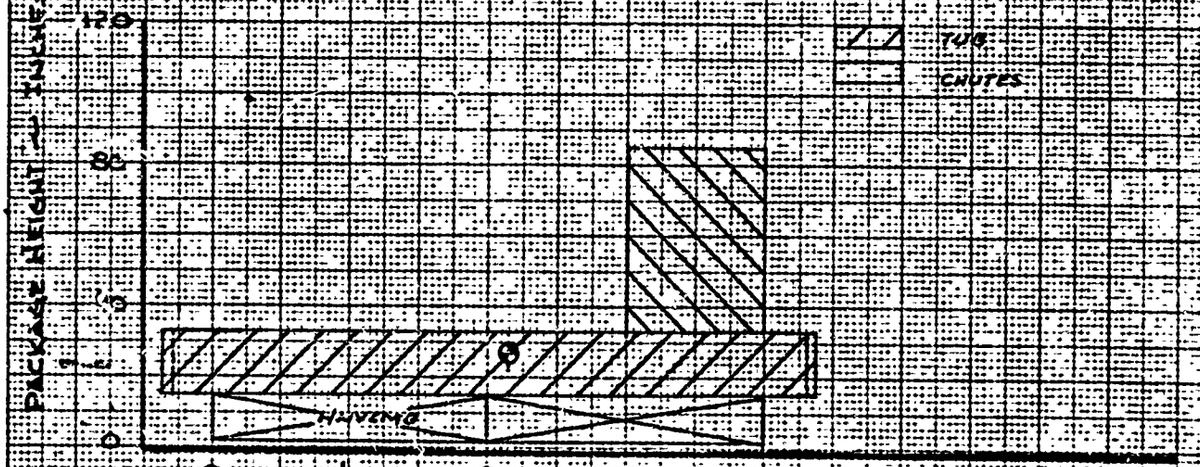
GA FORM 8290-8

6008 02

AERIAL DELIVERY PACKAGE DATA

FLIGHT 12-3
DRL'D 21
PKG. WT. 21350 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

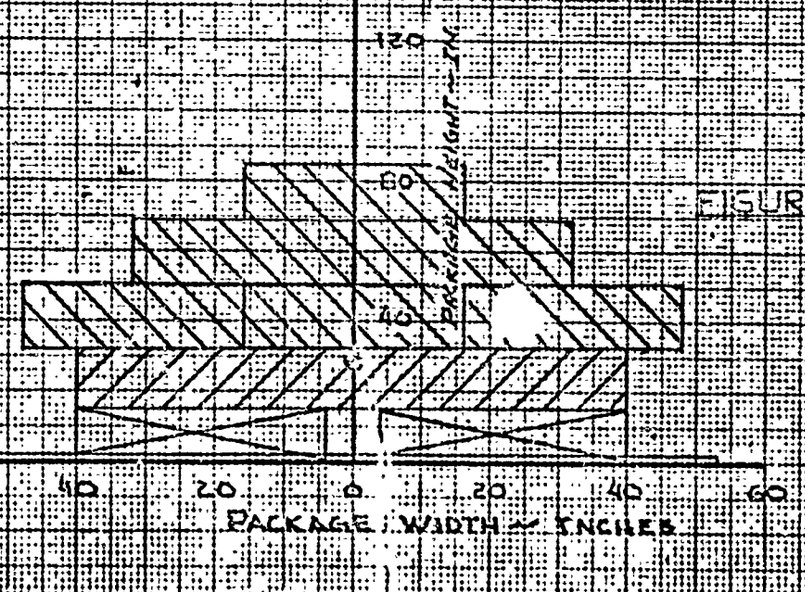


FIGURE B-21

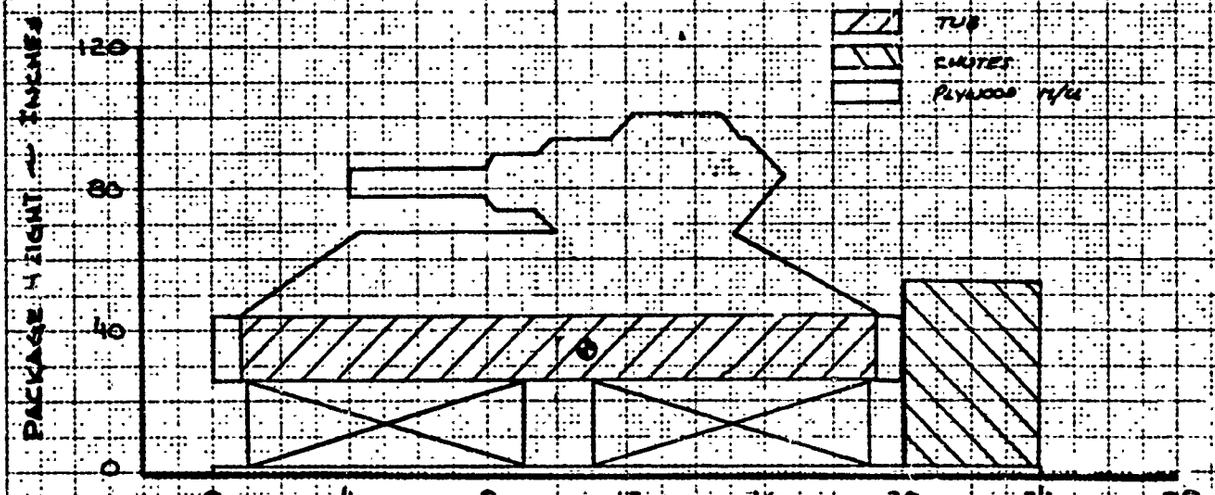
GA FORM 8560-8

6008
229

AERIAL DELIVERY PACKAGE DATA

FLIGHT 139
DROP 22 (AR/AAV)
PKG. WT. 34,400 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
N/C ℄

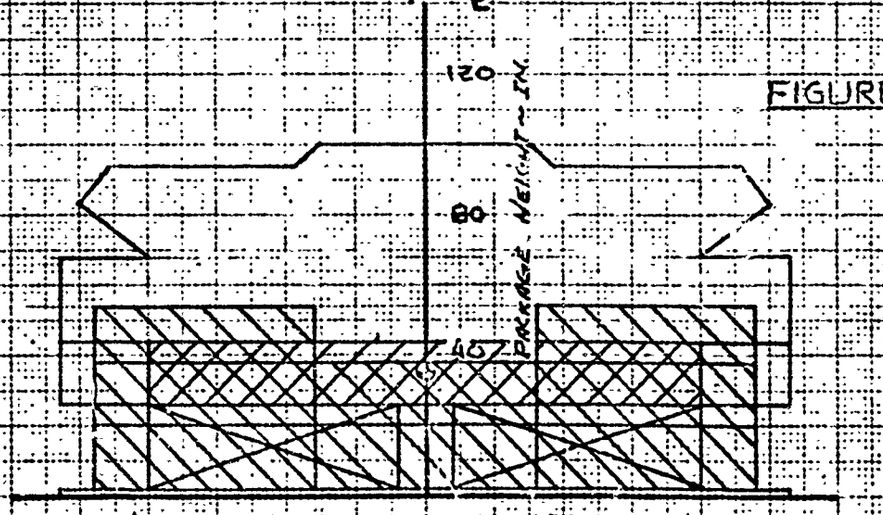


FIGURE B-22

GA FORM 5511B 2

PREPARED BY Pemberton
DATE 8-24-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

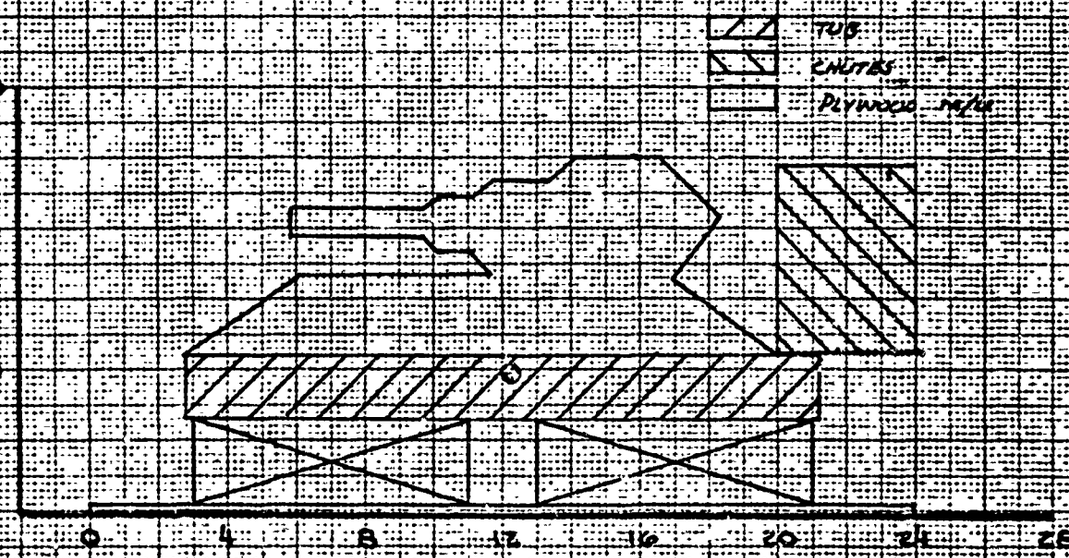
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-24

6008
230

AERIAL DELIVERY PACKAGE DATA

FLIGHT 169
DROP 22R
PKG. WT. 35050 LBS.

SIDE VIEW (FWD ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

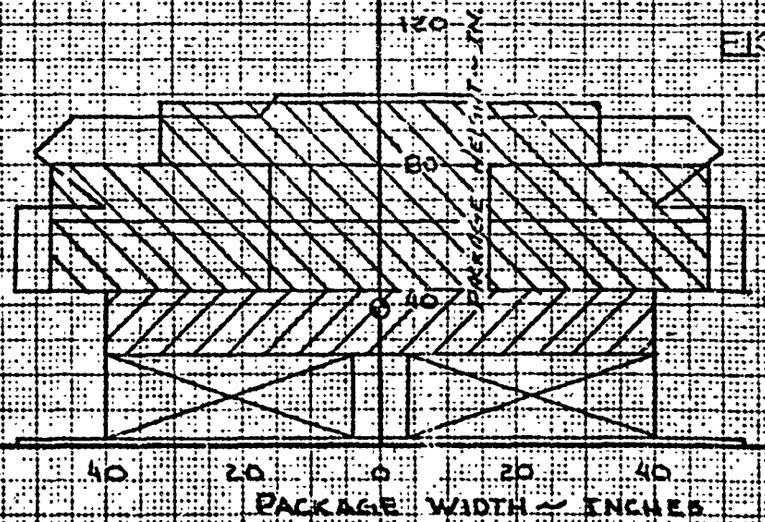


FIGURE B-22R

6008
230

GA FORM 8588-8

PREPARED BY Pemberton
DATE 8-24-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

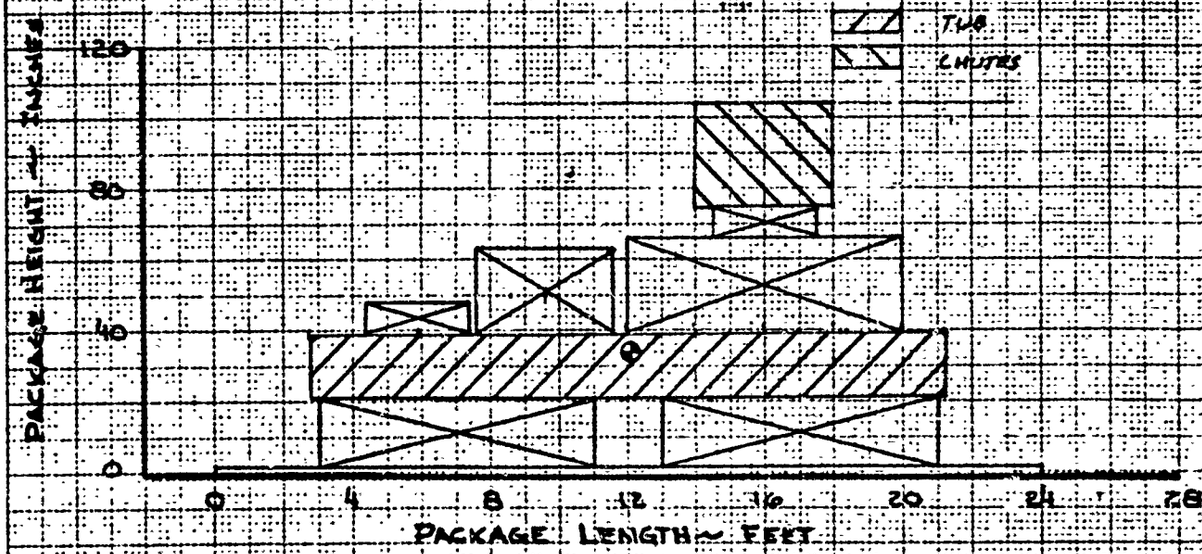
REPORT NO ER 5473
MODEL C-141A (600B)
PAGE B-25

6008M2

AERIAL DELIVERY PACKAGE DATA

FLIGHT 170
DROP 22R-2
PKG. WT. 19,700 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

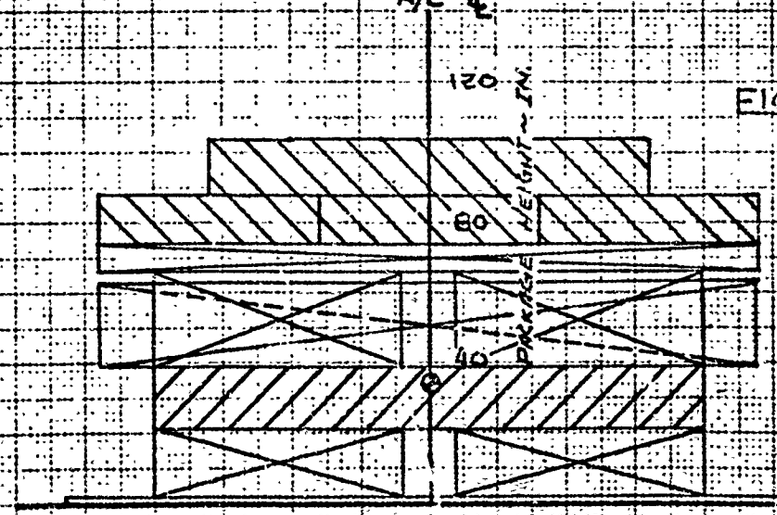


FIGURE B-22R-2

6008
231

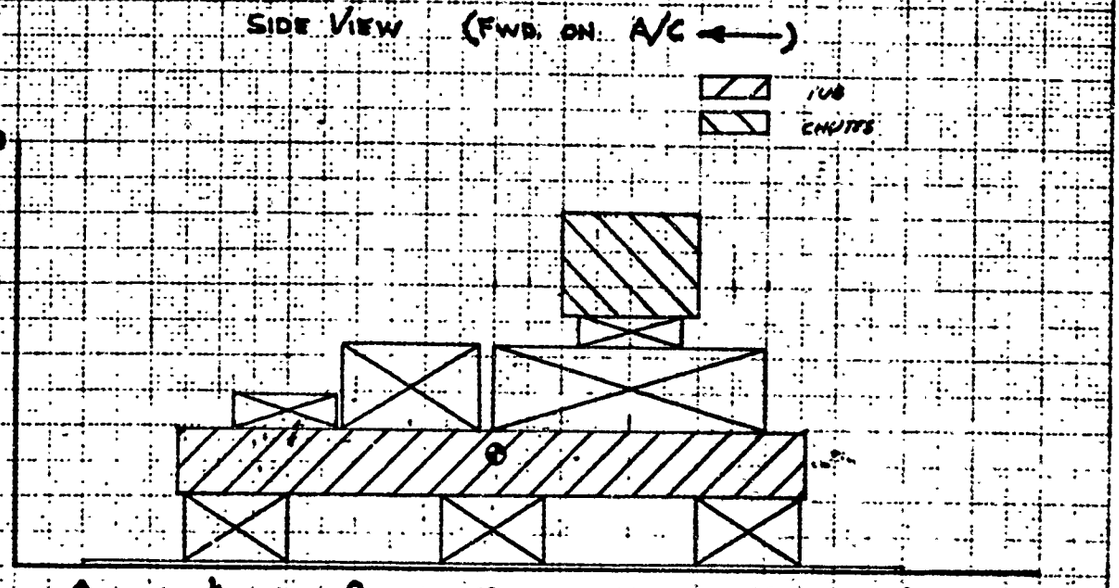
GA FORM 9966 B

6008
232

AERIAL DELIVERY PACKAGE DATA

FLIGHT 172 - 173
DROP 22R-3, 22R-4
PKG. WT. 19900, 19650 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

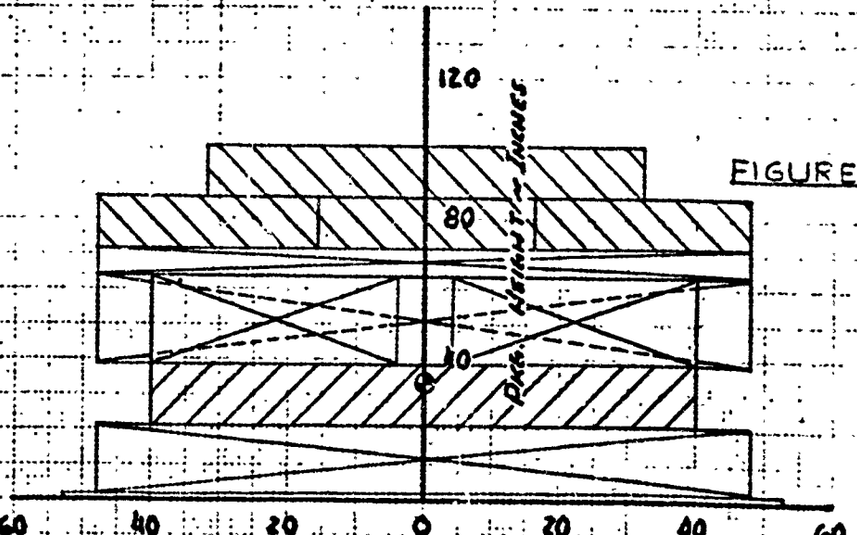


FIGURE B-22R-3

6008
232

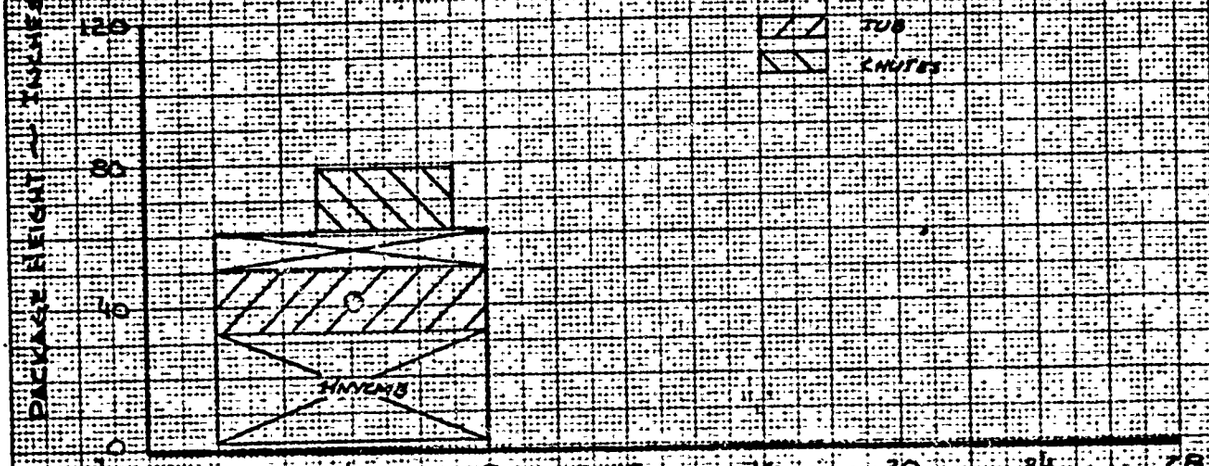
GA FORM 9560 B

6008 233

AERIAL DELIVERY PACKAGE DATA

FLIGHT 127
DROP 23
PKG. WT. 6,060 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

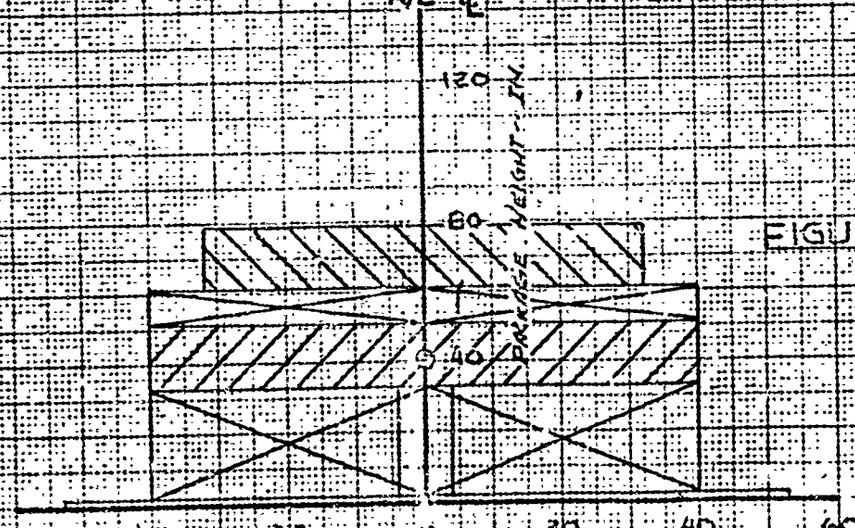


FIGURE B-23

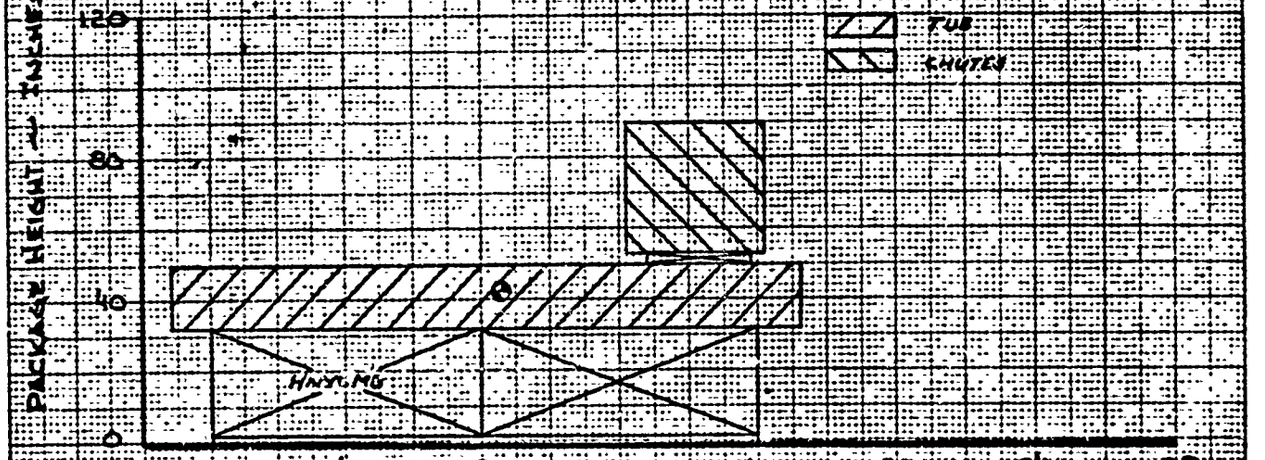
GA FORM 9988-2

600B 234

AERIAL DELIVERY PACKAGE DATA

FLIGHT 128
DROP 24
PKG. WT. 21,550 LBS

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

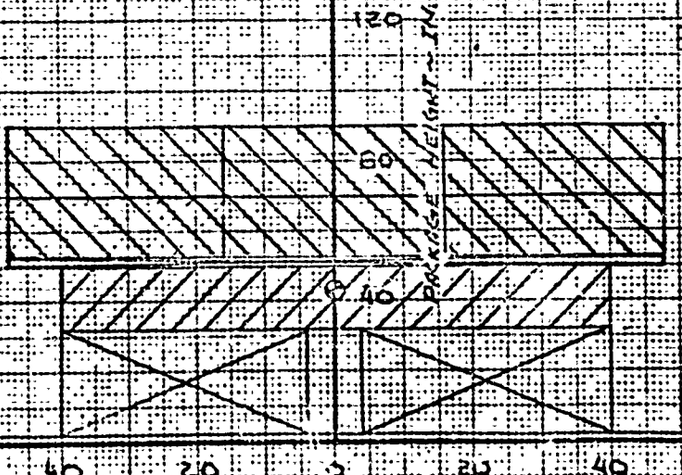


FIGURE B-24

600B 234-

PREPARED BY Pemberton
DATE 8-12-65
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LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

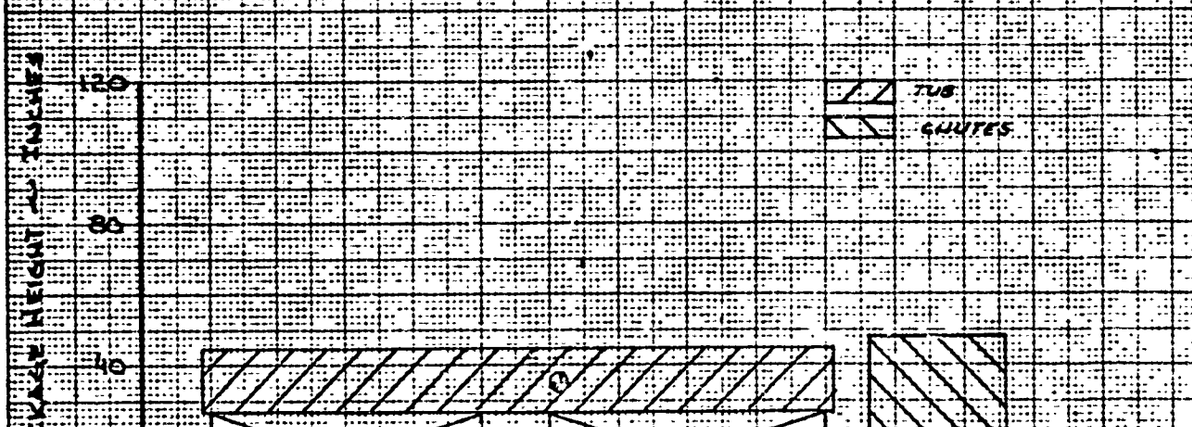
REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-29

6008 235

AERIAL DELIVERY PACKAGE DATA

FLIGHT 138
DROP 25
PKG. WT. 35,250 LBS.

SIDE VIEW (FWD ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

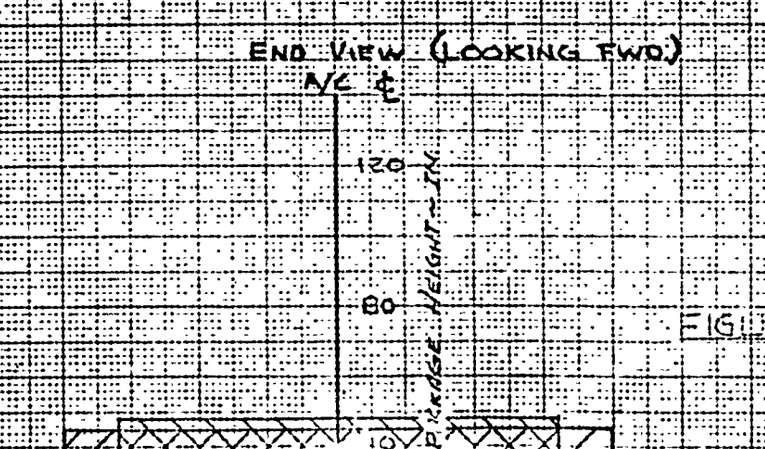


FIGURE P-25

GA FORM 9566-5

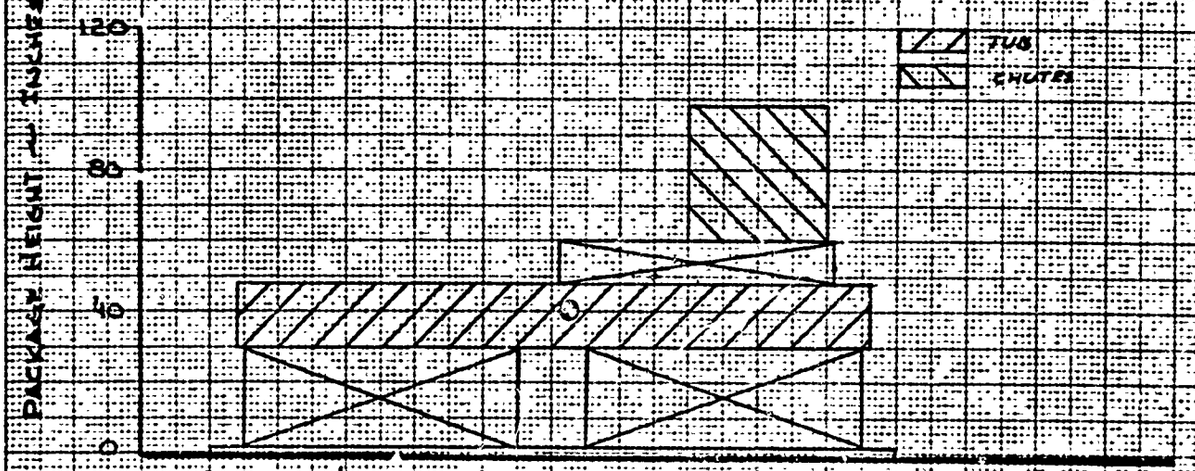
PREPARED BY Pemberton DATE 8-13-65 CHECKED BY ✓	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	REPORT NO. ER 5473 MODEL C-141A (6008) PAGE B-30

6008
236

AERIAL DELIVERY PACKAGE DATA

FLIGHT 129
DROP 26
PKG. WT. 23440 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

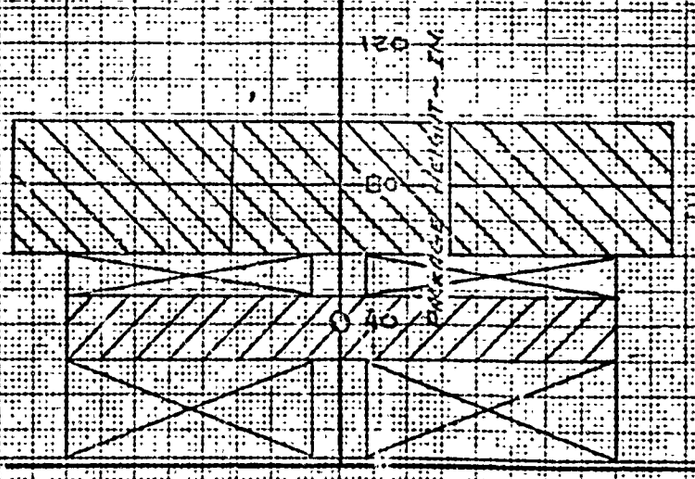


FIGURE B-26.

6008
236

GA FORM 9588-3

PREPARED BY Pemberton
DATE 8-13-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

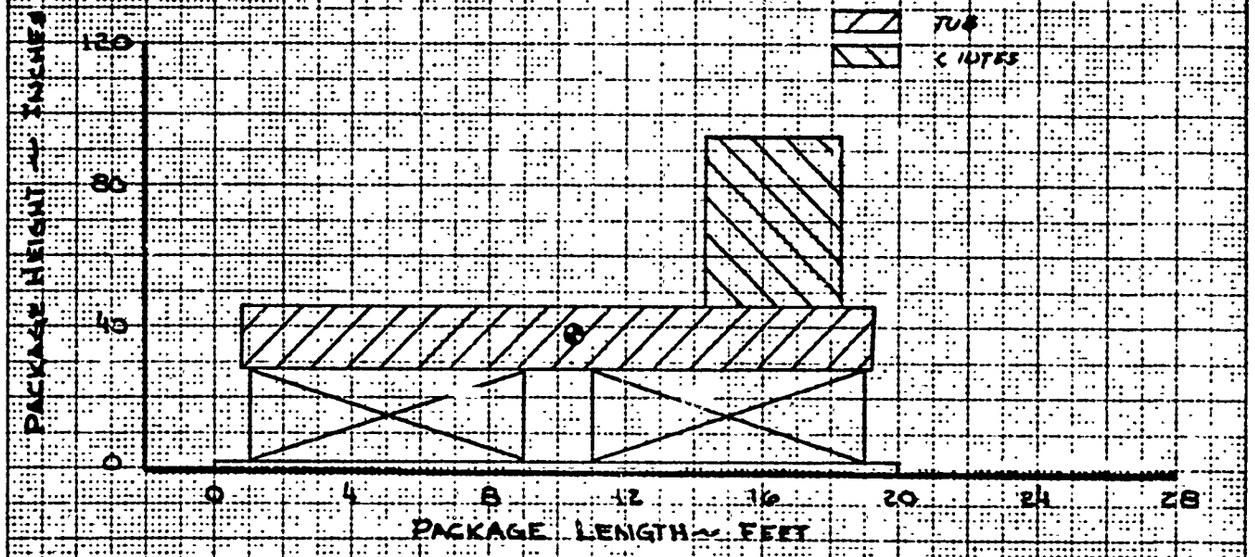
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-31

6008
237

AERIAL DELIVERY PACKAGE DATA

FLIGHT 141
DROP 27
PKG. WT. 23,750 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

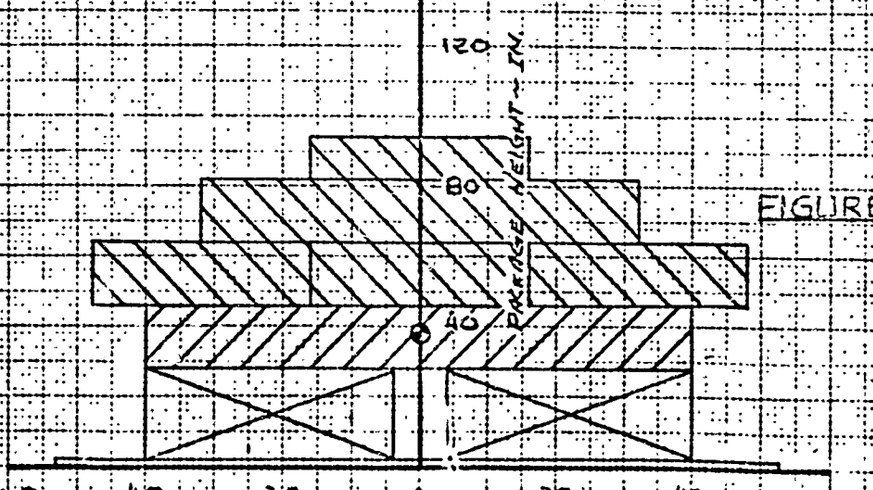


FIGURE B-27

6008
237

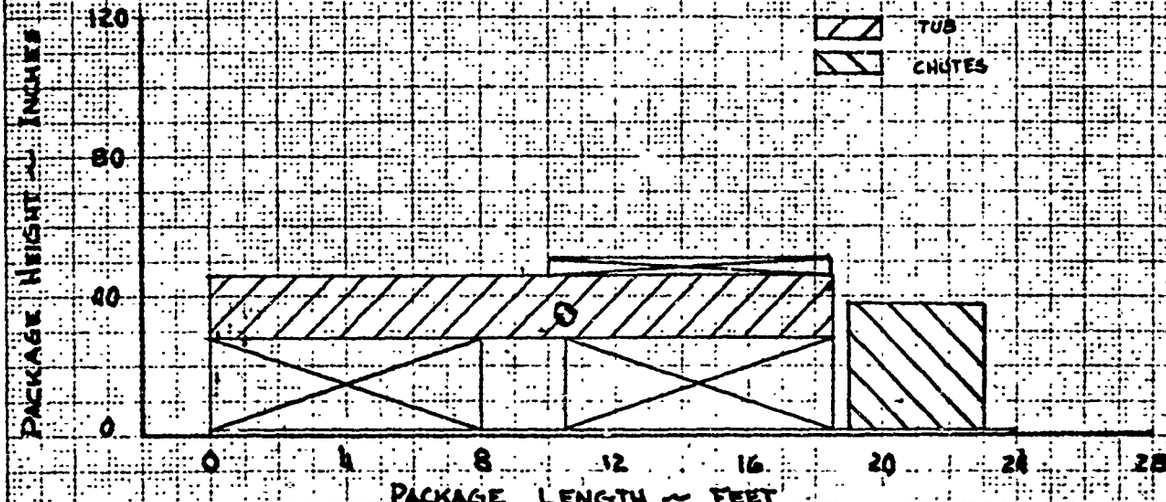
GA FORM 9548-3

6008
238

AERIAL DELIVERY PACKAGE DATA

FLIGHT 188
DROP 28
PKG. WT. 34,700 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)

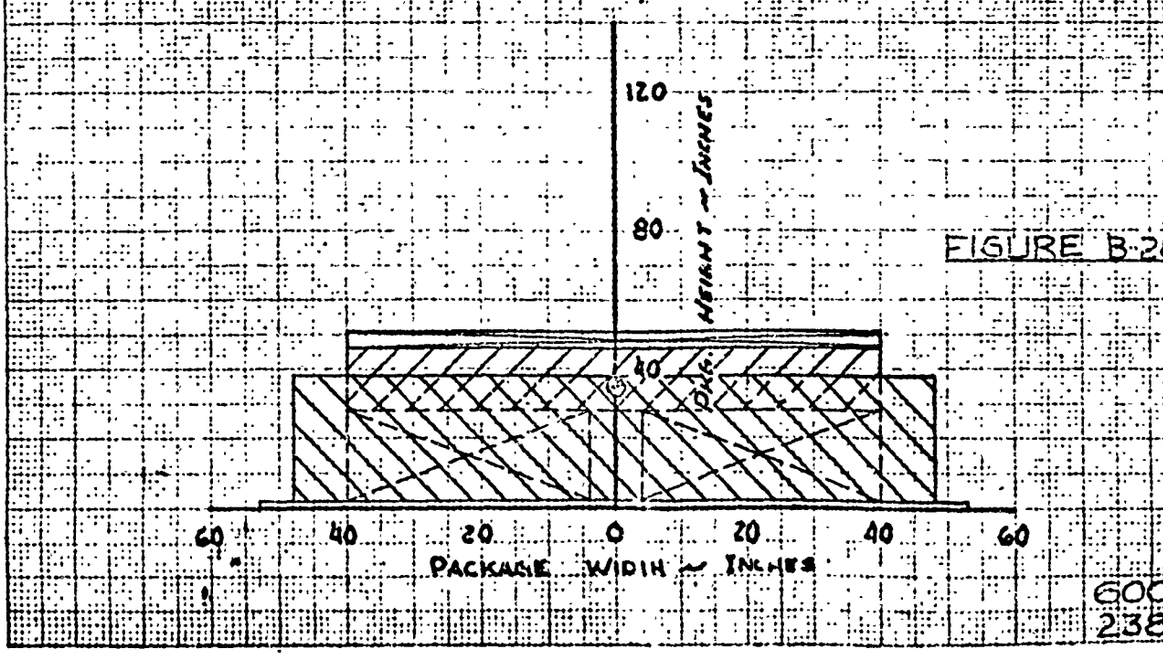


FIGURE B-28

6008
238

GA FORM 9988 B

PREPARED BY Pemberton
DATE 8-13-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

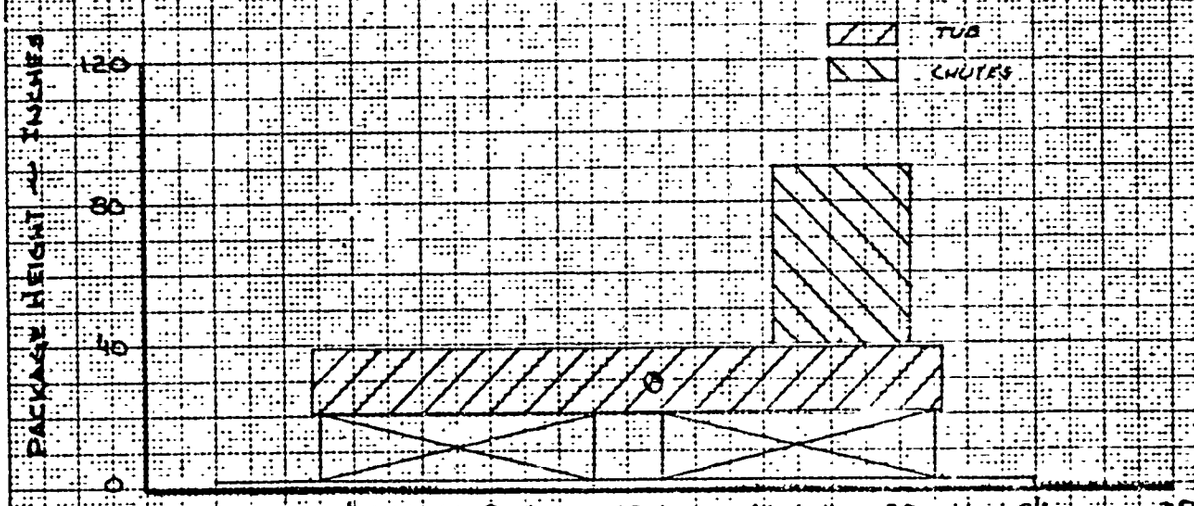
REPORT NO. ER-5473
MODEL C-141A (600B)
PAGE B-33

600B
0203

AERIAL DELIVERY PACKAGE DATA

FLIGHT 143
DROP 29
PKG. WT. 35,700 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

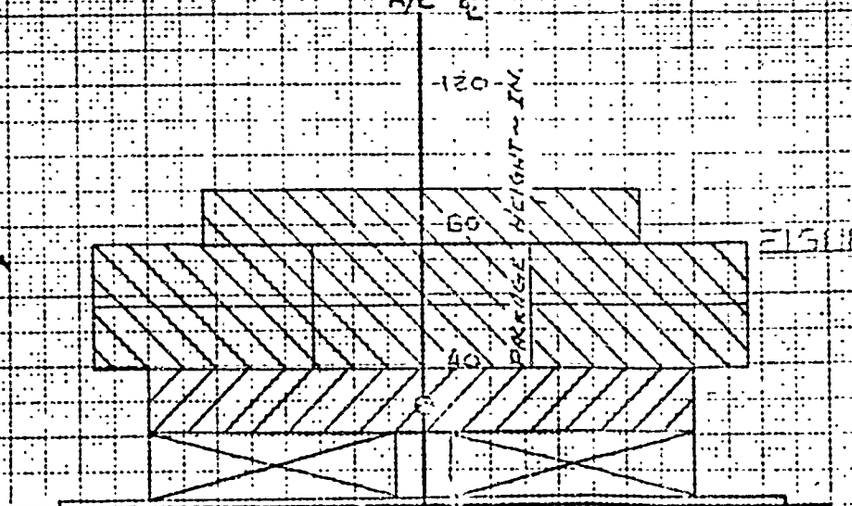


FIGURE F-29

600B
2-9

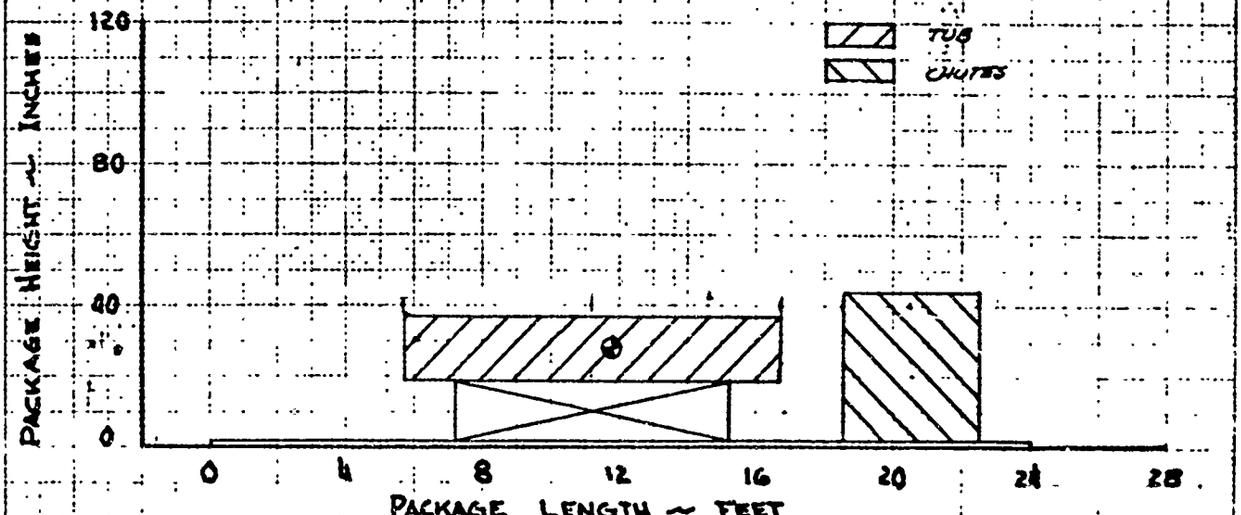
GA FORM 5548 B

6008
240

AERIAL DELIVERY PACKAGE DATA

FLIGHT 183
DROP 30
PKG. WT. 21,050 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

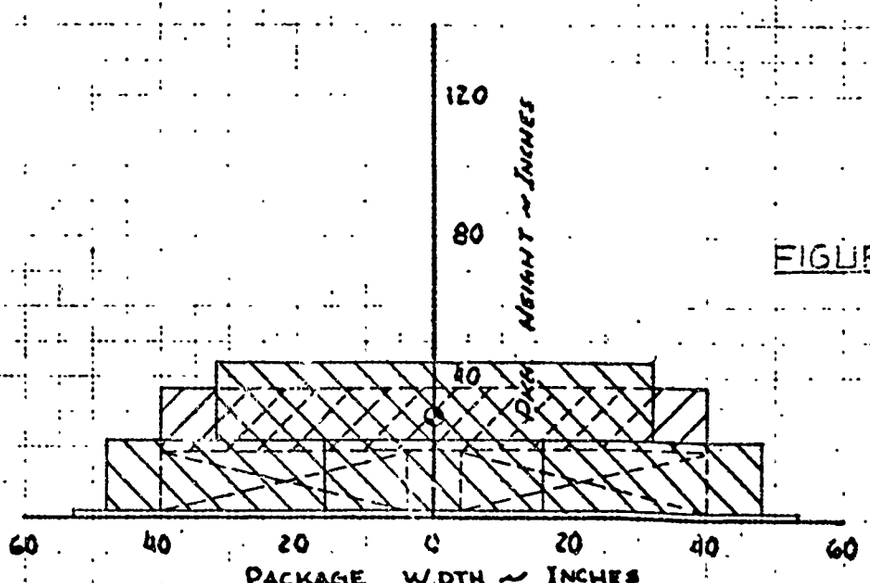


FIGURE B-30

6008
240

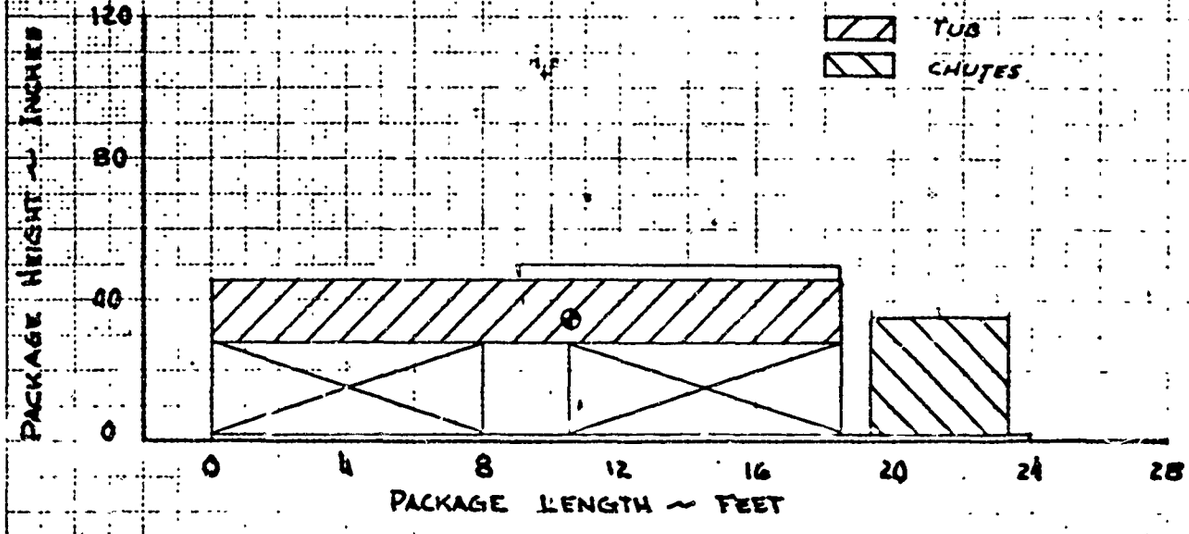
GA FORM 9868 B

6008
241

AERIAL DELIVERY PACKAGE DATA

FLIGHT 184
DROP 31
PKG. WT. 21,330 LBS.

SIDE VIEW (FWD. OF A/C ←)



END VIEW (LOOKING FWD.)

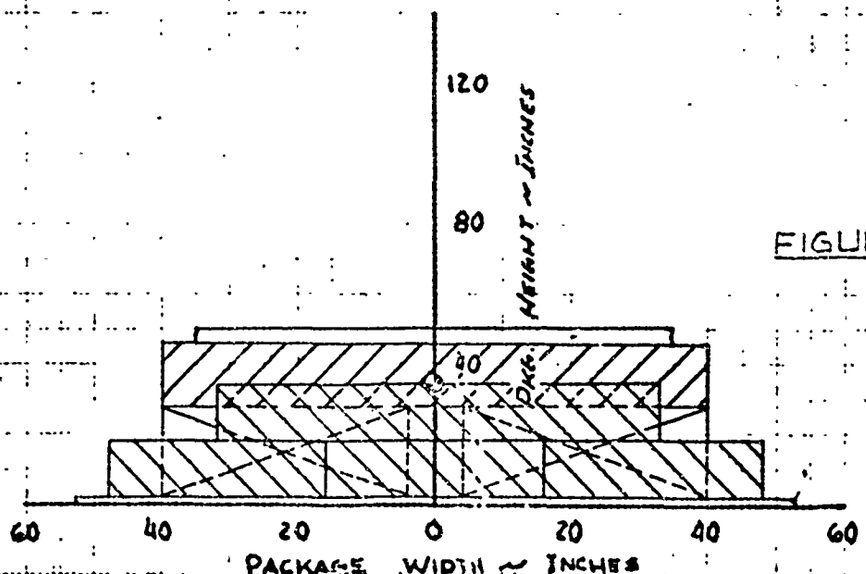


FIGURE B-31

6008
241

GA FORM 9588 B

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DATE 8-16-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

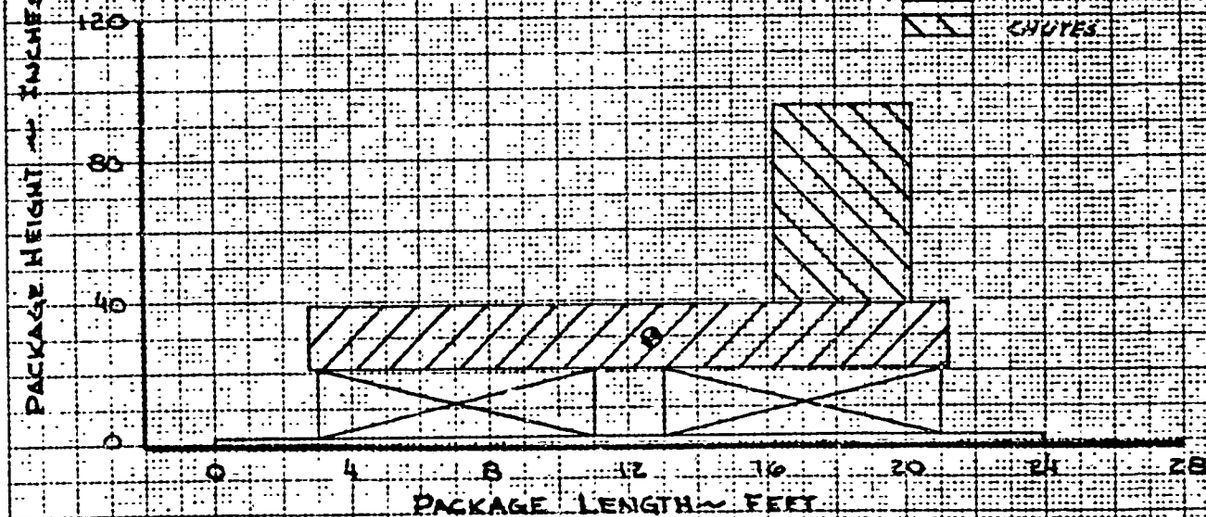
REPORT NO ER 5473
MODEL C-141A (600B)
PAGE B-36

6008
0104
0242

AERIAL DELIVERY PACKAGE DATA

FLIGHT 104
DROP 32
PKG. WT. 35,335 LBS.

SIDE VIEW (FWD ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

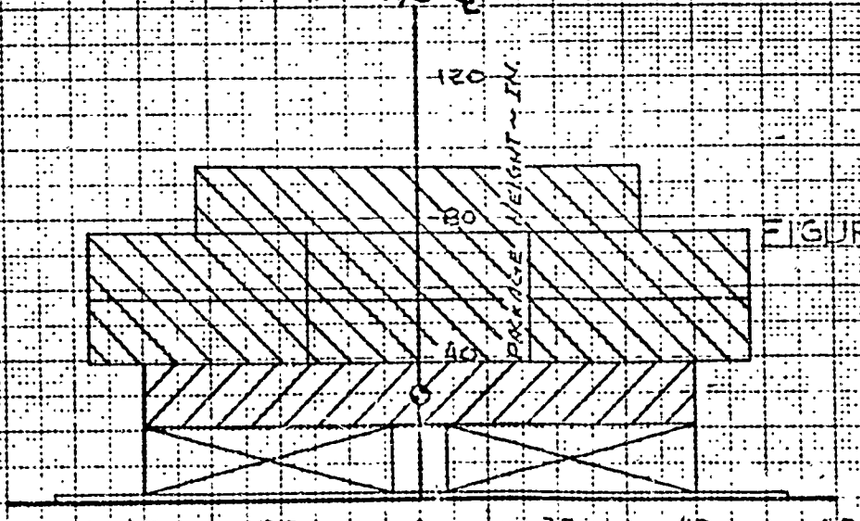


FIGURE B-32

6008
242

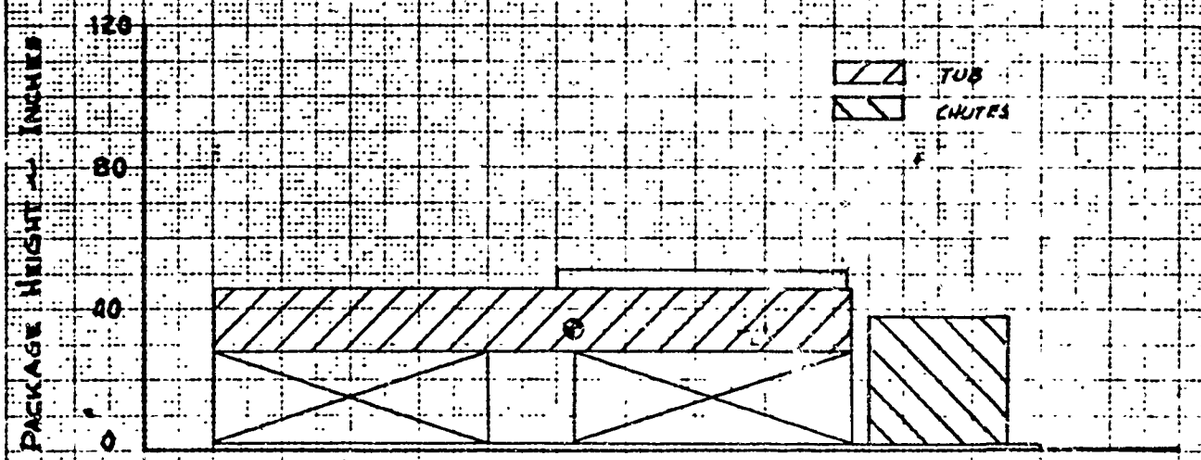
GA FORM 3588 3

600B 242

AERIAL DELIVERY PACKAGE DATA

FLIGHT 190
DROP 33
PKG. WT. 24,762 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

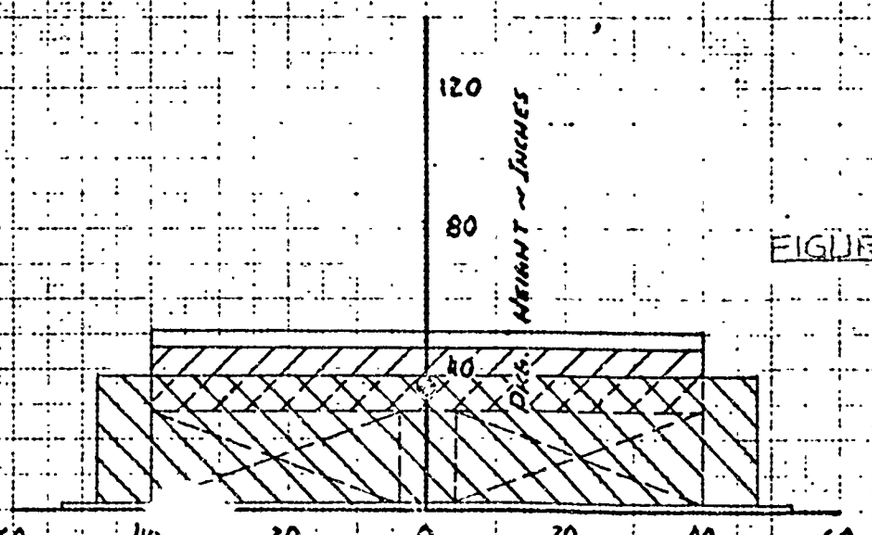


FIGURE B-33

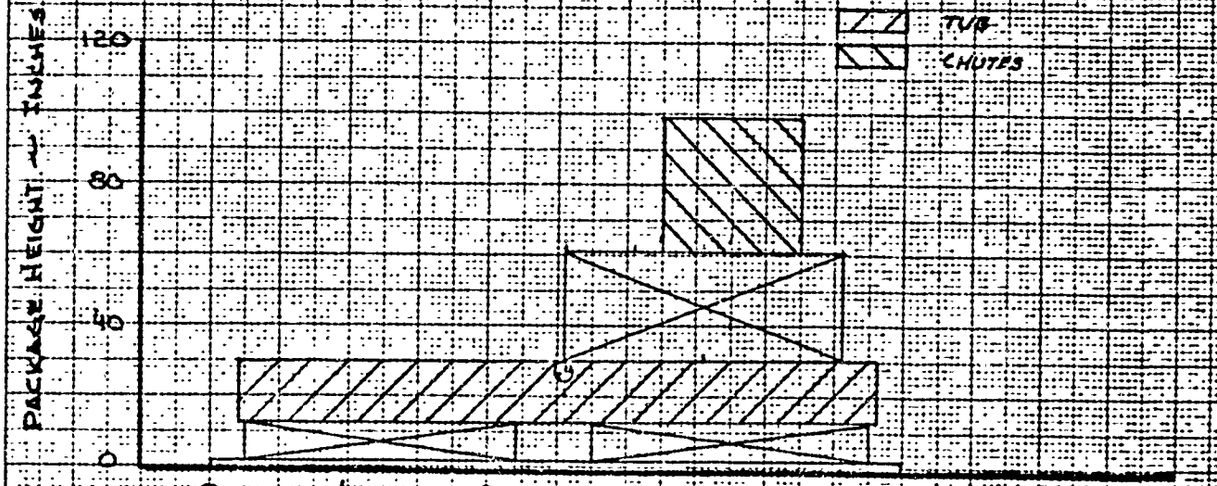
600B 243

6008
244

AERIAL DELIVERY PACKAGE DATA

FLIGHT 136
DROP 34
PKG. WT. 24,830 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

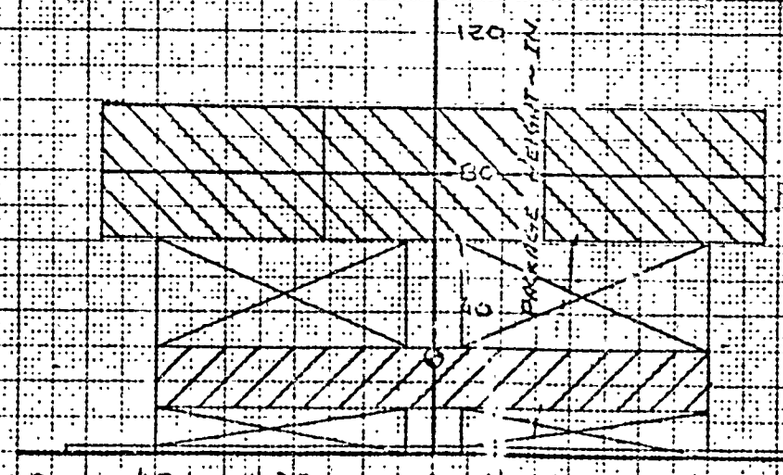


FIGURE B-34

6008
244

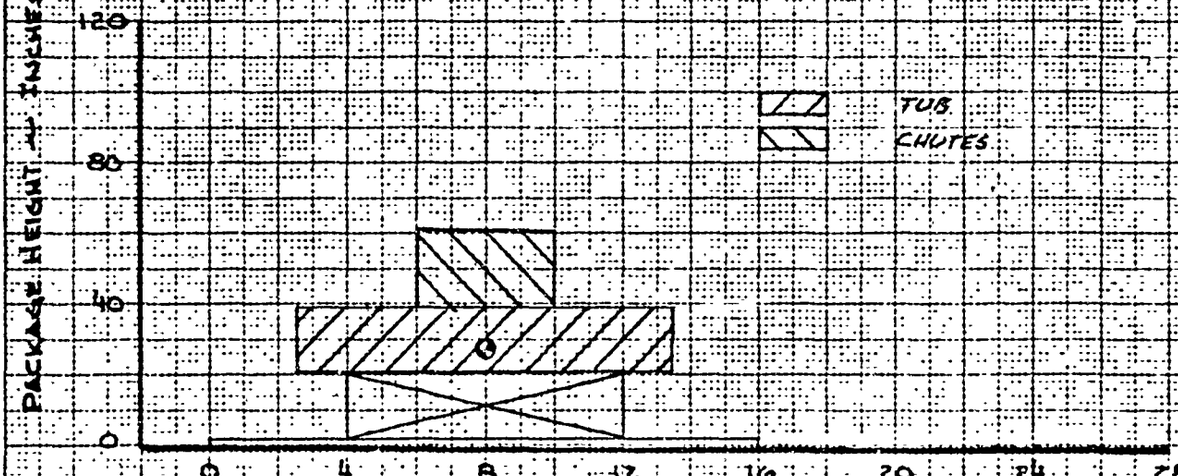
GA FORM 3548 B

6008
24-5

AERIAL DELIVERY PACKAGE DATA

FLIGHT 137
DROP 35
PKG. WT. 5,940 LBS.

SIDE VIEW (FWD. ON A/C ←→)



END VIEW (LOOKING FWD.)
A/C ℄

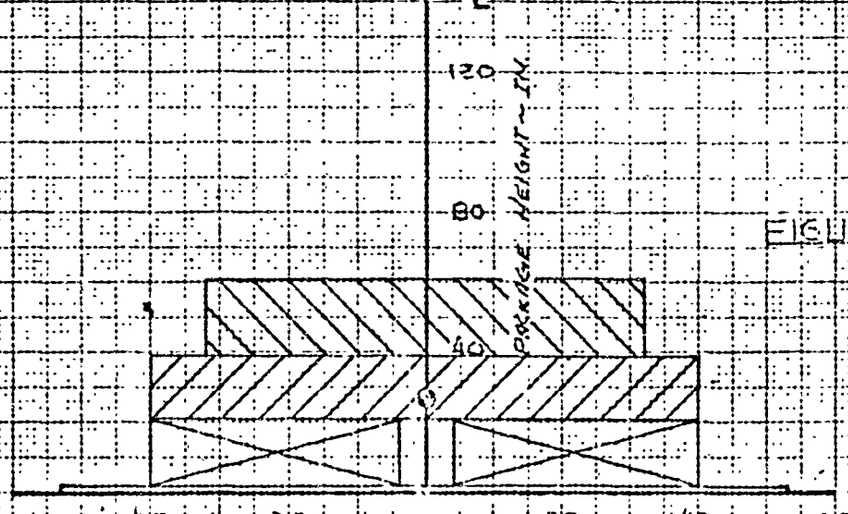


FIGURE B-35

6008
24-5

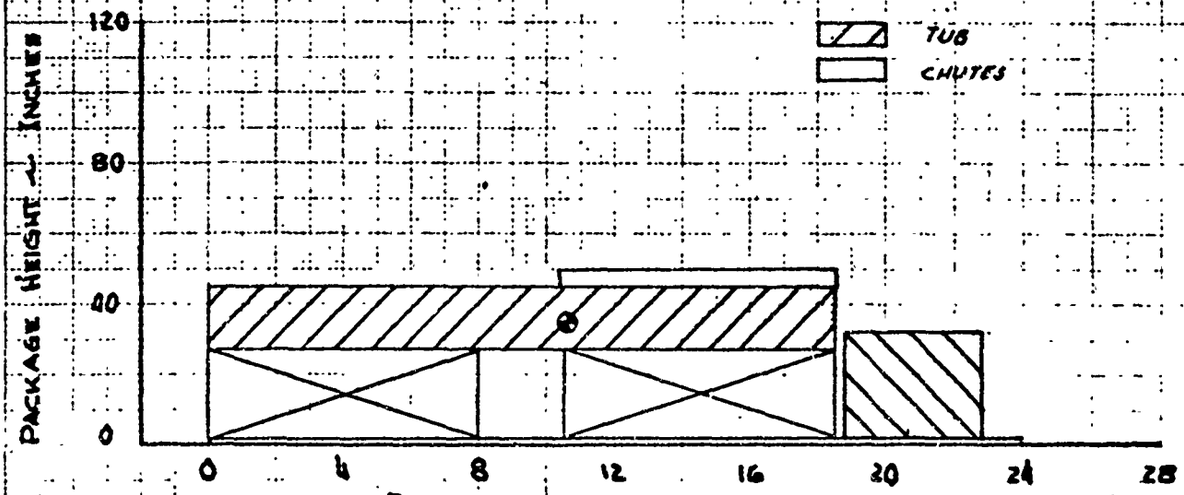
GA FORM 3508 B

6008
246

AERIAL DELIVERY PACKAGE DATA

FLIGHT 186
DROP 36
PKG. WT. 24,840 LBS.

SIDE VIEW (FWD. ON A/C ←—)



END VIEW (LOOKING FWD.)

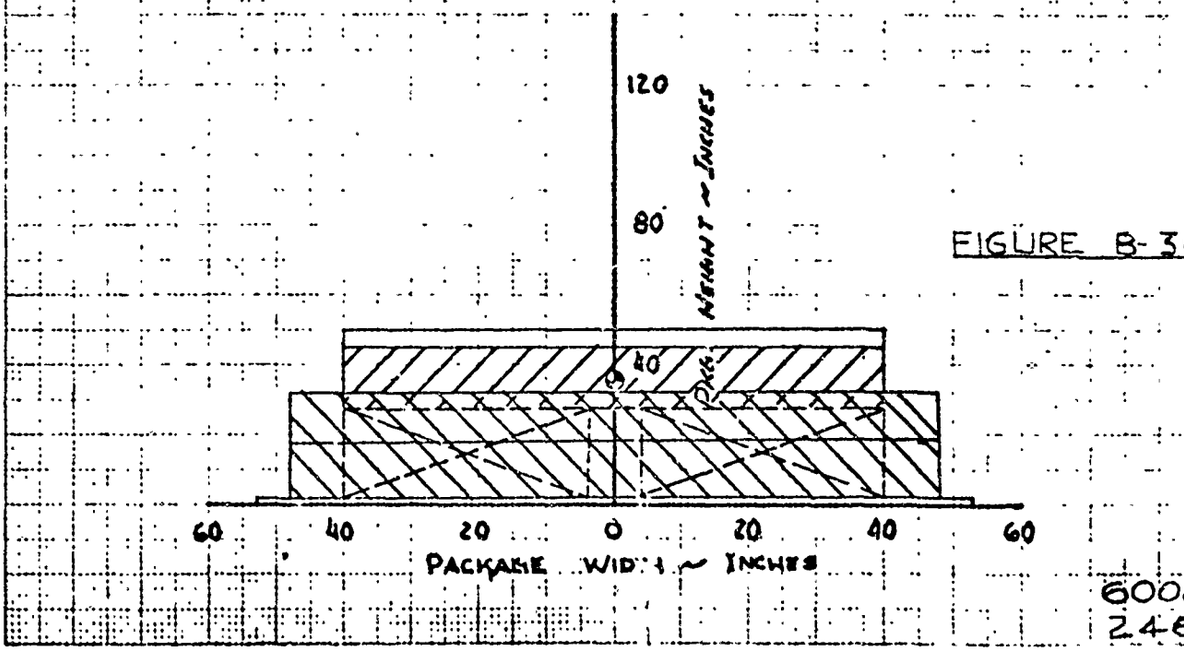


FIGURE B-36

6008
246

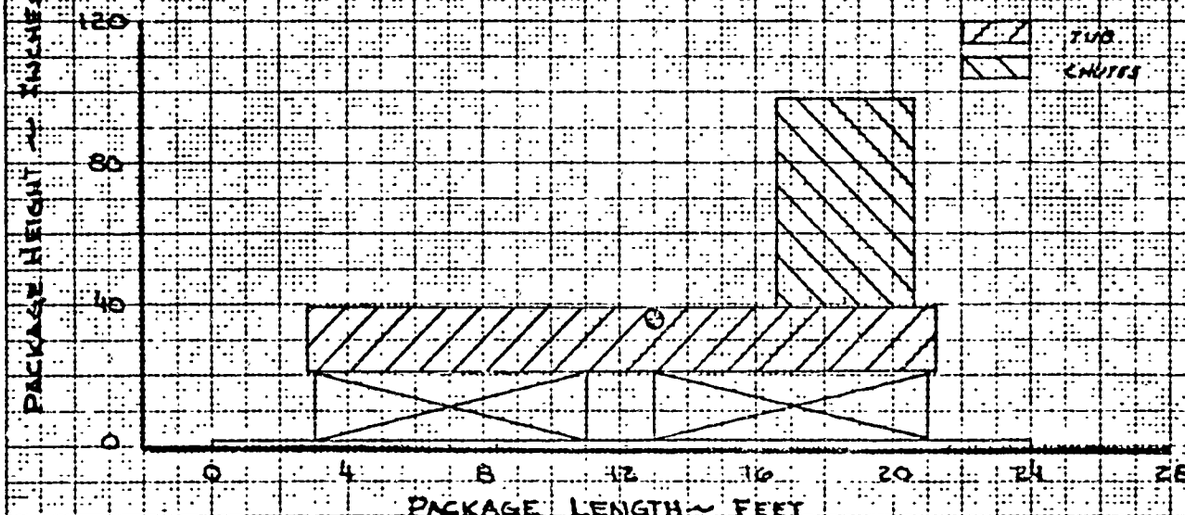
GA FORM 9866 B

600B 247

AERIAL DELIVERY PACKAGE DATA

FLIGHT 145
DROP 37-1
PKG. WT. 34,800 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

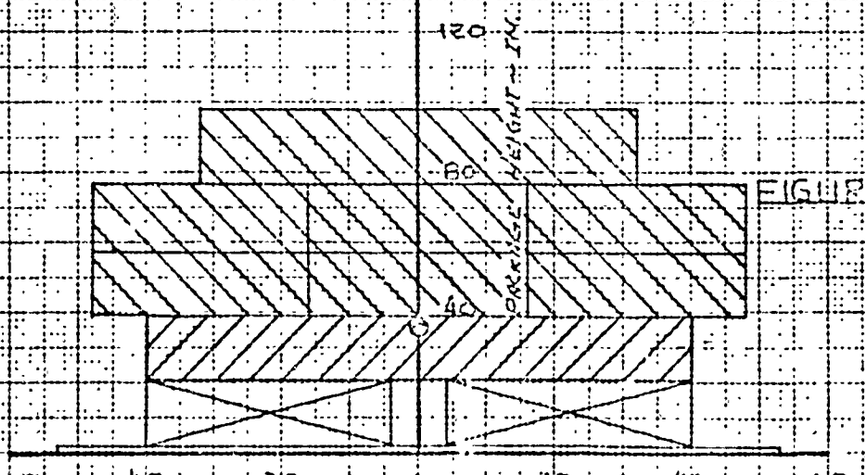


FIGURE B-37A

600B 247

PREPARED BY Pemberton
DATE 8-16-65
CHECKED BY —

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

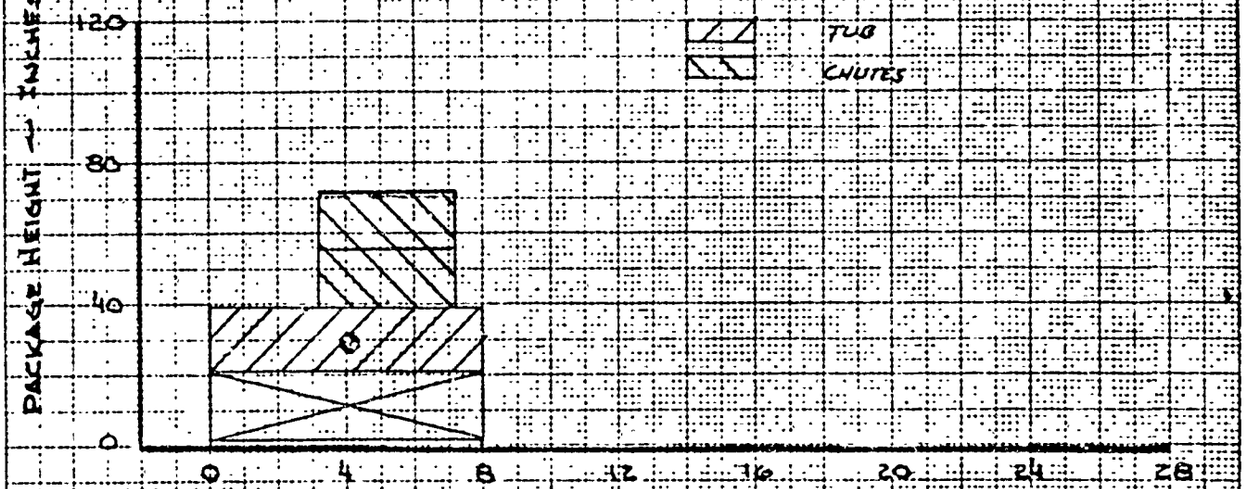
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-42

6008
24Y

AERIAL DELIVERY PACKAGE DATA

FLIGHT 145
DROP 37-2
PKG. WT. 9,450 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

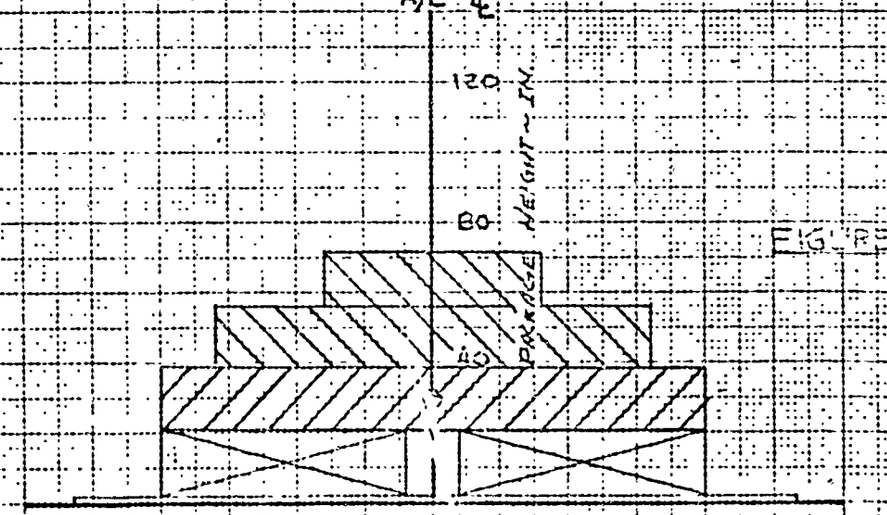


FIGURE B-37B

6008
24Y

GA FORM 9568 2

PREPARED BY Rombaoa
DATE 8-17-65
CHECKED BY V

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

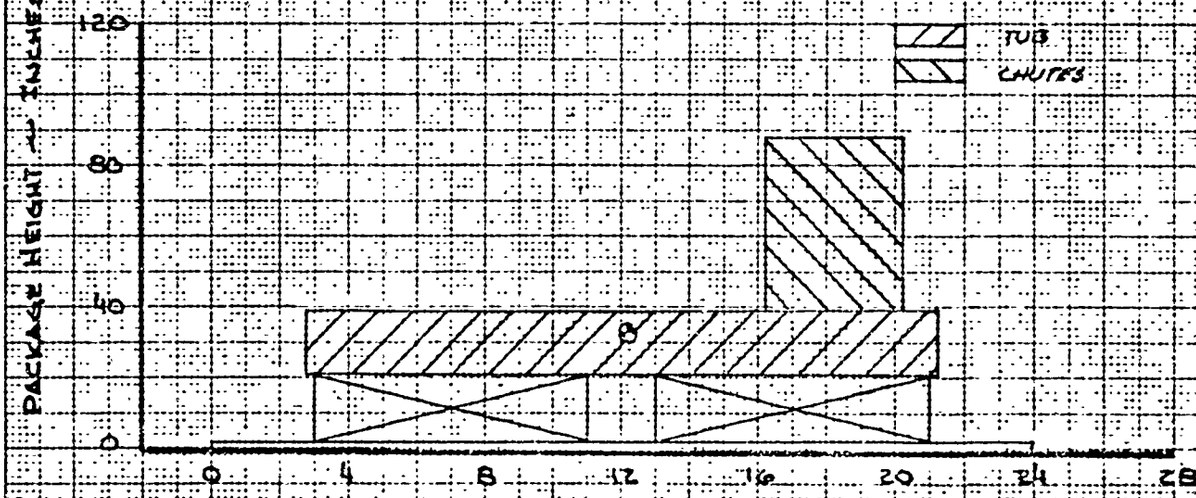
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-43

6008
249

AERIAL DELIVERY PACKAGE DATA

FLIGHT 146
DROP 38-1
PKG. WT. 34,900 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

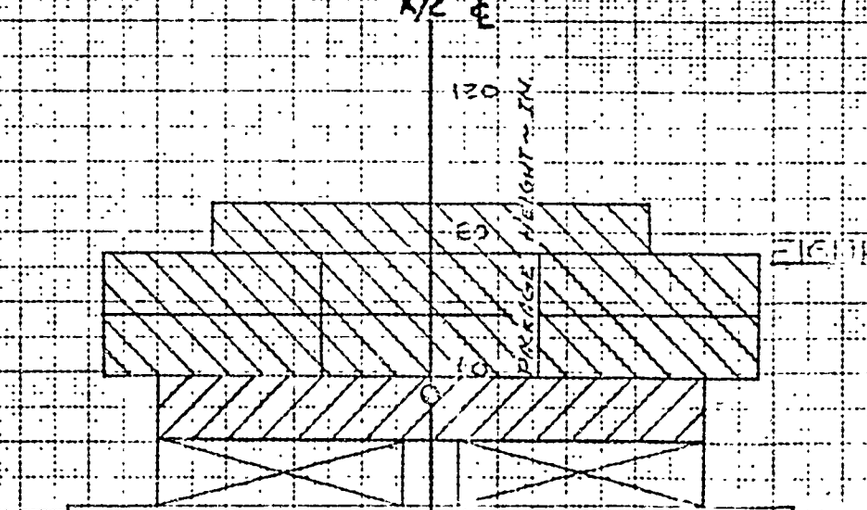


FIGURE B-3F.A

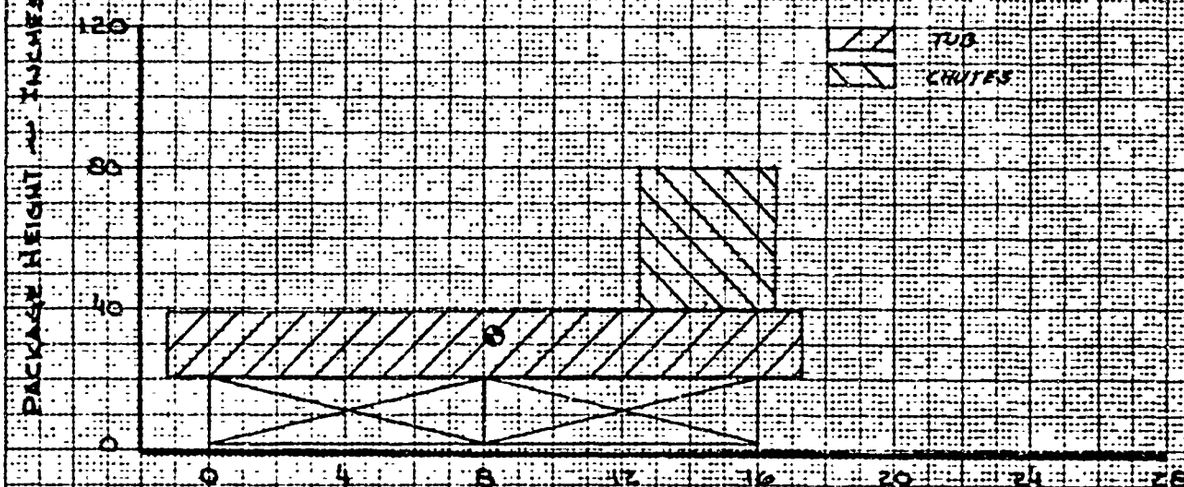
6008
249

600B 250

AERIAL DELIVERY PACKAGE DATA

FLIGHT 146
DROP 38-2
PKG. WT. 22,450 LBS

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

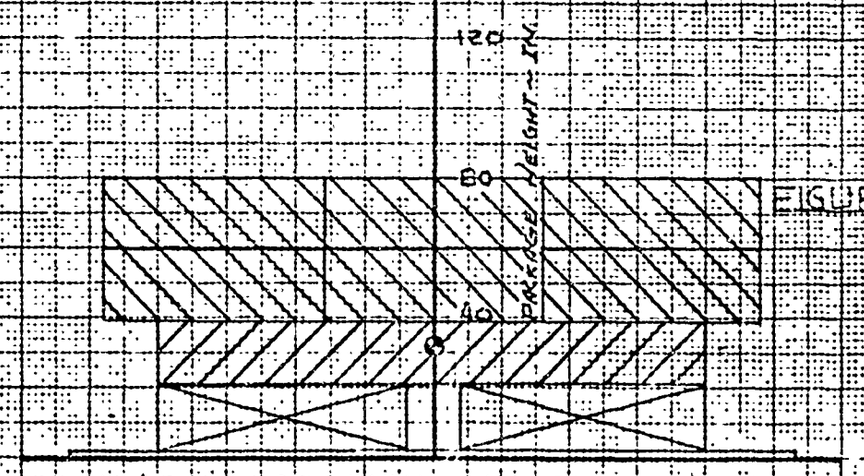


FIGURE B-39B

600B 250

GA FORM 9588 B

PREPARED BY Pinkerton
DATE 8-17-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

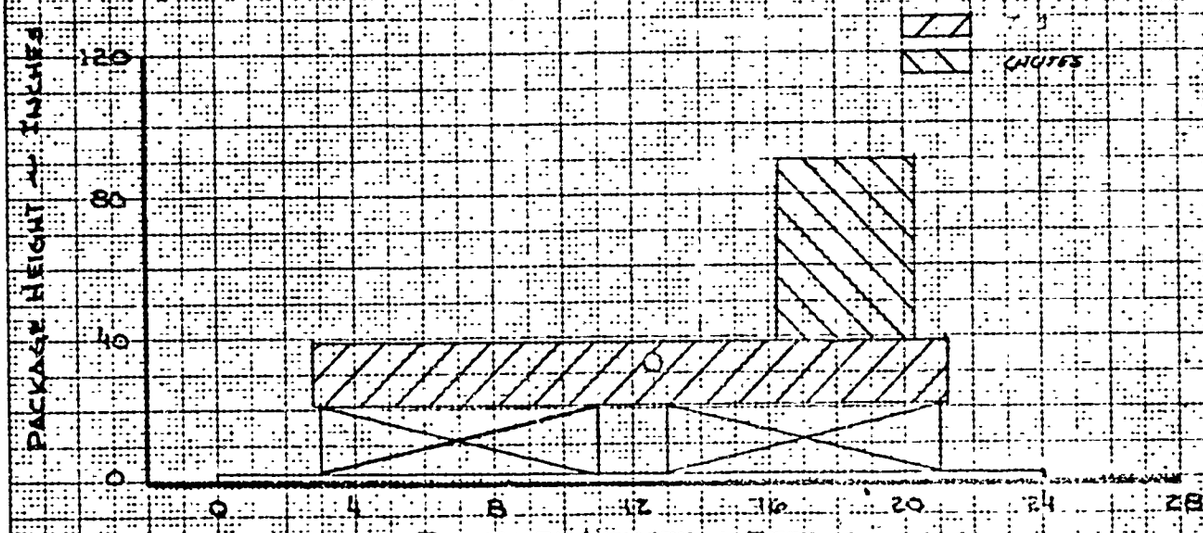
REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-45

6008
025

AERIAL DELIVERY PACKAGE DATA

FLIGHT 118
DROP 39
PKG. WT. 35,030 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

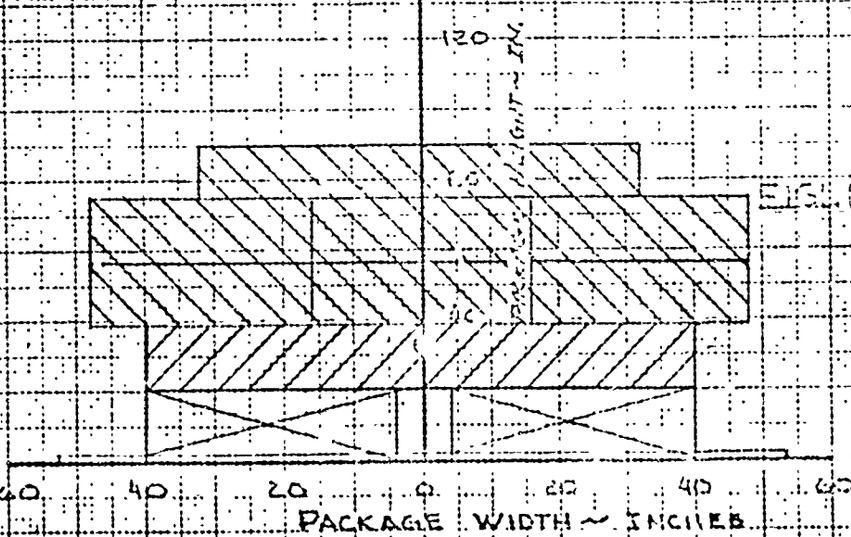


FIGURE B-39A

6008
251

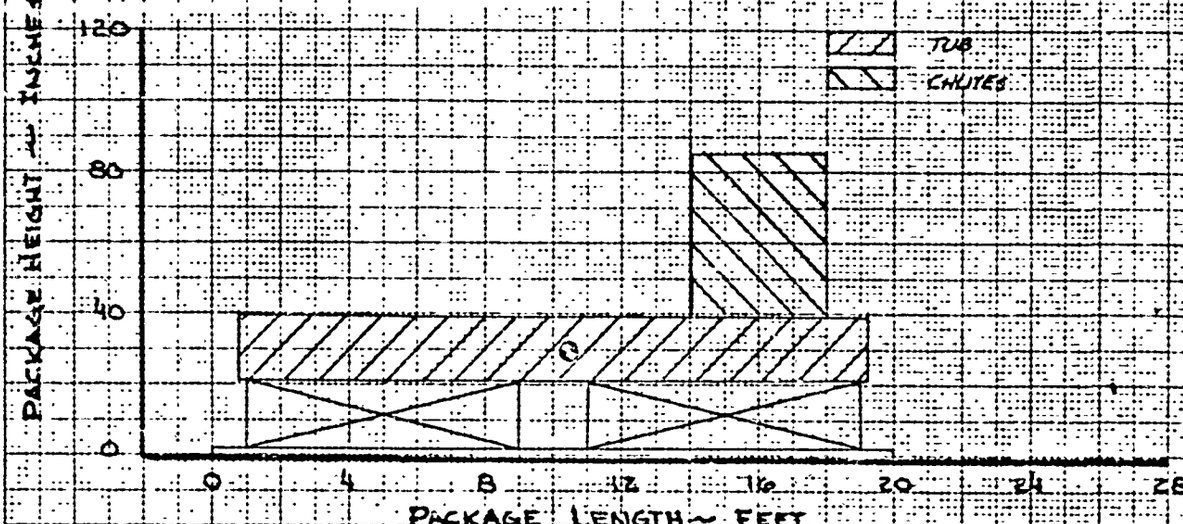
GA FORM 9544-8

6008
252

AERIAL DELIVERY PACKAGE DATA

FLIGHT 148
DROP 39-2
PKG. WT. 29,600 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

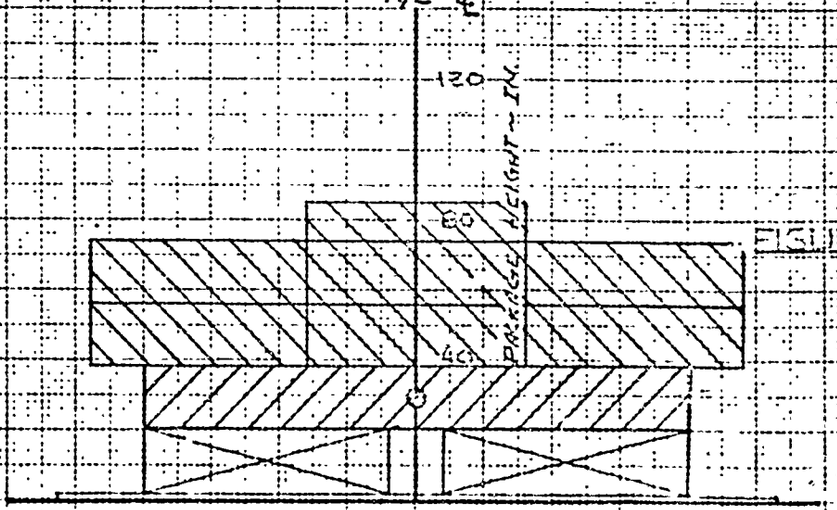


FIGURE B-355

6008
252

GA FORM 5588 B

PREPARED BY Pemberton
DATE 8-18-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

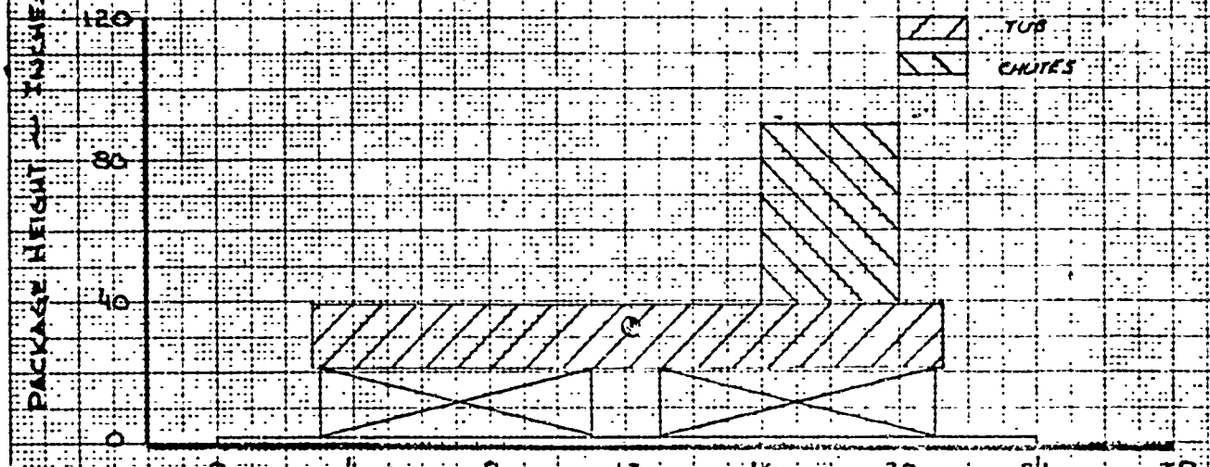
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-47

6008 253

AERIAL DELIVERY PACKAGE DATA

FLIGHT 149
DROP 40-1
PKG. WT. 35,360 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

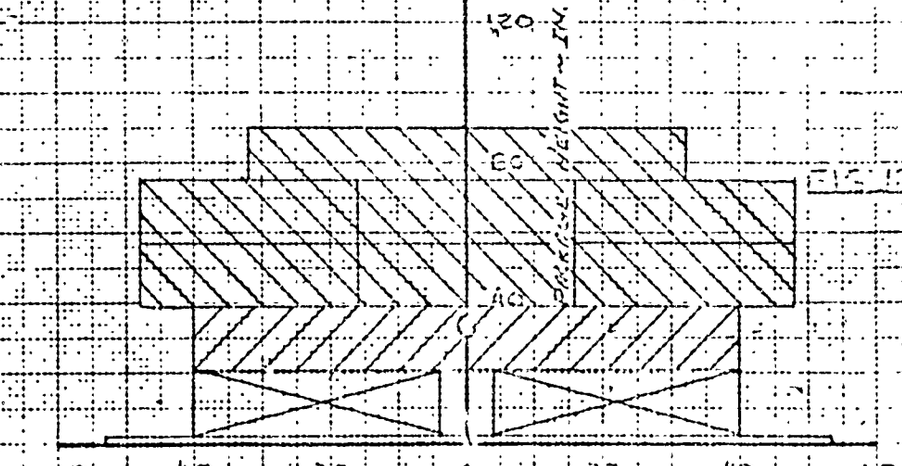


FIGURE B-10A

6008
253

GA FORM 5588 2

PREPARED BY Pemberton
DATE 8-18-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

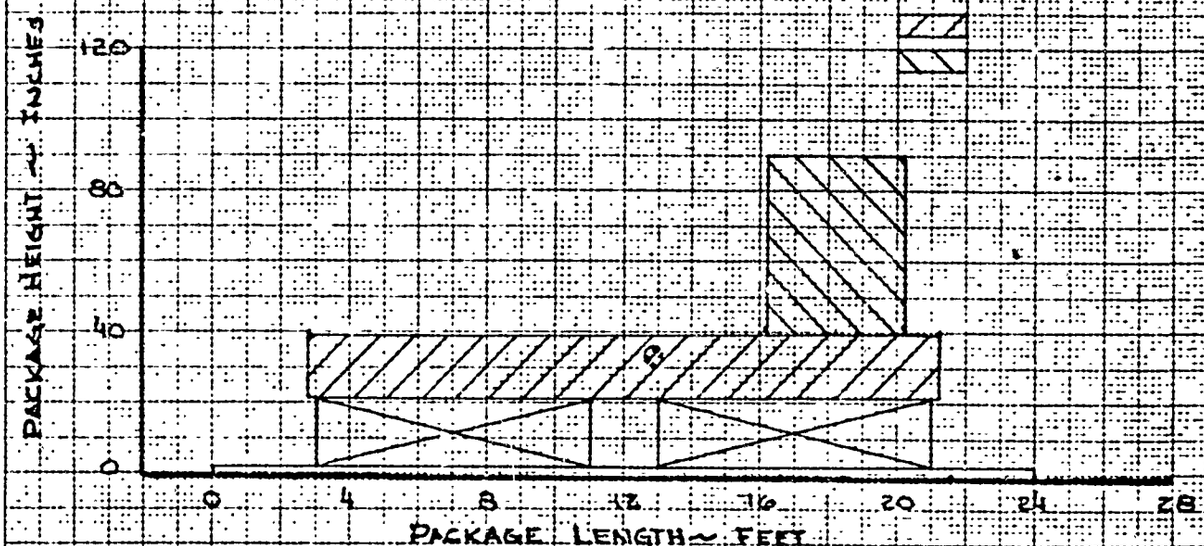
REPORT NO ER 5473
MODEL C-141A (600B)
PAGE B-48

6008 254

AERIAL DELIVERY PACKAGE DATA

FLIGHT 149
DROP 40-2
PKG. WT. 34,650 LBS.

SIDE VIEW (FWD. ON A/C ←→)



END VIEW (LOOKING FWD.)
A/C ℄

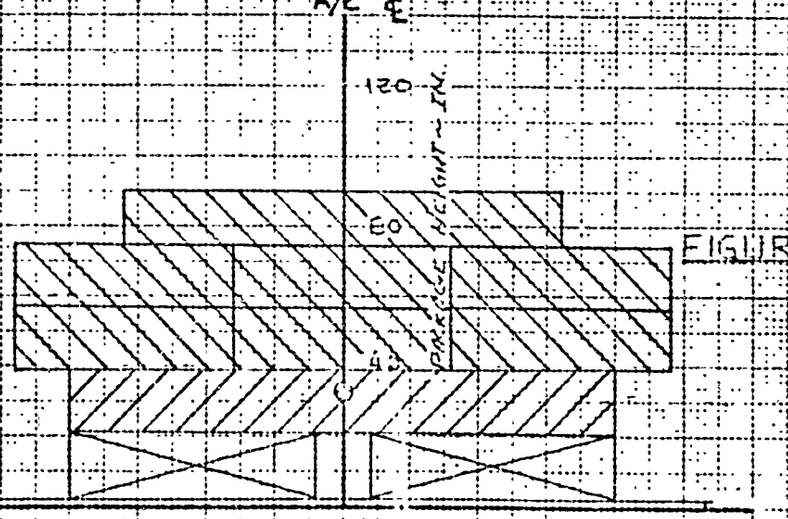


FIGURE B-42B

6008
254

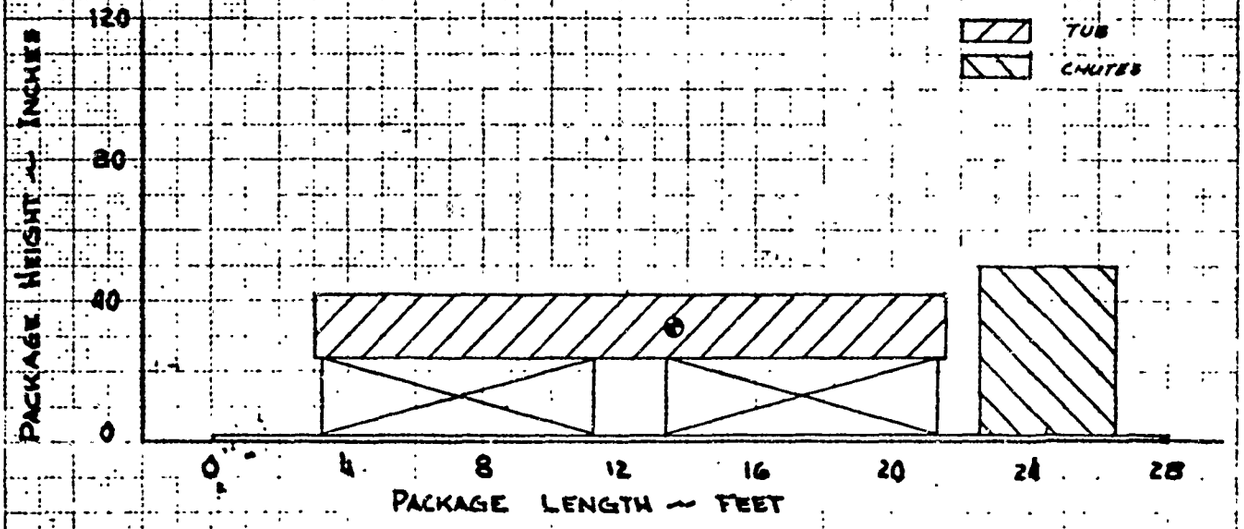
GA FORM 9588 B

6008
255

AERIAL DELIVERY PACKAGE DATA

FLIGHT 175
DROP 40-1R
PKG. WT. 35,390 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

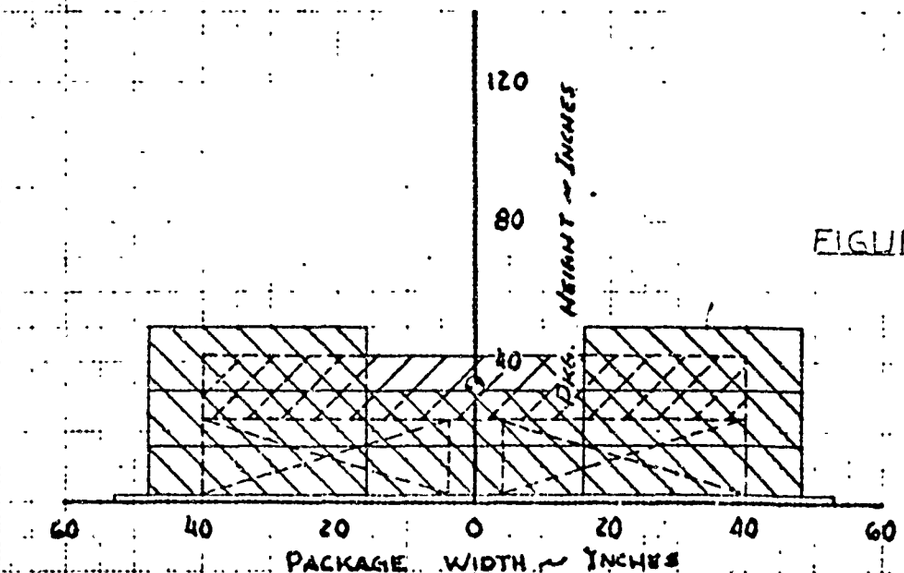


FIGURE B-40AR

PREPARED BY Pemberton
DATE 9-3-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

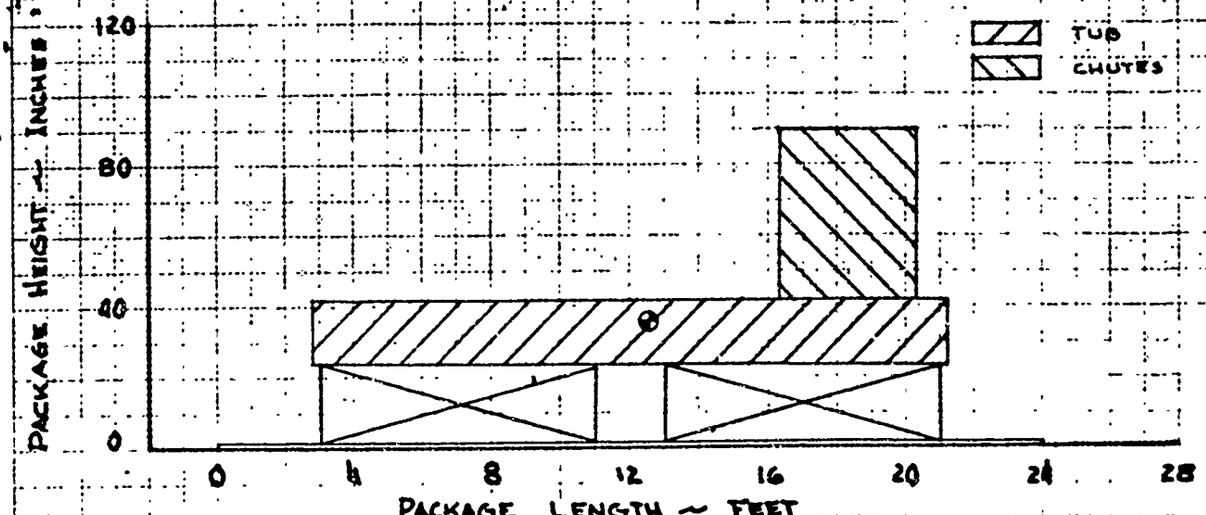
REPORT NO ER 5473
MODEL C-141A (600B).
PAGE B-50

6008
256

AERIAL DELIVERY PACKAGE DATA

FLIGHT 175
DROP 40-2R
PKG. WT. 35,040 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

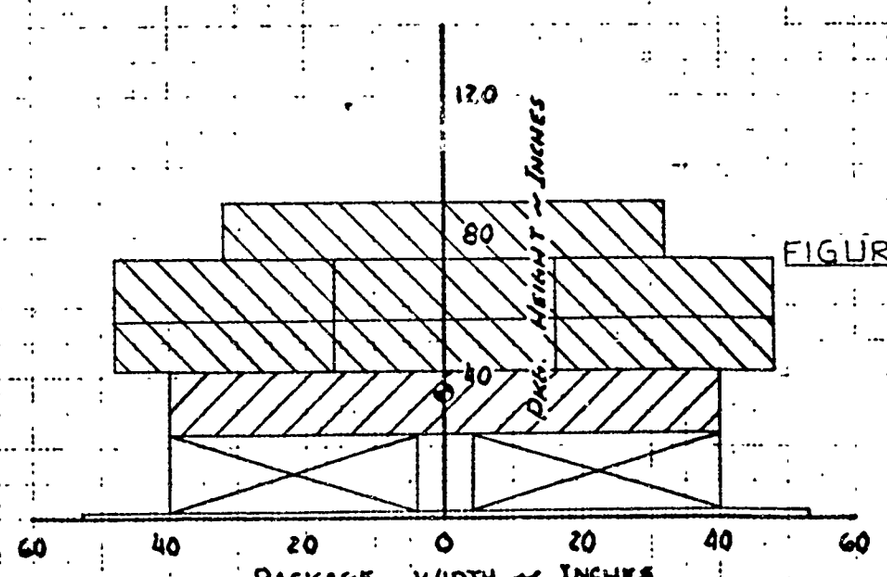


FIGURE B-40BR

6008
256

GA FORM 9668 B

PREPARED BY Pemberton
DATE 9-18-65
CHECKED BY /

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

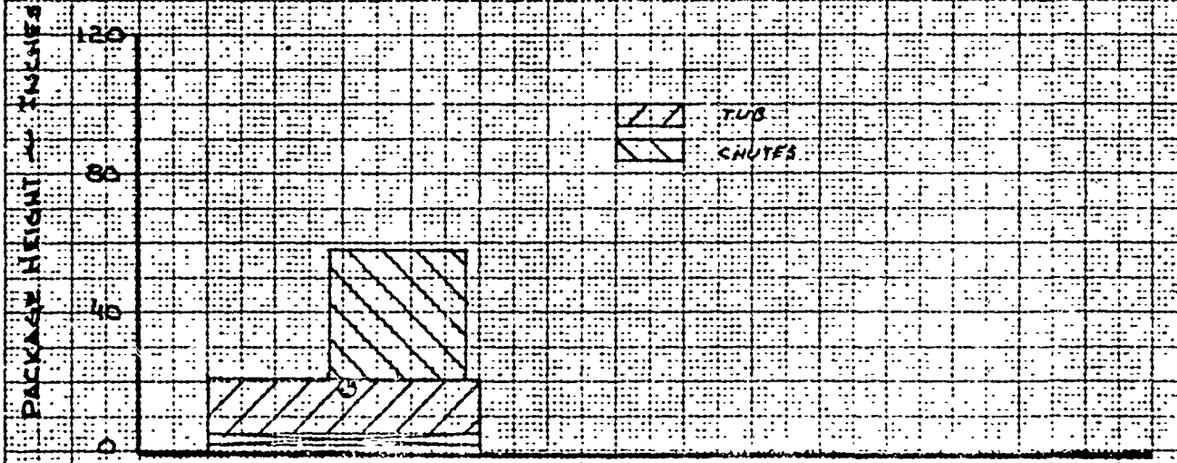
REPORT NO ER 6473
MODEL C-141A (600B)
PAGE B-51

6008
257

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-1
PKG. WT. 9,750 LBS.

SIDE VIEW (FWD ON A/C ←)



END VIEW (LOOKING FWD)
A/C ⊥

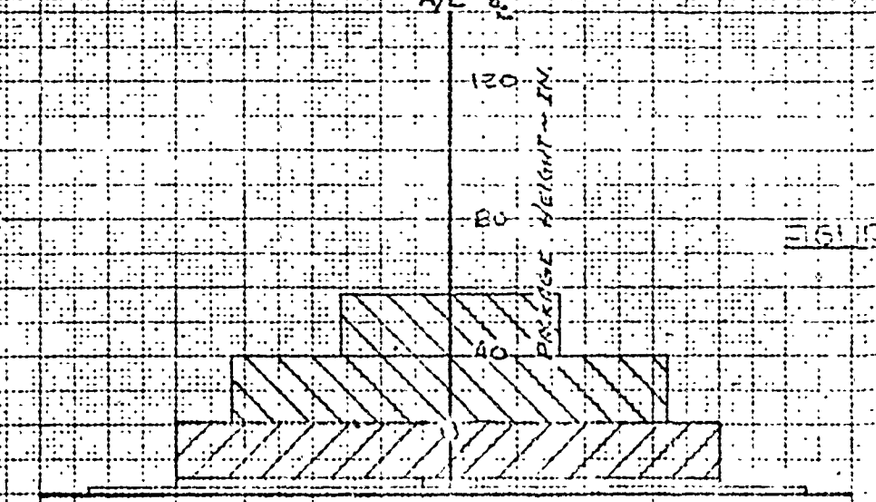


FIGURE B-41A

6008
257

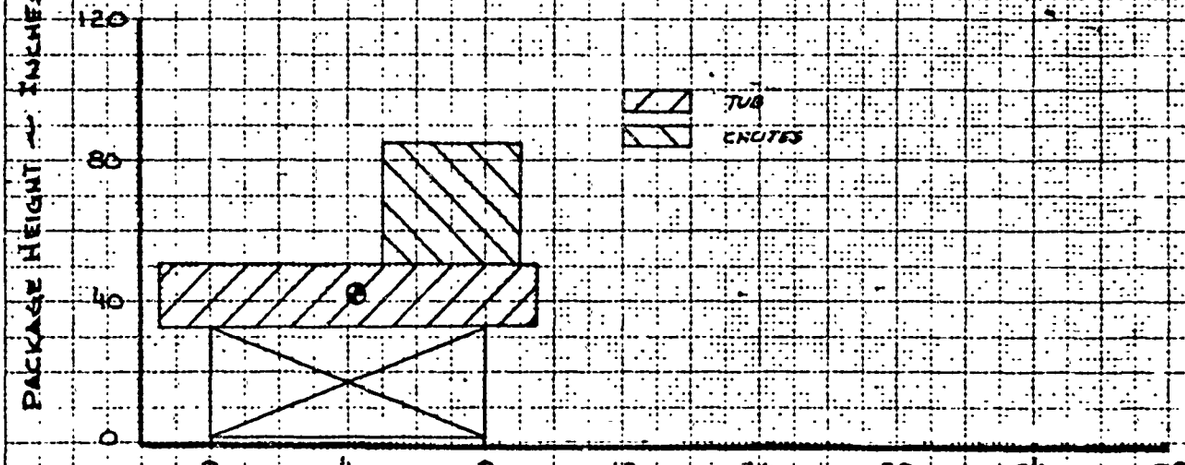
GA FORM 9588 2

6008
258

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-2
PKG. WT. 10,130 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

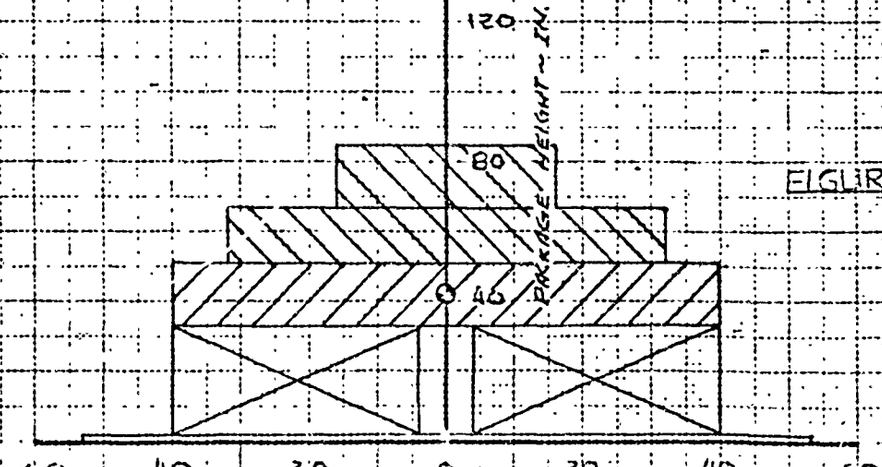


FIGURE P-41B

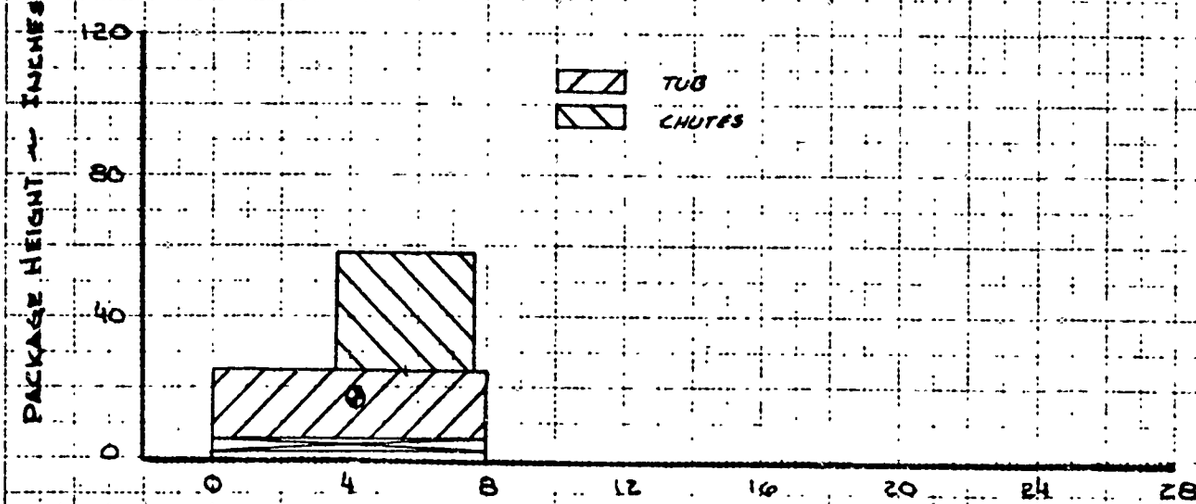
6008
258

6008
259

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-3
PKG. WT. 10,350 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

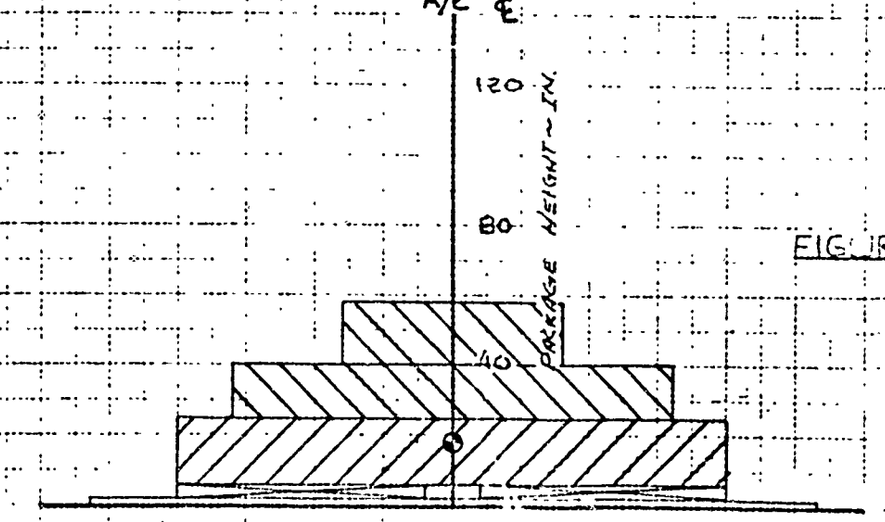


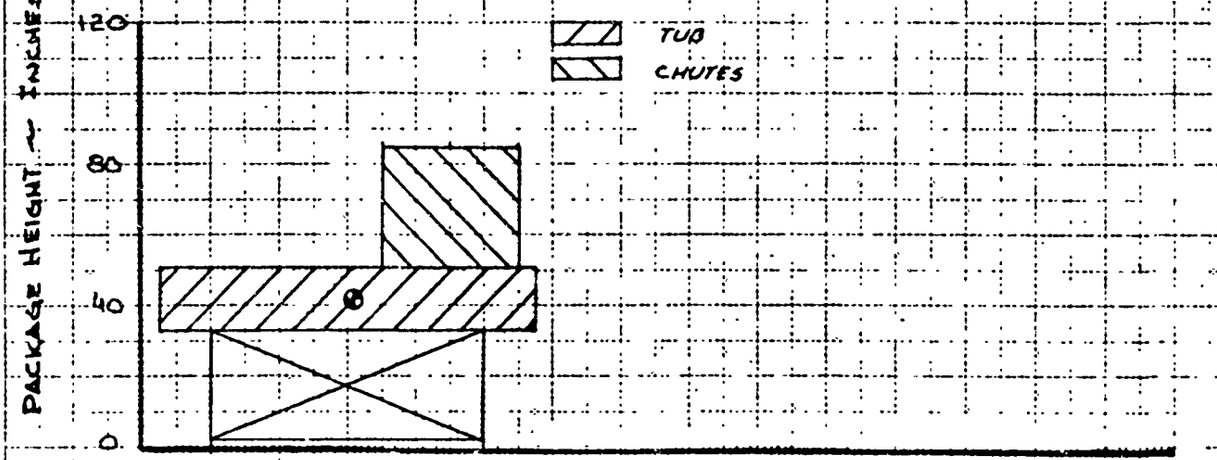
FIGURE B-41C

6008
260

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-4
PKG. WT. 9,950 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

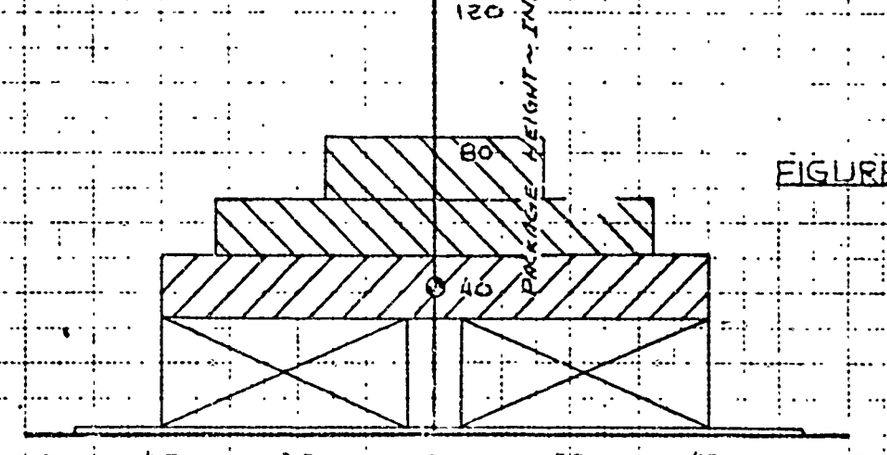


FIGURE B-41D

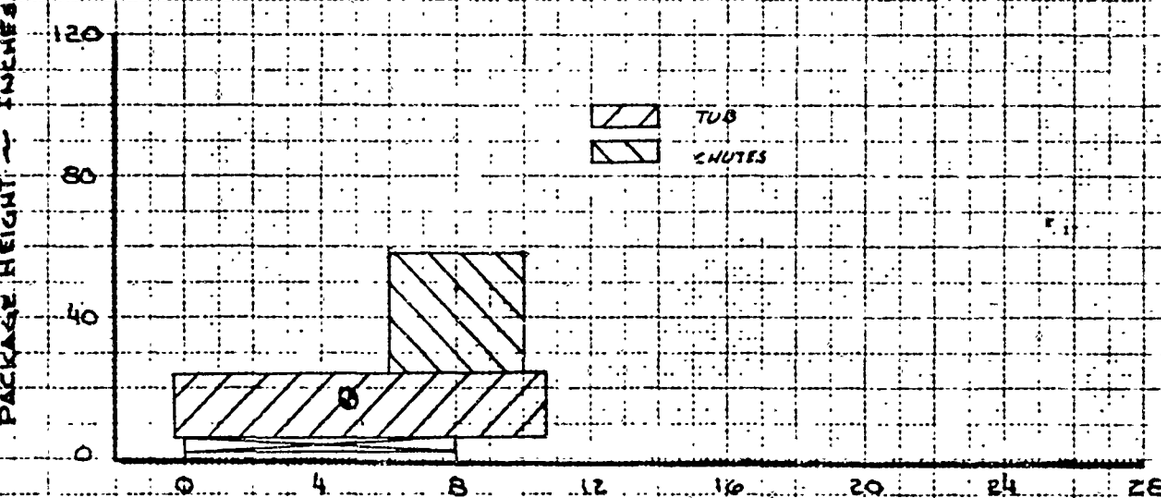
6008
260

6008
261

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-1
PKG. WT. 10,150 LBS.

SIDE VIEW (FWD. ON A/C ←→)



END VIEW (LOOKING FWD.)
A/C ℄

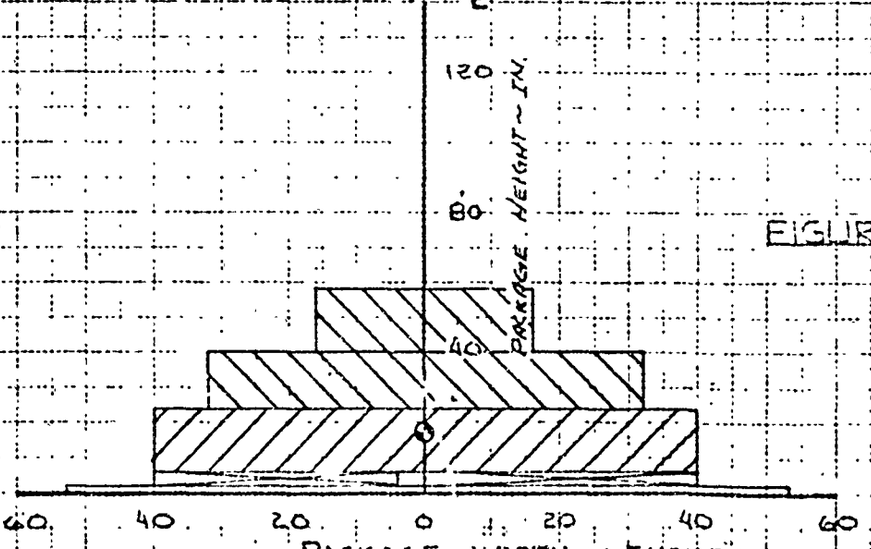


FIGURE R-42A

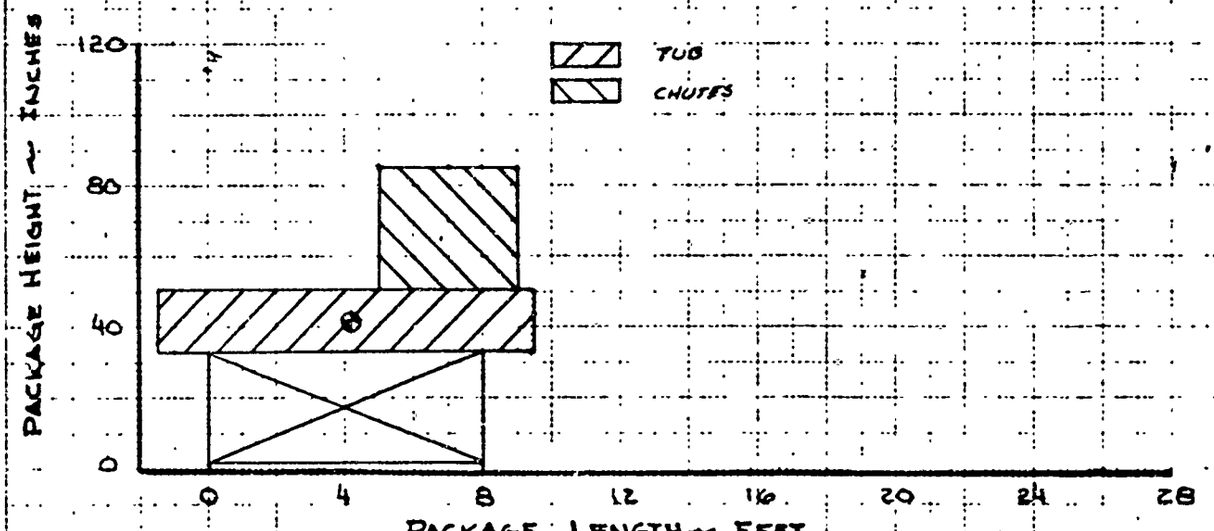
6008
261

6008
262

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-2
PKG. WT. 10,490 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)

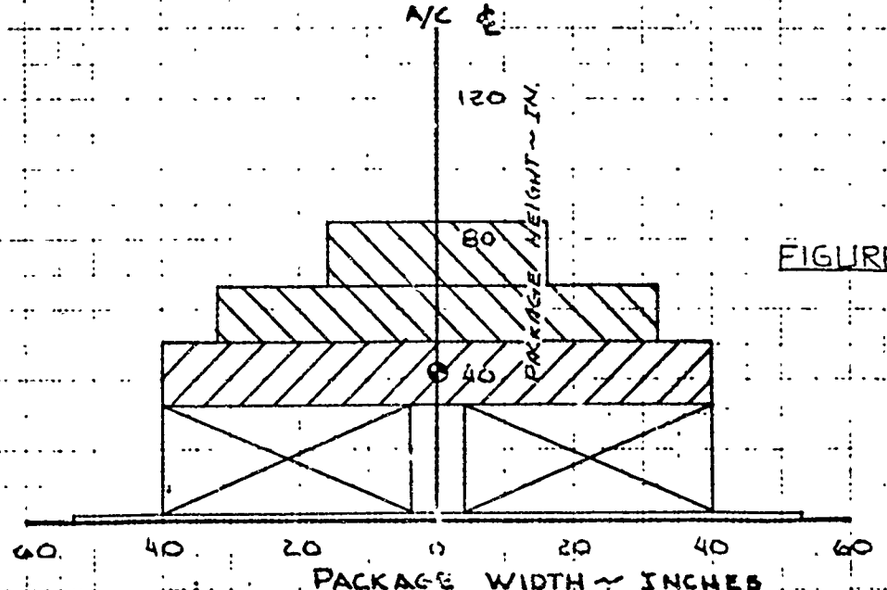


FIGURE B-42B

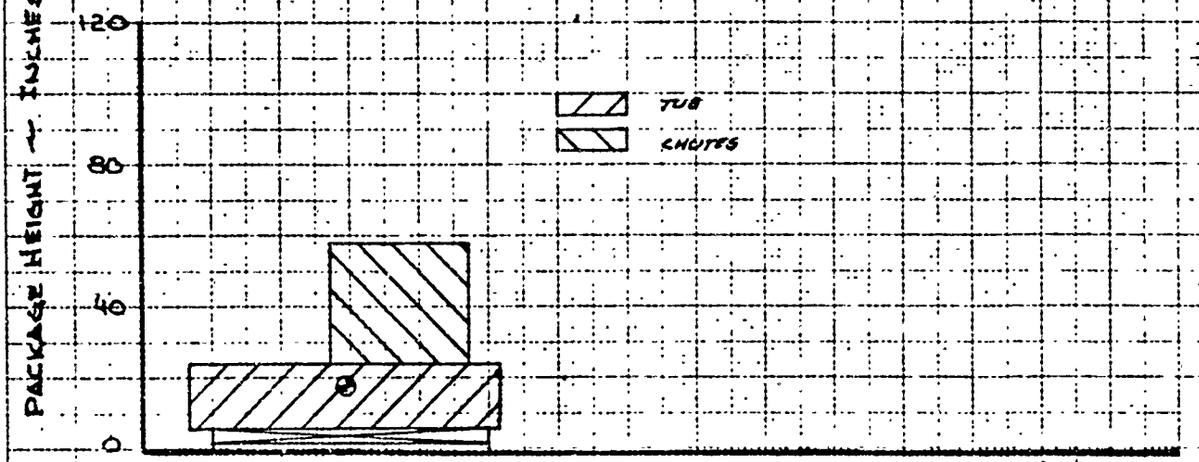
6008
262

6008
263

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-3
PKG. WT. 10,210 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

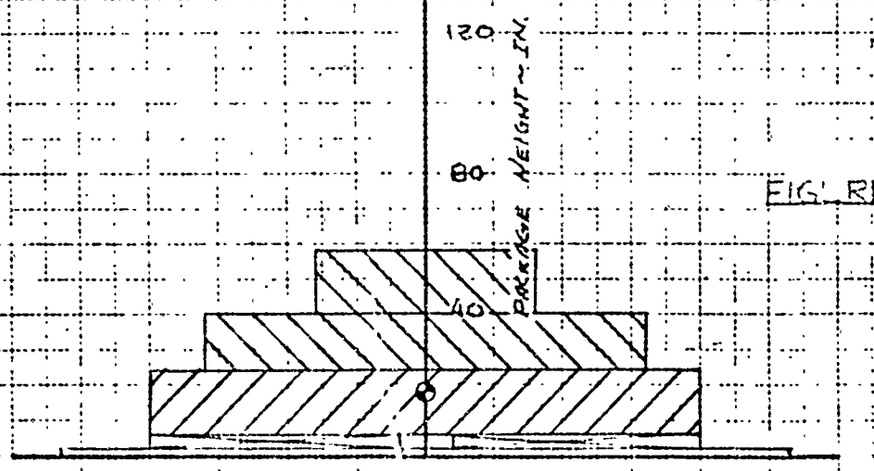


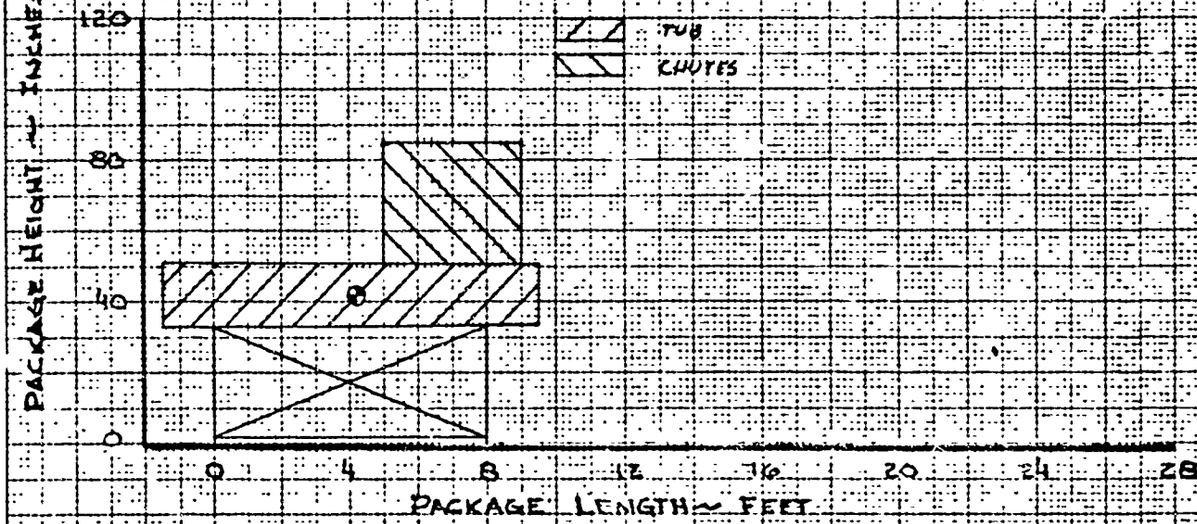
FIGURE B-42C

6008
264

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-4
PKG. WT. 9,920 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

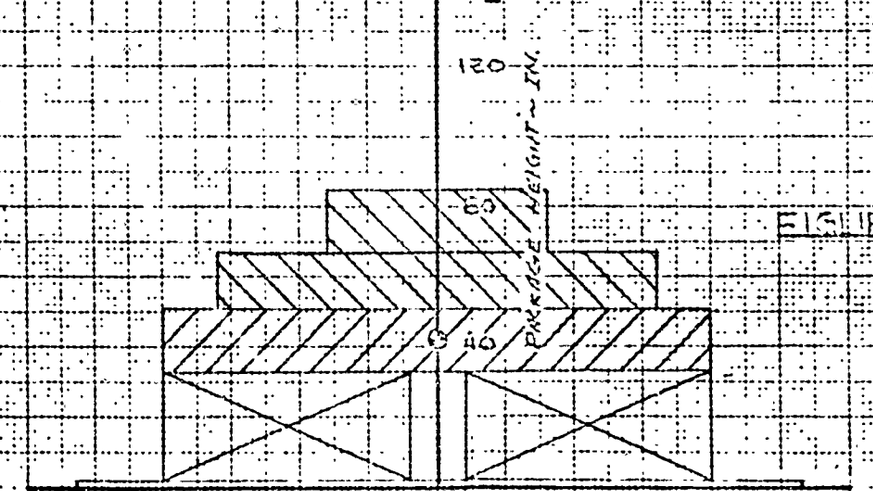


FIGURE B-42D

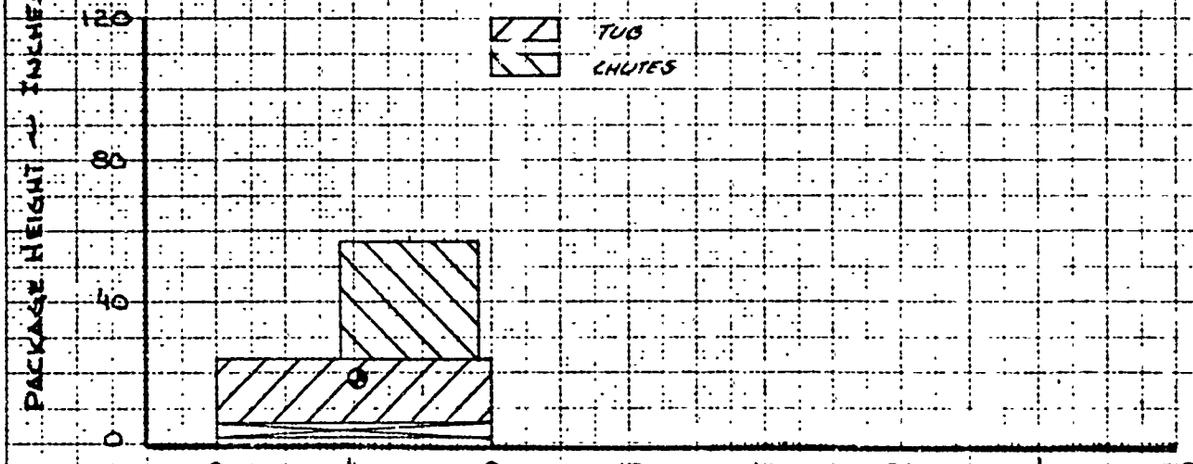
6008
264

6008
265

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-5
PKG. WT. 9,710 LBS.

SIDE VIEW (FWD. ON A/C ←→)



END VIEW (LOOKING FWD)
A/C ℄

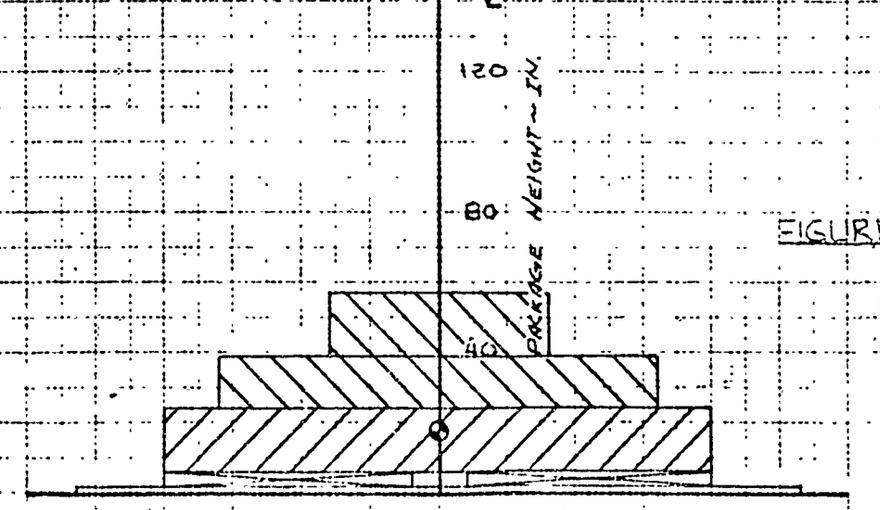


FIGURE B-42E

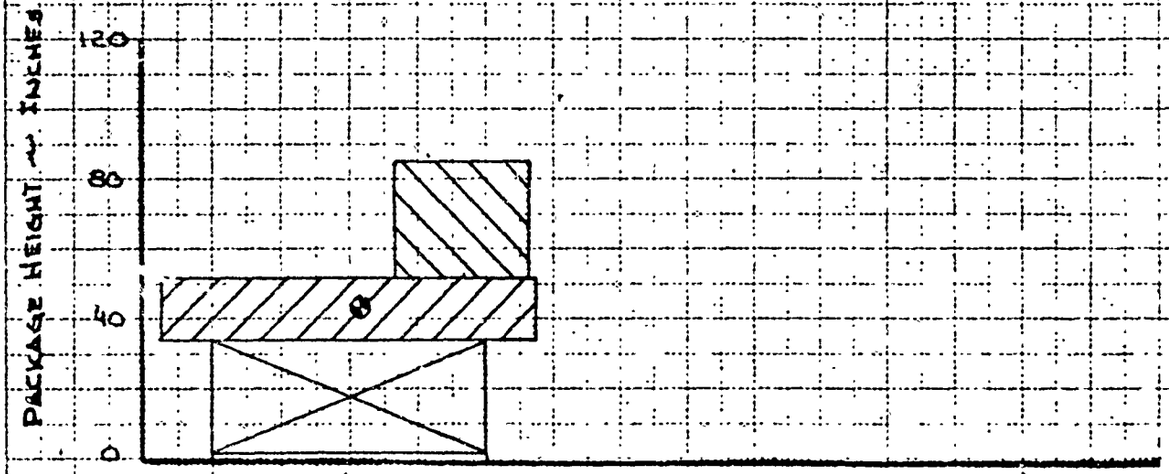
6008
265

6008
266

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-6
PKG. WT. 10,110 LBS

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD)
A/C ℄

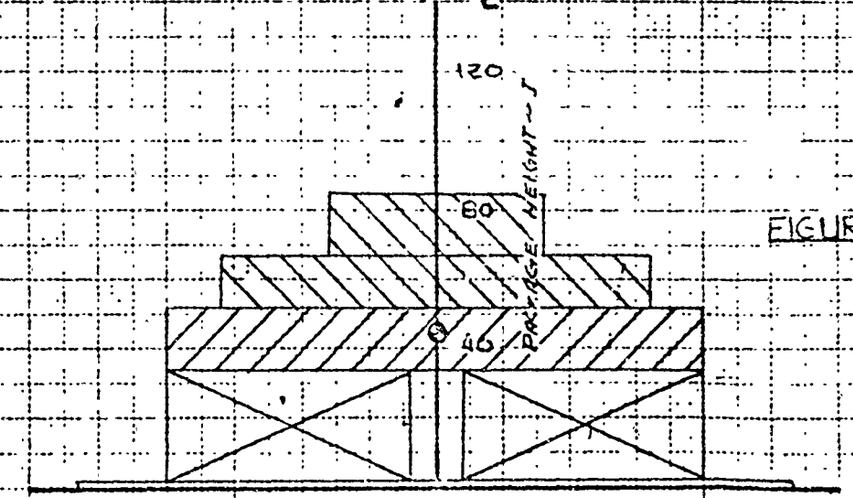


FIGURE B-42F

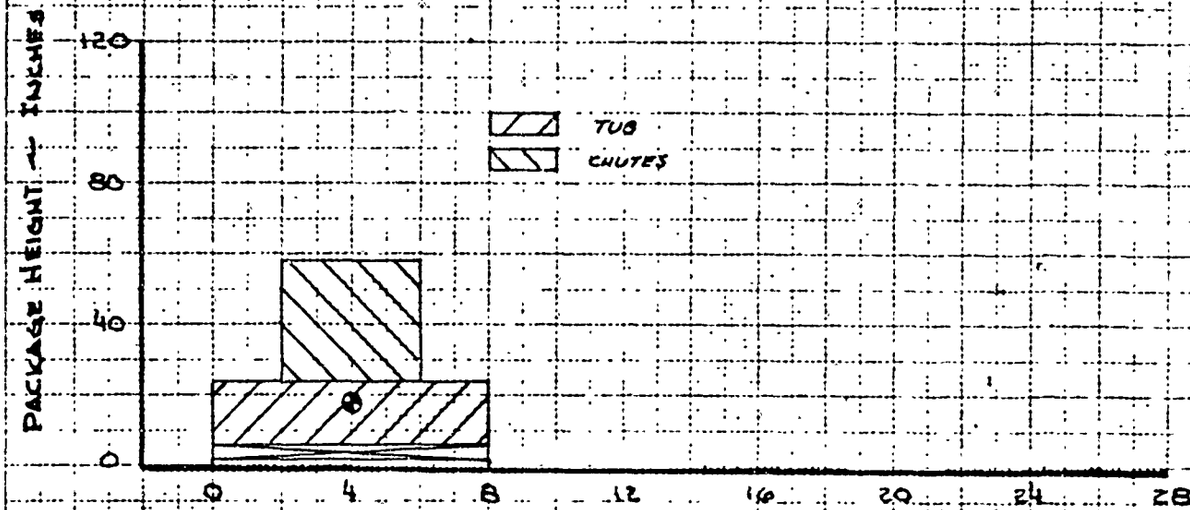
GA FORM 5788 B

6008
267

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-7
PKG. WT. 9,530 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)
A/C ℄

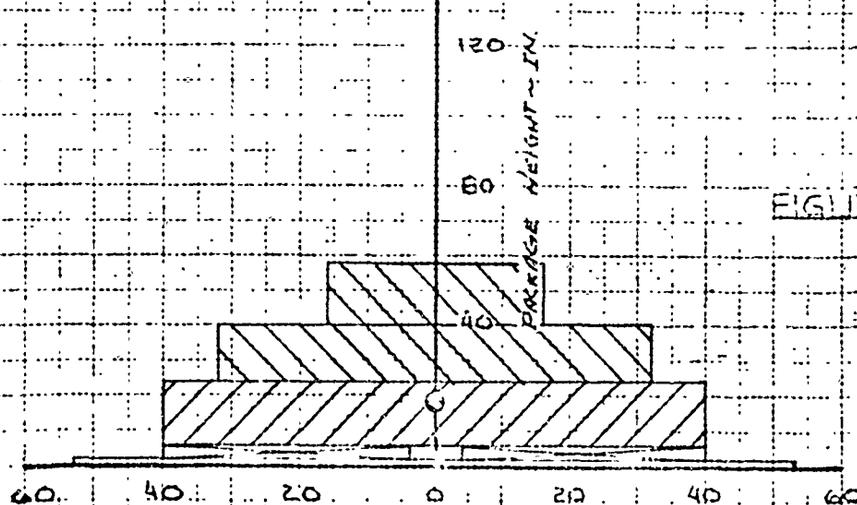


FIGURE B-42G

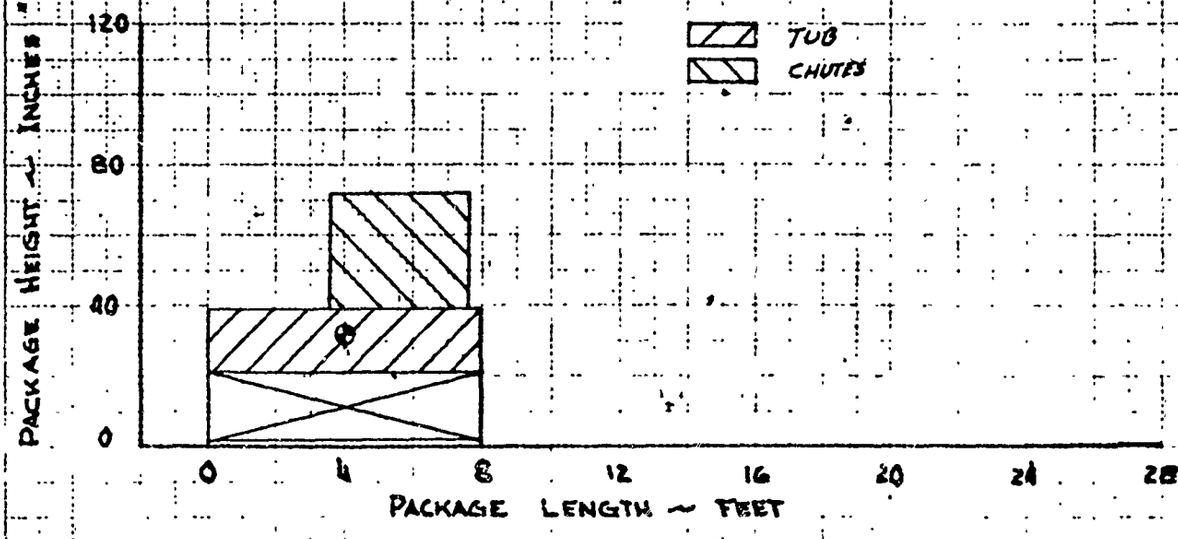
A FORM 5048 2

6008
268

AERIAL DELIVERY PACKAGE DATA

FLIGHT 178
DROP 43-1 (FIRST OUT)
PKG. WT. 10,465 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

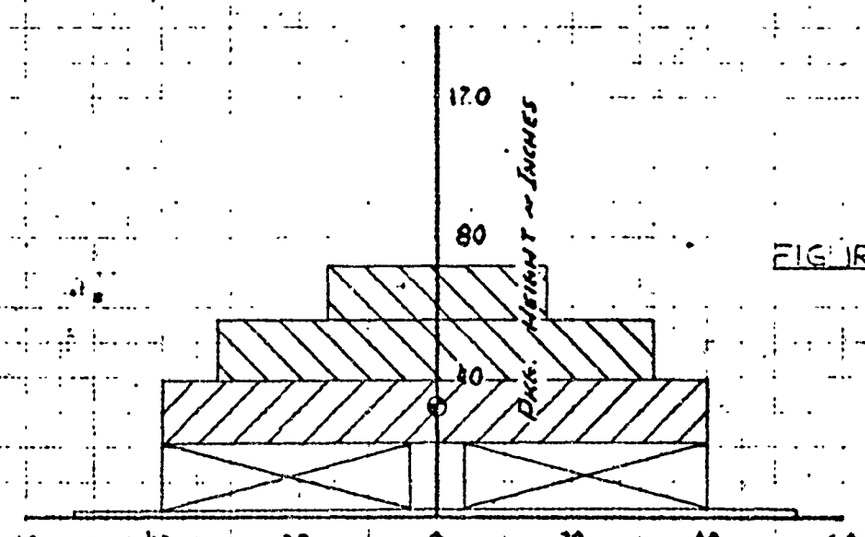


FIGURE B-43A

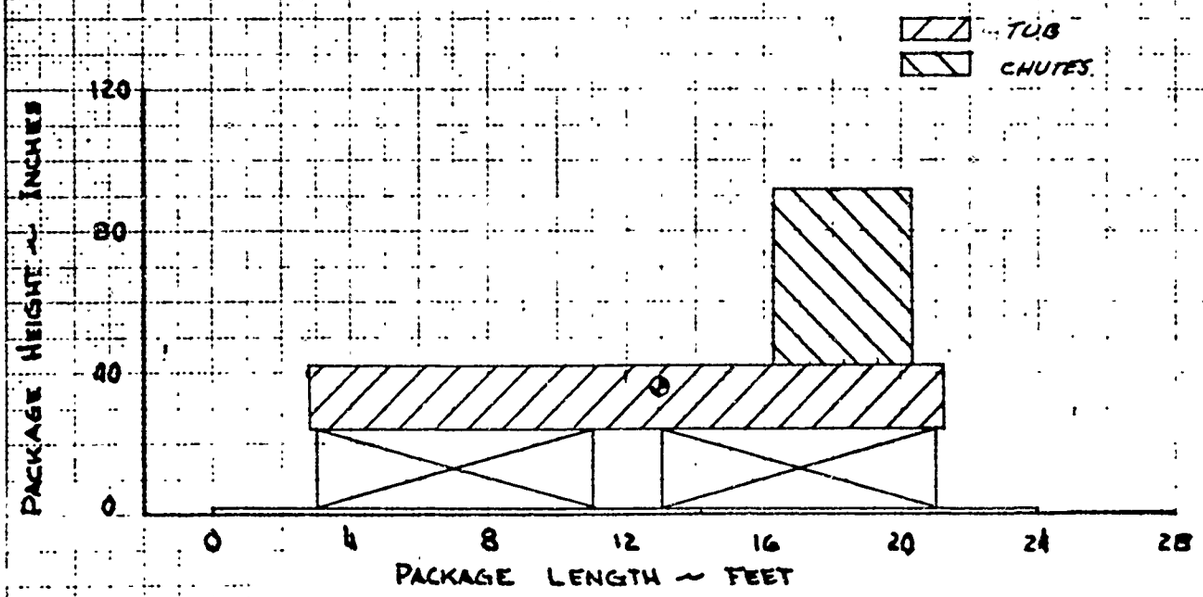
GA FORM 5568 2

6008
269

AERIAL DELIVERY PACKAGE DATA

FLIGHT 178
DROP 43-2 (Second out.)
PKG. WT. 35,025 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

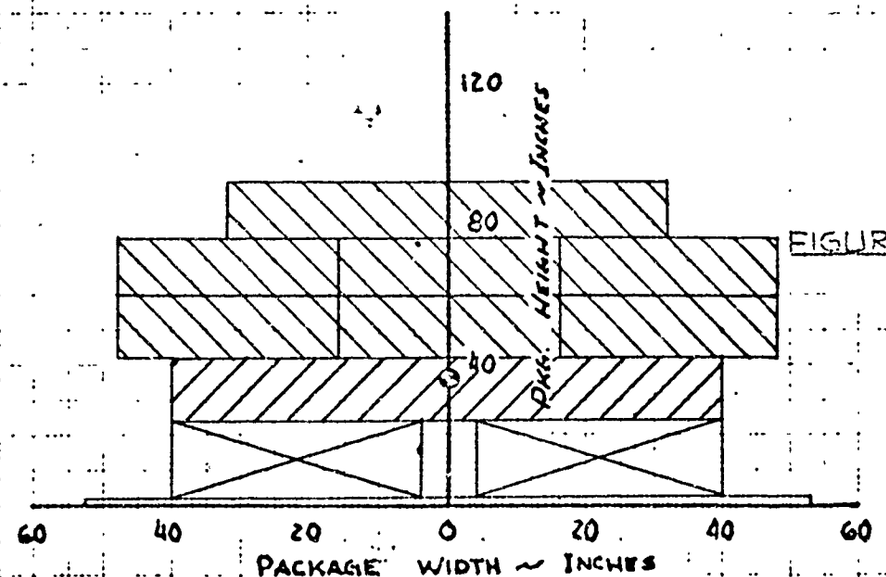


FIGURE B-43B

6008
269

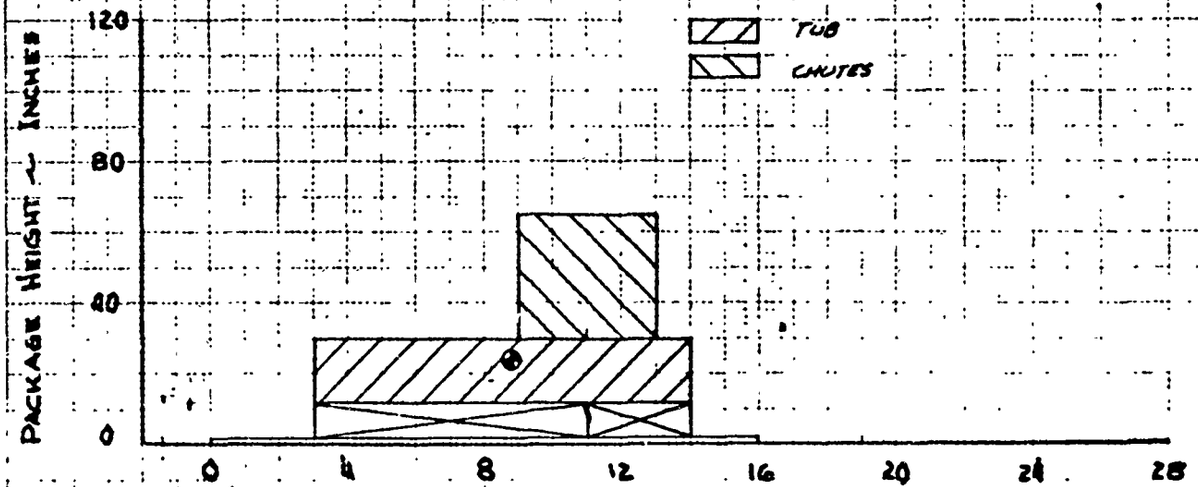
GA FORM 5988 B

6008
270

AERIAL DELIVERY PACKAGE DATA

FLIGHT 178
DROP 43-3 (THIRD out)
PKG. WT. 20,565 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

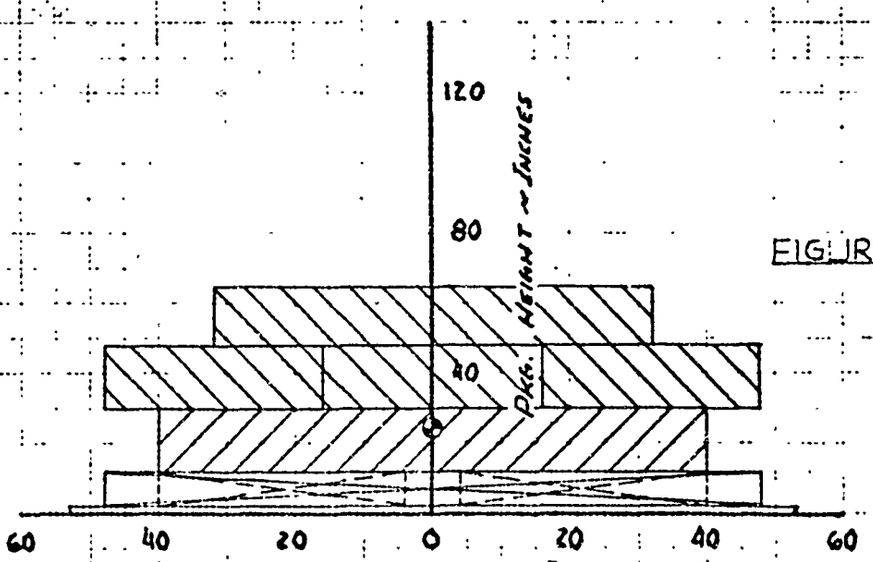


FIGURE B-43C

6008
270

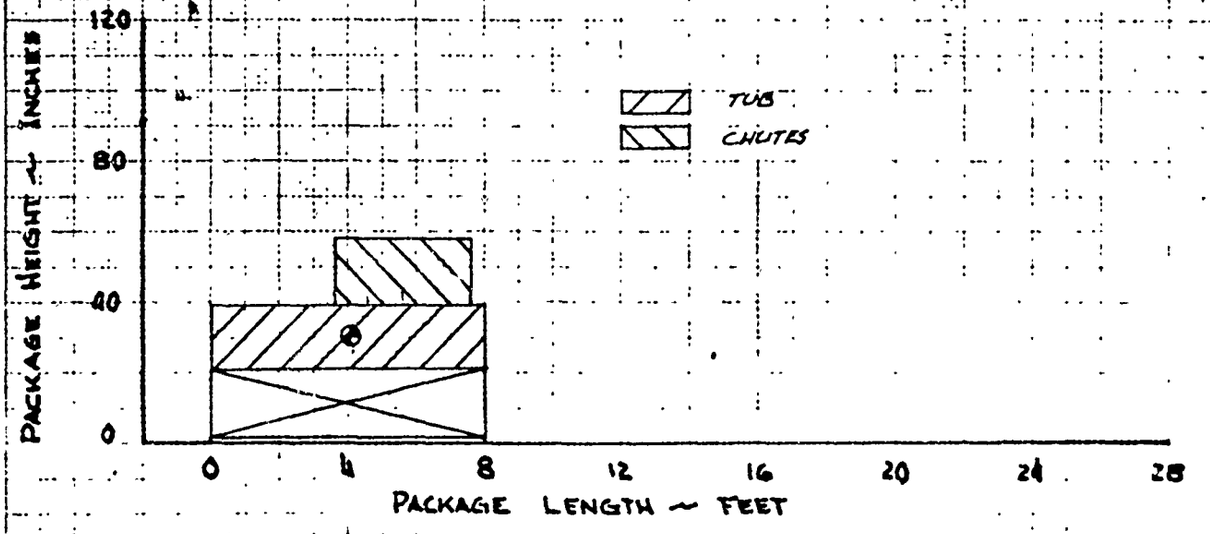
GA FORM 5588 8

6008
271

AERIAL DELIVERY PACKAGE DATA

FLIGHT 178
DROP 43-4 (LAST OFF)
PKG. WT. 5055 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

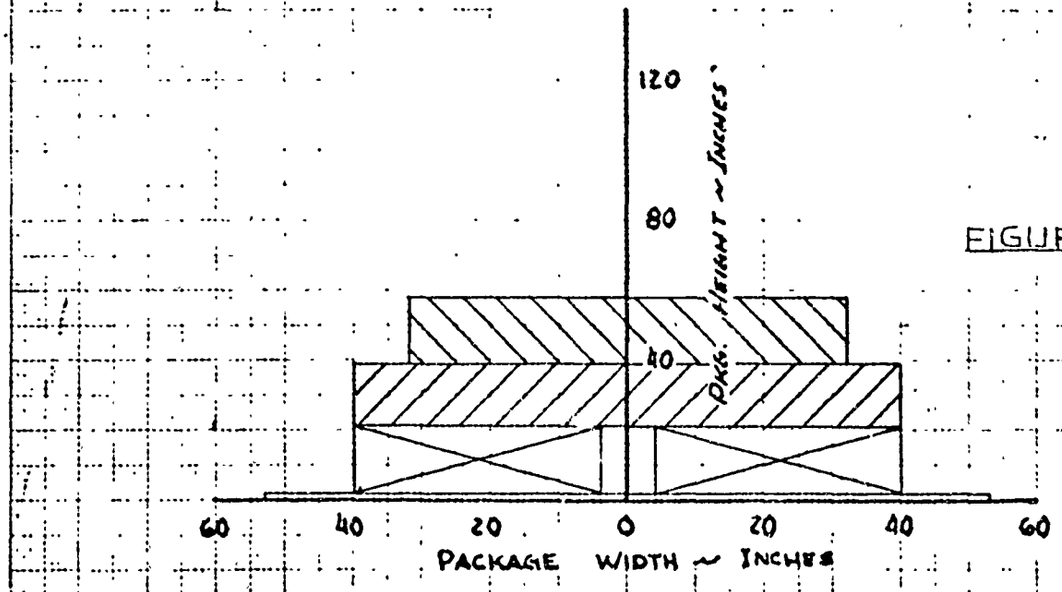


FIGURE B-43D

6008
271

GA FORM 5588 B

APPENDIX C

6008-ADS-2

NOTE:
1. GW ~ 190,000 LBS. (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 26 DEG.
4. $\dot{\gamma}_H$ ~ 0.2 DEG./SEC (A/C N.U.)
5. FAT ~ 6.0 °C

EXTRACTION FORCE
1 ~ 15' CHUTE ~ 80' EXT. LINE

AVERAGE EPR (4 ENGINES)

Se

T.E. UP

NOSE UP

EXTRACTION FORCE ~ POUNDS

ENGINE PRESSURE RATIO

ELEVATOR POSITION DEGREES

45 40 35 30 25 20 15 10 5 0

1.50 1.40 1.30 1.20 1.10 1.00

20 10 0 0

20 0

Best Available Copy

FCW
3-8-65
dap

ER 5473
C-141A
C-2

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6003

FLIGHT 73 DATE 3-4-65

RUN 3

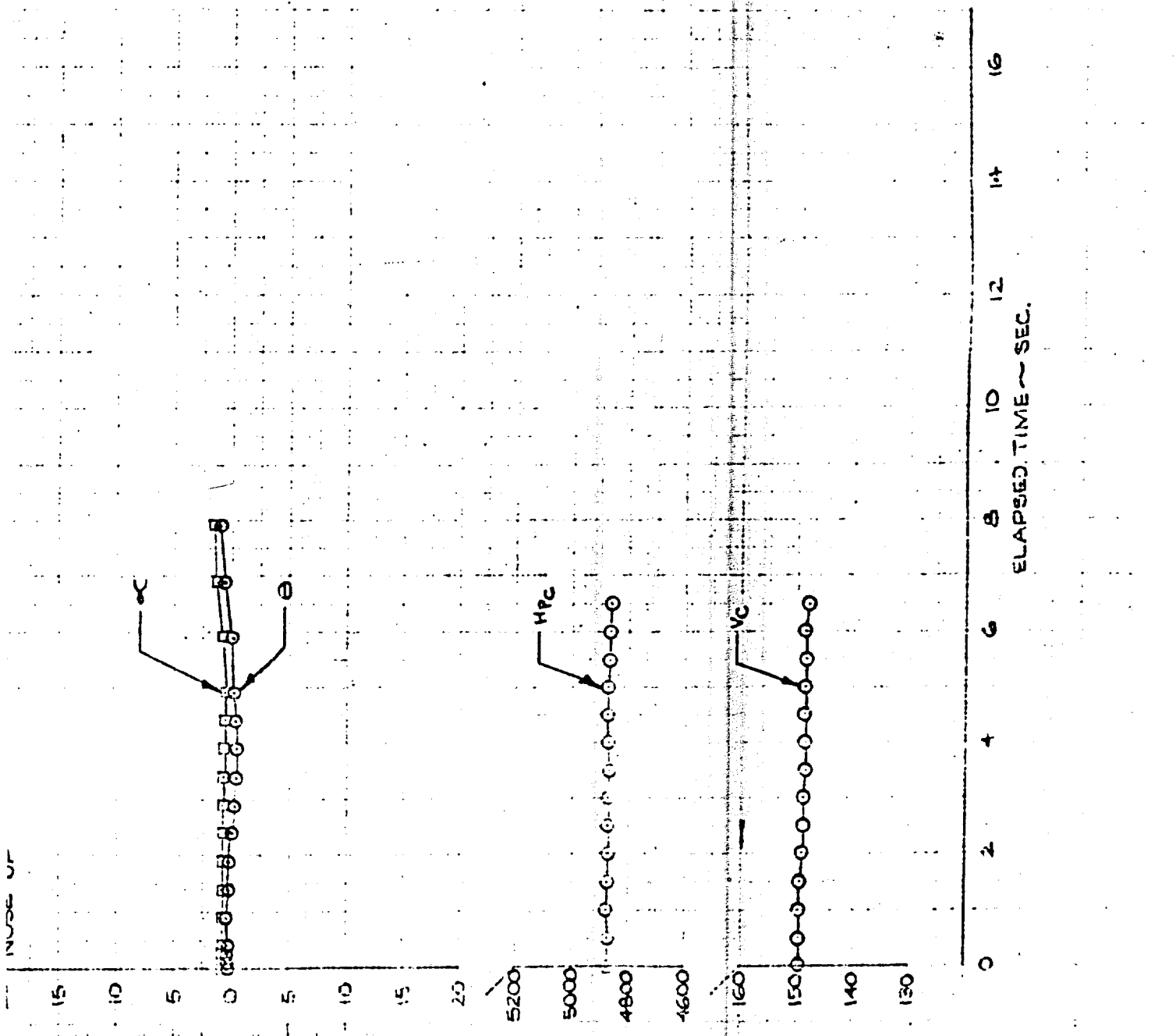


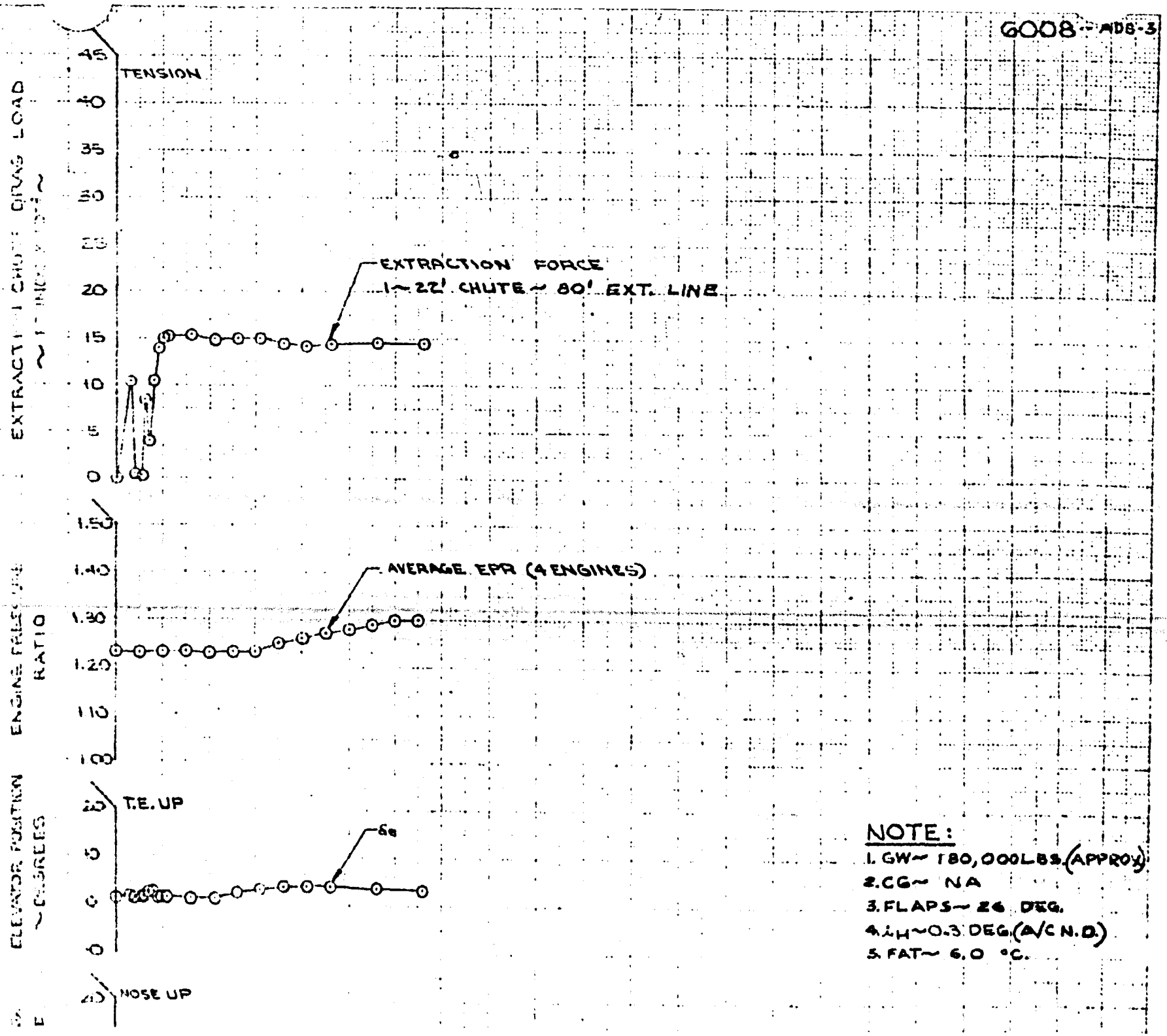
FIGURE C-1A

6009 - AC3-2

REVISED 3-31-65
RSA

Best Available Copy

Best Available Copy



NOTE:

1. GW ~ 180,000 LBS. (APPROX)
2. CG ~ NA
3. FLAPS ~ 26 DEG.
4. i_H ~ 0.3 DEG. (A/C N.D.)
5. FAT ~ 6.0 °C.

TED | RSA
3-8-65

ER 5473
C-141A
C-3

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 73 DATE 3-4-65

RUN S

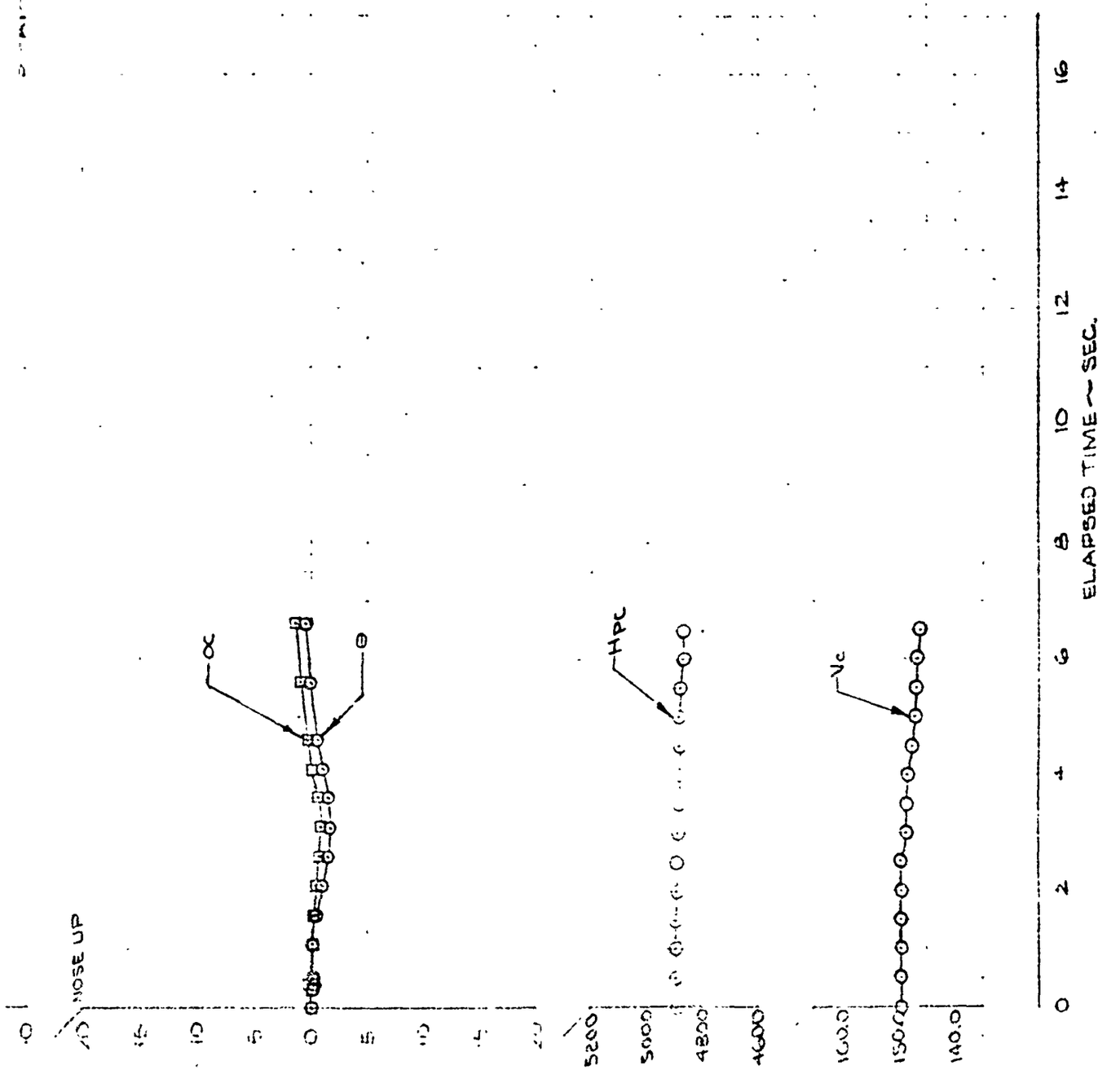


FIGURE C-3B

SCALE - ADS-3

REVISED 3-11-65

RSA

GOOD-Abs-4
EXTRACTION FORCE
1-28' CHUTE-60' EXT. LINE
AVG. EPR. (4 ENGINES)
T.E. UP
NOTE:
1. GW~ 175,000 LBS. (APPROX.)
2. CG~ NA
3. FLAPS~ 26 DEG.

JWP
3-8-65

ER 5473
C-141A
C-4

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 73 DATE 3-4-65

RUN NO. 6

2. CG ~ NA
3. FLAPS ~ 26 DEG.
4. ΔH ~ 0.3 DEG. (A/C N.D.)
5. FAT ~ 6.0 °C.

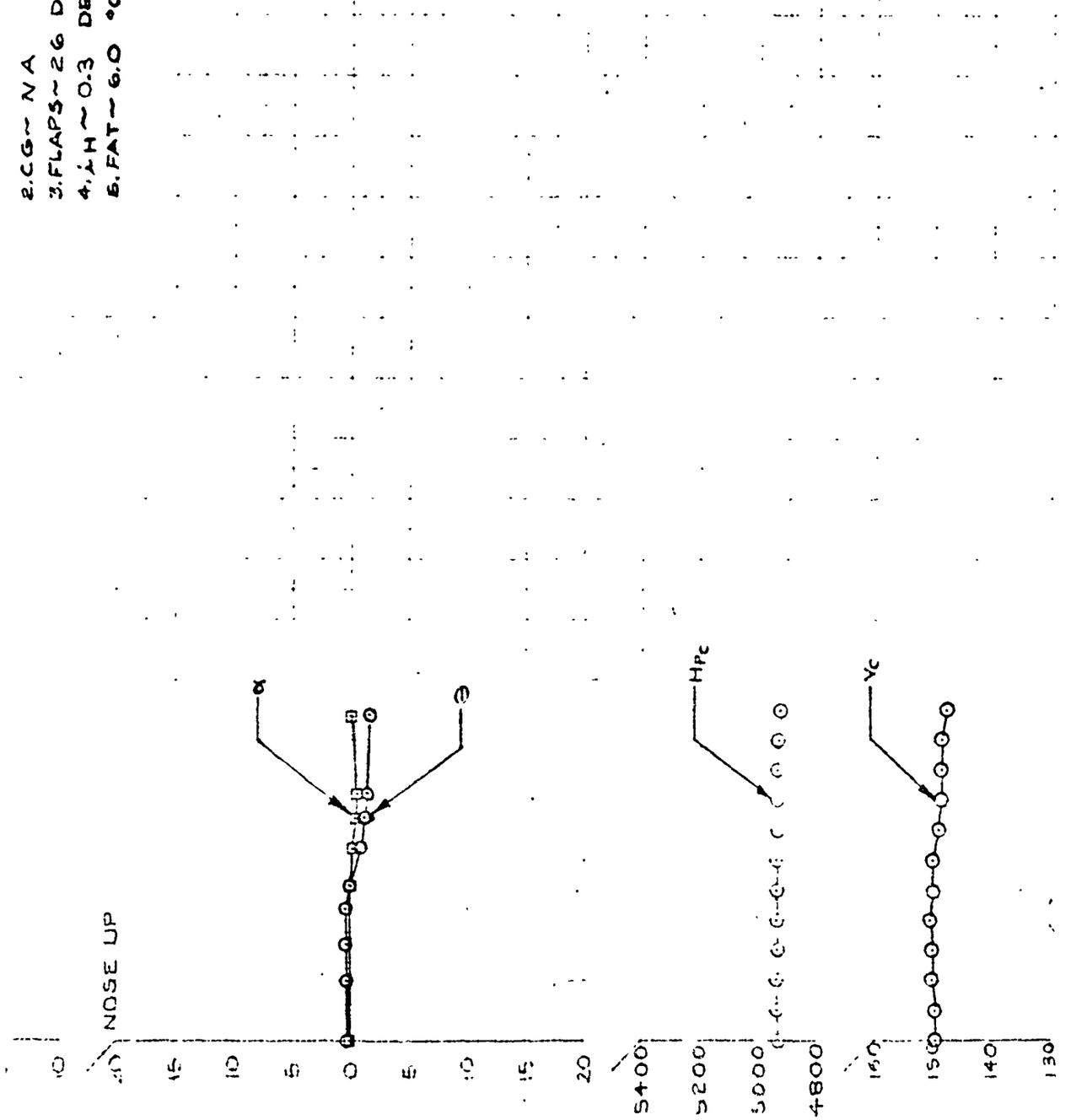


FIGURE C-1C

REVISED 1-15-65
MRH

ADS-4
REVISED 3-31-65
RSA

6008-ADS-8
NOTE:
1. GW ~ 190,000 LBS (APPROX)
2. C.G. ~ N.A
3. FLAPS ~ 26.5°
4. ΔH ~ 03 DEG (A/C N.D)
5. FAT ~ 8°C
EXTRACTION FORCE
1 ~ 22' CHUTE, ~ 80' EXT. LINE
AVERAGE EPR (4 ENGINES)
Se
T.E. UP
TENSION
45
40
35
30
25
20
15
10
5
0
1.50
1.40
1.30
1.20
1.10
1.00
40
20
0
20
EXTRACTION CHUTE DRAG LOAD
~ 10 PIPE x 12.7 ~
ENGINE PRESS RATIO
ELEVATOR POSITION
DEGREES
JOB NO. AS-6008.CON. 4.1.1

TED
3-8-65

ER 5473
C-141A
C-5

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 74 DATE 3-5-65

RUN 3

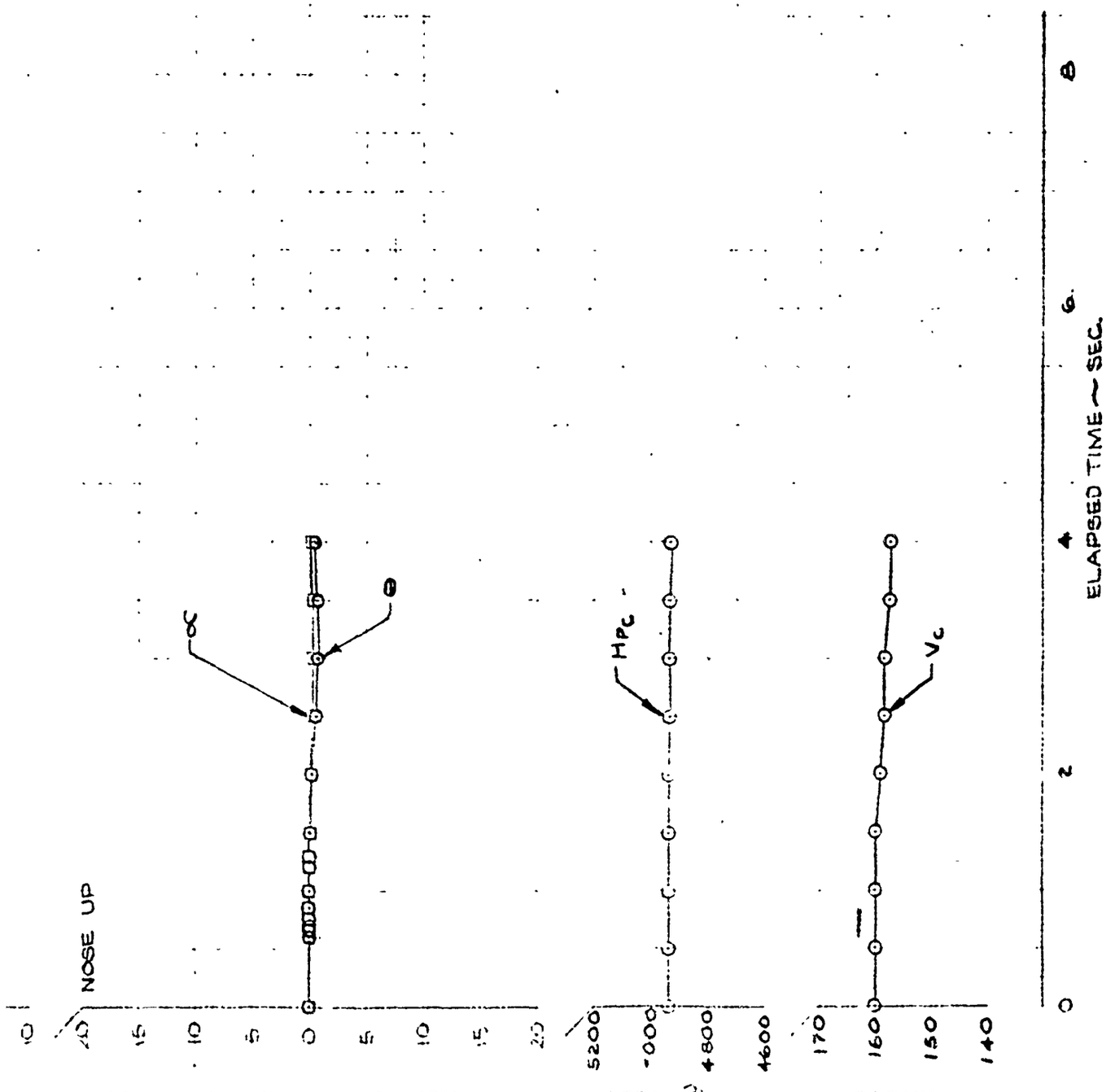


FIGURE C-2-A

REVISED 12 15 MIN

6 DOC 3 - ADS
REV. 3-8-65 KLN

6008-ADS-7
NOTE:
1. GW ~ 185,000 LBS (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 26.5°
4. ΔH ~ 03 DEG (A/C N.D)
5. FAT ~ 8.0°C
EXTRACTION FORCE
1 ~ 22' CHUTE ~ 80' EXT. LINE
AVERAGE EPR (4 ENGINES)
δe
T.E. UP
TENSION
45
40
35
30
25
20
15
10
5
0
1.50
1.40
1.30
1.20
1.10
1.00
20
0
EXTRACTION CHUTE DRAG LOAD
ENGINE PRESSURE RATIO
ELEVATOR POSITION DEGREES
JOB NO. AS-6 SUB. CODE 4.2.1

TCH & RSA
3/9/65

ER 5473
C-141A
C-6

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6009

FLIGHT 74 DATE 3-8-65

RUN 4

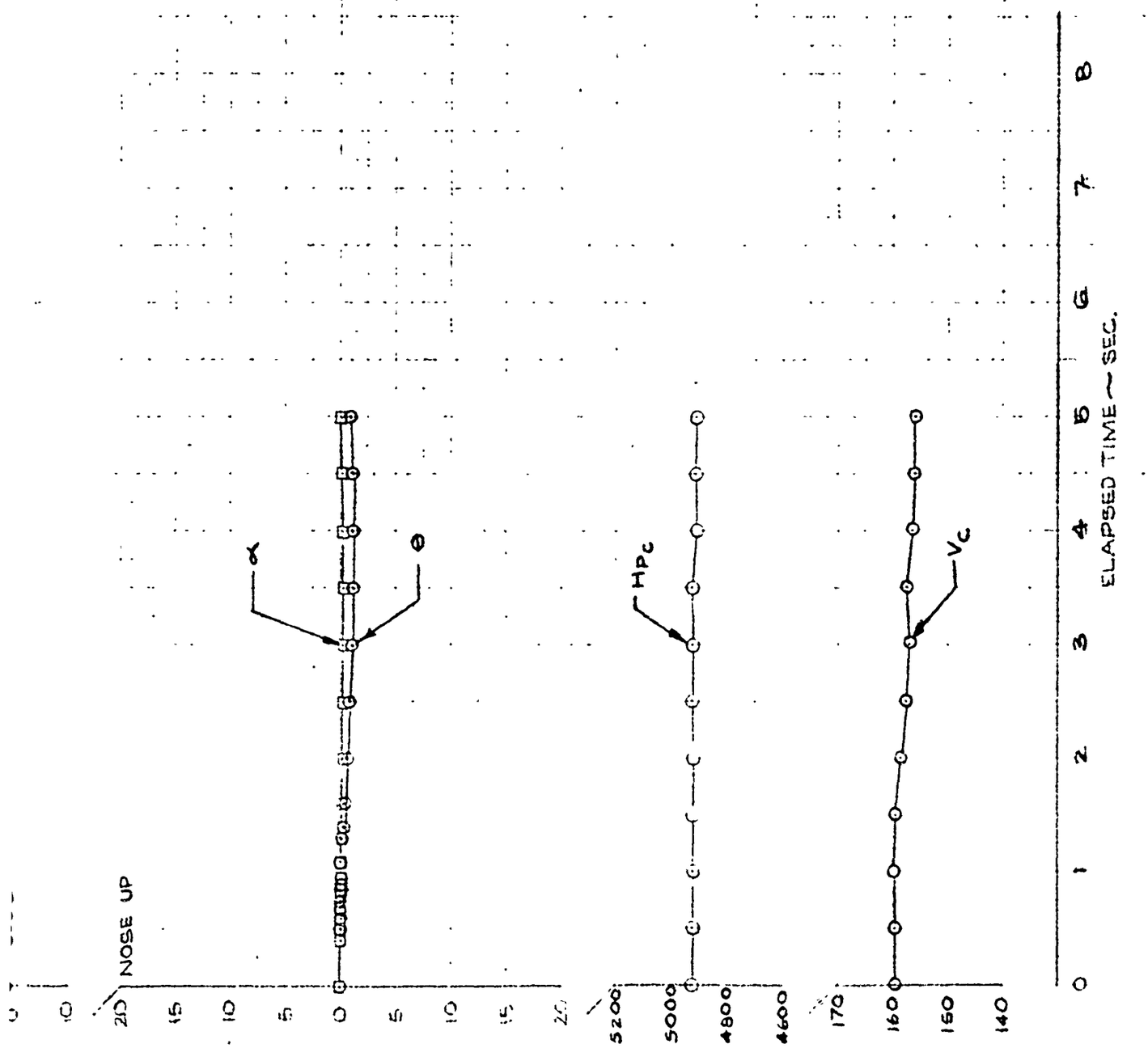


FIGURE C-28

REVISED 12-6-65
MBH

REV 3-31 65
RSA

6008-MS-8
NOTE:
1. G.W. ~ 17,000 Lbs APPROX.
2. C.G. ~ N.A.
3. FLAPS ~ 26.5 DEG.
4. M ~ 0.23 DEG(A/C IND)
5. FAT ~ 9.0°C
EXTRACTION FORCE
1-22' CHUTE - 80' EXT. LINE
AVERAGE EPR (4 ENGINES)
δ
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
ENGINE PRESS. RATIO
1.50
1.40
1.30
1.20
1.10
1.00
ELEVATOR POSITION
DEGREES
T.E. UP
20
10
0
JOB NO. ASS-6 SUB. CODE 4.2.1

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AFGS-8077 LAC 6008

FLIGHT 74 DATE 3-5-65

RUNS

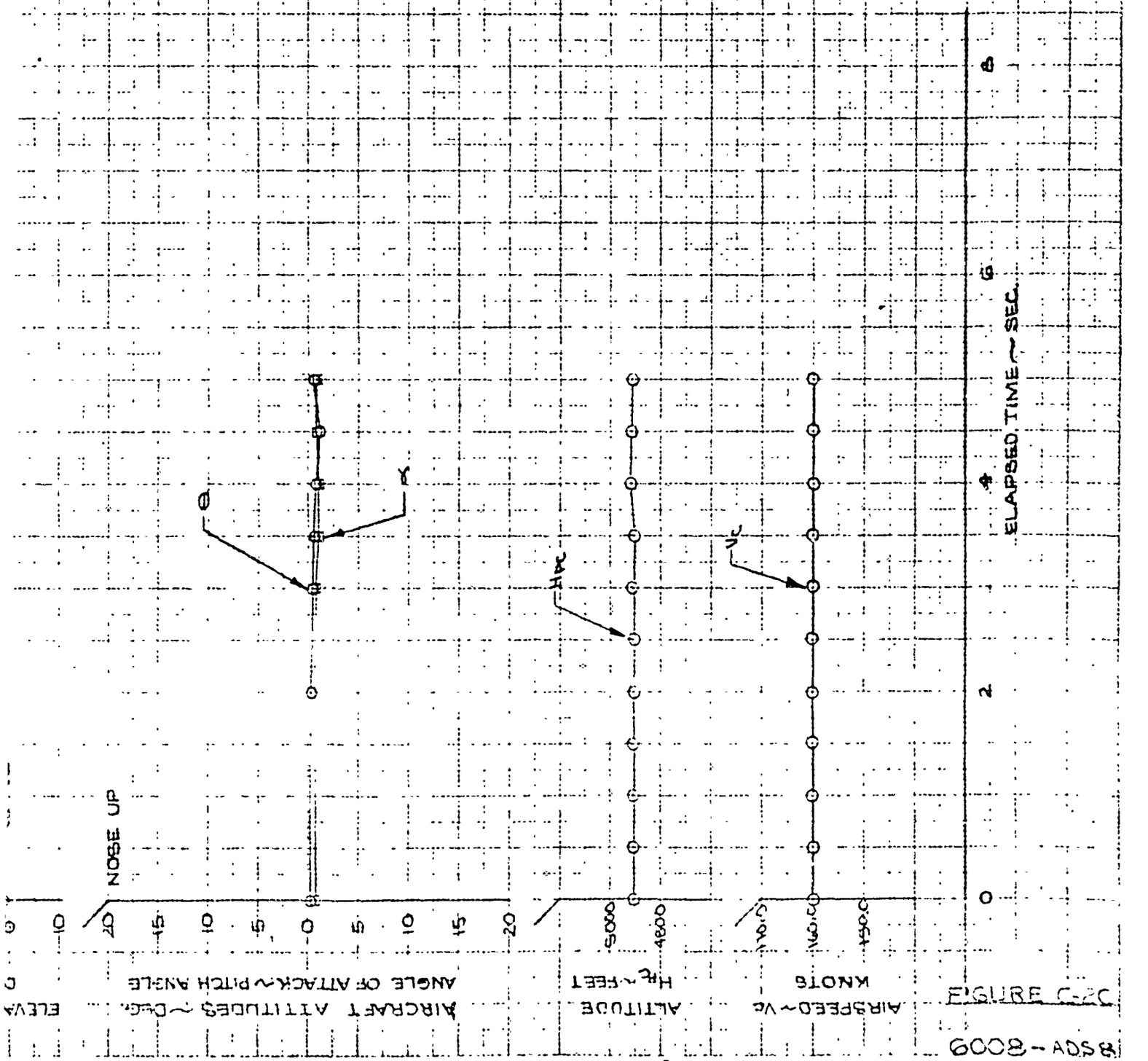


FIGURE C-2C

6008-ADS-10
EXTRACTION FORCE
1~28' CHUTE, ~80' EXT. LINE
NOTE:
1. GW ~ 185000 LBS (APPROX)
2. CG ~ .N.A.
3. FLAPS ~ 26.5 DEG
4. H ~ 0.3 DEG (INC. ND.)
5. FAT ~ 10.0 °C
AVERAGE EPR (4 ENGINES)
δe
T.E. UP
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION CHUTE DRAG LOAD
~ POUNDS x 10⁻³ ~
1.50
1.40
1.30
1.20
1.10
1.00
ENGINE PRESSURE
RATIO
20
0
DEGREES
ELEVATOR POSITION
JOB NO. ADS-7 SUB. CODE 4.2.1

PREPARED BY RSA
DATE 3/9/65
CHECKED BY

REPORT NO ER 5473
MODEL C-141A
PAGE C-8

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 75 DATE 3/5/65

RUN 2

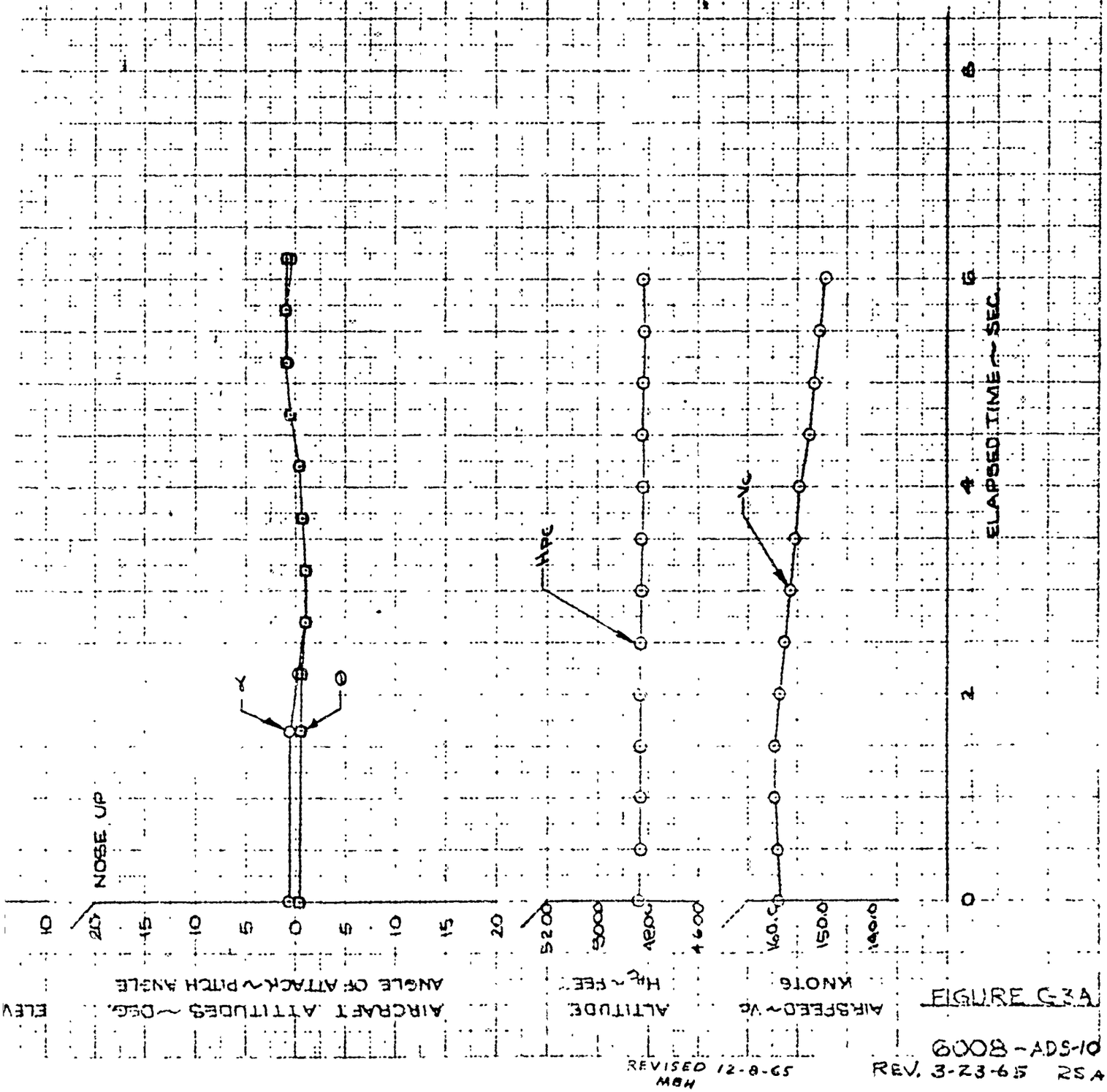


FIGURE C-3A

6008-ADS-10
REV. 3-23-65 2SA

REVISED 12-8-65
MBH

GOOD PAGE
NOTE:
1. GW ~ 193,000 LBS (APPROX)
2. CG ~ .NA
3. FLAPS ~ 26 DEG
4. i_H ~ 0.3° (A/C N.D.)
5. SAT ~ 10° C.
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10^{-3} ~
TENSION
EXTRACTION FORCE
1-28' CHUTE ~ 80' EXT. LINE
45
40
35
30
25
20
15
10
5
0
ENGINE PRESSURE RATIO
AVERAGE EPR (4 ENGINES)
1.50
1.40
1.30
1.20
1.10
1.00
ELEVATOR POSITION
DEGREES
T.E. UP
20
10
0
0
δ_e
JOB NO. A2S-7 SUB. CODE 4.2.1

PREPARED BY T.E.D.
DATE 3-9-66
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE C-9

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC C-008
FLIGHT 75 DATE 3-5-65

RUN 3



FIGURE C-3B

6008-ADS-11

REVISED 12-8-65 MBH
REV. 3-23-66 RSA

UCB NO. AC3-7608.CODE 4.2.1

PREPARED BY TCH & RSA
DATE 3/9/65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE C-10

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFGS-8077 LAC 6008
FLIGHT 78 DATE 3/5/65

RUN 4

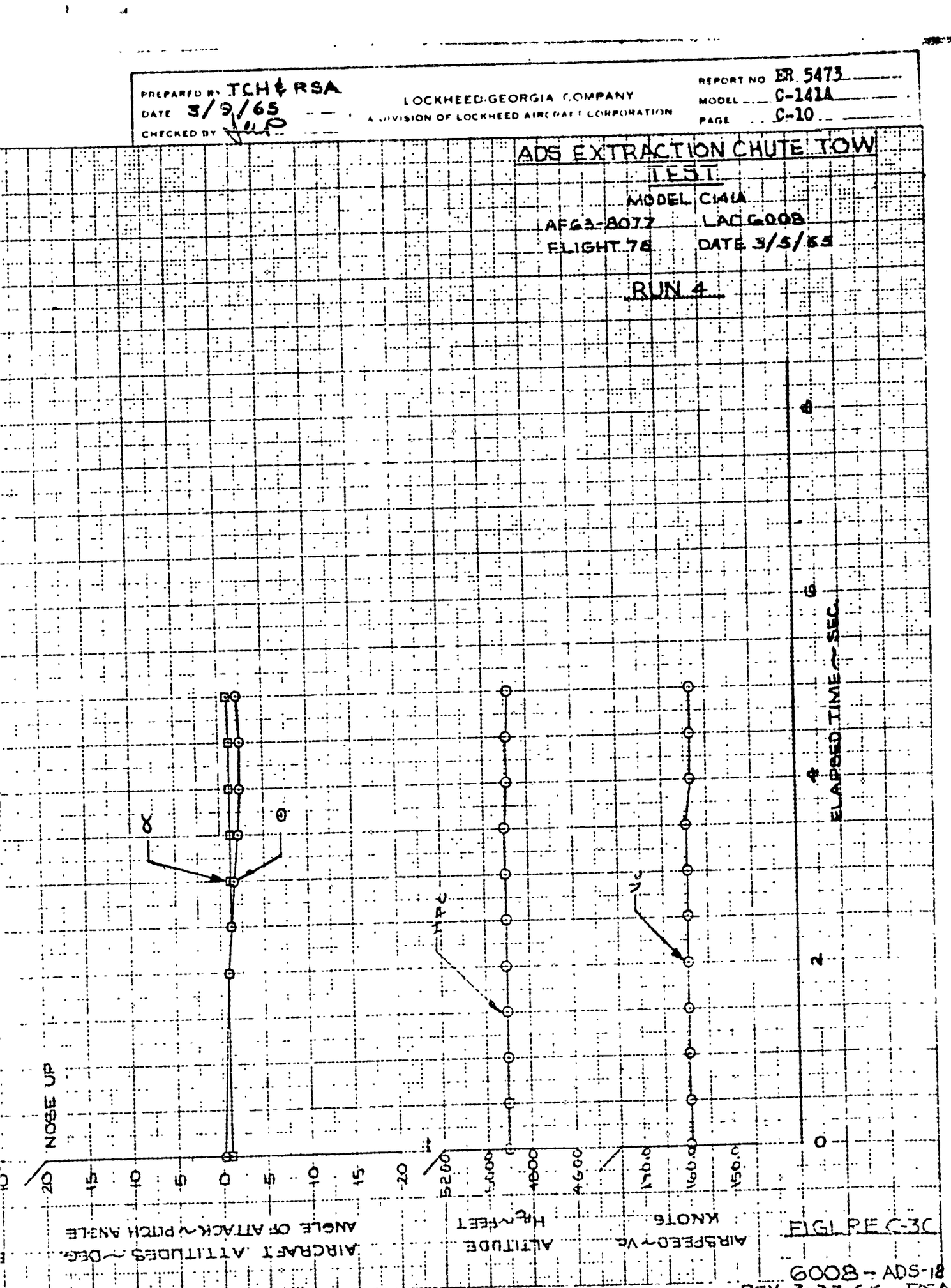


FIGURE C-3C

6008 - ADS-18
REV. 3-23-65 RSA

6008-A05-1
NOTE:
1. GW~190,000 LBS (APPROX)
2. C.G.~ NA
3. FLAPS~ 35°
4. ΔH~2.2°. (A/C NU)
5. FAT~ 7°C
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~
TENSION
EXTRACTION FORCE
1~32' CHUTE ~ 100' EXT. LINE
45
40
35
30
25
20
15
10
5
0
ENGINE PRESSURE RATIO
AVERAGE EPR (4 ENGINES)
1.50
1.40
1.30
1.20
1.10
1.00
ELEVATOR POSITION
DEGREES
T.E. UP
20
10
0
10
δe
JOB NO. ADS-9 SUB. CODE 4.2.1

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AFG3-8077 LAC 6008

FLIGHT 76 DATE 3-8-65

RUN 4

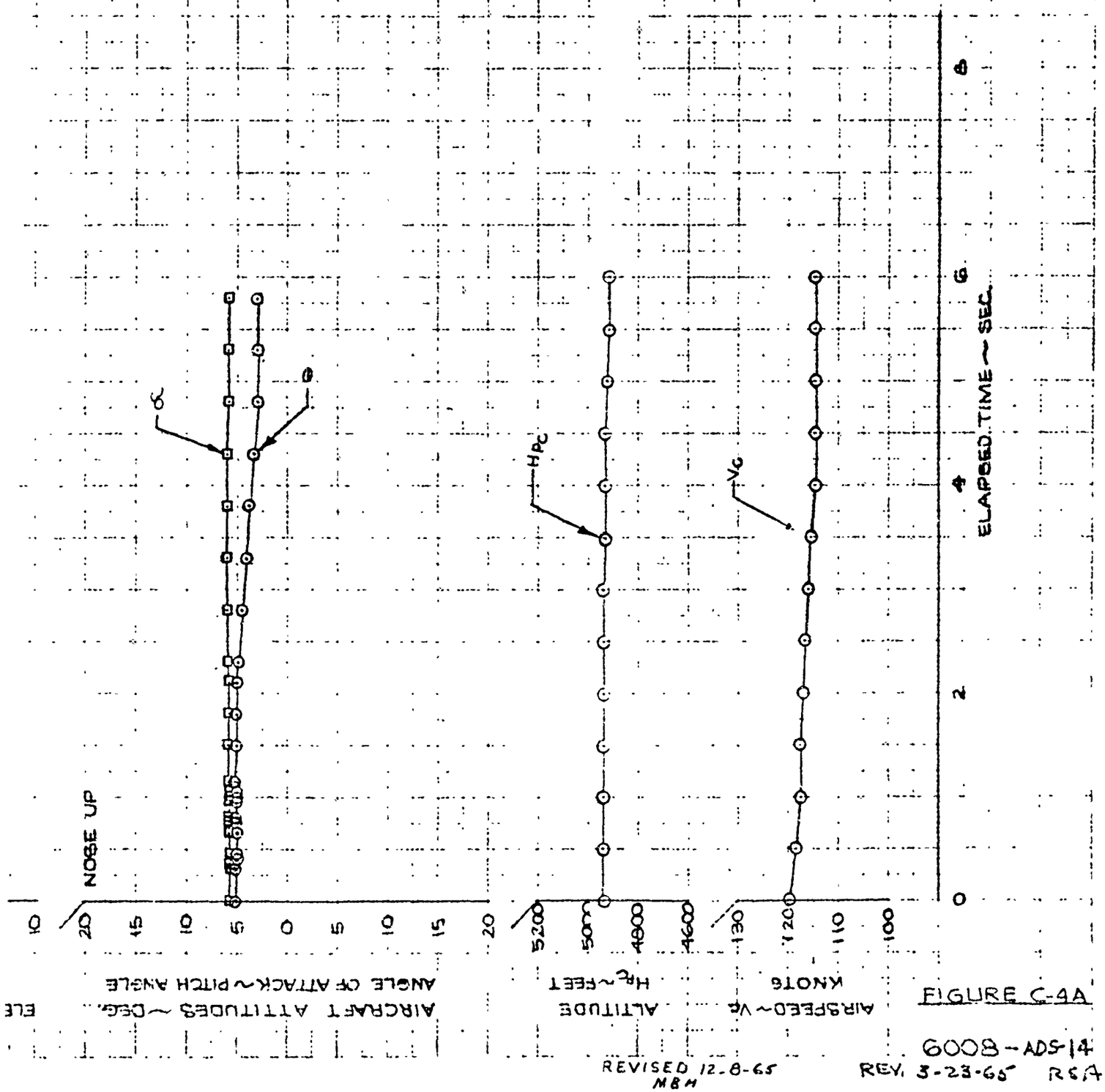


FIGURE C-4A

REVISED 12-8-65 MBH

6008-ADS-14
REV. 3-23-65 RSA

6008-3-14

UCS NO. 03-9 SUB. CODE 4.2.1

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6008
FLIGHT 76 DATE 3-8-65

RUN 6

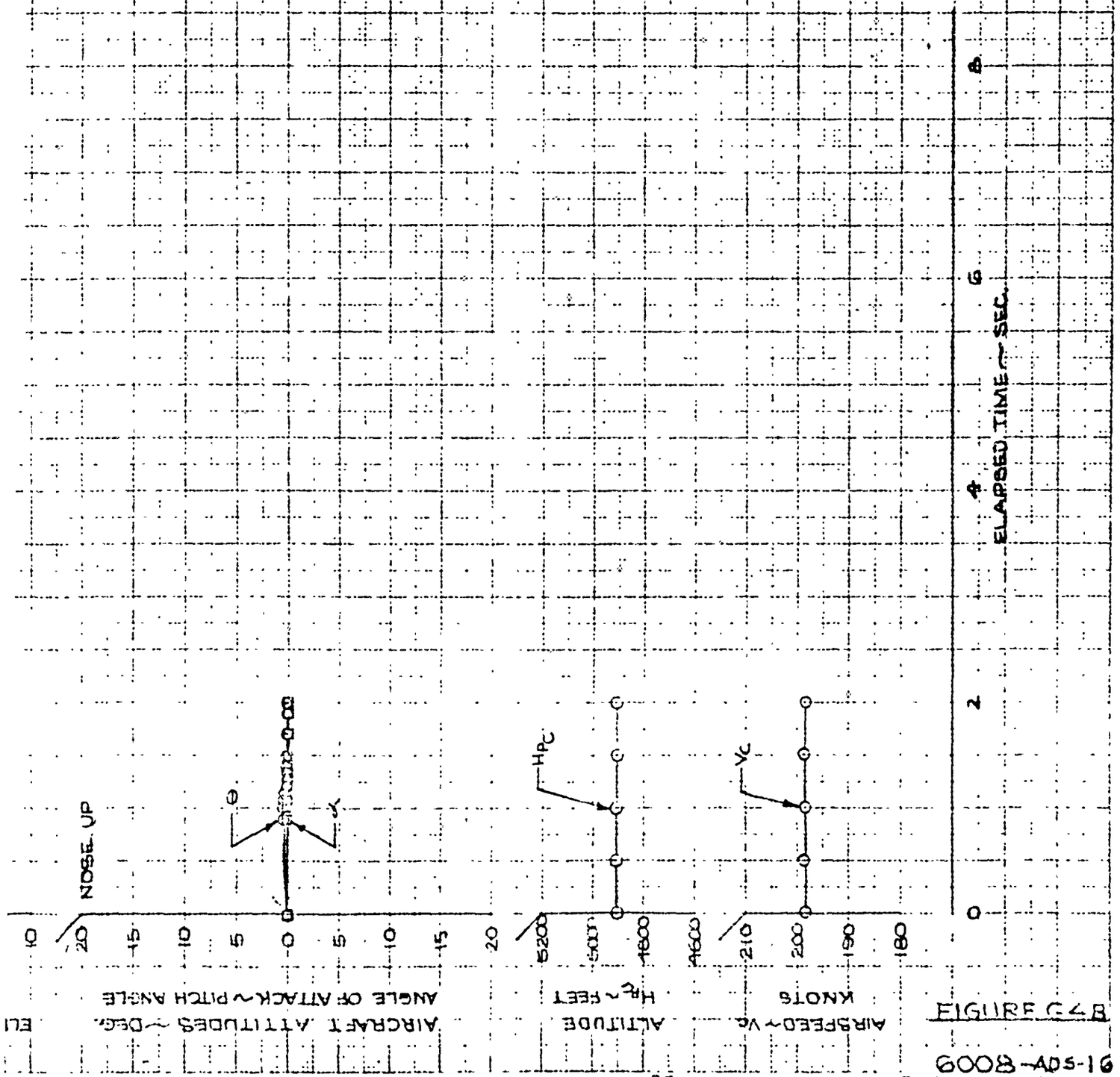


FIGURE C-4B

6008-ADS-16

REVISED 12-8-65 REV 3-23-65 RSA

GOOD - ADS-19

NOTE:
1. G.W. ~ 190,000 LBS (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 29 DEG
4. ΔH ~ 1.7 DEG (A/C N.U.)
5. FAT ~ 10.5 °C

ELEVATOR POSITION
DEGREES

T.E. UP

δ_e

ENGINE PRESSURE
RATIO

AVERAGE EPR (4 ENGINES)

EXTRACTION CHUTE DRAG LOAD
~ POUNDS x 10^{-3} ~

TENSION

EXTRACTION FORCE
1 ~ 22' CHUTE ~ 60' EXT. LINE

JOB NO. ADS-10 SUB. CODE 4.2.1

PREPARED BY T.E.D
DATE 3-18-66
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE C-13

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFGA-8077 LAC G0.08
FLIGHT 80 DATE 3-11-66

RUN 2

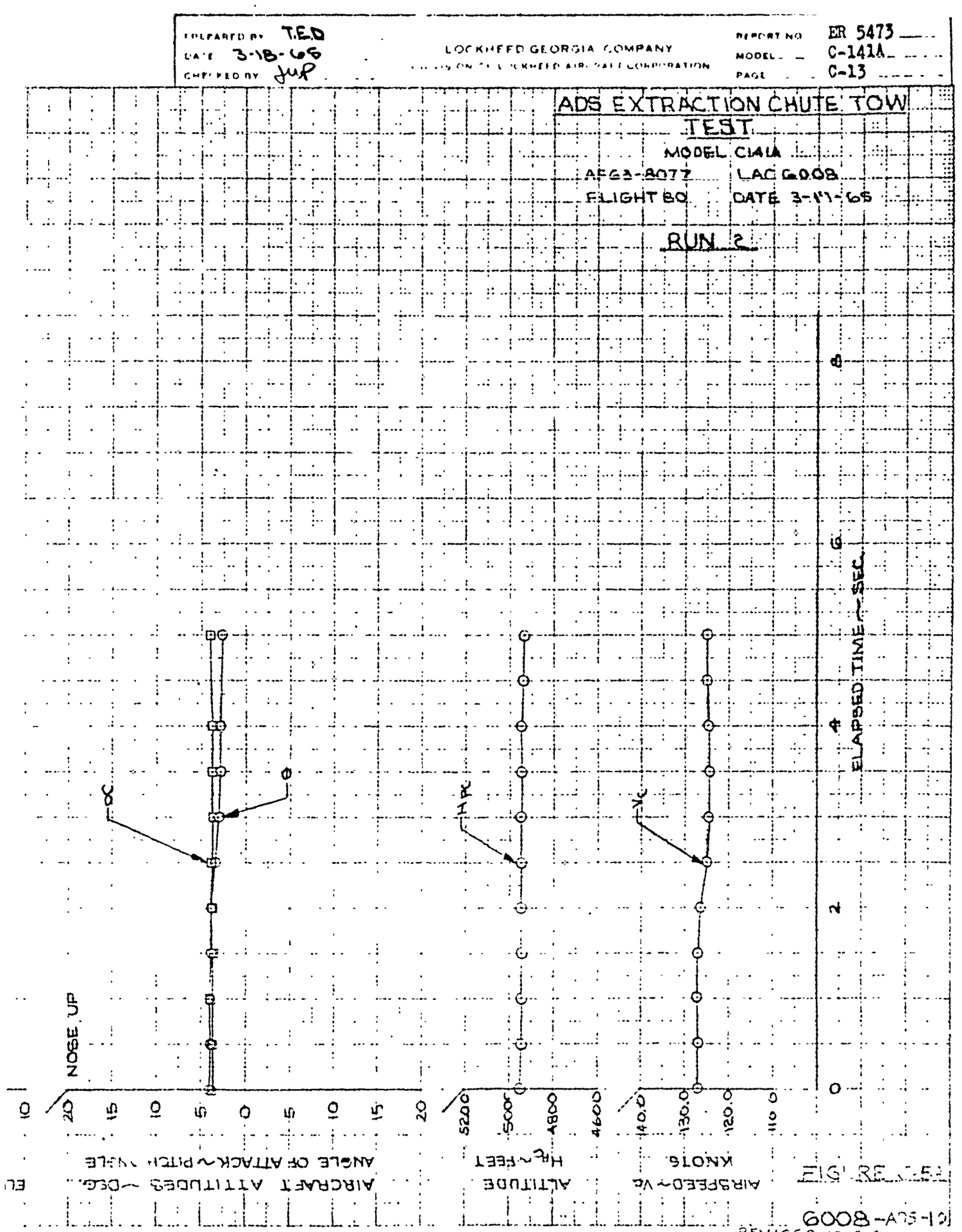


FIGURE 5-5

6008-ADS-10
REVISED 12-8-65
MBH

GOOB-ADS-20

NOTE:

1. G.W. ~ 185,000 LBS (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 29 DEG
4. ΔH ~ 1.3 DEG. (N/C)
5. FAT ~ 11.0 °C

EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10^{-3} ~

TENSION
45 40 35 30 25 20 15 10 5 0

EXTRACTION FORCE
17-22' CHUTE ~ 100' EXT. LINE.

ENGINE PRESSURE RATIO
1.50 1.40 1.30 1.20 1.10 1.00

AVERAGE EPR (4 ENGINES).

ELEVATOR POSITION DEGREES
T.E. UP
20 10 0

δ_e

JOB NO. ADS-10 SUB. CODE 4.2.1

PREPARED BY T.E.D.
DATE 3-18-65.
CHECKED BY

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REPORT NO ER 5473
MODEL C-141A
PAGE C-14

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 80 DATE 3-17-65

RUN 3

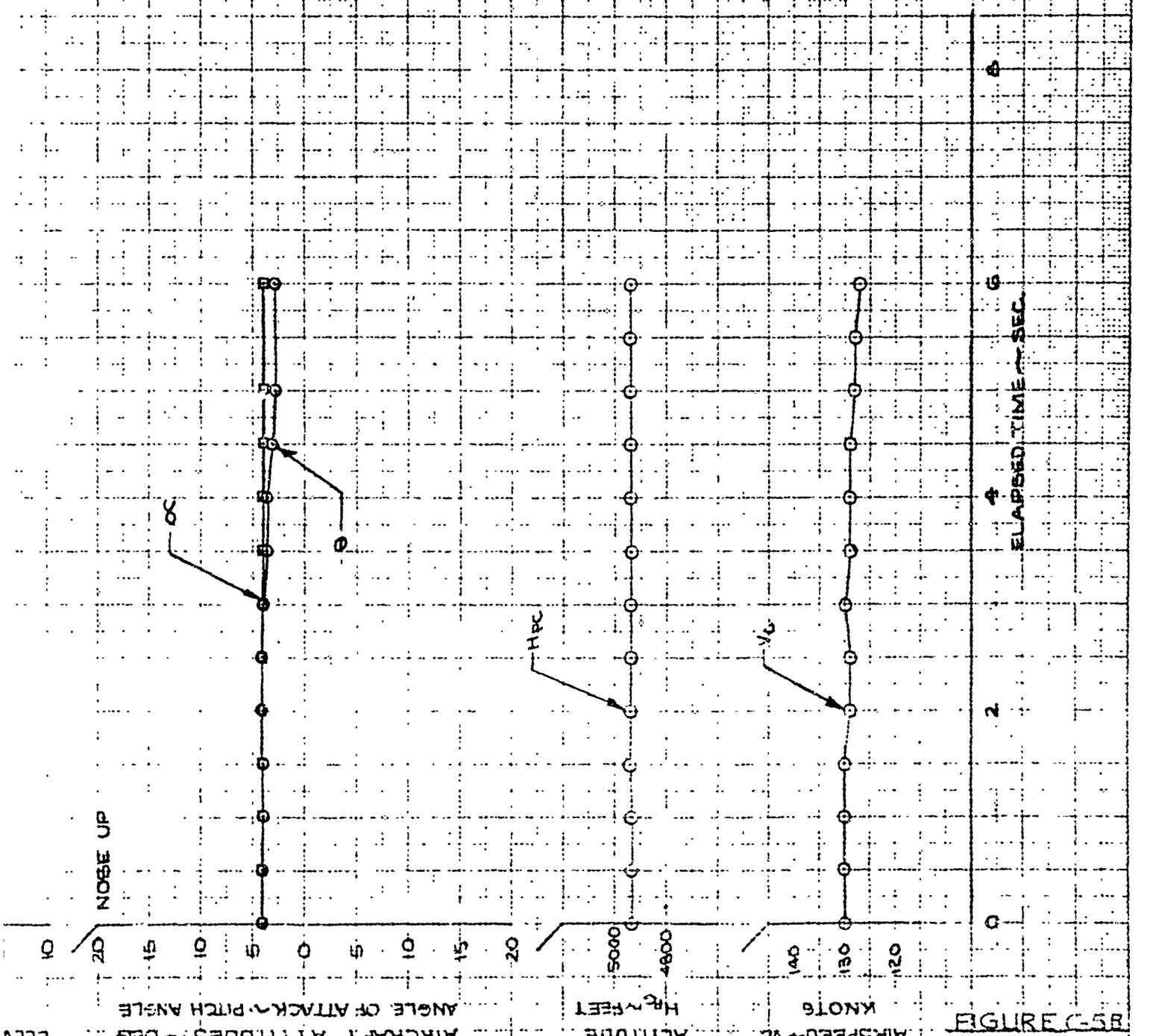


FIGURE C-5B

6008-ADS-20
REVISED 12-8-65
MBH

GOOB-ADS21
NOTE:
1. G.W. ~ 180,000 LBS. (APPROX.)
2. C.G. ~ NA
3. FLAPS ~ 24 DEG.
4. H ~ 0.3 (A/C NO.)
5. FAT ~ 13°C
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻² ~
TENSION
EXTRACTION FORCE
~ 22' CHUTE ~ 100' EXT. LINE
ENGINE PRESSURE RATIO
AVERAGE EPR (4 ENGINES)
ELEVATOR POSITION
DEGREES
T.E. UP
δe
JOB NO. ADS-10 SUB. CODE 4.2.1

PREPARED BY FCW
DATE 5-19-65
CHECKED BY

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MODEL C-141A
PAGE C-15

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 80 DATE 3-17-65

RUN 4

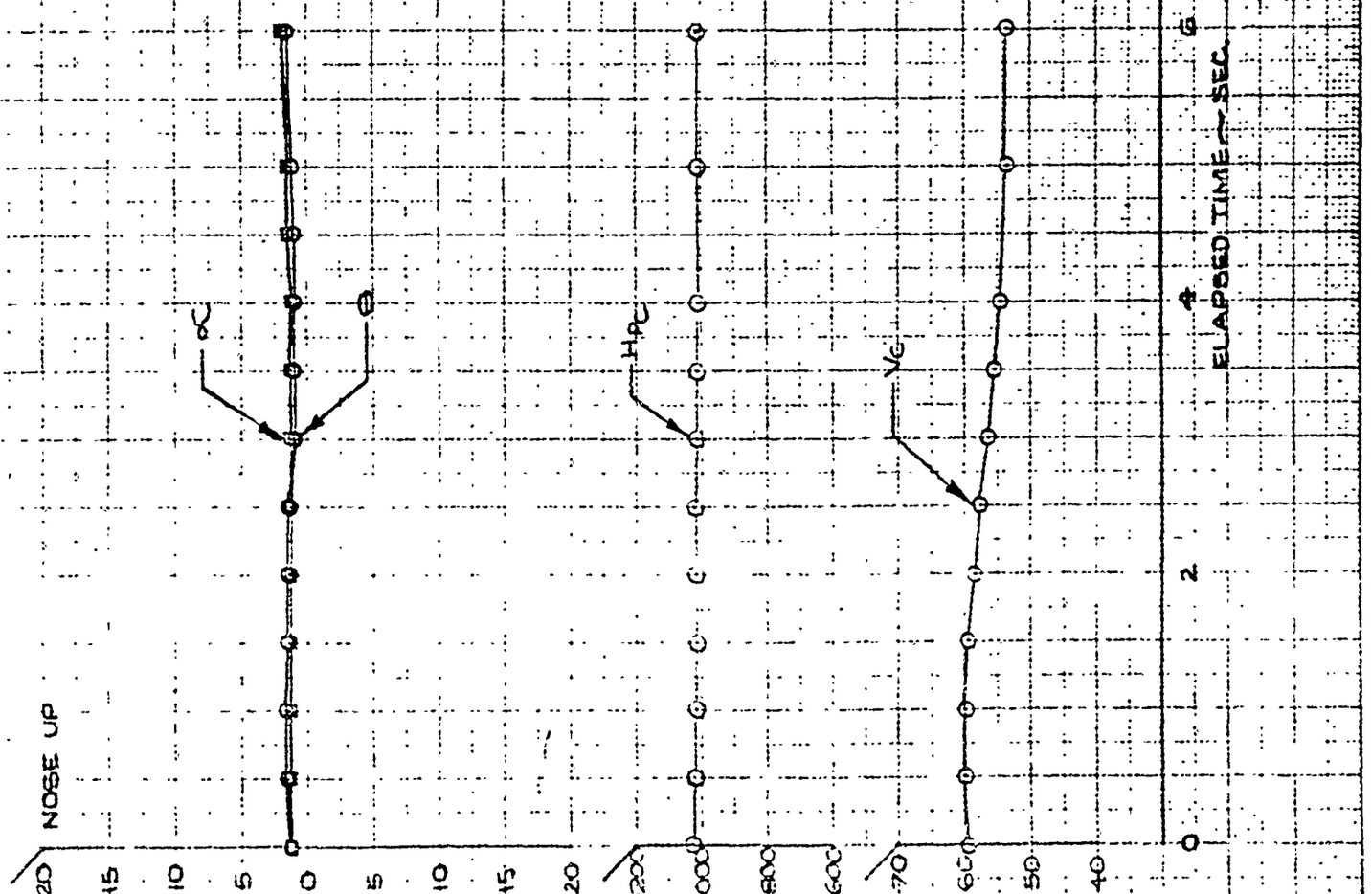
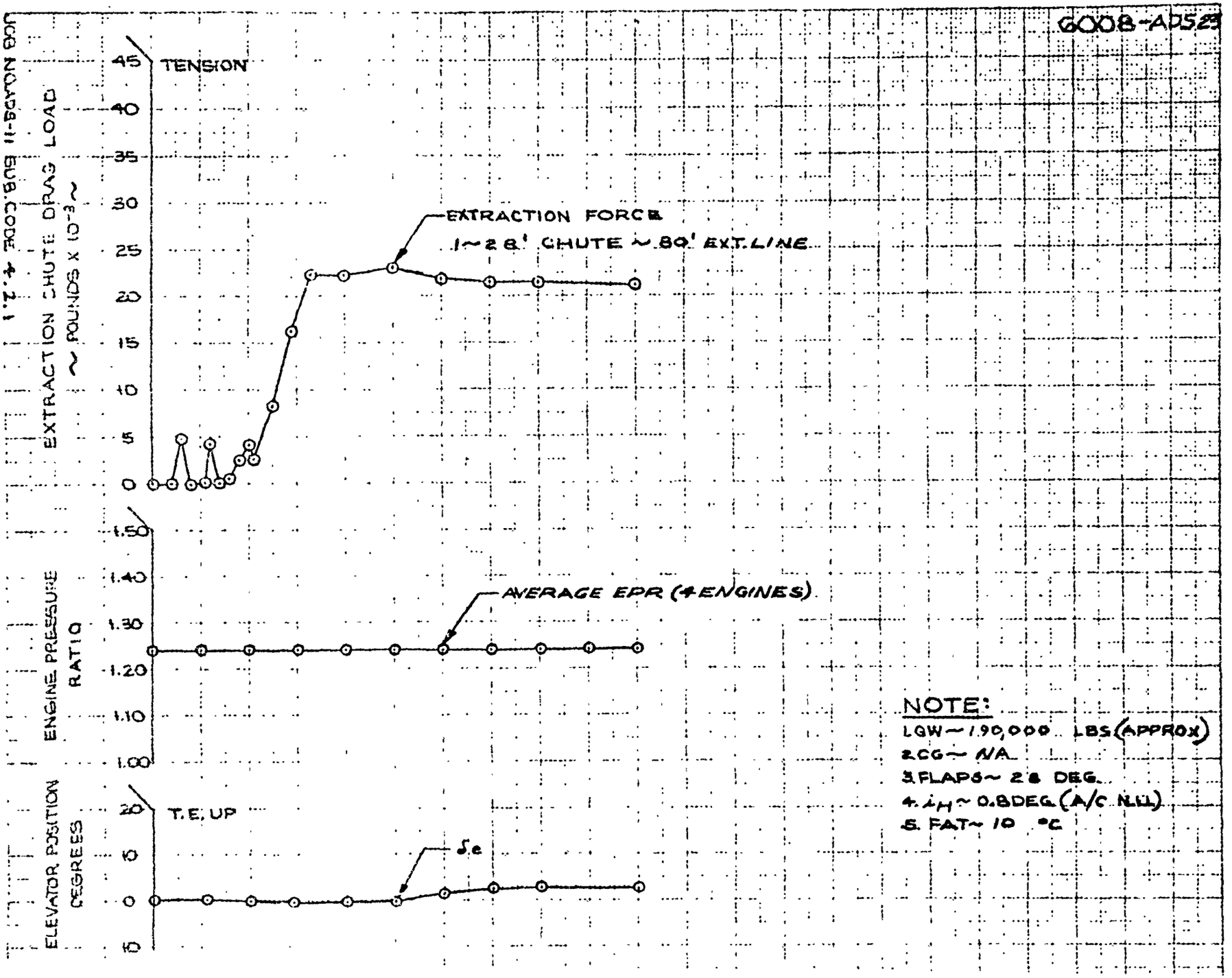


FIGURE C-15C

6008-A-21
REVISED 12-8-65
MJH


6008-AD523
JCB NOV 68 11-SOYON BOD
4.2.1
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10^{-3} ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
1~28' CHUTE ~ 80' EXT. LINE
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVERAGE EPR (4 ENGINES)
ELEVATOR POSITION DEGREES
20
15
10
5
0
15
T.E. UP
δ_e
NOTE:
1. GW ~ 190,000 LBS (APPROX)
2. CG ~ N/A
3. FLAPS ~ 28 DEG.
4. i_H ~ 0.8 DEG. (A/C NLL)
5. FAT ~ 10 °C

PREPARED BY R.S.A
DATE 3-19-65
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REPORT NO ER 5473
MODEL C-141A
PAGE C-16

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6008
FLIGHT 81 DATE 3-18-65

RUN 3

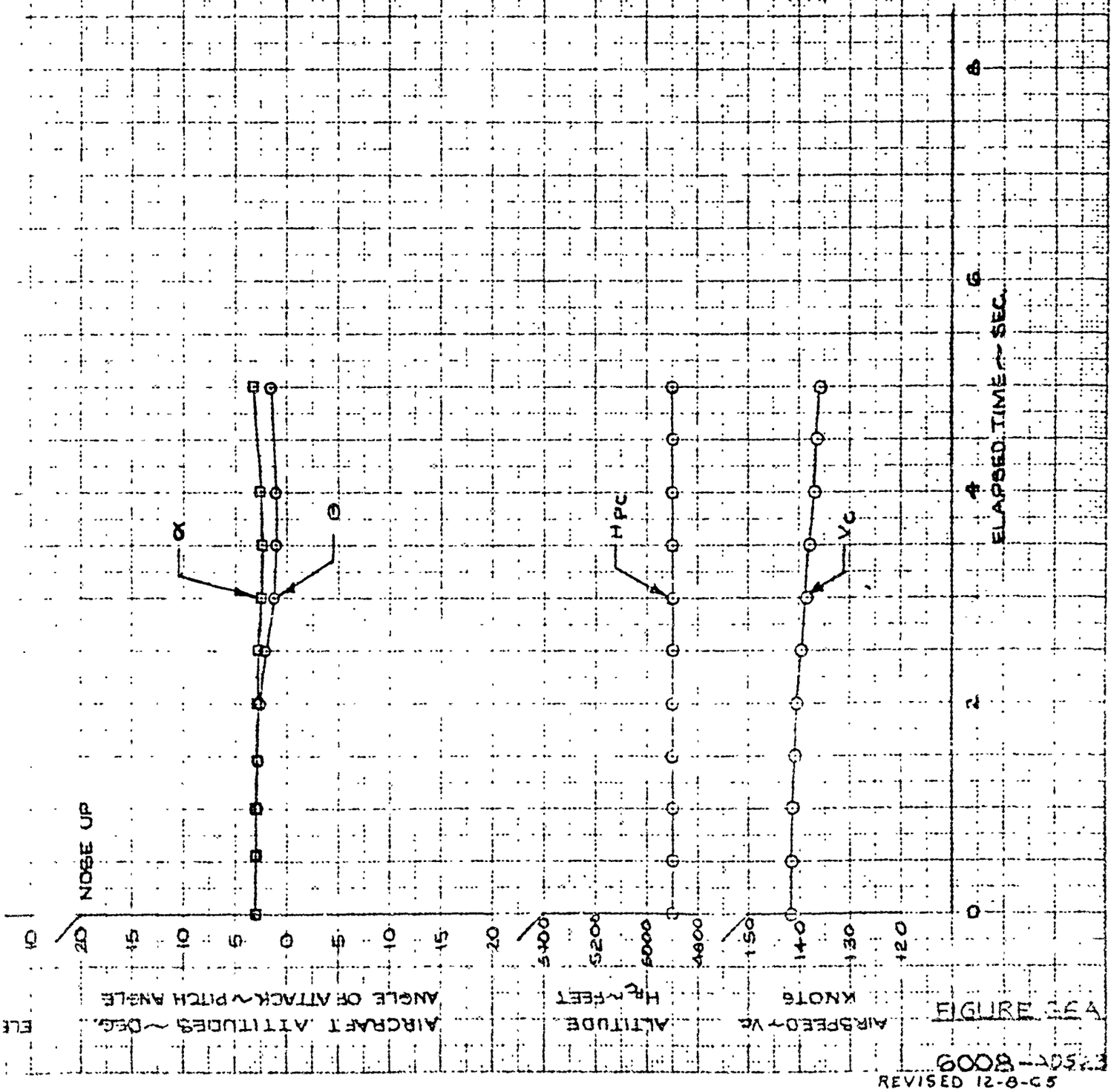


FIGURE C-4

6008-A05-3
REVISED 12-8-65

JOB NO. AMS-11 SUB. CODE 4.2.1

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 81 DATE 3-18-65

RUN 4

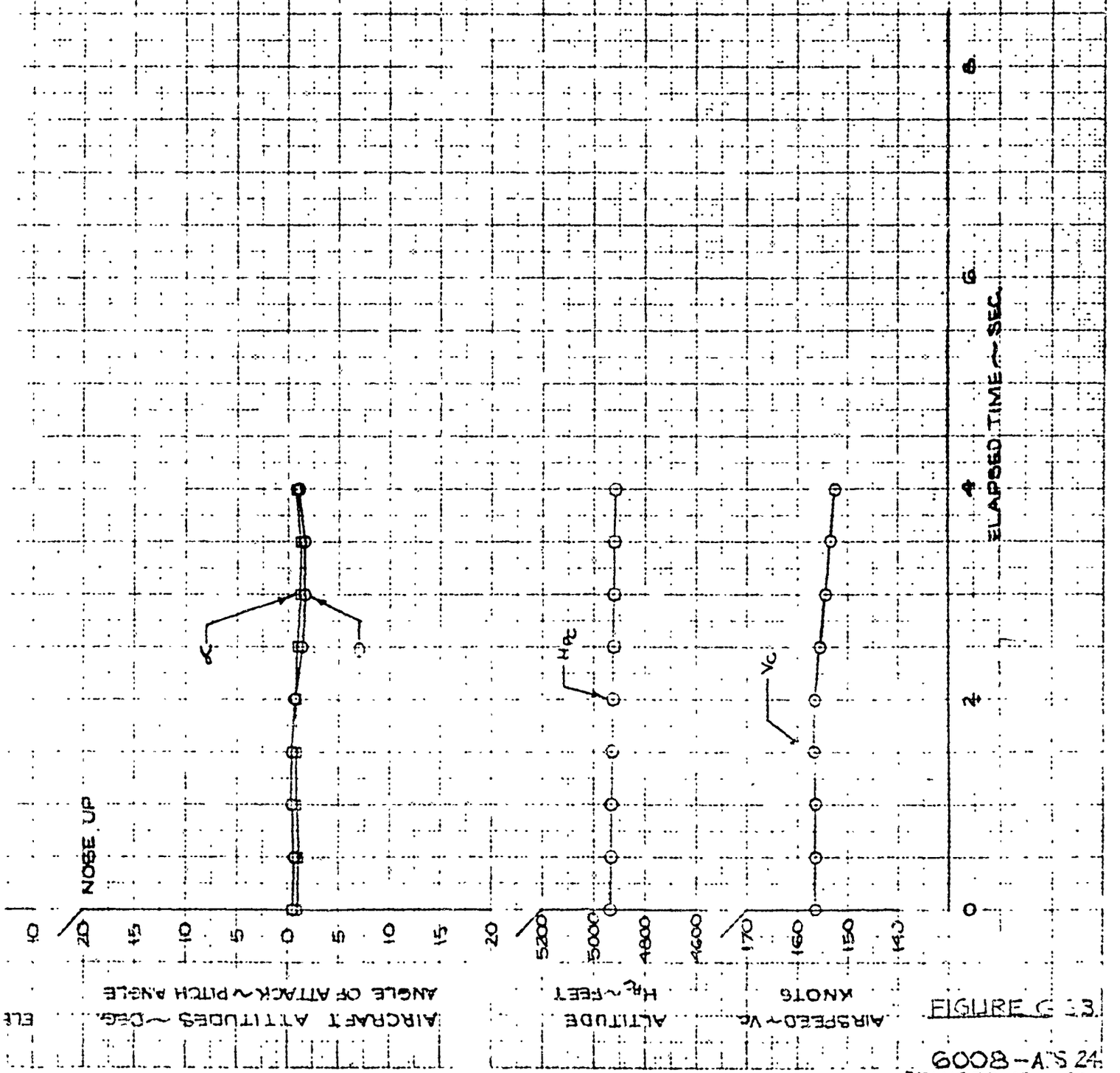


FIGURE C-13.

JOB NO. AD5-11 SUB. CODE 4.2.1
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
1~33' CHUTE REEFED TO 24% AT 100' EXT. LINE
ENGINE PRESSURE RATIO
AVERAGE EPR (4 ENGINES)
1.50
1.40
1.30
1.20
1.10
1.00
ELEVATOR POSITION
DEGREES
T.E. UP
20
10
0
Se
NOTE
1. G.W. ~ 180,000 LBS (APPROX)
2. C.G. ~ N.A.
3. FLAPS ~ 29 DEG
4. IH ~ 0.2 DEG (A/C N.U.)
5. FAT ~ 10.0°C

PREPARED BY T.E.D.
DATE 3-19-65
CHECKED BY JWP

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MODEL C-141A
PAGE C-18

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6008
FLIGHT 81 DATE 3-18-65

RUN 5

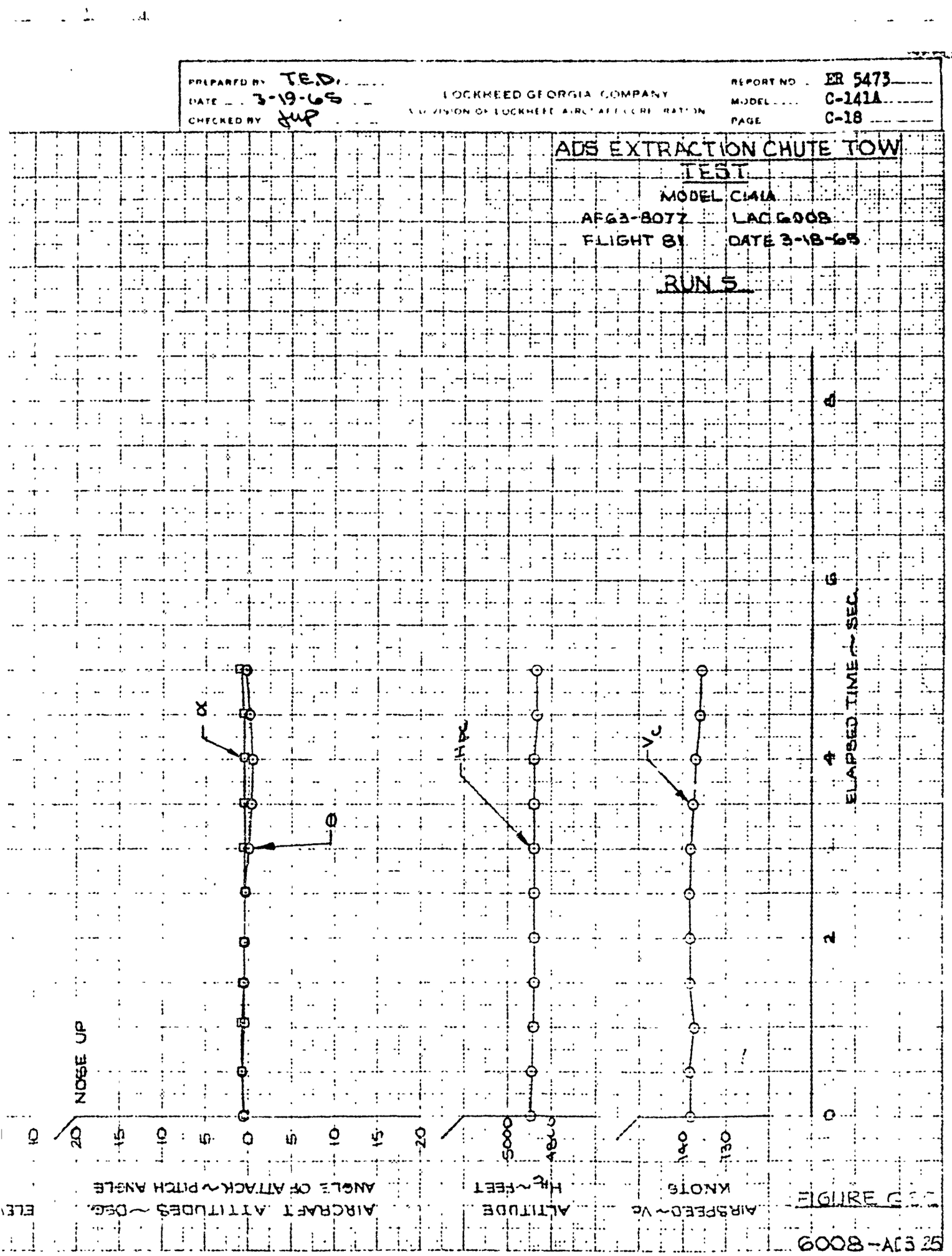


FIGURE C-18

6008-AC3 25

GOOB-ADS 26
JOB NO.ADS-11 SUB.CODE 4.2.1
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
1~32' CHUTE ~ 100' EXT. LINE
ENGINE PRESSURE RATIO
1.90
1.80
1.70
1.60
1.50
AVERAGE EPR
(ENG. NO. 1 & 4)
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVERAGE EPR
(ENG. NO. 2 & 3)
ELEVATOR POSITION
DEGREES
20
0
0
T.E.U.P.
δe
NOTE:
1. GW ~ 170,000 LBS (APPROX)
2. CG ~ NA
3. FLAPS ~ 29 DEG.
4. γ ~ 0.2 DEG (A/C NOT
5. FAT ~ 10 °C

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 81 DATE 3-18-65

RUN 6

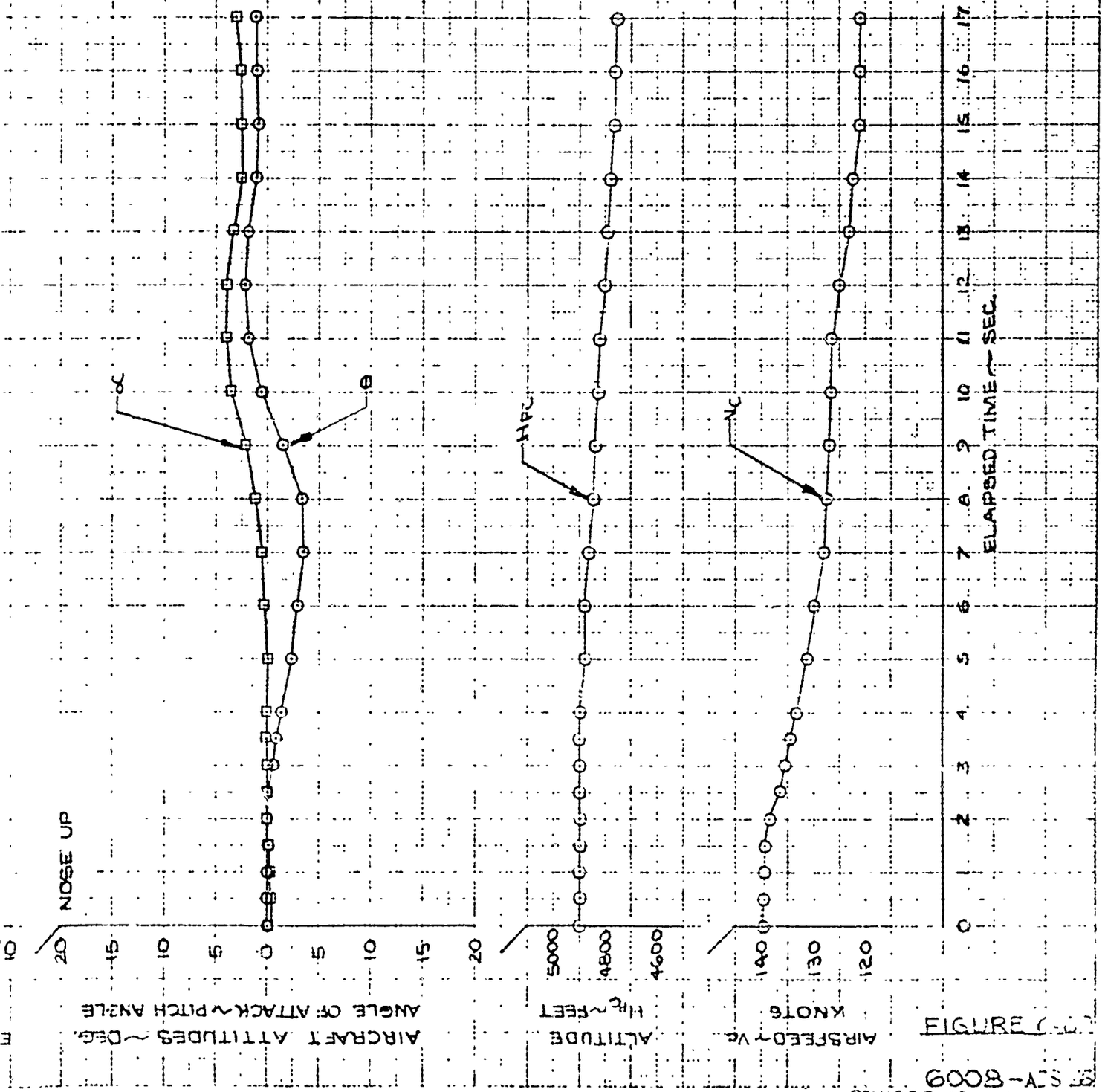
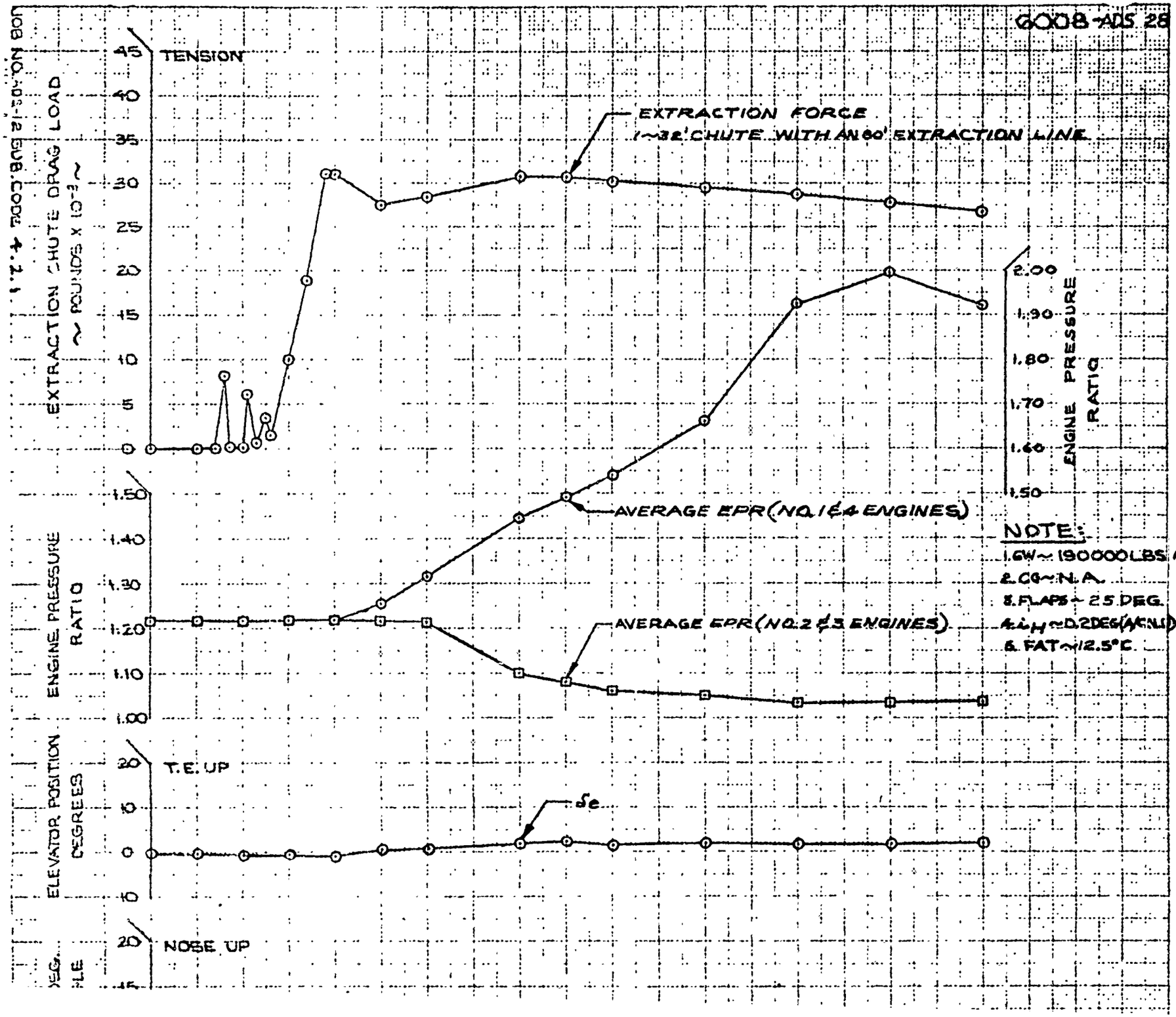


FIGURE C-12


JOB NO. 30812 SUB. CODE 4.2.1
EXTRACTION CHUTE DRAG LOAD ~ POUNDS X 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
1-32' CHUTE WITH AN 80' EXTRACTION LINE
ENGINE PRESSURE RATIO
2.00
1.90
1.80
1.70
1.60
1.50
AVERAGE EPR (NO.1 & 4 ENGINES)
NOTE:
1. GW ~ 190000 LBS APPROX
2. CG ~ N.A.
3. FLAPS ~ 25 DEG.
4. i_H ~ 0.2 DEG (ACTUAL)
5. FAT ~ 12.5°C
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVERAGE EPR (NO.2 & 3 ENGINES)
ELEVATOR POSITION DEGREES
T.E. UP
20
10
0
10
δe
NOSE UP
20
15
DEG.
ILE

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DATE 3-22-65
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MODEL C-141A
PAGE C-20

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC C-008
FLIGHT 83 DATE 3-19-65

RUN 2

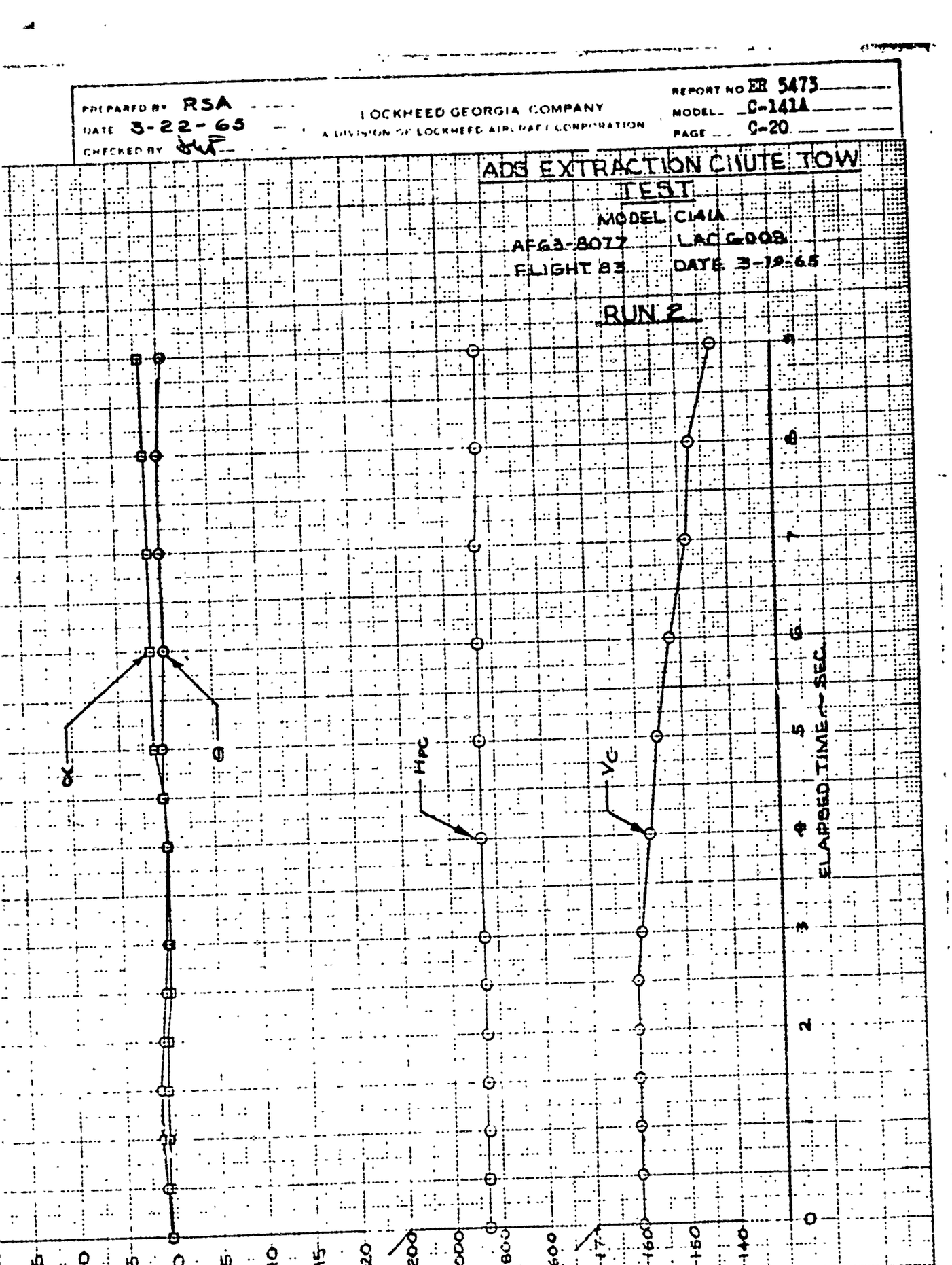


FIGURE 7A

6008-0523
REVISED 12-8-65 MKI

6008-AVS-29
JOB NO. NS-12 SUB. CODE 4.2.1
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~
ENGINE PRESSURE RATIO
ELEVATOR POSITION DEGREES
NOSE WHEEL DEG.
TENSION
45
40
35
30
25
20
15
10
5
0
1.50
1.40
1.30
1.20
1.10
1.00
20
0
0
20
15
T.E. UP
NOSE UP
EXTRACTION FORCE
1~32' CHUTE REEFED 24,000' EXTRACTION LINE
AVERAGE EPR (4 ENGINES)
Sa
NOTE
1. G.W. ~ 190,000 LBS (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 19 DEG.
4. ΔH ~ 0.3 DEG (A/C NOD.)
5. F.A.T. ~ 14.5°C

PREPARED BY T.E.D.
DATE 3-22-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

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MODEL C-141A
PAGE C-21

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 83 DATE 3-19-65

RUN 3

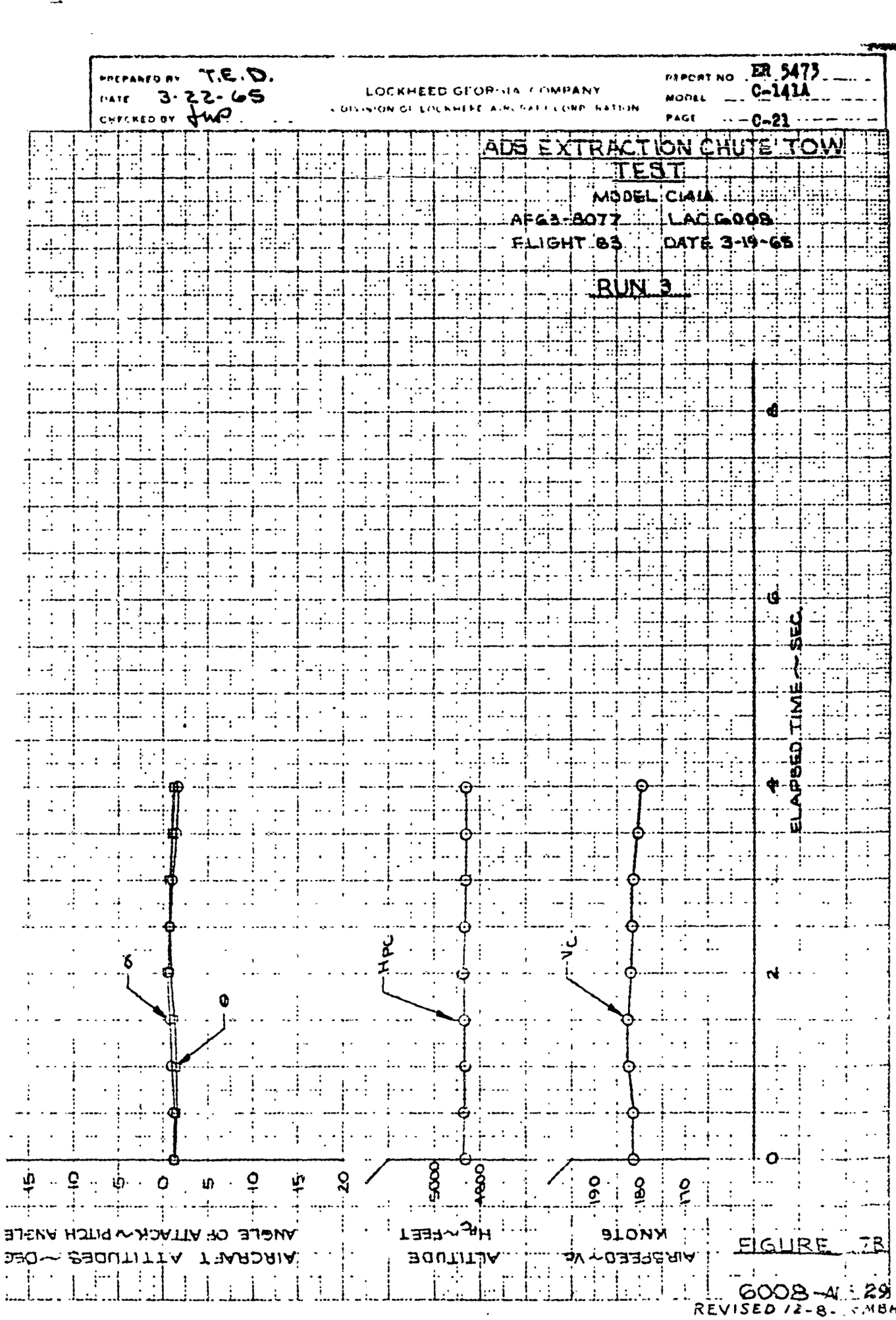


FIGURE 7B

GOOD+ALS 30
JOB NOADS-12 SUB.CODE 4.2.1
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
0
EXTRACTION FORCE
2-26' CHUTES WITH ANLRD' EXTRACTION LINE
ENGINE PRESSURE RATIO
AVERAGE EPR (4 ENGINES)
1.50
1.40
1.30
1.20
1.10
1.00
ELEVATOR POSITION
DEGREES
T.E. UP
20
10
0
10
NOSE UP
20
15
NOTE:
1. G.W. ~180,000 LBS. (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 29 DEG.
4. LH ~ 0.5 DEG (A/C NAD.)
5. FAT. ~ 11.0°C

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LRC 6008

FLIGHT 83 DATE 3-19-65

RUN 4

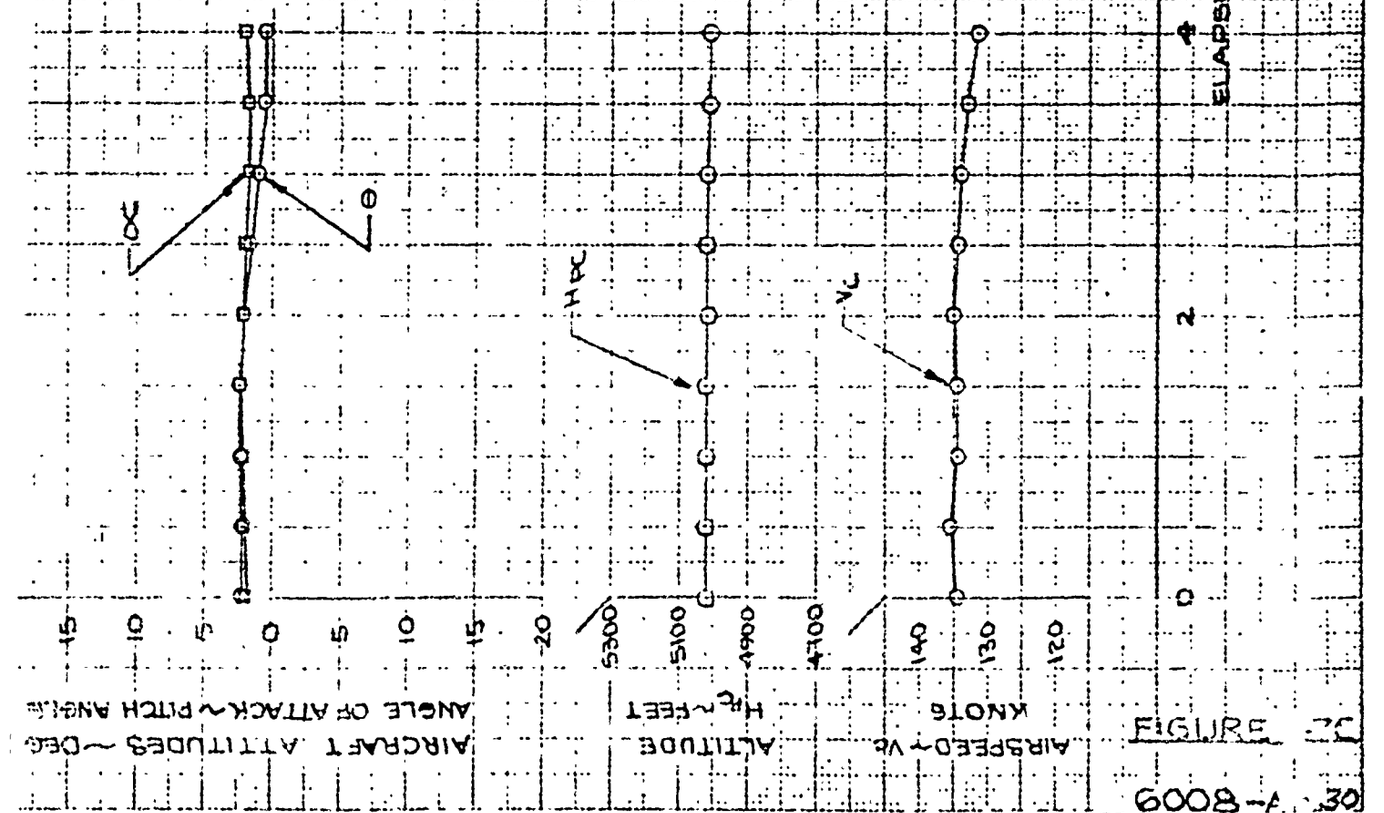


FIGURE C-5

GOOB-ADS-31

NOTE:
1. G.W. ~ 170,000 LBS (APPROX.)
2. C.G. ~ N.A.
3. FLAPS ~ 26 DEG.
4. $\Delta H \sim 0.2$ DEG. (A/C N.U.)
5. $\Delta F.T. \sim 12.0$ DEG.

EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10^{-3} ~
TENSION
45 40 35 30 25 20 15 10 5 0

EXTRACTION FORCE
2~22' CHUTES WITH A 100' EXTRACTION LINE

ENGINE PRESSURE RATIO
AVERAGE EPR (4 ENGINES)
1.50 1.40 1.30 1.20 1.10 1.00

ELEVATOR POSITION
DEGREES
T.E. UP
20 10 0 0 10 20

δ_e

NOSE UP

JOB NO. ADS-12 SUB. CODE 4.2.1

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT B3 DATE 3-19-65

RUN 5

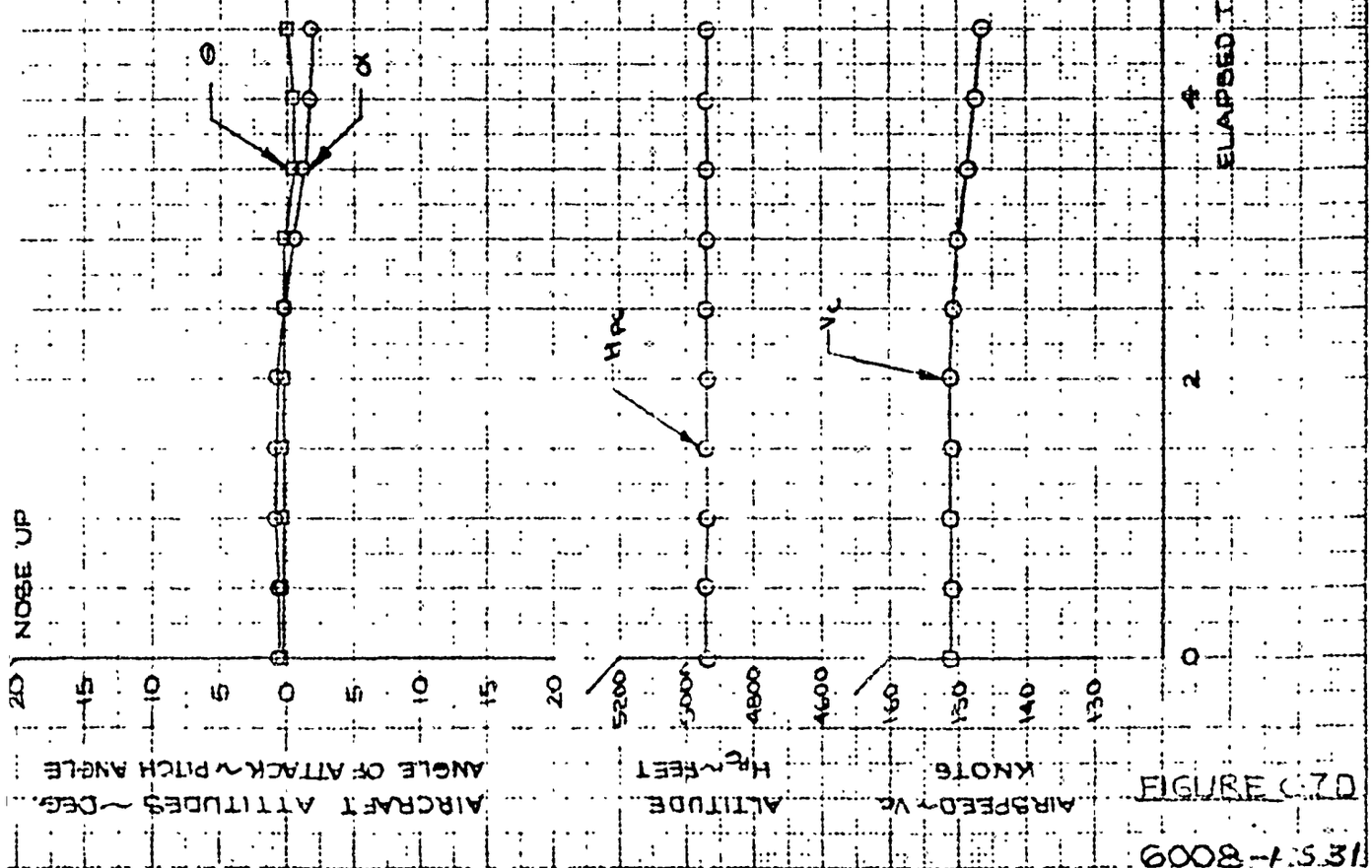
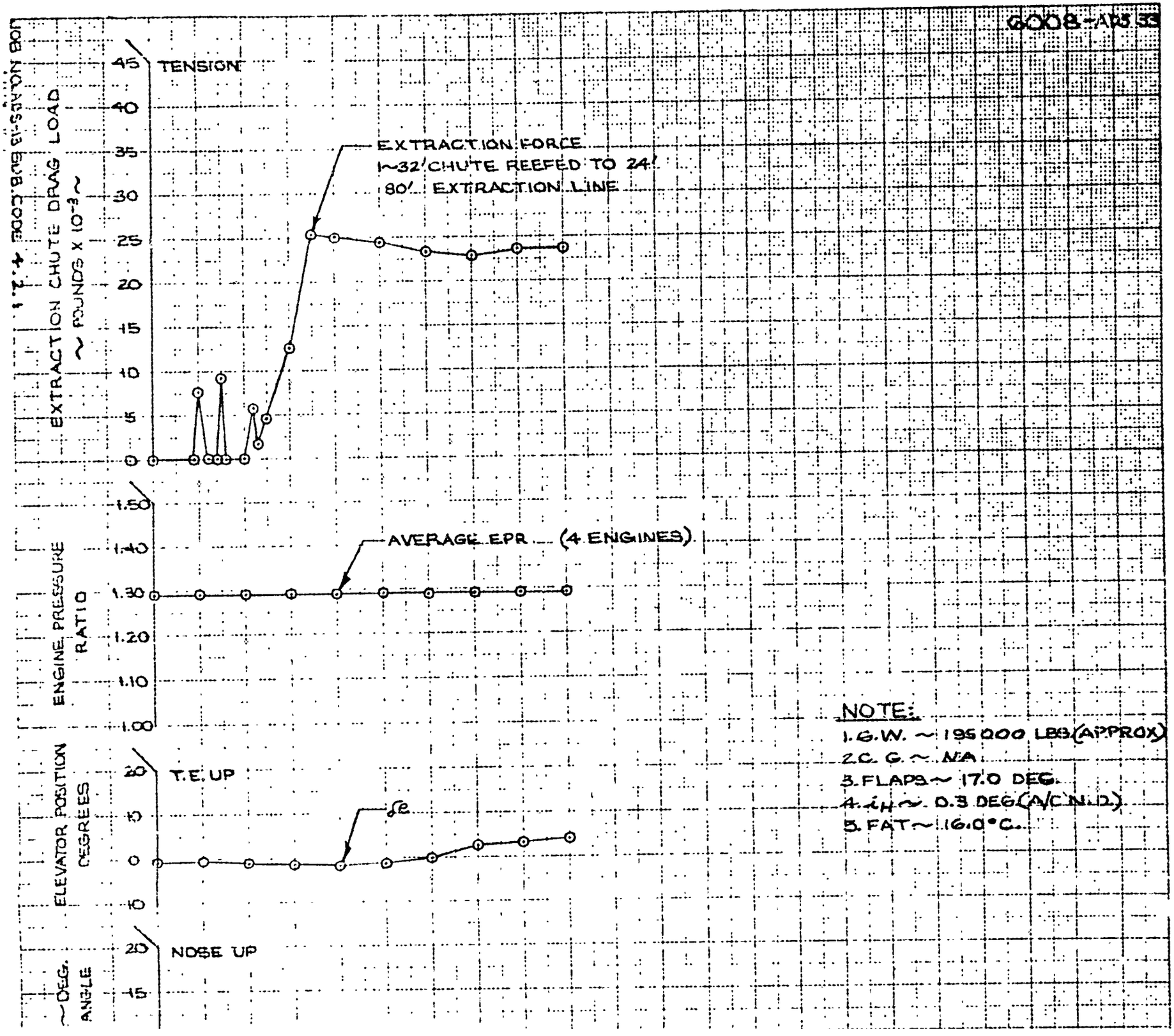


FIGURE C-20

6008-1.S.31
REVISED 12-8-65 MBH


B707-320B/C STATION 800
EXTRACTION CHUTE DRAG LOAD ~ POUNDS X 10⁻³ ~
45
40
35
30
25
20
15
10
5
0
TENSION
EXTRACTION FORCE
1~32' CHUTE REEFED TO 24'
80' EXTRACTION LINE
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVERAGE EPR (4 ENGINES)
ELEVATOR POSITION DEGREES
20
15
0
10
T.E. UP
δe
~DEG. ANGLE
20
15
NOSE UP
NOTE:
1. G.W. ~ 195 000 LBS (APPROX)
2. C.G. ~ N/A
3. FLAPS ~ 17.0 DEG.
4. iH ~ 0.3 DEG (A/C N.12)
5. FAT ~ 16.0°C.

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 94 DATE 3-22-65

RUN 2

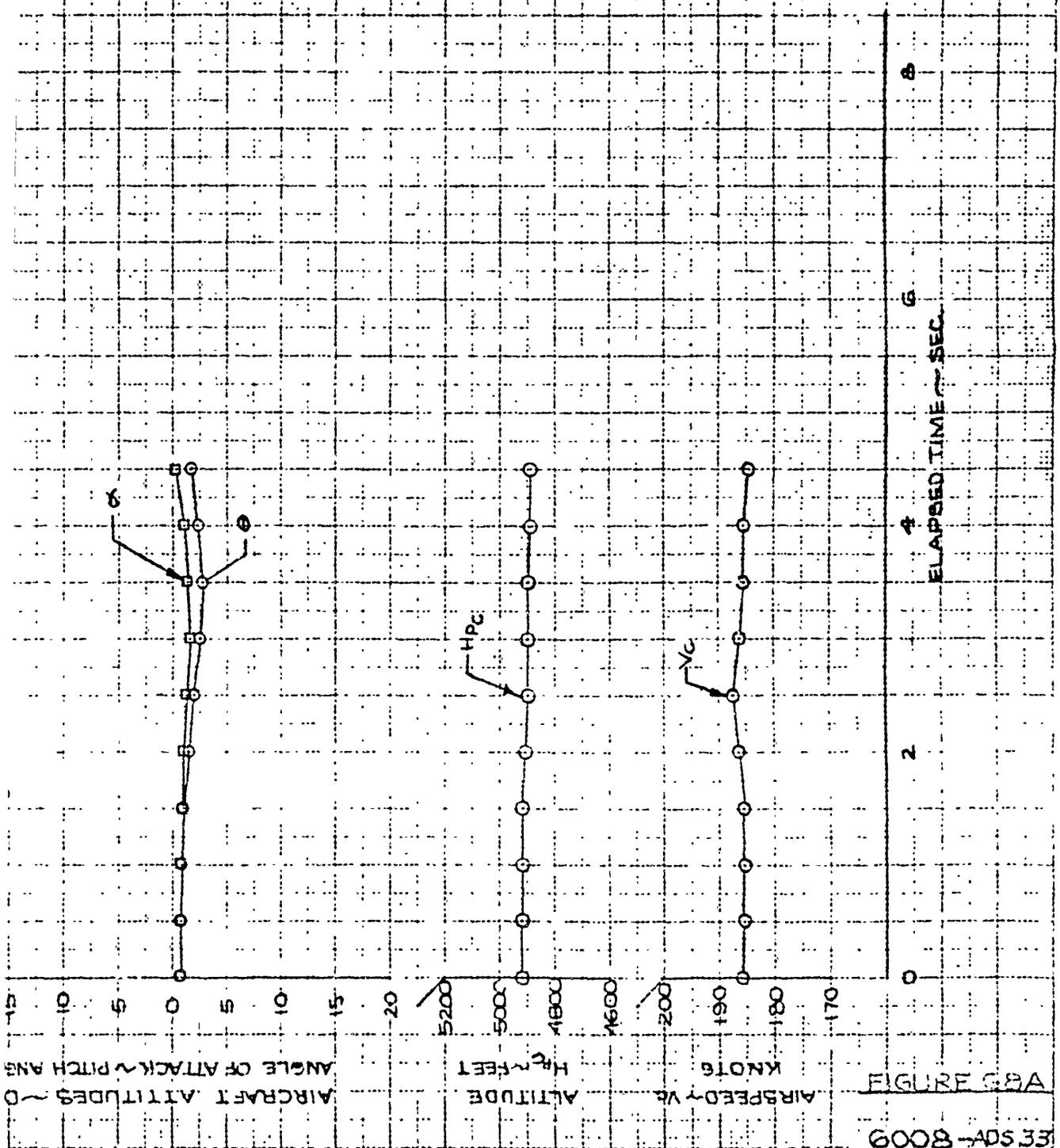
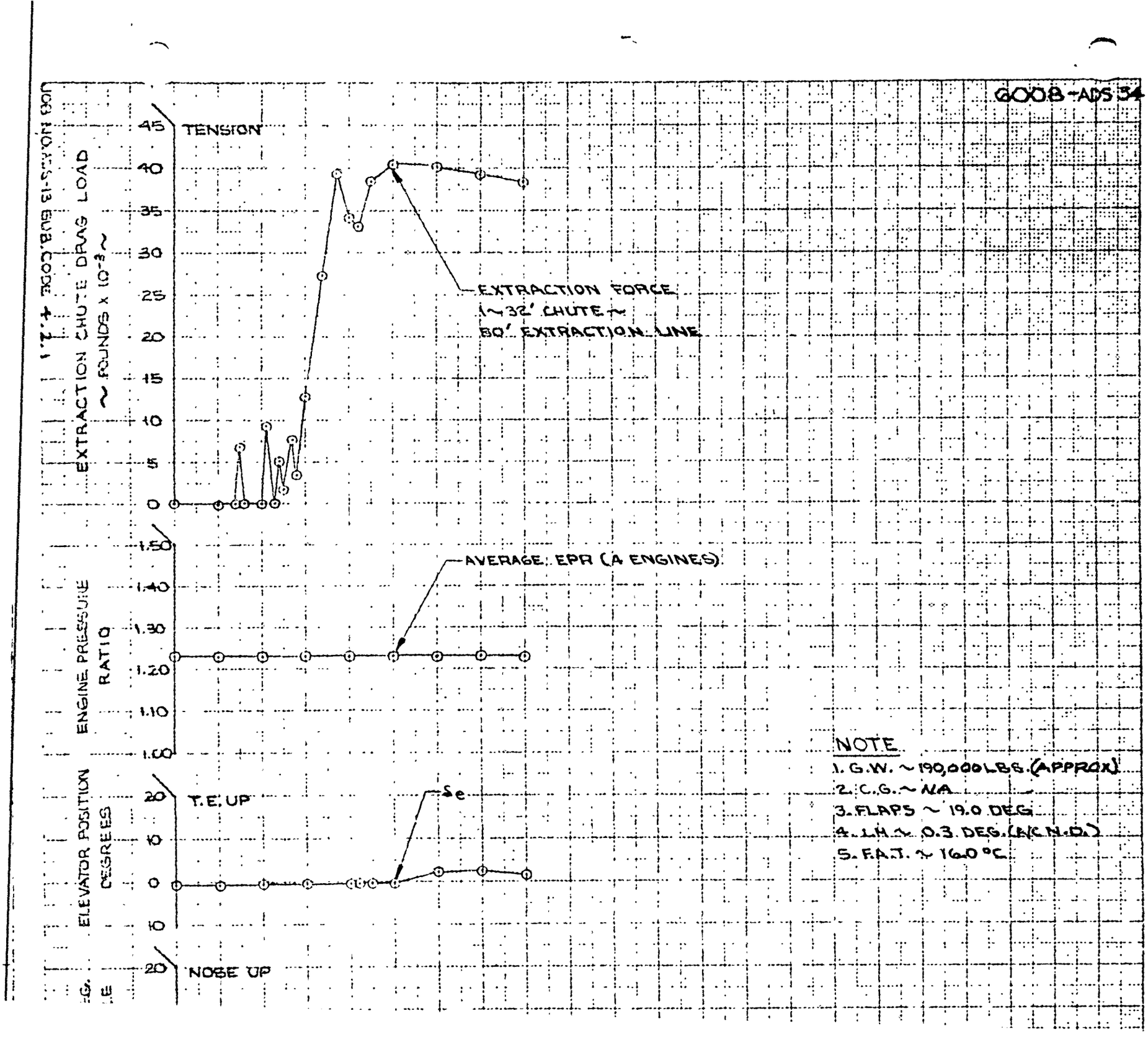


FIGURE G8A

6008-ADS 33
REVISED 12-8-65
MBH


GOOB-ADS 34
EXTRACTION CHUTE DRAG LOAD
~ POUNDS x 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
(~32' CHUTE~
80' EXTRACTION LINE
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVERAGE EPR (4 ENGINES)
ELEVATOR POSITION DEGREES
T.E. UP
20
10
0
10
20
NOSE UP
δe
NOTE
1. G.W. ~ 190,000 LBS. (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 19.0 DEG
4. I.H. ~ 0.3 DEG. (W.C.N.D.)
5. F.A.T. ~ 16.0 °C

PREPARED BY T.E.D.
DATE 3-23-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
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ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 84 DATE 3-22-65

RUN 3

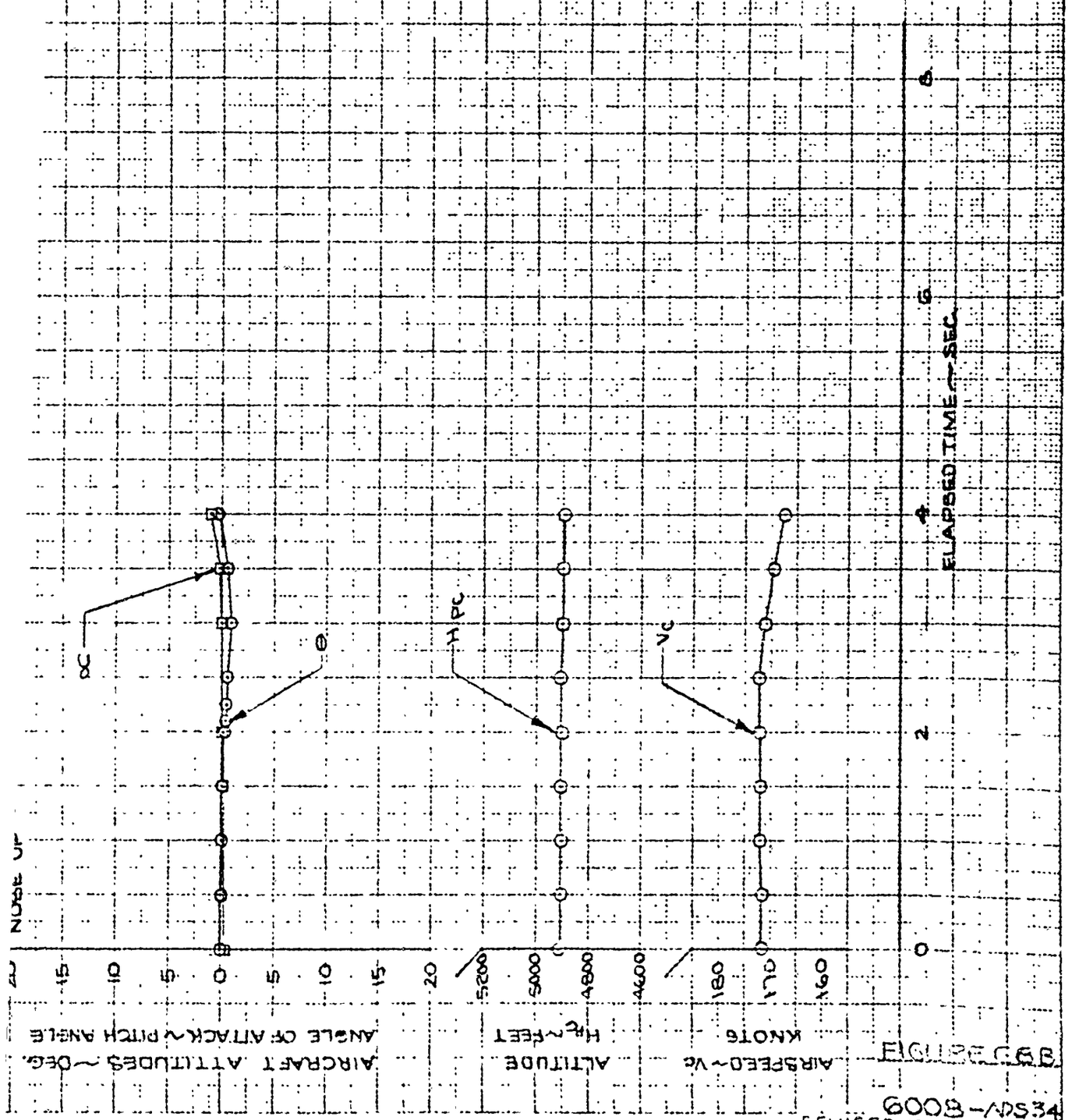
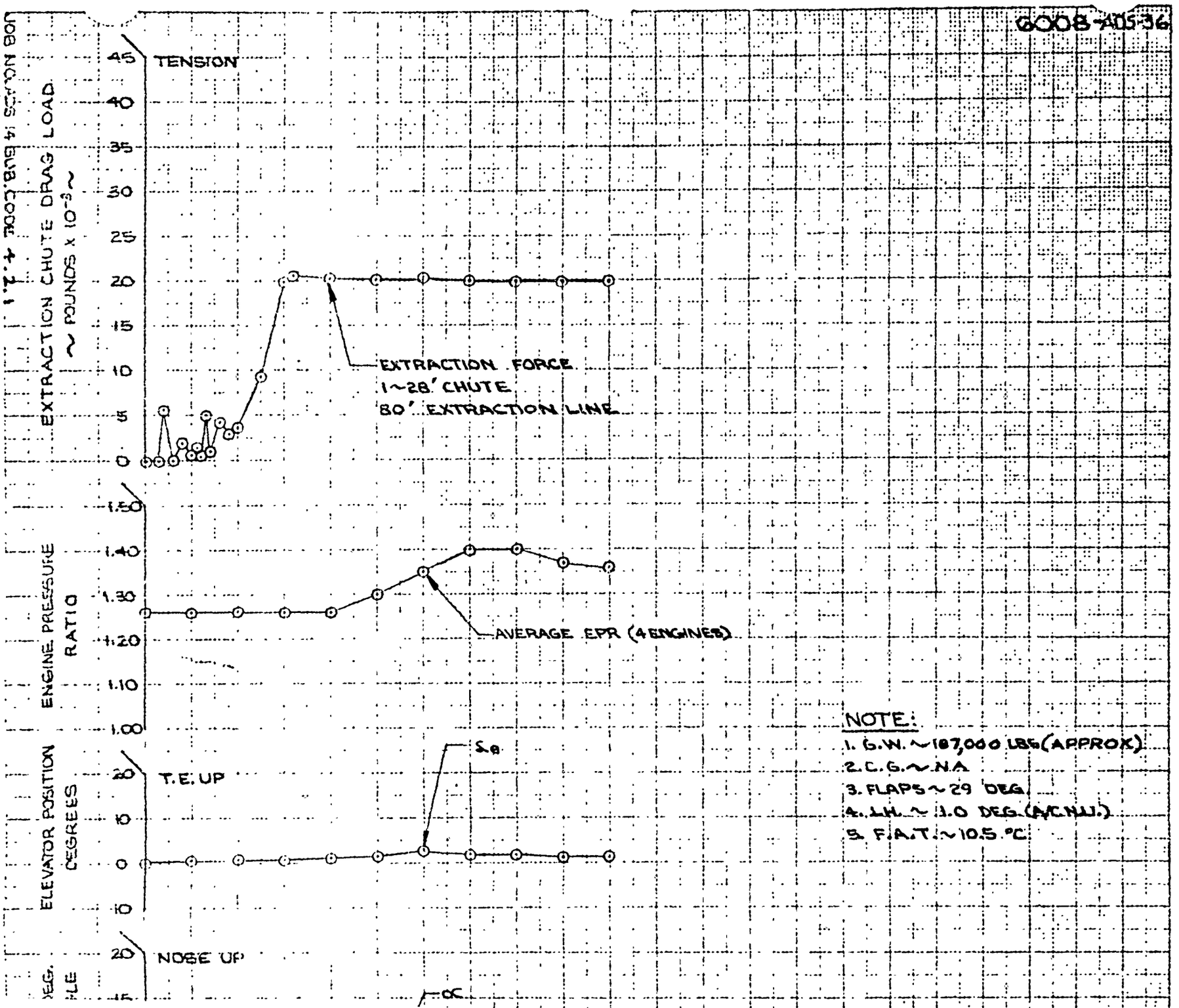


FIGURE C-6B

6008-ADS34
REVISED 12-8-65 NBH



NOTE:

1. G.W. ~ 187,000 LBS (APPROX)
2. C.G. ~ N.A.
3. FLAPS ~ 29 DEG.
4. L.H. ~ 1.0 DEG. (A/C NU.)
5. F.A.T. ~ 10.5 °C.

PREPARED BY TED
DATE 3-22-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE C-26

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 88 DATE 3-28-65

RUN 2

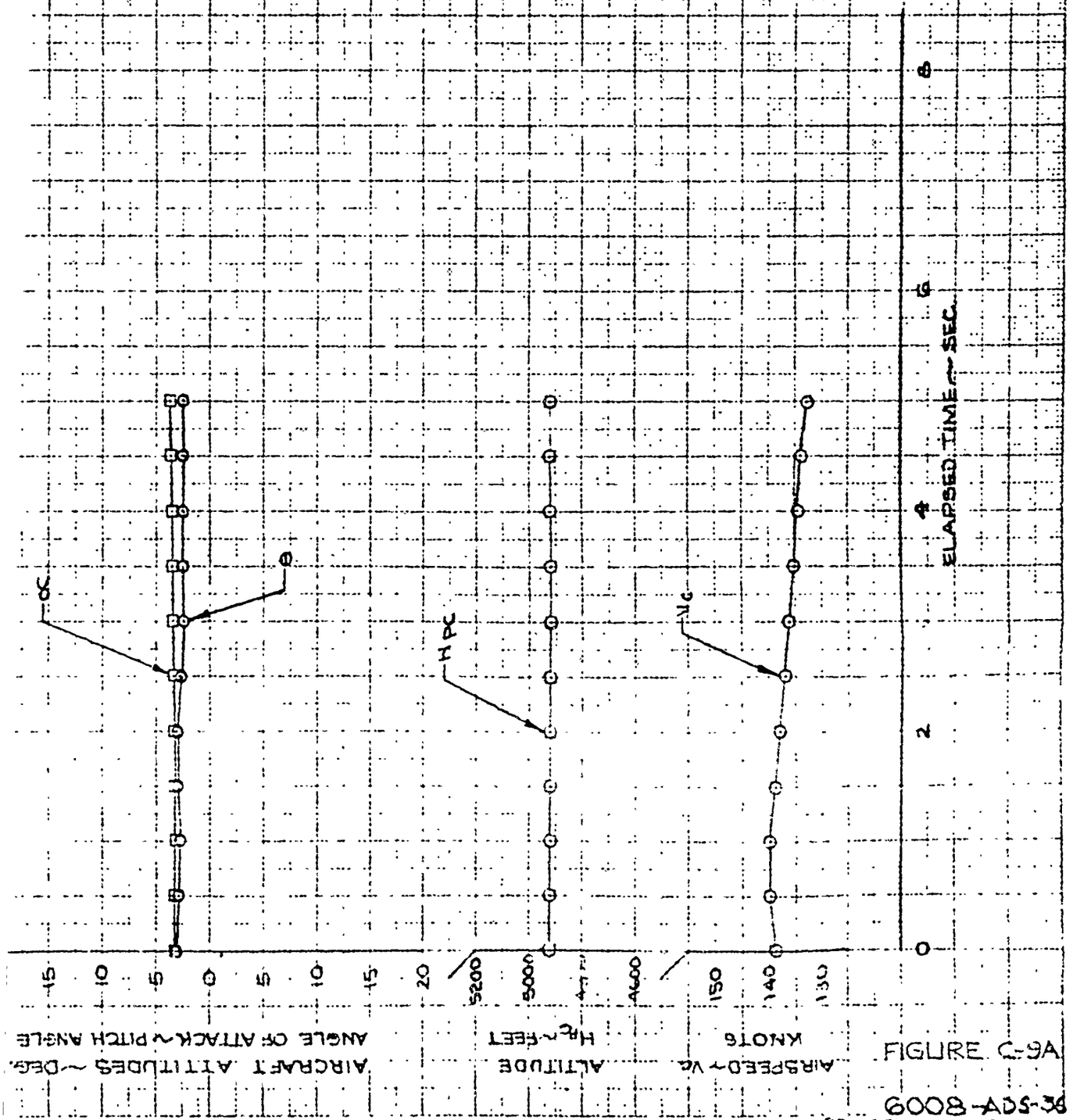
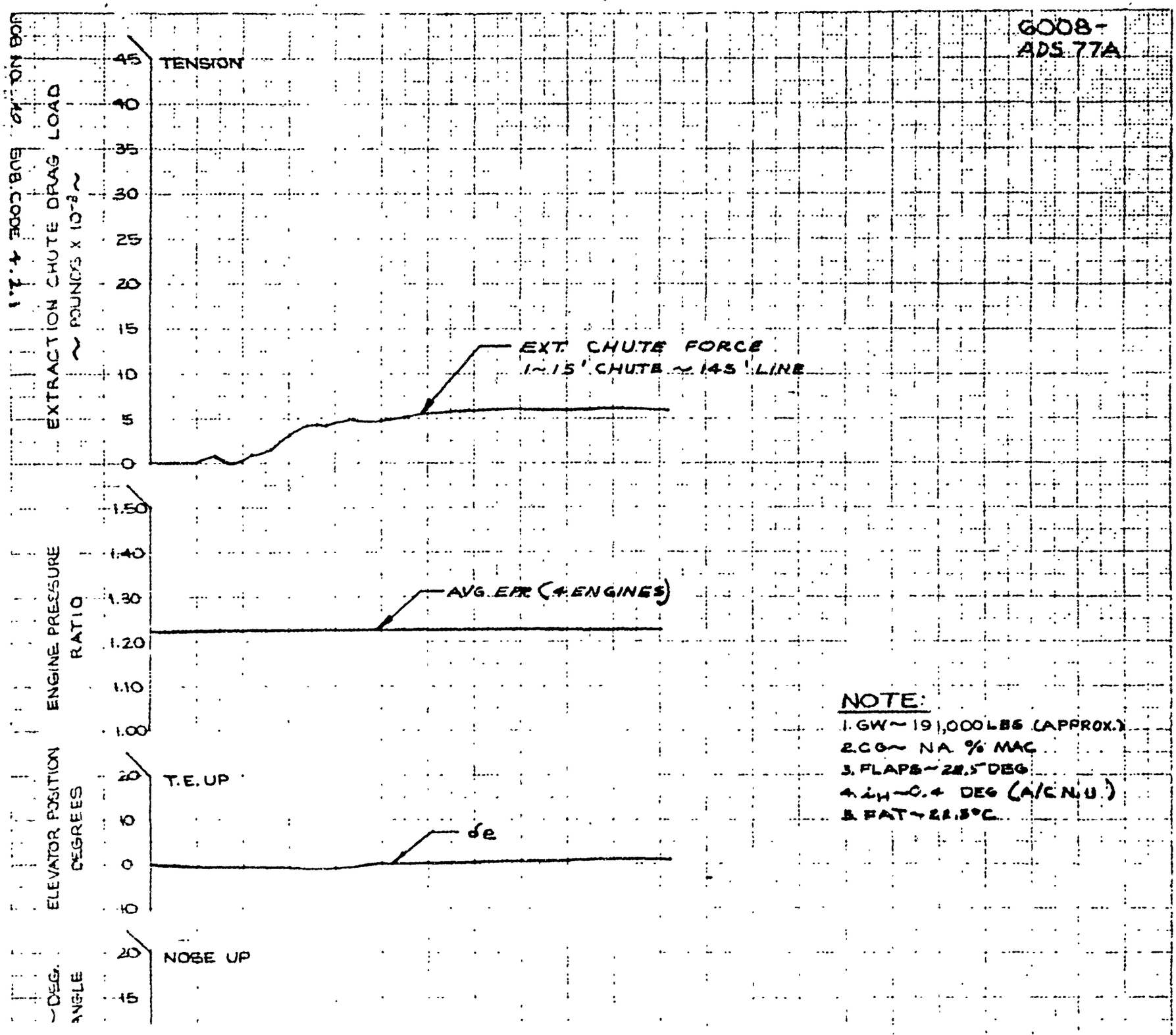


FIGURE C-9A

6008-ADS-36
REVISED 12-8-65 MBH

6008-
ADS 77A



NOTE:

1. GW ~ 191,000 LBS (APPROX.)
2. C.G. ~ NA % MAC
3. FLAPS ~ 28.5° DEG
4. i_H ~ 0.4 DEG (A/C N.U.)
5. FAT ~ 21.5°C

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT~122 DATE ~ 5-11-65

RUN 1

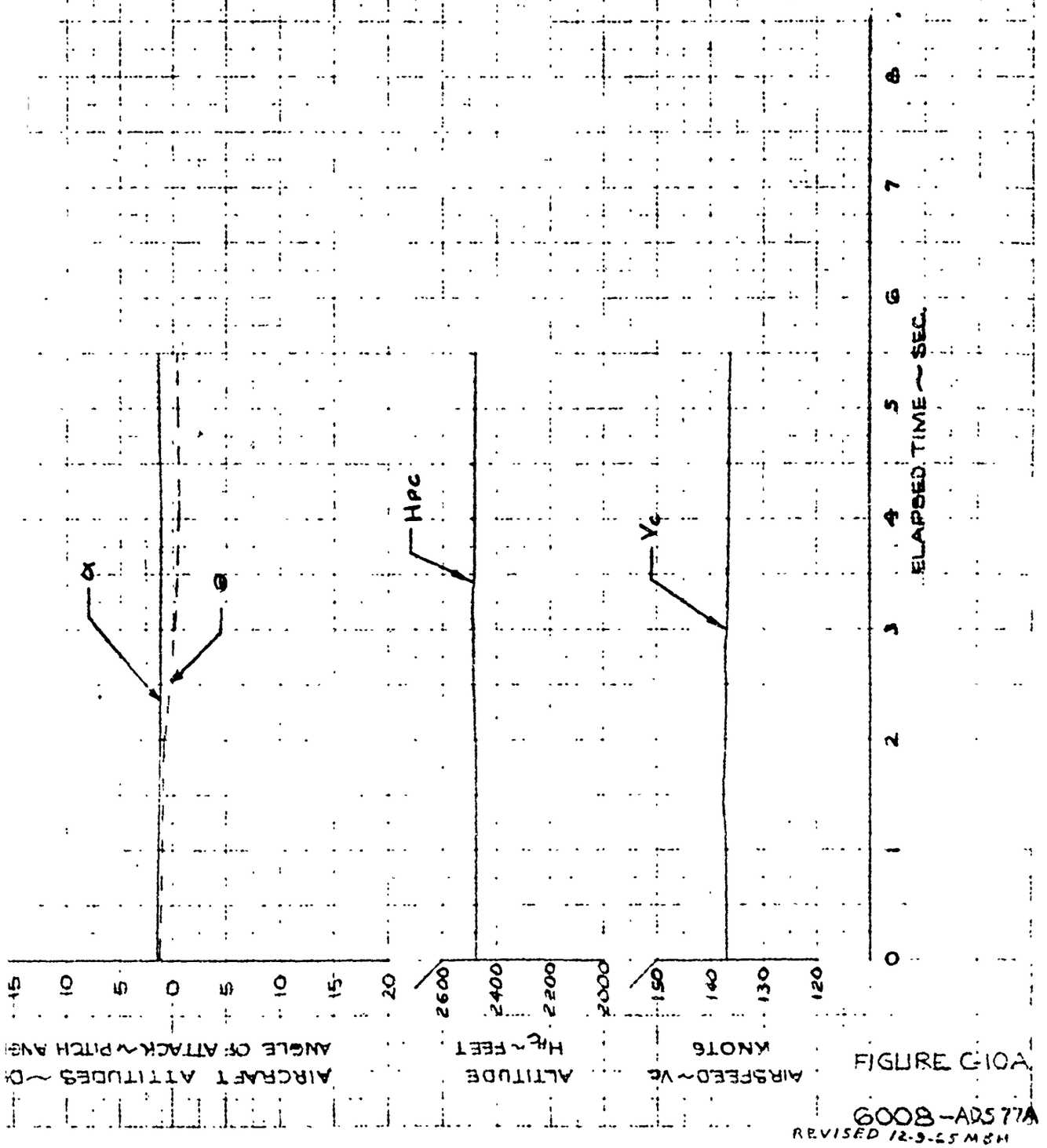
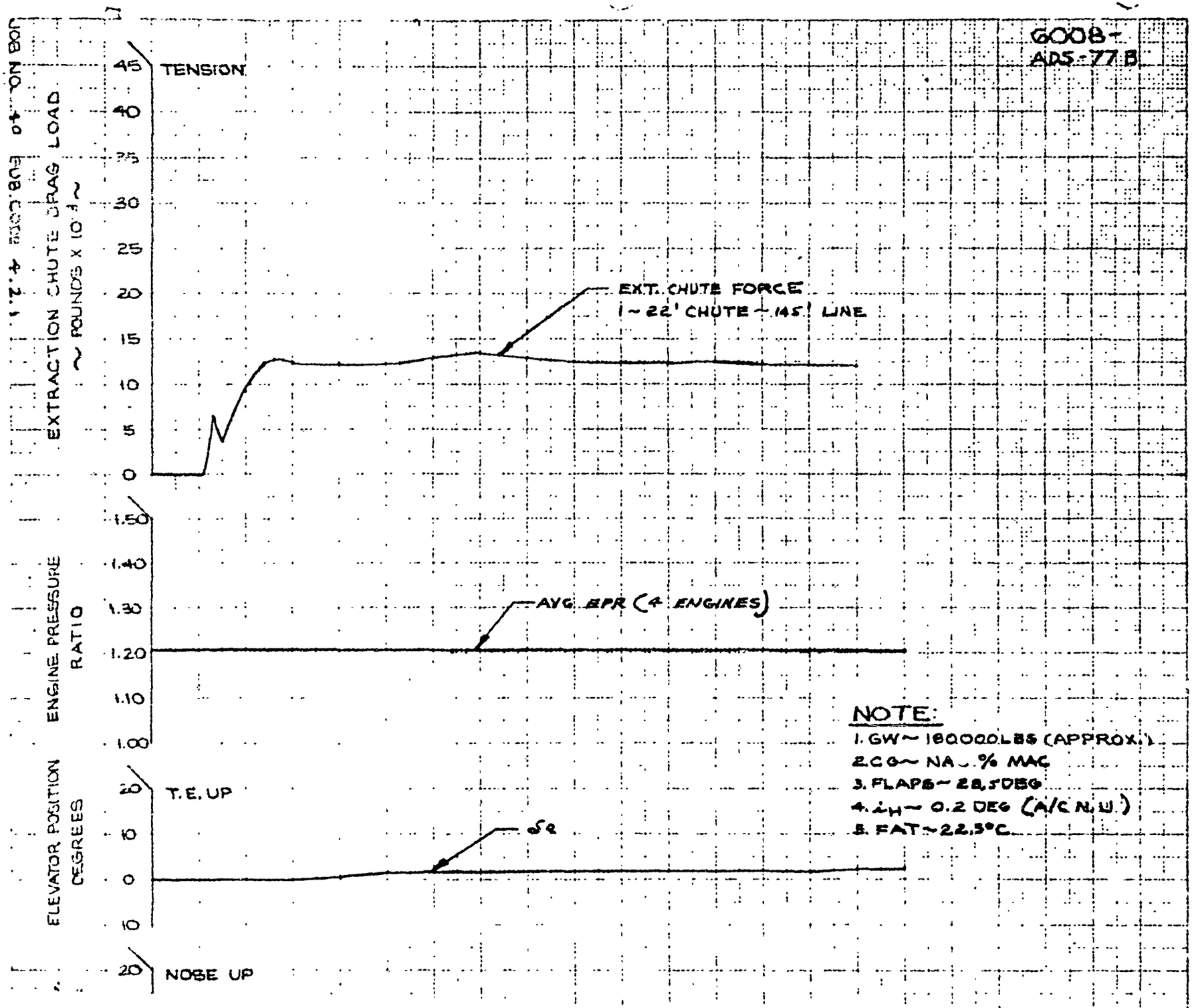


FIGURE C-10A

6008-ADS 77A

REVISED 12-9-65 MGH


6008-
ADS-77B
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10³ ~
45
40
35
30
25
20
15
10
5
0
TENSION
EXT. CHUTE FORCE
1 ~ 22' CHUTE ~ 145' LINE
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVG EPR (4 ENGINES)
ELEVATOR POSITION DEGREES
20
15
10
5
0
5
10
T.E. UP
δe
NOSE UP
NOTE:
1. GW ~ 180000 LBS (APPROX.)
2. CG ~ NA % MAC
3. FLAPS ~ 28.5 DEG
4. iH ~ 0.2 DEG (A/C N.U.)
5. FAT ~ 22.5°C

PREPARED BY RSA
DATE 5-11-65
CHECKED BY

ER 5473
MODEL C-141A
PAGE C-28

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT ~ 122 DATE ~ 5-11-65

RUN 2

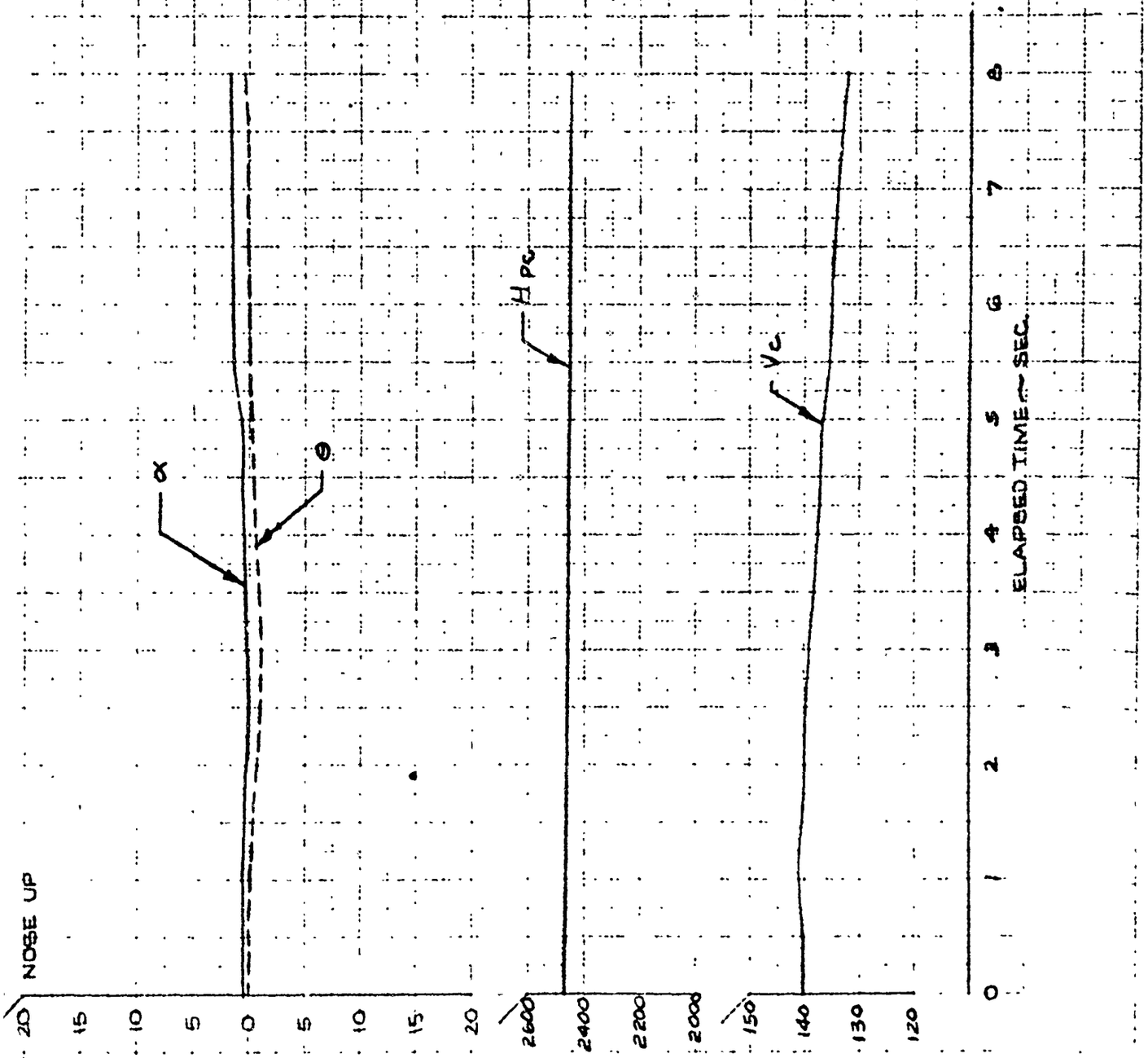


FIGURE C-10

6008-ADS 7113
REVISED 12-9-
MRH

6008+
ADS 770
NOTE:
1. GW~ 175000 LBS (APPROX.)
2. CG~ NA % MAC
3. FLAPS~28.3 DEG
4. ΔH~ 0.3 DEG (A/C N.U.)
5. SAT~24.5 °C.
EXT. CHUTE FORCE
I~ 28' CHUTE~ 145' LINE
AVG. EPR (4 ENGINES)
SA
EXTRACTION CHUTE DRAG LOAD
~ POUNDS x 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
ELEVATOR POSITION DEGREES
T.E. UP
20
10
0
10
NOSE UP
20
15
JOB NO. 40 SUB.CODE 4.2.1

TEP & REA
5-11-65

C-141A
C-29

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT~123 DATE~5-11-65

RUN 3

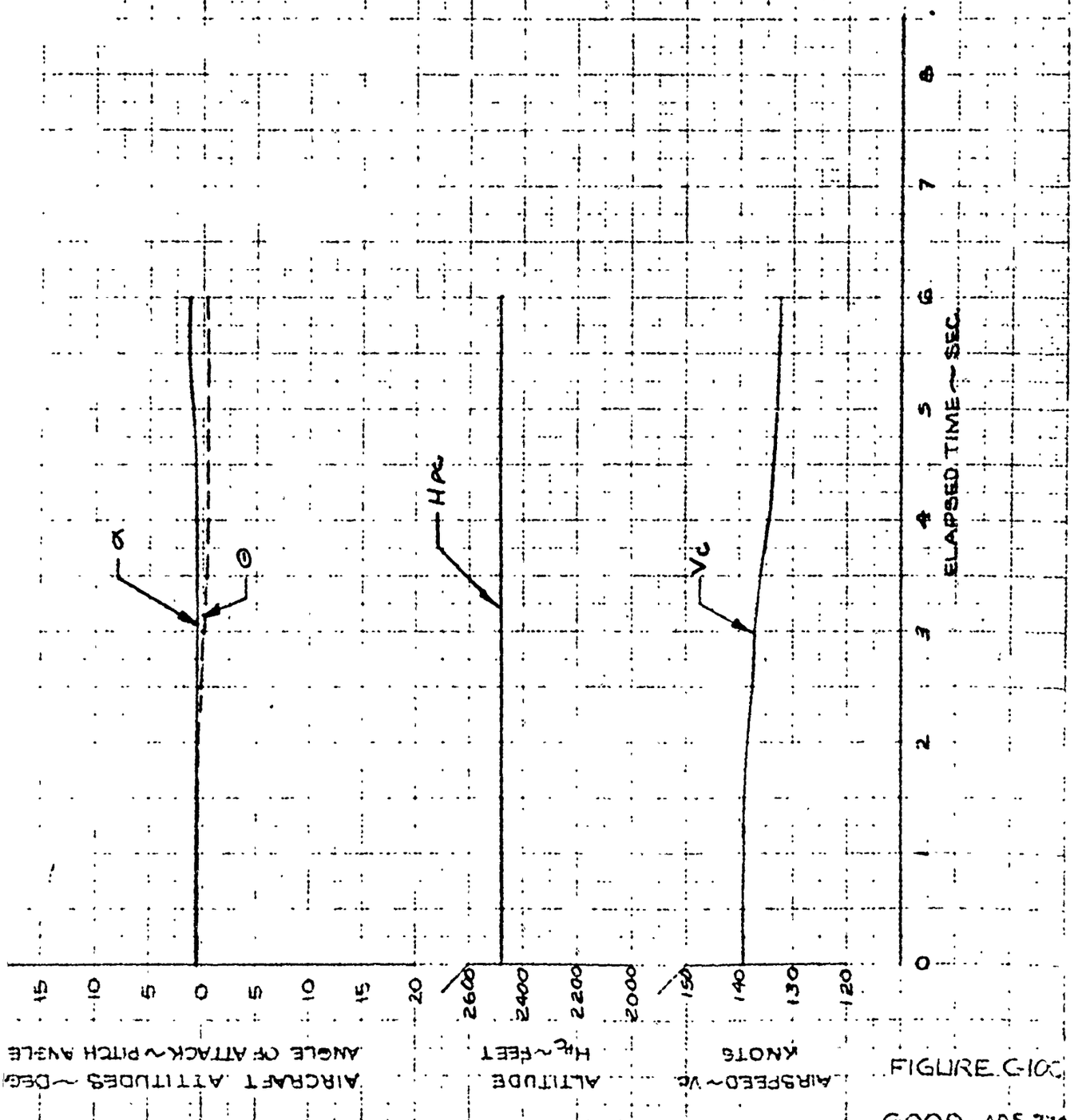
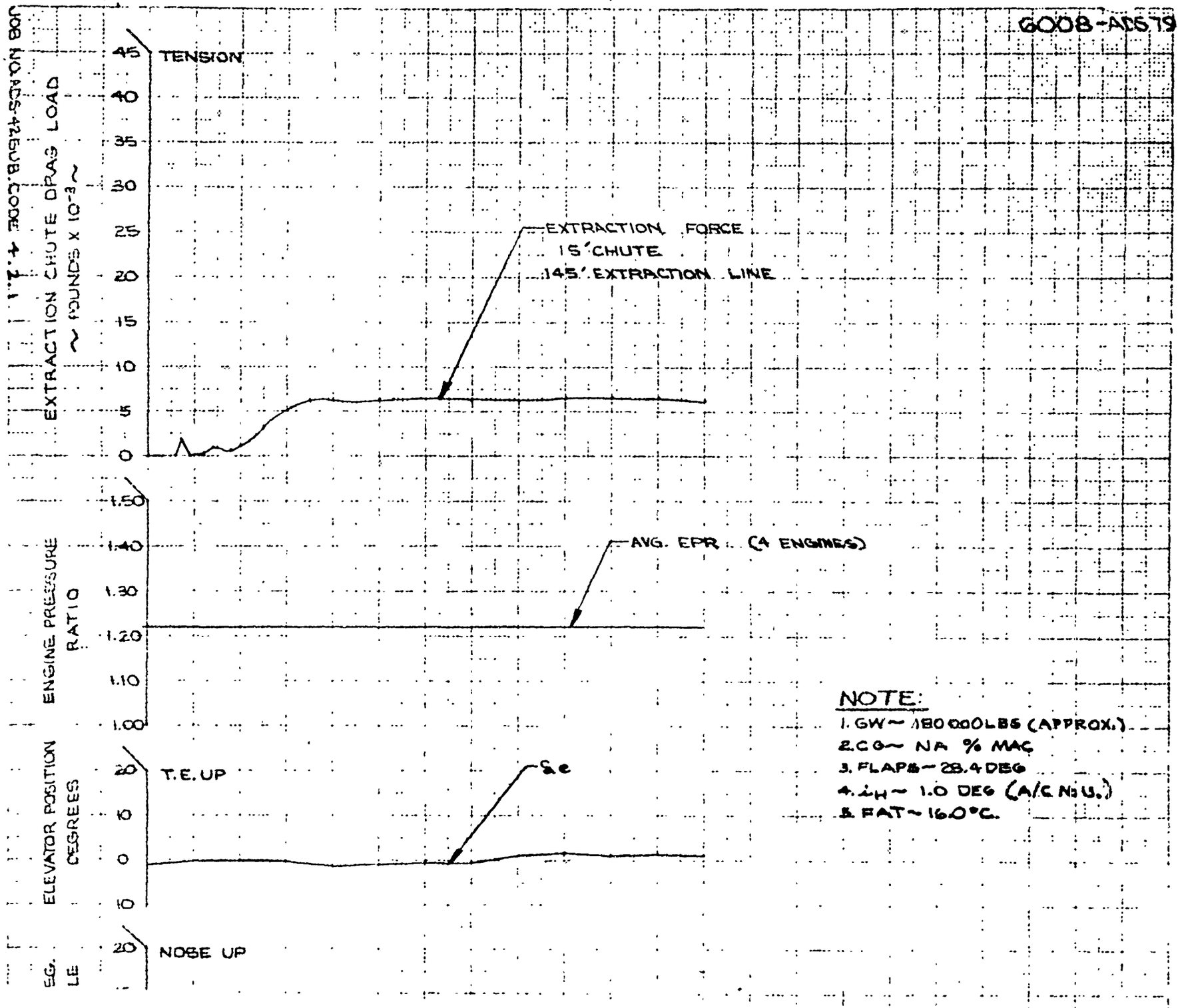


FIGURE C-10C

6008-ADS 770

REVISED 12-9-65 MBH

6008-A0579



NOTE:

1. GW ~ 180 000 LBS (APPROX.)
2. C.G ~ NA % MAC
3. FLAPS ~ 28.4 DEG
4. i_H ~ 1.0 DEG (A/C NOSE U.)
5. FAT ~ 16.0°C.

TED
5-13-65

C-141A
C-30

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT-124 DATE-5-13-65

RUN 1

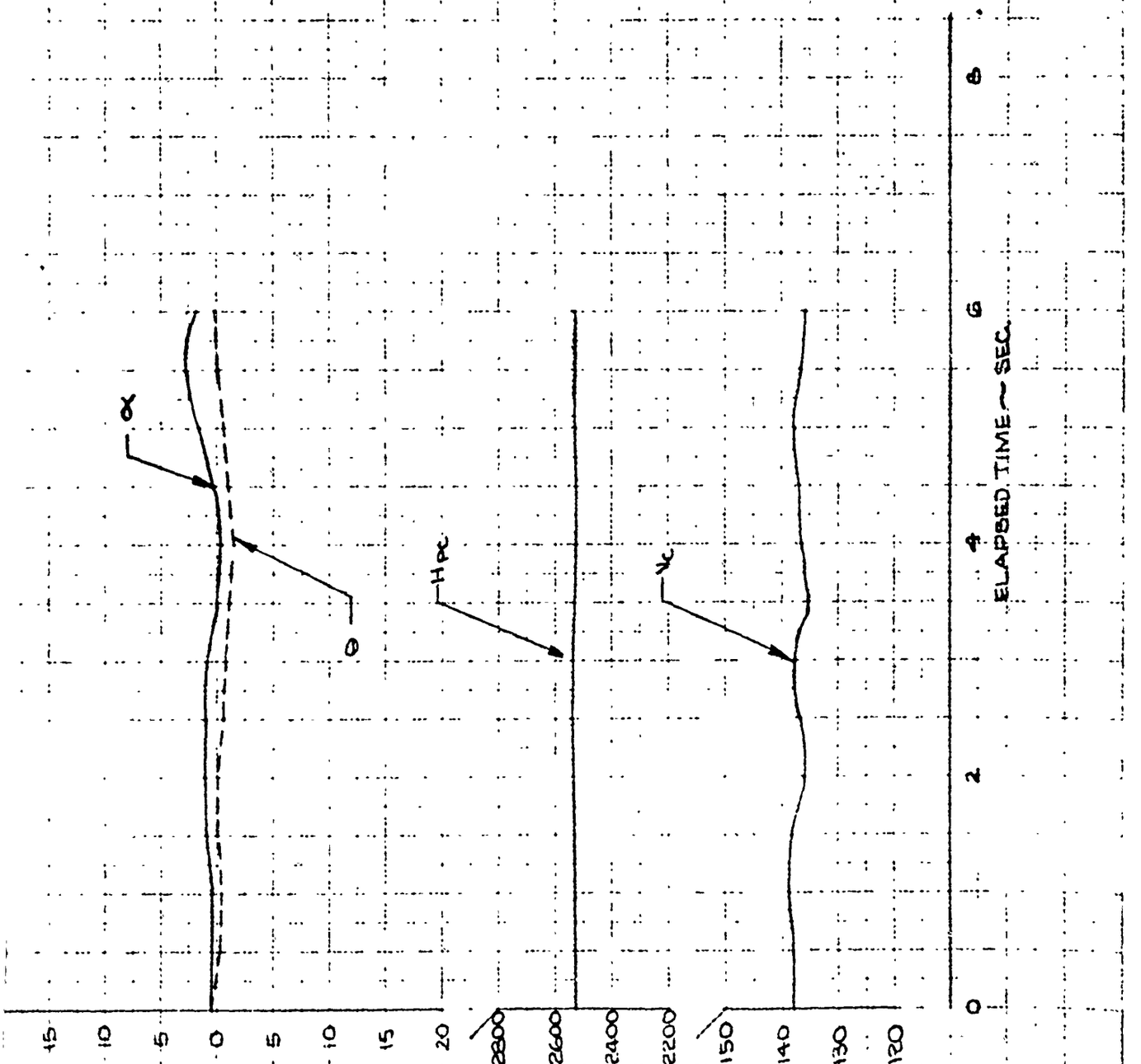
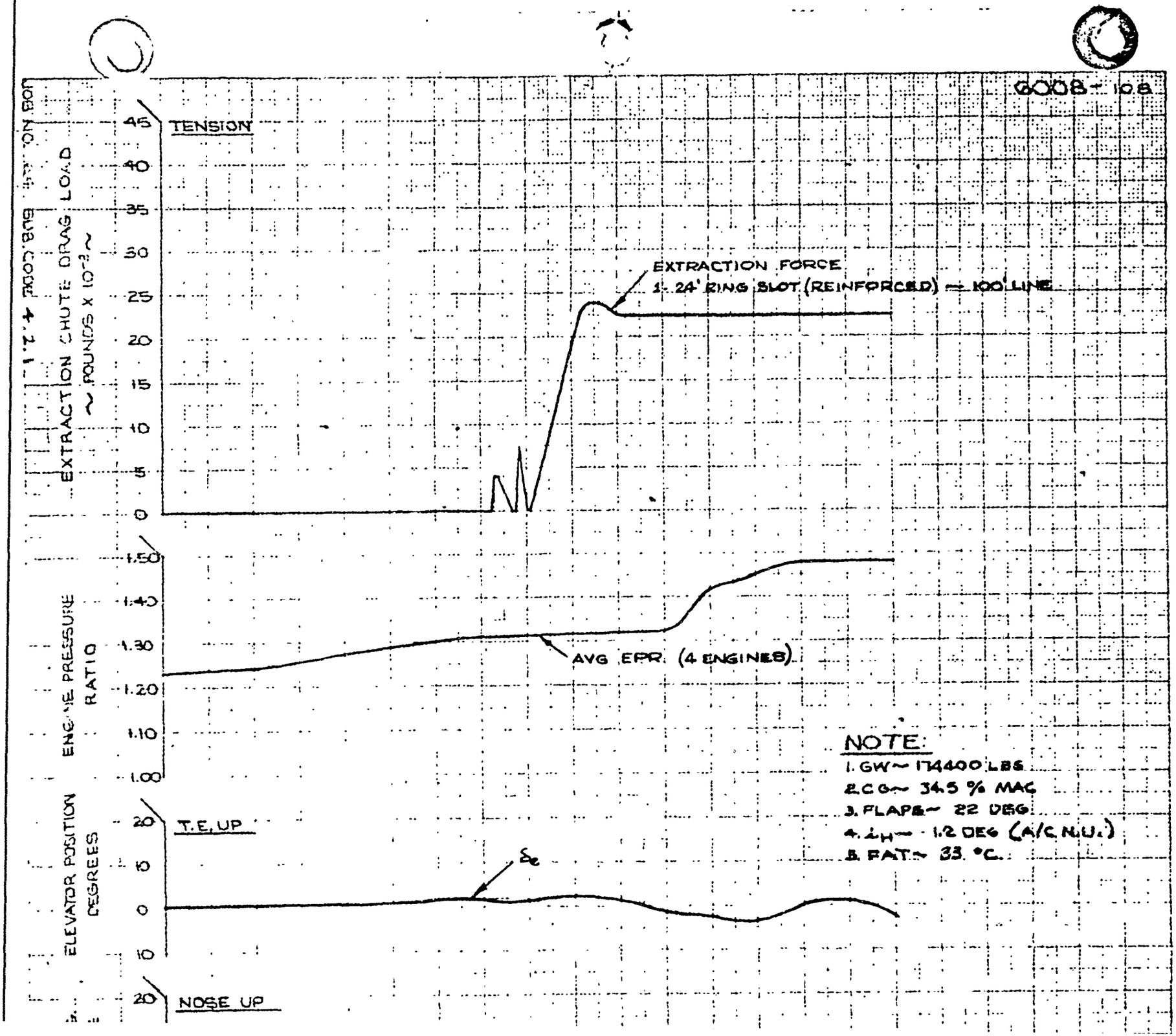


FIGURE C-11A

6008-ADS 79

REVISED 12-9-65
NBN


6008-108
EXTRACTION CHUTE DRAG LOAD ~ POUNDS X 10^{-2} ~
45
40
35
30
25
20
15
10
5
0
TENSION
EXTRACTION FORCE
1. 24' RING SLOT (REINFORCED) — 100' LINE
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVG EPR (4 ENGINES)
ELEVATOR POSITION DEGREES
20
15
0
10
20
T.E. UP
NOSE UP
δ_e
NOTE:
1. GW ~ 174400 LBS
2. CG ~ 34.5 % MAC
3. FLAPS ~ 22 DEG
4. i_H ~ 1.2 DEG (A/C N.U.)
5. FAT ~ 33 °C.

PREPARED BY 219
DATE 7-16-65
CHECKED BY

LOCKHEED GEORGIA COMPANY

ER 5473
C-141A
C-31

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 152 DATE 7-14-65

RUN 1

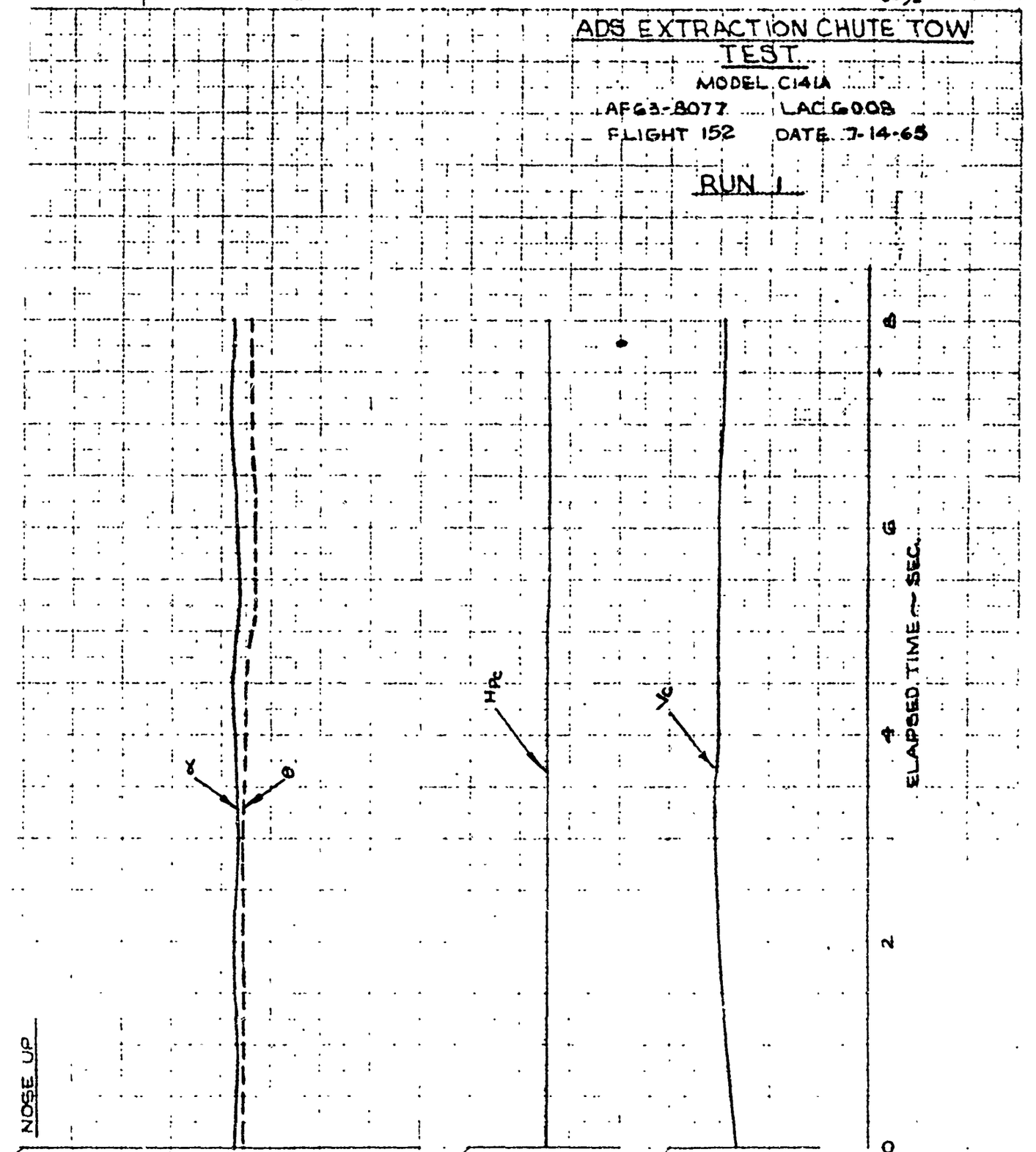
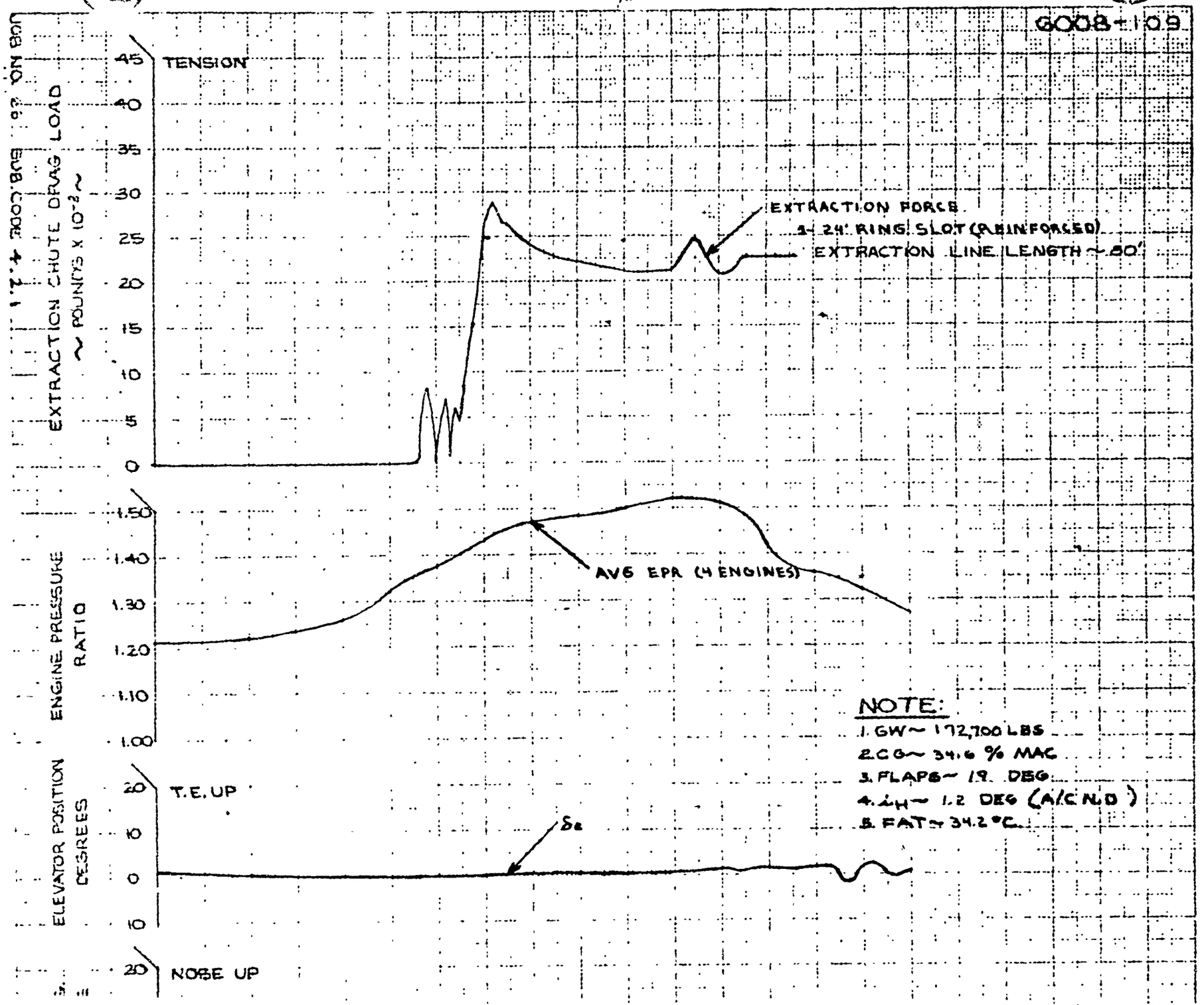


FIGURE C-12A

6008-108
REVISED 12-9-65
MBH


6008-109
EXTRACTION CHUTE DRAG LOAD ~ POUNDS X 10^{-2} ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
1-24' RING SLOT (REINFORCED)
EXTRACTION LINE LENGTH ~ 80'
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVG EPR (4 ENGINES)
NOTE:
1. GW ~ 172,700 LBS
2. C.G ~ 34.6 % MAC
3. FLAPS ~ 19. DEG
4. i_H ~ 1.2 DEG (A/C NOD)
5. FAT ~ 34.2 °C
ELEVATOR POSITION DEGREES
20
T.E. UP
10
0
10
δ_e
20
NOSE UP

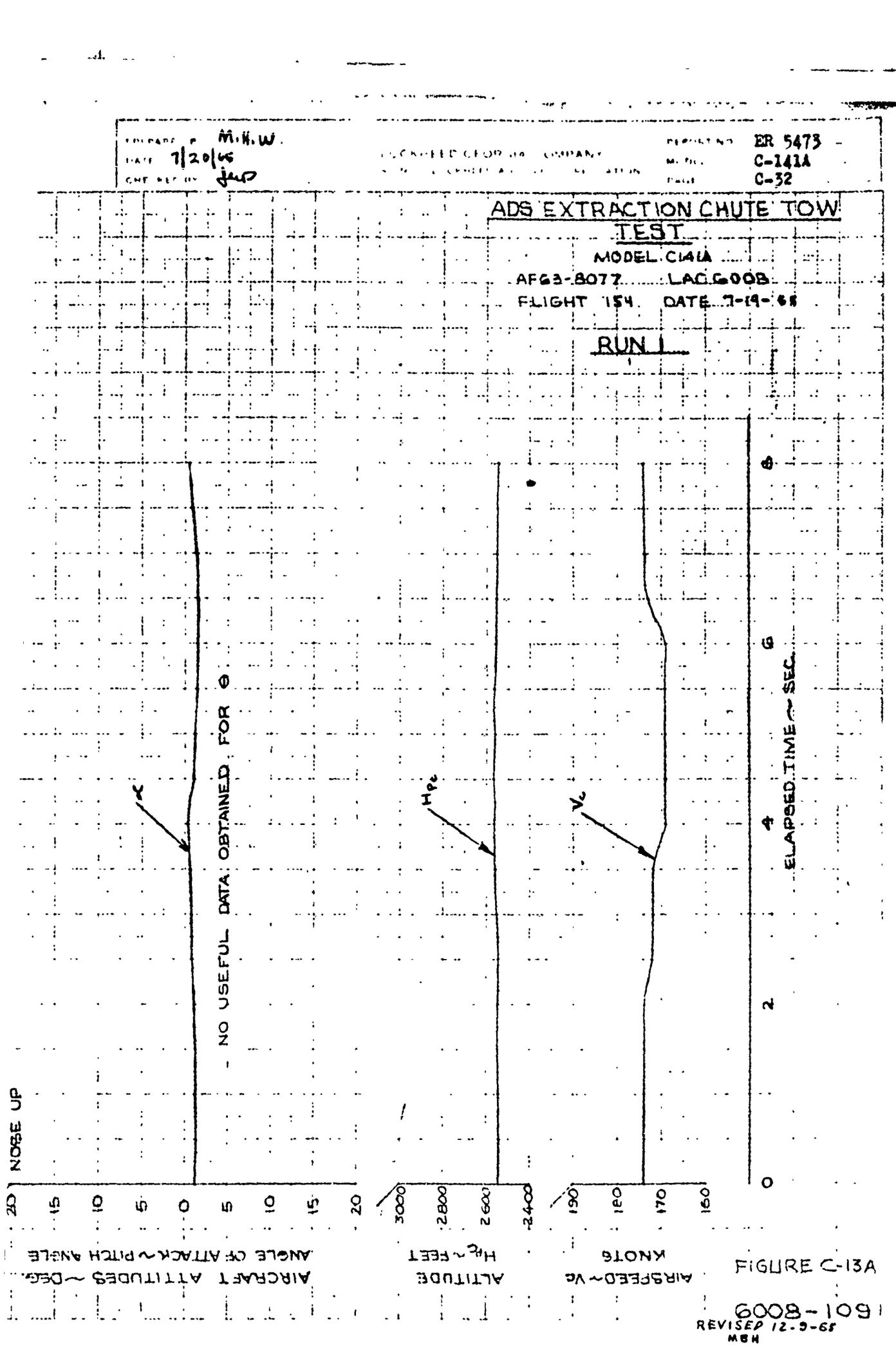
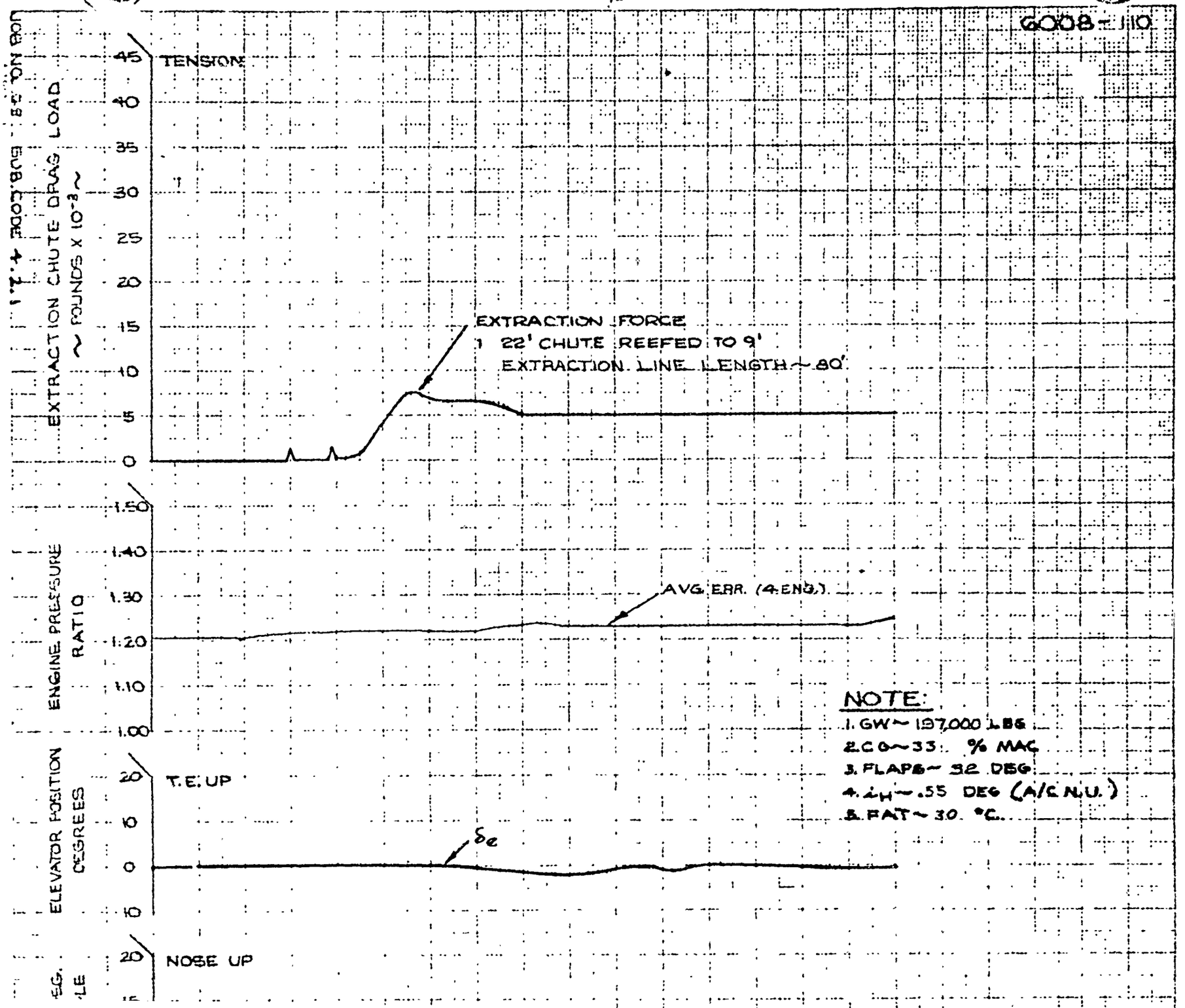


FIGURE C-13A

6008-109

REVISED 12-9-65
MBH


6008-110
EXTRACTION CHUTE DRAG LOAD ~ POUNDS X 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
1 22' CHUTE REEFED TO 9'
EXTRACTION LINE LENGTH ~ 80'
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVG. ERR. (4 ENG.)
NOTE:
1. GW ~ 197,000 LBS
2. CG ~ 33. % MAC
3. FLAPS ~ 32 DEG
4. i_H ~ .55 DEG (A/C N.U.)
5. FAT ~ 30. °C.
ELEVATOR POSITION DEGREES
T.E. UP
20
10
0
10
δ_e
NOSE UP
20

PREPARED BY RID
DATE 7-26-65
CHECKED BY [illegible]

ER 5473
C-141A
C-33

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 156 DATE 7-21-65

RUN 2

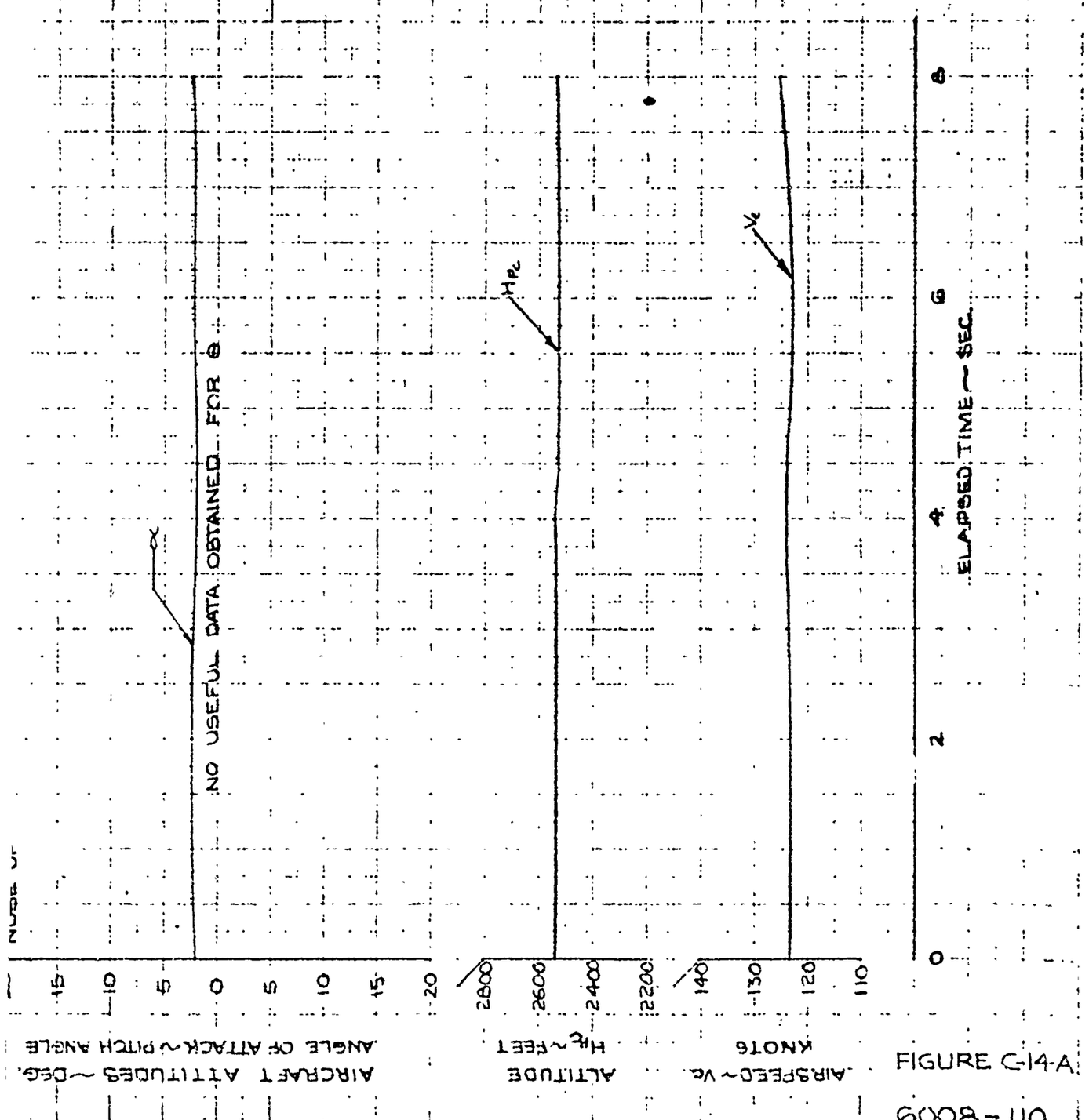


FIGURE C-14-A

6008-110
REVISED 12-9-65
MBH

6008+115A
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~
TENSION
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
(22' CHUTE REEFED TO APPROX. 9')
EXTRACTION LINE LENGTH ~ 80'
ENGINE PRESSURE
RATIO
AVG. E.P.R. (4 ENGINES)
1.50
1.40
1.30
1.20
1.10
1.00
ELEVATOR POSITION
DEGREES
T.E. UP
20
10
0
10
20
NOSE UP
Se
NOTE:
1. GW ~ 192,000 LBS.
2. CG ~ 33.2% MAC
3. FLAPS ~ 32 DEG.
4. δH ~ 0 DEG (NEUT.)
5. FAT ~ 30.5°C.
JOB NO. 17Q SUB. CODE 4.2.1

PREPARED BY RID & MBH
DATE 7-27-65
CHECKED BY [illegible]

A CONVAIR DIVISION OF GENERAL DYNAMICS CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE C-34

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 159 DATE 7-26-65

RUN 1

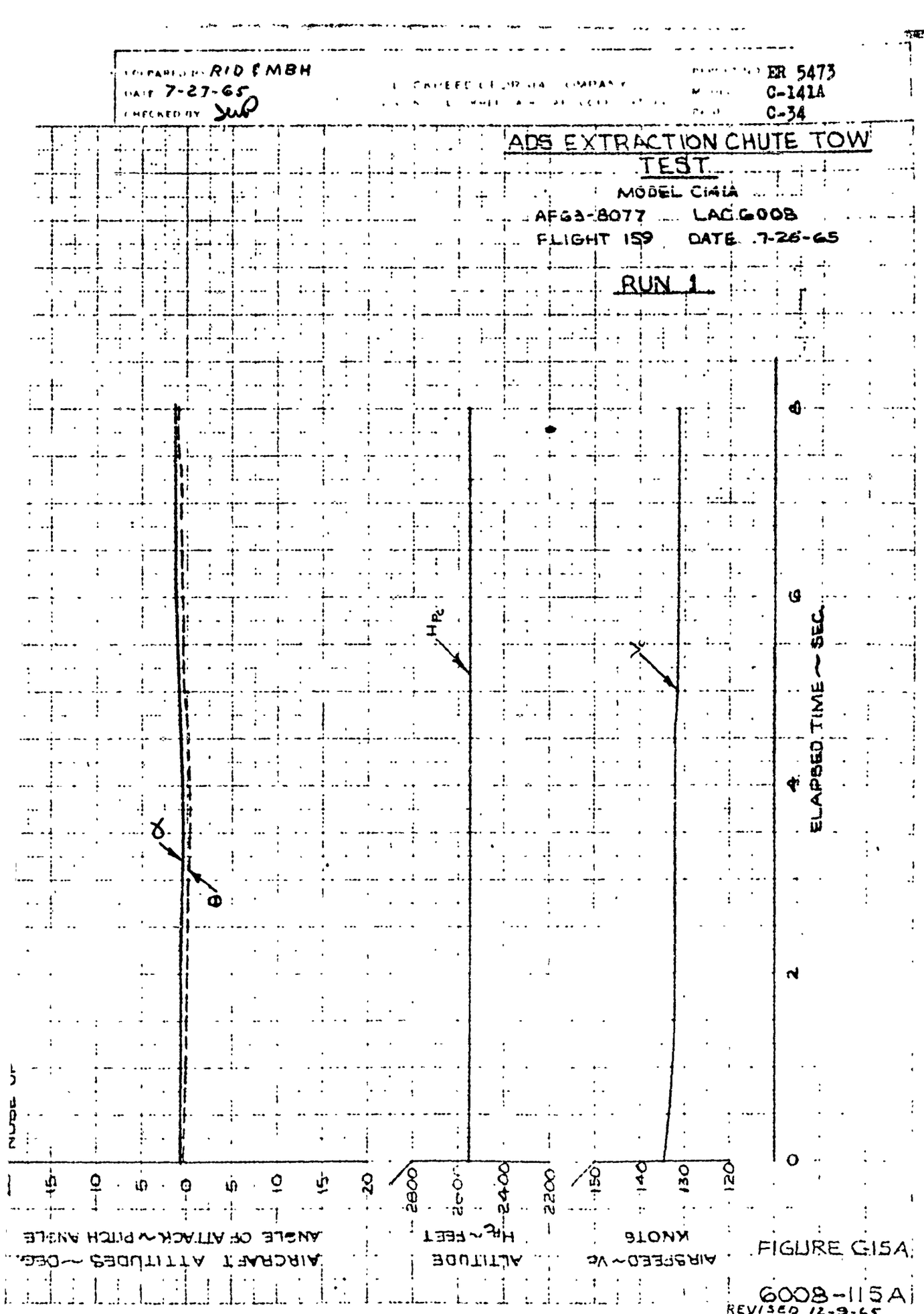
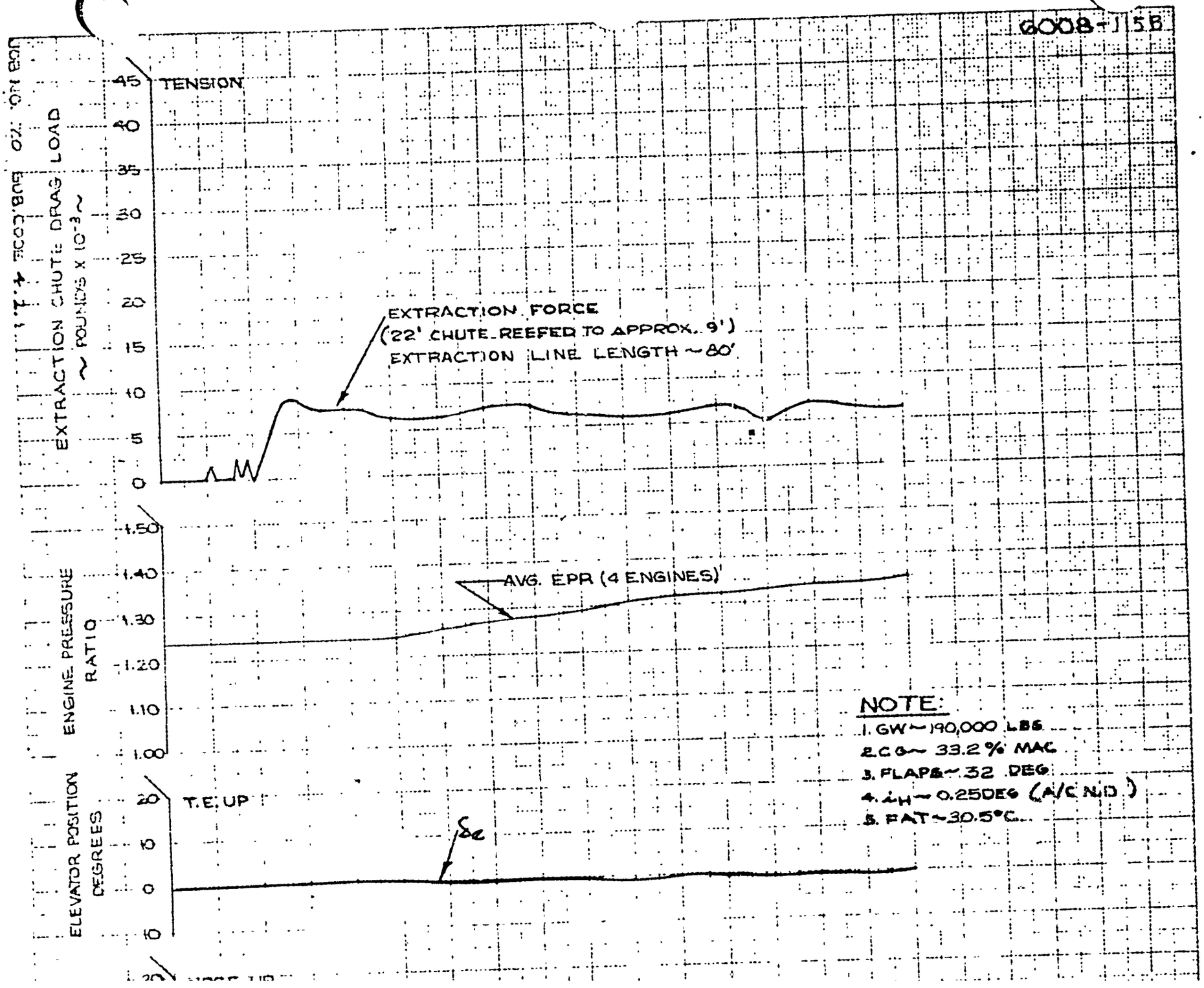


FIGURE C-15A

6008-115A
REVISED 12-9-65
MBH

6008-115B


TENSION
EXTRACTION CHUTE DRAG LOAD ~ POUNDS X 10⁻³ ~
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
(22' CHUTE REEFED TO APPROX. 9')
EXTRACTION LINE LENGTH ~ 80'
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVG. EPR (4 ENGINES)
ELEVATOR POSITION DEGREES
20
15
10
0
T.E. UP
δe
NOTE:
1. GW ~ 190,000 LBS
2. C.G ~ 33.2% MAC
3. FLAPS ~ 32 DEG
4. i_H ~ 0.25DEG (A/C N.D.)
5. FAT ~ 30.5°C

RIO & MBH
7-27-65
Jump

C-141A
C-35

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 159 DATE 7-26-65

RUN 2

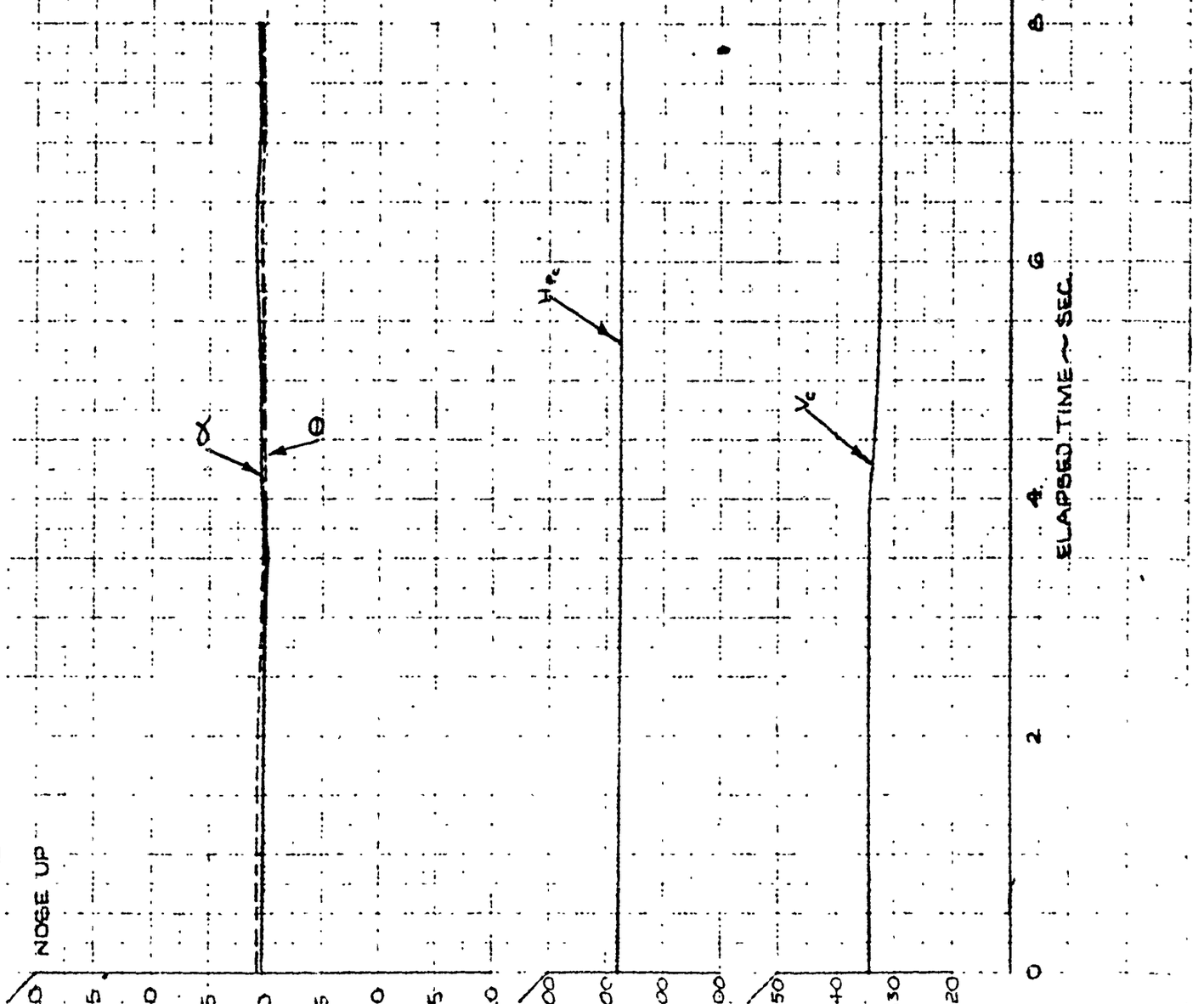


FIGURE G-15B

6008-115B
REVISED 12-9-65
MBH

GOOST LITA
EXTRACTION FORCE
11 22' CHUTE REEFED TO 9', EXTRACTION LINE LENGTH ~ 50'
AVG. EPR (4 ENGINES)
δe
NOTE:
1. GW ~ 177,000 LBS
2. CG ~ 33.5% MAC
3. FLAPS ~ 25 DEG.
4. ΔH ~ 10K DEG (A/C NU.)
5. SAT ~ 33 °C
TENSION
~ POUNDS X 10³ ~
EXTRACTION CHUTE DRAG LOAD
ENGINE PRESSURE RATIO
ELEVATOR POSITION DEGREES
T.E. UP
NOSE UP
SUB.CODE 4.2.1

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AFGS-8077 LAC 6008

FLIGHT 16.0 DATE 7-27-65

RUN 1

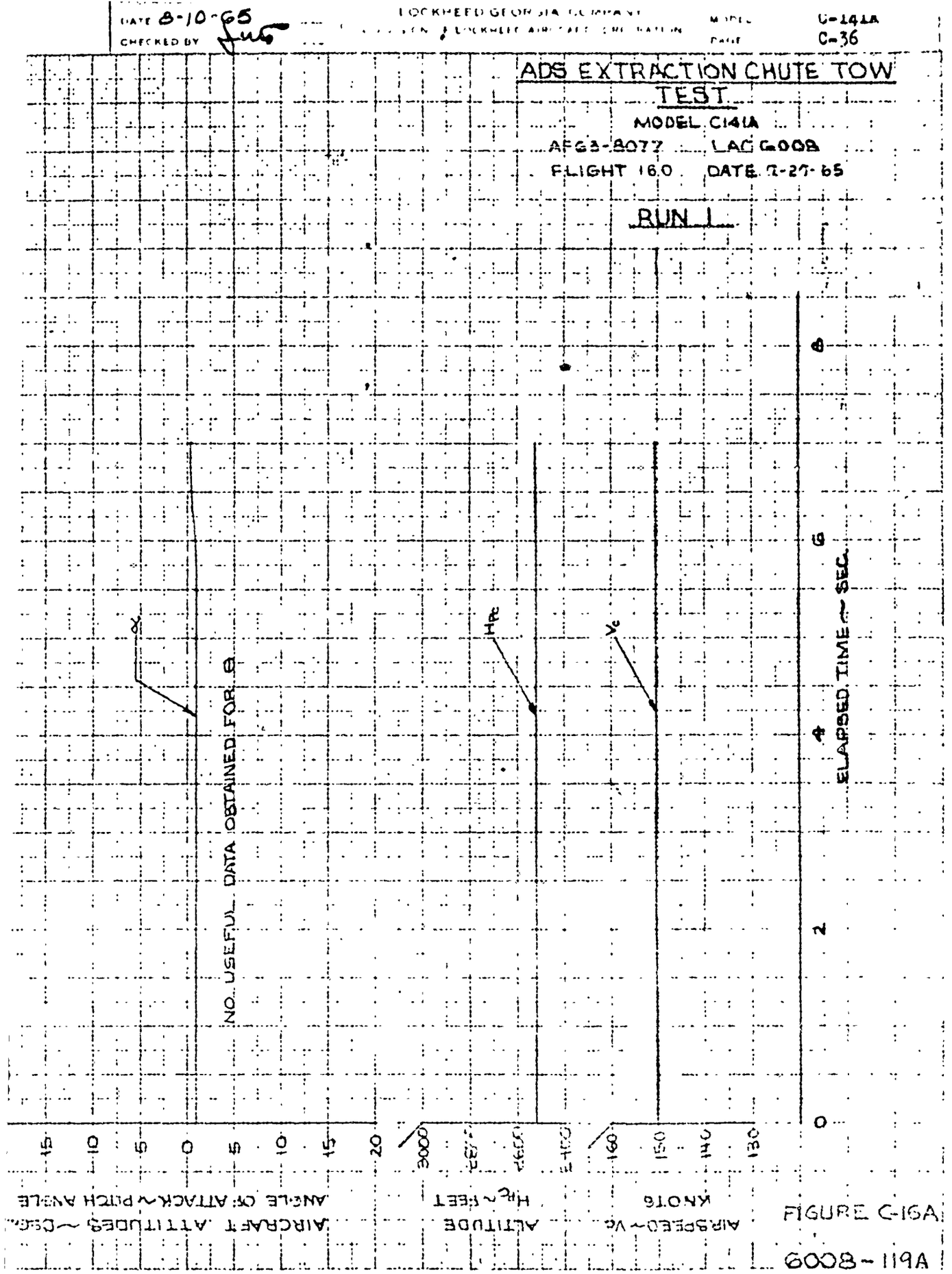
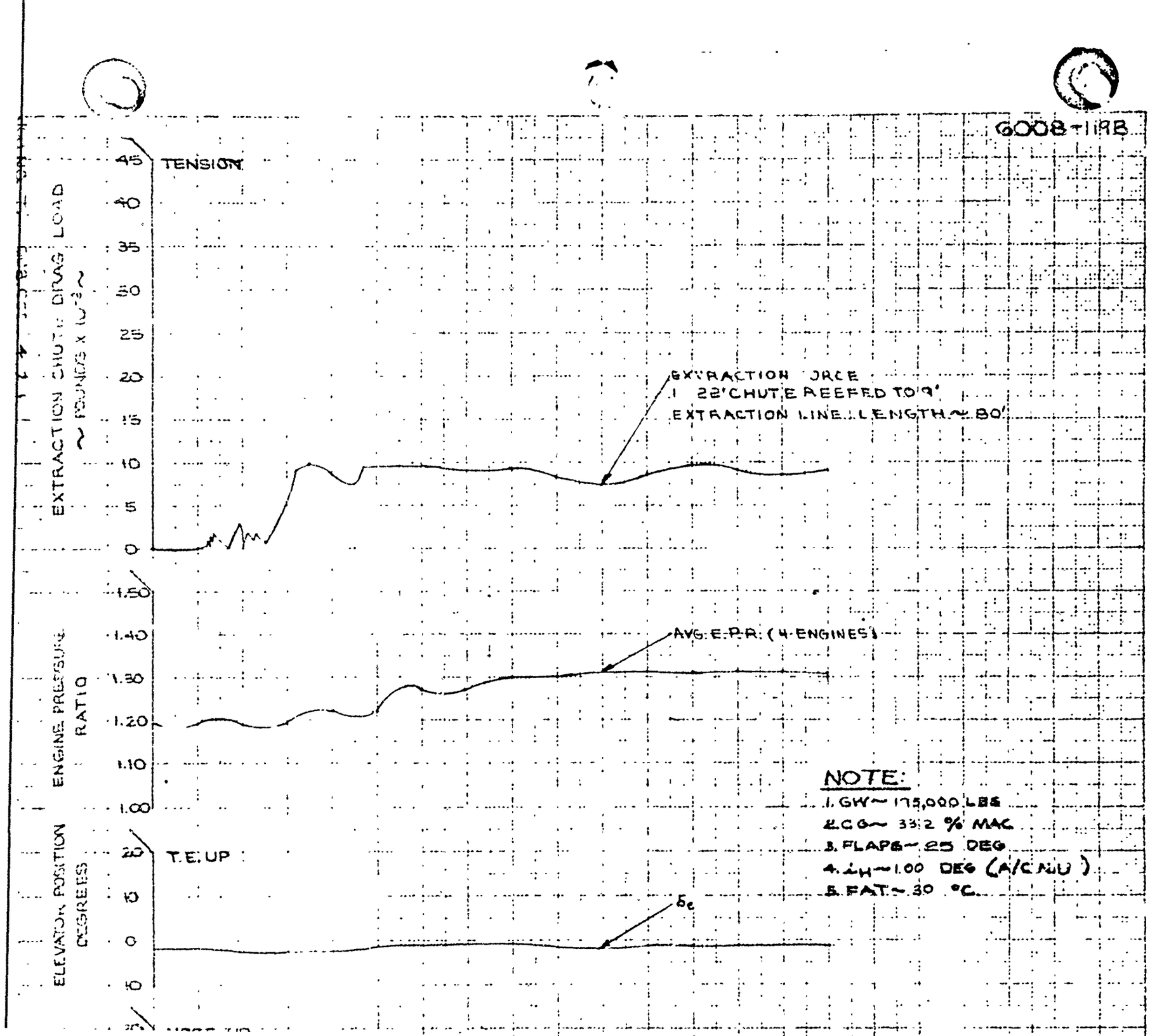


FIGURE C-16A

6008-119A


6008-11RB
TENSION
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10^-3 ~
45
40
35
30
25
20
15
10
5
0
EXTRACTION SPEED
1 22' CHUTE REEFED TO 9'
EXTRACTION LINE LENGTH ~ 80'
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVG E.P.R. (4 ENGINES)
ELEVATOR POSITION
DEGREES
T.E. UP
20
15
10
5
0
δe
NOTE:
1. GW ~ 175,000 LBS
2. CG ~ 33.2 % MAC
3. FLAPS ~ 25 DEG
4. iH ~ 1.00 DEG (A/C NU)
5. FAT ~ 30 °C

PREPARED BY MHW
DATE 8-10-65
CHECKED BY

LOCKHEED GEORGIA COMPANY

REPORT NO. ER 5475
MODEL C-141A
PAGE C-37

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 160 DATE 5-27-65

RUN 2

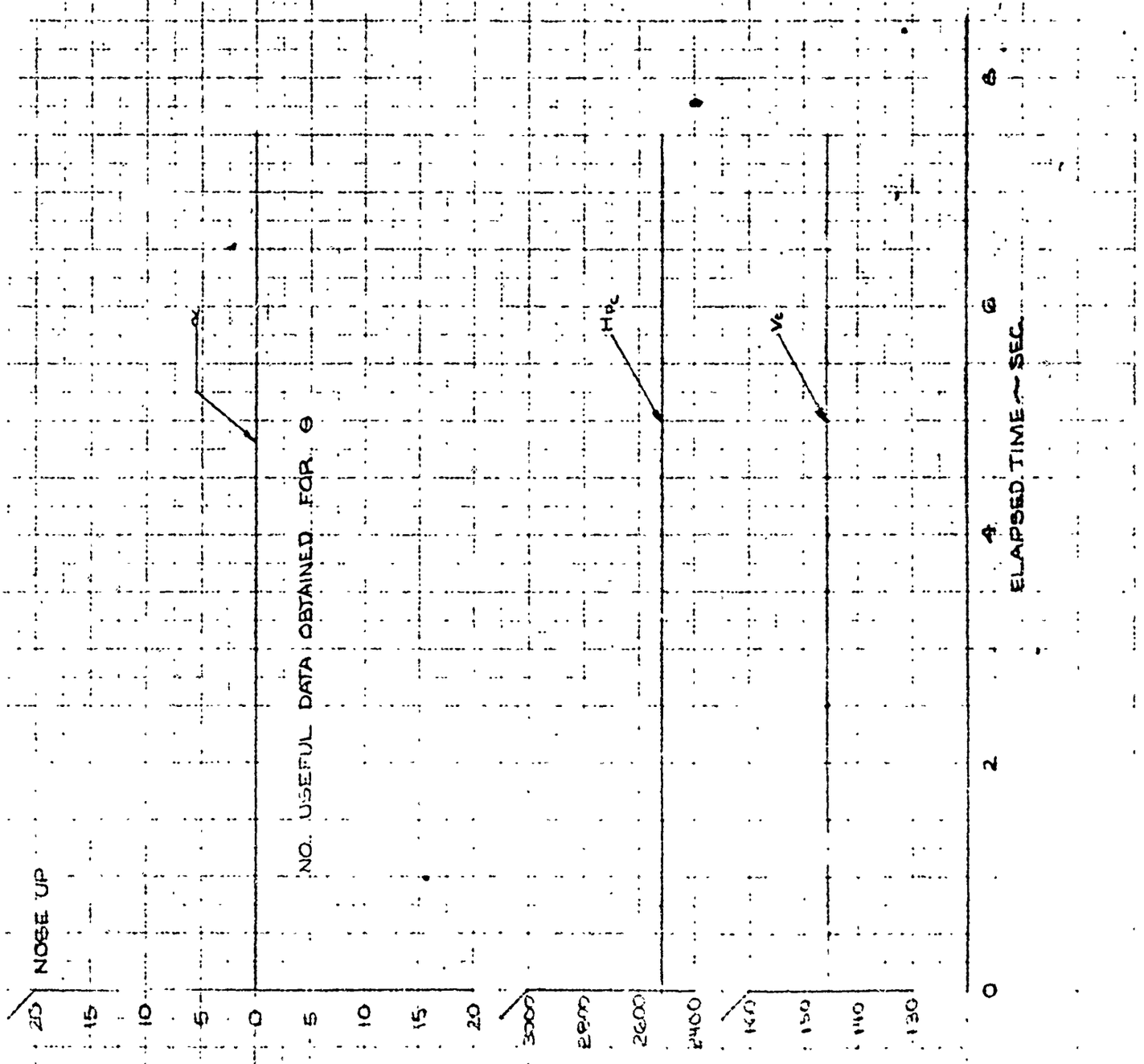
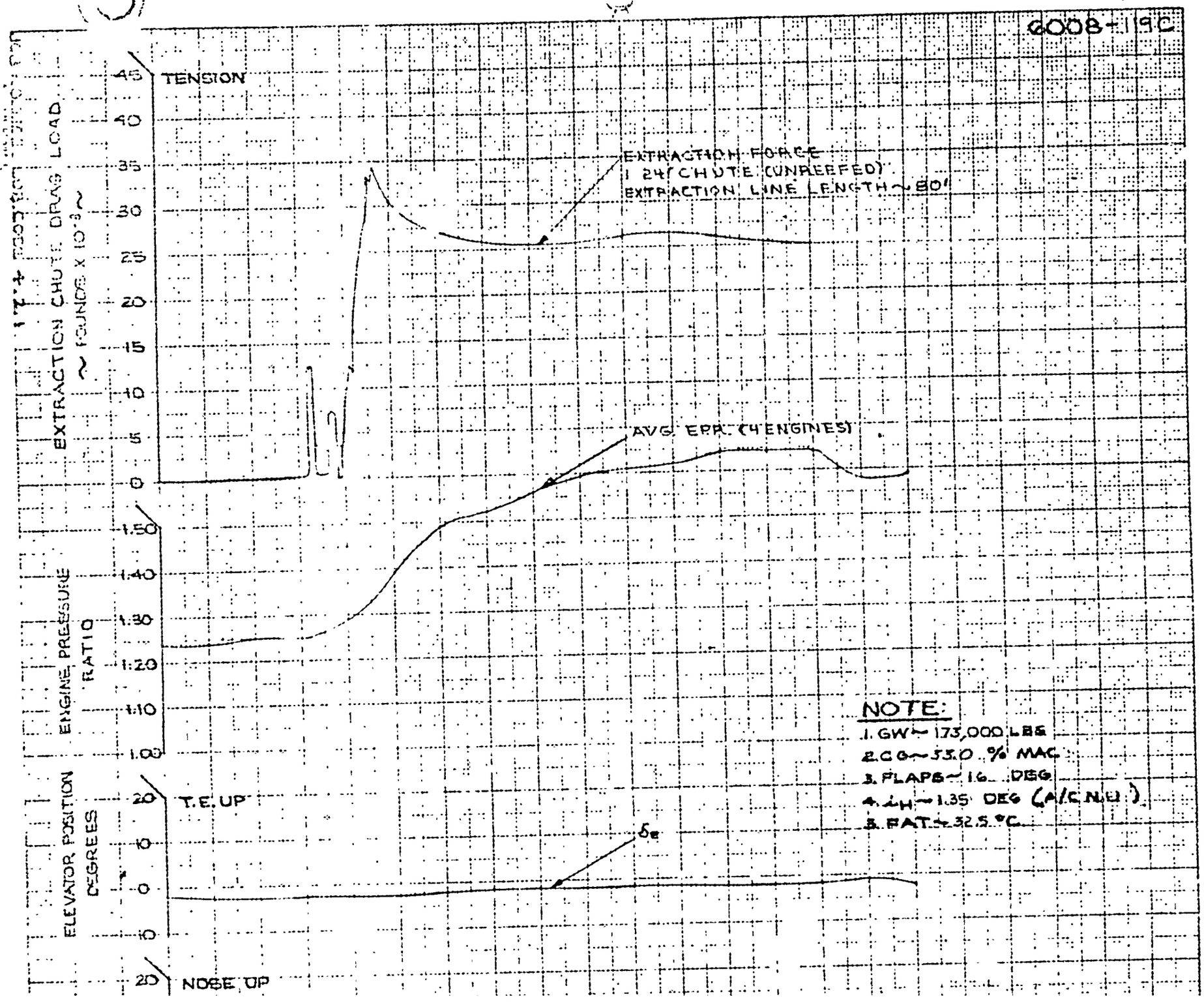


FIGURE G-52

6008-198


6008+19C
TENSION
EXTRACTION FORCE
1 24' CHUTE (UNREEFED)
EXTRACTION LINE LENGTH ~ 80'
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10³ ~
45
40
35
30
25
20
15
10
5
0
AVG EPR (4 ENGINES)
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
T.E. UP
δ_e
ELEVATOR POSITION DEGREES
20
0
-0
-10
-20
NOSE UP
NOTE:
1. GW ~ 173,000 LBS
2. C.G. ~ 33.0 % MAC
3. FLAPS ~ 16 DEG
4. i_H ~ 1.35 DEG (A/C NOSE)
5. FAT ~ 32.5 °C

PREPARED BY MHW
DATE 8-10-65
CHECKED BY JWO

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE C-38

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC S/N 008
FLIGHT 160 DATE 7-27-65

RUN 3

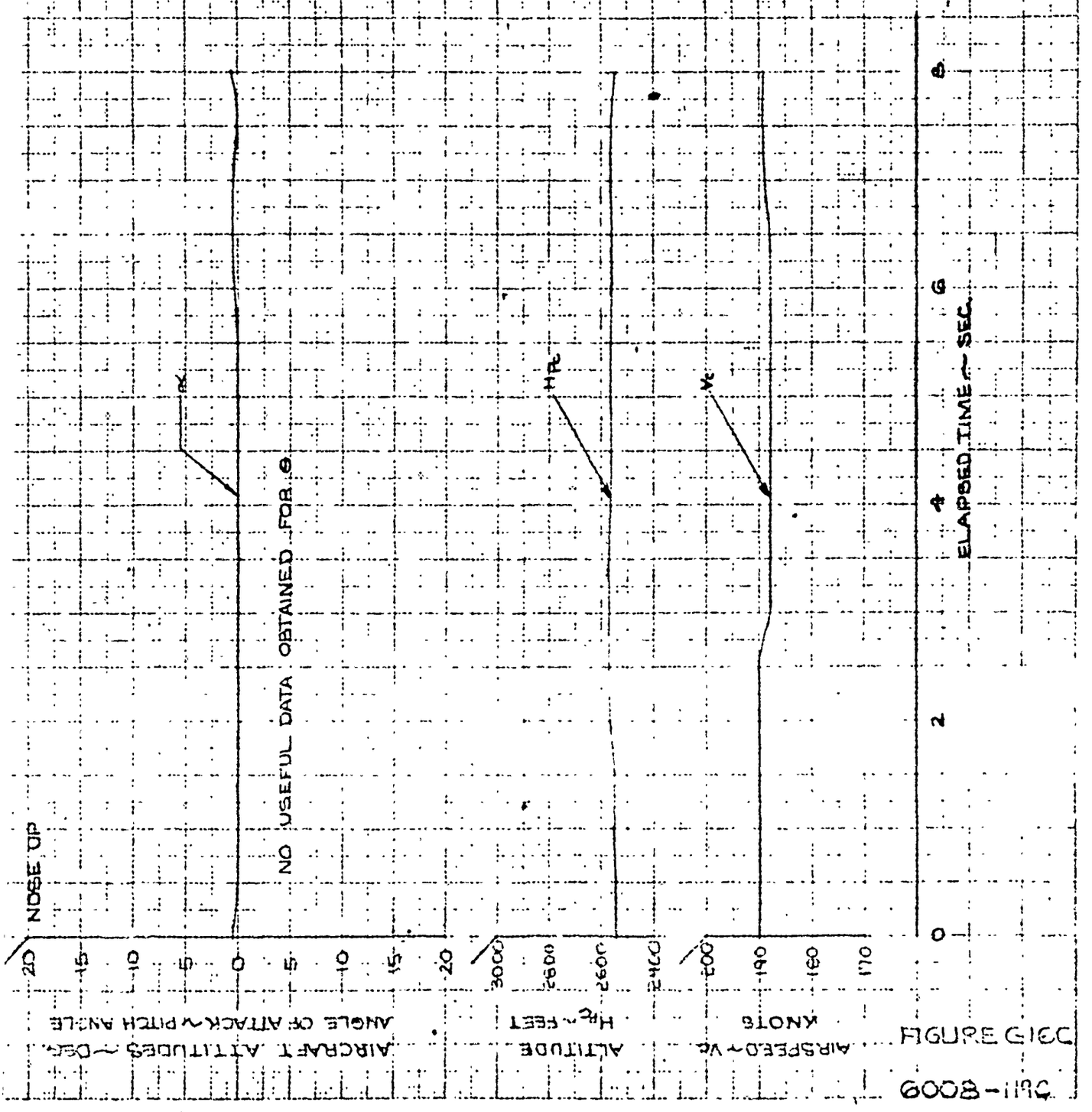
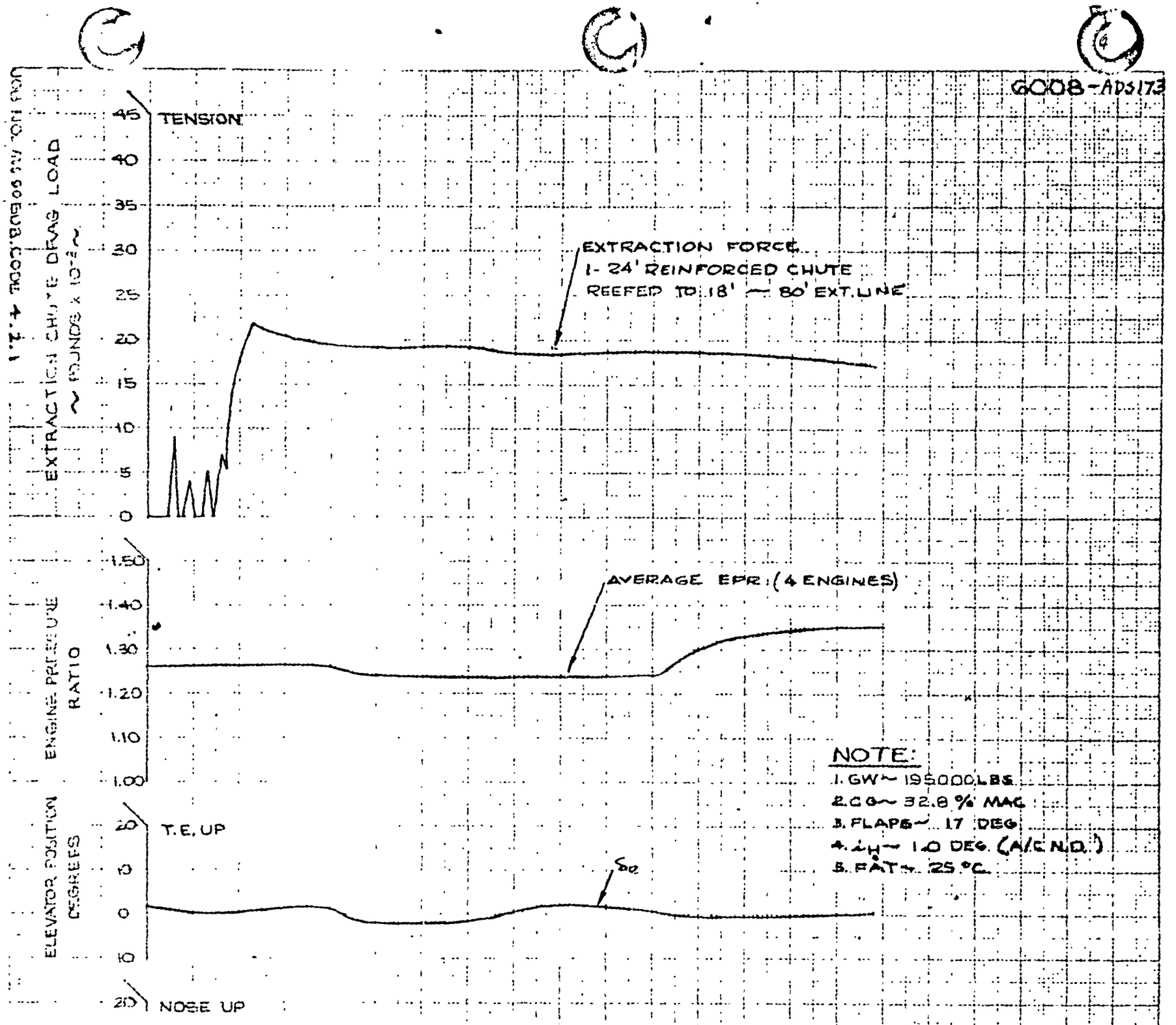


FIGURE G16C

6008-1196


TENSION
EXTRACTION CHUTE DRAG LOAD
~ POUNDS x 10⁻³ ~
45
40
35
30
25
20
15
10
5
0
EXTRACTION FORCE
1- 24' REINFORCED CHUTE
REEFED TO 18' — 80' EXT. LINE
ENGINE PRESSURE RATIO
1.50
1.40
1.30
1.20
1.10
1.00
AVERAGE EPR (4 ENGINES)
ELEVATOR POSITION
DEGREES
20
10
0
10
20
T.E. UP
NOSE UP
δe
NOTE:
1. GW ~ 195000 LBS
2. C.G ~ 32.8 % MAC
3. FLAPS ~ 17 DEG
4. iH ~ 1.0 DEG (A/C N.D.)
5. FAT ~ 25 °C

PREPARED BY R.I.D.
DATE 9-28-65
CHECKED BY JMP

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE C-39

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 187 DATE 9-28-65

RUN 1

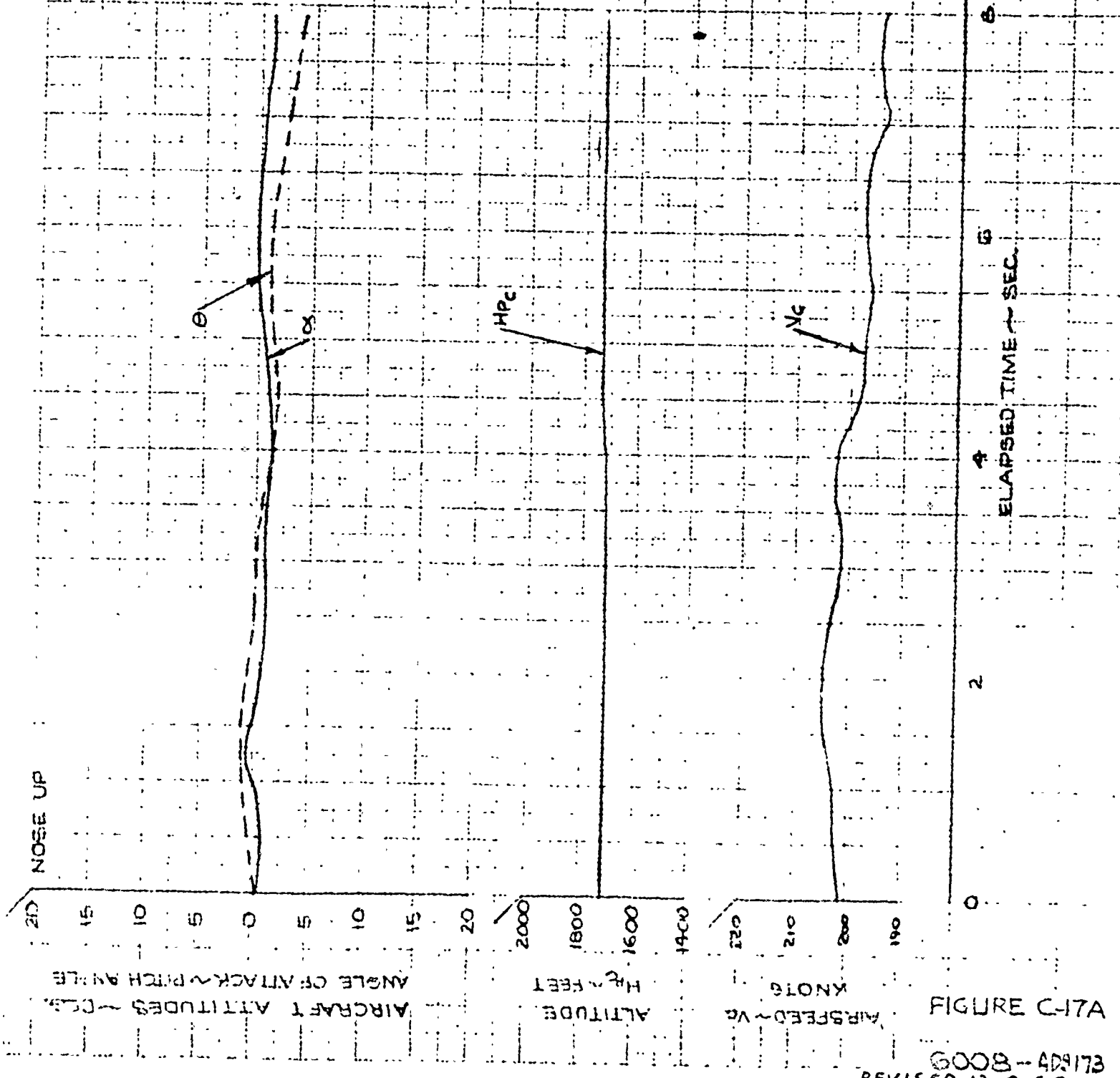


FIGURE C-17A

6008 - AD 173
REVISED 12-9-65
MBH

APPENDIX D

6058
ADS-5IA
AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
NOSE UP
NOSE LEFT
RIGHT ROLL
JOB NO. 2542SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 4-9-65

FLIGHT 38 DROP NO. 1

SHEET 1 OF 5

CARGO WT 2640 LBS.

B.A. CONDITIONS

1. G.W. ~ 161,800 LBS.
2. C.G. PRIOR TO DROP ~ 29.8 %MAC
3. C.G. AFTER DROP ~ 30.0 %MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.19 (4 ENGINES)
7. Δ_H ~ 0.2 DEG. (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 96 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 908
   VERT. ~ WL 168

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 15 FT.
3. RATED CHUTE FORCE/CARGO WT. 1.47
4. EXTRACTION LINE LENGTH ~ 100 FT

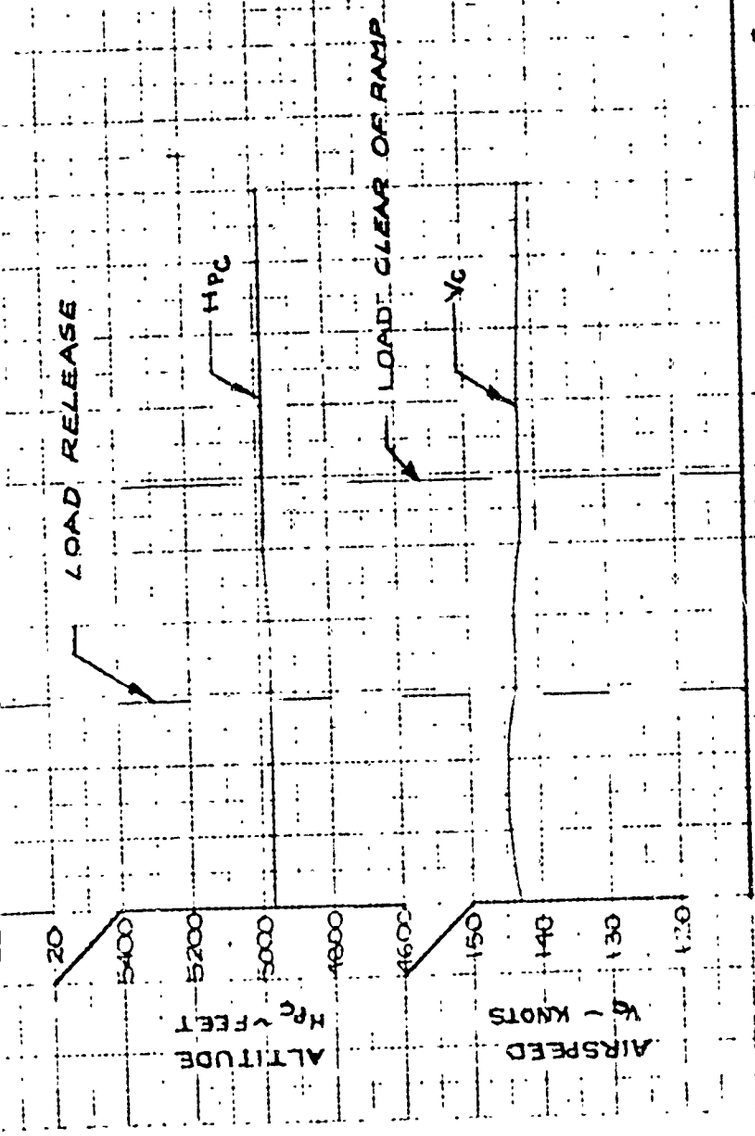


FIGURE D-1A

6008
ADS 507

REVISED 12-14-65 MGH

REVISED 5-4-65 PWL

REVISED 1/6/66 JWO

6008
ADS-508
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
Fa
Fr
Fe
T.E. UP
20
15
10
5
0
5
10
δaL
CONTROL FORCES ~ LBS.
LEFT AILERON POSITION ~ DEG.
JOB NO. ADS-22SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 4-9-65

FLIGHT 98 DROP NO. 1

SHEET 2 OF 5

CARGO WT. 2640 LBS

NOTE:
SEE FIGURE D-1 SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

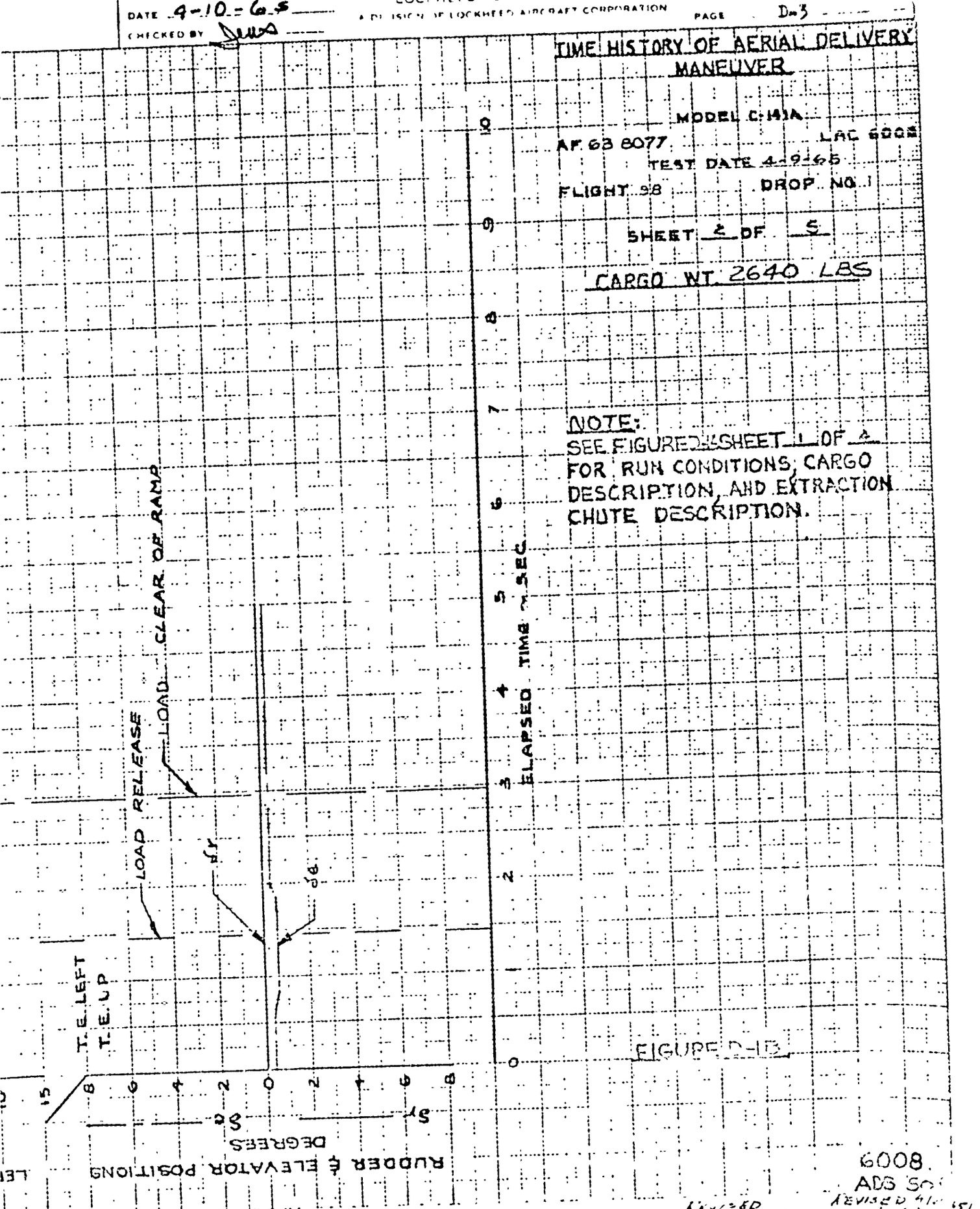
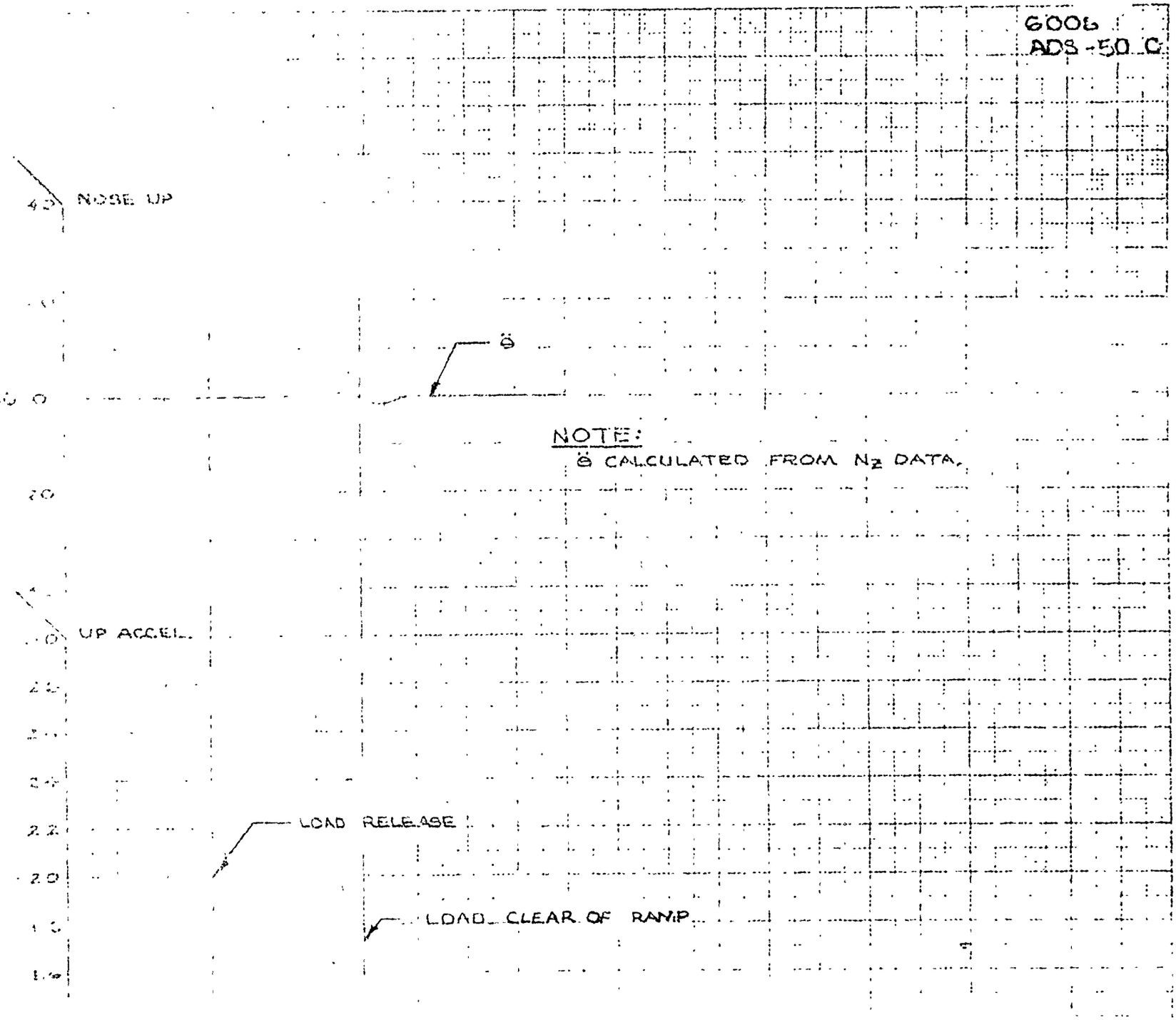


FIGURE D-1B

6008
ADS SO

REVISED 5-4-65 DWD
REVISED 4/... 65 DWD


6006
ADS-50 C
NOSE UP
UP ACCEL.
θ̈
NOTE:
θ̈ CALCULATED FROM N₂ DATA.
LOAD RELEASE
LOAD CLEAR OF RAMP

BY TED
DATE 4-10-65
CHECKED
REPORT NO ER 5473
MODEL C-141A
TEST D-4

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 4-9-65

FLIGHT 98 DROP NO. 1

SHEET 3 OF 5

CARGO WT. 2640 LBS

NOTE:
SEE FIGURE D-1A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

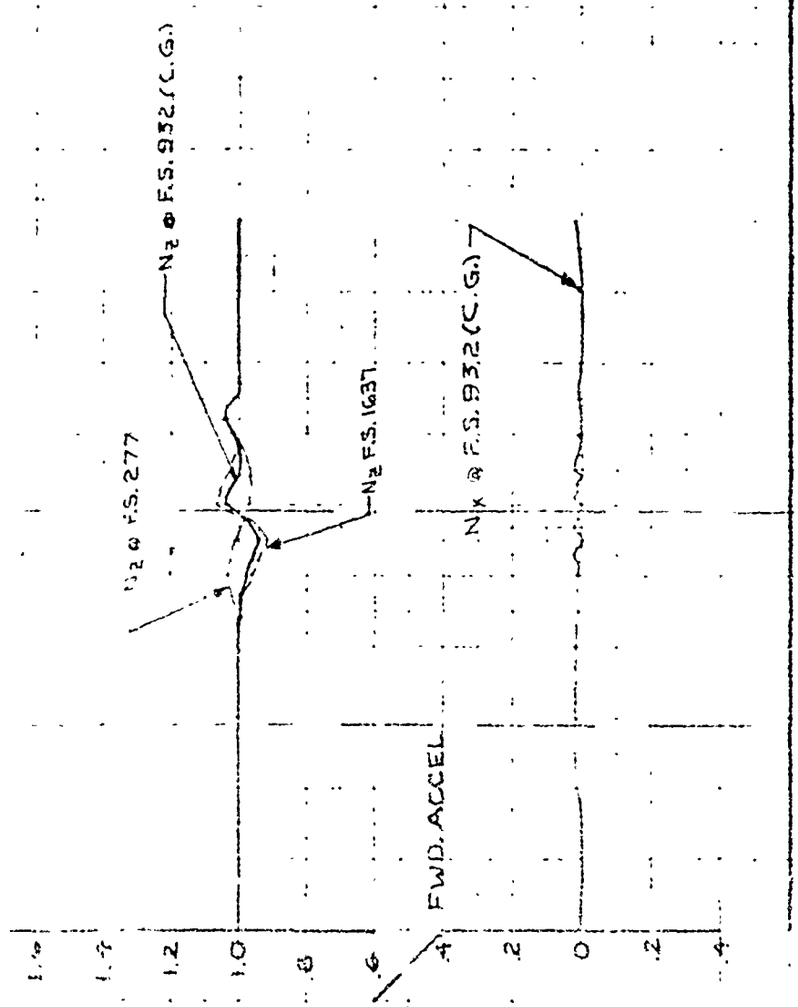
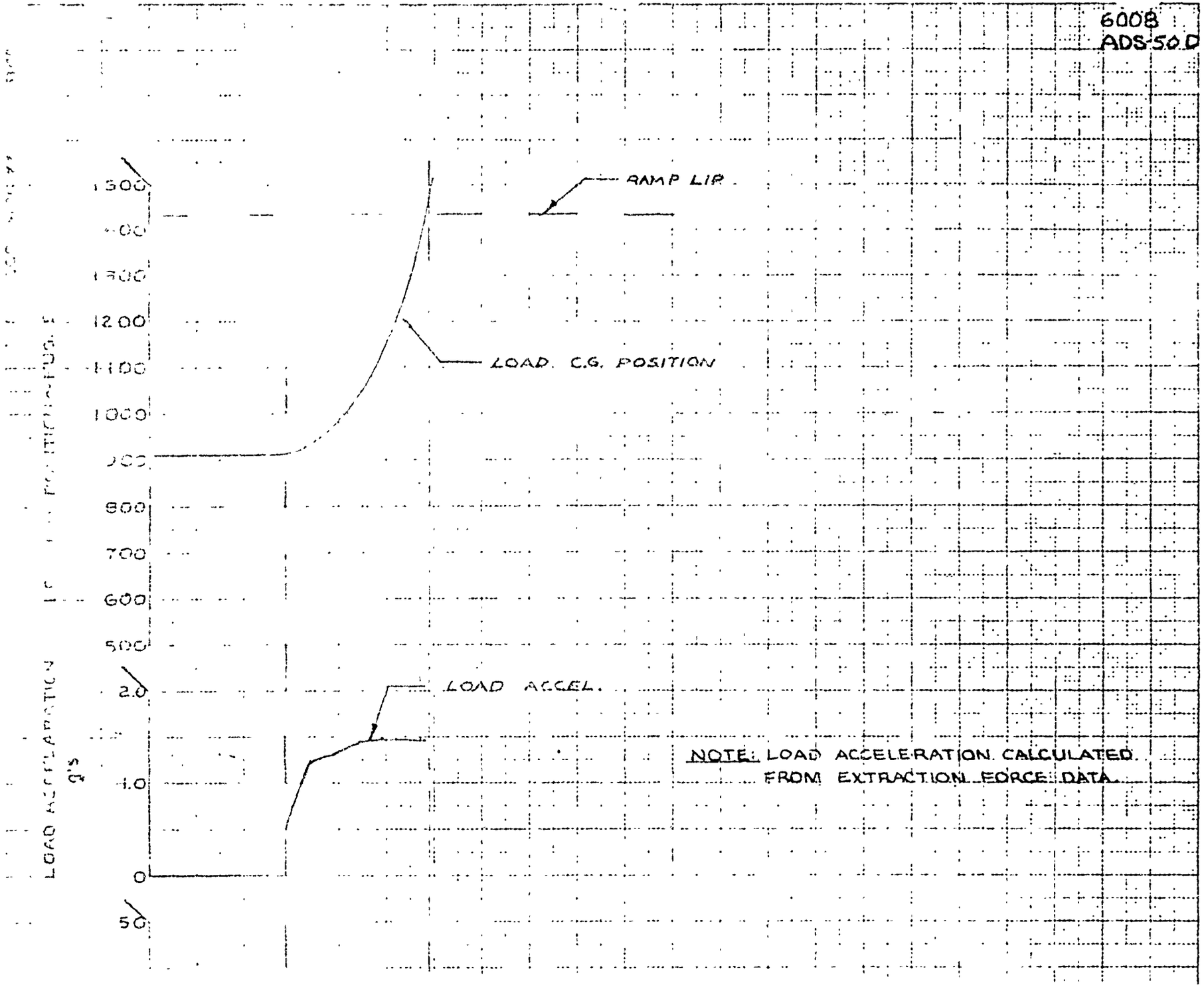


FIGURE D-5

6003

6008
ADS-50D



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-9-65

FLIGHT 98 DROP NO. 1

SHEET 4 OF 5

CARGO WT. 2640 LBS.

NOTE:
SEE FIGURE 1, SHEET 1 OF ___
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

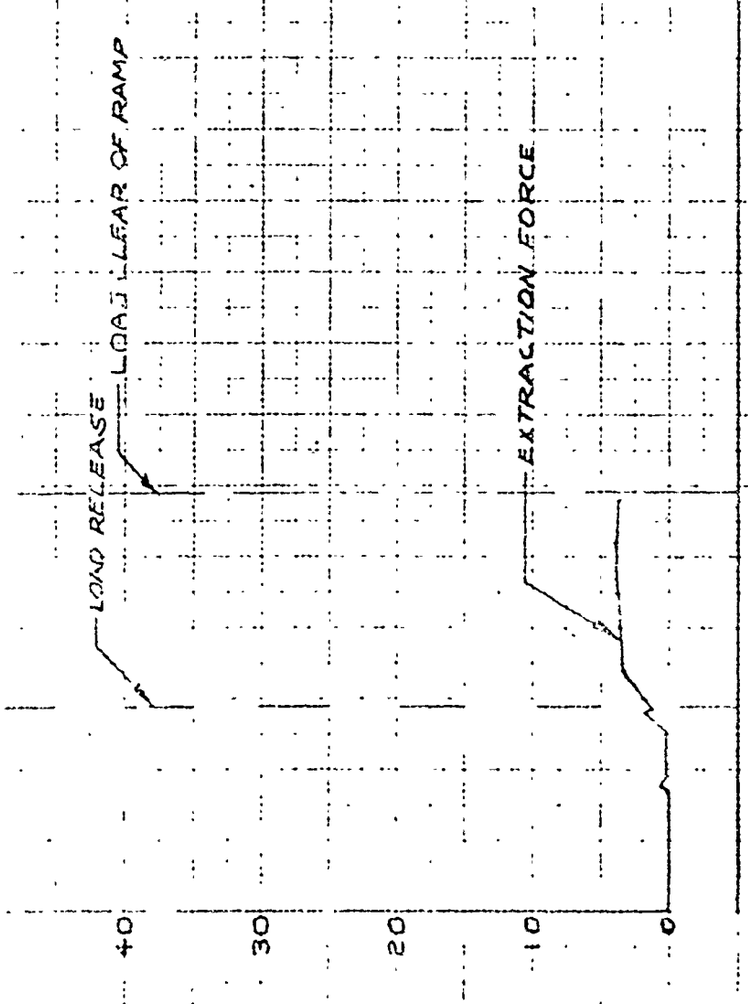


FIGURE D-10

6.C.O.B.
ADS-20

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM D-6
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 98 TEST DATE: 4-9-65

G.W. 161,800 LBS. A/S 145 KCAS

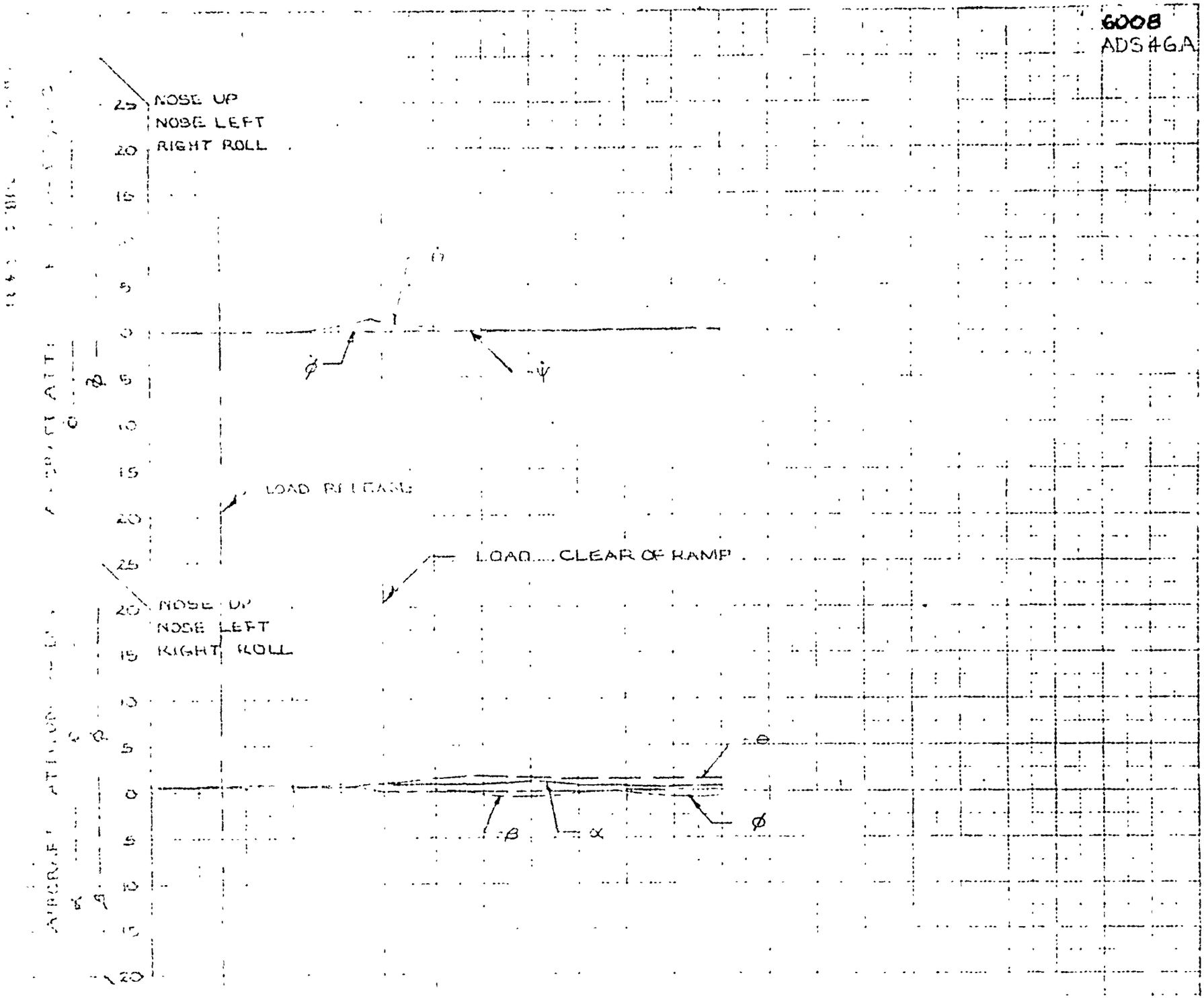
C.G. 29.8 %MAC. ALT. ~ 4,980 FT.

DROP WT. ~ 2,640 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	0.7
2	ANGLE OF PITCH	"	1.1
3	C.G. VERT. ACCEL.	g's	1.04
4	C.G. LONG. ACCEL.	"	- 0.02
5	VERT. ACCEL. @ F.S. 277	"	1.03
6	VERT. ACCEL. @ F.S. 1632	"	1.06
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	12.13
8	VERT. BEND. @ F.S. 1568	"	2.18
9	BENDING ~ M'_x @ HBL 44L	"	- 0.502
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	- 4.660
11	PITCH TRIM ACTUATOR ~ S_z	"	- 4.130
12	R.H. RAMP ACTUATOR LOAD	"	0.060
13	L.H. " " "	"	0.060
14	R.H. SPIDER ARM LOAD	"	0.100
15	L.H. " "	"	0.100
16	R.H. PETAL DOOR ACTUATOR LOAD	"	5.800
17	L.H. " " " "	"	5.820
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	0.230
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	0.420
20	L.H. " " " "	"	N.A.
21	R.H. RAMP HINGE DRAG LOAD	"	- 0.030
22	L.H. " " " "	"	N.A.
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A
24	EXTRACTION CHUTE FORCE	"	3.880
25	CARGO LONG. ACCEL.	g's	1.47

FIG. D-1E
ADS - SOE

6008
ADS 4GA


NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
5
0
5
10
15
20
25
LOAD RELEASE
LOAD CLEAR OF RAMP
NOSE DN
NOSE LEFT
RIGHT ROLL
20
15
10
5
0
5
10
15
20
θ
ψ
φ
θ
β
α
φ

FCW & JWP
DATE 4-3-65
JWP

FR 5473
C-141A
D-7

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 4-1-65

FLIGHT: 93 DROP NO. 2

SHEET 1 OF 7

CARGO WT. 5840 LBS.

RUN CONDITIONS

1. G.W. ~ 166,100 LBS.
2. C.G. PRIOR TO DROP ~ 29.6 % MAC.
3. C.G. AFTER DROP ~ 30.3% MAC
4. FLAPS ~ 67%.
5. GEAR ~ UP
6. AVG. EPR ~ 1.25 (4 ENGINES)
7. i_H ~ 0 DEG.

CARGO DESCRIPTION

1. TYPE CARRIER ~ PALLET
2. LENGTH ~ 96 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 664
   VERT. ~ WL 180

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 5 FT.
3. RATED CHUTE FORCE/CHUTE AT [illegible]
4. EXTRACTION [illegible]

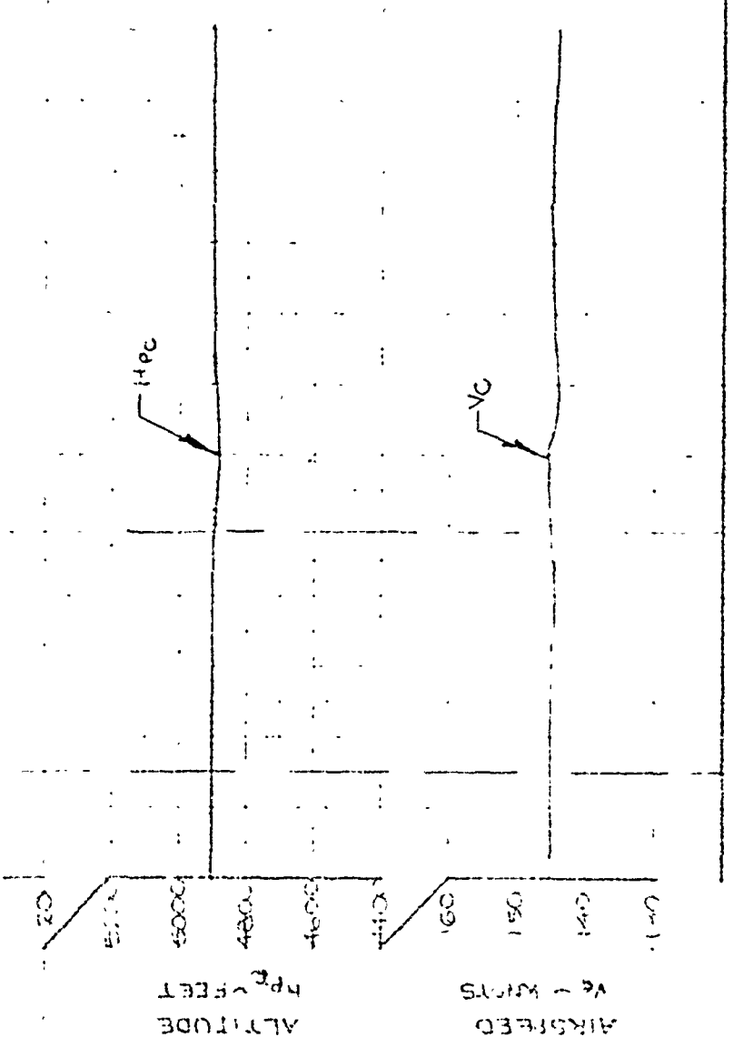


FIGURE D-7A

6018
ADS-46B

PULL
RIGHT ROLL
PUSH LEFT

70 60 50 40 30 20 10 0 10 20 30 40

F_A

LOAD
RELEASE

$F_E \& F_F$

LOAD CLEAR OF RAMP

F_A

T.E. UP

20 15 10 5 0 5 10

δ_{SA}

CONTROLLER [illegible]

LEFT AILERON POSITION [illegible]

PREPARED BY FCW
DATE 4-3-65
CHECKED BY

REPORT NO. ER 5473
MODEL C-141A
PAGE D-8

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 4-1-65

FLIGHT 22 DROP NO 2

SHEET 2 OF 7

CARGO WT 5840 LBS.

NOTE:
SEE FIGURE 2A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

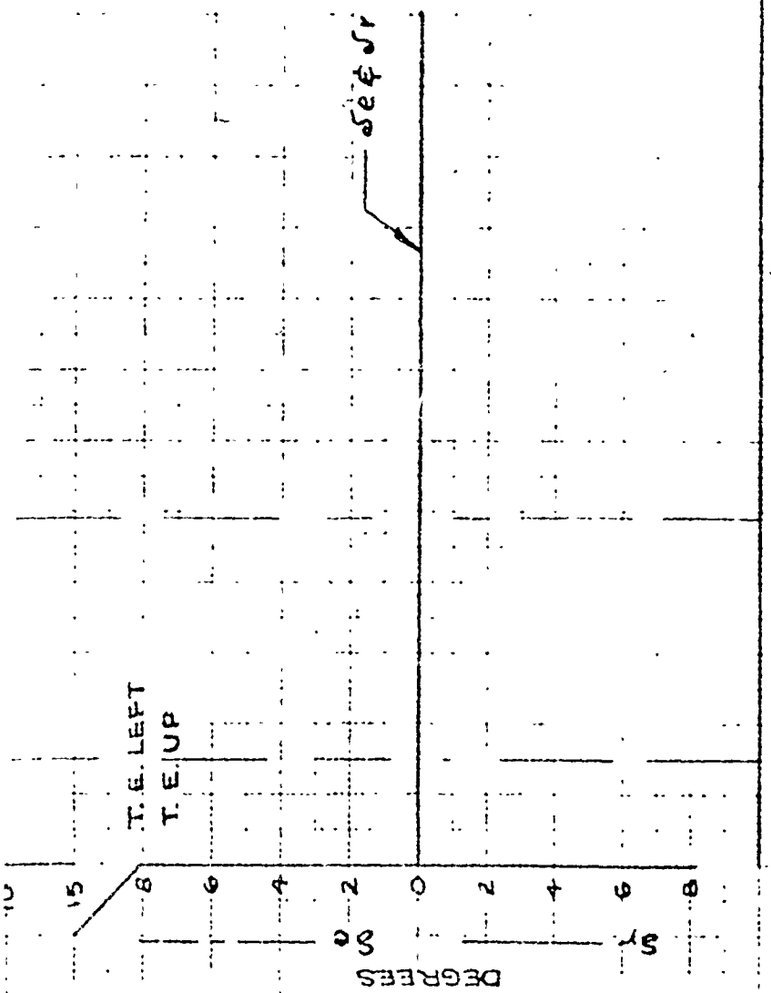


FIGURE 2-2B

6003
ADD

REVISED 5-4-65 JA
REVISED 4/19/65 JA

6008
ADS #6C
NOTE:
θ CALCULATED FROM N_z DATA
N_z @ FS 1637 NOT AVAILABLE
LOAD CLEAR OF RAMP
LOAD RELEASE
θ
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
DEG/SEC
PITCHING ACCELERATION
AL ACCELERATIONS ~ g
N_z @ FS 2.1)
N_{LC} FS 1637
JOB NO. ADS SUL CODE +2.1

DATE 4-1-65

ER 3412
MODEL C-141A
D-9

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 4-1-65

FLIGHT-93 DROP NO. 2

SHEET 3 OF 7

CARGO WT. 58401 LBS.

NOTE:
SEE FIGURE D-2A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

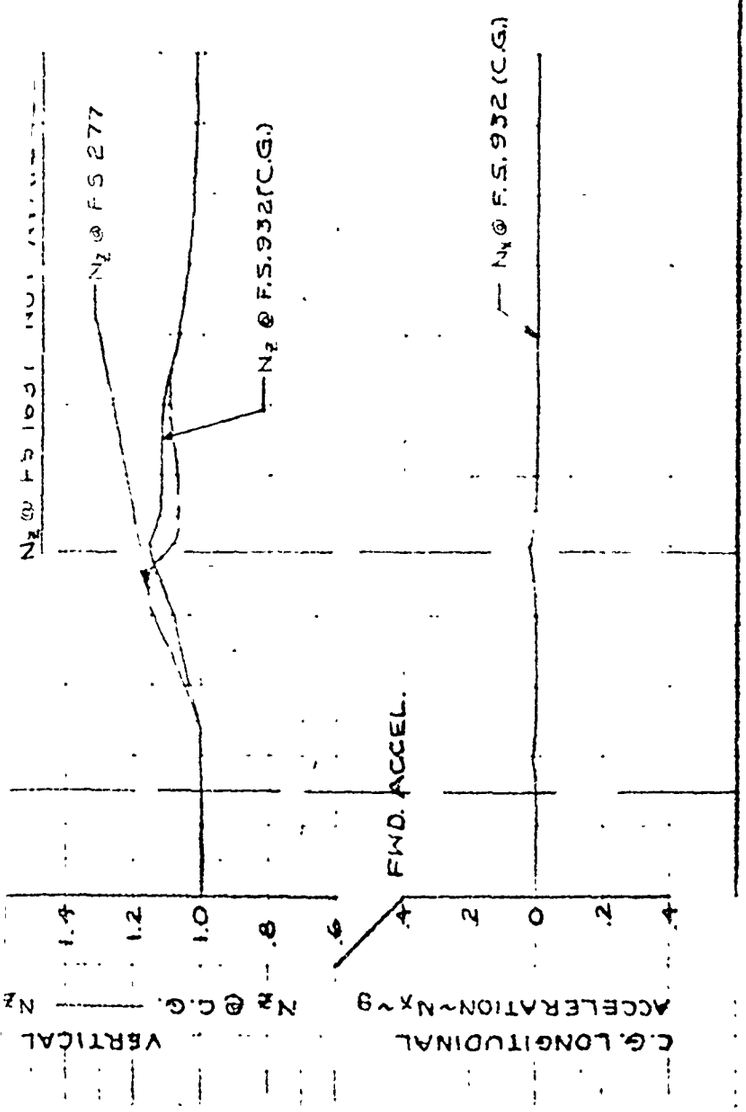


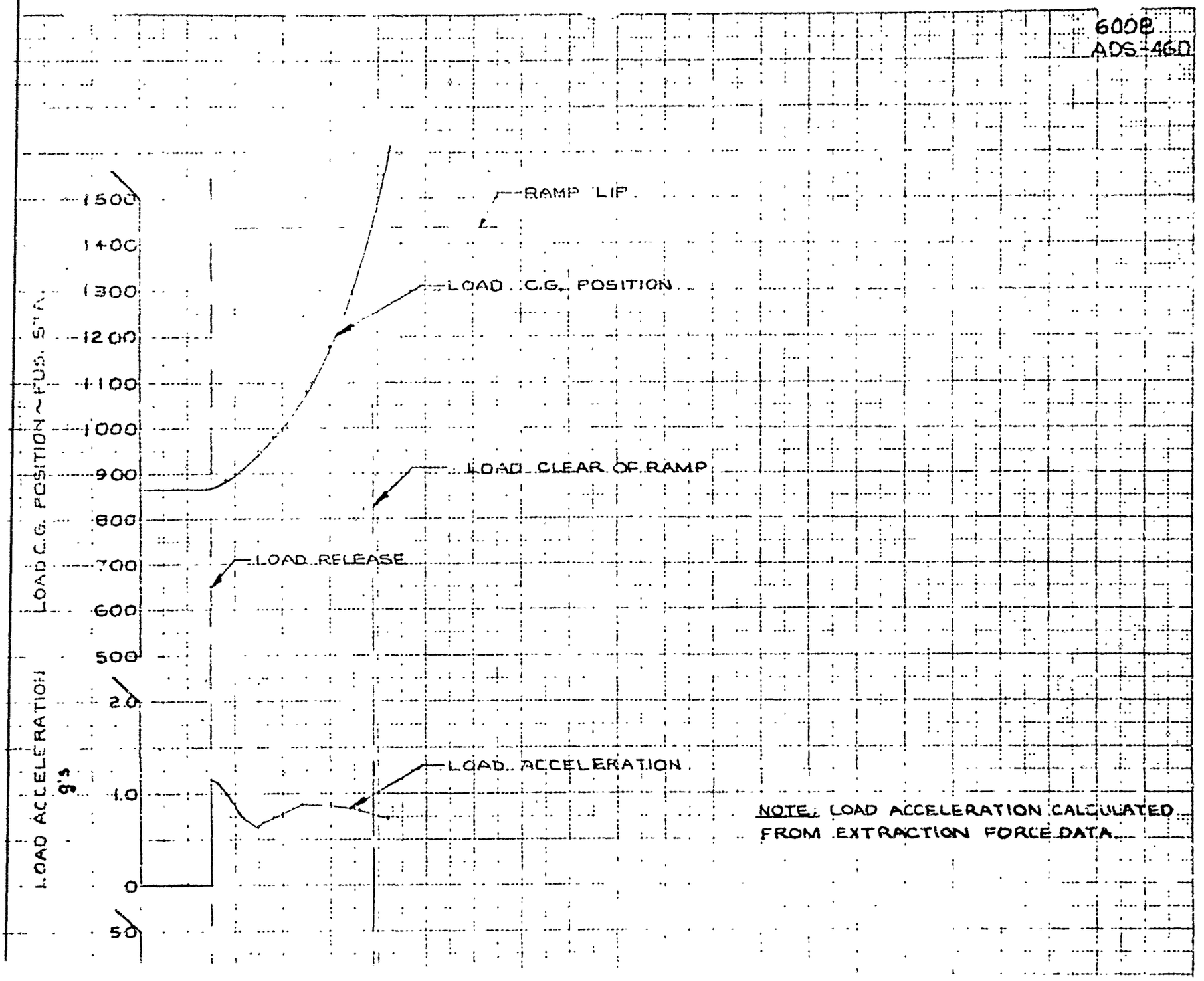
FIGURE D-2C

GOOD
ACCEPT

REVISED 5-4-65 [illegible]

REVISED 7/17/65 [illegible]

600B
ADS-460


LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD C.G. POSITION
LOAD CLEAR OF RAMP
LOAD RELEASE
LOAD ACCELERATION g's
2.0
1.0
0
-.5
LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

PREPARED BY T.E.O.
DATE 4-3-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-10

1/0

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-1-65

FLIGHT 93 DROP NO. 2

SHEET 4 OF 7

CARGO WT. 5840 LBS

NOTE:
SEE FIGURE D-2, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

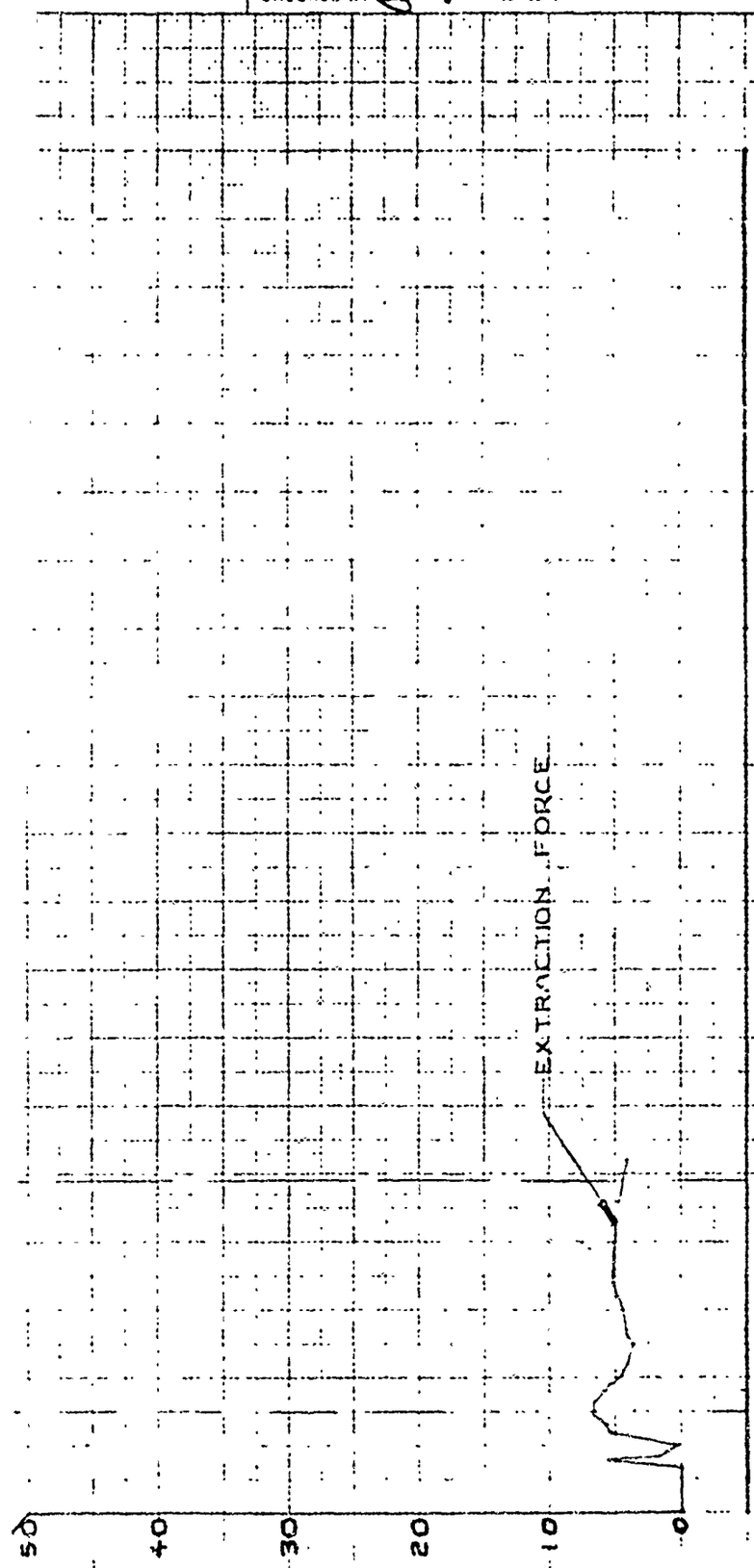


FIGURE D-2D

6008
AD3-1

6008-445468
LOAD CLEAR OF RAMP
LOAD RELEASE
L.H.
R.H.
TENSION
LBS. X 10⁻³
RAMP ACTUATOR LOAD
AG3 LINK AXIAL LOAD
VERTICAL LOAD
PULL DOWN
PULL R.T.
LH HINGE DATA — NA

DATE FCW 4-5-65

ER 5473
MODEL C-141A
D-11

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 4-1-65

FLIGHT 93 DROP NO. 2

SHEET 5 OF 7

CARGO WT. 5840 LBS

NOTE:
SEE FIGURE D-2A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

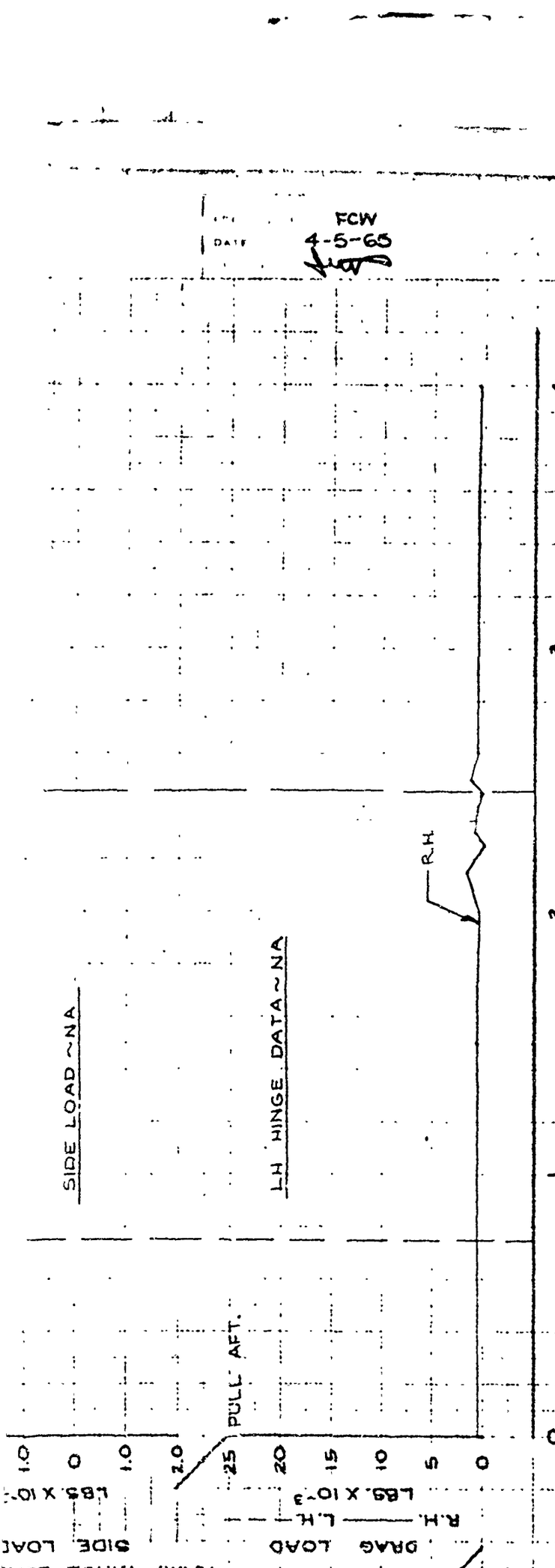
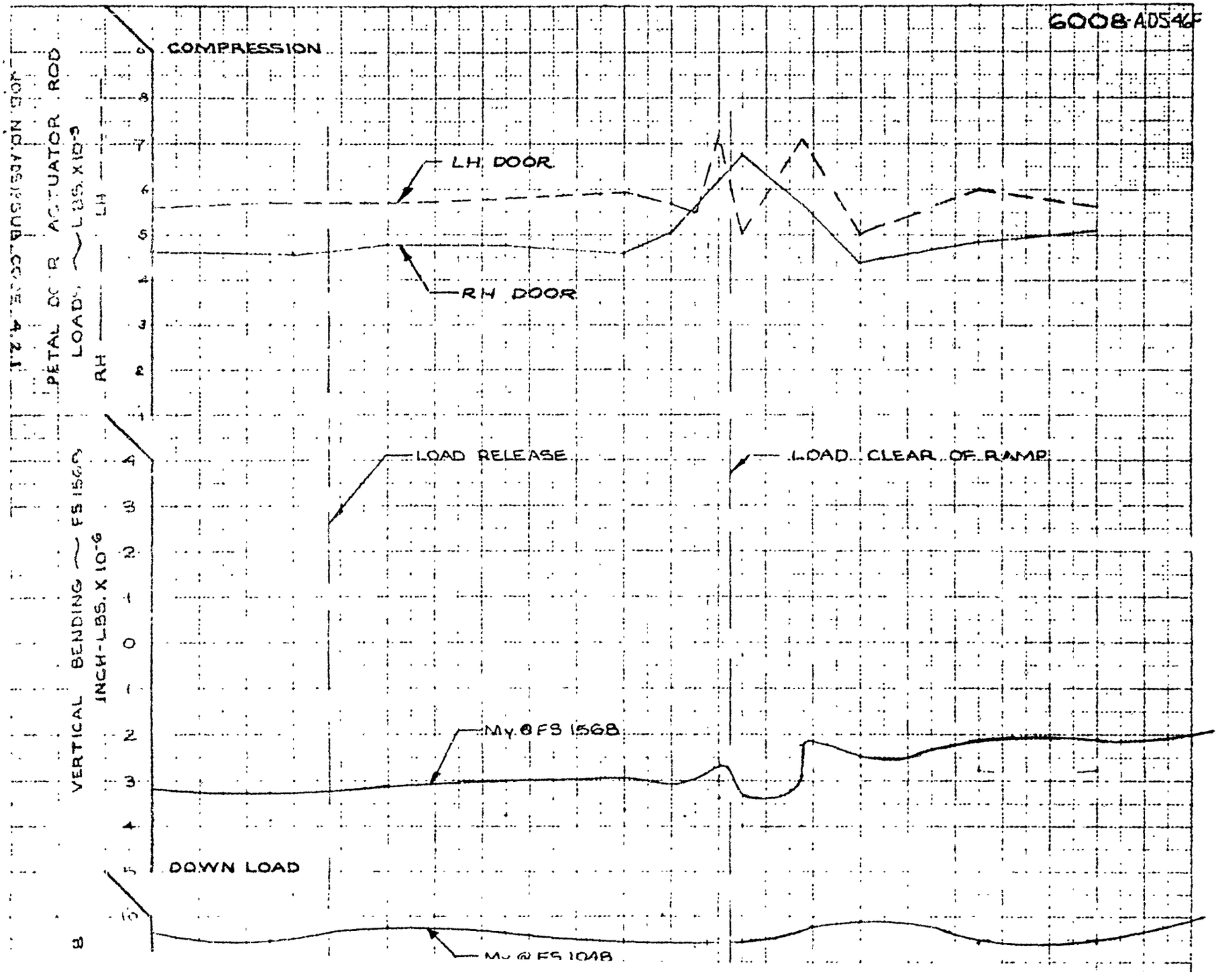


FIGURE D-2E

6008-ADS-165

REVISED REVISED 4/19/65

6008-A0546


PETAL DOOR ACTUATOR ROD
LOADS — LBS. X 10⁻³
RH —— LH ——
COMPRESSION
LH DOOR
RH DOOR
LOAD RELEASE
LOAD CLEAR OF RAMP
VERTICAL BENDING — FS 1568
INCH-LBS. X 10⁻⁶
My @ FS 1568
DOWN LOAD
My @ FS 1048

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-B077 LAC 6008

TEST DATE 4-1-65

FLIGHT 93 DROP NO. 2

SHEET 6 OF 7

CARGO WT. 5840 LBS.

NOTE.
SEE FIGURE D-2A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

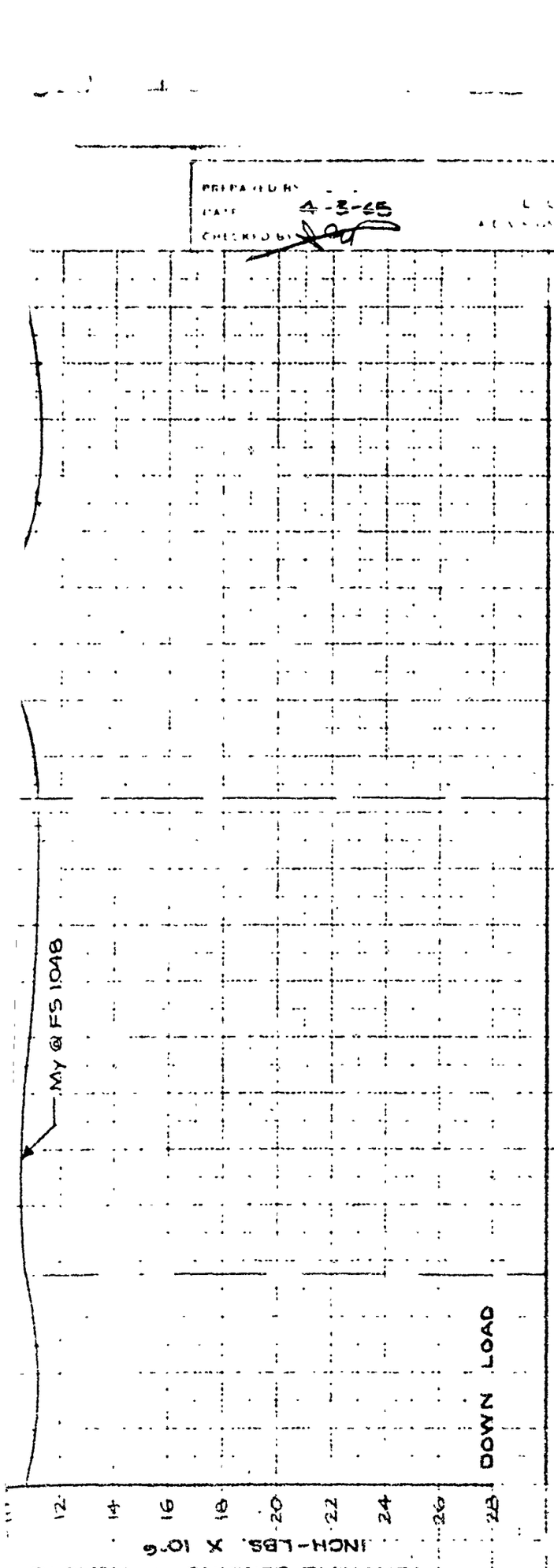
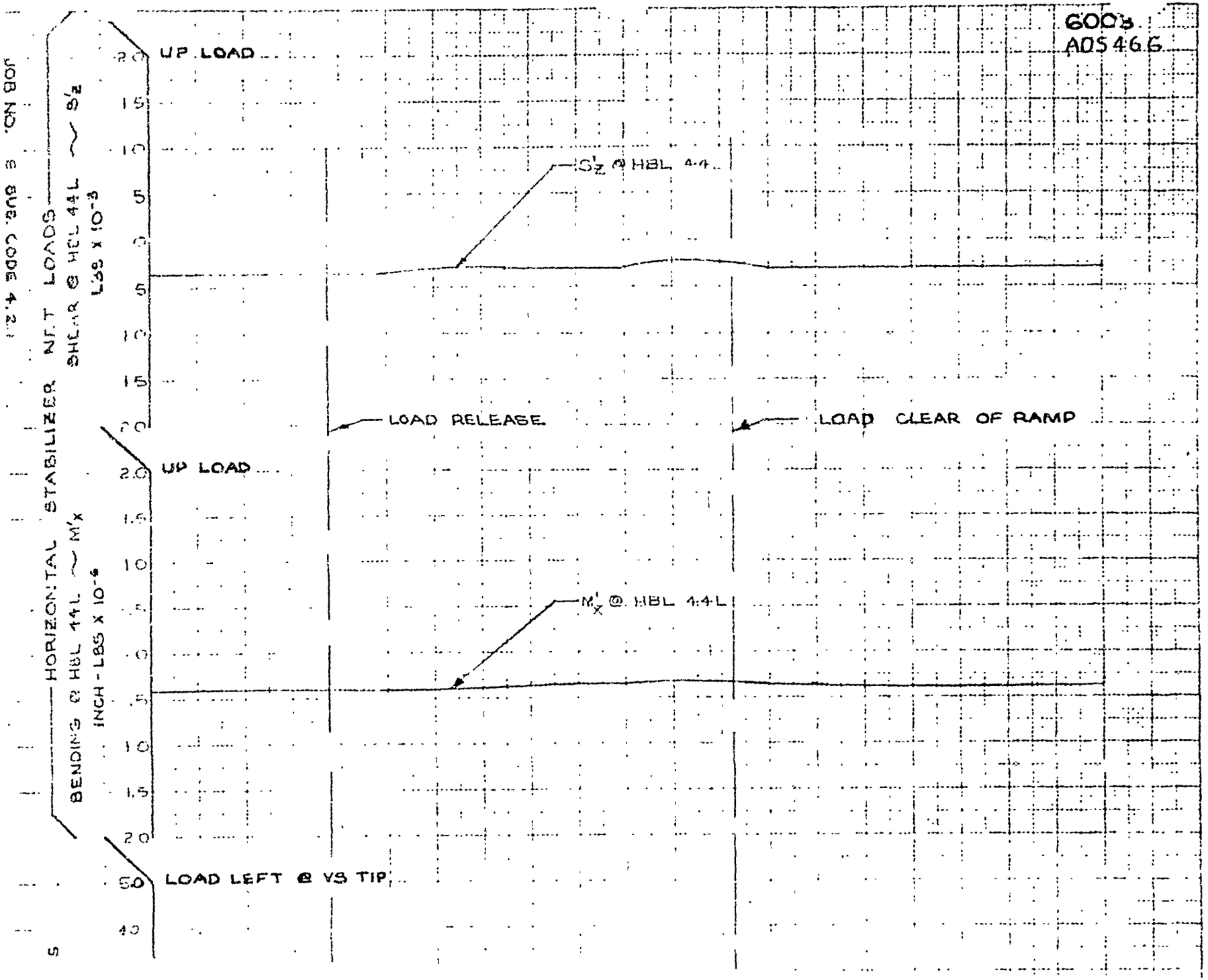


FIGURE D-2F

6008
ADS-10C

REVISED 5-4-65 JWL
REVISED 4/M/65 JWL


600's
ADS 466
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'_x
INCH - LBS X 10^{-4}
SHEAR @ HBL 44L ~ S'_z
LBS X 10^{-3}
UP LOAD
S'_z @ HBL 44L
LOAD RELEASE
LOAD CLEAR OF RAMP
UP LOAD
M'_x @ HBL 44L
LOAD LEFT @ VS TIP

PREPARED BY
DATE 4-3-65

ER 5473 -
MODEL C-141A
D-13

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF68-8077 LAC 6008

TEST DATE: 4-1-65

FLIGHT 93. DROP NO. 2

SHEET 7 OF 7

CARGO WT. 5840 LBS

NOTE:
SEE FIGURE D-2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

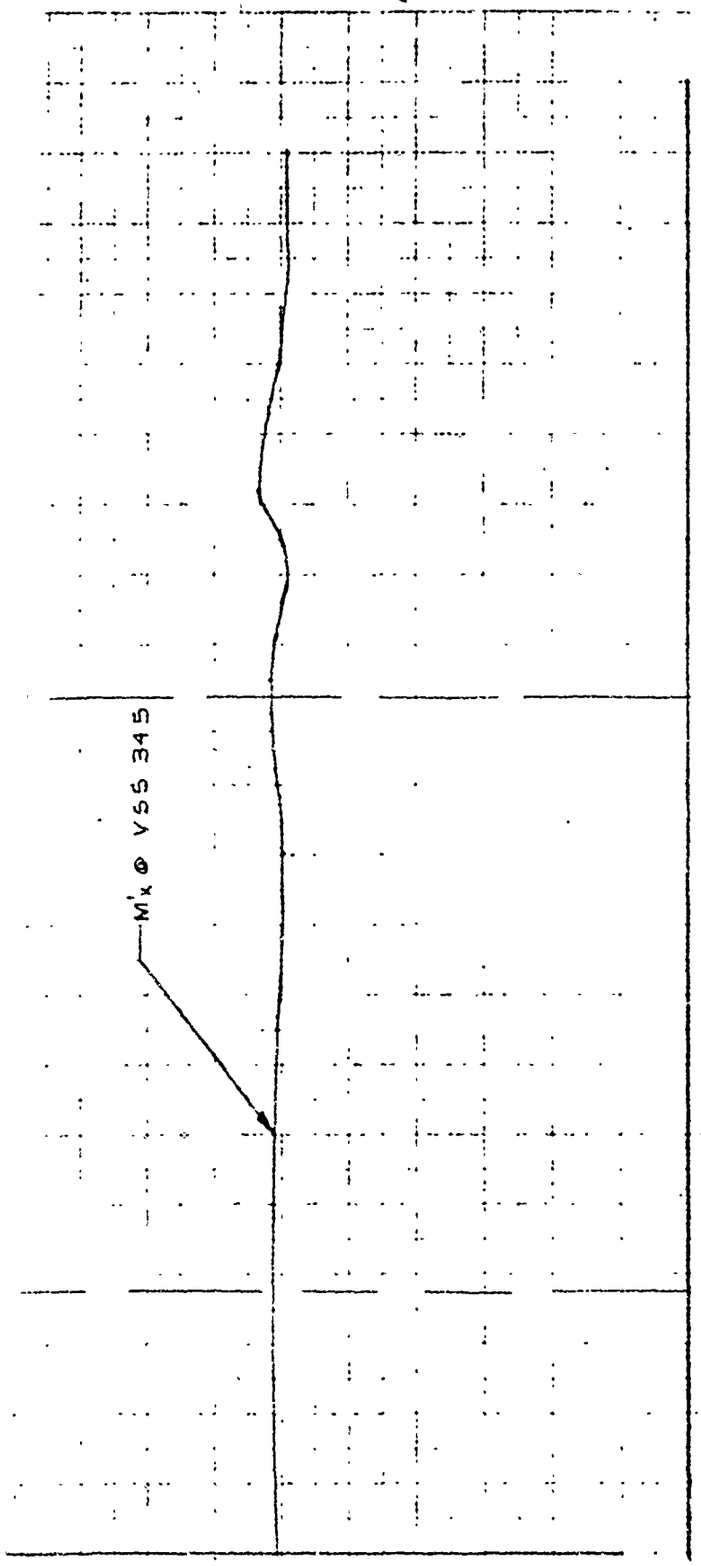


FIGURE D-2C

6008
ADS 46G
REVISED 5-4-65 JWL
Revised 4/19/65 AHP

6008
ADS 47A
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
LOAD CLEAR OF RAMP
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
AIRCRAFT ATTITUDES ~ DEG.
25
20
15
10
5
0
5
10
15
20
25
θ
φ
ψ
α
β

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 4-2-65

FLIGHT 94 DROP NO. 3

SHEET 1 OF 7

CARGO WT. 19,650 LBS

RUN CONDITIONS

1. G.W. 170,500 LBS
2. C.G. PRIOR TO DROP 28.5% MAC
3. C.G. AFTER DROP 31.1% MAC
4. FLAPS 42%
5. GEAR UP
6. AVG. EPR 1.25 (4 ENGINES)
7. Δ_H ~ 1.0 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 144 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 832
   VERT. ~ WL 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.8
4. EXTRACTION LINE LENGTH ~ 100'

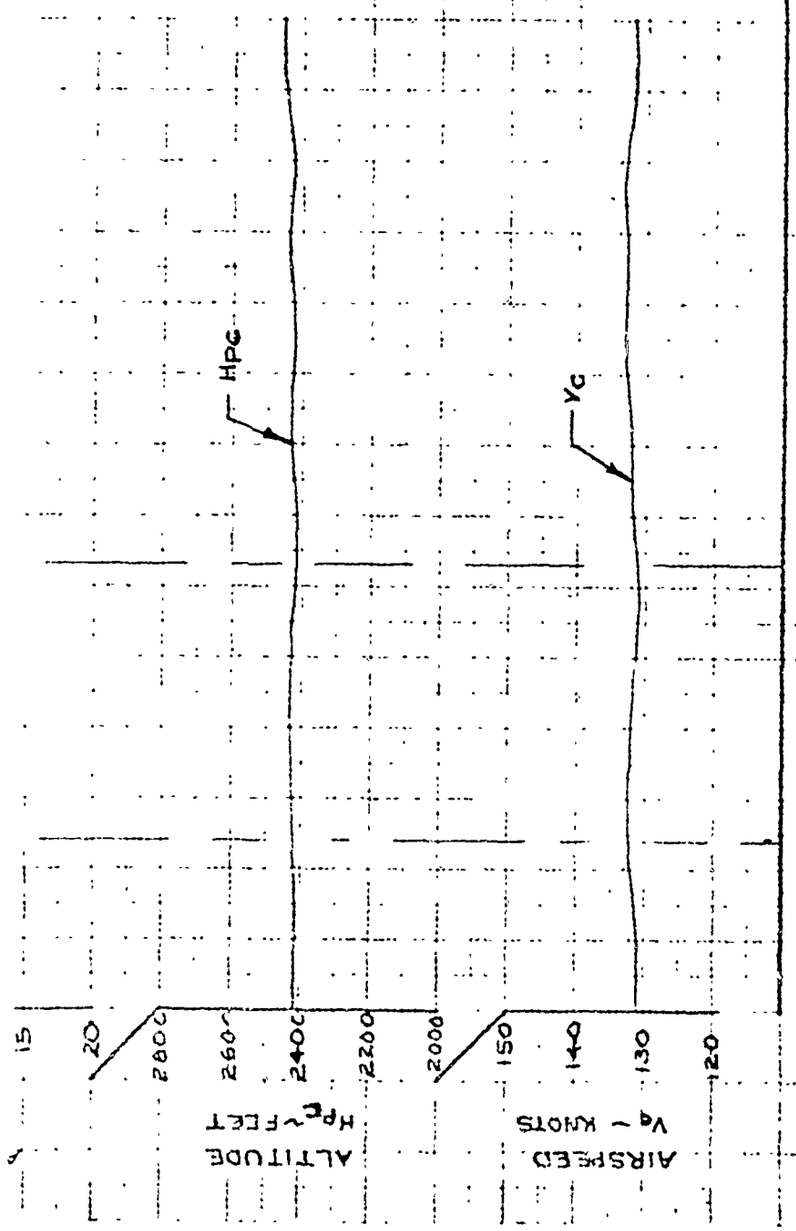


FIGURE D-3A

6008

REVISED 5-4-65 MWJ

REVISED 5-4-65 MWJ

REVISED

6008
AD547B
CONTROL FORCES ~ NA
LOAD CLEAR OF RAMP
LOND RELEASE
T.E. UP
PULL
RIGHT ROLL
RUSH LEFT
70
60
50
40
30
20
10
0
10
20
30
40
20
15
10
5
0
5
10
F_A
δ_{AL}
δ_{AR}

PREPARED BY RSA
DATE 4-5-65
CHECKED BY

ER 5473
MODEL C-141A
D-15

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 4-2-65

FLIGHT 94 DROP NO. 3

SHEET 2 OF 7

CARGO WT. 10,650 LBS

NOTE:
SEE FIGURE D-3A SHEET 1 OF 7.
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

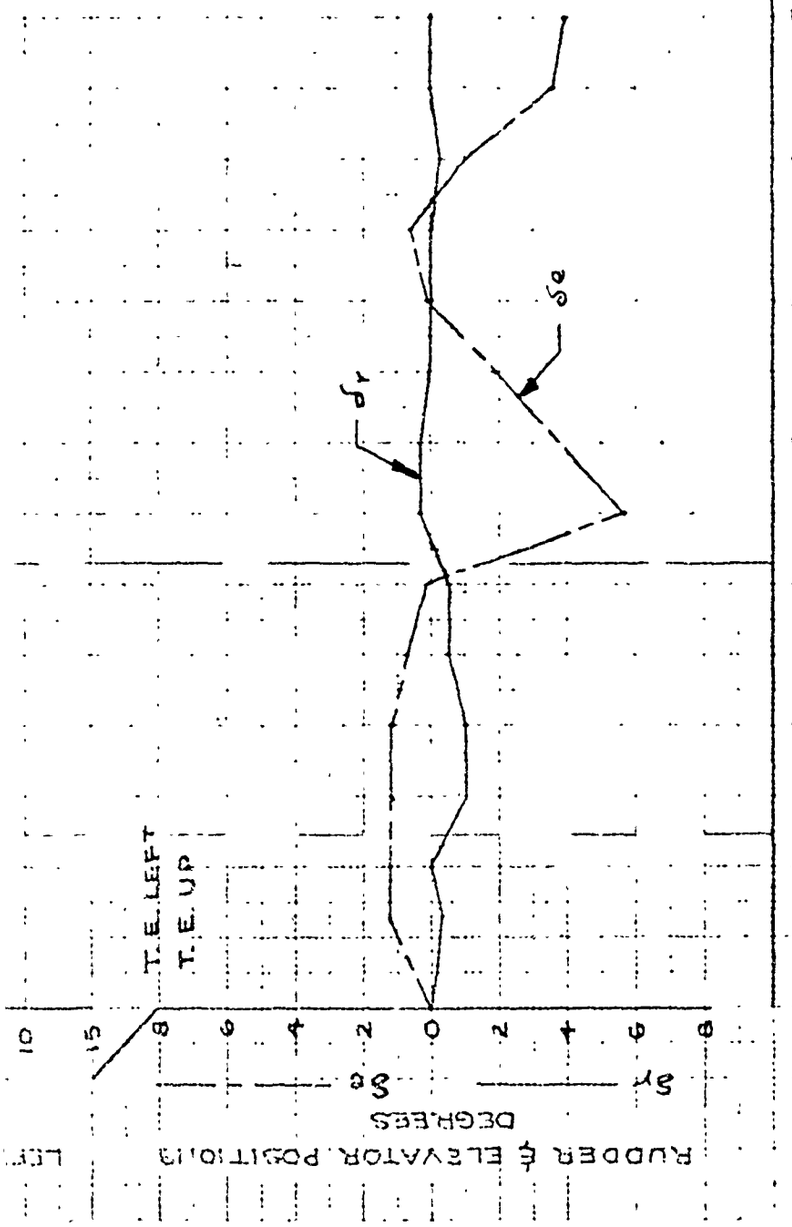


FIGURE D-3B

6008
5-4-65 JWS
REVISED 5-4-65 JWS
REVISED 4/7/65 JWS

6008
AD5476
LOAD CLEAR OF RAMP
LOAD RELEASE
NOTE:
θ CALCULATED FROM N_z DATA
N_z @ F.S. 1637 ~ NOT AVAILABLE
N_z @ F.S. 277
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ
DEG/SEC
PITCHING ACCEL ATION
ACCELERATIONS ~ g's
JOB NO. AD5-1 SUB. CODE 4.2.1

DATE 4-12-65

ER 9473
C-141A
D-16

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 4-2-65

FLIGHT 94 DROP NO. 3

SHEET 3 OF 7

CARGO WT. 10,650 LBS

NOTE:
SEE FIGURE D-3a SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

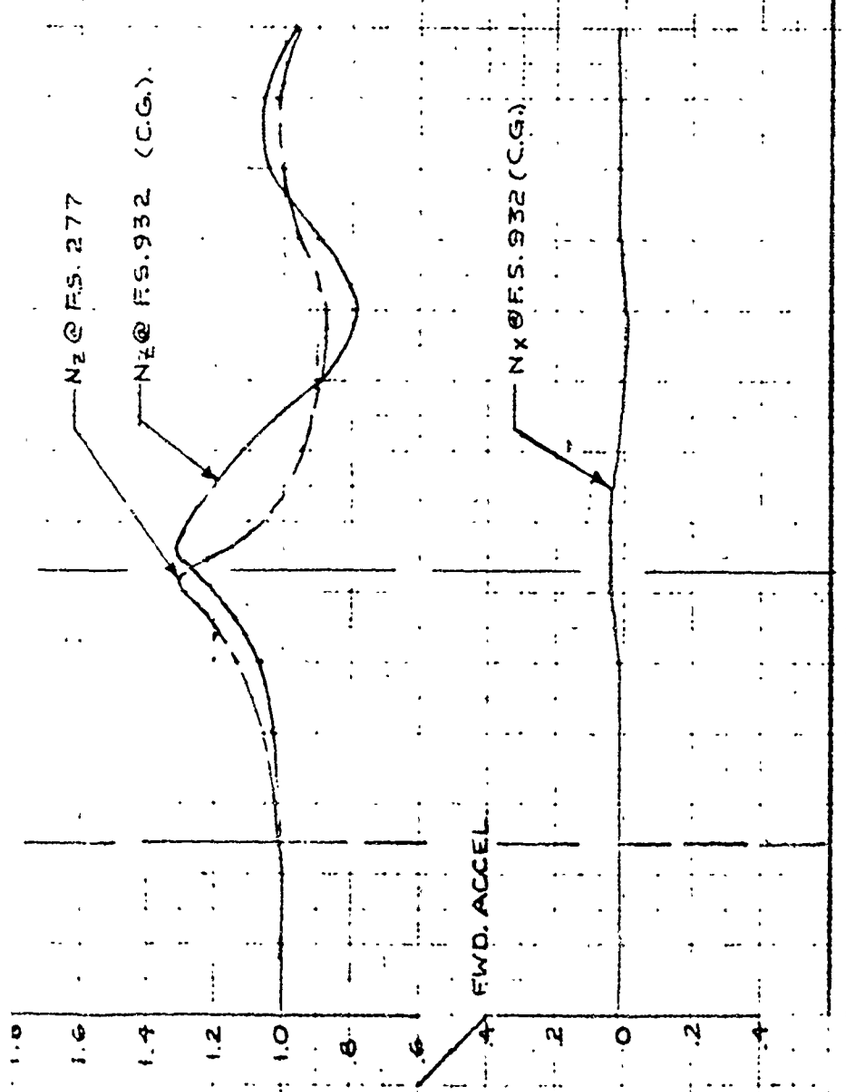


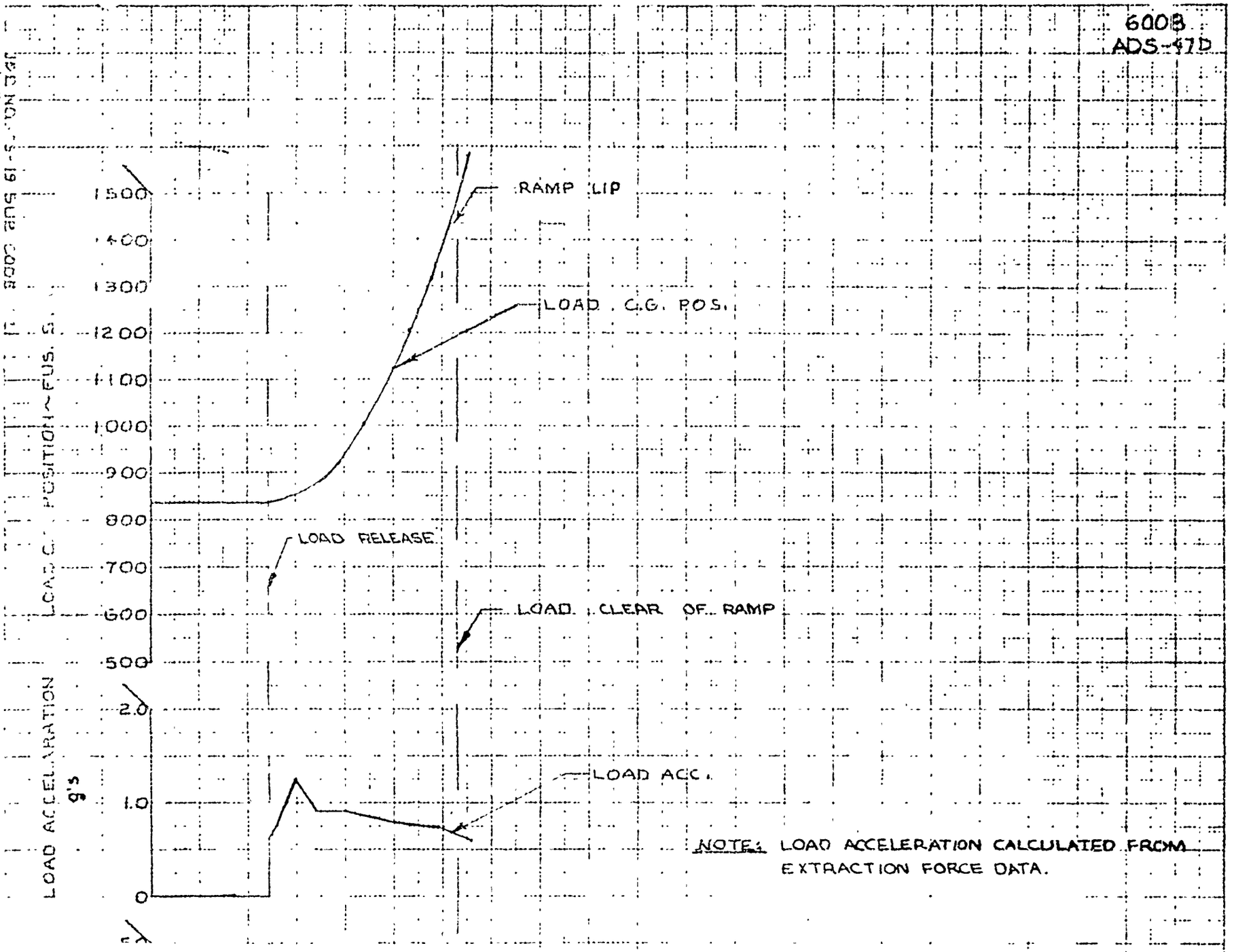
FIGURE D-3C

6003
ADS 47C

REVISED 5-4-65 JWJ

REVISED 4/19/65 JWP

600B
ADS-47D


LOAD C.G. POSITION ~ FUS. S.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD C.G. POS.
LOAD RELEASE
LOAD CLEAR OF RAMP
LOAD ACCELERATION
g's
2.0
1.0
0
LOAD ACC.
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-2-65

FLIGHT 94 DROP NO. 3

SHEET 4 OF 7

CARGO WT. 10,650 LBS

NOTE :
SEE FIGURE D-3, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

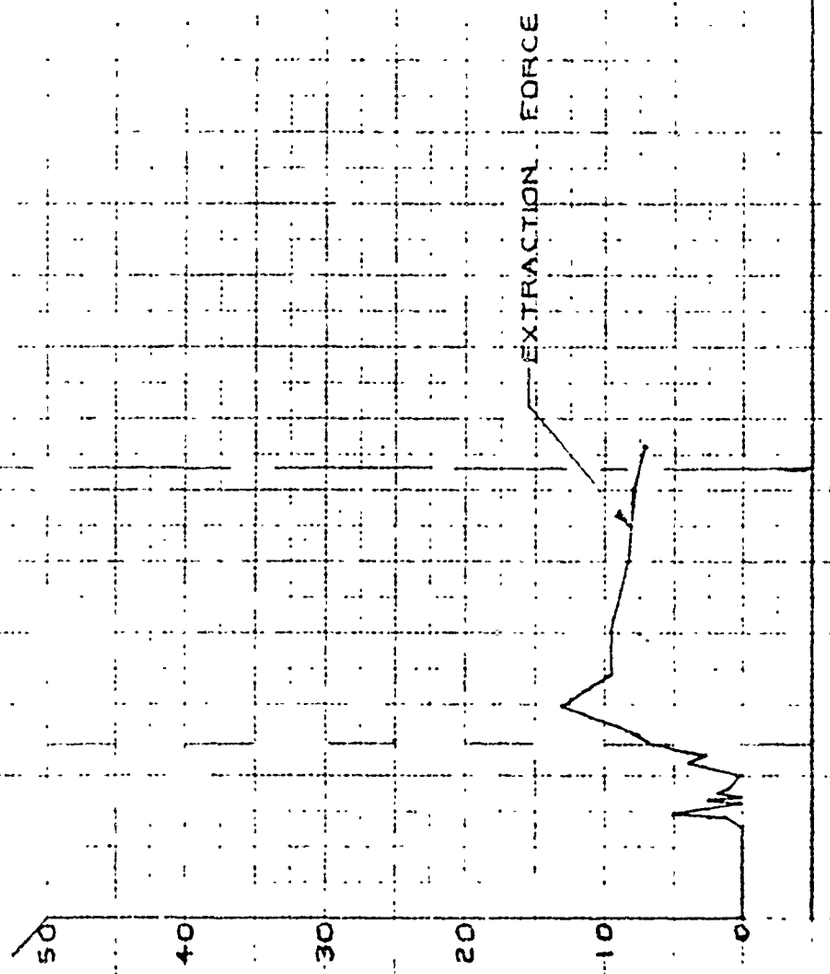


FIGURE D-30

6008-ADS-TD

REVISED REVISED 4/19/65
5-4-65 JWS JWS

6002
ADS 4 TE
R.H.
L.H.
LH ADS LINK AXIAL LOAD
RH ADS LINK AXIAL LOAD
RH RAMP HINGE VERT. LOAD
LH HINGE DATA N/A
PULL DOWN
RIGHT PULL
LBS X 10-3
VERTICAL LOAD
AXIAL LOAD
TENSION
ACTUATOR LOAD
JOB NO.

TED
DATE 4-5-65

ER 5473
MODEL C-141A
D-18

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 4-2-65

FLIGHT 34 DROP NO. 3

SHEET 5 OF 7

CARGO WT. 10,650 LBS

NOTE:
SEE FIGURE D-3A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

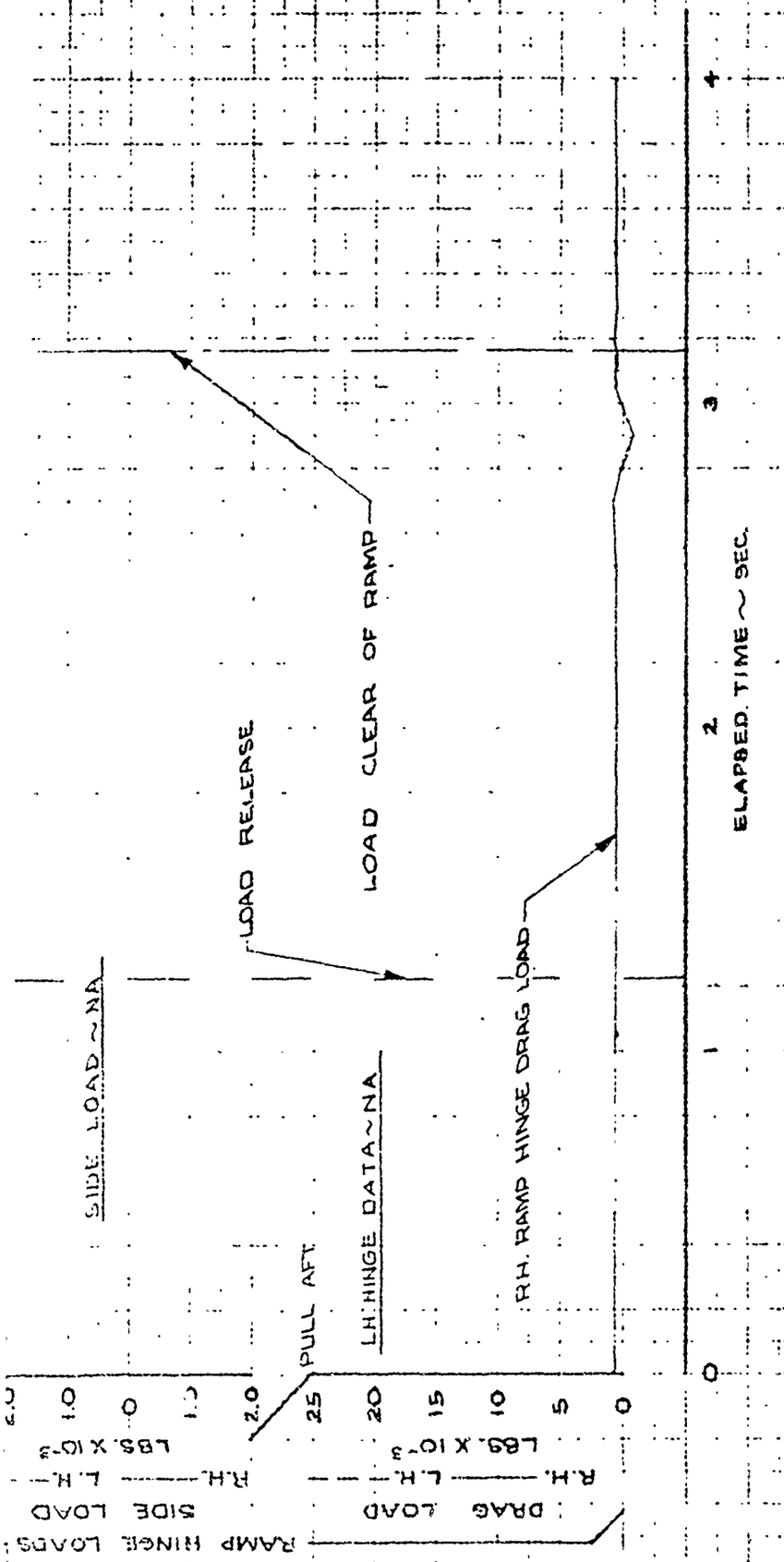


FIGURE D-3E

6002
ADS 47E

REVISED 5-4-65 JWJ

Revised 4/15/65 JWJ

6008
ADS 41F
L.H. PETAL DOOR
R.H. PETAL DOOR
LOAD RELEASE
M_Y @ F.S. 1568
LOAD CLEAR OF RAMP
COMPRESSION
DOWN LOAD
PETAL DOOR ACTUATOR ROD
LOAD - LBS. X 10^{-3}
LH
RH
VERTICAL BENDING ~ F.S. 1500
INCH-LBS. X 10^{-6}

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 4-2-65

FLIGHT 94 DROP NO. 3

SHEET 6 OF 7

CARGO WT. 10,650 LBS

NOTE:
SEE FIGURE D-3A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

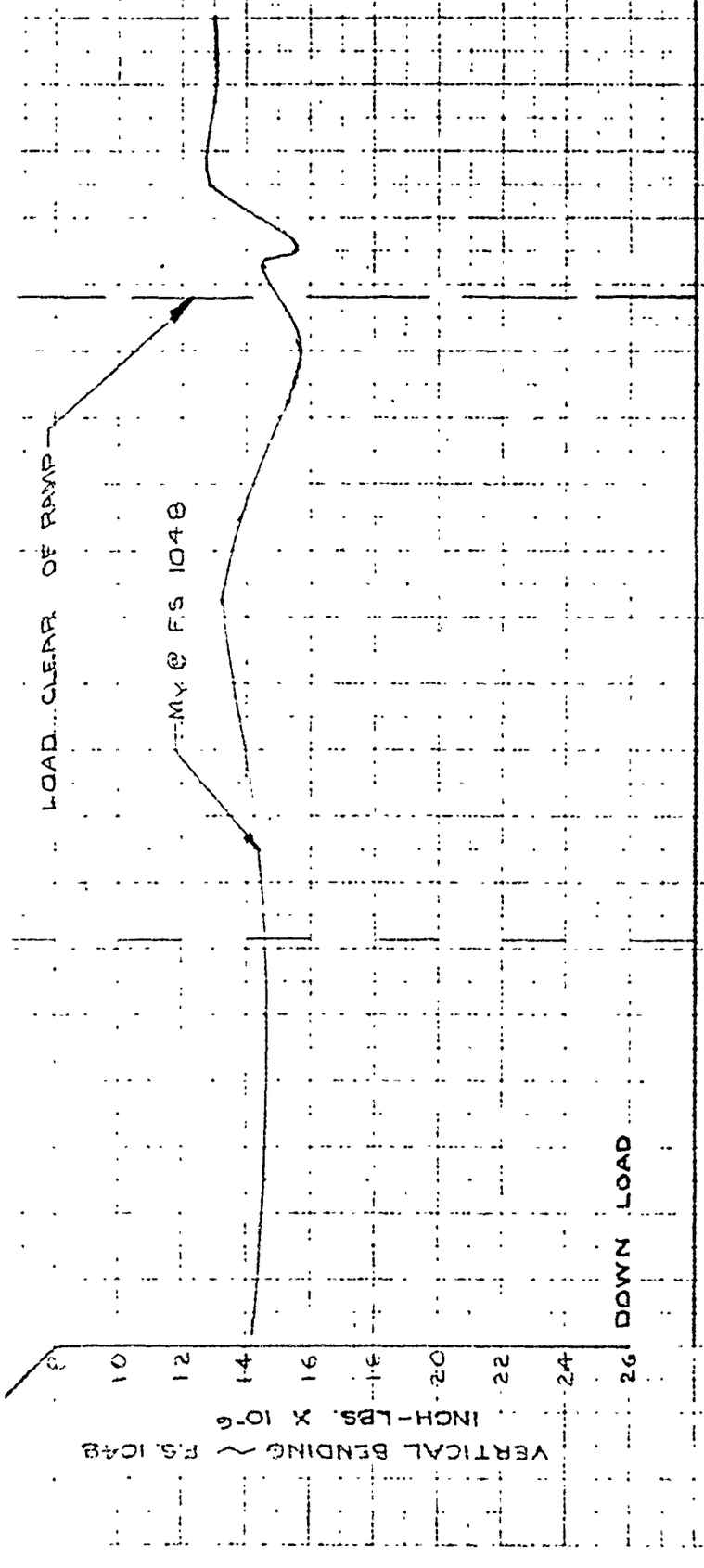


FIGURE D-3F

6008
ADS-4TF
REVISED
5-4-65 PAN JHP

6003
AD5476
LOAD RELEASE
LOAD CLEAR OF RAMP
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
HORIZONTAL STABILIZER
INCH-LBS X 10⁻⁶
LBS X 10⁻³

RSA
4-5-65
JWD

ER 5473
C-141A
D-20

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

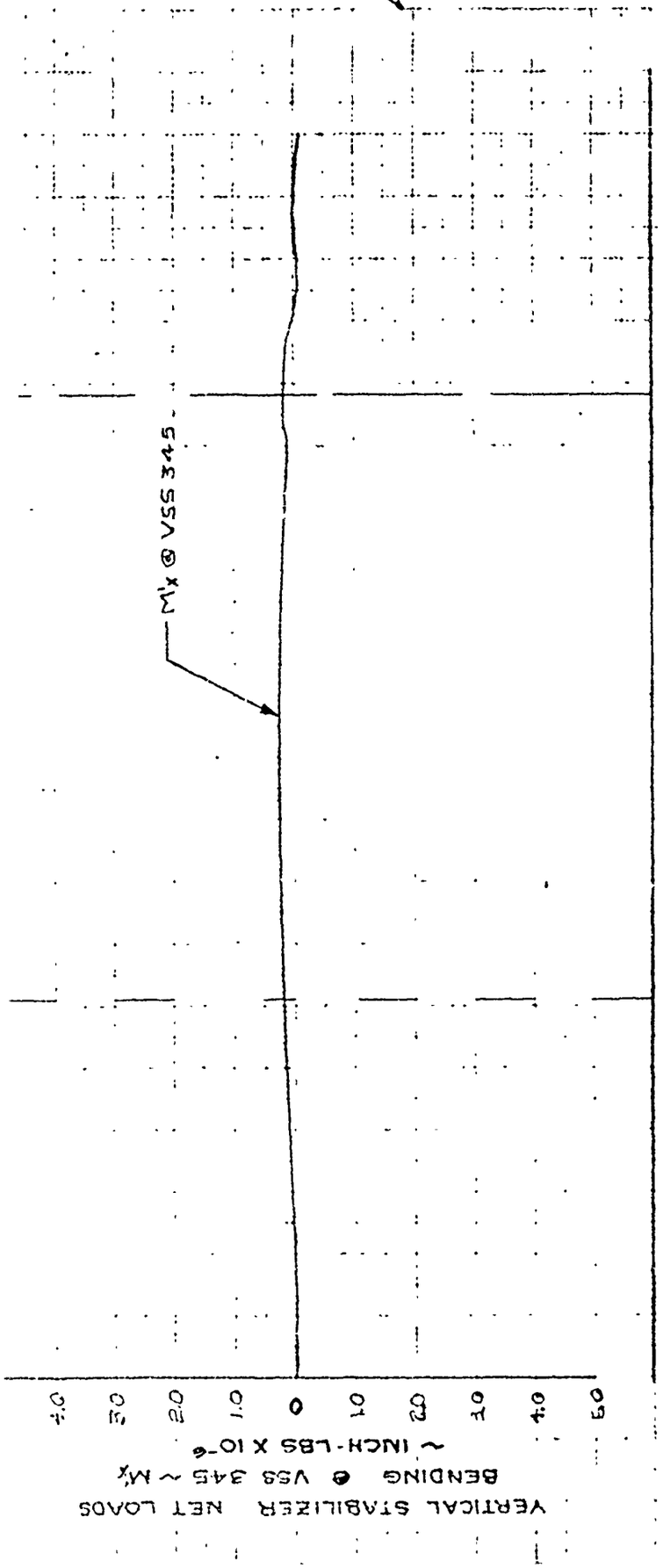
AF68-8077 LAT 6008

TEST DATE: 4-2-65

FLIGHT 94 DROP NO. 3

SHEET 7 OF 7

CARGO WT. 10,650 LBS



NOTE:
SEE FIGURE D-3A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-3G

6008
ADS 17G

REVISED 5-4-65 JWD

REVISED 4/9/65 JWD

6003
ADS 44A
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
ψ
φ
α
β
ϕ
θ
25
20
15
10
5
0
5
10
15
20
NOSE UP
NOSE LEFT
RIGHT ROLL
20
15
10
5
0
5
0

PREPARED BY RSA
DATE 4-6-65
CHECKED

REPORT NO ER 5473
MODEL C-141A
PAGE D-21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

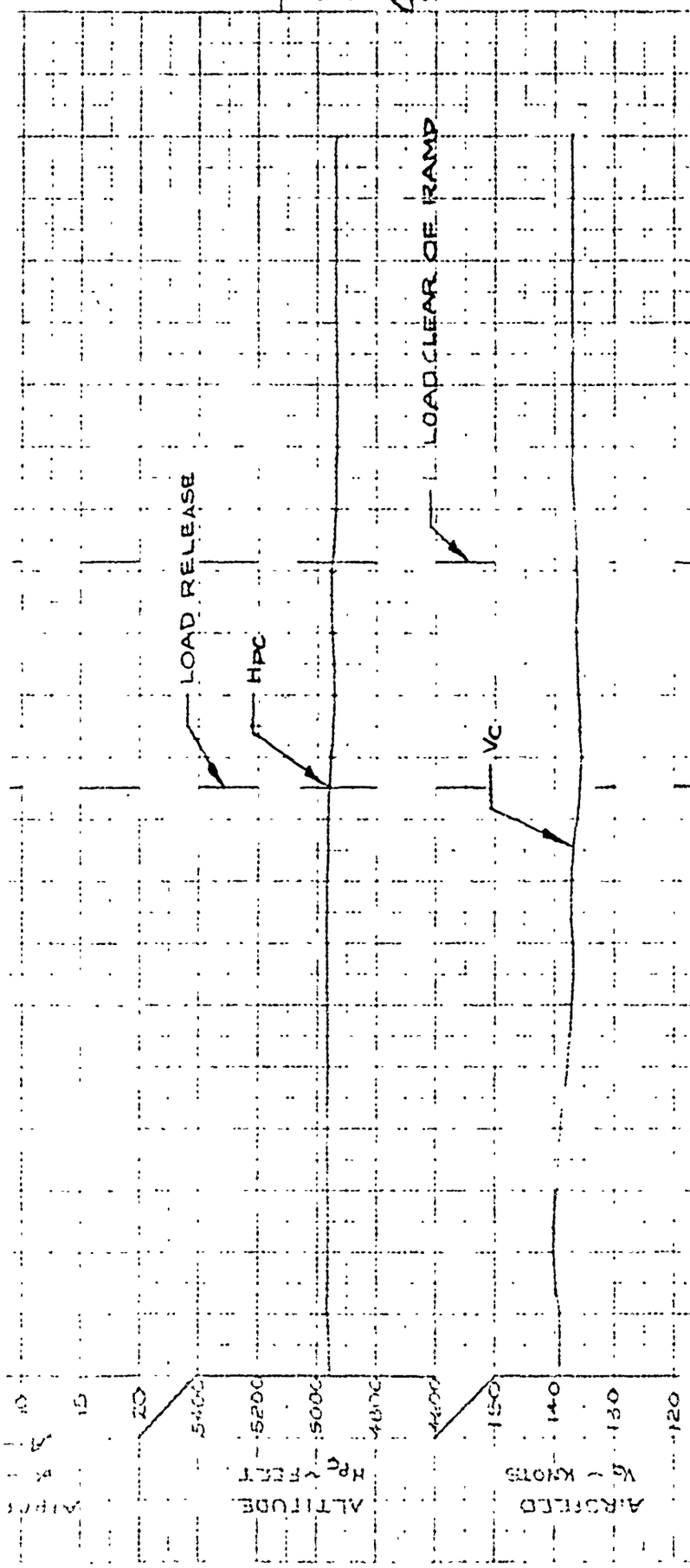
AF63807 LAC 6008

TEST DATE 4-4-65

FLIGHT-95 DROP NO. 4

SHEET 1 OF 5

CARGO WT. 10,300 LBS.



RUN CONDITIONS

1. G.W. ~ 169,200 LBS.
2. C.G. PRIOR TO DROP ~ 28.0 % MAC
3. C.G. AFTER DROP ~ 30.0 % MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 (4 ENGINES)
7. Δ_H ~ 1.3 DEG. (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 861
   VERT. ~ WL 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22' REEFED 24'
3. RATED CHUTE FORCE/CARGO WT. ~ 1.4
4. EXTRACTION LINE LENGTH ~ 100'

NOTE

R.H. REST. NUT LOCKS UNLOCKED INTENTIONALLY IN EMERGENCY RELEASE MODE.

FIGURE D-21-A

REVISED 12-19-68 MCH

A1.5

60ud
ADS.48.B
Fe
Fr
Fa
δat
RIGHT ROLL
PUSH LEFT
PULL.
T.E. UP
70
60
50
40
30
20
10
0
10
20
30
40
20
15
10
5
0
5
Fy
Fa
δat

PREPARED BY RSA
DATE 4-7-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-22

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-6-65

FLIGHT 95 DROP NO. 4

SHEET 2 OF 5

CARGO WT. 10,300 LBS.

NOTE:
SEE FIGURE 2 SHEET 1 OF 3 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

P.H. RESTRAINT LOCKS UNLOCKED INTENTIONALLY BY EMERGENCY RELEASE HANDLE.

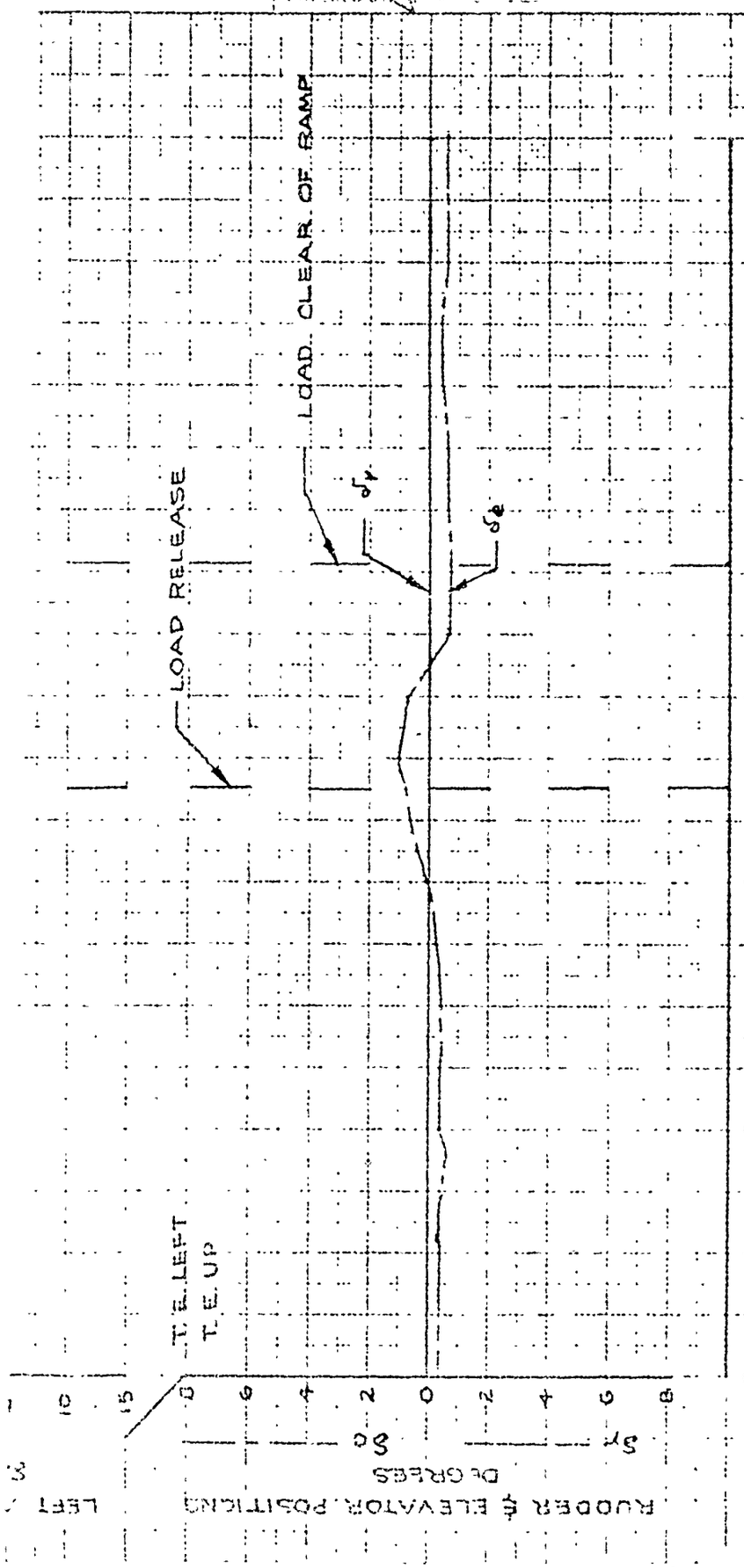


FIGURE D-4.3

3003
ADS-48B

REVISED 5-4-65 TAD

REVISED

6008
ADS 4.8 C
NOTE:
θ̈ CALCULATED FROM N₂ DATA
θ
LOAD RELEASE
LOAD CLEAR OF RAMP
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ̈
DEG/SEC²
PITCHING ACCELERATION
ACCELERATIONS ~ g
FS 277 ——— N₂ FS1637 ———
JOB NO. ADS-2 SUB. CODE 4.2.1

PREPARED BY FCW
DATE 4-7-65
CHECKED BY Lew

REPORT NO. ER 5473
MODEL C-141A
PAGE D-23

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE: 4-6-65
FLIGHT 95 DROP NO. 4
SHEET 3 OF 5

CARGO WT 10,300 LBS

NOTE:
SEE FIGURE D-4A SHEET 1 OF 3 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

R.H. RESTRAINT LOCKS UNLOCKED INTENTIONALLY BY EMERGENCY RELEASE HANDLE.

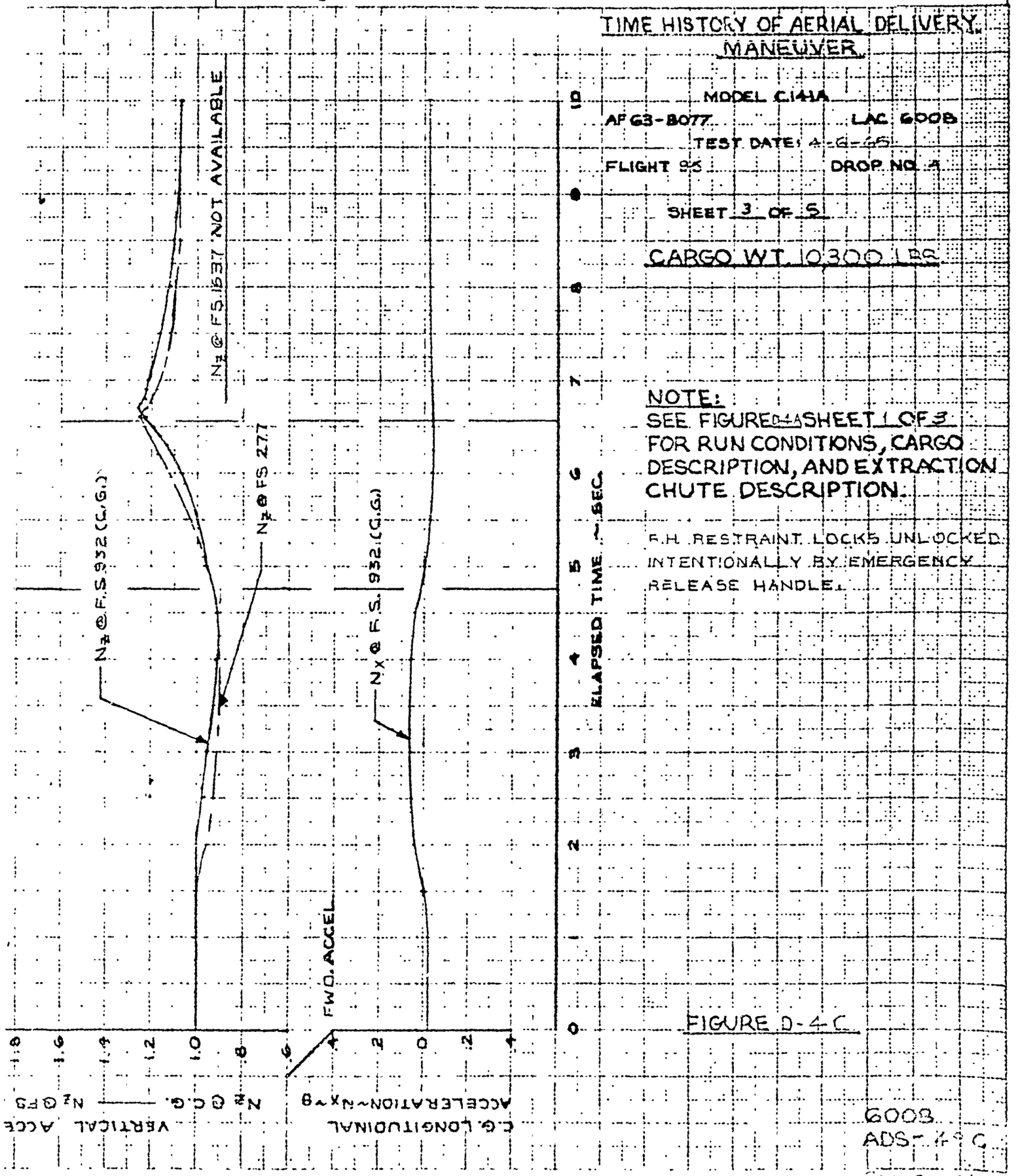


FIGURE D-4C

6008
ADS-4 C

REVISED 4/27/65

6008
ADS 48 D
RAMP LIP
LOAD C.G. POSITION
LOAD ACCEL.
NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
g's

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

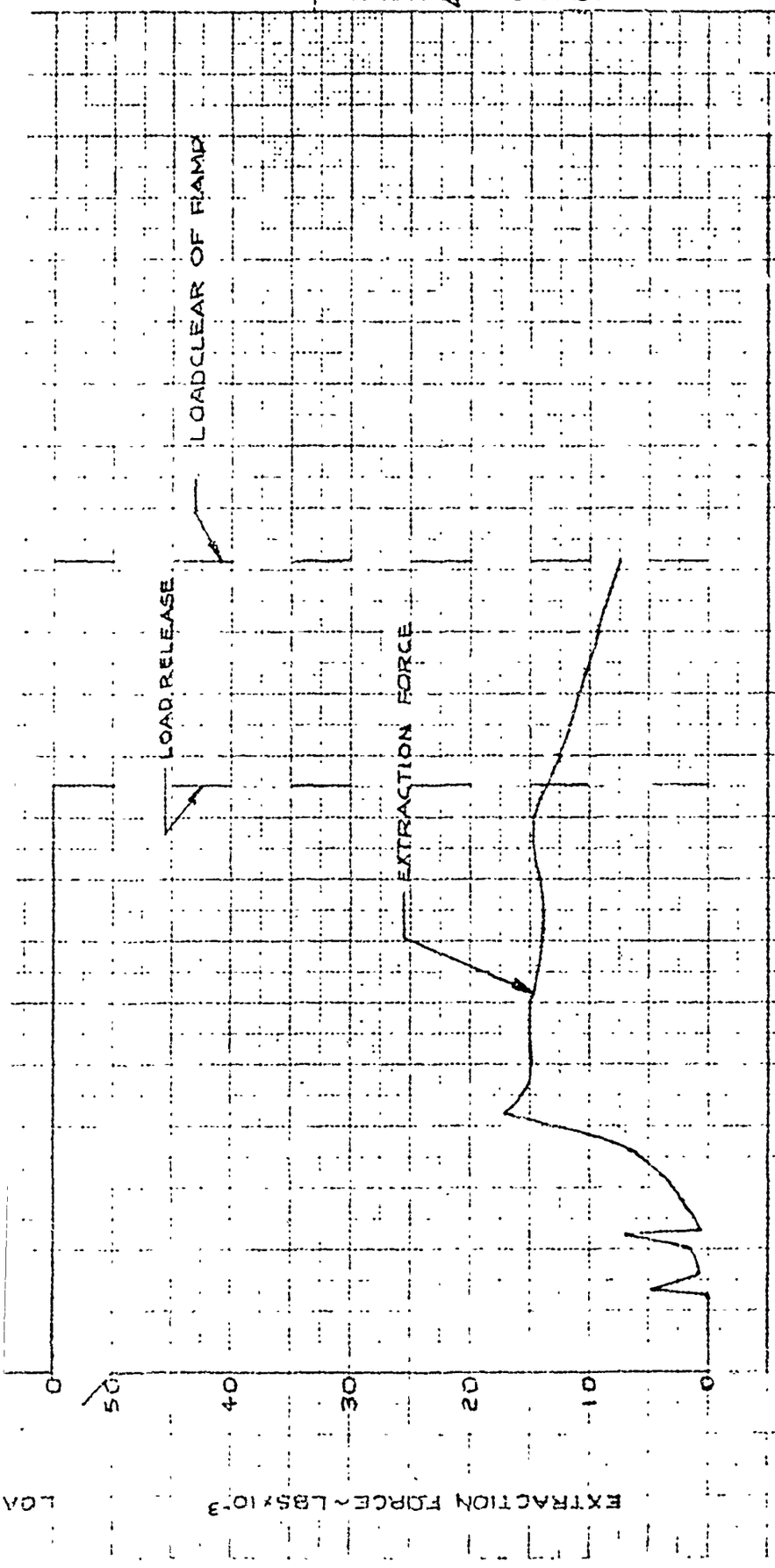
AF 63-8077 LAC E008

TEST DATE 4-6-65

FLIGHT 96 DROP NO. 4

SHEET 4 OF 5

CARGO WT. 10,300 LBS.



NOTE:
SEE FIGURE D-4, SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

R.H. RESTRAINT LOCKS UNLOCKED INTENTIONALLY BY EMERGENCY RELEASE HANDLE.

FIGURE D-4 D

ADS-48E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM D-25
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 95 TEST DATE: 4-6-65

G.W. 169,200 LBS. A/S 140.5 KCAS

C.G. 28.0% MAC ALT. ~ 4,980 FT.

NOTE: DROP WT. ~ 10,300 LBS..

R.H. RAILS INTENTIONALLY RELEASED BY EMERGENCY RELEASE HANDLE

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	2.3
2	ANGLE OF PITCH	"	1.0
3	C.G. VERT. ACCEL.	g's	1.26
4	C.G. LONG. ACCEL.	"	- 0.057
5	VERT. ACCEL. @ F.S. 277	"	1.25
6	VERT. ACCEL. @ F.S. 1637	"	N.A.
7	VERT. BEND. @ F.S. 1048	IN.-LBS X 10^{-6}	13.03
8	VERT. BEND. @ F.S. 1568	"	1.51
9	BENDING ~ M'_X @ HBL 44L	"	- 0.289
10	SHEAR ~ S'_Z @ HBL 44L	LBS. X 10^{-3}	- 2.790
11	PITCH TRIM ACTUATOR ~ S_Z	"	- 1.620
12	R.H. RAMP ACTUATOR LOAD	"	0.830
13	L.H. " " "	"	0.440
14	R.H. SPIDER ARM LOAD	"	2.620
15	L.H. " " "	"	2.340
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.460
17	L.H. " " " "	"	6.650
18	BENDING ~ M'_X @ VSS	IN-LBS. X 10^{-6}	0.096
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	1.470
20	L.H. " " " "	"	N.A.
21	R.H. RAMP HINGE DRAG LOAD	"	- 0.907
22	L.H. " " " "	"	N.A.
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	17.10
25	CARGO LONG. ACCEL.	g's	1.35

FIG. D-4E
ADS-48E

6008
ADS-42A
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
θ
ψ
φ
NOSE UP
NOSE LEFT
RIGHT ROLL
20
15
10
5
0
5
10
θ
φ
α

PREPARED BY TED
DATE 4-6-65
CHECKED BY

ER 5475
PAGE 2-114
PAGE 2-26

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 4-6-65

FLIGHT 96 DROP NO. 6

SHEET 1 OF 5

CARGO WT. 0450 LBS.

RUN CONDITIONS

1. G.W. ~ 170,600 LBS
2. C.G. PRIOR TO DROP ~ 27.4% MAC
3. C.G. AFTER DROP ~ 30.0% MAC
4. FLAPS ~ 61%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 (4 ENGINES)
7. Δ_H ~ 1.3 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 144 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. 824
   VERT. ~ W.L. 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 15'
3. RATED CHUTE FORCE/CHUTE W.T. ~ 18
4. EXTRACTION LINE LENGTH ~ 30'

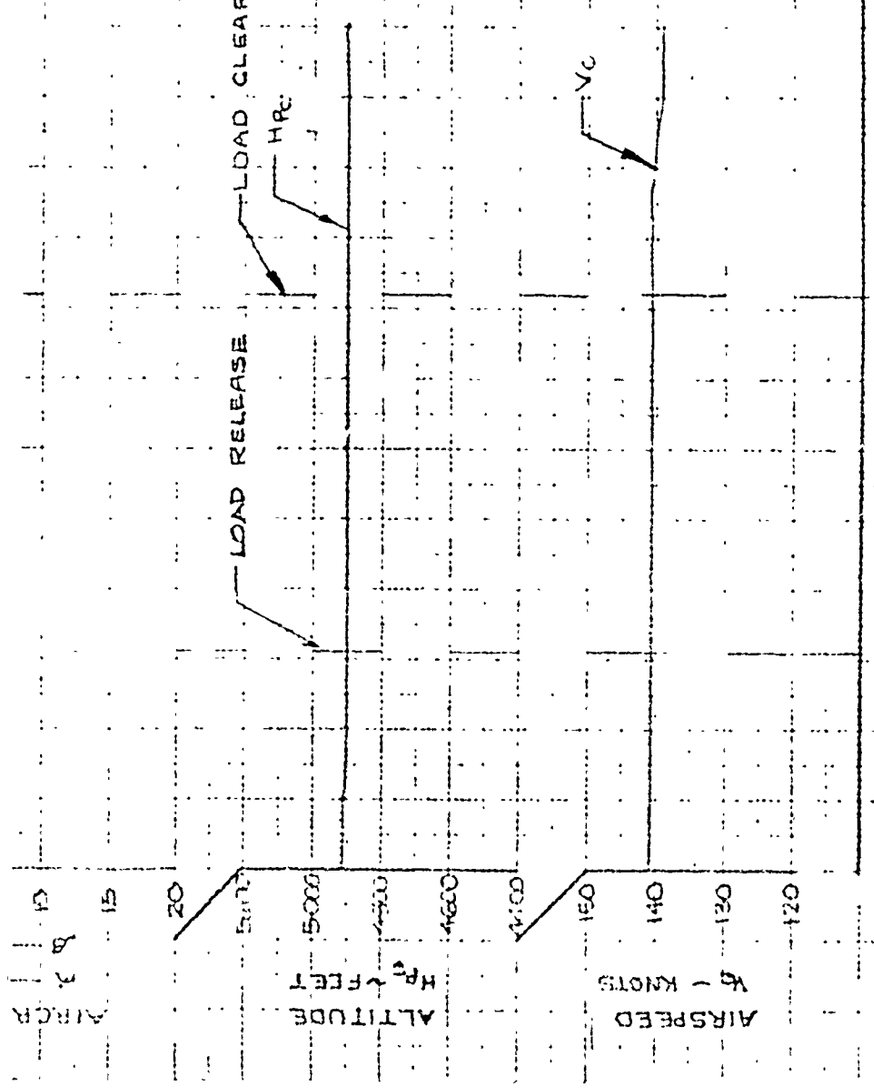
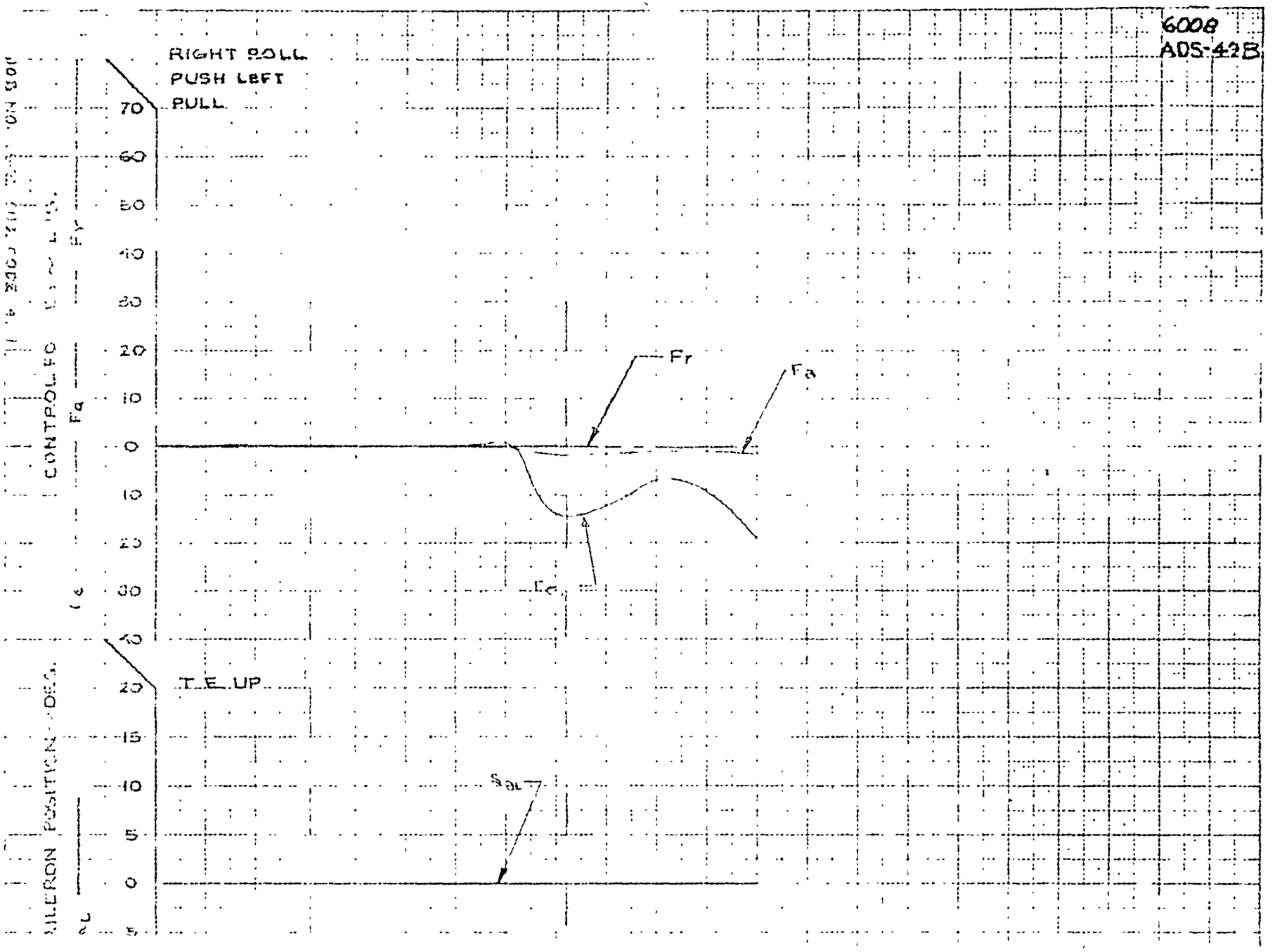


FIGURE D-5A

REVISED 5-4-65 RCW


6008
ADS-42B
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
Fr
Fa
Fc
T.E. UP
25
15
10
5
0
5
δ_{AL}

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-6-65

FLIGHT 96 DROP NO. 5

SHEET 2 OF 5

CARGO WT 10,450 LBS.

NOTE:
SEE FIGURE 2 SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

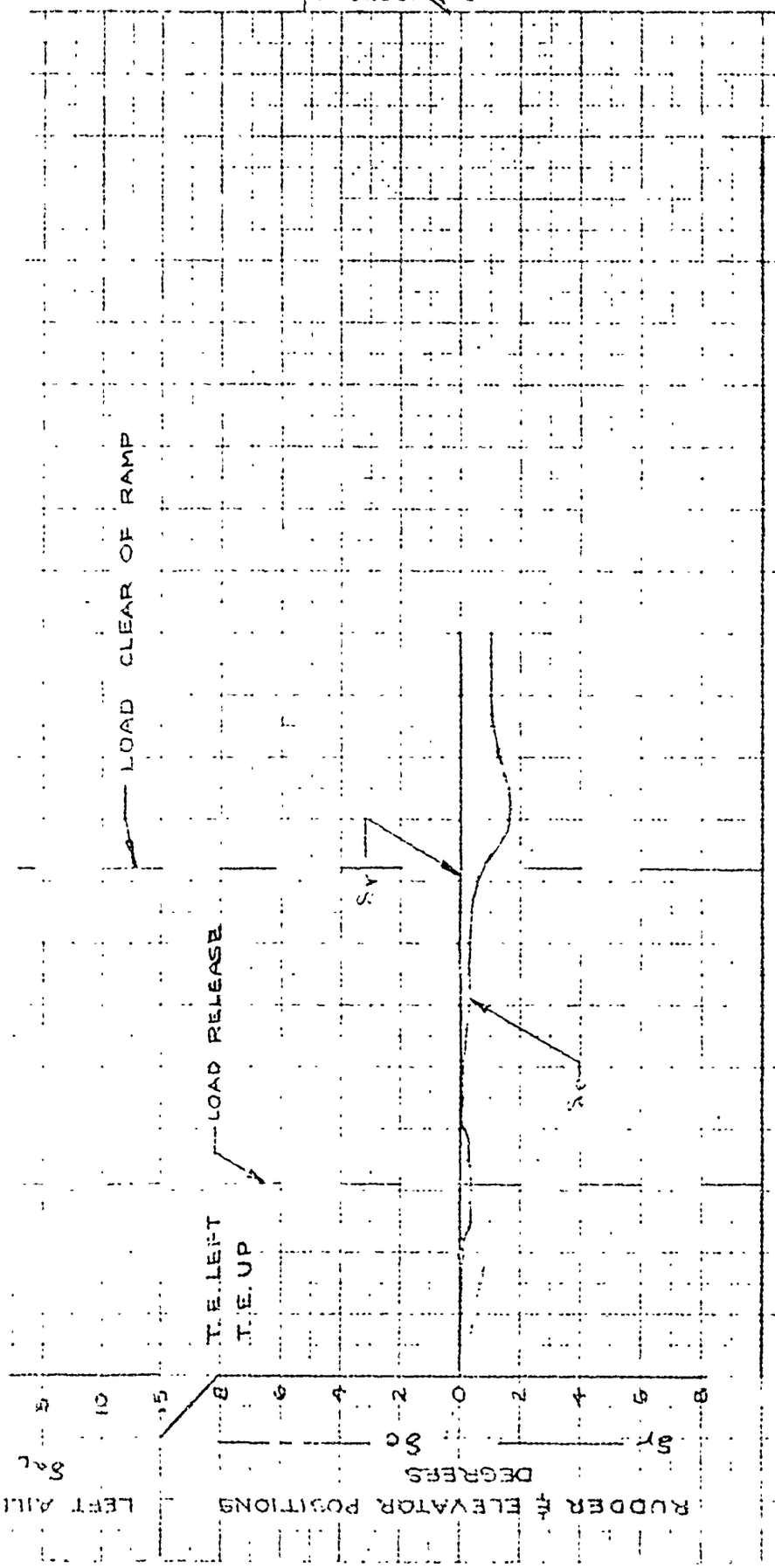


FIGURE 2 SHEET 2

6008
ADS-4)

6008
AD3-42.C
NOTE:
θ CALCULATED FROM N2 DATA.
LOAD CLEAR OF RAMP
N2 @ F.S. 1631
LOAD RELEASE
NOSE UP
UP ACCEL.
θ
DEG/SEC²
PITCHING ACCELERATION
ACCELERATIONS — G
4.0
2.0
0
2.0
4.0
3.0
2.8
2.6
2.4
2.2
2.0
1.8

PREPARED BY: T.E.D
DATE: 4-7-65
CHECKED BY: JWD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
FAST D-28

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 600B

TEST DATE: 4-6-65

FLIGHT 96 DROP NO. 5

SHEET 3 OF 5

CARGO WT. 10,450

NOTE:
SEE FIGURE D-5A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

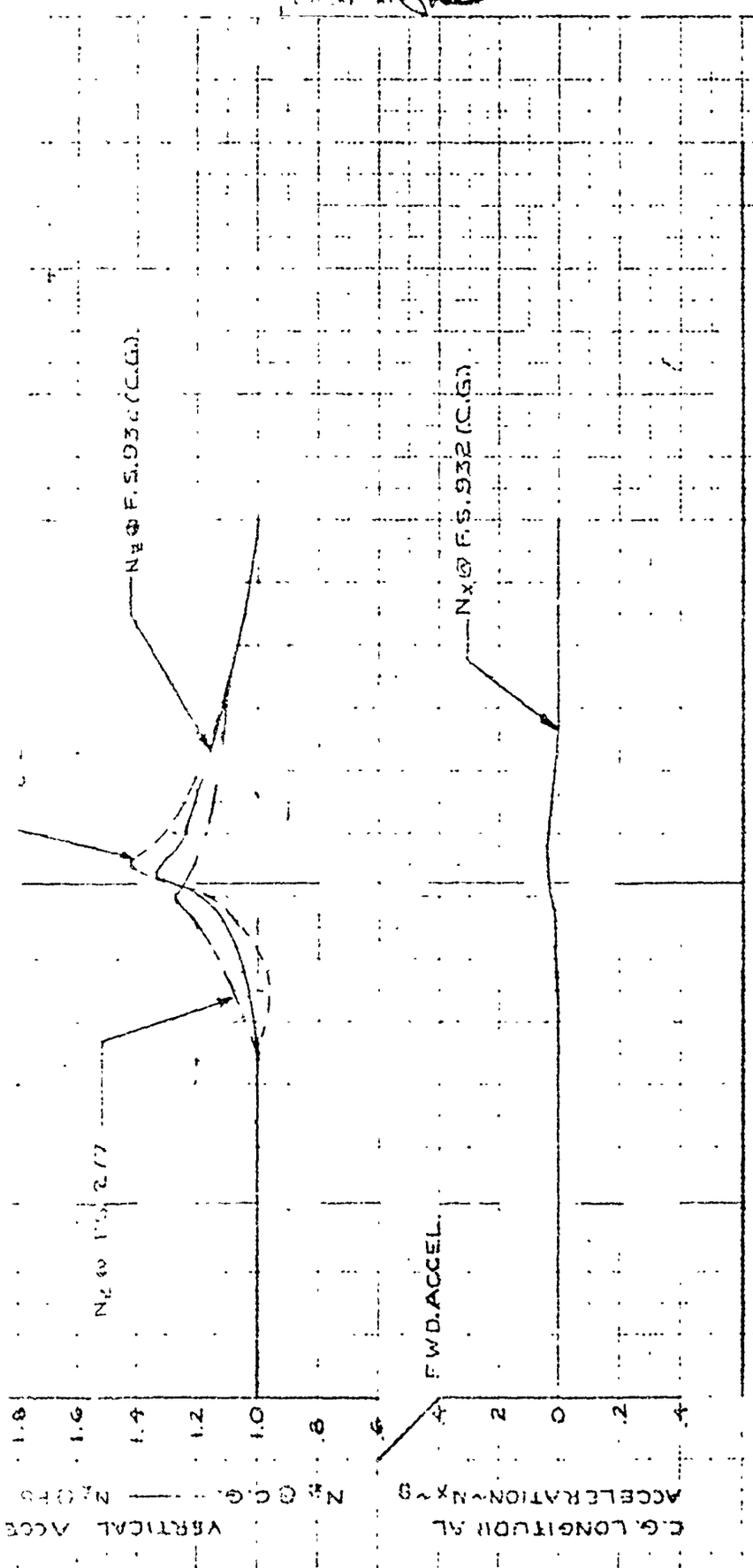
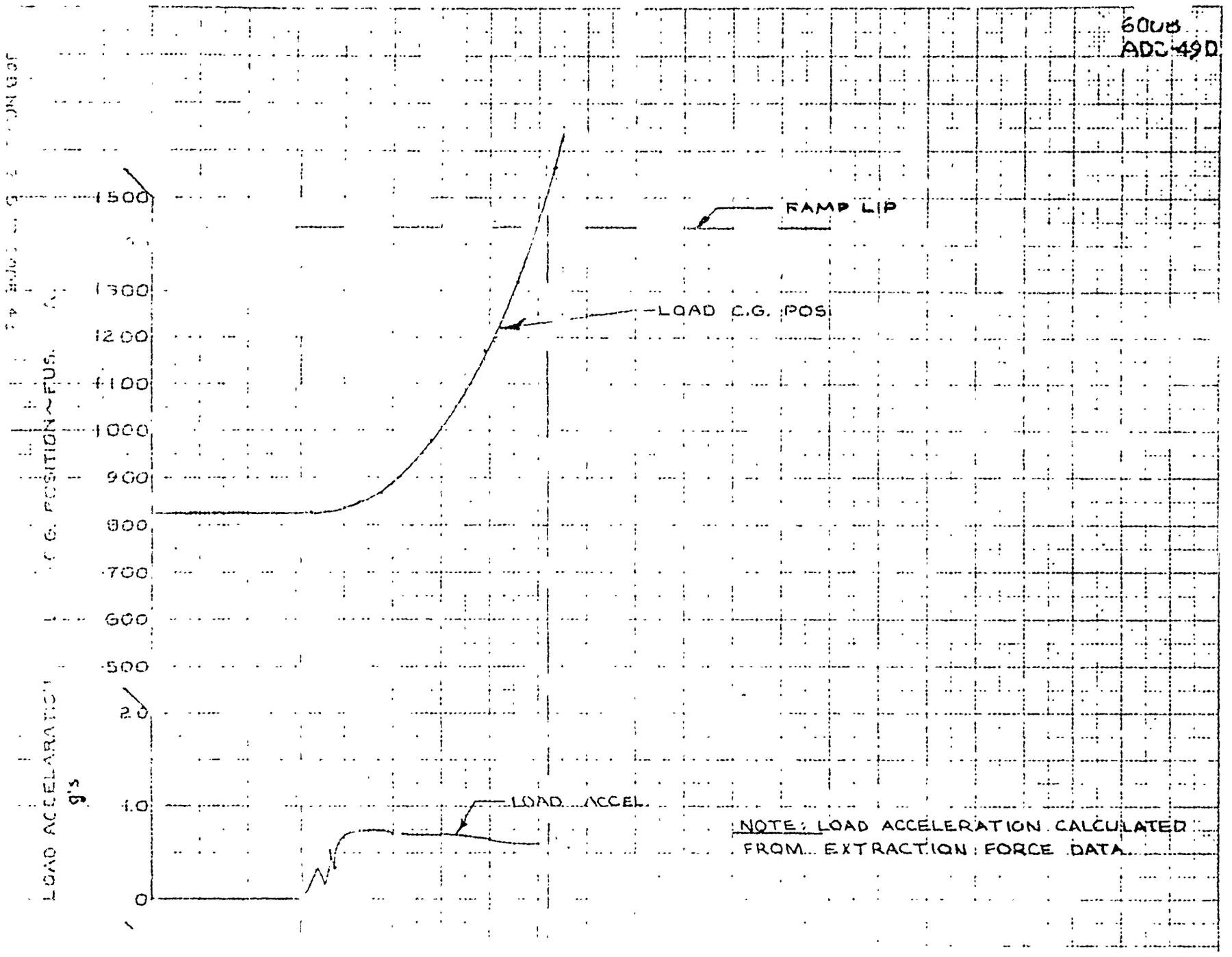


FIGURE D-5C

GC03
ADS-

REVISED 6-4-65 Pg. 1
REVISED Pg. Jwp


6008
ADC-49D
RAMP LIP
LOAD C.G. POS
1500
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
0
g's
LOAD ACCEL.
NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-6-65

FLIGHT 96 DROP NO. 5

SHEET 4 OF 5

CARGO WT. 104501 LBS.

NOTE:
SEE FIGURE 5, SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

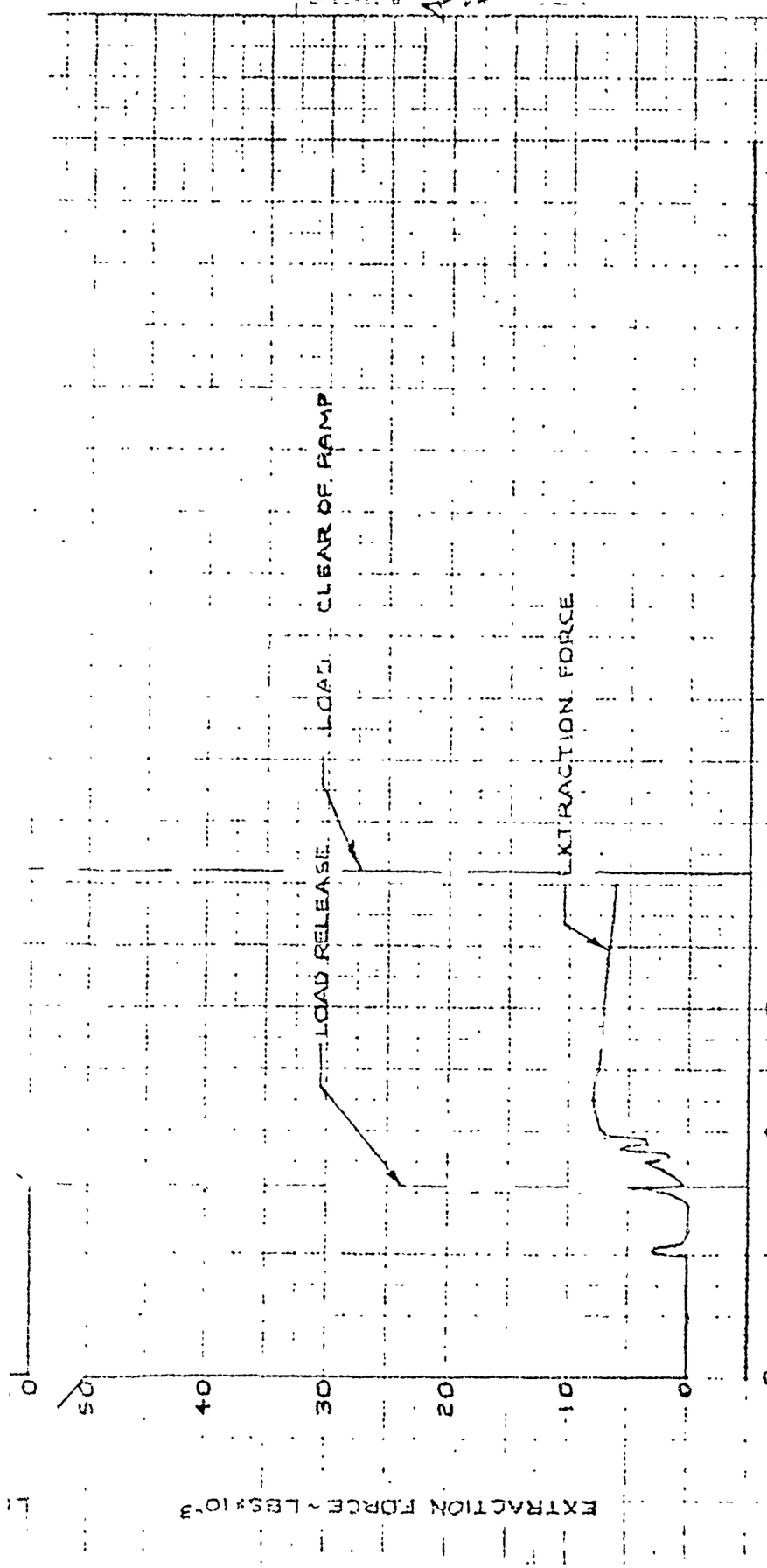


FIGURE D-5D

ADS-49E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM D-30
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 65-8077 LAC 6009

FLIGHT 96 TEST DATE 4-6-65

G.W. 170,600 LBS. A/S 141 KCAS

C.G. 27.4 %MAC ALT. ~ 4,920 FT.

DROP WT. ~ 10,450 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	2.3
2	ANGLE OF PITCH	"	4.5
3	C.G. VERT. ACCEL.	g's	1.33
4	C.G. LONG. ACCEL.	"	- 0.068
5	VERT. ACCEL. @ F.S. 277	"	1.27
6	VERT. ACCEL. @ F.S. 1637	"	1.42
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	13.03
8	VERT. BEND. @ F.S. 1568	"	1.57
9	BENDING ~ M'_x @ HBL 44L	"	- 0.28
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	- 2.680
11	PITCH TRIM ACTUATOR ~ S_z	"	- 1.350
12	R.H. RAMP ACTUATOR LOAD	"	0.950
13	L.H. " " "	"	0.960
14	R.H. SPIDER ARM LOAD	"	3.560
15	L.H. " " "	"	3.420
16	R.H. PETAL DOOR ACTUATOR LOAD	"	7.500
17	L.H. " " " "	"	7.700
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	0.096
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	2.260
20	L.H. " " " "	"	N.A.
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.220
22	L.H. " " " "	"	N.A.
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	7.74
25	CARGO LONG. ACCEL.	g's	0.74

GA FORM 2883

FIG. D-5E
ADS-49E

6008
ADS-52A
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
LOAD RELEASE

PREPARED BY FCW
DATE 4-13-65
RECHECKED BY FCW

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO EP 5473
MODEL C-141A
PAGE D-31

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63807 LAC 6008
TEST DATE 4-12-65
FLIGHT 99 DROP NO. 2
SHEET 1 OF 6

CARGO WT. 13200 LBS.

RUN CONDITIONS
1. G.W. 169,300 LBS.
2. C.G. PRIOR TO DROP 25.8% MAC
3. C.G. AFTER DROP 29.5% MAC
4. FLAPS ~ UP
5. GEAR ~ UP
6. AVG. EPR ~ 1.18 (4 ENGINES)
7. $\dot{\gamma}_H$ ~ 1.7 DEG. (A/C N.U.)

CARGO DESCRIPTION
1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 144 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F.S. 312
VERT. ~ WL 176

EXTRACTION CHUTE DESCRIPTION
1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WEIGHT
4. EXTRACTION LINE LENGTH ~ 100 FT.

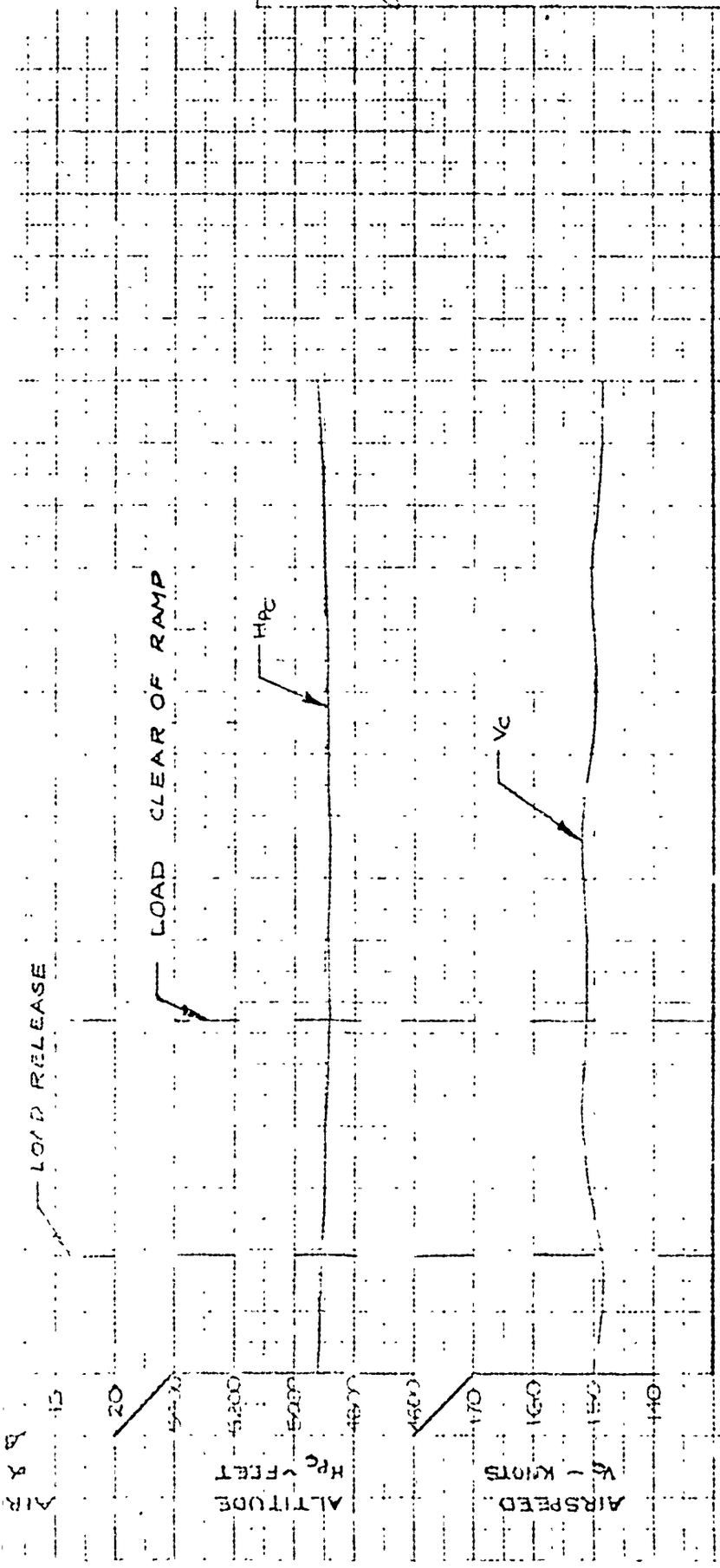


FIGURE D-3A

REVISED 12-14-65 MAH

REVISED

ADS-52B
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
F_e
F_a
F_v
CONTROL FORCES ~ LBS.
F_a
F_R
F_e
T.E. UP
20
15
10
5
0
5
δ_{AL}
AILERON POSITION ~ DEG.
F_{AIL}
LOAD RELEASE
JOB NO. RDE-24 SUB. CODE 4

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 4-2-65

FLIGHT 99 DROP NO. 6

SHEET 2 OF 4

CARGO WT. 13,200 LBS.

NOTE:
SEE FIGURE 1 SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

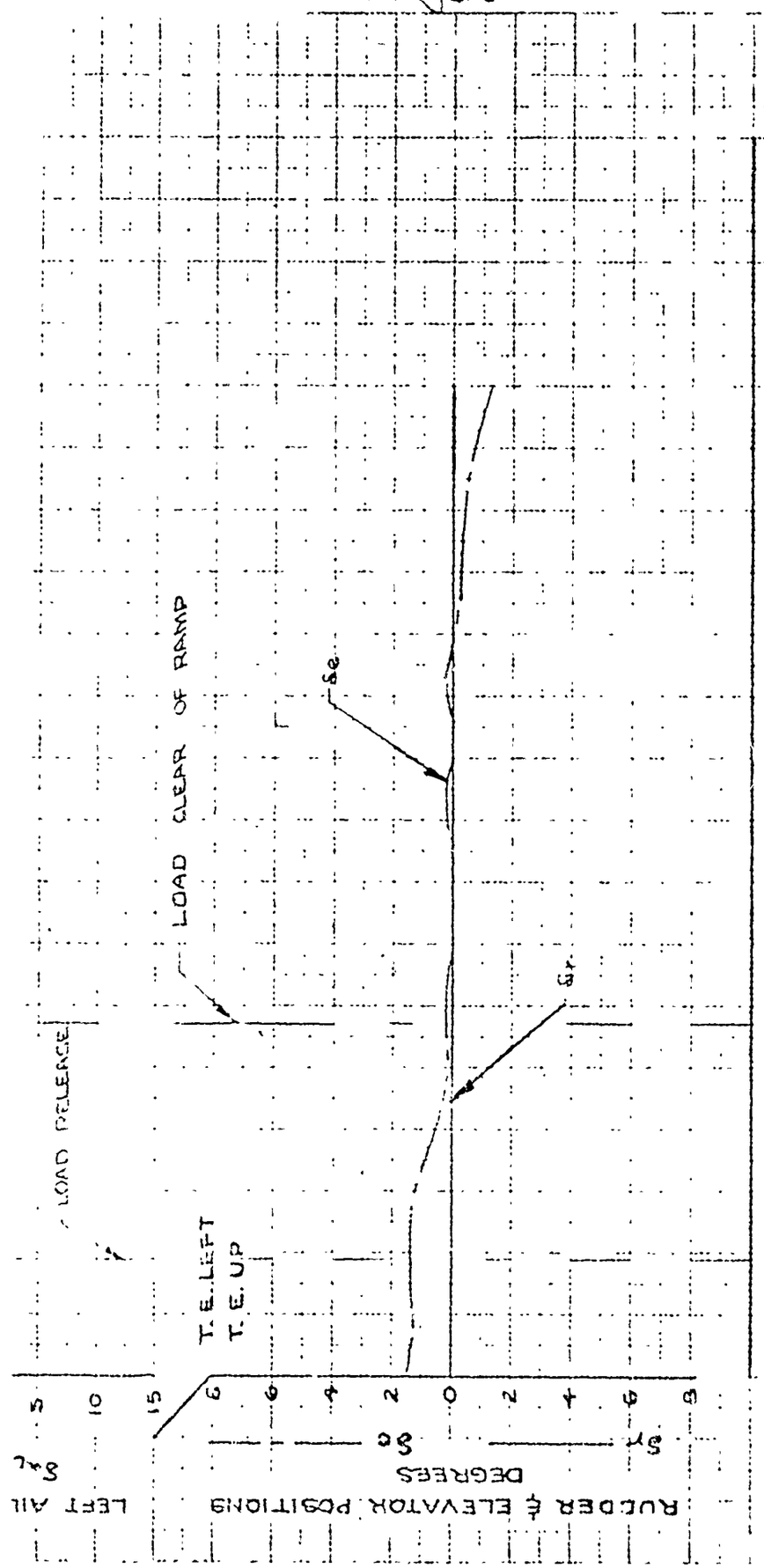


FIGURE 2 SHEET 2

6008
ADS-3225
REVISED 4/20/65

6008
ADS-52C
NOTE:
@ CALCULATED FROM Nz DATA
LOAD CLEAR OF RAMP
LOAD RELEASE
NOSE UP
UP ACCEL.
4.0
2.0
0
-2.0
3.0
2.8
2.6
2.4
2.2
2.0
1.8
DEG/SEC
PITCHING ACCELERATION
ACCELERATIONS ~ g
JOB NO. AC324 SUBCODE 4.2.1

PREPARED BY TED
DATE 4-12-65
CHECKED BY

REPORT NO ER 5475
MODEL C-141A
PAGE D-33

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 600B

TEST DATE: 4-12-65

FLIGHT 99 DROP NO. 6

SHEET 5 OF 6

CARGO WT. 13 200 LBS

NOTE:
SEE FIGURE 4 SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

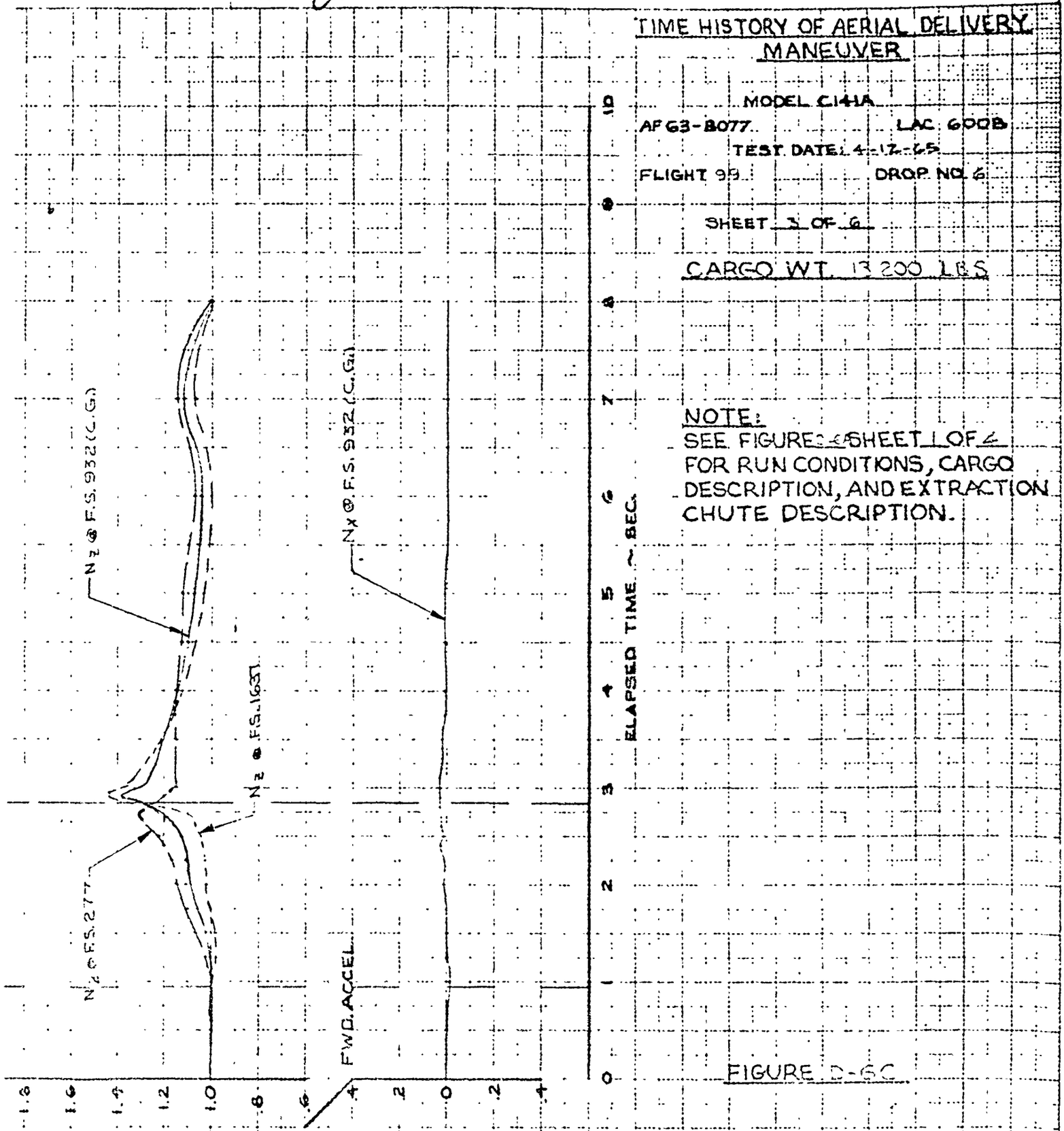
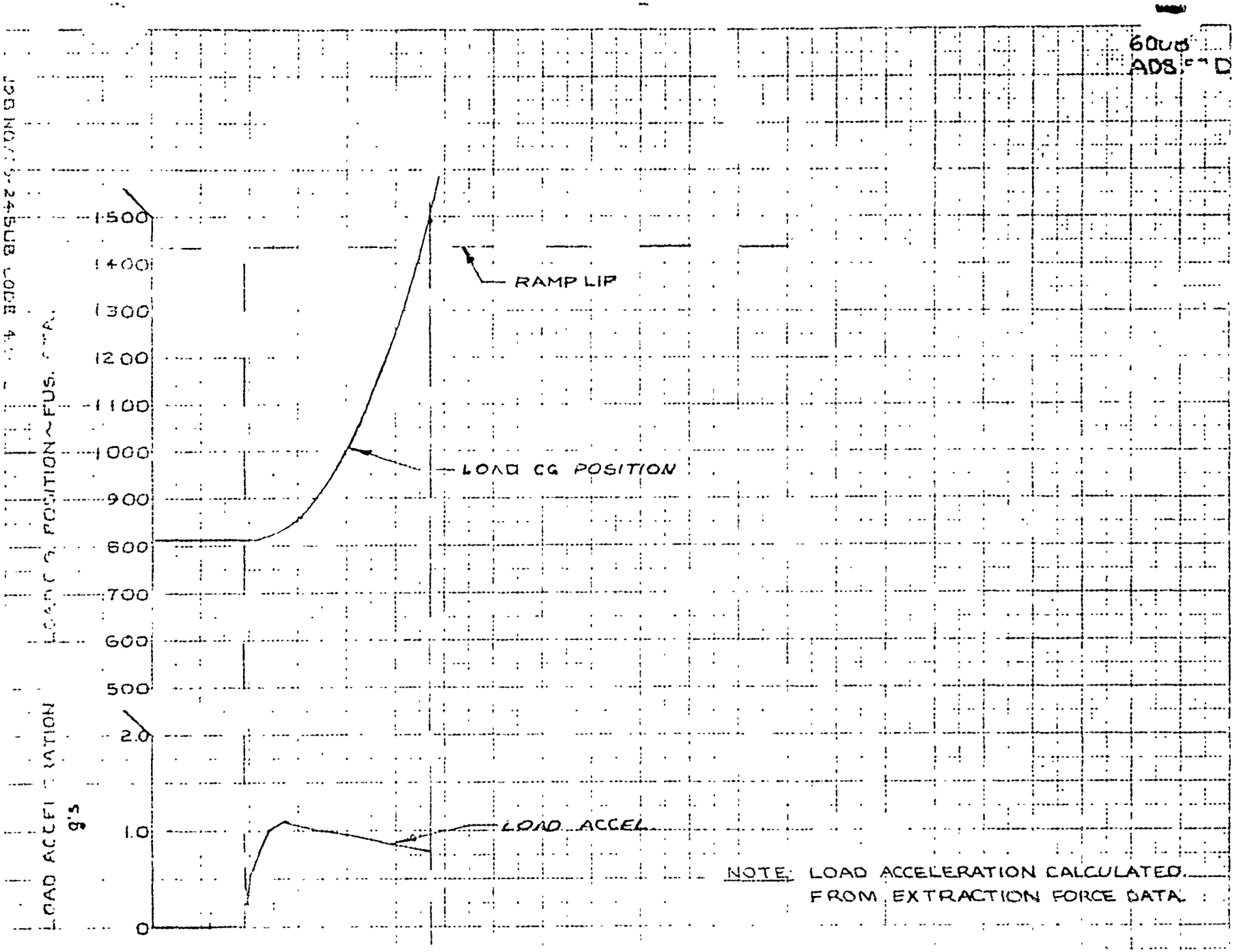


FIGURE D-6C

GOC3
ADS-22

REVISED 5-4-65 JHD
REVISED 7/30/65


RAMP LIP
LOAD CG POSITION
LOAD ACCEL
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
0
g's
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-12-65

FLIGHT 99 DROP NO. 6

SHEET 4 OF 6

CARGO WT. 13,200 LBS.

NOTE:
SEE FIGURE D-5, SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

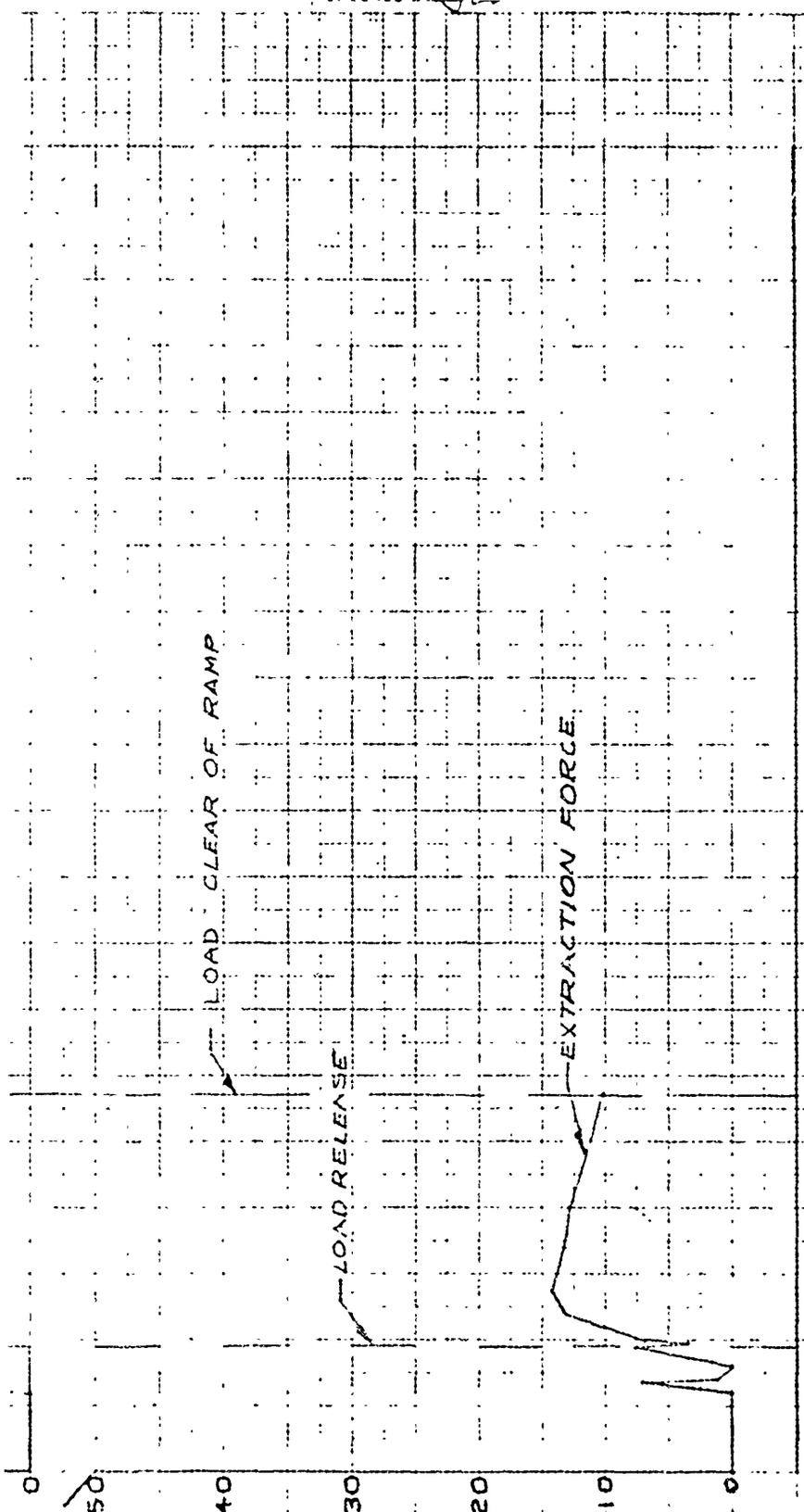


FIGURE D-6D

6008
ADS-52E

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF63-8077 LAC 6008

FLIGHT ~ 99 DATE: 4-12-65

DROP NO. ~ 6 DROP WT. ~ 13,200 LB

SHEET 5 OF 6

NOTE:

SEE FIGURE 21 SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION

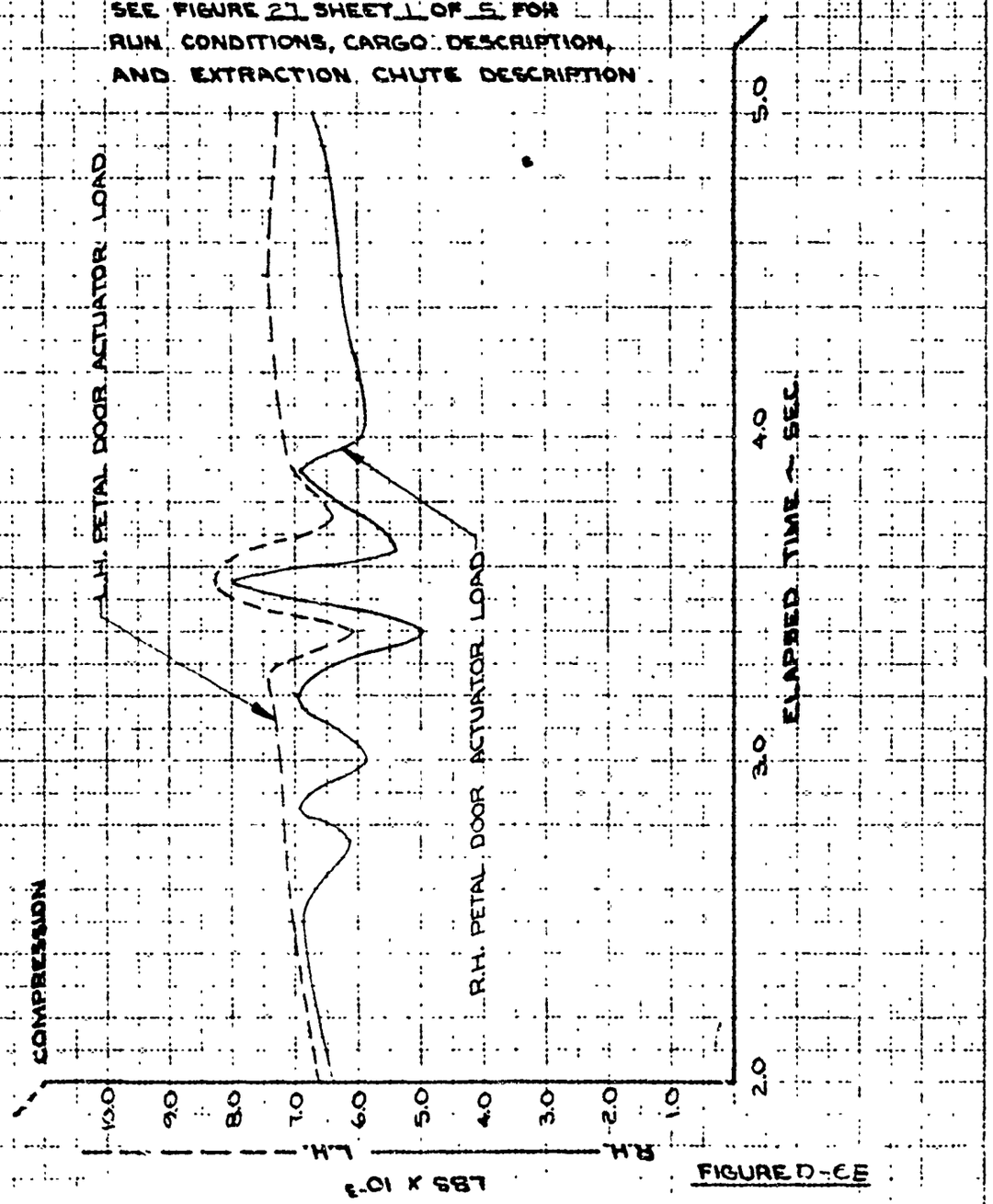


FIGURE D-6E

6008
ADS-52E

ADS-52F

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM D-36
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 99 TEST DATE: 4-12-65

G.W. 169,300 LBS. A/S 155 KCAS

C.G. 25.8 %MAC. ALT ~ 4,940 FT.

DROP WT. ~ 13,200 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	6.1
2	ANGLE OF PITCH	"	8.0
3	C.G. VERT. ACCEL.	g's	1.37
4	C.G. LONG. ACCEL.	"	- 0.045
5	VERT. ACCEL. @ F.S. 277	"	1.30
6	VERT. ACCEL. @ F.S. 1637	"	1.45
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	2.994
8	VERT. BEND. @ F.S. 1568	"	1.248
9	BENDING ~ M'_x @ HBL 44L	"	- 0.091
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	- 1.100
11	PITCH TRIM ACTUATOR ~ S_z	"	- 1.840
12	R.H. RAMP ACTUATOR LOAD	"	0.760
13	L.H. " " "	"	0.300
14	R.H. SPIDER ARM LOAD	"	4.410
15	L.H. " "	"	4.500
16	R.H. PETAL DOOR ACTUATOR LOAD	"	8.000
17	L.H. " " " "	"	8.240
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	3.400
20	L.H. " " " "	"	2.400
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.550
22	L.H. " " " "	"	- 1.020
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	14.33
25	CARGO LONG. ACCEL.	g's	1.08

FIG. D-6E
ADS-52F

ADS53A
AIRCRAFT ATTITUDE RATES — DEG/SEC
JOB NO. [illegible] SUB. CODE 4.21
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
LOAD CLEAR OF RAMP
25
20
15
10
5
0
5
10
15
20
25
θ
φ
ψ
β

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

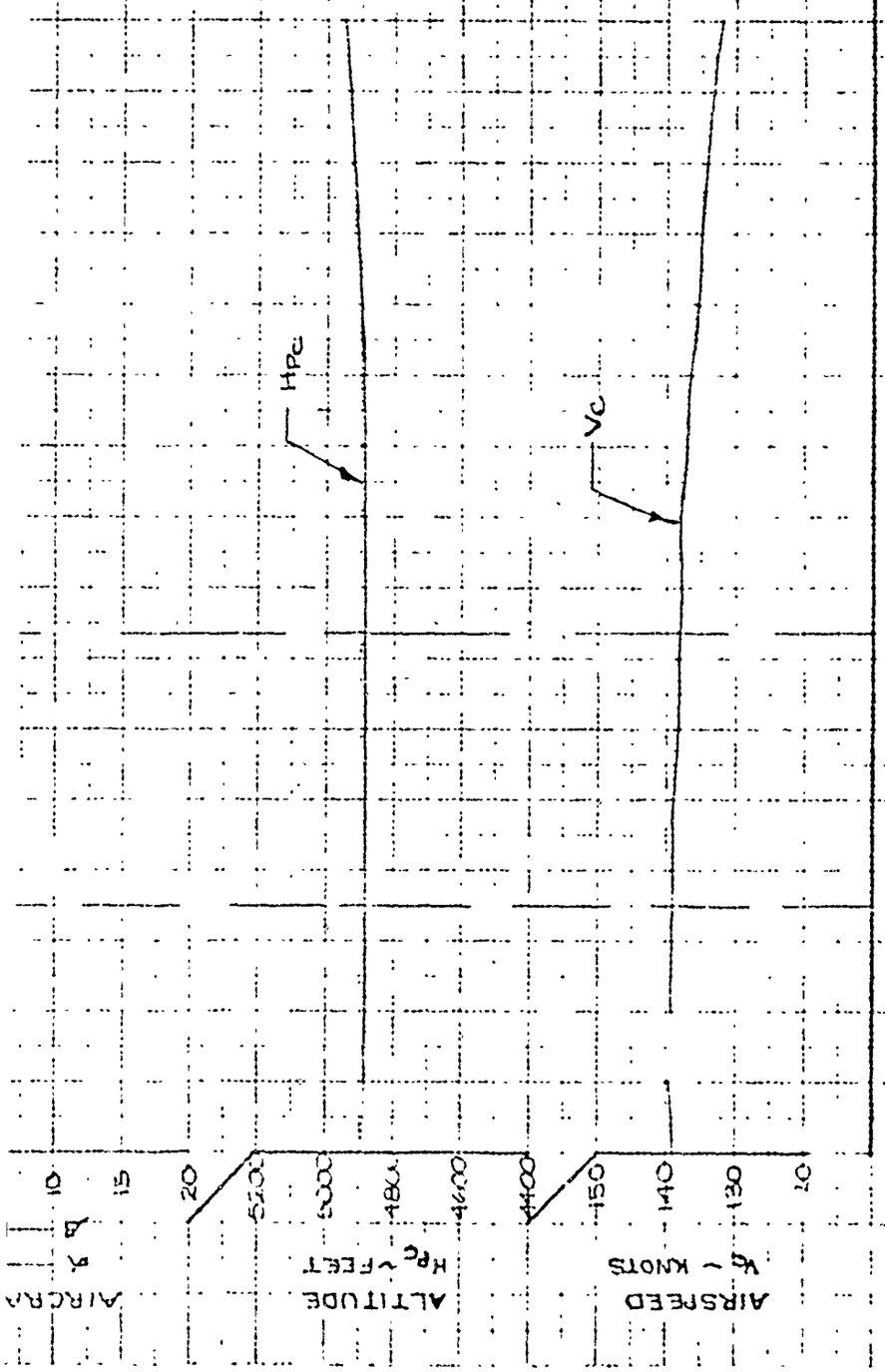
AF63-8077 LAC 6008

TEST DATE 4-13-65

FLIGHT 100 DROP NO. 7

SHEET 1 OF 6

CARGO WT. 18300 LBS.



RUN CONDITIONS

1. G.W. ~ 178,200 LBS.
2. C.G. PRIOR TO DROP ~ 26.2 % MAC
3. C.G. AFTER DROP ~ 30.2 % MAC
4. FLAPS ~ 62 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. T. ΔH ~ 1.7° (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 835
   VERT. ~ WL 178

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE 32' PEFFIO TO 24
3. RATED CHUTE FORCE/CARGO WT. 1.2
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE D-37A

6/30
ADS

REVISED 12-19-65 MRH

REVISED 5-4-65 FCW

REVISED 4/27/66 MRH

6006
ADS-33B
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
CONTROL FORCE ~ LBS.
Fy
Fa
Fe
Fy & Fa
Fe
T.E. UP
20
15
10
5
0
5
AILERON POSITION ~ DEG.
δA/L
LOAD CLEAR OF RAMP

PREPARED BY TED
DATE 4-30-65
CHECKED BY

REPORT NO ER 5473
MODEL C-141A
PAGE D-38

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

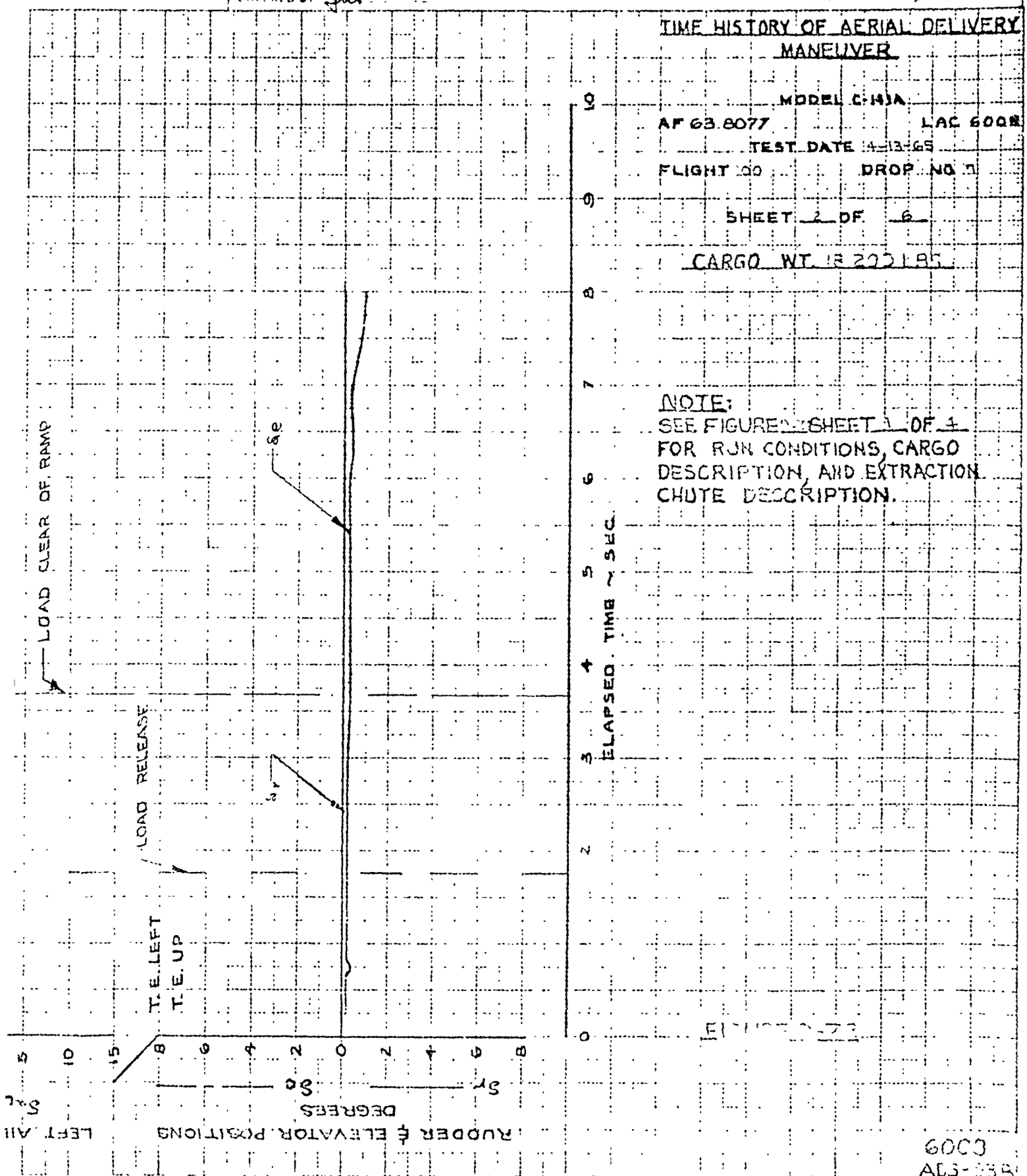
TEST DATE 4-13-65

FLIGHT 60 DROP NO 7

SHEET 2 OF 6

CARGO WT. 22185

NOTE:
SEE FIGURE 2 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.



6003
AD3-38B

REVISED 6-2-65 DID
REVISED 6-4-65 DWJ

6008
AD8-53C
NOTE:
θ̇ CALCULATED FROM N2 DATA.
θ̇
LOAD RELEASE
LOAD CLEAR. OF RNWY.
NOSE UP.
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
DEG/SEC²
PITCHING ACCELERATION
N2 @ F.S. 1037
DATA NOT AVAILABLE
N2 @ F.S. 932 (C.G.)
ELERATIONS ~ G
JOB NO. 415 SUB. CODE 4.2.1

PREPARED T.E.D
DATE 4-14-65
CHECKED [illegible]

REPORT NO ER 5473
MODEL C-141A
PAGE D-39

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

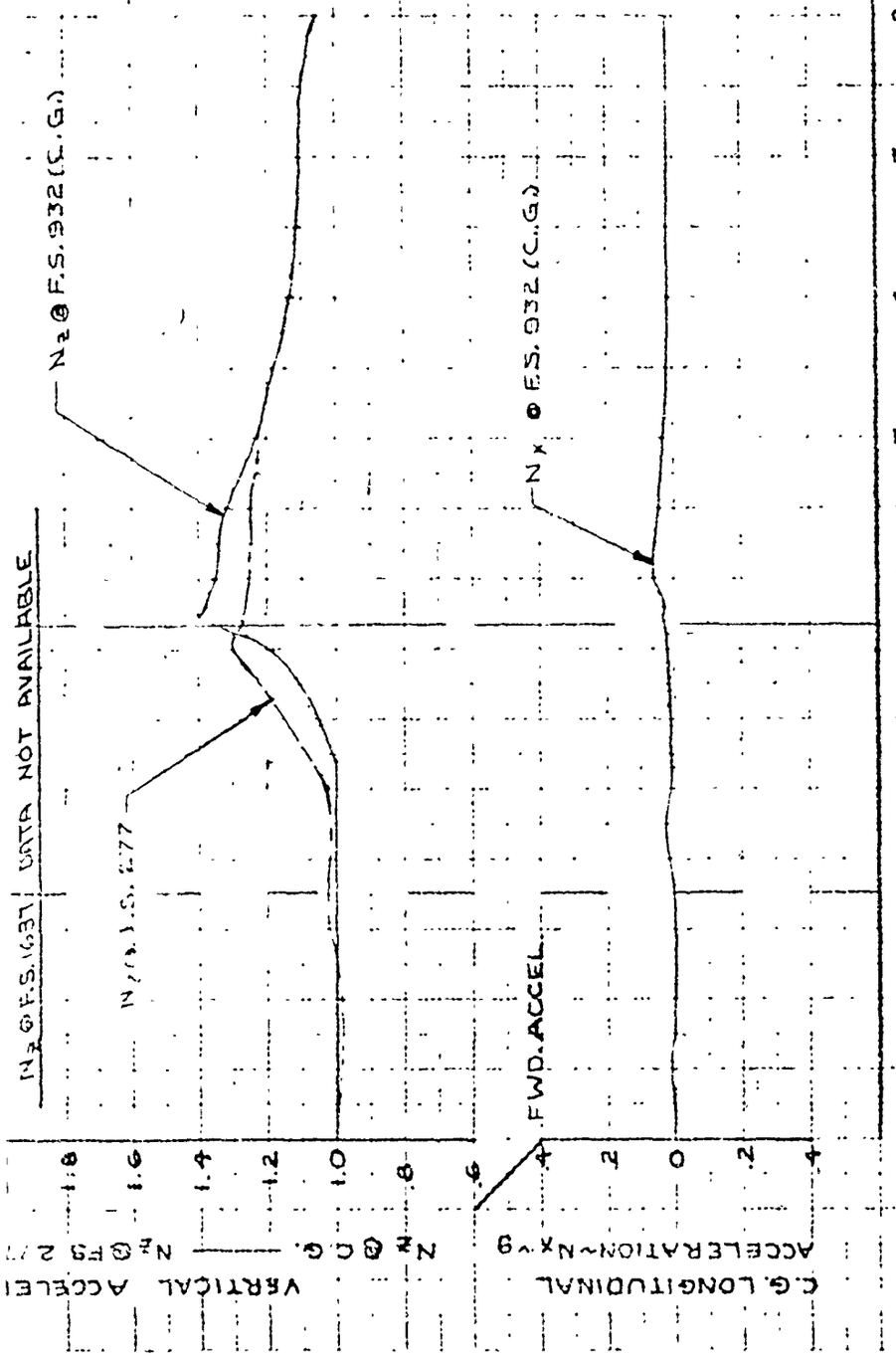
AF 63-8077 LAC 6008

TEST DATE 4-13-65

FLIGHT 100 DROP NO. 1

SHEET 3 OF 6

CARGO WT. 18,300 LBS

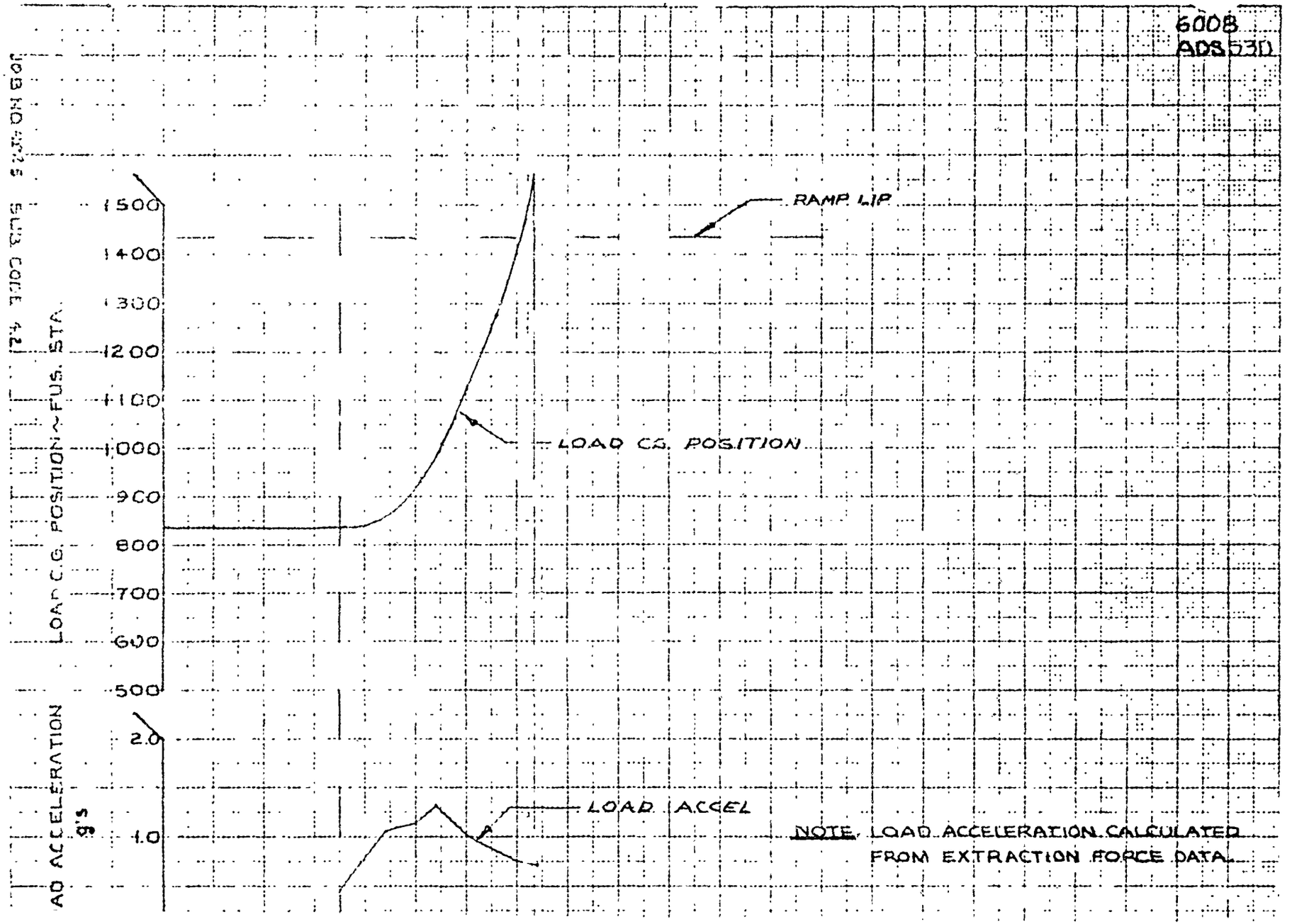


NOTE:
SEE FIGURE D-7A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-7C

GCCB
ADS

Revised Accel Axis
5-4-65 [illegible]


6008
ADS530
JOB NO. 8225 SUB CODE 42
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD C.G. POSITION
LOAD ACCELERATION
g's
2.0
1.0
LOAD ACCEL
NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA.

PREPARED BY RSA
DATE 4-13-65
CHECKED BY [illegible]

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-40

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-13-65

FLIGHT 100 DROP NO. 7

SHEET 4 OF 6

CARGO WT. 18300 LBS.

NOTE:
SEE FIGURE D-7A, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION

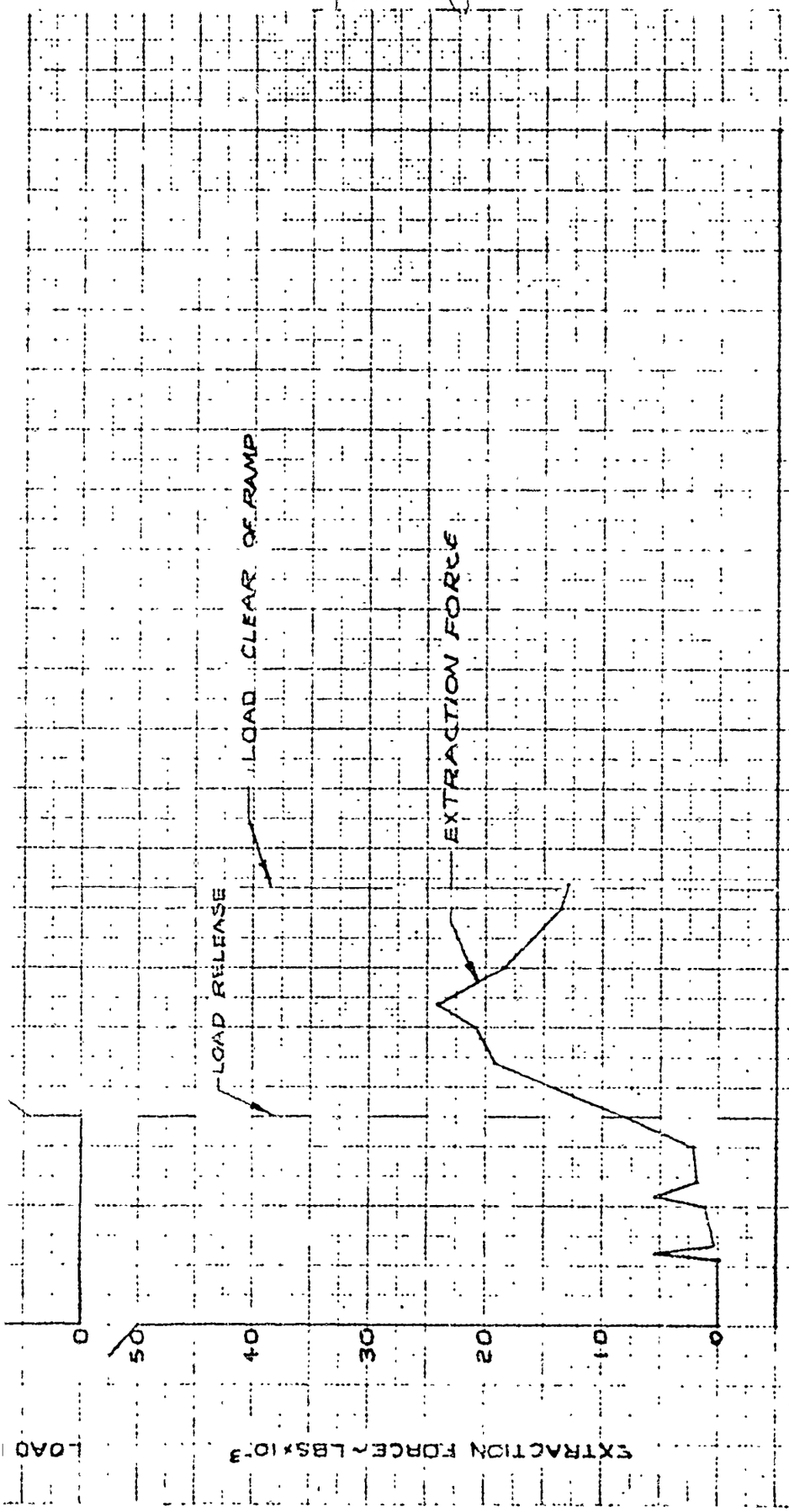


FIGURE D-7D

6008
ADS 530

REVISED 5-4-65 DMJ
REVISED 4/2-16 JWD

6008
ADS-53E

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF63-8077 LAC 6008
FLIGHT ~ 100 DATE: 4-13-65
DROP NO. ~ 7 DROP WT. ~ 18,300

SHEET 5 OF 6

NOTE:
SEE FIGURE 31 SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

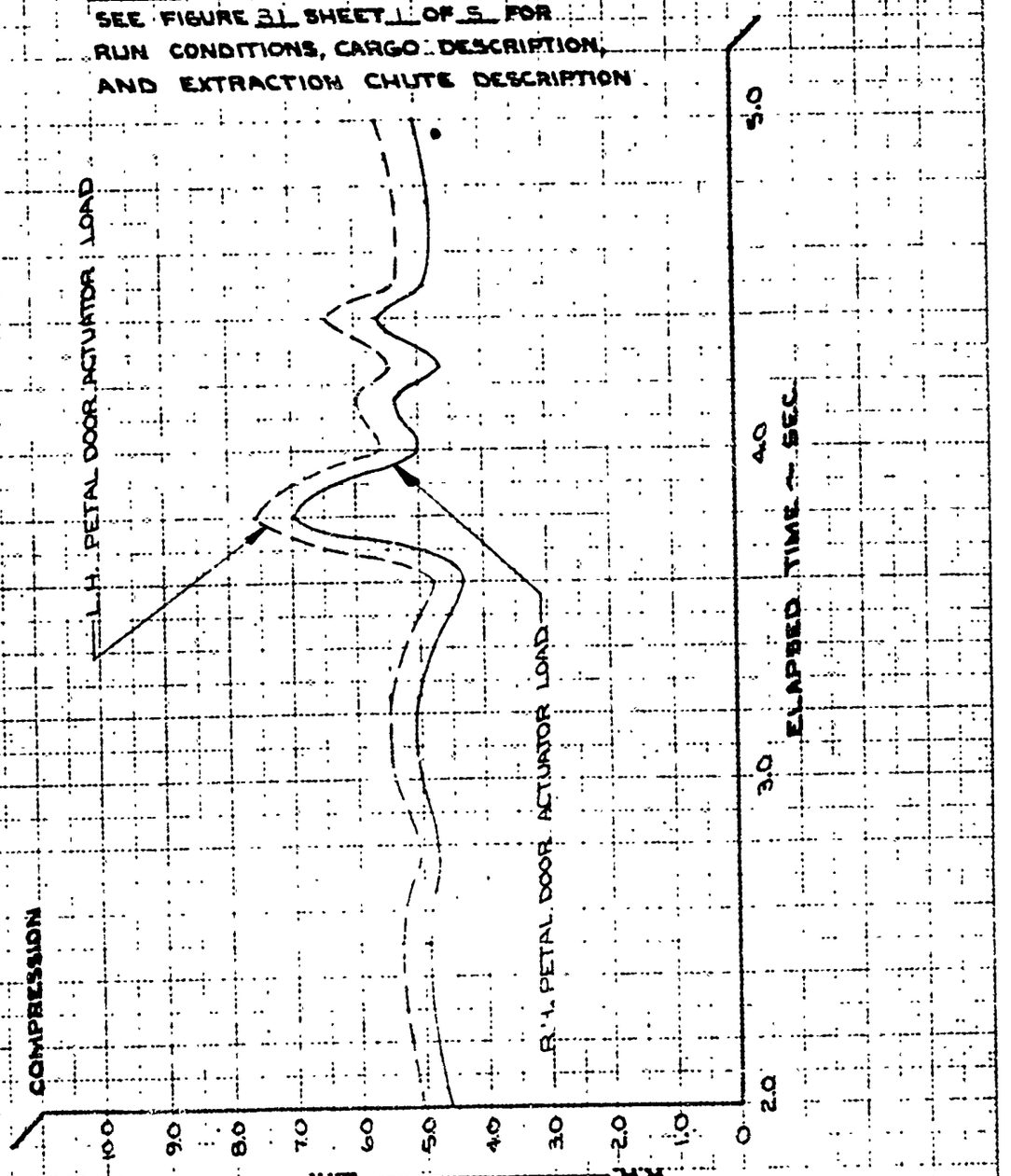


FIGURE D-7E

6008
ADS-53E

ADS-53F

	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	TEMP	PERM
Prepared				Page	D-42
Checked			TITLE	Model C-141A	
Approved				Report No ER 5473	

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 65-8077 LAC 6008

FLIGHT 100 TEST DATE: 4-13-65

G.W. 178,200 LBS. A/S 140 KCAS

C.G. 26.2% MAC. ALT. ~ 4,900 FT.

DROP WT. ~ 18,300 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	4.5
2	ANGLE OF PITCH	"	7.2
3	C.G. VERT. ACCEL.	g's	1.399
4	C.G. LONG. ACCEL.	"	- 0.057
5	VERT. ACCEL. @ F.S. 277	"	1.304
6	VERT. ACCEL. @ F.S. 1637	"	N.A.
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	13.03
8	VERT. BEND. @ F.S. 1568	"	1.349
9	BENDING ~ M'_x @ HBL 44L	"	- 0.240
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	- 2.430
11	PITCH TRIM ACTUATOR ~ S_z	"	- 2.143
12	R.H. RAMP ACTUATOR LOAD	"	0.810
13	L.H. " " "	"	0.290
14	R.H. SPIDER ARM LOAD	"	4.600
15	L.H. " "	"	5.070
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.960
17	L.H. " " " "	"	7.560
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	0.132
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	2.410
20	L.H. " " " "	"	2.140
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.242
22	L.H. " " " "	"	- 2.780
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	24.0
25	CARGO LONG. ACCEL.	g's	1.32

LA FORM 200-8

FIG. D-7E
ADS-53F

6008
ADS-54A
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
LOAD CLEAR OF RAMP
JOB NO. ADS 26 SUB. CODE 4.21

PREPARED BY FCW
DATE 4-14-65
CHECKED BY

REPORT NO ER 5473
MODEL C-141A
PAGE D-43

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 4-14-65

FLIGHT 101 DROP NO. 8

SHEET 1 OF 7

CARGO WT. 188201 LBS

RUN CONDITIONS

1. G.W. 179,400 LBS.
2. C.G. PRIOR TO DROP 26.7 %MAC
3. C.G. AFTER DROP 30.3 %MAC
4. FLAPS ~ 37½
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. γ_H ~ 1.7 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192. IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 847
   VERT. ~ WL 178

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. .90
4. EXTRACTION LINE LENGTH ~ 100 FT

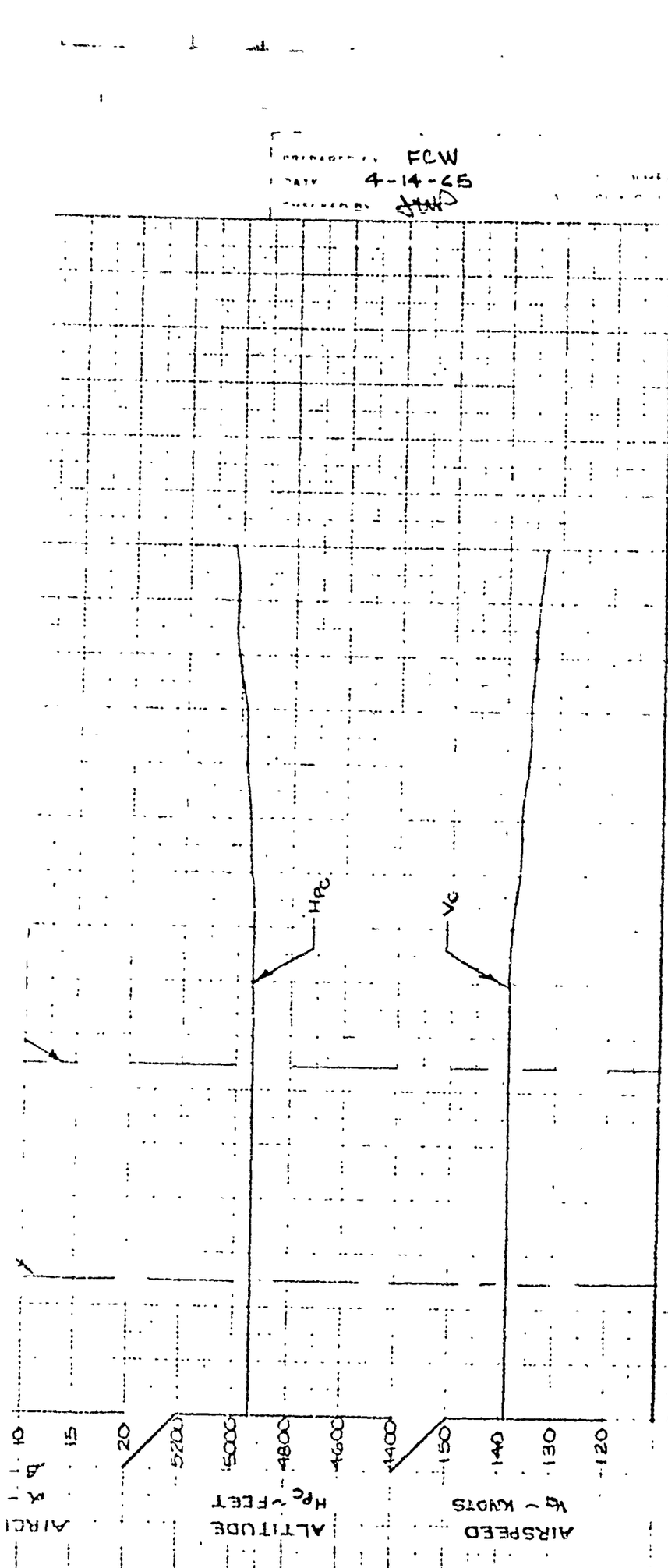


FIGURE D-8A

REVISED 12-14-65 MBH

REVISED 5-4-65 FCW

6008
ADS&A

6008
ADS-54E

RIGHT ROLL
PUSH LEFT
PULL

-70 -60 -50 -40 -30 -20 -10 0 10 20 30 40

F_r F_a F_e

CONTROL FORCES ~ LBS.

T.E. UP

20 15 10 5 0 5

δ_{al}

AILERON POSITION ~ DEG.

JOB NO. ADS 26 SUB. CODE 4

PSA
4-14-65
JWP

ER 5473
MODEL C-141A
D-44

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 4-14-65

FLIGHT 101 DROP NO. 6

SHEET 2 OF 7

CARGO WT. 18820 LBS

NOTE:
SEE FIGURE 2 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

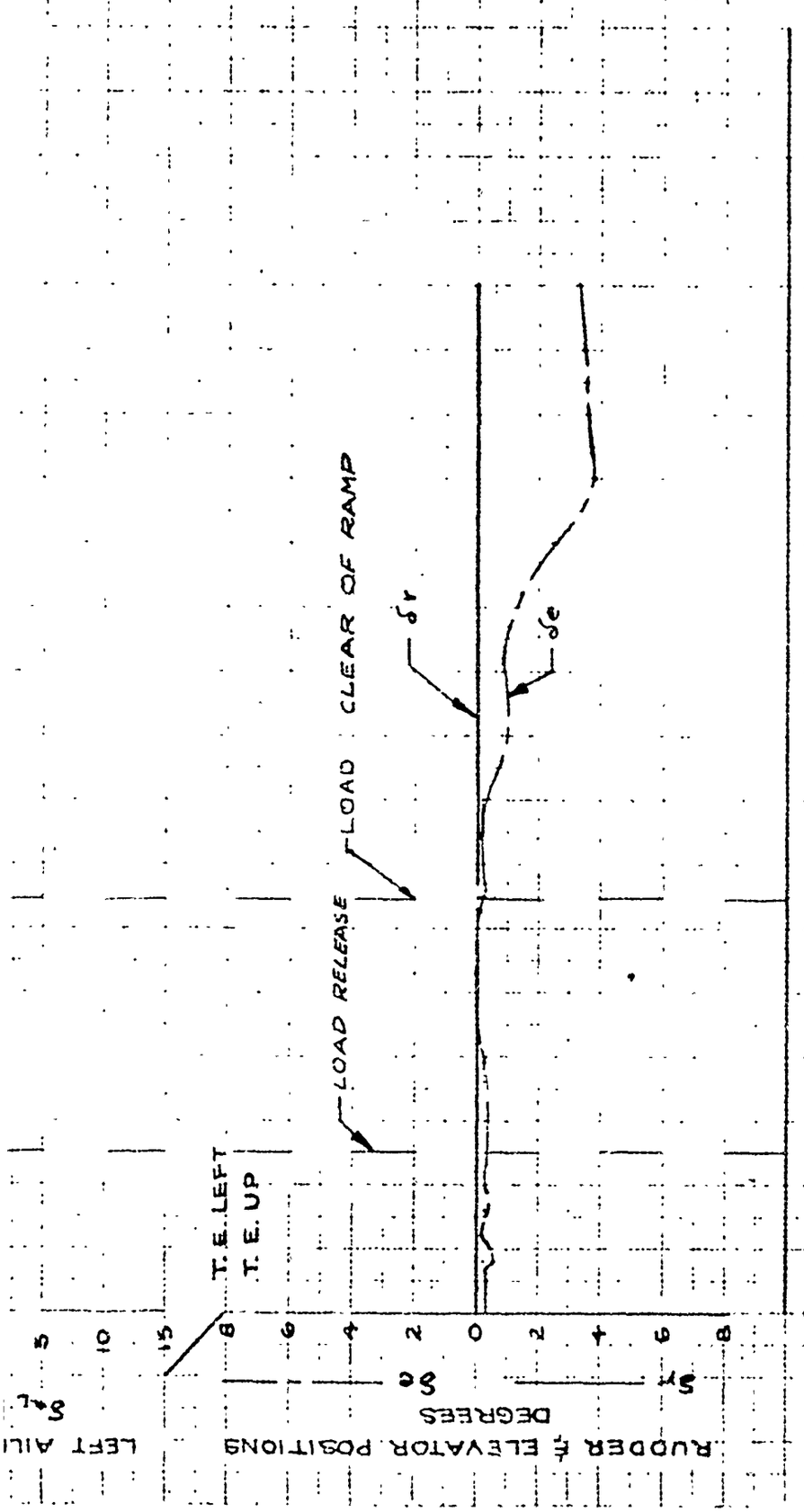


FIGURE D-5.13

6008
ADS-13

REVISED 5-4-65 JWP

REVISED 4/21/66 JWP

6008
ADS 54C
NOTE:
θ̈ CALCULATED FROM N2 DATA.
θ̈
LOAD RELEASE
LOAD CLEAR OF RAMP
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ̈
DEG/SEC²
PITCHING ACCELERATION
S 277 ——— NxG FS1637 ———
ACCELERATIONS ~ g
JOB NO. ADS 7 SUB. CODE 4.2.1

FCW
4-15-65
JWP

ER 5473
MODEL C-141A
D-45

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 4-14-65

FLIGHT 101 DROP NO. 8

SHEET 3 OF 7

CARGO WT. 18820 LBS.

NOTE:
SEE FIGURE D-8a SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

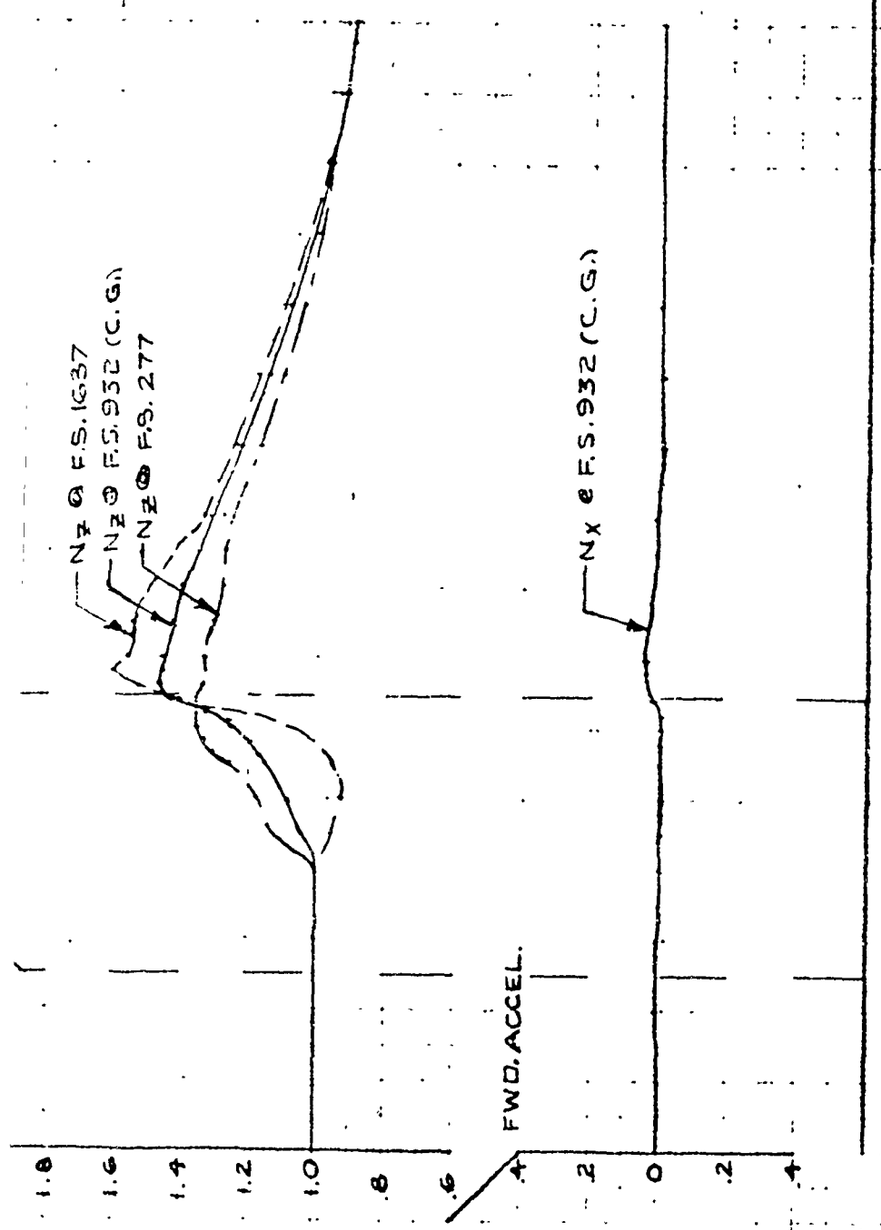


FIGURE D-8c

6008
ADS 5-4-0

REVISED 5-6-65 JWP
REVISED 4/21/ JWP

60000
ADS 540
RAMP LIP
LOAD C.G. POSITION
LOAD ACCEL.
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA
LOAD ACCELERATION
LOAD C.G. POSITION ~ FUS. STA.
2.0
1.0
0
1500
1400
1300
1200
1100
1000
900
800
700
600
500
JOB NO. 4526 SUB CODE 421

RSA
4-14-65
CHECKED BY

ER 5473
C-141A
/D-46

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-14-66

FLIGHT 101 DROP NO. 8

SHEET 4 OF 7

CARGO WT. 18820 LBS.

NOTE:
SEE FIGURE ~~D-8~~, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

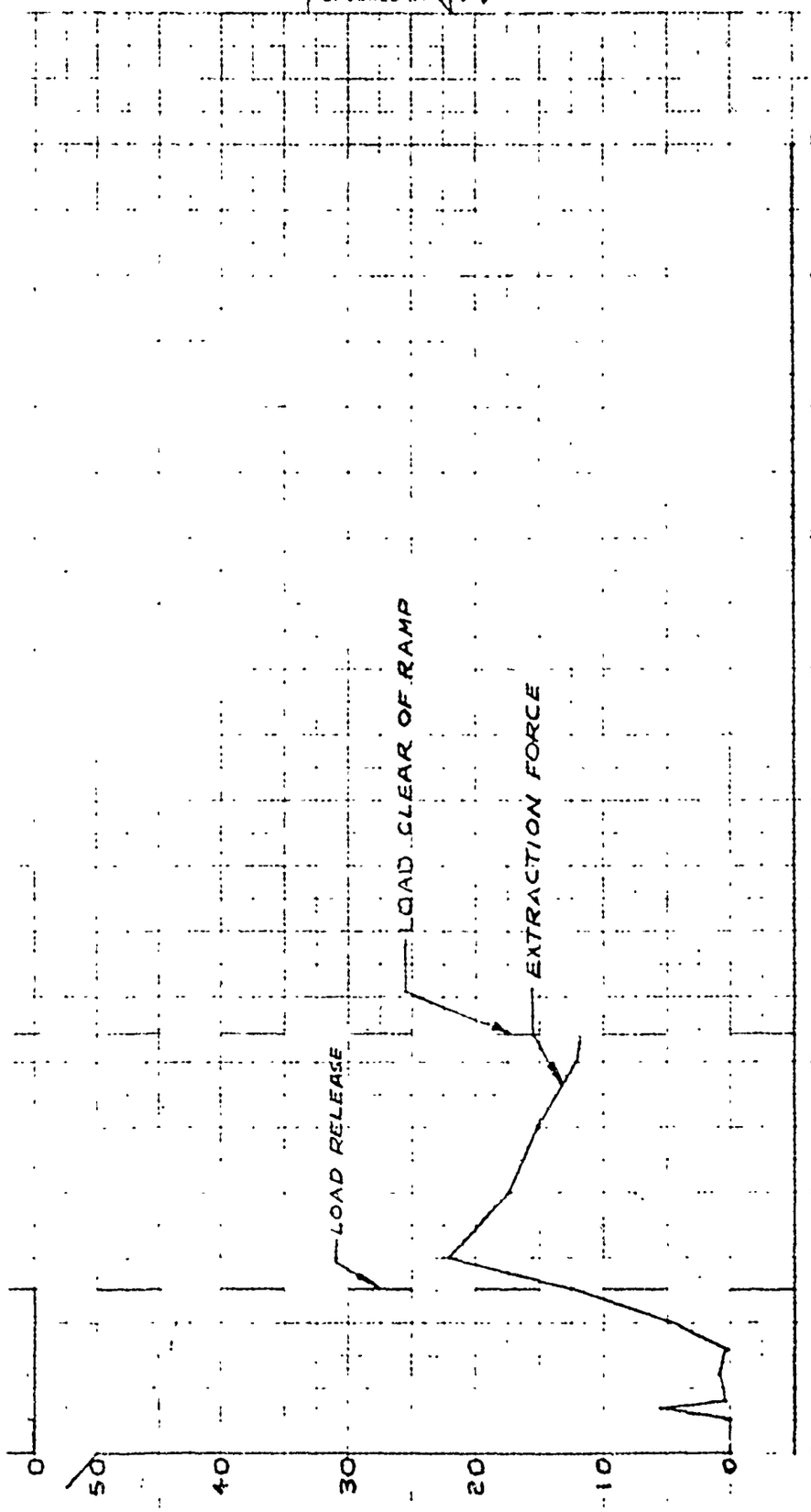


FIGURE D-8D

6008
ADS 54D

REVISED 5-4-66 REVISED 4/21/66 GPM

JOB NO. AD5-[illegible] SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

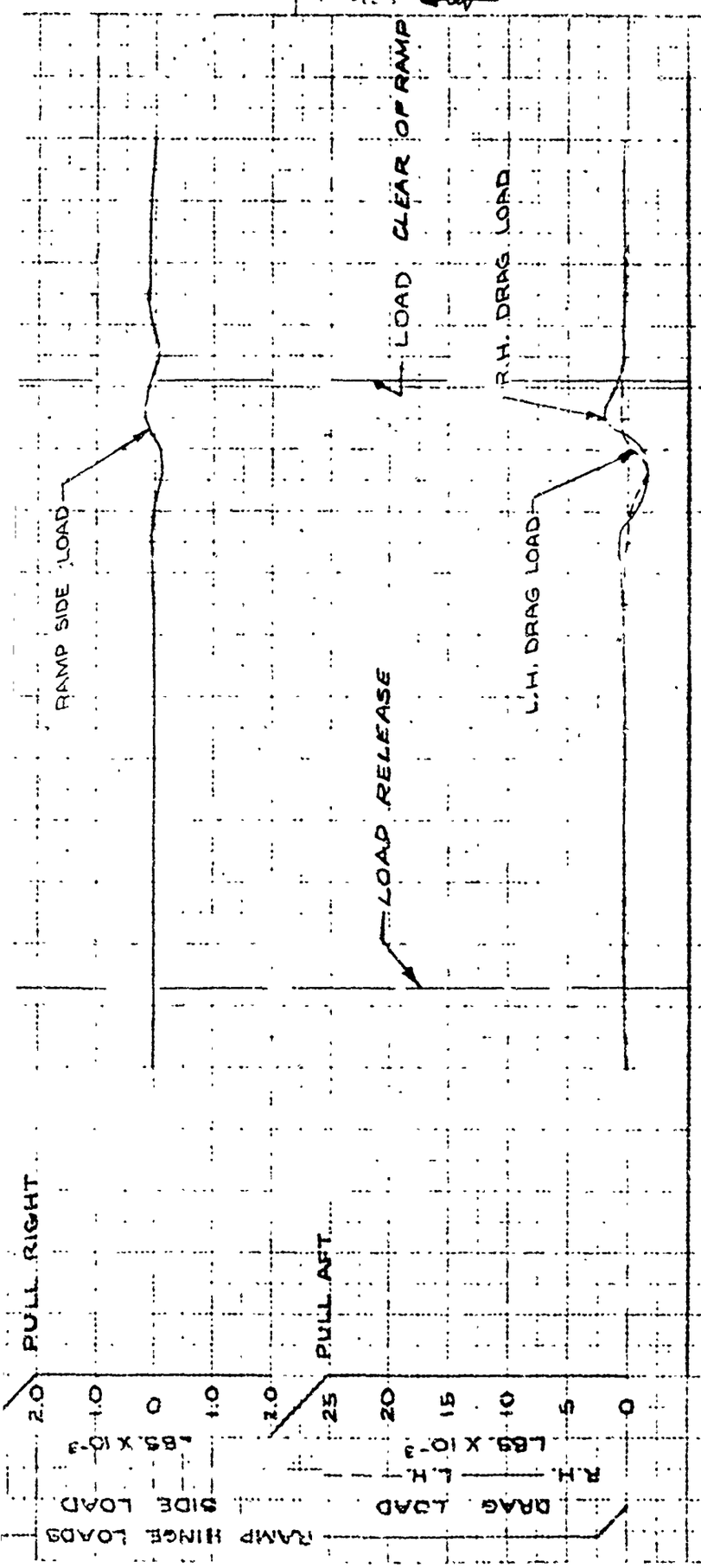
AF 63-8077 LAC 6008

TEST DATE: 4-14-65

FLIGHT 101 DROP NO. 8

SHEET 5 OF 7

CARGO WT 18820 LBS



NOTE:
SEE FIGURE D-8A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-8E

6008
ADS-54E

REVISED 5-4-66 PWJ
REVISED 7/21/66 JWP

600b
ADS-54E
LOAD CLEAR OF RAMP
My@ FS 568
R.H. PETAL DOOR ACTUATOR
L.H. PETAL DOOR ACTUATOR
LOAD RE EASE
COMPRESSION
DOWN LOAD
VERTICAL BENDING ~ FS 568
INCH-LBS. X 10⁻⁶
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X10⁻³
RH
LH
JOB NO. AS & SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 4-14-65

FLIGHT 101 DROP NO. 8

SHEET 6 OF 7

CARGO WT. 18820 LBS.

NOTE:
SEE FIGURE D-8A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

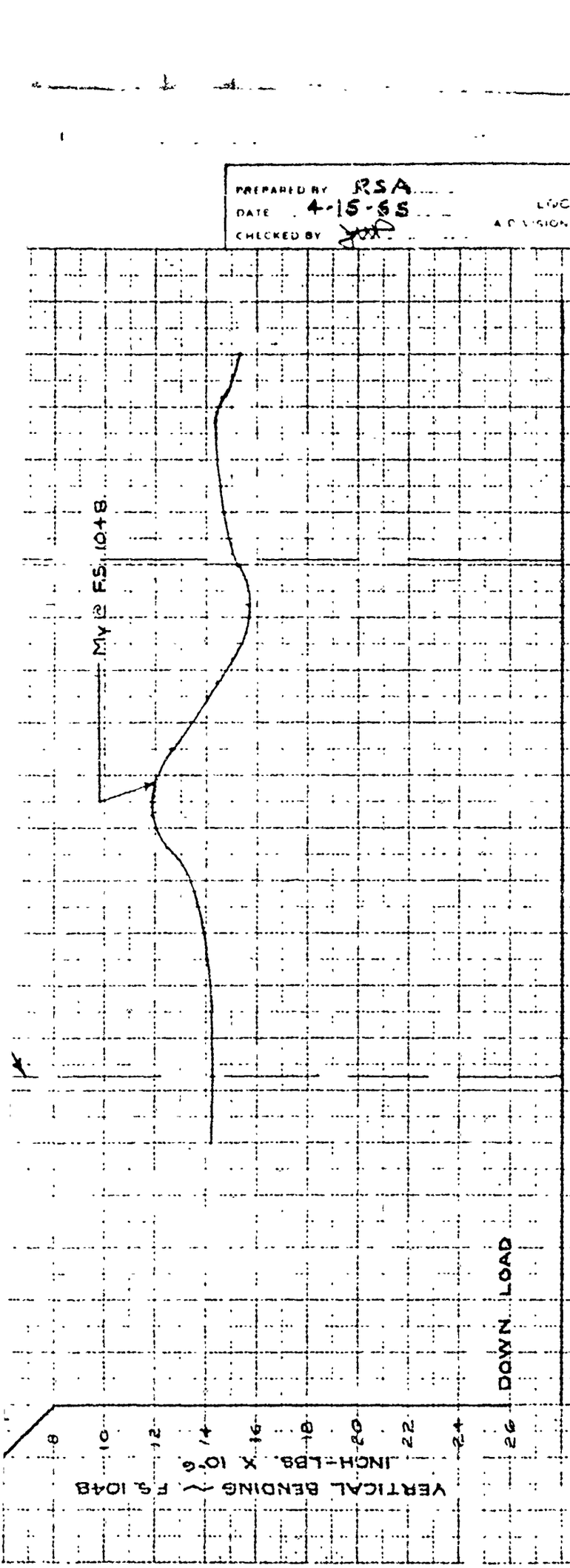


FIGURE D-8F

REVISED 5-4-65 2nd Issue
REVISED 4/

6008
ADS-54G
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'x
INCH - LBS x 10⁻⁶
SHEAR @ HBL 44L ~ S'x
LBS x 10⁻³
M'x @ HBL 44L
S'x @ HBL 44L
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
JOB NO. ADS-26SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 4-14-65

FLIGHT 101 DROP NO. 8

SHEET 1 OF 7

CARGO WT. 18820 LBS

NOTE:
SEE FIGURE D-8a SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

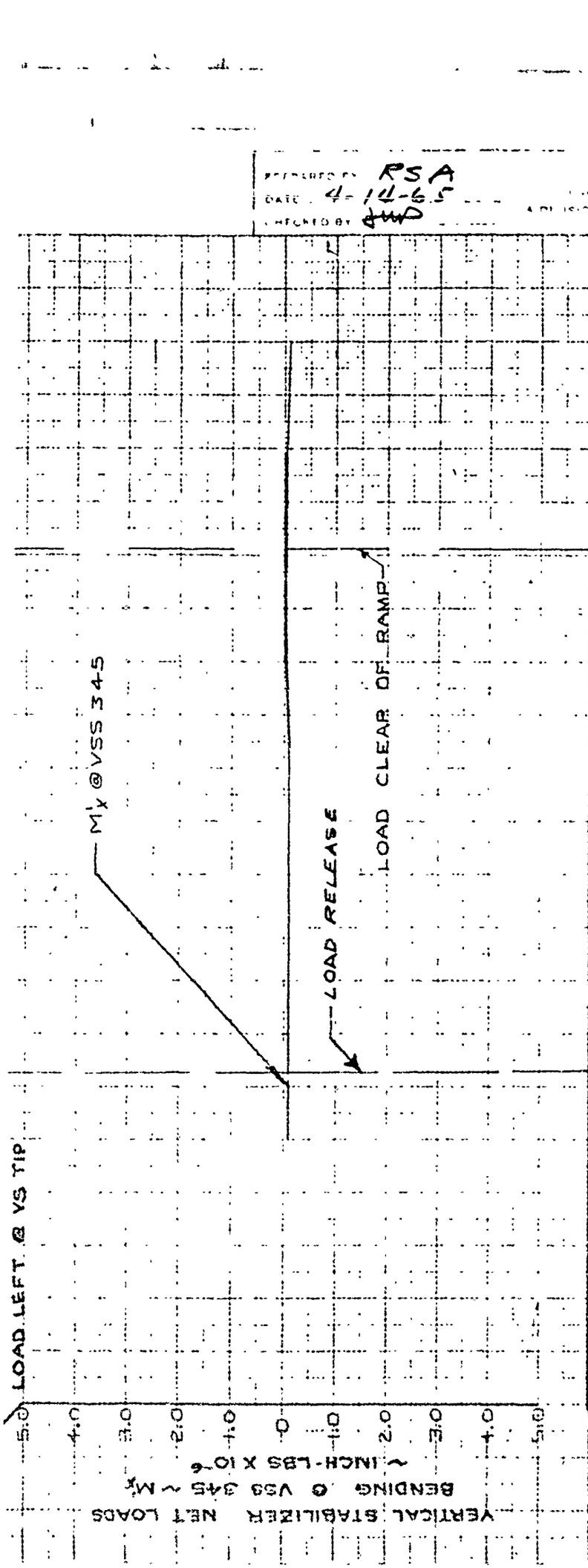


FIGURE D-8c

Revised 5-4-65 JWJ
Revised 4/21/65 JWD

ADS-55A
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
θ
φ
ψ
AIRCRAFT ATTITUDES ~ DEG
θ ~ NOT AVAILABLE
α
β
JOB NO. ADS-2 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 4-16-65

FLIGHT 102 DROP NO. 9

SHEET 1 OF 1

CARGO WT. 18330 LBS.

RUN CONDITIONS

1. G.W. ~ 177,900 LBS
2. C.G. PRIOR TO DROP ~ 26.6 % MAC
3. C.G. AFTER DROP ~ 30.2 % MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. $\dot{\gamma}_H$ ~ 1.5 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 547
   VERT. ~ WL 178

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22'
3. RATED CHUTE FORCE/CARGO WT. 0.63
4. EXTRACTION LINE LENGTH ~ 100'

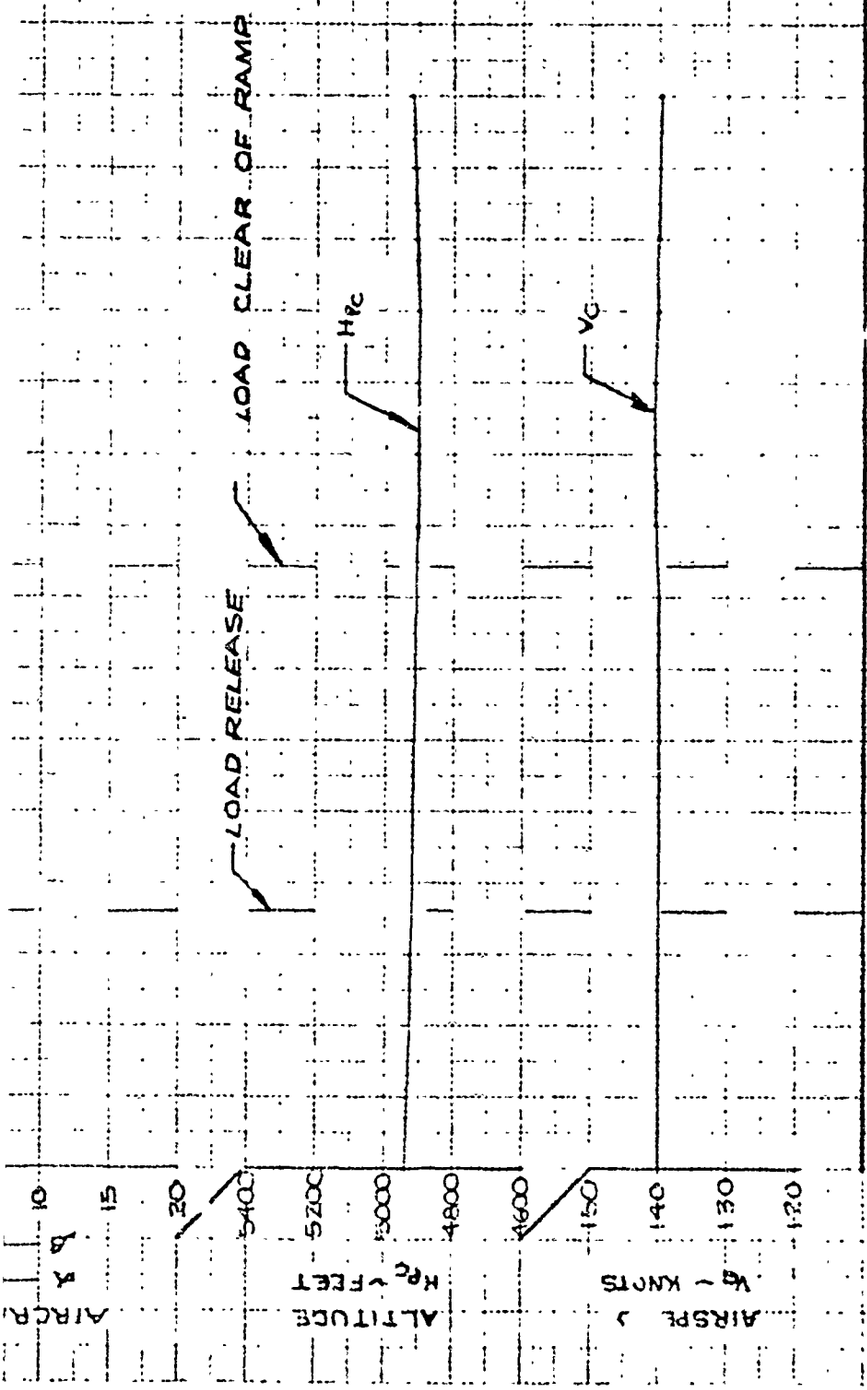


FIGURE D-9A

600B
ADS-55A

REVISED 12-14-65 MBH

REVISED 5-9-65 FCW

6008
ADS-27SB

Fe, Fa, & Fr

δ_{al}

RIGHT ROLL
PUSH LEFT
PULL

T.E. UP

70 60 50 40 30 20 10 0 10 20 30 40 20 15 10 5 0 5

F_e F_a F_r δ_{al}

CONTROL FORCES ~ LBS.

T AILERON POSITION ~ DEG.

JOB NO. ADS-27SUB. CODE 4.21

PREPARED BY FCW
DATE 4-19-65
CHECKED BY

REPORT NO ER 5473
MODEL C-141A
PAGE D-51

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-15-65

FLIGHT 102 DROP NO 9

SHEET 2 OF 5

CARGO WT 18330 LBS.

NOTE:
SEE FIGURE D-2 SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

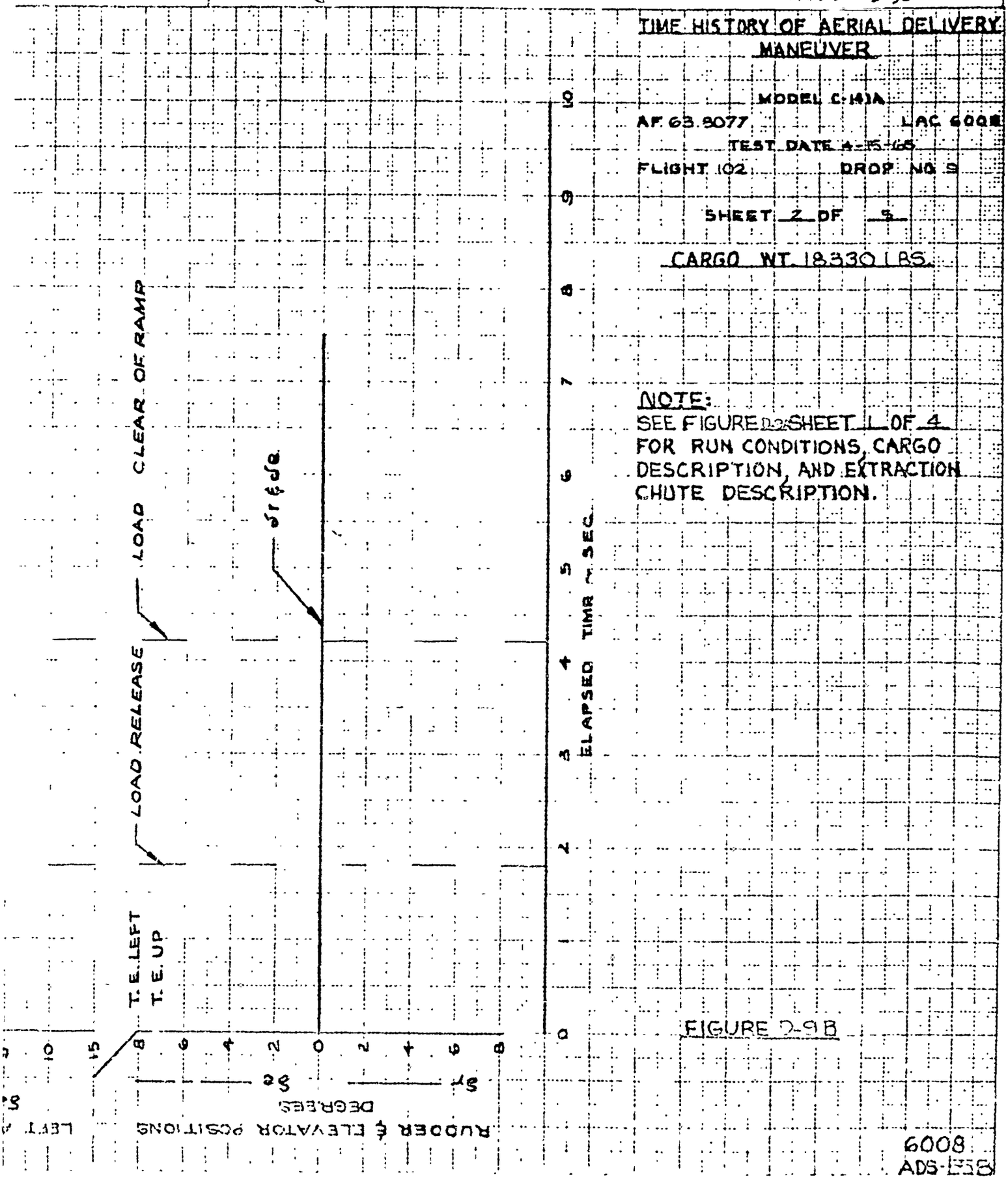


FIGURE D-9B

6008
ADS-55C
NOTE:
q̈ CALCULATED FROM Nz DATA
q̈
Nz @ F.S. 1637
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ
DEG/SEC.²
PITCHING ACCELERATION
ACCELERATIONS ~ g
-g 2.77 — — — Nz @ FS 1637 — — —
JOB NO. ADS-2 SUB. CODE 4.2.1

TED.
DATE 4-16-65

REPORT NO. ER 5743
MODEL C-141A
PAGE D-52

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE 4-15-65

FLIGHT 192 DROP NO. 9

SHEET 3 OF 5

CARGO WT 18,330 LBS

NOTE:
SEE FIGURE D-8A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

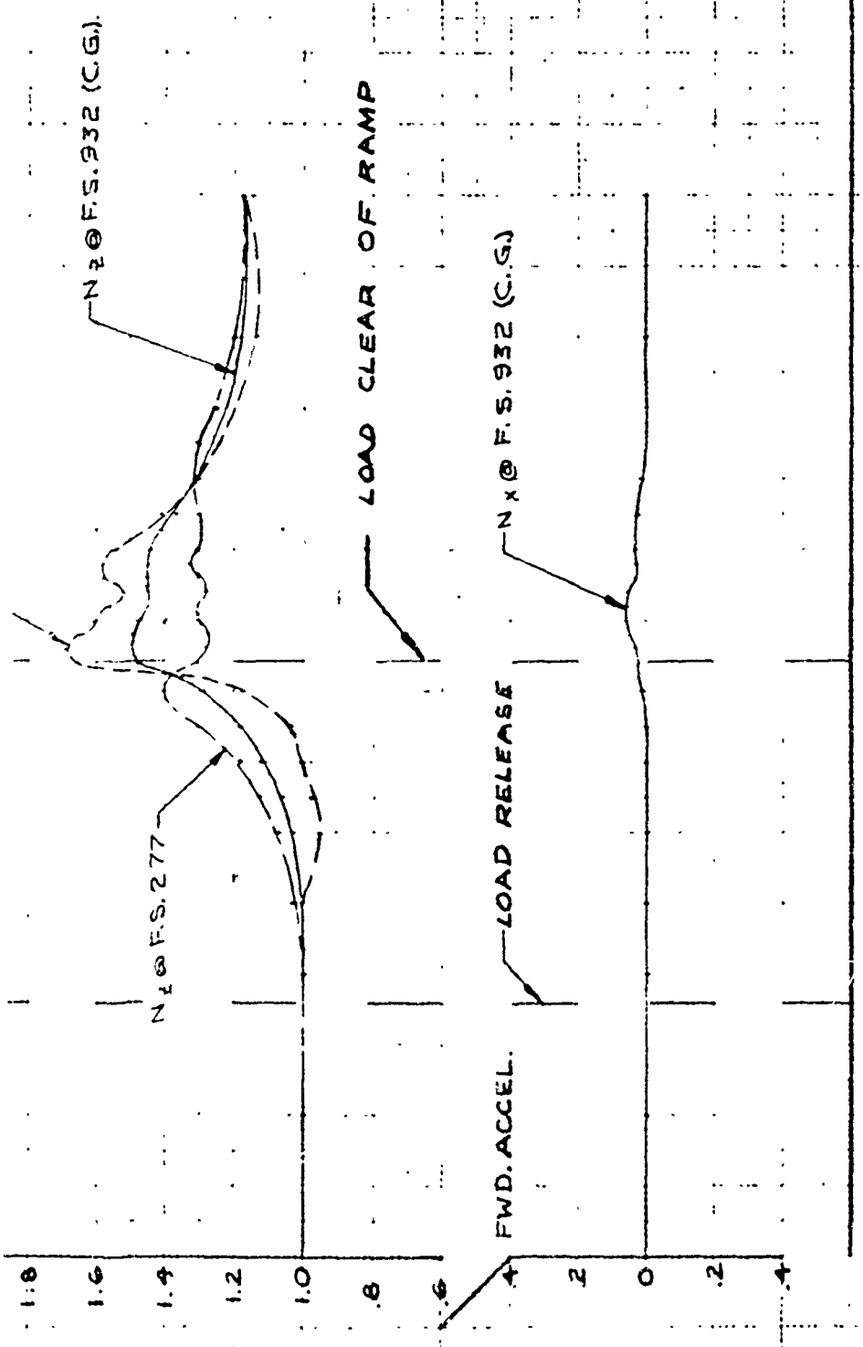


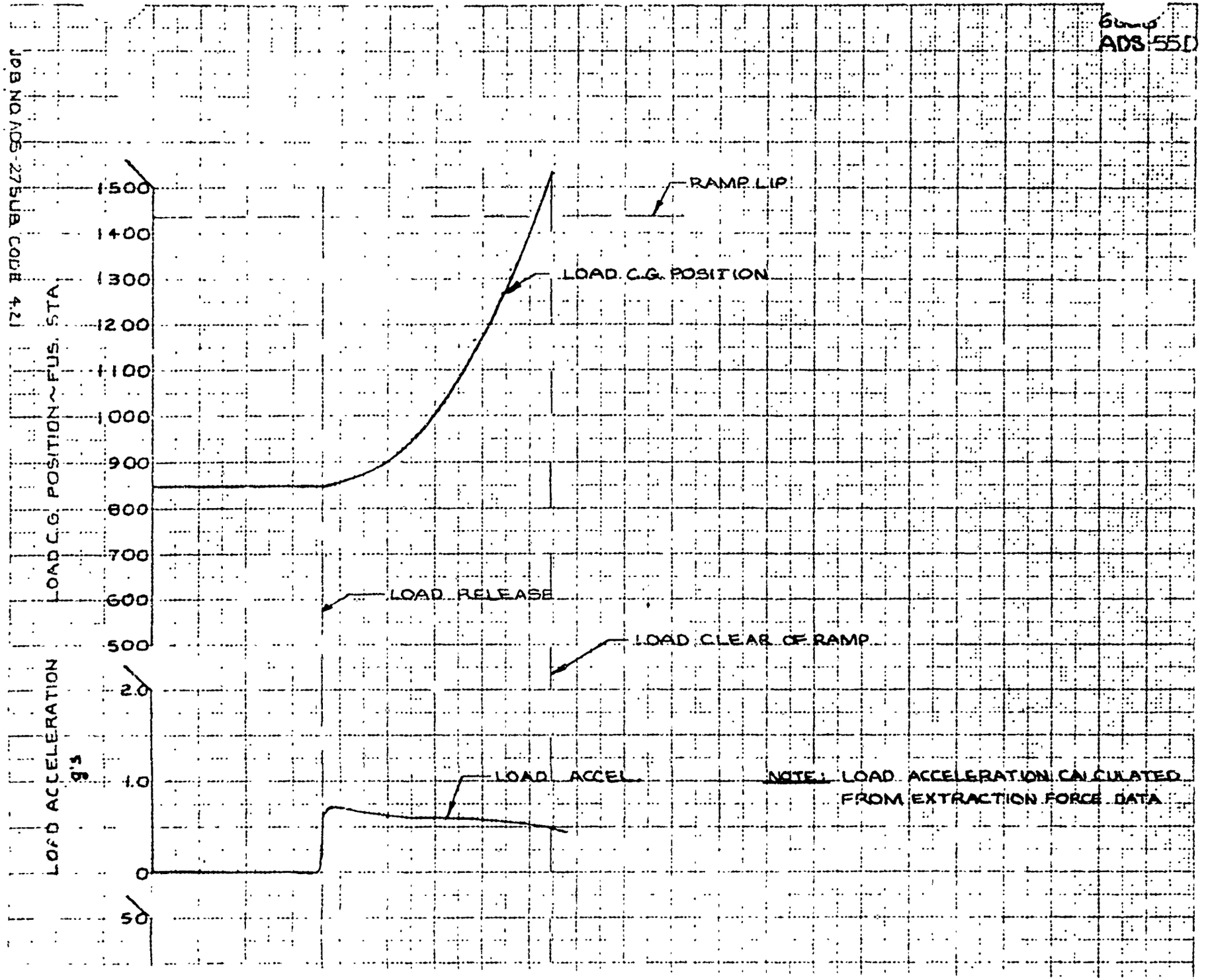
FIGURE D-9C

6008
ADS-55C

REVISED 5-4-65

ADS-55D

JOB NO ADS-275 SUB CODE 421



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-15-65
FLIGHT 102 DROP NO. 9

SHEET 4 OF 5

CARGO WT. 18,330 LBS.

NOTE:
SEE FIGURE D-9A, SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

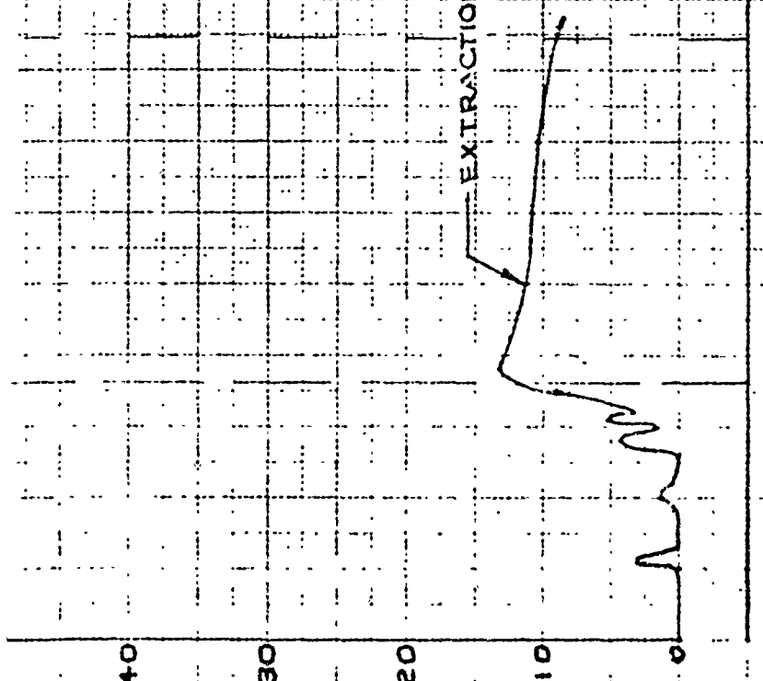


FIGURE D-9D

ADS-55E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP / PERM D-54
Checked			TITLE	Model C-141A	
Approved				Report No ER 5473	

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6009

FLIGHT 102 TEST DATE: 4-15-65

G.W. 177,900 LBS. A/S 141 KCAS.

C.G. 26.6% MAC. ALT. ~ 4,950 FT.

DROP WT. ~ 18,330 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	3.5
2	ANGLE OF PITCH	"	N.A.
3	C.G. VERT. ACCEL.	g's	1.49
4	C.G. LONG. ACCEL.	"	- 0.06
5	VERT. ACCEL. @ F.S. 277	"	1.41
6	VERT. ACCEL. @ F.S. 1637	"	1.69
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	15.14
8	VERT. BEND. @ F.S. 1568	"	1.47
9	BENDING ~ M'_x @ HBL 44L	"	- 0.271
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	- 2.560
11	PITCH TRIM ACTUATOR ~ S_z	"	- 1.684
12	R.H. RAMP ACTUATOR LOAD	"	0.785
13	L.H. " " "	"	0.233
14	R.H. SPIDER ARM LOAD	"	6.480
15	L.H. " " "	"	6.450
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.970
17	L.H. " " " "	"	6.760
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	4.070
20	L.H. " " " "	"	2.650
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.950
22	L.H. " " " "	"	- 0.850
23	RAMP HINGE TOTAL SIDE LOAD	"	0.200
24	EXTRACTION CHUTE FORCE	"	13.12
25	CARGO LONG. ACCEL.	g's	0.715

LA FORM 900.8

FIG. D-9E
ADS-55E

60UD ADS-562A

JOB NO ADS-285 SUB. CODE 4.21

PREPARED BY RSA
DATE 4-20-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-55

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

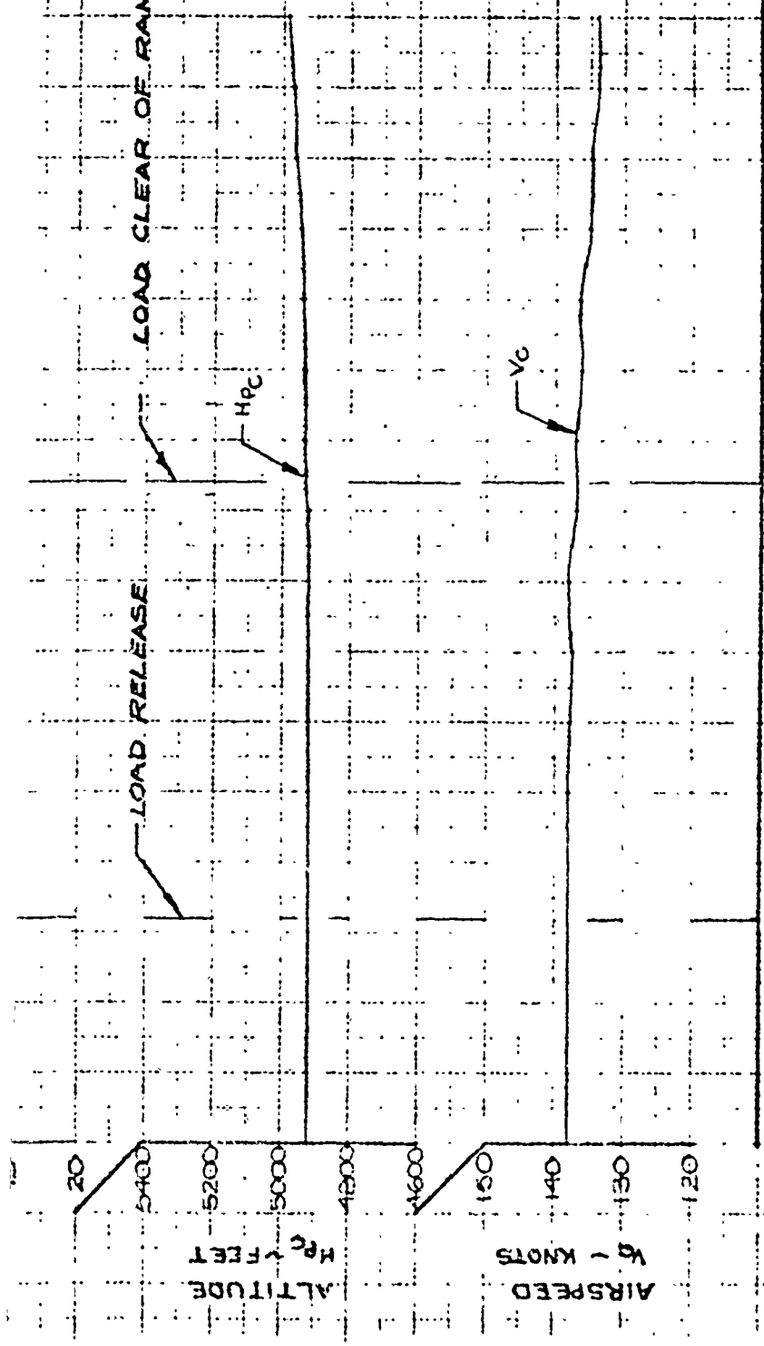
AF63807 LAC 6008

TEST DATE 4-16-65

FLIGHT 105 DROP NO. 10

SHEET 1 OF 7

CARGO WT. 18,400 LBS



RUN CONDITIONS

1. G.W. ~ 178,500 LBS.
2. C.G. PRIOR TO DROP ~ 26.7% MAC
3. C.G. AFTER DROP ~ 29.7% MAC
4. FLAPS ~ 67%
5. GEAR UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. $\dot{\gamma}_H$ ~ 1.8 DEG. (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 847
   VERT. ~ WL 178

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 15'
3. RATED CHUTE FORCE/CARGO WT. 038
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE D-10A

600B
ADS-56A
REVISED 5-4-65

REVISED 12-14-65 MSH

6008
ADS-5GB

JDB NO. ADS 28 SUB. CODE 4.21

PREPARED BY RSA
DATE 4-20-65
CHECKED BY

REPORT NO. ER 5473
MODEL C-141A
PAGE D-56

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 4-16-65

FLIGHT 103 DROP NO. 10

SHEET 2 OF 7

CARGO WT. 18400 LBS.

NOTE:
SEE FIGURE ~~2~~ SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

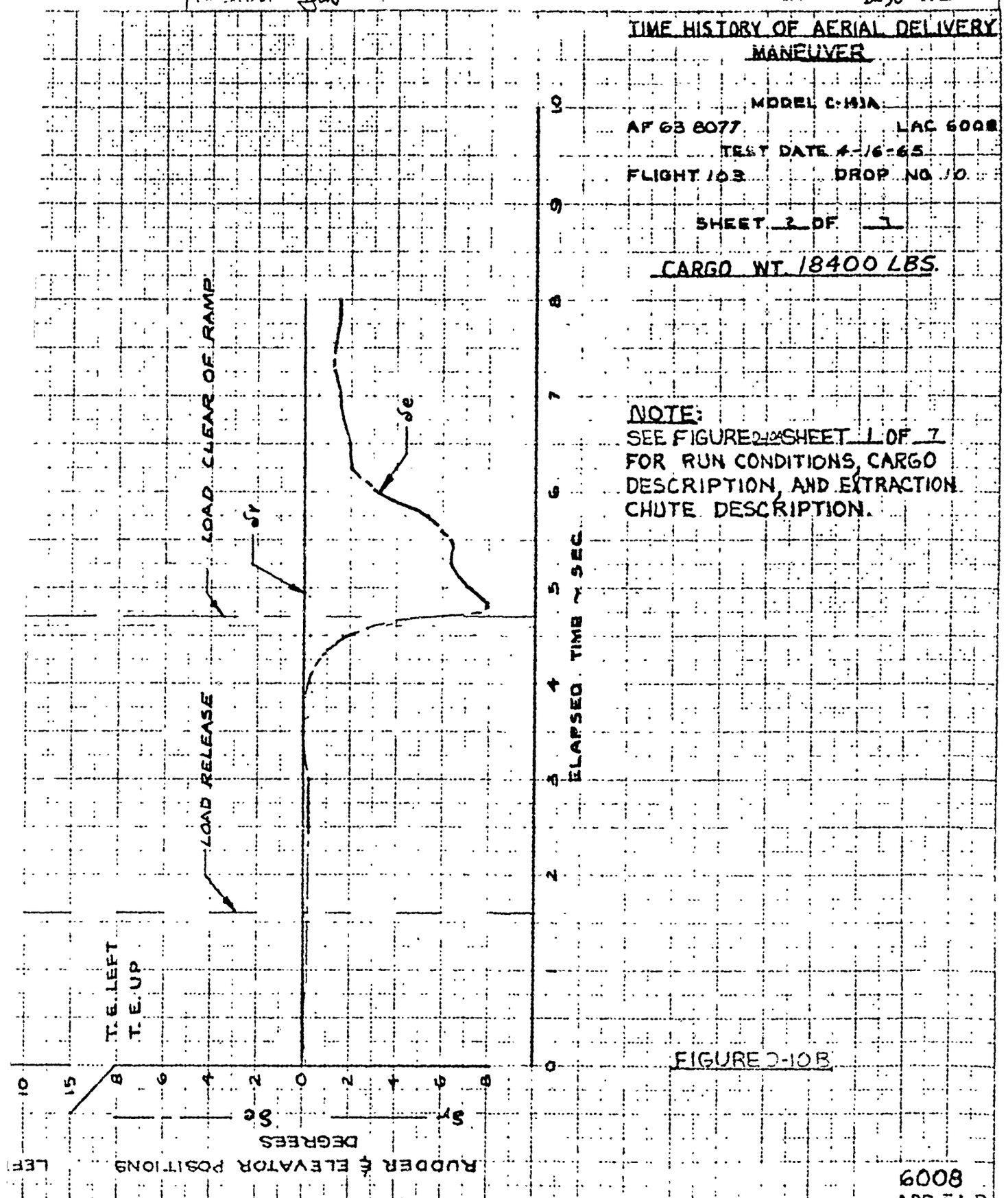


FIGURE D-10B

6008
ADS-56B
REVISED 5-4-65

6008
ADS-5 & C
NOTE:
θ̈ CALCULATED FROM Nz DATA
θ̈
LOAD CLEAR OF RAMP
Nz @ F.S. 1637
Nz @ F.S. 277
LOAD RELEASE
Nz @ F.S. 932 (C.G.)
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
θ̈ DEG/SEC²
PITCHING ACCELERATION
AL ACCELERATIONS ~ g
Nz @ FS 277
NA @ FS 1637
JOB NO. ADS-28 SUB. CODE 4.2.1

T.E.D.
DATE 4-20-66

REPORT NO. ER 5473
MODEL C-141A
FILE D-57

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE 4-16-65
FLIGHT 103 DROP NO. 10
SHEET 3 OF 7

CARGO WT. 18,400 LBS

NOTE:
SEE FIGURE D-10 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

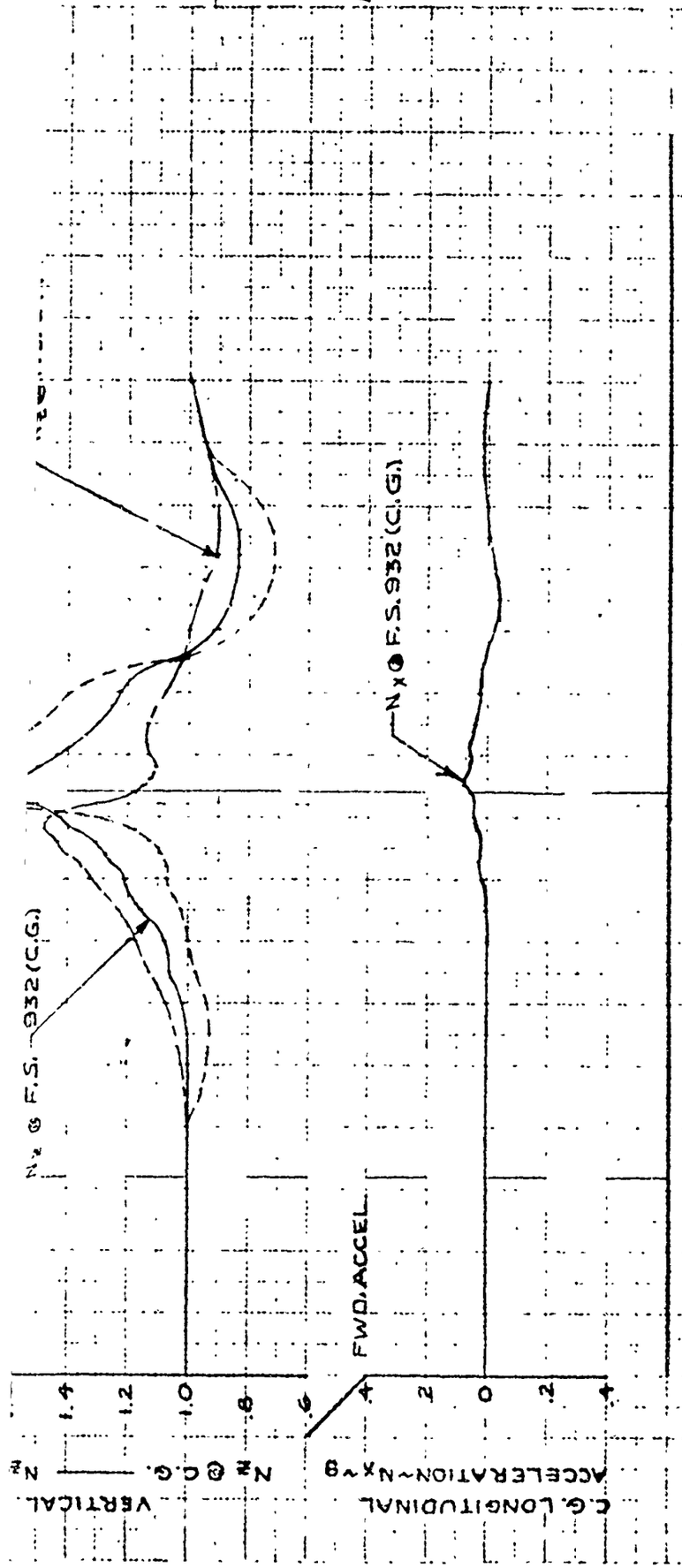


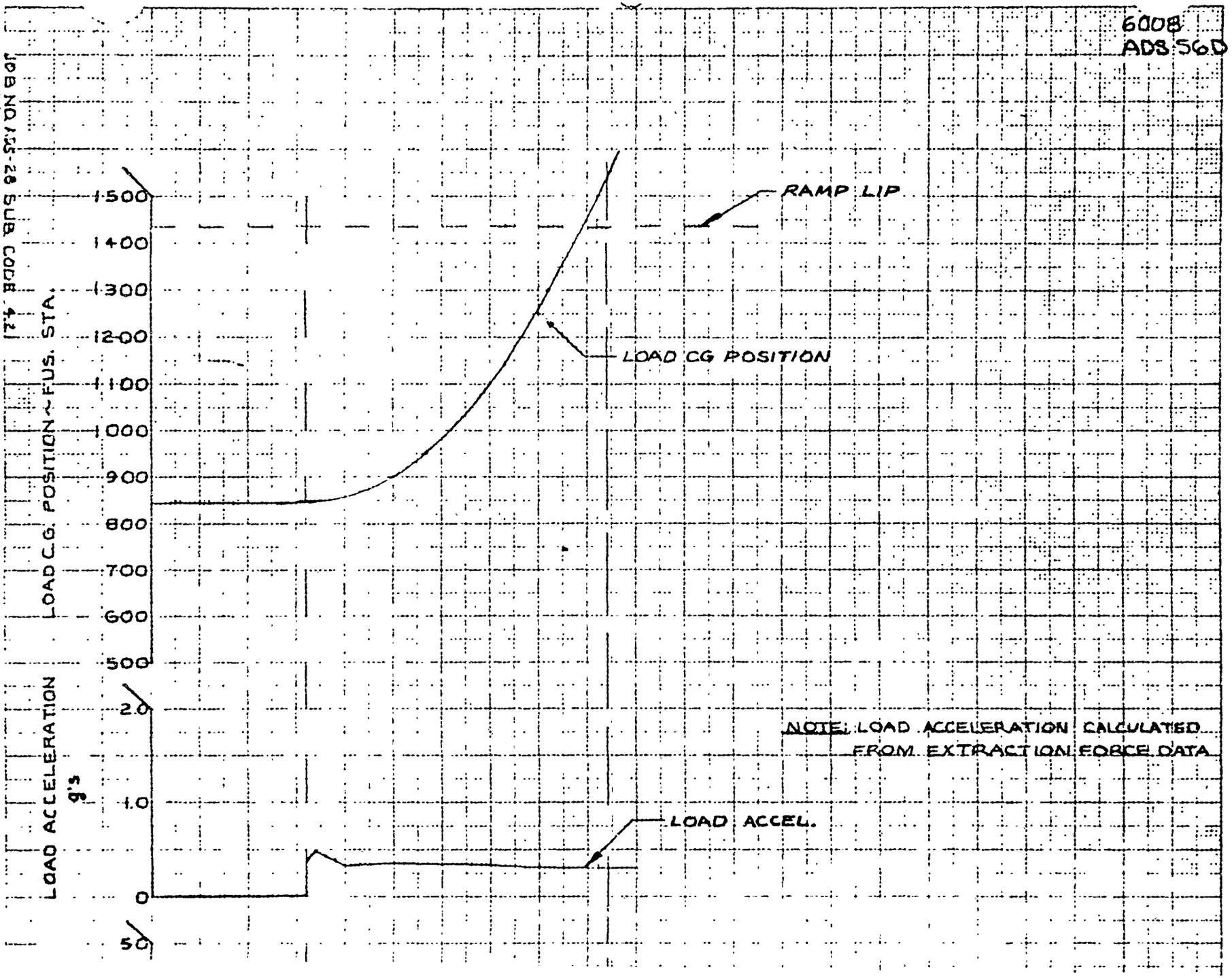
FIGURE D-10C

6008
ADS-56C

REVISED 5-4-65

6008
ADS 56D

JOB NO 155-28 SUB CODE 4-21



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-16-65

FLIGHT 103 DROP NO. 10

SHEET 4 OF 7

CARGO WT. 18,400 LBS

NOTE:
SEE FIGURE 10, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

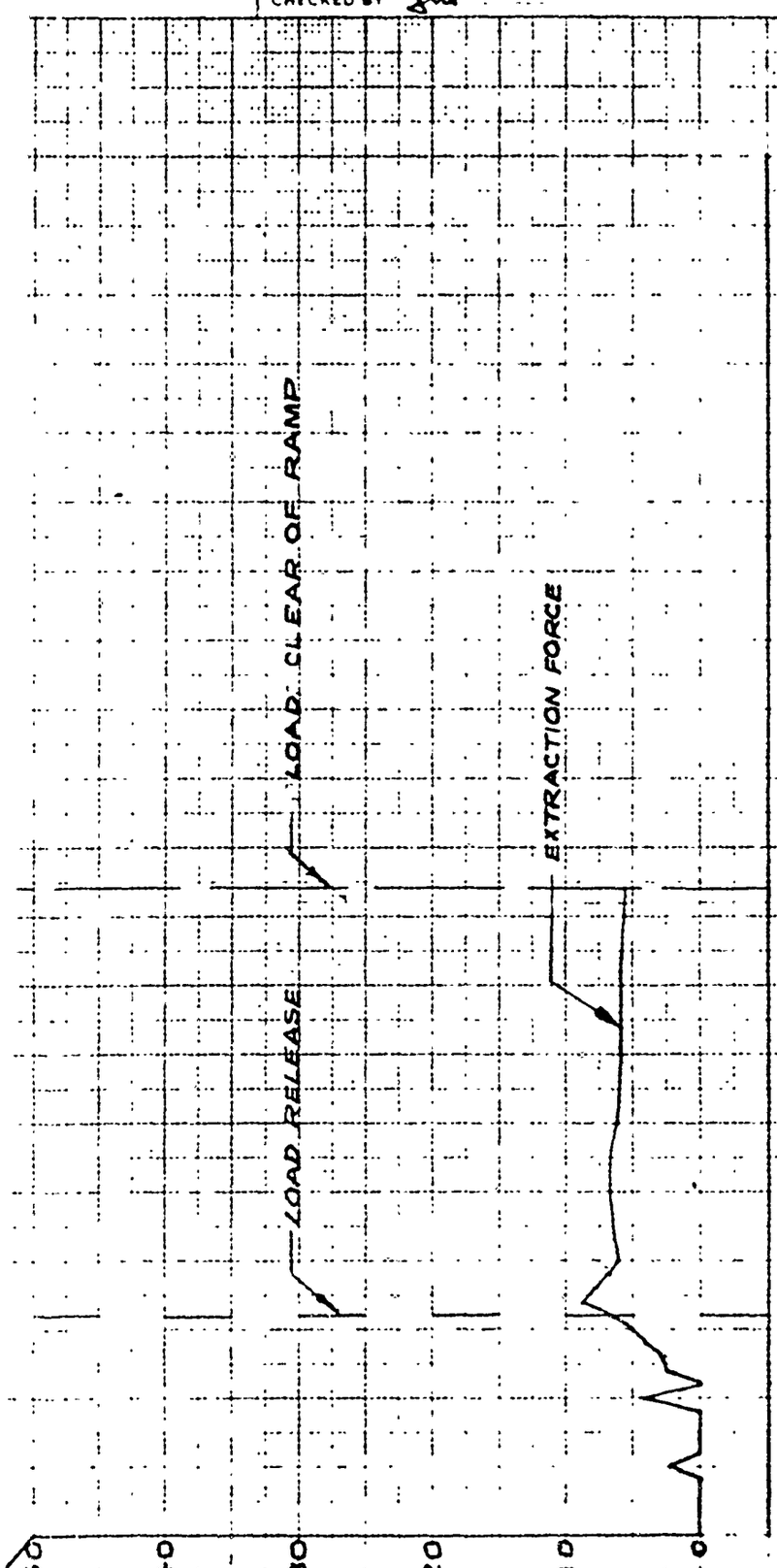


FIGURE D-10D

6008 ADS-S&E
LOAD CLEAR OF RAMP
L.H.
R.H
R.H. SPIDER ARM LOAD
L.H. SPIDER ARM LOAD
R.H. HINGE VERTICAL LOAD
LH. HINGE VERTICAL LOAD
TENSION
TENSION
PULL DOWN
PULL RIGHT
RAMP ACTUATOR LOAD
LBS. X 10-3
ADS LINK AXIAL LOAD
LBS X 10-3
VERTICAL LOAD
LBS. X 10-3
R.H.
L.H.
4 2 0 2 4
30 20 10 0
15 10 5 0
2.0 1.0
JOB NO. ADS 28 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-16-65

FLIGHT 103 DROP NO 10

SHEET 5 OF 7

CARGO WT 18,400 LBS

NOTE:
SEE FIGURE D-10A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

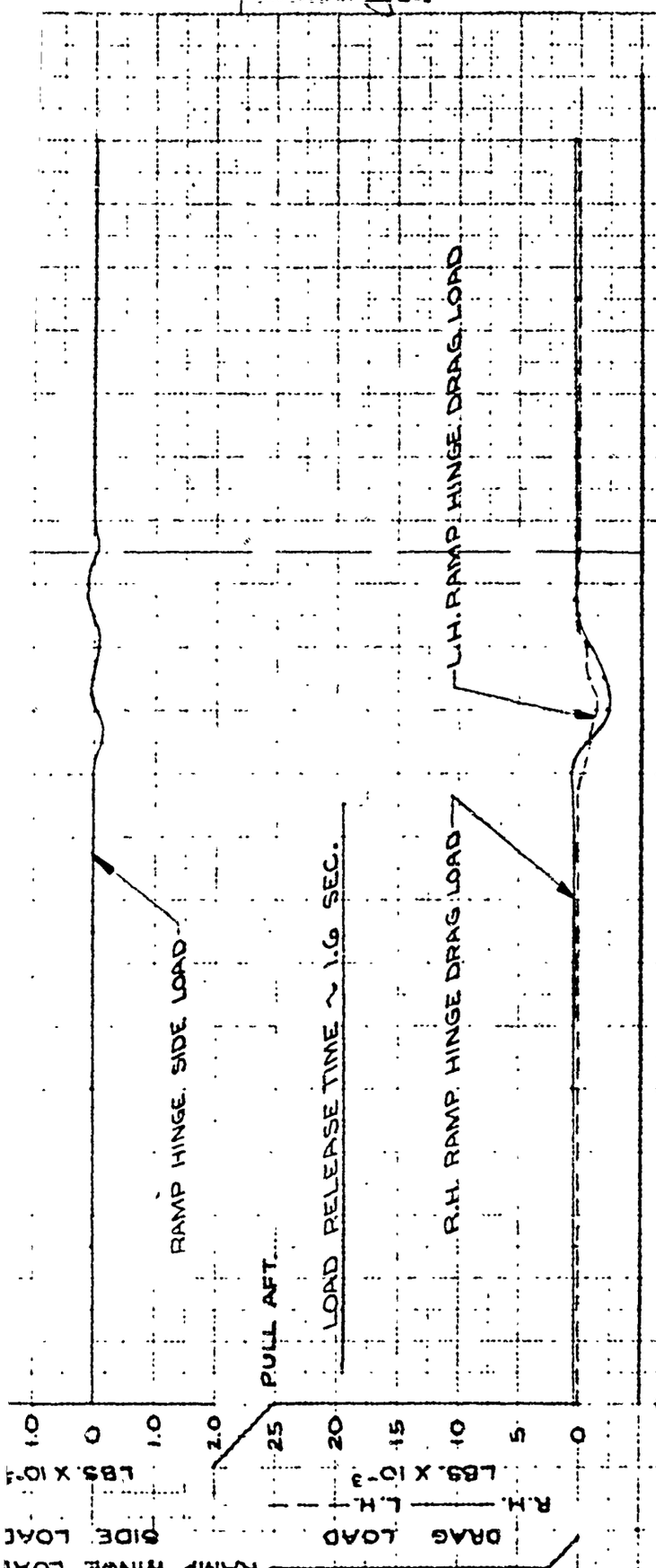


FIGURE D-10E

6008
ADS-SOF
L.H. PETAL DOOR ACTUATOR
R.H. PETAL DOOR ACTUATOR
My @ F.S. 1508
LOAD CLEAR OF RAMP
My @ F.S. 1048
COMPRESSION
DOWN LOAD
PETAL DOOR ACTUATOR ROD LOADS ~ LBS X10-3
RH
LH
VERTICAL BENDING ~ FS 1508 INCH-LBS. X10-6
JOB NO. ADS-286 SUB. CODE 4.2.1

PREPARED BY TED
DATE 4-20-65
CHECKED BY JOHP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-60

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 4-16-65

FLIGHT 103 DROP NO 10

SHEET 6 OF 7

CARGO WT. 18,400 LBS

NOTE:
SEE FIGURE D-10A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

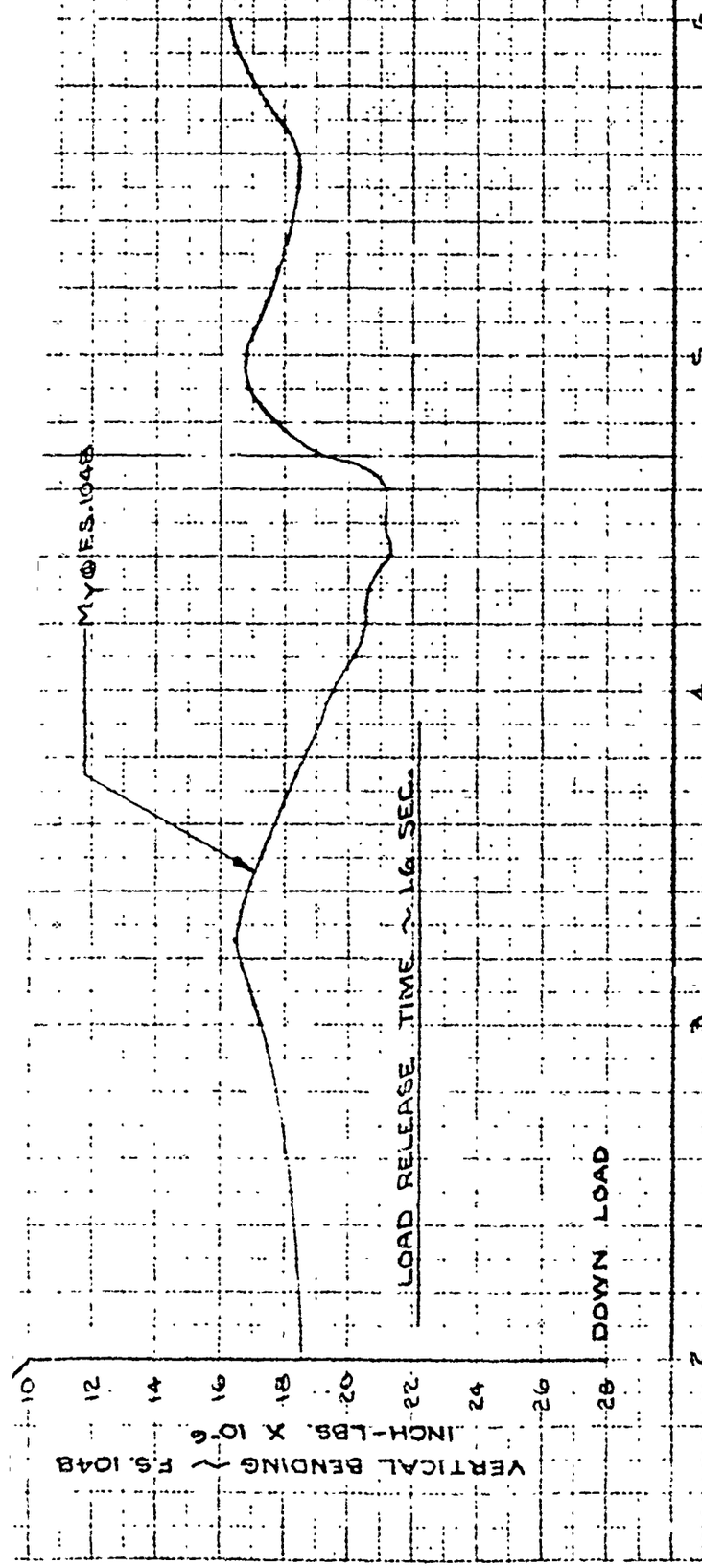


FIGURE D-10F

6008
ADS-56F
REVISED 5-4-65
JWJ

6008
ADS-54-3
HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ S'_z
LBS X 10^{-3}
BENDING @ HBL 44L ~ M'_x
INCH - LBS X 10^{-6}
S'_z @ HBL 44L
M_x @ HBL 44L
LOAD CLEAR OF RAMP
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
JOB NO. 28808. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 4-16-65

FLIGHT 103 DROP NO. 16

SHEET 1 OF 1

CARGO WT. 18,400 LBS

NOTE:
SEE FIGURE D-10A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

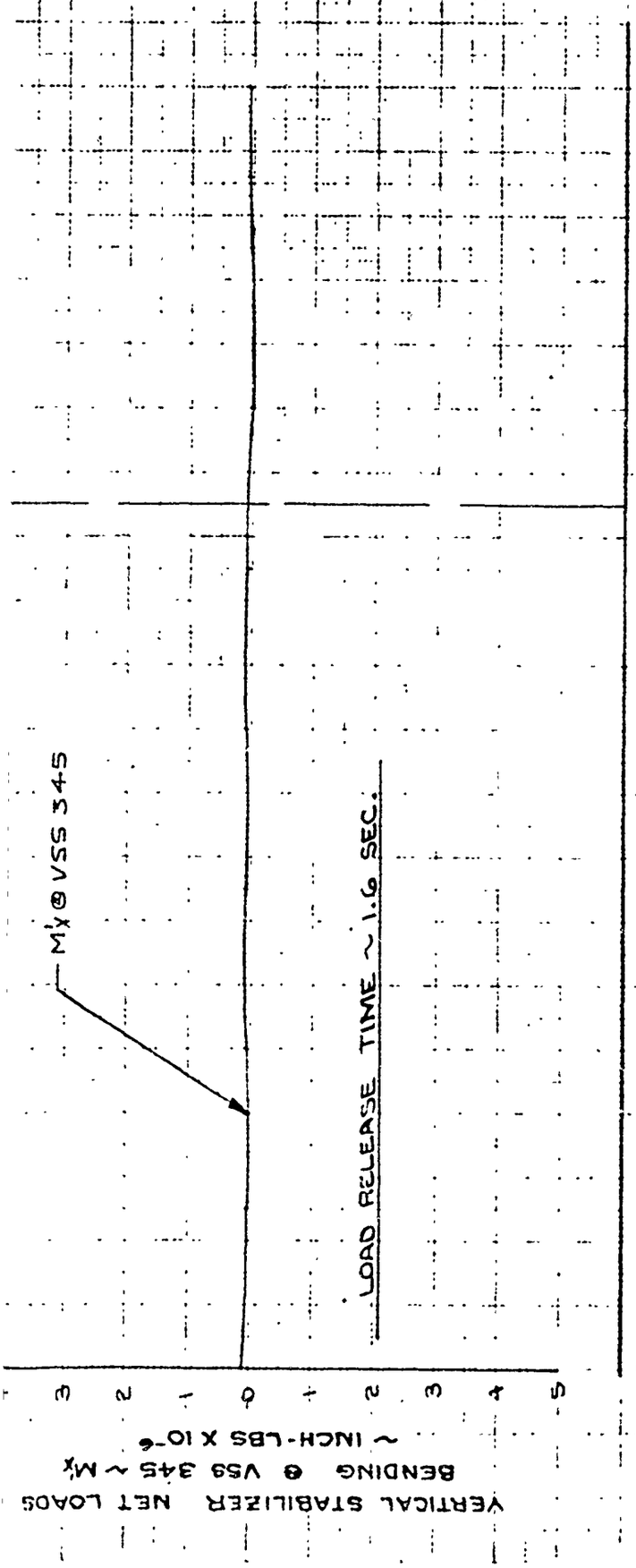


FIGURE D-2G

6008
ADS STA
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
θ
φ
ψ̇
AIRCRAFT ATTITUDES ~ DEG
NOSE UP
NOSE LEFT
RIGHT ROLL
20
15
10
5
0
5
10
15
θ
φ
α
β
LOAD CLEAR OF RAMP
JOB NO. 29 SUB CODE 4.21

PREPARED BY RSA
DATE 4-21-65
CHECKED BY [illegible]

REPORT NO ER 5473
MODEL C-141A
PAGE D-62

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 4-20-65

FLIGHT 108 DROP NO. 11

SHEET 1 OF 7

CARGO WT. 21,900 LBS

RUN CONDITIONS

1. G.W. ~ 184,200 LBS.
2. C.G. PRIOR TO DROP ~ 26.4 % MAC
3. C.G. AFTER DROP ~ 30.0 % MAC
4. FLAPS ~ 33%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 (4 ENGINES)
7. $\dot{\gamma}_H$ ~ 1.7 DEG. (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 16 FT.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 858
   VERT. ~ WL 173

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.07
4. EXTRACTION LINE LENGTH ~ 100 FT.

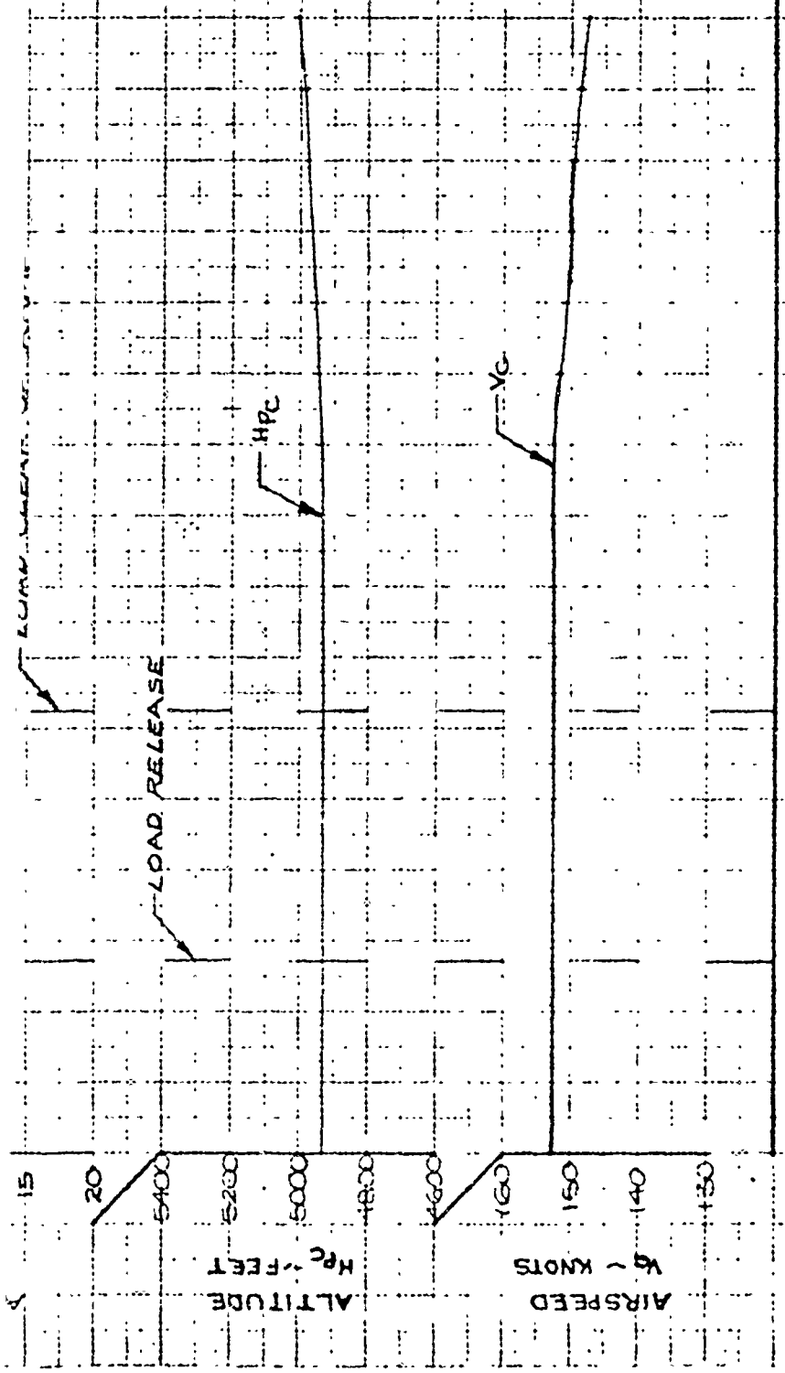


FIGURE D-11A

6008
ADS 57A

REVISED
12-14-65
MRH

ADS 573
Fe, Fa, & Fr
δaL
RIGHT ROLL
PUSH LEFT
PULL
T.E. UP
70
60
50
40
30
20
10
0
10
20
30
40
20
15
10
5
0
5
10
Fr
Fa
Fe
δaL
CONTROL FORCES ~ LBS.
LEFT AILERON POSITION ~ DEG
JOB NO. 2-9 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 600A

TEST DATE 4-20-65

FLIGHT 108 DROP NO. 11

SHEET 2 OF 7

CARGO WT. 21,900 LBS.

NOTE:
SEE FIGURE D-1A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

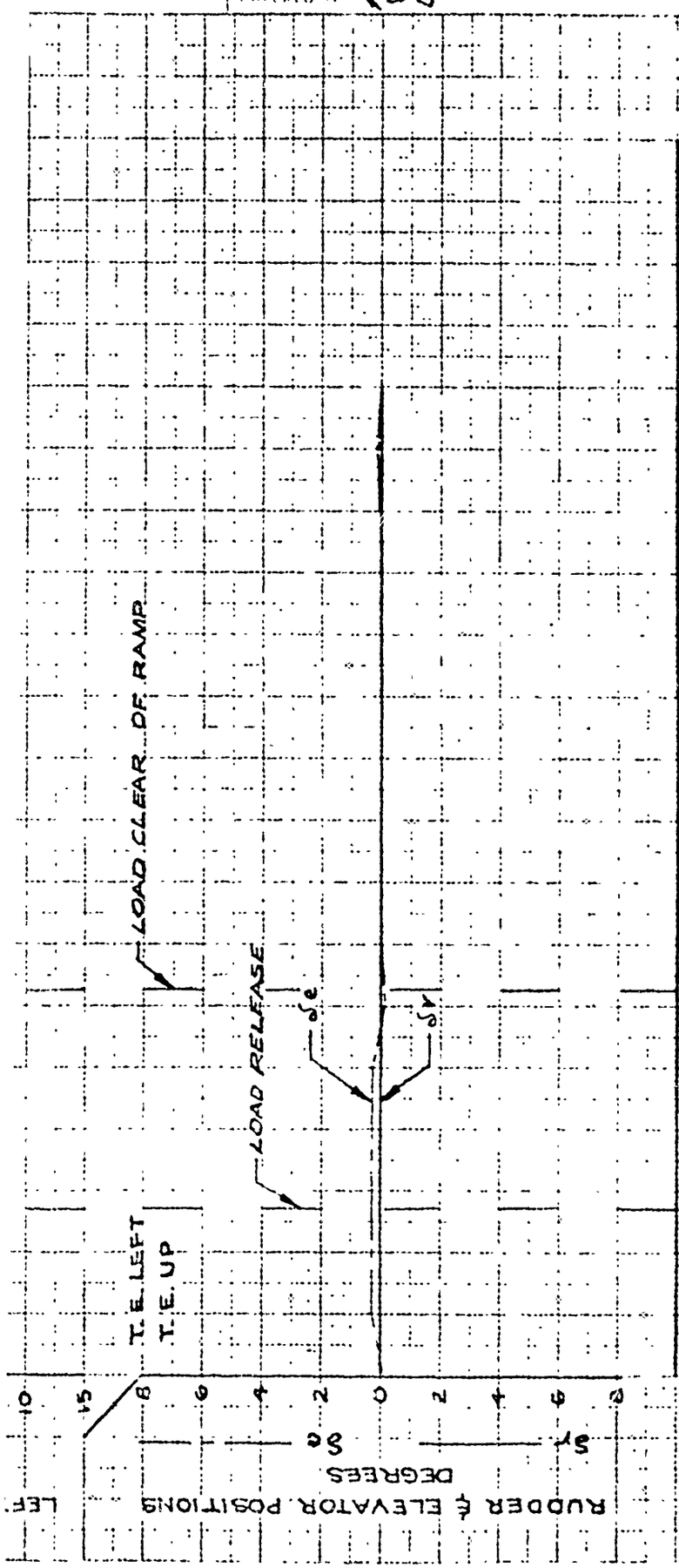


FIGURE D-1B

6008
ADS-51C
NOTE:
⊖ CALCULATED FROM Nz DATA
LOAD RELEASE
LOAD CLEAR OF RAMP
NOSE UP
UP ACCEL.
PITCHING ACCELERATION
DEG/SEC²
ACCELERATIONS ~ g
JOB NO. FDS 2) SUB. CODE 4 2.1

PREPARED BY TED
DATE 4-21-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-64

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

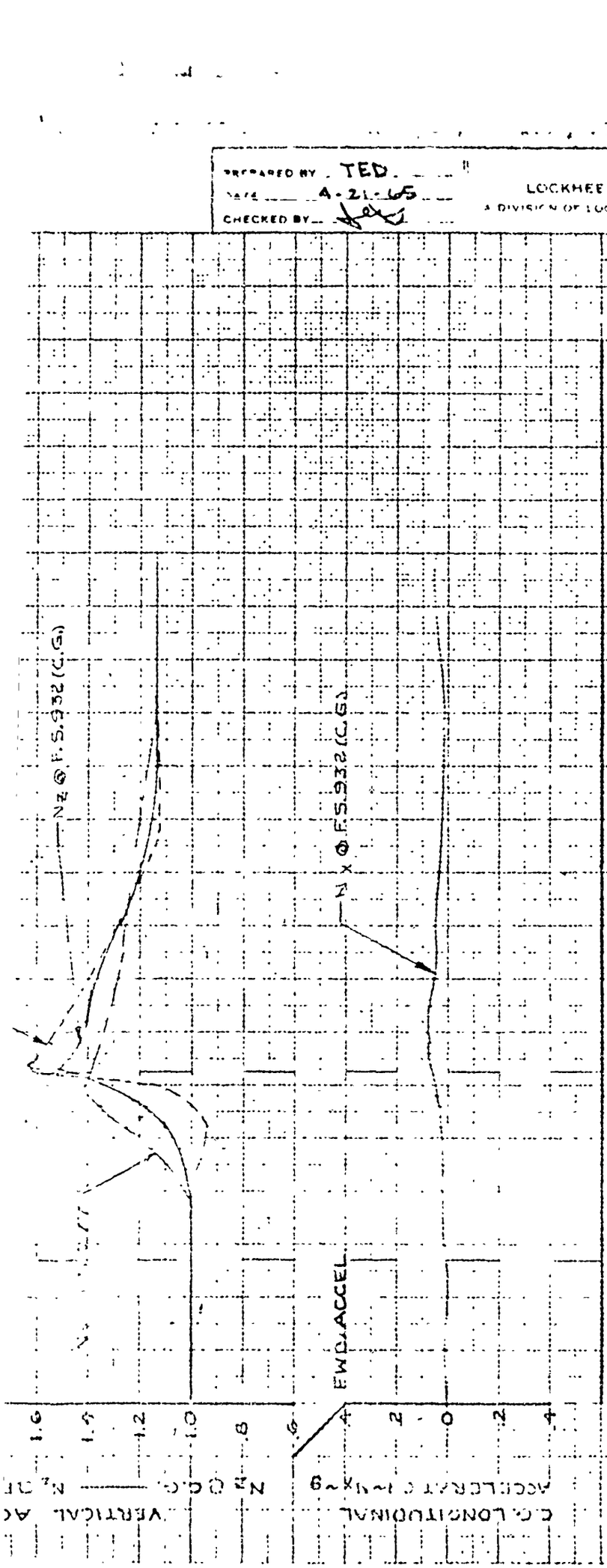
TEST DATE: 4-20-65

FLIGHT 63 DROP NO. 11

SHEET 3 OF 7

CARGO WT. [illegible]

NOTE:
SEE FIGURE [illegible] SHEET [illegible]
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.



6008
ADS

ADS57D
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
RAMP LIP
LOAD CG POSITION
LOAD ACCEL
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
0
.5
LOAD ACCELERATION
LOAD C.G. POSITION ~ FUS. STA.
JOB NO. 149 SUB CODE 4.2

PREPARED BY RSA
DATE 4-21-65
CHECKED BY

REPORT NO. AR 5475
MODEL C-141A
PAGE D-65

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-20-65

FLIGHT 108 DROP NO. 11

SHEET 4 OF 7

CARGO WT. 21,900 LBS.

NOTE:
SEE FIGURE D-1A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

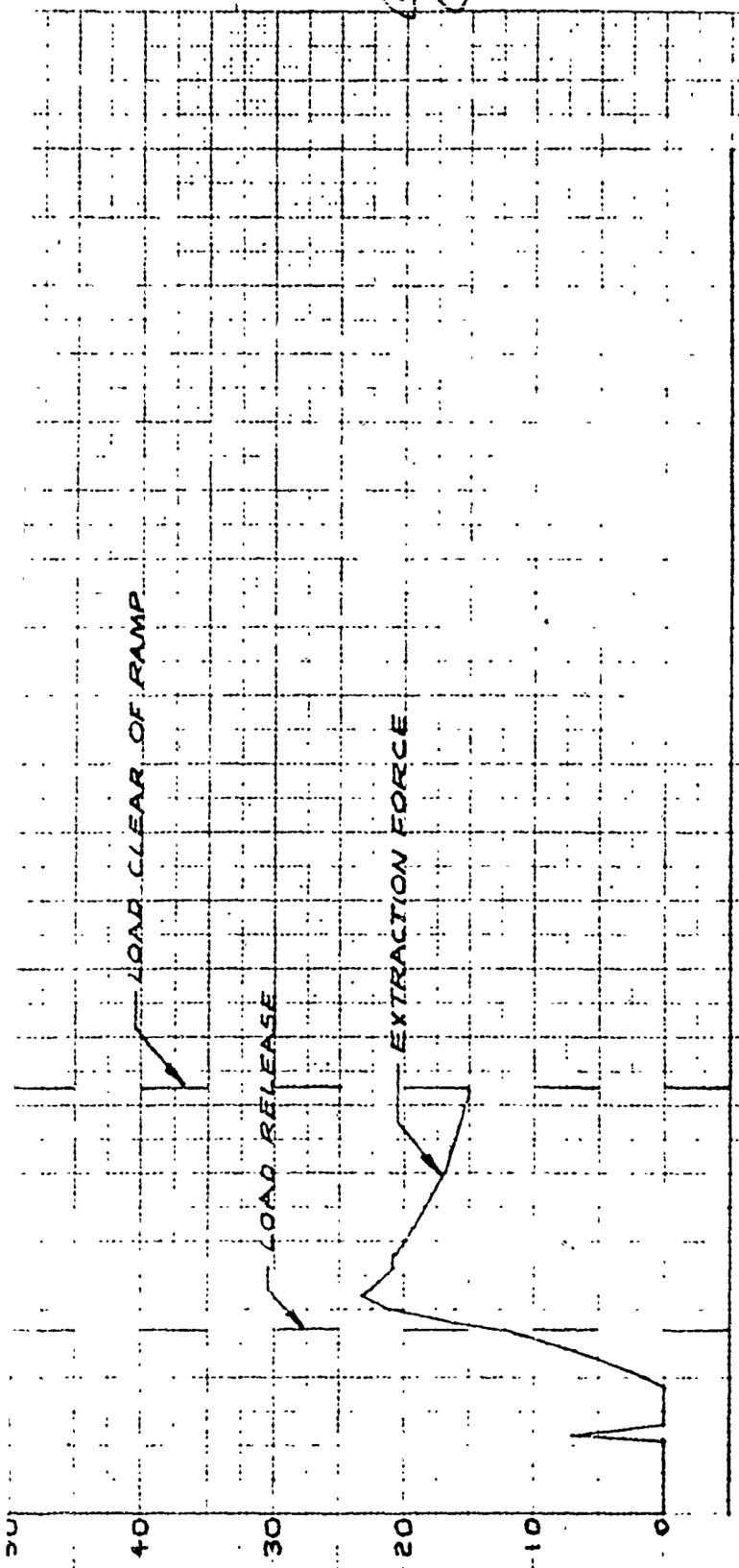


FIGURE D-11D

6008
ADS S7 D

GOOD ADS SIDE
L.H.
R.H.
RH
LH
RH
LH
PULL RIGHT
PULL DOWN
TENSION
TENSION
VERTICAL LOAD
LBS X 10⁻³
R.H.
L.H.
ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H.
L.H.
RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H.
L.H.
JOB NO. ADS 29 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

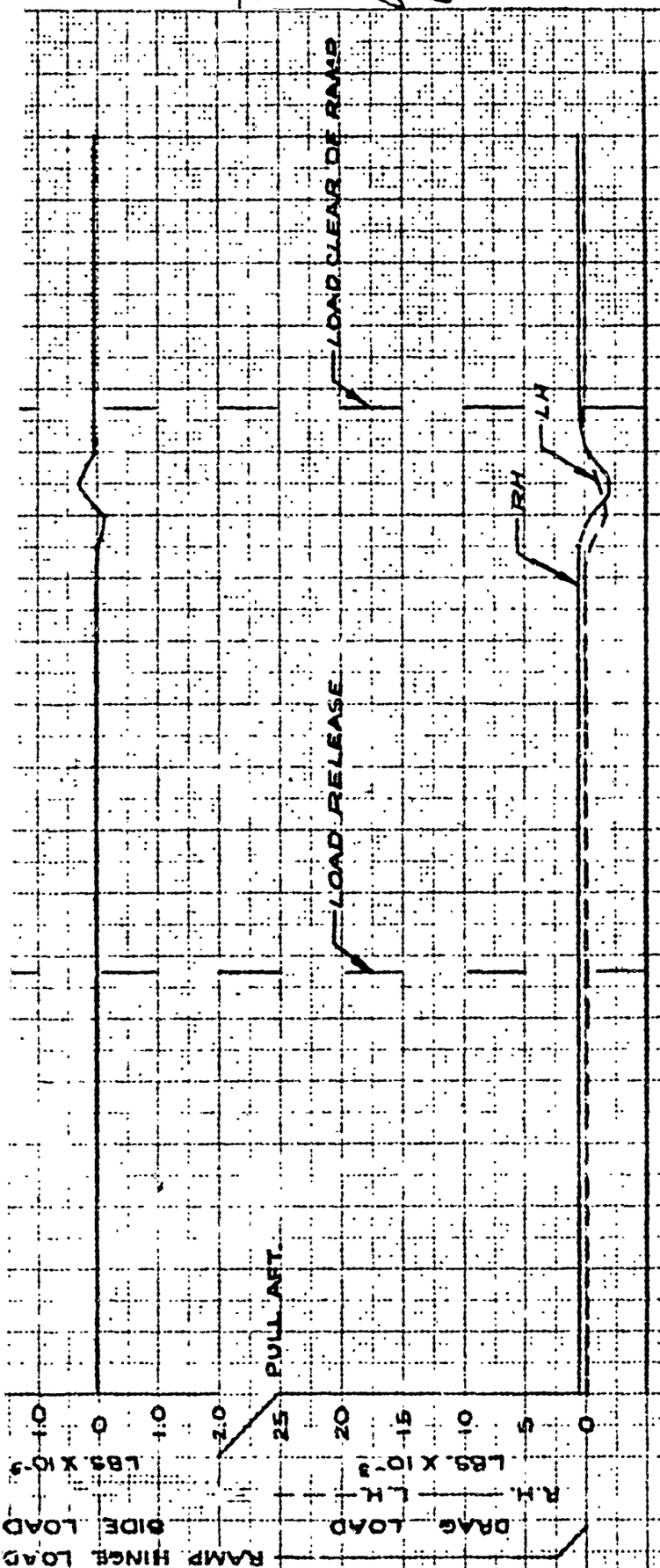
AF 63-8077 LAC 6008

TEST DATE: 4-20-65

FLIGHT 108 DROP NO. 11

SHEET 5 OF 7

CARGO WT. 21,900 LBS.



NOTE:
SEE FIGURE D-11A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-11E

6008
ADS 57E
LOAD CLEAR OF RAMP
My @ FS 1568
LOAD RELEASE
LH
RH
COMPRESSION
DOWN LOAD
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
RH
LH
JOB NO. AD57 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 4-20-65

FLIGHT 108 DROP NO 11

SHEET 6 OF 7

CARGO WT. 21,900 LBS

NOTE:
SEE FIGURE D-IIA SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

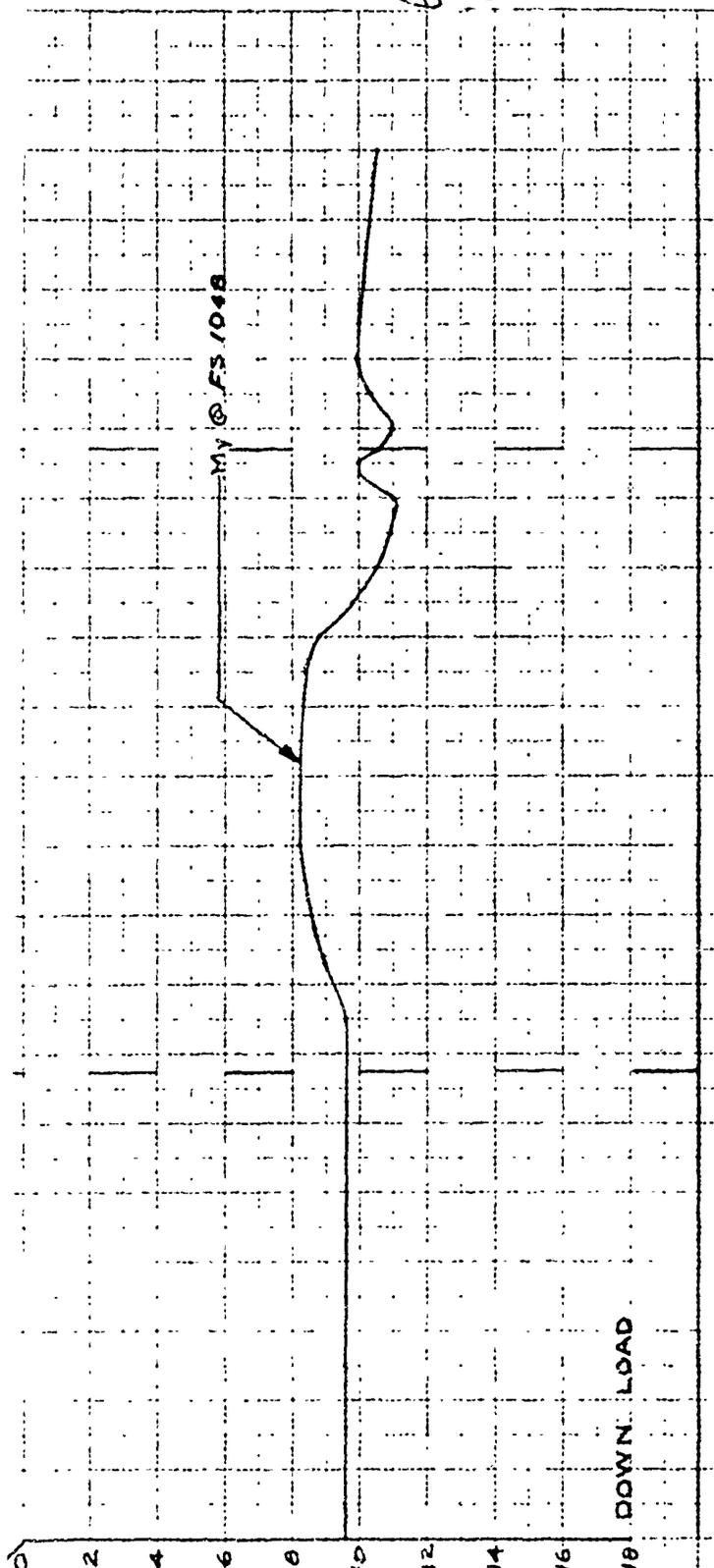


FIGURE D-1 F

6008
AD3.57G
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'x
INCH - LBS x 10⁻⁶
SHEAR @ HBL 44L ~ S'z
LBS x 10⁻³
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
LOAD RELEASE
LOAD CLEAR OF RAMP
M'x @ HBL 44L
S'z @ HBL 44L
2.0
1.5
1.0
.5
0
.5
1.0
1.5
2.0
JOB NO. AD3.25 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 4-20-65

FLIGHT 108 DROP NO. 11

SHEET 7 OF 7

CARGO WT. 21900 LBS

NOTE:
SEE FIGURE D-11A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

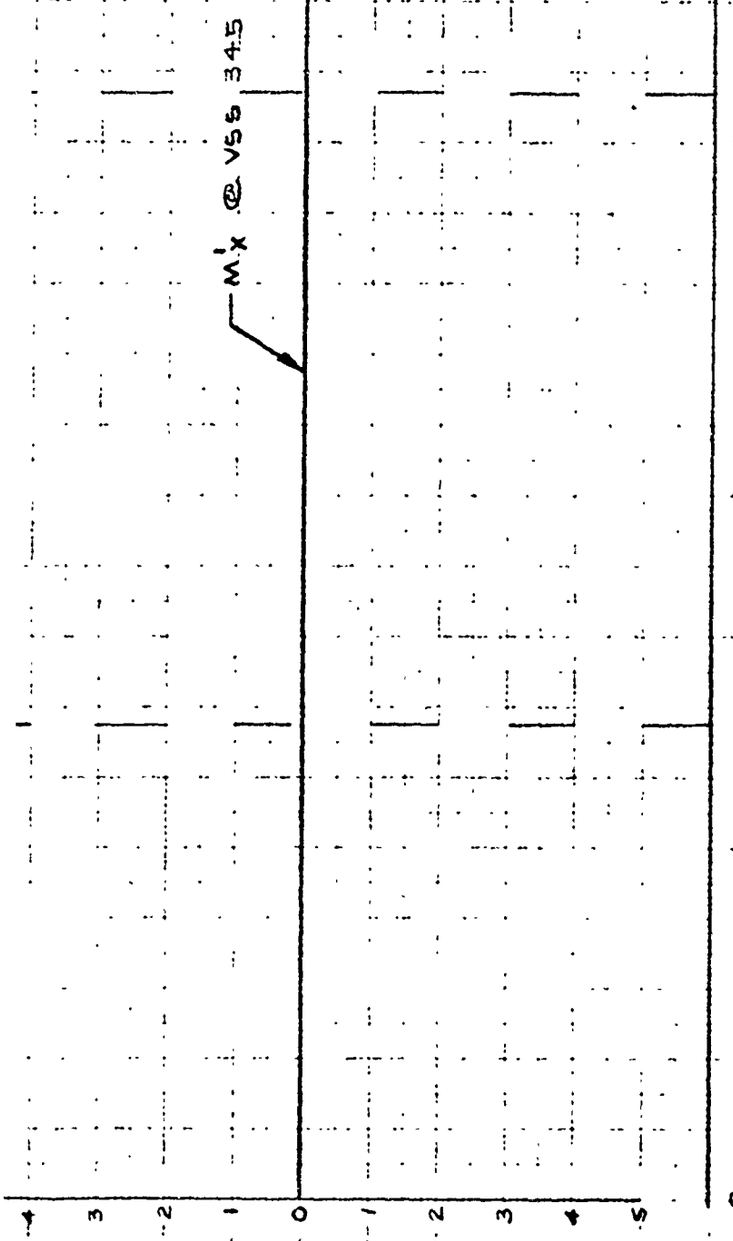


FIGURE D-11G

6008
ADS 5T G

6008
ADS-58A
AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
φ
ψ
α
β
JOB NO. ADS-305 LIB. CODE 4.2.1

PREPARED BY TED
DATE 4-21-65
CHECKED BY

LOCKHEED GEORGIA COMPANY

REPORT NO ER 5473
MODEL C-141A
PAGE D-69

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 4-21-65

FLIGHT NO. 111 DROP NO. 12

SHEET 1 OF 5

CARGO WT. 23,830 LBS

RUN CONDITIONS

1. G.W. ~ 181,050
2. C.G. PRIOR TO DROP ~ 26.3% MAC
3. C.G. AFTER DROP ~ 29.9 % MAC
4. FLAPS ~ 6°
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. ΔH ~ 1.5° (A/C NU)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. 866
   VERT. ~ WL 173

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 22'
3. RATED CHUTE FORCE/CARGO WT. ~ 1.17
4. EXTRACTION LINE LENGTH ~ 30'

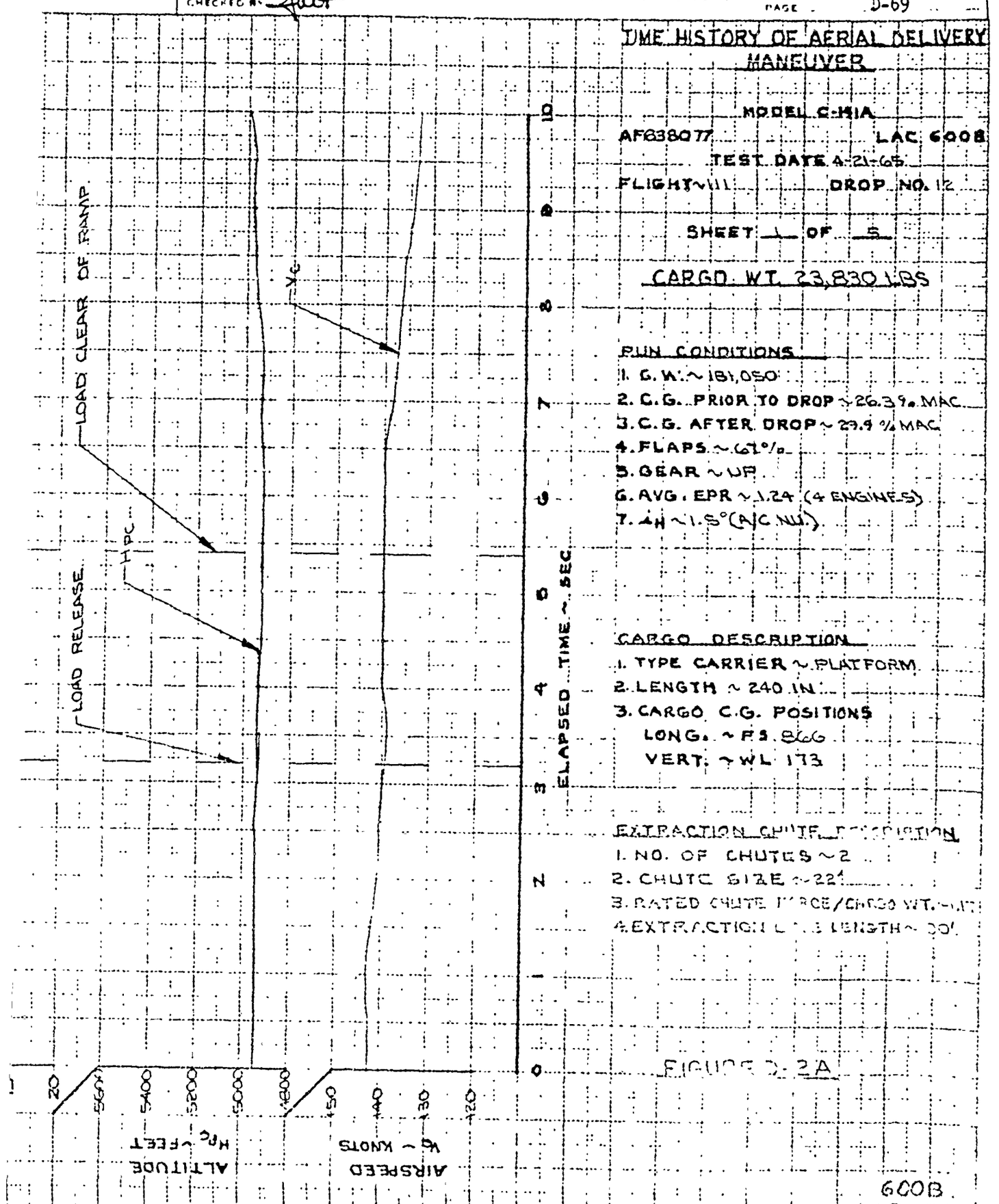


FIGURE D-2A

REVISED
12-14-65
MBH

6008
ACS 1556

JOB NO. SUB. CODE 4.21

T.E.D.

REPORT NO ER 5473
MODEL C-141A
PAGE D-70

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE A-21-65

FLIGHT ~ 111 DROP NO ~ 12

SHEET 2 OF 3

CARGO WT 23,830 LBS

NOTE:
SEE FIGURE 12 SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

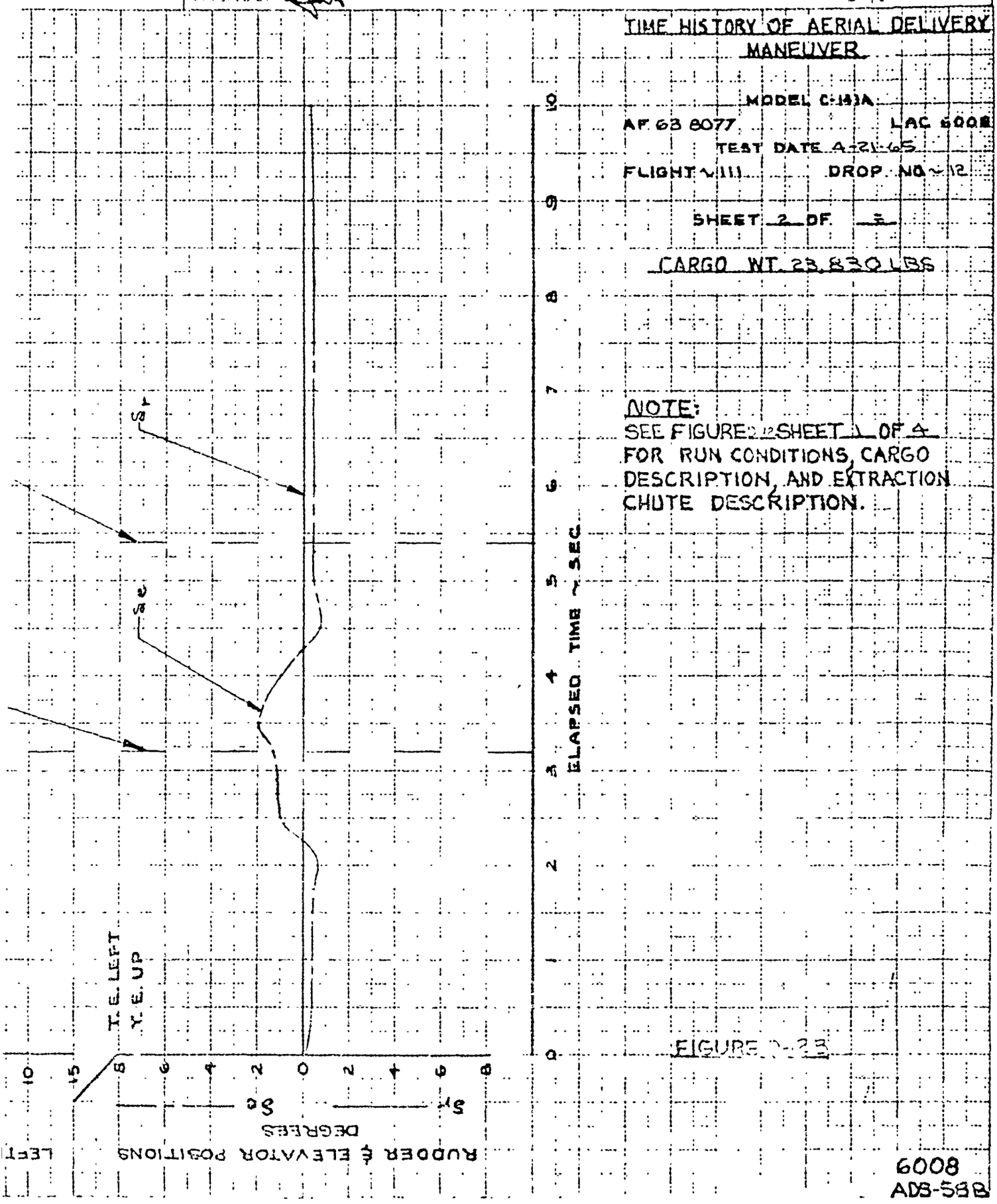


FIGURE 12-23

6008
ADS-58B

6008
ADS-58C

NOTE:
① CALCULATED FROM N_z DATA

$\ddot{\theta}$

LOAD CLEAR OF RAMP

N_z @ F.S. 163

N_z @ F.S. 932 (C.G.)

N_z @ F.S. 277

LOAD RELEASE

NOSE UP

UP ACCEL

40 20 0 20 40 3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6

$\ddot{\theta}$ DEG/SEC

PITCHING ACCELERATION

ACCELERATIONS ~ g

—— N_z @ FS 163 ——

—— @ FS 277

JOB NO. ADS-30 SUB. CODE 4.2.1

PREPARED BY TED
DATE 4-5-65
CHECKED BY

ER 5473
C-141A
D-71

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 4-21-65

FLIGHT ~ 111 DROP NO ~ 12

SHEET 3 OF 5

CARGO WT. 23,830 LBS

NOTE:
SEE FIGURE D-12A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

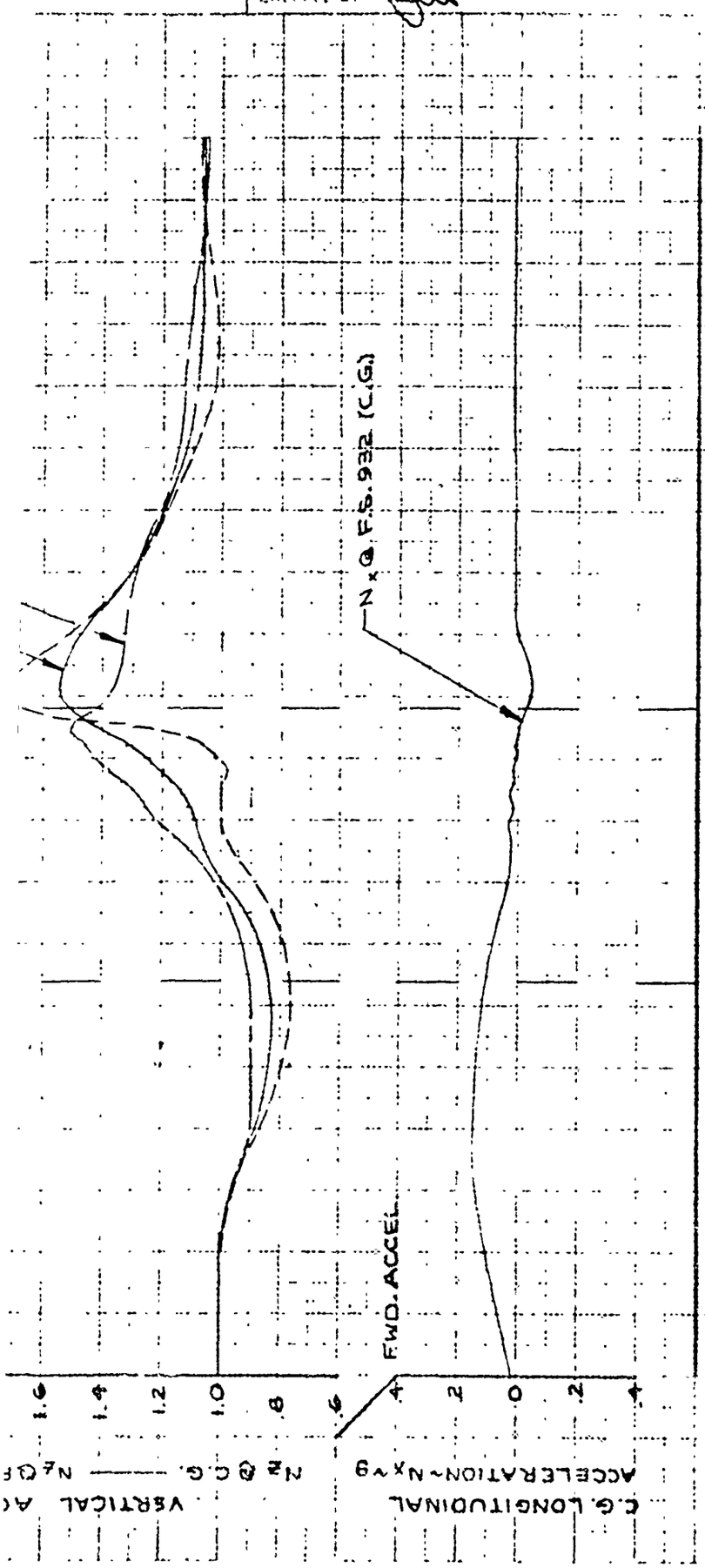
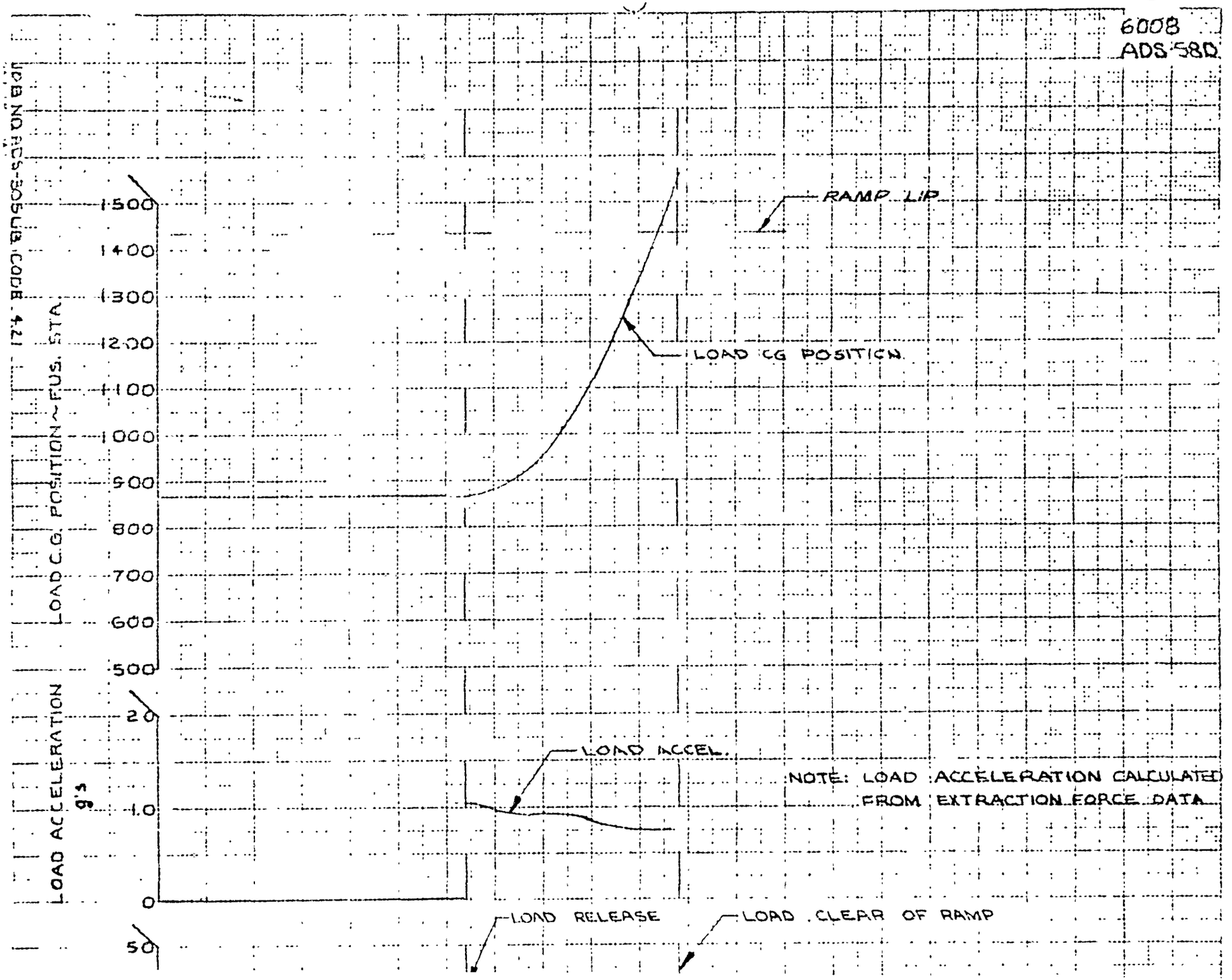


FIGURE D-12C

6008
ADS-58D

JOB NO. ADS-305UB CODE 4.21



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-21-65

FLIGHT \\\ DROP NO. 12

SHEET 4 OF 5

CARGO WT. 23,830 LBS

NOTE:
SEE FIGURE D-12A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

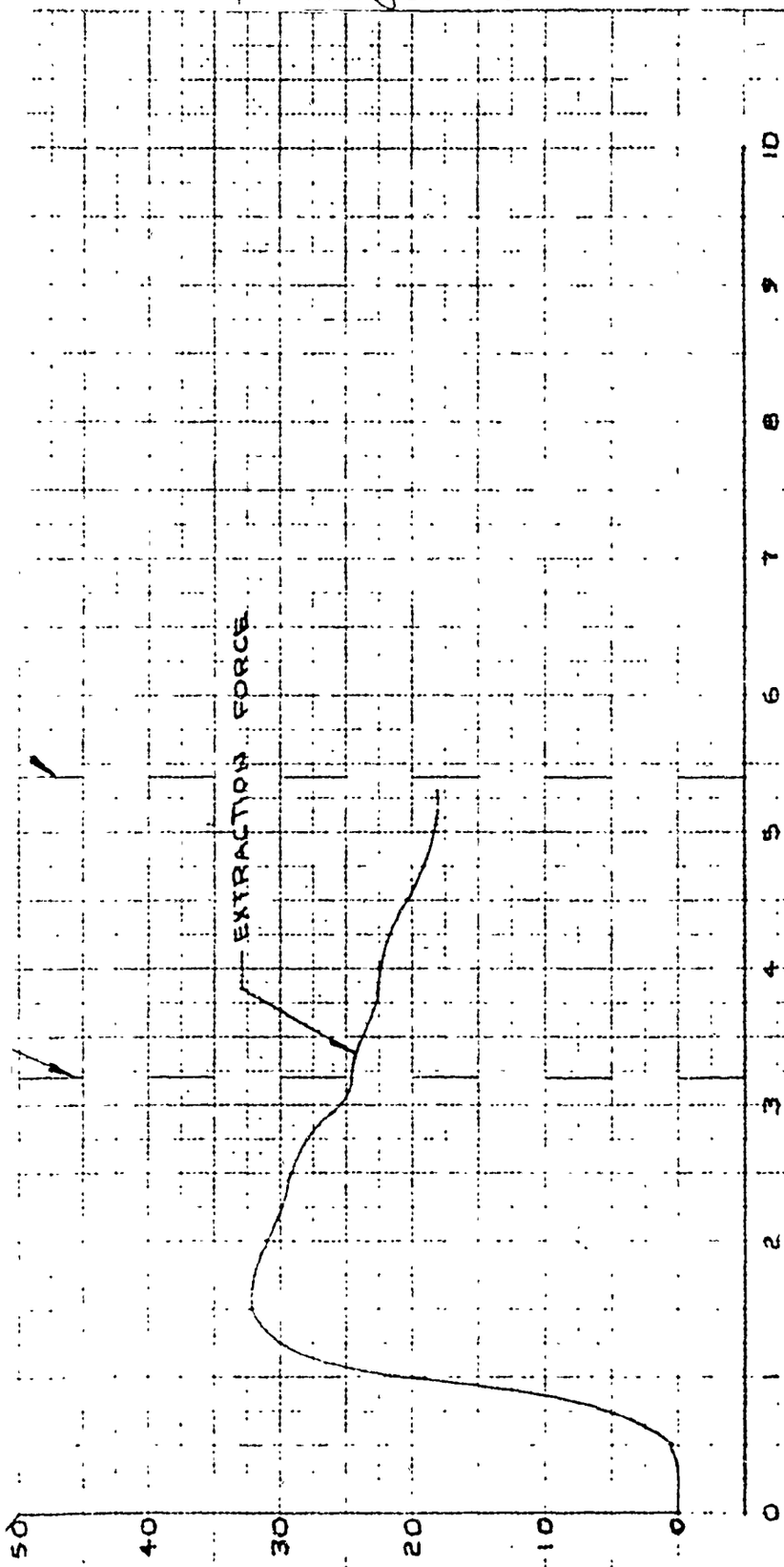


FIGURE D-12D

ADS-58E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM D-73
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 65-8077 LAC 6008

FLIGHT 111 TEST DATE 4-21-65

G.W. 181,100 LBS. A/S 140 KCAS.

C.G. 26.3% MAC. ALT ~ 4,950 FT.

DROP WT. ~ 23,830 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	3.6
2	ANGLE OF PITCH	"	9.1
3	C.G. VERT. ACCEL.	g's	1.55
4	C.G. LONG. ACCEL.	"	- 0.046
5	VERT. ACCEL. @ F.S. 277	"	1.51
6	VERT. ACCEL. @ F.S. 1637	"	1.74
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	19.160
8	VERT. BEND. @ F.S. 1568	"	1.030
9	BENDING ~ M'_x @ HBL 44L	"	- 0.152
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	- 1.720
11	PITCH TRIM ACTUATOR ~ S_z	"	- 1.530
12	R.H. RAMP ACTUATOR LOAD	"	0.500
13	L.H. " " "	"	0.350
14	R.H. SPIDER ARM LOAD	"	8.330
15	L.H. " " "	"	N.A
16	R.H. PETAL DOOR ACTUATOR LOAD	"	7.180
17	L.H. " " " "	"	6.710
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	- 0.100
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	4.470
20	L.H. " " " "	"	3.470
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.770
22	L.H. " " " "	"	- 1.240
23	RAMP HINGE TOTAL SIDE LOAD	"	0.130
24	EXTRACTION CHUTE FORCE	"	32.36
25	CARGO LONG. ACCEL.	g's	1.36

GA FORM 1668-B

FIG. D-12E
ADS-58E

6008
ADS 591
AIRCRAFT ATTITUDES ~ DEG.
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
JOB NO. 6008 SUB. CODE 1.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF638077 LAC 6008

TEST DATE 4-22-65

FLIGHT 112 DROP NO. 13

SHEET 1 OF 2

CARGO WT 27,190 LBS

RUN CONDITIONS

1. G.W. 185,300 LBS.
2. C.G. PRIOR TO DROP ~ 26.2 % MAC
3. C.G. AFTER DROP ~ 29.6% MAC
4. FLAPS ~ 65%
5. GEAR ~ UP
6. AVG. EPR 1.23 (4 ENGINES)
7. Δ_H ~ 1.0 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. 876
   VERT. ~ W.L. 179

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES - 2
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT ~ 0.26
4. EXTRACTION LINE LENGTH ~ 100 FT.

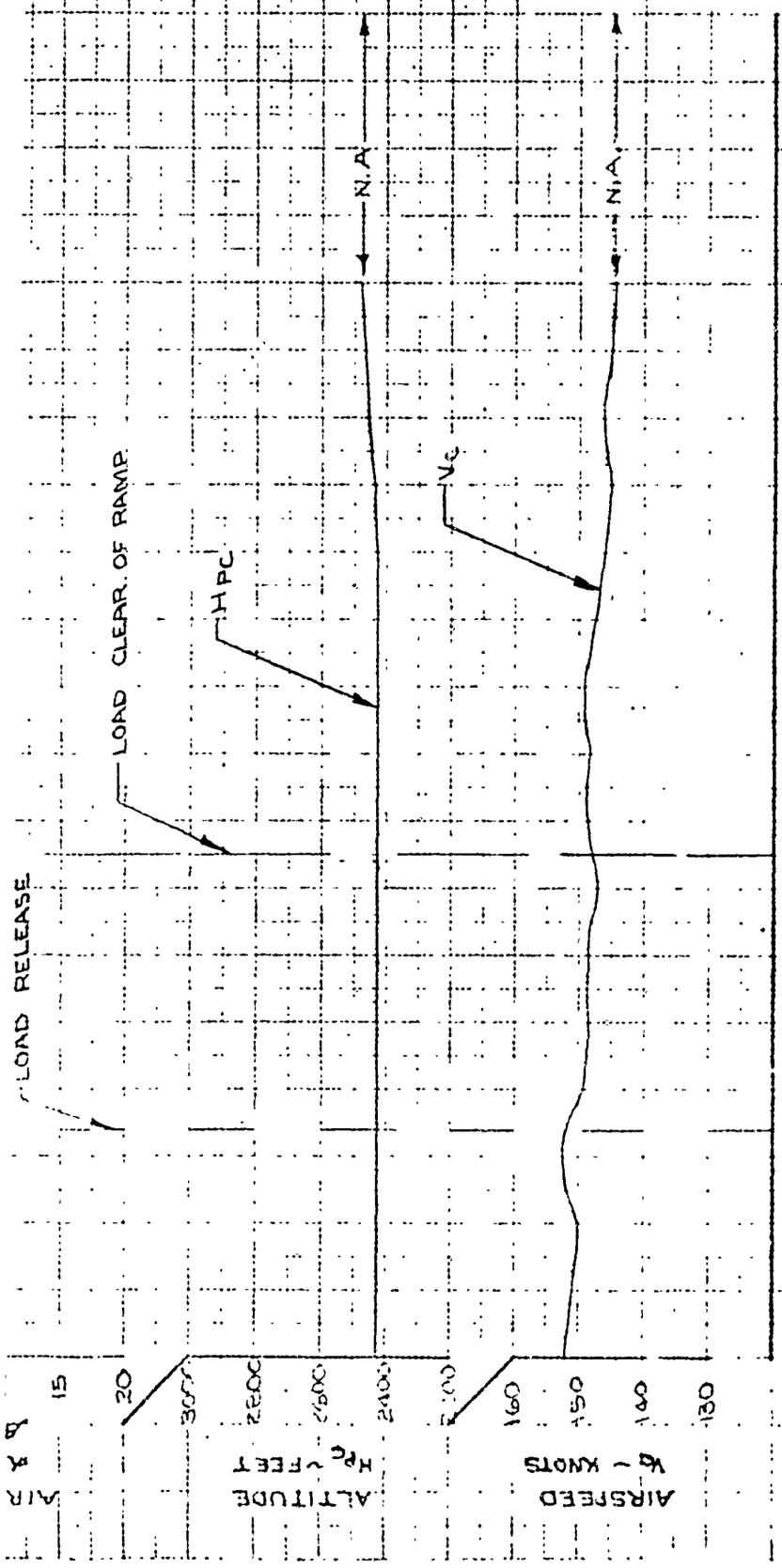


FIGURE D-13A

REVISED 12-14-65 MBH.

6008
ADS-59A
REVISED 5-4-65 [illegible]

6008
ADS-59B
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
T.E. UP
20
15
10
5
0
5
F_r
F_e
F_a
F_c
S_{aL}
CONTROL FORCES ~ LBS.
AILERON POSITION ~ DEG.
LOAD RELEASE
DOA NO. AL3-31 SUB. CODE 4.21

PREPARED BY TED
DATE 4-22-65
CHECKED BY Jus

ER 5473
MODEL C-141A
PAGE D-75

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 4-22-65

FLIGHT 112 DROP NO 13

SHEET 2 OF 3

CARGO WT. 27,190 LBS

NOTE:
SEE FIGURE B SHEET 1 OF 1 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

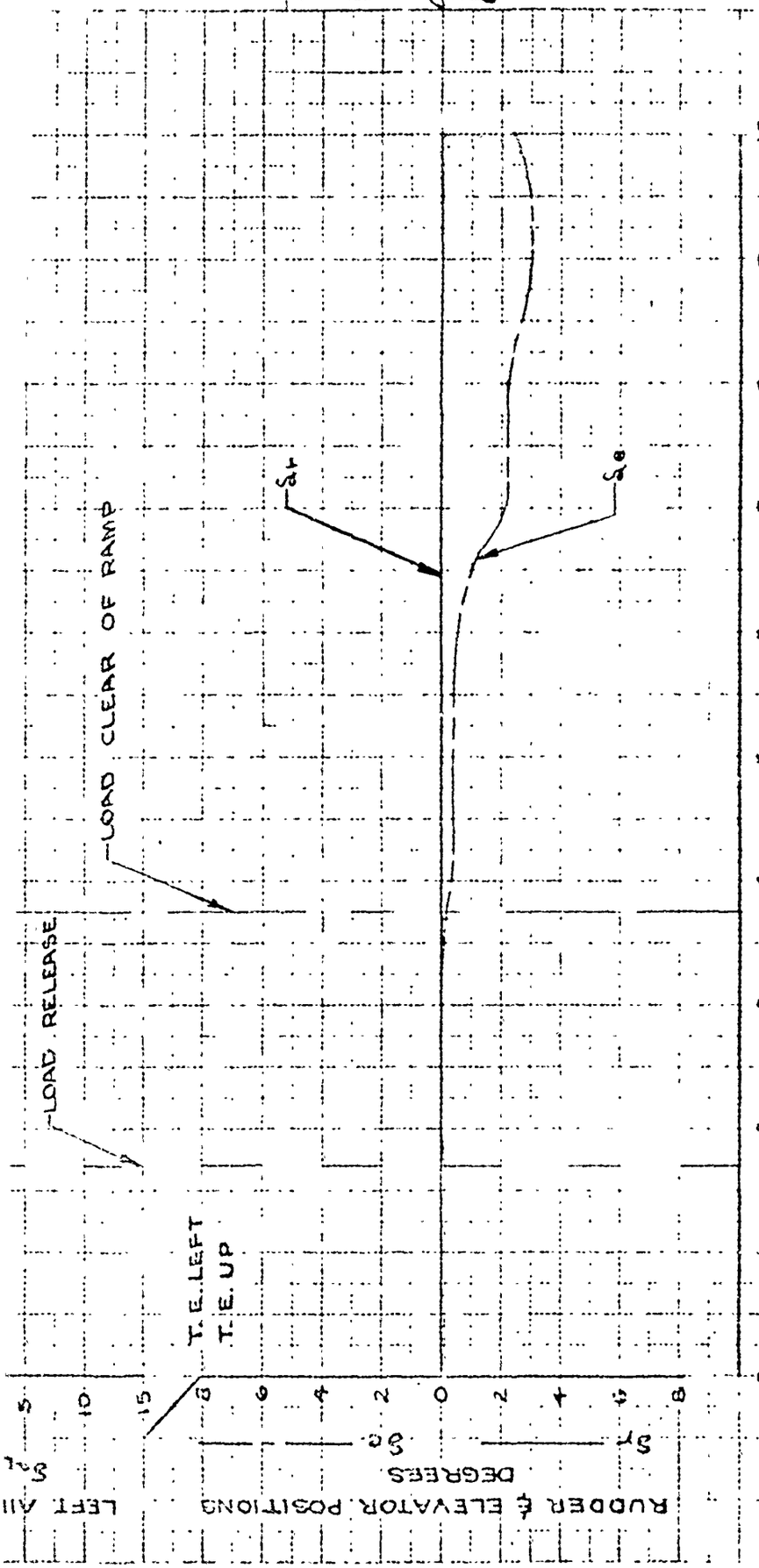
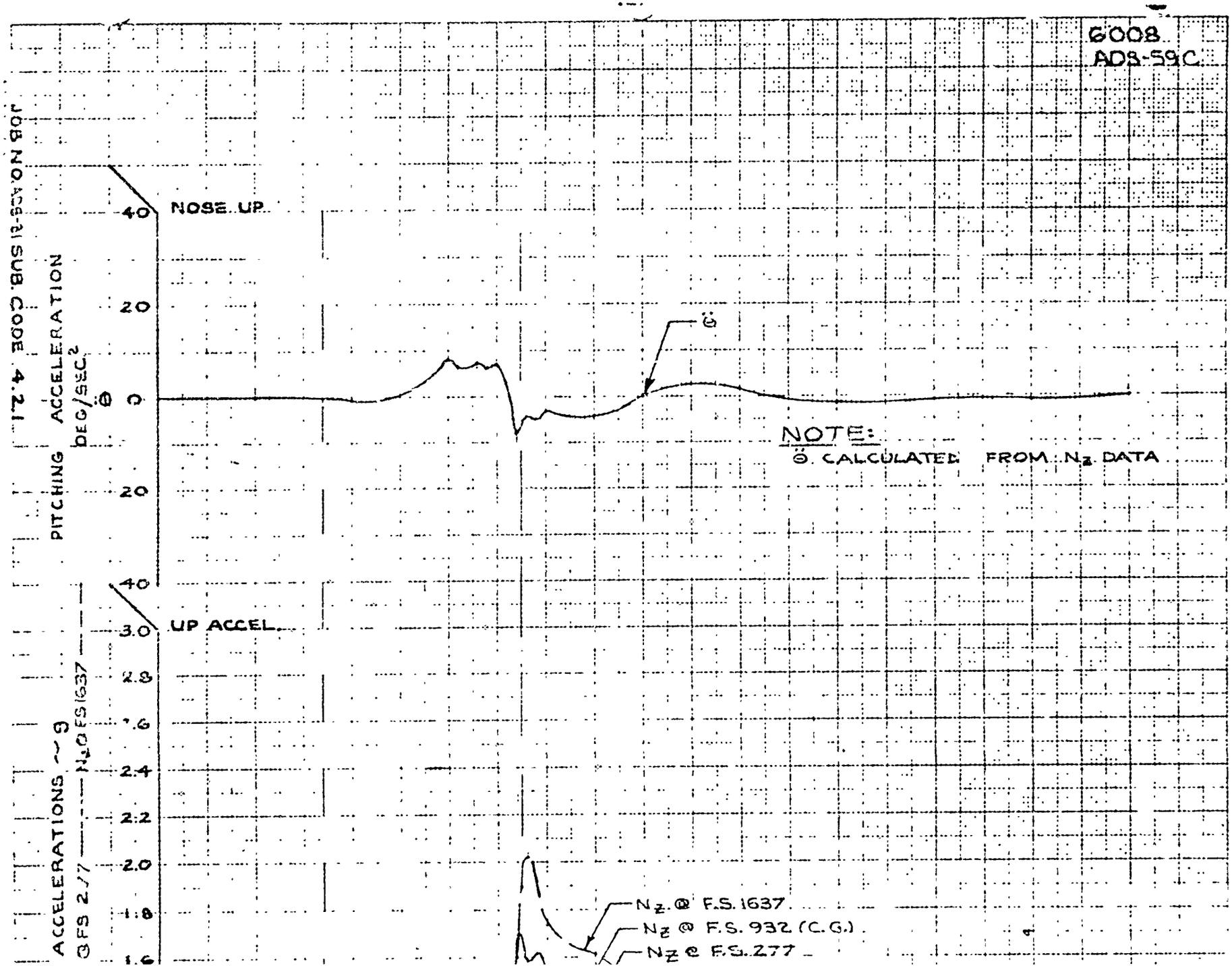


FIGURE 3-B

6008
ADS-59B
REVISED 5-4-66
Jus

6008
ADS-59C

JOB NO. ASS-12-SUB CODE 4.2.1



PREPARED TED E. [illegible]
DATE 4-23-65
CHECKED [illegible]
PROJECT ER 5473
MODEL C-141A
PAGE D-76

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE 4-22-65

FLIGHT 112 DROP NO. 13

SHEET 3 OF 7

CARGO WT. 27,190 LBS.

NOTE:
SEE FIGURE D-13 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

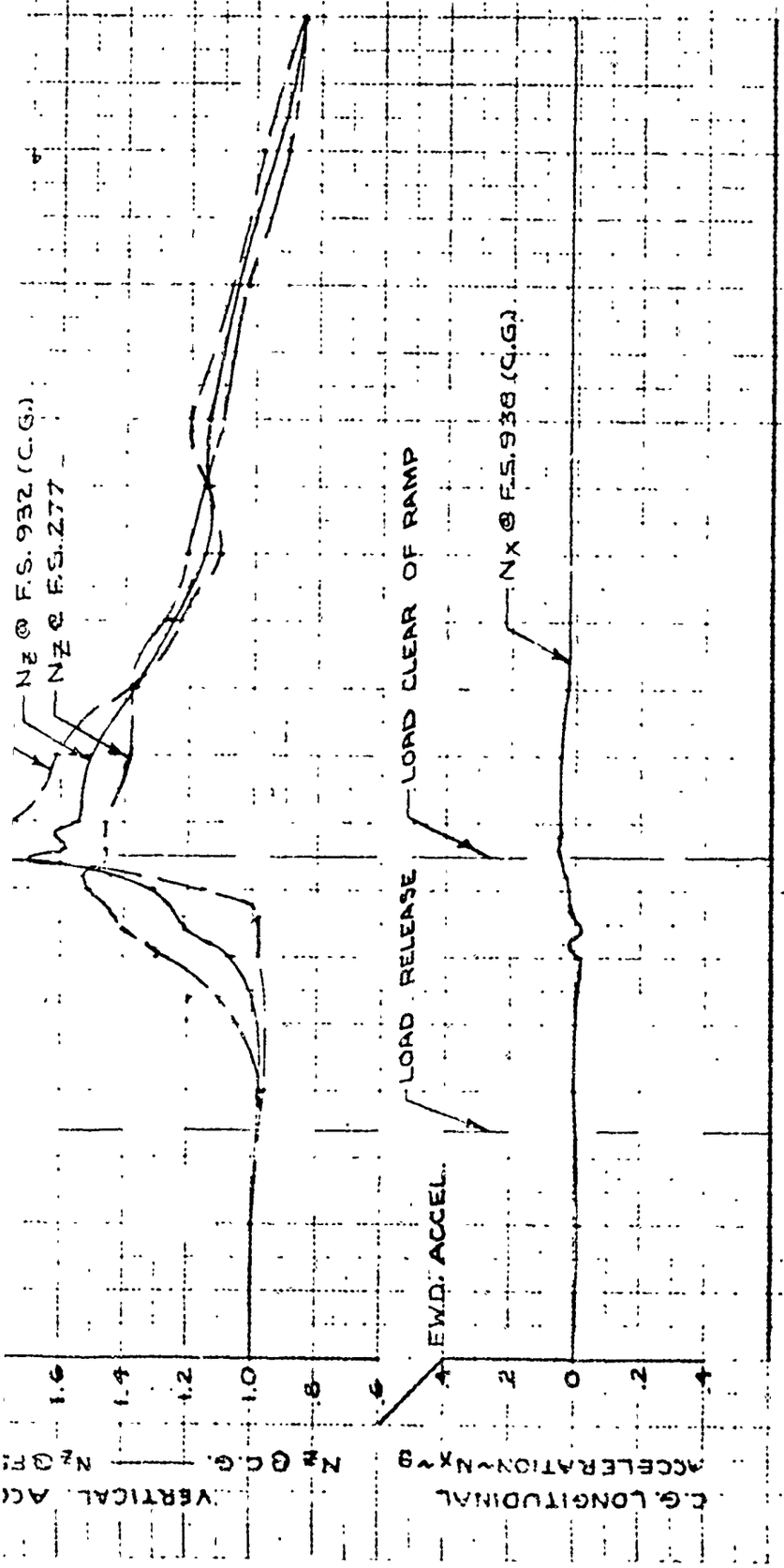
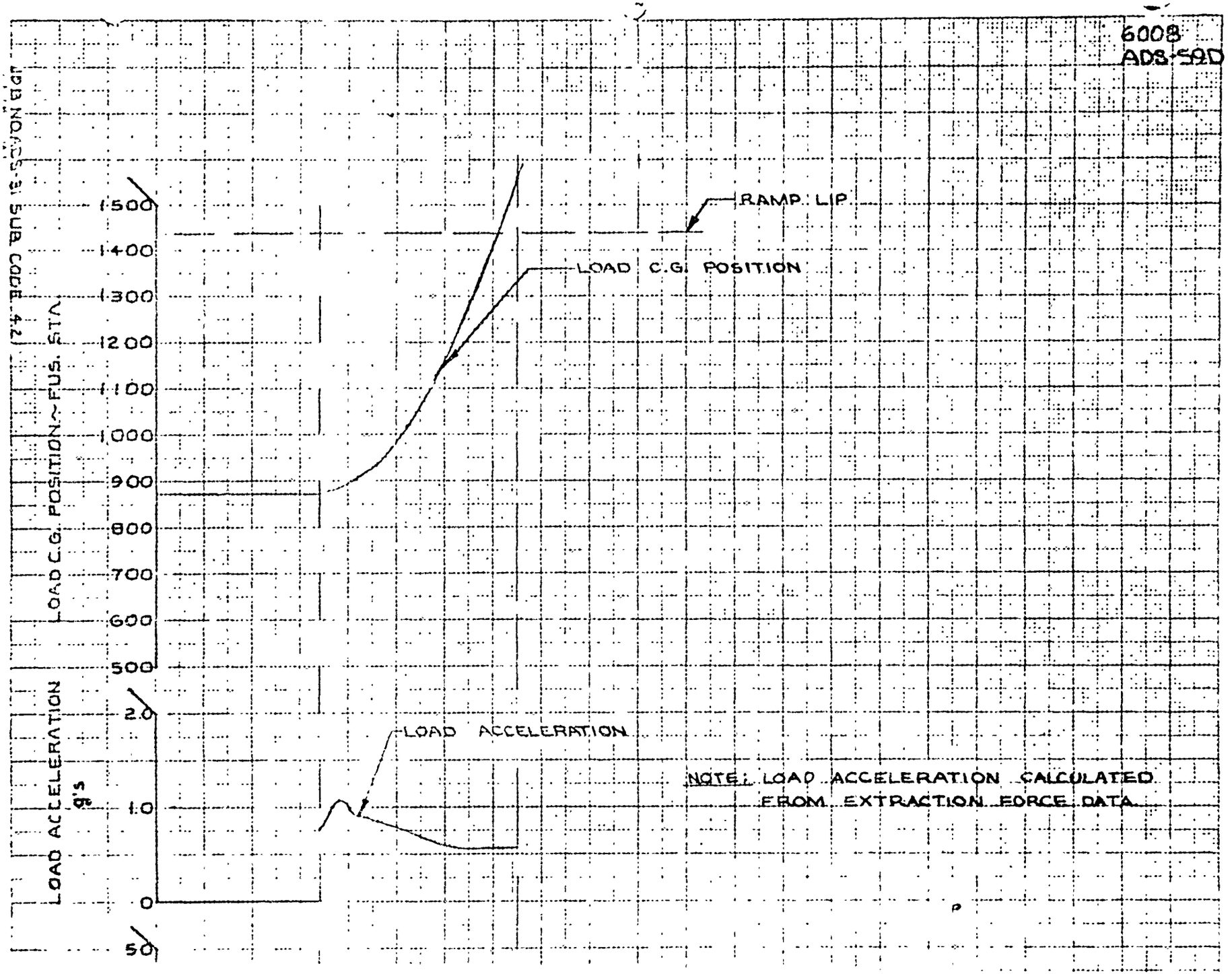


FIGURE D-13C

6008
ADS-59C

REVISED
5-9-65

6008
ADS-50D


RAMP LIP
LOAD C.G. POSITION
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
LOAD ACCELERATION
LOAD ACCELERATION
g's
2.0
1.0
0
50
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

PREPARED BY TED
DATE 4-23-65
CHECKED BY JWS

REPORT NO ER 5473
MODEL C-141A
PAGE D-77

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-22-65

FLIGHT 112 DROP NO. 13

SHEET 4 OF 7

CARGO WT. 27,190 LBS

NOTE:
SEE FIGURE D-12, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

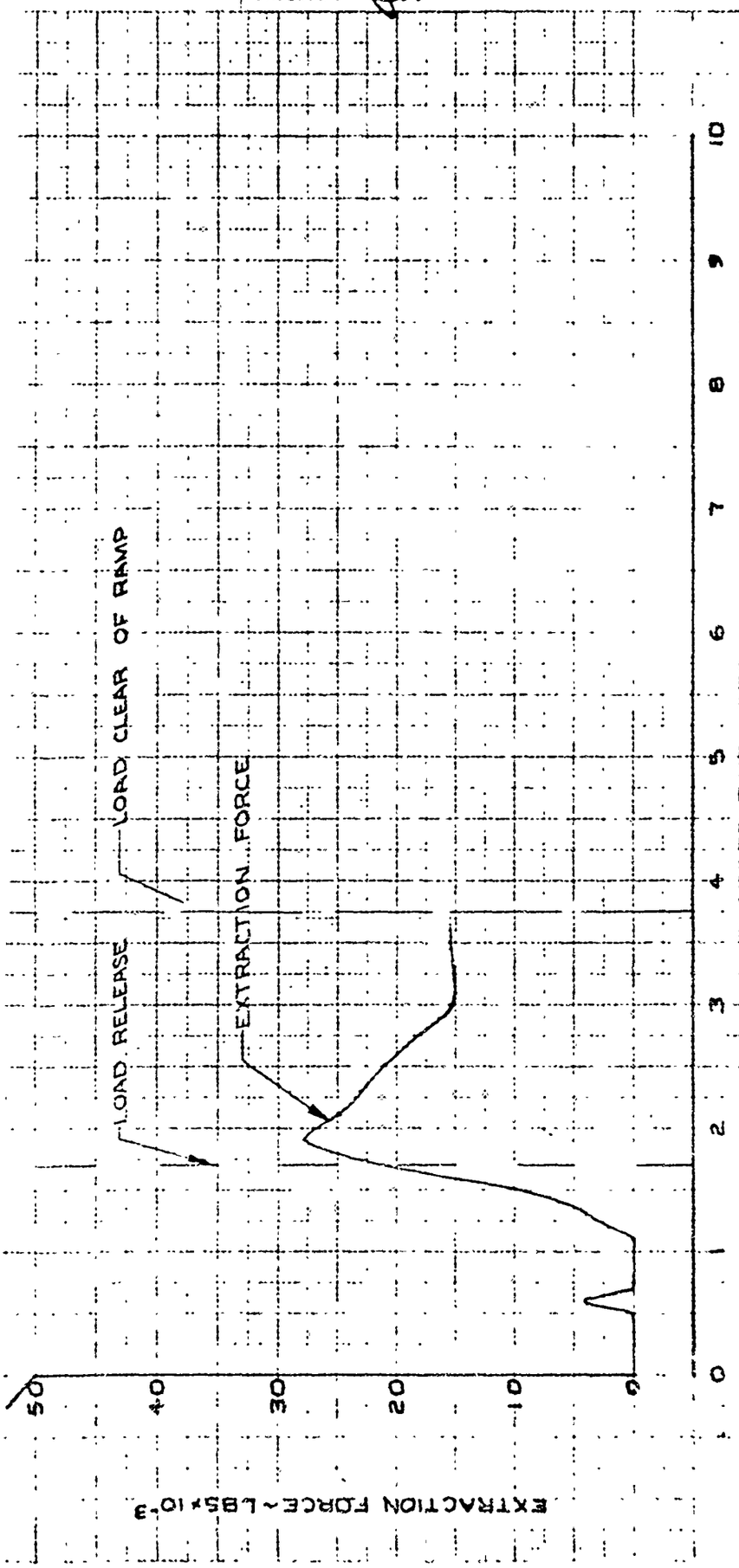


FIGURE D-13 D

6008
ADS-59 D
REVISED 5-4-65
JWS

6008-ADS-59E

JOB NO. ADS-31 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-22-65

FLIGHT 112 DROP NO 13

SHEET 5 OF 7

CARGO WT. 27,190 LBS

NOTE:
SEE FIGURE D-13A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

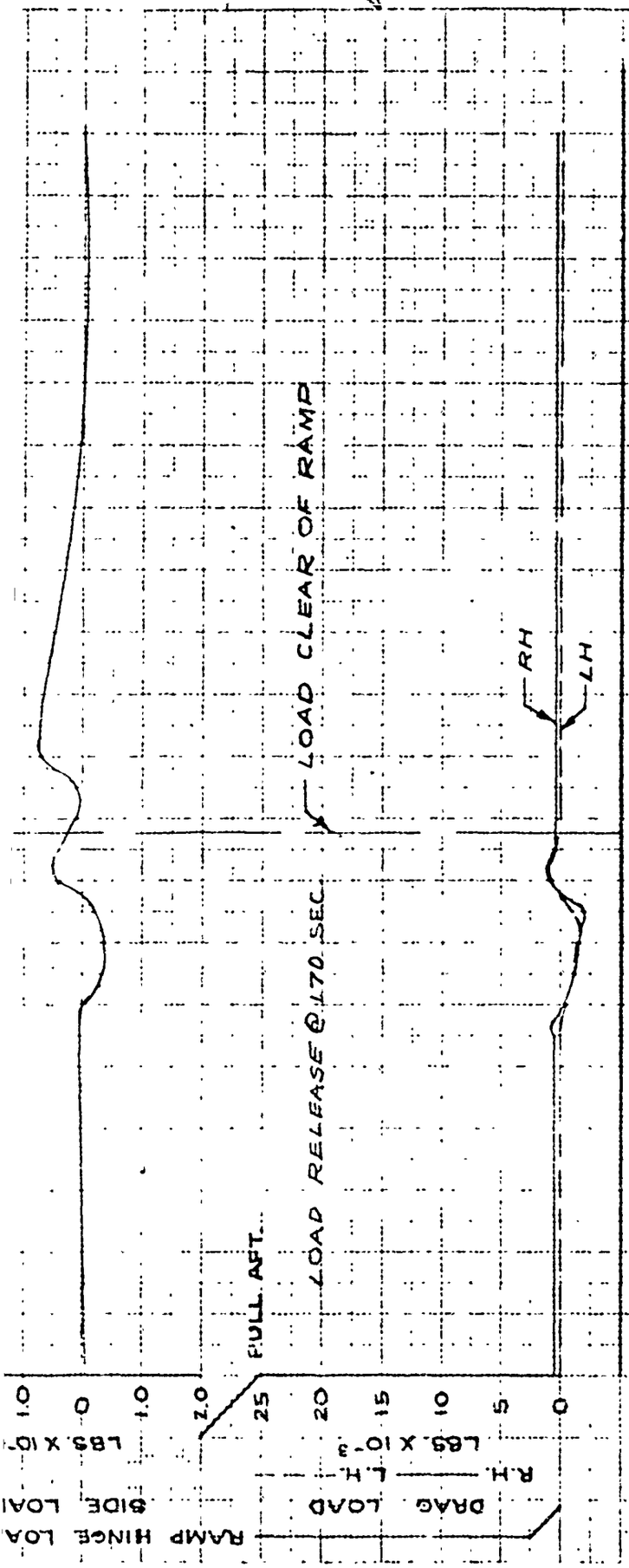


FIGURE D-13E

REVISED 5-4-6
JWO

6008
ADS-59F
LH
RH
MY@ FS 1568
COMPRESSION
DOWN LOAD
RH
LH
PETAL DOOR ACTUATOR RCD
LOADS ~ LBS X 10-3
VERTICAL BENDING ~ FS 1568
INCH-LBS X 10-6
JOB NO. 55555 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 4-22-65

FLIGHT 112 DROP NO. 13

SHEET 6 OF 7

CARGO WT. 27,190 LBS

NOTE:
SEE FIGURE D-13A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

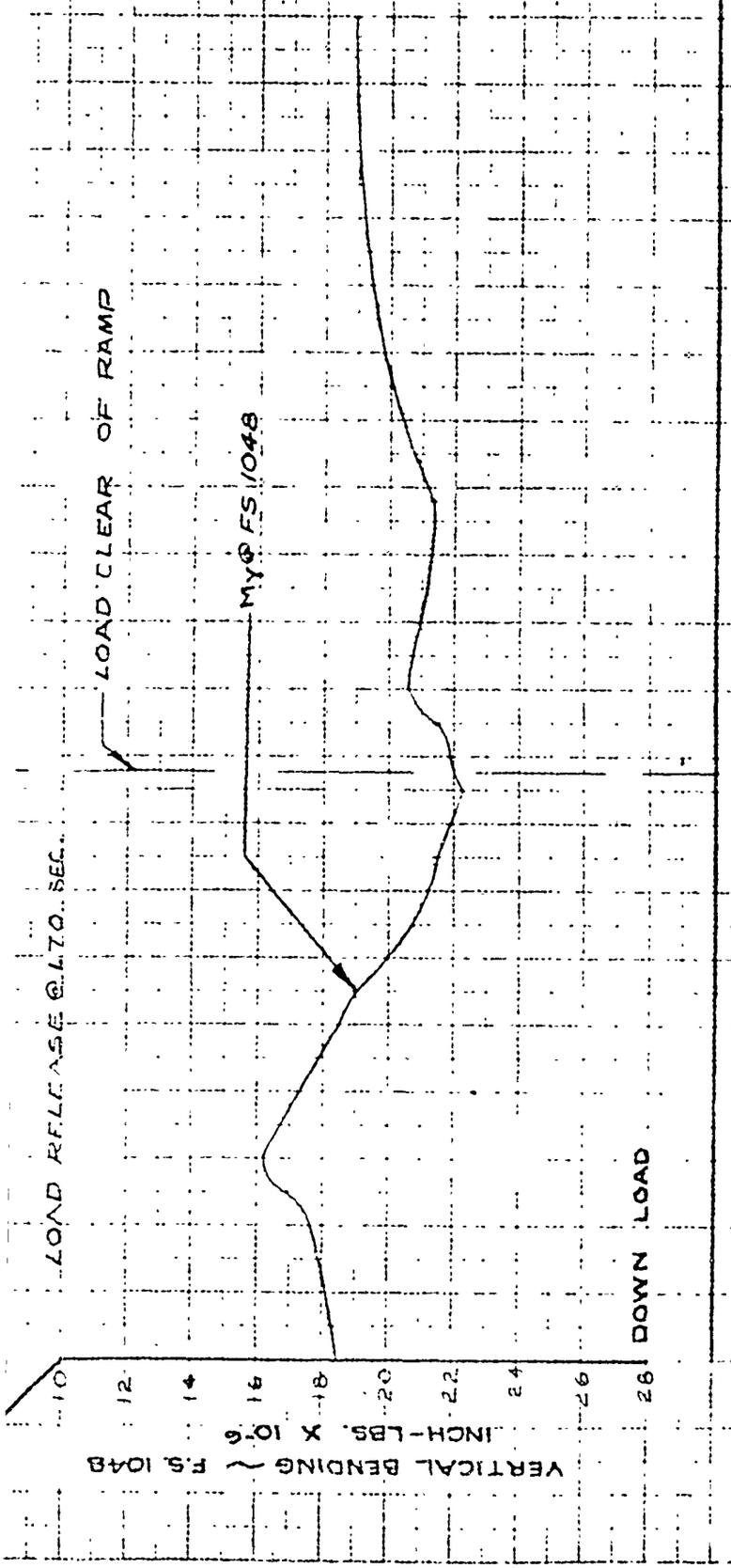


FIGURE D-13F

6008
ADS-59F
REVISED 5-4-67
FW

600E
AD3-59G
HORIZONTAL STABILIZER NET LOADS
SHEAR @ HRL 44L ~ S'z
LBS x 10-3
BENDING @ HBL 44L ~ M'x
INCH-LBS x 10-6
S'z @ HBL 44L
M'x @ HBL 44L
LOAD CLEAR OF RAMP
LOAD LEFT @ YS TIP
UP LOAD
UP LOAD
JOB NO. NDS-31606. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 4-22-65

FLIGHT 112 DROP NO. 13

SHEET 1 OF 1

CARGO WT. 27,190 LBS

NOTE:
SEE FIGURE D-12 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

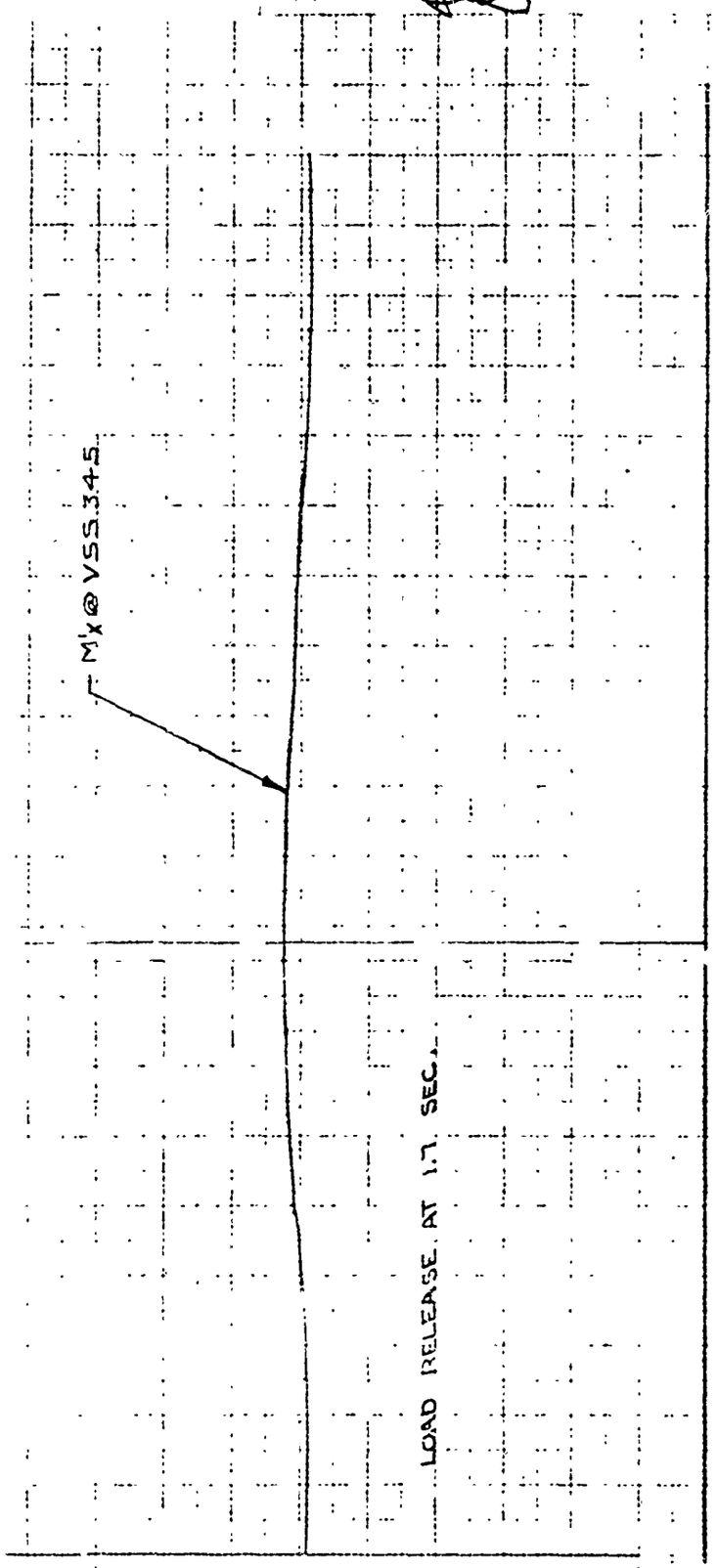


FIGURE D-13.6

6008
ADS-72A

AIRCRAFT ATTITUDES ~ DEG

NOSE UP
NOSE LEFT
RIGHT ROLL

25 20 15 10 5 0 5 10 15 20 25

θ
φ
ψ

AIRCRAFT ATTITUDE RATES ~ DEG/SEC

NOSE UP
NOSE LEFT
RIGHT ROLL

20 15 10 5 0 5 10 15

q
θ
p
φ
r
ψ

JOB NO. [illegible] SUB. CODE 4121

PREPARED BY RSA
DATE 4-30-65
CHECKED BY JWD

LOCKHEED GEORGIA COMPANY

REPORT NO ER 5473
MODEL C-141A
PAGE D-81

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE ~ 4-30-65

FLIGHT ~ 117 DROP NO. 4 P2

SHEET 1 OF 7

CARGO WT. 27,450 LBS.

RUN CONDITIONS

1. G.W. ~ 187,900 LBS
2. C.G. PRIOR TO DROP ~ 26.8 %MAC
3. C.G. AFTER DROP ~ 30.2 %MAC
4. FLAPS ~ 6.7 %
5. GEAR ~ UP
6. AVG. EPR ~ NA
7. ΔH ~ NA

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS. 878
   VERT. ~ WL 179

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 0.81
4. EXTRACTION LINE LENGTH ~ 100 FT.

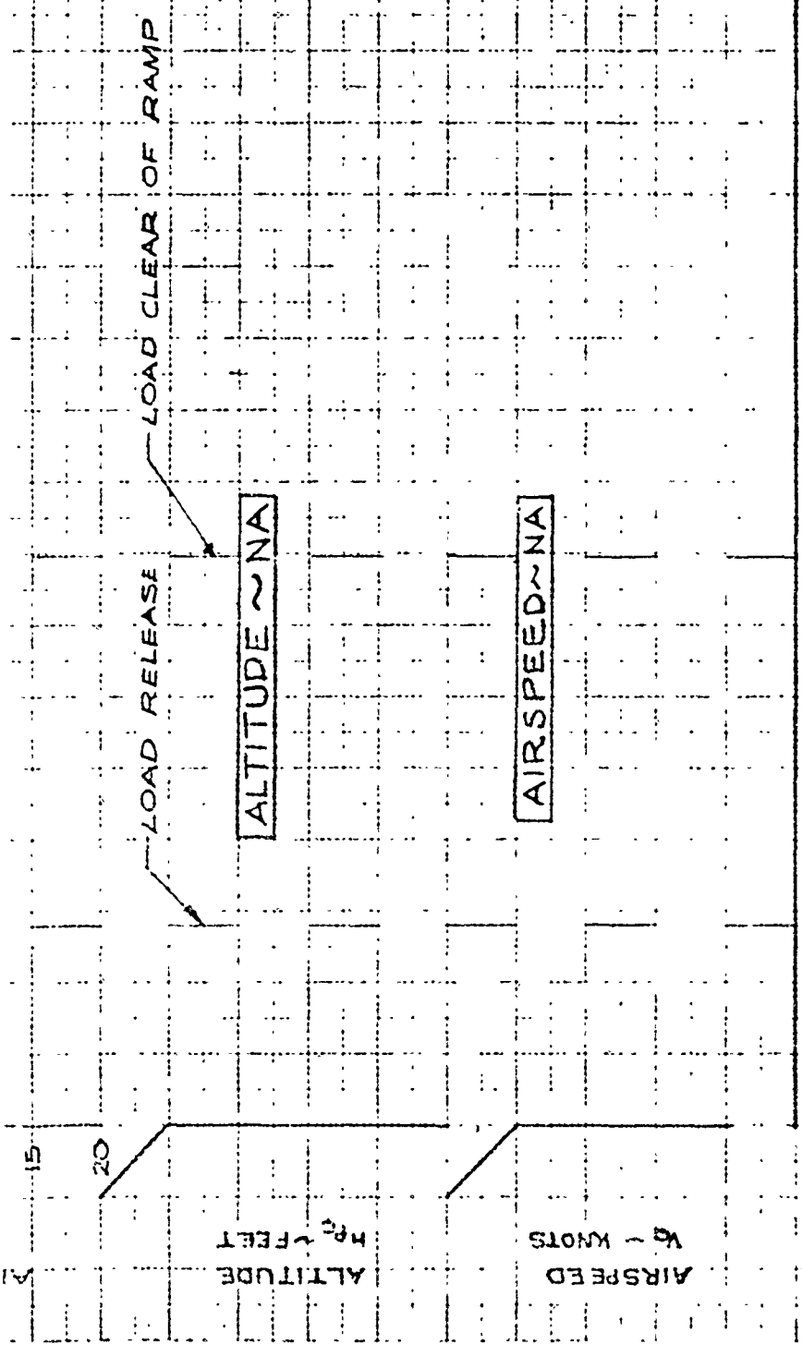


FIGURE D-4A

6008
ADS-72B
Fd
Fr
Fe
δal
RIGHT ROLL
PUSH LEFT
PULL
TE UP
70 60 50 40 30 20 10 0 10 20 30 40
20 15 10 5 0 5
Fy
Fa
Fe
δal
CONTROL FORCES ~ LBS.
AILERON POSITION ~ DEG
JOB NO. ADS 22 SUB. CODE 4.21

PREPARED BY RSA
DATE 8-1-65
CHECKED BY [illegible]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-82

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE- 4-30-65

FLIGHT- 117 DROP NO- 4R

SHEET 2 OF 7

CARGO WT 27,450 LBS

NOTE:
SEE FIGURE 14 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AID EXTRACTION CHUTE DESCRIPTION.

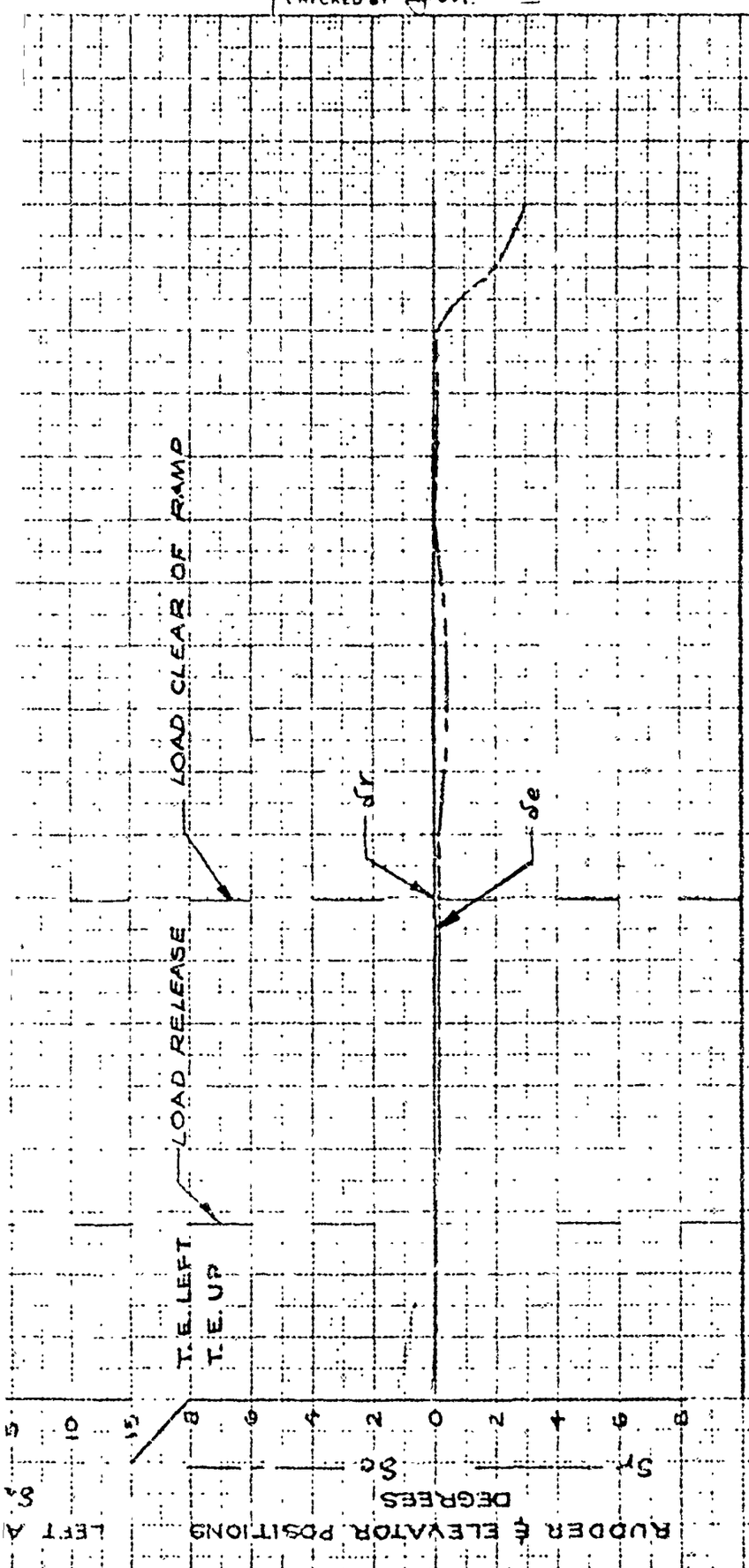


FIGURE D-82

6008
ADS-72C

NOTE:
$\ddot{\theta}$ CALCULATED FROM N_z DATA

$\ddot{\theta}$

N_z @ F.S. 1637

N_z @ F.S. 932 (C.G.)

N_z @ F.S. 277

NOSE UP

UP ACCEL

40 20 0 20 40 3.0 2.8 2.6 2.4 2.2 2.0

$\ddot{\theta}$ DEG/SEC^2

PITCHING ACCELERATION

ACCELERATIONS ~ g

O FS 277 —— N_z @ FS 1637 ——

JOB NO. ADS-72C SUB. CODE 4.2.1

PREPARED BY TED
DATE 4-30-65
CHECKED BY [illegible]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-83

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 4-30-65

FLIGHT 117 DROP NO. 14 R

SHEET 3 OF 7

CARGO WT. 27,450 LBS

NOTE:
SEE FIGURE D-14 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

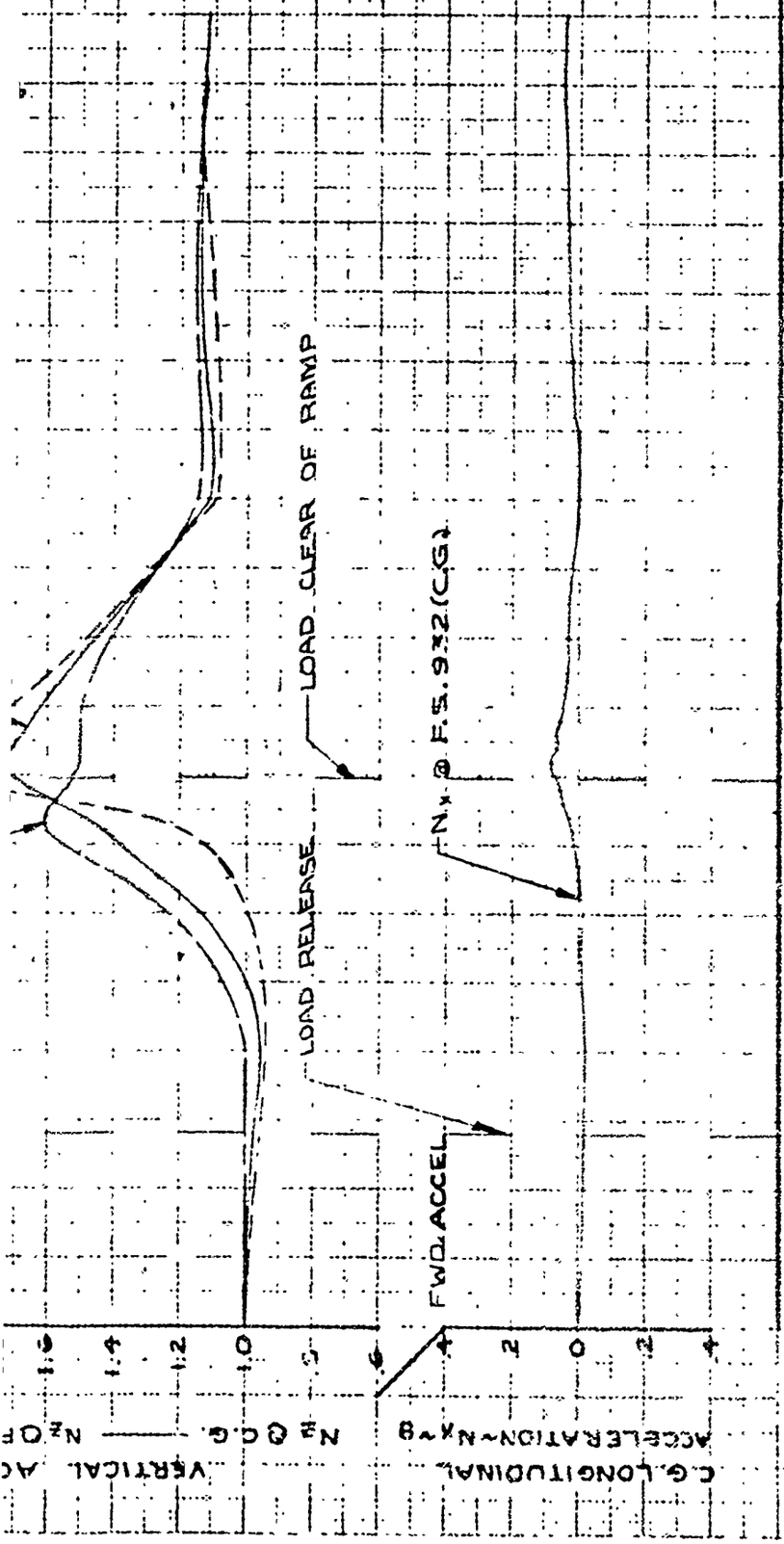


FIGURE D-14-C

6008
ADS-220
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA
RAMP LIP
LOAD CG POSITION
LOAD ACCEL.
LOAD ACCELERATION
LOAD C.G. POSITION ~ EUS STA.
JOB NO. ADS 35 SUB CODE 42

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-30-65

FLIGHT~117 DROP NO.~14R

SHEET 4 OF 7

CARGO WT. 27,450 LBS.

NOTE:
SEE FIGURE D-14A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

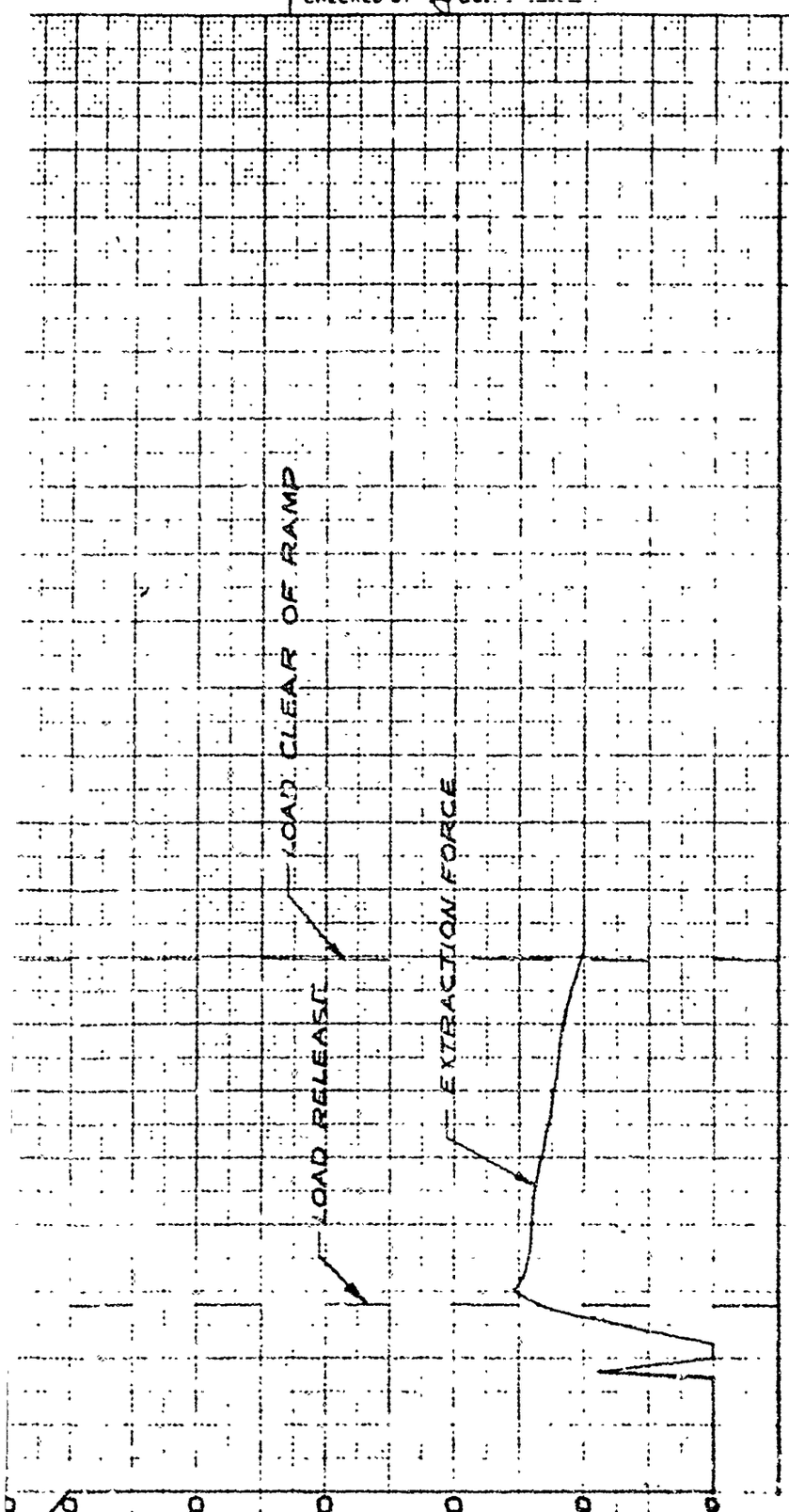


FIGURE D-14 D

6008-ADS-112E
RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H.
L.H.
TENSION
4
2
0
2
4
ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H.
L.H.
TENSION
30
20
10
R.H. SPIDER ARM LOAD
L.H. SPIDER ARM LOAD
VERTICAL LOAD
LBS X 10⁻³
R.H.
L.H.
PULL DOWN
15
10
5
0
R.H. HINGE VERT. LOAD
L.H. HINGE VERT. LOAD
LOADS
PULL RIGHT
2.0
1.0
RIMP. HINGE SIDE LOAD
JOB NO ADS-356 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 4-30-65

FLIGHT 171 DROP NO. 14R

SHEET 5 OF 7

CARGO WT. 27,450 LBS

NOTE:
SEE FIGURE D-14A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

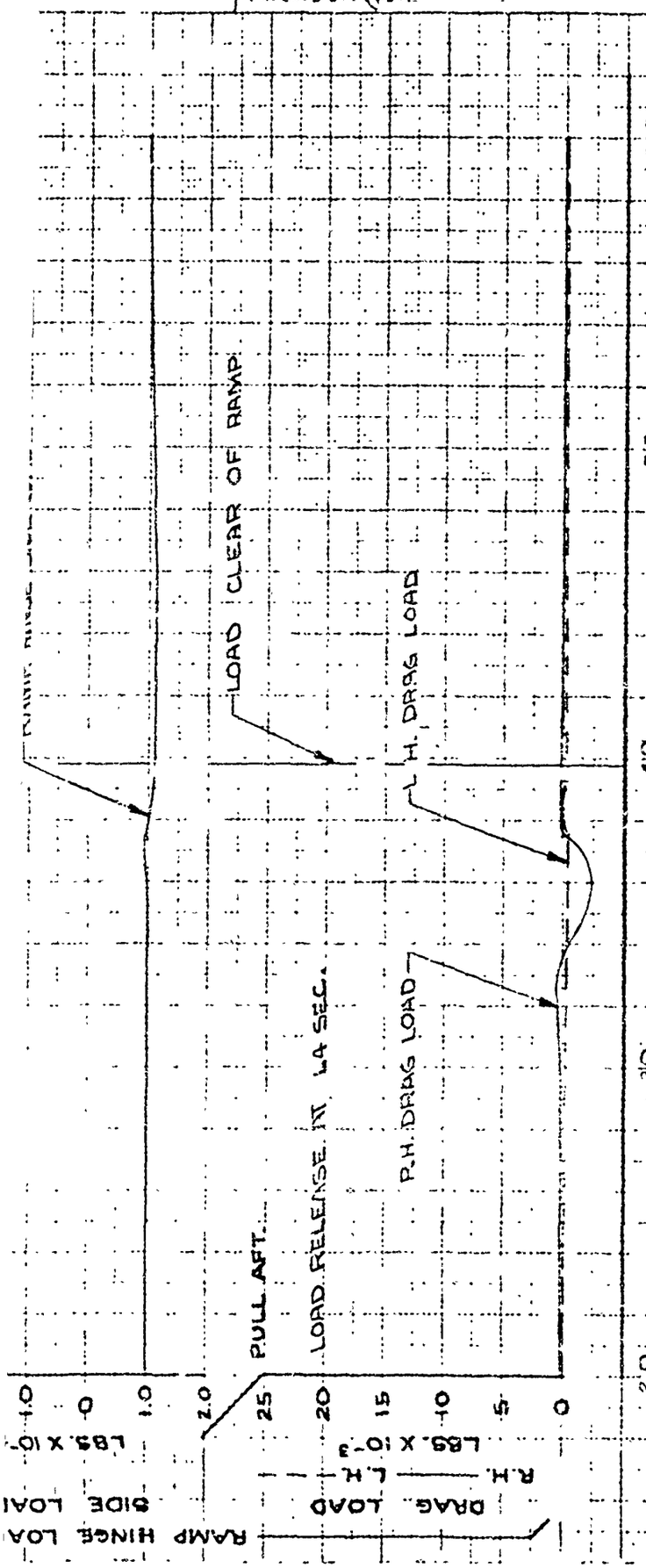


FIGURE D-4E

6C08
ADS-72E
L.H. PETAL DOOR ACT. LOAD
R.H. PETAL DOOR ACT. LOAD
My @ F.S. 1568
LOAD CLEAR OF RAMP
COMPRESSION
DOWN LOAD
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X10-3
LH
RH
VERTICAL BENDING ~ FS 1560
INCH-LBS X 10-6
JOB NO. ASS-SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 4-30-65

FLIGHT 117 DROP NO 14 R

SHEET 6 OF 7

CARGO WT. 27,450 LBS

NOTE:
SEE FIGURE D-14B SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

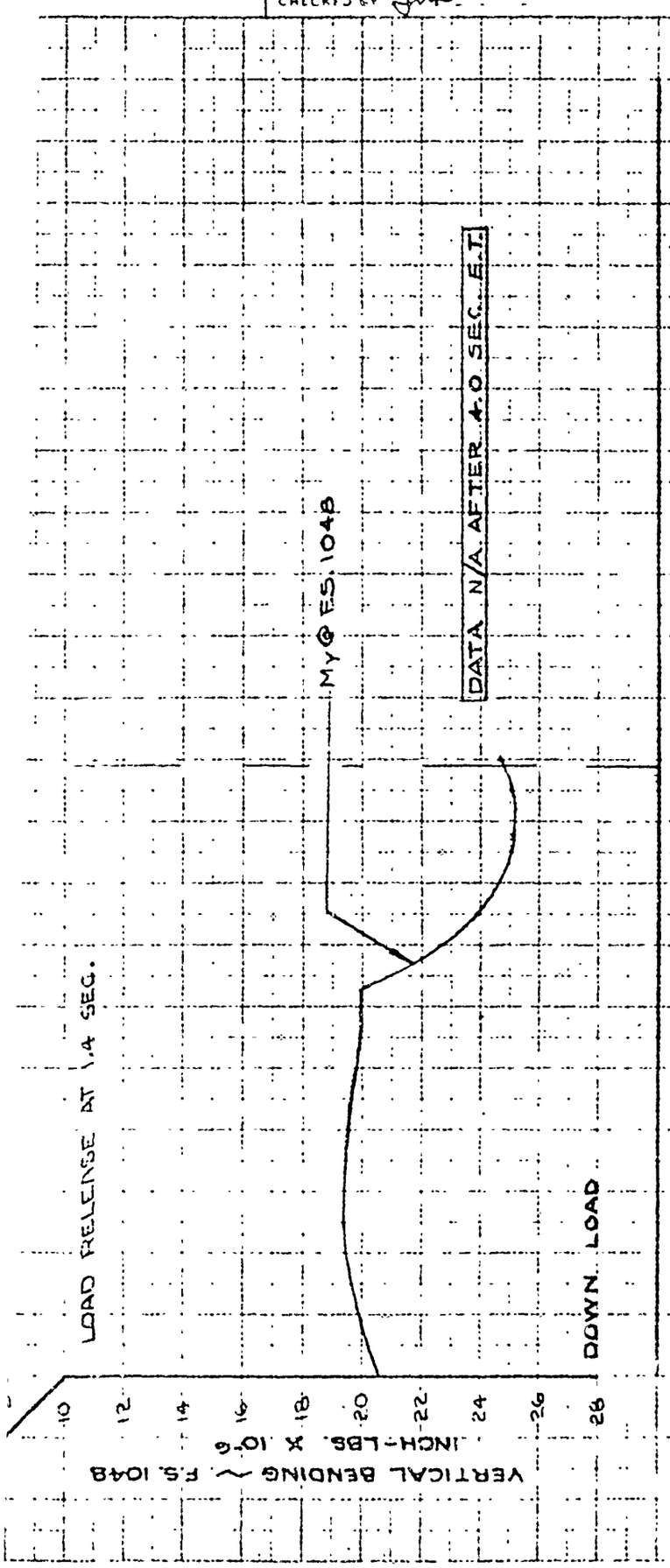


FIGURE D-14F

6008
ADS 72G
S'z @ HBL 44L
M'x @ HBL 44L
LOAD CLEAR OF RAMP
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
LOAD RELEASE AT 1.4 SEC.
2.0
1.5
1.0
.5
0
.5
1.0
1.5
2.0
-.5
4
LBS x 10-3
SHEAR @ HBL 44L ~ S'z
INCH-LBS x 10-6
BENDING @ HBL 44L ~ M'x
HORIZONTAL STABILIZER NET LOADS
JOB NO. ALS-55 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 4-30-65

FLIGHT 117 DROP NO. 14 R

SHEET 1 OF 1

CARGO WT. 27,450 LBS

NOTE:
SEE FIGURE 1 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

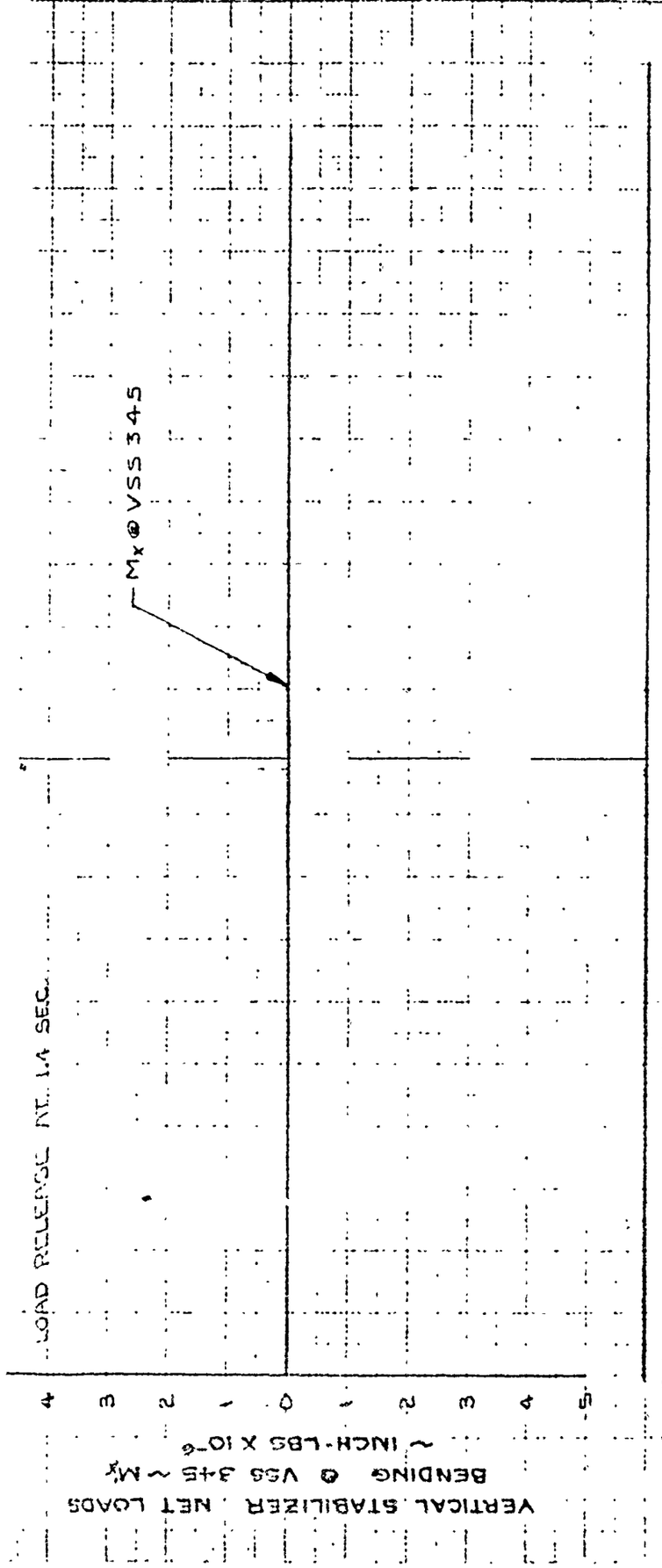


FIGURE D-14.G

6008
ADS 7321

LOAD CLEAR OF RAMP

LOAD RELEASE

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDE RATES ~ DEG/SEC

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDES ~ DEG

JOB NO. [illegible] SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE ~ 5-4-65

FLIGHT ~ 118 DROP NO. 15

SHEET 1 OF 7

CARGO WT 27930 LBS

RUN CONDITIONS

1. G.W. ~ 188100 LBS.
2. C.G. PRIOR TO DROP ~ 26.5% MAC
3. C.G. AFTER DROP ~ 30.0 % MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. ΔH ~ 0.8 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. 876
   VERT. ~ WL 179

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 15'
3. RATED CHUTE FORCE/CARGO WT. ~ 0.13
4. EXTRACTION LINE LENGTH ~ 100'

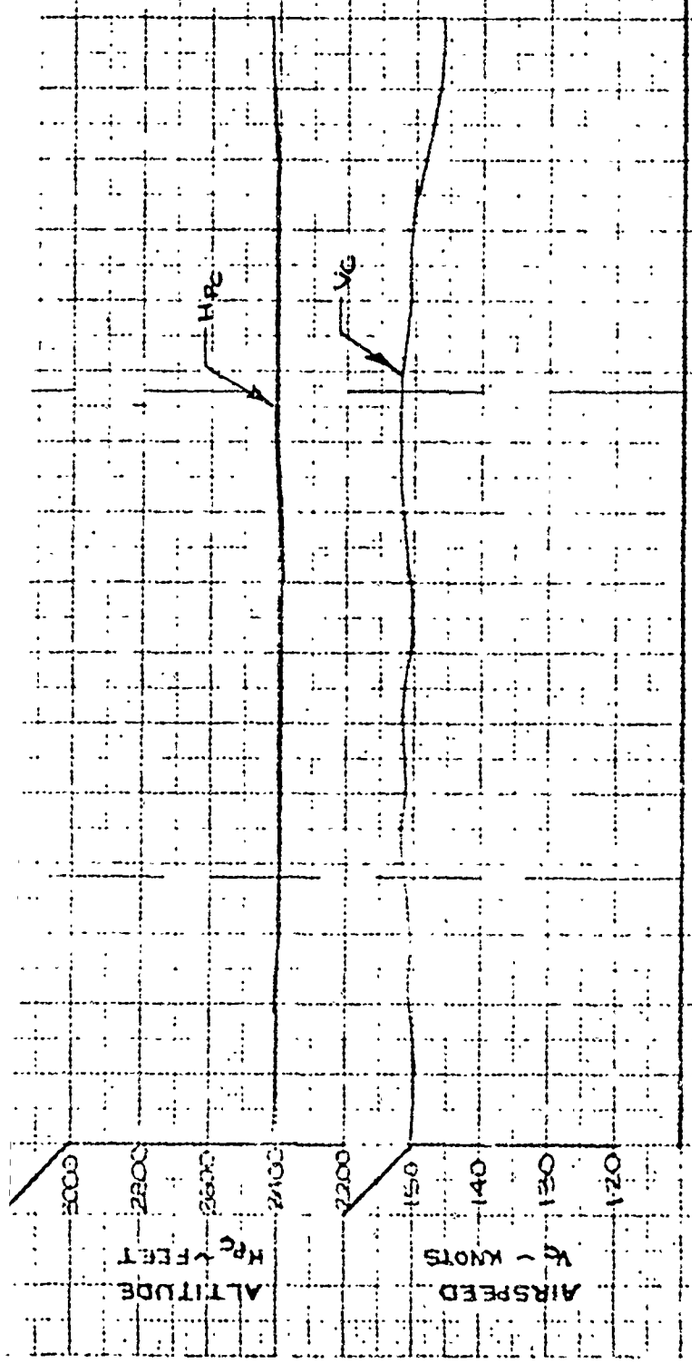


FIGURE D-IFA

GOOD
ADS 73B
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
CONTROL FORCES ~ LBS.
Fa
Fe
Fr
Fe
Fa
Fr
LOAD RELEASE
LOAD CLEAR OF RAMP
T.E. UP
20
15
10
5
0
5
10
15
LEFT AILERON POSITION ~ DEG.
Sal
T.E. LEFT
JOB NO. ADS 36 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 5-4-65

FLIGHT 118 DROP NO 15

SHEET 2 OF 7

CARGO WT 27930 LBS

NOTE:
SEE FIGURE 1 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

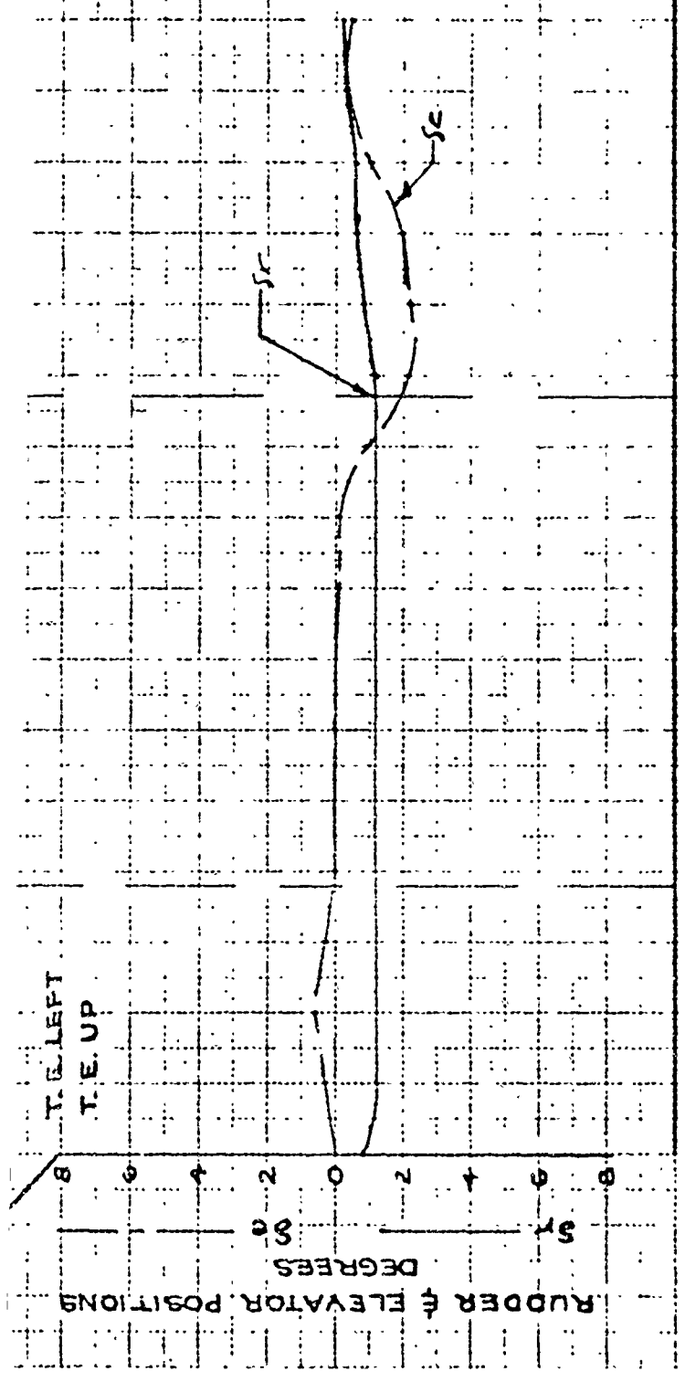


FIGURE D-15B

GOC8
ADS 73C

NOTE: $\ddot{\theta}$ CALCULATED FROM N_z DATA

LOAD CLEAR OF RAMP

LOAD RELEASE

N_z @ F.S. 1637

N_z @ F.S. 952 1.6

N_z @ F.S. 277

NOSE UP

UP ACCEL.

PITCHING ACCELERATION $\ddot{\theta}$ rad/sec²

40 20 0 20 40

TICAL ACCELERATIONS ~ g

3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6 1.4

N_z @ FS 277 — — — N_z @ FS 1637

JOB NO. AUG 88 SUB. CODE 4.2.1

T.E.D.
5-8-65

C-141A
D-90

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFGB-8077 LAC 6008

TEST DATE 5-4-65

FLIGHT ~ 118 DROP NO. 15

SHEET 3 OF 7

CARGO WT. 27930 LBS.

NOTE:
SEE FIGURE 1 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

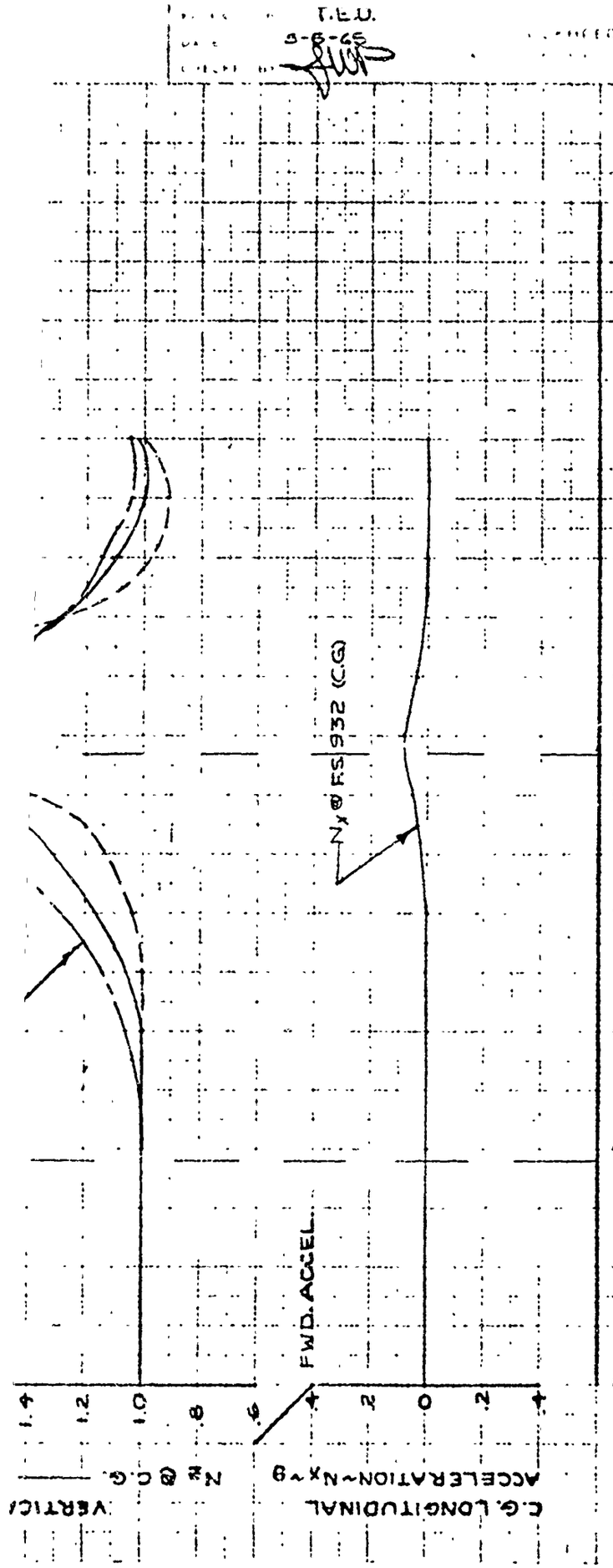


FIGURE D-15C

6008
ADS 730

6008
ADS 73D

RAMP UP

NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

LOAD ACCEL.

LOAD CLEAR OF RAMP

LOAD RELEASE

LOAD ACCELERATION

LOAD C.G. POSITION ~ FUS. STA.

JOB NO ADS 73 SUB CODE 1.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

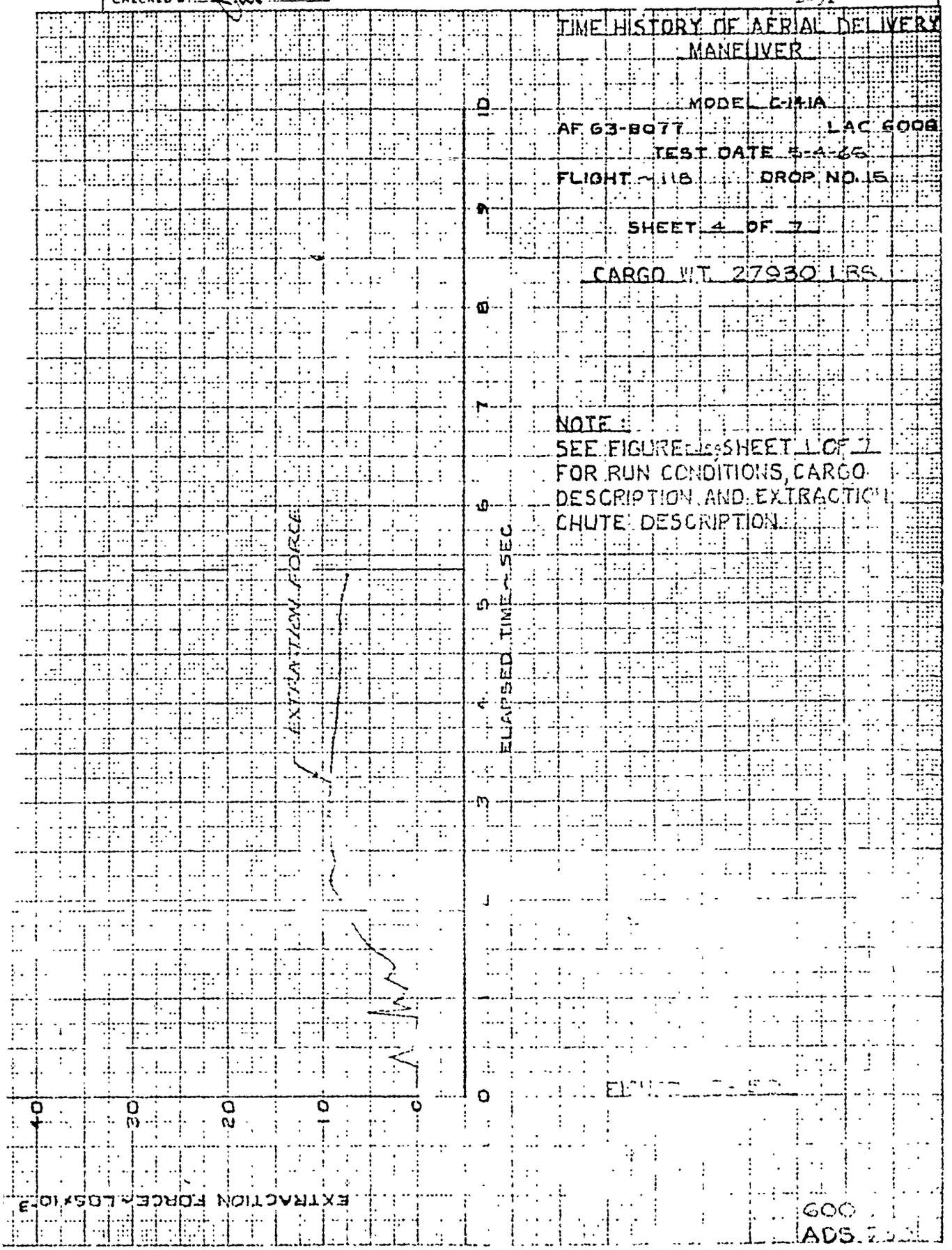
TEST DATE 5-A-66

FLIGHT 118 DROP NO. 15

SHEET 4 OF 7

CARGO WT. 27930 LBS

NOTE:
SEE FIGURE 1, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.



600
ADS

6008-ADS
73E

JOB NO. ADS 66 SUB. CODE 4.2.1

RAMP ACTUATOR LOAD
LBS. X 10-3
R.H. L.H.
4 2 0 2 4
TENSION
R.H.

ADS LINK AXIAL LOAD
LBS X 10-3
R.H. L.H.
30 20 10 0
TENSION
L.H. SPIDER ARM LOAD
LOAD CLEAR OF RAMP

VERTICAL LOAD
LBS X 10-3
R.H. L.H.
15 10 5 0
PULL DOWN
L.H. RAMP HINGE VERT. LOAD
R.H. SPIDER ARM LOAD

INGE LOADS
SIDE LOAD
LBS X 10-3
2.0 1.0 0
PULL RIGHT
R.H. RAMP HINGE VERT. LOAD
RAMP HINGE SIDE LOAD

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 5-5-65

FLIGHT ~ 18 DROP NO. 15

SHEET 5 OF 7

CARGO WT. 27,980 LBS

NOTE:
SEE FIGURE D-15A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

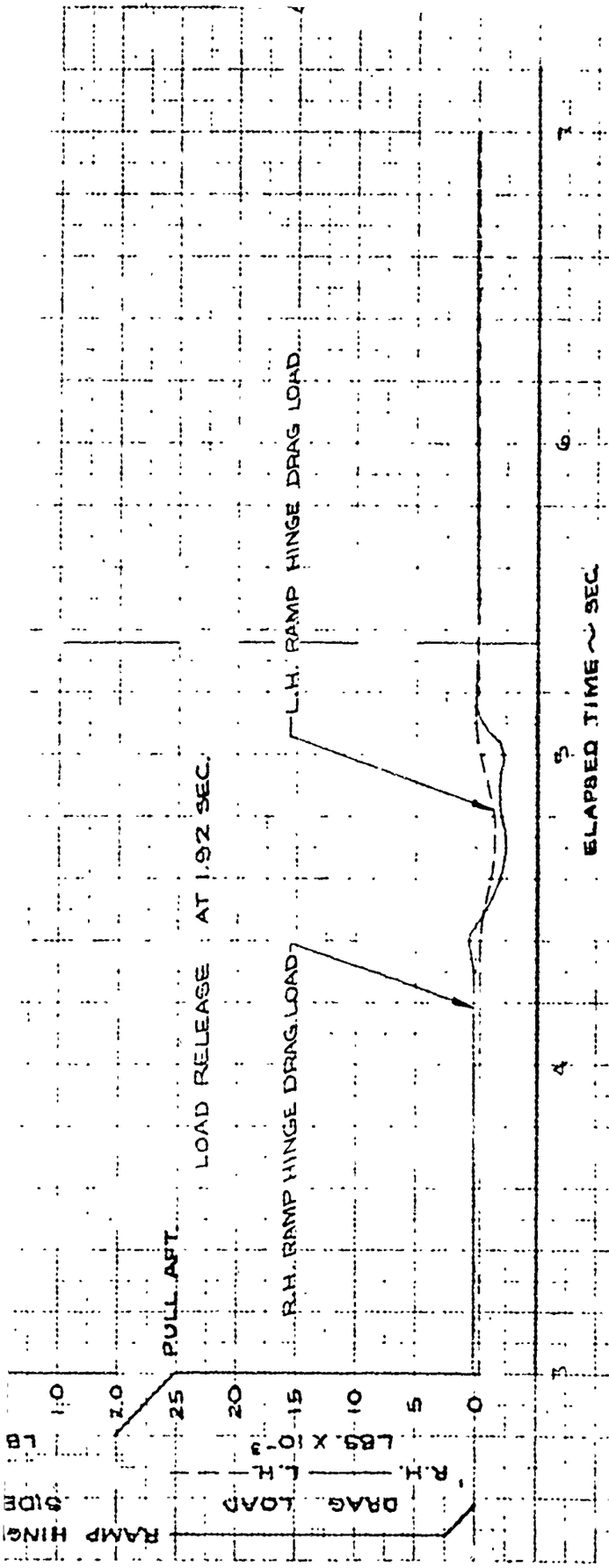


FIGURE D-15E

6008
ADS-73E

6008
ADS 78E
PETAL DOOR ACTUATOR RCD
PART NO. ASSY SUB CODE 4.2.1
LOAD — LBS X 10-3
RH
LH
VERTICAL BENDING — FS 1500
INCH-LBS. X 10-6
COMPRESSION
DOWN LOAD
L.H. PETAL DOOR ACTUATOR
R.H. PETAL DOOR ACTUATOR
MAX @ F.S. 1500

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 5-5-65

FLIGHT~118 DROP NO 15

SHEET 6 OF 7

CARGO WT. 27,930 LBS

NOTE:
SEE FIGURE D-15A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

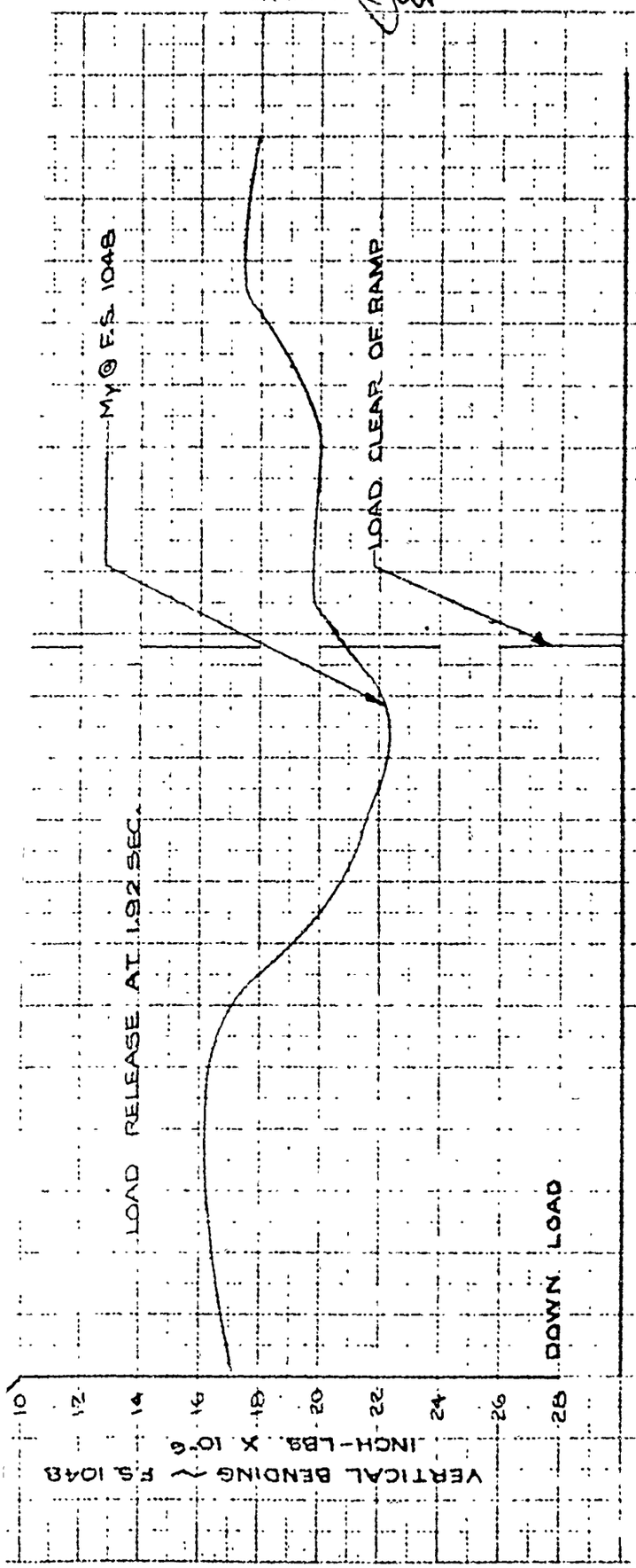


FIGURE D-15F

6008
ADS 73G

S'_z @ HBL 44L

M'_x @ HBL 44L

M'_x @ VSS 345

HORIZONTAL STABILIZER NET LOADS

SHEAR @ HBL 44L ~ S'_z
LBS x 10^{-3}

BENDING @ HBL 44L ~ M'_x
INCH - LBS x 10^{-6}

M'_x
LOADS

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

JOB NO. ADS 338 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

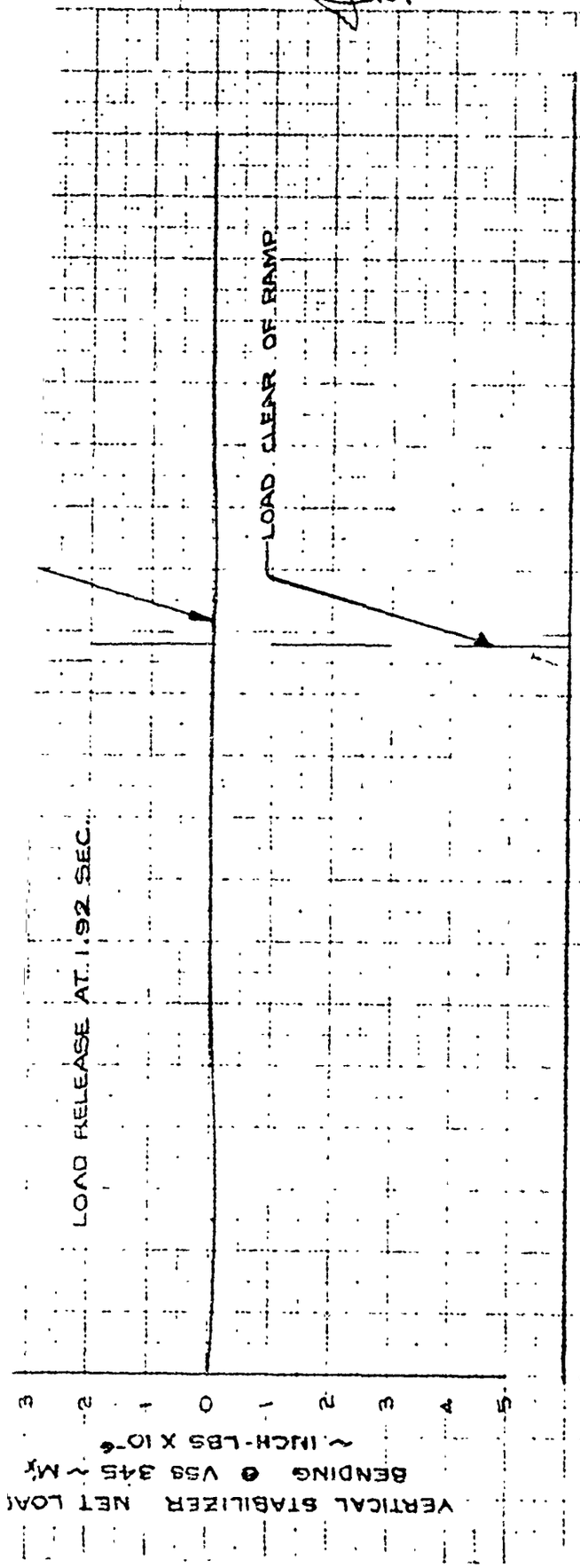
AF63-8077 LAC 6008

TEST DATE: 5-4-65

FLIGHT-118 DROP NO. 15

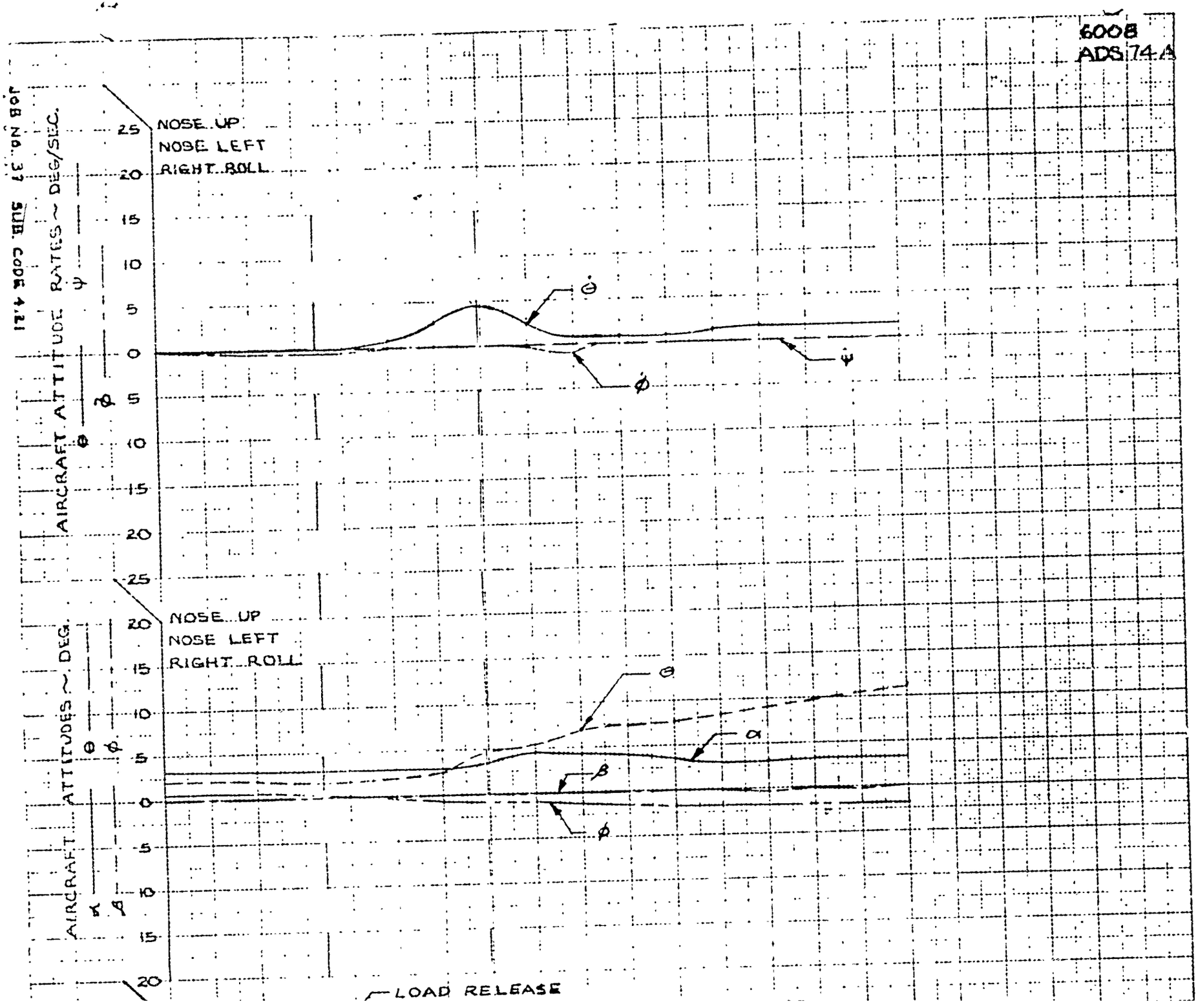
SHEET 7 OF 7

CARGO WT. 27,930 LBS



NOTE:
SEE FIGURE D-15A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-15G


6008
ADS 74A
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
25
20
15
10
5
0
5
10
15
20
25
θ
φ
ψ
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDES ~ DEG.
20
15
10
5
0
5
10
15
20
θ
α
β
φ
LOAD RELEASE

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE ~ 5-5-65

FLIGHT ~ 119 DROP NO. ~ 16

SHEET 1 OF 7

CARGO WT. 29,250 LBS

RUN CONDITIONS

1. G.W. ~ 188,200 LBS
2. C.G. PRIOR TO DROP ~ 26.3 % MAC
3. C.G. AFTER DROP ~ 29.8 % MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.26 (4 ENGINES)
7. Δ_H ~ 1.7 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 24 FT
3. CARGO C.G. POSITIONS
   LONG. ~ FS 879
   VERT. ~ WL 180

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT
3. RATED CHUTE FORCE/CARGO WT. ~ 1.3
4. EXTRACTION LINE LENGTH ~ 100 FT

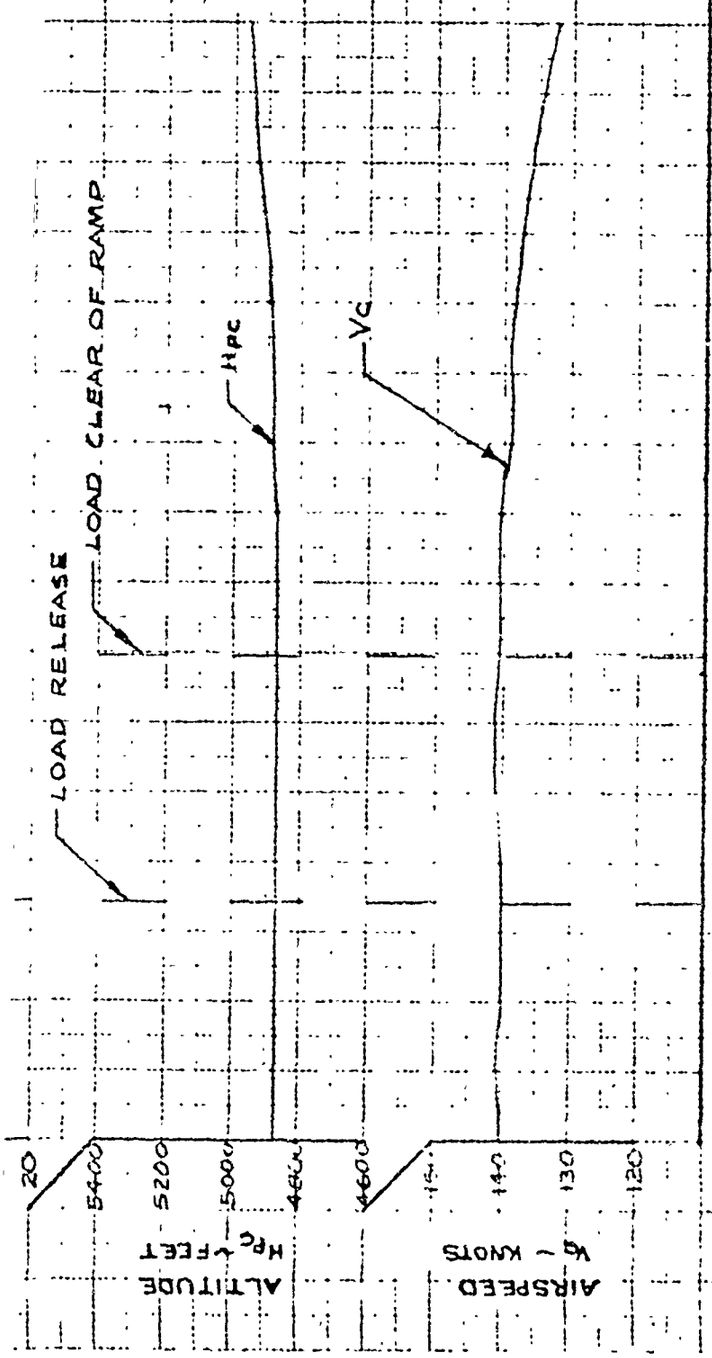


FIGURE D-16A

6008
ADS 74A

REVISED 12-14-65 MRM

6008
ADS 748

JOB NO. 37 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE - 5-5-65

FLIGHT - 119 DROP NO - 16

SHEET 2 OF 7

CARGO WT 29,250 LBS

NOTE:
SEE FIGURE D-1C SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

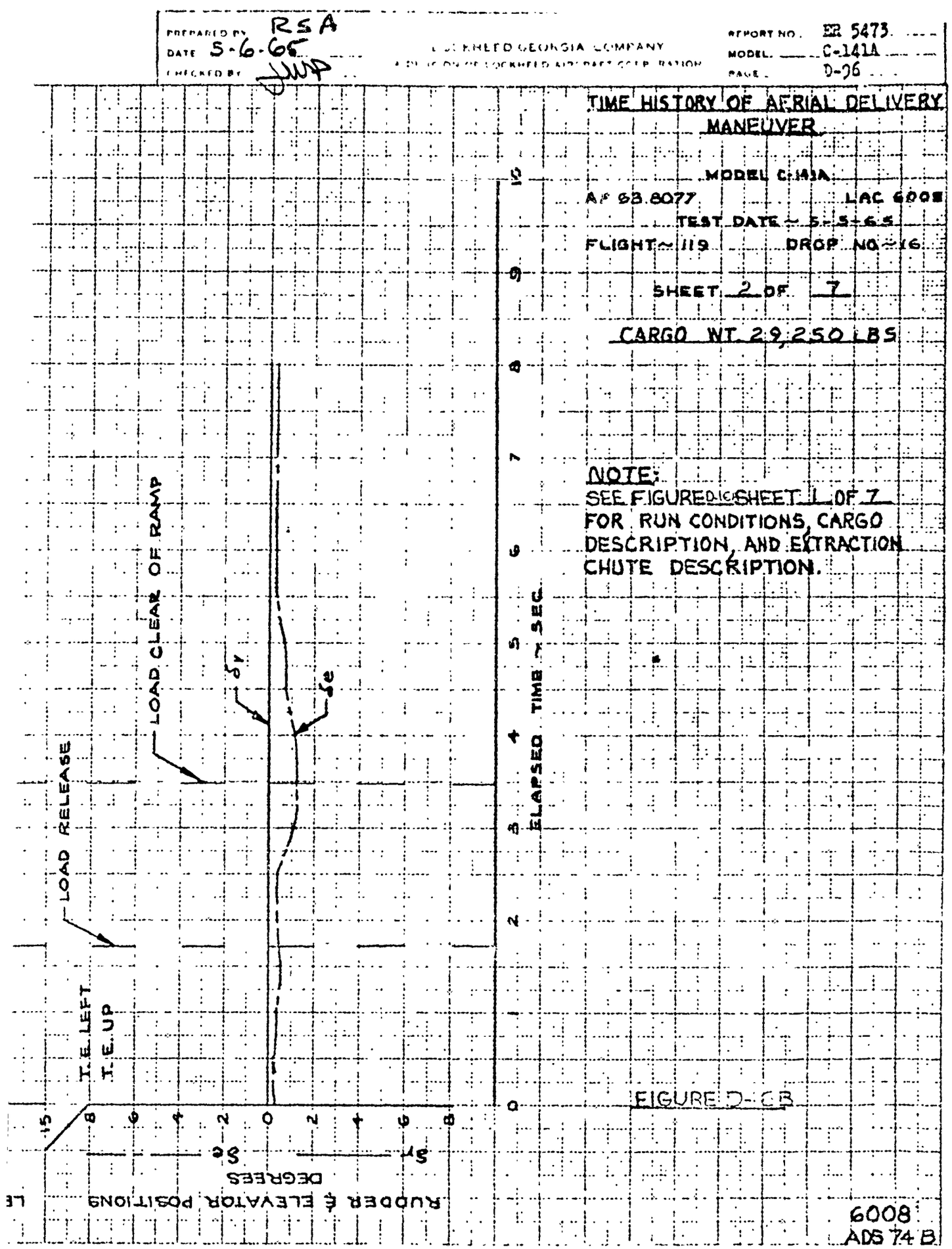


FIGURE D-CB

6008
AD3-74C
NOTE:
⊙ CALCULATED FROM N_z DATA.
⊙
LOAD RELEASE
LOAD CLEAR OF RAMP
N_z @ FS 1637
N_z @ FS 932 (C.G.)
N_z @ FS 277
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
PITCHING ACCELERATION DEG/SEC.²
ACCELERATIONS ~ g
N_z @ FS 277 — — — N_z @ FS 1637 — — —
JOB NO. 37 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 5-5-65

FLIGHT ~ 119 DROP NO. ~ 16

SHEET 3 OF 7

CARGO WT 29,250 LBS

NOTE:
SEE FIGURE D-16 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

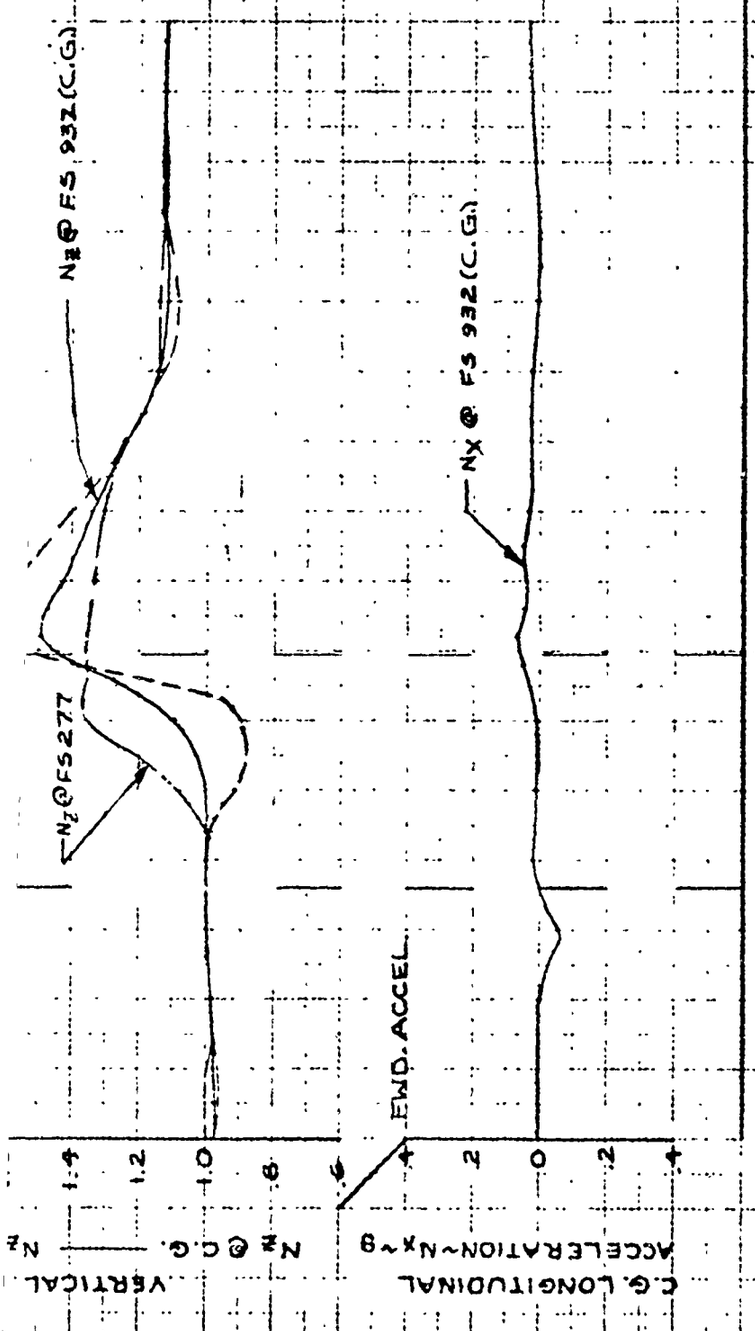


FIGURE D-16C

6006
AD3740

JOB NO. 37. SUB. CODE 4.21

MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 5-5-65

FLIGHT ~ 119 DROP NO. ~ 16

SHEET 4 OF 7

CARGO WT 29,250 LBS

NOTE :
SEE FIGURE 6168 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

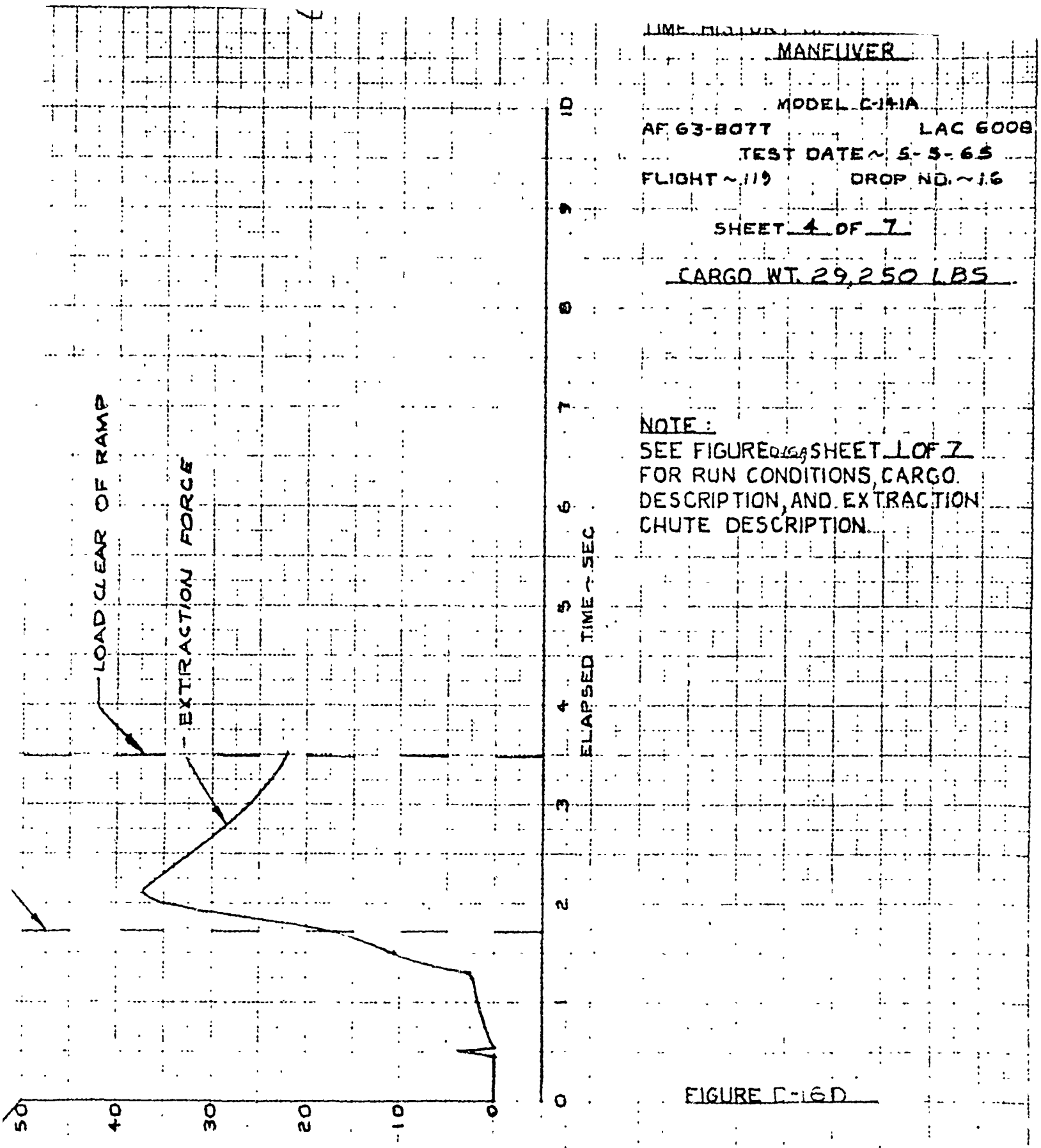


FIGURE C-16D

6008
ADS 74.D

PREPARED BY TED

CONTRACT NO. ER 5473

MODEL C-141A

6008
ADS-74E
L.H. ACTUATOR
R.H. ACTUATOR
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
L.H. VERT. LOAD
R.H. VERT. LOAD
SIDE LOAD
TENSION
TENSION
DOWN LOAD
PULL RIGHT
RAMP ACTUATOR LOAD
LBS. X 10-3
ADS LINK AXIAL LOAD
LBS X 10-3
VERTICAL LOAD
LBS X 10-3
R.H.
L.H.
4
2
0
2
4
30
20
10
0
15
10
5
0
2.0
JOB NO. 37 SUB. CODE 4.2.1

PREPARED BY TED
DATE 5-6-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-99

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

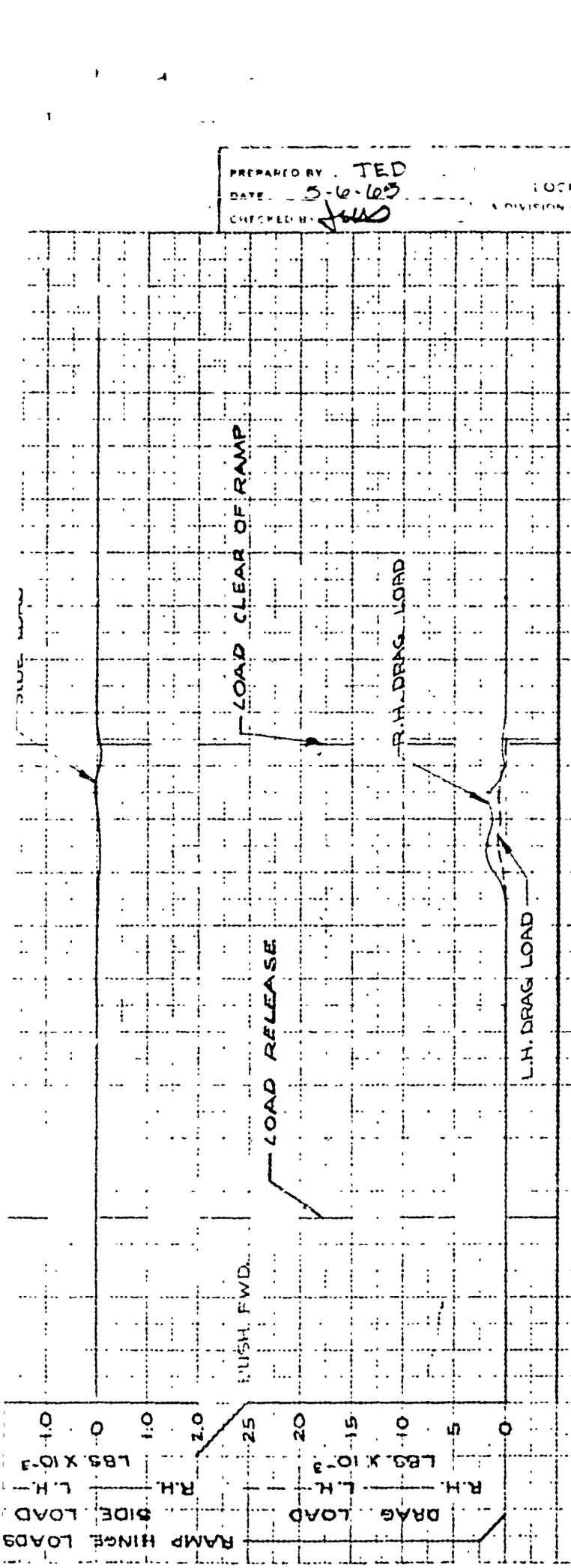
AF 63-8077 LAC 6008

TEST DATE: 5-5-65

FLIGHT 119 DROP NO 16

SHEET 5 OF 7

CARGO WT 29,250 LBS



NOTE:
SEE FIGURE 1 OF SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE [illegible]

6008
ADS-74-E
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X10-3
RH
LH
VERTICAL BENDING ~ FS 1560
INCH-LBS. X 10-6
COMPRESSION
DOWN LOAD
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
MY @ F.S. 1568
MY @ F.S. 1048
JOB NO. 37 SUB. CODE 4.2.1

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-100

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-8077 LAC 6008

TEST DATE: 5-5-65

FLIGHT 119 DROP NO. 16

SHEET 6 OF 7

CARGO WT. 29,250 LBS

NOTE:
SEE FIGURE D-16A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

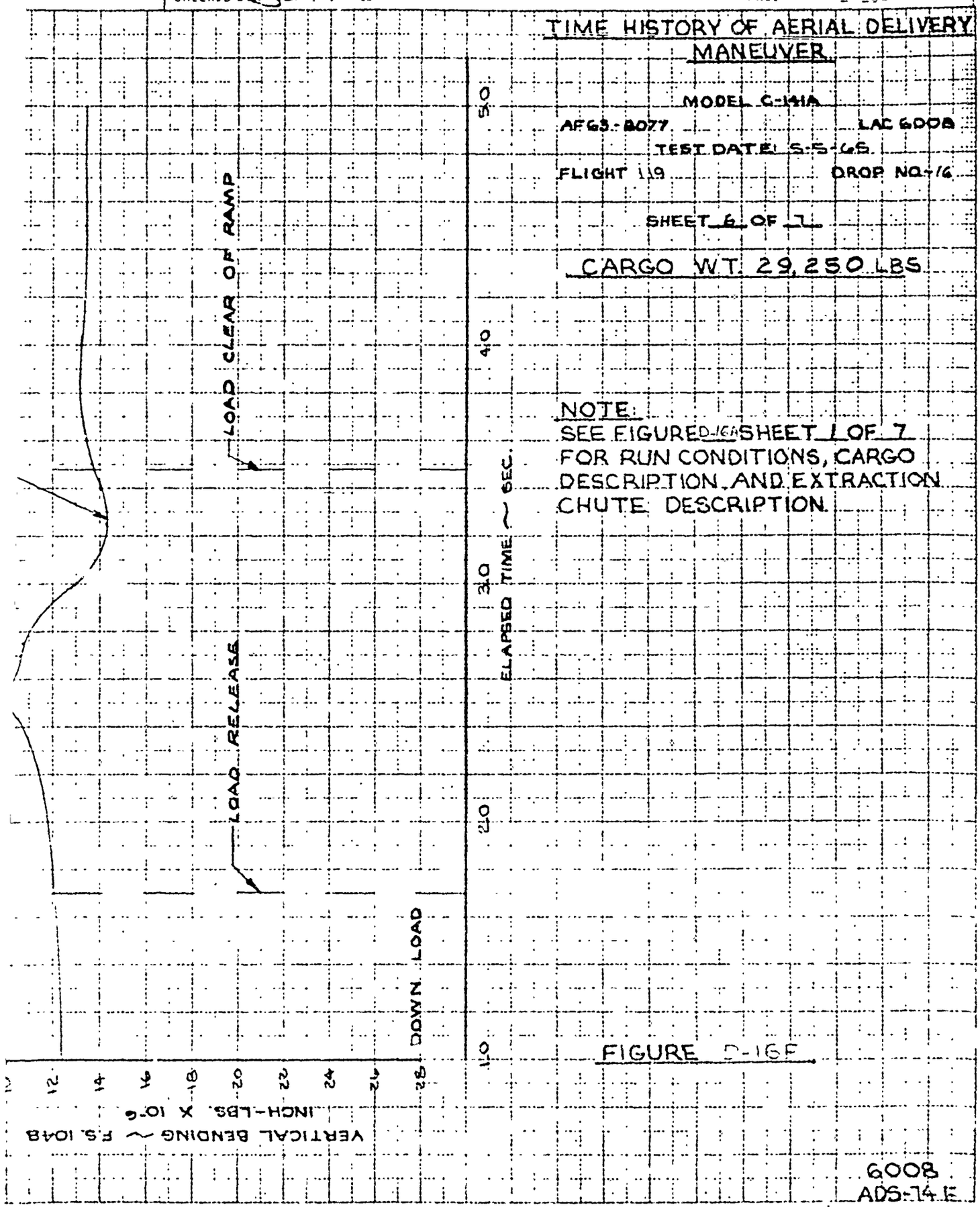


FIGURE D-16F

008
409-74-15
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'x
INCH - LBS x 10-6
SHEAR @ HBL 44L ~ S'z
LBS x 10-3
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
LOAD RELEASE
LOAD CLEAR OF RAMP
S'z @ HBL 44L
M'x @ HBL 44L
M'x @ VSS 345
JOB NO. 37 SUB. CODE 4.2.1
DS

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 5-5-65

FLIGHT 119 DROP NO. 16

SHEET 1 OF 7

CARGO WT. 29,250 LBS

NOTE:
SEE FIGURE D-16 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

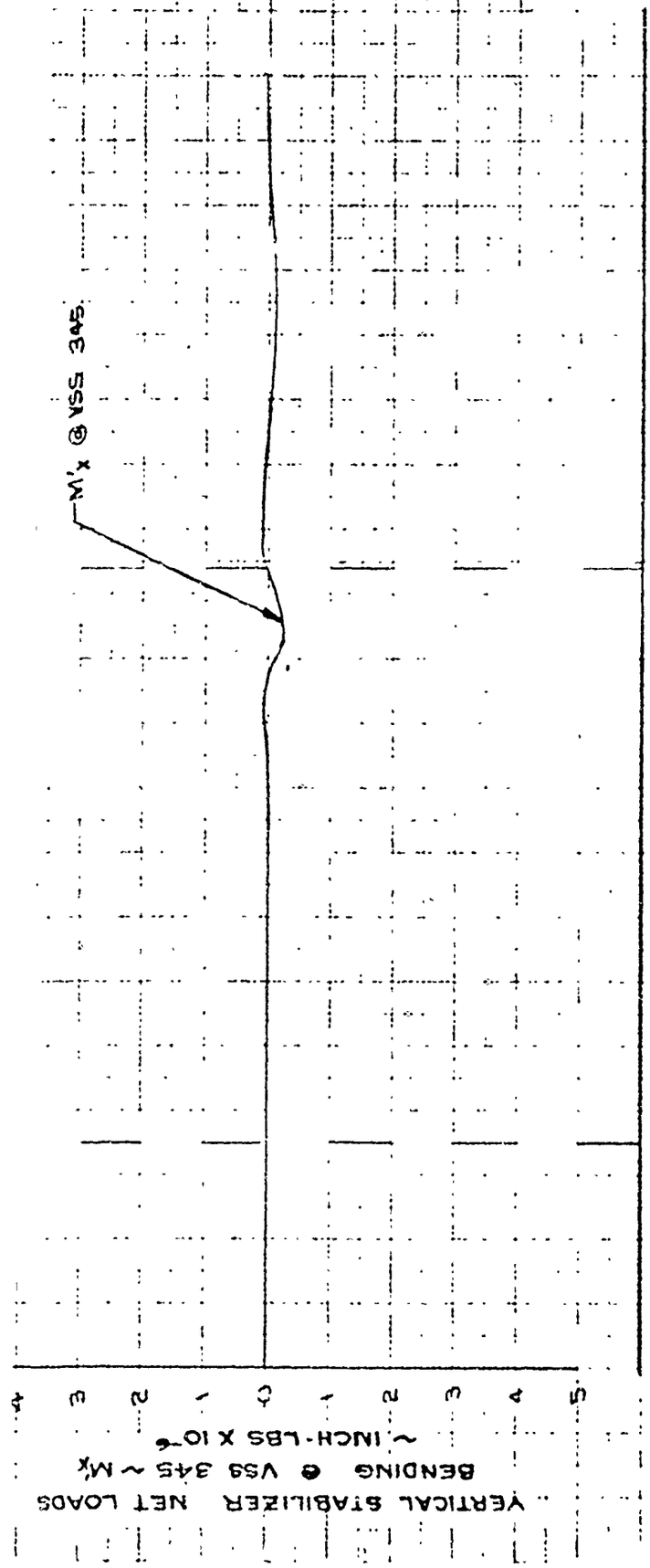


FIGURE D-66

6008
ADS 75 A
AIRCRAFT ATTITUDES ~ DEG
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
20
15
10
5
0
5
10
15
θ
φ
ψ
Φ
δ
δ
Φ
Φ ~ N.A.
LOAD CLEAR OF RAMP
JOB NO. 0-3 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 600B

TEST DATE ~ 5-6-65

FLIGHT 120 DROP NO. 11

SHEET 1 OF 7

CARGO WT. 32,030 LBS

RUN CONDITIONS

1. G.W. 191,600 LBS
2. C.G. PRIOR TO DROP ~ 25.9 % MAC
3. C.G. AFTER DROP ~ 29.8 % MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR 1.30
7. γ_H ~ 1.5 DEG (A/C N.O.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 268 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S 877
   VERT. ~ WL 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 26 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.19
4. EXTRACTION LINE LENGTH ~ 100 FT.

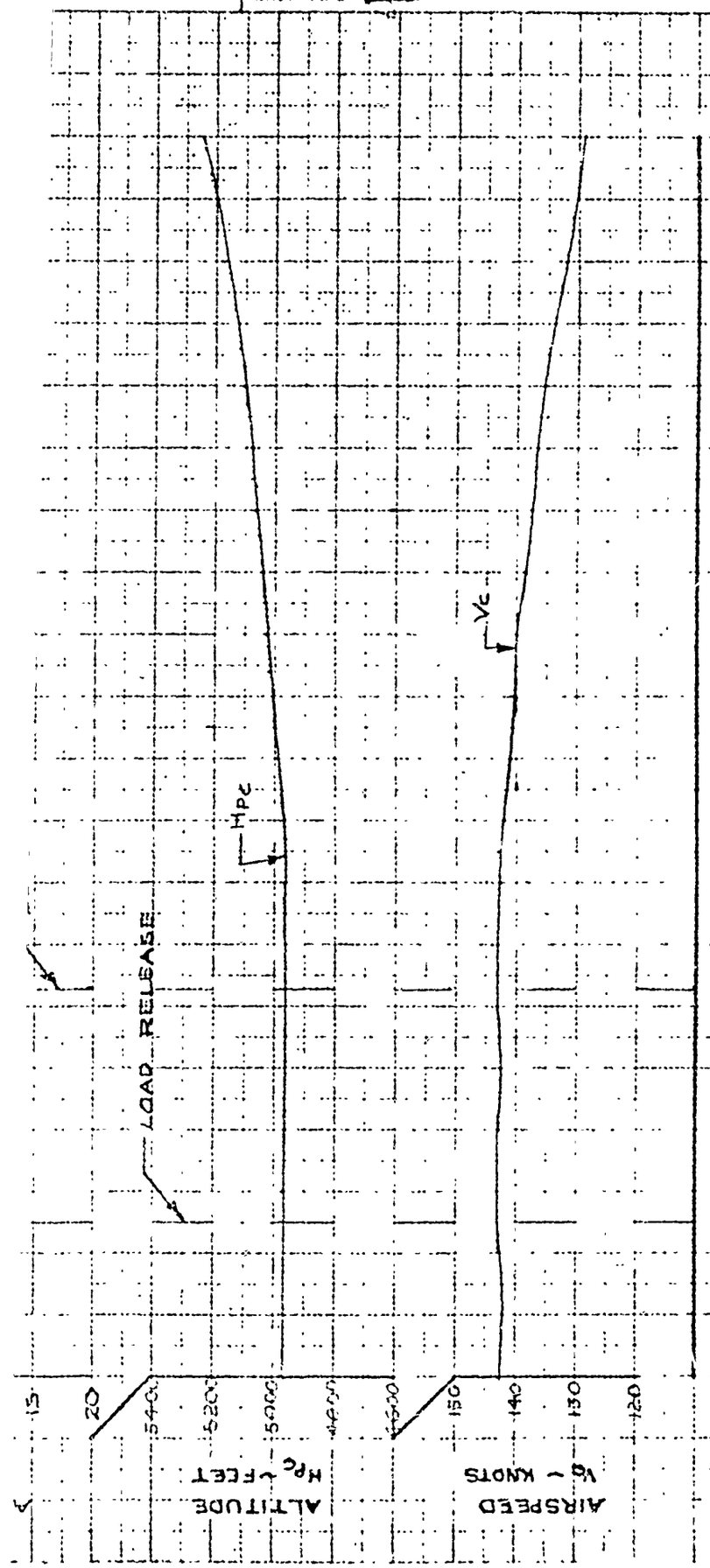


FIGURE D-17A

600B
ADS 75A

REVISED 12-14-65 MBH

6008
ADS 25B
RIGHT ROLL
PUSH LEFT
PULL
TE UP
70 60 50 40 30 20 10 0 10 20 30 10 20 15 10 5 0 5 10
CONTROL FORCES ~ LBS.
ELT AILERON POSITION ~ DEG
JOB NO.
SUB. CODE

CHECKED BY

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE

FLIGHT 120 DROP NO 17

SHEET 2 OF 7

CARGO WT 32,030 LBS

NOTE:
SEE FIGURE 2A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

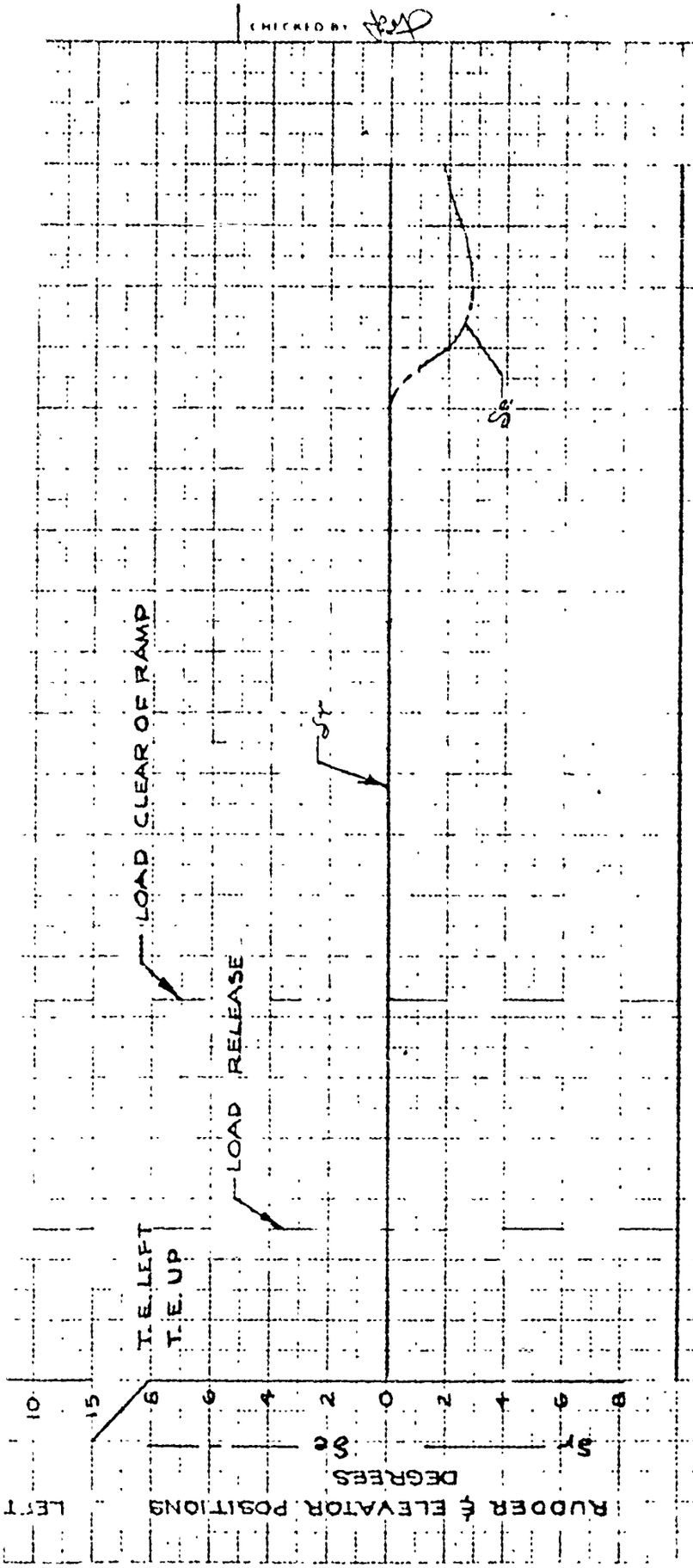


FIGURE D-17B

6008
ADS-75C

NOTE:
① CALCULATED FROM N_z DATA

N_z @ F.S. 277

N_z @ F.S. @ F.S. 932 (C.G.)

N_z @ F.S. 1637

NOSE UP

UP ACCEL

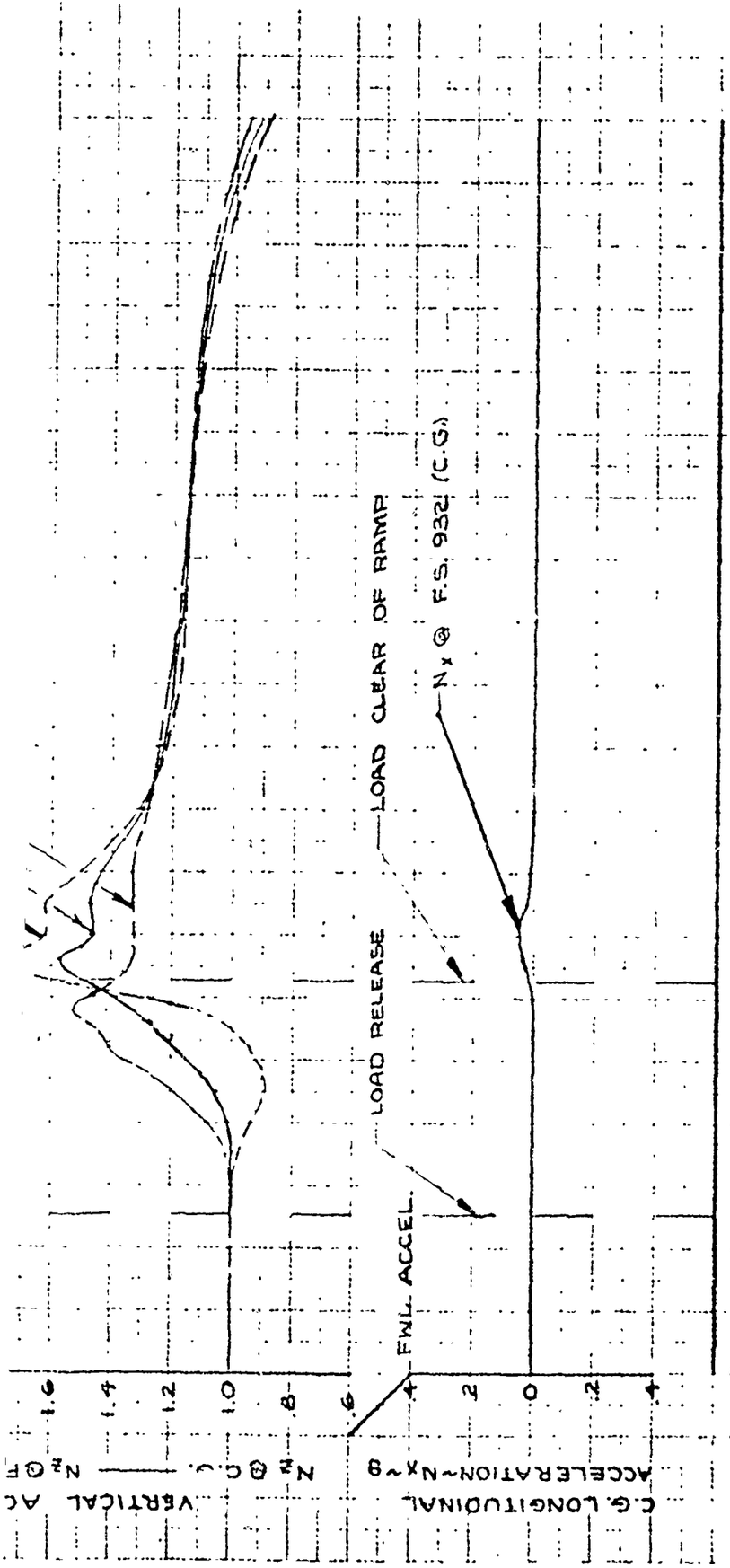
40 20 0 20 40 3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6

PITCHING ACCELERATION ① DEG/SEC.²

ACCELERATIONS ~ g

n_z GFS 277 —— N_z FS 1637 ——

JOB NO. 38 SUB. CODE 4.2.1



MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 5-6-65

FLIGHT ~ 120 DROP NO ~ 17

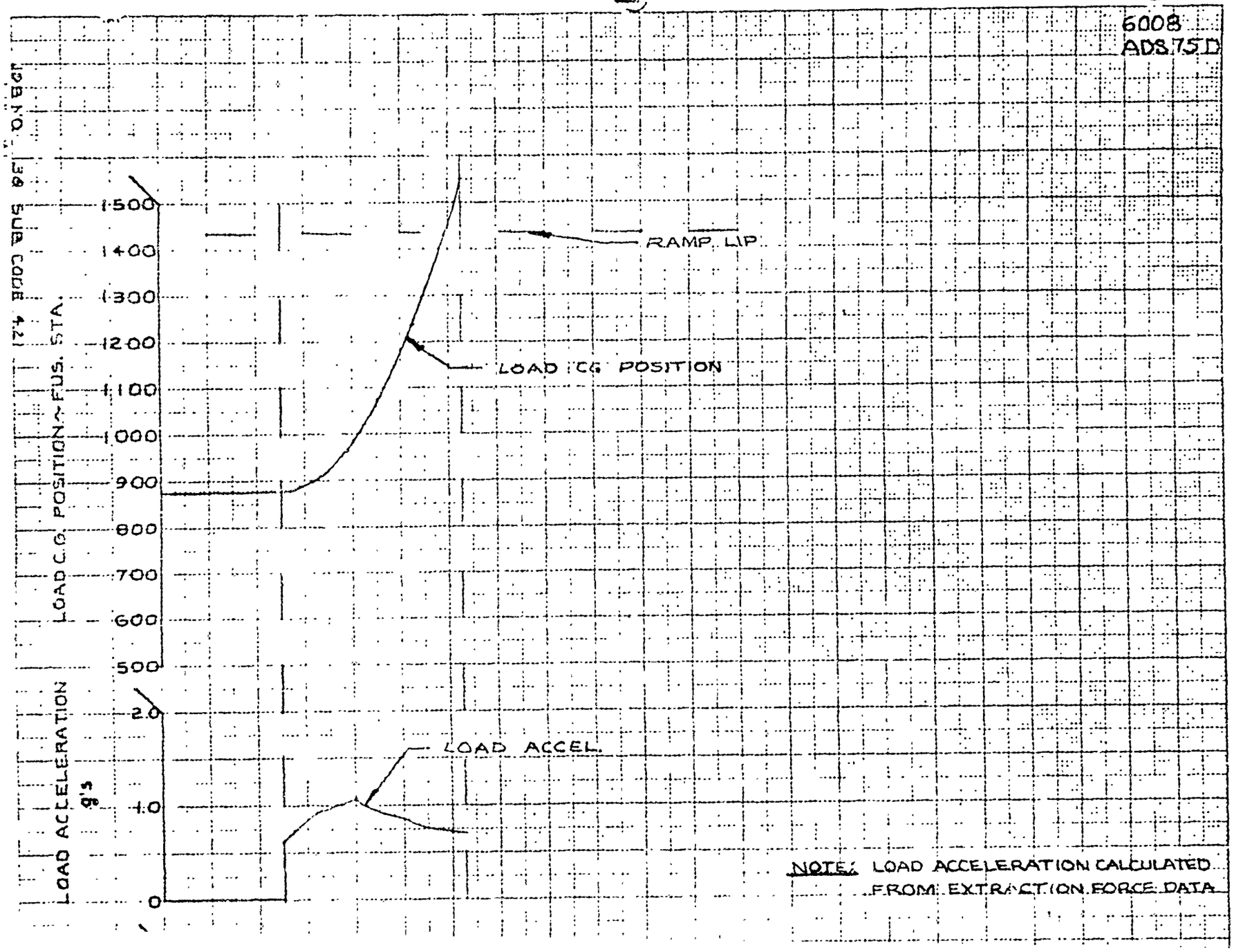
SHEET 3 OF 7

CARGO WT. 32,030 LBS

NOTE:
SEE FIGURE D-17A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-17C

6008
ADS-75C


6008
ADS 75 D
JOB NO. 38 SUB CODE 421
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD C.G. POSITION
LOAD ACCELERATION g's
2.0
1.0
0
LOAD ACCEL.
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 5-6-65

FLIGHT ~ 120 DROP NO. ~ 17

SHEET 4 OF 7

CARGO WT. 32,080 LBS.

NOTE:
SEE FIGURE D-12, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

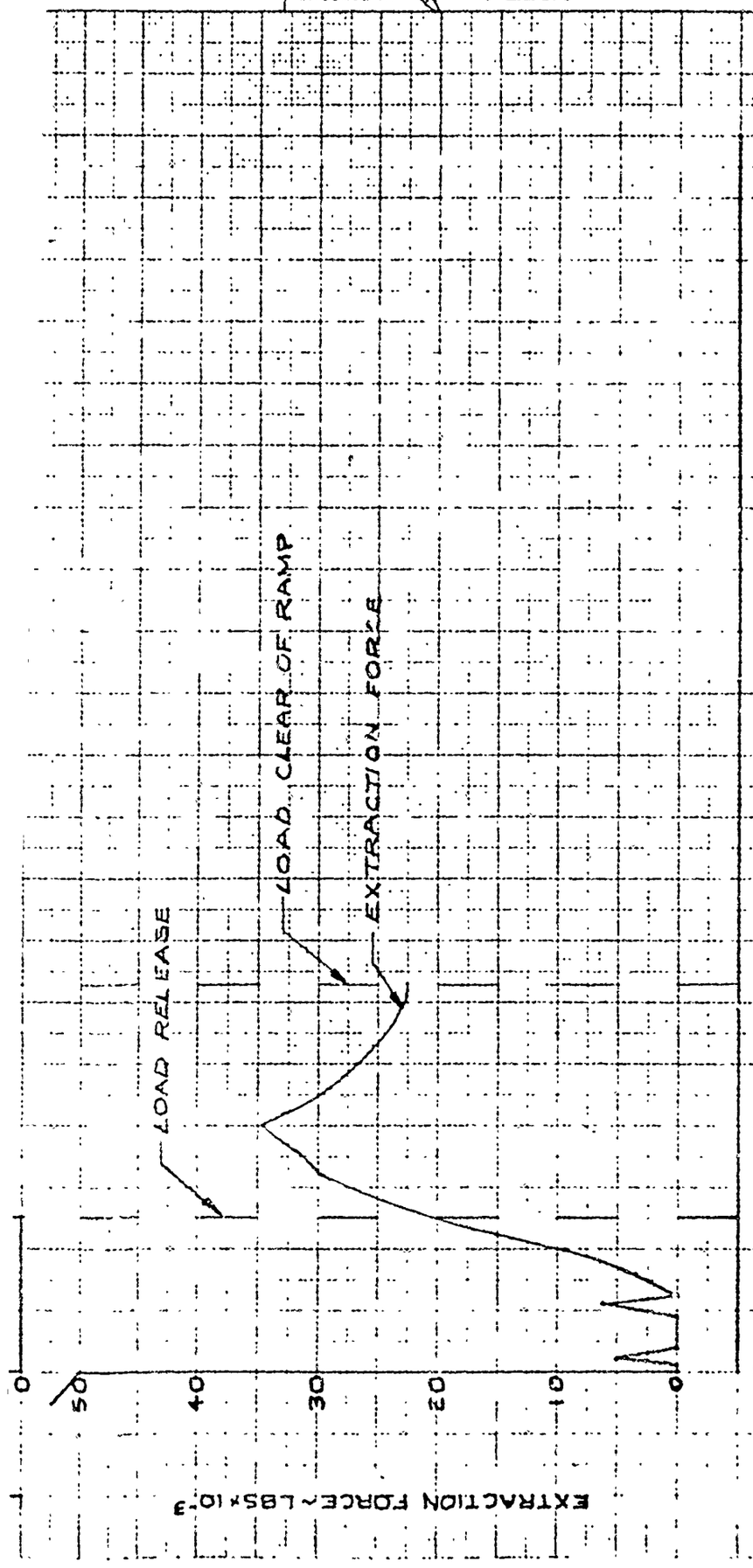
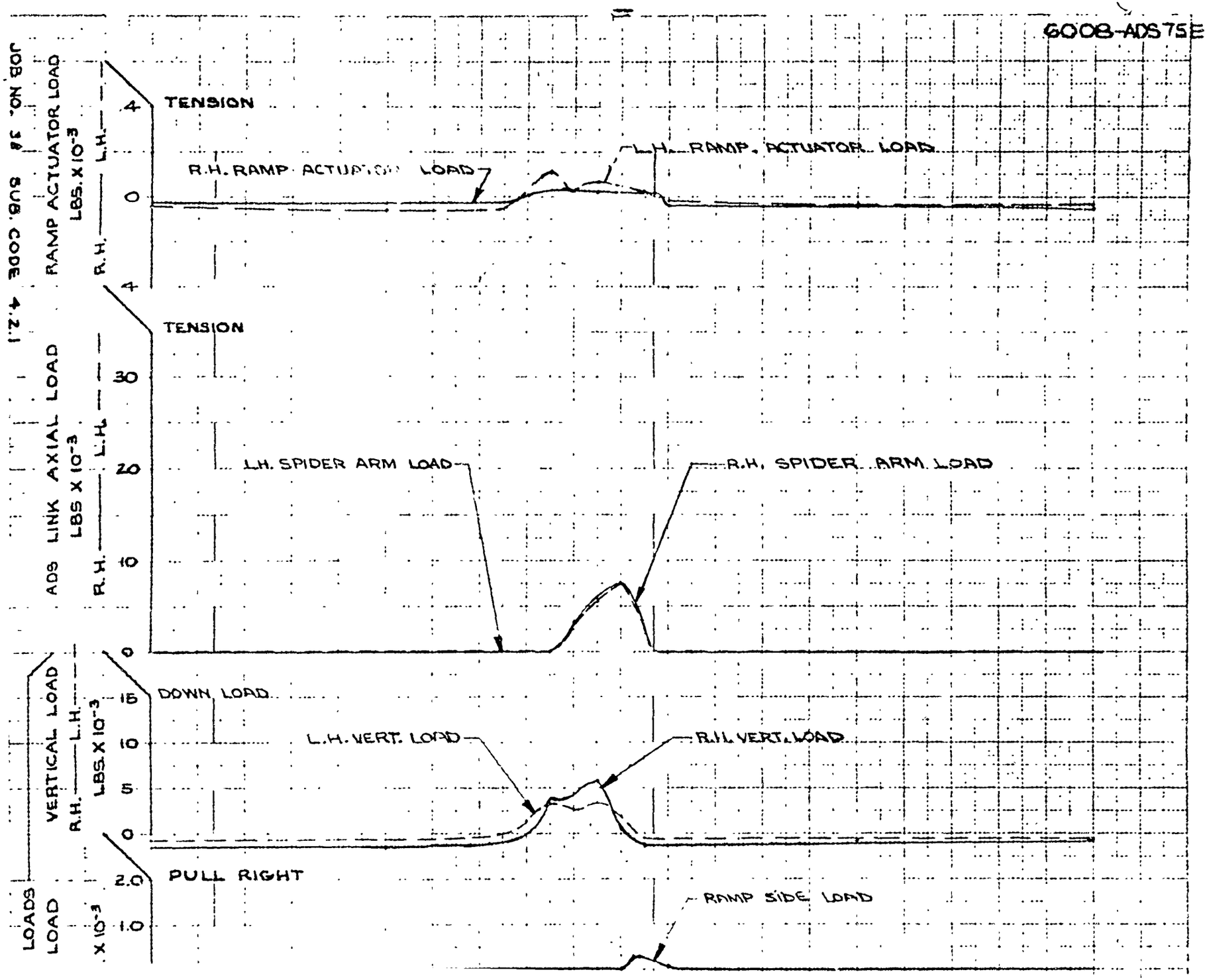


FIGURE D-17D

6008-ADS75E


RAMP ACTUATOR LOAD LBS. X 10⁻³
R.H. L.H.
4
0
4
TENSION
R.H. RAMP ACTUATION LOAD
L.H. RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD LBS X 10⁻³
R.H. L.H.
30
20
10
0
TENSION
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
VERTICAL LOAD R.H. L.H. LBS. X 10⁻³
15
10
5
0
DOWN LOAD
L.H. VERT. LOAD
R.H. VERT. LOAD
LOADS
LOAD X 10⁻³
2.0
1.0
PULL RIGHT
RAMP SIDE LOAD

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 5-6-65

FLIGHT ~ 120 DROP NO. 17

SHEET 5 OF 7

CARGO WT. 32,030 LBS.

NOTE:
SEE FIGURE D-7A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

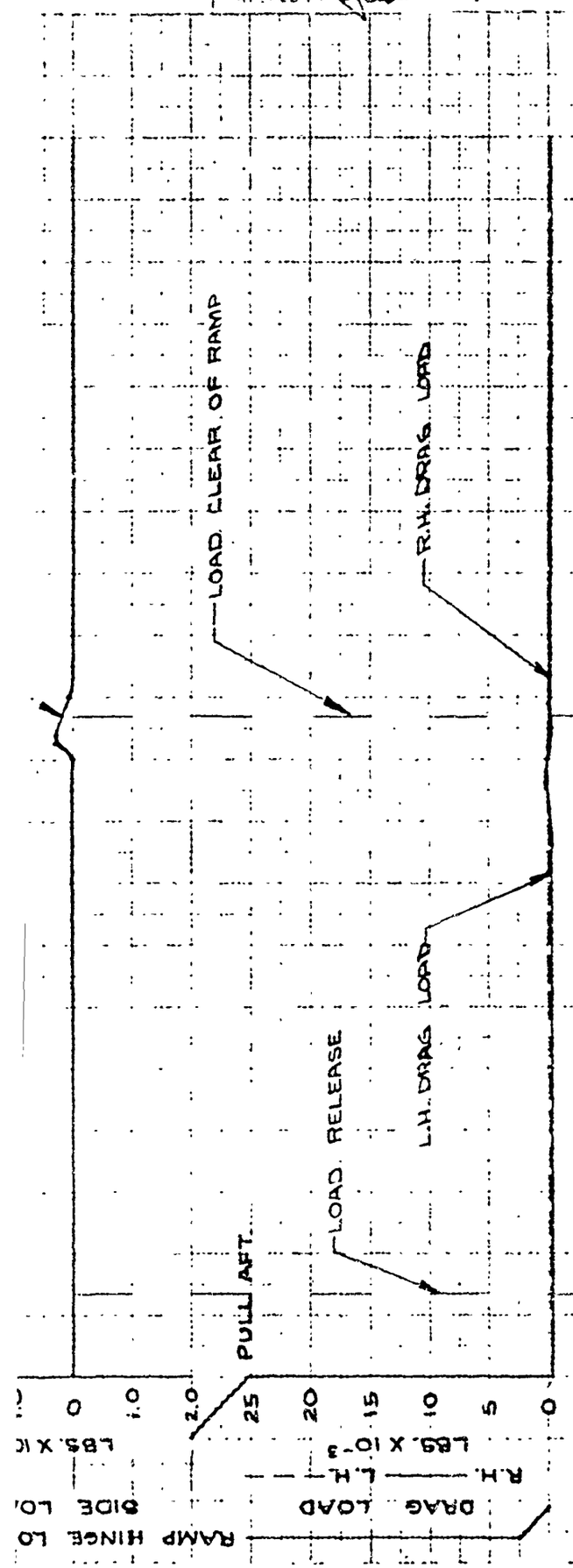


FIGURE D-17E

6008
ADS-75E
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
LOAD CLEAR OF RAMP
LOAD RELEASE
COMPRESSION
DOWN LOAD
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10-3
RH
LH
VERTICAL BENDING ~ FS 1560
INCH-LBS. X 10-6
JOB NO. 30 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 5-6-65

FLIGHT~ 120 DROP NO~17

SHEET 6 OF 7

CARGO WT. 32,030 LBS.

NOTE:
SEE FIGURE D-17A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

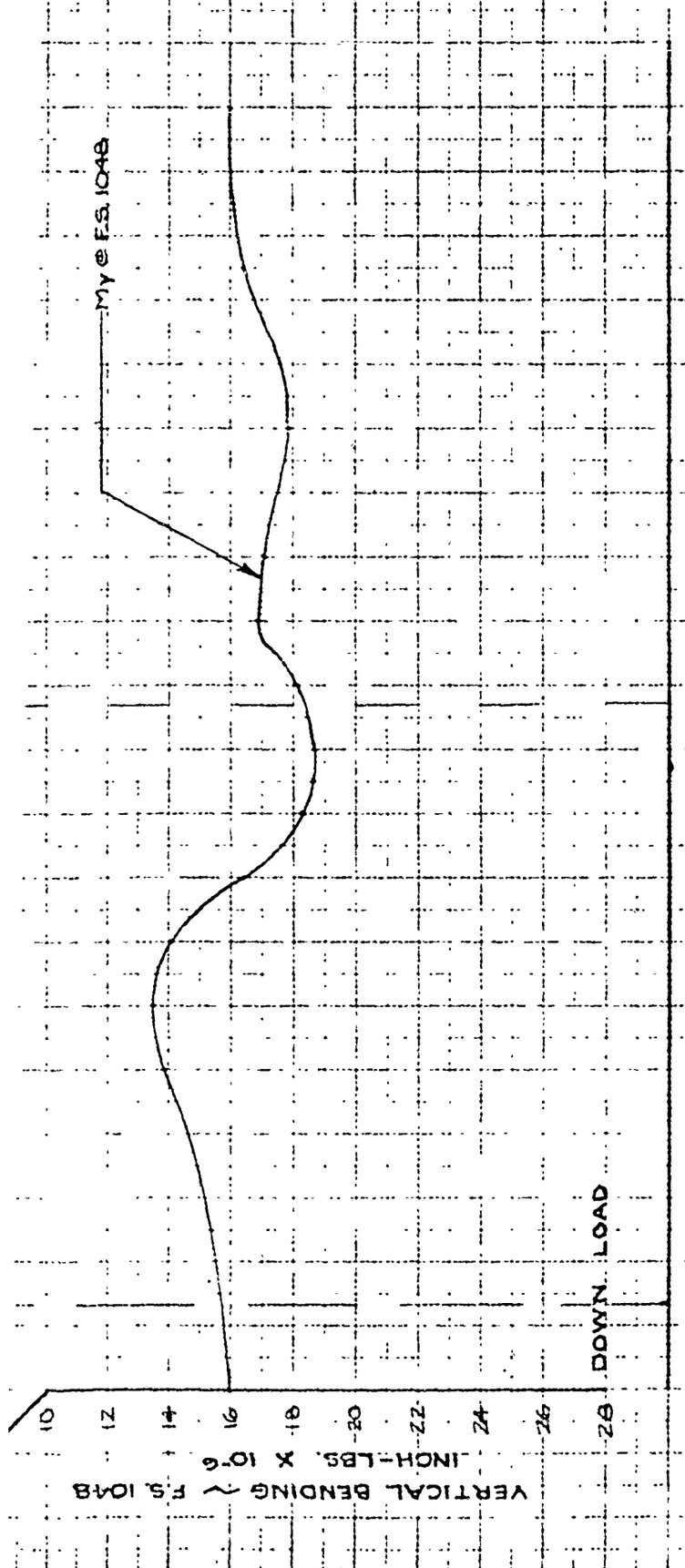


FIGURE D-17F

GOOD
ADS 75G

JOB NO. 38 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF68-8077 LAC 6008

TEST DATE: 5-6-65

FLIGHT ~ 120 DROP NO. ~ 17

SHEET 7 OF 7

CARGO WT. 32,030 LBS.

NOTE:
SEE FIGURE D-17A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

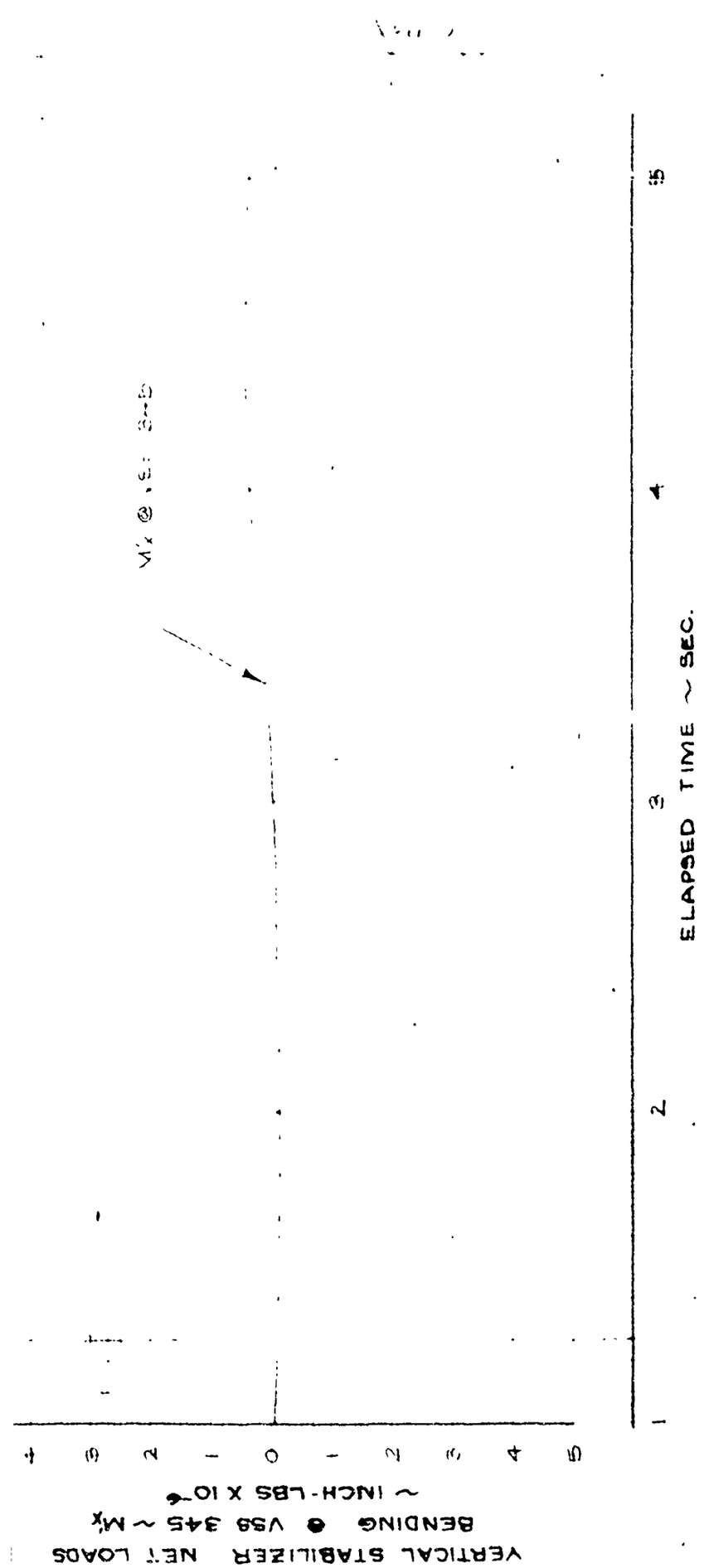


FIGURE D-17G

6008-MB-3

NOTE:
1. GW ~ 180,000 LBS. (APPROX)
2. CG ~ NA
3. FLAPS ~ 26 DEG.
4. ΔH ~ -0.3 DEG. (A/C N.D.)
5. FAT ~ 6.0 °C.

EXTRACTION FORCE
1 ~ 22' CHUTE ~ 80' EXT. LINE

AVERAGE EPR (4 ENGINES)

T.E. UP

NOSE UP

EXTRACTION CHUTE DRAG LOAD ~ TENSION ~

ENGINE PRESSURE RATIO

ELEVATOR POSITION ~ DEGREES

JOB NO. [illegible] 4.2.1

Best Available Copy

PREPARED BY RSA
DATE 5-11-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER-5473
MODEL C-141A
PAGE D-109

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 5-6-65

FLIGHT 121 DROP NO. 16

SHEET 1 OF 7

CARGO WT 35,560 LBS

RUN CONDITIONS

1. G.W. ~ 191,100 LBS.
2. C.G. PRIOR TO DROP ~ 22.6 % MAC
3. C.G. AFTER DROP ~ 29.6 % MAC
4. FLAPS ~ 65 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.25 (4 ENGINES)
7. ΔH ~ 0.3 DEG (A/C NU)

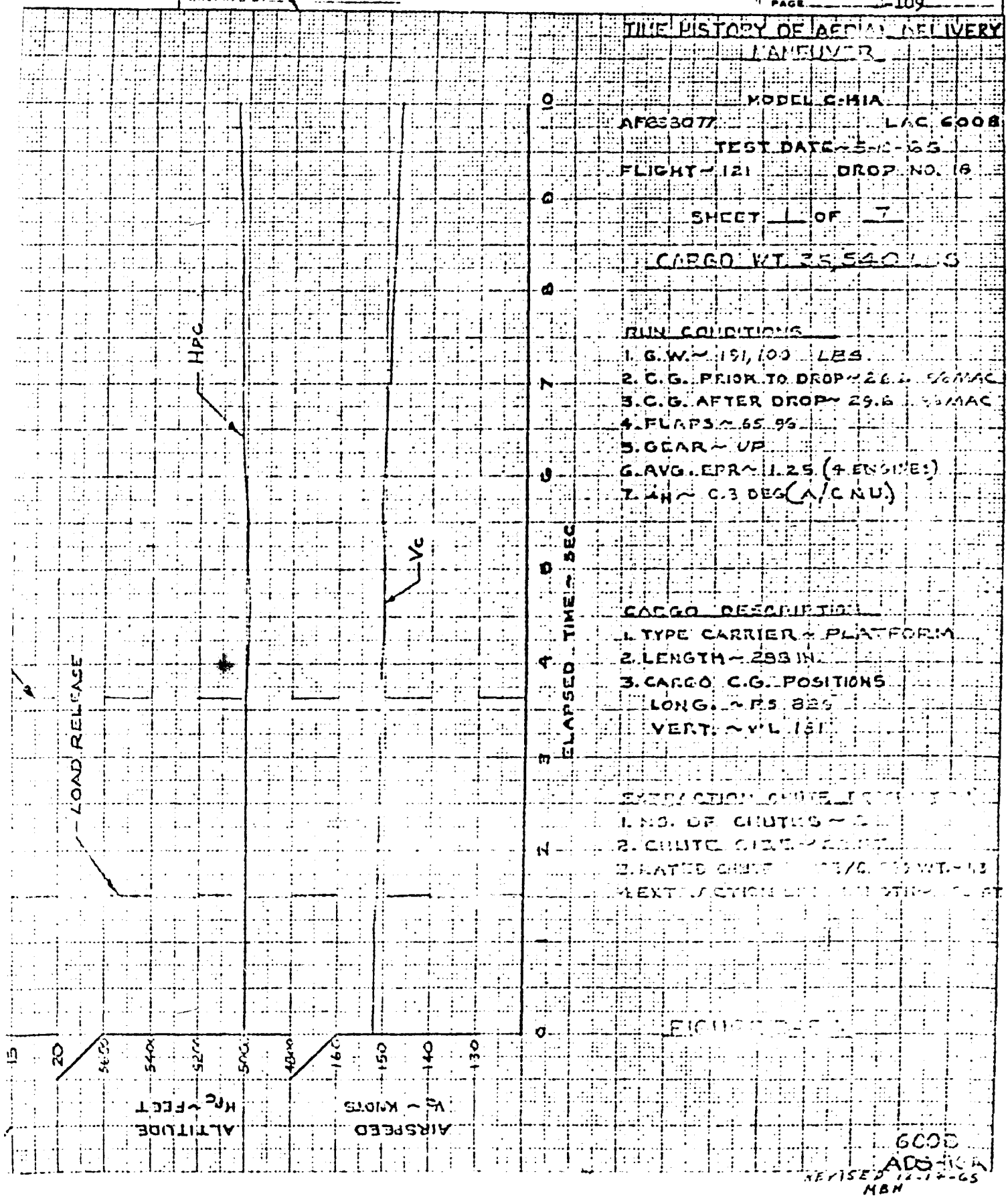
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 828
   VERT. ~ WL 151

EXTRACTION CHUTE [illegible]

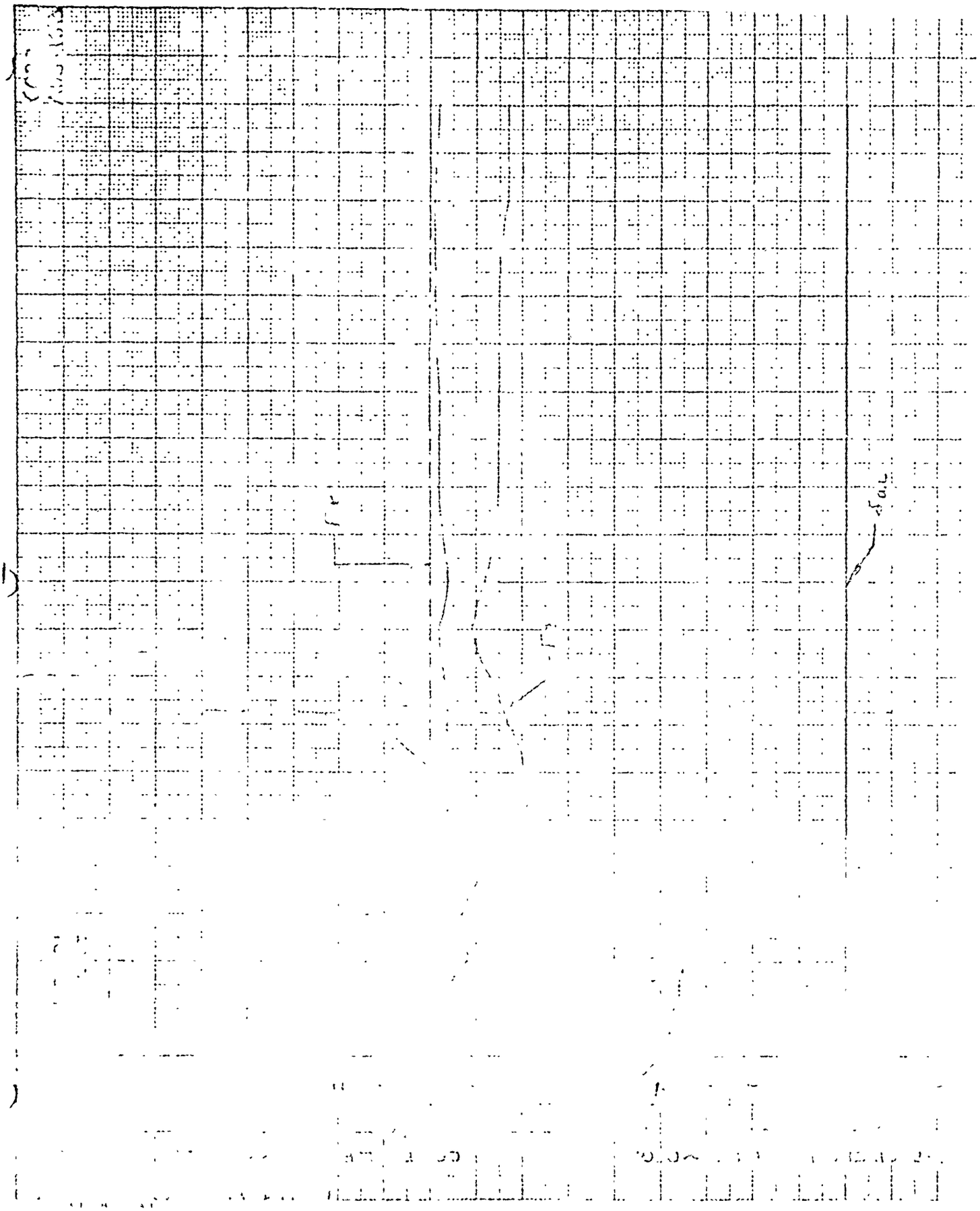
1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ [illegible]
3. RATED CHUTE [illegible] W/O WT. ~ [illegible]
4. EXTRACTION LINE [illegible] ~ [illegible] FT

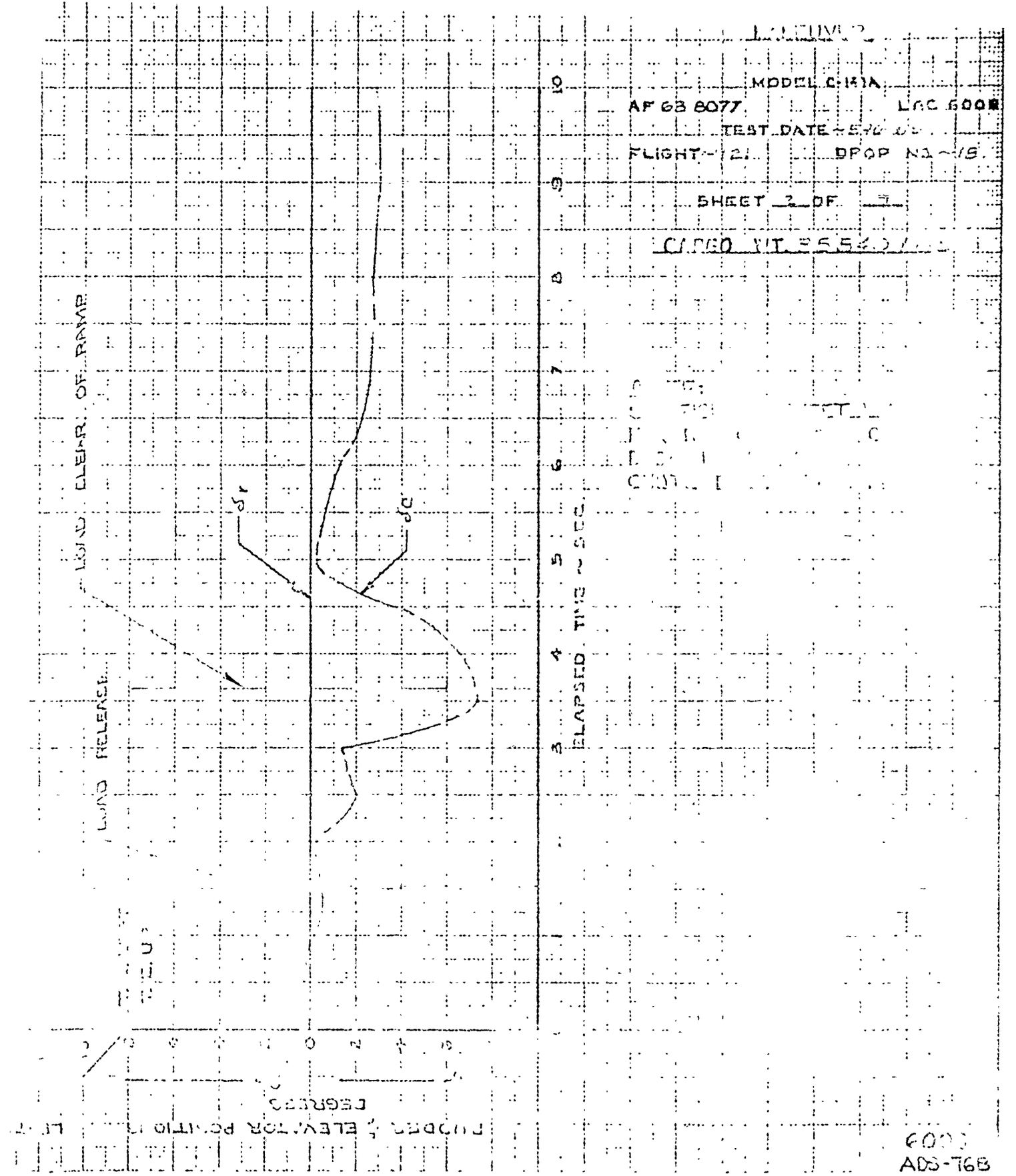
FIGURE D-[illegible]



GOOD ADOPTION

REVISED 12-17-65 MBH




MODEL C-141A
AF 68 8077
LAC 6008
SHEET 3 OF
LOAD CLEAR OF RAMP
LOAD RELEASE
ELAPSED TIME - SEC.
DEGREES
ADS-768

6008
ADS-T6C
NOTE:
θ̈ CALCULATED FROM N_Z DATA
θ̈
N_Z @ F.S. 1637
N_Z @ F.S. 932 (C.G.)
N_Z @ F.S. 277
NOSE UP
UP ACCEL
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
θ̈
DEG/SEC²
PITCHING ACCELERATION
N_Z F.S. 1637
277
ELERATIONS ~ g
JOB NO. ADS-39 SUB. CODE 4.2.1

PREPARED BY T.E.D.
DATE 5-11-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-111

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE: 5-10-65
FLIGHT 121 DROP NO. 18
SHEET 1 OF 1

CARGO WT 35,540 LBS

NOTE:
SEE FIGURE D-1A SHEET 1 OF 1 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

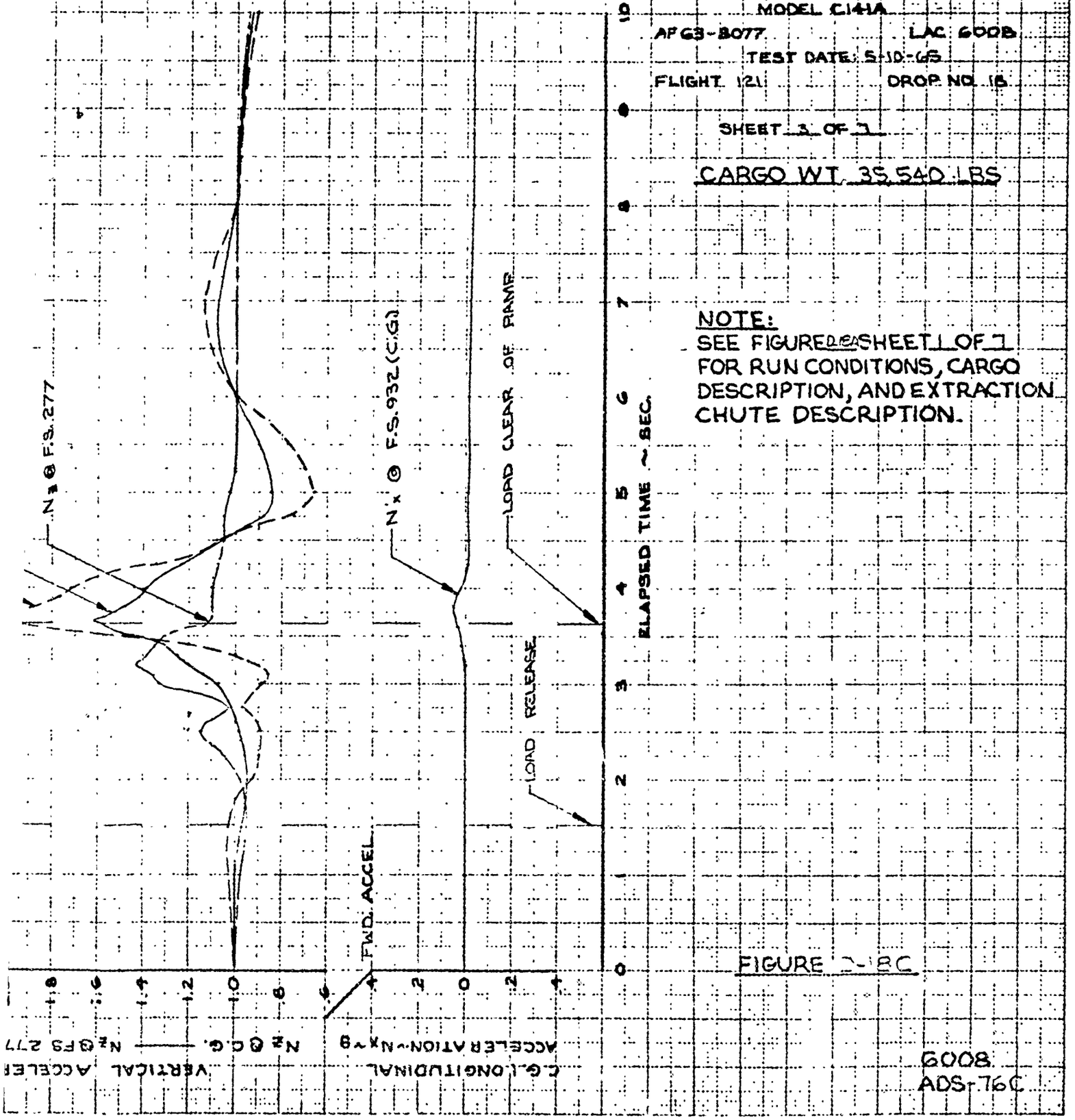
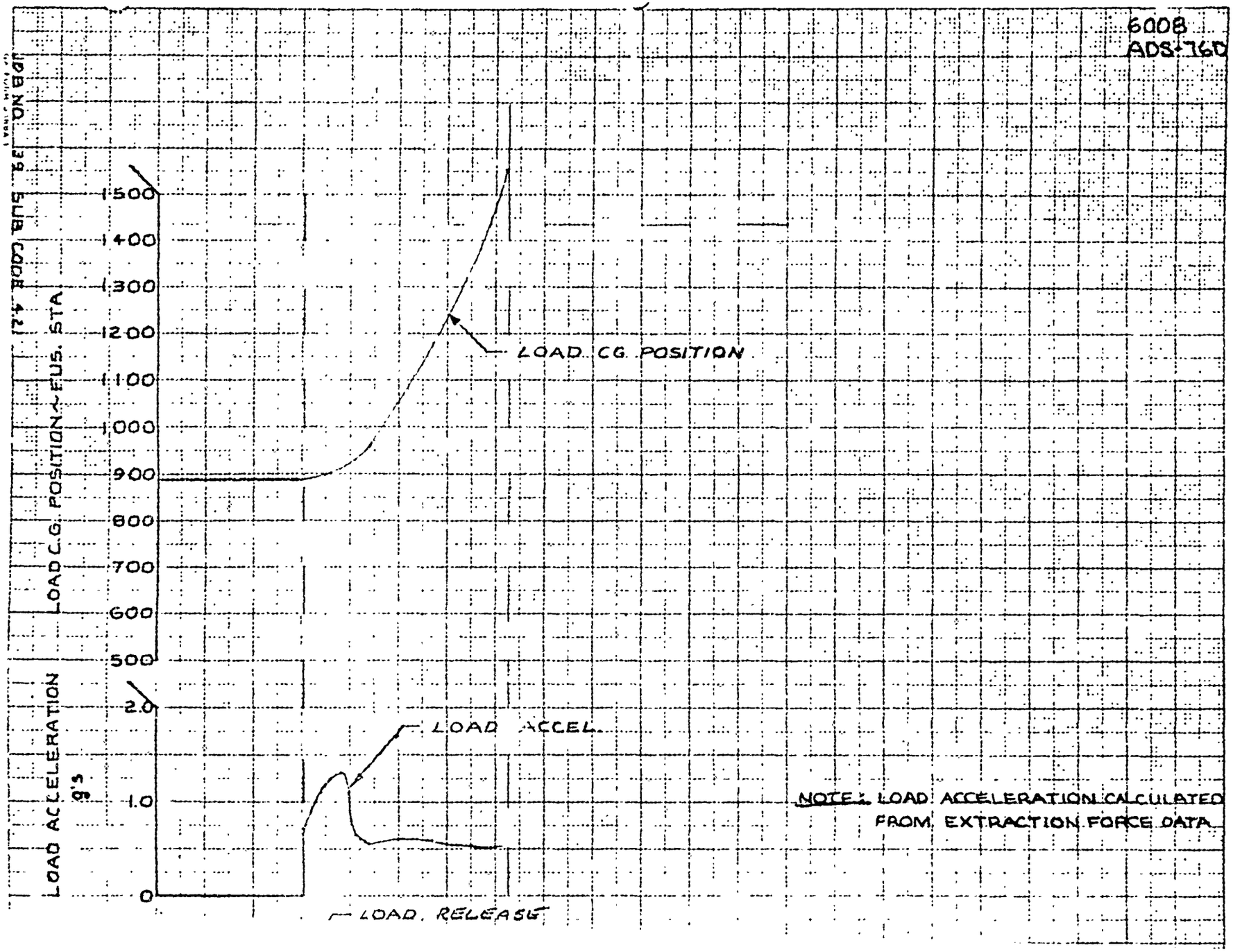


FIGURE D-1BC

6008
ADS-76C

6008
ADS-760


JOB NO. 36 SUB CODE 42
LOAD C.G. POSITION - F.S. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
LOAD C.G. POSITION
LOAD ACCELERATION g's
2.0
1.0
0
LOAD ACCEL.
LOAD RELEASE
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

112

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 5-10-65

FLIGHT ~ 121 DROP NO. ~ 18

SHEET 4 OF 7

CARGO WT. 35540 LBS

NOTE:
SEE FIGURE ~~D-16~~, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

NOTE: ONE EXTRACTION CHUTE FAILED AT APPROXIMATELY 1.9 SEC. ELAPSED TIME.

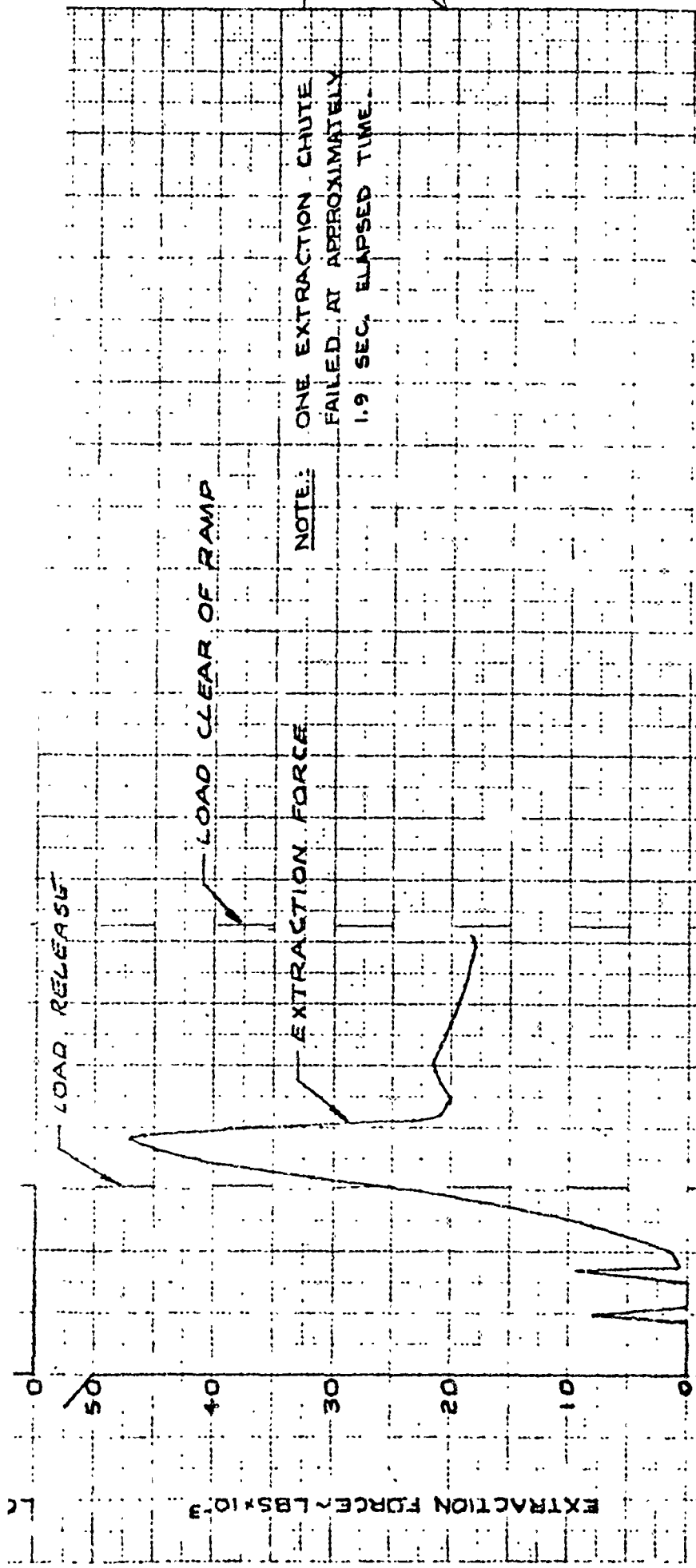


FIGURE D-18 D

6008-ADS
ADS-76E
R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD
R.H. SPIDER ARM LOAD
L.H. SPIDER ARM LOAD
R.H. VERT. LOAD
L.H. VERT. LOAD
SIDE LOAD
TENSION
TENSION
DOWN LOAD
PULL RIGHT
RAMP ACTUATOR LOAD
LBS. X 10-3
R.H.
L.H.
4
2
0
-2
-4
ADS LINK AXIAL LOAD
LBS X 10-3
30
20
10
0
VERTICAL LOAD
LBS X 10-3
15
10
5
0
2.0
JOB NO. ADS-39 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 5-10-65

FLIGHT ~ 121 DROP NO. 16

SHEET 2 OF 7

CARGO WT. 35,540 LBS

NOTE:
SEE FIGURE D-16A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

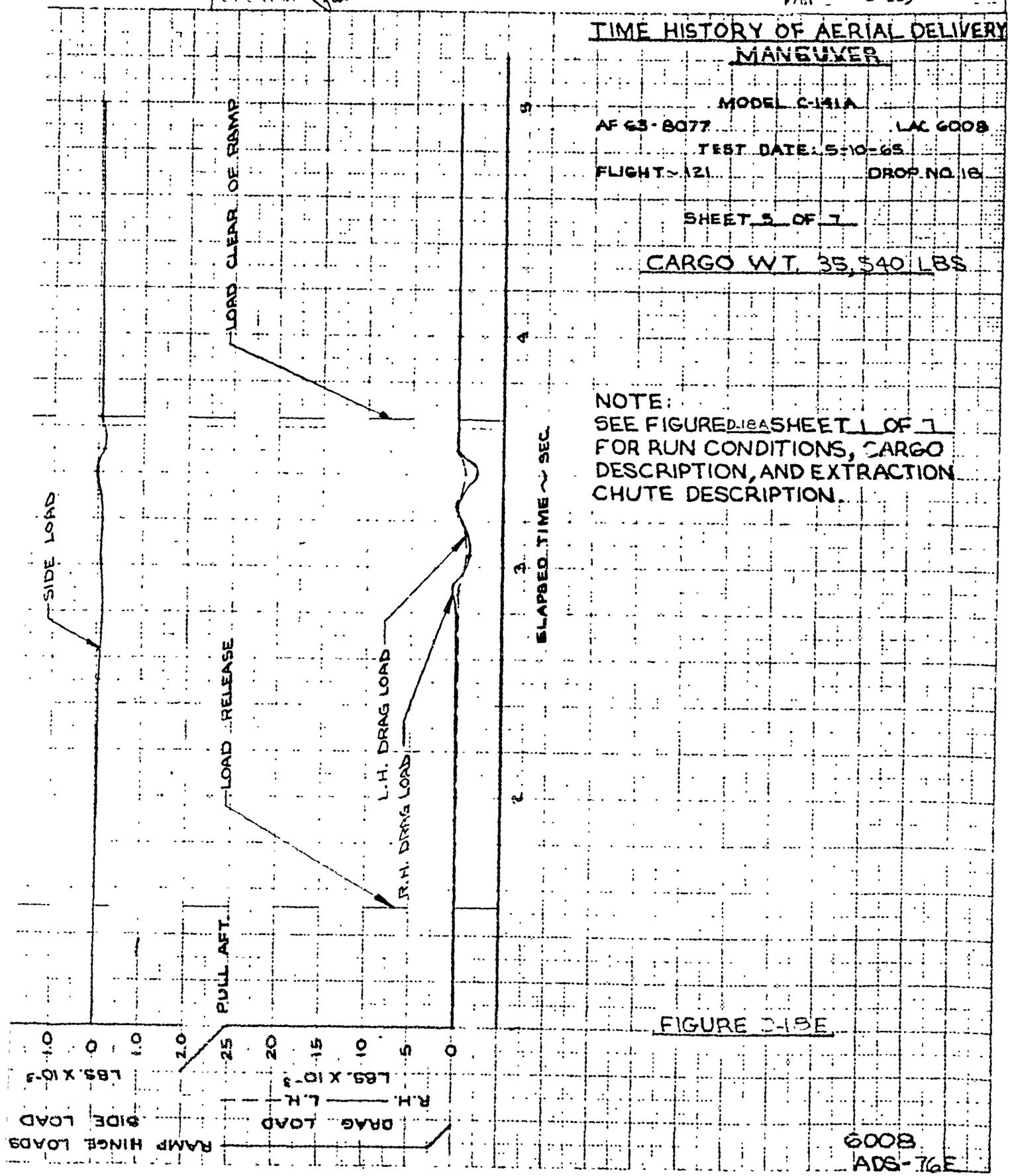


FIGURE D-16E

6008
ADS-T&F
L.H. PETAL DOOR ACTUATOR
R.H. PETAL DOOR ACTUATOR
M.Y. @ F.S. 1568
M.Y. @ F.S. 1048
COMPRESSION
DOWN LOAD
VERTICAL BENDING — FS 1568
INCH-LBS X 10⁻⁶
PETAL DOOR ACTUATOR ROD
LOAD — LBS X 10⁻³
RH
LH
ROD END BEARING CODE 1.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF65-8077 LAC 6006

TEST DATE: 5-10-65

FLIGHT 121 DROP NO. 18

SHEET 6 OF 7

CARGO WT. 35540 LBS

NOTE:
SEE FIGURE 18 SHEET OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION

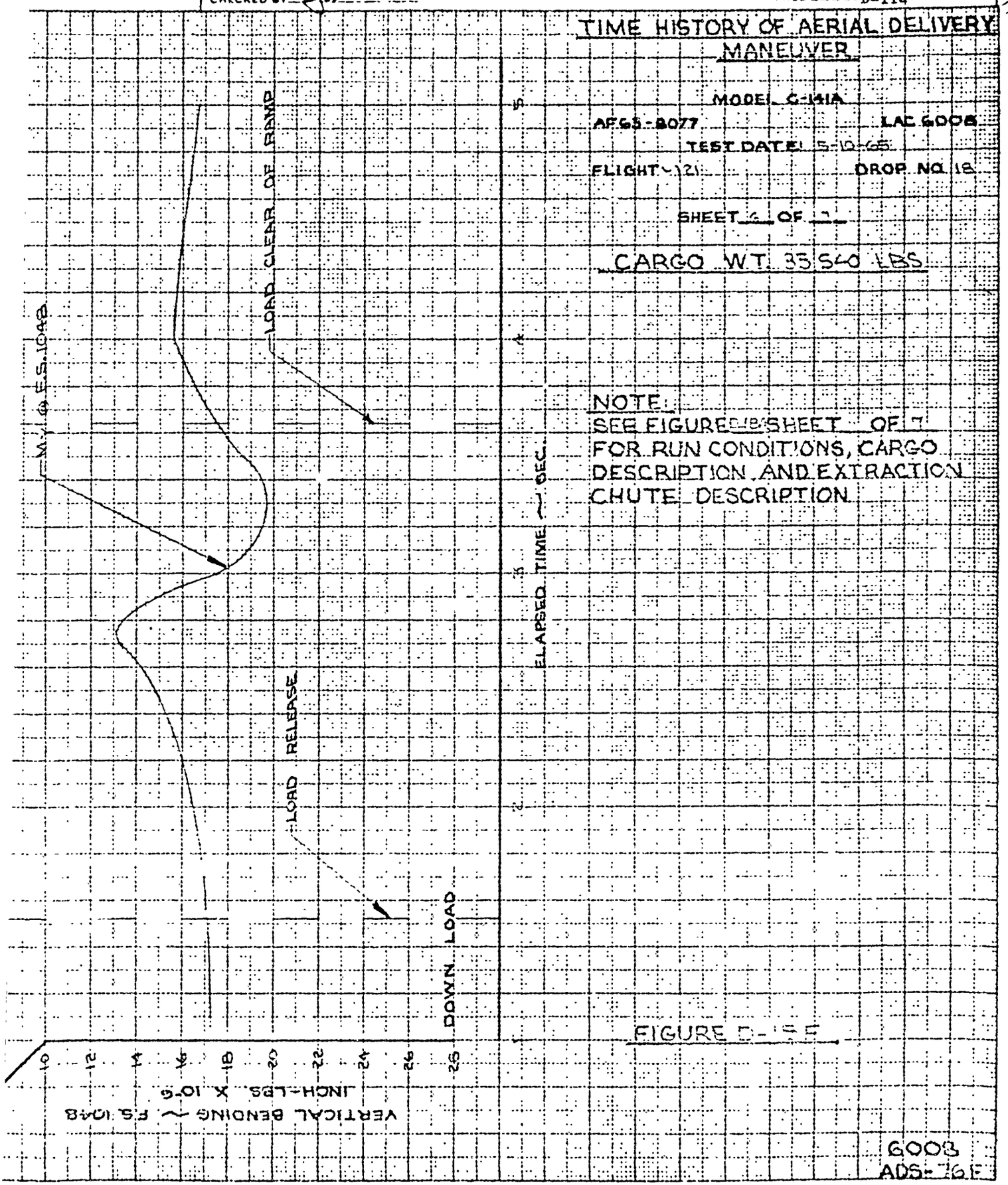


FIGURE D-155

GOOD
ADS-766

HORIZONTAL STABILIZER NET LOADS

BENDING @ HBL 44L ~ M'_x INCH-LBS x 10^{-6}

SHEAR @ HBL 44L ~ S'_z LBS x 10^{-3}

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

JOB NO. ADS-766 UB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 5-10-65

FLIGHT ~ 121 DROP NO. 18

SHEET 1 OF 1

CARGO WT. 35,540 LBS

NOTE:
SEE FIGURE D-18 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

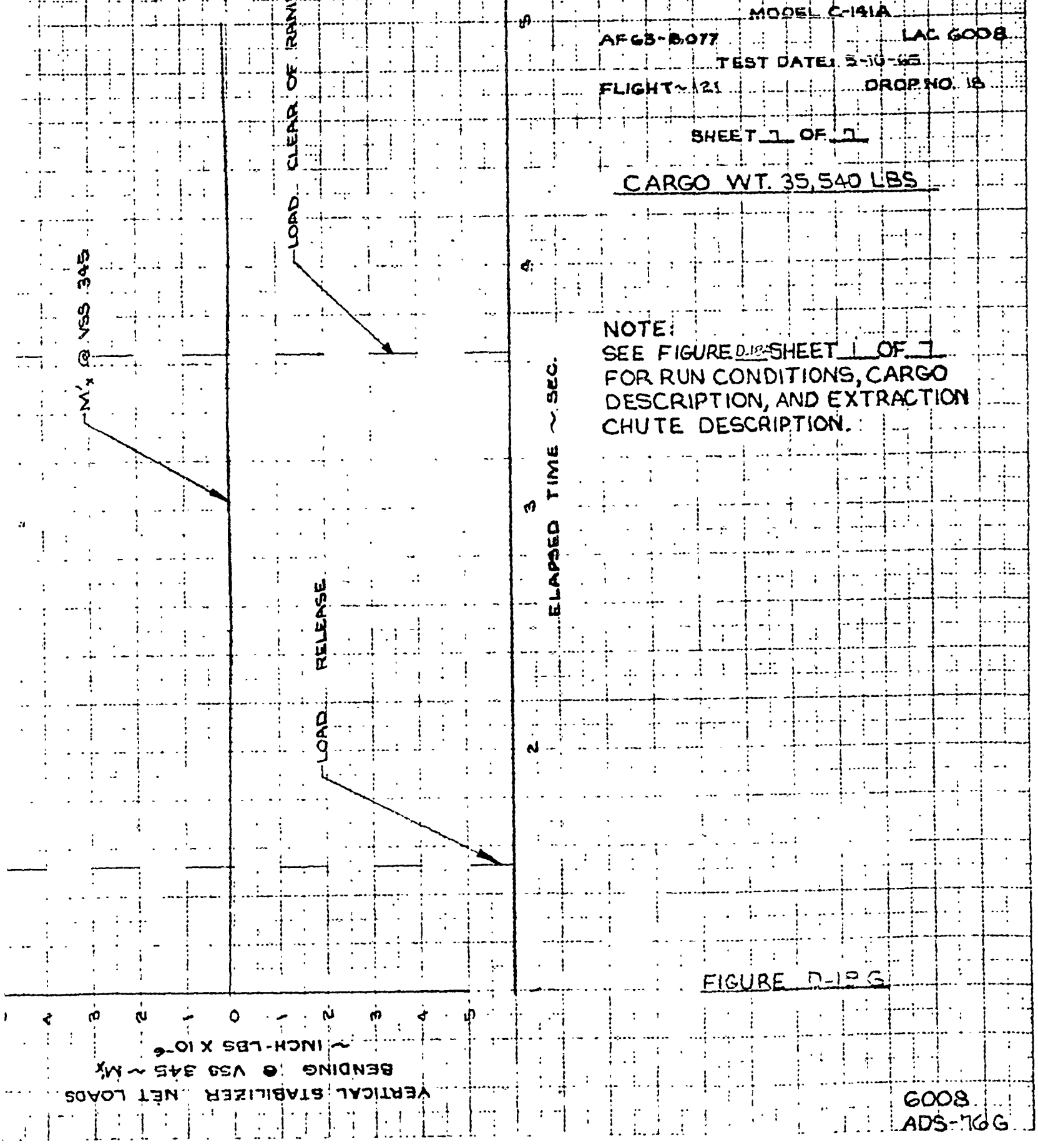
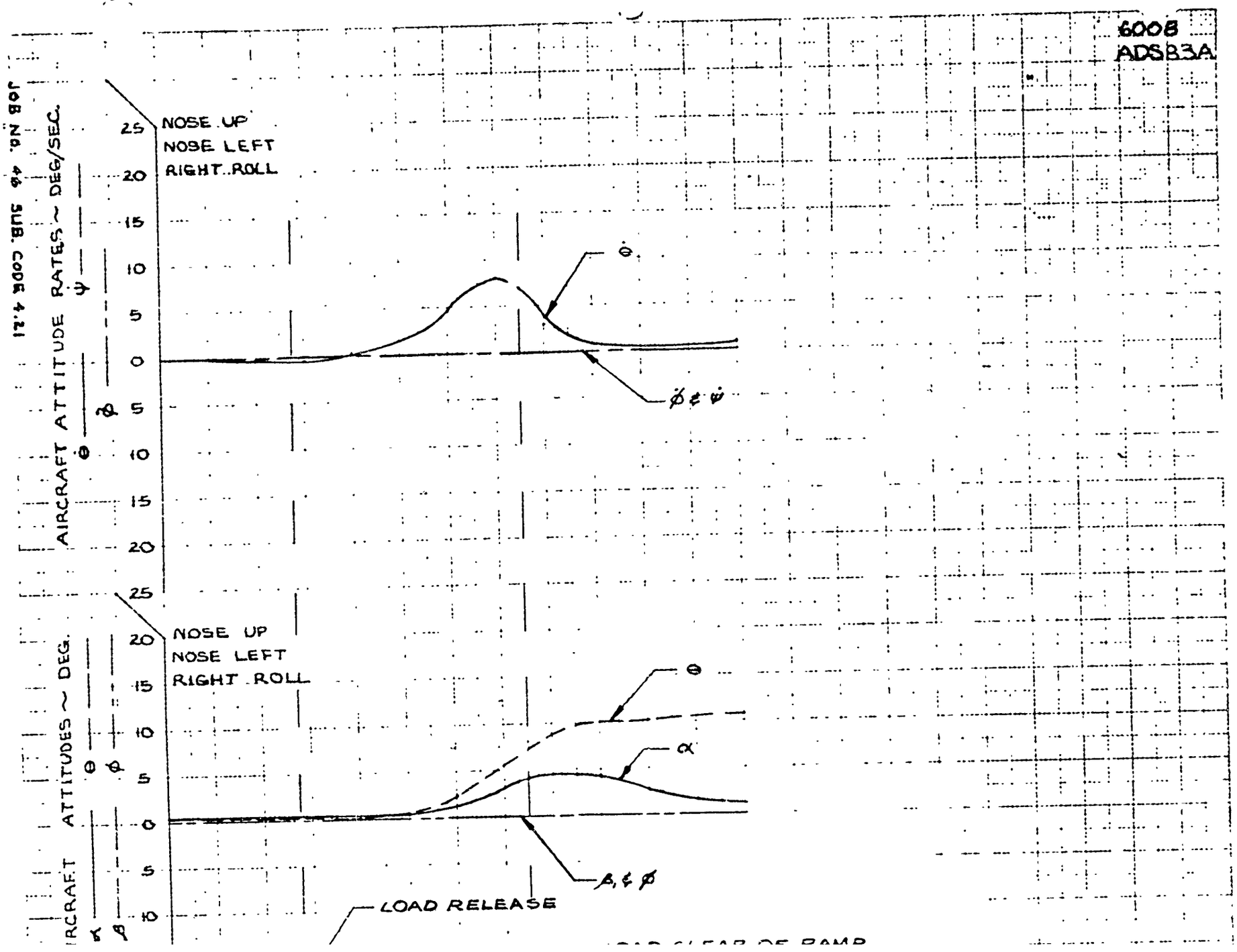


FIGURE D-18G


JOB NO. 4-6 SUB. CODE 4.21
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
ψ̇
θ̇
φ̇
θ̇ & φ̇
AIRCRAFT ATTITUDES ~ DEG.
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
φ
α
β
β & φ
LOAD RELEASE

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 600B

TEST DATE - 5-20-65

FLIGHT ~ 130 DROP NO. ~ 19

SHEET 1 OF 7

CARGO WT 35710 LBS

RUN CONDITIONS

1. G.W. ~ 195600 LBS.
2. C.G. PRIOR TO DROP ~ 26.4% MAC.
3. C.G. AFTER DROP ~ 26.9 % MAC.
4. FLAPS ~ 68%.
5. GEAR ~ UP
6. AVG. EPR ~ 1.25 (4 ENGINES)
7. i_H ~ 1.3° (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER PLATFORM
2. LENGTH ~ 288 IN
3. CARGO C.G. POSITIONS
   LONG. ~ FS 887
   VERT. ~ WL 185

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT
3. RATED CHUTE FORCE/CARGO WT ~ 0.6
4. EXTRACTION LINE LENGTH ~ 100 FT.

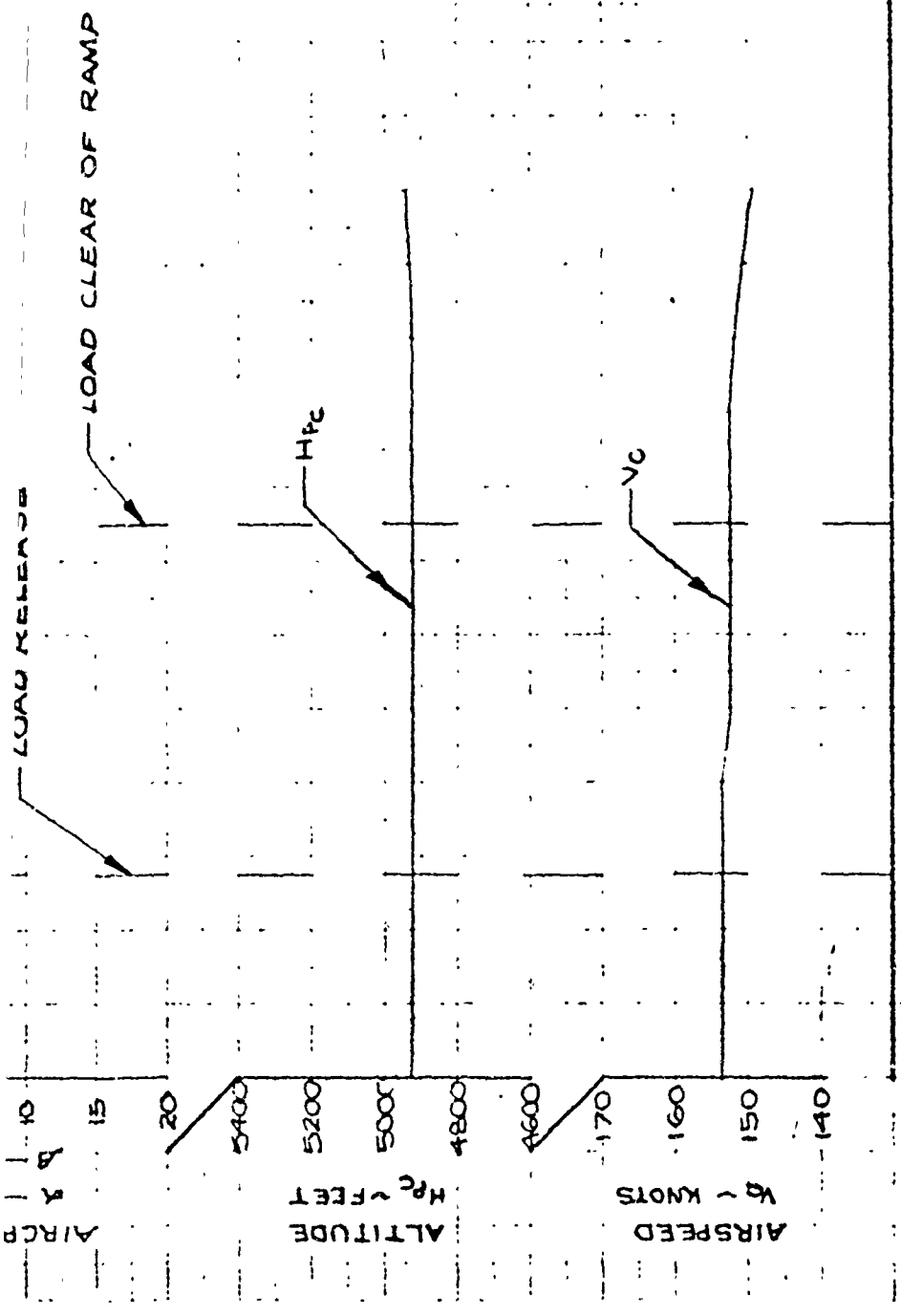


FIGURE D-19A

600B
ADS83A

REVISED 12-15-65
MBH

6028
ADS-83B

Fe, Fa, & Fr
δal
RIGHT ROLL
PUSH LEFT
PULL
T.E. UP
70
60
50
40
30
20
10
0
10
20
30
40
30
20
15
10
5
0
5
Fe
Fa
Fr
δal
CONTROL FORCES ~ LBS.
AILERON POSITION ~ DEG.

RSA
DATE 5-20-65

ER 5473
MODEL C-141A
D-117

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE ~ 5-20-65

FLIGHT ~ 130 DROP NO ~ 12

SHEET 2 OF 7

CARGO WT. 35710 LBS

NOTE:
SEE FIGURE D-19 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

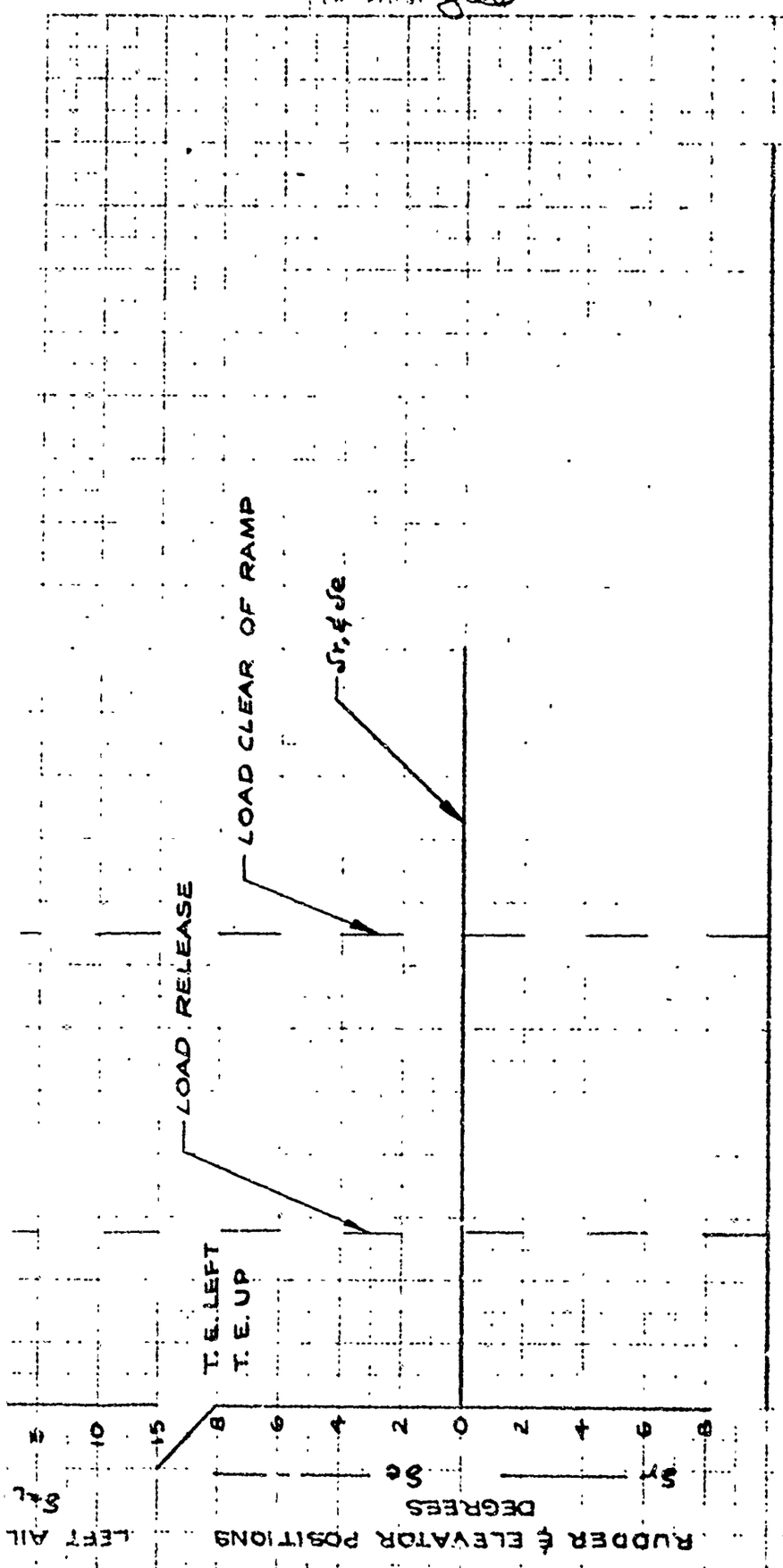
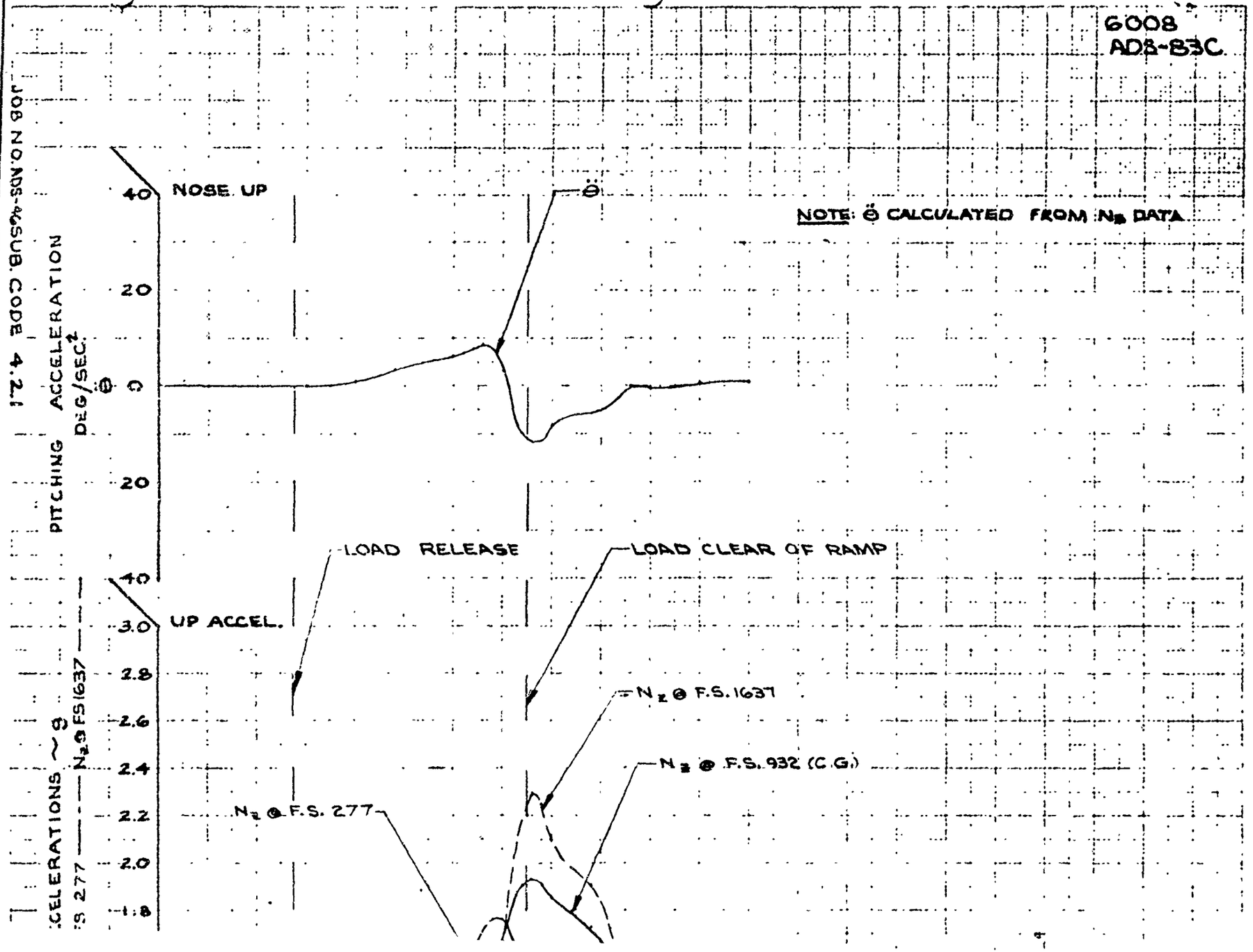


FIGURE D-19 B


6008
AD8-83C.
JOB NO. NOS-4405 SUB. CODE 4.2.1
PITCHING ACCELERATION
θ̈ DEG/SEC.²
ACCELERATIONS ~ g
Nz @ FS 277
Nz @ FS 1637
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ̈
NOTE: θ̈ CALCULATED FROM Nz DATA
LOAD RELEASE
LOAD CLEAR OF RAMP
Nz @ F.S. 1637
Nz @ F.S. 932 (C.G.)
Nz @ F.S. 277

T.E.D
5-20-66

ER 5473
C-141A
D-118

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 5-20-66

FLIGHT-150 DROP NO. 19

SHEET 3 OF 7

CARGO WT. 35,710 LBS

NOTE:
SEE FIGURE D-19A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

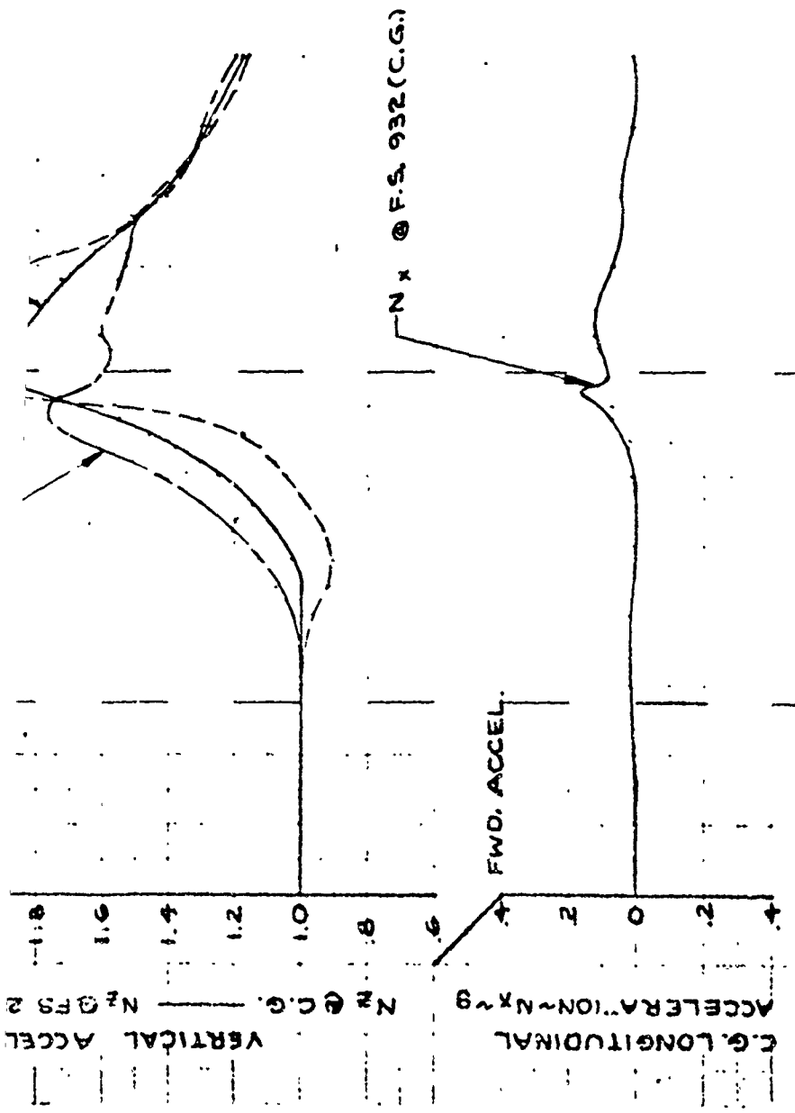
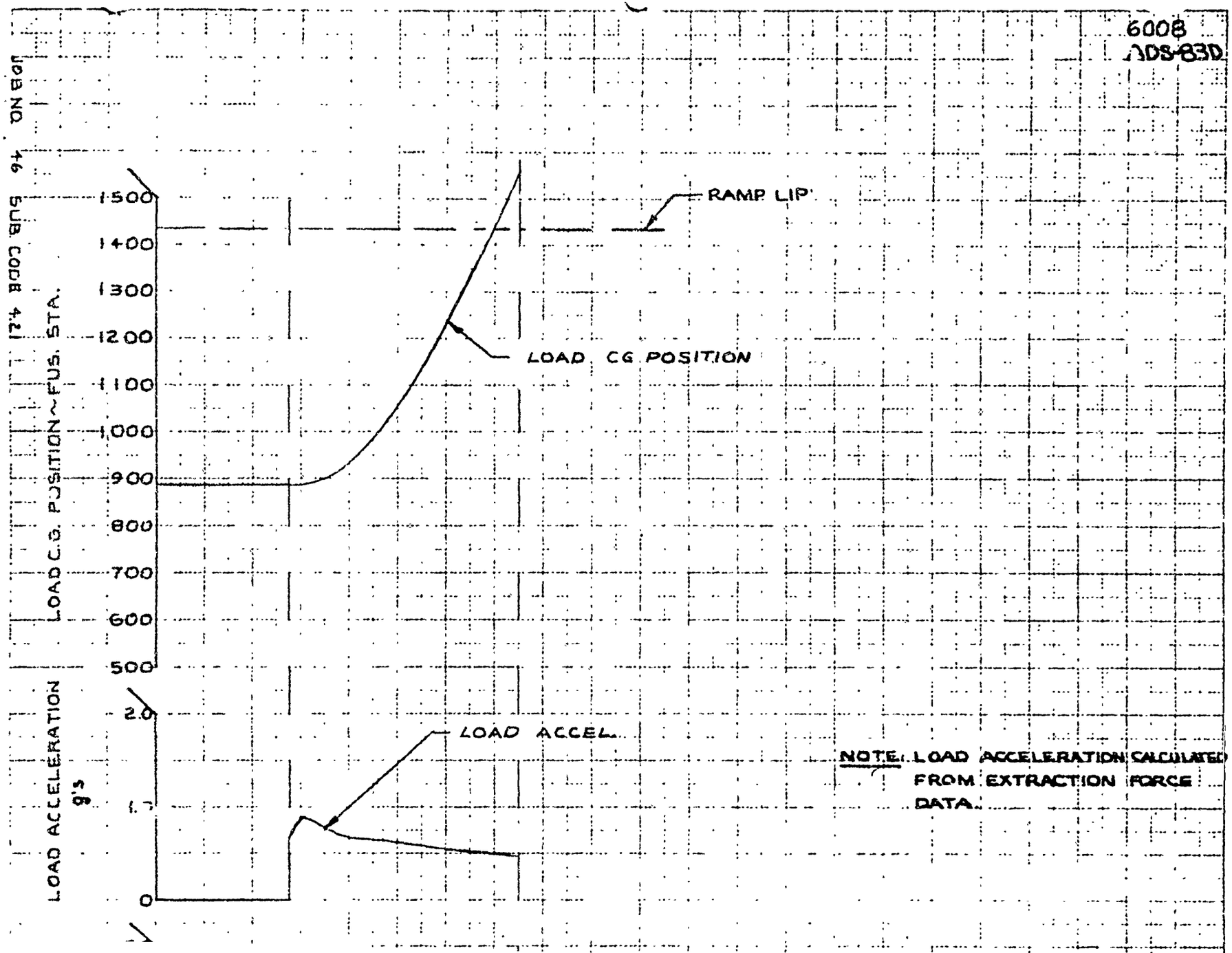


FIGURE D-19C

6008
NDS-83D

JOB NO. 46 SUB CODE 42



PREPARED BY RSA
DATE 5-20-65
CHECKED BY [illegible]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
FAM D-119

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE - 5-20-65

FLIGHT - 130 DROP NO. - 19

SHEET 4 OF 7

CARGO WT. 35710 LBS

NOTE:
SEE FIGURE D-19A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

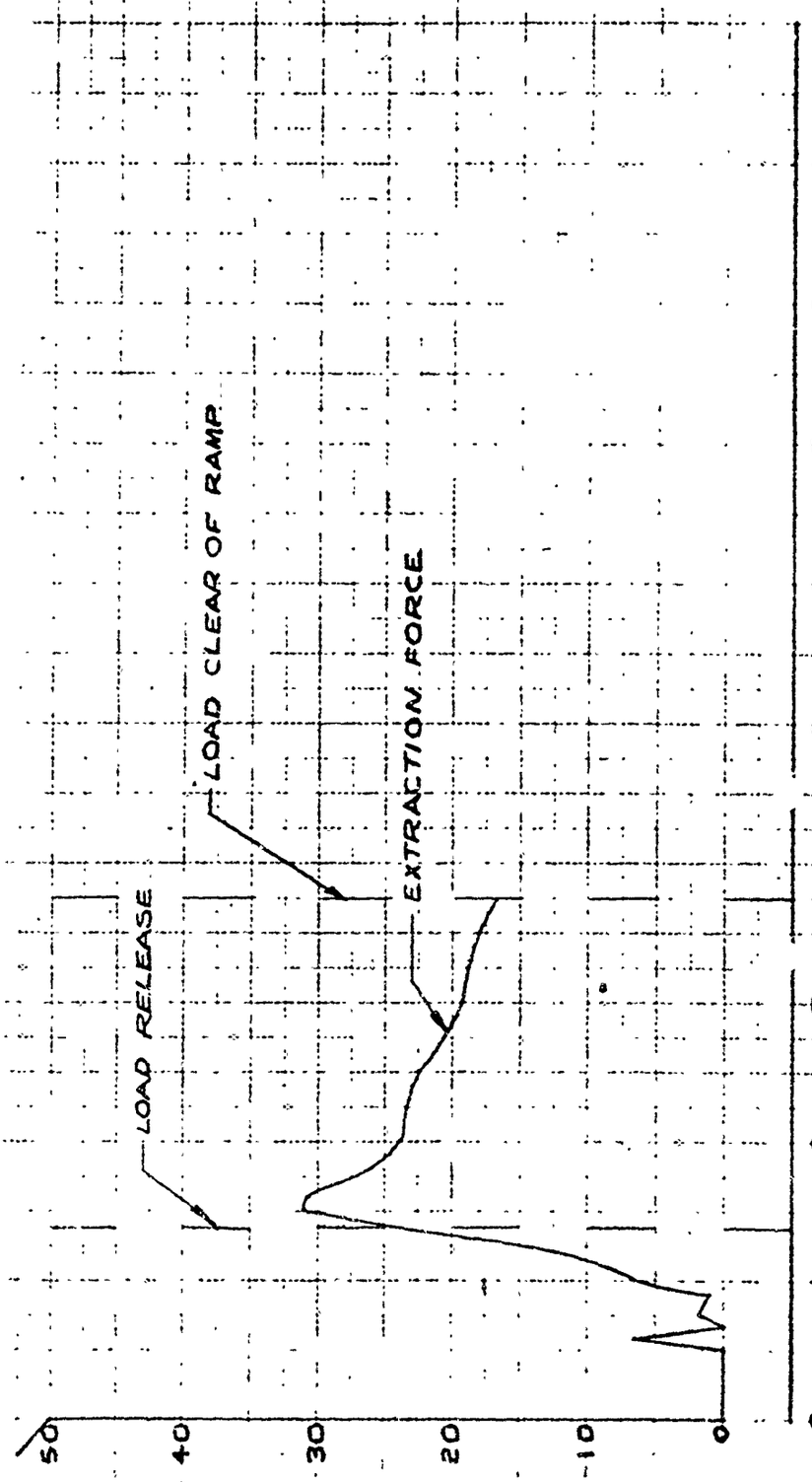


FIGURE D-19D

6008
ADS-83E
L.H. RAMP ACTUATOR LOAD
R.H. RAMP ACTUATOR LOAD
L.H. SPIDER ARM LOAD
LOAD CLEAR OF RAMP
R.H. VERT LOAD
SIDE LOAD
R.H. SPIDER ARM LOAD
LOAD RELEASE
L.H. VERT. LOAD
TENSION
TENSION
DOWN LOAD
PULL RIGHT
4 2 0 -2 -4
30 20 10 0
15 10 5 0
2.0
R.H. L.H.
LBS X 10⁻³
RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD
VERTICAL LOAD
JOB NO. SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 5-20-65

FLIGHT-130 DROP NO.-19

SHEET 5 OF 7

CARGO WT. 35,710 LBS

NOTE:
SEE FIGURE D-19A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

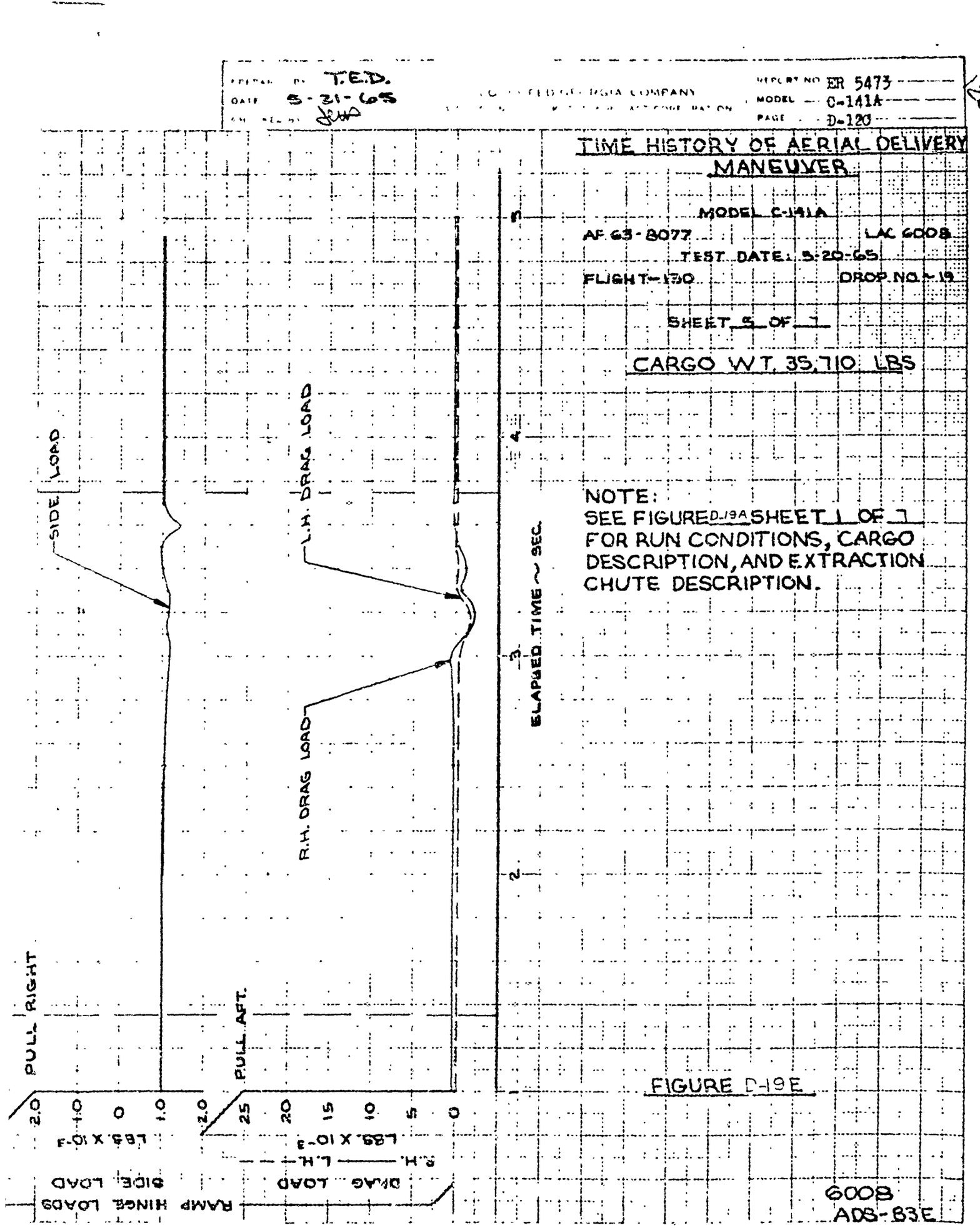


FIGURE D-19E

6008
ADS-83E
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
M_Y @ F.S. 156B
COMPRESSION
DOWN LOAD
10 9 8 7 6 5 4 3 2
4 3 2 1 0 1 2 3 4 5
RH —— LH ——
LOADS ~ LBS. X 10⁻³
VERTICAL BENDING ~ FS 156B
INCH-LBS. X 10⁻⁶
PETAL DOOR ACTUATOR ROD
JOB NO. ADS-466UB CODE 4.2.1

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

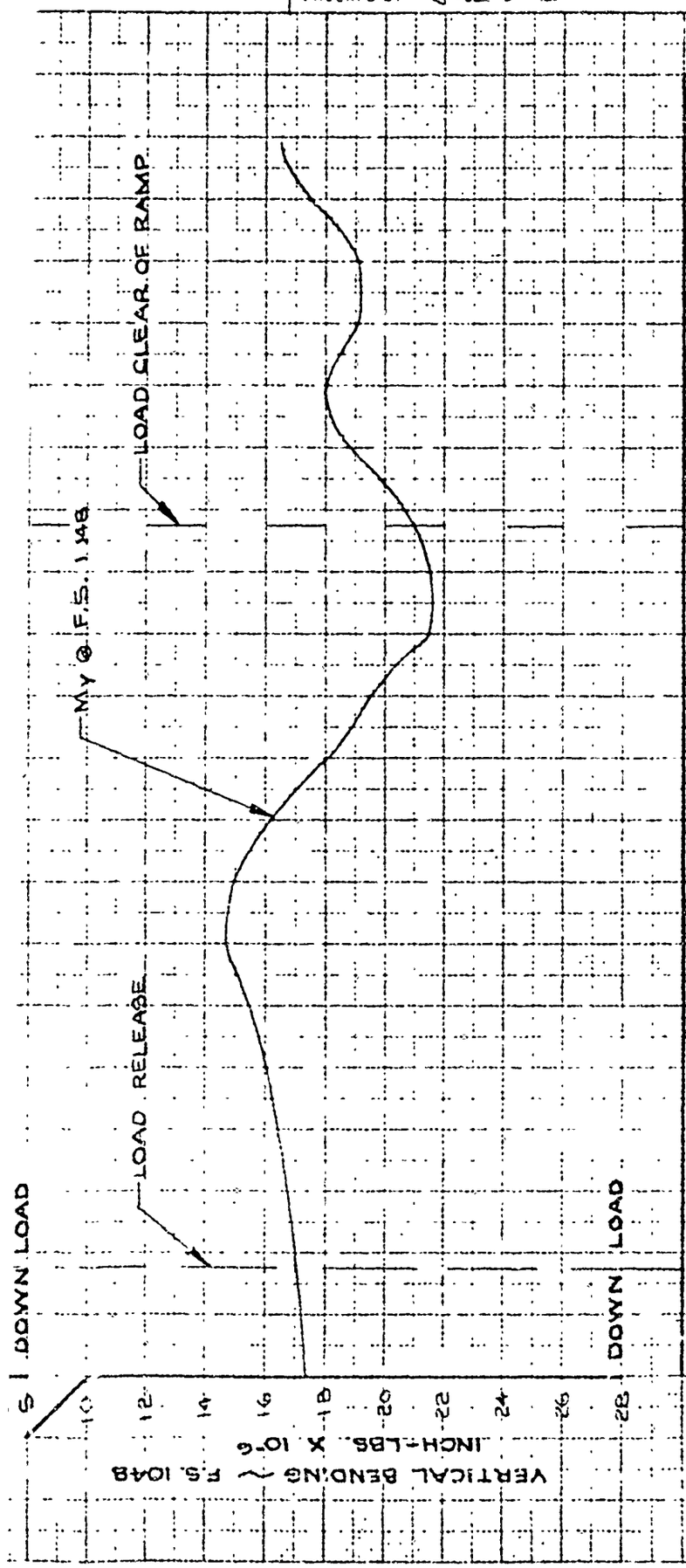
AF63-8077 LAC 6008

TEST DATE: 5-20-66

FLIGHT ~ 130 DROP NO. 19

SHEET 6 OF 7

CARGO WT. 35,710 LBS



NOTE:
SEE FIGURE D-19A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-19F

GOOD
ADS-1835
HORIZONTAL STABILIZER NET LOADS
SHEAR @ H3L 44L ~ S'z
LBS x 10-3
BENDING @ H3L 44L ~ M'x
INCH - LBS x 10-6
UP LOAD
UP LOAD
S'z @ HBL 44L
M'x @ HBL 44L
LOAD RELEASE
LOAD CLEAR OF RAMP
LOAD LEFT @ VS TIP
M.L @ VSS 245
JOB NO. ADS-468 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 5-20-65

FLIGHT ~ 130 DROP NO. ~ 19

SHEET 1 OF 1

CARGO WT. 36,710 LBS

NOTE:
SEE FIGURE D-19 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

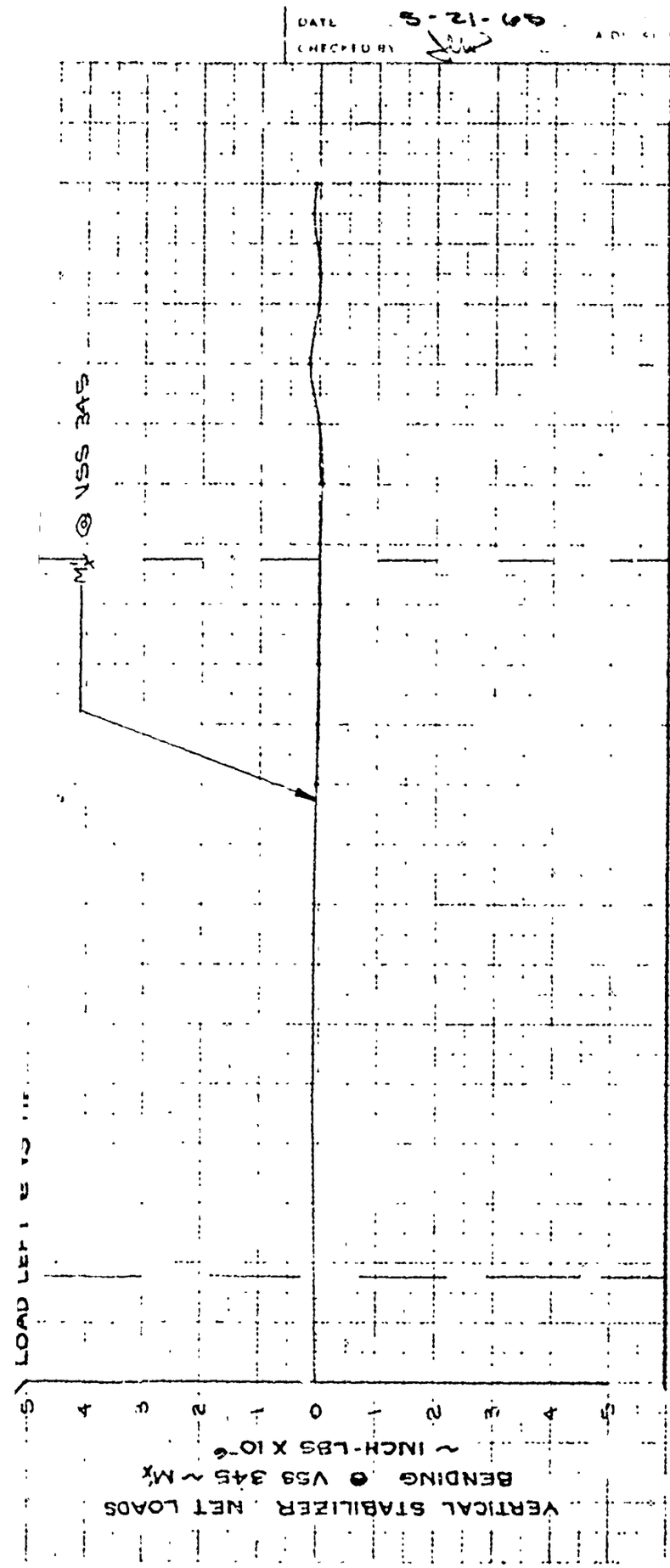


FIGURE D-19G

6008
ADS-98-A
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
AIRCRAFT ATTITUDES ~ DEG
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
LOAD CLEAR OF RAMP
JOB NO. ADS-538 LIB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE ~ 6-15-65

FLIGHT ~ 142 DROP NO. ~ 20

SHEET 1 OF 7

CARGO WT. 34960 LBS

RUN CONDITIONS

1. G.W. ~ 185400 LBS.
2. C.G. PRIOR TO DROP ~ 26.2% MAC
3. C.G. AFTER DROP ~ 30.1% MAC
4. FLAPS ~ 63%
5. GEAR ~ UP.
6. AVG. EPR ~ 1.26 (4 ENGINES)
7. Δ_H ~ 1.0 DEG. (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 881 IN.
   VERT. ~ WL 164

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ .40
4. EXTRACTION LINE LENGTH ~ 150 FT.

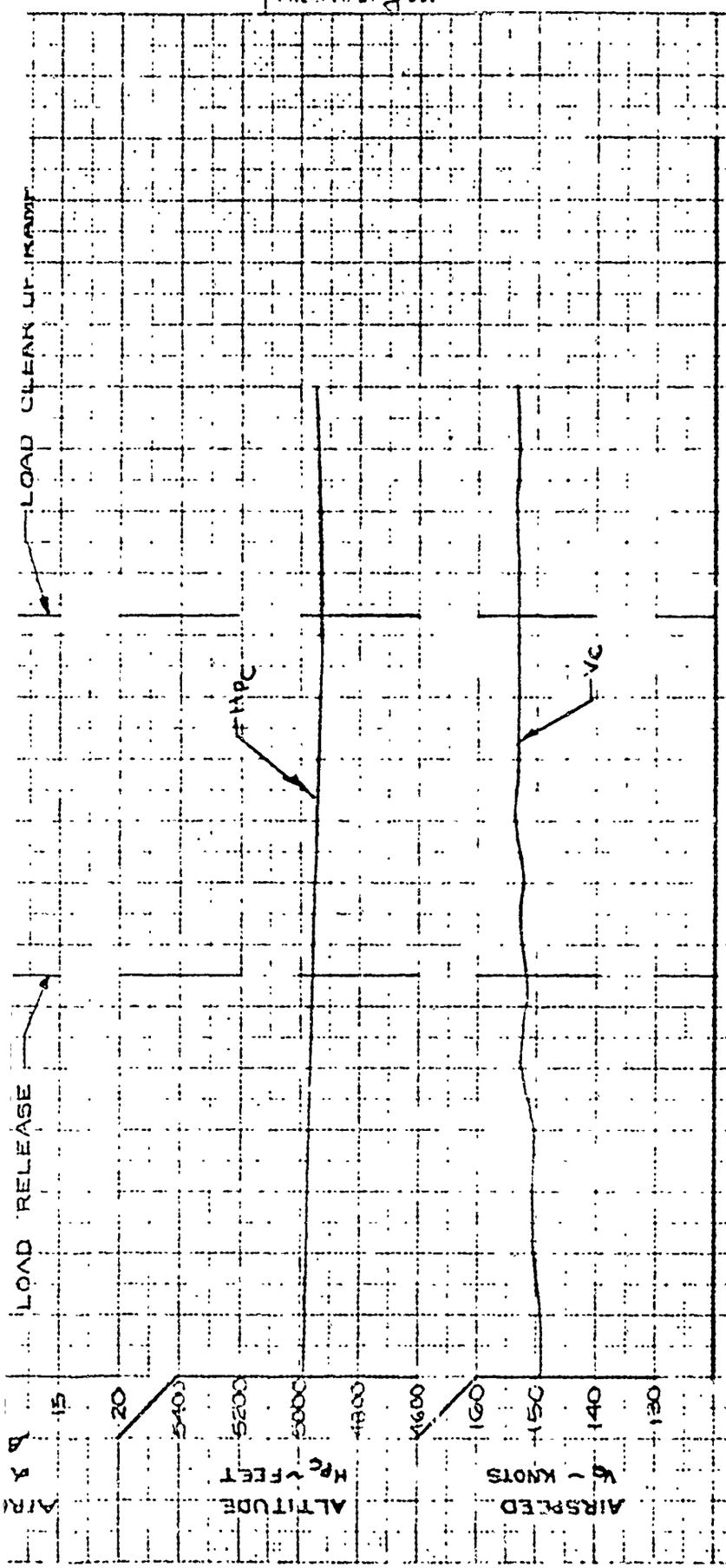


FIGURE D-20A

6008
ADS-B2B
LOAD RELEASE
LOAD CLEAR OF RAMP
F_E
F_A
E_T
S_L
TAKE UP
FULL
LEFT AILERON POSITION ~DEG
CONTROL FORCE ~ LBS

PREPARED BY FCW
DATE 6-17-65
CHECKED BY [illegible]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-124

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE - 6-15-65

FLIGHT-142 DROP NO - 20

SHEET 2 OF 7

CARGO WT 34960 LBS

NOTE:
SEE FIGURE 20 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

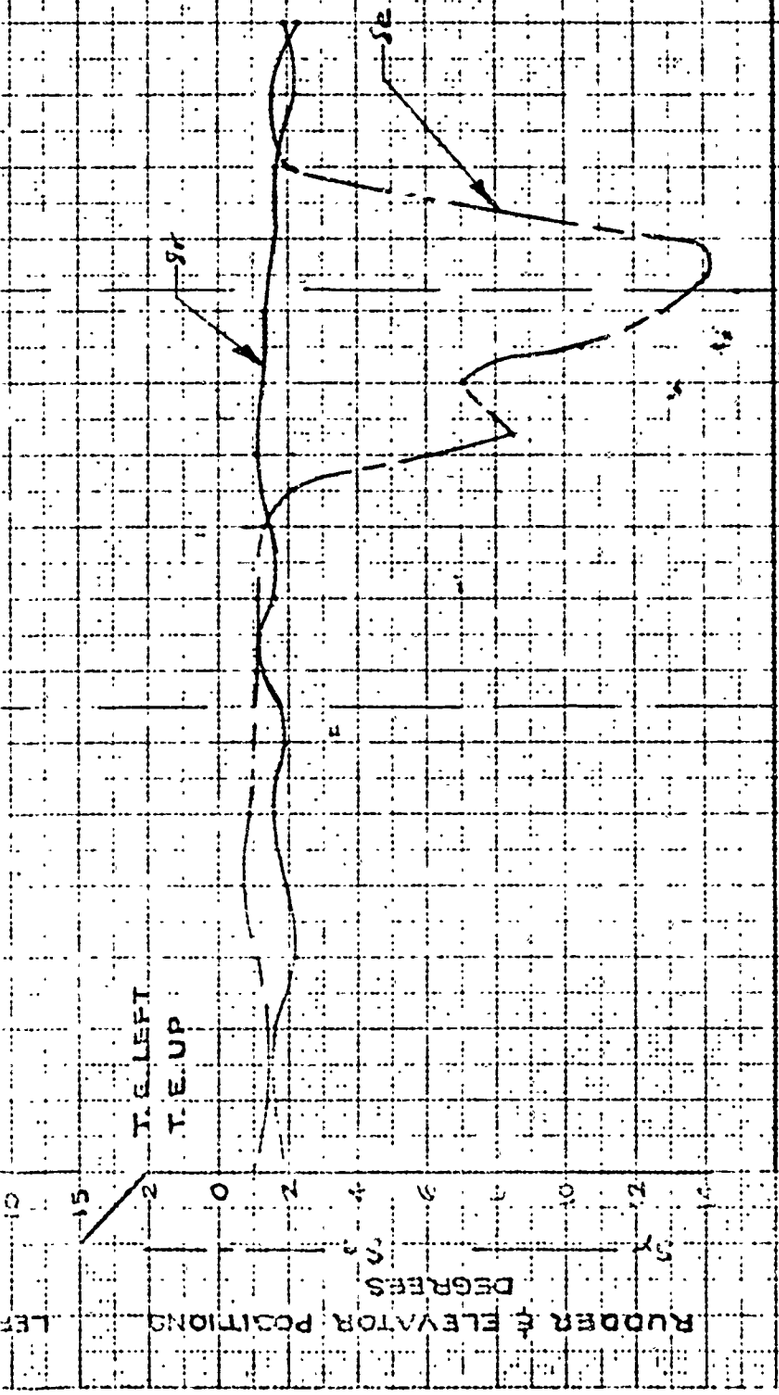
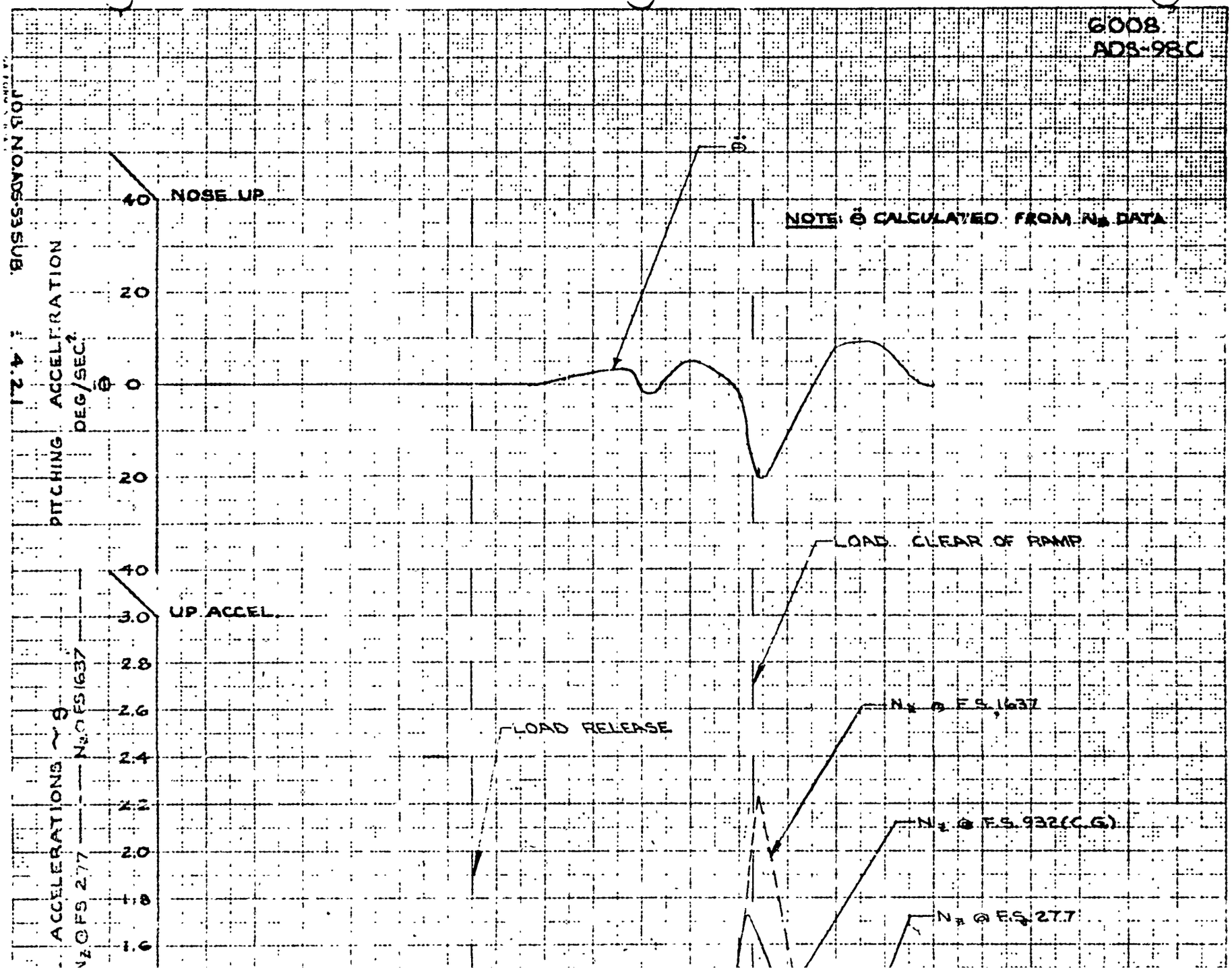


FIGURE 20B

6008
ADS-98B

6008.
ADS-98C

JOB NO. ADS-53 SUB. 4.2.1



PREPARED BY TED
DATE 6-16-65
CHECKED BY JWO

ER 5473
MODEL C-141A
D-125

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 600B

TEST DATE ~ 6-15-65

FLIGHT ~ 142 DROP NO. ~ 20

SHEET 1 OF 1

CARGO WT. 34,960 LBS

NOTE:
SEE FIGURE D-20A SHEET 1 OF 1 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

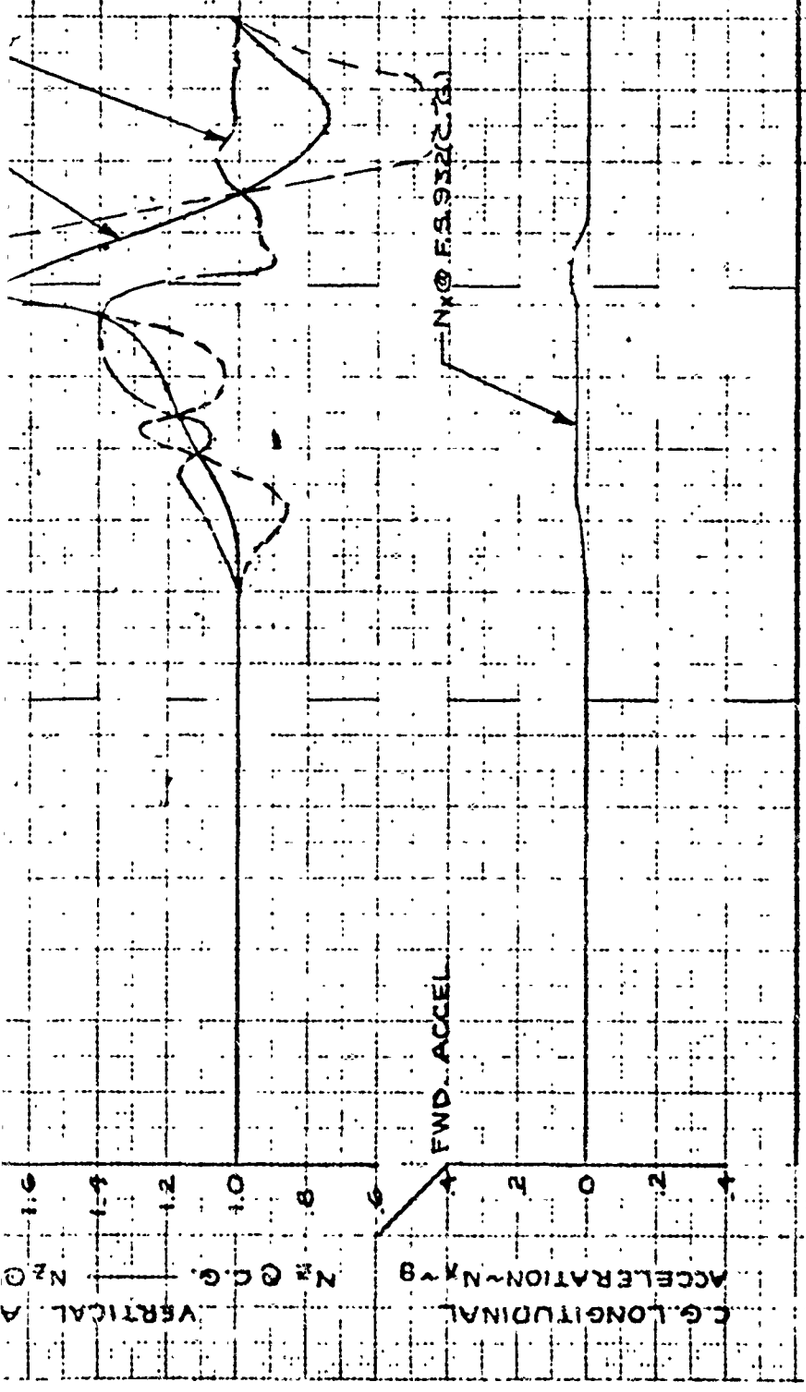


FIGURE D-20C

6008
ADS-98C

6003
ADS-980

RAMP LIP

LOAD CG POSITION

LOAD CLEAR OF RAMP

LOAD RELEASE

NOTE: LOAD ACCELERATION CALCULATED FROM LOAD CG POSITION DATA

LOAD ACC.

LOAD ACCELERATION — LOAD C.G. POSITION ~ FUS. STA

g's

1500 1400 1300 1200 1100 1000 900 800 700 600 500 2.0 1.0 0 .5

JOB NO ADS-93 SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE- 6-15-65

FLIGHT-142 DROP NO.- 20

SHEET 4 OF 7

CARGO WT. 34960 LBS.

NOTE:
SEE FIGURE D-20A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

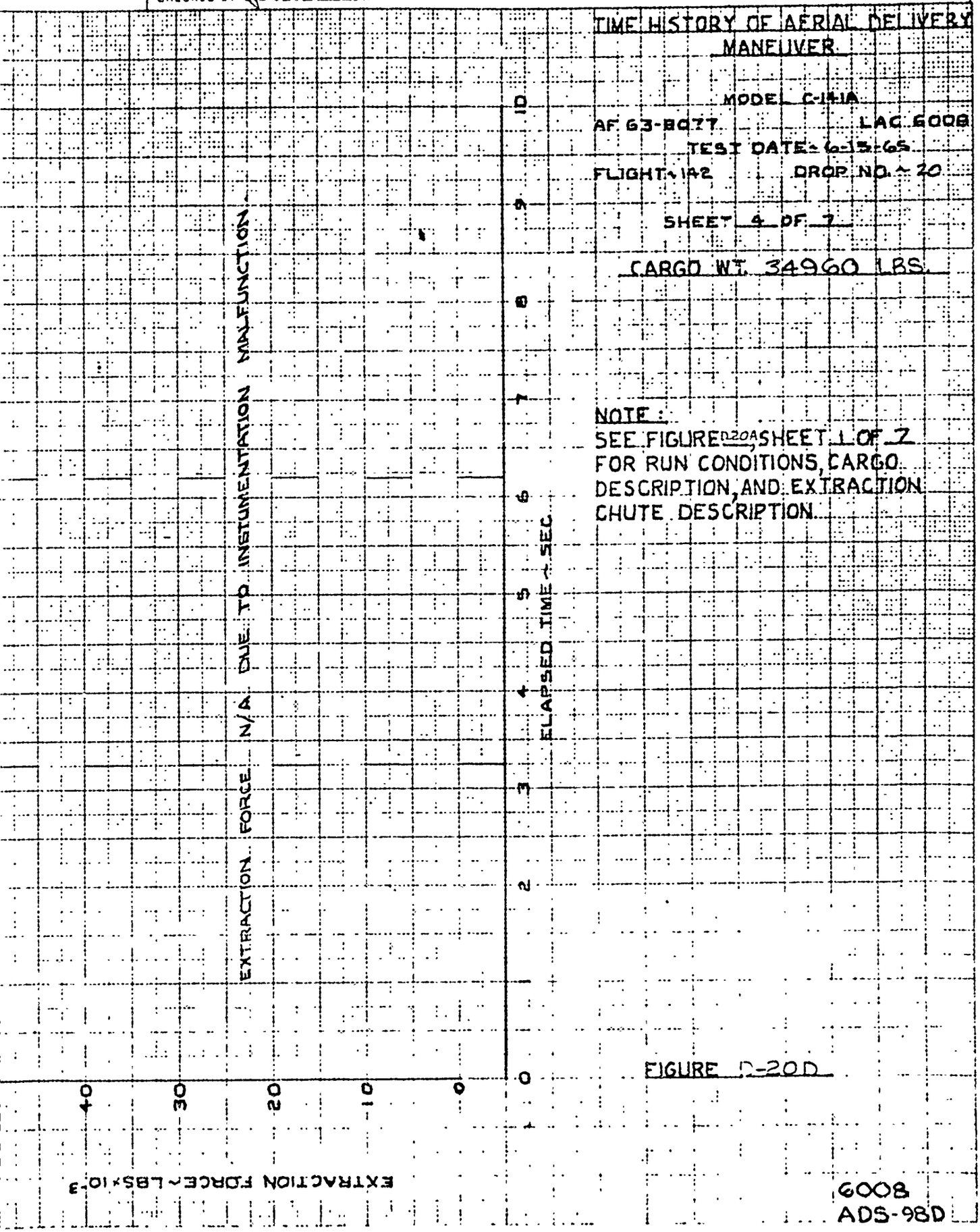
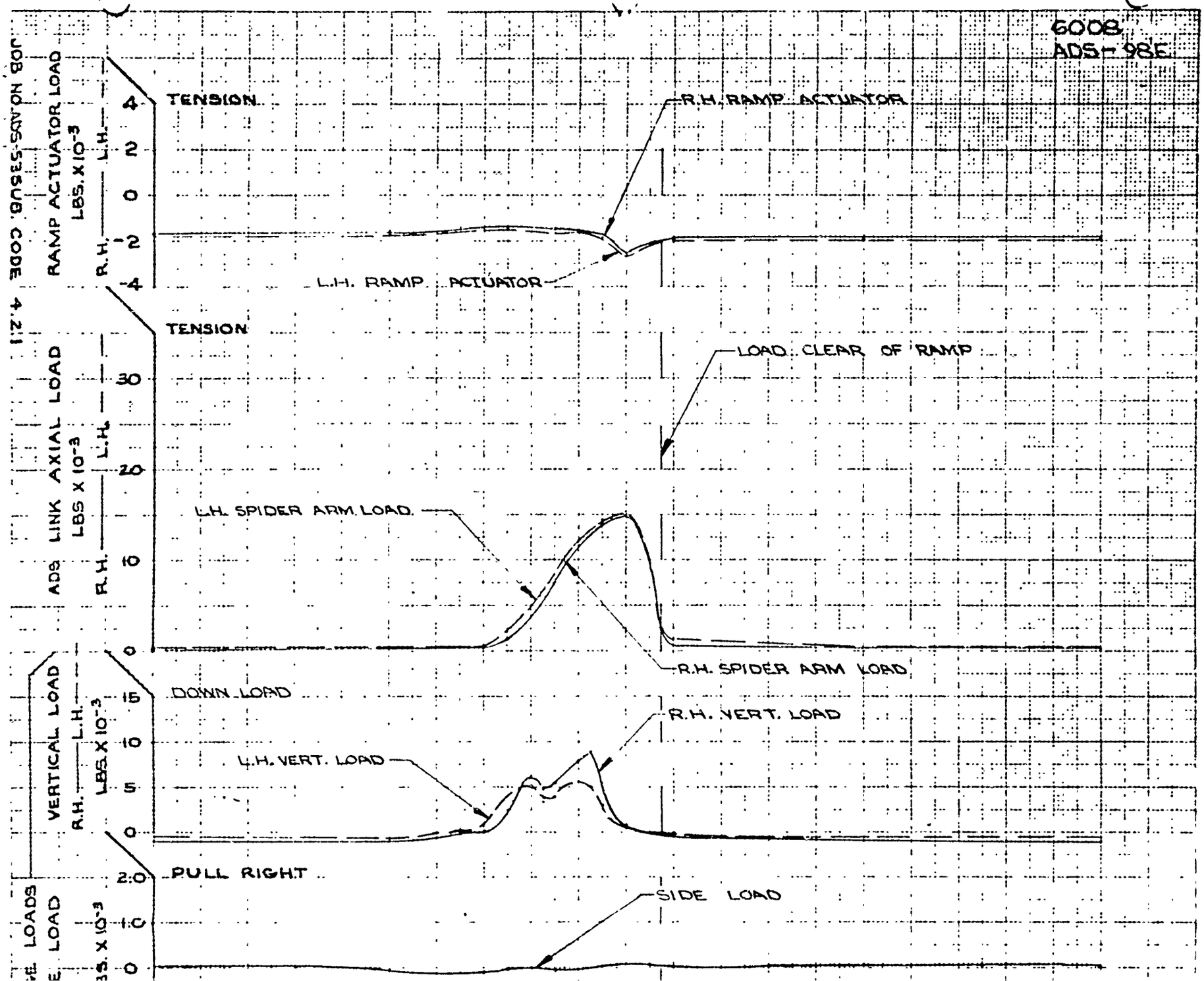


FIGURE D-20D


6008
ADS-98E
TENSION
RAMP ACTUATOR LOAD LBS. X 10⁻³
R.H.
L.H.
4
2
0
-2
-4
R.H. RAMP ACTUATOR
L.H. RAMP ACTUATOR
TENSION
ADS LINK AXIAL LOAD LBS X 10⁻³
R.H.
L.H.
30
20
10
0
LOAD CLEAR OF RAMP
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
DOWN LOAD
VERTICAL LOAD LBS X 10⁻³
R.H.
L.H.
15
10
5
0
R.H. VERT. LOAD
L.H. VERT. LOAD
PULL RIGHT
2.0
1.0
0
SIDE LOAD

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 6-15-65

FLIGHT 142 DROP NO 20

SHEET 5 OF 7

CARGO WT. 34,960 LBS

NOTE:
SEE FIGURE D-20A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

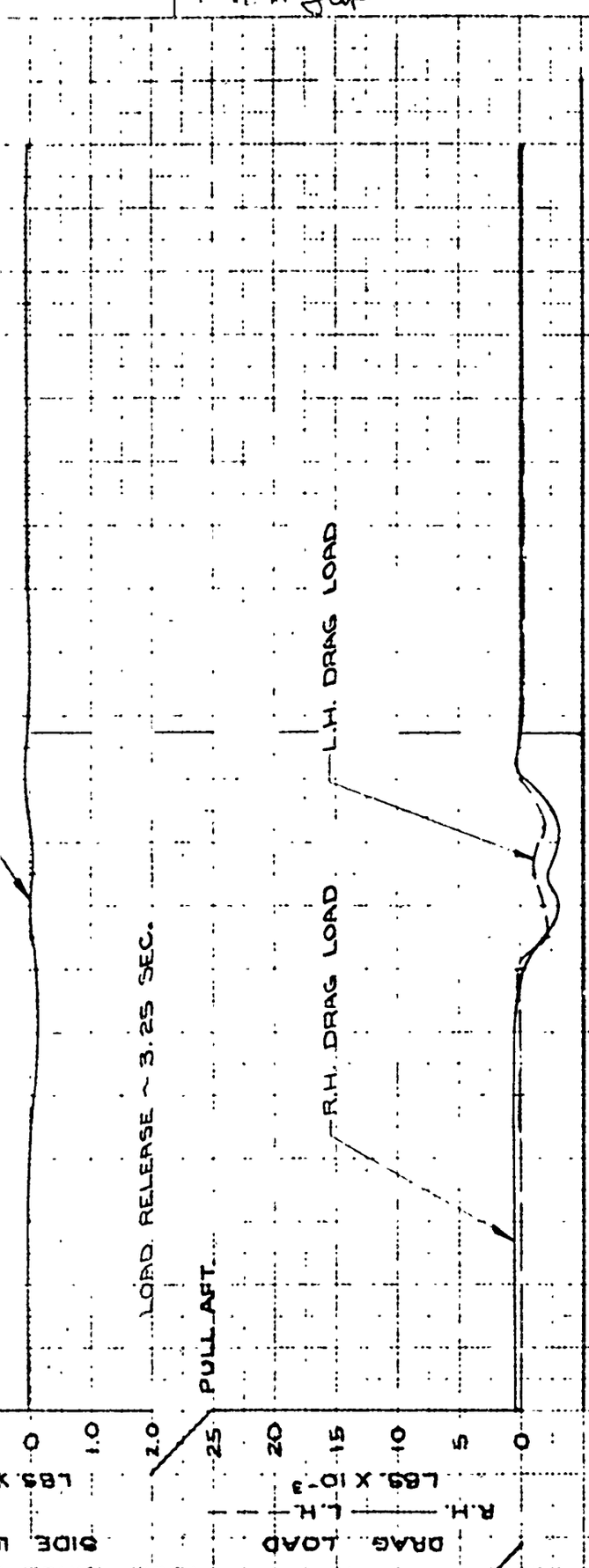


FIGURE D-20E

6008
ADS-98E
L.H. PETAL DOOR ACTUATOR LOAD
FMY @ F.S. 1568
R.H. PETAL DOOR ACTUATOR LOAD
COMPRESSION
DOWN LOAD
VERTICAL BENDING ~ FS 1560
INCH-LBS X10-6
PETAL DOOR ACTUATOR ROD
LOAD ~ LBS X10-3
RH
LH
JOB NO ADS-98SUB.COOL 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-8077 LAC 6008

TEST DATE: 6-15-65

FLIGHT ~ 142 DROP NO ~ 20

SHEET 6 OF 7

CARGO WT. 34,960 LBS

NOTE:
SEE FIGURE 23 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION

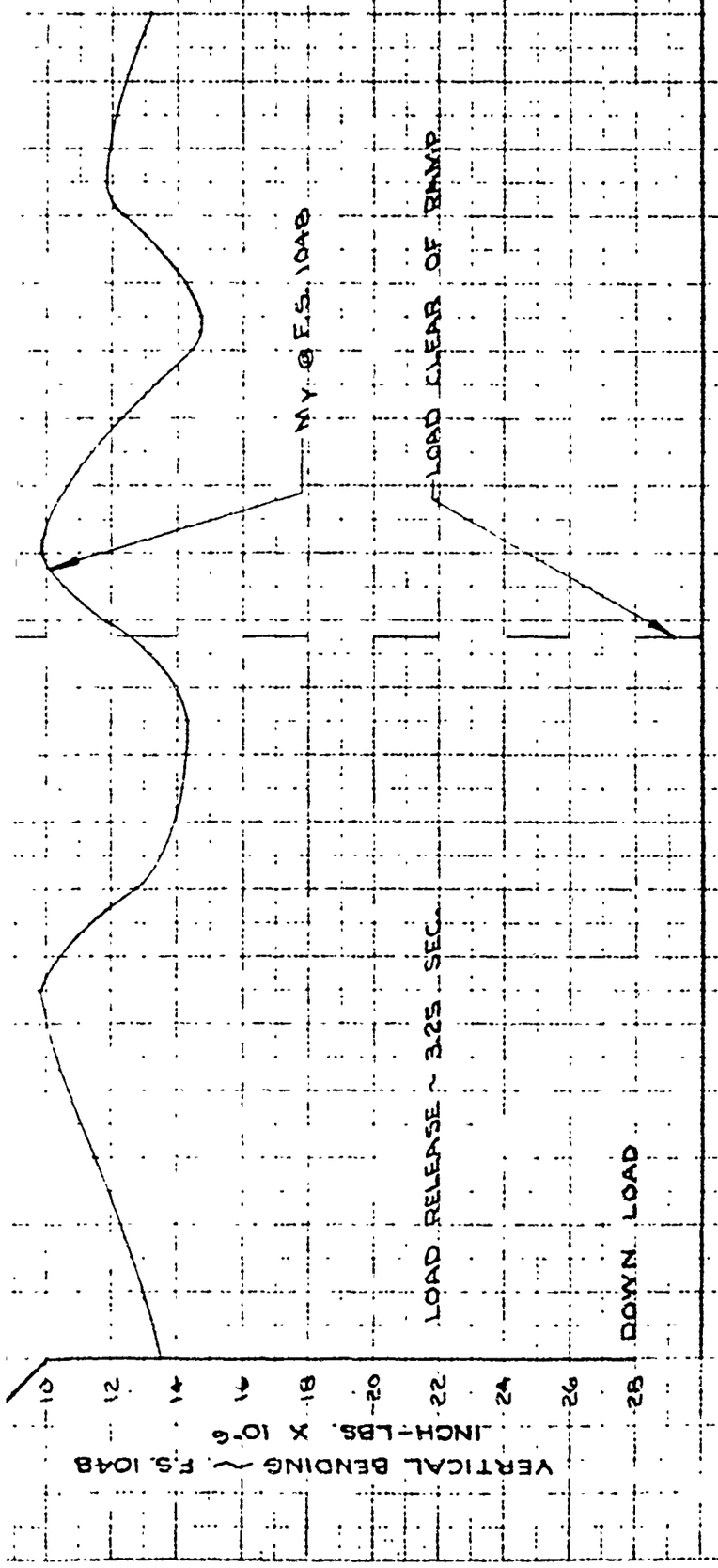


FIGURE D-20F

6008
ADS-198G
HORIZONTAL STABILIZER NET LOADS
SHEAR @ H 44L ~ S'z
LBS X 10^3
UP LOAD
BENDING @ H 44L ~ M'x
INCH - LBS X 10^6
UP LOAD
LOAD LEFT @ VS TIP
JOB NO. ADS-638UB. CODE 4.2.1

PREPARED BY TED
DATE 6-16-65
CHECKED BY [illegible]

REPORT NO ER 5473
MODEL C-141A
PAGE D-129

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-15-65

FLIGHT ~ 142 DROP NO. ~ 20

SHEET 1 OF 1

CARGO WT. 34,960 LBS.

NOTE:
SEE FIGURE D-20A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

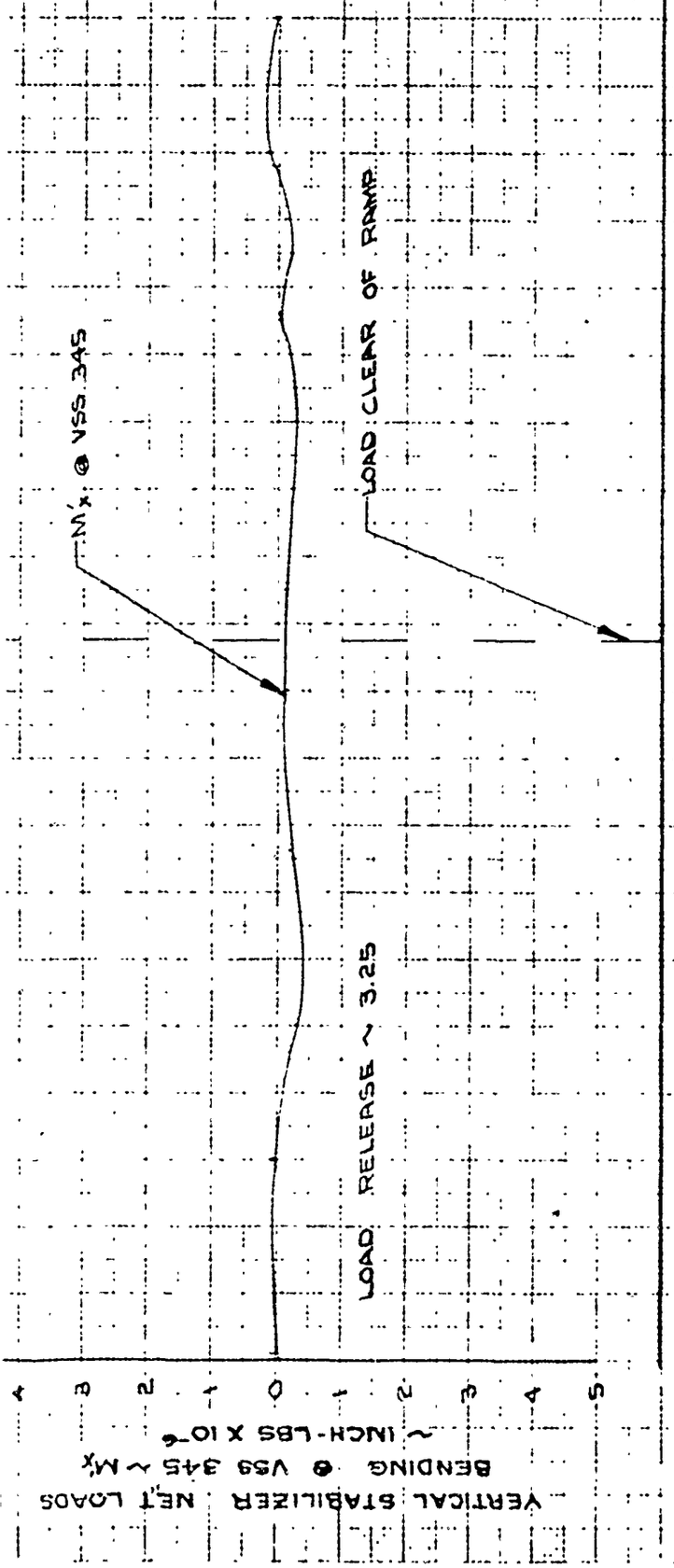
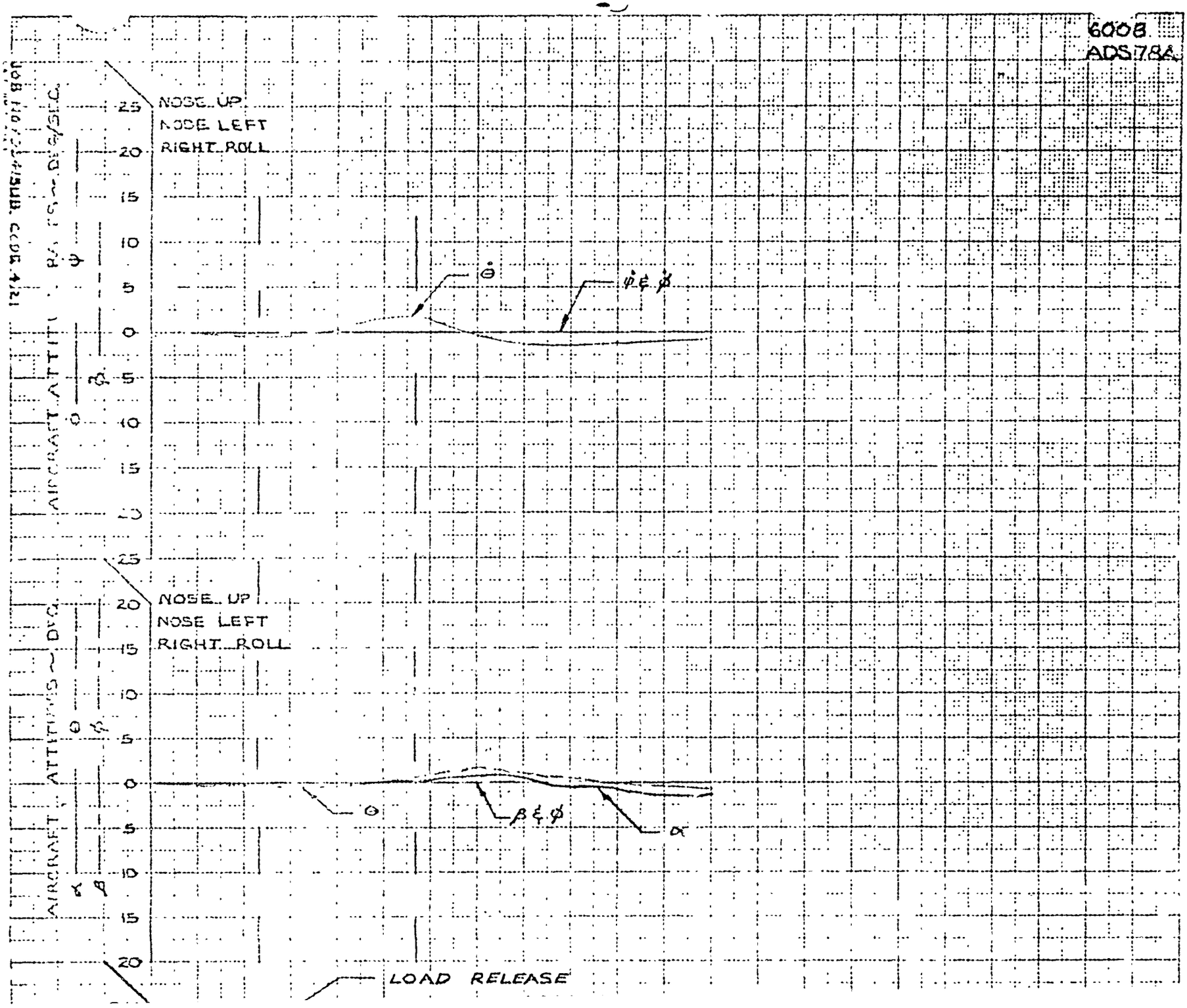


FIGURE D-20G

6008
ADS-98G


6008
ADS 784
JOB 110/22 #15UB CODE 4121
AIRCRAFT ATTITUDES ~ DEG.
AIRCRAFT RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
θ
φ
ψ
θ̇ ξ φ̇
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
β ξ φ
α
LOAD RELEASE

PREPARED BY RSA
DATE 5-12-65
CHECKED BY

REPORT NO ER 5473
MODEL C-141A
PAGE D-130

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE ~ 5-12-65

FLIGHT ~ 123 DROP NO. ~ 21

SHEET 1 OF 5

CARGO WT 21,350 LBS.

RUN CONDITIONS

1. G.W. ~ 180,400 LBS
2. C.G. PRIOR TO DROP ~ 33.4% MAC
3. C.G. AFTER DROP ~ 29.9 % MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.25 (4 ENGINES)
7. Δ_H ~ 0.5 DEG. (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. 1018
   VERT. ~ WL 173

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT ~ 1.09
4. EXTRACTION LINE LENGTH ~ 140 FT.

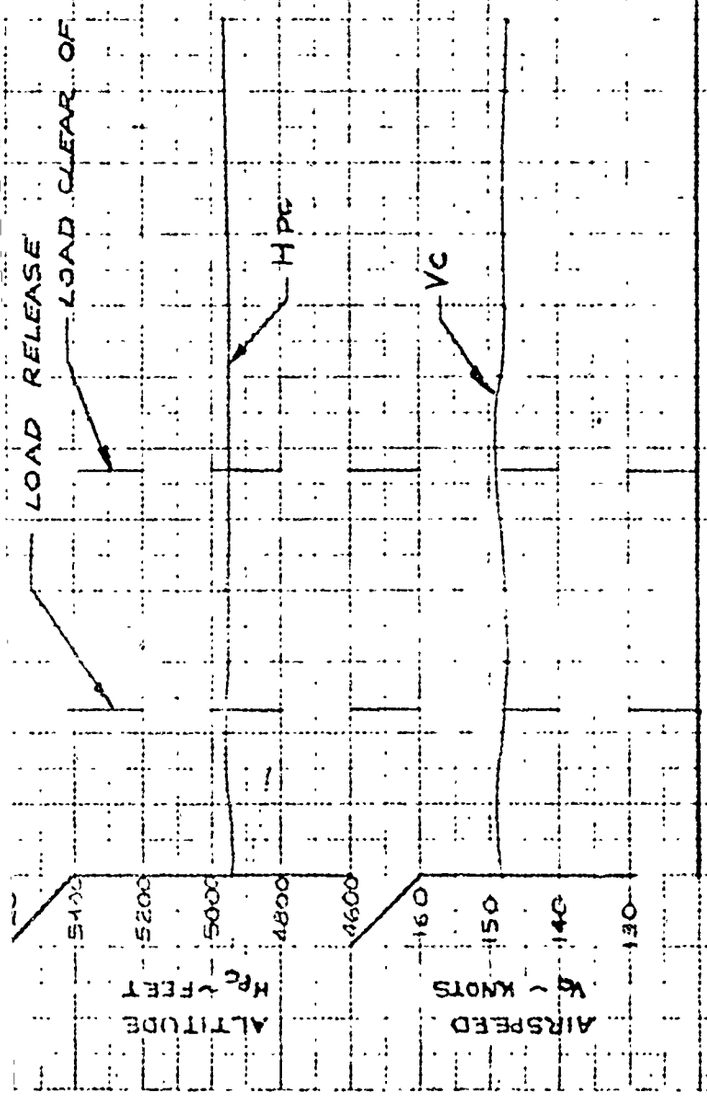


FIGURE D-21A

600B
ADS 78A
REVISED 12-15-65
MBH

6008
ADS 78 B

RIGHT ROLL
PUSH LEFT
PULL

T.E. UP

F_r
F_a
F_e
δ_{aL}

70 60 50 40 30 20 10 0 10 20 30 40 20 15 10 5 0 5 10

F_r — F_a — F_e — δ_{aL}

CONTROL FORCES ~ LBS.

LEFT AILERON POSITION ~ DEG.

JOB NO. ADS-4 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE ~ 5-12-65

FLIGHT ~ 123 DROP NO ~ 21

SHEET 2 OF 5

CARGO WT. 21,350 LBS

NOTE:
SEE FIGURE 2 SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

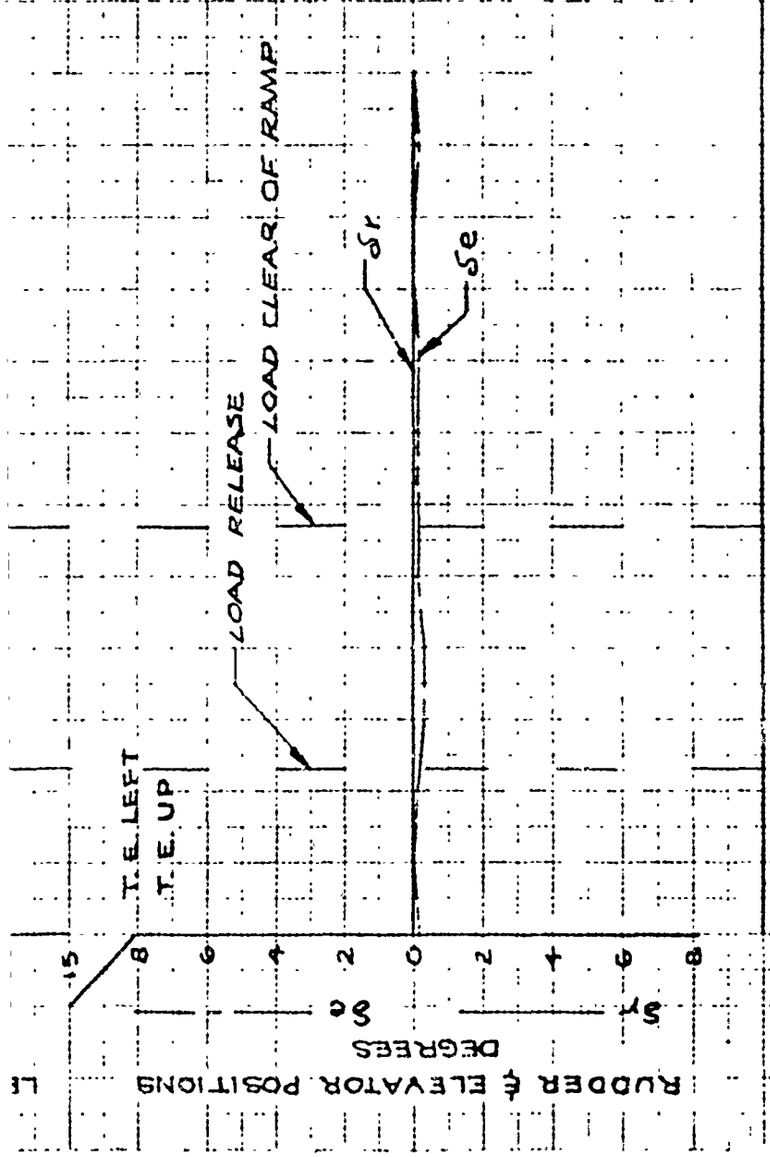
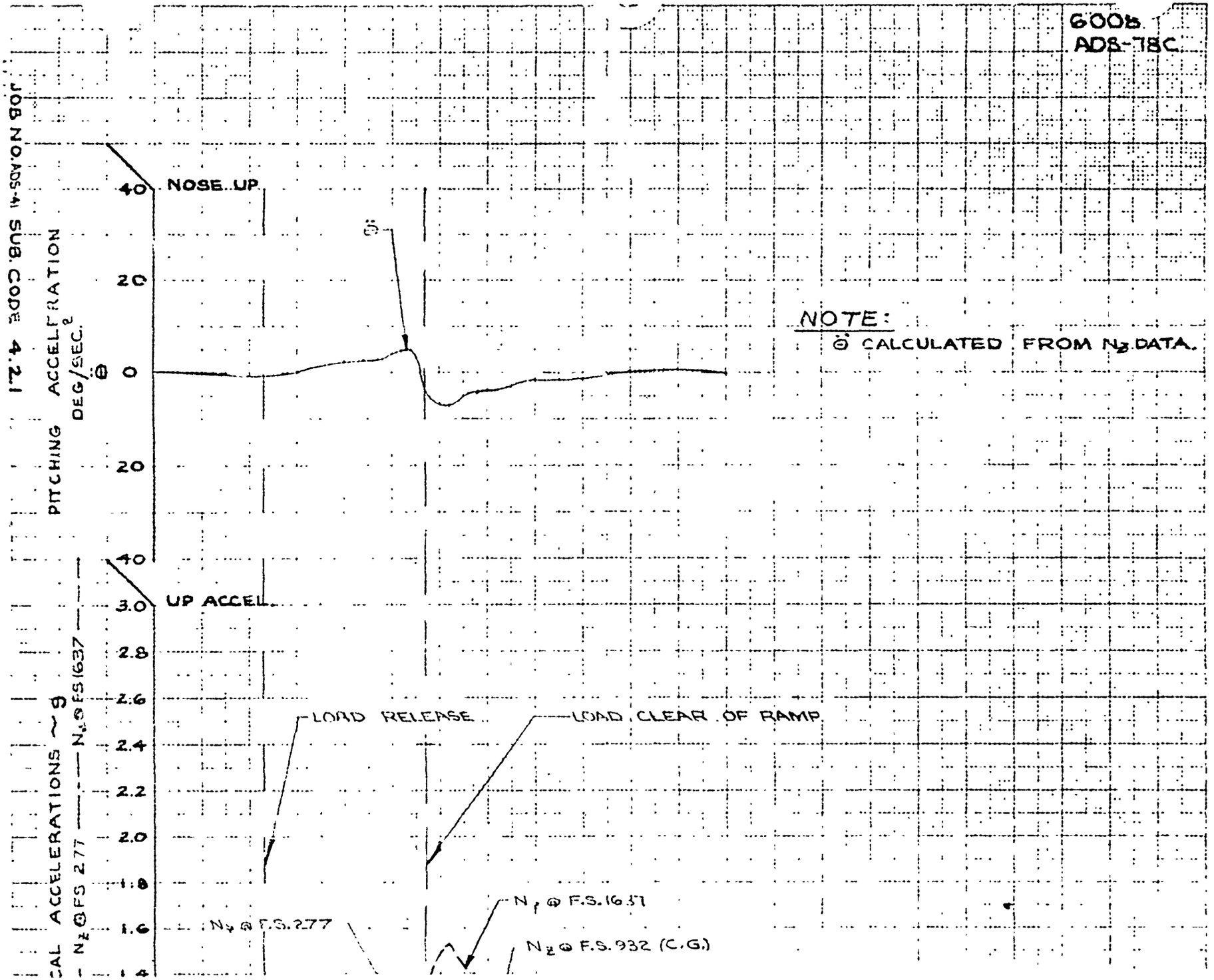


FIGURE D-213


JOB NO. ADS-4 SUB. CODE 4.2.1
PITCHING ACCELERATION
DEG/SEC.²
40
NOSE UP
20
0
20
40
NOTE:
θ̈ CALCULATED FROM Nz DATA.
3.0
UP ACCEL.
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
CAL ACCELERATIONS ~ g
Nz @ FS 277
Nz @ FS 1637
LOAD RELEASE
LOAD CLEAR OF RAMP
Nz @ F.S. 277
Nz @ F.S. 1637
Nz @ F.S. 932 (C.G.)

T.E.D.
DATE 5-12-65

REPORT NO. ER 5473
MODEL C-141A
PLATE D-132

13-7

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 5-12-65

FLIGHT-123 DROP NO.-21

SHEET 3 OF 5

CARGO WT. 21,350 LBS

NOTE:
SEE FIGURE D-21A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

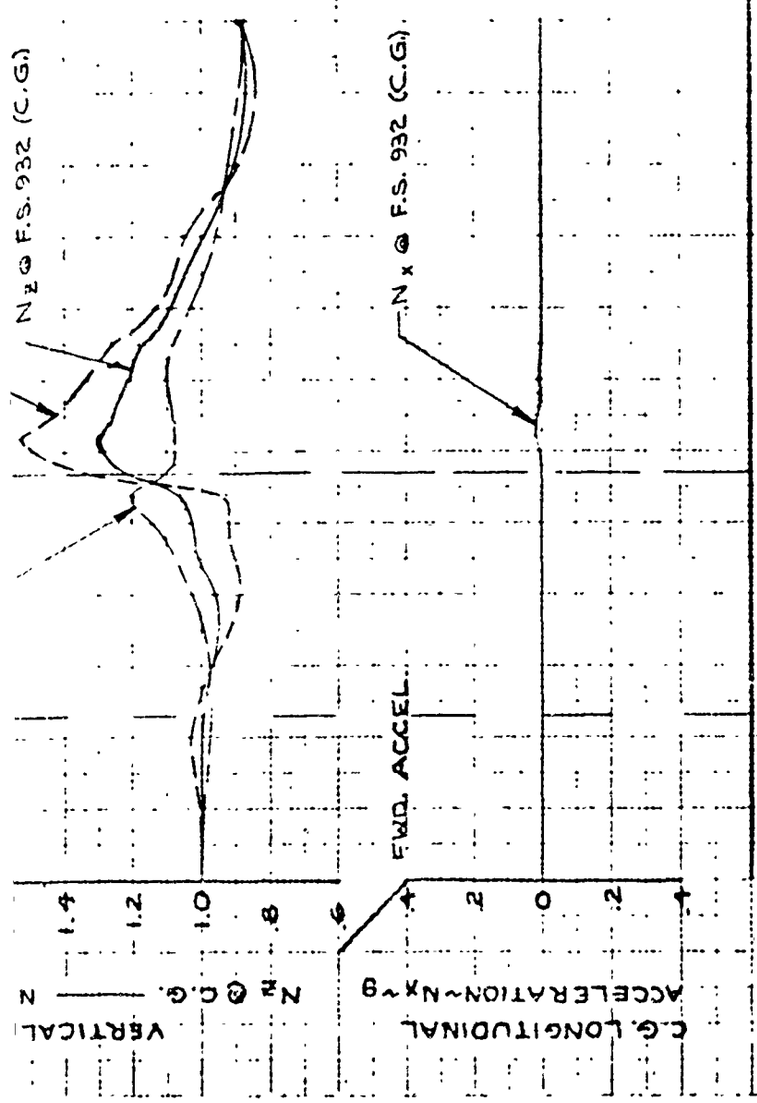
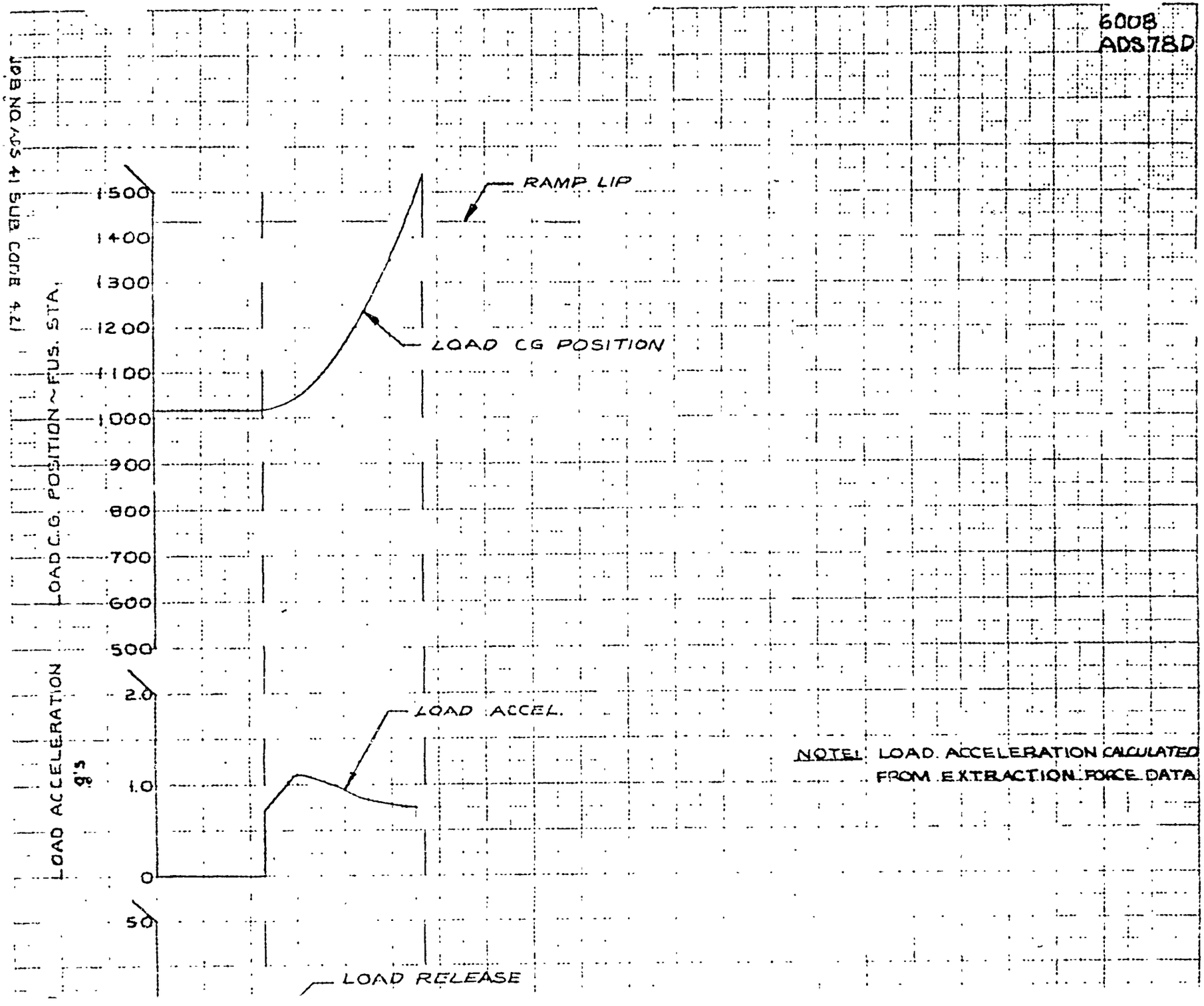


FIGURE D-21C

6008
ADS-78C

6008
ADS78D

JOB NO 65-41 SUB CODE 421



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 5-12-65

FLIGHT ~ 123 DROP NO. ~ 21

SHEET 4 OF 5

CARGO WT. 21,350 LBS

NOTE:
SEE FIGURE D-21A, SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

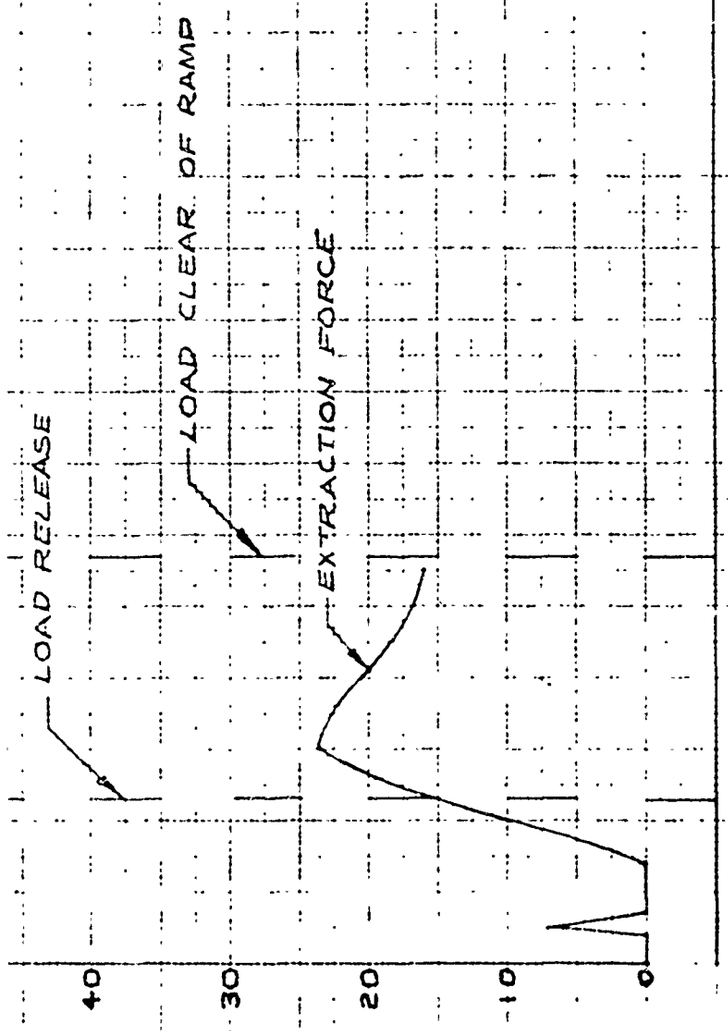


FIGURE D-21D

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM D-134
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 65-8077 LAC 6008

FLIGHT 123 TEST DATE 5-12-65

G.W. 188,800 LBS. A/S 150 KCAS

C.G. %MAC. ALT. ~ 4,960 FT.

DROP WT. ~ 21,350 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	1.0
2	ANGLE OF PITCH	"	1.8
3	C.G. VERT. ACCEL.	g's	1.304
4	C.G. LONG. ACCEL.	"	-0.022
5	VERT. ACCEL. @ F.S. 277	"	1.203
6	VERT. ACCEL. @ F.S. 1637	"	1.531
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	17.62
8	VERT. BEND. @ F.S. 1568	"	1.03
9	BENDING ~ M'_X @ HBL 44L	"	0.309
10	SHEAR ~ S'_Z @ HBL 44L	LBS. X 10^{-3}	2.31
11	PITCH TRIM ACTUATOR ~ S_Z	"	1.97
12	R.H. RAMP ACTUATOR LOAD	"	0.39
13	L.H. " "	"	0.29
14	R.H. SPIDER ARM LOAD	"	6.308
15	L.H. " "	"	6.120
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.710
17	L.H. " " " "	"	6.564
18	BENDING ~ M'_X @ VSS	IN-LBS. X 10^{-6}	0.033
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	3.555
20	L.H. " " " "	"	3.379
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.989
22	L.H. " " " "	"	- 1.898
23	RAMP HINGE TOTAL SIDE LOAD	"	- 0.306
24	EXTRACTION CHUTE FORCE	"	23.5
25	CARGO LONG. ACCEL.	g's	1.10

LG FORM 1503

FIG. D-21E
ADS-78E

600EI
ADS-96A
LOAD RELEASE
LOAD CLEAR OF RAMP
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
AIRCRAFT ATTITUDES ~ DEG
JOB NO. ALSS SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 600B

TEST DATE 6-9-65

FLIGHT 139 DROP NO. 22

SHEET 1 OF 7

CARGO WT. 34400 LBS.

RUN CONDITIONS

1. G.W. ~ 195300 LBS.
2. C.G. PRIOR TO DROP ~ 33.3% MAC
3. C.G. AFTER DROP ~ 30.0% MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.29
7. γ_H ~ 0.25 DEG. (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. 987
   VERT. ~ WL 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28'
3. RATED CHUTE FORCE/CARGO WT. 1.40
4. EXTRACTION LINE LENGTH ~ 100'

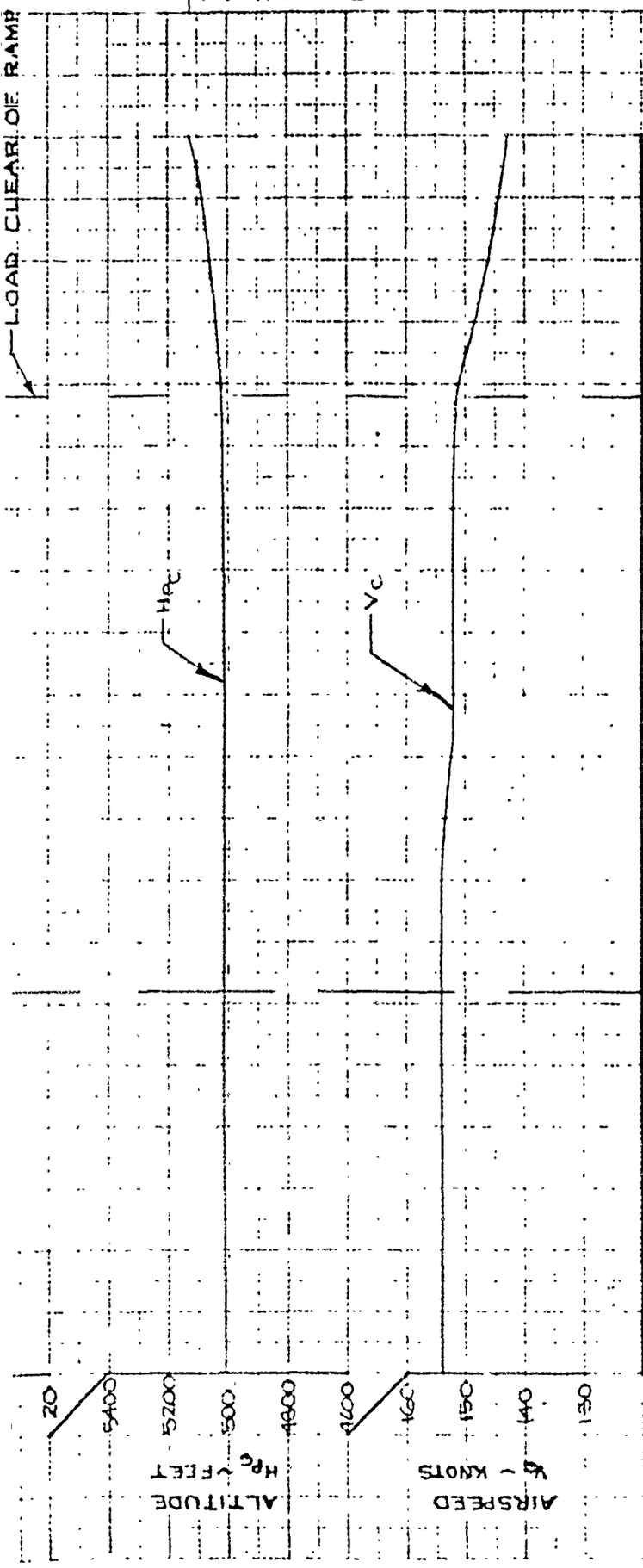
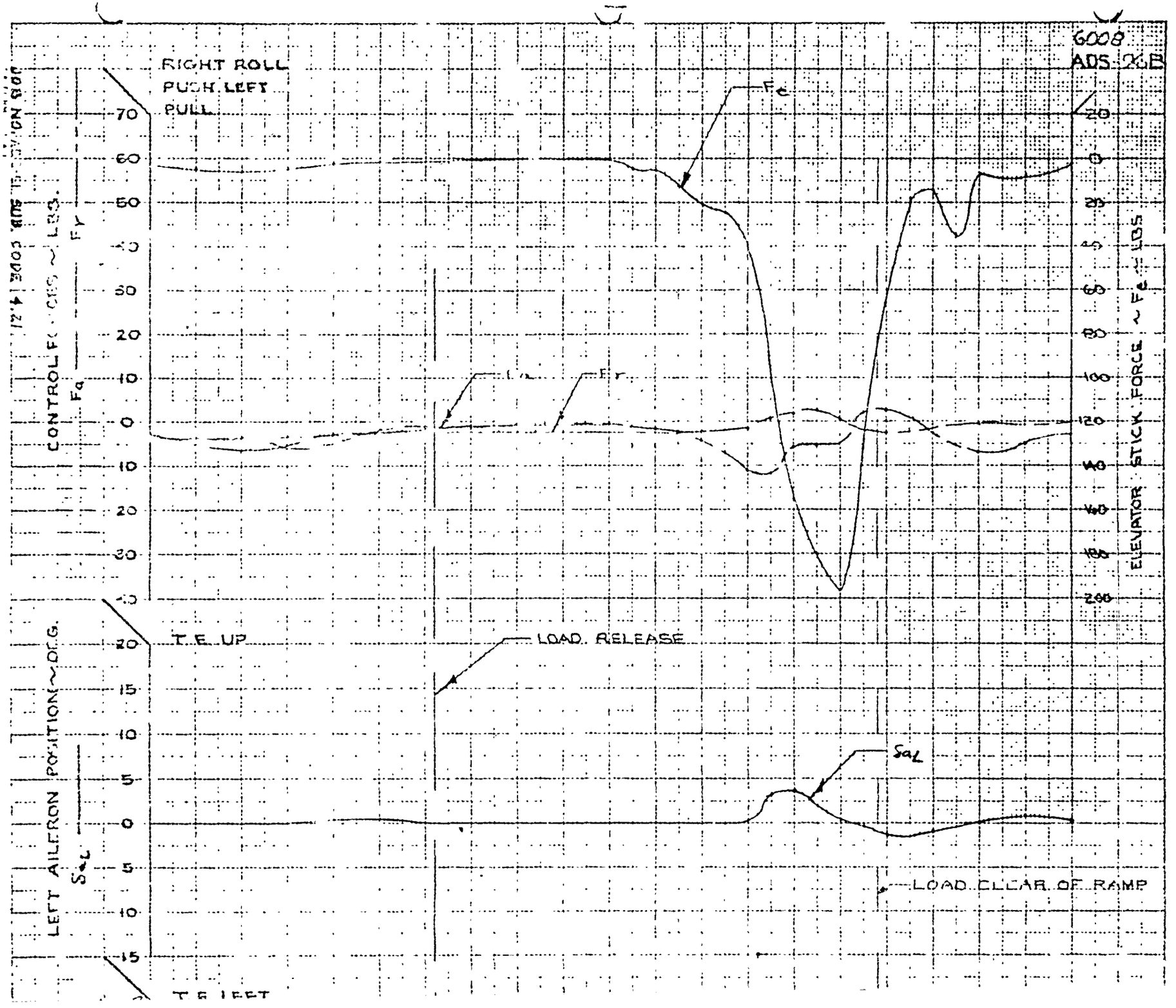


FIGURE D-22A


6008
ADS 26B
RIGHT ROLL
PUSH LEFT
PULL
CONTROL FORCES ~ LBS.
Fa
Fr
70
60
50
40
30
20
10
0
10
20
30
40
Fe
ELEVATOR STICK FORCE ~ Fe ~ LBS.
20
0
20
40
60
80
100
120
140
160
180
200
T.E. UP
T.E. LEFT
LEFT AILERON POSITION ~ DEG.
Sa L
20
15
10
5
0
5
10
15
LOAD RELEASE
Sa L
LOAD CLEAR OF RAMP

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 6-9-65

FLIGHT 139 DROP NO 22

SHEET 2 OF 7

CARGO WT 34400 LBS

NOTE:
SEE FIGURE D-22 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

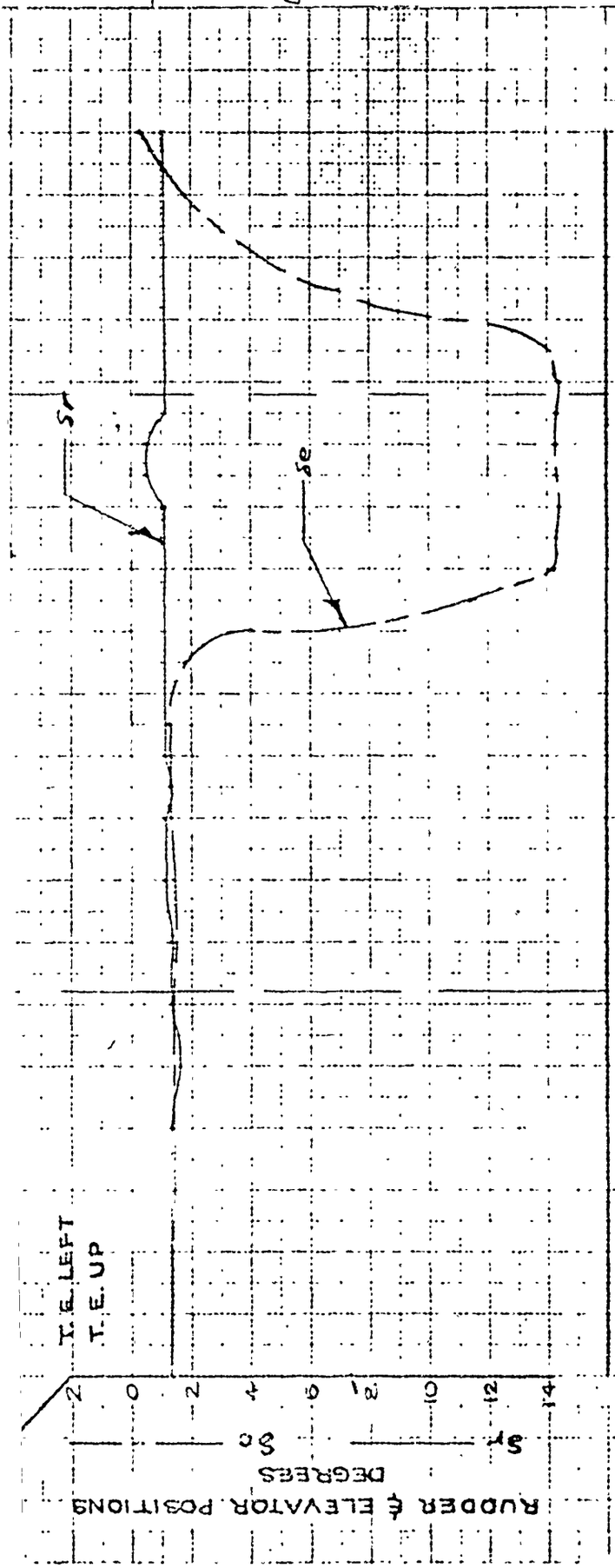


FIGURE D-22B

6008
AD3-960
NOTE: θ CALCULATED FROM Nz DATA
θ
LOAD CLEAR OF RAMP
LOAD RELEASE
Nz @ F.S. 1637
Nz @ F.S. 932(C.G)
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
θ
DEG/SEC²
PITCHING ACCELERATION
Nz @ FS 277 —— Nz @ FS 1637 ——
CAL ACCELERATIONS ~ g
JOB NO. AD3-960 SUB. CODE 4.2.1

TED
DATE 6-16-65
ER 5473
MODEL C-141A
T.R. 137

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC. 6008

TEST DATE: 6-9-65

FLIGHT ~ 139 DROP NO. ~ 22

SHEET 3 OF 7

CARGO WT. 34,400 LBS.

NOTE:
SEE FIGURE D-22A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

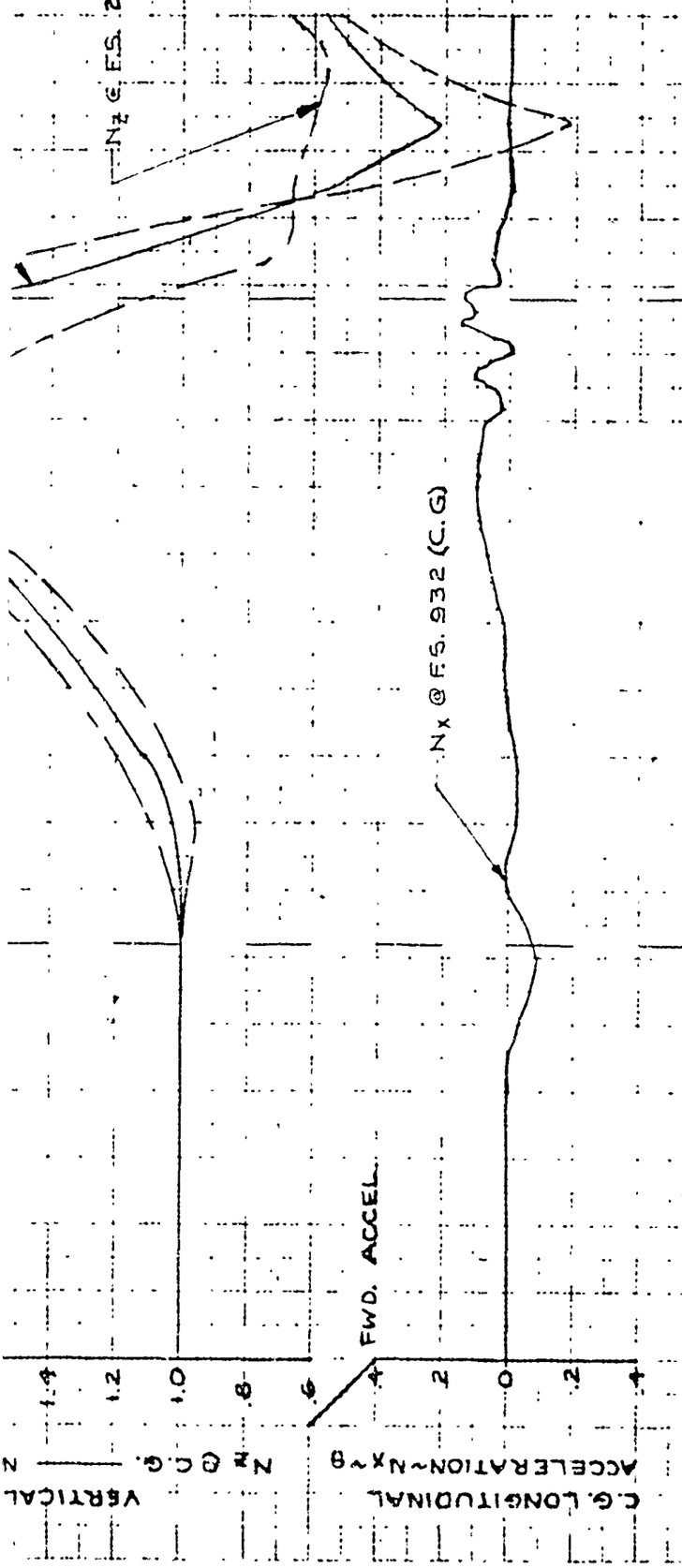
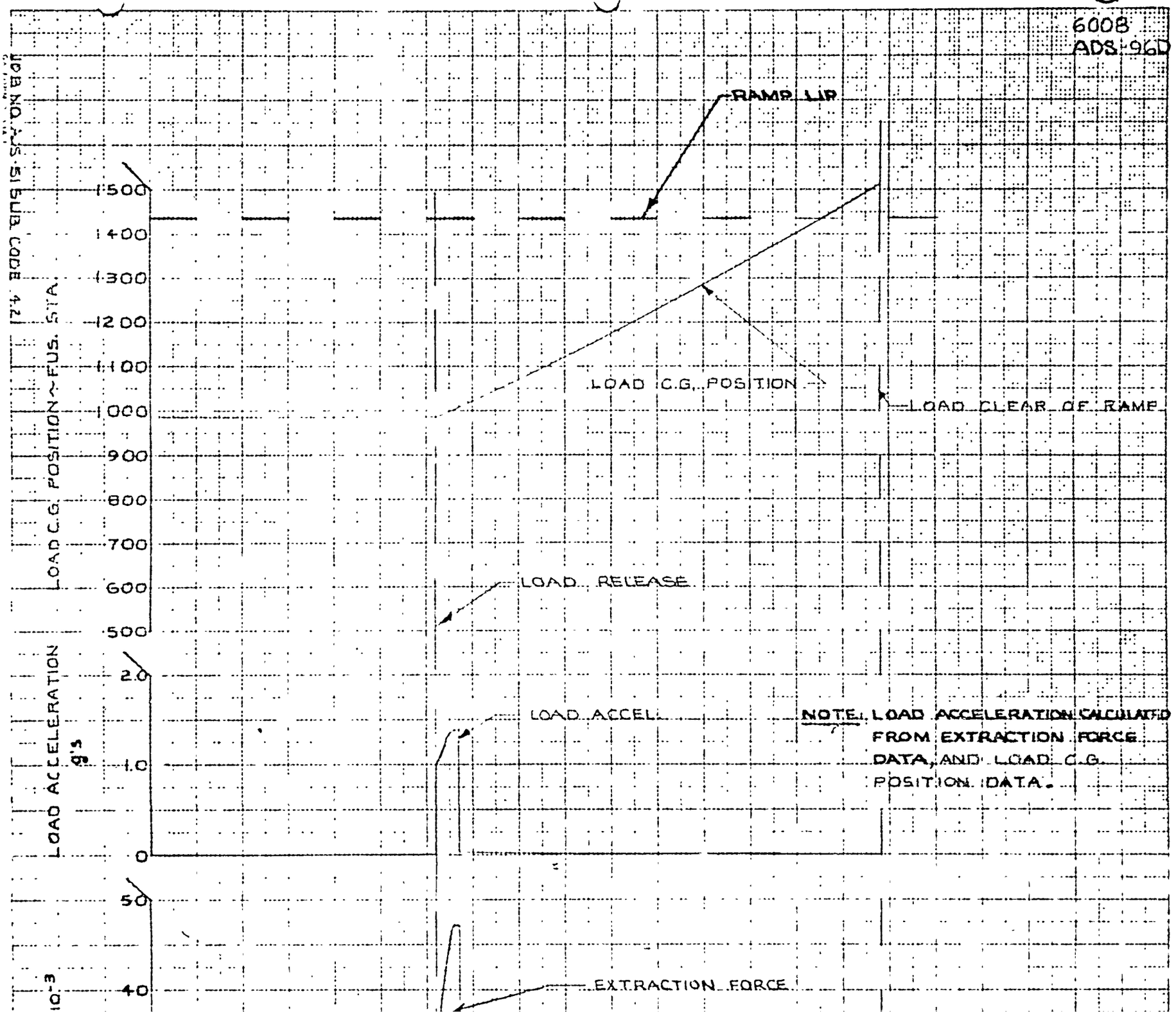


FIGURE D-22C

6008
ADS-96C

6008
ADS-96D

JOB NO. ADS-51 SUB. CODE 4.2



PREPARED BY FCW
DATE 6-9-65
CHECKED BY JWD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
T.A.I. D-138

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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-9-65

FLIGHT: 139 DROP NO. 22

SHEET 4 OF 7

CARGO WT. 34400 LBS

NOTE:
SEE FIGURE 2.22A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

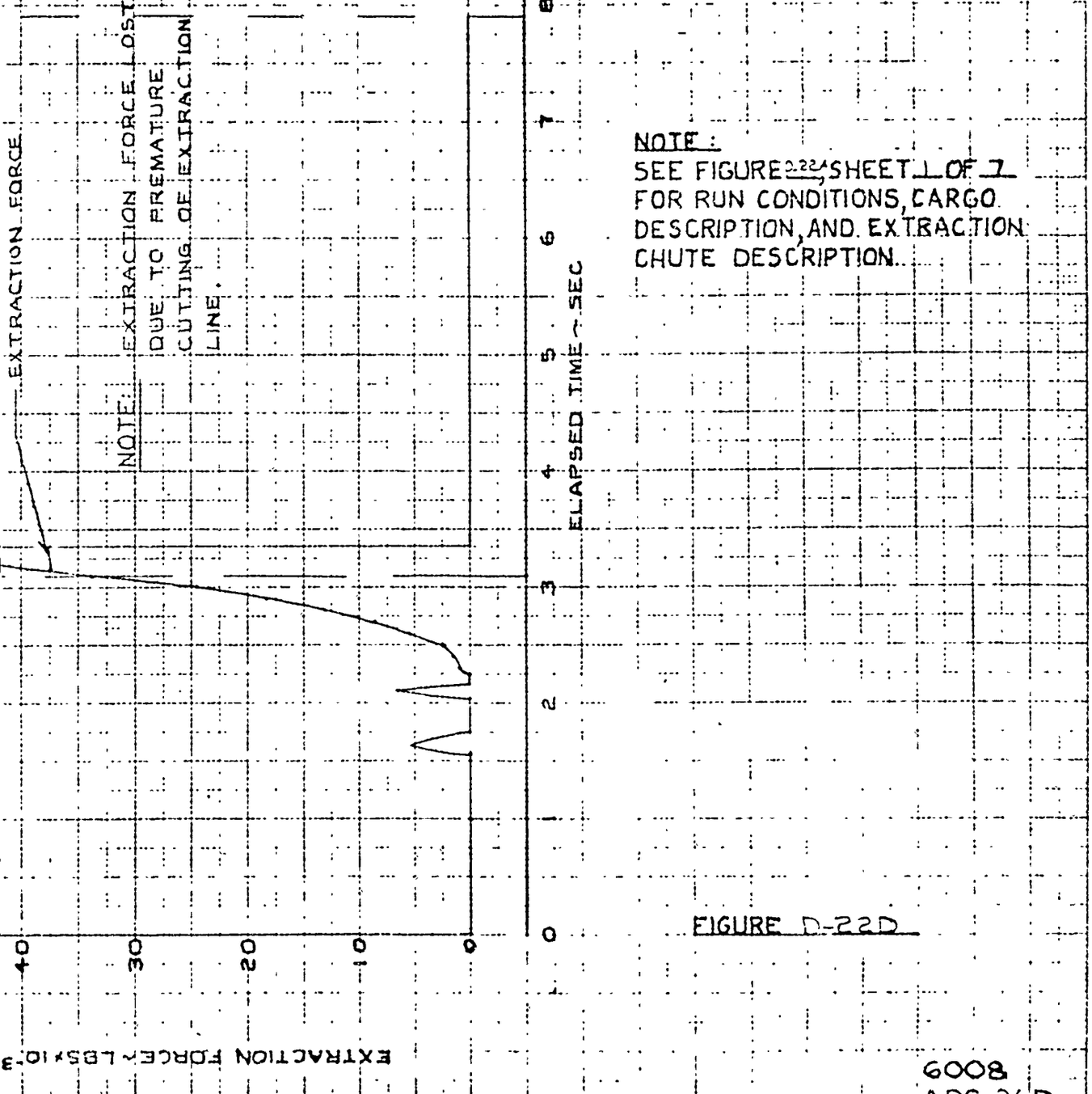
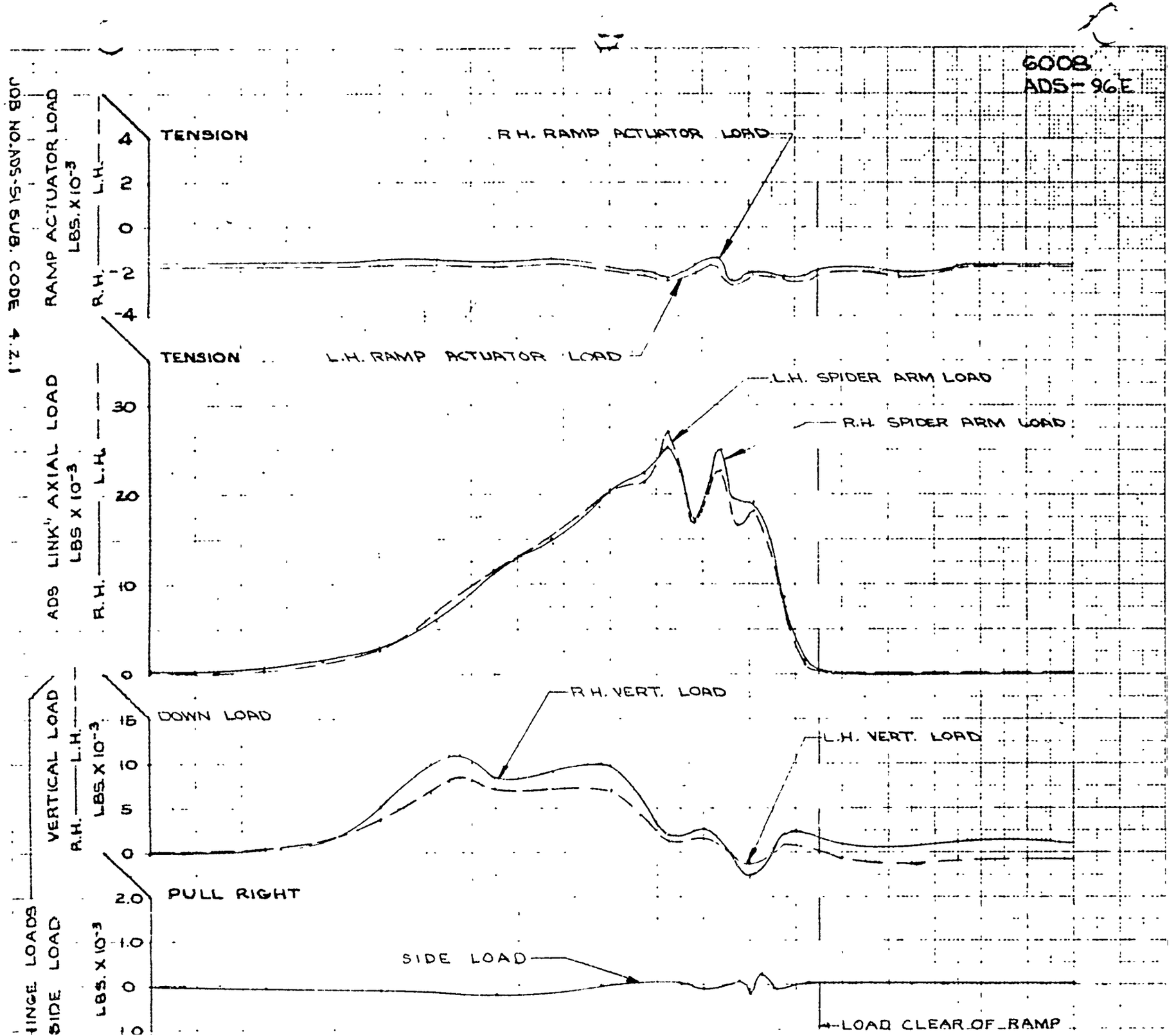


FIGURE D-22D

6008
ADS-96D


6008
ADS-96E
RAMP ACTUATOR LOAD LBS. X 10⁻³
R.H. —— L.H. — —
TENSION
4
2
0
-2
-4
R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD LBS X 10⁻³
R.H. —— L.H. — —
TENSION
30
20
10
0
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
VERTICAL LOAD
R.H. —— L.H. — —
LBS. X 10⁻³
DOWN LOAD
15
10
5
0
R.H. VERT. LOAD
L.H. VERT. LOAD
PULL RIGHT
2.0
1.0
0
-1.0
LBS. X 10⁻³
SIDE LOAD
LOAD CLEAR OF RAMP
HINGE LOADS
SIDE LOAD
1.2.1 ← 3000 SUB. BUS IS-SQV'ON 80C

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

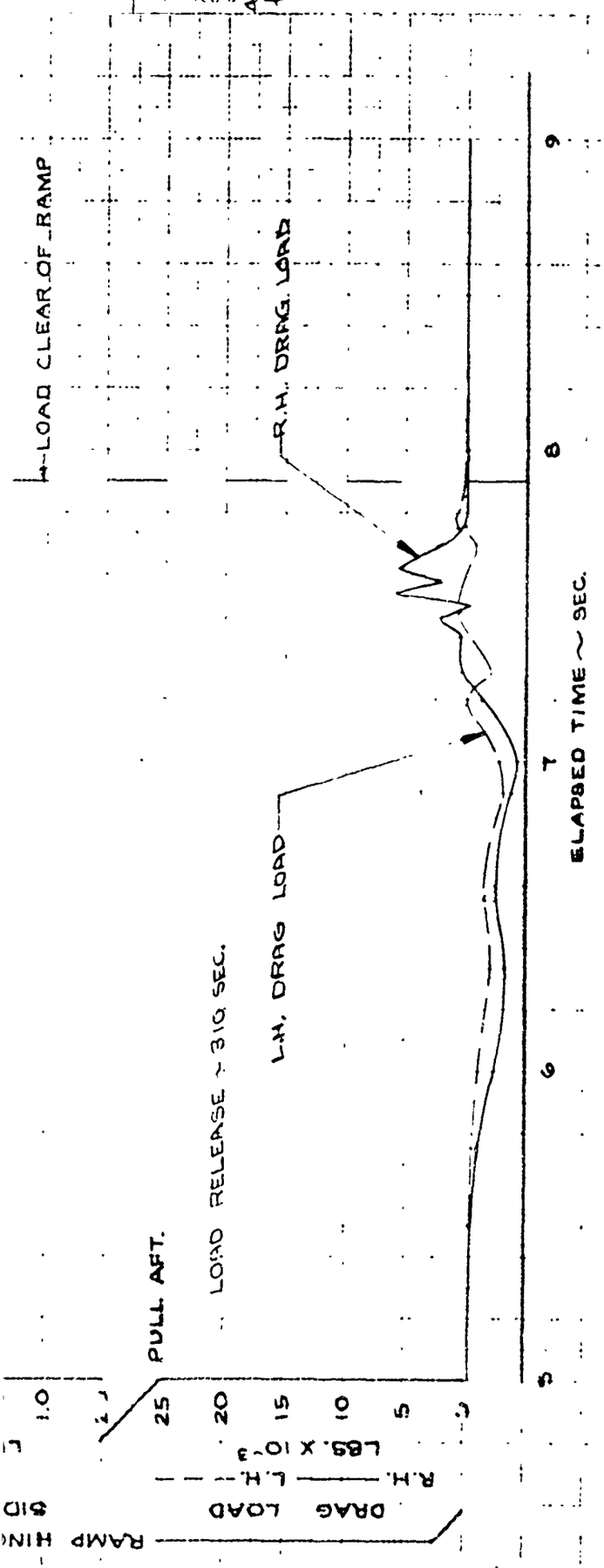
AF 63-8077 LAC 6008

TEST DATE: 6-9-65

FLIGHT 139 DROP NO. 22

SHEET 5 OF 7

CARGO WT. 34,400 LBS



NOTE:
SEE FIGURE D-22A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-22 E

6008
ADS-96E

PEDAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10-3
RH ——— LH
LH PEDAL DOOR ACTUATOR LOAD
COMPRESSION

VERTICAL BENDING ~ FS 1560
INCH-LBS. X 10-6
R.H. PEDAL DOOR ACTUATOR LOAD
MY @ F.S. 1560
MY @ F.S. 1048
DOWN LOAD

JOB NO. ADS-5 | SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

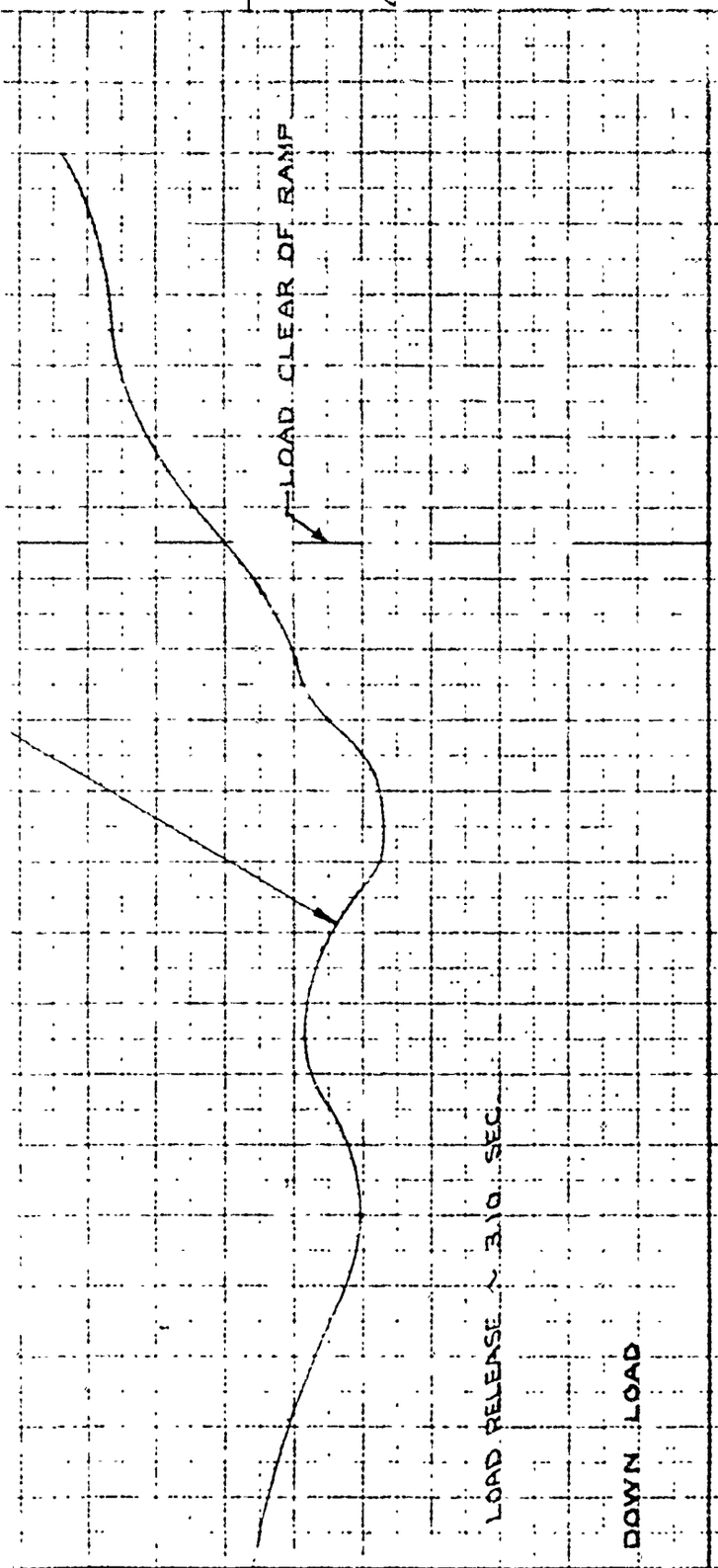
AF63-8077 LAC 6008

TEST DATE 6-9-65

FLIGHT ~ 139 DROP NO ~ 22

SHEET 6 OF 7

CARGO WT. 34,400 LBS



NOTE:
SEE FIGURE D-22A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-22F

6008
ADS-966
HORIZONTAL STABILIZER NET LOADS
BENDING @ H.S.L. 44L ~ M'x
INCH - LBS X 10-6
SHEAR @ H.S.L. 44L ~ S'z
LBS X 10-3
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
LOAD CLEAR OF RAMP
M'x @ HBL 44L
S'z @ HBL 44L
M'x @ VSS 345
JOB NO. ADS-518 SUB. CODE 4.2.1

PREPARED BY TED
DATE 6-11-65
CHECKED BY JSP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5475
MODEL C-141A
PAGE D-141

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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-5077 LAC 6008

TEST DATE: 6-9-65

FLIGHT-139 DROP NO.-26

SHEET 1 OF 1

CARGO WT. 34400 LBS

NOTE:
SEE FIGURE 2 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

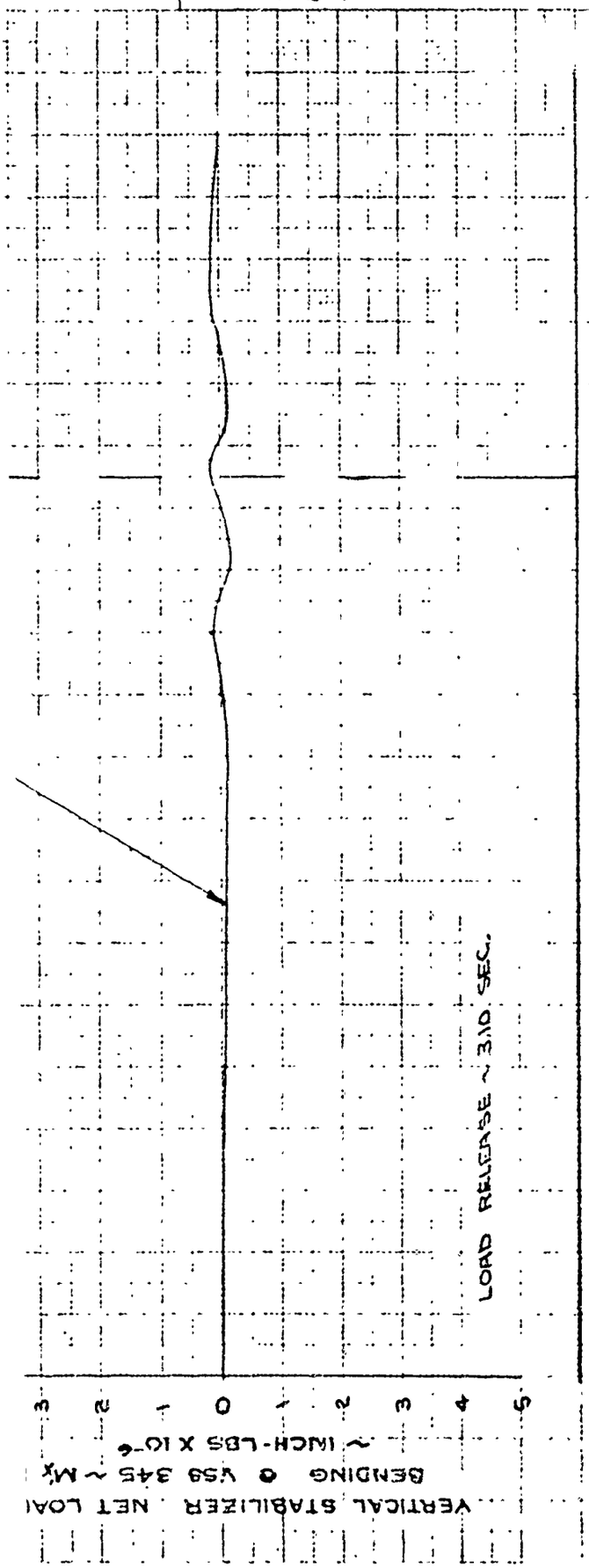
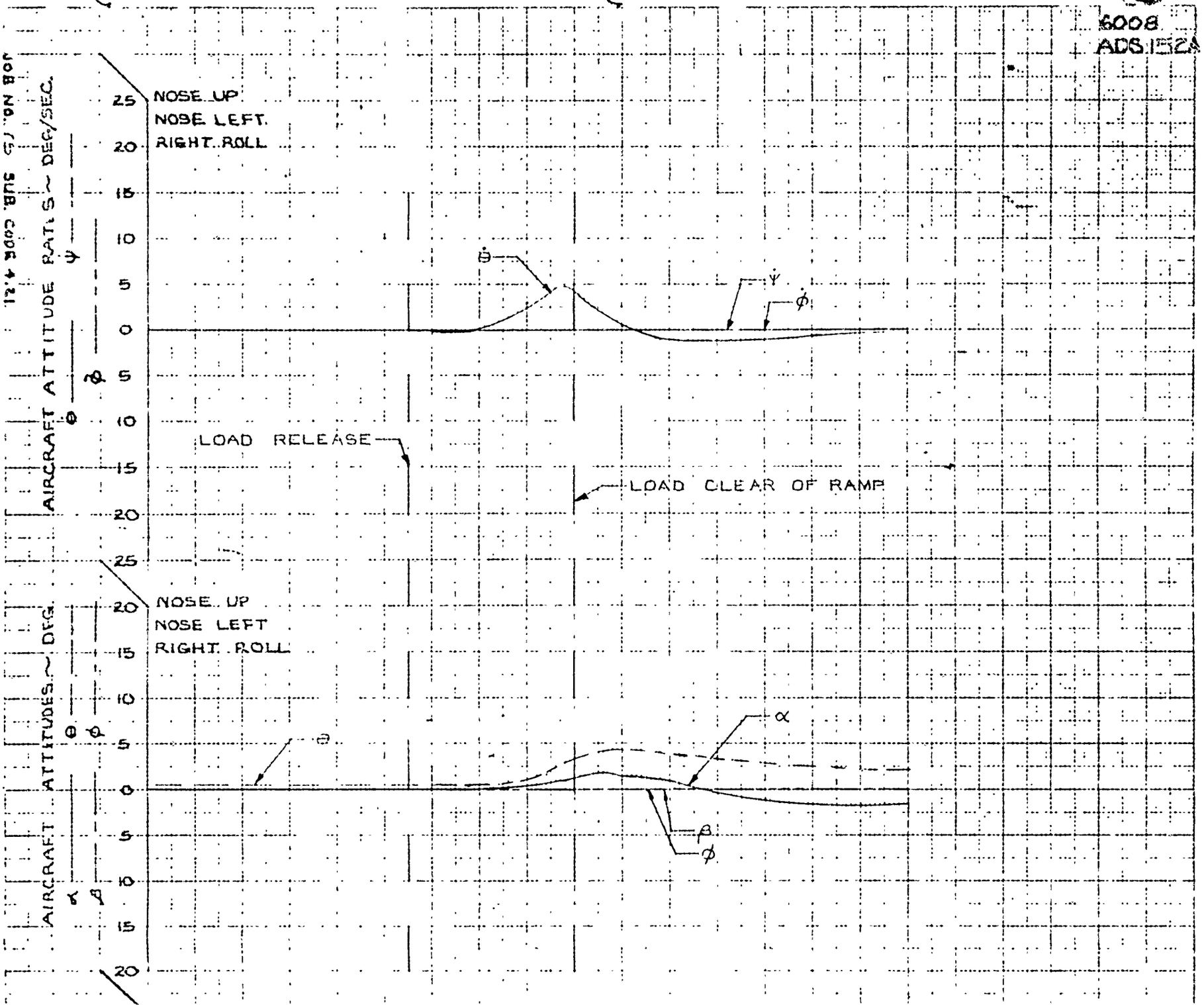


FIGURE 2-226


6008
ADS 1524
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
LOAD CLEAR OF RAMP
AIRCRAFT ATTITUDES ~ DEG.
NOSE UP
NOSE LEFT
RIGHT ROLL

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 8-23-65

FLIGHT 168 DROP NO. 22R

SHEET 1 OF 7

CARGO WT. 35,050 LBS

RUN CONDITIONS

1. G.W. ~ 193,800 LBS.
2. C.G. PRIOR TO DROP ~ 33.7% MAC
3. C.G. AFTER DROP ~ 30.6% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24
7. $\dot{\gamma}_H$ ~ 0.05 N.D.

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 986
   VERT. ~ WL 185

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT. DIA.
3. RATED CHUTE FORCE/CARGO WT. LB
4. EXTRACTION LINE LENGTH ~ 100 FT

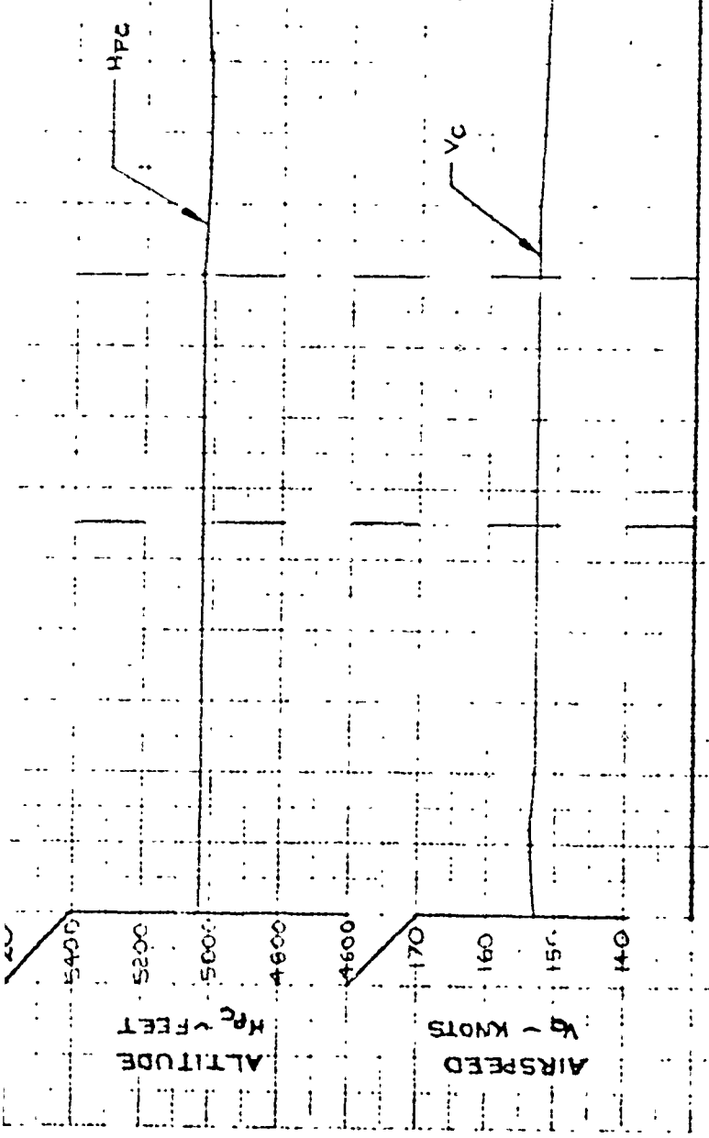
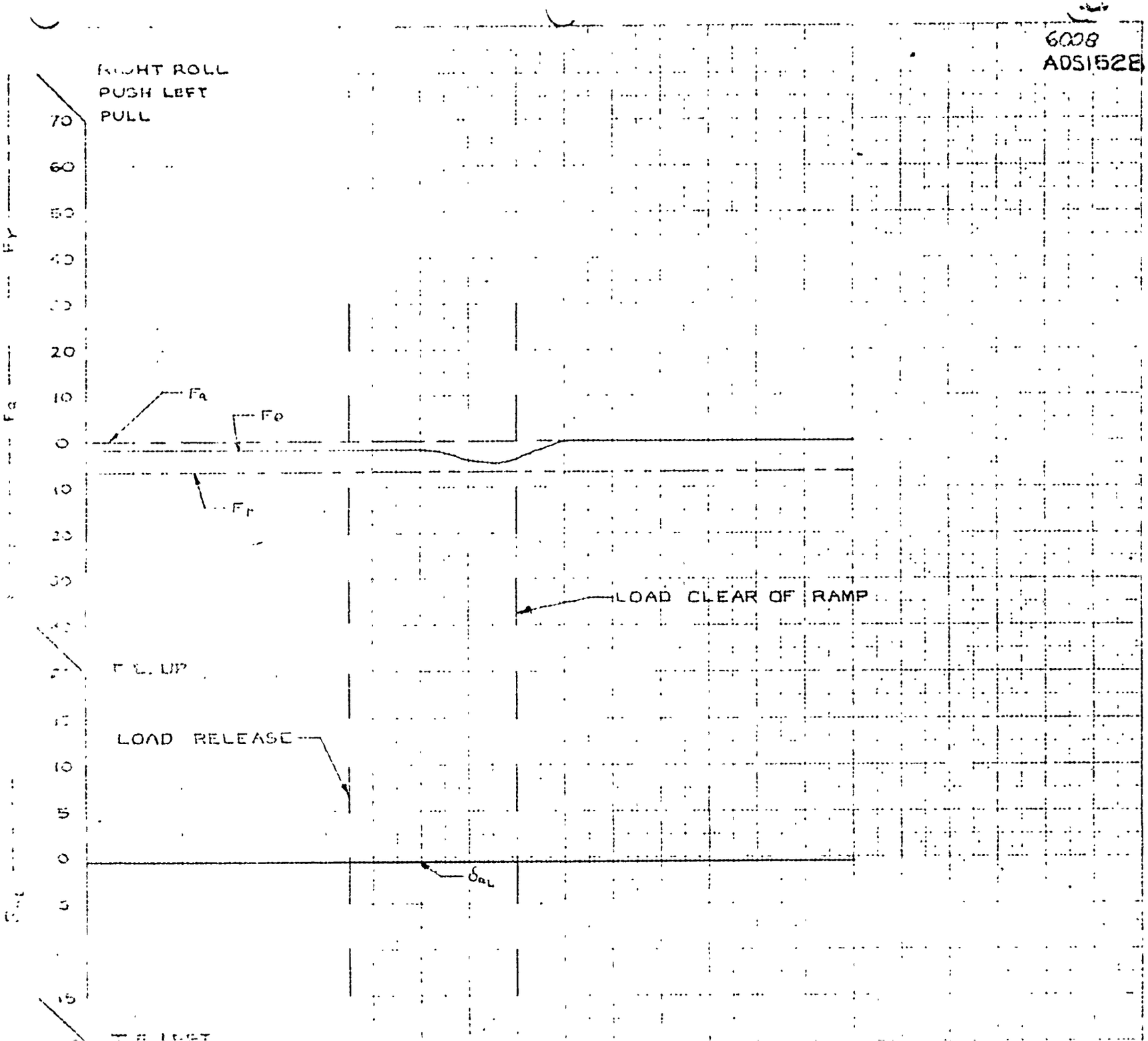


FIGURE D-23A


6008
A051528
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
F_a
F_e
F_r
LOAD CLEAR OF RAMP
LOAD RELEASE
δ_{aL}

PREPARED BY MBH
DATE 8-25-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY

ER 5473
MODEL C-141A
PAGE D-143

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 8-23-65

FLIGHT 168 DROP NO 22R

SHEET 2 OF 7

CARGO WT 35,050 LBS.

NOTE:
SEE FIGURE D-23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

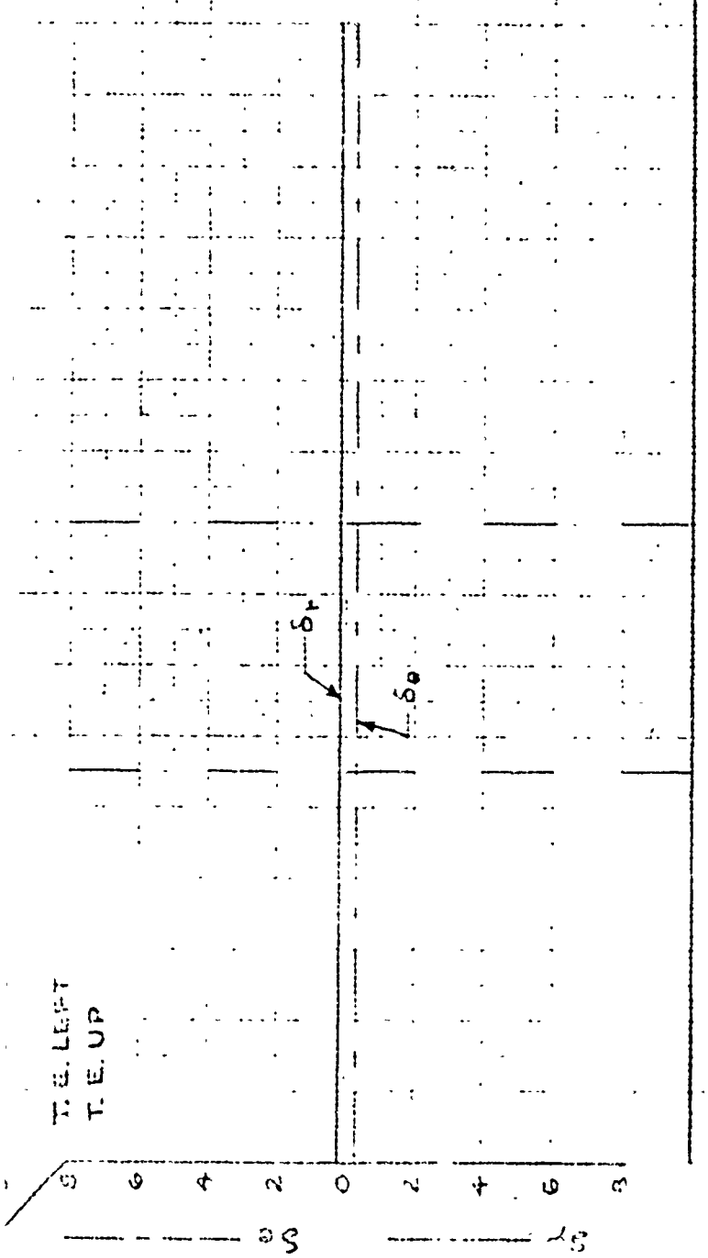
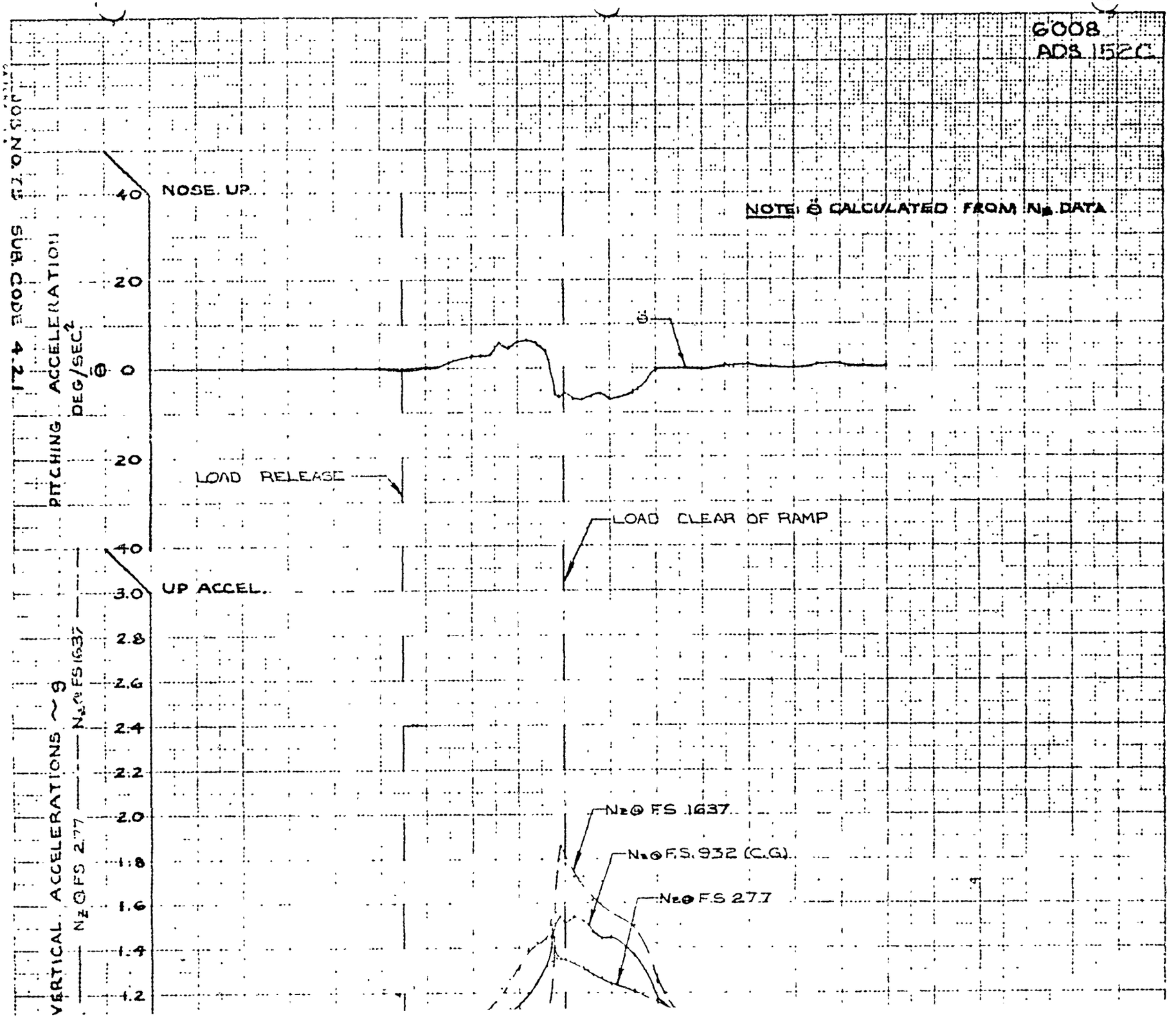


FIGURE D-23B

6008
ADS 152B


6008
ADS 152C
SUB CODE 4.2.1
NOSE UP
NOTE: θ̈ CALCULATED FROM Nz DATA
PITCHING ACCELERATION
DEG/SEC²
40
20
0
20
40
θ̈
LOAD RELEASE
LOAD CLEAR OF RAMP
UP ACCEL.
VERTICAL ACCELERATIONS ~ g
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
Nz @ FS 277
Nz @ FS 1637
Nz @ F.S. 1637
Nz @ F.S. 932 (C.G.)
Nz @ F.S. 277

PREPARED BY DTM
DATE 8-23-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO FP 5473
MODEL C-141A
FAIL D-144

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 8-23-65

FLIGHT 168 DROP NO. 22R

SHEET 3 OF 7

CARGO WT. = 35,050 LBS

NOTE:
SEE FIGURE D-23A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

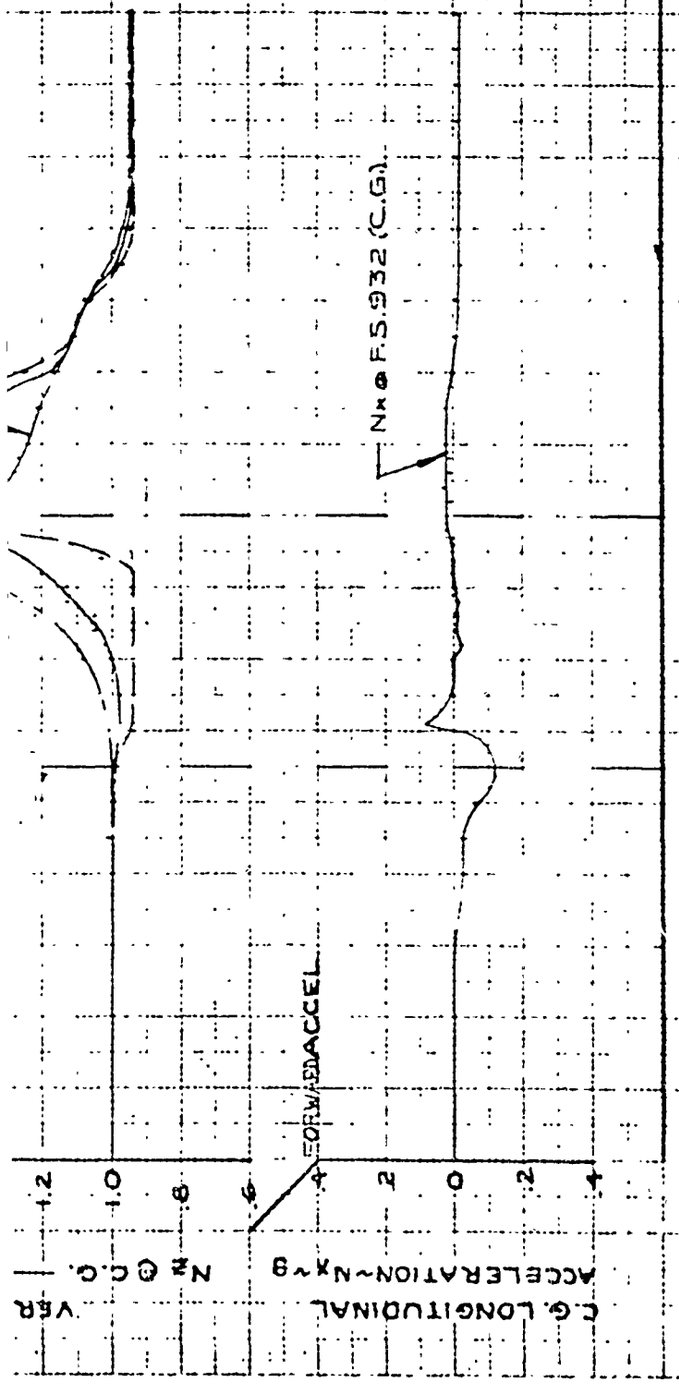


FIGURE D-23C

6008
ADS 152C

6008
ADS 1520
RAMP LIP
LOAD CLEAR OF RAMP
LOAD C.G. POSITION
LOAD RELEASE
LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
0
5.0
4.0
g's
LOAD C.G. POSITION ~ FUS. STA.
LOAD ACCELERATION
10-3
JOB NO. 75 SUB CODE 4.2

IAS

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 8-23-65

FLIGHT 168 DROP NO. 22R

SHEET 4 OF 7

CARGO WT. 35,050 LBS.

NOTE:
SEE FIGURE D-22A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

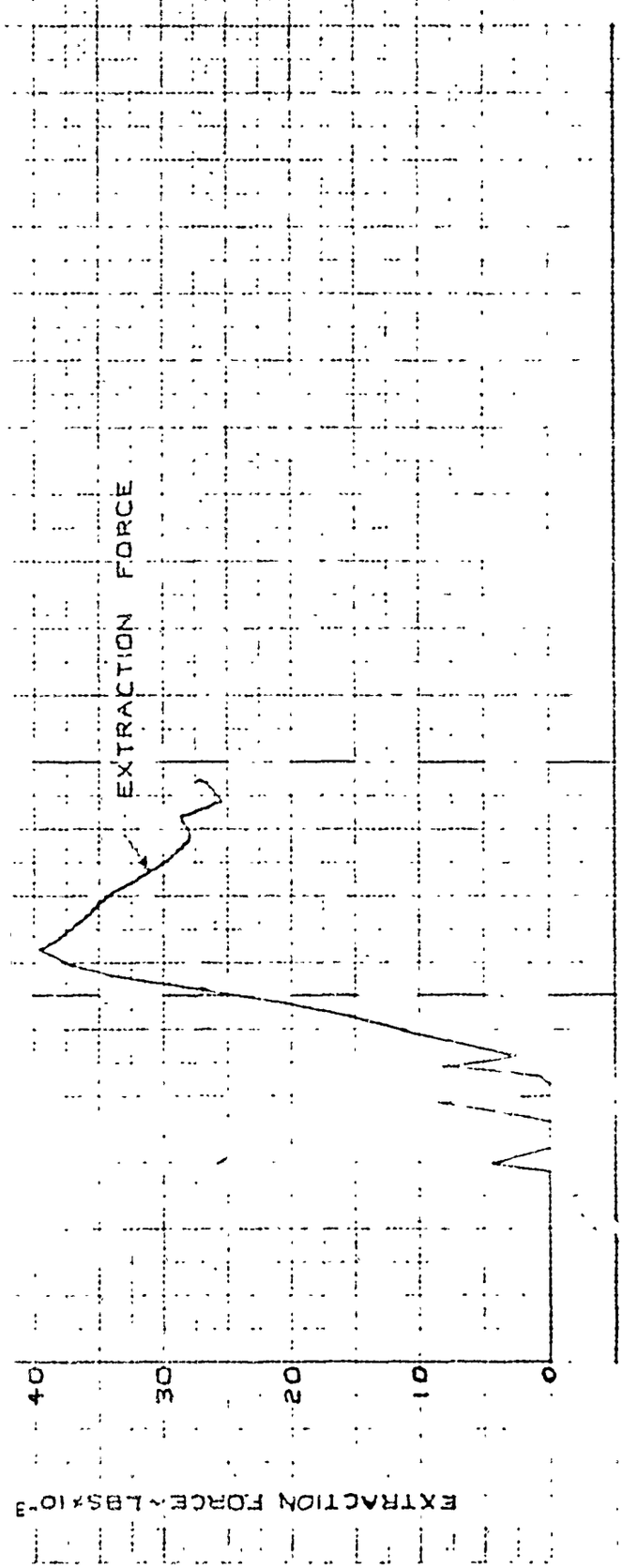


FIGURE D-23D

6008
ADS-152E

LH RAMP ACTUATOR
RH RAMP ACTUATOR
LH SPIDER ARM
RH SPIDER ARM
DOWN LOAD
RH VERTICAL LOAD
LH VERTICAL LOAD
PULL RIGHT

TENSION
TENSION

RAMP ACTUATOR LOAD
LBS. X 10-3
R.H. L.H.
4 2 0 -2 -4

ADS LINK AXIAL LOAD
LBS X 10-3
R.H. L.H.
30 20 10 0

VERTICAL LOAD
LBS X 10-3
R.H. L.H.
15 10 5 0

LOADS
LOAD
5 X 10-3
2.0 1.0 0

DATA FOR SIDE LOAD NOT AVAILABLE

JOB NO. 78 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 8-23-65

FLIGHT 168 DROP NO. 22R

SHEET 5 OF 7

CARGO WT 35,050 LBS

NOTE:
SEE FIGURE D-23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

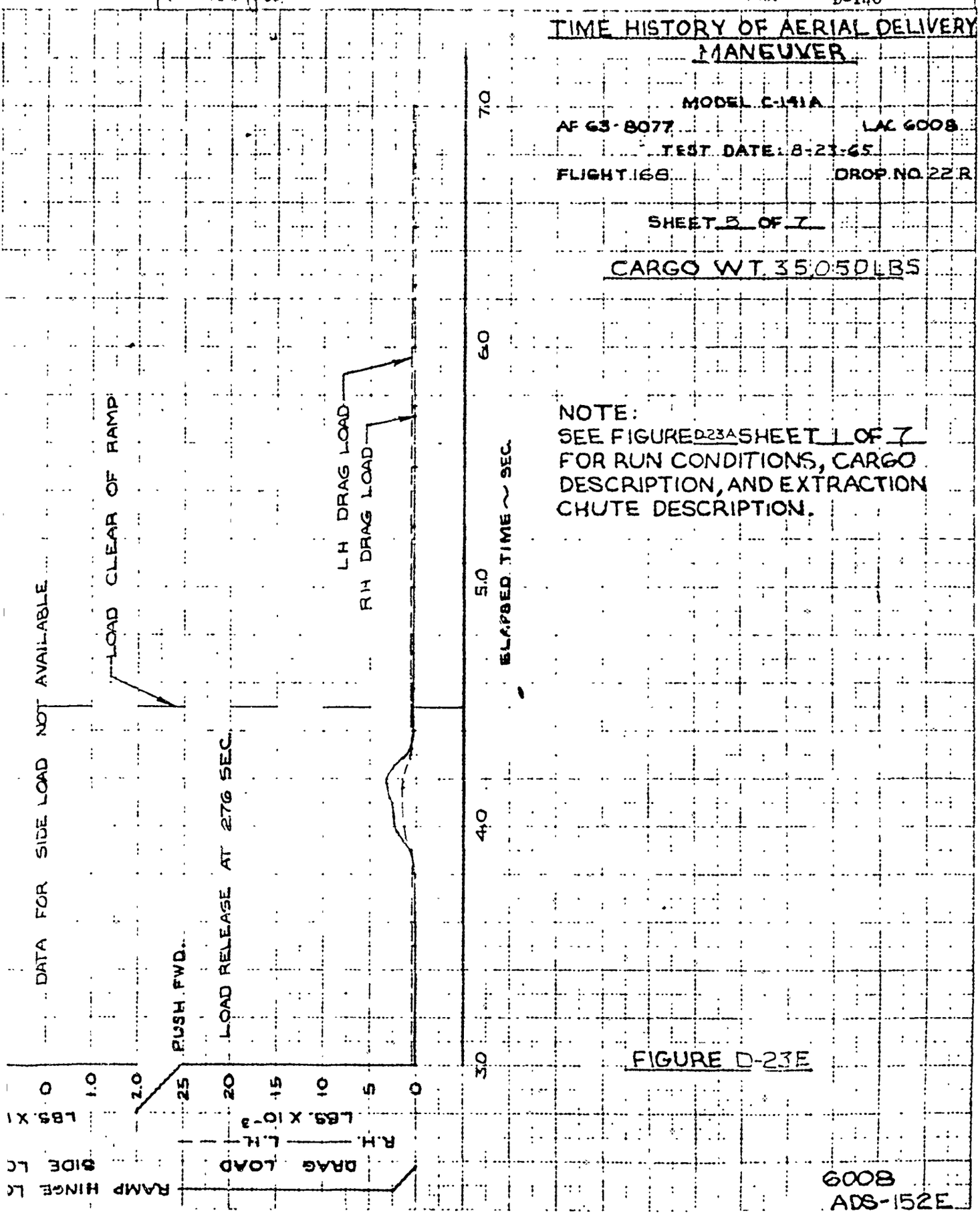


FIGURE D-23E

6008
ADS-152E

6008
AD8152F

JOB NO. 75 SUB. CODE 4.2.1

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X10⁻³
RH — LH

VERTICAL BEND NG ~ FS 156B
INCH-LBS. X 10⁻⁶

LOAD RELEASE AT 2.76 SEC.

COMPRESSION

RH NOT AVAILABLE

RH PETAL DOOR ACTUATOR

LH PETAL DOOR ACTUATOR

RH NOT AVAILABLE

LOAD CLEAR RAMP

DATA NOT AVAILABLE

DOWN LOAD

7 6 5 4 3 2 1 0 1

0 2

1048

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 8-23-65

FLIGHT 168 DROP NO. 22R

SHEET 6 OF 7

CARGO WT. 35,050 LBS.

NOTE:
SEE FIGURE D-23A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

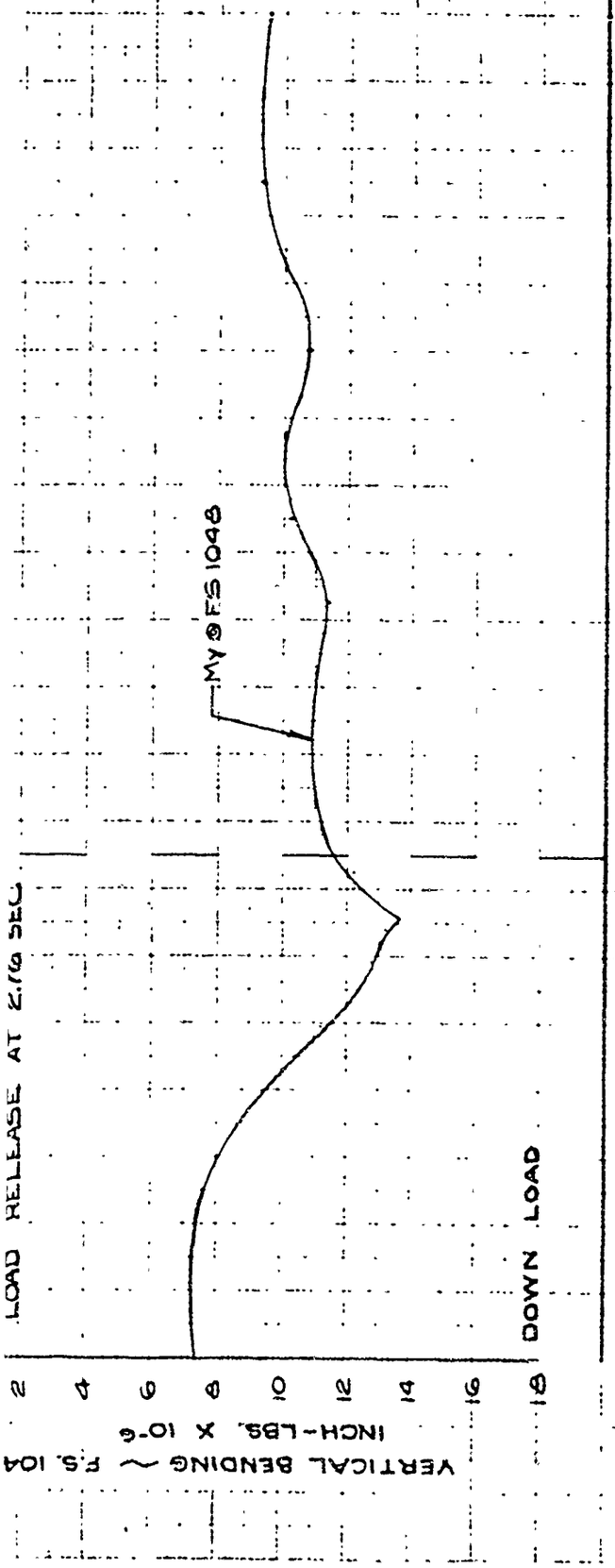


FIGURE D-23F

6008
AC9152G

UP LOAD

DATA NOT AVAILABLE

UP LOAD

DATA NOT AVAILABLE

LOAD CLEAR OF RAMP

LOAD LEFT @ VS TIP

LOAD RELEASE AT 2.76 SEC

HORIZONTAL STABILIZER NET LOADS

SHEAR @ H3L 44L ~ S_Z
LBS x 10^{-3}

BENDING @ H8L 44L ~ M_X
INCH - LBS x 10^{-6}

NET LOADS
45 ~ M_X
-6

JOB NO. 75 SUB. CODE 4.2.1

DTM
8-24-65
Jeep

ER 5473
MODEL C-141A
D-148

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF68-8077 LAC 6008

TEST DATE: 8-23-65

FLIGHT 166 DROP NO. 22R

SHEET 7 OF 7

CARGO WT. 35,050 LBS

NOTE:
SEE FIGURE D-23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

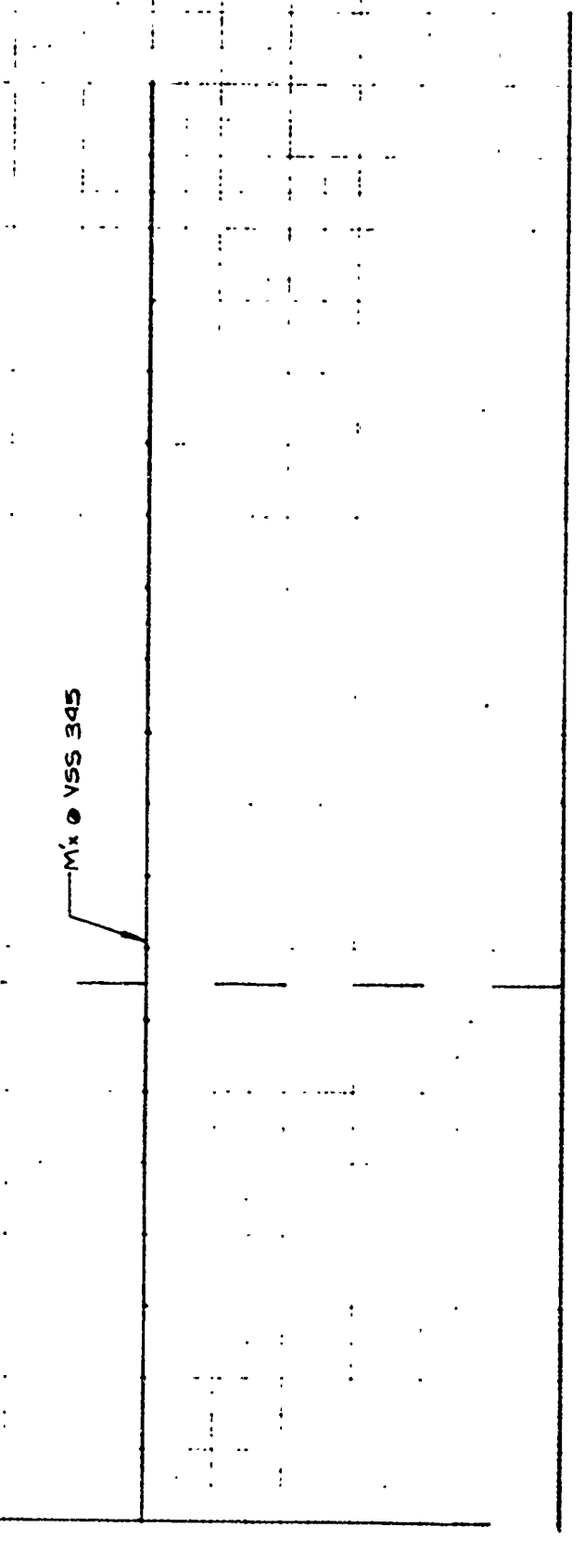
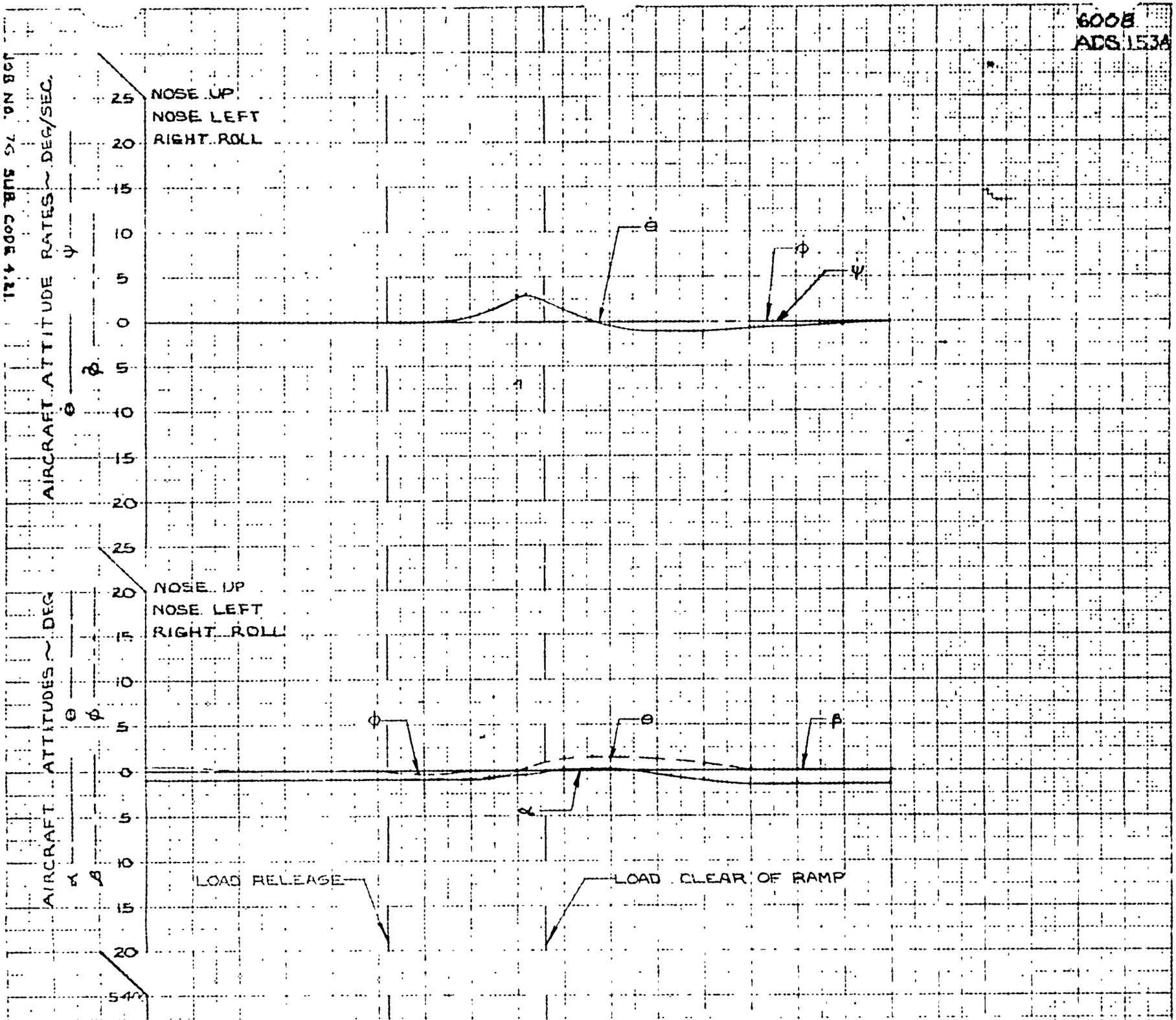


FIGURE D-23G

6008
ADS 152G


AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
θ
φ
ψ
AIRCRAFT ATTITUDES ~ DEG
NOSE UP
NOSE LEFT
RIGHT ROLL
α
β
LOAD RELEASE
LOAD CLEAR OF RAMP

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 600B

TEST DATE 8-25-65

FLIGHT 170 DROP NO. 22R-2

SHEET 1 OF 1

CARGO WT. 97001 BS

RUN CONDITIONS

1. G.W. 173,500 LBS.
2. C.G. PRIOR TO DROP ~ 32.7 % MAC
3. C.G. AFTER DROP ~ 30.4 % MAC
4. FLAPS 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 ~ E.P.R.
7. ΔH ~ 0.1 ~ DEG. ~ A/C N.U.

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 24 FT.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. ~ 993
   VERT. ~ W.L. ~ 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.21
4. EXTRACTION LINE LENGTH ~ 100 FT.

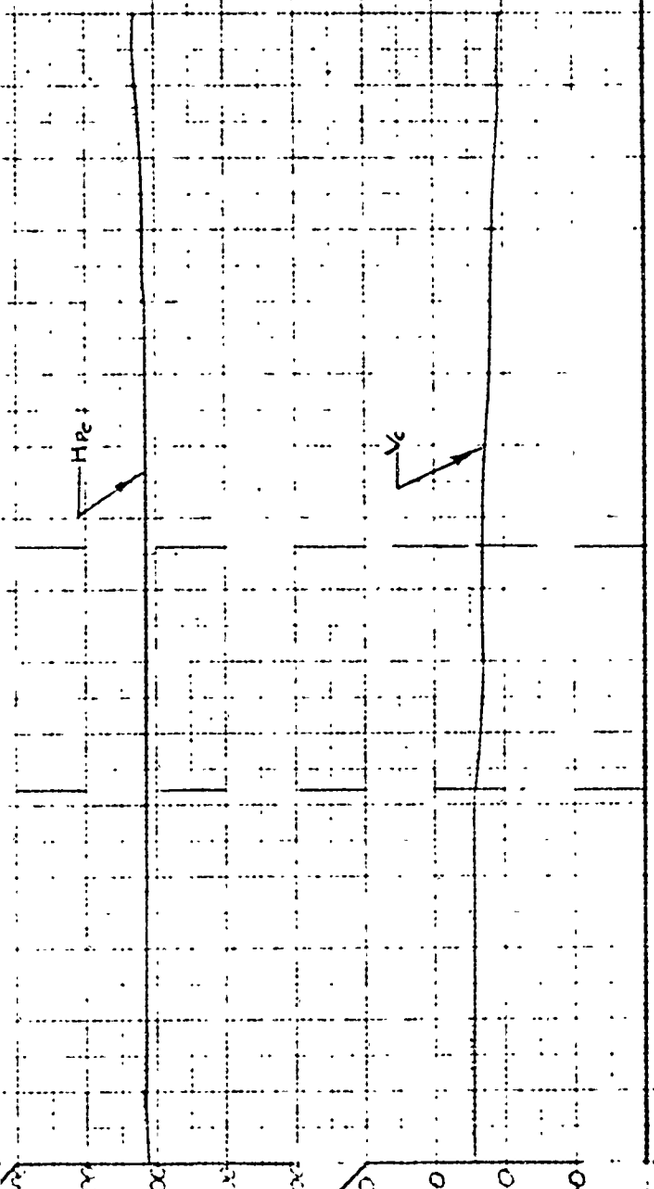
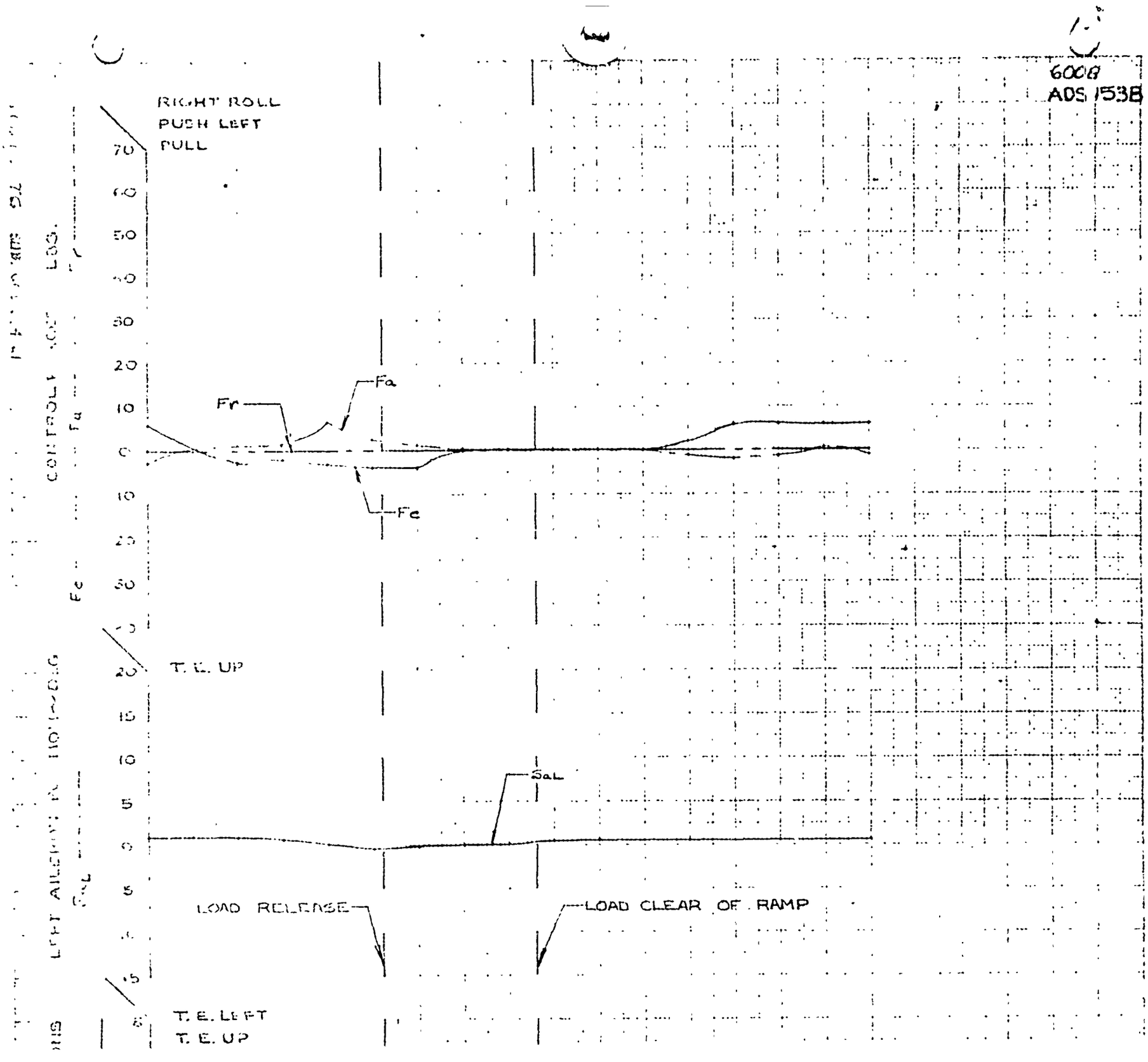


FIGURE D-24A


6008
ADS 153B
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
50
CONTROL FORCE LBS.
Fr
Fa
Fe
T. E. UP
20
15
10
5
0
5
10
15
SaL
LOAD RELEASE
LOAD CLEAR OF RAMP
T. E. LEFT
T. E. UP

DTM
DATE 8-26-65
CHECKED BY JWP

ER 5473
C-141A
D-150

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 8-25-65

FLIGHT 170 DROP NO 22R-2

SHEET 2 OF 2

CARGO WT 197001 BS

NOTE:
SEE FIGURE D-24A SHEET 1 OF 2 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

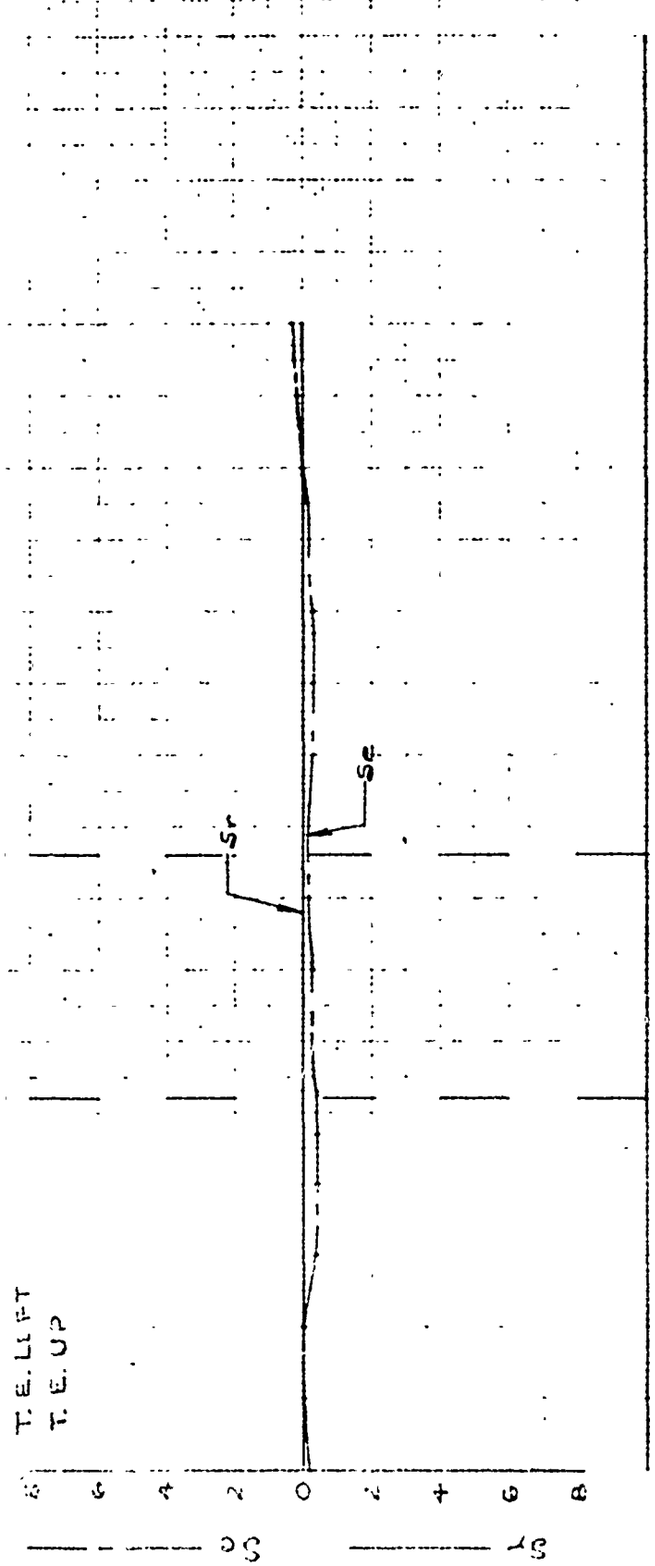


FIGURE D-24B

6008
AD5153B

6008
ADS 1537C

NOTE: $\ddot{\theta}$ CALCULATED FROM N_3 DATA

N_2 @ FS 1637

N_3 @ F.S. 932 (C.G.)

N_2 @ F.S. 277

LOAD CLEAR OF RAMP

LOAD RELEASE

NOSE UP

UP ACCEL.

PITCHING ACCELERATION $\ddot{\theta}$ DEG/SEC^2

40 20 0 20 40

VERTICAL ACCELERATIONS ~ g

N_z @ FS 277 —— N_z @ FS 1637 ——

3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 g

JOB NO. 76 SUB. CODE 4.2.1

PREPARED BY: JDG
DATE: 8-25-65
CHECKED BY: JWP

REPORT NO. ER 5473
MODEL C-141A
D-151

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 8-25-65

FLIGHT 170 DROP NO. 22R-2

SHEET 3 OF 7

CARGO WT. 19,700 LBS

NOTE:
SEE FIGURE D-24A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

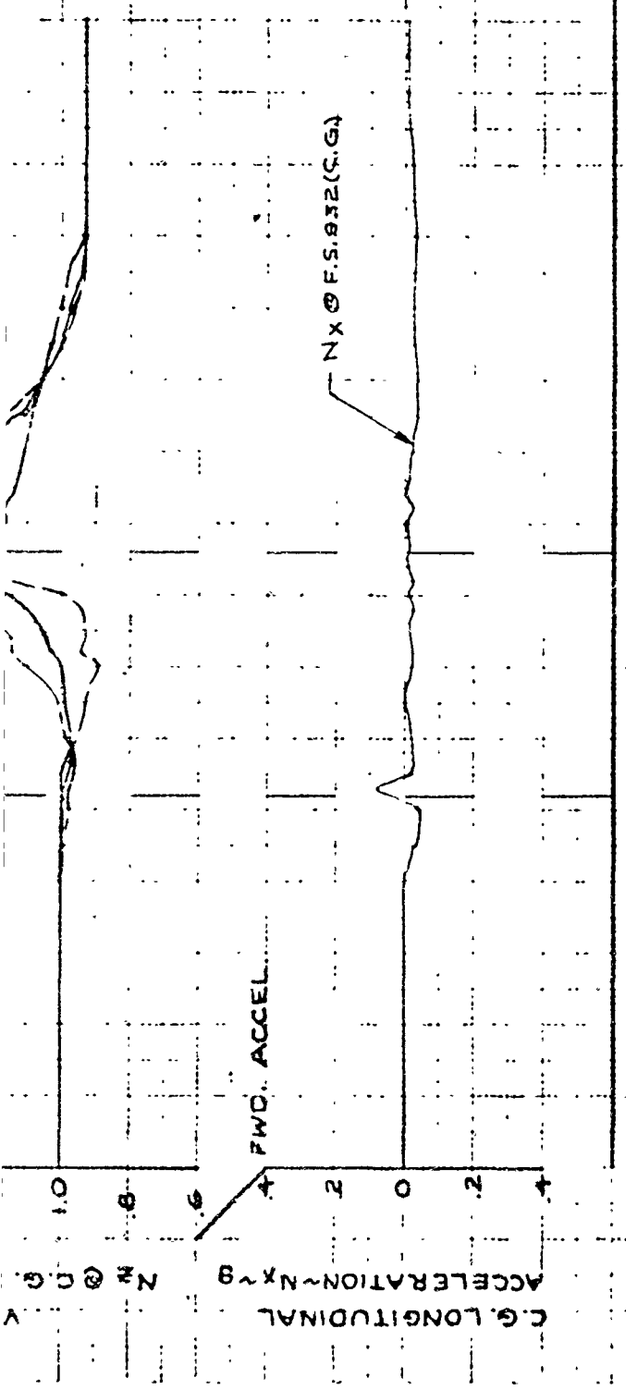


FIGURE D-24C

6008
ADS 153C

ADS 153D
RAMP LIP
LOAD C.G. POSITION
LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
LOAD CLEAR OF RAMP
LOAD RELEASE
LOAD ACCELERATION
g's
LOAD C.G. POSITION ~ FUS. STA.
JOB NO. TG- SUB CODE 421

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 8-25-65

FLIGHT 170 DROP NO. 22R-2

SHEET 4 OF 7

CARGO WT. 19700 LBS.

NOTE:
SEE FIGURE D-24A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

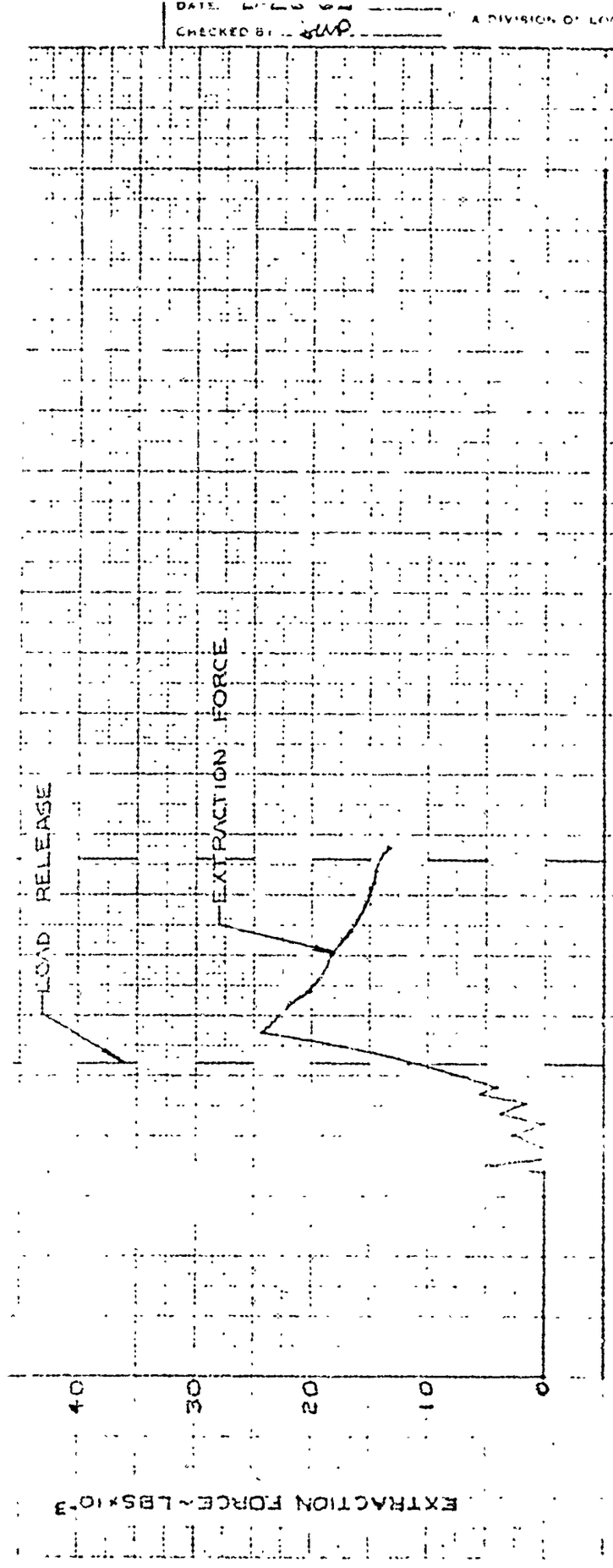


FIGURE D-24D

6008
ADS 153D

6008
ADS-153E

L.H. RAMP ACTUATOR
R.H. RAMP ACTUATOR
L.H. SPIDER ARM
R.H. SPIDER ARM
L.H. VERTICAL LOAD
R.H. VERTICAL LOAD
LOAD CLEAR OF RAMP
LOAD RELEASE
SIDE LOAD - DATA NOT AVAILABLE

TENSION
4 2 0 -2 -4
R.H. L.H.
LBS. X 10⁻³
RAMP ACTUATOR LOAD

TENSION
30 20 10 0
R.H. L.H.
LBS X 10⁻³
ADS LINK AXIAL LOAD

DOWN LOAD
15 10 5 0
R.H. L.H.
LBS X 10⁻³
VERTICAL LOAD

PULL RIGHT
2.0 1.0 0 1.0
LBS. X 10⁻³
SIDE LOAD

HINGE LOADS

JOB NO. 76 SUB. CODE 4.2.1

PREPARED BY JDG
DATE 8-25-65
CHECKED BY DWP

REPORT NO ER 5473
MODEL C-141A
PAGE D-153

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 8-25-65

FLIGHT 170 DROP NO. 22-R2

SHEET 5 OF 7

CARGO WT. 19,700 LBS.

NOTE:
SEE FIGURE 24A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

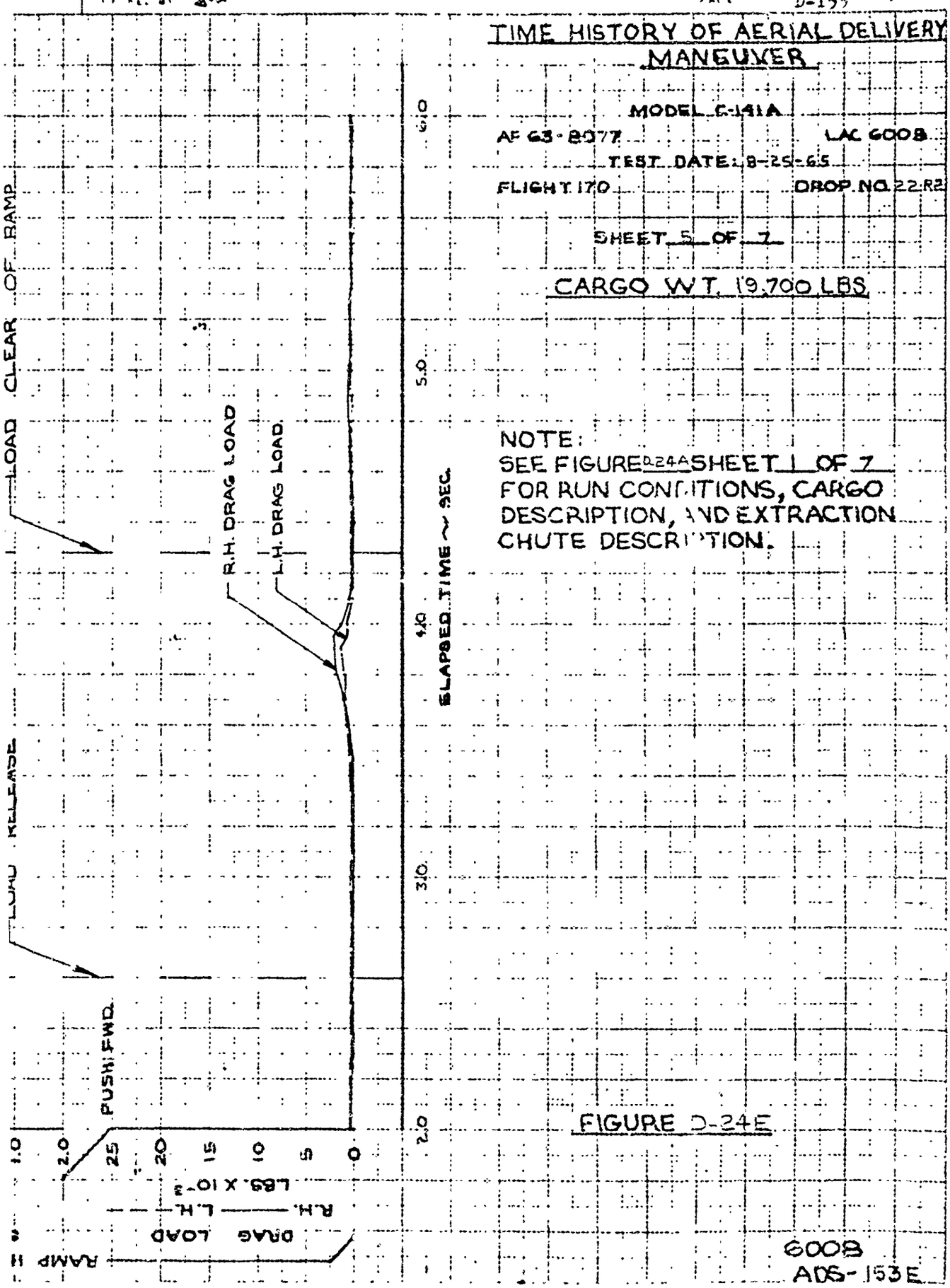


FIGURE D-24E

6008
ADS 153F
L.H. PETAL DOOR ACTUATOR
R.H. PETAL DOOR ACTUATOR
My @ F.S. 1568
LOAD CLEAR OF RAMP
LOAD RELEASE
COMPRESSION
DOWN LOAD
PETAL DOOR ACTUATOR ROD LOADS ~ LBS. X 10-3
RH
LH
VERTICAL BENDING ~ F.S. 1568 INCH-LBS. X 10-6
F.S. 1048
JOB. NO. 76 SUB. CODE. 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-8077 LAC 6008

TEST DATE: 8-25-65

FLIGHT 170 DROP NO. 22R-2

SHEET 6 OF 7

CARGO WT. 19,700 LBS.

NOTE:
SEE FIGURE D-24A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

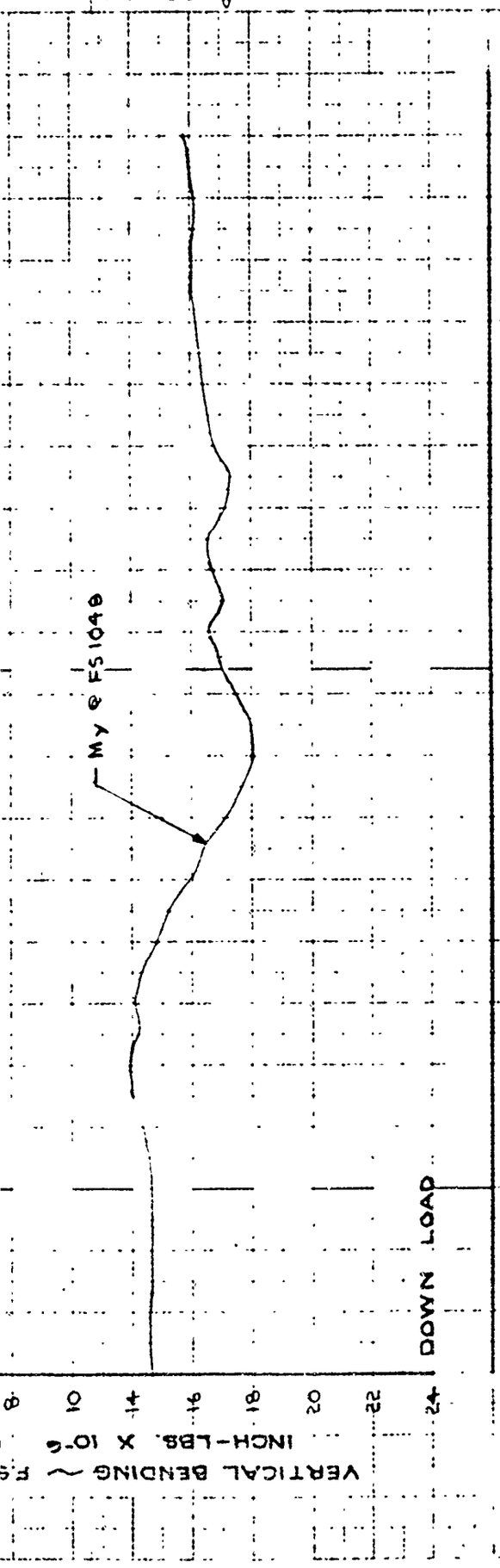
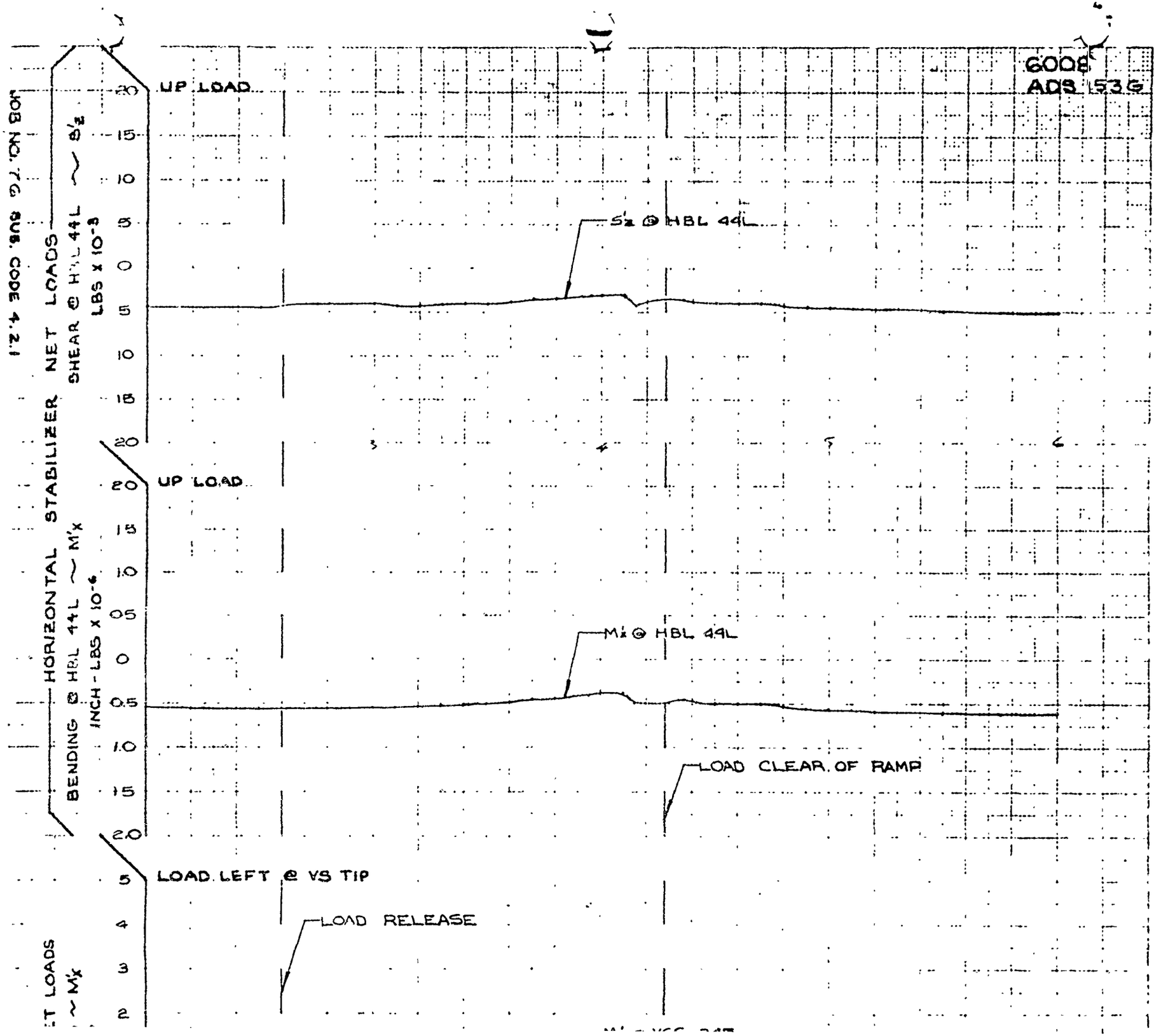


FIGURE D-24F


CODE
ADS 1536
UP LOAD
5½ @ HBL 44L
HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ S'z
LBS x 10⁻³
20
15
10
5
0
5
10
15
20
UP LOAD
M'x @ HBL 44L
BENDING @ HBL 44L ~ M'x
INCH-LBS x 10⁻⁶
2.0
1.5
1.0
0.5
0
0.5
1.0
1.5
2.0
LOAD CLEAR OF RAMP
LOAD LEFT @ VS TIP
LOAD RELEASE
5
4
3
2

DTM
8-25-65
dup

MODEL ER 5473
C-141A
D-155

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 8-25-65

FLIGHT 170 DROP NO. 22R-2

SHEET 2 OF 2

CARGO WT. 19,700 LBS

NOTE:
SEE FIGURE D-24A SHEET 1 OF 2
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

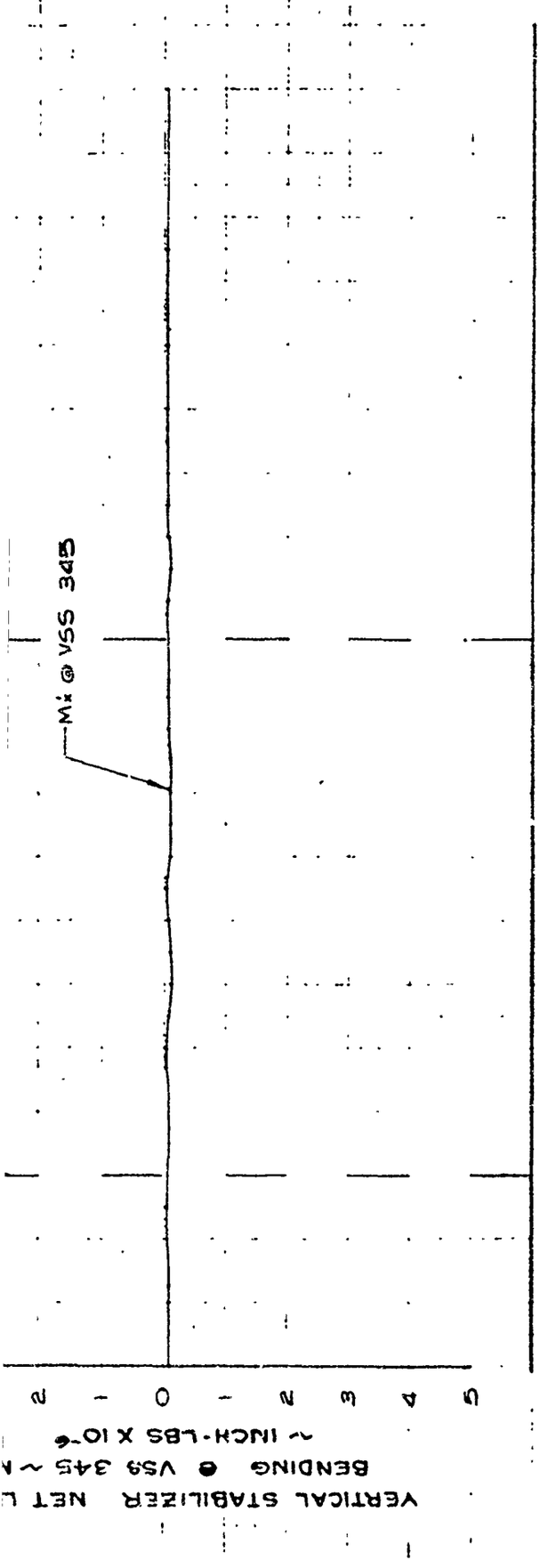


FIGURE D-24G

6008
ADS 153G

60CB
ADS-1154A
LOAD RELEASE
LOAD CLEAR OF RAMP
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
AIRCRAFT ATTITUDES ~ DEG.
JOB NO. 78 SUB. CODE 1.21

PREPARED BY MBH
DATE 8-28-65
CHECKED BY JWP

REPORT NO. FR 5473
MODEL C-141A
PAGE D-156

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 600B

TEST DATE 8-27-65

FLIGHT 172 DROP NO. 22R-1

SHEET 1 OF 2

CARGO WT 19,900

RUN CONDITIONS

1. G.W. ~ 179,300 LBS.
2. C.G. PRIOR TO DROP ~ 32.9% MAC
3. C.G. AFTER DROP ~ 30.8% MAC
4. FLAPS ~ 24.4 DEG.
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 ~ EPR
7. Δ_H ~ 0.1 DEG. ~ N.U.

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS ~ 993
   VERT. ~ WL ~ 180

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.2
4. EXTRACTION LINE LENGTH ~ 100 FT.

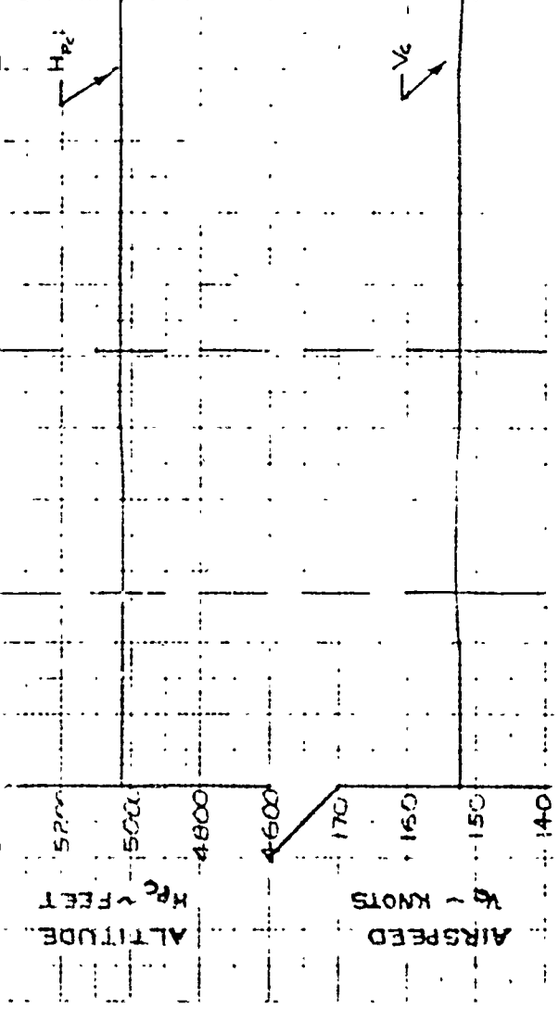
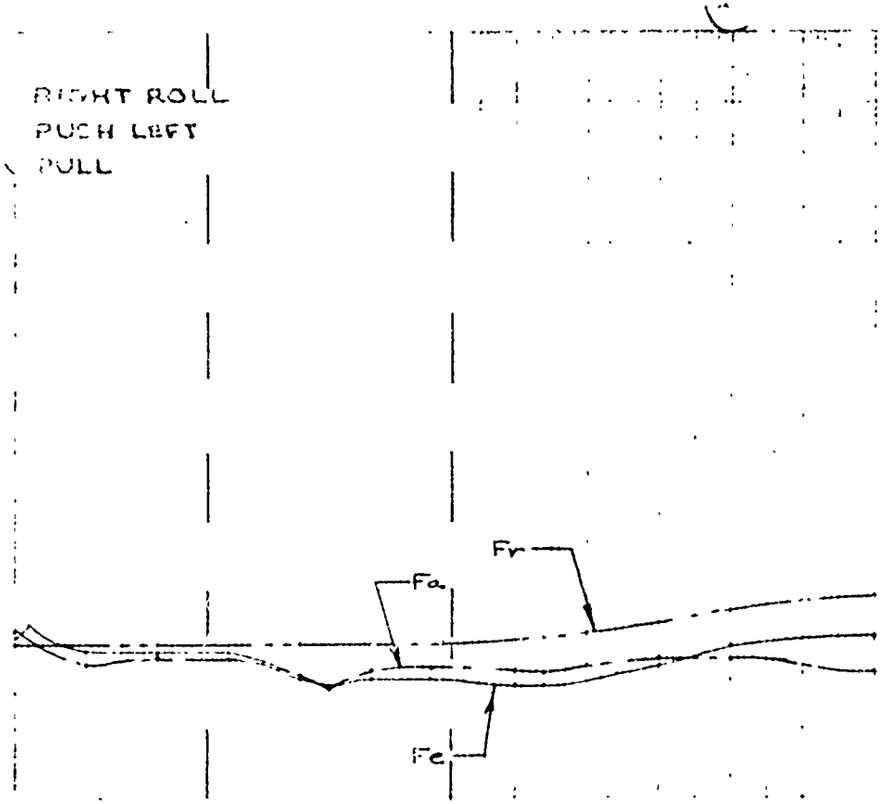
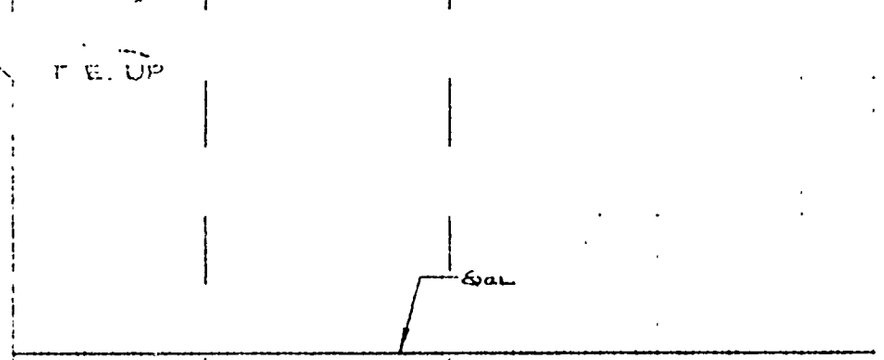


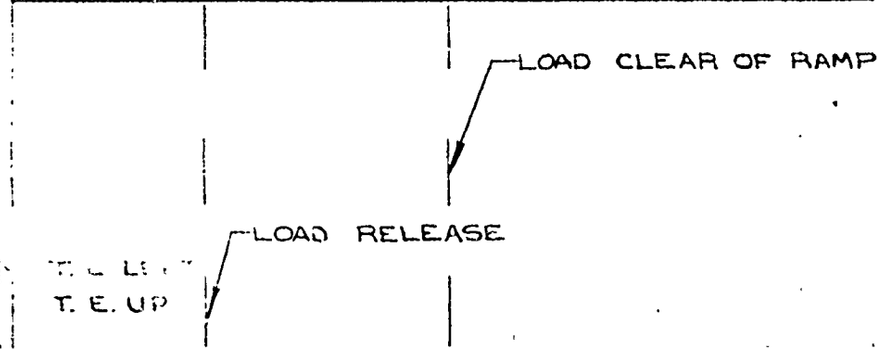
FIGURE D-25A

600B
ADS-154A
REVISED 12-16-65
MBH

6008
AOS-154-B







DTM
DATE 8-26-65

ER 5473
C-141A
D-157

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 8-27-65

FLIGHT 172 DROP NO 22R-3

SHEET 2 OF 7

CARGO WT 19,900 LBS.

NOTE:
SEE FIGURE D-25A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

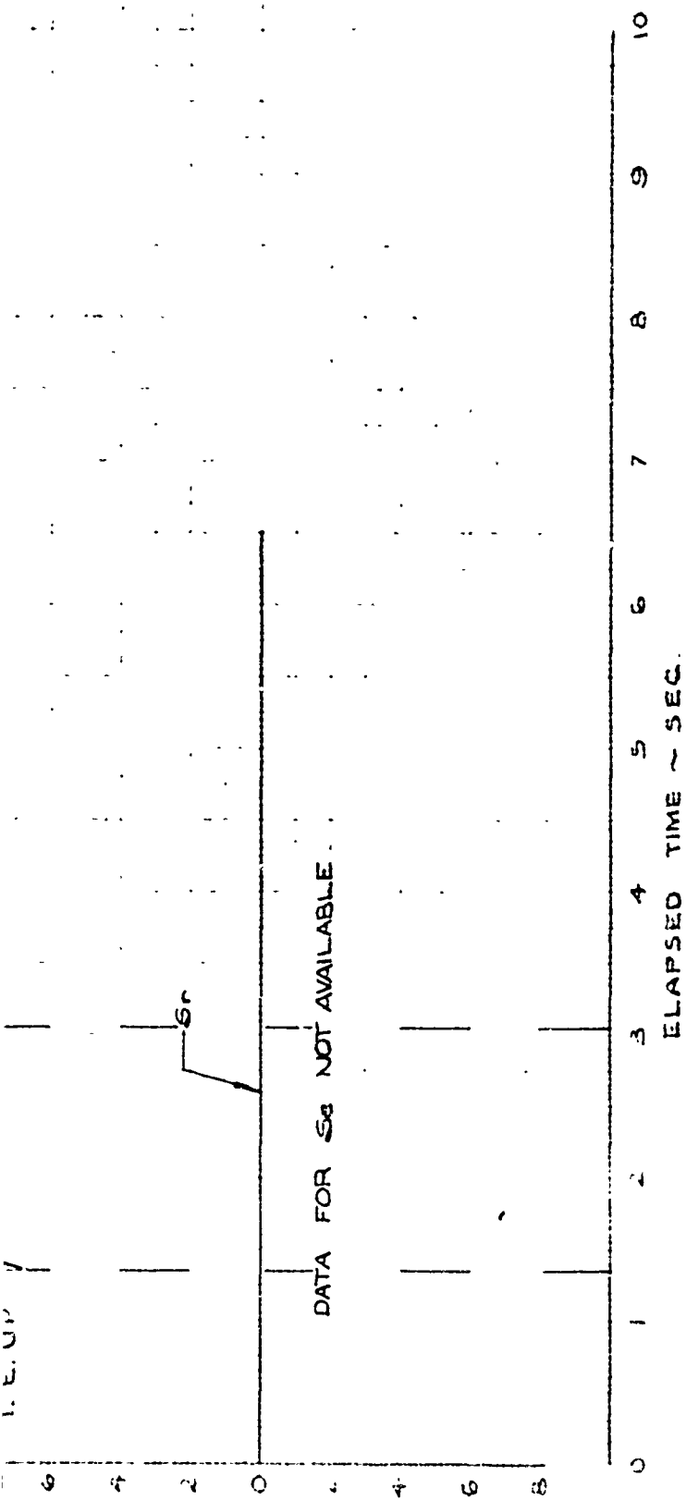


FIG. D-25B

6008
AD-154-B

6008
ADS-E4C

NOTE: θ̈ CALCULATED FROM N_z DATA

N_z @ FS 277 — N_z @ FS 637 — N_z @ FS 937

ICAL ACCELERATIONS ~ g

PITCHING ACCELERATION θ̈ DEG/SEC²

4.0 2.0 0 2.0 4.0 3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6 1.4

NOSE UP

θ

LOAD CLEAR OF RAMP

UP ACCEL.

JOB NO. 78 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFGB-B077 LAC 6008

TEST DATE: 8-27-65

FLIGHT IT2 DROP NO 228-3

SHEET 3 OF 7

CARGO WT 99001 LBS

NOTE:
SEE FIGURE D-25A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

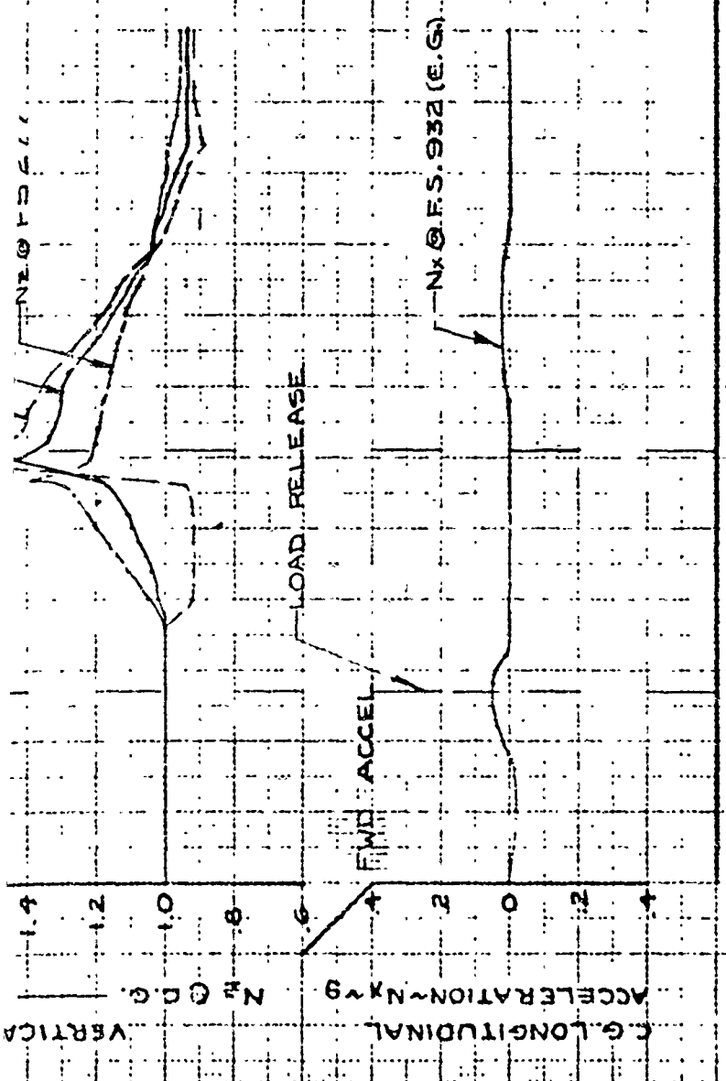


FIGURE D-25C

6008
ADS 154D

RAMP LIP

LOAD C.G. POSITION

LOAD ACCELERATION

LOAD CLEAR OF RAMP

LOAD RELEASE

NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

LOAD C.G. POSITION — FUS. STA.

1500 1400 1300 1200 1100 1000 900 800 700 600 500

LOAD ACCELERATION

g's

2.0 4.0 0

50 EXTENSION

JOB NO 78 SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

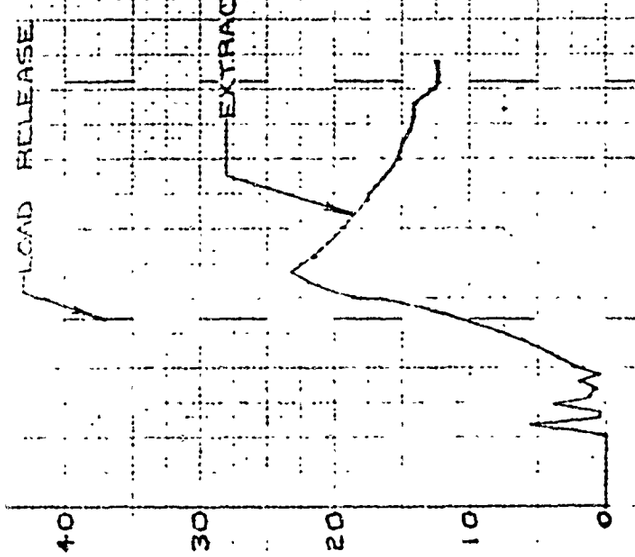
TEST DATE 8-27-65

FLIGHT 172 DROP NO. C2R-5

SHEET 4 OF 7

CARGO WT. 19,900 LBS

NOTE:
SEE FIGURE D-25A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.



ELAPSED TIME - SEC
0 1 2 3 4 5 6 7 8 9 10

EXTRACTION FORCE - LBS x 10^3

FIGURE D-25D

6008
ADS-154E

LH RAMP ACTUATOR
RH RAMP ACTUATOR
LH SPIDER ARM
RH SPIDER ARM
RH VERTICAL LOAD
LH VERTICAL LOAD
LOAD CLEAR OF RAMP
LOAD RELEASE
DATA FOR SIDE LOAD NOT AVAILABLE

TENSION
TENSION
PULL DOWN
PULL RIGHT

4 2 0 -2 -4
R.H. L.H.
LBS. X 10-3
RAMP ACTUATOR LOAD

20 10 0
R.H. L.H.
LBS X 10-3
LINK AXIAL LOAD

15 10 5 0
R.H. L.H.
LBS. X 10-3
VERTICAL LOAD

2.0 1.0 0
LBS. X 10-3
SIDE LOAD

JOB NO. 778 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 8-27-65

FLIGHT 2 DROP NO. 22R-3

SHEET 3 OF 7

CARGO WT. 19900 LBS

NOTE:
SEE FIGURE D-25A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

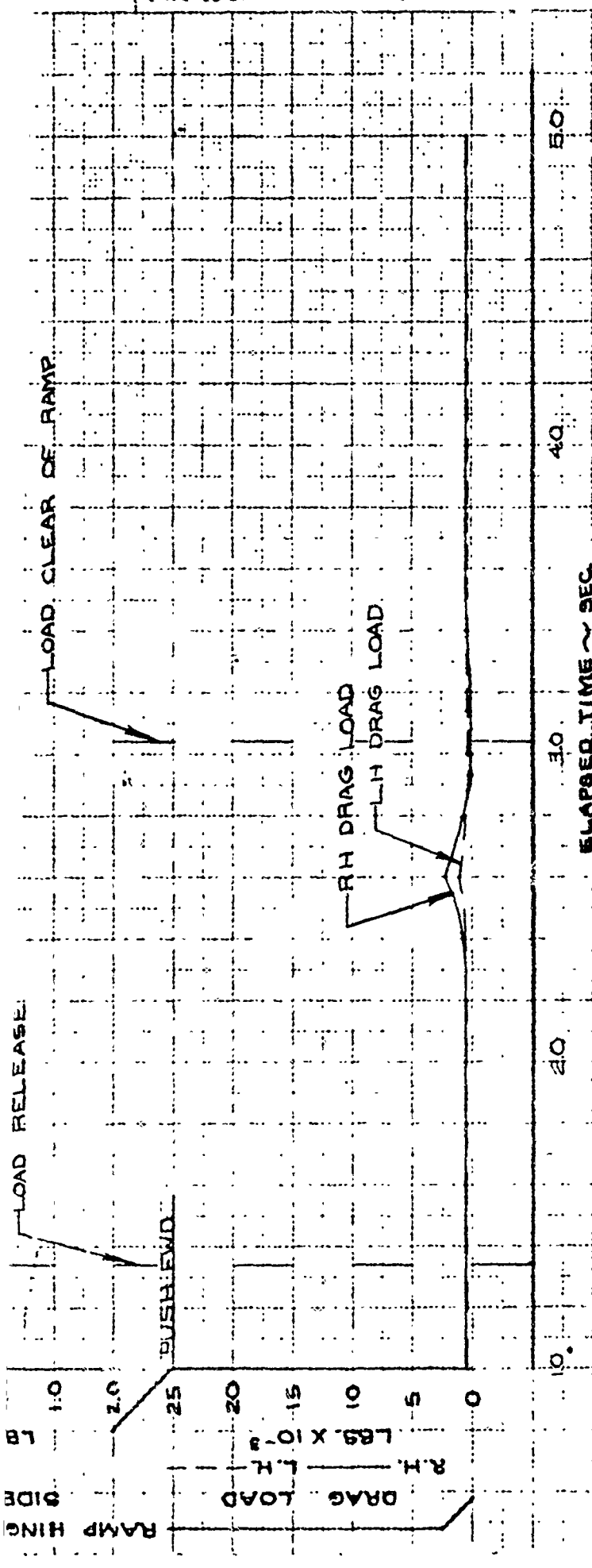


FIGURE D-25E

6008
ADS-154F
LH PETAL DOOR ACTUATOR
RH PETAL DOOR ACTUATOR
M, @ F.S. 1568
LOAD CLEAR OF RAMP
LOAD RELEASE
COMPRESSION
DOWN LOAD
PETAL DOOR ACTUATOR ROD LOADS ~ LBS. X10-3
RH
LH
VERTICAL BENDING ~ F.S. 1568
INCH-LBS. X 10-6
F.S. 1048
JOB NO. 78 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 8-27-65

FLIGHT 172 DROP NO 22R3

SHEET 6 OF 7

CARGO WT. 19,900 LBS.

NOTE:
SEE FIGURE D-25A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

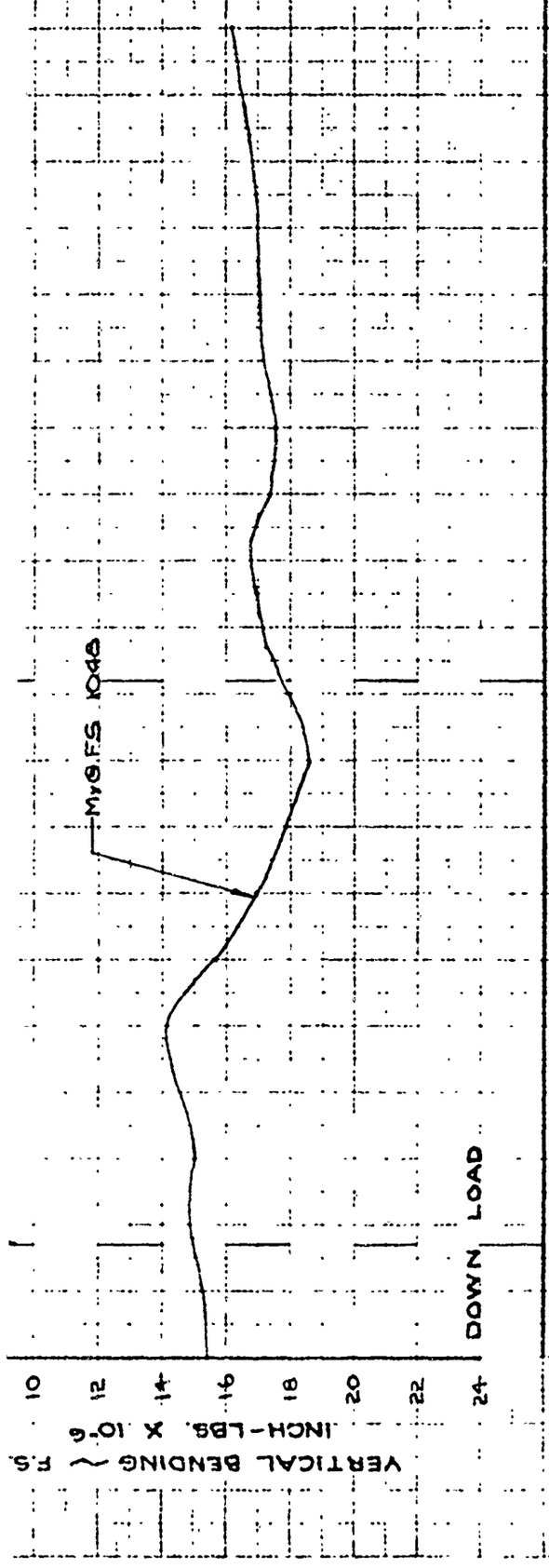


FIGURE D-25F

JOB NO. 78 SYS. CODE 4.2.1

VERTICAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ S_z
LBS X 10^{-3}

HORIZONTAL BENDING @ HBL 44L ~ M_x
INCH-LBS X 10^{-6}

JET LOADS
LBS ~ M_x
10^{-6}

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

LOAD RELEASE

S_z @ HBL 44L

M_x @ HBL 44L

LOAD CLEAR OF RAMP

M_x @ VSS 345

DTM
8-28-68

ER 5473
MODEL C-141A
D-162

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF68-8077 LAC 6008

TEST DATE: 8-27-68

FLIGHT 172 DROP NO. 22R-3

SHEET 1 OF 1

CARGO WT. 19,900 LBS.

NOTE:
SEE FIGURE D-25A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

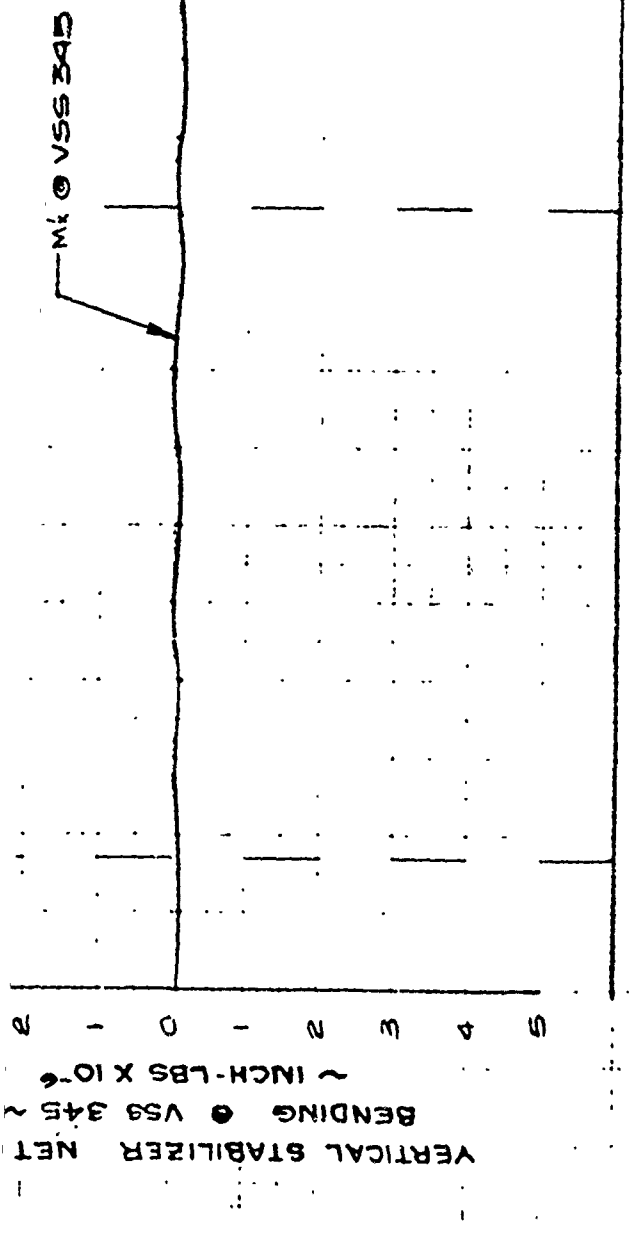
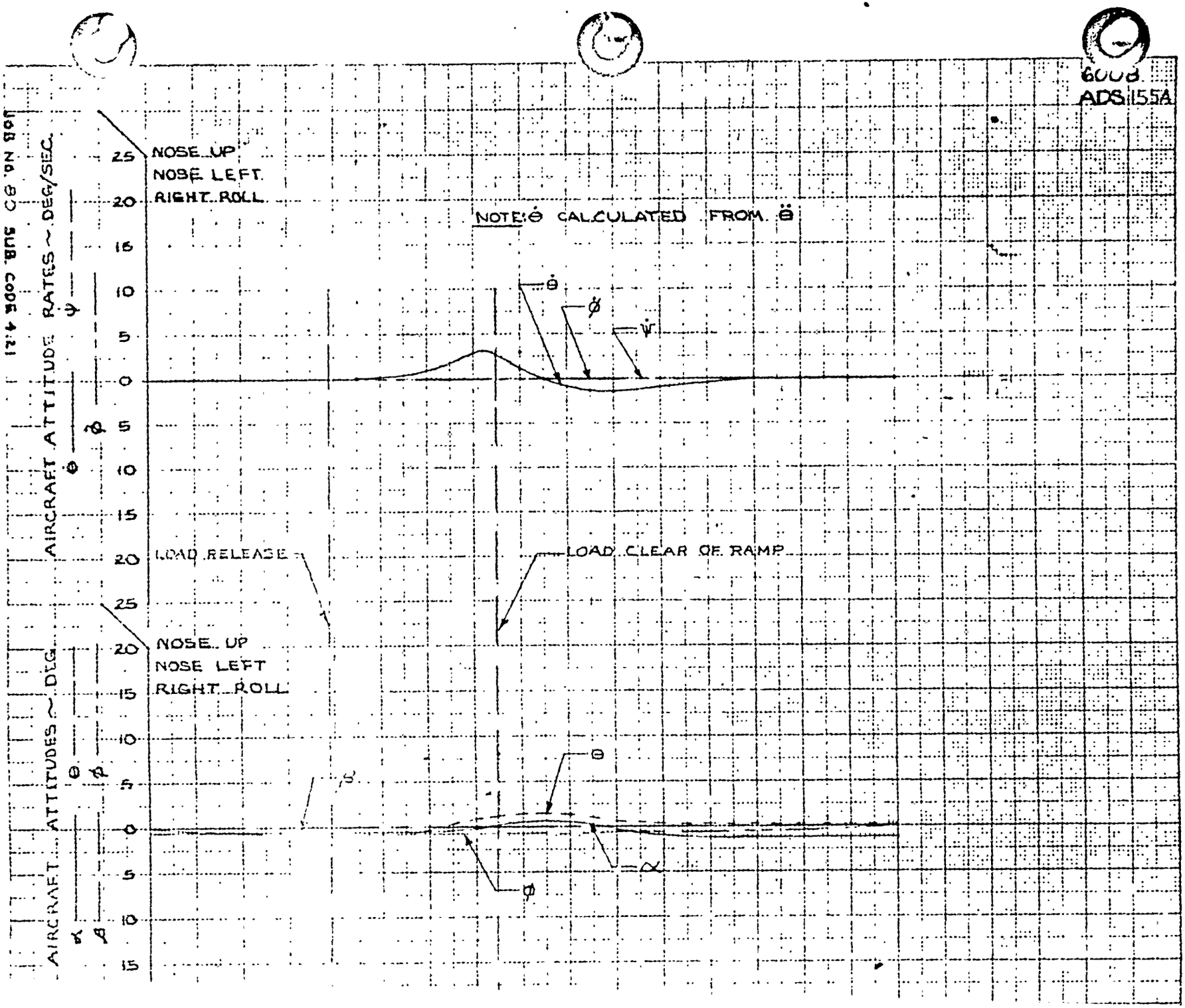


FIGURE D-25G

6008
ADS 154G


6008
ADS 155A
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
NOTE: θ̇ CALCULATED FROM θ̈
θ̇
φ̇
ψ̇
LOAD RELEASE
LOAD CLEAR OF RAMP
AIRCRAFT ATTITUDES ~ DEG
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
φ
α
β

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 8-31-65

FLIGHT 173 DROP NO. 22R-4

SHEET 1 OF 7

CARGO WT 19,650 LBS.

RUN CONDITIONS

1. G.W. ~ 179,400 LBS.
2. C.G. PRIOR TO DROP ~ 32.7% MAC
3. C.G. AFTER DROP ~ 30.5% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 EPR
7. $\dot{\gamma}_H$ ~ 0.15°/(A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. ~ 993
   VERT. ~ W.L. ~ 160

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 2
3. RATED CHUTE FORCE/CARGO WT. ~ 1.2
4. EXTRACTION LINE LENGTH ~ 30 FT

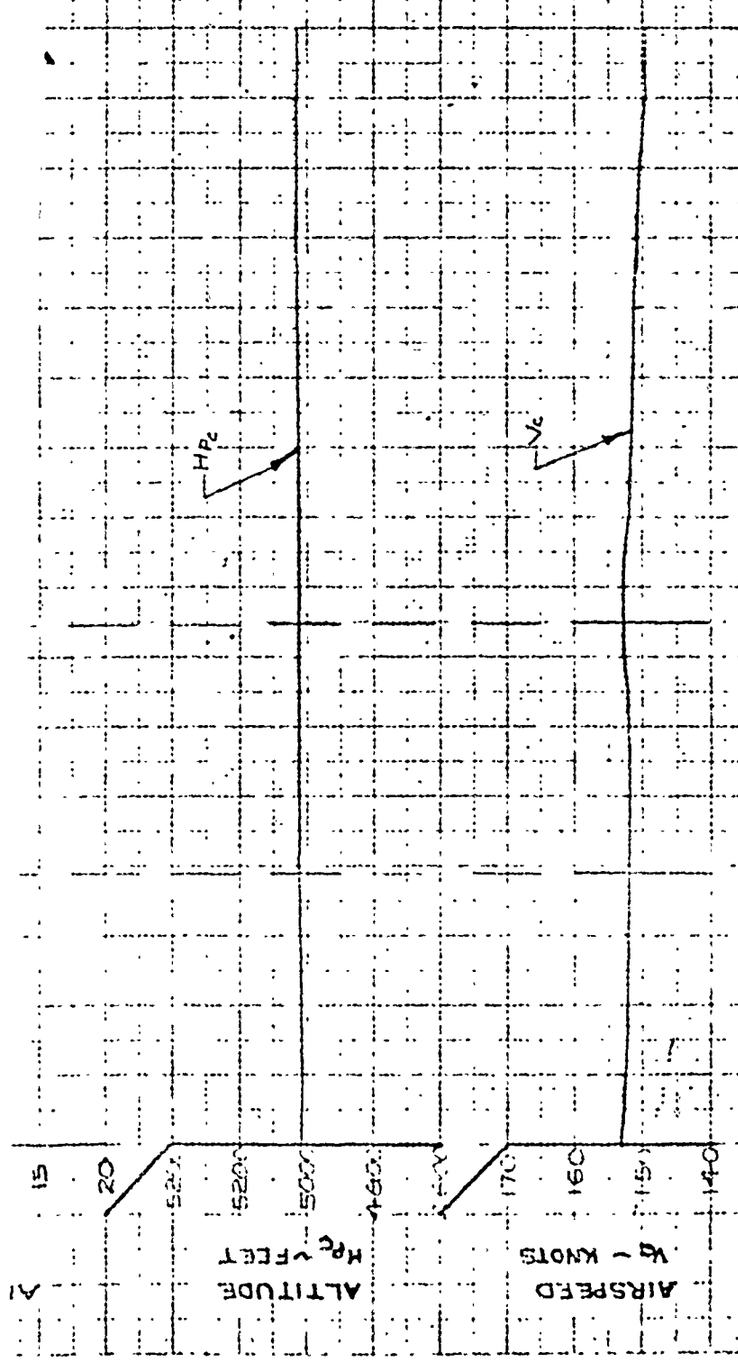
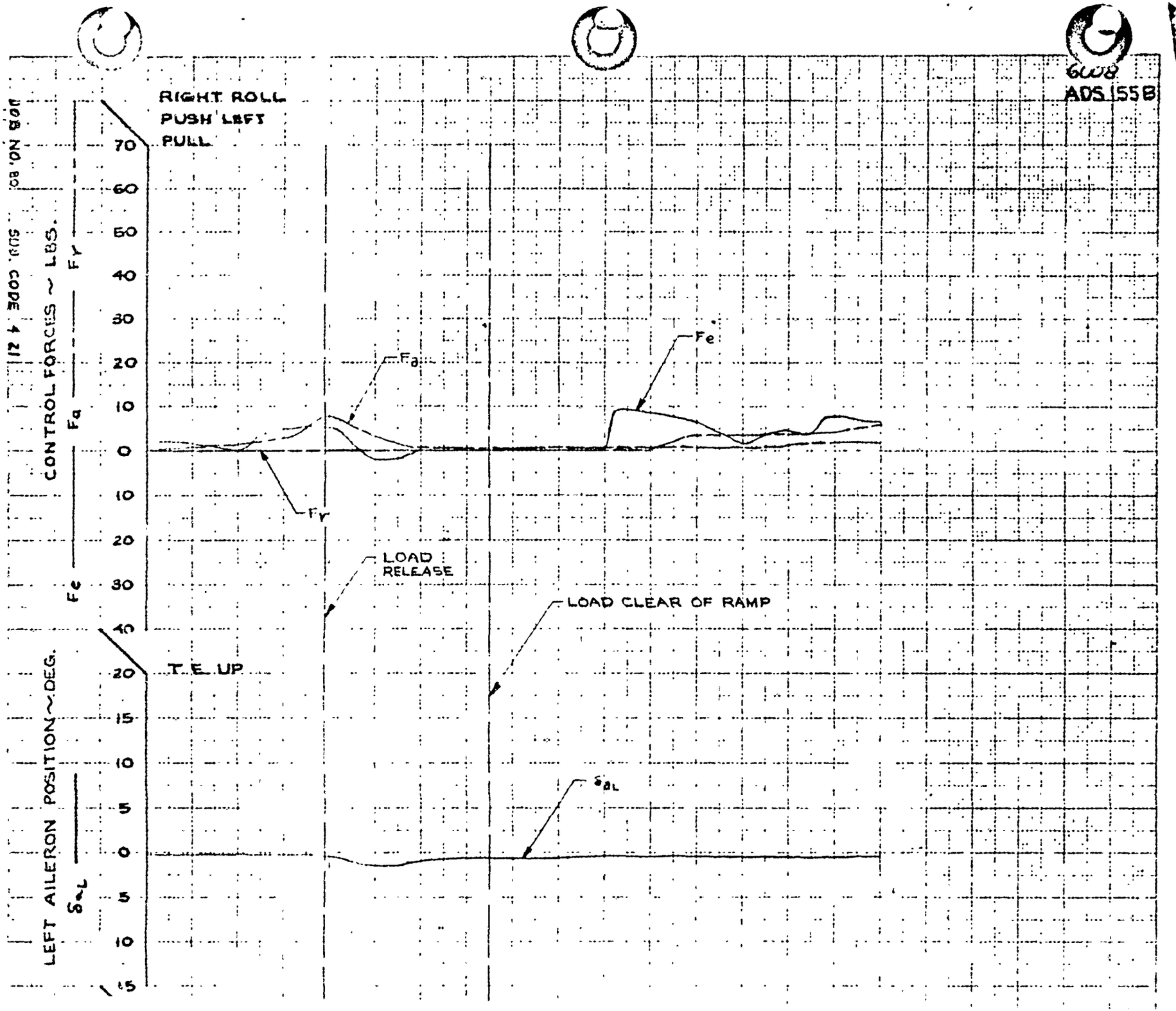


FIGURE D-26A


6008
ADS 55B
RIGHT ROLL
PUSH LEFT
PULL
CONTROL FORCES ~ LBS.
Fe —— Fa ---- Fr
70
60
50
40
30
20
10
0
10
20
30
40
Fa
Fe
Fr
LOAD
RELEASE
LOAD CLEAR OF RAMP
T.E. UP
LEFT AILERON POSITION ~ DEG.
δaL
20
15
10
5
0
5
10
15
δaL

DRAWN JDG
DATE 9-1-65
CHECKED jmp

REPORT ER 5473
MODEL C-141A
D-164

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 9-21-65

FLIGHT 173 DROP NO 22R-4

SHEET 2 OF 7

CARGO WT 19,650 LB

NOTE:
SEE FIGURE D-26A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

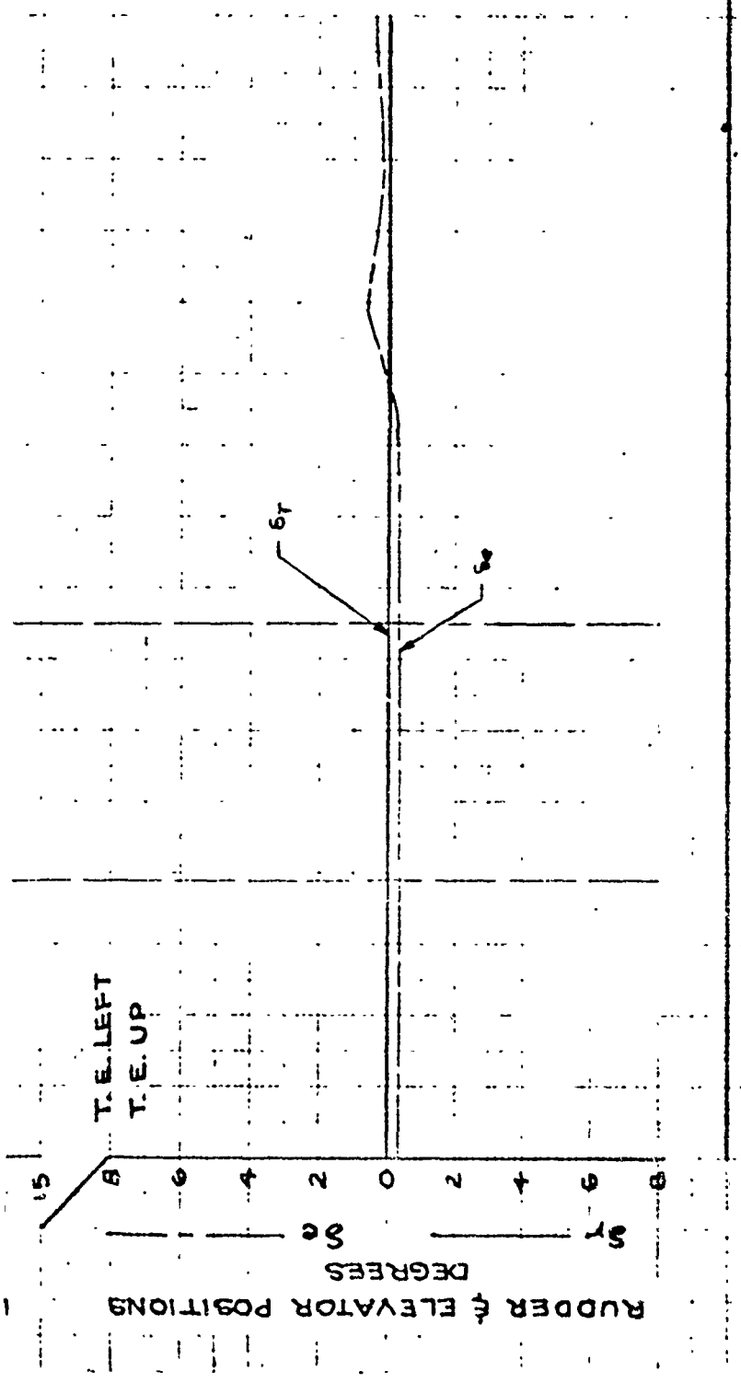
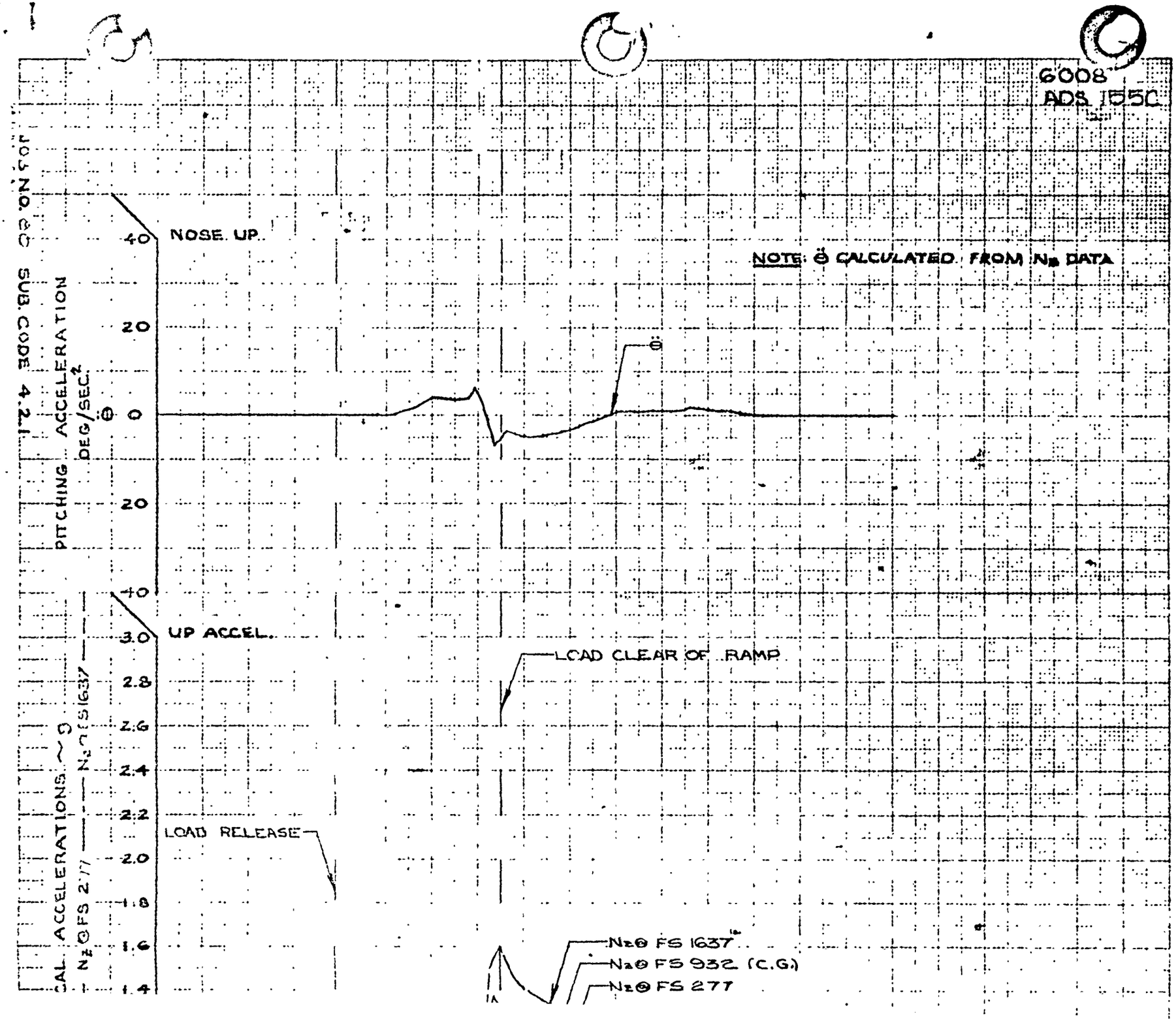


FIGURE D-26B

6008
ADS 155C



PREPARED BY DTM
DATE 9-1-65
CHECKED BY JMP

REPORT NO. ER 5473
MODEL C-141A
D-165

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE: 8-31-65
FLIGHT 173 DROP NO. 22R-4

SHEET 3 OF 7

CARGO WT. 19,650 LBS.

NOTE:
SEE FIGURE D26A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

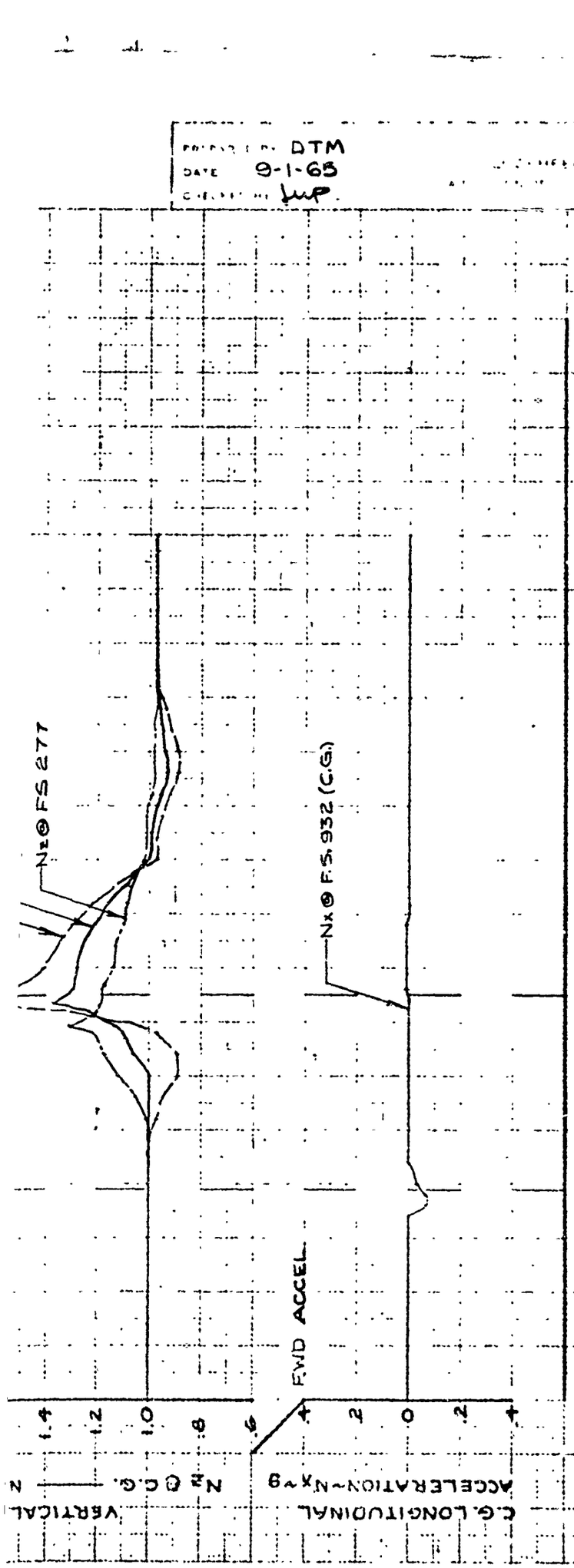


FIGURE D-26C

6008
ADS 35C

6008
ADS-155
RAMP LIP
LOAD C.G. POSITION
LOAD CLEAR OF RAMP
LOAD RELEASE
LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA
1500
1400
1300
1200
1100
1000
900
800
700
600
500
LOAD C.G. POSITION ~ FUS. STA.
2.0
1.0
0
LOAD ACCELERATION
g's
JOB NO 60 ... SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 8-31-65

FLIGHT 173 DROP NO. 22R-1

SHEET 4 OF 7

CARGO WT. 19650 LBS

NOTE:
SEE FIGURE D-26A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

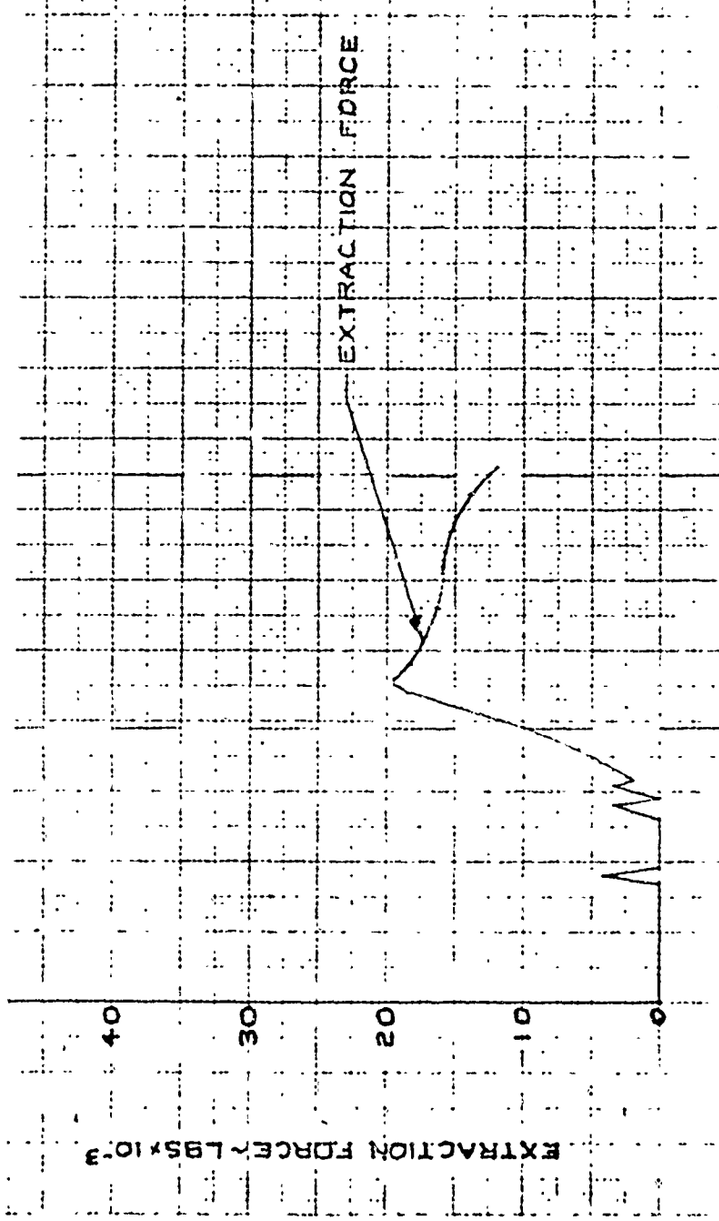


FIGURE D-26D

6008
ADS-155E
LOAD CLEAR OF RAMP
LOAD RELEASE AT 1.95 SEC.
RAMP SIDE LOAD ~ NA
PULL RIGHT
PULL DOWN
TENSION
TENSION
L.H.
R.H.
LBS. X 10-3
RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD
VERTICAL LOAD
SIDE LOADS
DE LOAD
JOB NO. 80 SUB. CODE 4.2.1

PREPARED BY MBH
DATE 9-1-65
CHKD JMP

REPORT NO ER 5473
MODEL C-141A
PAGE D-167

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

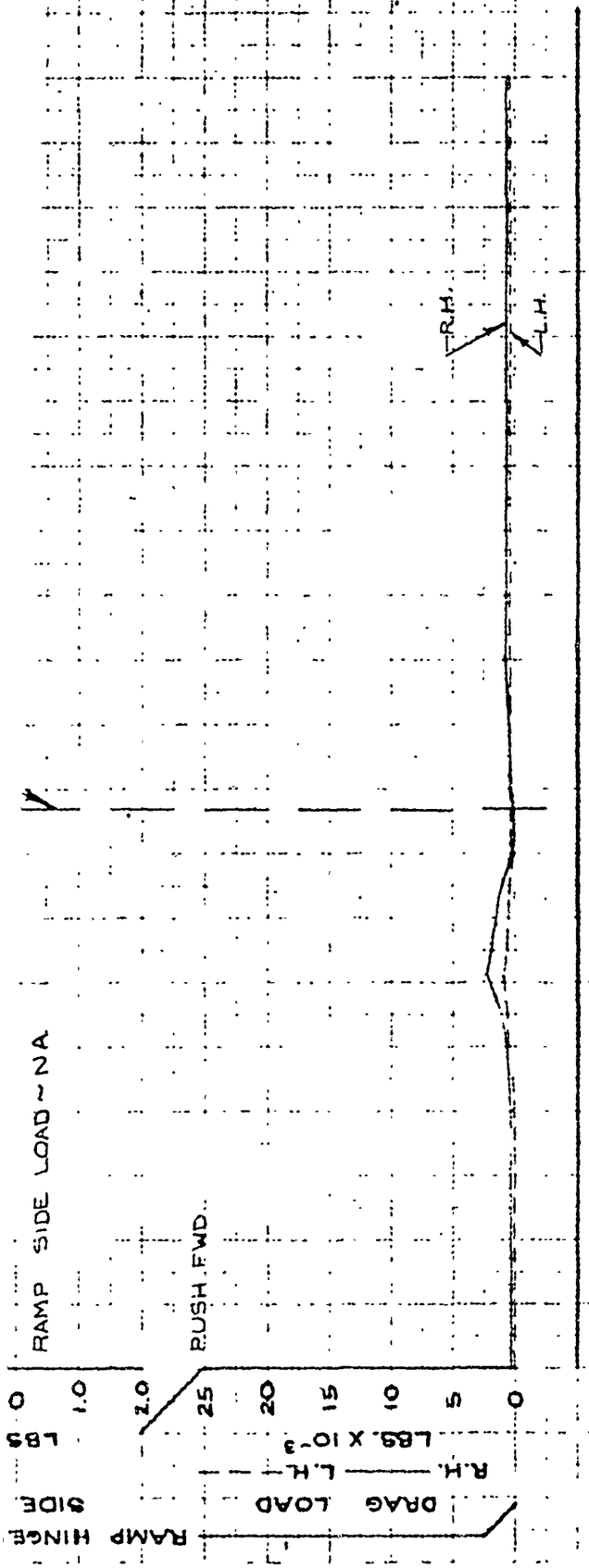
AF 63-8077 LAC 6008

TEST DATE: 8-31-65

FLIGHT 173 DROP NO 22R-1

SHEET 5 OF 7

CARGO WT. 19,650 LBS.



NOTE:
SEE FIGURE D-26A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-26E

6005
ADS-155F
LH PETAL DOOR ACTUATOR
RH PETAL DOOR ACTUATOR
My@ FS 1868
LOAD CLEAR OF RAMP
My@ FS 1040
COMPRESSION
DOWN LOAD
JOB NO. 80 SUB. CODE 4.2.1
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X10-3
RH
LH
VERTICAL BENDING ~ FS 1868
INCH-LBS X 10-6
FS 1040

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 8-31-65

FLIGHT 173 DROP NO 22R-4

SHEET 6 OF 7

CARGO WT. 19650 LBS

NOTE:
SEE FIGURE D-26 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

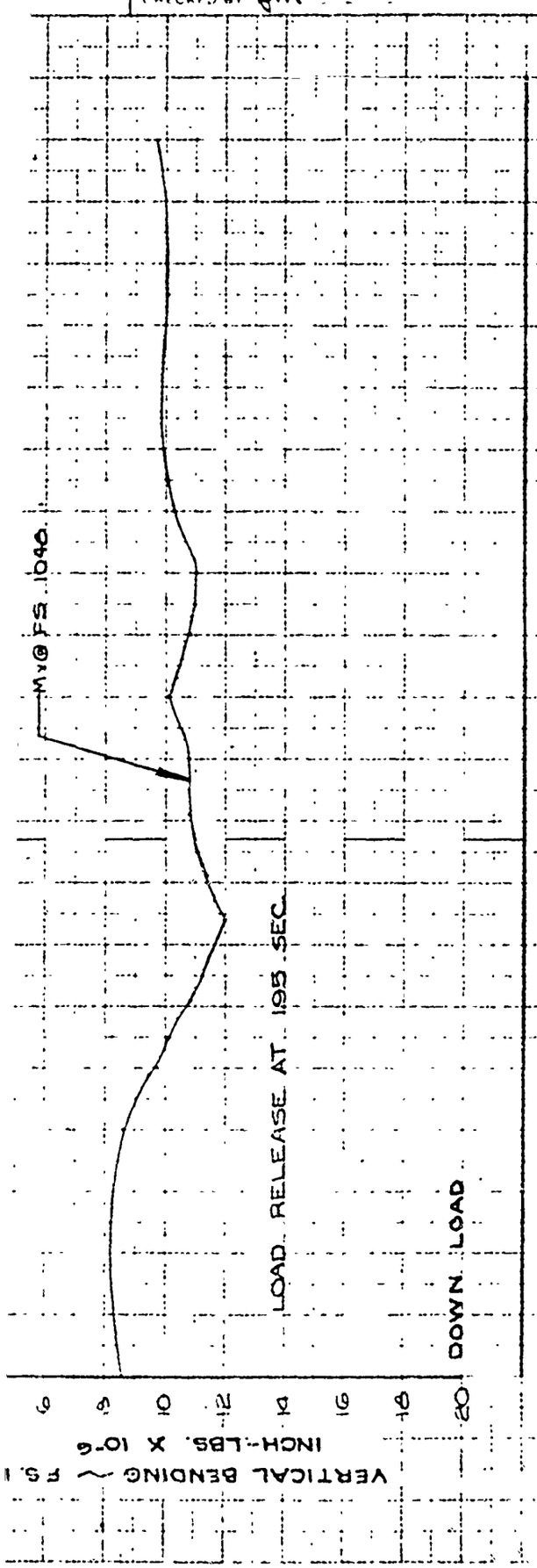
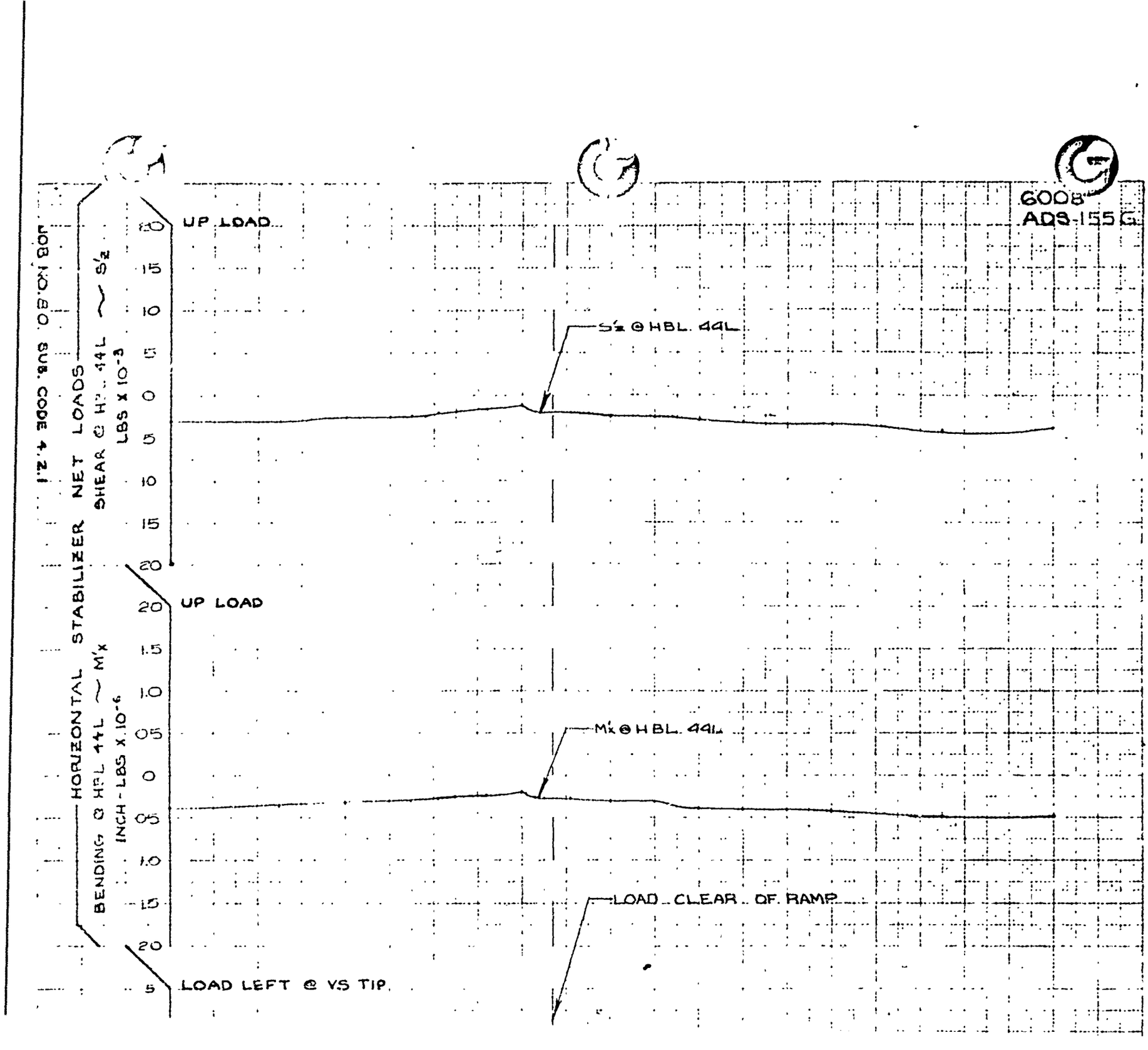


FIGURE D-26F


6008
ADS-155G
HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ S'z
LBS X 10⁻³
UP LOAD
S'z @ HBL 44L
BENDING @ HBL 44L ~ M'x
INCH-LBS X 10⁻⁶
UP LOAD
M'x @ HBL 44L
LOAD CLEAR OF RAMP
LOAD LEFT @ VS TIP

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 8-31-65

FLIGHT 173 DROP NO. 22R-4

SHEET 1 OF 1

CARGO WT. 96500LBS.

NOTE:
SEE FIGURE 22EA SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

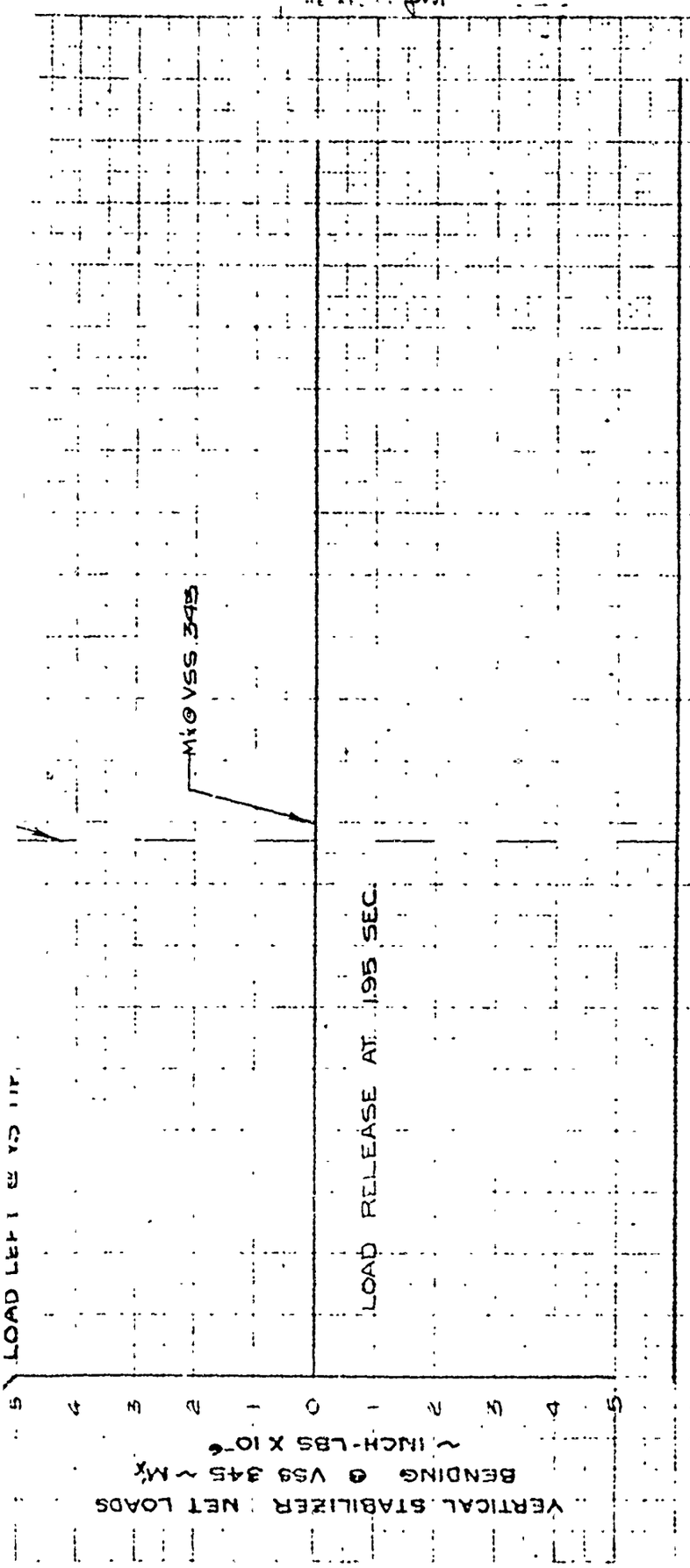
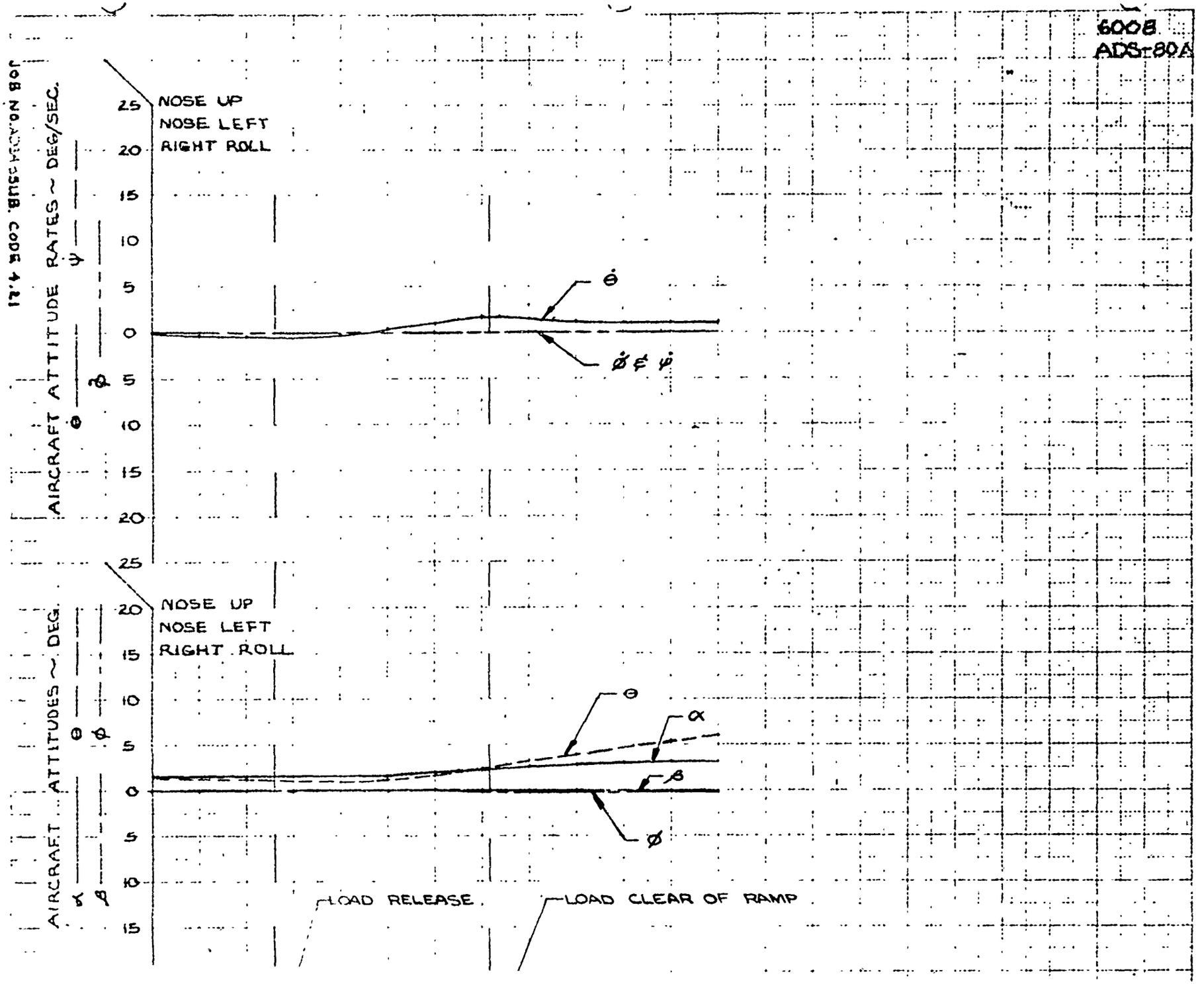


FIGURE D-266


AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
θ̇
φ̇ & ψ̇
AIRCRAFT ATTITUDES ~ DEG.
NOSE UP
NOSE LEFT
RIGHT ROLL
20
15
10
5
0
5
10
15
Θ
α
β
Φ
LOAD RELEASE
LOAD CLEAR OF RAMP

PREPARED RSA
DATE 5-18-65

REPORT NO ER 5473
MODEL C-141A
PAGE D-170

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE ~ 5-17-65

FLIGHT ~ 127 DROP NO. ~ 29

SHEET 1 OF 5

CARGO WT. 6060 LBS.

RUN CONDITIONS

1. G.W. ~ 166900 LBS.
2. C.G. PRIOR TO DROP ~ 24.0 % MAC.
3. C.G. AFTER DROP ~ 29.5% MAC.
4. FLAPS ~ 55%.
5. GEAR ~ UP
6. AVG. EPR ~ 1.20 (4 ENGINES)
7. i_H ~ 1.7 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 96 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 537
   VERT. ~ WL 188

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 15'
3. RATED CHUTE FORCE/CARGO WT. ~ 1.37
4. EXTRACTION LINE LENGTH ~ 140 FT

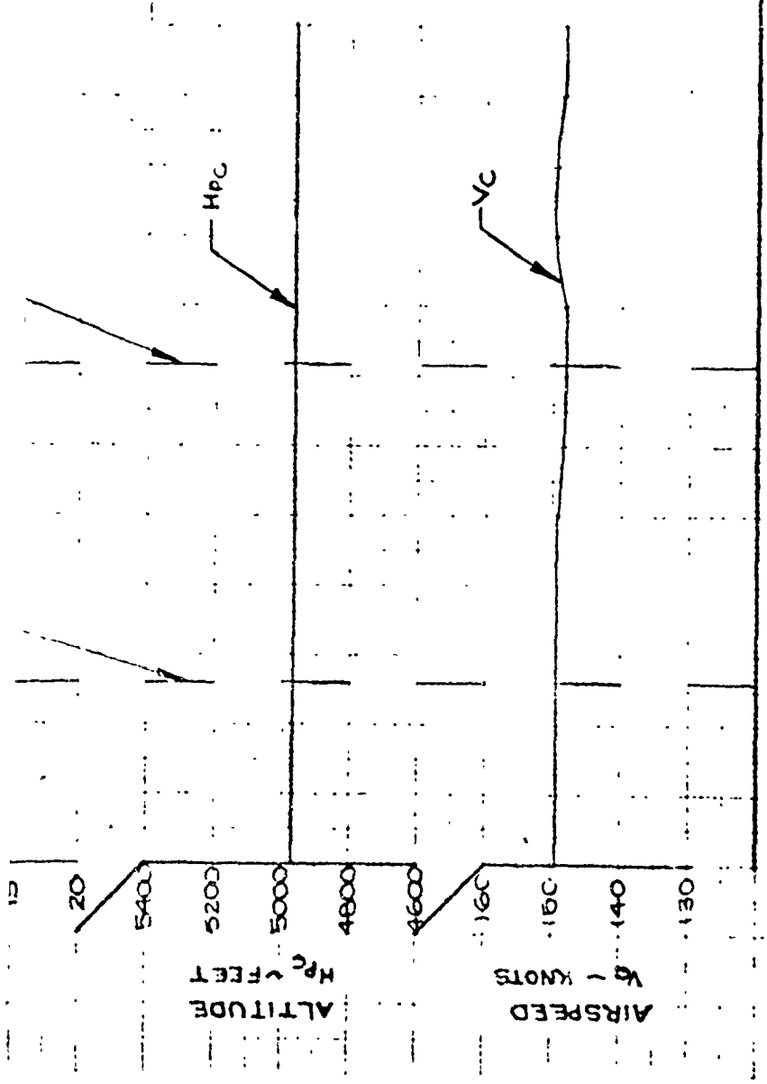
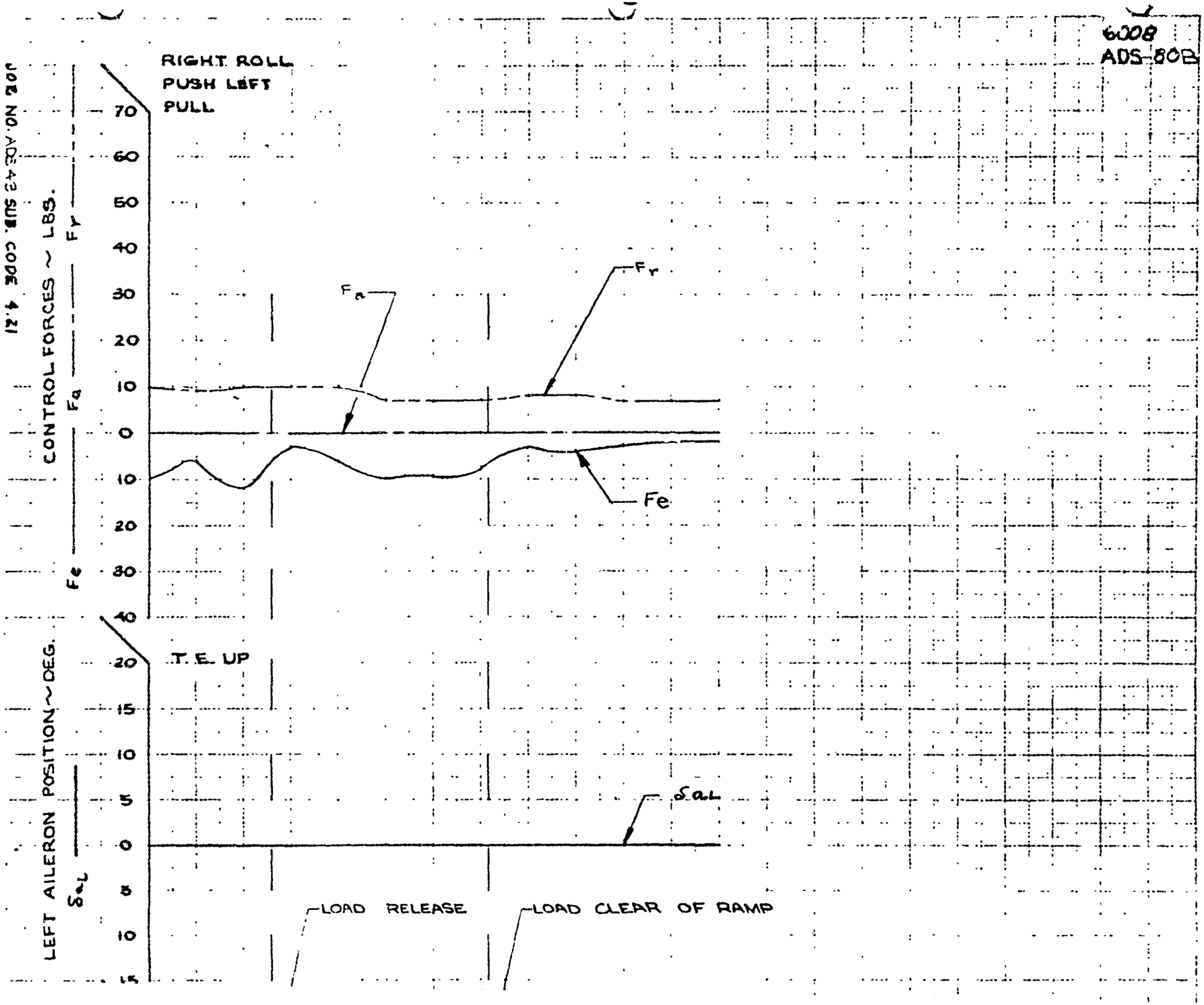


FIGURE D-27A

6008
ADS-50A
REVISED 12-15-65
MBH


6008
ADS-80B
RIGHT ROLL
PUSH LEFT
PULL
CONTROL FORCES ~ LBS.
Fa
Fr
Fe
70
60
50
40
30
20
10
0
10
20
30
40
Fa
Fr
Fe
T.E. UP
LEFT AILERON POSITION ~ DEG.
δaL
20
15
10
5
0
5
10
15
δaL
LOAD RELEASE
LOAD CLEAR OF RAMP

RSA
DATE 5-18-65

ER 5473
C-141A
D-17I

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE ~ 5-17-65

FLIGHT ~ 127 DROP NO ~ 23

CARGO WT. 6060 LBS

NOTE:
SEE FIGURE D-27A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

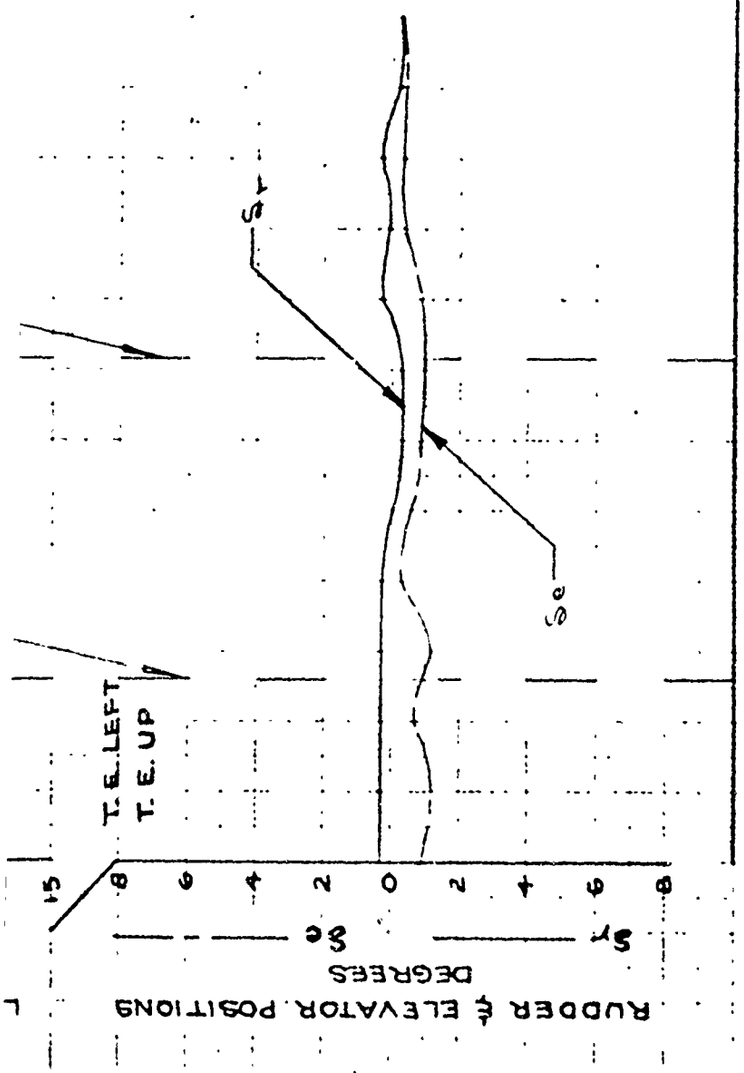
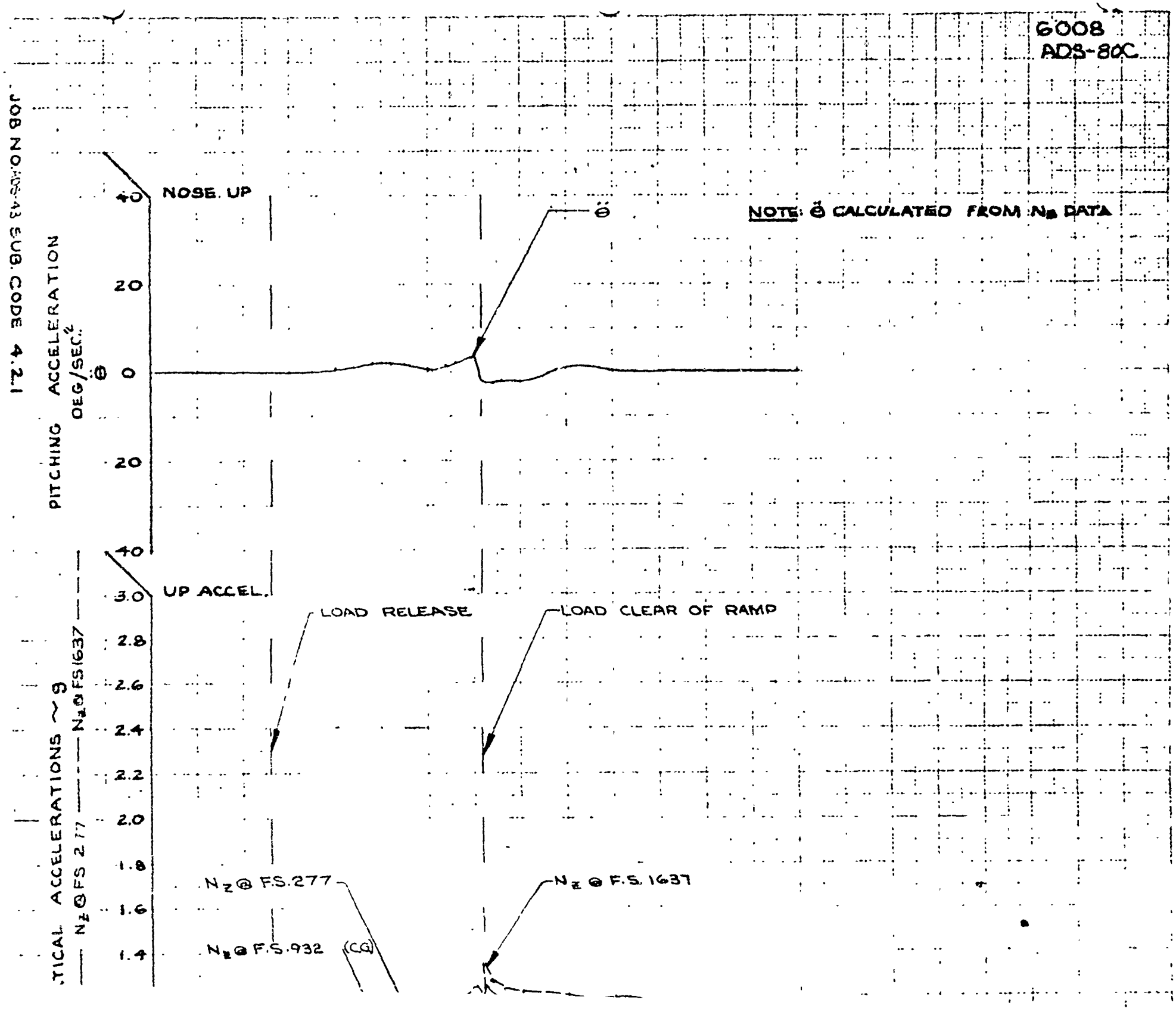


FIGURE D-27B

6008
ADS-80C

JOB NO. ADS-43 SUB. CODE 4.2.1



TED.
8-18-65

ER 5473
C-141A
D-172

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 5-17-65

FLIGHT~127 DROP NO~23

SHEET 3 OF 5

CARGO WT. 6060 LBS

NOTE:
SEE FIGURE D-27A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

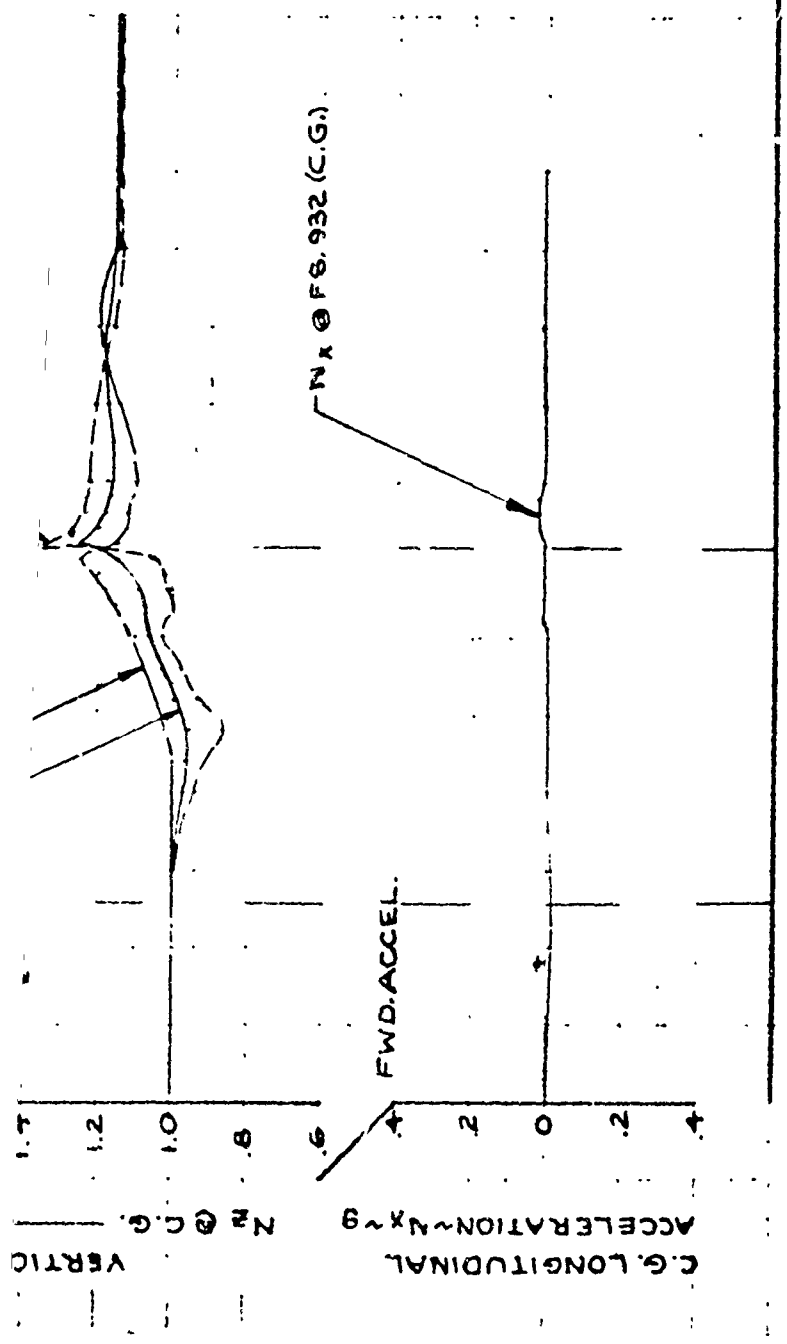
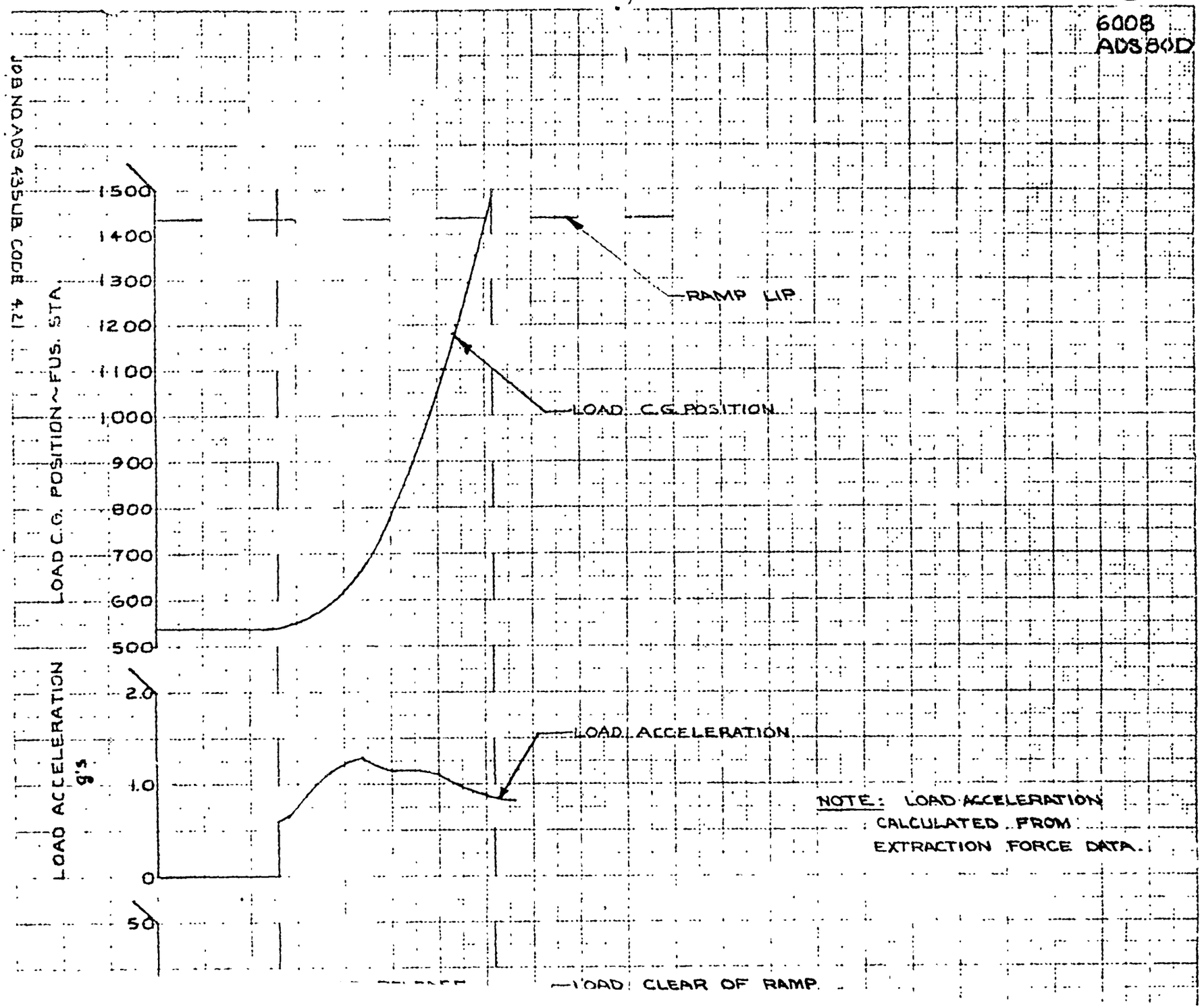


FIGURE D-27C


600B
AD580D
JOB NO AD3 435 UB CODE 421
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD C.G. POSITION
LOAD ACCELERATION
g's
2.0
1.0
0
50
LOAD ACCELERATION
NOTE: LOAD ACCELERATION
CALCULATED FROM
EXTRACTION FORCE DATA.
LOAD CLEAR OF RAMP

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 5-17-65

FLIGHT ~ 127 DROP NO. ~ 23

SHEET 4 OF 5

CARGO WT. 6060 LBS

NOTE:
SEE FIGURE D-27A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

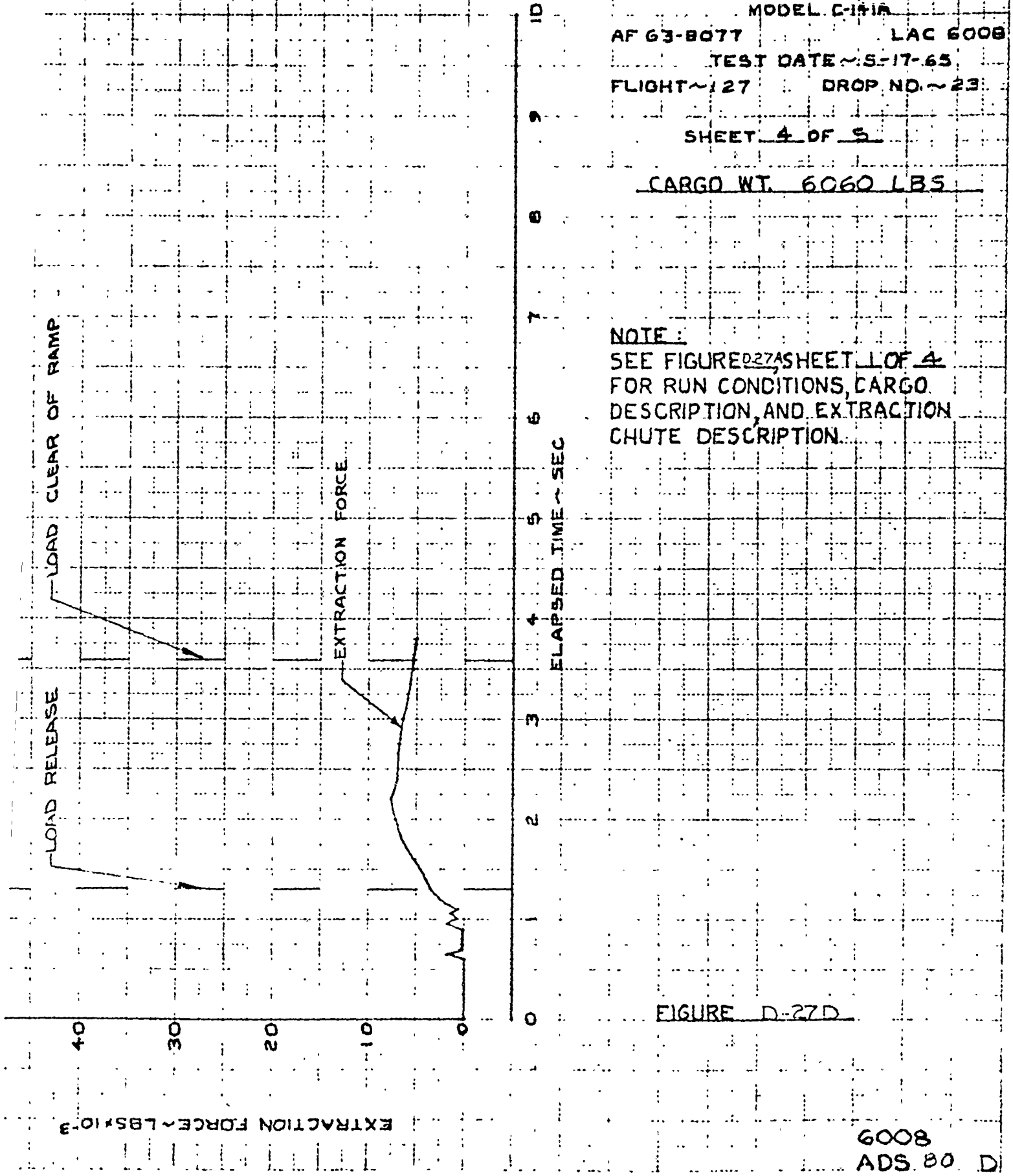


FIGURE D-27D

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM D-174
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 65-8077 LAC 6008

FLIGHT 127 TEST DATE: 5-17-65

G.W. 166,900 LBS. A/S 150 KCAS.

C.G. 24.0 %MAC. ALT. ~ 4,985 FT.

DROP WT. ~ 6,060 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	3.1
2	ANGLE OF PITCH	"	5.9
3	C.G. VERT. ACCEL.	g's	1.25
4	C.G. LONG. ACCEL.	"	- 0.148
5	VERT. ACCEL. @ F.S. 277	"	1.24
6	VERT. ACCEL. @ F.S. 1637	"	1.35
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	15.86
8	VERT. BEND. @ F.S. 1568	"	0.813
9	BENDING ~ M'_X @ HBL 44L	"	0.379
10	SHEAR ~ S'_Z @ HBL 44L	LBS. X 10^{-3}	5.086
11	PITCH TRIM ACTUATOR ~ S_Z	"	- 5.050
12	R.H. RAMP ACTUATOR LOAD	"	0.100
13	L.H. " " "	"	0
14	R.H. SPIDER ARM LOAD	"	2.000
15	L.H. " "	"	1.875
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.720
17	L.H. " " " "	"	7.640
18	BENDING ~ M'_X @ VSS	IN-LBS. X 10^{-6}	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-5}	0.426
20	L.H. " " " "	"	0.624
21	R.H. RAMP HINGE DRAG LOAD	"	- 0.525
22	L.H. " " " "	"	- 0.532
23	RAMP HINGE TOTAL SIDE LOAD	"	- 1.125
24	EXTRACTION CHUTE FORCE	"	7.933
25	CARGO LONG. ACCEL.	g's	1.30

FIG. D-27E
ADS-80E

600B
ADS-81A

AIRCRAFT ATTITUDES ~ DEG.

NOSE UP
NOSE LEFT
RIGHT ROLL

25 20 15 10 5 0 5 10 15 20 25

θ
φ
ψ

AIRCRAFT ATTITUDE RATES ~ DEG/SEC.

NOSE UP
NOSE LEFT
RIGHT ROLL

20 15 10 5 0 5 10 15

θ
φ
q
r

LOAD RELEASE

JOB NO. 14 SUB. CODE 4-21

RSA
DATE 5-19-65

ER 5473
MODEL C-141A
CASE D-175

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

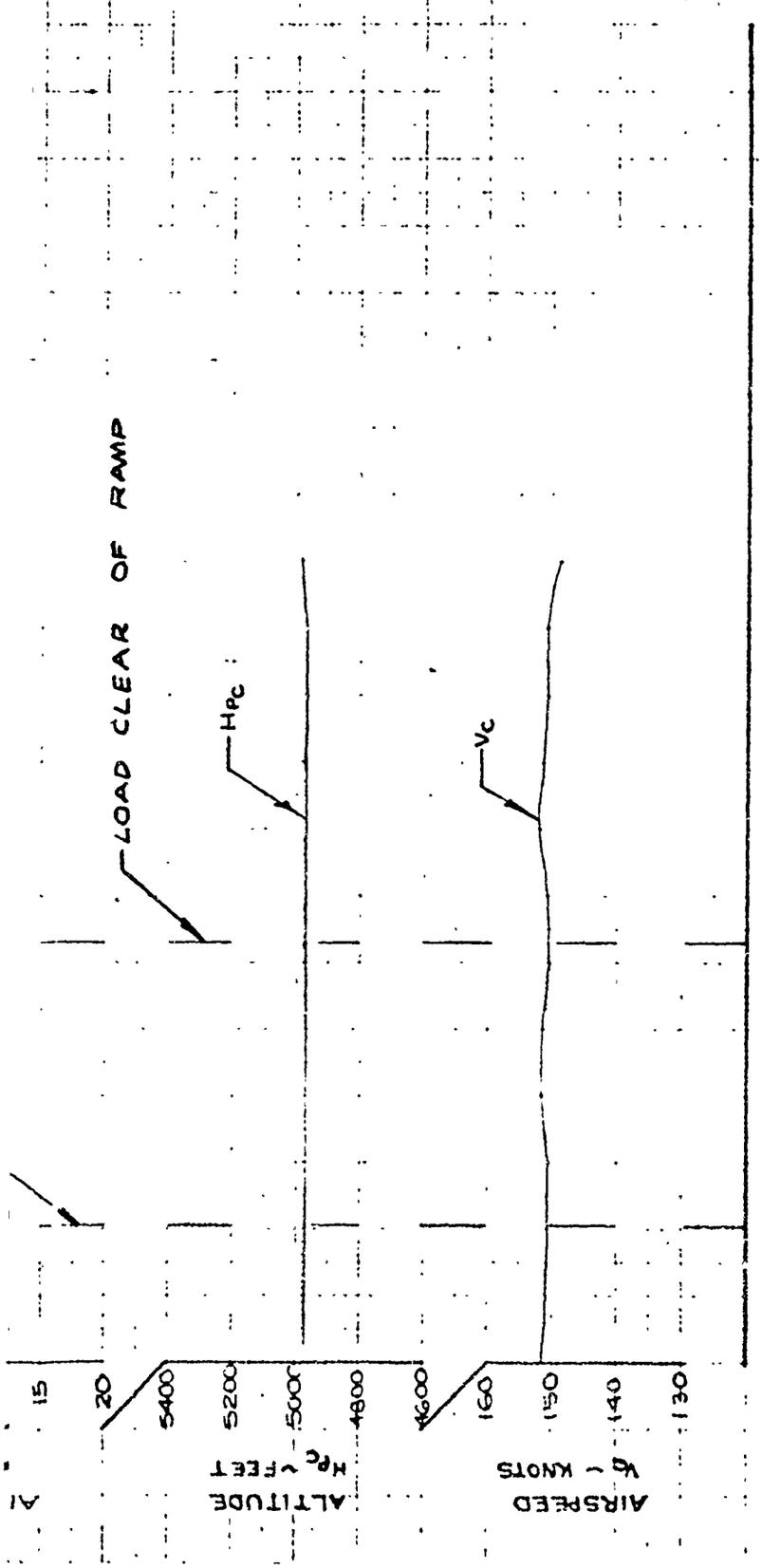
AF63807 LAC 6008

TEST DATE ~ 5-18-65

FLIGHT ~ 128 DROP NO. ~ 24

SHEET 1 OF 5

CARGO WT. 21550 LBS



RUN CONDITIONS

1. G.W. ~ 181 500 LBS
2. C.G. PRIOR TO DROP ~ 19.5% MAC
3. C.G. AFTER DROP ~ 30.2% MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.27 (4 ENGINES)
7. $\dot{\gamma}_H$ ~ 3.0 DEG. (A/C N.U.)

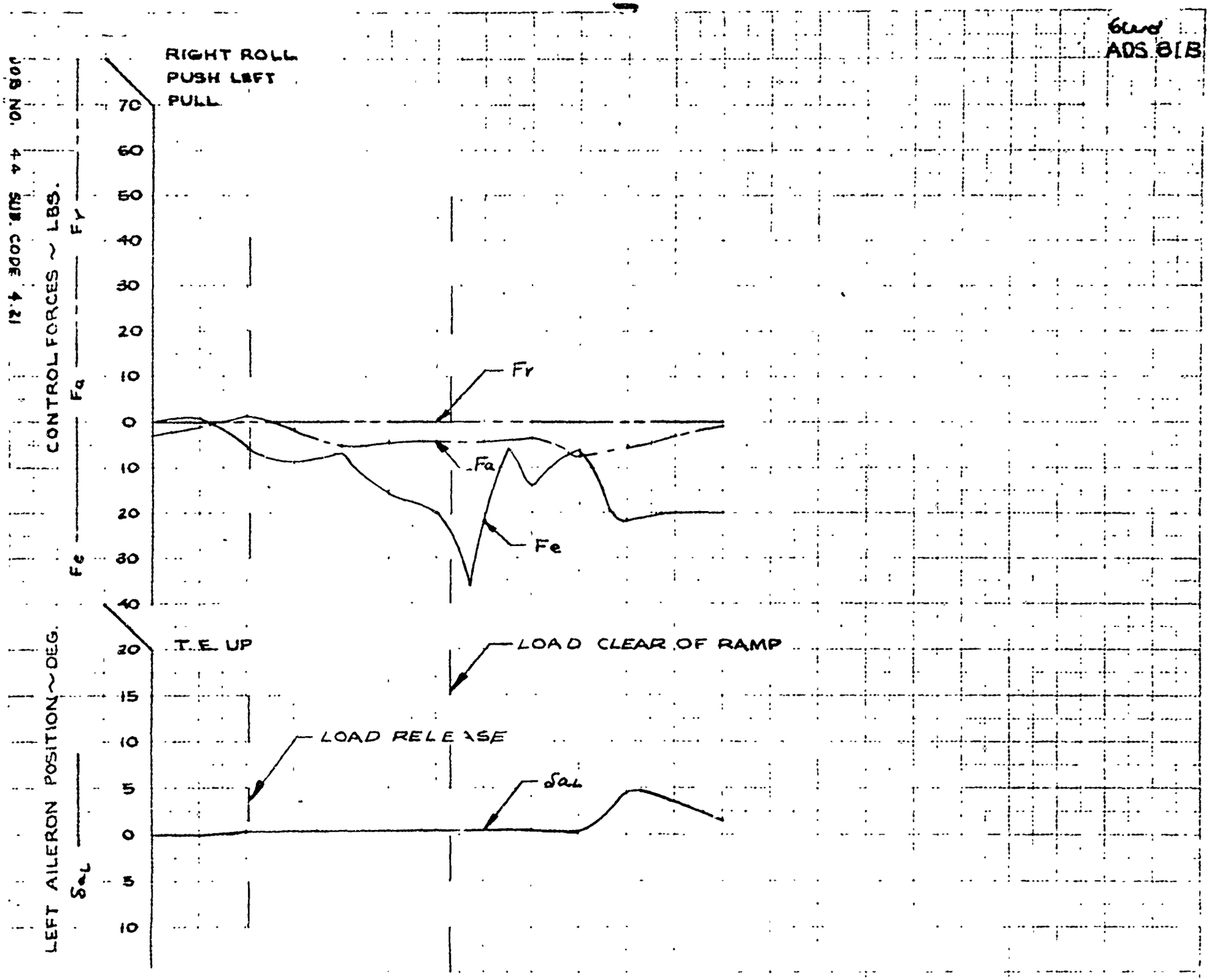
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 699
   VERT. ~ WL 188

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28'
3. RATED CHUTE FORCE/CARGO WT ~ 1.14
4. EXTRACTION LINE LENGTH ~ 140'

FIGURE C-28A


6 and
ADS 81B
RIGHT ROLL
PUSH LEFT
PULL
CONTROL FORCES ~ LBS.
Fa
Fr
Fe
70
60
50
40
30
20
10
0
10
20
30
40
Fr
Fa
Fe
T.E. UP
LOAD CLEAR OF RAMP
LOAD RELEASE
LEFT AILERON POSITION ~ DEG.
δaL
20
15
10
5
0
5
10
δaL

RSA
DATE 5-19-65

ER 5473
C-141A
D-176

176

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE ~ 5-18-65

FLIGHT ~ 128 DROP NO ~ 24

SHEET 2 OF 5

CARGO WT 21550 LBS

NOTE:
SEE FIGURE ~~2~~ SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

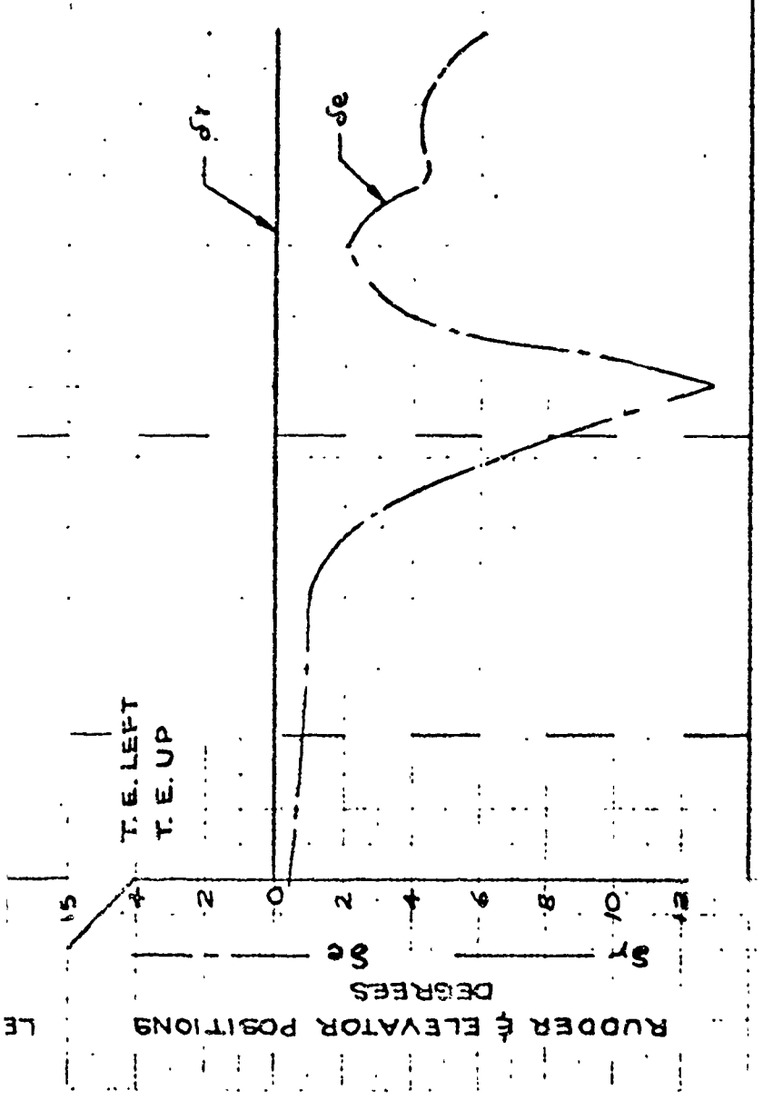
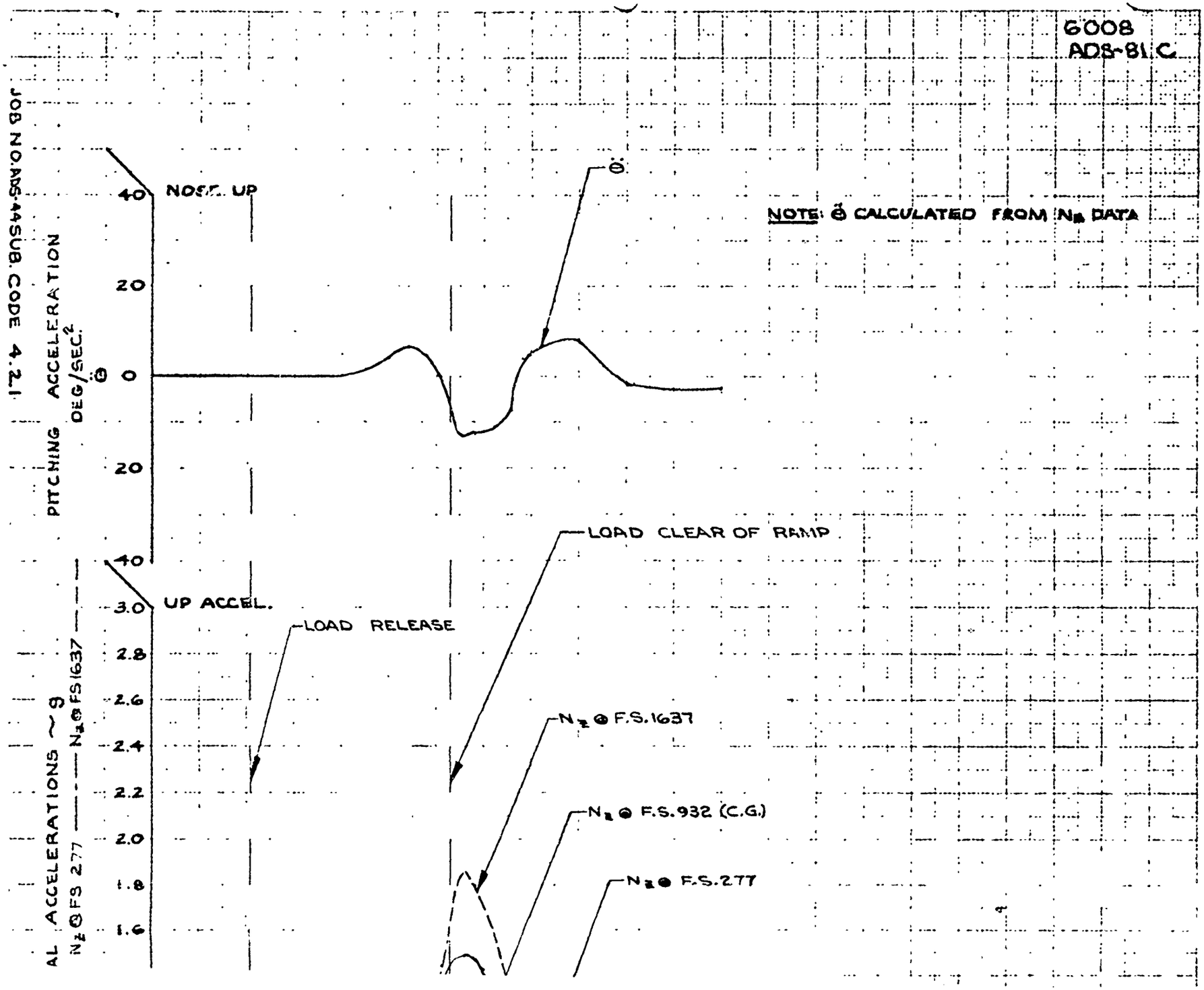


FIGURE D-28B

6008
ADS 81B


6008
AD8-81.C
JOB NO. AD8-44SUB. CODE 4.2.1
PITCHING ACCELERATION
DEG/SEC.²
θ̈
NOSE UP
40
20
0
20
40
NOTE: θ̈ CALCULATED FROM N_z DATA
LOAD CLEAR OF RAMP
LOAD RELEASE
N_z @ F.S.1637
N_z @ F.S.932 (C.G.)
N_z @ F.S.277
AL ACCELERATIONS ~ g
N_z @ FS 277 —— N_z @ FS 1637 ——
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6

T.E.D.
5-19-66

ER 5473
C-141A
D-177

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 5-18-65

FLIGHT-12B DROP NO.-2A

SHEET 3 OF 5

CARGO WT. 21550 LBS

NOTE:
SEE FIGURE D-28A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

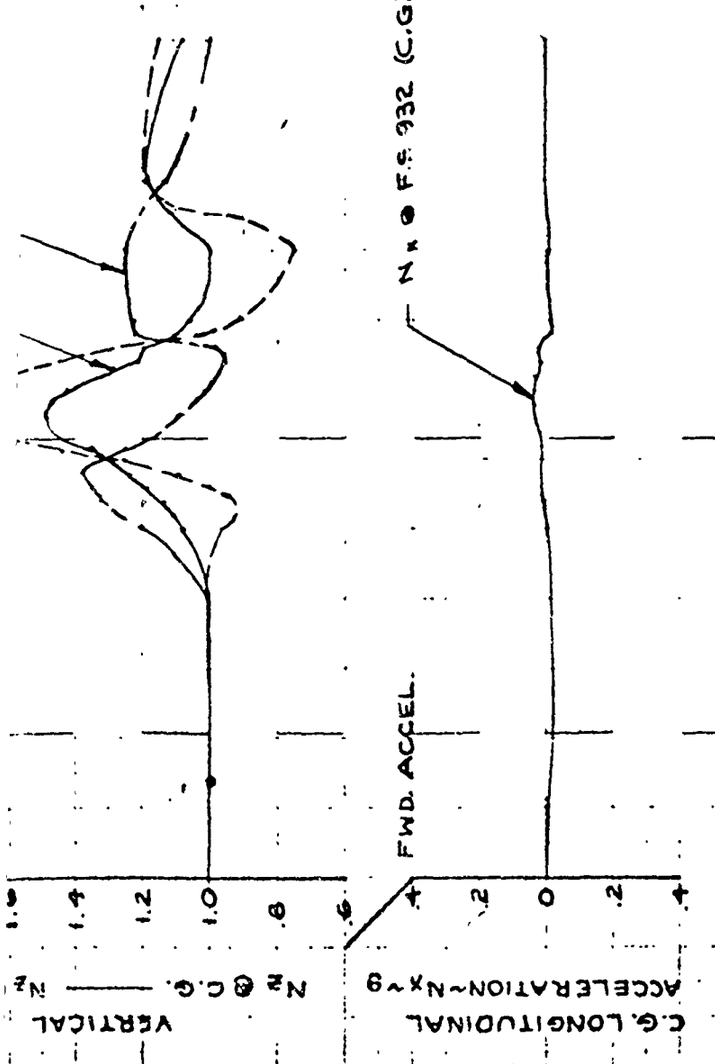
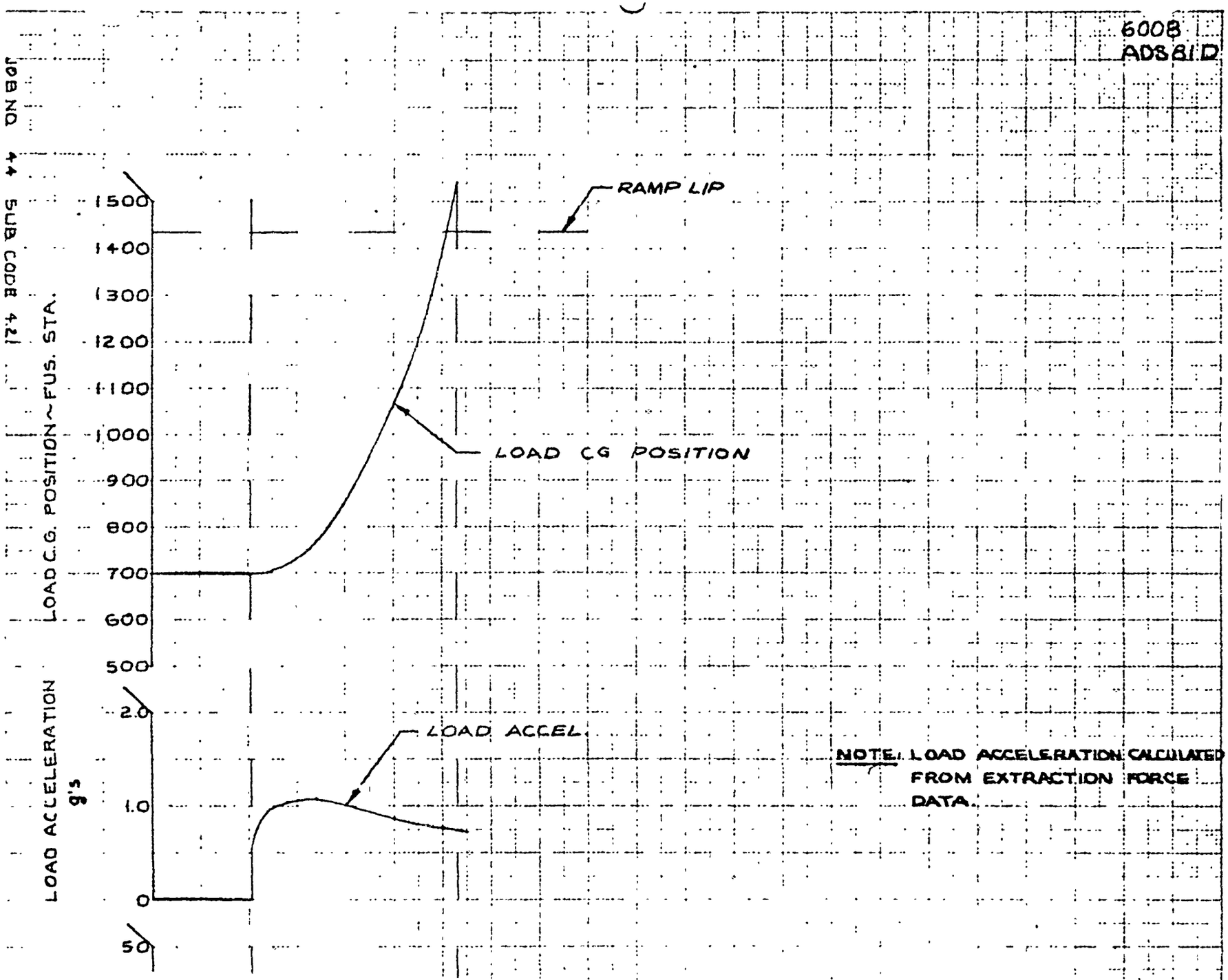


FIGURE D-28C

6008
AD8818

JOB NO. 44 SUB CODE 124



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

PREPARED BY RSA
DATE 5-19-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
EA D-178

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 5-18-65

FLIGHT ~ 128 DROP NO. ~ 24

SHEET 4 OF 5

CARGO WT. 21550 LBS

NOTE:
SEE FIGURE D-28A, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

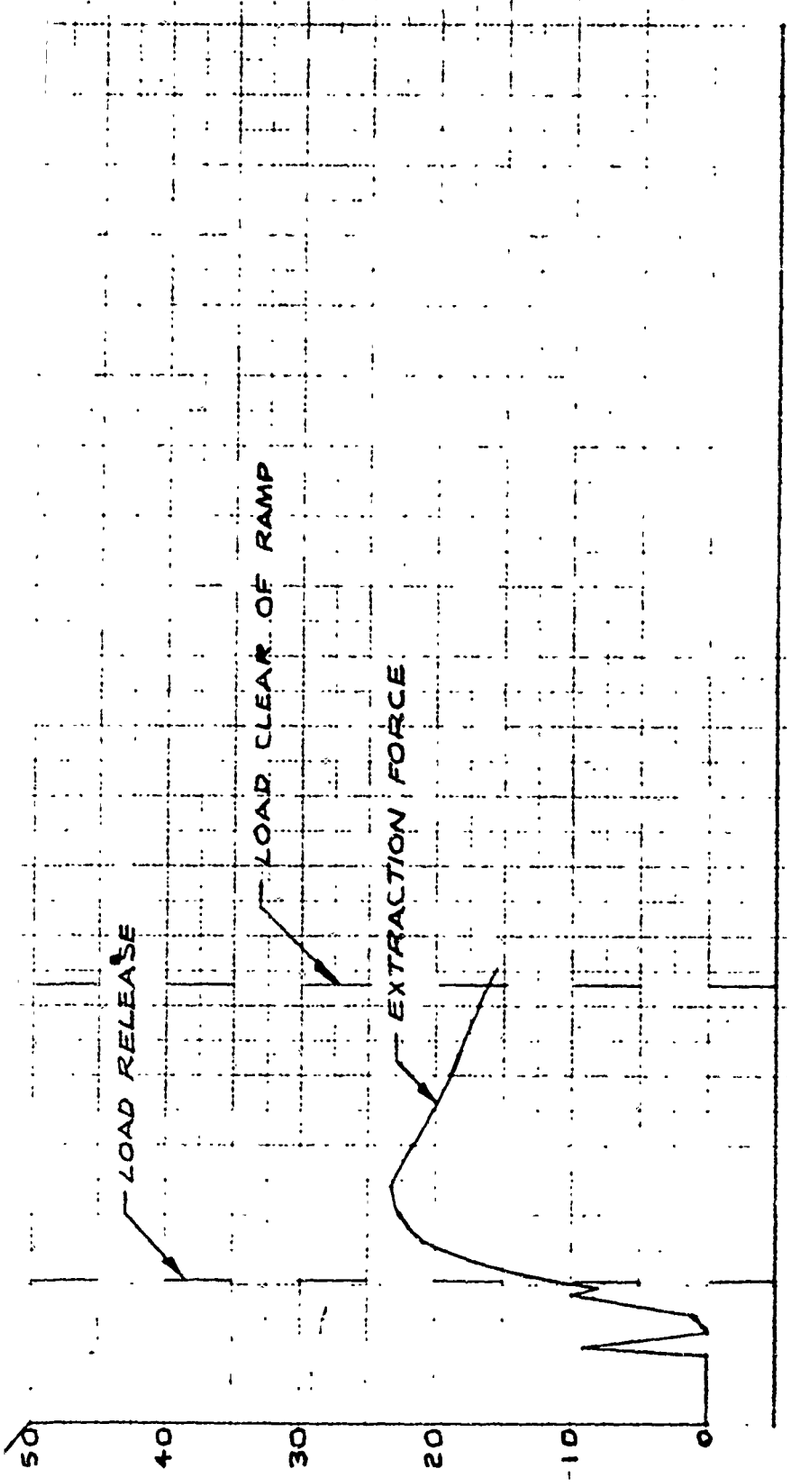


FIGURE D-29D

6008
ADS 81D

ADS-81E

	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page D-179
Prepared			TITLE	Model C-141A
Checked				Report No ER 5473
Approved				

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 65-8077 LAC 6009

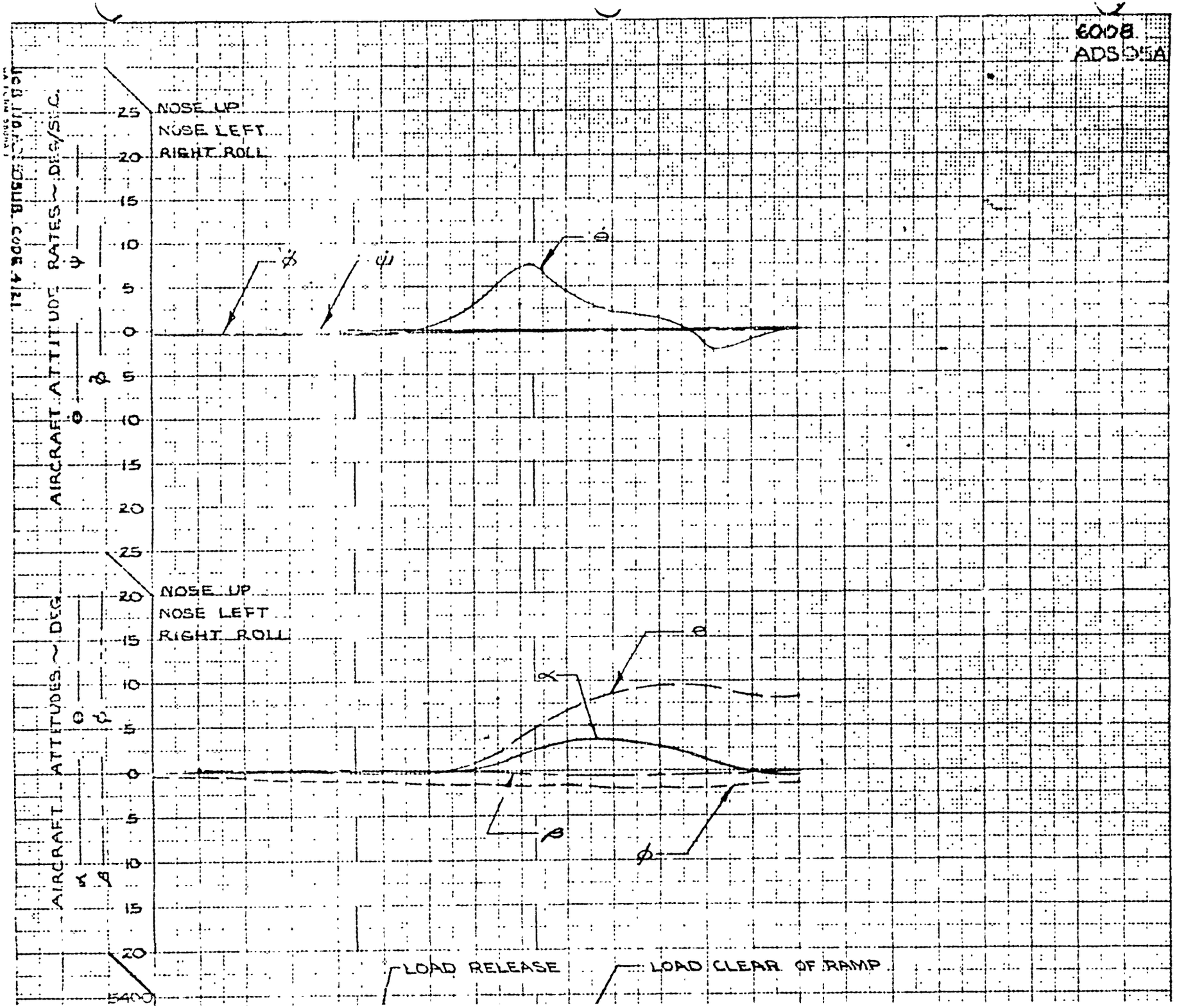
FLIGHT 128 TEST DATE: 5-18-65

G.W. 181,500 LBS. A/S 152 KCAS

C.G. 19.5 %MAC. ALT. ~ 4,980 FT.

DROP WT. ~ 21,550 LBS..

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	2.1
2	ANGLE OF PITCH	"	4.4
3	C.G. VERT. ACCEL.	g's	1.48
4	C.G. LONG. ACCEL.	"	0.011
5	VERT. ACCEL. @ F.S. 277	"	1.38
6	VERT. ACCEL. @ F.S. 1637	"	1.86
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	N.A.
8	VERT. BEND. @ F.S. 1568	"	0.22
9	BENDING ~ M'_X @ HBL 44L	"	0.03
10	SHEAR ~ S'_Z @ HBL 44L	LBS. X 10^{-3}	0.37
11	PITCH TRIM ACTUATOR ~ S_Z	"	7.96
12	R.H. RAMP ACTUATOR LOAD	"	0.19
13	L.H. " " "	"	0.49
14	R.H. SPIDER ARM LOAD	"	7.69
15	L.H. " " "	"	7.59
16	R.H. PETAL DOOR ACTUATOR LOAD	"	8.19
17	L.H. " " " "	"	8.40
18	BENDING ~ M'_X @ VSS	IN-LBS. X 10^{-6}	0.198
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	3.89
20	L.H. " " " "	"	3.45
21	R.H. RAMP HINGE DRAG LOAD	"	− 2.04
22	L.H. " " " "	"	− 1.65
23	RAMP HINGE TOTAL SIDE LOAD	"	− 1.143
24	EXTRACTION CHUTE FORCE	"	23.31
25	CARGO LONG. ACCEL.	g's	1.06


E008
ADS 05A
AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
ψ
θ
φ
χ
β
LOAD RELEASE
LOAD CLEAR OF RAMP
5400

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE ~ 6-7-65

FLIGHT ~ 138 DROP NO. 25

SHEET 1 OF 7

CARGO WT 35250 LBS.

RUN CONDITIONS

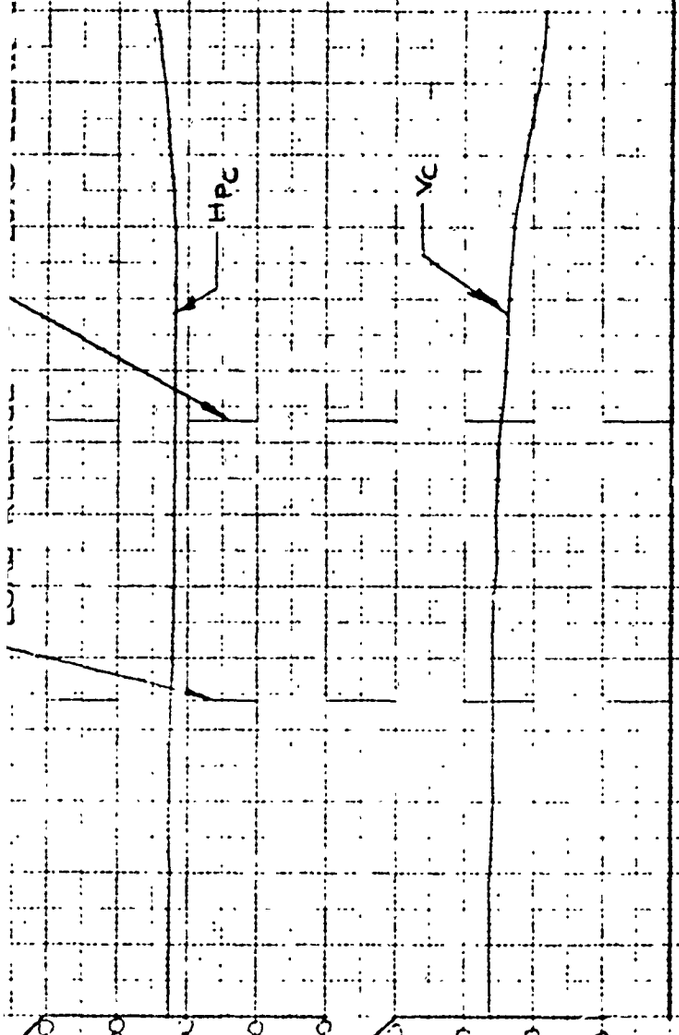
1. G.W. ~ 194200 LBS.
2. C.G. PRIOR TO DROP ~ 19.2
3. C.G. AFTER DROP ~ 20.0
4. FLAPS ~ 63%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. $\dot{\gamma}_H$ ~ 2.65 DEG. (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 780
   VERT. ~ WL 182

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 25FT
3. RATED CHUTE FORCE/CARGO WT ~ 1.8G
4. EXTRACTION LINE LENGTH ~ 100 FT



ELAPSED TIME ~ SEC.

0 1 2 3 4 5 6 7 8 9 10

ALTITUDE H_{PC} ~ FEET
5400 5200 5000 4800 4600

AIRSPEED V_C ~ KNOTS
170 160 150 140

FIGURE D-29A

600B
ADS 95A
REVISED 2-15-65
MBH

6008
ADS 258

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40 20 15 10 5 0 5

CONTROL FORCES ~ LBS.

F_y — F_a — F_e

T.E. UP

T AILERON POSITION ~ DEG

δ_{a_L}

F_y

F_a

F_e

δ_{a_L}

PREPARED BY FCW
DATE 6-7-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-181

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 6-7-65

FLIGHT 138 DROP NO 25

SHEET 2 OF 7

CARGO WT 35250 LBS

NOTE:
SEE FIGURE 25 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

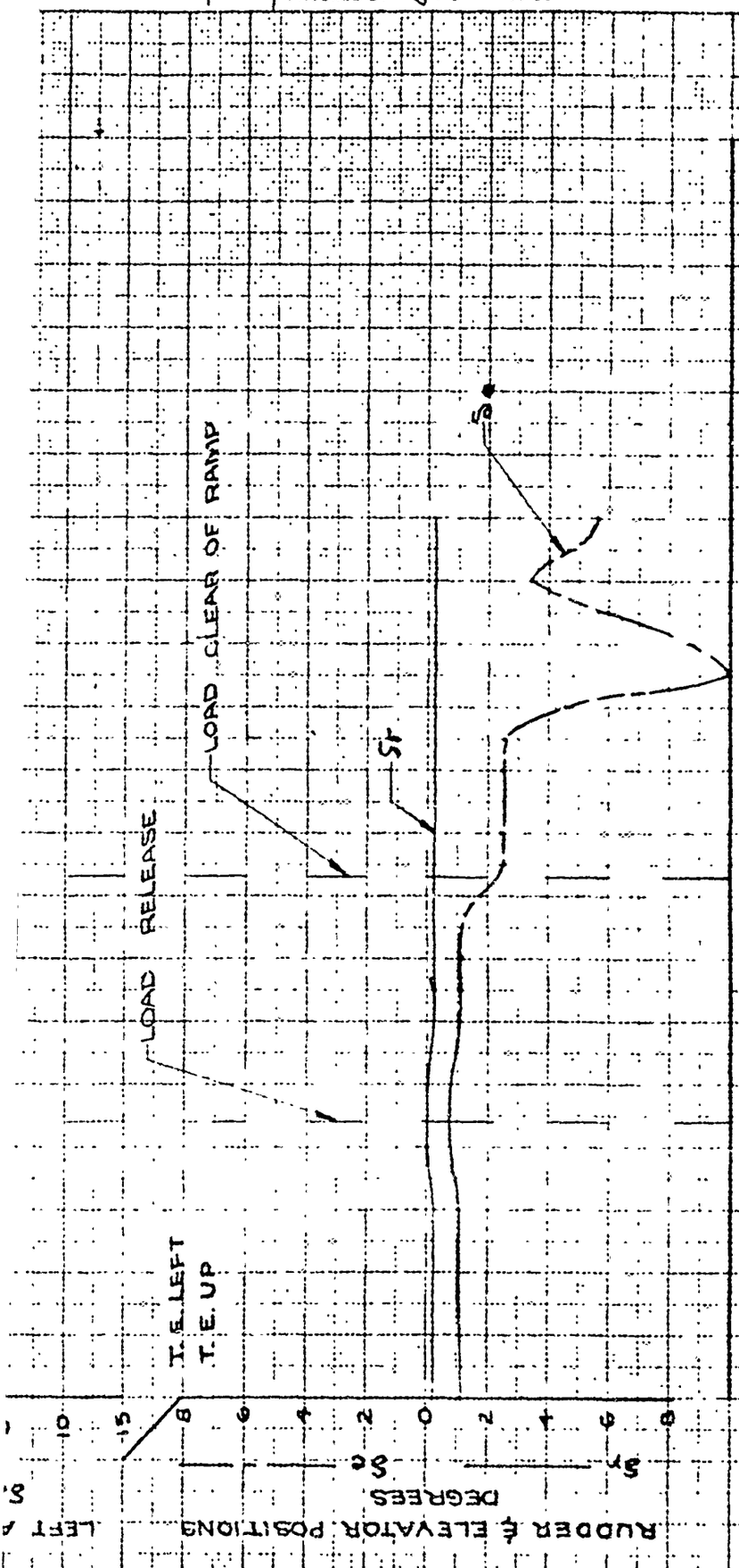


FIGURE C-29B

6008
ADS 95B

G008
ADS-95C
NOTE: θ̈ CALCULATED FROM Nz DATA
LOAD CLEAR OF RAMP
LOAD RELEASE
θ̈
Nz @ F.S. 1637
Nz @ F.S. 932 (C-6)
Nz @ F.S. 277
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
θ̈
DEG/SEC²
PITCHING ACCELERATION
Nz GFS 277 —— Nz C FS 1637 ——
Nz ACCELERATIONS ~ g
JOB NO. ADS-5 SUB. CODE 4.2.1

PREPARED BY TED
DATE 6-7-65
CHECKED BY JHP

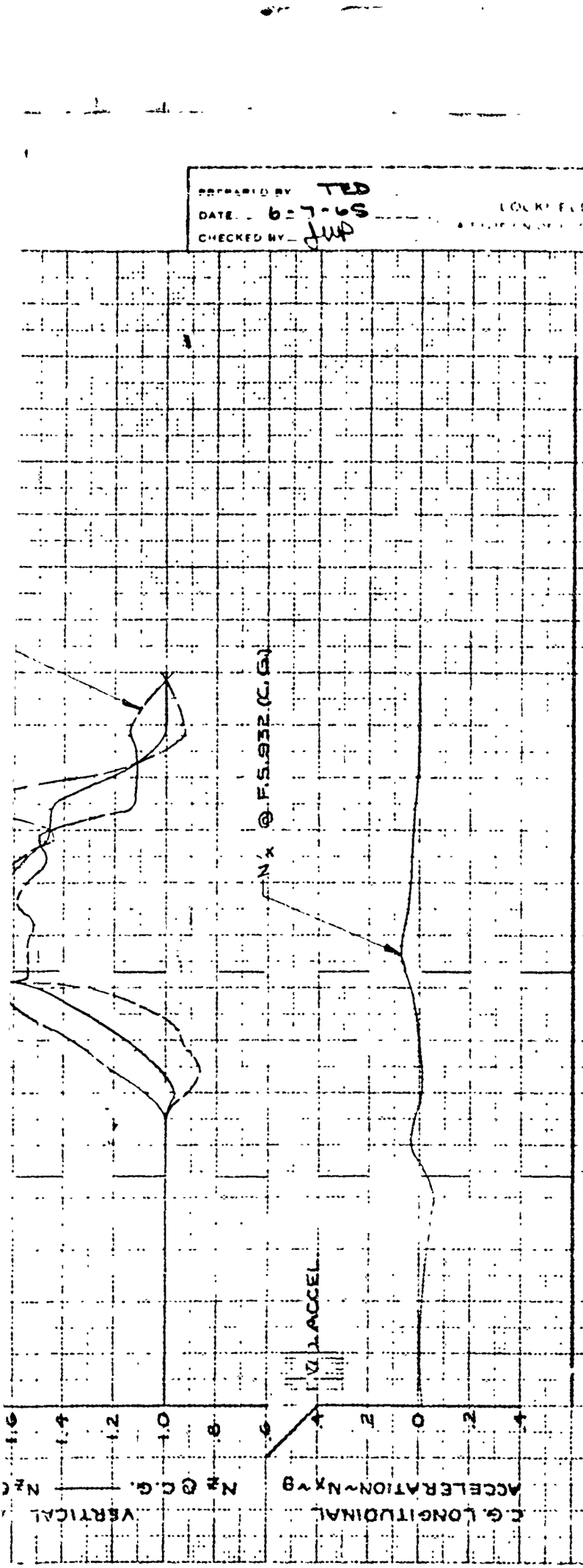
LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
FILE D-182

TIME HISTORY OF AERIAL DELIVERY MANEUVER

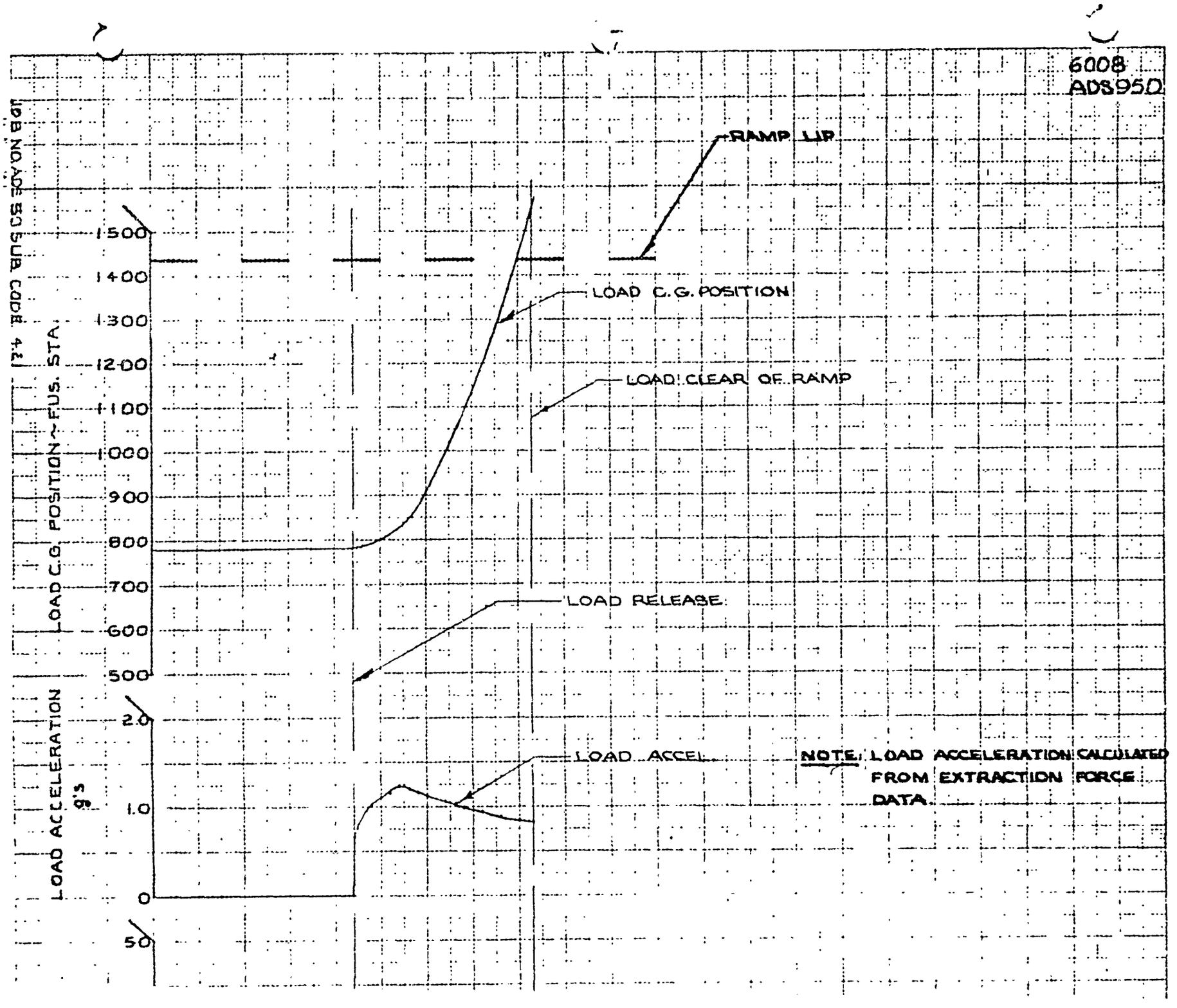
MODEL C141A
AFG3-B077 LAC 600B
TEST DATE: 6-7-65
FLIGHT-138 DROP NO.-25
SHEET 3 OF 7

CARGO WT 35,250 LBS



NOTE:
SEE FIGURE 229A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-29C


6008
ADS950
JOB NO. 65 SUB CODE 43
RAMP LIP
LOAD C.G. POSITION
LOAD CLEAR OF RAMP
LOAD RELEASE
LOAD ACCEL
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
LOAD ACCELERATION g's
2.0
1.0
0
50

PREPARED BY FCW
DATE 6-8-65
CHECKED BY JMP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-283

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE~6-7-65

FLIGHT~138 DROP NO. 25

SHEET 4 OF 7

CARGO WT. 352501 LBS.

NOTE:
SEE FIGURE D-29A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

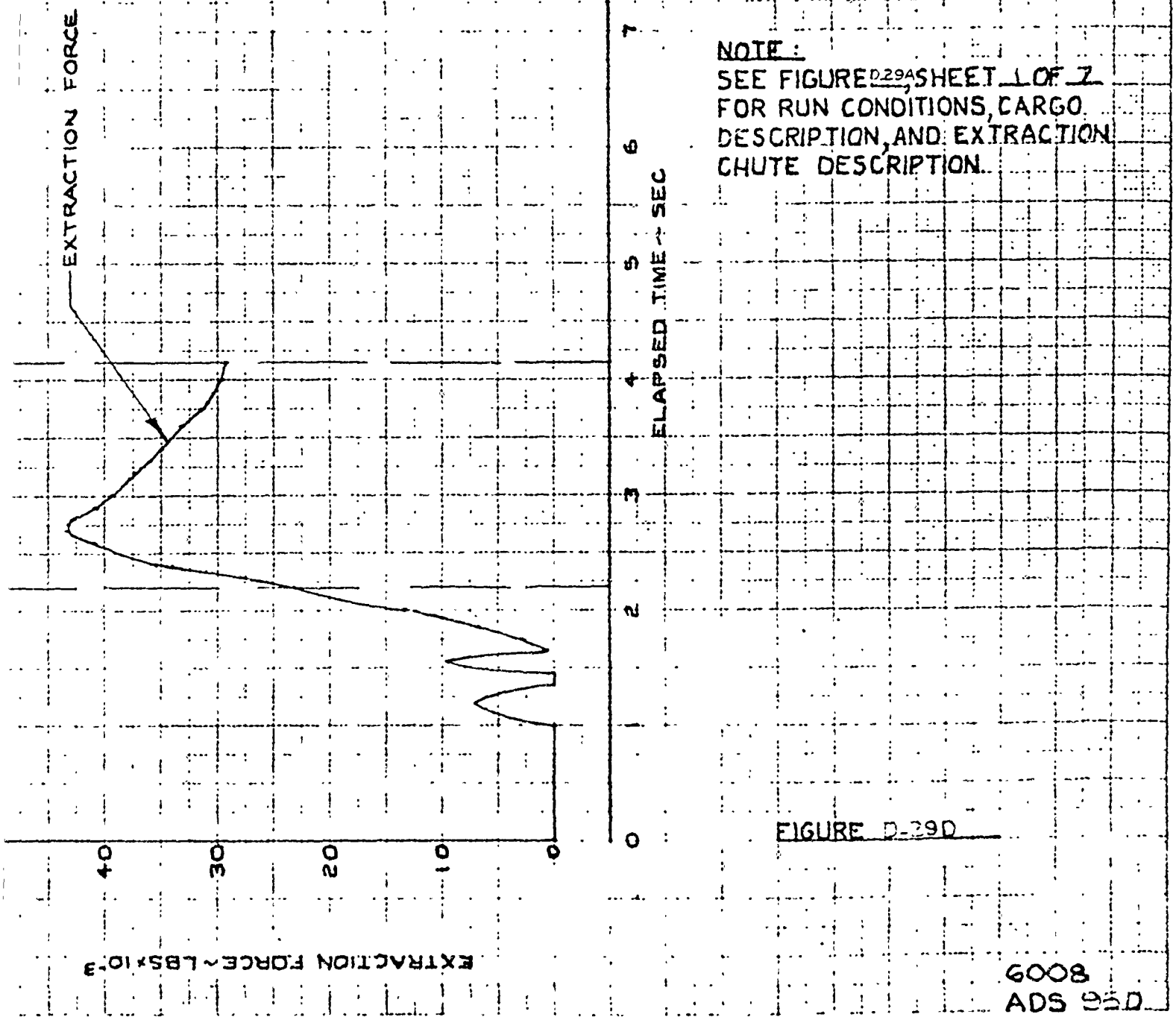


FIGURE D-29D

6008
ADS 95D

6008
ADS-95E

RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H. — L.H.
4 2 0 -2 -4
TENSION
R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD

ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H — L.H.
30 20 10 0
TENSION
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD

VERTICAL LOAD
LBS X 10⁻³
R.H. — L.H.
15 10 5 0
DOWN LOAD
L.H. VERT. LOAD
R.H. VERT. LOAD

LOADS
LOAD
X 10⁻³
2.0 1.0
PULL RIGHT
SIDE LOAD

JOB NO. ADS-505 SUB. CODE 4.2.1

PREPARED BY T.E.D.
DATE 6-8-65
CHECKED Jwp

REPORT NO ER 5473
MODEL C-141A
PAGE D-184

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-7-65

FLIGHT ~ 138 DROP NO ~ 25

SHEET 5 OF 7

CARGO WT. 35,250 LBS

NOTE:
SEE FIGURE D-29A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

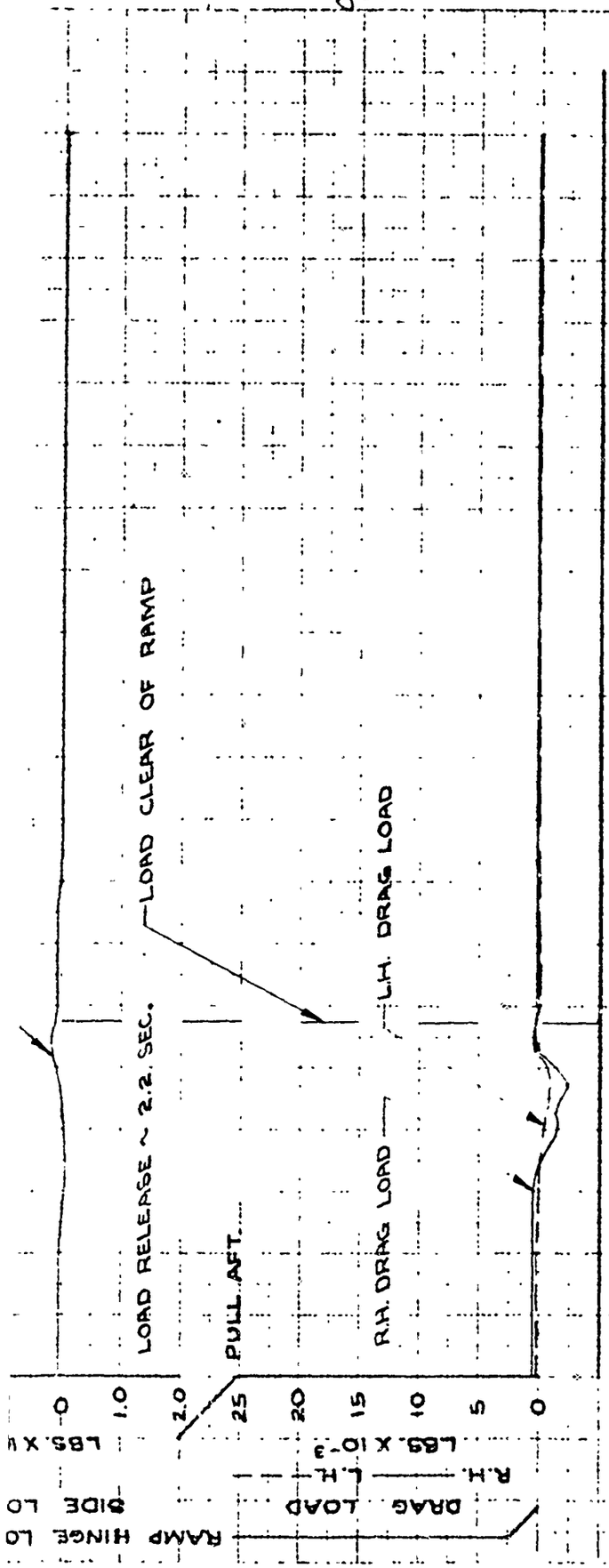


FIGURE D-29E

6008
ADS-95F
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
My @ F.S.1362
My @ F.S.1048
COMPRESSION
DOWN LOAD
10 9 8 7 6 5 4 3 2 4 3 2 1 0 1 2 3 4 5 10 12
LH
RH
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X10-3
VERTICAL BENDING ~ FS 1362
INCH-LBS. X10-6
48
JOB NO. ADS-506UB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-8077 LAC 6008

TEST DATE: 6-7-65

FLIGHT ~ 138 DROP NO ~ 25

SHEET 6 OF 7

CARGO WT. 35,250 LBS

NOTE:
SEE FIGURE D-234 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

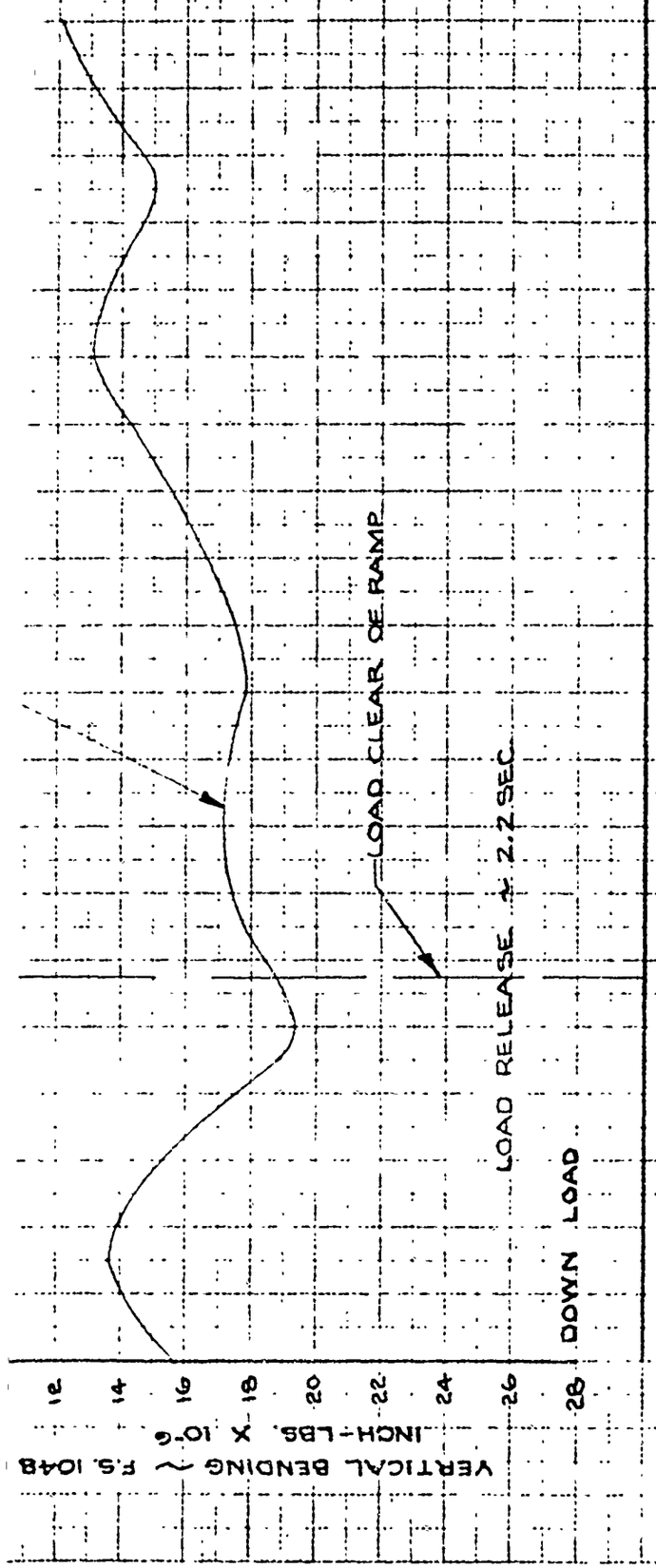
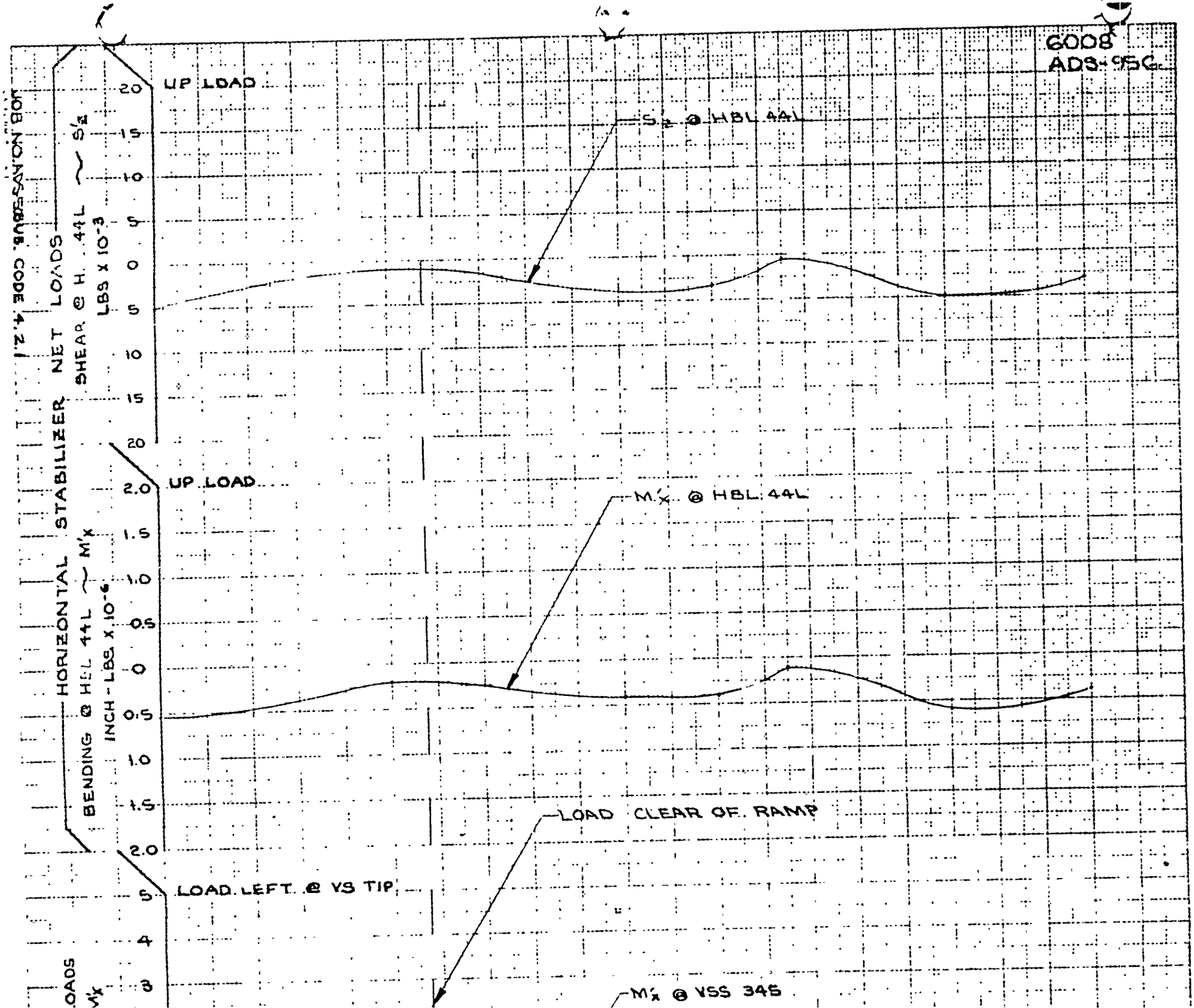


FIGURE D-29


6008
ADS-95G
UP LOAD
S'z @ HBL 44L
HORIZONTAL STABILIZER NET LOADS
SHEAR @ H. 44L ~ S'z
LBS X 10⁻³
20
15
10
5
0
5
10
15
20
UP LOAD
M'x @ HBL 44L
BENDING @ HBL 44L ~ M'x
INCH-LBS X 10⁻⁶
2.0
1.5
1.0
0.5
0
0.5
1.0
1.5
2.0
LOAD CLEAR OF RAMP
LOAD LEFT @ VS TIP
M'x @ VSS 345
5
4
3

PREPARED BY T.E.D.
DATE 6-8-65
CHECKED BY JWP

REPORT NO ER 5473
MODEL C-141A
PAGE D-186

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 6-7-65

FLIGHT ~ 138 DROP NO. ~ 25

SHEET 1 OF 1

CARGO WT. 35,250 LBS

NOTE:
SEE FIGURE D-29A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

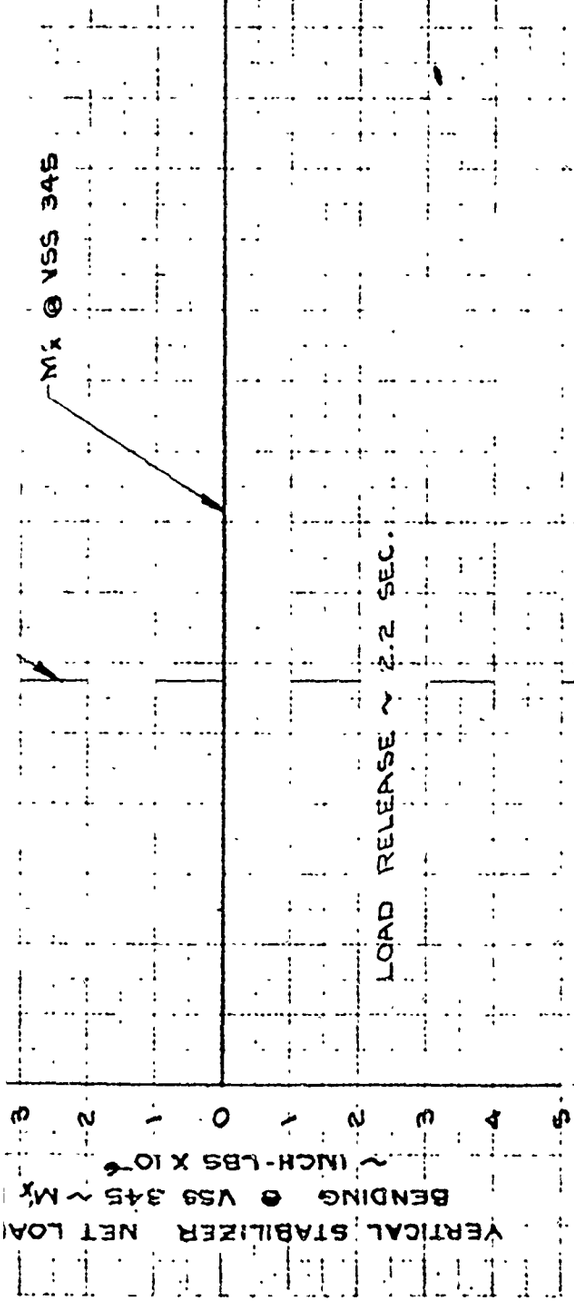


FIGURE D-29G

6008
ADS-95G

6008
ADSB2A
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
AIRCRAFT ATTITUDES ~ DEG.
NOSE UP
NOSE LEFT
RIGHT ROLL
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
ψ̇ ε φ̇
θ
α
φ ε β
25
20
15
10
5
0
5
10
15
20
25
φ
θ
ψ
φ

RSA & FCW

DATE 5-20-65

REPORT NO ER 5473
MODEL C-141A
DATA D-187

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 5-19-65

FLIGHT-129 DROP NO. 26

SHEET 1 OF 4

CARGO WT 23440 LBS

RUN CONDITIONS

1. G.W.~182600 LBS.
2. C.G. PRIOR TO DROP~19.5%M.A.C.
3. C.G. AFTER DROP~30.2%M.A.C.
4. FLAPS~30%
5. GEAR~UP
6. AVG. EPR~1.30 (4ENGINES)
7. $\dot{\gamma}_H$~5.5 DEG. (A/C NU)

CARGO DESCRIPTION

1. TYPE CARRIER~PLATFORM
2. LENGTH~240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~FS 717
   VERT. ~WL 188

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES~2
2. CHUTE SIZE~28'
3. RATED CHUTE FORCE/CARGO WT. 1.18
4. EXTRACTION LINE LENGTH~140 FT

NOTE: ALL DATA BETWEEN 4.1 AND 4.5 SEC. IS EXTRAPOLATED DUE TO AN INSTRUMENTATION POWER FAILURE.

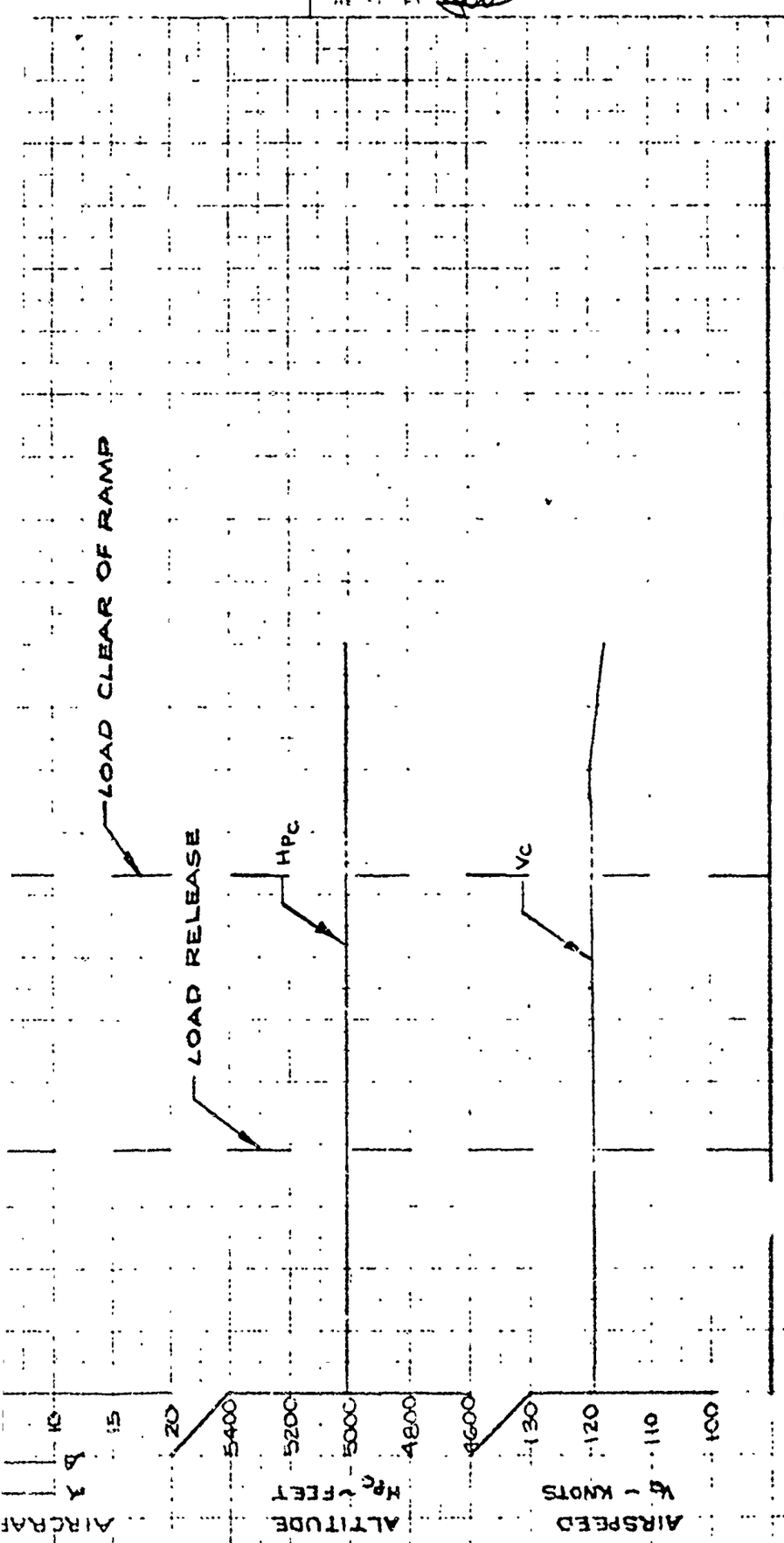
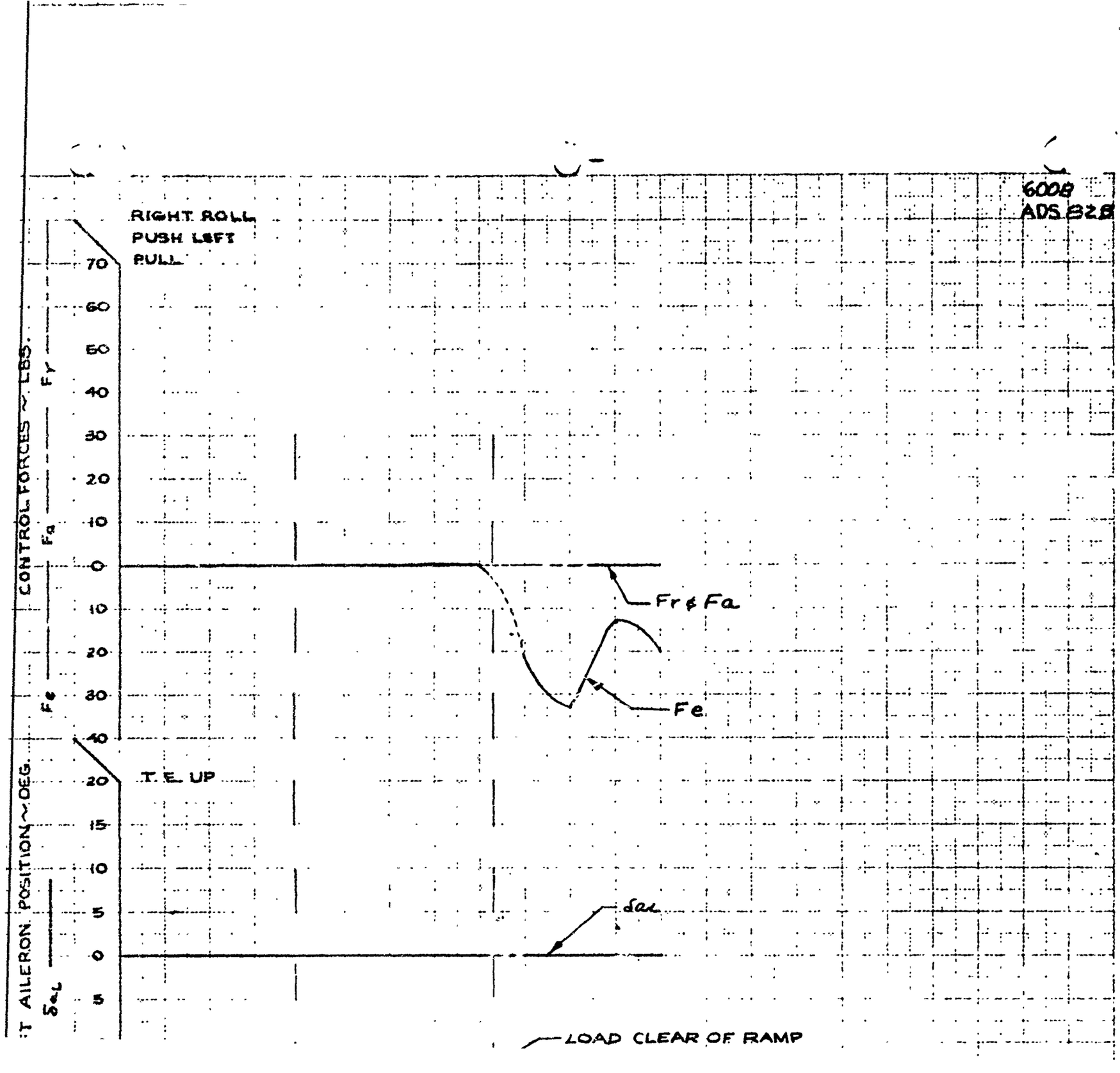


FIGURE D-30A

600B
ADS 82A


6008
ADS 828
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
Fr
Fa
Fe
Fr & Fa
Fe
T. E. UP
20
15
10
5
0
5
δaL
δaL
LOAD CLEAR OF RAMP
CONTROL FORCES ~ LBS.
T AILERON POSITION ~ DEG.

RSA
DATE 5-19-65

ER 5473
MODEL C-141A
D-188

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE ~ 5-19-65

FLIGHT ~ 129 DROP NO ~ 26

SHEET 2 OF 4

CARGO WT 234401BS

NOTE:
SEE FIGURE D-30A SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

NOTE: ALL DATA BETWEEN 4.1 AND 4.5 SEC. IS EXTRAPOLATED DUE TO AN INSTRUMENTATION POWER FAILURE.

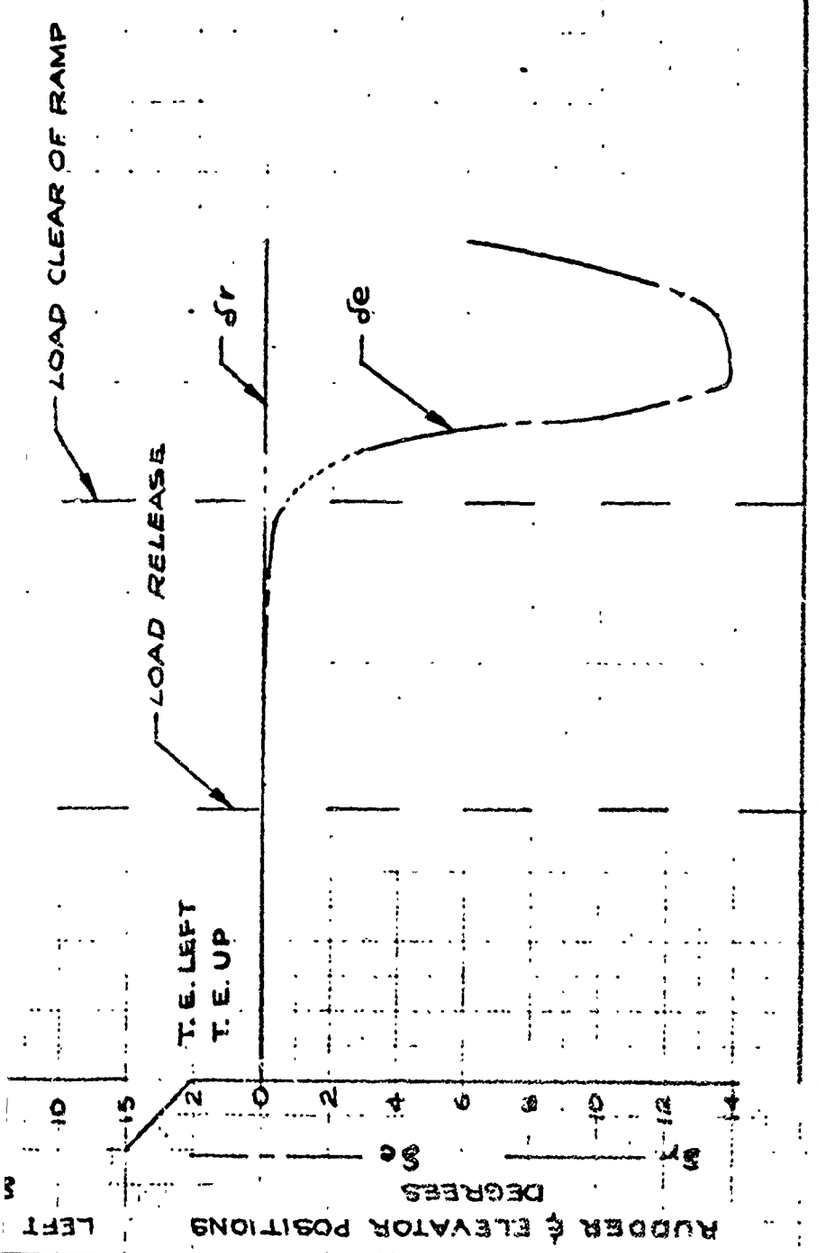
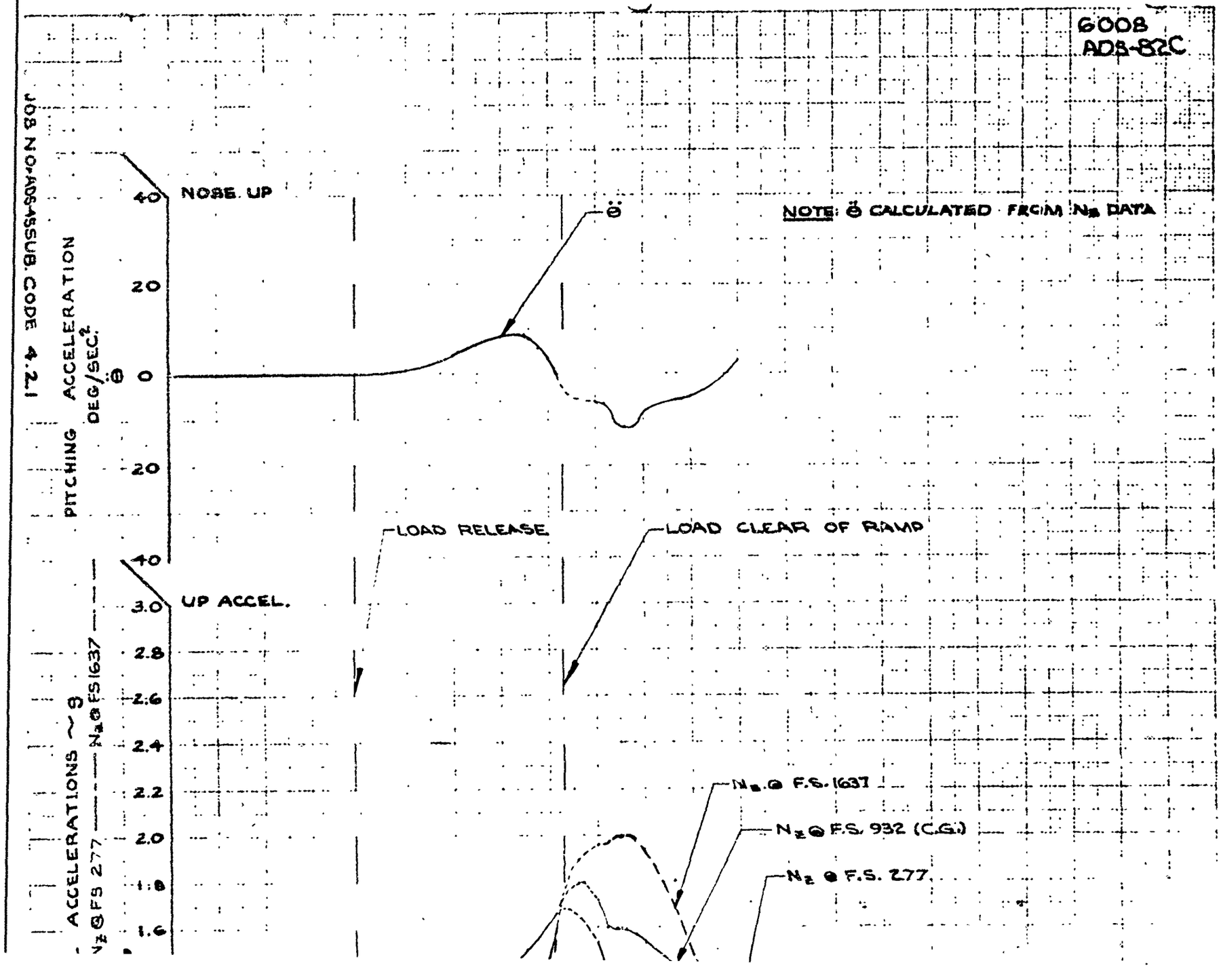


FIGURE D-30B


6008
AD8-82C
JOB NO. ADS-SSUB. CODE 4.21
NOSE UP
NOTE: θ̈ CALCULATED FROM Nz DATA
θ̈
PITCHING ACCELERATION DEG/SEC.²
40
20
0
20
40
LOAD RELEASE
LOAD CLEAR OF RAMP
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
ACCELERATIONS ~ g
Nz @ FS 277
Nz @ FS 1637
Nz @ F.S. 1637
Nz @ F.S. 932 (C.G.)
Nz @ F.S. 277

T.E.D.
3-20-68

ER 5473
C-141A
D-189

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 3-19-68

FLIGHT-129 DROP NO.-26

SHEET 3 OF 4

CARGO WT. 23440 LBS

NOTE:
SEE FIGURE D30 SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

NOTE: ALL DATA BETWEEN 4.1 AND 4.5 SEC. IS EXTRAPOLATED DUE TO AN INSTRUMENTATION POWER FAILURE.

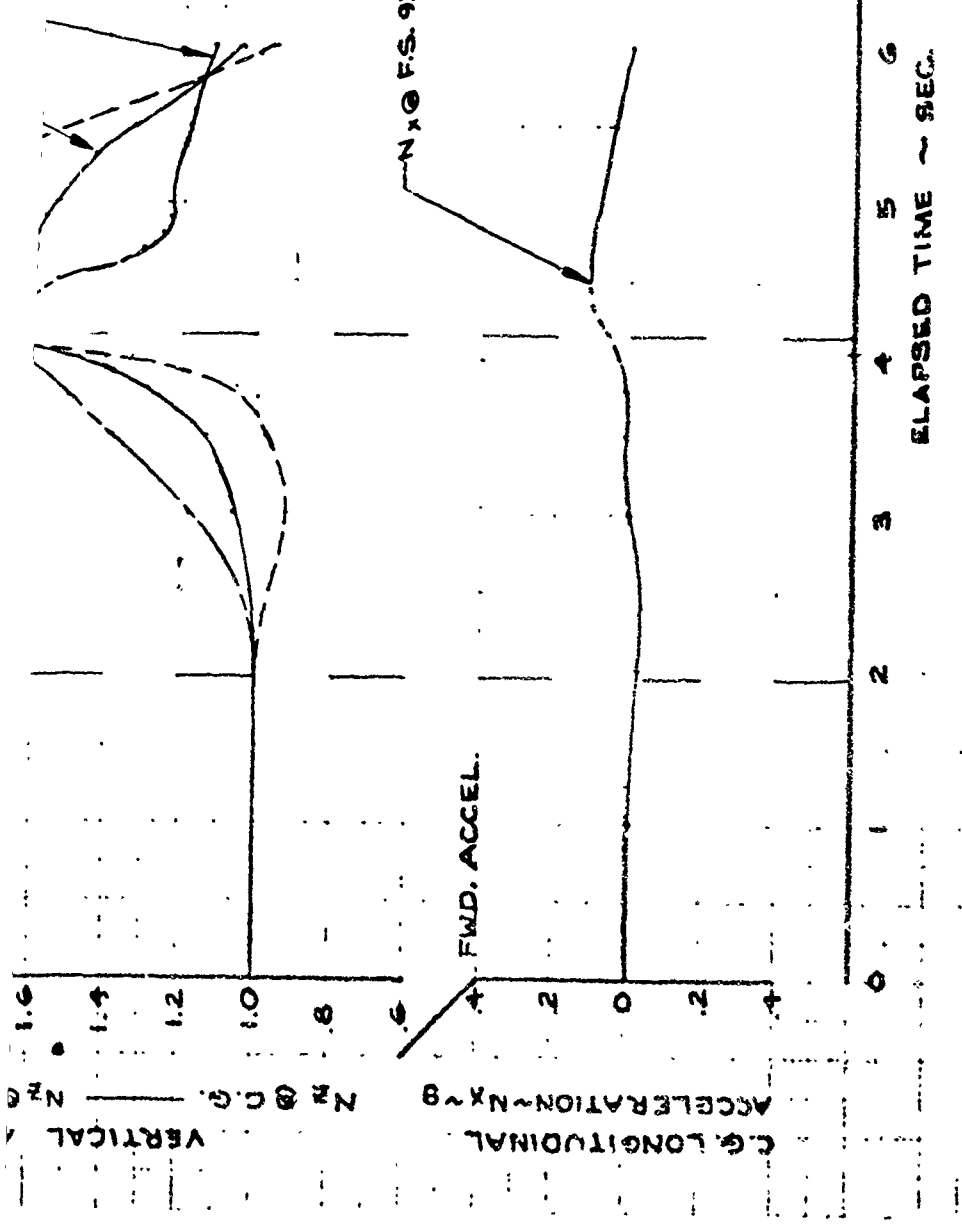
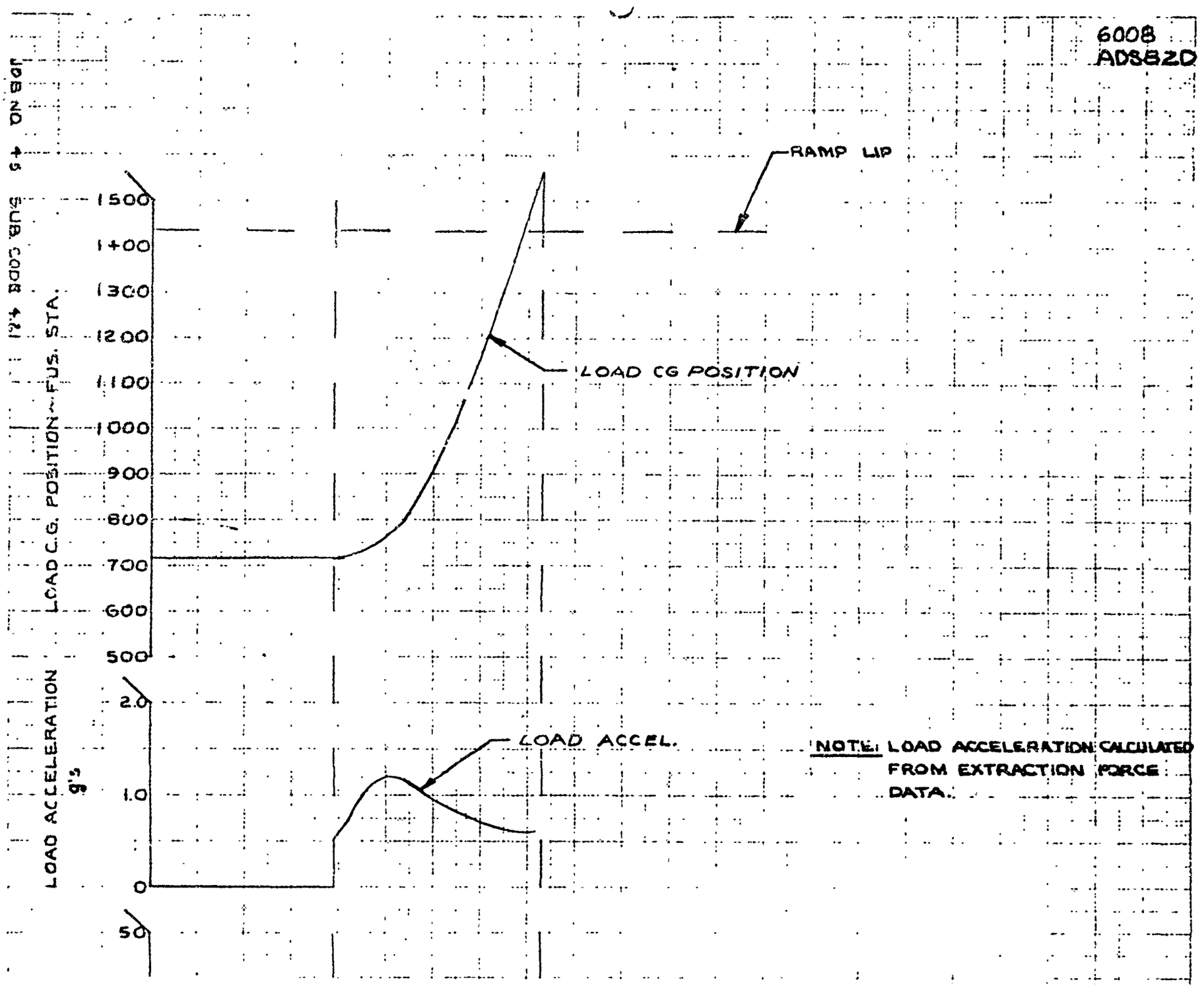


FIGURE D30C

6008
ADS-82C

6008
ADS82D



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

PREPARED BY RSA
DATE 5-20-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
FAC D-190

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 67-0077 LAC 6008

TEST DATE ~ 5-19-65

FLIGHT ~ 129 DROP NO. ~ 26

SHEET 4 OF 4

CARGO WT. 23440 LBS

NOTE:
SEE FIGURE 3.30A, SHEET 1 OF 4 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

NOTE: ALL DATA BETWEEN 4.1 AND 4.5 SEC. IS EXTRAPOLATED DUE TO INSTRUMENTATION POWER FAILURE.

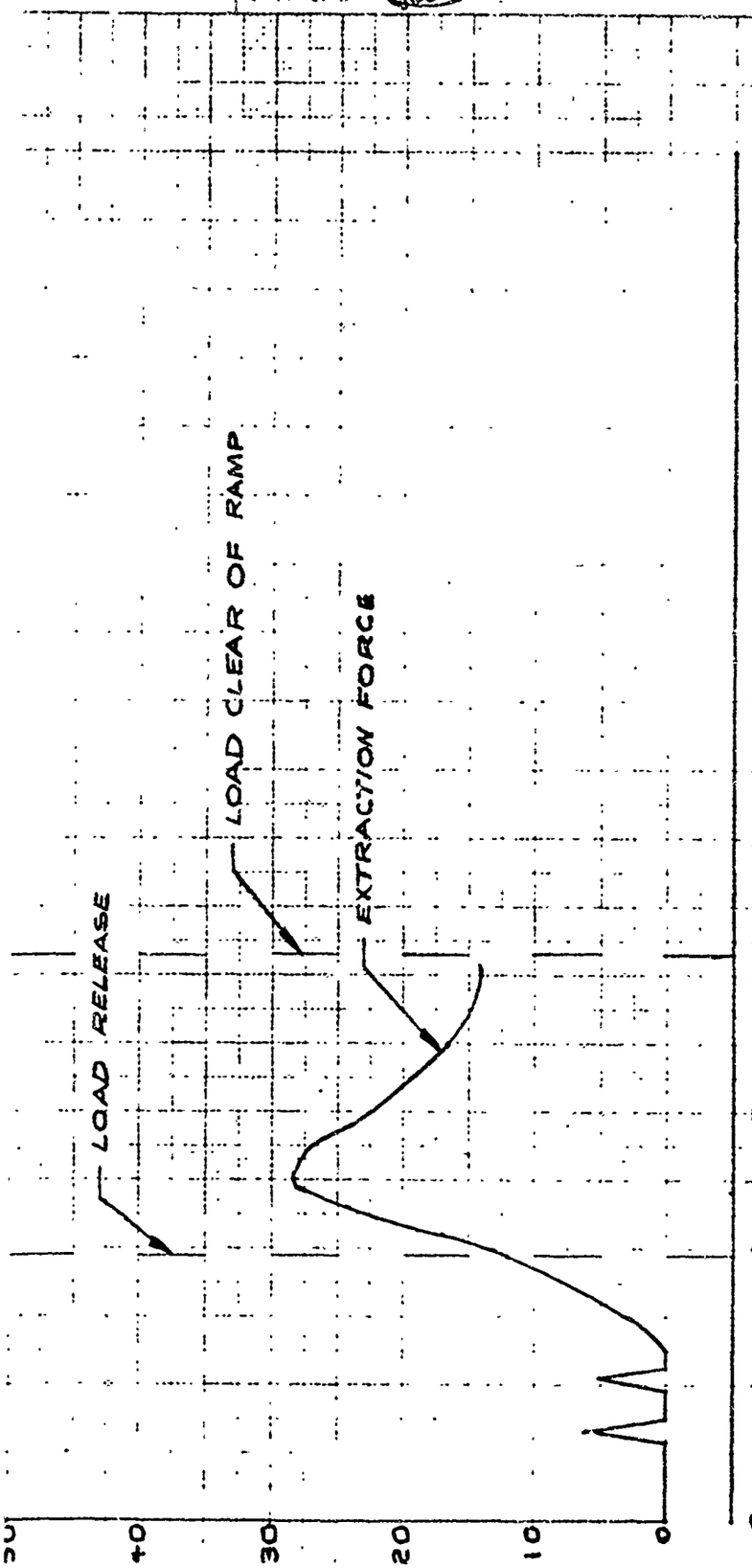


FIGURE D-[illegible]OD

6008
ADS 82 D

ADS-82E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM D-191
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 129 TEST DATE: 5-19-65

G.W. 182,600 LBS. A/S 120.5KCAS

C.G. 19.5 %MAC. ALT. ~ 5,020 FT.

DROP V/T. ~ 23,440 LBS.

*PEAK LOAD MEASUREMENTS NOT AVAILABLE DUE TO INST. POWER FAILURE

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	5.8
2	ANGLE OF PITCH	"	11.3
*3	C.G. VERT. ACCEL.	g's	1.80 (ESTIMATED)
*4	C.G. LONG. ACCEL.	"	0.12
*5	VERT. ACCEL. @ F.S. 277	"	1.680
*6	VERT. ACCEL. @ F.S. 1637	"	2,000
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	18.4
8	VERT. BEND. @ F.S. 1568	"	1.36
9	BENDING ~ M'_X @ HBL 44L	"	0.80
10	SHEAR ~ S'_Z @ HBL 44L	LBS. X 10^{-3}	0.61
11	PITCH TRIM ACTUATOR ~ S_Z	"	- 5.80
12	R.H. RAMP ACTUATOR LOAD	"	- 2.37
13	L.H. " " "	"	- 2.01
14	R.H. SPIDER ARM LOAD	"	5.50
15	L.H. " " "	"	5.00
*16	R.H. PETAL DOOR ACTUATOR LOAD	"	N.A.
*17	L.H. " " "	"	N.A.
18	BENDING ~ M'_X @ VSS	IN-LBS. X 10^{-6}	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	3.60
20	L.H. " " " "	"	2.95
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.82
22	L.H. " " " "	"	- 0.53
*23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	28.40
25	CARGO LONG. ACCEL.	g's	1.20

GA FORM 1489-B

FIG. D-30E
ADS-82E

6008
ADS-57A
AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
LOAD CLEAR OF RAMP
θ
φ
ψ
JOB NO ADS-57SUB CODE 4121

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 6-14-65

FLIGHT ~ 141 DROP NO. ~ 27

SHEET 1 OF 7

CARGO WT 23,750 LBS

RUN CONDITIONS

1. G.W. ~ 187,200 LBS.
2. C.G. PRIOR TO DROP ~ 16.7% MAC
3. C.G. AFTER DROP ~ 29.1% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. Δ_H ~ 2.55 DEG. (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. ~ 717
   VERT. ~ WL ~ 185

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 32 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.22
4. EXTRACTION LINE LENGTH ~ 140 FT.

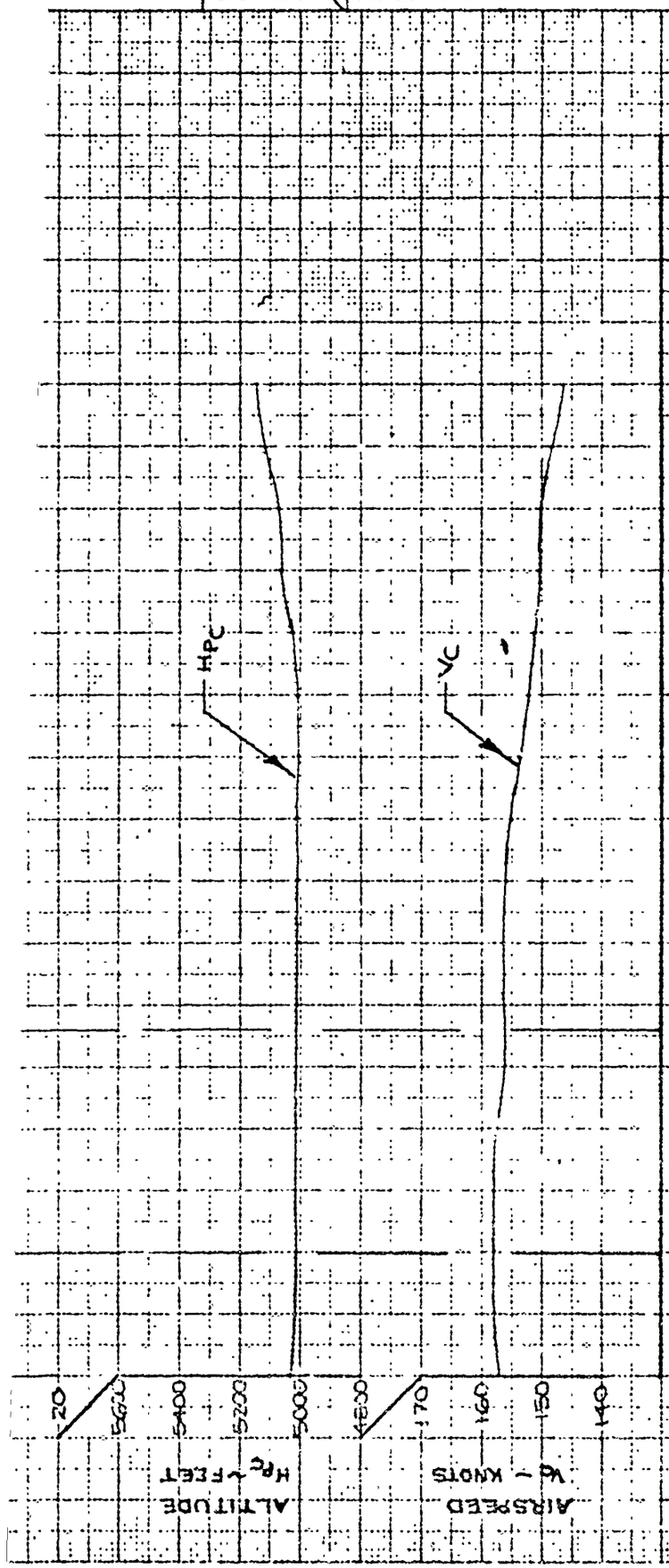


FIGURE D-31A

600B
ADS-91A
REVISED 12-15-65
MBH

6008
ADS-91B

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40 20 15 10 5 0

CONTROL FORCES ~ LBS

Fy — Fa — Fe

Fa

Fr

Fe

LOAD RELEASE

LOAD CLEAR OF RAMP

T.E. UP

ERON POSITION ~ DEG

JOB NO. ADS-52 SUB. CODE 4.21

PREPARED BY FCW
DATE 6-15-65
CHECKED BY JMP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-193

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 6-14-65
FLIGHT-141 DROP NO-77
SHEET 2 OF 7

CARGO WT 23,750 LBS

NOTE:
SEE FIGURE D-3A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

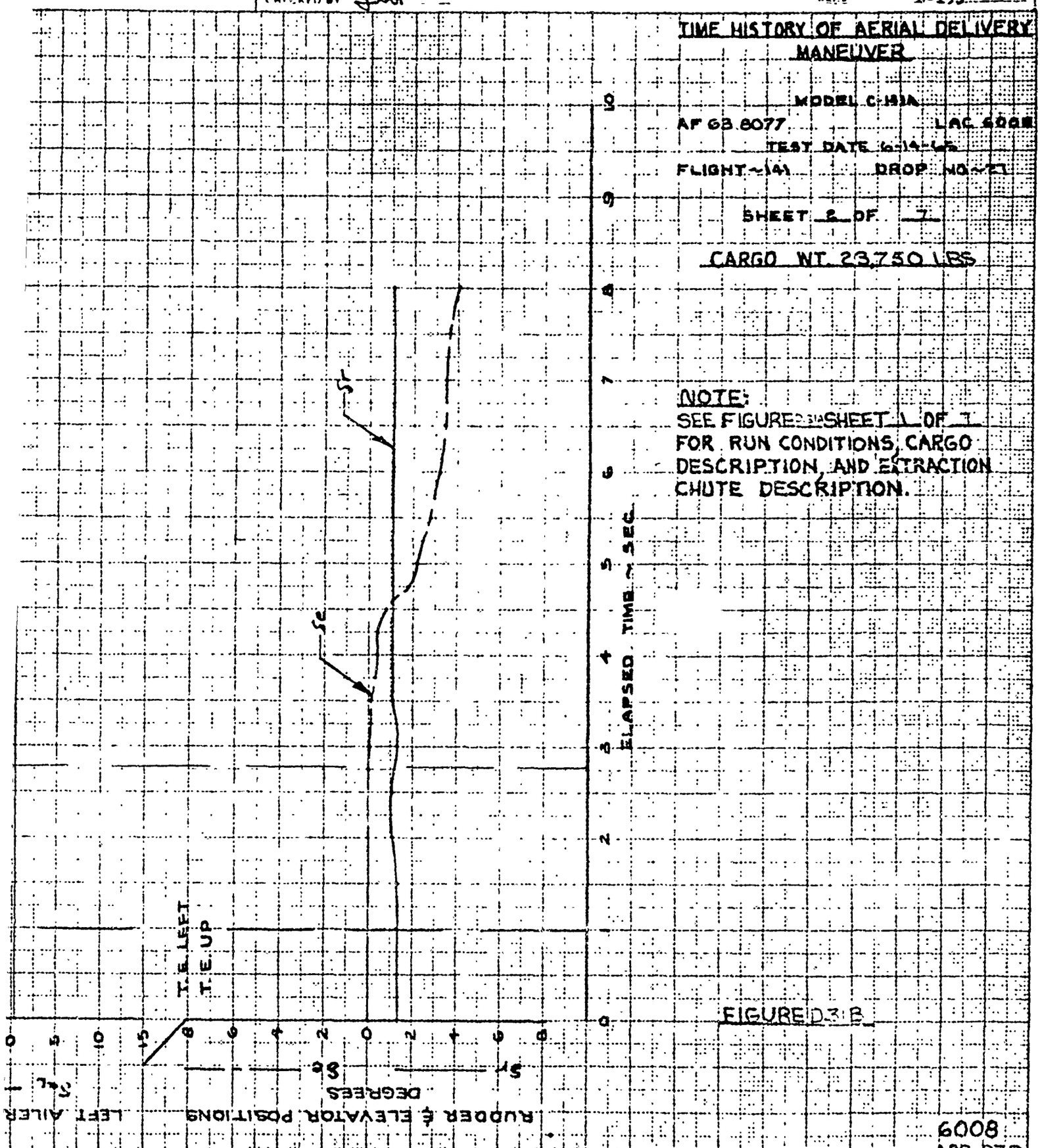
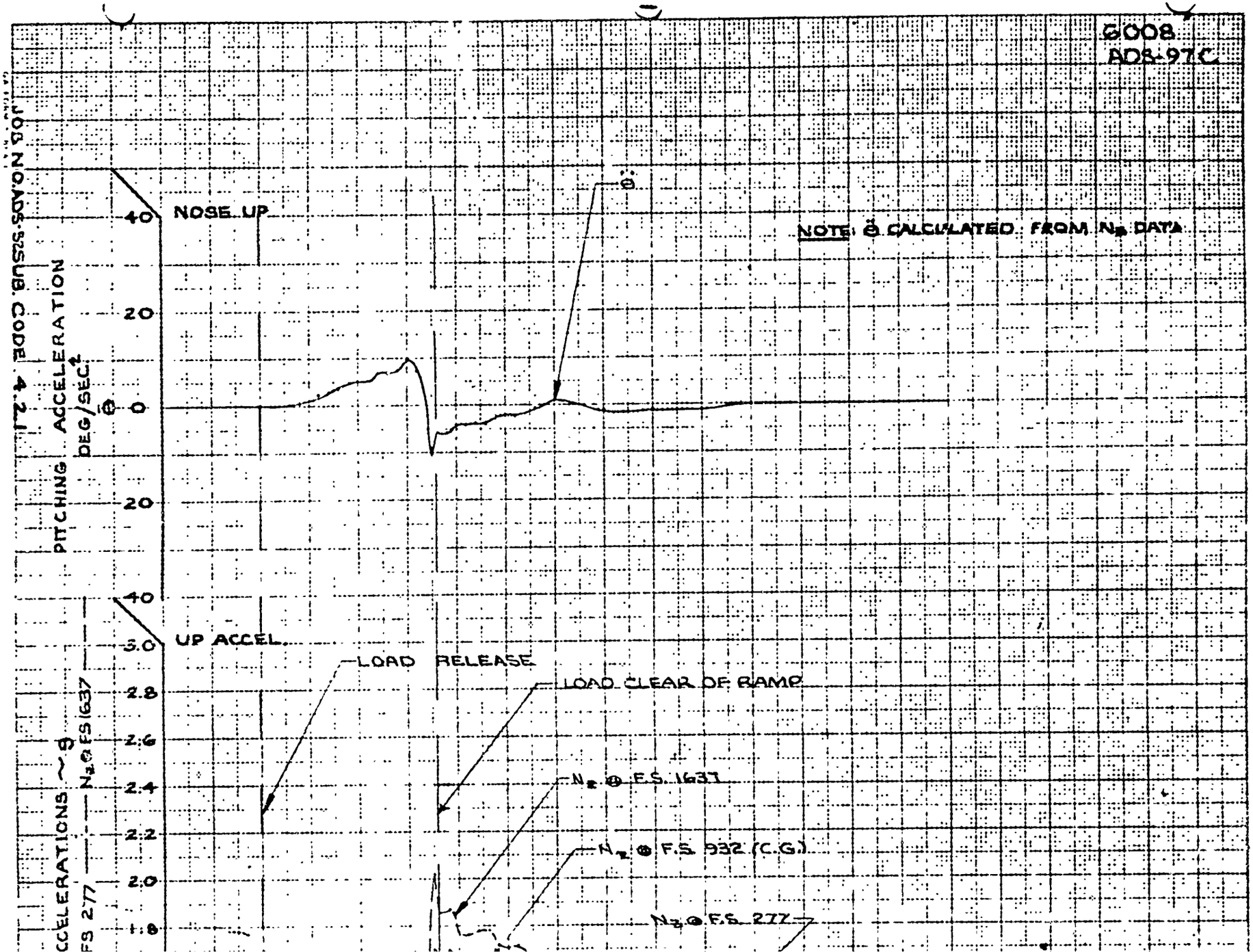


FIGURE D-3B

6008
ADS-97B


JOB NO. AD8-52SUB. CODE 4.2.1.1
PITCHING ACCELERATION DEG/SEC²
NOSE UP
40
20
0
20
40
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
2.0
1.8
ACCELERATIONS ~ g
FS 277
N₂ @ FS 1637
NOTE: ë CALCULATED FROM N_z DATA
LOAD RELEASE
LOAD CLEAR OF RAMP
N_z @ F.S. 1637
N_z @ F.S. 932 (C.G.)
N_z @ F.S. 277

PREPARED BY TED
DATE 6-13-69
CHECKED BY JMP

LOCKHEED GEORGIA COMPANY

REPORT NO. ER 5473
MODEL C-141A
PAGE D-194

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFG3-80077 LAC 6008

TEST DATE: 6-14-65

FLIGHT-141 DROP NO.-27

SHEET 2 OF 7

CARGO WT. 23750 LBS

NOTE:
SEE FIGURE D-31A SHEET 1 OF 1 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

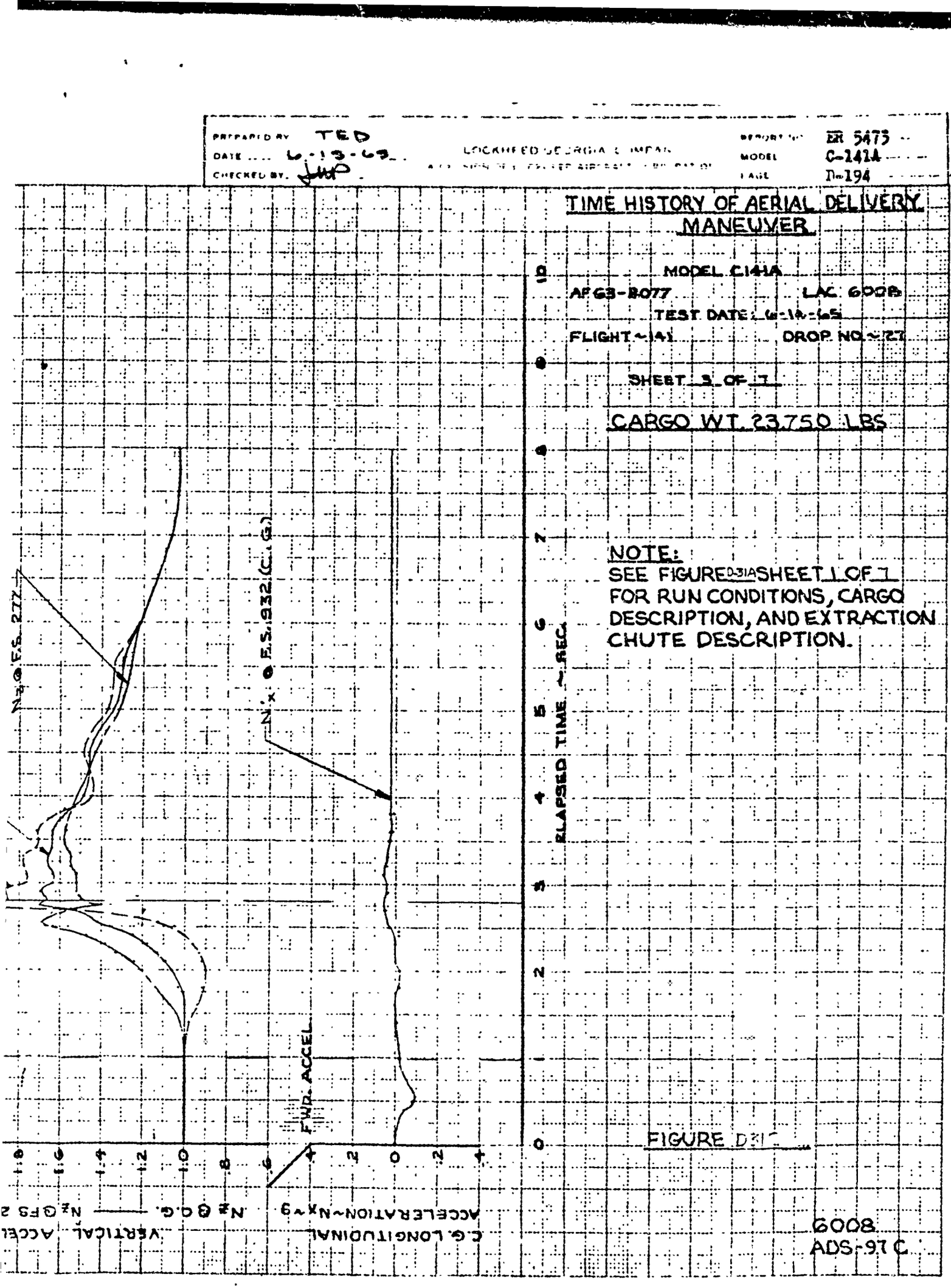


FIGURE D31

6008
ADS 910

RAMP LIP

LOAD C.G. POSITION

LOAD ACCELERATION

NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

LOAD ACCELERATION — LOAD C.G. POSITION ~ FUS. STA

1500 1400 1300 1200 1100 1000 900 800 700 600 500

2.0 1.0 0

g's

JOB NO ADS-52 SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 6-14-66

FLIGHT ~ 14 DROP NO. ~ 21

SHEET 4 OF 7

CARGO WT. 23750 LBS.

NOTE:
SEE FIGURE D-31A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

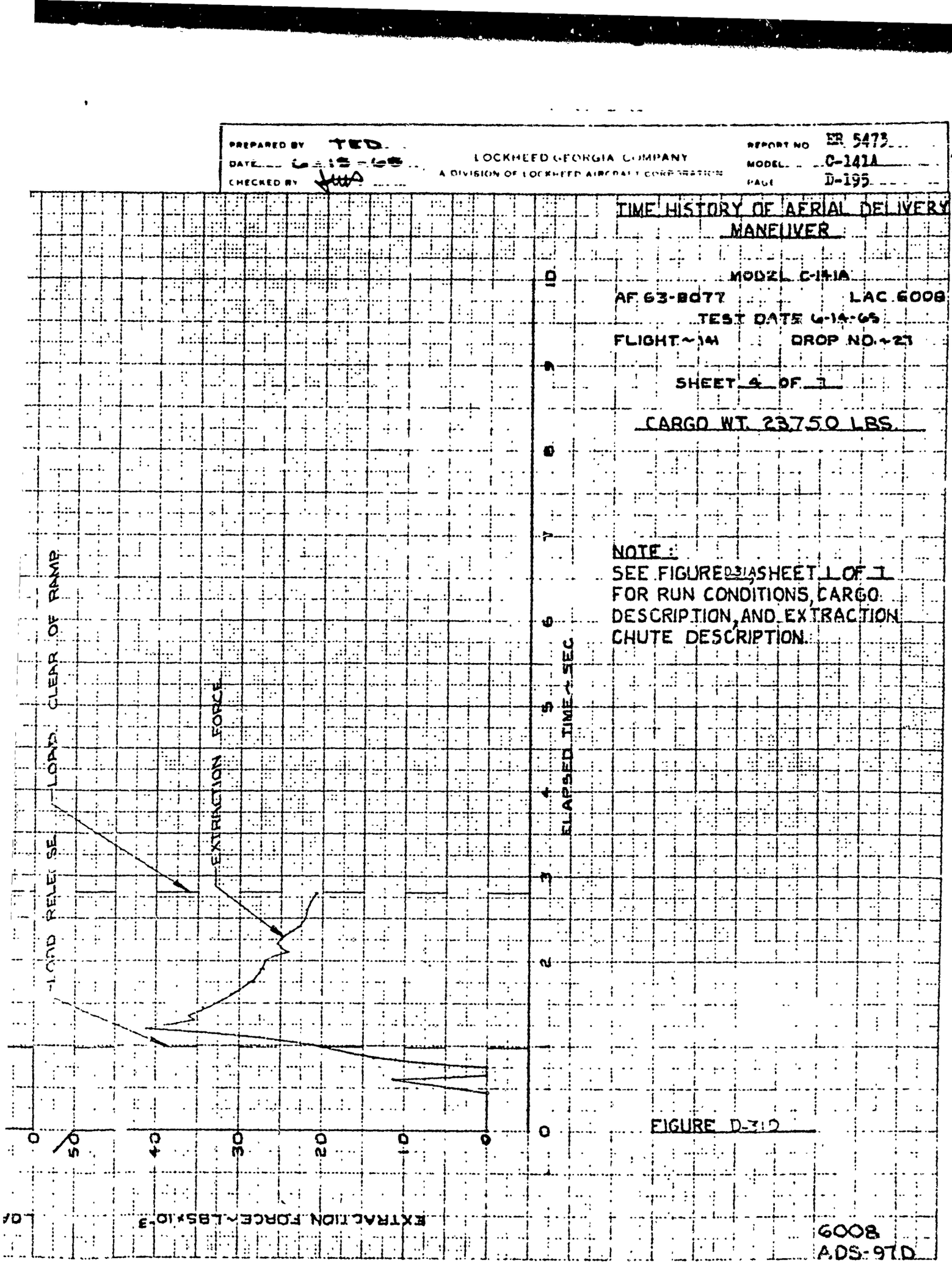


FIGURE D-31D

6008
ADS-972
LOADS
VERTICAL LOAD
R.H. L.H.
LBS X 10-3
X 10-3
2.0 1.0
PULL RIGHT
0 5 10 15
DOWN LOAD
L.H. VERT. LOAD
R.H. VERT. LOAD
SIDE LOAD
ADS LINK AXIAL LOAD
LBS X 10-3
R.H. L.H.
0 10 20 30
R.H. SPIDER ARM LOAD
L.H. SPIDER ARM LOAD
TENSION
RAMP ACTUATOR LOAD
LBS. X 10-3
R.H. L.H.
-4 -2 0 2 4
R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD
TENSION
JOB NO ADS-52 SUB. CODE 4.2.1

PREPARED BY: TED
DATE: 6-19-63
CHECKED BY: JWP

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

WORK ORDER NO: ER 5473
MODEL: C-141A
PAGE: D-196

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-19-63

FLIGHT 141 DROP NO. 27

SHEET 5 OF 7

CARGO WT. 23750 LBS

NOTE:
SEE FIGURE D-31A SHEET 1 OF 1 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

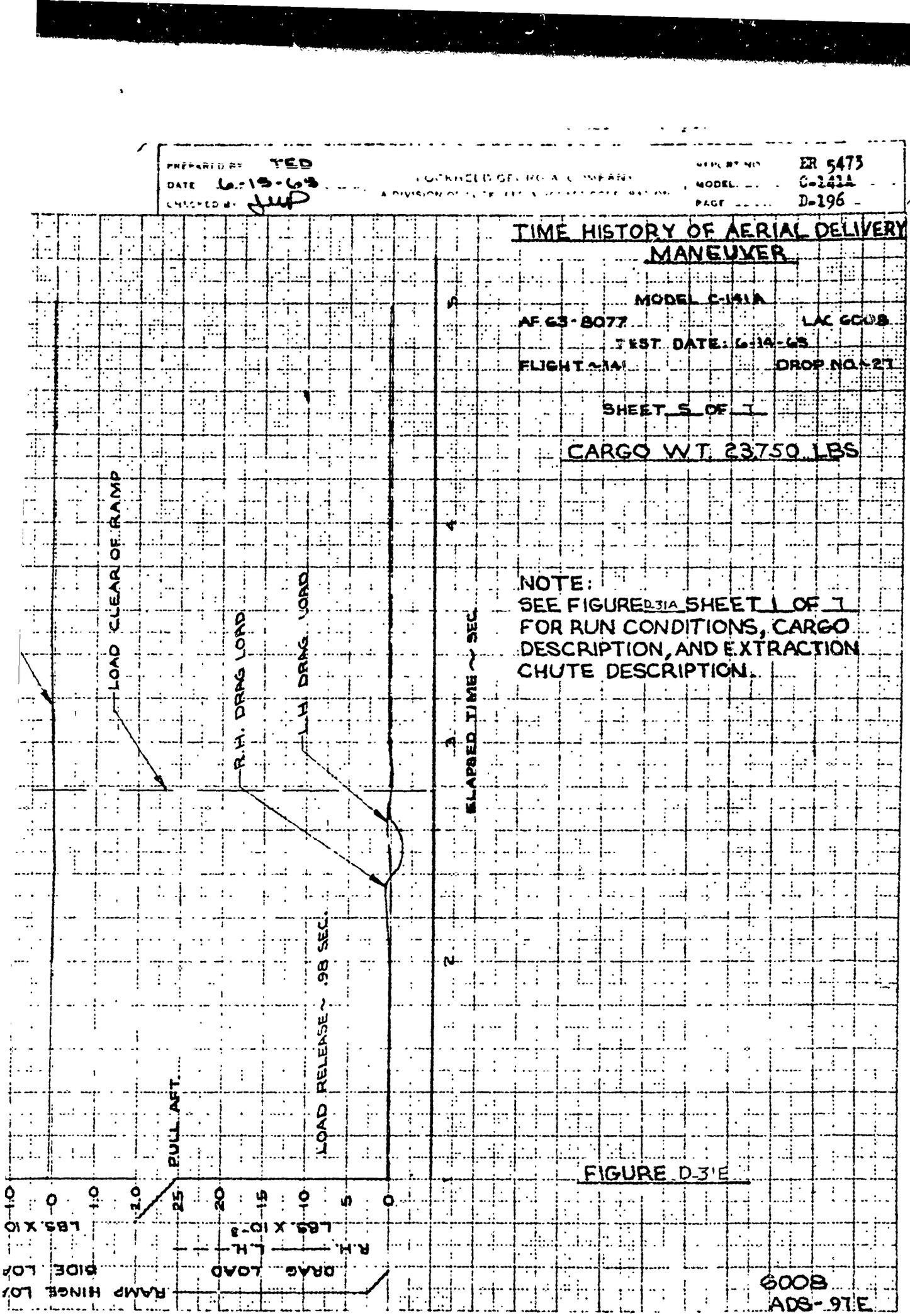


FIGURE D-31E

6008
ADS-91F
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
LOAD CLEAR DE RAMP
My @ F.S. 1568
My @ F.S. 1048
COMPRESSION
DOWN LOAD
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X 10-3
LH
RH
VERTICAL BENDING ~ F.S. 1568
INCH-LBS X 10-6
JOB NO. ADS-526 UB, CODE 4.2.1

PREPARED BY T.E.D.
DATE 6-15-69
CHECKED BY [illegible]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-197

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-BOZT LAC 6008

TEST DATE: 6-14-69

FLIGHT-141 DROP NO-27

SHEET 6 OF 7

CARGO WT. 23,750 LBS

NOTE:
SEE FIGURE D-31A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

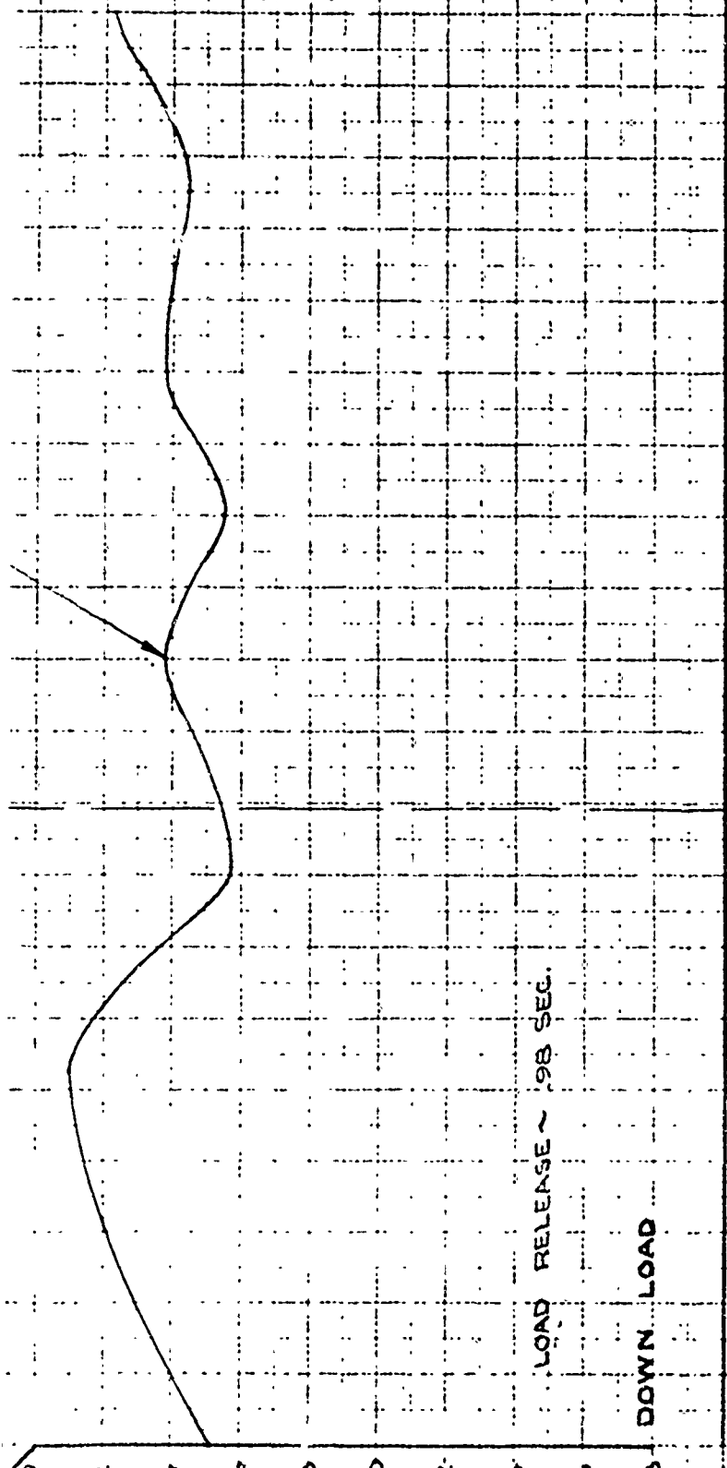


FIGURE D-31F

GOOD
AL-21G
LOAD CLEAR OF RAMP
S'_z @ HBL 44L
M'_x @ HBL 44L
UP LOAD
UP LOAD
-20 -15 -10 -5 0 5 10 15 20
2.0 1.5 1.0 .5 0 .5 1.0 1.5 2.0
LBS X 10^{-3}
INCH - LBS X 10^{-6}
SHEAR @ HBL 44L ~ S'_z
BENDING @ HBL 44L ~ M'_x
HORIZONTAL STABILIZER NET LOADS
JOB NO. ADS-528 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 65-B077 LAC 6008

TEST DATE: 6-14-65

FLIGHT ~ 161 DROP NO. ~ 23

SHEET 1 OF 1

CARGO WT. 23,750 LBS

NOTE:
SEE FIGURE D-31A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

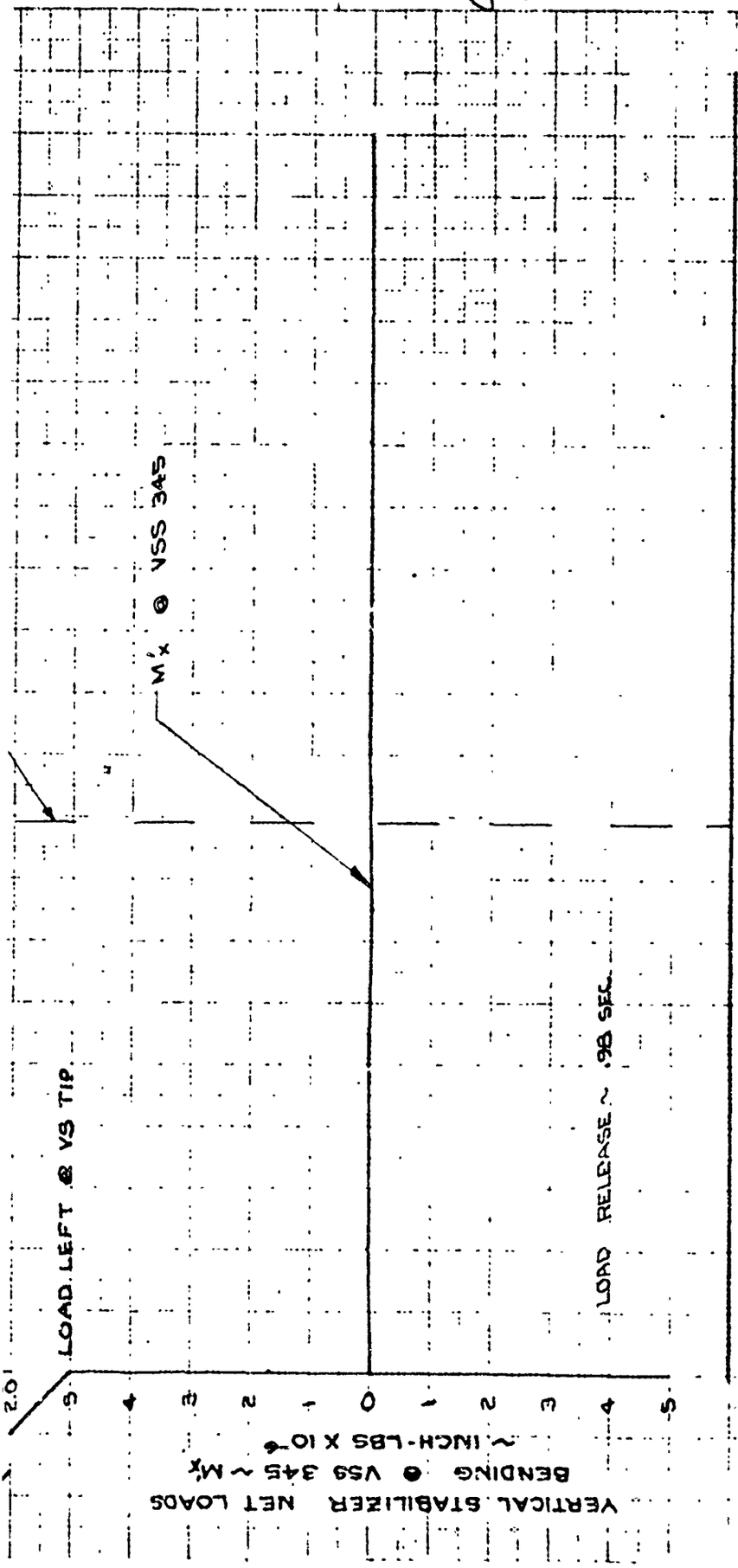


FIGURE D-31G

ADS 177A

AIRCRAFT ATTITUDE RATES ~ DEG/SEC

NOSE UP
NOSE LEFT
RIGHT ROLL

25 20 15 10 5 0 5 10 15 20 25

θ ϕ ψ

AIRCRAFT ATTITUDES ~ DEG

NOSE UP
NOSE LEFT
RIGHT ROLL

25 20 15 10 5 0 5 10 15 20 25

β α θ ϕ

JOB NO. 92 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 3-30-64

FLIGHT 68 DROP NO. 28

SHEET 1 OF 7

CARGO WT. 34,700 LB

RUN CONDITIONS

1. G.W. ~ 256,200 LBS.
2. C.G. PRIOR TO DROP ~ 25.8 % MAC
3. C.G. AFTER DROP ~ 31.5 % MAC
4. FLAPS ~ 35 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.31
7. Δ_H ~ 0.9 °(A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 764
   VERT. ~ WL 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ ONE
2. CHUTE SIZE ~ 24 FT. REEFED TO 16 FT
3. RATED CHUTE FORCE/CARGO WT. ~ 1.88
4. EXTRACTION LINE LENGTH ~ 100 FT.

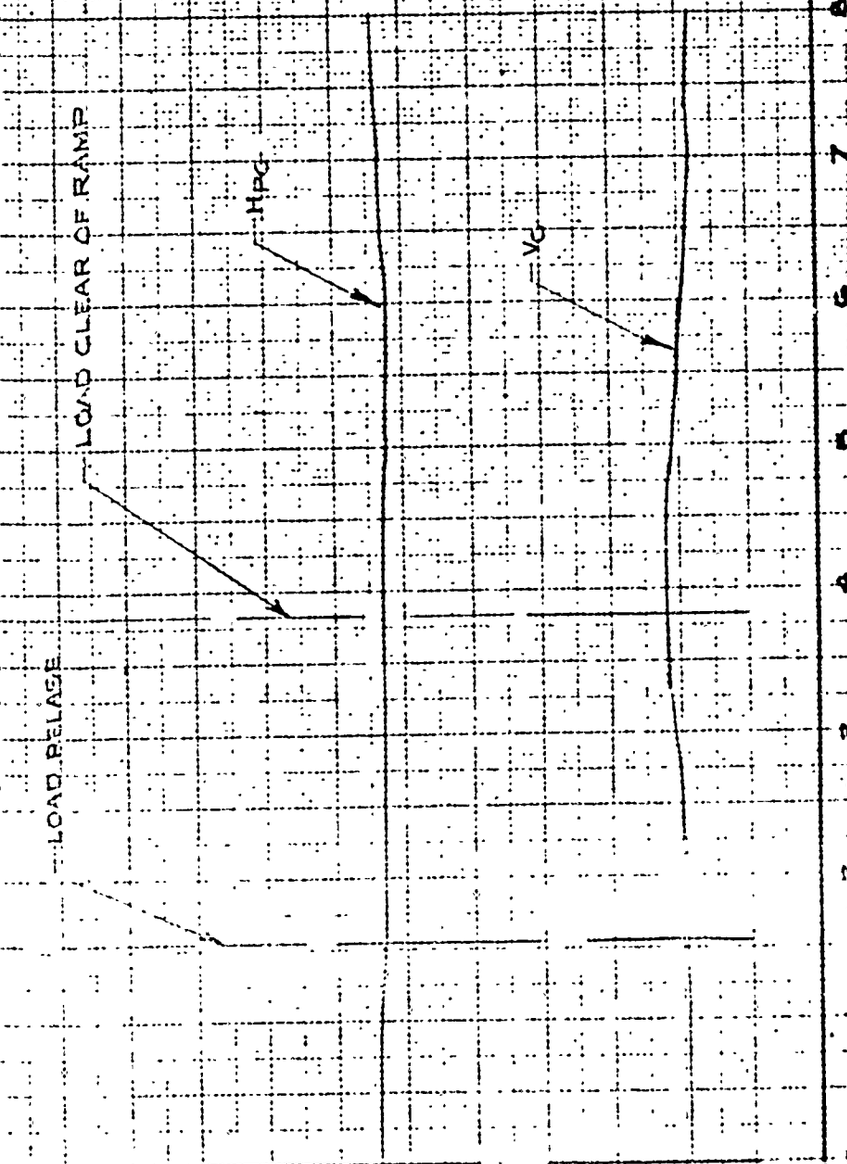
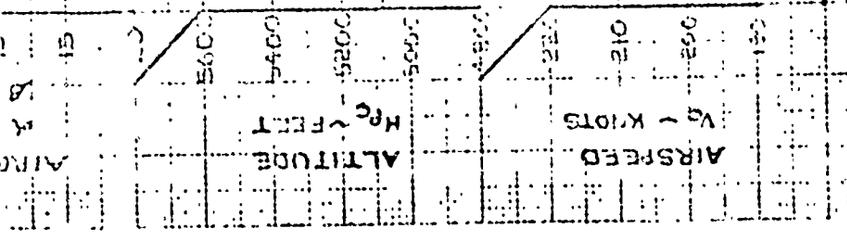
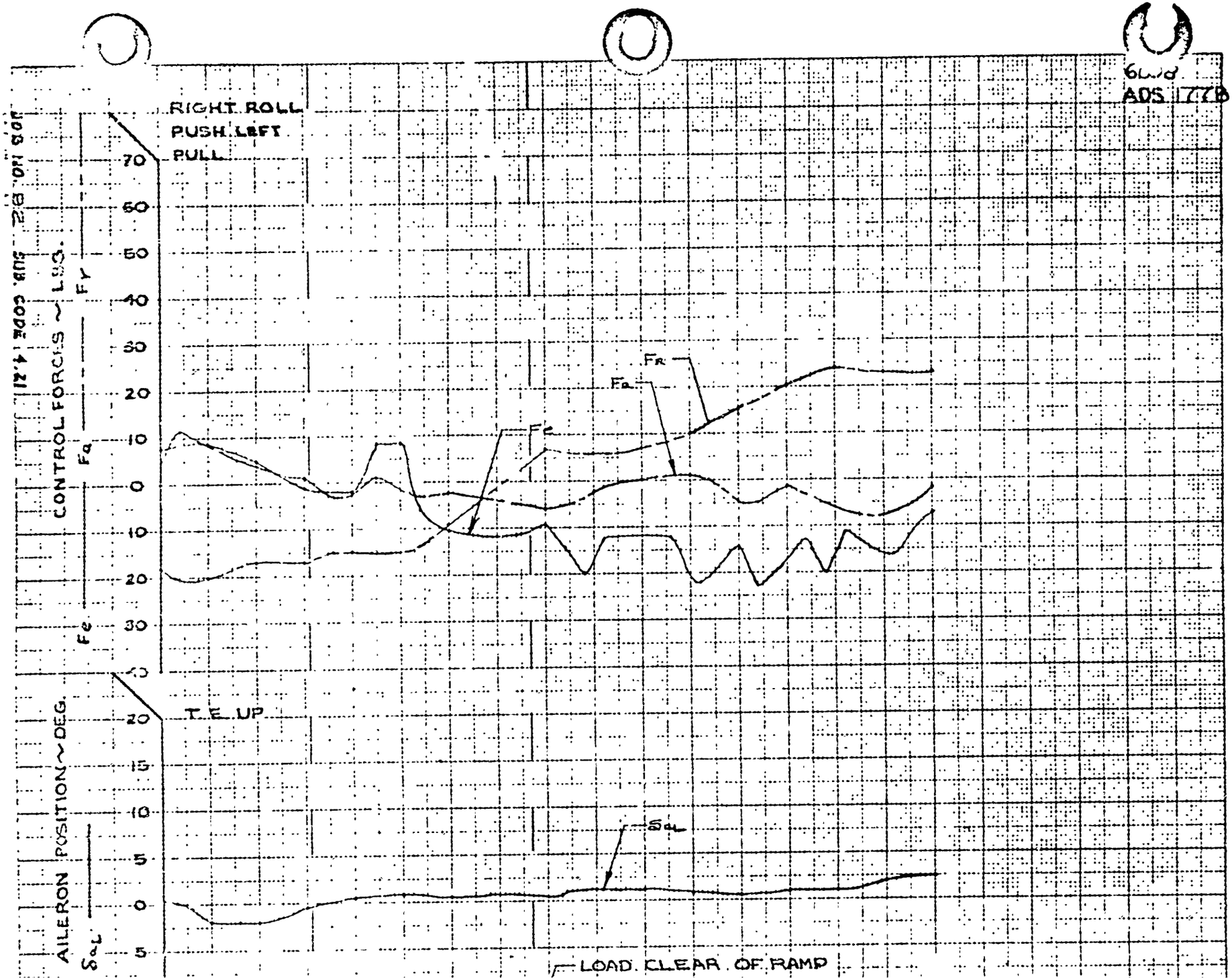


FIGURE D-32A




6W8
ADS 177B
RIGHT ROLL
PUSH LEFT
PULL
CONTROL FORCES ~ LBS.
Fr
Fa
Fe
70
60
50
40
30
20
10
0
10
20
30
40
Fe
Fa
FR
T.E. UP
AILERON POSITION ~ DEG.
δaL
20
15
10
5
0
5
δaL
LOAD CLEAR OF RAMP

PREPARED BY DTM
DATE 10-12-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-200

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 9-30-65

FLIGHT 188 DROP NO 28

SHEET 2 OF 7

CARGO WT ~ 24,700 LBS

NOTE:
SEE FIGURE D-22A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

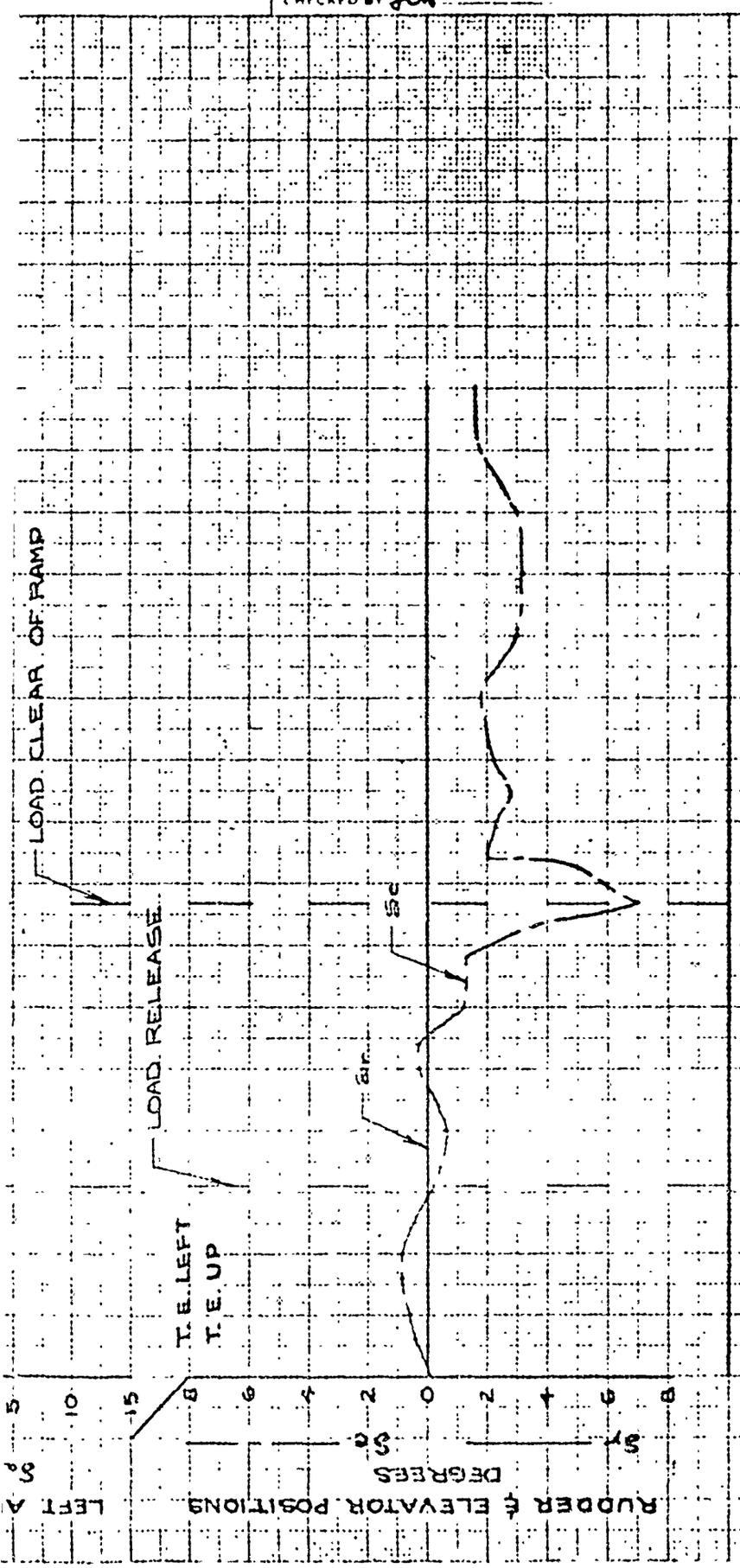
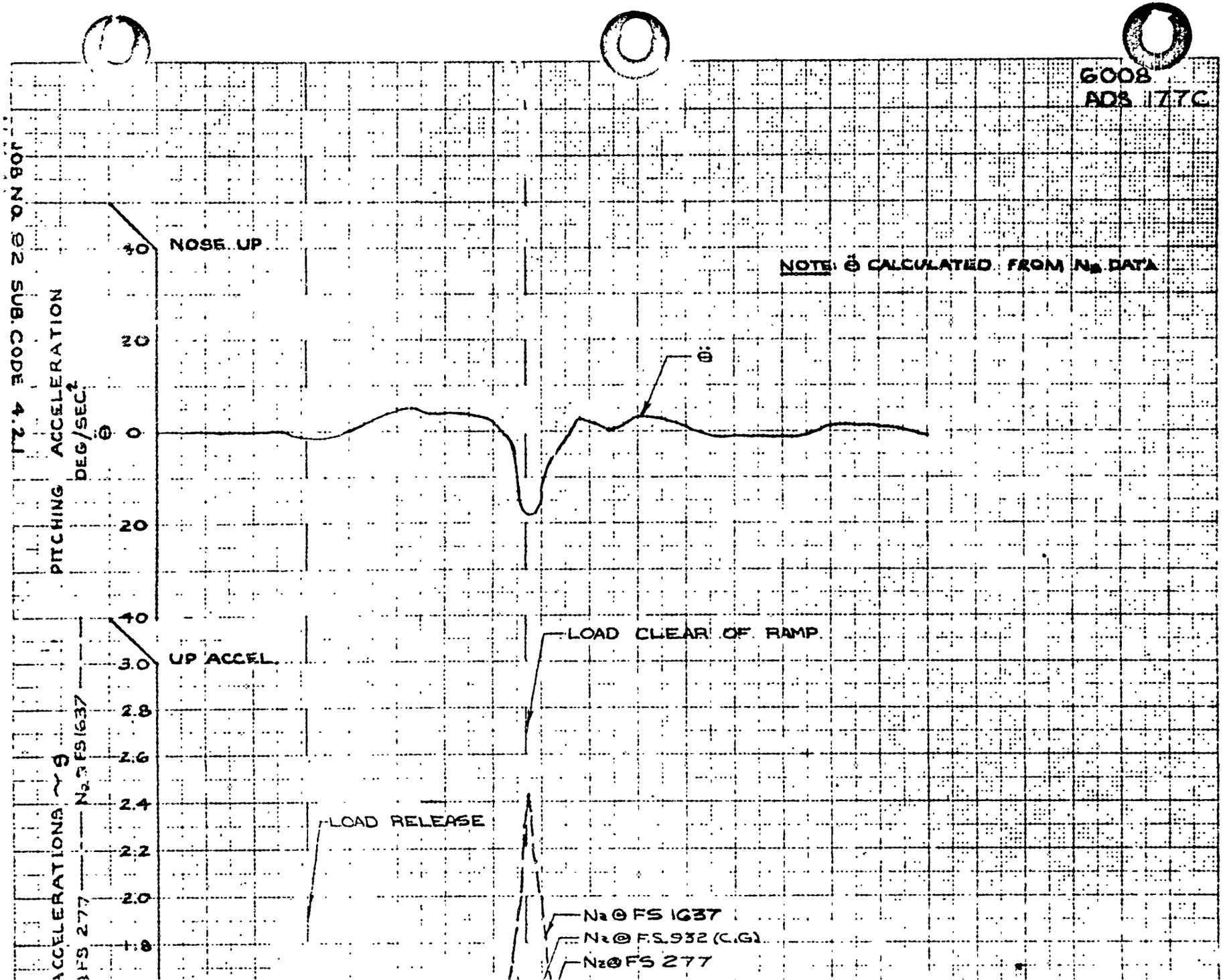


FIGURE D-22B


NOSE UP
NOTE: ë CALCULATED FROM N₂ DATA
ë
PITCHING ACCELERATION DEG/SEC²
40
20
0
20
40
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
2.0
1.8
LOAD CLEAR OF RAMP
LOAD RELEASE
N₂ @ FS 1637
N₂ @ F.S. 932 (C.G.)
N₂ @ FS 277
ACCELERATIONS ~ g
N₂ @ FS 277
N₂ @ FS 1637
SUB CODE 4.2.1.08 NO. 02

PREPARED BY DTM
DATE 10-1-65
CHECKED BY [illegible]

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-201

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 9-30-65

FLIGHT 188 DROP NO. 28

SHEET 3 OF 7

CARGO WT. 24,700 LBS

NOTE:
SEE FIGURE D-32A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

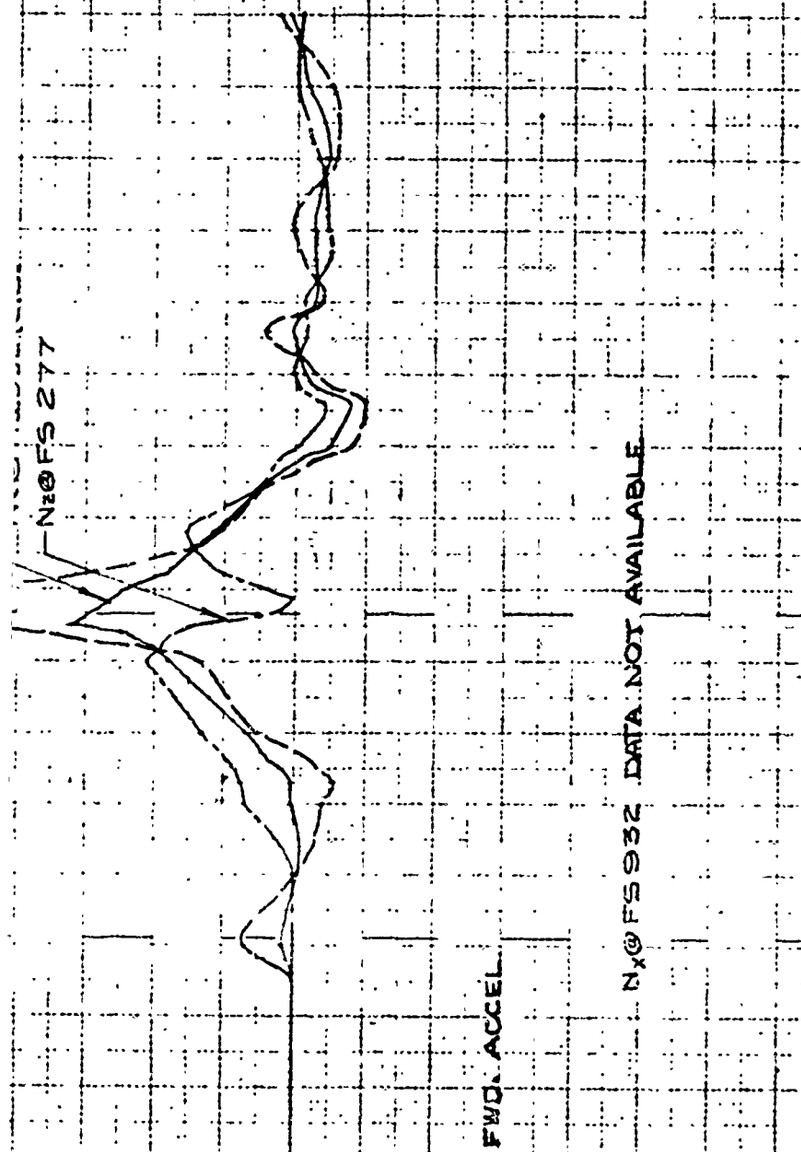
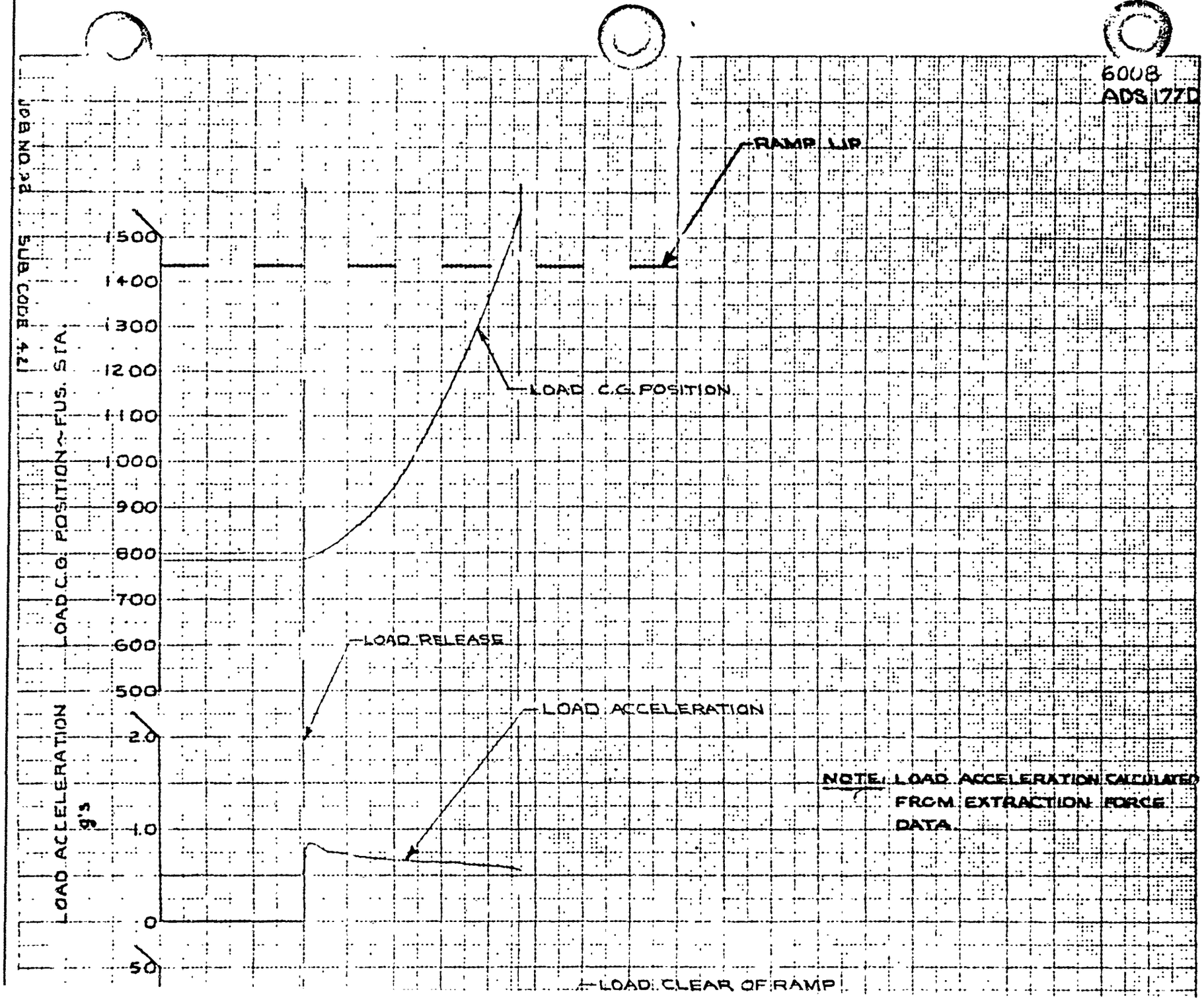


FIGURE D-32C

6008
ADS 177C


6008
ADS 177D
JOB NO. 22
SUB CODE 421
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD C.G. POSITION
LOAD RELEASE
LOAD ACCELERATION
LOAD ACCELERATION g's
2.0
1.0
0
-.5
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
LOAD CLEAR OF RAMP

PREPARED BY JDG
DATE 12-1-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-202

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 9-30-65

FLIGHT 198 DROP NO. 28

SHEET 4 OF 7

CARGO WT. 24,700 LB.

NOTE:
SEE FIGURE D-32A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

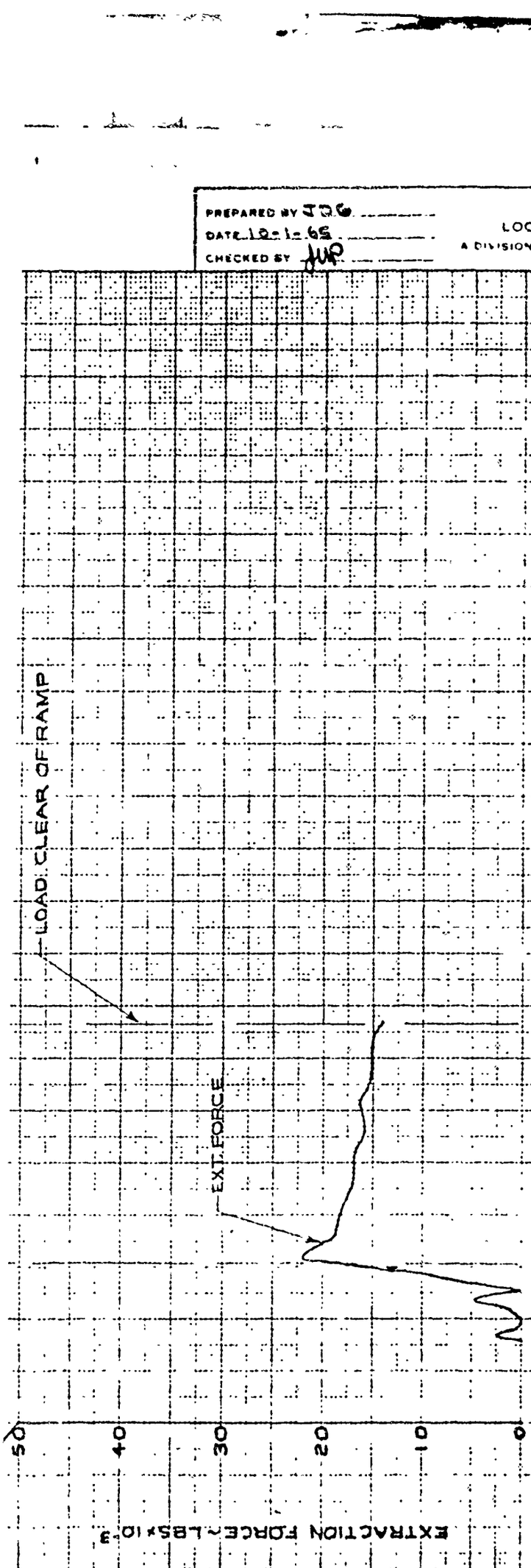


FIGURE D-32D

6008
ADS-177E

LH RAMP ACTUATOR LOAD
RH RAMP ACTUATOR LOAD
LH SPIDER ARM
RH SPIDER ARM
LH VERTICAL LOAD
RH VERTICAL LOAD
SIDE LOAD

RAMP ACTUATOR LOAD
LBS. X 10-3
TENSION
4 2 0 -2 -4
R.H. L.H.

ADS LINK AXIAL LOAD
LBS X 10-3
TENSION
30 20 10 0
R.H. L.H.

VERTICAL LOAD
LBS. X 10-3
DOWN LOAD
15 10 5 0
R.H. L.H.

LOADS
X 10-3
PULL RIGHT
2.0 1.0

JOB NO. 92 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

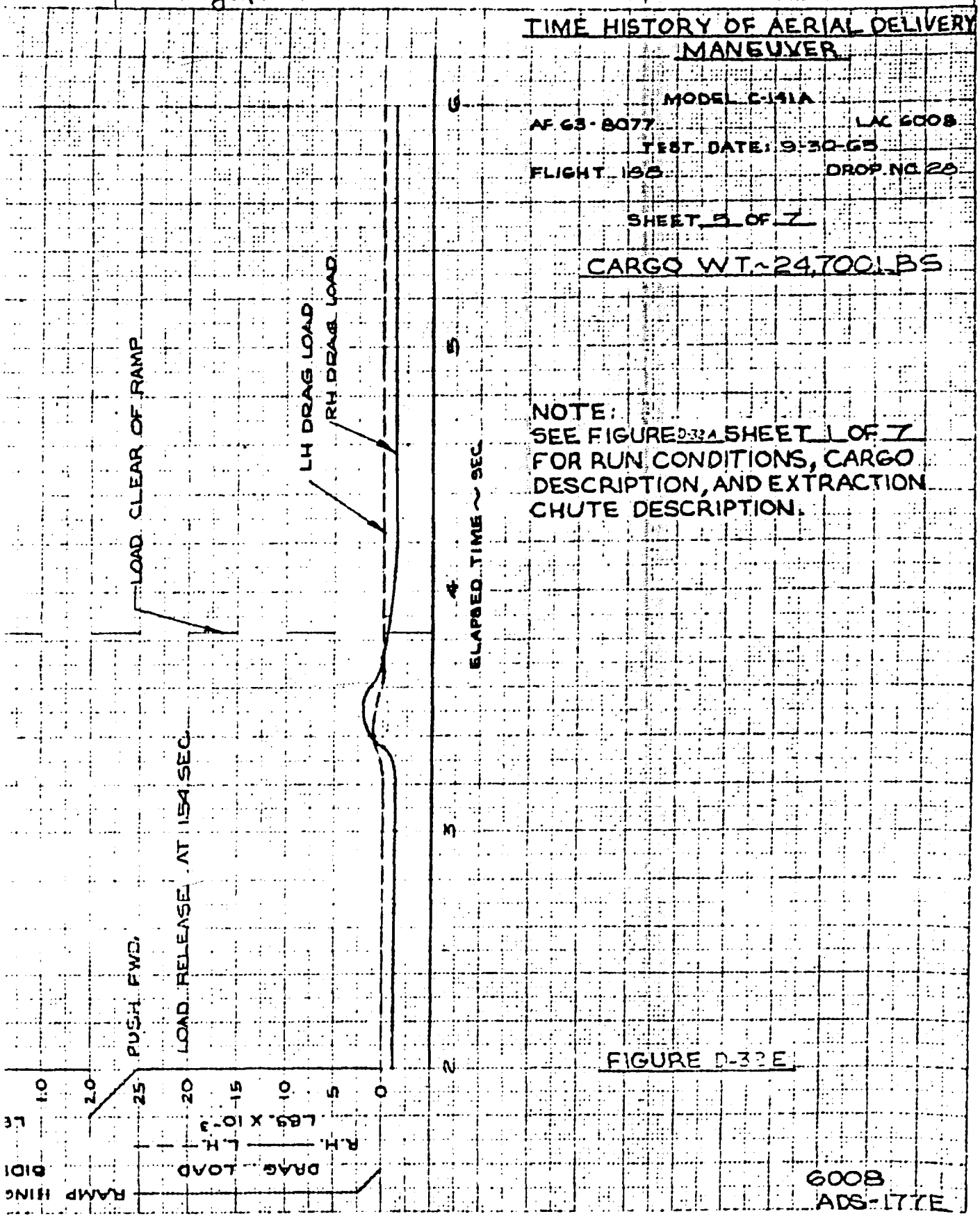
AF 63-8077 LAC 6008

TEST DATE: 9-30-65

FLIGHT 188 DROP NO. 20

SHEET 5 OF 7

CARGO WT.~24,700 LBS



NOTE:
SEE FIGURE D-32A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-32E

6008
ADS 177F
LH PETAL DOOR ACTUATOR
RH PETAL DOOR ACTUATOR
My@FS 1569
COMPRESSION
VERTICAL BENDING ~ FS 1569
INCH-LBS X 10⁻⁶
RH
LH
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X10⁻³
JOB NO. 92 SUB. CODE 4.2.1

PREPARED BY DTM
DATE 10-1-65
CHECKED BY LMD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-204

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-8077 LAC 6008

TEST DATE: 9-30-65

FLIGHT 186 DROP NO. 28

SHEET 6 OF 7

CARGO WT.~ 24,700 LBS

NOTE:
SEE FIGURE D-32A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

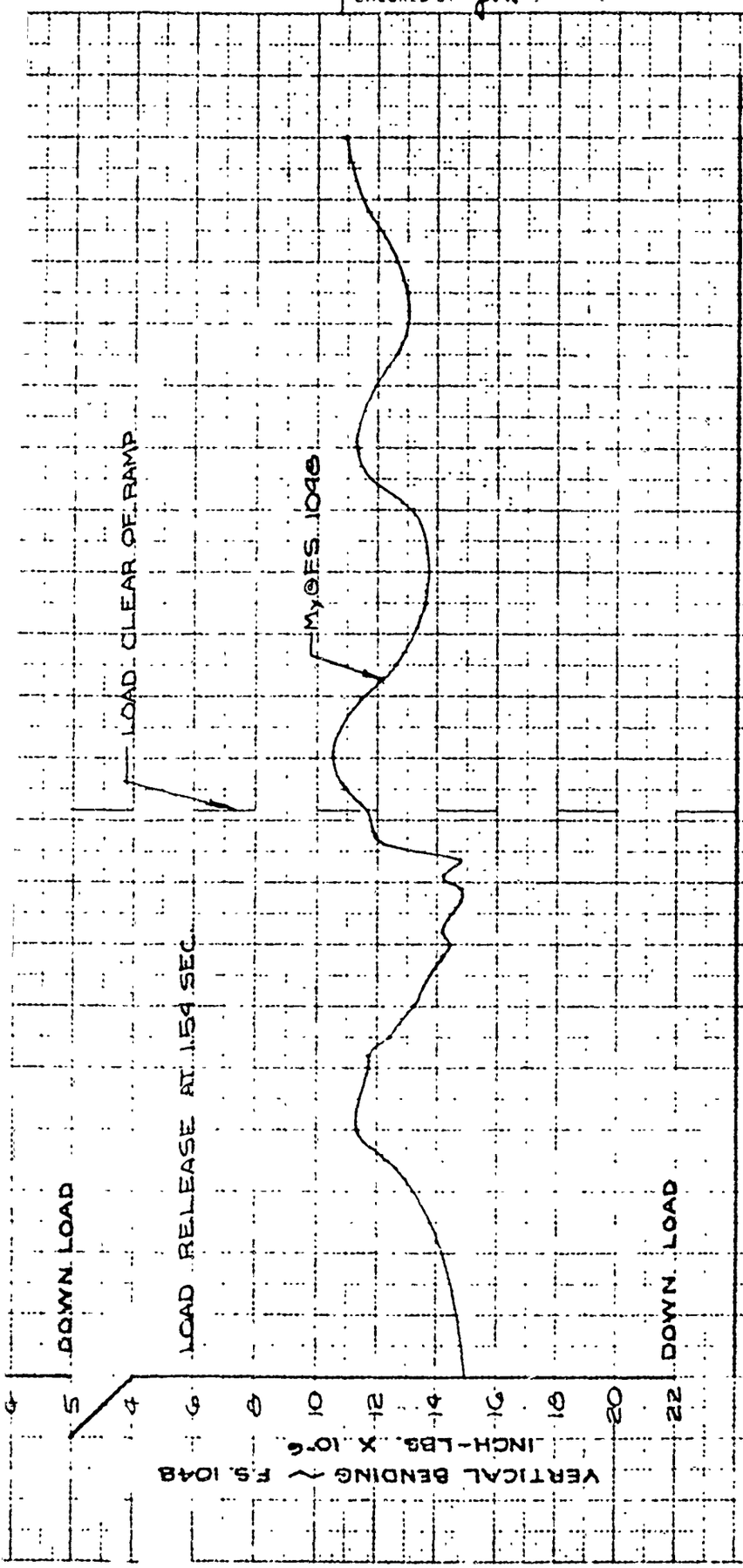


FIGURE D-32F

600
ADS 1775
HORIZONTAL STABILIZER NET LOADS
JOB NO. 82 SUB. CODE 4.2.1
SHEAR @ HBL 44L ~ Sz
LBS X 10-3
BENDING @ HBL 44L ~ Mx
INCH - LBS X 10-6
UP LOAD
UP LOAD
Sz @ HBL 44L
Mx @ HBL 44L
LOAD CLEAR OF RAMP
LOAD LEFT @ VS TIP
20 15 10 5 0 5 10 15 20
20 15 10 05 0 05 10 15 20

PREPARED BY DTM
DATE 10-1-65
CHECKED BY JEP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-205

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-30-65

FLIGHT 188 DROP NO. 28

SHEET 1 OF 7

CARGO WT.~24,700 LBS.

NOTE:
SEE FIGURE D-32A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

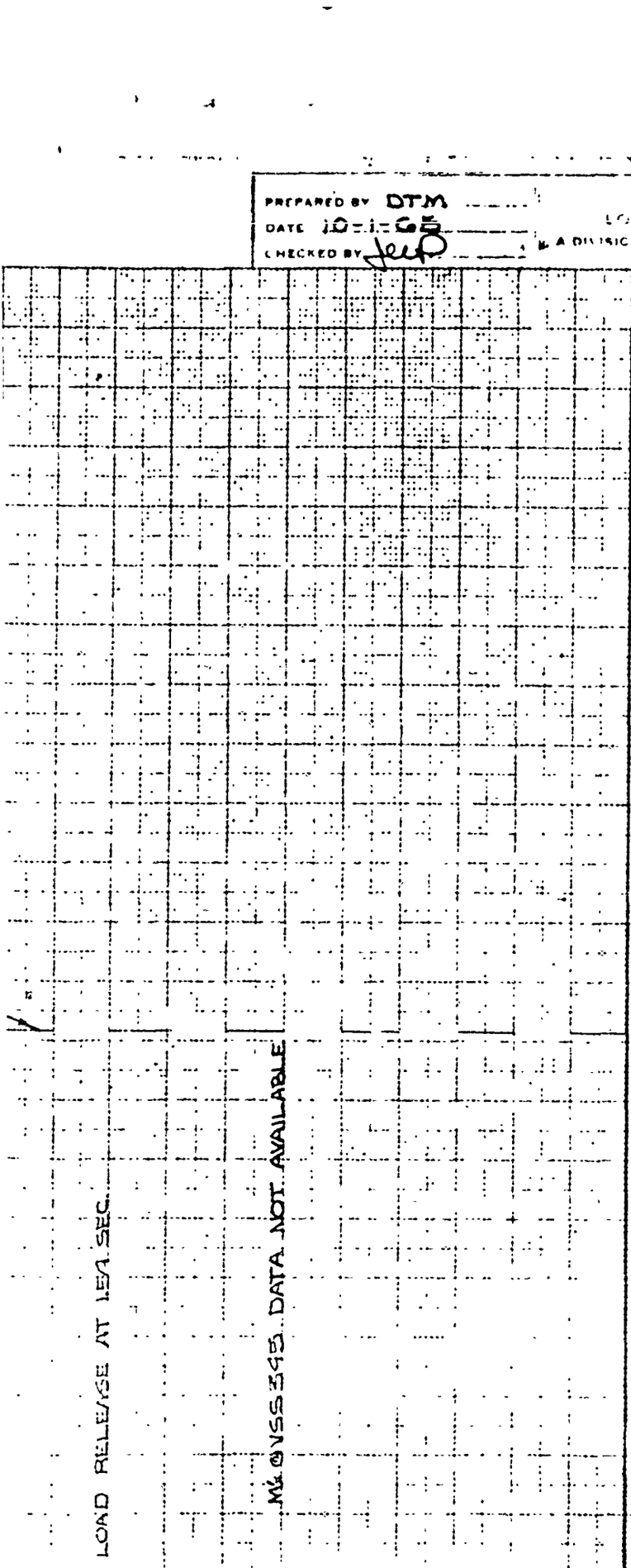
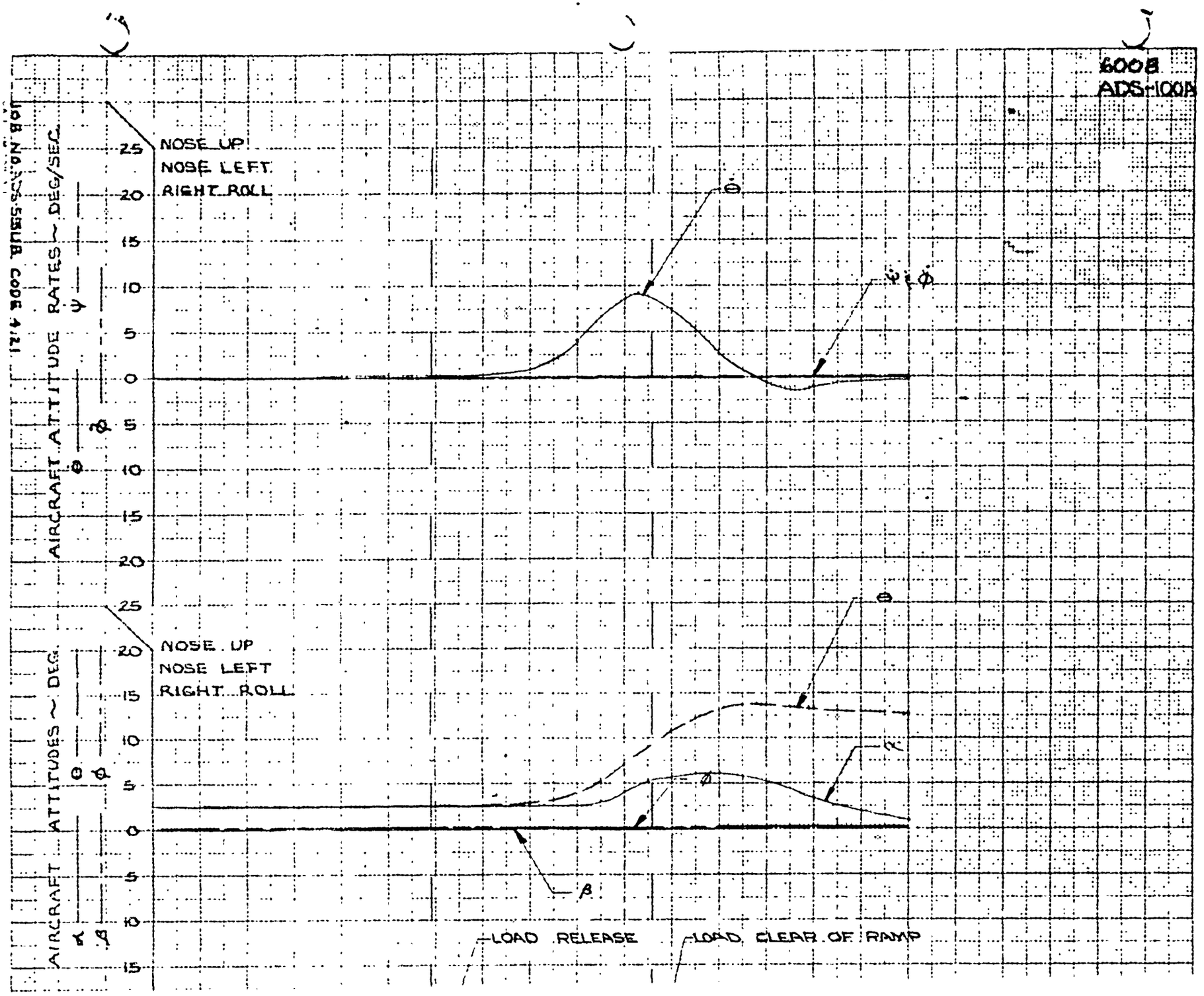


FIGURE D-32G

6008
ADS 177G


6008
ADS-100A
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
ψ
φ
AIRCRAFT ATTITUDES ~ DEG.
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
φ
χ
β
LOAD RELEASE
LOAD CLEAR OF RAMP

PREPARED BY TED
DATE 6-21-65
CHECKED BY JHP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-206

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63807 LAC 6008
TEST DATE ~ 6-18-65
FLIGHT ~ 143 DROP NO. ~ 29
SHEET 1 OF 1

CARGO WT 35700 LBS

RUN CONDITIONS
1. G.W. ~ 195,900 LBS.
2. C.G. PRIOR TO DROP ~ 19.5 % MAC
3. C.G. AFTER DROP ~ 30.3 % MAC
4. FLAPS ~ 20 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.27 (4 ENGINES)
7. γ_H ~ 4.36 DEG (A/C N.U.)

CARGO DESCRIPTION
1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. 781
   VERT. ~ W.L. 175

EXTRACTION CHUTE DESCRIPTION
1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.03
4. EXTRACTION LINE LENGTH ~ 100 FT.

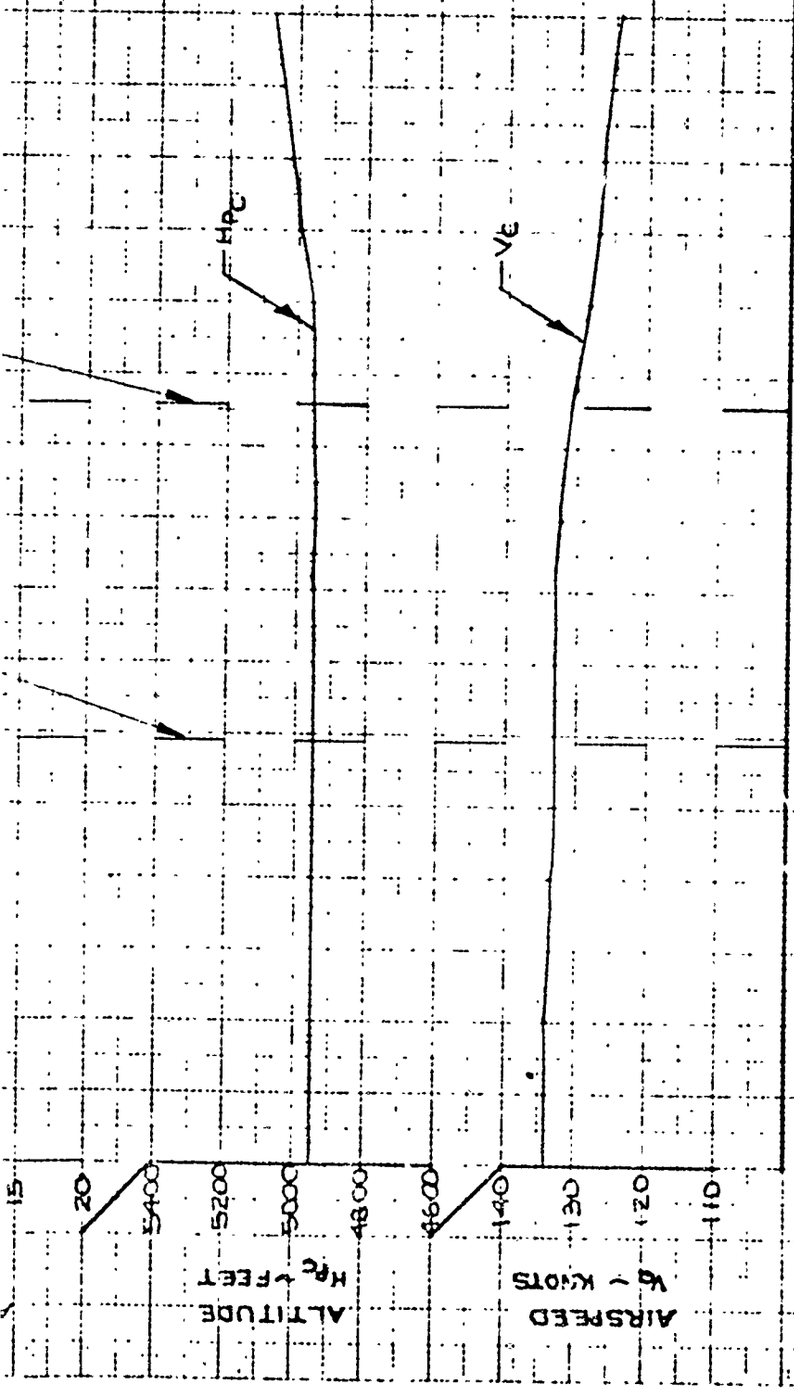
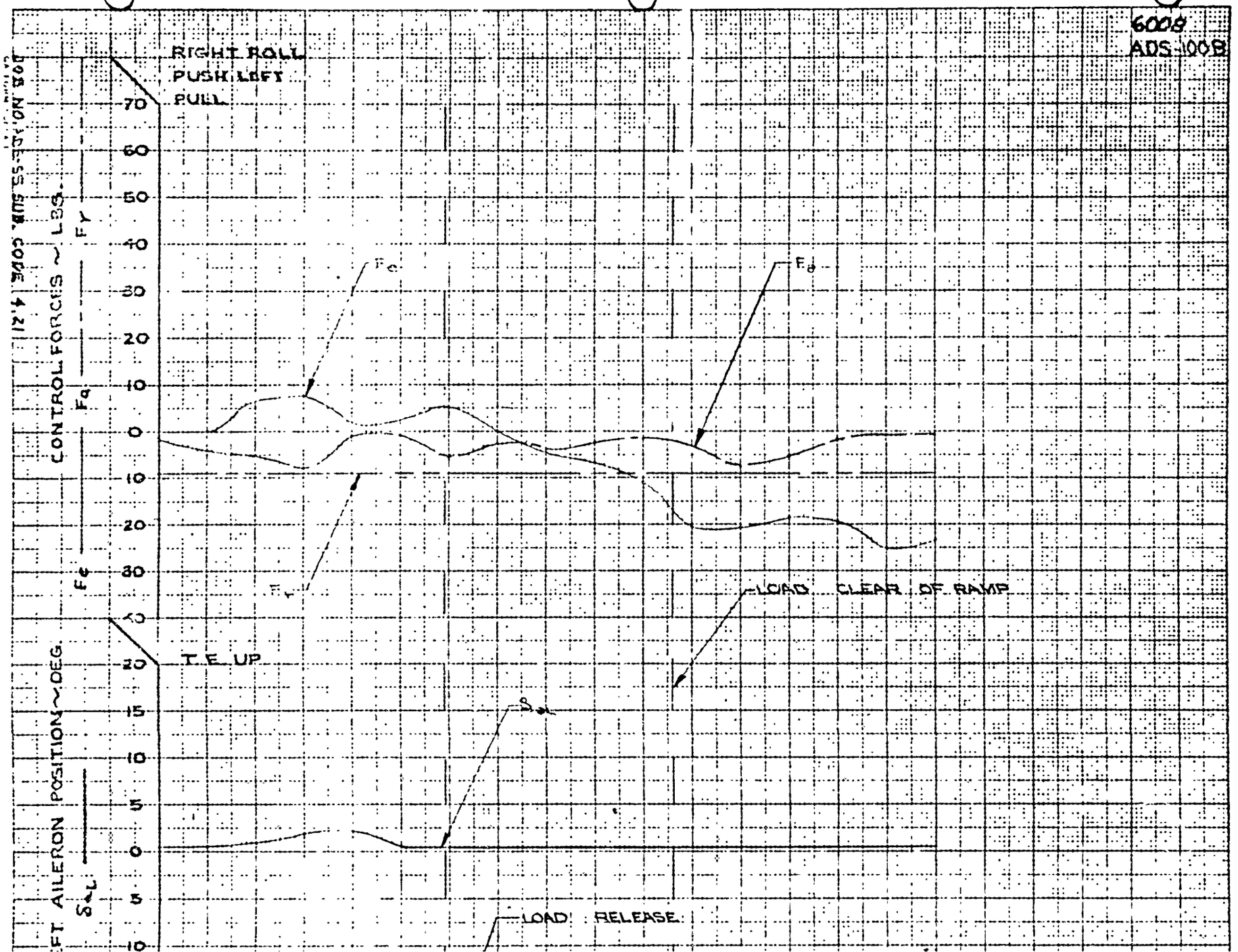


FIGURE D-33A

600B
ADS-100N

REVISED 12-15-65
MBH


6008
ADS-100B
RIGHT ROLL
PUSH LEFT
PULL
T.E. UP
LOAD CLEAR OF RAMP
LOAD RELEASE
CONTROL FORCES ~ LBS.
LEFT AILERON POSITION ~ DEG.
70
60
50
40
30
20
10
0
10
20
30
40
20
15
10
5
0
5
10

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE - 6-18-65

FLIGHT - 143 DROP NO - 29

SHEET 2 OF 7

CARGO WT 35,700 LBS

NOTE:
SEE FIGURE D-33A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

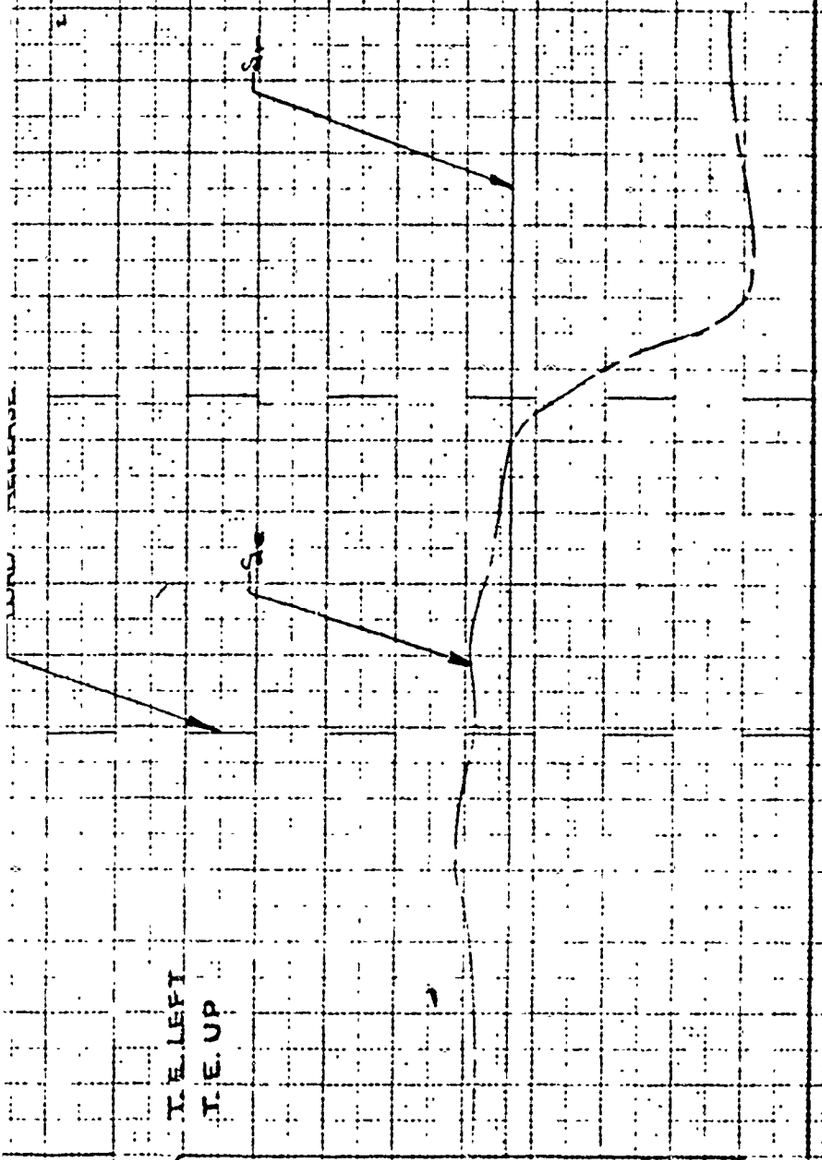


FIGURE D-33B

6008
ADS-100C

NOTE: $\ddot{\theta}$ CALCULATED FROM N_B DATA

$\ddot{\theta}$

LOAD CLEAR OF RAMP

LOAD RELEASE

N_z @ F.S. 1637

N_z @ F.S. 932 (C.G.)

N_z @ F.S. 277

NOSE UP

UP ACCEL.

40 20 0 20 40

3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6

PITCHING ACCELERATION $\ddot{\theta}$ DEG/SEC^2

N_z @ FS 277 — — N_z @ FS 1637 — — N_z ACCELERATIONS ~ g

JOB NO. ADS-55 SUB. CODE 4.2.1

PREPARED BY TED
DATE 6-21-68
CHECKED BY JWP

REPORT NO ER 5473
MODEL C-141A
PAGE D-208

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE 6-18-68

FLIGHT 143 DROP NO 29

SHEET 3 OF 1

CARGO WT 35700 LBS.

NOTE:
SEE FIGURE D-33A SHEET 1 OF 1 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

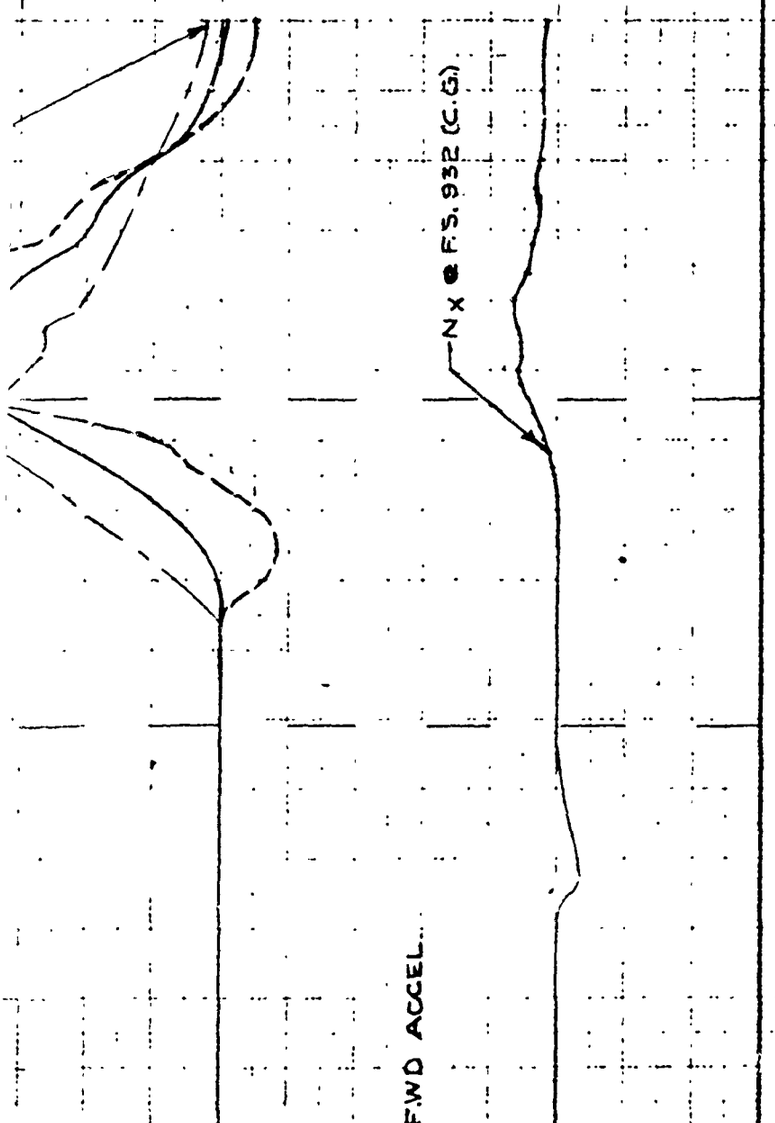
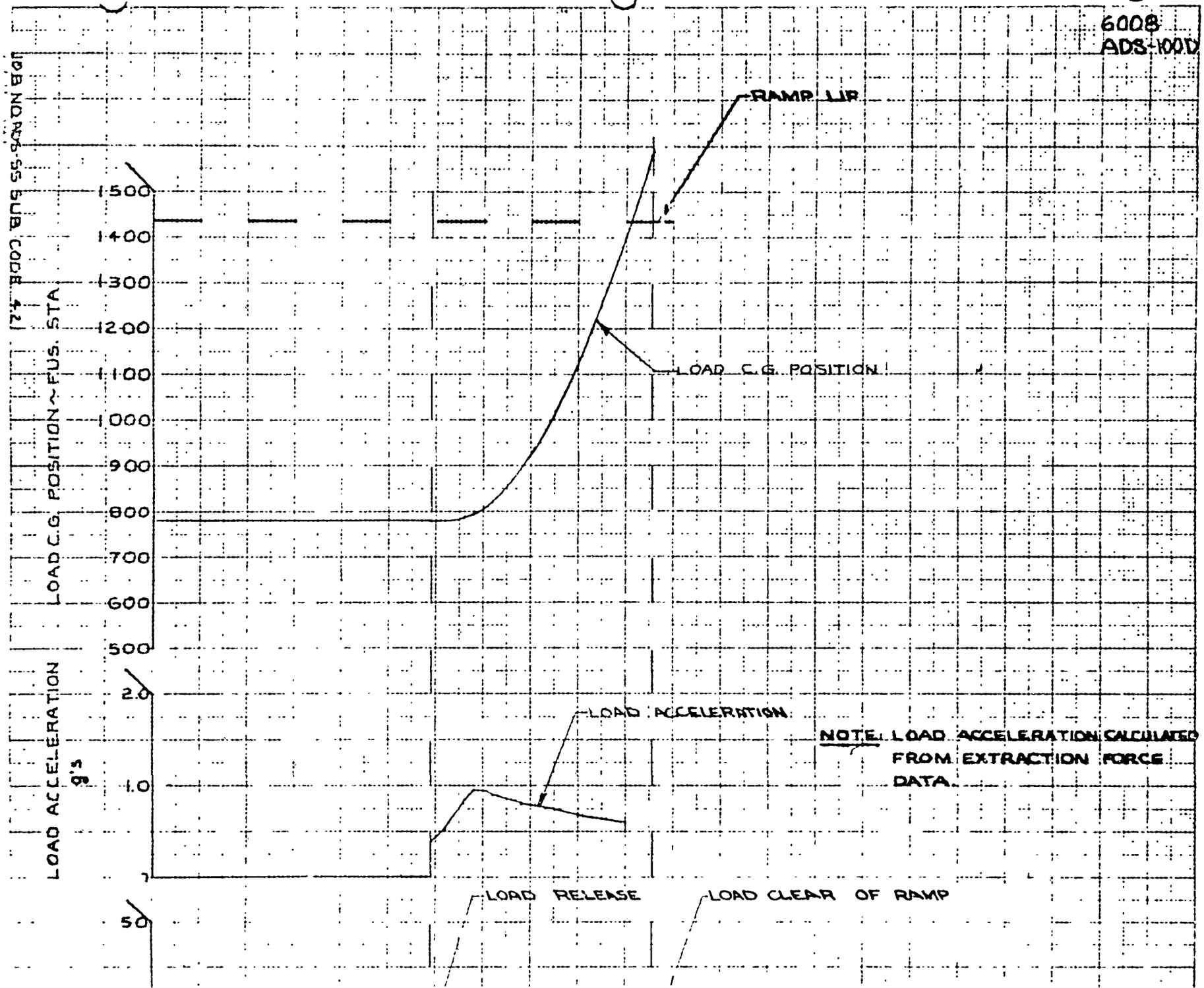


FIGURE D-33C

6008
ADS-100

UPB NO. ADS-SS SUB. CODE 4.2



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE~6-18-65

FLIGHT~143 DROP NO. 29

SHEET 4 OF 7

CARGO WT. 35,700 LBS

NOTE:
SEE FIGURE D-33A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

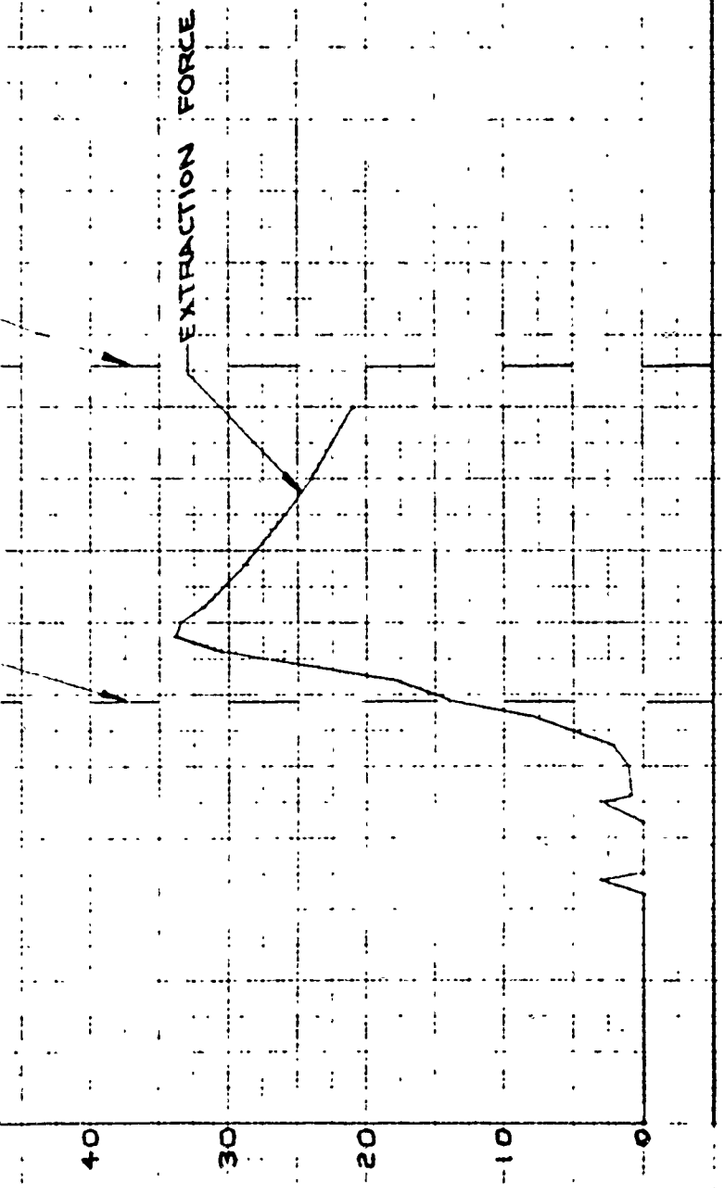
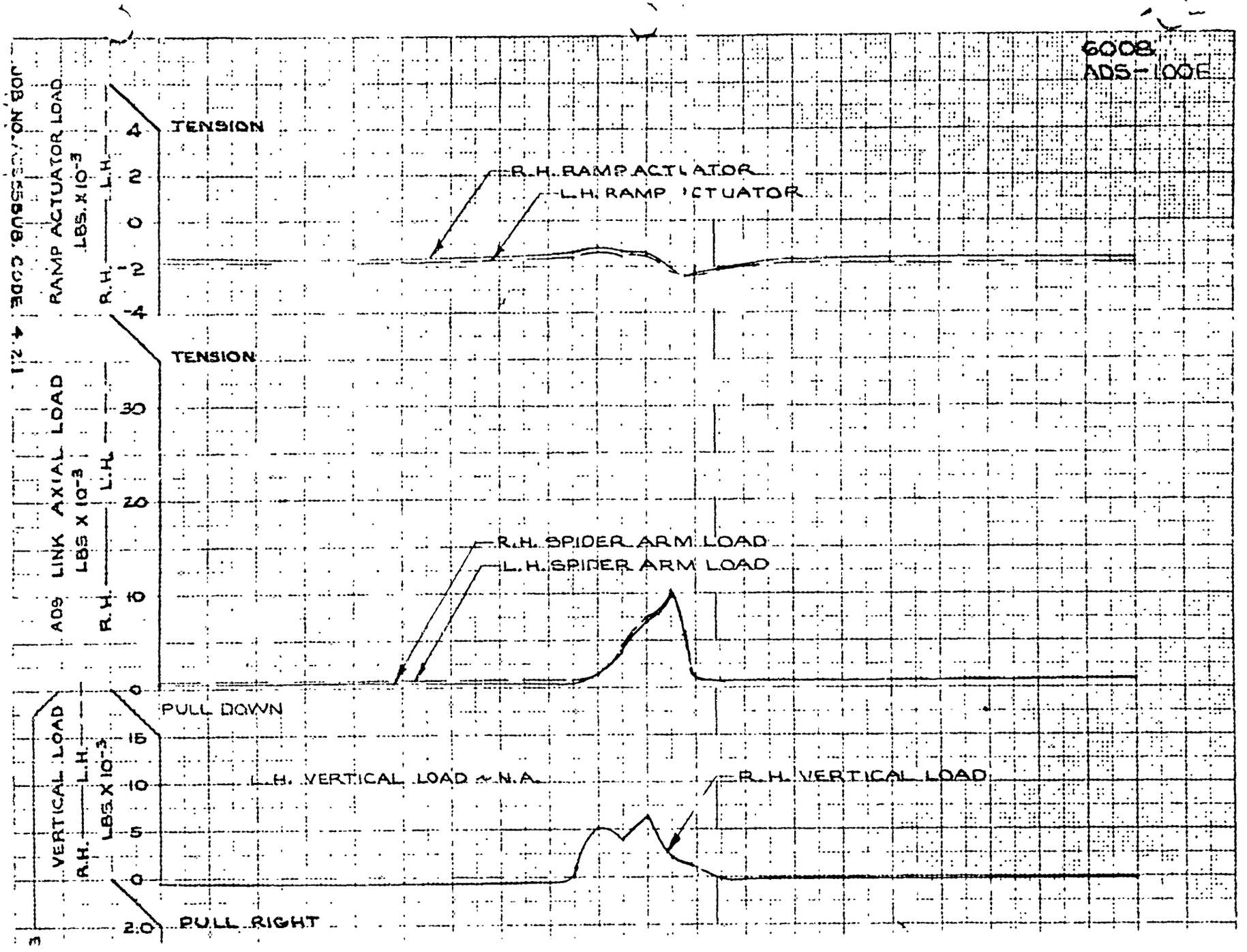


FIGURE D-33D


6008
ADS-LOOE
RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H.
L.H.
4
2
0
-2
-4
TENSION
R.H. RAMP ACTUATOR
L.H. RAMP ACTUATOR
ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H.
L.H.
30
20
10
0
TENSION
R.H. SPIDER ARM LOAD
L.H. SPIDER ARM LOAD
PULL DOWN
VERTICAL LOAD
R.H.
L.H.
LBS X 10⁻³
15
10
5
0
L.H. VERTICAL LOAD ~ N.A.
R.H. VERTICAL LOAD
2.0
PULL RIGHT

PREPARED BY FCW
DATE 6-21-65
CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-210

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-18-65

FLIGHT ~ 143 DROP NO. ~ 29

SHEET 5 OF 7

CARGO WT. 35700 LBS

NOTE:
SEE FIGURE D-33A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

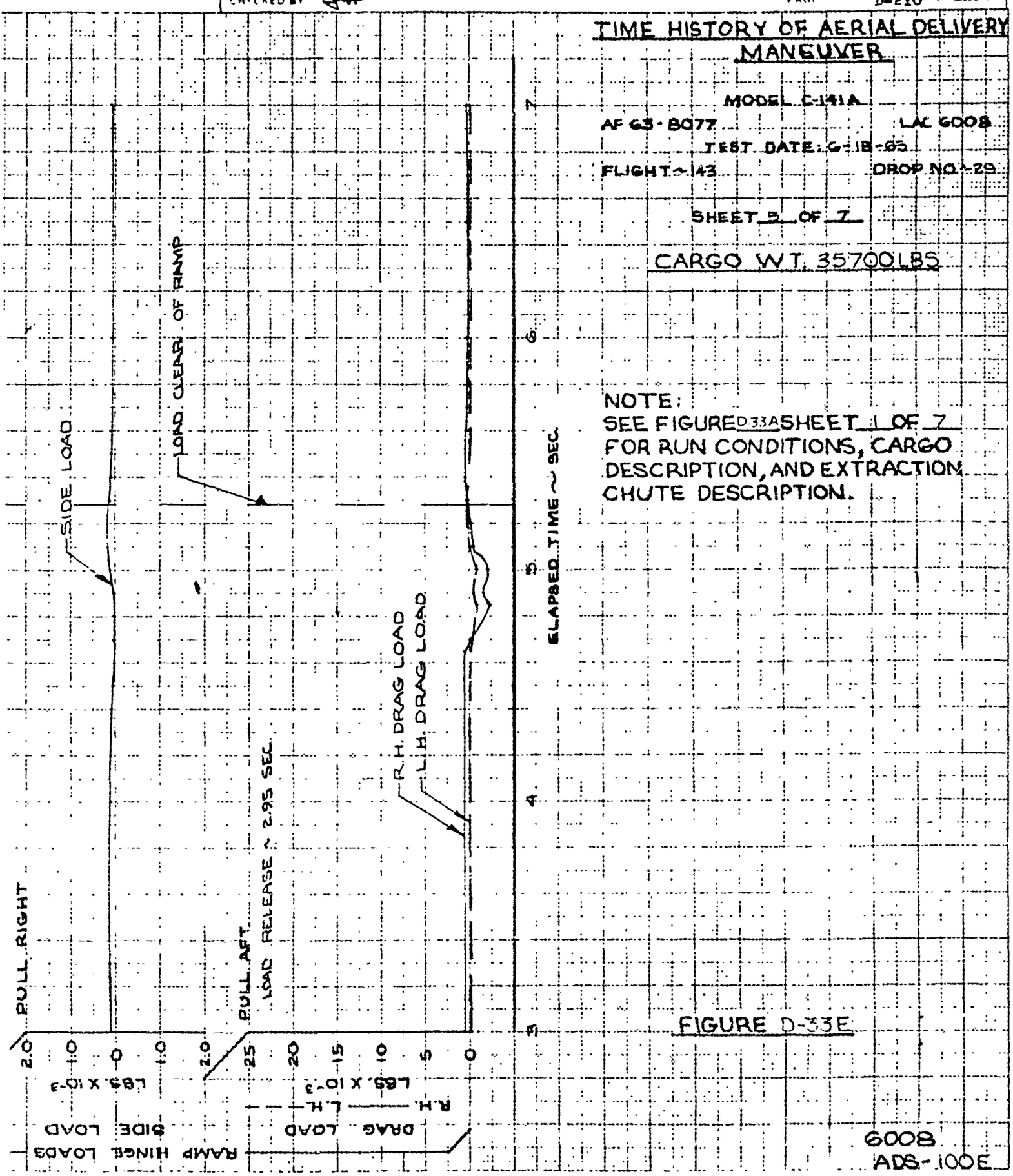
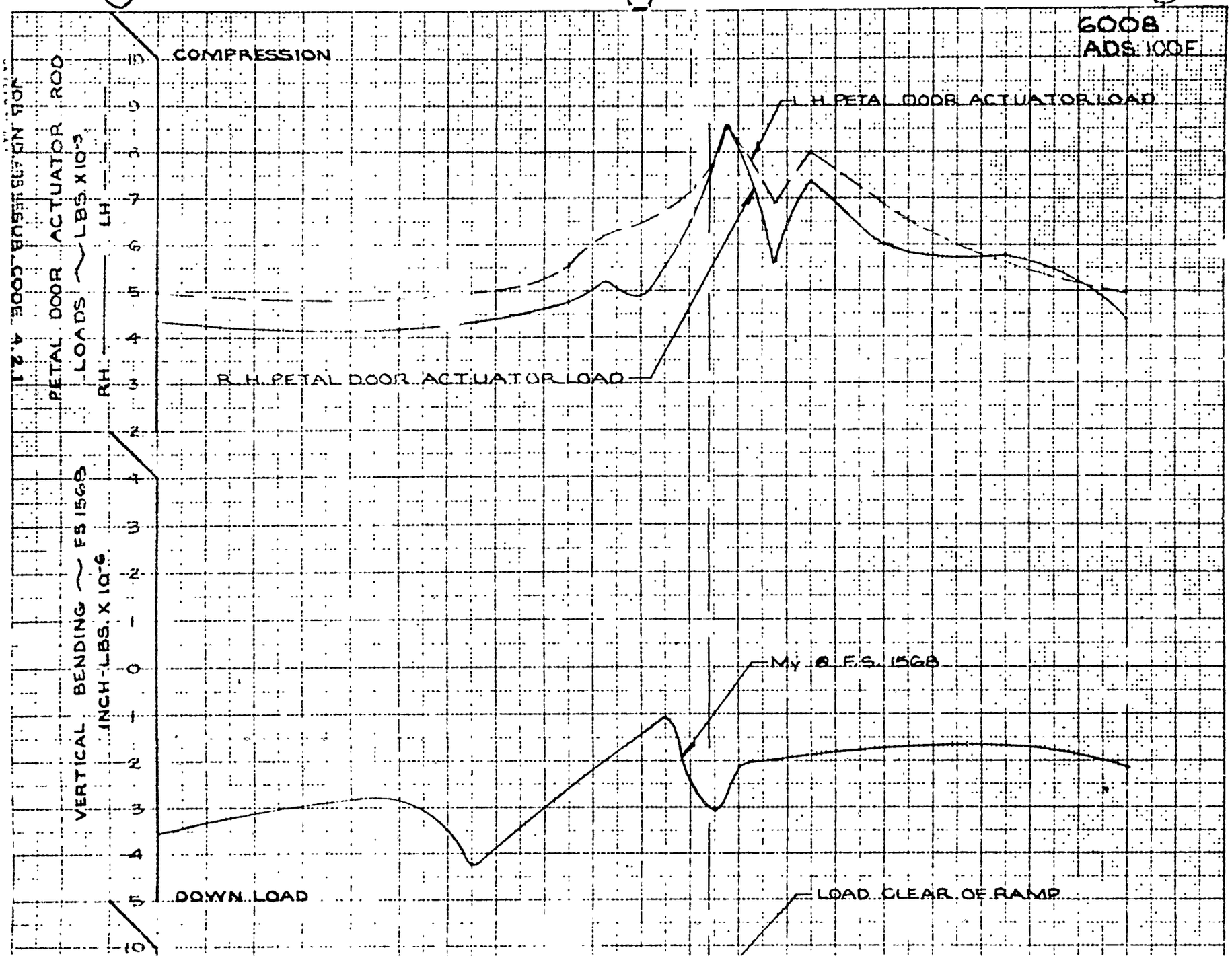


FIGURE D-33E


6008
ADS 100F
COMPRESSION
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
PETAL DOOR ACTUATOR ROD LOADS ~ LBS. X 10⁻³
RH
LH
VERTICAL BENDING ~ FS 1568 INCH-LBS. X 10⁻⁶
My @ F.S. 1568
DOWN LOAD
LOAD CLEAR OF RAMP

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-18-65

FLIGHT ~ 143 DROP NO. 29

SHEET 6 OF 7

CARGO WT. 35700 LBS.

NOTE:
SEE FIGURE D-33A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

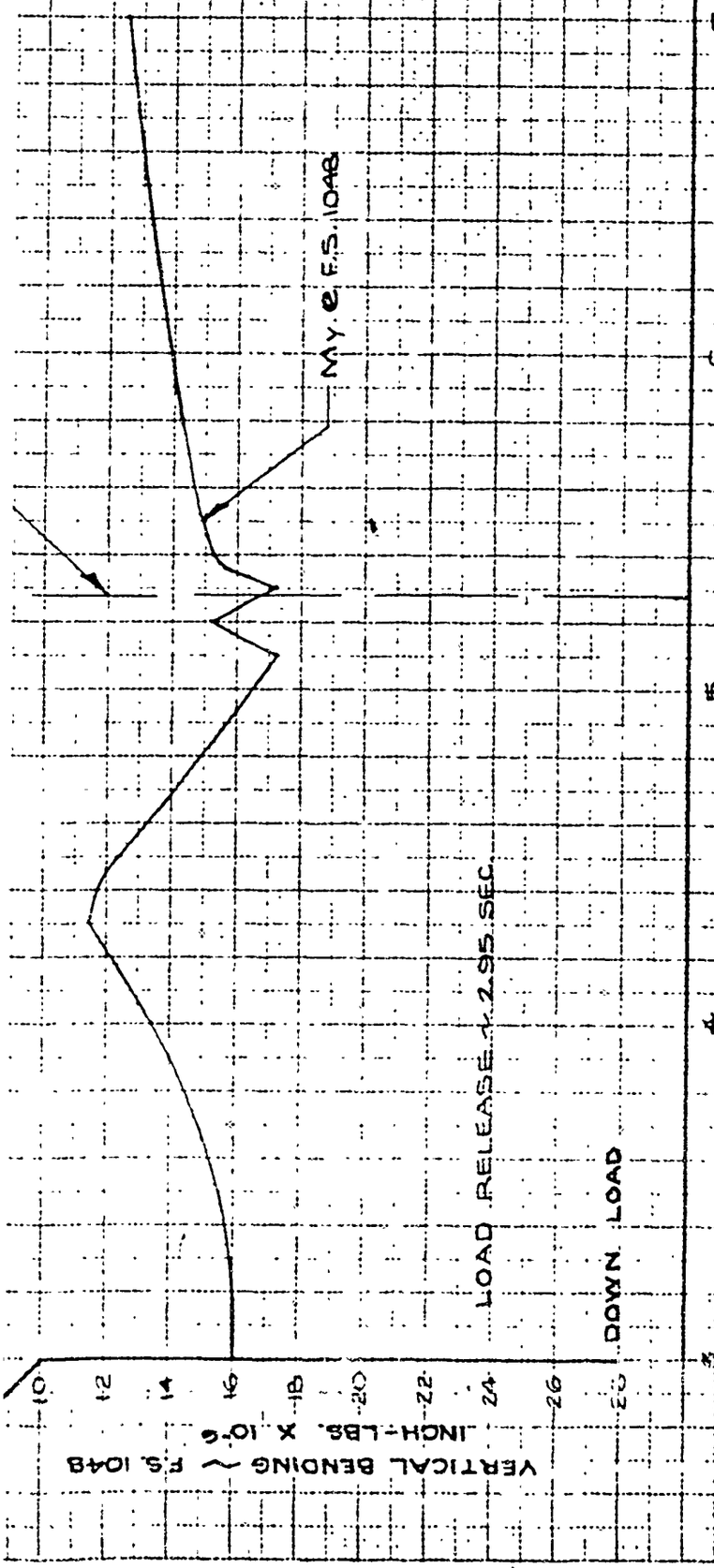


FIGURE D-33F

GOOD
ADS LOG
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ Mx
INCH - LBS X 10-6
SHEAR @ HBL 44L ~ Sz
LBS X 10-3
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
Mx @ HBL44L
Sz @ HBL 44L
LOAD CLEAR OF RAMP
JOB NO. ADS SUB. CODE 4.2.1

PREPARED BY FCW
DATE 6-21-65
CHECKED BY

REPORT NO ER 5473
MODEL C-141A
PAGE D-212

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 6-18-65

FLIGHT 143 DROP NO. 29

SHEET 7 OF 7

CARGO WT. 35700 LBS

NOTE:
SEE FIGURE D-33A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

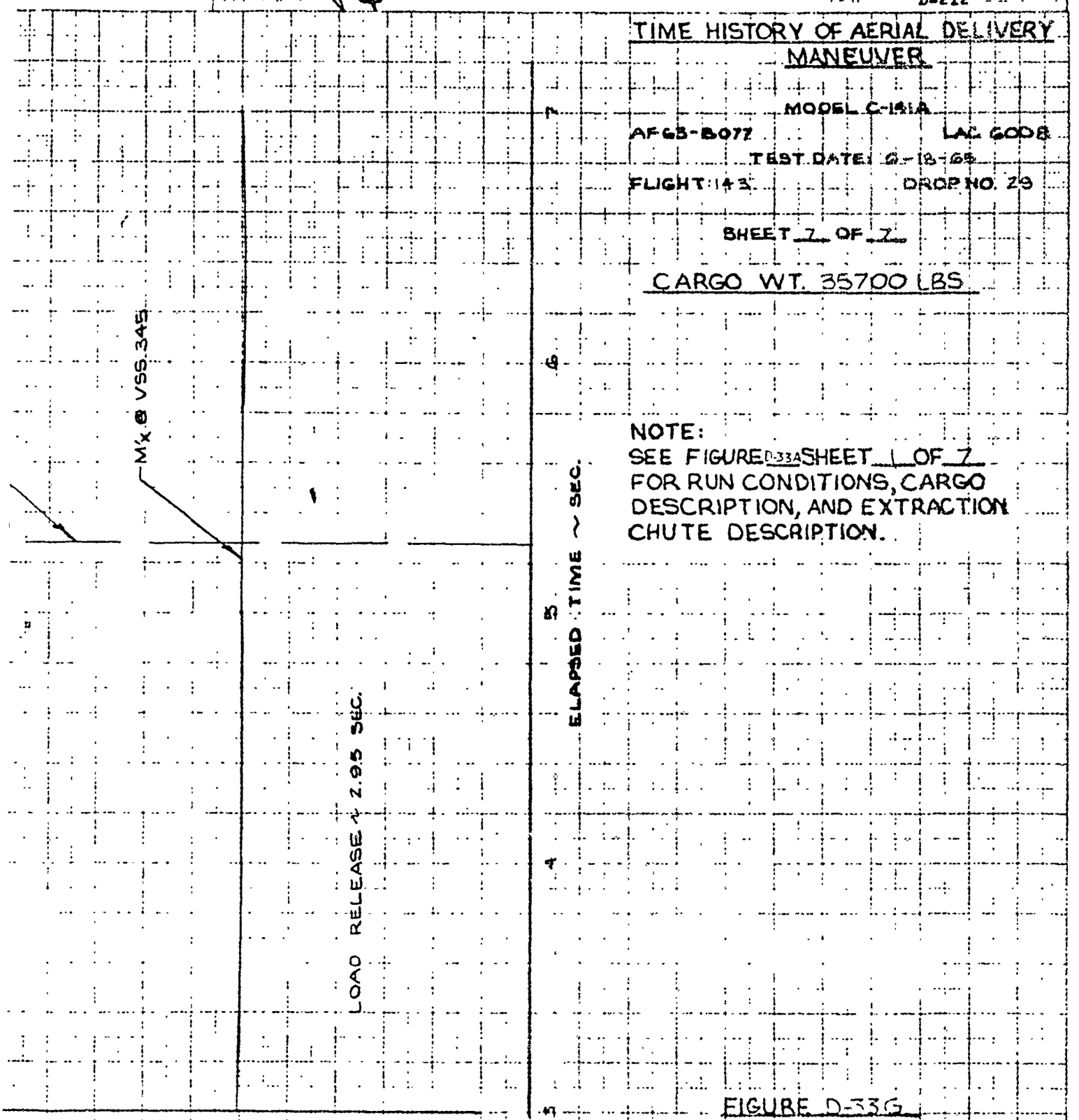


FIGURE D-33G

6008
ADS-100G

ADS 166A
LOAD CLEAR OF RAMP
LOAD RELEASE
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
JOB NO. 85 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 9-14-65

FLIGHT 183 DROP NO. 30

SHEET 1 OF 7

CARGO WT. 21,050 LB.

RUN CONDITIONS

1. G.W. ~ 253,900
2. C.G. PRIOR TO DROP ~ 26.1 % MAC
3. C.G. AFTER DROP ~ 31.2 % MAC
4. FLAPS ~ 55%
5. GEAR ~ UP
6. AVG. EPR ~ 1.31 EPR
7. γ_H ~ 1.9° (A/C NU)

CARGO DESCRIPTION

1. TYPE CARRIER PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   - LONG. ~ FS 779
   - VERT. ~ WL 174

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 24 FT.
3. RATED CHUTE FORCE/CARGO WT. = 1.14
4. EXTRACTION LINE LENGTH = 100 FT.

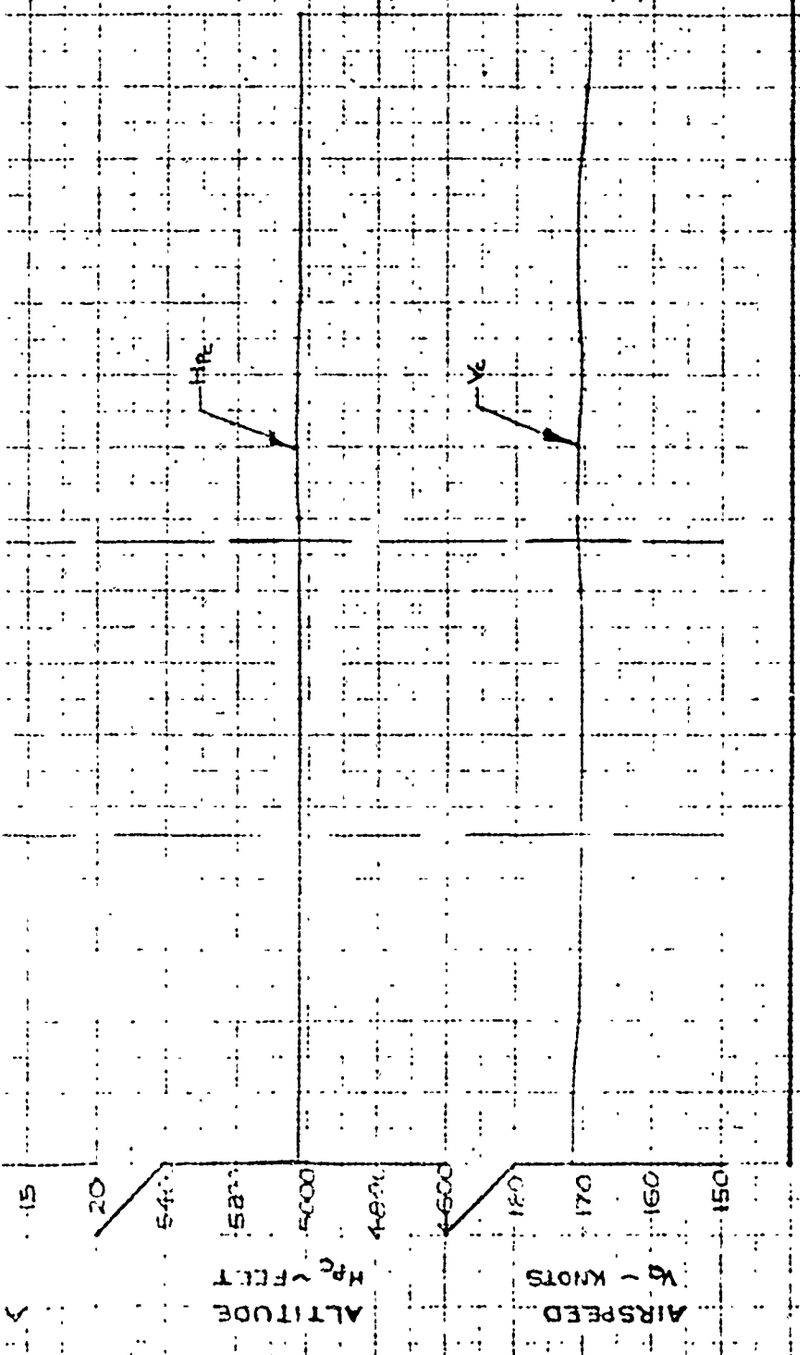
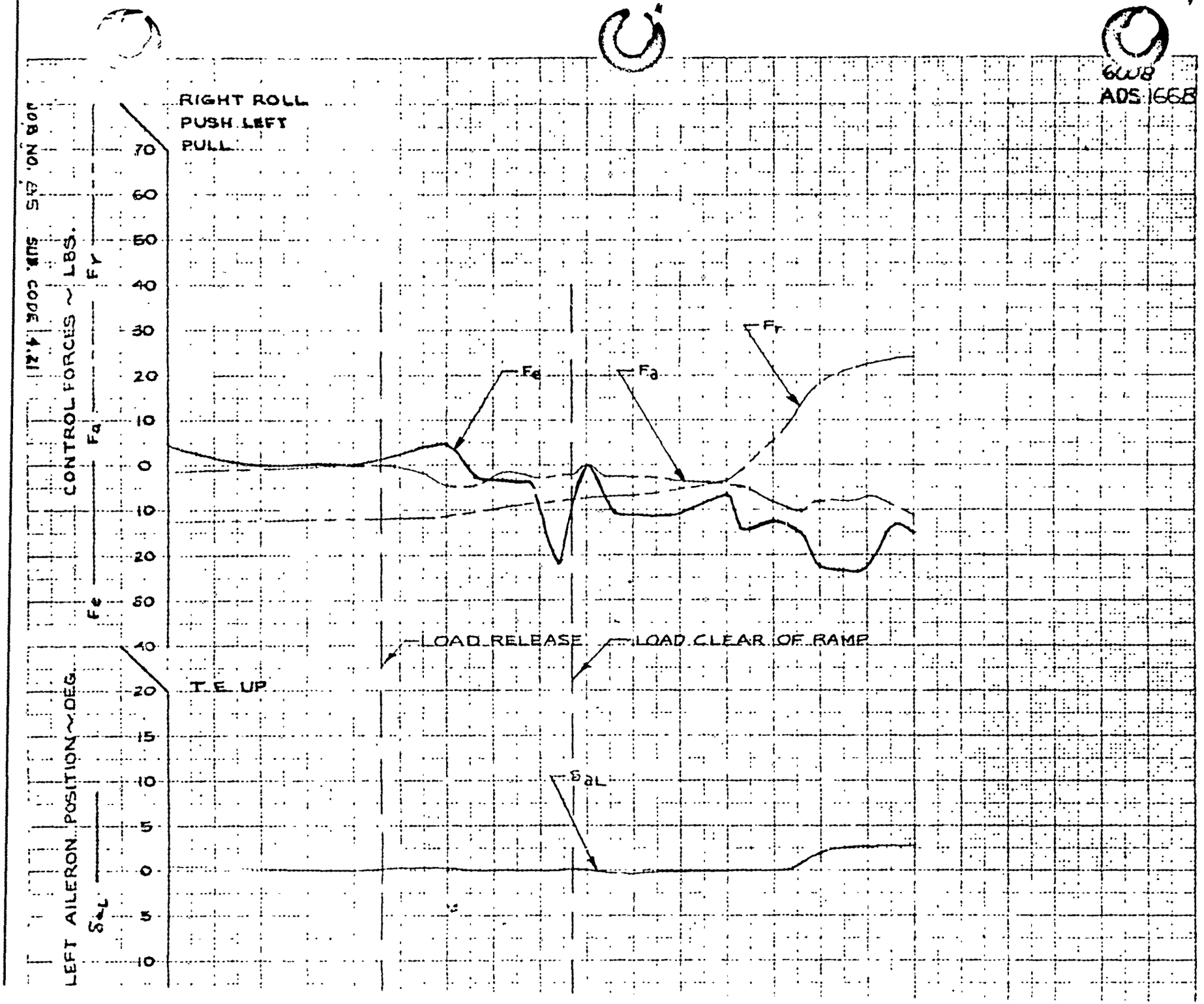


FIGURE D-34A


JOB NO. 45 SUB. CODE 4.21
CONTROL FORCES ~ LBS.
Fr
Fa
Fe
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
Fr
Fe
Fa
LOAD RELEASE
LOAD CLEAR OF RAMP
T.E. UP
LEFT AILERON POSITION ~ DEG.
δaL
20
15
10
5
0
5
10
δaL
6008
ADS 1668

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 9-14-65

FLIGHT 183 DROP NO 30

SHEET 2 OF 7

CARGO WT 21,050 LBS.

NOTE:
SEE FIGURE D-34A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

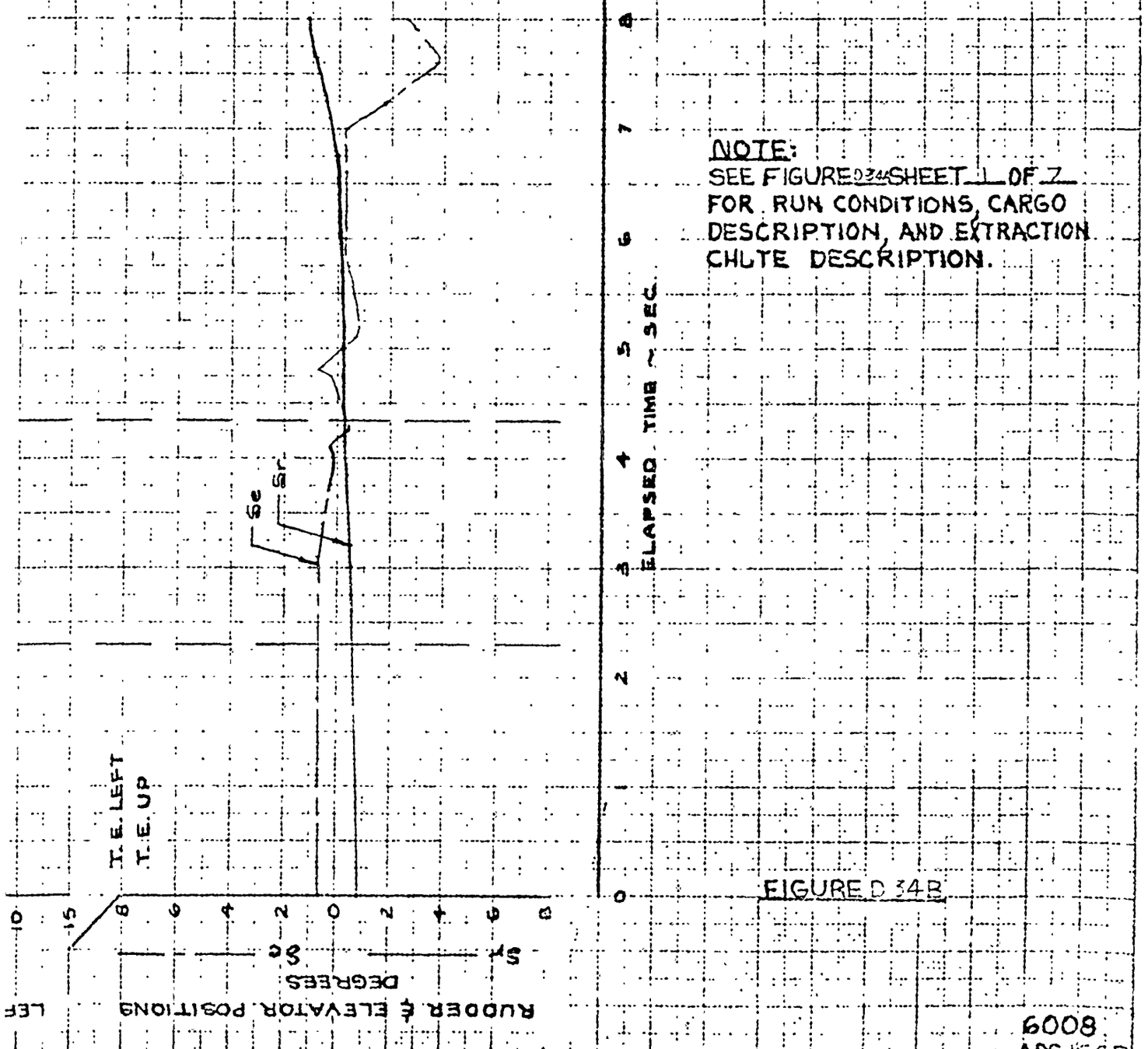
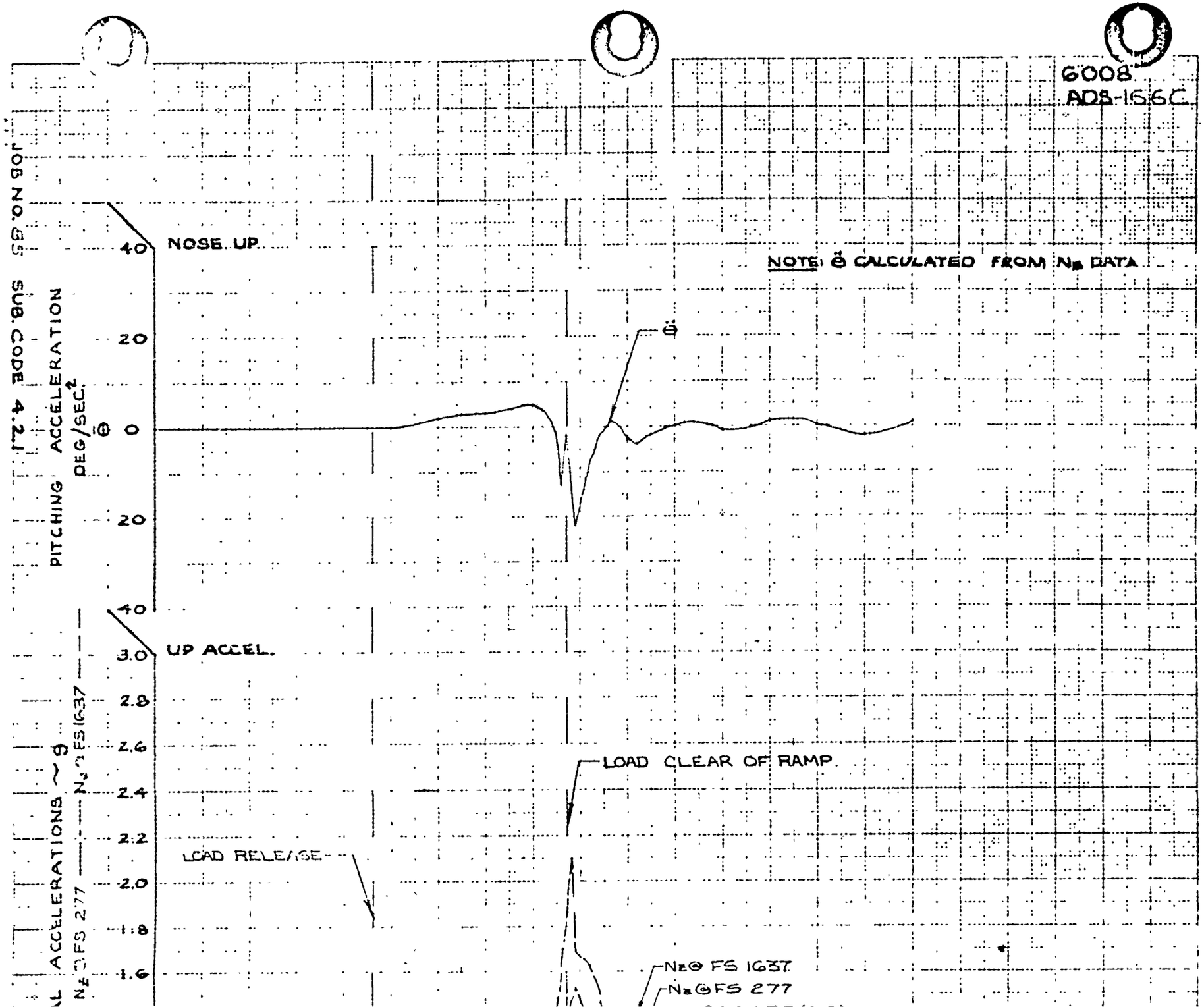


FIGURE D-34B


6008
ADS-166C
JOB NO. 65
SUB. CODE 4.2.1
PITCHING ACCELERATION
DEG/SEC.²
NOSE UP
NOTE: ë CALCULATED FROM N_z DATA
ë
40
20
0
20
40
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
VERTICAL ACCELERATIONS ~ g
N_z @ FS 277
N_z @ FS 1637
LOAD CLEAR OF RAMP
LOAD RELEASE
N_z @ FS 1637
N_z @ FS 277

PREPARED BY DTM
DATE 8-19-65
CHECKED BY [illegible]

REPORT NO. ER 5473
MODEL C-141A
FAC D-215

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 8-14-65

FLIGHT 183 DROP NO. 30

SHEET 3 OF 7

CARGO WT. 21,050 LBS

NOTE:
SEE FIGURE D34A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

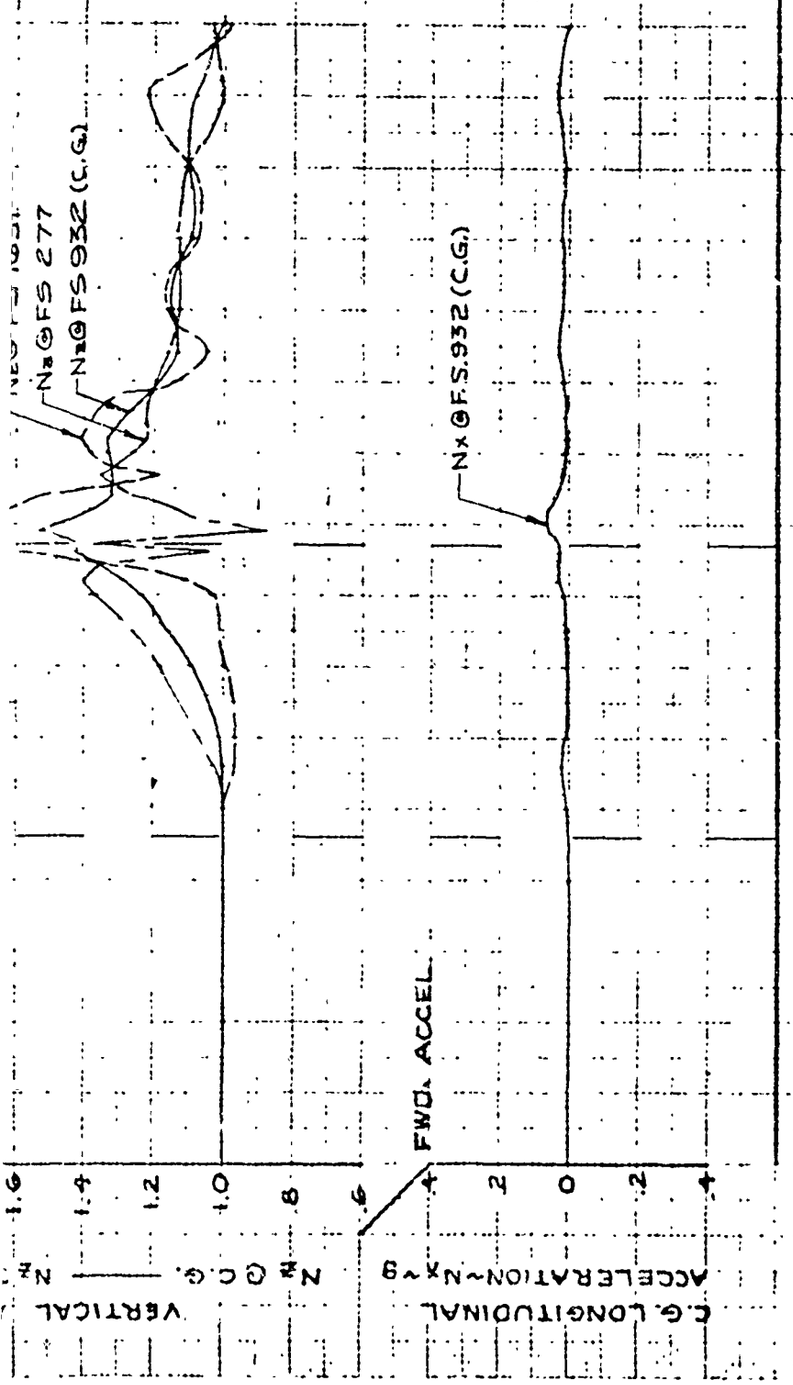
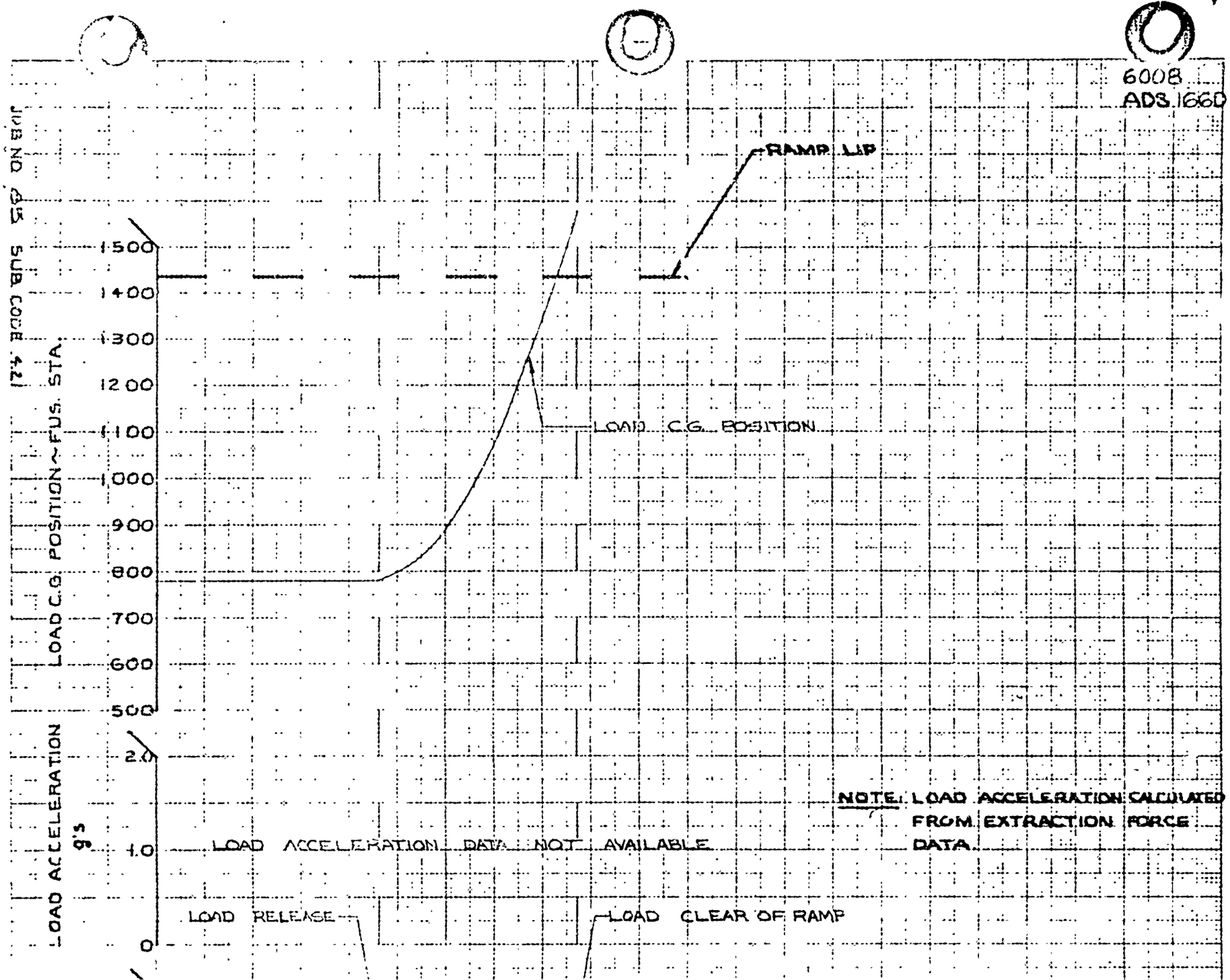


FIGURE D34C

6008
ADS-165C

6008
ADS 1660

JOB NO. 65 SUB CODE 421



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 9-14-65

FLIGHT 183 DROP NO. 30

SHEET 4 OF 7

CARGO WT. 21050 LBS.

NOTE:
SEE FIGURE 23-A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION

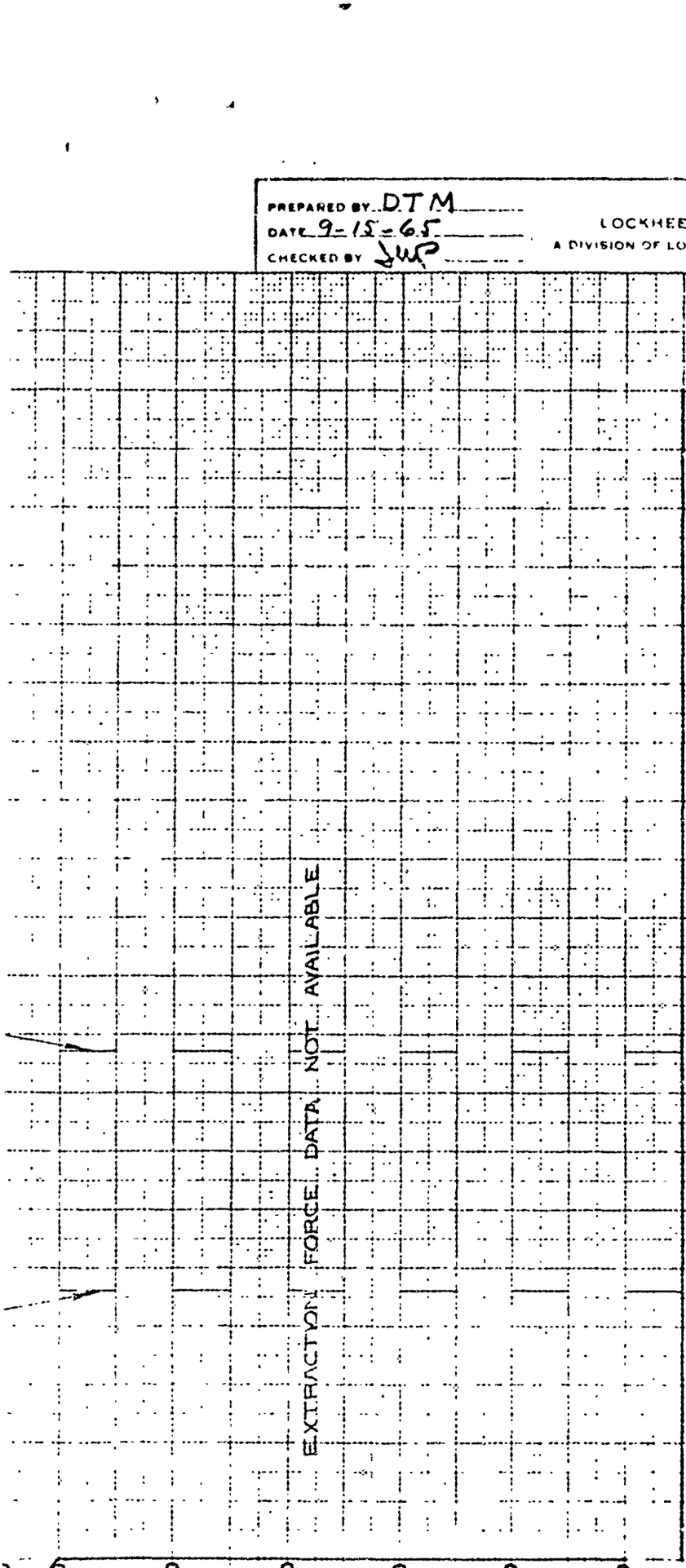


FIGURE D-34 D

6008
ADS-156E
L.H.RAMP ACTUATOR
R.H.RAMP ACTUATOR
LOAD CLEAR OF RAMP
L.H.SPIDER ARM
R.H. SPIDER ARM
L.H.VERTICAL LOAD
R.H.VERTICAL LOAD
LOAD RELEASE
TENSION
TENSION
PULL DOWN
PULL RIGHT
4 2 0 -2 -4
30 20 10 0
15 10 5 0
2.0
R.H. L.H.
LBS X 10-3
RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD
VERTICAL LOAD
ADS
JOB NO. 85 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-14-65

FLIGHT 183 DROP NO. 30

SHEET 5 OF 7

CARGO WT. 21,050 LBS.

NOTE:
SEE FIGURE D-34A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

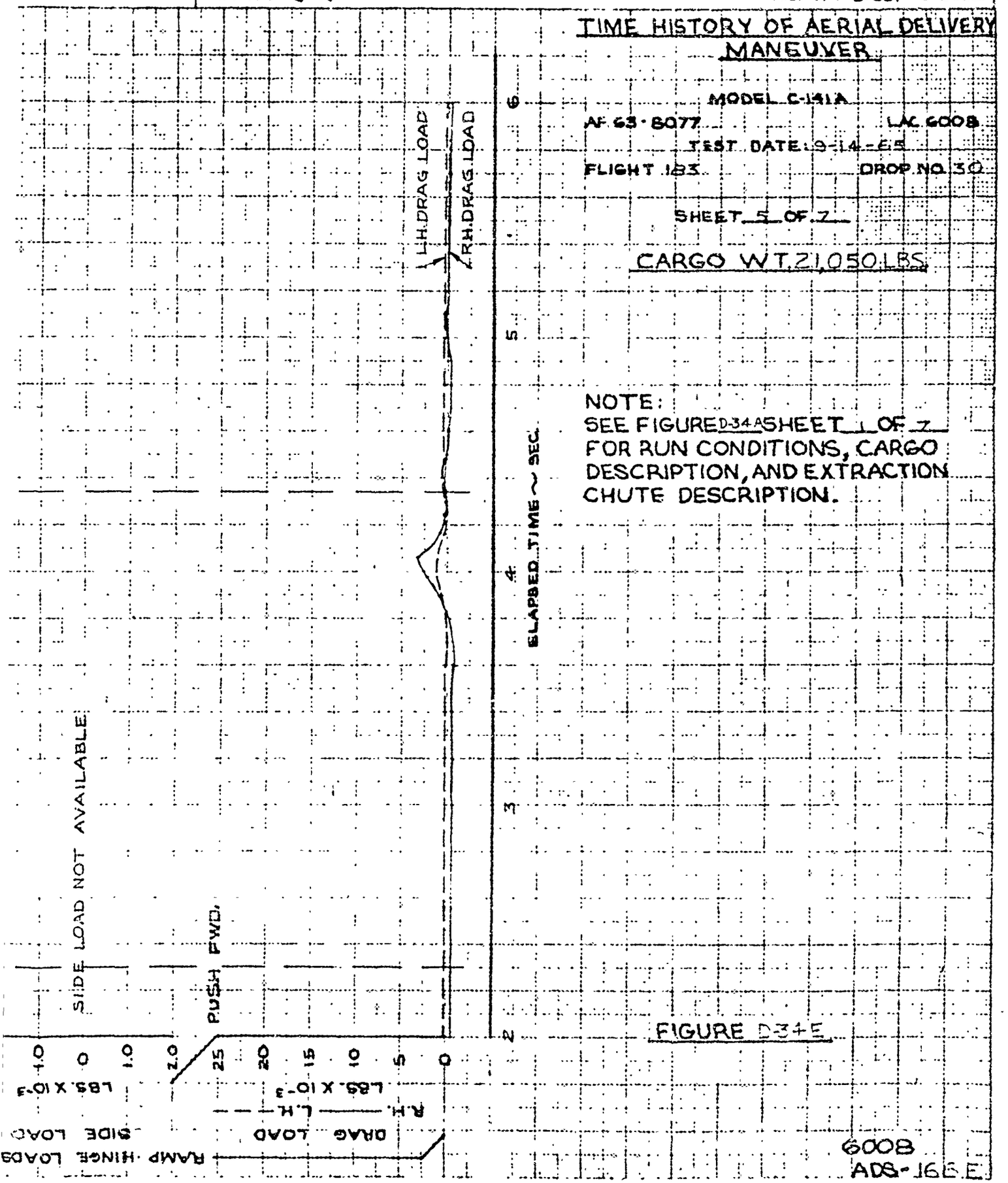


FIGURE D-34E

6008
ADS-1561
R H PETAL DOOR ACTUATOR
L H PETAL DOOR ACTUATOR
My@ FS 1568
LOAD CLEAR OF RAMP
COMPRESSION
DOWN LOAD
LOAD RELEASE
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X 10-3
RH
LH
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10-6
JOB NO. 85 SUB. CODE 4.2.1

PREPARED BY DTM
DATE 9-19-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-218

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE: 9-19-65
FLIGHT 165 DROP NO. 30
SHEET 6 OF 7

CARGO WT. 21,050 LBS.

NOTE:
SEE FIGURE D-344 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

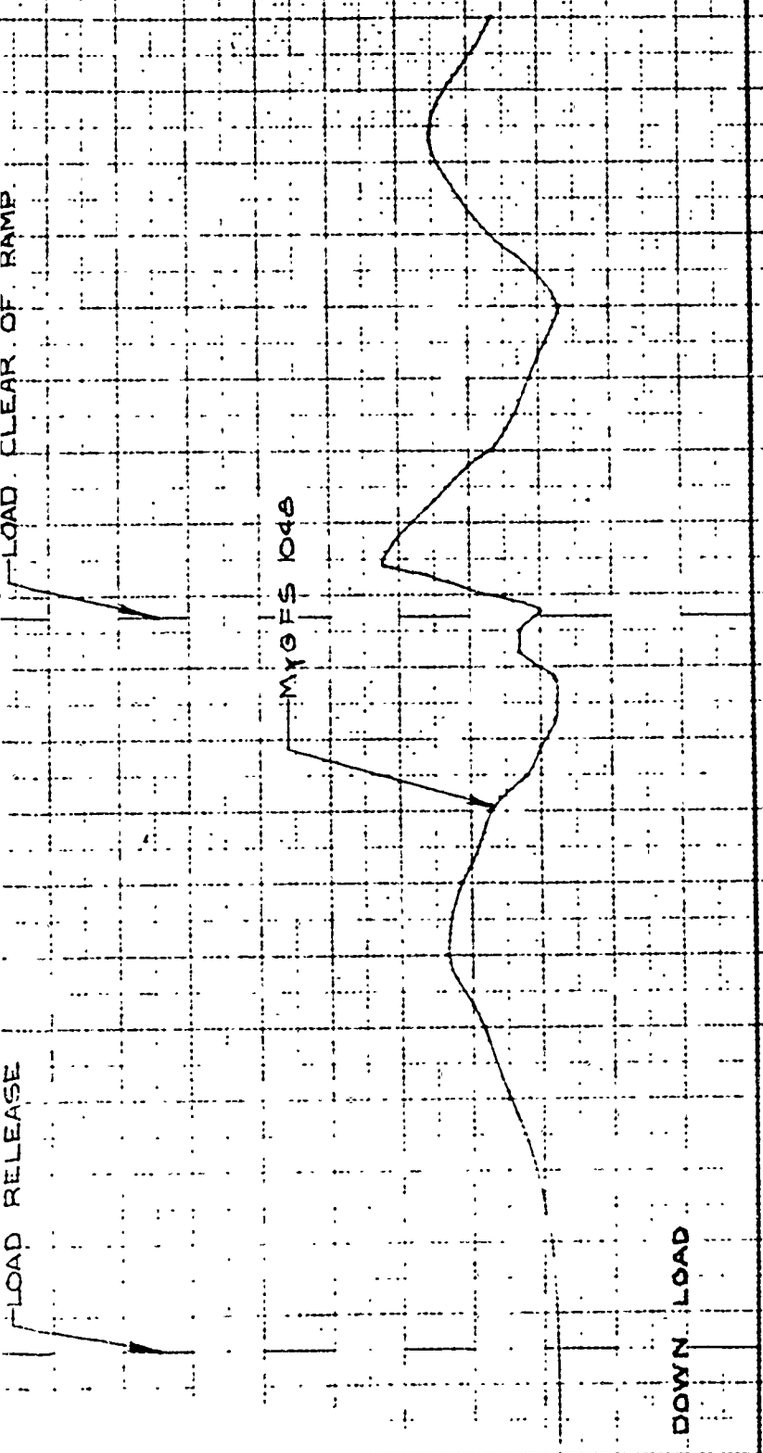


FIGURE D-34F

6008
AD3-1668
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 441 ~ M'x
INCH - LBS x 10⁻⁶
SHEAR @ HBL 441 ~ S'z
LBS x 10⁻³
UP LOAD
UP LOAD
LOAD RELEASE
LOAD CLEAR OF RAMP
LOAD LEFT @ VS TIP
Sz@HBL 441
Mx@HBL 441
20 15 10 5 0 5 10 15 20
20 15 10 5 0 .5 1.0 1.5 2.0
JOB NO. 65 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-14-65

FLIGHT 183 DROP NO. 30

SHEET 2 OF 2

CARGO WT. 21,050 LBS.

NOTE:
SEE FIGURE D-34A SHEET 1 OF 2
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

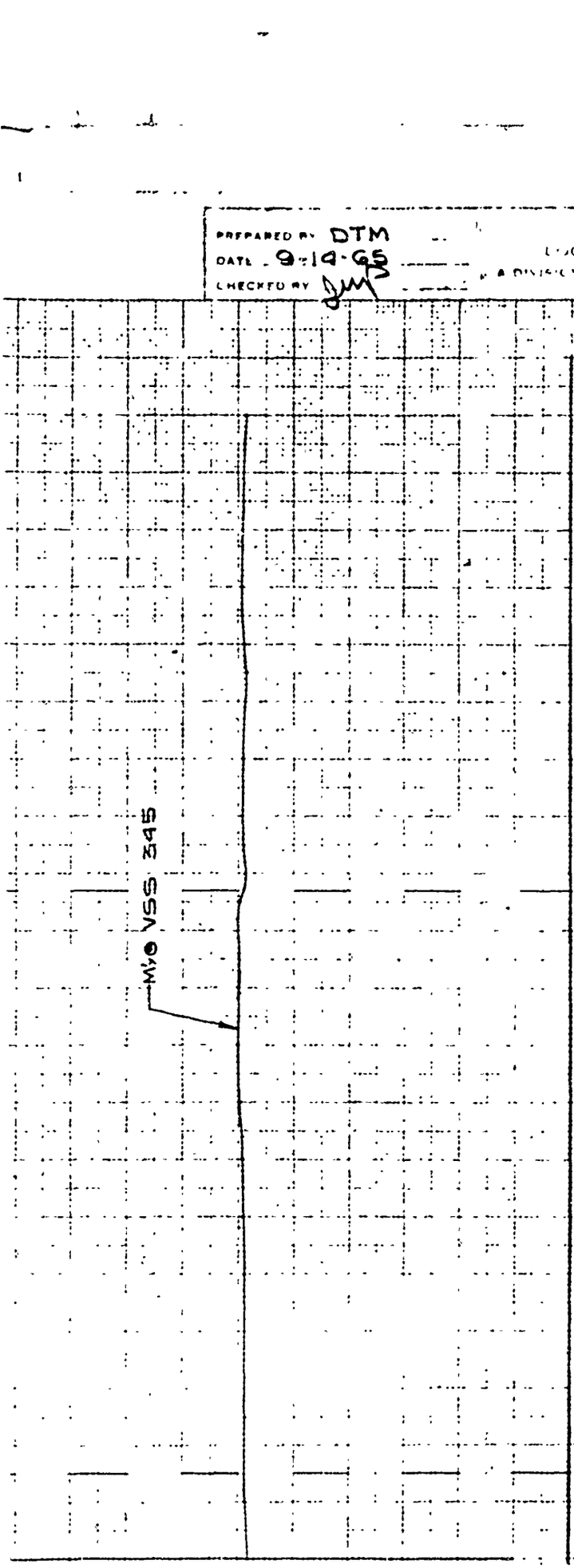


FIGURE D-34G

6008
ADS1167A
LOAD CLEAR OF RAMP
AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
JOB NO. 86 SUB. CODE 1121

PREPARED BY JDS
DATE 9-21-65
CHECKED BY JMP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-220

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63807 LAC 6008
TEST DATE 9-20-65
FLIGHT 184 DROP NO. 31
SHEET 1 OF 7

CARGO WT. 21,330 LB.

RUN CONDITIONS
1. G.W. ~ 279,400 LBS.
2. C.G. PRIOR TO DROP ~ 26.7% MAC
3. C.G. AFTER DROP ~ 31.6% MAC
4. FLAPS ~ 55%
5. GEAR ~ UP
6. AVG. EPR ~ 1.36
7. ΔH ~ 1.3 DEG. (A/C NOSE UP)

CARGO DESCRIPTION
1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS ~ 774
   VERT. ~ W.L. ~ 191

EXTRACTION CHUTE DESCRIPTION
1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 34' REEFED TO 18'
3. RATED CHUTE [illegible] WT. 0.34
4. EXTRACTION [illegible] LENGTH 100 FT.

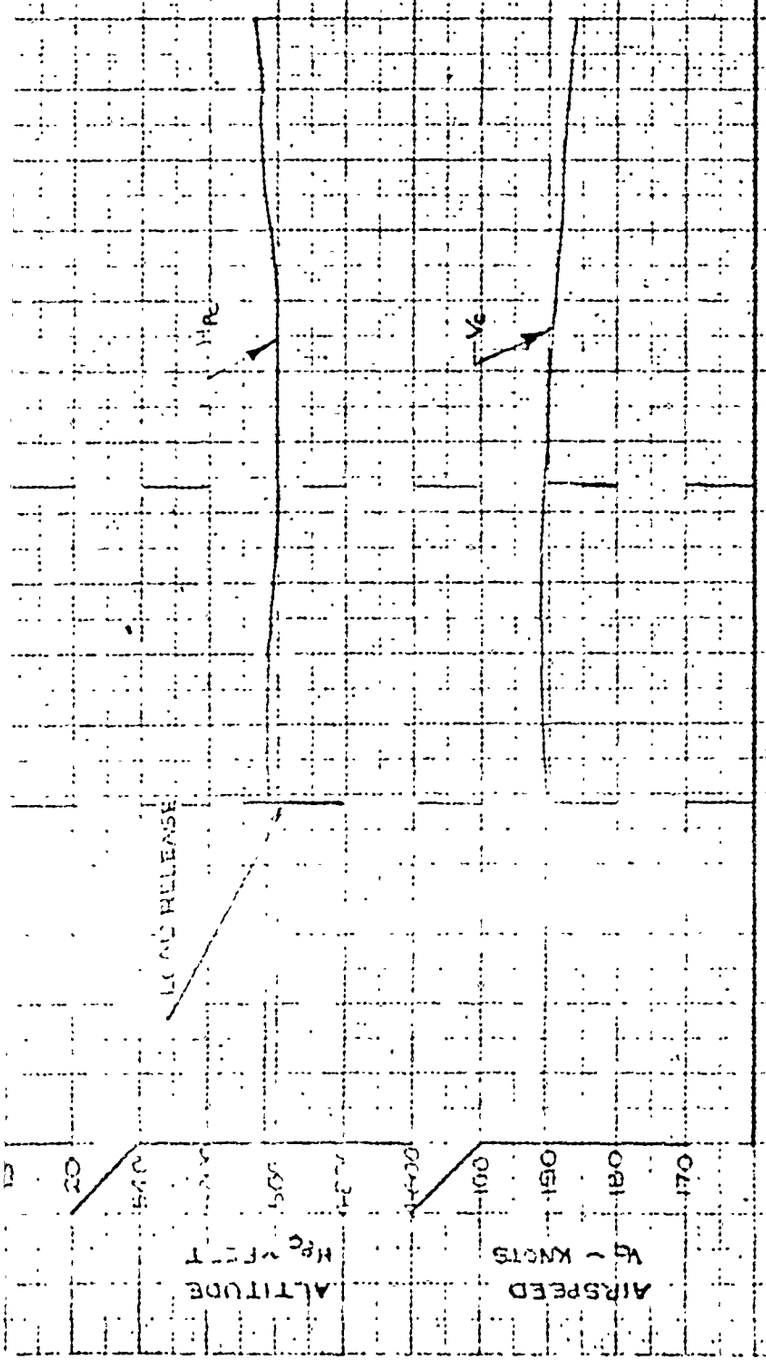
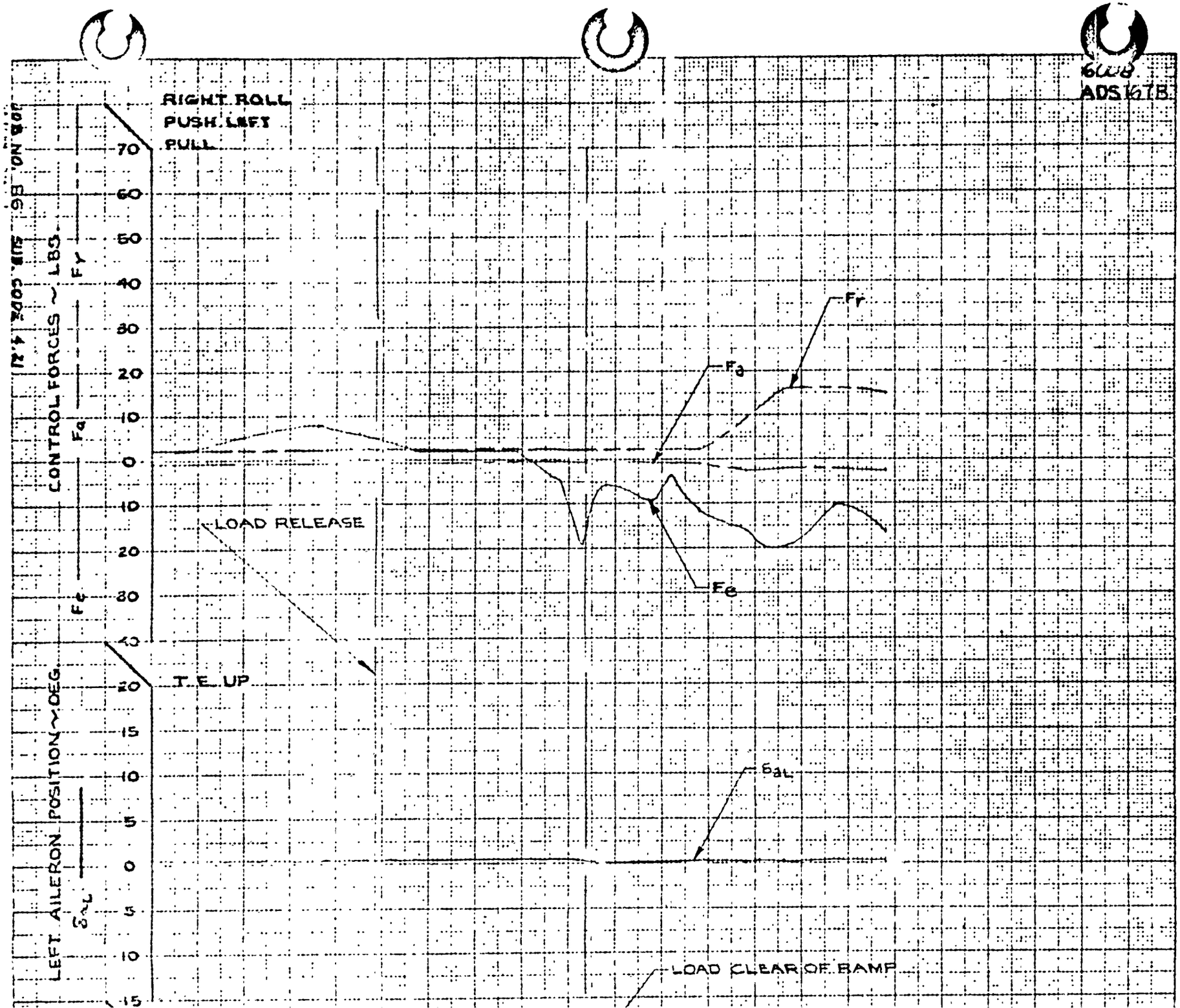


FIGURE D-35A

6008
ADS-67A
REVISED 12-17-65
MGH


RIGHT ROLL
PUSH LEFT
PULL
CONTROL FORCES ~ LBS.
Fr
Fa
Fe
70
60
50
40
30
20
10
0
10
20
30
40
Fr
Fa
Fe
LOAD RELEASE
T.E. UP
LEFT AILERON POSITION ~ DEG.
δaL
20
15
10
5
0
5
10
15
δaL
LOAD CLEAR OF RAMP

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 9-20-65

FLIGHT 184 DROP NO 31

SHEET 2 OF 7

CARGO WT 21,330 LBS.

NOTE:
SEE FIGURE D-35 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

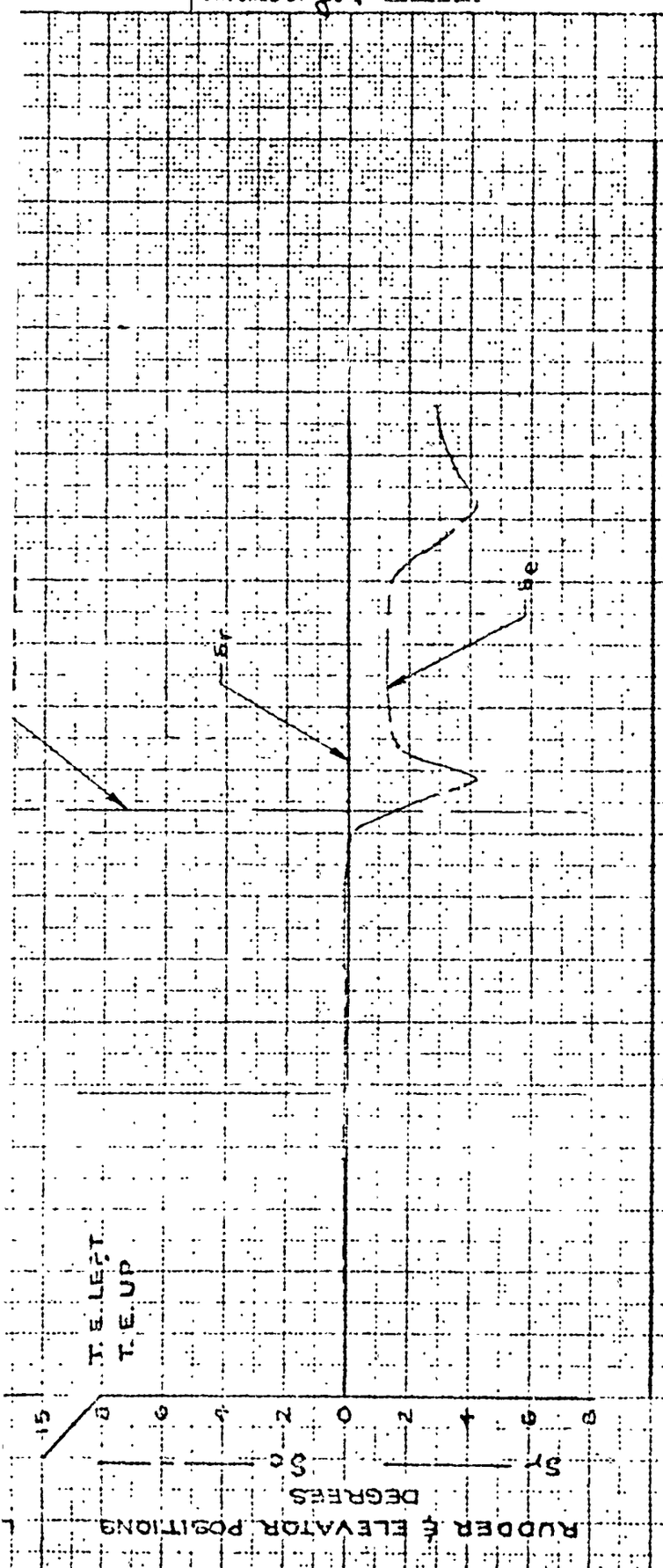


FIGURE D-35

6008
ADS
NOTE: θ CALCULATED FROM N_z DATA
LOAD CLEAR OF RAMP
N_z @ FS 1637
N_z @ FS 1637 (C.G.)
N_z @ FS 277
θ
NOSE UP
UP ACCEL
LOAD RELEASE
+4.0
2.0
0
2.0
4.0
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ
DEG/SEC²
PITCHING ACCELERATION
N_z @ FS 1637
FS 277
ACCELERATIONS - g
JOB NO. 36 SUB. CODE 4.2.1

222

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 9-20-65

FLIGHT 184 DROP NO. 31

SHEET 3 OF 7

CARGO WT. 21,330 LBS

NOTE:
SEE FIGURE D-35A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

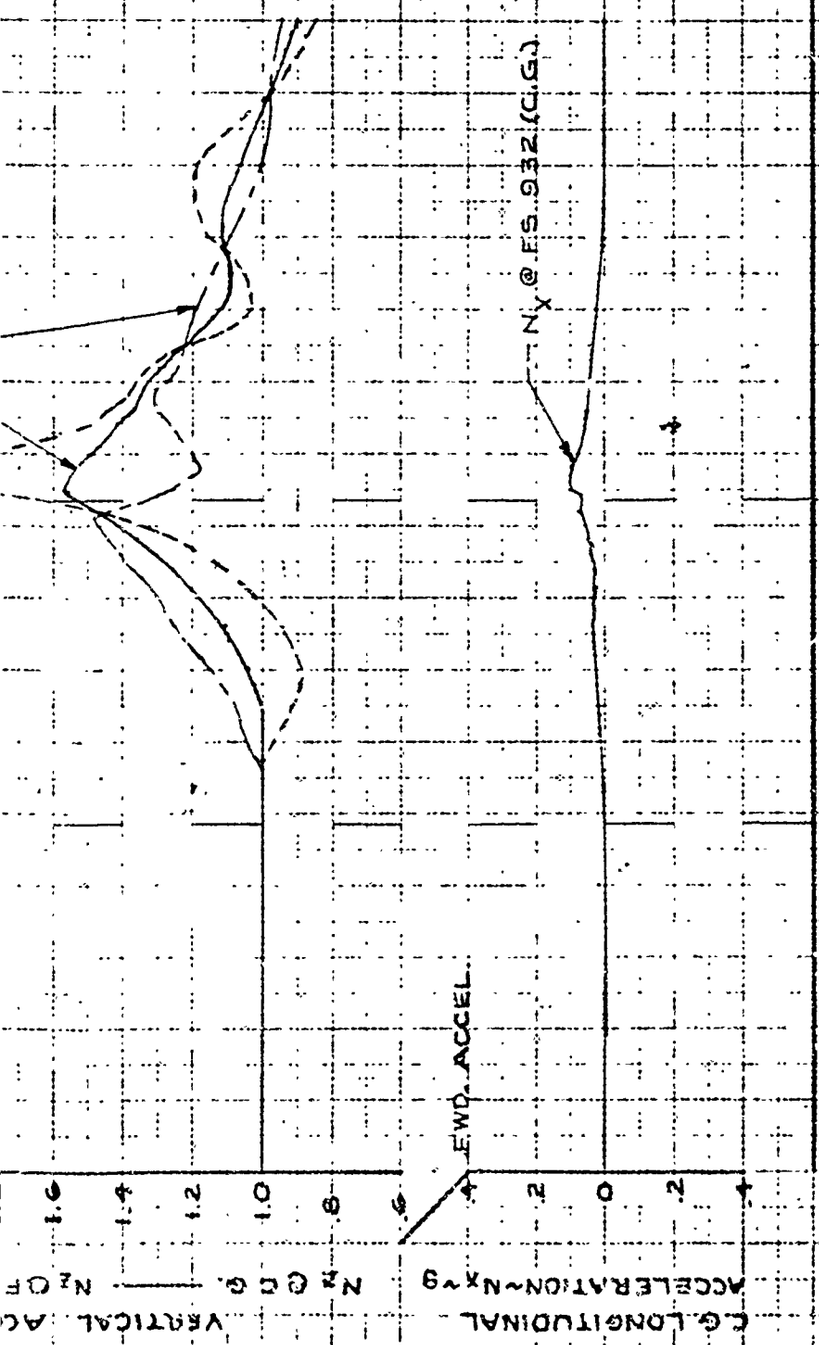
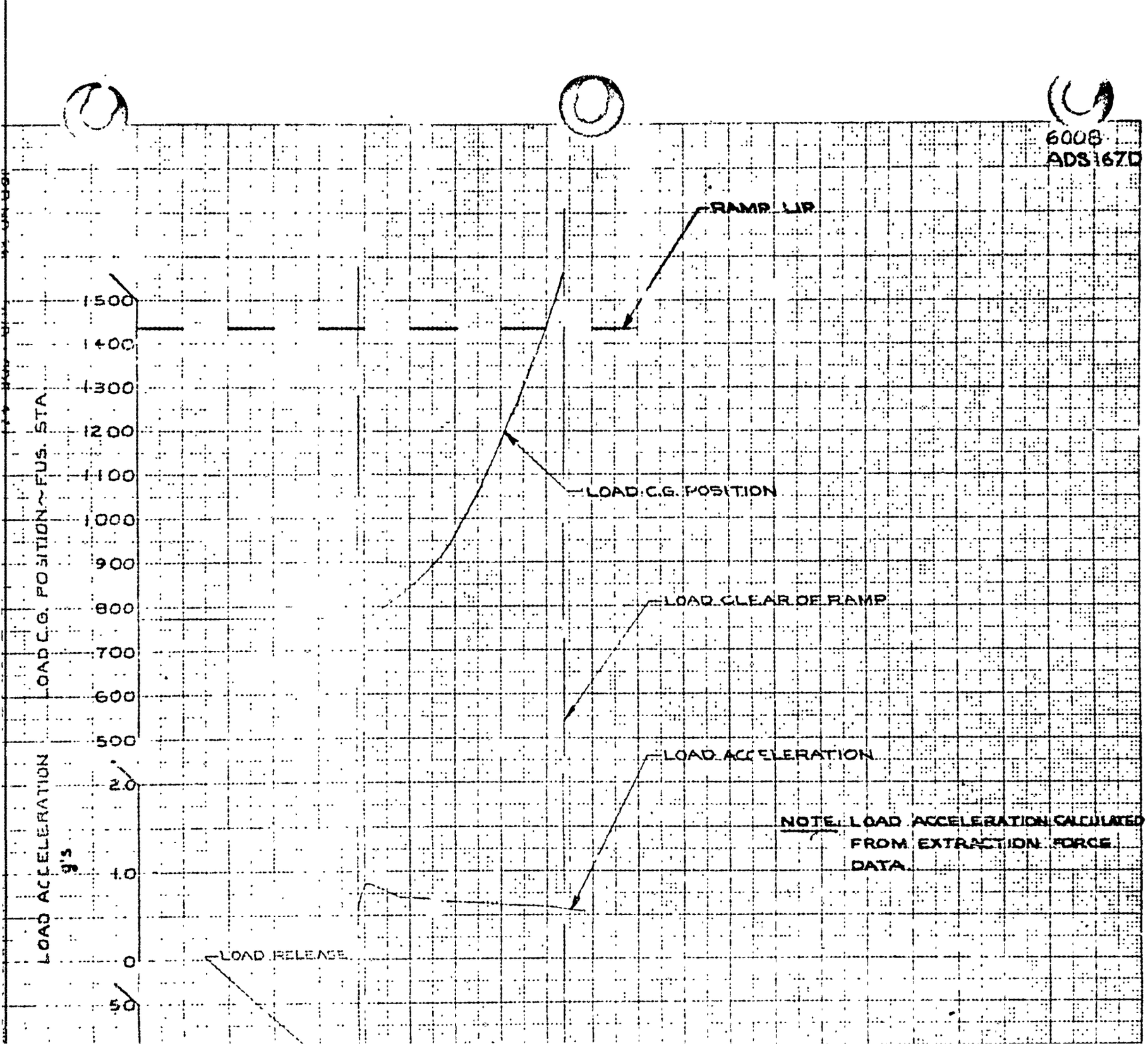


FIGURE D-35C

6008
ADS 167D



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

223

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 9-20-65

FLIGHT 184 DROP NO. 31

SHEET 4 OF 7

CARGO WT ~21,330 LB.

NOTE:
SEE FIGURE D-35A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

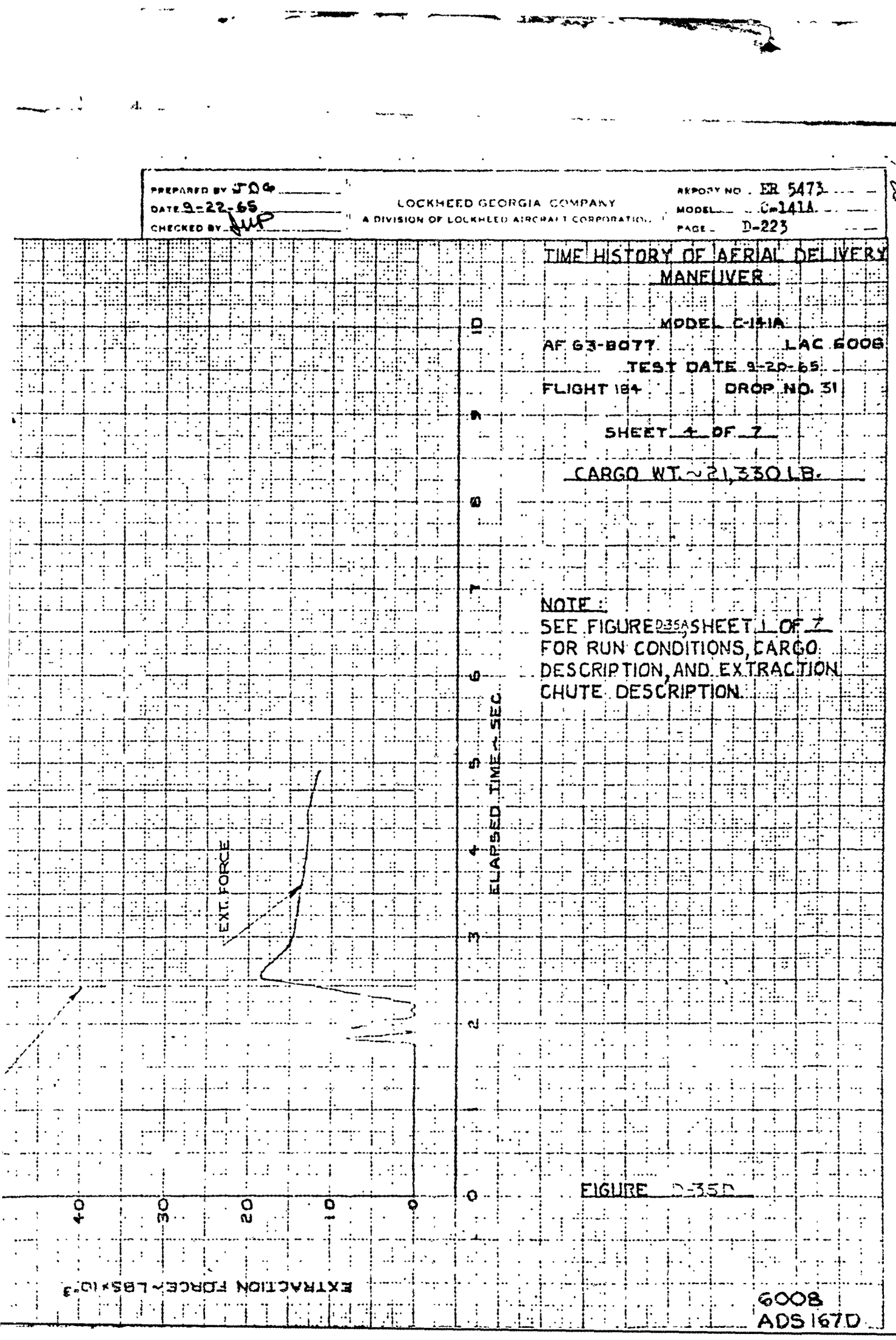


FIGURE D-35D

6008
ADS-16TE
LH RAMP ACTUATOR
RH RAMP ACTUATOR
LH SPIDER ARM
RH SPIDER ARM
LH VERTICAL LOAD
RH VERTICAL LOAD
SIDE LOAD
TENSION
TENSION
PULL DWN
PULL RIGHT
4 2 0 -2 -4
R.H. L.H.
LBS. X 10-3
RAMP ACTUATOR LOAD
30 20 10 0
R.H. L.H.
LBS X 10-3
ADS LINK AXIAL LOAD
15 10 5 0
R.H. L.H.
LBS. X 10-3
VERTICAL LOAD
2.0 1.0
X 10-3
LOADS
JOB NO. 66 SUB. CODE 4.2.1

PREPARED BY DTM
DATE 9-21-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-224

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 I.AC 6008

TEST DATE 9-20-65

FLIGHT 184 DROP NO. 3

SHEET 5 OF 7

CARGO WT. - 21,330 LBS

NOTE:
SEE FIGURE D35A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

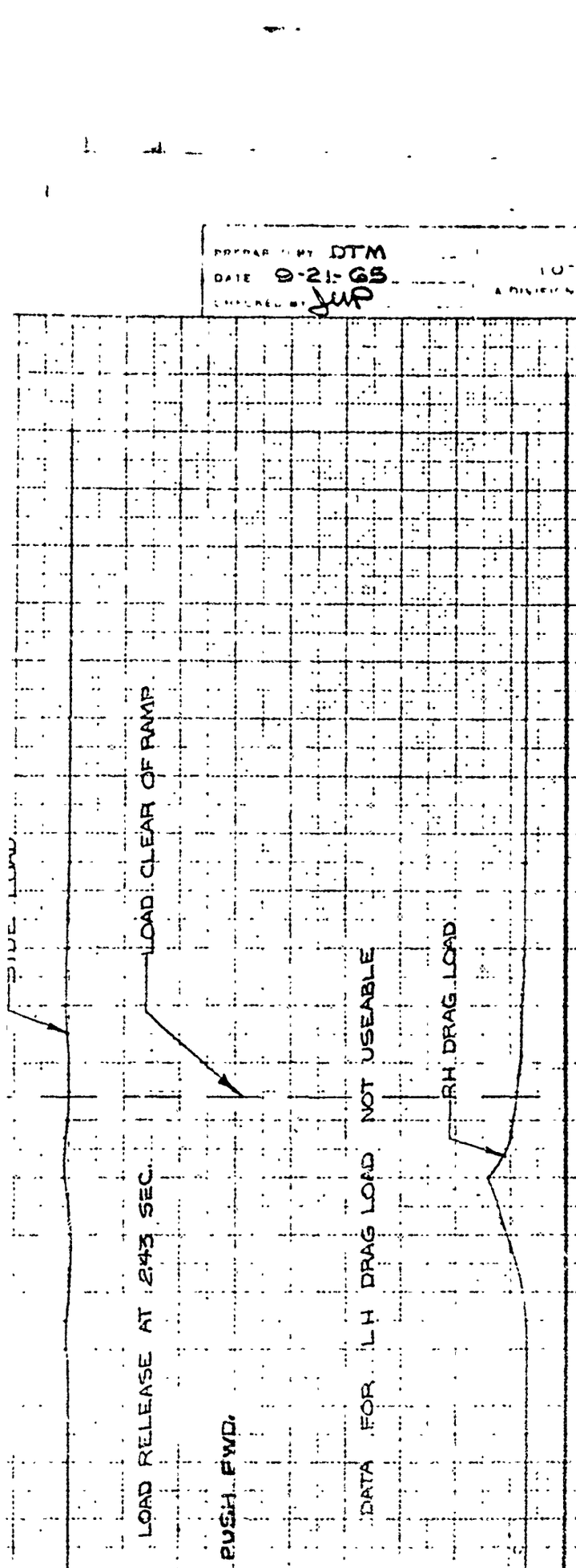


FIGURE D-35E

6008
ADS-167F
L.H. PETAL DOOR ACTUATOR
R.H. PETAL DOOR ACTUATOR
LOAD CLEAR OF RAMP
M@F.S. 1568
COMPRESSION
DOWNLOAD
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
RH
LH
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶
JOB NO. 56 SUB. CODE 4.2.1

PREPARED BY MBH
DATE 9-21-6
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-225

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 9-20-65

FLIGHT 189 DROP NO. 31

SHEET 6 OF 7

CARGO WT.~21,330 LBS

NOTE:
SEE FIGURE D-35A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

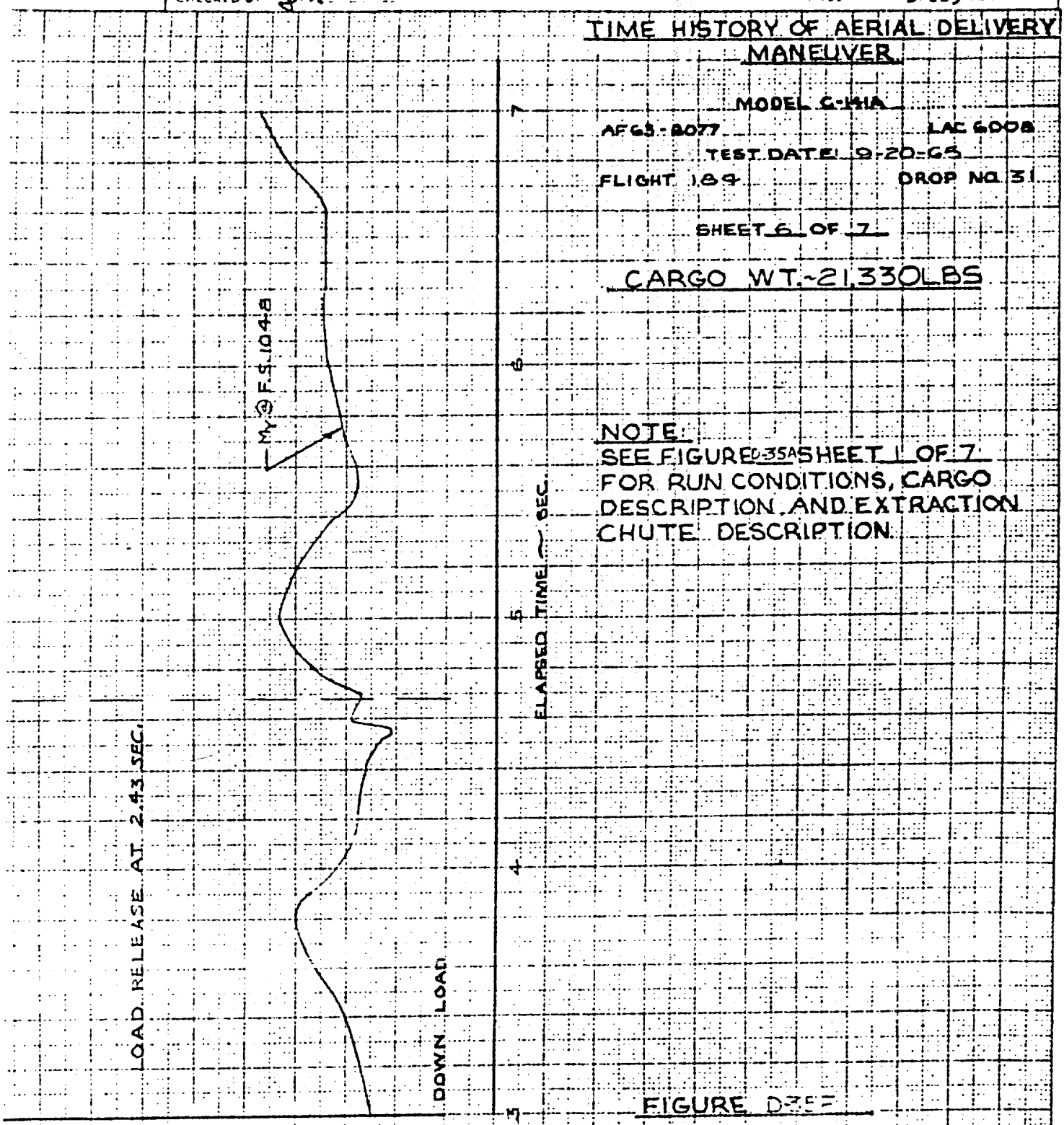


FIGURE D-35F

600 ADS 1676
HORIZONTAL STABILIZER NET LOADS
JOB NO. 8G SUB. CODE 4.2.1
SHEAR @ HBL 44L ~ S'_z
LBS x 10^{-3}
BENDING @ HBL 44L ~ M'_x
INCH - LBS x 10^{-6}
LOADS
M'_x
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
LOAD RELEASE AT 2.45 SEC
LOAD CLEAR OF RAMP
S'_z @ HBL 49L
M'_x @ HBL 49L
20 15 10 5 0 5 10 15 20
20 15 10 05 0 05 10 15 20
4
3

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

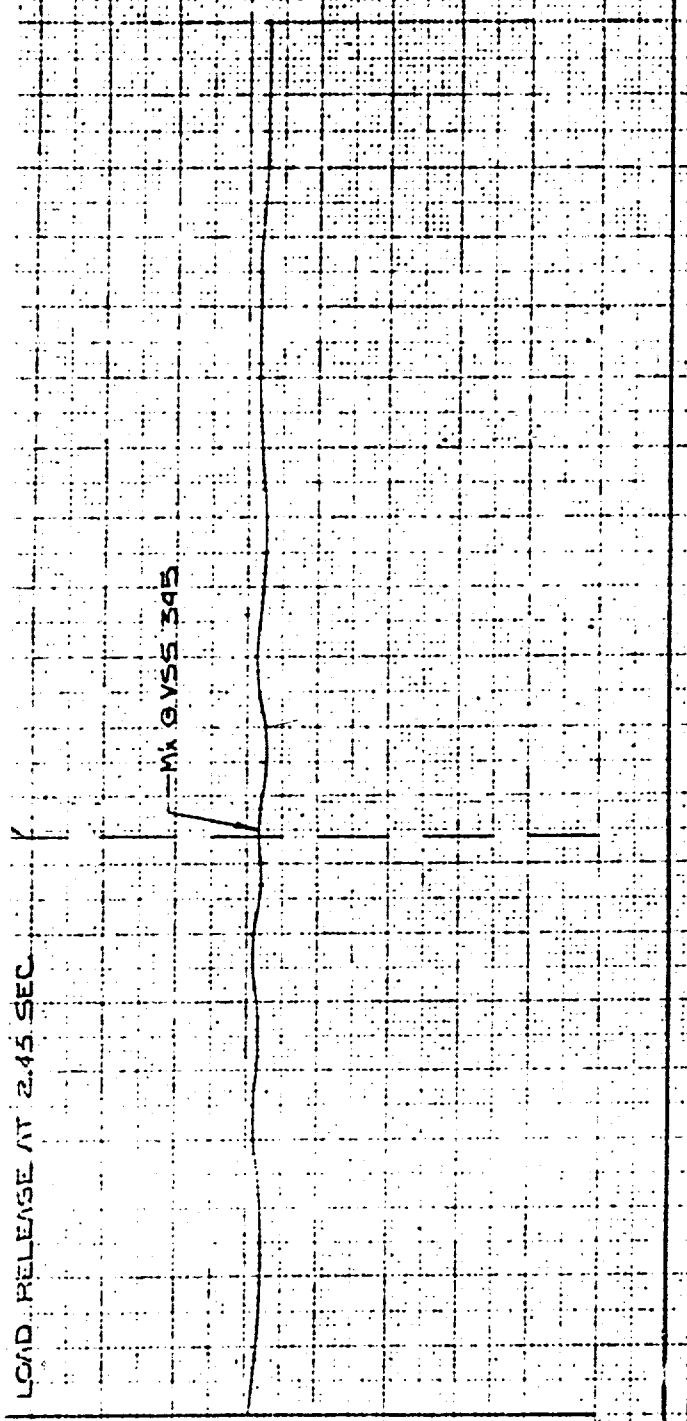
AF 65-8077 LAC 6008

TEST DATE: 9-20-65

FLIGHT 184 DROP NO. 31

SHEET 1 OF 1

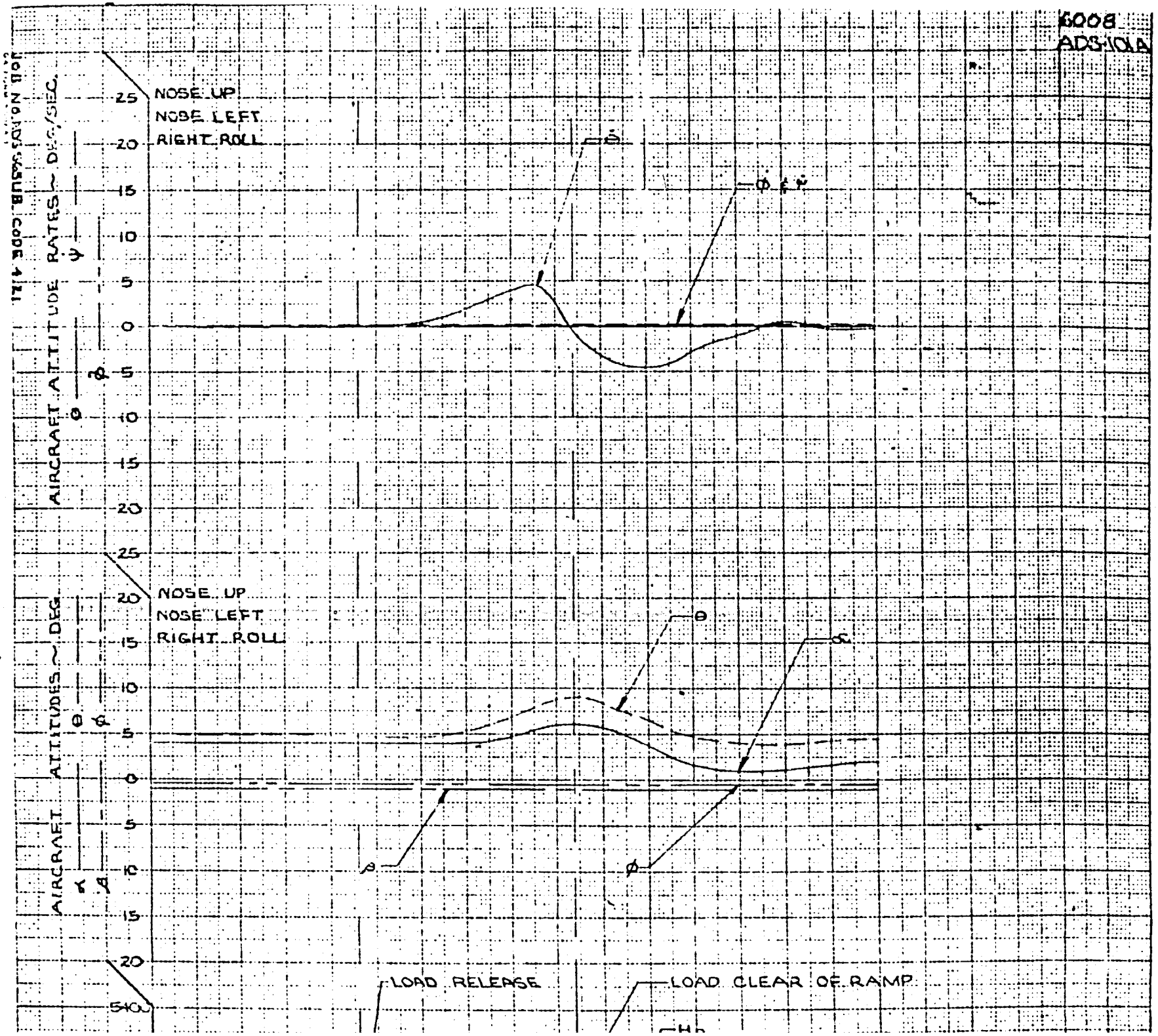
CARGO WT. ~ 21,330 LBS



NOTE:
SEE FIGURE D-35A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-35G

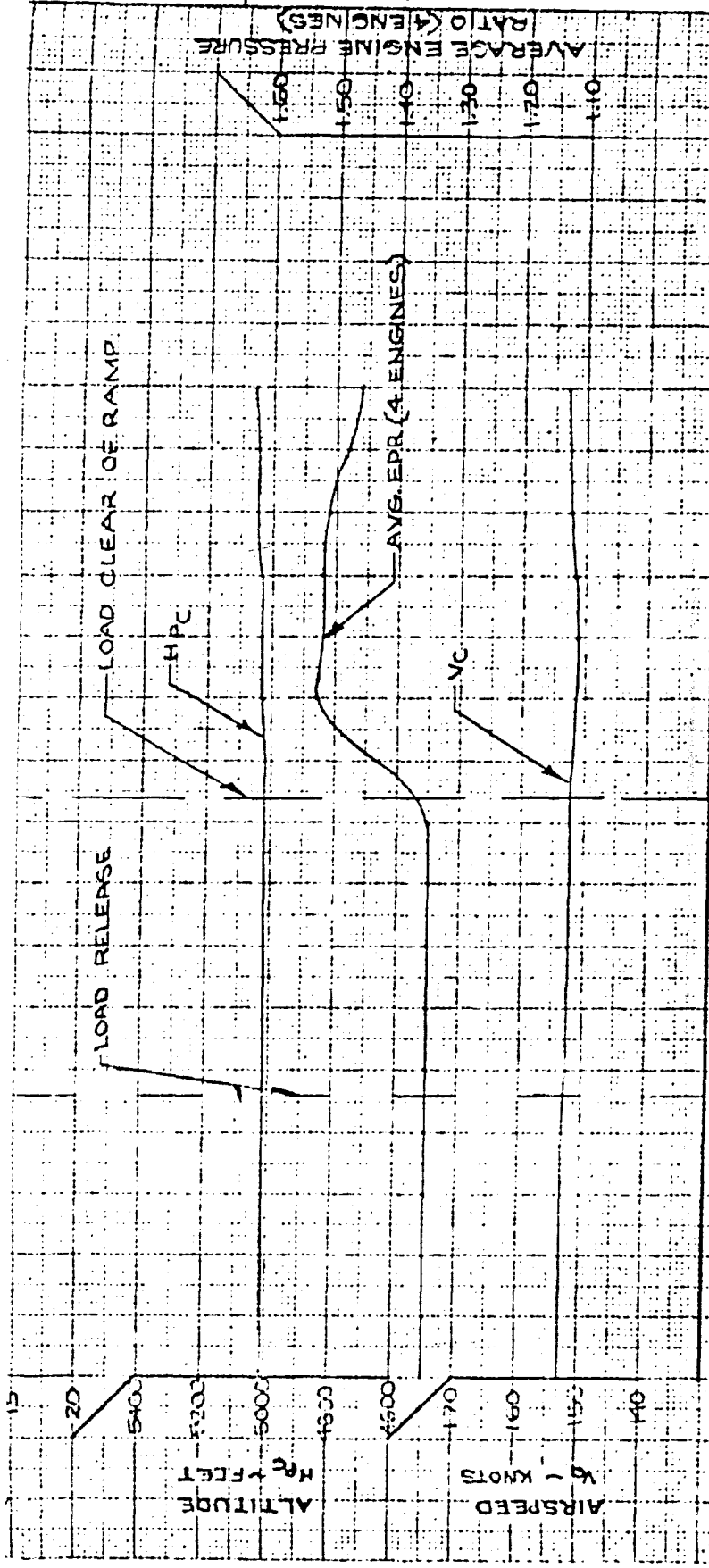
6008
ADS-10A


NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
ψ
θ
φ
25
20
15
10
5
0
5
10
15
20
25
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDES ~ DEG
θ
φ
ψ
LOAD RELEASE
LOAD CLEAR OF RAMP
540

PREPARED BY. TED
DATE 6-24-65
CHECKED BY. JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-227



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 600B

TEST DATE 6-22-65

FLIGHT ~ 144 DROP NO. ~ 32

SHEET 1 OF 1

CARGO WT. 35,335 LBS.

RUN CONDITIONS

1. G.W. ~ 276,200 LBS.
2. C.G. PRIOR TO DROP ~ 26.8 % MAC
3. C.G. AFTER DROP ~ 20.3 % MAC
4. FLAPS ~ 63 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.35 (4 ENGINES) ~ OSBERT
7. $\dot{H}$ ~ 2.2 DEG. (A/C NU.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 1090
   VERT. ~ WL 175

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28
3. RATED CHUTE FORCE/CARGO WT. ~ 1.37
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE D-36A

600B
ADS-101A
REVISED 12-13-65
MGH

6008
ADS-1018

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40

T.E. UP

20 15 10 5 0 5 10

F_y — F_a — F_e

CONTROL FORCES ~ LBS.

δ_{eL}

EFT AILERON POSITION ~ DEG

JOB NO. AS6-96 SUB. CODE 4.2.1

PREPARED BY TED.
DATE 6-23-68
CHECKED BY JAH

REPORT NO ER 5473
MODEL C-141A
PAGE D-228

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 6-22-68

FLIGHT 144 DROP NO 32

SHEET 2 OF 3

CARGO WT. 35,335 LBS.

NOTE:
SEE FIGURE D-36 SHEET 1 OF 3
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

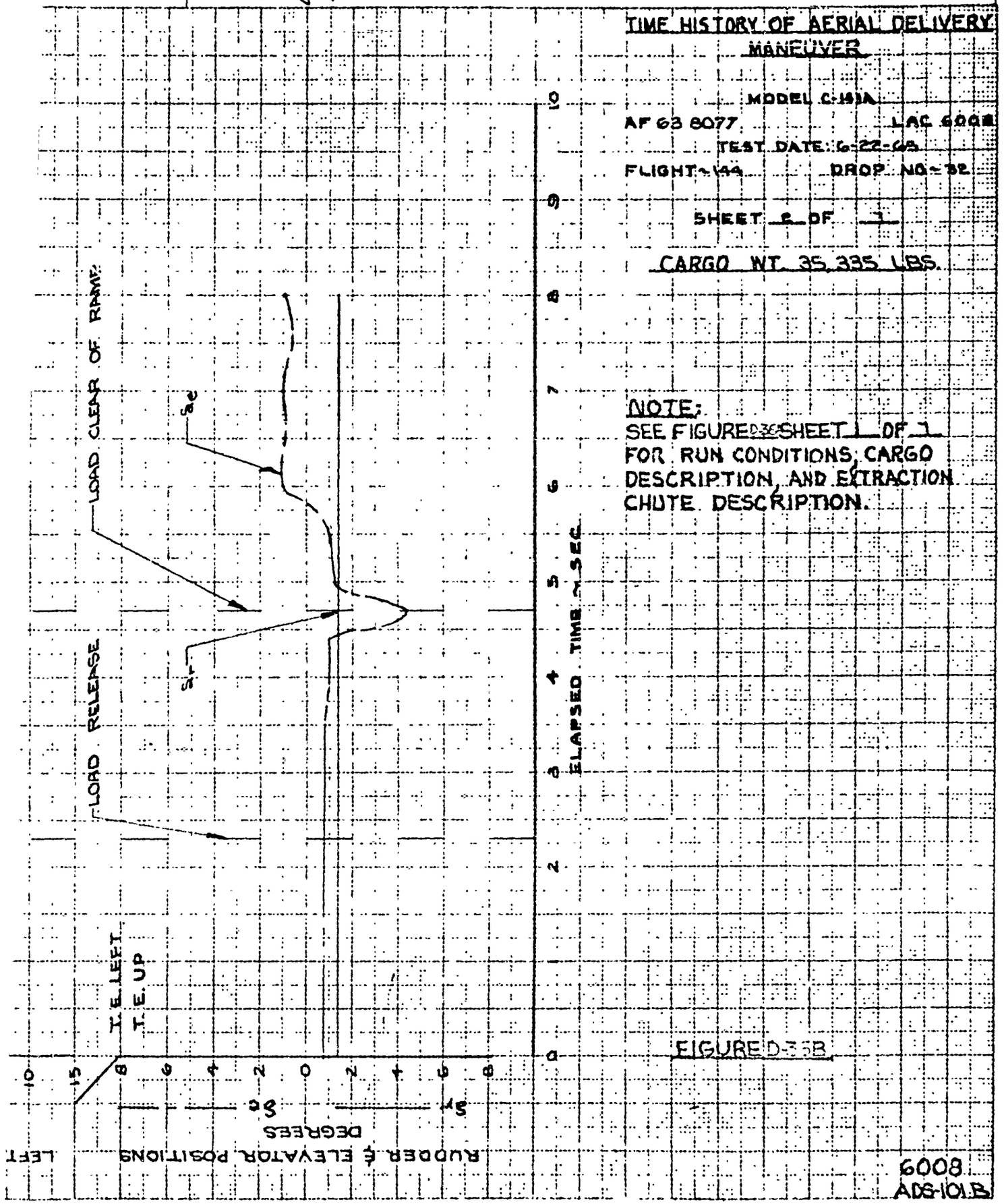


FIGURE D-36B

6008
AD3-10C

NOTE: $\ddot{\theta}$ CALCULATED FROM N_z DATA

JOB NO. AD3-56 SUB. CODE 4.2.1

PREPARED BY TEB
DATE 6-23-65
CHECKED BY DWP

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-229

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 1 AC 6008

TEST DATE: 6-22-65

FLIGHT-144 DROP NO-32

SHEET 2 OF 7

CARGO WT 39,335 LBS

NOTE:
SEE FIGURE D-36 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

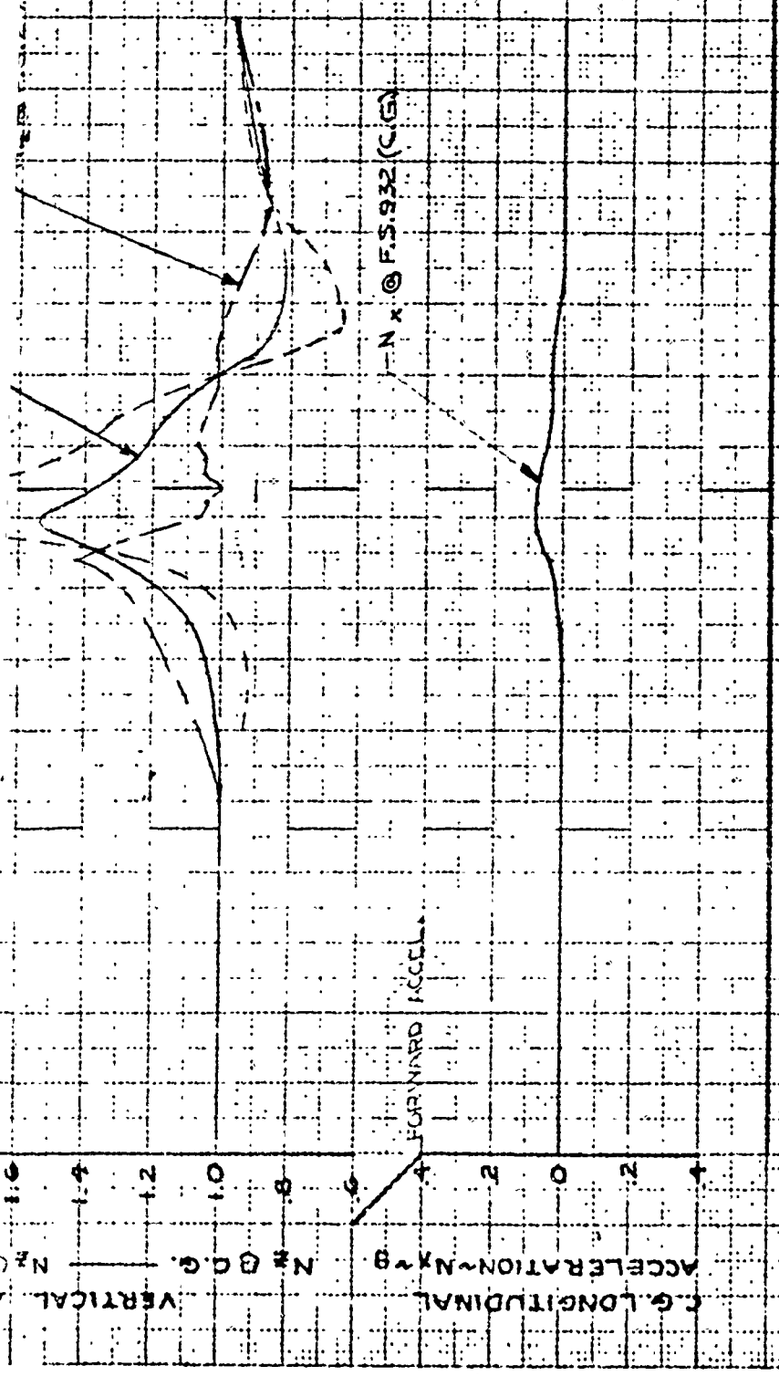


FIGURE D-5 C

6008
ADS-101 C

6008
ADD'L LOAD
RAMP LB
LOAD C.G. POSITION
LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA, AND LOAD C.G. POSITION DATA.
LOAD ACCELERATION
LOAD C.G. POSITION ~ FUS. STA
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
0
g's
JOB NO ANS-56 SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-22-65

FLIGHT ~ 144 DROP NO. ~ 32

SHEET 4 OF 7

CARGO WT. 35,335 LBS

NOTE:
SEE FIGURE D-36A, SHEET 1 OF 1 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

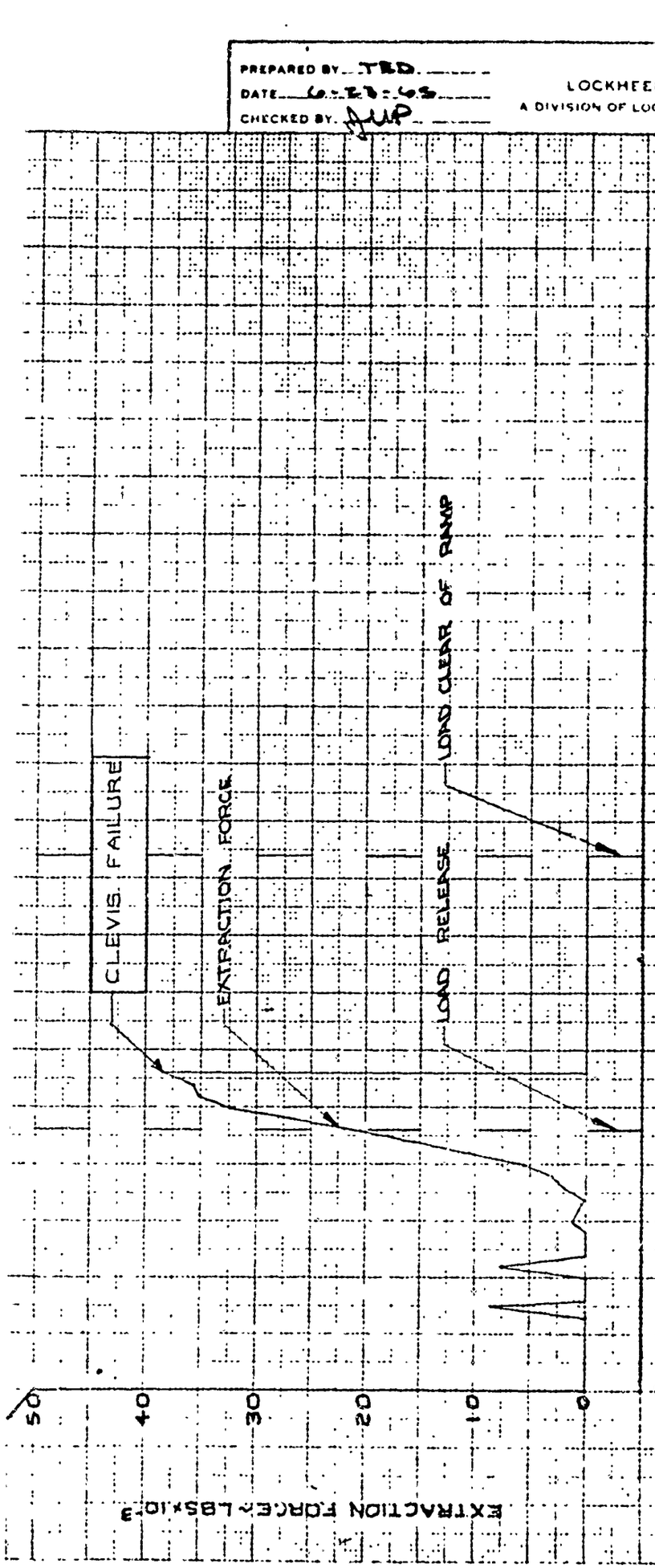


FIGURE D-36D

6009
ADS SIDE
RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H.
L.H.
4
2
0
-2
-4
TENSION
R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H.
L.H.
30
20
10
0
TENSION
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
DOWN LOAD
VERTICAL LOAD
LBS X 10⁻³
R.H.
L.H.
15
10
5
0
R.H. VERT. LOAD
L.H. VERT. LOAD ~ N/A
ADS
10⁻³
2.0
1.0
0
PULL RIGHT
SIDE LOAD
JOB NO. ADS-5G SUB CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-22-65

FLIGHT ~ 144 DROP NO. 3E

SHEET 5 OF 7

CARGO WT. 35,335 LBS.

NOTE:
SEE FIGURE D-36A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

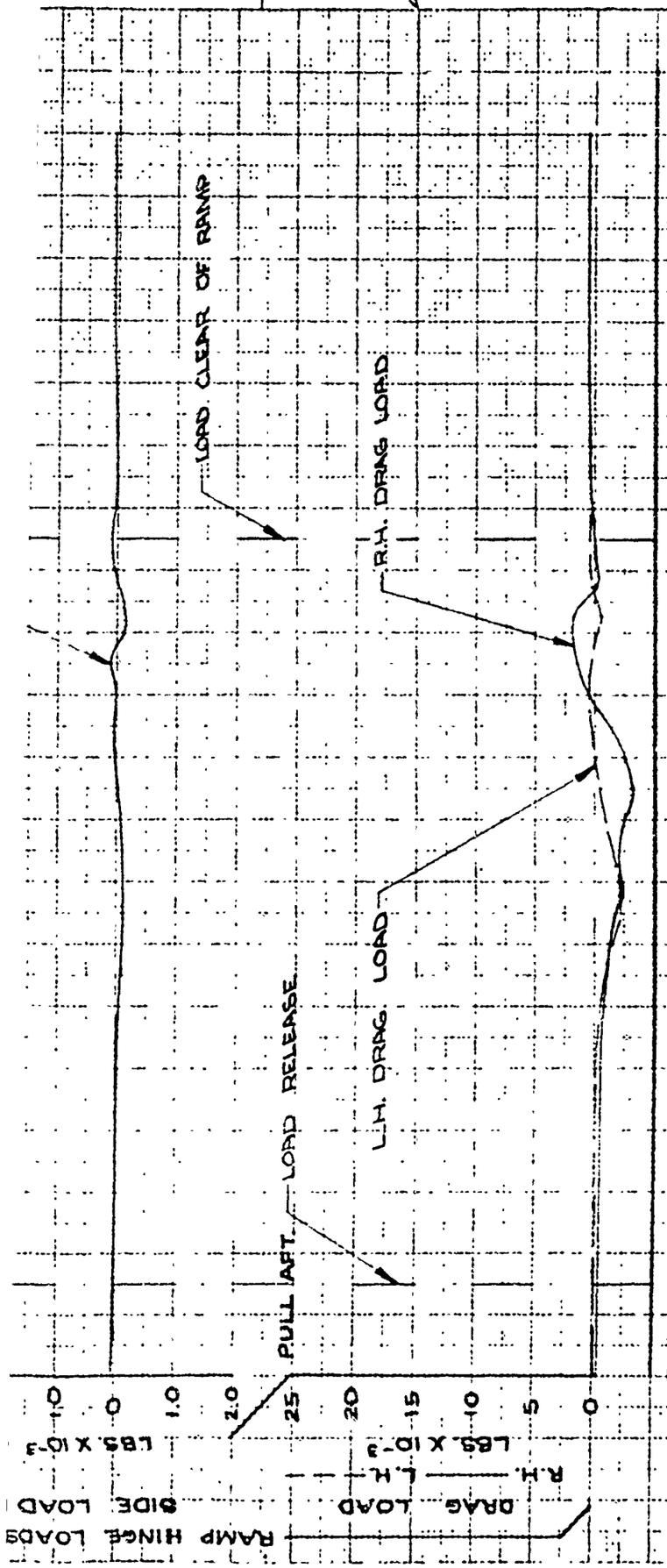


FIGURE D-35E

6008
ADS-10E
My @ F.S. 1568
My @ FS. 1048
R.H. PETAL DOOR ACTUATOR LOAD
L.H. PETAL DOOR ACTUATOR LOAD
COMPRESSION
DOWN LOAD
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
RH
LH
JOB NO. ADS-56 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 65-8077 LAC 6008

TEST DATE 6-22-66

FLIGHT-144 DROP NO-32

SHEET 6 OF 7

CARGO WT. 35,335 LB

NOTE:
SEE FIGURE D-36A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

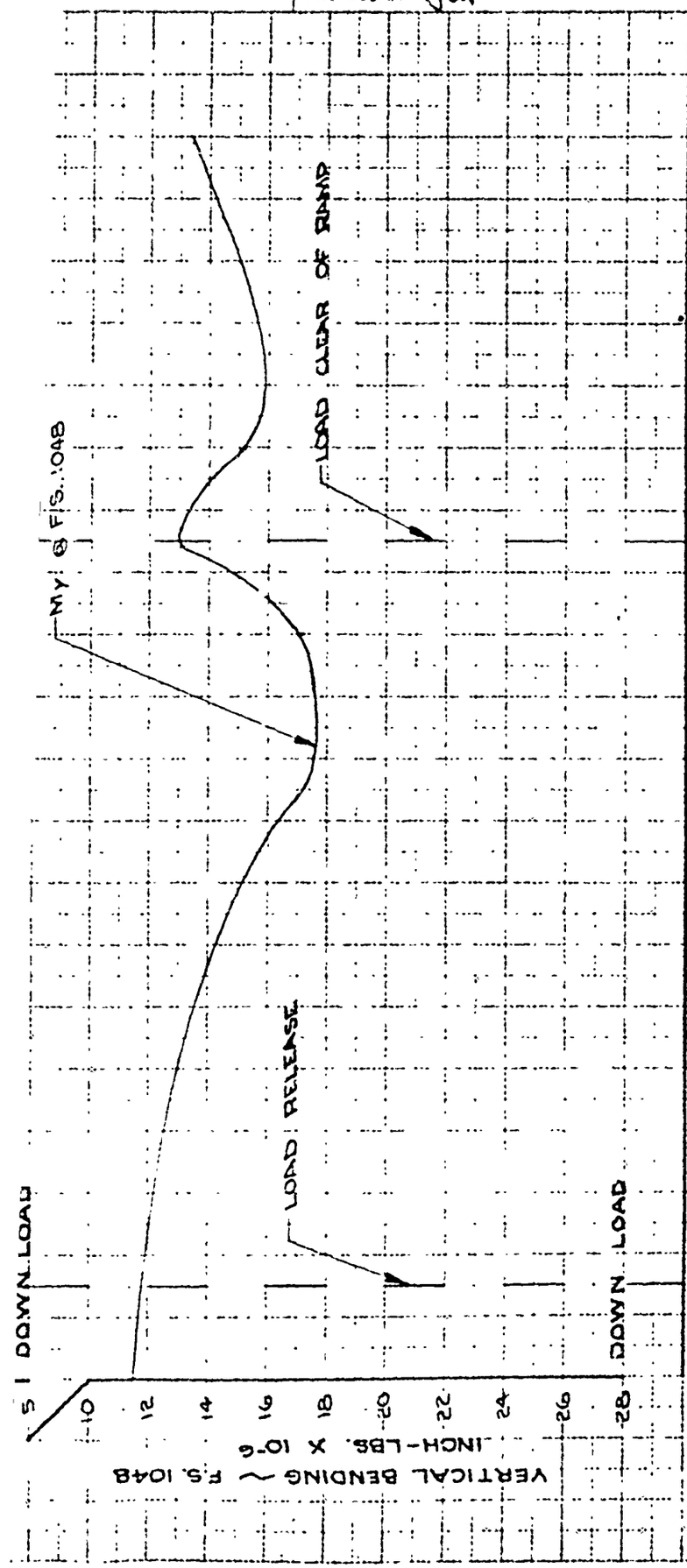


FIGURE D-36F

GOOD ADS-IOIG
HORIZONTAL STABILIZER NET LOADS
JOB NO. ADS-5&6 SUB. CODE 4.2.1
BENDING @ HBL 44L ~ M'x
INCH - LBS x 10⁻⁶
SHEAR @ HBL 44L ~ S'z
LBS x 10⁻³
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
LOAD RELEASE
LOAD CLEAR OF RAMP
M'x @ HBL 44L
S'z @ HBL 44L
M'x @ VSS 34S

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-22-65

FLIGHT ~ 44 DROP NO. ~ 32

SHEET 1 OF 1

CARGO WT. 35,335 LBS

NOTE:
SEE FIGURE D-36A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

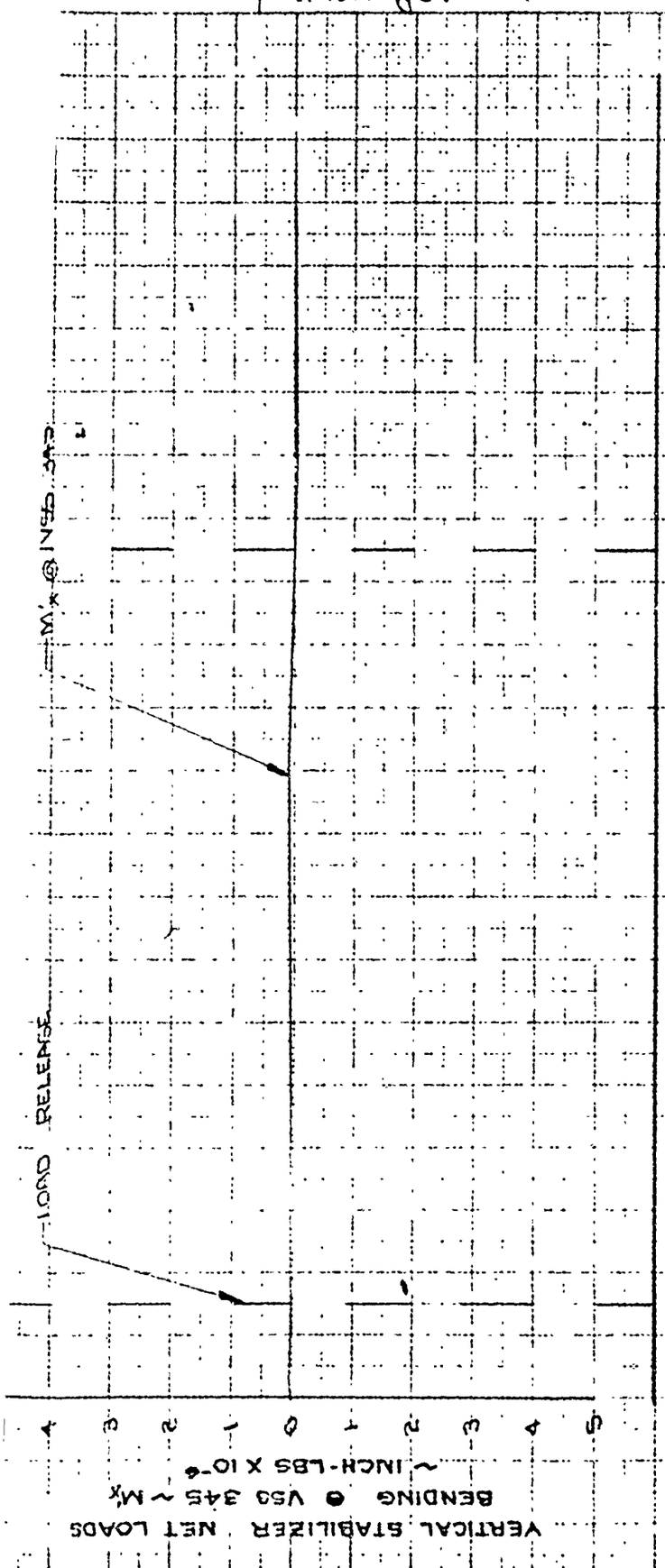
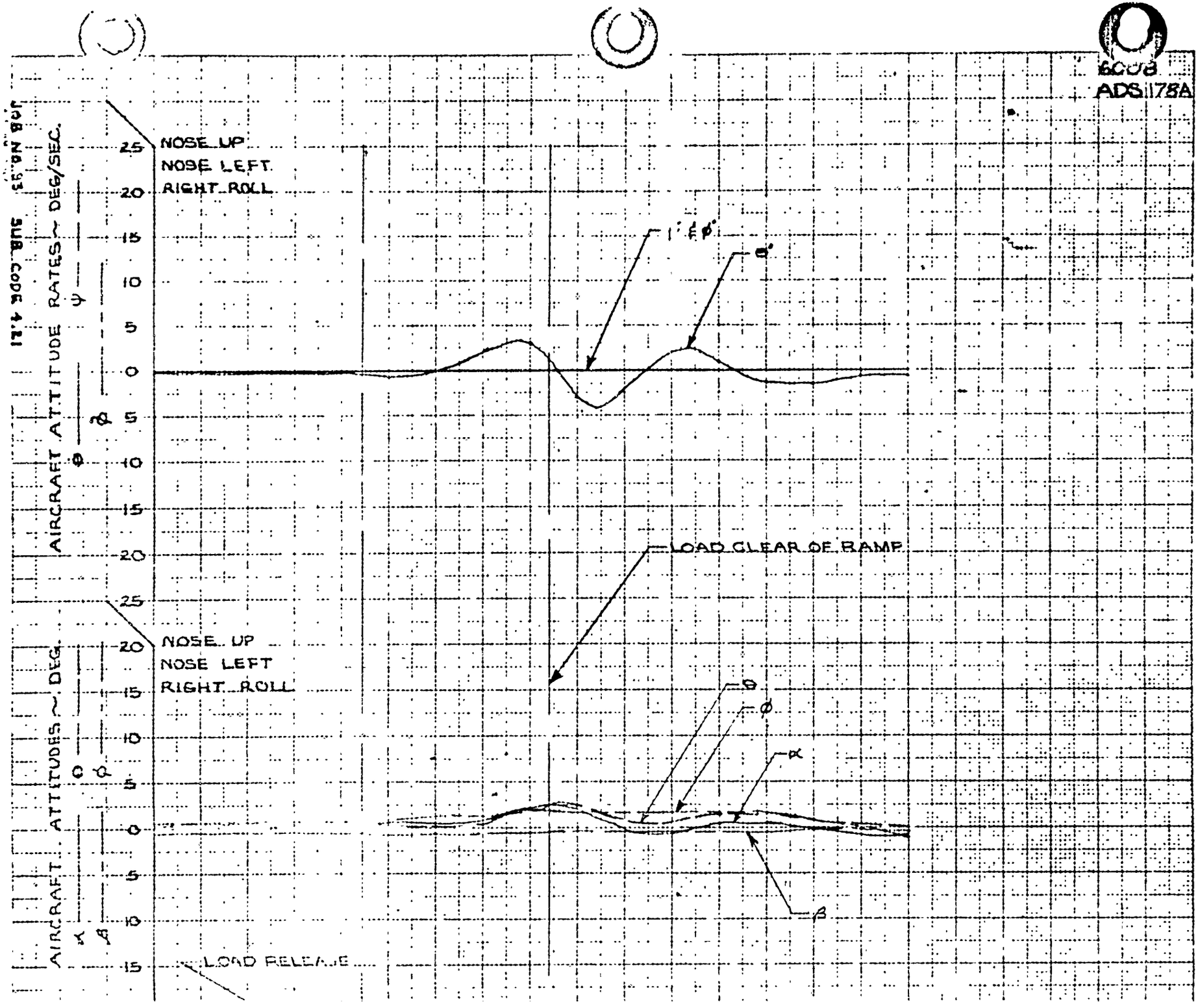


FIGURE D-36G

JOB NO. 33 SUB CODE 12.4.21



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 600B

TEST DATE 10-4-65

FLIGHT 190 DROP NO. 33

SHEET 1 OF 7

CARGO WT. 24,760 LB.

RUN CONDITIONS

1. G.W. ~252,200 LB
2. C.G. PRIOR TO DROP ~25.6% MAC
3. C.G. AFTER DROP ~31.7% MAC
4. FLAPS ~39%
5. GEAR ~UP
6. AVG. EPR ~1.59
7. Δ_H ~1.15 (A/C NOSE UP)

CARGO DESCRIPTION

1. TYPE CARRIER ~PLATFORM
2. LENGTH ~288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~FS 784
   VERT. ~WL 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ONE
2. CHUTE SIZE ~24 FT.
3. RATED CHUTE FORCE/CARGO WT. 1.3
4. EXTRACTION LINE LENGTH ~60 FT.

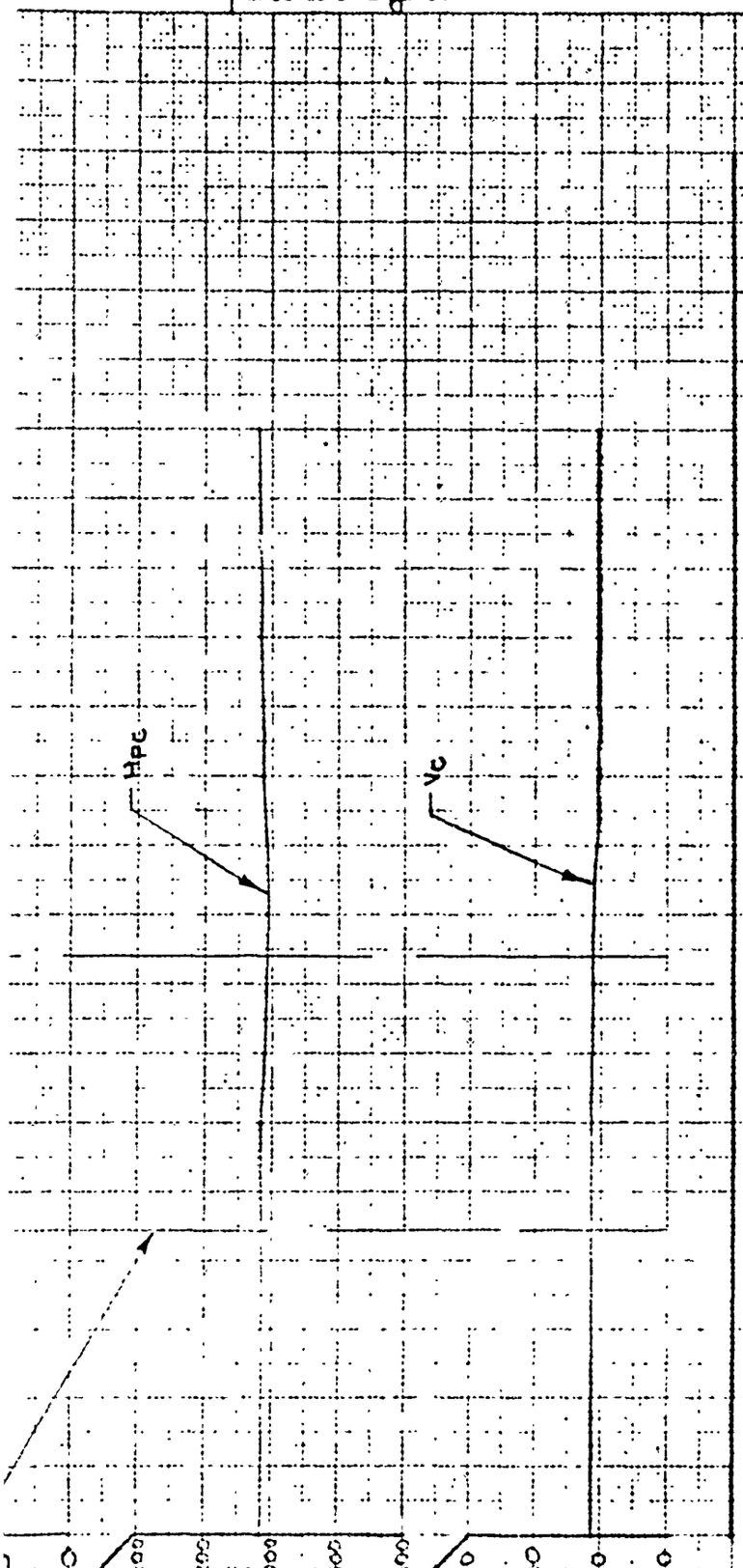


FIGURE D-37A

ADS 128
Fa
Fr
Fe
δab
LOAD RELEASE
T.E. UP
RIGHT ROLL
PUSH LEFT
PULL
70 60 50 40 30 20 10 0 10 20 30 40
25 20 15 10 5 0 5 10
Fr Fa Fe
CONTROL FORCES ~ LBS.
LEFT AILERON POSITION ~ DEG
JOB NO. 93
SUB. CODE 4.21

PREPARED BY JDG
DATE 10-5-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

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MODEL C-141A
PAGE D-235

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 10-4-65

FLIGHT 190 DROP NO 33

SHEET 2 OF 7

CARGO WT 24,760

NOTE:
SEE FIGURE D-32 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

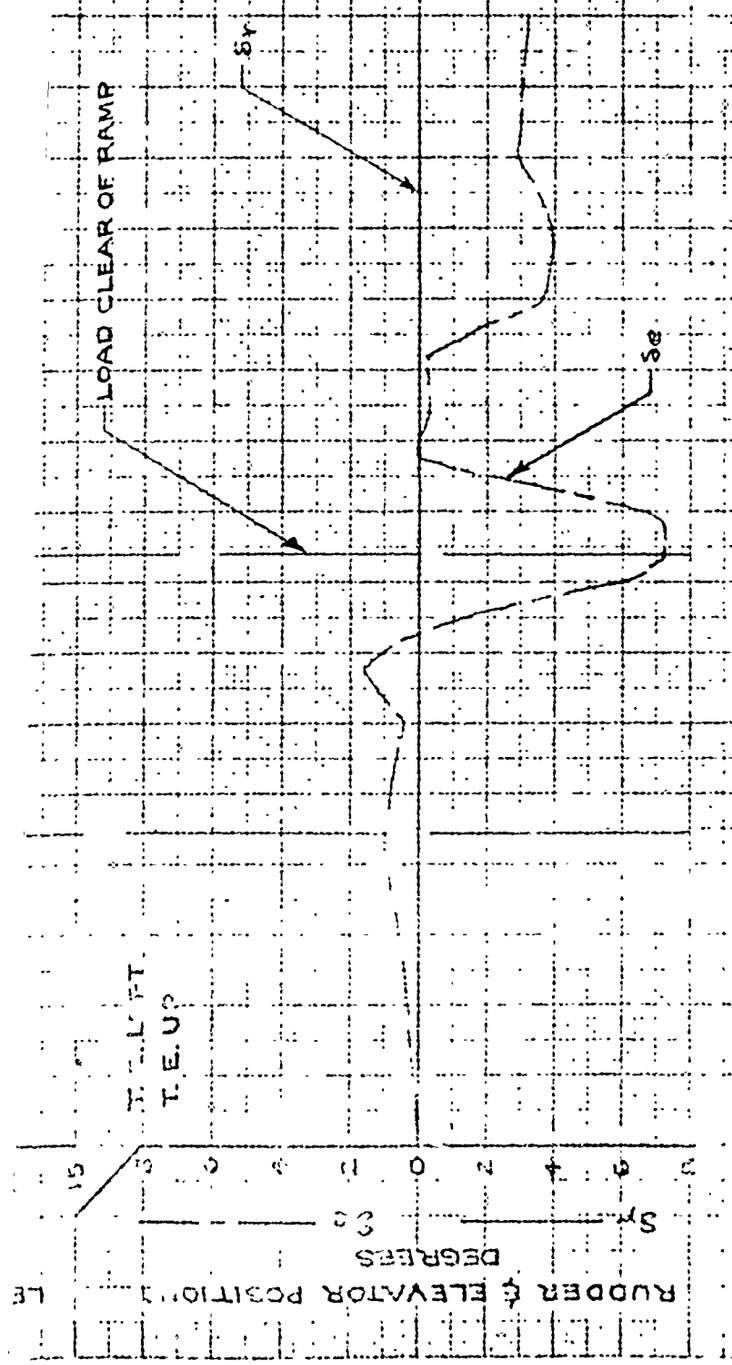


FIGURE D-37B

6008
ADB 178C
NOTE: θ̈ CALCULATED FROM Nz DATA
θ̈
LOAD CLEAR OF RAMP
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
θ̈
DEG/SEC²
PITCHING ACCELERATION
277 — — — Nz @ FS 1637 — — —
ELERATIONS ~ g
JOB NO 63 SUB. CODE 4.2.1.

PREPARED BY DTM
DATE 10-5-65
CHECKED BY JWR

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-236

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFG3-8077 LAC 6008

TEST DATE: 10-4-65

FLIGHT 190 DROP NO. 33

SHEET 3 OF 7

CARGO WT. 24760 LBS.

NOTE:
SEE FIGURE D37A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

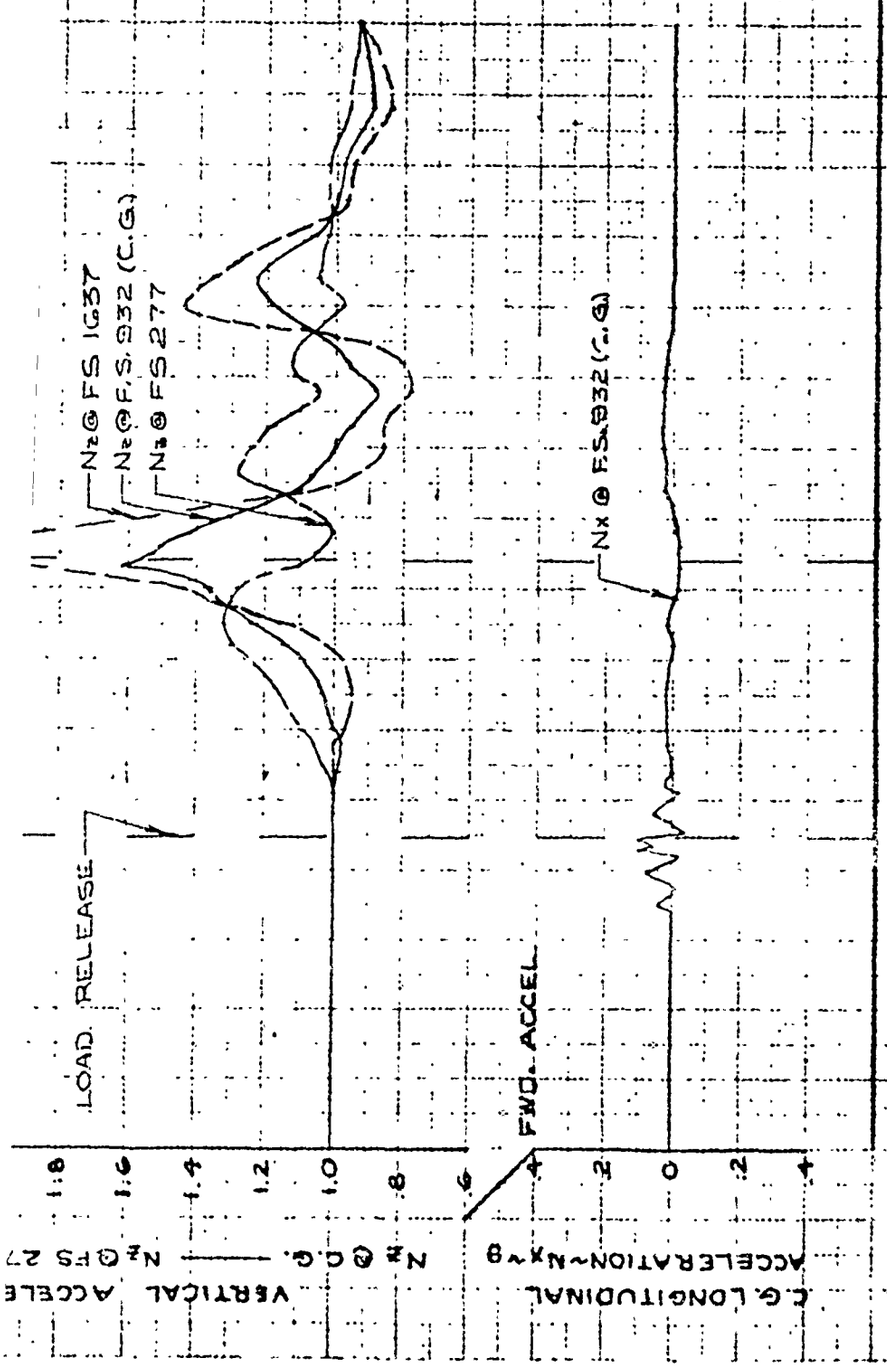


FIGURE D-37C

6008
ADS 170C

6008
ADS1780
RAMP LIP
LOAD C.G. POSITION
LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
20
+0
g's
AD ACCELERATION
LOAD C.G. POSITION ~ FUS. STA.
JOB NO. 93
SUB CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 10-4-65

FLIGHT 190 DROP NO. 33

SHEET 4 OF 7

CARGO WT. 24,760 LB.

NOTE:
SEE FIGURE D-37A, SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

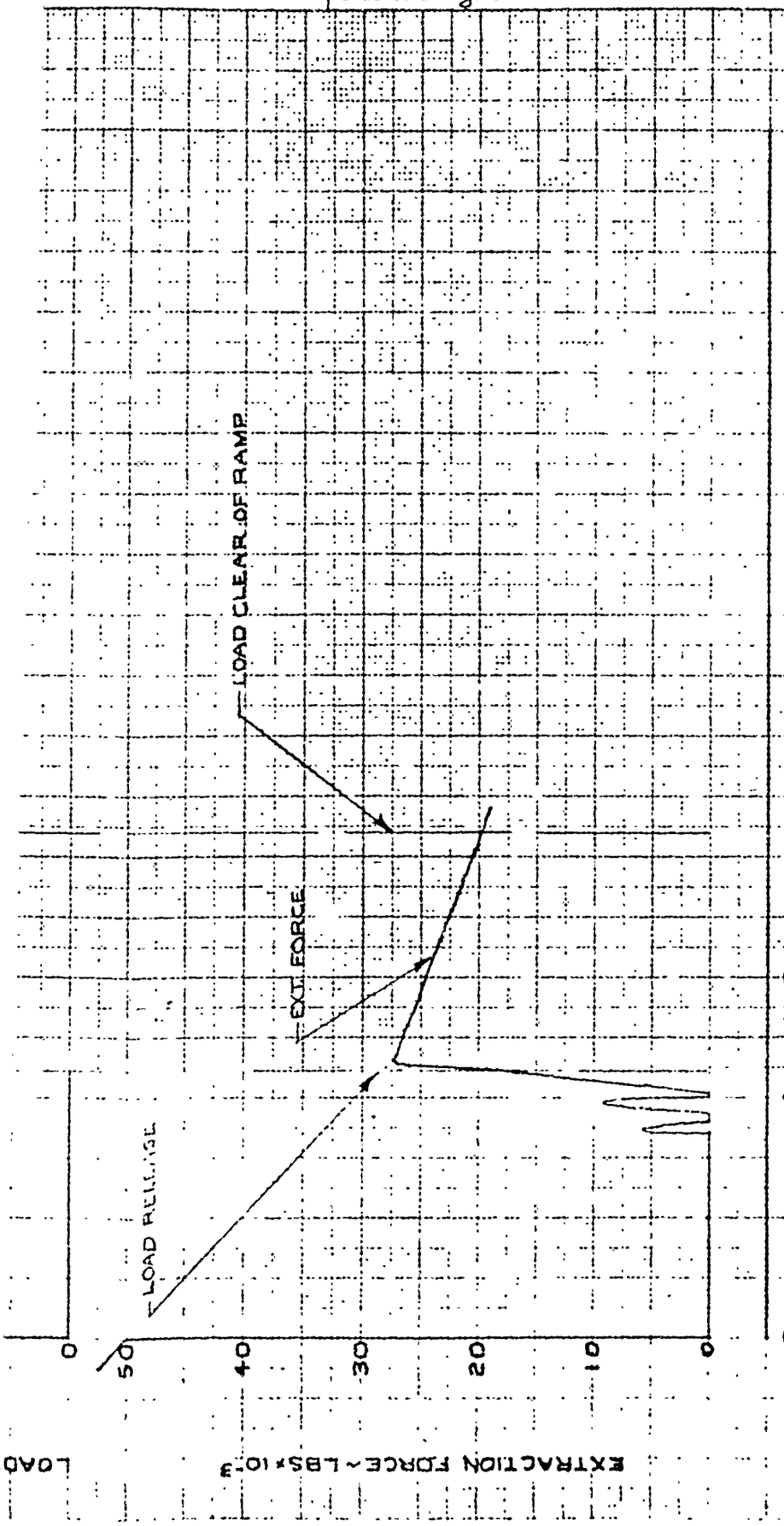


FIGURE D-37D

6008
ADS-179E
R.H. RAMP ACTUATOR
L.H. RAMP ACTUATOR
NOT AVAILABLE
LOAD CLEAR OF RAMP
L.H. SPIDER ARM
R.H. SPIDER ARM
R.H. VERTICAL LOAD
L.H. VERTICAL LOAD
LOAD RELEASE
TENSION
TENSION
PULLDOWN
RAMP ACTUATOR LOAD
LBS. X 10-3
4 2 0 -2 -4
R.H. L.H.
ADS LINK AXIAL LOAD
LBS X 10-3
30 20 10 0
R.H. L.H.
VERTICAL LOAD
LBS X 10-3
15 10 5 0
R.H. L.H.
JOB NO. 93 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

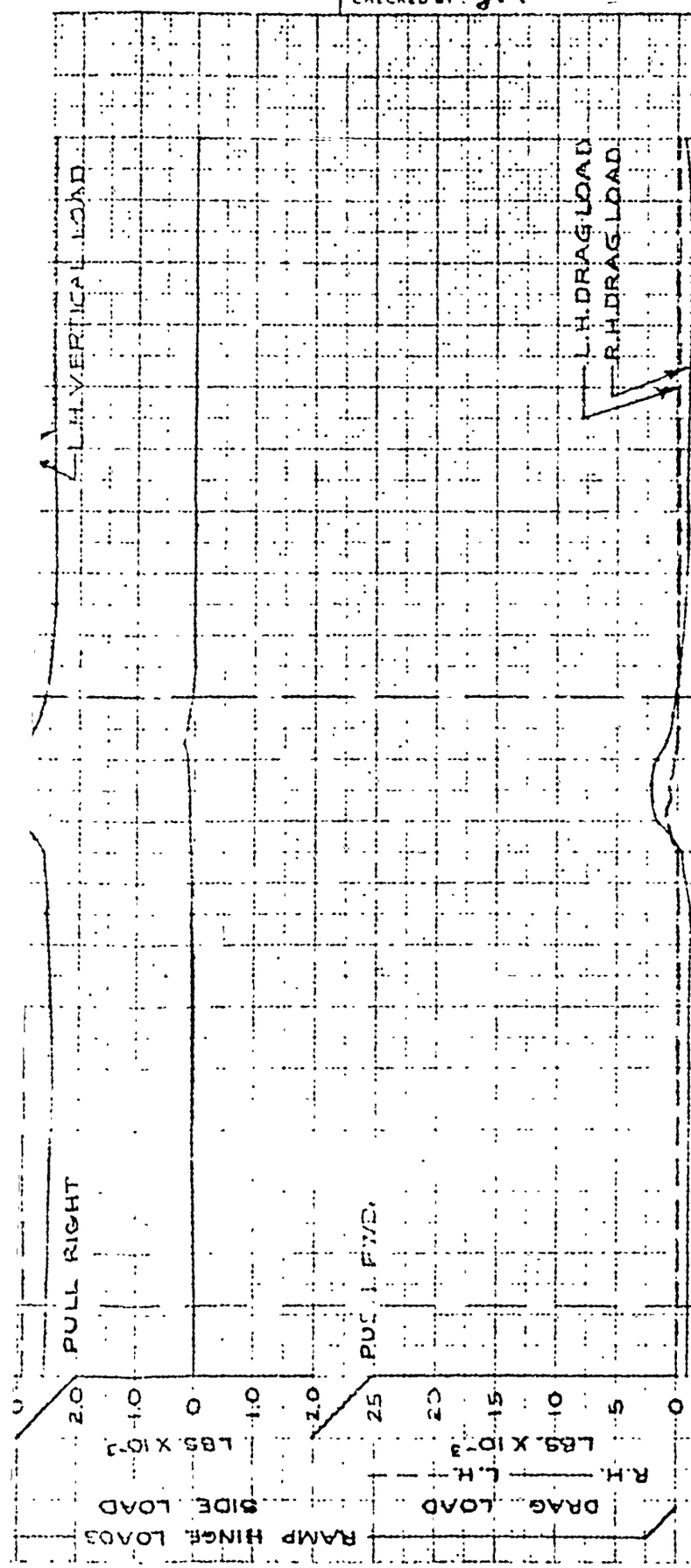
AF 63-8077 LAC 6008

TEST DATE: 10-4-65

FLIGHT 190 DROP NO. 33

SHEET 5 OF 7

CARGO WT 24,760 LBS.



NOTE:
SEE FIGURE D-37A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-37E

6008
ADS 178F
R.H. PETAL DOOR ACTUATOR
L.H PETAL DOOR ACTUATOR
MY@FS 1566
COMPRESSION
DOWN LOAD
VERTICAL BENDING ~ FS 1566
INCH-LBS X 10⁻⁶
RH
LH
LOADS ~ LBS X 10⁻³
PETAL DOOR ACTUATOR ROD
JOB NO. 93 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 10-4-65

FLIGHT 190 DROP NO 33

SHEET 6 OF 7

CARGO WT ~ 24760 LBS

NOTE:
SEE FIGURE D-37A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

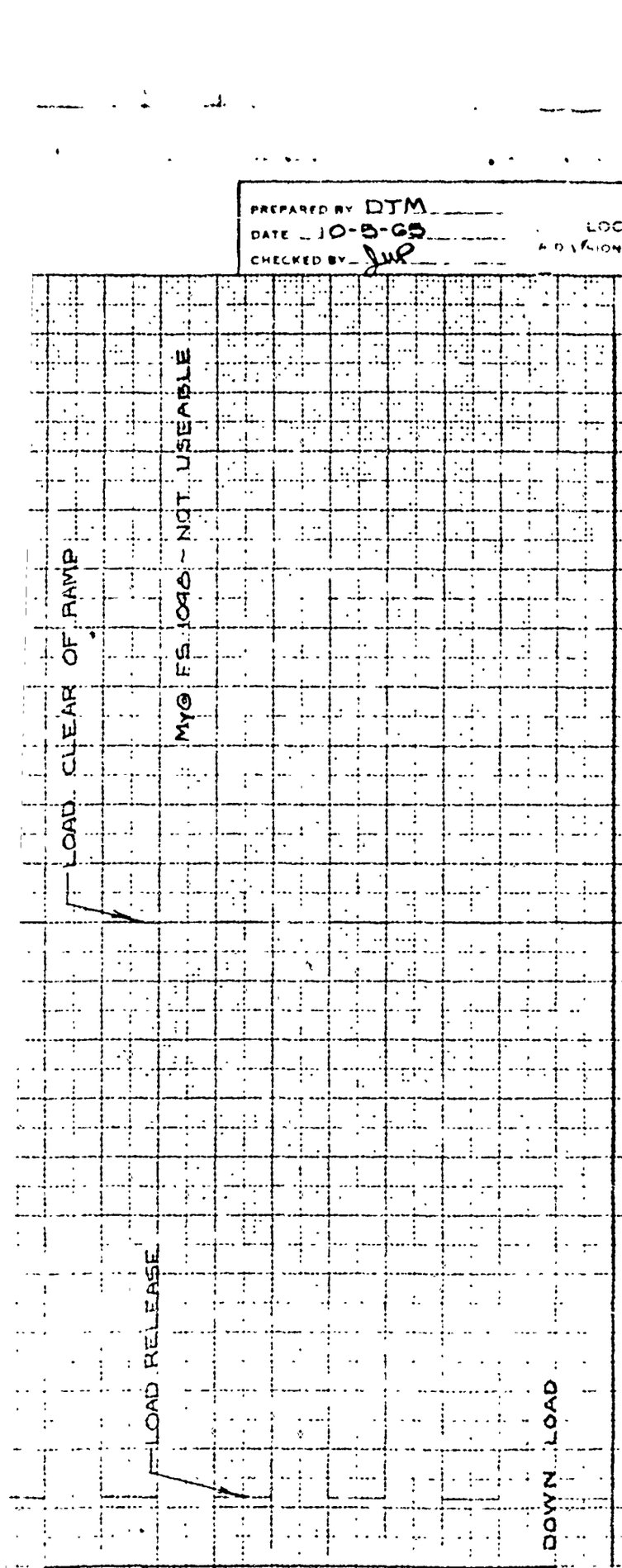


FIGURE D-37F

JOB NO. 92 SUB. CODE 4.2.1
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'x
INCH - LBS x 10⁻⁶
SHEAR @ HBL 44L ~ S'z
LBS x 10⁻³
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
M'x @ HBL 44L
S'z @ HBL 44L
OAT CLEAR OF RAMP
ADS 1786
6008

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 10-4-65

FLIGHT 180 DROP NO. 33

SHEET 1 OF 1

CARGO WT.~24,760 LBS

NOTE:
SEE FIGURE D-37A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

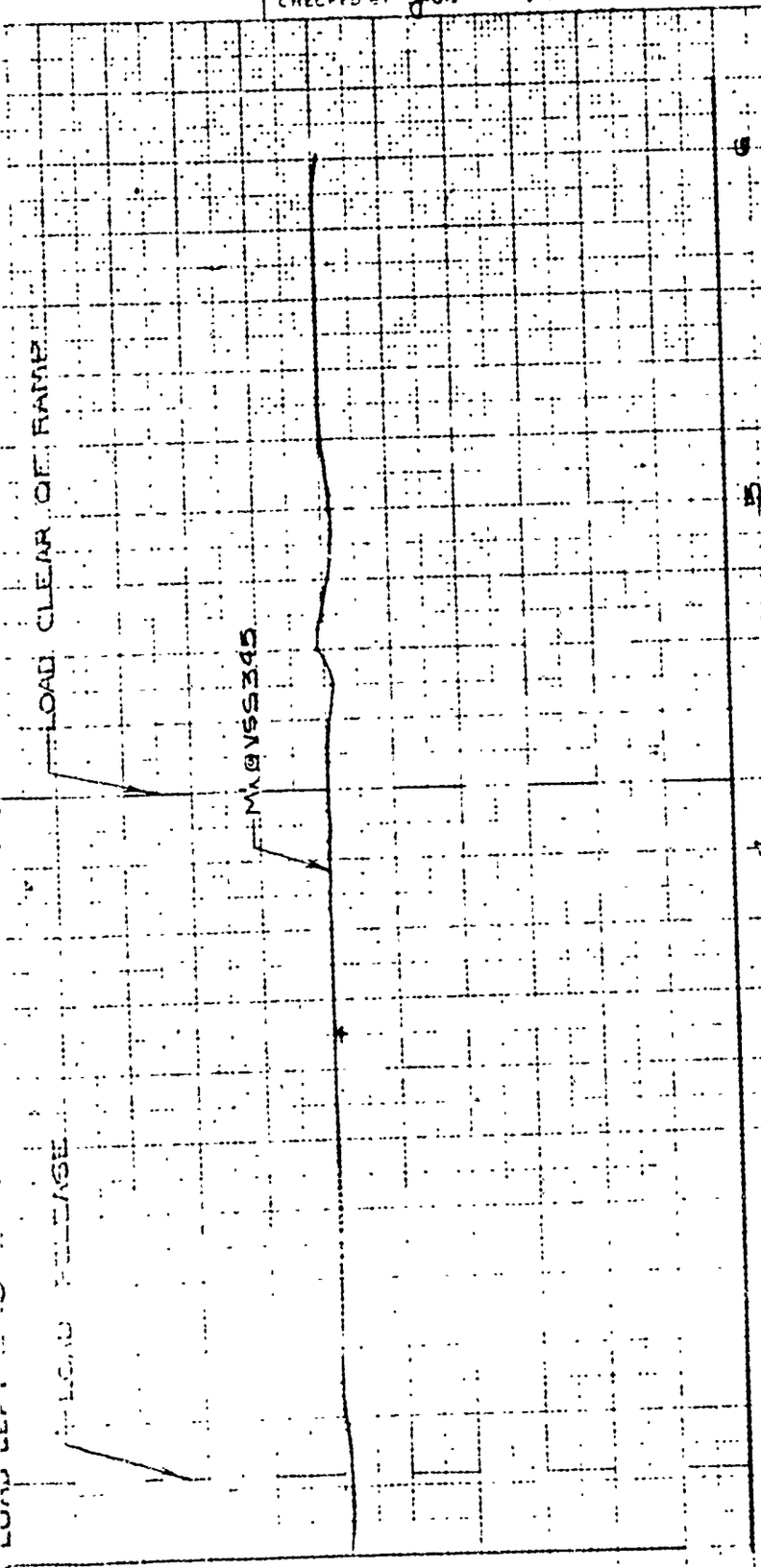


FIGURE D-37G

JOB NO. AD5468 LIB. CODE 4.21
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
AIRCRAFT ATTITUDES ~ DEG
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD RELEASE
LOAD CLEAR OF RAMP
25
20
15
10
5
0
5
10
15
20
25

PREPARED BY TED
DATE 6-4-65
CHECKED BY [illegible]

REPORT ER 5473
MODEL C-141A
FACT D-241

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 6-3-65

FLIGHT ~ 136 DROP NO. ~ 34

SHEET 1 OF 5

CARGO WT. 24,830 LBS

RUN CONDITIONS

1. G.W. ~ 185600 LBS
2. C.G. PRIOR TO DROP ~ 27.5 % MAC
3. C.G. AFTER DROP ~ 30.3 % MAC
4. FLAPS ~ 63 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.23
7. i_H ~ 1.2 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 884
   VERT. ~ WL 173

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28
3. RATED CHUTE FORCE/CARGO WT. .33
4. EXTRACTION LINE LENGTH ~ 140 FT.

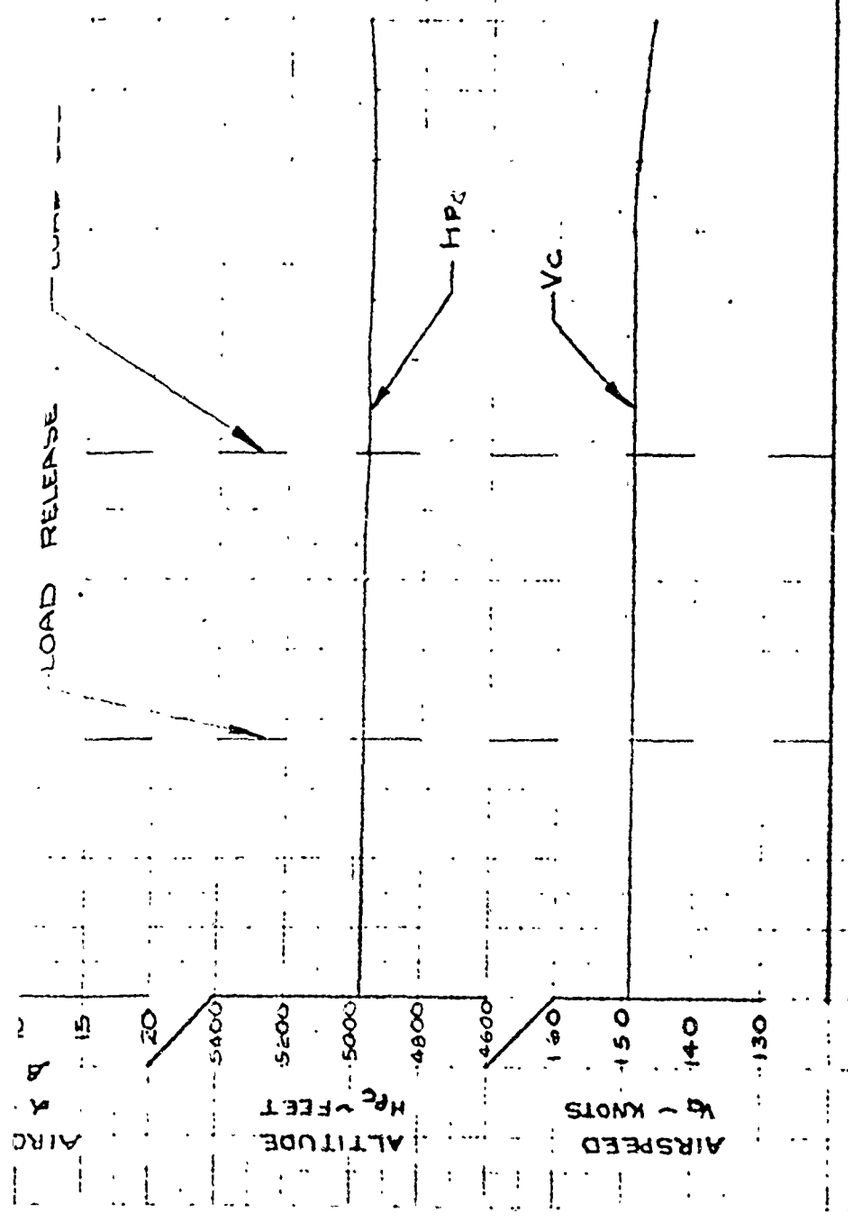


FIGURE D-38A

6008
ADS-93A
REVISED 12-15-65
MAN

6008
ADS-93E

JOB NO. ADS-48 SUB. CODE 4.21

PREPARED BY TED
DATE 6-4-63
TIME REQUIRED 40

SUPPORT NO ER 5473
MODEL C-141A
FACT D-242

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 6-3-65

FLIGHT ~ 136 DROP NO ~ 34

SHEET 2 OF 5

CARGO WT 24,830 LBS

NOTE:
SEE FIGURE D38A SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

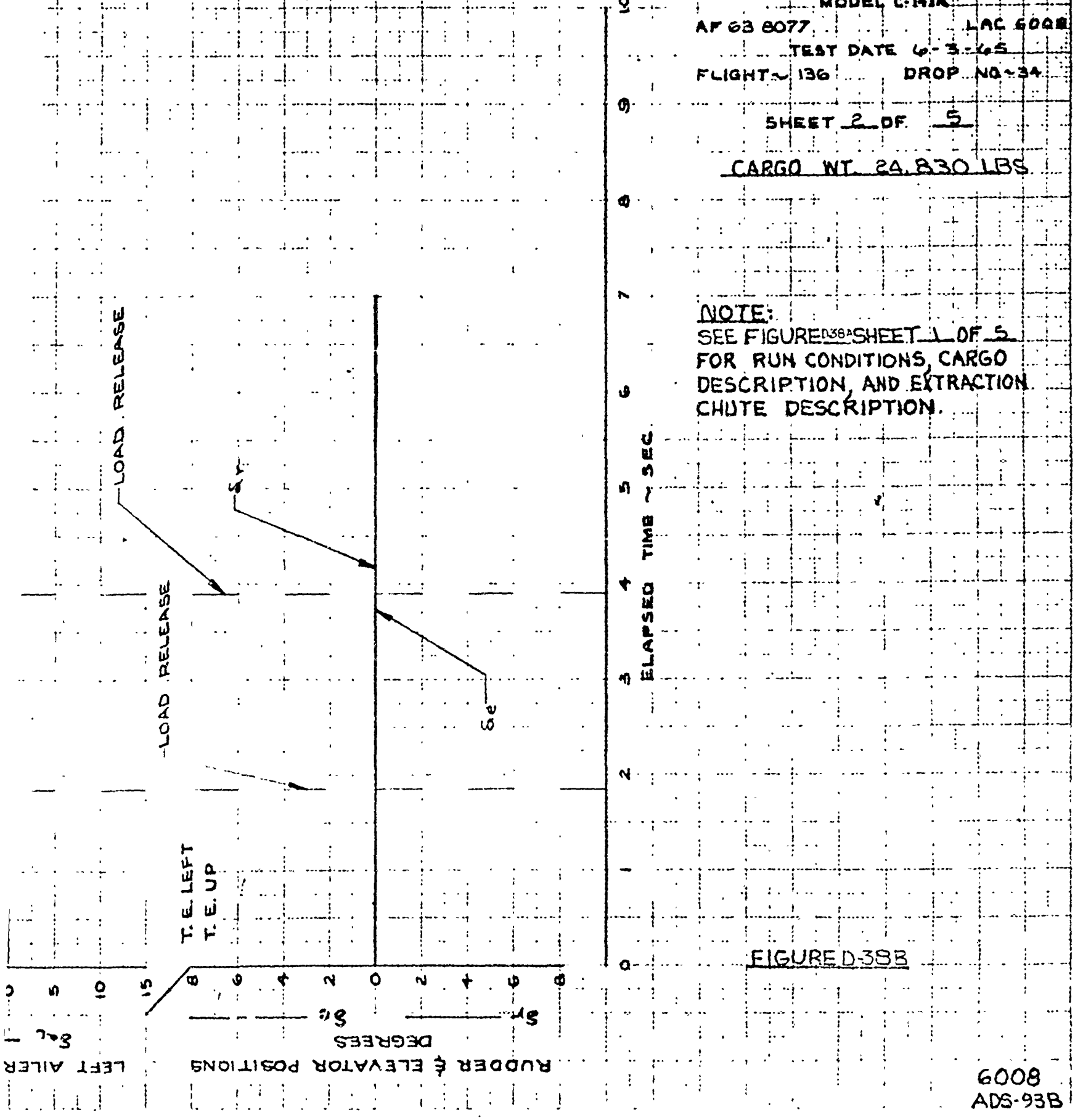


FIGURE D-38B

6008
ADS-93B

6008
ADS-93C
NOTE: ö CALCULATED FROM N₂ DATA
LOAD RELEASE
LOAD CLEAR OF RAMP
N₂ @ F.S. 1637
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
PITCHING ACCELERATION
ö
DEG/SEC²
RATIONS ~ g
N₂ @ FS 1637
JOB NO. ADS-48 SUB. CODE 4.2.1

T.E.D.
6-4-65
JWD

ER 5473
C-141A

D-243

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 6-3-65

FLIGHT ~ 136 DROP NO ~ 3F

SHEET 3 OF 5

CARGO WT. 24,830 LBS

NOTE:
SEE FIGURE D-38A SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

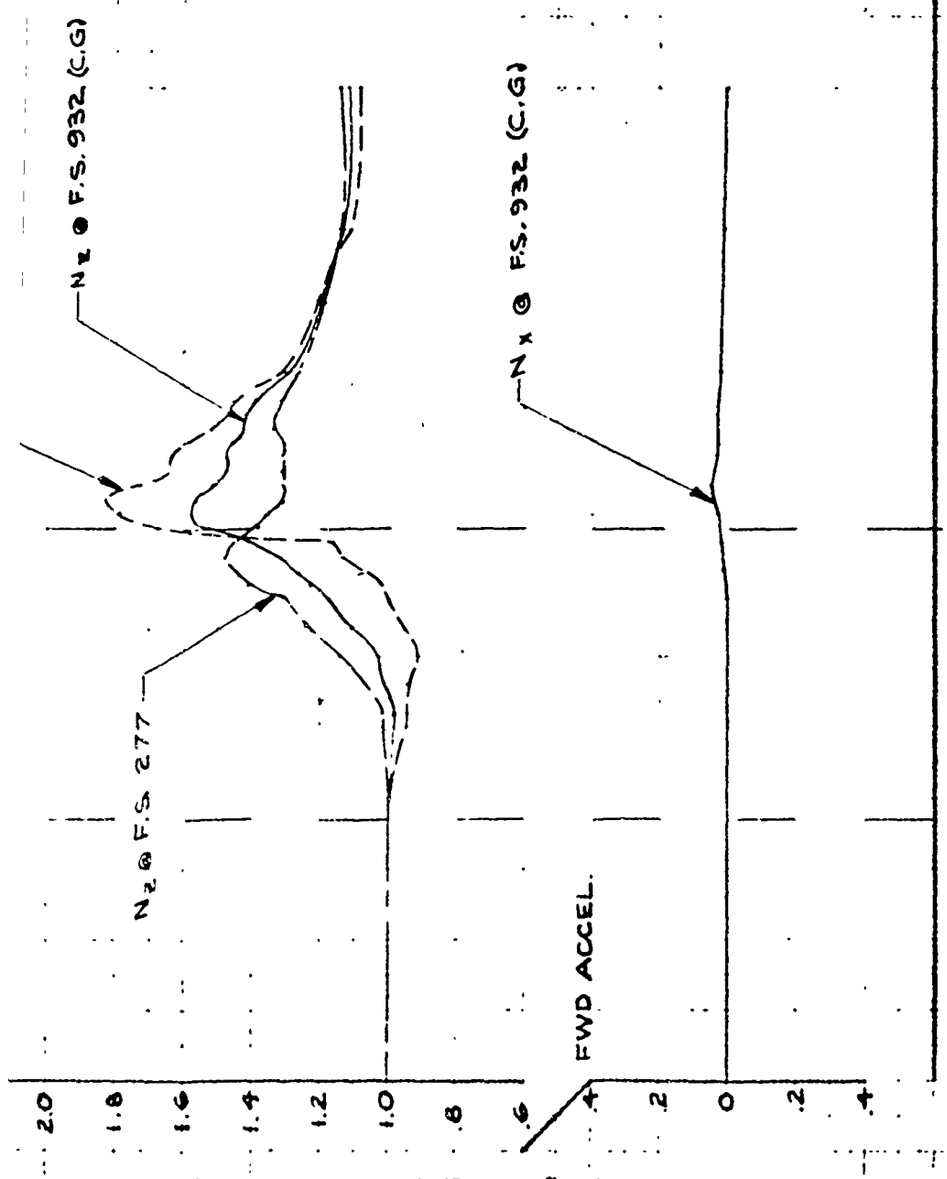
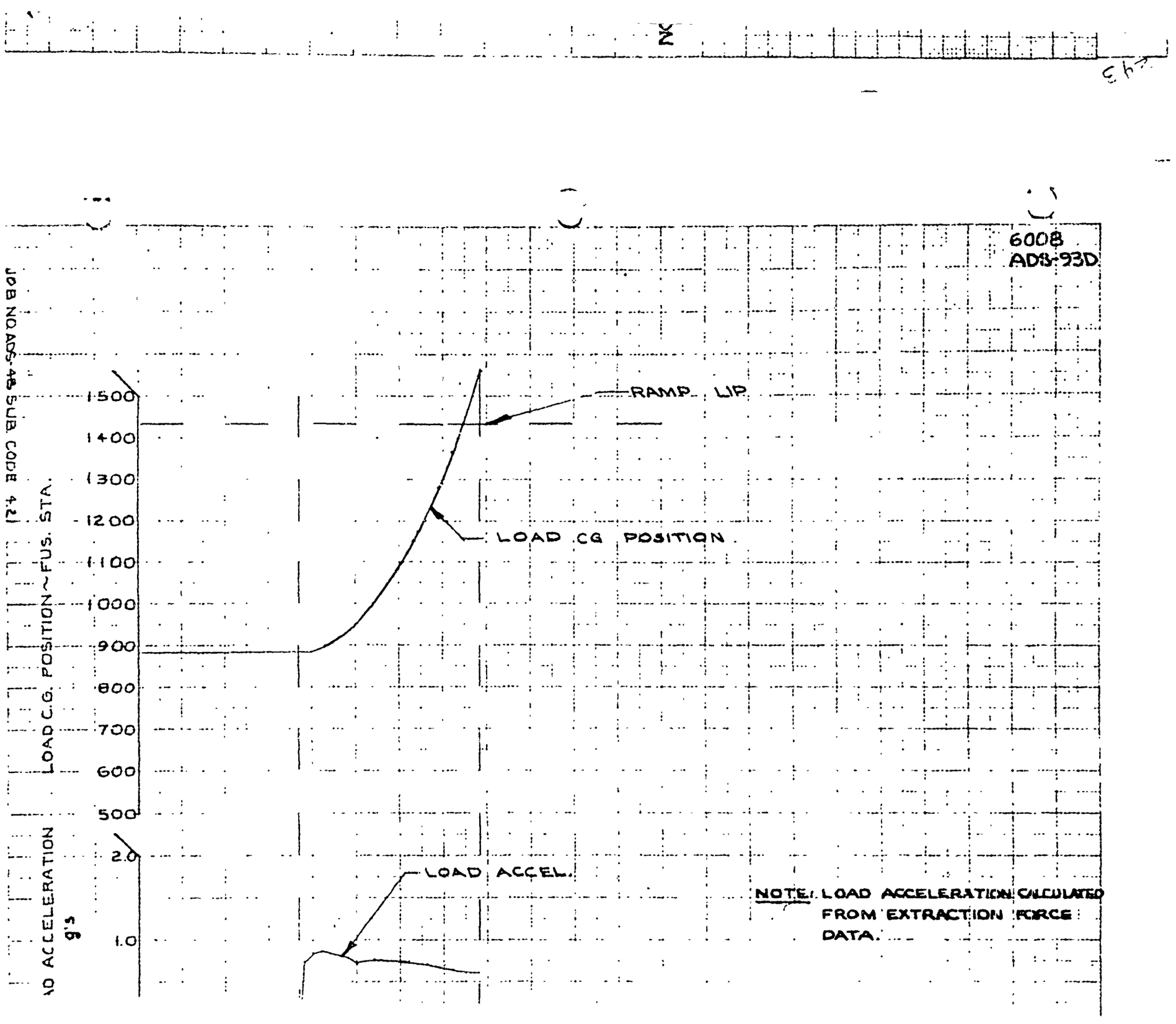


FIGURE D-38C

6008
ADS-93C


6008
ADS-93D
JOB NO ADS-48 SUB CODE 42
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD CG POSITION
LOAD ACCEL.
2.0
1.0
g's
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 6-3-65

FLIGHT ~ 136 DROP NO. ~ 54

SHEET 4 OF 5

CARGO WT. 24,830 LBS

NOTE:
SEE FIGURE D-38A SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

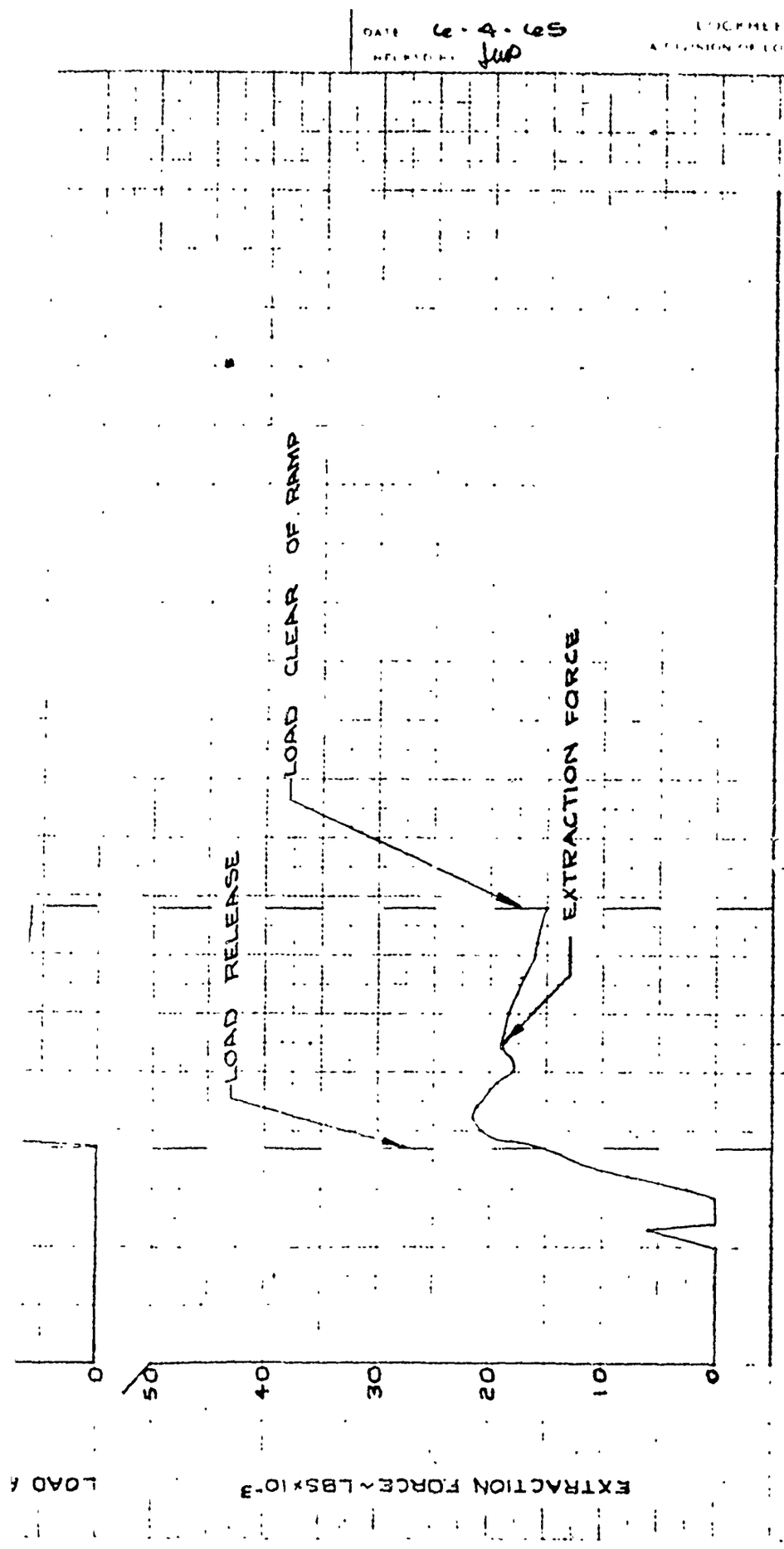


FIGURE D-38D

ADS-93E

	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	TEMP	PERM
Prepared				Page	D-245
Checked			TITLE	Model C-141A	
Approved				Report No ER 5473	

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 136 TEST DATE: 6-3-65

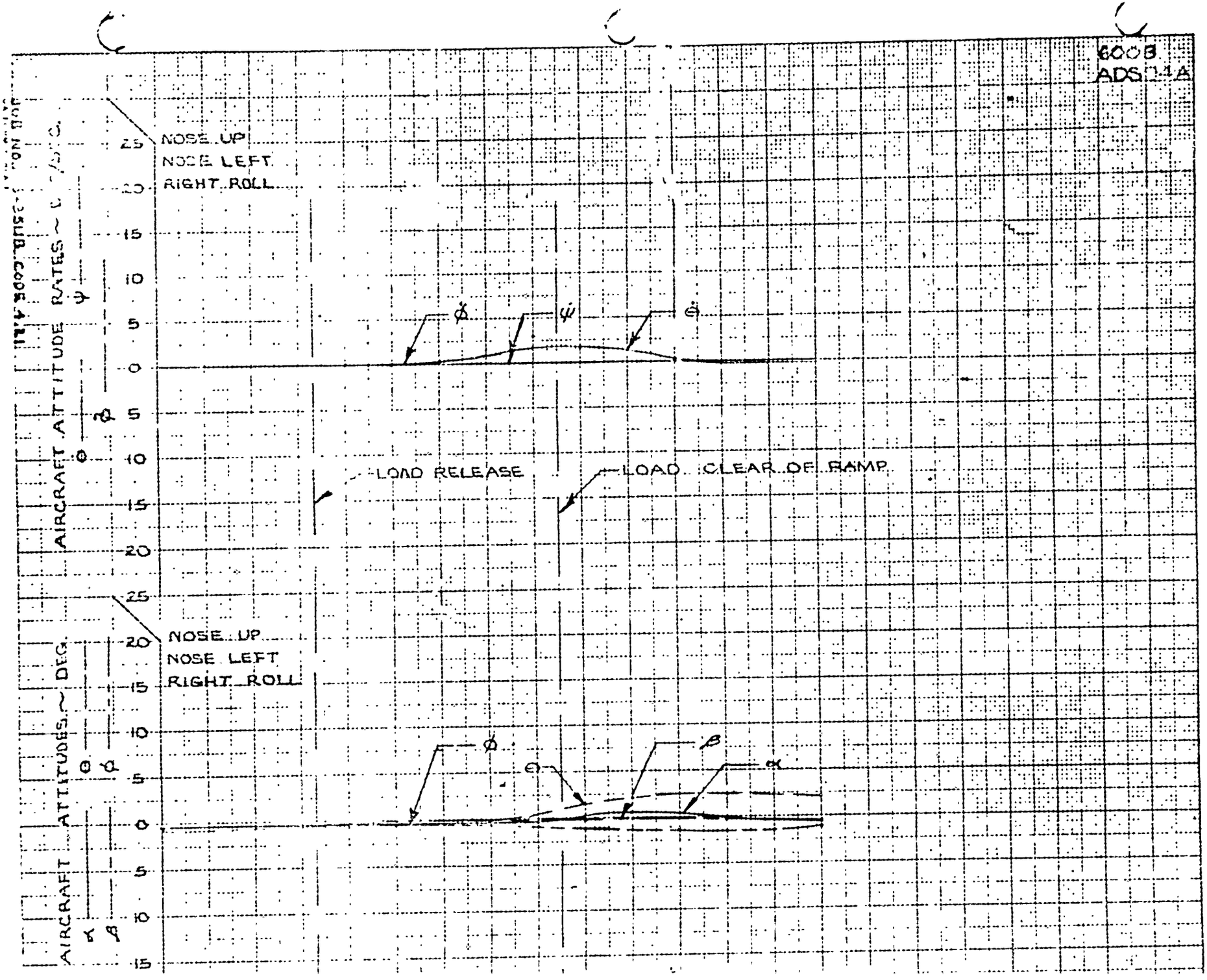
G.W. 185,600 LBS. A/S 150 KCAS.

C.G. 27.5% MAC. ALT. ~ 4,980 FT.

DROP WT. ~ 24,830 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	2.0
2	ANGLE OF PITCH	"	4.4
3	C.G. VERT. ACCEL.	g's	1.58
4	C.G. LONG. ACCEL.	"	− 0.05
5	VERT. ACCEL. @ F.S. 277	"	1.48
6	VERT. ACCEL. @ F.S. 1637	"	1.83
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	18.198
8	VERT. BEND. @ F.S. 1568	"	0.588
9	BENDING ~ M'_x @ HBL 44L	"	− 0.186
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	− 1.08
11	PITCH TRIM ACTUATOR ~ S_z	"	2.576
12	R.H. RAMP ACTUATOR LOAD	"	0
13	L.H. " " "	"	3.15
14	R.H. SPIDER ARM LOAD	"	6960
15	L.H. " "	"	7140
16	R.H. PETAL DOOR ACTUATOR LOAD	"	8711
17	L.H. " " "	"	9450
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	0.09
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	3.431
20	L.H. " " "	"	3.389
21	R.H. RAMP HINGE DRAG LOAD	"	2.929
22	L.H. " " "	"	1.361
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	21.60
25	CARGO LONG. ACCEL.	g's	0.87

FIG. D-38E
ADS-93E


600B
ADS 11A
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
$\dot{\phi}$
$\dot{\psi}$
$\dot{\theta}$
LOAD RELEASE
LOAD CLEAR OF RAMP
AIRCRAFT ATTITUDES ~ DEG.
NOSE UP
NOSE LEFT
RIGHT ROLL
ϕ
θ
β
α

PREPARED BY FCW
DATE 6-7-65
CHECKED BY JHO

A LITTON INDUSTRIES COMPANY
A DIVISION OF LITTON AIR PART CORPORATION

REPORT NO ER 5473
MODEL D-141A
PAGE D-246

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE ~ 6-4-65

FLIGHT 137 DROP NO. 55

SHEET 1 OF 5

CARGO WT. 5940 LBS.

RUN CONDITIONS

1. G.W. ~ 163800 LBS.
2. C.G. PRIOR TO DROP ~ 24.8% MAC.
3. C.G. AFTER DROP ~ 29.5% MAC.
4. FLAPS ~ 65%
5. GEAR ~ UP
6. AVG. EPR ~ 1.26 (4 ENGINES)
7. Δ_H ~ 0.6 DEG. (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 592
   VERT. ~ WL 174

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 5 FT.
3. RATED CHUTE FORCE/CARGO WT. 1.01
4. EXTRACTION LINE LENGTH 42.0

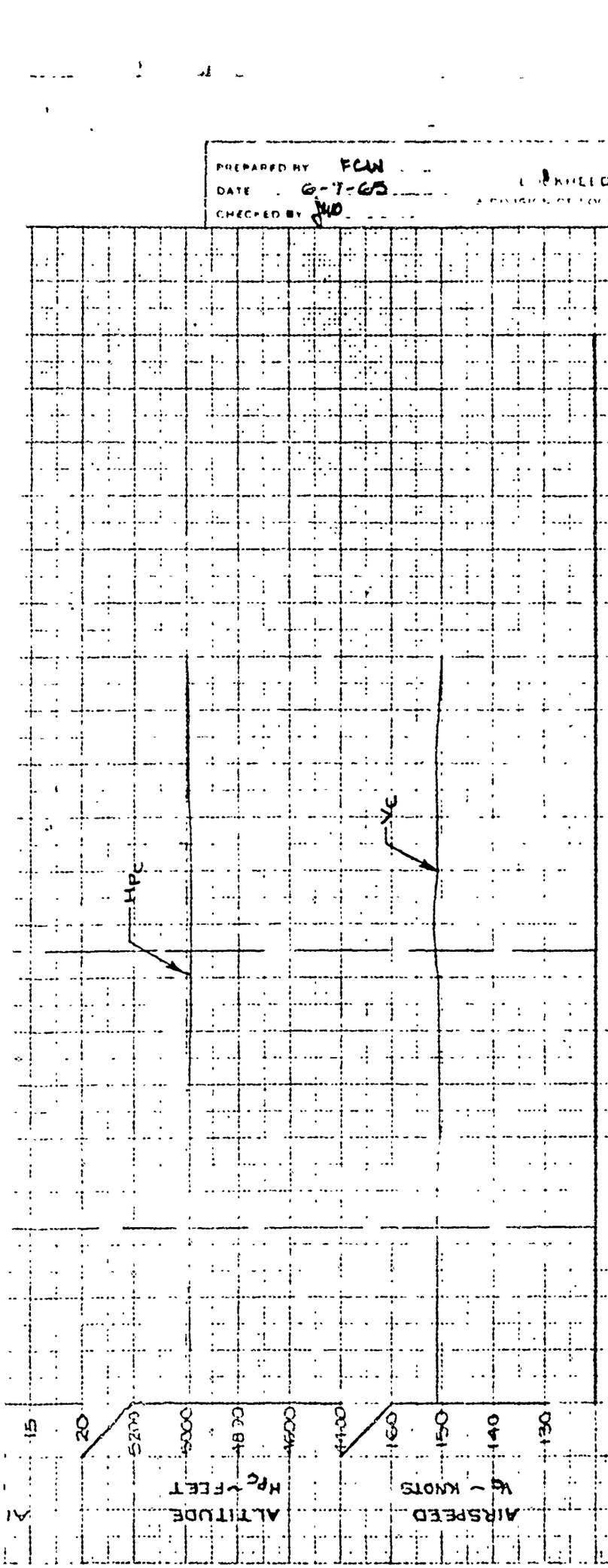


FIGURE D-3-A

6008
ADS-94A

REVISED 12-13-65
MJH

6008
ADS-94B

JOB NO. ADS-49 SUB. CODE 4.21

PREPARED BY T.E.D
DATE 6-7-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-247

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 6-4-65
FLIGHT - 137 DROP NO - 35
SHEET 2 OF 5

CARGO WT. 5940 LBS

NOTE:
SEE FIGURE D-392 SHEET 1 OF 5
FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

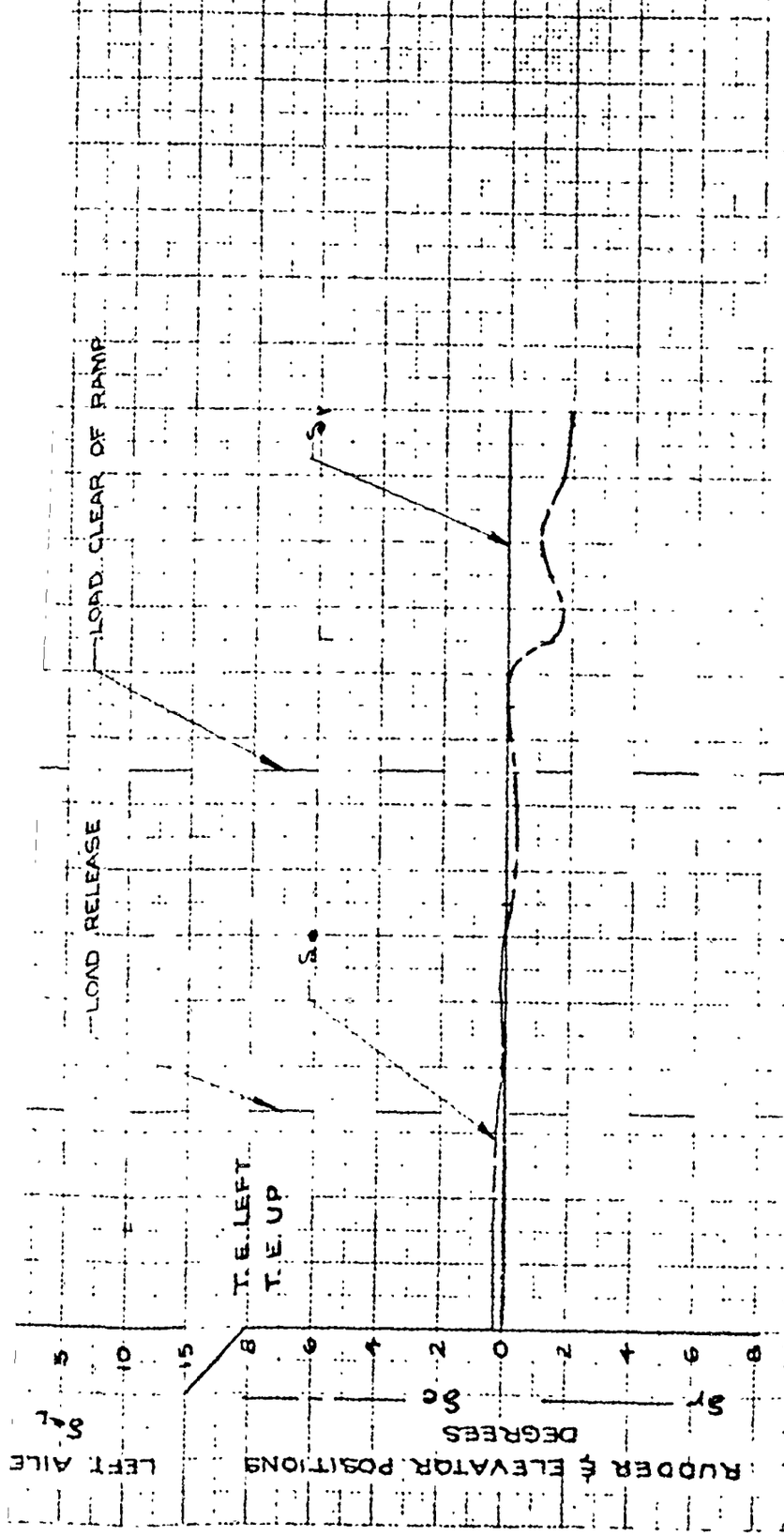


FIGURE D-393

6008
ADS-94B

6008
ADS-94C

NOTE: θ CALCULATED FROM N_z DATA

LOAD CLEAR OF RAMP

N_z @ F.S 1637

LOAD RELEASE

NOSE UP

UP ACCEL.

40 20 0 20 40

θ

DEG/SEC²

PITCHING ACCELERATION

3.0 2.8 2.6 2.4 2.2 2.0 1.8

N_z @ F.S 1637

ELERATIONS ~ g

JOB NO. ADS-44 SUB. CODE 4.2.1

T.E.D
DATE 6-7-68

REPORT NO ER 5473
MODEL C-141A
PAGE D-248

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 4-4-65

FLIGHT ~ 137 DROP NO ~ 35

SHEET 3 OF 5

CARGO WT. 5940 LBS

NOTE:
SEE FIGURE D-39 SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

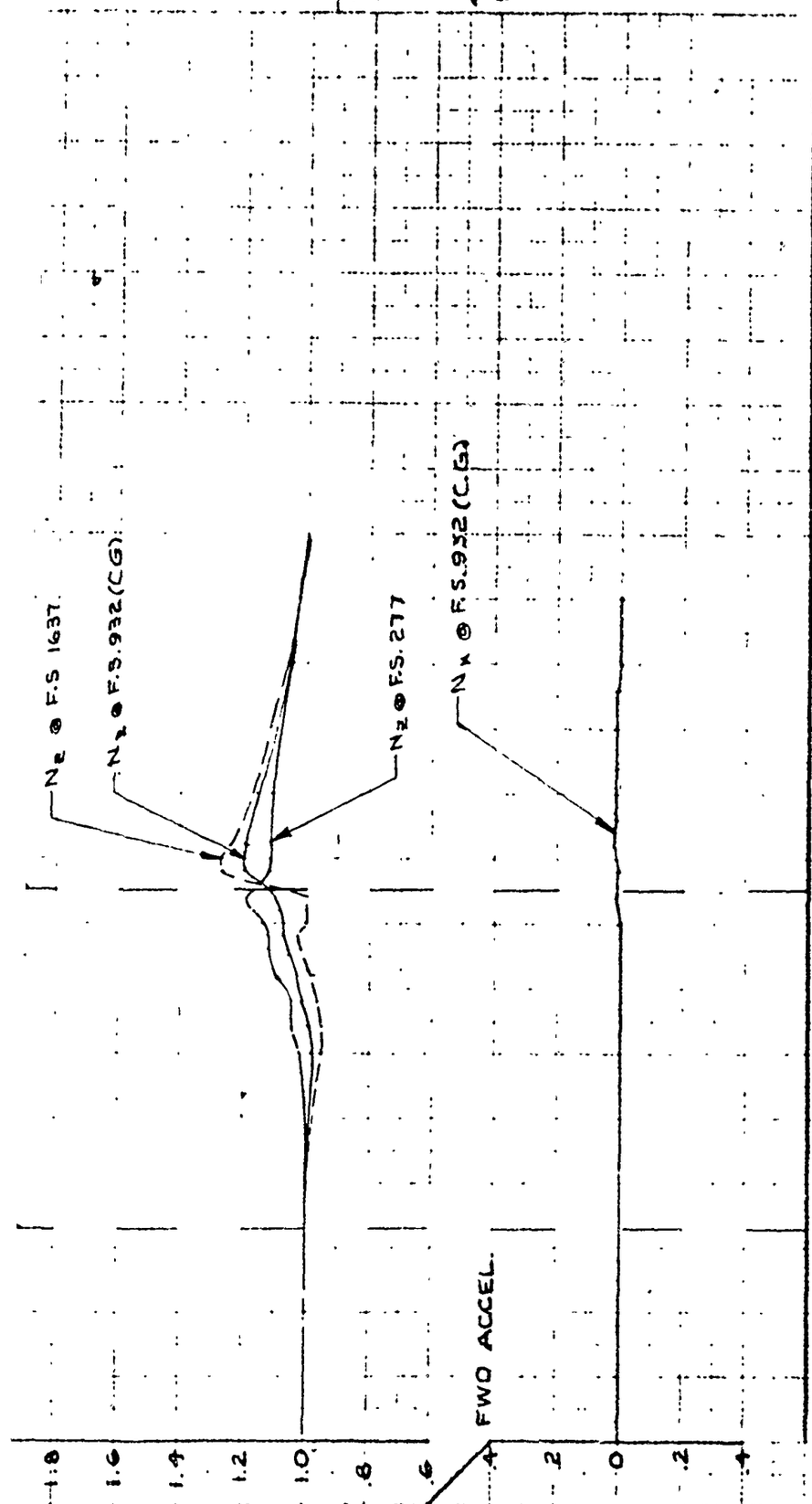


FIGURE D-39C

6008
ADS-94C

6008
A1X8-9AD
RAMP LIP
LOAD C.G. POSITION
LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA
LOAD C.G. POSITION ← FUS. STA
LOAD ACCELERATION
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
g's
JOB NO ADS-49 SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 6-4-65

FLIGHT ~ 137 DROP NO. ~ 35

SHEET 4 OF 5

CARGO WT. 5940 LBS

NOTE:
SEE FIGURE D-39A, SHEET 1 OF 5 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

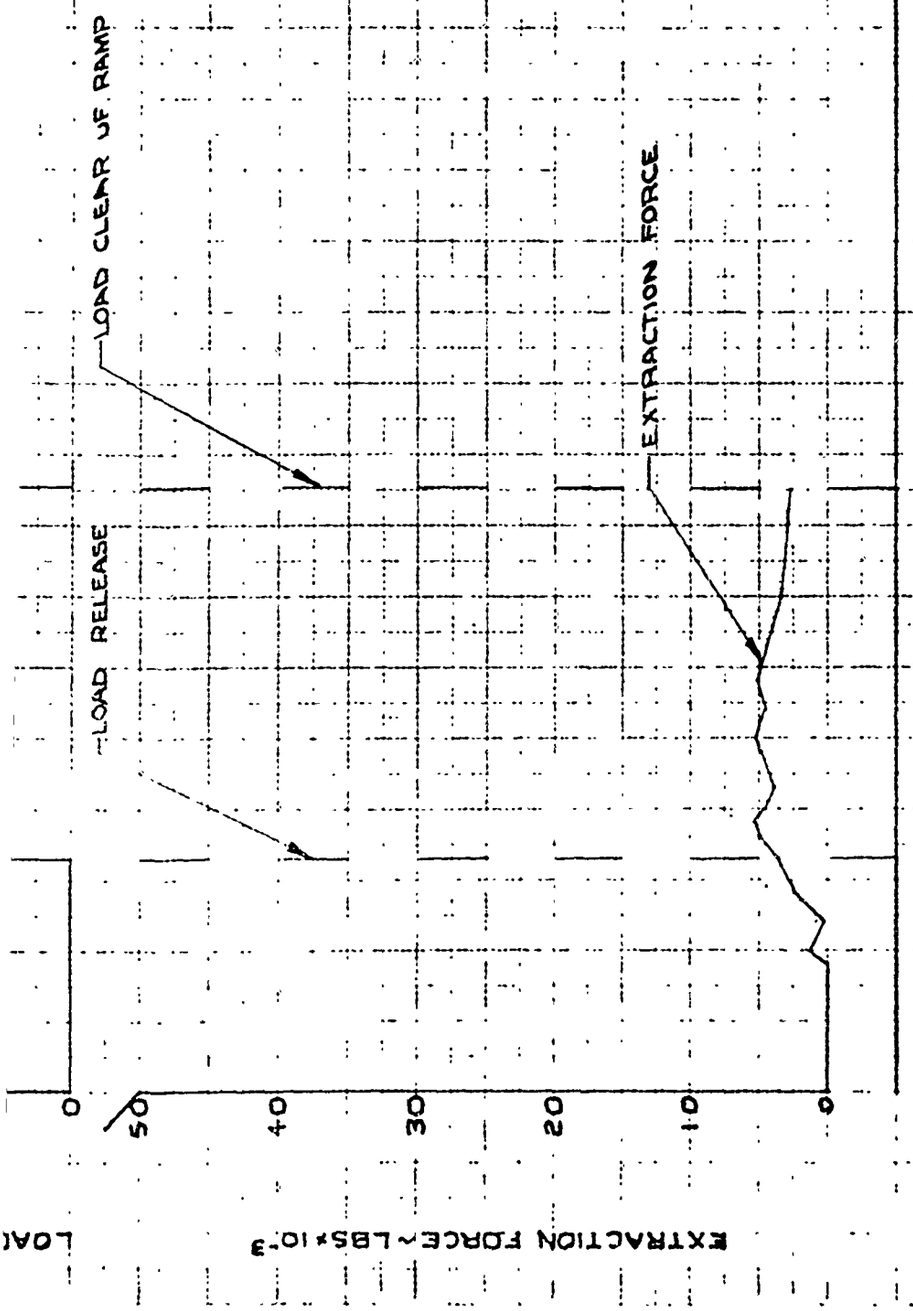


FIGURE D-39D

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT 137 TEST DATE: 6-4-65

G.W. 163,800 LBS. A/S KCAS.

C.G. 24.8 %MAC. ALT. ~ 5,000 FT.

DROP WT. ~ 5,940 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	0.6
2	ANGLE OF PITCH	"	2.5
3	C.G. VERT. ACCEL.	g's	1.20
4	C.G. LONG. ACCEL.	"	-0.03
5	VERT. ACCEL. @ F.S. 277	"	1.19
6	VERT. ACCEL. @ F.S. 1637	"	1.28
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10^{-6}	16.76
8	VERT. BEND. @ F.S. 1568	"	- 2.42
9	BENDING ~ M'_x @ HBL 44L	"	-0.492
10	SHEAR ~ S'_z @ HBL 44L	LBS. X 10^{-3}	- 3.93
11	PITCH TRIM ACTUATOR ~ S_z	"	2,450
12	R.H. RAMP ACTUATOR LOAD	"	-1.357
13	L.H. " " "	"	-1.040
14	R.H. SPIDER ARM LOAD	"	2.860
15	L.H. " " "	"	2.660
16	R.H. PETAL DOOR ACTUATOR LOAD	"	7.450
17	L.H. " " " "	"	7.750
18	BENDING ~ M'_x @ VSS	IN-LBS. X 10^{-6}	- 0.094
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10^{-3}	1.457
20	L.H. " " " "	"	1.426
21	R.H. RAMP HINGE DRAG LOAD	"	-0.764
22	L.H. " " " "	"	- 0.794
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE.	"	5.290
25	CARGO LONG. ACCEL.	g's	0.88

FIG. D-39.E
ADS-94E

AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
θ
ψ
φ
α
β
DATA NOT USEABLE
CAD CLEAR OF RAMP
JOB NO. 25 SUB. CODE 421

PREPARED BY MBH
DATE 9-23-65
CHECKED BY MP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-251

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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63807 LAC 6008
TEST DATE 9-23-65
FLIGHT 186 DROP NO. 36
SHEET 1 OF 7

CARGO WT. 24,840 LBS.

RUN CONDITIONS

1. G.W. ~ 264,100 LBS.
2. C.G. PRIOR TO DROP ~ 23.1% MAC
3. C.G. AFTER DROP ~ 33.8% MAC
4. FLAPS ~ 75%
5. GEAR ~ DOWN
6. AVG. EPR ~ 1.50
7. ΔH ~ 2.15° (A/C NU)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS ~ 645
   VERT. ~ W.L. ~ 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 24 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.5
4. EXTRACTION LINE LENGTH ~ 100 FT.



FIGURE 2-10A

ADS 168B
Fr
Fa
Fe
S.&L
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
Fr
Fa
Fe
CONTROL FORCES ~ LBS.
T.E. UP
25
20
15
10
5
0
POSITION ~ DEG.
JOB NO. 88
SUB. CODE 4.21

PREPARED BY JDG
DATE 9-24-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-252

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 9-23-65
FLIGHT 186 DROP NO. 36
SHEET 2 OF 7

CARGO WT. 24,840 LB.

NOTE:
SEE FIGURE D-4 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

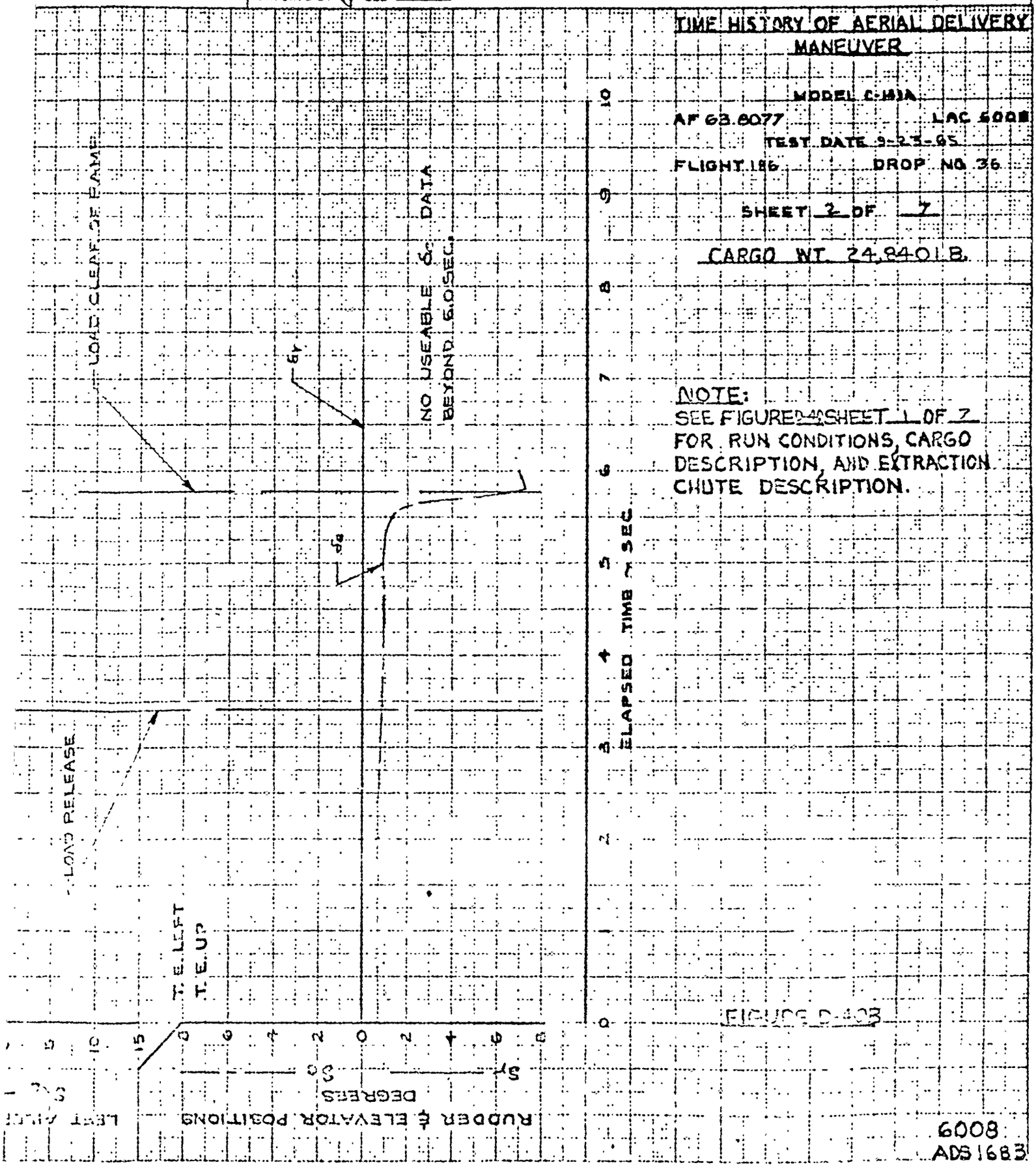


FIGURE D-403

6008
ADS 1683

6008
ADS 116 BC
NOTE: θ̈ CALCULATED FROM Nz DATA
θ̈
NOSE UP
UP ACCEL.
4.0
2.0
0
2.0
4.0
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ̈
deg/sec²
PITCHING ACCELERATION
ACCELERATIONS ~ g
3FS 277 —— Nz @ FS1637 ——
JOB NO. 88 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE 2-23-65
FLIGHT 186 DROP NO 36
SHEET 3 OF 7

CARGO WT 24,840 LBS

NOTE:
SEE FIGURE D-40 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

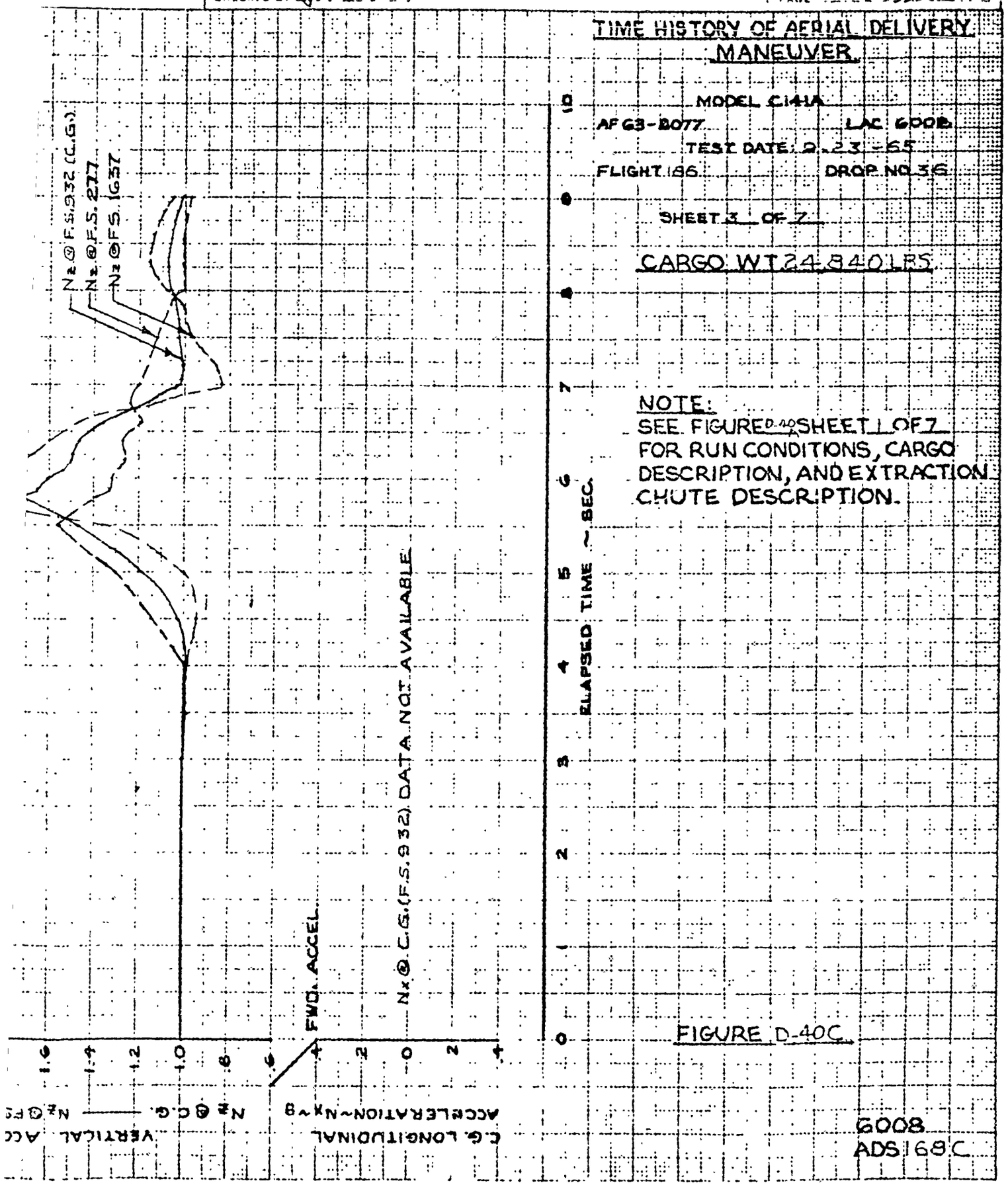


FIGURE D-40C

6008
ADS LEAD
RAMP LIP
LOAD C.G. POSITION
LOAD CLEAR OF RAMP
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
LOAD RELEASE
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2.0
1.0
LOAD C.G. POSITION ~ FUS. STA
ACCELERATION
JOB NO. 68 SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 9-23-65

FLIGHT 196 DROP NO. 36

SHEET 4 OF 7

CARGO WT. 24,840 LBS

NOTE:
SEE FIGURE D-40A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

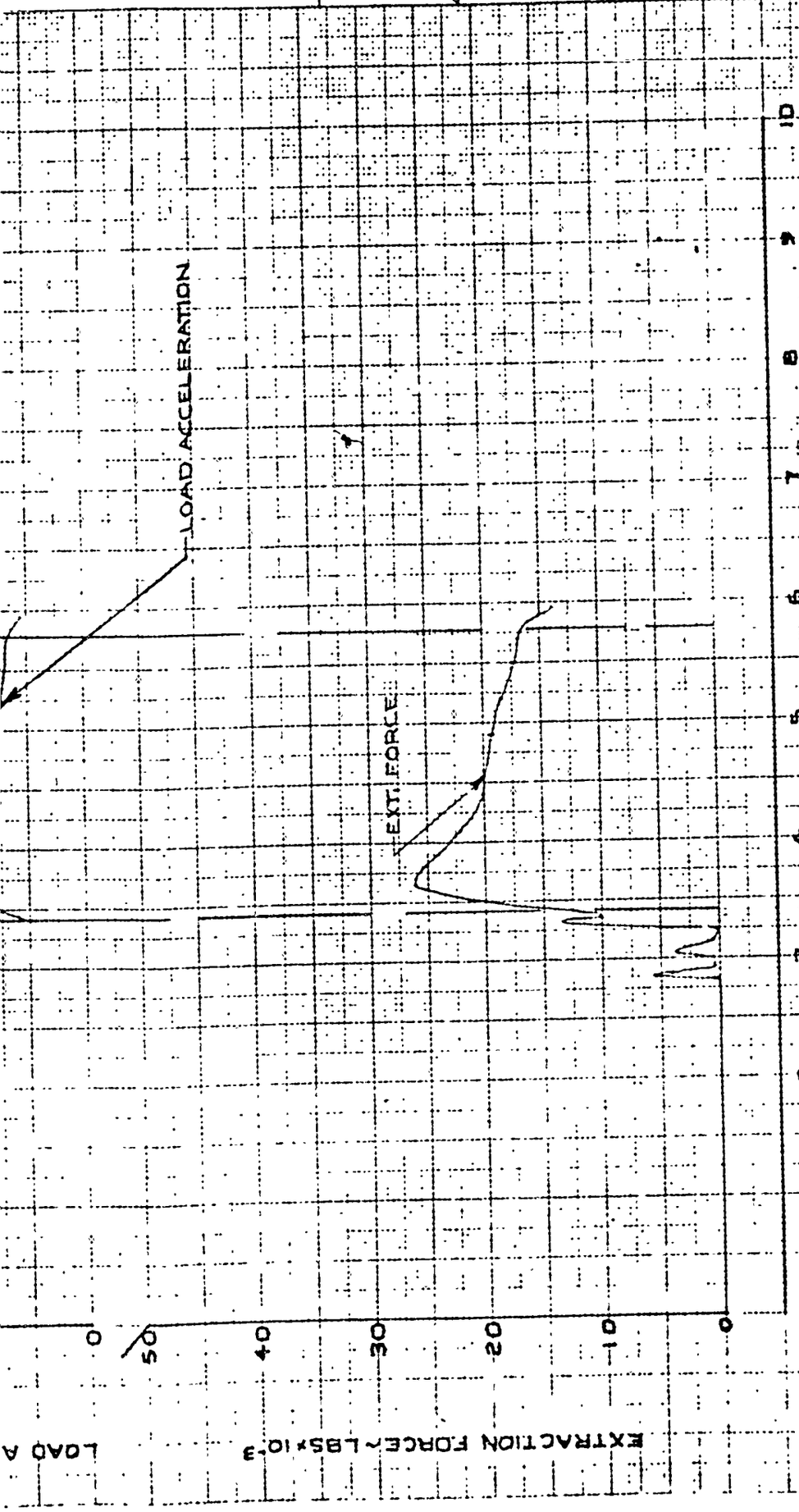


FIGURE D-40D

6008
ADS-168E
L.H. RAMP ACTUATOR LOAD
R.H. RAMP ACTUATOR LOAD
LOAD CLEAR OF RAMP
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
L.H. VERT. LOAD
R.H. VERT. LOAD
LOAD RELEASE
TENSION
TENSION
DOWN LOAD
4
2
0
-2
-4
30
20
10
0
15
10
5
L.H.
R.H.
L.H.
R.H.
L.H.
R.H.
LBS. X 10-3
LBS X 10-3
LBS X 10-3
RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD
VERTICAL LOAD
JOB NO. 88 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

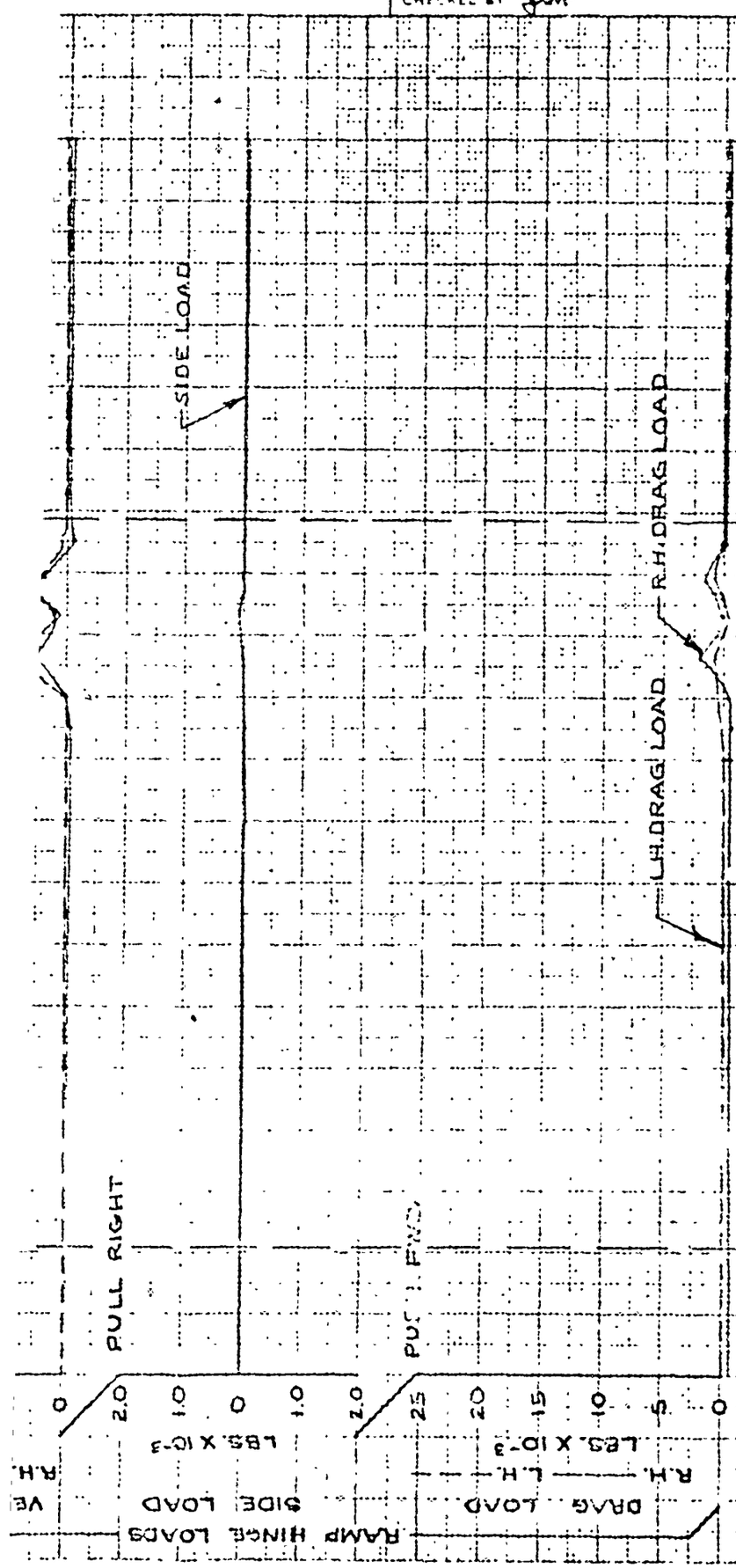
AF 63-8077 LAC 6008

TEST DATE: 9-23-65

FLIGHT 166 DROP NO. 36

SHEET 5 OF 7

CARGO WT. 21,840 LBS



NOTE:
SEE FIGURE D-40A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-40

GOOD
ADHESIVE
RH PETAL DOOR ACTUATOR
LH PETAL DOOR ACTUATOR
My@ ES 1568
COMPRESSION
VERTICAL BENDING ~ FS 1560
INCH-LBS X 10⁻⁶
RH
LH
LOADS ~ LBS X 10⁻³
PETAL DOOR ACTUATOR ROD
JOB NO. 88 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 8-23-65

FLIGHT 18G DROP NO 3

SHEET 6 OF 7

CARGO WT.-24840LBS.

NOTE:
SEE FIGURE D-1-0A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

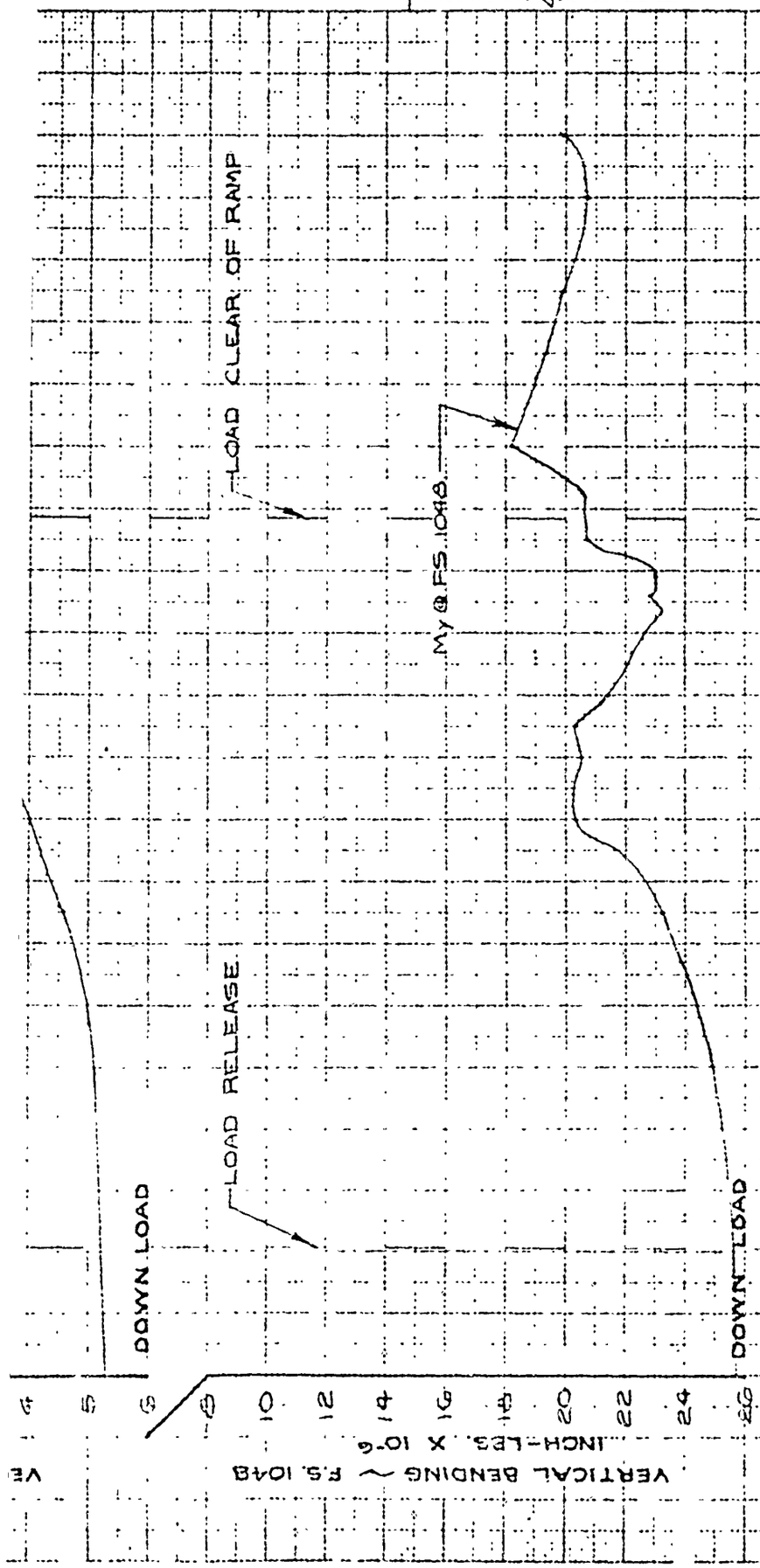


FIGURE D-1-0F

HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 4.4 ~ M'_x
INCH-LBS X 10^{-6}
SHEAR @ HBL 4.4 ~ S'_z
LBS X 10^{-3}
UP LOAD
UP LOAD
LOAD RELEASE
M'_x @ HBL 4.4
S'_z @ HBL 4.4
600 ADS 1586

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-23-65

FLIGHT 186 DROP NO. 36

SHEET 7 OF 7

CARGO WT. 24,840 LBS.

NOTE:
SEE FIGURE D-40 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

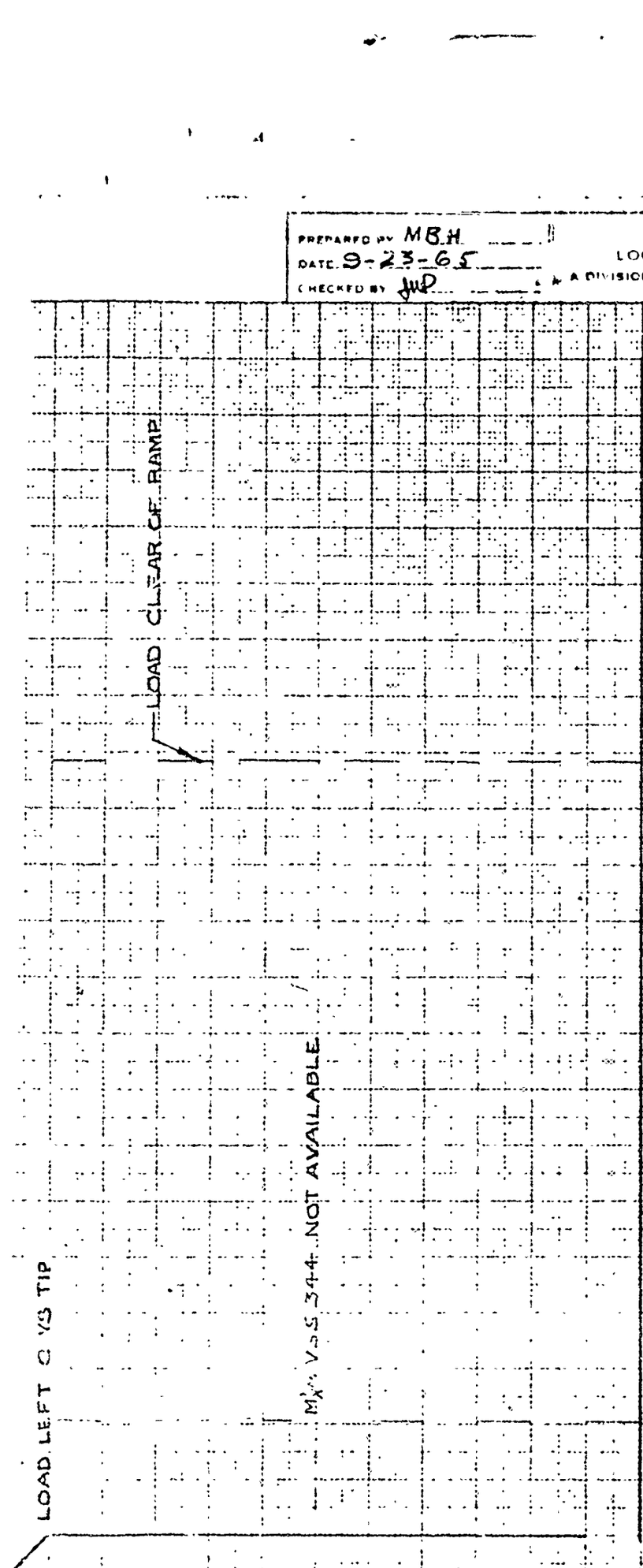


FIGURE D-40G

APPENDIX E

6008
ADS-117A

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δ_F ~ %	AIRSPEED V_c ~ KCAS	ALTITUDE H_P ~ FT.	RUDDER BOOST SYSTEM PRES.	SIDESLIP ANGLE β ~ DEG.	RUDDER POS. δ_r ~ DEG	PITCH ANGL θ
1	1201	228000	22.0	0	140	4980	HIGH	0	0	8.7
1A	1239				141	4980		-4.4	-5.1	9.0
1B	1279				142	4720	*	-15.2	-28.8	6.3
1C	1351				138	4730		4.4	10.5	10.9
1D	1385				140	5040	*	15.4	29.1	8.0
2	1754	227000	22.0	20	136	5020		0.4	0	9.0
3	1835			50	126	5190		0.2	0	6.0
3A	1883				124	5080	*	-13.2	-31.6	6.0
3B	1962				126	4960	*	13.6	32.6	6.0
4	2054	223000	22.0	88	118	4980		0	0	5.5
4A	2094				118	4980		-5.3	-11.6	5.5
4B	2131				118	4990	*	-10.7	-32.1	5.6
4C	2182				118	5050		6.5	14.0	5.0
4D	2212				118	5020	*	11.8	32.6	4.7
[illegible]	[illegible]	221000	21.5	0	160	5020		0	0	6.0
5A	2673				159	4840	*	-14.1	-27.5	4.8
5B	2741				160	4720	*	14.3	27.5	5.0
6	2819			88	160	5020		0	0	-0.6
6A	2853				159	5100	*	-11.5	-27.2	-1.3
6B	2903				160	4940	*	11.2	25.9	-1.0
7	3047	219000	21.5	0	180	5100	LOW	0	0	2.7
7A	3101				180	5100		-4.9	-6.7	2.9
7B	3151				180	5050		5.6	7.3	2.7
8	3243	217000	21.5		200	5000		0.8	0	2.6
9	3964			50	200	5150		0.1	0	-2.6
9A	4038				199	5100		-3.6	-6.7	-2.6
9B	4075				199	5000	*	-5.2	-9.4	-2.2
9C	4099				200	5000		4.9	6.7	-2.2
9D	4114				200	5000	*	5.6	8.1	-2.6
10	4568	211000	21.9	88	200	5020		0.1	0	-4.6
10A	4604				200	5000	*	-4.2	9.2	-6.0
10B	4631				200	4960	*	5.1	8.6	-6.2

GA FORM 5-8A-2 JOB NO 69

ER 5473
Page E-2
MODEL C-141A
AF 63-8077 LAC 6008
FLIGHT ~ 161
DATE ~ 7-30-65

PETAL DOOR ACTUATOR LOADS ~ LBS

+ ~ COMPRESSION

ANGLE Θ ~ DEG +ve ↑	ANGLE OF ATTACK ~ DEG +ve ↑	BANK ANGLE Φ ~ DEG +ve R Wg ↓	R.H. DOOR MIN.	R.H. DOOR MAX.	R.H. DOOR MEAN	L.H DOOR MAX.	L.H DOOR MIN.	L.H DOOR MEAN	PETAL DOOR POSITION ~ DEG.	NOTE:
7	9.8	-0.4	4780	6550	5670	NA	NA	NA	65	
0	10.1	-1.3	5030	7050	5830					
3	10.9	-3.2	4940	6480	5600					
.9	10.4	-0.8	5980	7710	6970					
.0	11.2	-0.8	7580	9690	8780					
.0	9.8	-1.9	4710	6730	5690	6760	5390	6140		1. * ~ Boost Cut-Off
.0	6.6	0.4	4320	5800	5150	6430	5010	5570		2. Strake Length ~ 13.5
.0	4.8	-4.5	4940	6550	5710	8540	6970	7370		3. Ramp Side Panels
.0	6.4	0.2	6420	7760	7010	6560	5890	6090		~ OFF
.5	5.8	-0.8	3000	4500	3670	5060	3660	4220		
.5	5.7	-0.4	3160	4730	4000	5910	4220	5010		
.6	4.6	-0.4	3550	4870	4230	6740	5240	5910		
.0	5.4	-1.3	3230	4910	4120	5480	3730	4470		
.7	5.4	-0.8	4370	6190	5510	5570	3860	4670		
.0	6.4	0	5050	6640	6010	6810	5290	6320		
.8	5.2	1.7	4690	6510	5710	9080	7080	7930		
.0	6.8	0	7690	9440	8330	6900	5150	6140		
.6	-1.8	-0.4	3750	5570	4420	5860	4040	4670		
.3	-1.4	0.8	9030	11370	10200	10,220	8320	9460		
.0	-1.8	0.8	7170	10460	9290	11,330	9280	10,020		
7	5.3	-0.4	7510	9830	8720	10,160	7700	9150		
.9	5.0	-1.1	8480	10970	9380	10,490	8450	9550		
.7	5.3	-2.6	8620	10560	9450	10,400	8580	9460		
6	3.2	-1.3	8830	11720	10,050	11,820	8490	10,020		
.6	-2.0	0.2	6000	7960	6960	7710	5280	6290		
.6	-2.1	-1.7	7920	11150	9350	5450	5710	7100		
.2	-1.[illegible]	-3.0	9560	11400	10450	9900	6520	7730		
.2	-1.[illegible]	-2.6	5500	7670	6550	11,240	8220	9750		FIGURE E-1A
2.6	-2.	-1.9	6030	7960	6950	11,330	8810	10,200		
4.6	-3.[illegible]	-1.9	3300	6440	5260	6140	4040	5300		
6.0	-2.[illegible]	-2.2	6120	8830	7310	7980	5820	7150		
2.2	-3.[illegible]	-1.3	4750	7510	6830	7460	6270	7420		

6008
ADS ~ 117A

6008
ADS-1178

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δ_F ~ °	AIRSPEED V_c ~ KCAS	ALTITUDE H_p ~ FT.	RUDDER BOOST SYSTEM PRES.	SIDESLIP ANGLE β ~ DEG.	RUDDER POS. δ_r ~ DEG	PITCH ANGLE θ ~
1	1042	229000	22.0	0	140	5220	HIGH	0	0	10.5
1A	1082				139	5220		-5.4	-7.55	10.0
1B	1111				138	5120	*	-12.3	-21.85	9.6
1C	1188				140	5000		5.0	7.82	8.8
1D	1226			↓	140	4840	*	11.8	19.69	9.0
2	N.A.	226600	22.0	20	136	4920		.20	0	7.8
3				50	129	5020		-.60	-0.54	6.9
3A					124	5120	*	-12.3	-23.47	9.5
3B				↓	125	5220	*	13.0	26.44	7.1
4				88	118	5360		.20	0	4.6
4A					118	5080	*	-13.0	-29.95	6.3
4B	↓			↓	118	5160	*	12.0	31.03	6.5
5	1494	223000	21.7	0	160	5020		0	-0.27	6.9
5A	1547				159	4940	*	-14.4	-27.79	7.4
5B	1652			↓	160	5120	*	13.9	27.52	7.0
6	1732			50	160	5460	↓	0	0	1.3
7	1839			0	179	5100	LOW	0	0	3.8
8	1948				200	5100		.20	0	3.4
8A	1981				199	5150		-5.5	-8.36	4.1
8B	2006				201	5207	*	-6.8	-10.52	5.5
8C	NA				—	—		N.A.	N.A.	NA
8D	2132			↓	201	6160	*	5.8	8.90	5.6
9	2271			20	200	6360		0	0	1.0
10	2326	215000	21.8	50	200	6240		0	0	-1.0
10A	2361				200	6250	*	-7.?	-9.??	-0.5
10B	2411			↓	200	6200	*	-?.?	7.??	-?.?
11	2631			88	199	6220		0	0	-4.7
11A	2829				200	5030	*	5.5	9.93	-4.6
11B	3017			↓	200	5200	↓ *	-6.9	-11.87	-4.1

JOB NO 69

ER 5473
Page E-3
MODEL C-141A
AF 63-8011 AC 6008
FLIGHT ~ 162
DATE ~ 8-3-65

PETAL DOOR ACTUATOR LOADS ~ LBS

+ = COMPRESSION

LH ANGLE Θ ~ DEG. + ~ NOSE UP	ANGLE OF ATTACK ~ DEG. + ~ NOSE UP	BANK ANGLE Φ ~ DEG. + ~ RT WING UP	R.H. DOOR MAX	R.H. DOOR MIN	R.H. DOOR MEAN	L.H DOOR MAX.	L.H DOOR MIN.	L.H DOOR MEAN	PETAL DOOR POSITION ~ DEG.
.5	9.1	-.22	2900	1200	2030	3070	1860	2500	38
2.0	10.2	-1.09	2070	970	1490	3000	1900	2380	
1.6	9.9	0	1490	120	800	3100	1950	2550	
1.8	9.6	-3.05	2900	1300	2070	2900	1480	2190	
1.0	9.9	-3.05	2660	1630	2290	1950	480	1290	
1.8	8.6	0	2830	1180	1960	3070	1810	2430	
6.9	6.4	-1.5	2360	900	1600	2620	1190	1980	
7.5	5.8	-1.3	2520	1110	2000	2190	1120	1640	
7.1	6.6	-2.18	1770	640	1040	2980	1710	2310	
4.6	5.8	0	1370	-20	640	1480	520	1170	
6.3	4.4	+.21	2850	1250	2100	950	-670	190	
6.5	5.4	-4.8	500	-850	-160	2830	1570	2330	
6.9	6.9	-1.7	N.A.	N.A.	2550	N.A.	N.A.	3140	
7.4	5.4	0	3230	1300	2190	3690	2190	2900	
7.0	6.9	-3.3	3510	870	2780	3690	2240	3050	
1.3	1.4	-1.3	2660	1160	1960	2900	1670	2190	
3.8	5.1	-.44	4130	2570	3090	4260	2550	3520	
3.4	3.5	-.65	4830	2660	3610	5230	2950	3950	
4.1	3.8	-.44	5860	3840	5020	4000	1950	3140	
5.5	3.5	-2..	5960	4150	4950	4100	2260	3070	
NA	NA.	NA	NA	NA	NA	NA	NA	NA	
5.6	3.3	-2.2	4290	2220	3120	7330	5000	6100	
1.0	1.7	0	4670	2500	3610	5360	2900	4260	
-1.0	-.0	-.65	3650	1860	2800	3810	2100	3020	
-0.5	-1.5	-1.3	9030	6670	8020	4520	2060	3240	
-.7	-1.9	-1.1	5260	3420	4430	9620	[illegible]	9390	
-4.7	-3..	-1.7	-470	-2290	-1390	-430	-3400	-1330	
-4.6	-3.4	-2.1	NA	NA	-2990	6140	3520	4950	
-4.1	-3.1	-2.65	6910	4460	5590	-1190	-4240	-3380	

NOTE:
1. * ~ BOOST CUT-OFF
2. STRAKE LENGTH ~ 13
3. TIME CORR. IN-OPERATIVE FOR RUNS 2 THRU 4B.
4. RAMP SIDE PANELS-

FIGURE E-13

6008
ADS-117C

RUN NUMBER	TIME CORR.	TRUE WT. LF	C.G. % MAC	FLAP POS. δF - DEG	AIRSPEED K - KNOTS	ALTITUDE HP FT.	RUDDER STICK CONTROL FREE	SIDESLIP ANGLE β - DEGS.	RUDDER POS. δr - DEGS.	
	1262	234400	22.5	0	149	5065	HIGH	-0.8	0	9
	1302			0	141	5060		-5.0	-6.21	9
	1338			0	141	4830	*	-16.3	-28.87	10
	1475			0	142	5005		6.0	-8.63	1(
	1507			0	143	4900	*	16.4	30.49	9
	1768			20	142	5000		0.8	0.54	E
	1832			50	130	5070		0.4	0.81	E
	1879			50	130	5100	*	-12.7	-30.78	J
	1924			50	130	5370	*	13.0	31.03	J
	2006	229600	22.5	88	123	5135		.05	0.81	(
	2051			88	123	5075		-5.1	-9.17	(
	2088			88	123	5020	*	-11.6	-4.32	(
	2210			88	123	5075		5.8	11.33	
	2240			88	123	5080	*	11.0	32.38	
	2160			0	155	5140		.09	0.81	
	2510			0	157	5120	*	-14.4	-0.27	
	2580			0	155	5940	*	14.5	27.52	
	2680	227000	22.3	88	155	5450		1.3	1.35	-
	2727			88	156	5540	*	-12.2	-26.94	
	2770			88	154	5690	*	12.5	26.71	
	2929			0	177	5295	LOW	1.2	1.35	
	2980			0	180	5255	*	-4.8	-6.21	
	3010			0	178	5425	*	5.8	8.36	
	3095	225000	21.8	0	200	5530		0.5	0.81	
	3440			50	19[illegible]	5305		0.2	0.81	-
	3480			50	197	5295		-5.4	-8.09	-
	3498			50	196	5255	*	-5.7	-8.90	-
	3537			50	198	5180		5.0	7.55	
	3556			50	199	5105	*	4.6	7.01	
	3617	222000	22.0	88	197	5065		-0.6	-0.27	
	3640			88	196	5100	*	-4.4	-10.25	
	3699			88	198	5055	*	4.1	7.01	

GA FORM 964A-2 JOB NO 69

PETAL DOOR ACTUATOR LOADS ~ LBS + COMPRESSION

PITCH ANGLE - DEG + TE DN	ANGLE OF ATTACK - DEG + LE UP	BANK ANGLE - DEG + LE RT	R.H. DOOR MAX	R.H. DOOR MIN	R.H. DOOR MEAN/MAX	L.H. DOOR MAX	L.H. DOOR MIN	L.H. DOOR MEAN	PETAL DOOR POSITION - DEG.
9.3	9.0	0	5473	3773	4798	5482	3365	4706	65
9.9	9.7	-0.87	5590	3540	4565	6024	3906	5106	
10.1	7.3	-5.00	4215	2329	3214	7859	5694	6659	
10.1	10.0	-1.96	6149	4402	5310	5624	3485	4306	
9.3	10.5	-3.92	8338	6079	7243	4377	2282	3059	
8.0	7.3	-0.65	5630	3722	4772	5254	3446	4266	
5.6	5.8	0	5249	3197	3985	4410	2868	3760	
7.3	4.3	-1.74	5655	4104	4772	5332	4073	4820	
7.9	6.0	-1.74	6275	4677	5488	5302	3952	4724	
2.8	4.1	-0.65	3555	1551	2529	3639	1398	2506	
4.5	4.6	-1.96	4414	1933	3507	3422	1157	2145	
5.1	4.0	-1.74	5178	3293	4199	4916	2747	3760	
5.4	4.1	1.09	3796	1002	2243	4193	48	3229	
5.7	6.2	-0.22	4629	2863	3651	4916	2627	3736	
7.9	8.0	-1.74	NA	NA	NA	5718	3741	4565	
10.2	6.0	1.31				7600	5577	6947	
9.2	7.6	-1.31				4800	3035	3882	
-0.1	-0.4	0				3254	964	2434	
0.2	1.0	-0.65				6218	3567	5013	
3.2	-0.2	-2.18				9062	6507	8074	
4.9	5.7	0.87				7055	4916	5832	
6.0	6.0	-0.65				7971	5591	6579	
4.8	5.6	-0.87				7929	4989	6820	
4.4	4.2	-0.87				8625	5519	6989	
-0.3	1.0	-0.65				7481	4994	5901	
-0.5	-1.3	-2.83				5576	2913	4295	
-1.6	-1.5	-0.44				5376	3056	4617	
-1.0	-1.8	-2.39				9506	6493	8321	
2.1	-1.5	-2.18				5901	6790	8395	
-3.5	-1.8	-1.31				3852	370	1753	
-3.4	-1.8	-2.61				3136	370	1876	
-4.7	-1.7	-3.46				7629	3753	5580	

NOTE:
1.* ~ BOOST CL
2. STRAKE LENG
3. RAMP SIDE PA

FIGURE F

141A

65

CUT-OFF
NGTH~62"
PANELS~OFF

F-1C

28

F-117C

6CCB
ADS-11TD

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δF ~ %	AIRSPEED Vc ~ KCAS	ALTITUDE Hp ~ FT.	RUDDER BOOST SYSTEM PRES.	SIDESLIP ANGLE β ~ DEG.	RUDDER POS. δr ~ DEG.
	4034	221000	21.5	0	138	4705	HIGH	0.60	0
	4069				138	4750		-4.90	-8.36
	4097				138	4805	*	-14.40	-30.76
	4150				136	4825		4.90	9.17
	4180				139	4775	*	14.20	1.08
	4250			20	150	4780		1.70	5.67
	4320	219600	21.3	50	120	4835		0.50	0.81
	4374				120	4790	*	-14.10	-26.17
	4440				120	4750	*	14.20	32.92
	4520			88	114	4970		0.50	1.35
	4667				114	4960	*	-12.90	-32.11
	4715				113	5095	*	11.50	32.92
	4820			0	155	5315		0.60	1.08
	4865	217600	21.5	0	155	5125	*	-13.70	-27.79
	[illegible]			0	155	5025	*	13.00	28.06
	5033			50	158	5040		1.10	1.08
	5122	216600	21.5	0	175	5225	LOW	1.00	1.08
	5270				200	5185		0.60	1.35
	5310				200	5330		-5.60	-7.82
	5333				198	5440	*	-6.40	-9.98
	5389				198	5446		5.80	9.17
	5411			0	200	5450	*	5.90	9.44
	5451			20	200	5580		0.50	0.81
	5509	212400	21.8	50	198	5500		0.40	1.08
	5533				198	5515	*	-7.00	-10.70
	5[illegible]12				200	4920	*	5.90	9.17
	5[illegible]63			88	200	5080		0.50	0.81
	5[illegible]74				198	5270	*	-6.40	-11.33
	5827				198	5365	*	5.80	9.44

GA FORM 904A-2 JOB NO 69

PETAL DOOR ACTUATOR LOADS ~ LBS

+ ~ COMPRESSION

MODEL C-14

AF 63-6011 LAC S

FLIGHT ~ 163

DATE ~ 8-3-6

POS. ± ~ DEG	PITCH ANGLE Θ ~ DEG.	ANGLE OF ATTACK ~ DEG	BANK ANGLE Φ ~ DEG.	R.H. DOOR MAX	R.H. DOOR MIN	R.H. DOOR MEAN	L.H DOOR MAX	L.H DOOR MIN.	L.H DOOR MEAN	PETAL DOOR POSITION ~ DEG
10.30	9.8	-0.44	NA	NA	NA	2073	771	1446	38	
10.10	10.0	0				2169	627	1446		
10.80	8.9	-0.44				2314	819	1470		
9.20	7.6	0.22				1832	289	988		
9.70	10.3	-0.65				1615	-241	675		
8.00	7.2	0.23				2141	847	1553		
6.60	6.8	-0.23				2024	471	1247		
8.80	6.0	-3.48				635	-541	-212		
8.60	7.5	-0.65				1812	541	1247		
6.40	5.8	1.31				1412	-400	530		
8.20	4.6	-0.44				-588	-2329	-1290		
8.40	5.8	-1.96				2710	1035	1718		
7.40	7.2	0.65				2753	1082	1835		
7.40	5.7	2.18				1929	-376	776		
8.10	7.3	-1.52				2710	212	1412		
2.00	1.5	0.65				2329	94	1365		
6.00	4.7	2.18				2871	753	1906		
3.20	3.7	0.22				3600	1012	2212		
3.60	4.1	-1.31				1788	-659	565		
3.00	3.8	-0.65				2071	-800	282		
3.40	3.8	-0.65				4447	1788	3482		
4.00	3.7	-0.65				1812	4965	3482		
2.10	.40	0				3634	800	1977		
-1.50	-1.2	0.22				2565	-47	1271		
-0.90	-1.1	-0.87				-1977	-3741	-3153		
-2.00	-1.2	1.31				5177	3777	4092		
-2.90	-3.0	0.87				651	-2555	-1060		
-3.20	-3.0	-0.65				241	-2475	-1157		
-3.10	-3.0	1.09	↓	↓	↓	4965	2338	3470	↓	

NOTE:

1.* ~ BOOST CUT

2. STRAKE LENGT

3. RAMP SIDE PAN

FIGURE E

600F

ADS-

6008
ADS-11PE

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δ_F ~ %	AIRSPEED V_c ~ KCAS	ALTITUDE H_P ~ FT.	RUDDER BOOST SYSTEM PRES.	SIDESLIP ANGLE β ~ DEG.	RUDDER POS. δ_r ~ DEG	PITCH ANGLE θ ~
	3897	245,200	25.8	0	149	5000	HIGH	0.70	1.62	N.A.
	3979						*	-19.55	-27.52	
	4098						*	13.95	26.17	
	4469			20				-0.40	0.27	
	4535			50				-0.40	0.54	
	4593	239,200	25.7	88				-0.50	0.27	
	4636						*	-13.35	-28.33	
	4677						*	12.15	28.06	
	4793				122			-0.40	0	
	4835						*	-12.3	-31.30	
	4882						*	11.1	31.84	
	5016			0	160			-0.50	0	
	5095	236,300	25.5	88				-0.40	-0.27	
	5230			0	180		LOW	-0.20	0.27	
	5331	235,200	25.1		200			-0.40	0.27	
	5358							-5.2	-7.55	
	5395						*	-6.75	-9.44	
	5431							5.4	8.09	
	5456						*	5.50	9.17	
	5785			50				-0.40	-0.27	
	5851	234,100	25.3	88				-0.60	-0.27	
	5884						*	-5.10	-11.06	
	5926						*	3.60	8.36	

GA FORM 906A-2 JOB NO 69

PETAL DOOR ACTUATOR LOADS ~ LBS

+ = COMPRESSION

ER 5473
Page E-6
MODEL C-141A
AFGS ECN ___ AC 6008
FLIGHT ~ 164
DATE ~ 8-5-65

ANGLE OF ATTACK ~ DEG. +~ NU	BANK ANGLE Φ ~ DEG. +~ RT	R.H. DOOR MAX	R.H. DOOR MIN	R.H. DOOR MEAN	L.H DOOR MAX	L.H DOOR MIN.	L.H DOOR MEAN	PETAL DOOR POSITION ~ DEG.
9.10	0.22	NA	NA	NA	6590	3620	4480	65
7.70	0.89				8480	6020	7450	
9.90	-2.89				4700	2940	3660	
5.70	-0.44				5250	3760	4460	
3.30	-1.33				5450	3490	4530	
0.40	-1.11				3900	1690	3010	
1.90	2.00				7040	4100	6070	
0.60	-0.67				8820	6800	7590	
5.90	-0.67				3810	2170	2990	
4.50	0				4990	2990	4020	
5.10	-1.11				4460	3180	3810	
7.80	-0.89				5900	3900	4890	
-1.00	-1.55				3930	1320	2720	
5.80	-1.33				6990	4290	5640	
3.90	-0.22				8190	4680	6700	
4.20	-1.96				8840	5640	7280	
4.30	-0.89				8960	5860	7410	
3.9	-3.26				9210	6930	7740	
4.20	-3.11				9880	6070	7740	
-1.20	-2.00				7280	4410	5880	
-2.50	-2.44				4480	150	2580	
-2.30	-1.55				5300	1620	3350	
-2.10	-2.66				8530	4530	6310	

NOTE:
1. 62° STRAKE
2. RAMP SIDE PANELS ~ ON
3. * ~ BOOST CUT-OFF

FIGURE E-1F

GOOD
ADS-117F

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δF ~ %	AIRSPEED Vc ~ KCAS	ALTITUDE Hp ~ FT.	RUDDER BOOST SYSTEM PRES.	SIDESLIP ANGLE β ~ D.G.	RUDDER POS. δr ~ DEG.	PITCH ANG.
	6193	233,200	25.0	0	145	5000	HIGH	0.20	1.36	N.A.
	6237			50				0.20	0.55	
	6316	231,200	25.2	88				0	0.55	
	6419							*-13.80	-28.89	
	6476							* 12.80	28.61	
	6538				120			0	0.82	
	6574							*-12.30	-31.34	
	6613							* 12.15	29.70	
	6790			0	160			0.10	0	
	6855			50				-0.20	0	
	6942	229,800	24.7	0	180		LOW	-0.05	-0.27	
	7052				200			-0.70	-0.27	
	7114							*-6.70	-11.45	
	7165							* 5.50	10.36	
	7378	226,800	24.7	50				-0.60	-0.27	
	7496			88				-0.30	0	

GA FORM 804A-2 JOB NO 69

ER 5473
MODEL C-141A
AF 63-8077 LAC 6008
FLIGHT - 164
DATE - 8-5-65

PETAL DOOR ACTUATOR LOADS - LBS

+ = COMPRESSION

PITCH ANGLE θ - DEG. + = NOSE UP	ANGLE OF ATTACK - ORIG. - DEG. + = NOSE UP	BANK ANGLE Φ - DEG. + = RT. BANK	R.H. DOOR MAX	R.H. DOOR MIN	R.H. DOOR MEAN	L.H. DOOR MAX	L.H. DOOR MIN.	L.H. DOOR MEAN	PETAL DOOR POSITION - DEG.
8.80	0		NA	NA	NA	1663	260	1110	38
3.30	-0.94					1350	190	820	
0	-0.89					240	-870	-340	
0.90	1.11					-1230	-3590	-2360	
0.20	-2.22					5160	3230	-840	
5.10	0					680	-310	96	
4.20	0.67					-550	-2990	1590	
5.20	-2.22					2560	1160	690	
7.30	1.33					1880	220	1010	
1.00	-0.94					1230	-190	580	
5.20	-0.94					2120	-260	770	
3.50	-1.11					2140	-190	720	
9.10	-0.89					960	-920	20	
3.40	-2.00					2940	530	1830	
-2.00	-2.22					1350	-700	190	
-3.30	-1.11					-1040	-3130	-2150	

NOTE:
1. 62" STRAKE
2. RAMP SIDE PANELS ~ ON
3. * ~ BOOST CUT-OFF

FIGURE E-1F

6008
ADS 148A

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % MAC	FLAP DEG SPEED	INDICATED AIRSPEED KNOTS	ALTITUDE HP - FT	RUDDER BOOST	AILERON FEEL	SIDESLIP ANGLE DEGREES	RUDDER POS. DEGREES	PITCH
1	1360	224600	24.0	0	145	5015	HIGH		1.6	1.6	N.A.
1A	1442				145	5150			-4.3	-6.5	
1B	1480				138	4950		*	-15.2	-29.7	
1C	1577				144	5045			5.8	7.6	
1D	1599				145	5085		*	14.9	30.8	
2	1885			20	143	5025			1.3	1.4	
3	1855	223,600	24.5	50	144	5120			1.4	1.4	
3A	1970				145	5050		*	-13.8	-29.4	
3B	2015				144	5075		*	-14.2	30.2	
4	2061	219,600	24.5	88	144	5100			0.8	1.6	
4A	2121				140	5130			-5.6	-10.8	
4B	2142				144	5175		*	-13.0	-29.9	
4C	2222				143	5060			5.9	10.5	
4D	2249				142	5215		*	12.6	30.2	
5	[illegible]				118	4980			0.8	1.35	
5A	2666				119	5110			-4.3	-9.2	
5B	2694				120	5120		*	-12.1	-31.8	
5C	2756				119	5060			5.5	11.6	
5D	2790				118	5020		*	12.4	33.2	
6	3090			0	162	5040			1.6	1.6	
6A	3128				161	4970		*	-12.8	-26.7	
6B	3166				161	5020		*	14.0	27.8	
7	3274			88	160	5220			0.8	1.6	
7A	3306				160	5190		*	-11.8	25.9	
7B	3345				160	5395		*	11.6	25.9	
8	3515	215,800	24.2	0	142	5025	HIGH		1.1	1.6	N.A.
8A	3575				142	4885			-5.2	9.1	
8B	3618				138	4580		*	-12.3	-30.3	
8C	3710				143	4650			6.4	10.3	
8D	3750				143	4450		*	14.6	31.8	
9	3850			20	141	5070			1.1	1.6	
10	3959			50	140	5100			1.6	1.6	
10A	4070				142	5010		*	-13.4	30.2	
10B	4104				141	5100		*	14.4	30.8	
11	4200			88	140	5100			1.1	1.6	
11A	4235				138	5150		*	-13.6	-30.8	
11B	4273				140	5255		*	13.9	29.7	

GA FORM 904A-2

PETAL DOOR ACTUATOR LOADS - LBS + COMPRESSION

MODEL 747

NOZZLE ANGLE 15°

DATE 8-13-65

PITCH ANGLE	ROLL ANGLE	R.H. DOOR			L.H. DOOR			CG LOCATION STA.
		AFT	FWD	FWD/AFT	AFT	FWD	FWD/AFT	
N.A.	9.1	1.9	3900	2340	2960	3670	2450	2950	65
	8.2	-0.9	3740	1880	2900	4260	3110	3560	
	8.9	-4.4	1960	560	1180	6550	4680	5580	
	9.1	1.7	4330	2720	3550	4160	2230	3090	
	9.1	1.3	6560	4280	5140	3210	1130	2180	
	7.9	-1.3	3740	2180	2880	3730	2490	2950	
	3.4	0.4	3520	1430	2470	3650	1940	2700	
	3.2	-1.7	5080	3470	4380	5970	4430	5320	
	4.1	3.4	6290	4170	5220	5320	4040	4640	
	-0.6	0	2210	0	1020	2330	250	1380	
	0.9	-2.9	4220	1800	3390	2250	-80	1200	
	0.9	-6.7	9330	6000	8370	5870	2780	4840	
	-0.1	0.9	2260	-460	1050	4040	1940	3090	
	-0.6	4.9	5620	2720	4030	8630	6180	7480	
	5.2	1.7	2230	480	1400	2370	1050	1630	
	4.7	0	2610	990	1860	2180	-80	1110	
	4.0	-1.1	4140	2120	3250	3380	1440	2430	
	4.7	0.9	1880	-160	830	2720	1200	2040	
	4.7	2.1	2770	830	2040	3650	2270	2990	
	6.6	1.5	4550	2100	3170	4410	2600	3480	
	5.3	-3.2	3820	1590	2640	6760	4760	5670	
	6.8	0.9	6700	4870	5680	4000	2410	3210	
	-2.7	-2.3	2290	-730	590	2100	-210	830	
	-0.8	-6.3	11410	8450	10300	6320	3340	4640	
	-2.3	-1.9	5600	3070	4460	10100	8300	9270	
N.A.	9.0	-1.7	650	-860	-240	660	-660	0	38
	8.1	0.9	0	-1530	-730	470	-1010	-250	
	8.6	2.9	0	-2150	-1180	-40	-1320	-480	
	8.9	-0.2	160	-970	-480	470	-1050	-450	
	9.1	2.3	-110	-1450	-910	80	-1550	-600	
	7.3	0.2	190	-990	-430	740	-540	-60	
	3.7	1.3	4730	-400	-910	310	-740	-210	
	2.6	0.2	3250	1370	2230	-1940	①	-1810	
	3.1	1.9	①	①	①	2720	1600	2700	
	-0.2	-1.5	-1370	①	-2100	-510	-2140	-1420	
	1.1	-0.2	4820	2580	3710	①	①	①	
	-0.1	0.9	①	①	①	4490	3110	3870	

NOTES:

1. * ~ Boost Cut-Off
2. Ramp Side Panels ~ ON
3. No Strake
4. ① ~ R.H. Door < -2420
5. ① ~ L.H. Door < -3280

FIGURE E-2A

6608 ADS 48B

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS.	C.G. % M.A.C.	FLAP POS. δF = 0/0	AIRSPEED K.C.A.S.	ALTITUDE IN FT.	ADJUSTED BOOST CYCLOMETER READ.	SIDESLIP ANGLE β = DEG.	RUDDER POS. δr = DEG.	PITCH
12	4371			88	115	5030	HIGH	0.8	1.6	N.A
12A	4417			↓	115	5125	*	-12.8	-31.8	
12B	4460			↓	115	5210	*	13.4	32.6	
13	4766	209,600	24.3	0	159	5050		0.8	0	
13A	4807			↓	159	5020	*	-8.7	-17.0	
13B	4842			↓	160	5160	*	9.2	15.4	
14	4958			50	160	5160	↓	0.6	0	↓
15	5823	207,000	24.3	0	133	5330	HIGH	0	-1.1	N.A
15A	5869			↓	129	5340	↓	-5.4	-8.1	
15B	5893			↓	121	5120	*	-16.2	-31.3	
15C	5945			↓	140	4875	*	15.9	31.3	
15D	6012			↓	137	5050	↓	6.5	7.6	
15E	6040			↓	139	4965	*	16.1	31.3	
16	6280			20	133	5220	↓	0.6	-0.5	
17	6340			50	136	5445	↓	0.6	-0.5	
17A	N.A.			↓	$1.2V_s$	5000	↓	N.A.		
17B	N.A.			↓	↓	5000	↓	N.A.		
18	N.A.			88	↓	5000	↓	N.A.		
18A	6780	203,000	24.7	↓	132	4980	↓	-5.0	-10.5	
18B	6805			↓	134	5000	*	-12.0	-30.8	
18C	6841			↓	133	5100	↓	6.5	14.6	
18D	6874			↓	133	5040	*	12.2	32.9	
19	7056	200,000	24.7	↓	112	5160	↓	0.6	0.5	
19A	7091			↓	111	5000	↓	-5.2	-10.5	
19B	7124			↓	109	4940	*	-12.2	-31.8	
19C	7171			↓	111	4780	↓	6.3	11.6	
19D	7198			↓	113	4670	*	12.3	33.5	
20	7458			0	161	4950	↓	-0.8	1.6	
20A	7504			↓	158	4680	*	-14.3	-27.5	
20B	7574			↓	162	4930	*	14.4	27.8	
21	7648	197,600	24.5	88	161	5245	↓	0.4	0.3	
21A	7693			↓	161	5120	*	-11.3	-26.2	
21B	7752			↓	159	5090	*	12.7	27.5	
22	7853			0	180	5220	Low	0.6	0.3	
22A	7896			↓	179	5020	*	-4.2	-6.2	
22B	7933			↓	179	4920	*	6.6	8.4	
23	8078	194000	23.6	↓	199	5240	↓	0.2	0.5	

GA FORM 904A-2

ER 5473

PETAL DOOR ACTUATOR LOADABLE

+ COMPRESSION

R.H. DOOR — L.H. DOOR

MODEL SATURN V

WEIGHT 1 AS-6

LIFT 165

DATE 8-13-65

PITCH ANGLE, DEG	ANGLE OF ATTACK, DEG	SIDE ANGLE, DEG	R.H. DOOR MAX	R.H. DOOR MIN	L.H. DOOR MAX	L.H. DOOR MIN	R.H. DOOR MEAN	L.H. DOOR MEAN	RAMP SIDE PANELS ON/OFF
N.A.	5.5	0.2	-190	-1370	-780	190	-930	-370	38
	3.9	-2.5	2560	860	1770	-1940	①	-2970	
	4.7	0.8	①	①	①	2100	1130	1850	
	6.7	-0.4	80	-1690	-730	350	-1300	-450	
	6.6	-2.1	190	-1640	-910	-820	-2560	-1530	
	6.6	-1.7	-670	①	-1800	510	-1300	-490	
	0.7	-1.1	-670	-2260	-1430	-410	-1830	-1130	
N.A.	9.6	1.1	3660	1830	2800	3790	2470	3010	65
	10.6	-0.8	3310	1670	2470	4020	2910	3520	
	10.7	1.1	1560	-320	700	5750	4140	5280	
	9.3	0.6	6480	4490	5000	2370	510	1360	
	10.0	0	4570	3230	3790	3810	2510	3050	
	10.3	-1.3	6160	4260	5270	2330	490	1200	
	9.2	-0.2	3750	1960	2720	3790	2490	2880	
	4.1	0	3390	1510	2310	1750	3240	2430	
	0.8	0.6	3500	1240	2370	1460	-330	580	
	1.2	1.1	6480	4470	5570	3980	1980	3270	
	0.3	-2.3	1780	-270	400	3540	2200	2640	
	0.5	-1.3	4220	2310	2580	6000	4490	4660	
	5.5	-0.4	2040	110	160	2000	620	1130	
	5.6	0.6	2310	700	1530	1500	20	660	
	4.5	-1.3	2900	1450	2100	2230	760	1400	
	5.5	-1.5	1400	-540	620	2430	1070	1790	
	5.0	0.2	2210	430	1260	2930	1500	2230	
	6.4	0.8	4570	2300	3630	4570	2900	3770	
	5.0	0.8	3600	1610	2500	6660	4720	5670	
	6.4	1.7	6890	4950	3660	3900	2290	3050	
	-3.0	0.8	1450	-750	-80	1200	-760	40	
	-2.5	2.1	9930	7100	8630	4530	2860	3650	
	-2.7	-0.6	4660	2600	3580	9270	7250	8200	
	4.2	0.8	5700	3280	4170	5280	3240	4270	
	4.6	-0.8	6560	3770	5240	5890	3520	4550	
	4.2	2.3	5810	3770	4730	6590	4160	5500	
	3.0	-2.5	6080	3070	4680	5870	3170	4760	

NOTES:

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ ON
3. NO STRAKE
4. ① ~ R.H. DOOR < -2420
5. ① ~ L.H. DOOR < -3280

NOTES:

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ OFF
3. NO STRAKE

FIGURE E-2B

6008
ADS 182

RUN NUMBER	TIME CORR.	GROSS WEIGHT (LB)	C.G. (% M.A.C.)	FLAP DEF. (DEG)	AIRSPEED (KNOTS)	ALTITUDE (FT.)	STABILIZER POINT SYSTEM FREE	SIDESLIP ANGLE (DEG)	AILERON ANGLE (DEG)	ROLLER FOR
24	8329			50	200	5290	HIGH	0.3	0	
24A	8363				199	5080	*	-5.6	-8.6	
24B	8381				202	4980	*	-4.8	-8.6	
24C	N.A.				200	5000		N.A.		
24D	N.A.						*	N.A.		
25	N.A.			88				N.A.		
25A	N.A.						*	N.A.		
25B	N.A.						*	N.A.		

GA FORM 9048-2

PETAL DOOR ACTUATOR LOADS - LBS

+ = COMPRESSION

PITCH ANGLE - DEG	ANGLE OF ATTACK - DEG	RAMP ANGLE - DEG	R.H. DOOR MAX	R.H. DOOR MIN	L.H. DOOR MAX	L.H. DOOR MIN	PETAL DOOR LOCATION - DEG	MIN
N.A.	-1.8	0.4	4520	1560	3120	4450	2040	3050
	-1.4	0.6	8770	5650	7210	3110	950	2290
	0	3.4	8550	6080	6830	3150	1420	2350

65

NOTES:
1. #~ BOOST CUT-OF
2. RAMP SIDE PANELS
3. NO STRAKE

FIGURE E-2

JOB ADS 1958

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δF ~ c/o	AIRSPEED K ~ KCAS	ALTITUDE Hp ~ FT.	RUDDER BOOST SYSTEM POS.	SIDESLIP ANGLE β ~ DEG.	RUDDER POS. δr ~ DEG.	ELEVATOR POS. δe ~ DEG.	PITCH ANGLE θ ~ DEG.
1	1191	228,500	29.5	0	178	5000	LOW	0.3	0	NA	
2	1271				200	5320		0.3	0		
2A	1392				200	5405		-4.5	-9.08		
2B	1413				202	5395	*	-6.2	-12.02		
2C	1462				200	5425		6.1	10.15		
2D	1481				199	5380	*	6.1	11.22		
3R	1657	225,600	29.5	20	201	5420		0.3	0		
4	1753			50	200	5130		0.3	-0.27		
4A	1788				199	5150	*	-6.2	-12.02		
4B	1830				200	5050	*	5.6	10.42		
5	1887			68	200	5025		0.3	-0.53		
5A	1920				200	5110	*	-5.9	-12.02		
5B	1950				199	5130	*	6.0	10.68		
6	2156			0	179	5180		-0.1	-0.53		
6A	2194				180	5200		-5.0	-7.21		
6B	2235				180	5220		6.2	9.35		
7	2305	222,000	29.1		201	5370		0.7	0.80		
7A	2344				200	5325		-5.3	-8.28		
7B	2366				199	5270	*	-6.2	-9.88		
7C	2404				198	5220		5.7	8.01		
7D	2424				201	5210	*	5.7	8.81		
8	2714			50	200	5145		-0.3	-0.80		
9	2780			68	200	5065		-0.1	-0.80		
9A	2804				201	5120	*	-4.7	-10.68		
9B	2840				200	5190	*	6.0	9.08		
10	3020	218,600	24.5	68	116	4970	HIGH	11.8	32.32		
11	3120				140	5200		0	-0.53		
11A	3157				140	5120	*	-13.3	-30.18		
11B	3200				139	5010	*	13.3	28.65		
12	3272	216,600	24.4	50	140	5025	*	12.6	26.19		
13	3750	215,000	24.1	0	139	4960		0.3	2.94		
13A	3785				140	4935		-5.5	-5.34		
13B	3811				139	4895	*	-10.4	-18.96		
13C	3851				140	4940		5.7	8.01		
13D	3880				141	5120	*	11.7	23.50		
14	3987			20	141	5330		0	0.80		
15	4033			50	140	5335		0.1	0.80		

JCB NO. ADS 73

GA FORM 9884

PETAL DOOR ACTUATOR LOADS - LB

R.H. DOOR / L.H. DOOR

SIDE SLIP ANGLE	ANGLE OF ATTACK	PANEL ANGLE	PETAL DOOR POSITION DEG.	MAX	MIN	MAX/MIN	MAX	MIN
5.1	0	470	-1360	-450	760	-1240	-440	38
3.6	1.84	210	-2420	-1102	190	-1910	-1050	
9.0	0	1260	-1100	-30	-1620	-3680	-2710	
4.0	-0.20	1650	-890	80	-1910	-3720	-3220	
3.8	0	-1310	-3940	-2910	1810	-860	150	
3.9	0	-1730	-4200	-2810	1720	-900	170	
2.8	0.82	160	-2470	-1500	-20	-2340	-1492	
-1.4	0	-970	-3070	-2000	-760	-2840	-1910	
-1.0	-0.61	3150	580	1680	-4140	-6500	-5490	
-1.4	-0.82	-4100	-7040	-5300	2760	670	1700	
-2.8	0	-3040	-4520	-4100	-2040	-4780	-3680	
-2.8	0	3040	1260	2280	①	①	①	
-2.8	0.82	①	①	①	3030	1320	2210	
5.4	0.41	5140	2840	3680	5530	3530	4330	65
5.6	-0.82	5780	3150	4410	5970	3910	4990	
5.2	-0.41	5670	3310	4460	6840	4360	5360	
3.7	-0.20	5410	2360	4020	6120	3300	4780	
4.1	-0.61	6640	3990	5330	6160	3720	5090	
4.2	0	7190	4540	5560	6460	4290	5390	
3.7	1.43	6040	2990	4650	7620	4710	6020	
3.9	0	6040	3410	4520	7300	4710	5930	
-1.4	-0.61	8030	2780	3810	5240	2730	3930	
-2.5	0	1780	-580	680	2690	-290	760	
-2.5	-2.24	6820	1780	4720	2800	-740	820	
-2.4	0	2340	-1050	370	6090	2040	4120	
5.4	1.43	-1550	-3410	-2420	2420	1330	1770	38
0.7	0	-240	-1630	-1050	-250	-1920	-1070	
1.5	0	4990	2440	3730	-2610	-4580	-3600	
0.7	0.41	-3200	-4830	-3940	4980	3370	4160	
3.8	0	-1690	-2940	-2280	2990	1720	2290	
9.6	-0.20	1680	-1050	1020	1940	-1280	1320	38
9.5	-2.45	1000	-320	340	1520	320	880	
9.7	0.82	790	-1050	-80	1090	170	690	
9.5	2.86	1200	50	660	1200	170	650	
9.5	0.82	1100	-420	420	1120	-820	20	
5.8	1.43	1580	210	790	1660	670	1180	
4.5	0	1050	-102	680	1550	400	640	

NOTES

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ 0
3. NO STRAKE
4. ① R.H. DOOR <- 7035
5. ① L.H DOOR <- 6690

FIGURE E-3A

NOTES

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ 0
3. NO STRAKE
4. ① R.H. DOOR <- 7035
5. ① L.H. DOOR <- 6690

ADS1498

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP DEF. δF	AIRSPEED K-KNOTS	ALTITUDE H_P - FT.	RUDDER BOOST SYSTEM OPER.	SIDESLIP ANGLE β - DEG.	RUDDER POS. δR - DEG.	PITCH ANGLE θ - DEG.
15A	4134			50	138	5140	HIGH *	-12.9	-26.18	NA
15B	4178				138	5095	*	13.0	28.05	
16	4309			88	139	5170		0.1	-0.53	
16A	4338				138	5160	*	14.3	-29.65	
16B	4377				139	5165	*	13.9	29.64	
17	4469	211,600	29.6		113	5160		-0.7	-0.80	
17A	4502				114	5095	*	-11.8	-32.32	
17B	4542				114	5195	*	13.0	31.52	
18	4642	210,800	29.2	0	160	5380		1.2	2.14	
18A	4681				159	5270	*	-12.0	-24.04	
18B	4735				159	5040	*	13.8	28.58	
19	4789			50	161	5150		0.3	0	
20	4831			0	179	5100		0.1	-1.07	
21	4953	209,600	29.2		200	5265		0.1	-0.53	
21A	N.A.				200	5280		-5.4	-8.81	
21B	5009				199	5180	*	-8.9	-17.36	
21C	5041				202	5020	LOW	6.0	8.55	
21D	5058				199	5070	*	5.8	8.01	
21E	5135				201	5020	*	-6.5	-11.75	
22	5188			20	201	5150		0.3	-1.07	
23	5243	207,400	29.5	50	201	5130		0	-1.34	
23A	5272				199	5180	*	-7.5	-11.75	
23B	5311				202	5090	*	6.0	6.94	
24	5443			88	200	5335		0.1	-1.60	
24A	5469				200	5480	*	-6.5	-12.55	
24B	5516				201	5190	*	5.6	8.28	
25	5618	205,600	29.3	0	201	5040		-0.2	-1.60	
25A	5672				200	5225		-5.1	-8.55	
25B	5696				200	5245	*	-5.9	-10.95	
25C	5731				199	5245		NA	NA	
25D	5749				199	5230				
26	5838			88	200	4870				
26R	6055				200	5105		-0.1	-1.34	
26A	6085				198	5250	*	-4.9	-9.62	
26B	6119				201	5280	*	4.9	6.68	
27	6202				134	5105	HIGH	-0.5	-1.07	
28	6256	201,600	29.6	50	136	5190	*	-12.7	-24.04	
28A	6328				135	5090	*	13.2	30.18	

MISSILE SIMULATOR
MISSILE ACCELERATION
LOADS - LBS
+ COMPRESSION

S-DEG ANGLE	ANGLE OF ATTACK-DEG	BANK ANGLE Φ-DEG	R.H. DOOR			L.H. DOOR			PETAL DOOR POSITION-DEG
			MAX	MIN	MEAN	MAX	MIN	MEAN	
4.1	1.84	2990	-840	-1730	-700	-2190	-1430	38	
4.6	-0.82	-790	-2150	-1630	3110	1430	2150		
0.4	1.22	370	-1890	-740	-60	-1390	-720		
1.4	-0.41	4720	2420	3360	-2230	-4290	-3390		
0.6	0.41	-2470	-5250	-3730	4860	2760	3810		
5.8	-0.82	890	-320	340	860	-440	290		
4.5	2.04	8030	1000	1810	-970	-2800	-1850		
5.4	0.82	-1470	-3040	-2150	2880	1510	2100		
7.0	-0.20	1520	-50	660	1890	210	1050		
6.1	2.04	1730	-520	290	-20	-1430	-690		
6.9	0.20	-320	-1680	-1100	2000	-60	740		
1.1	0.61	580	-840	80	670	-1050	-380		
5.1	0.61	1680	-100	580	1770	-480	570		
3.5	1.43	1210	-790	130	1050	-860	0		
4.1	-1.84	2620	260	1360	-820	-2730	-1960		
4.1	-1.43	3360	890	1940	-1660	-3680	-2760		
3.5	1.02	-1100	-3200	-2150	2570	550	1660		
3.7	0.41	-920	-3360	-2260	2420	400	1470		
4.2	-0.20	2780	680	1730	-1160	-3600	-2310		
2.8	0	1100	-1310	-420	900	-1770	-780		
-1.2	-0.61	-370	-3260	-1780	-400	-2570	-1720		
-0.8	-2.25	4720	1630	3040	-4820	-6690	-5930		
-1.0	-1.02	-4200	-7040	-5640	4360	1734	3140		
-1.4	-0.61	-2470	-5510	-3990	-2040	5550	-3790		
0.5	0.41	4620	1650	3202	①	①	①		
0.5	-1.22	①	①	①	3790	1510	2610		
4.1	-0.20	5300	3040	3940	5890	4060	4670	65	
4.4	-1.02	3950	4940	5670	6380	3990	5240		
4.2	-0.20	NA	NA	NA	NA	NA	NA		
NA	NA	↓	↓	↓	↓	↓	↓		
-2.5	1.43	1520	-1310	290	1870	-1220	40		
-2.3	0.41	6640	1522	4360	1220	-1660	40		
-1.8	-0.20	1020	-1760	160	5570	2100	4630		
1.2	0.20	2550	420	1340	2670	460	1240		
4.3	0.82	5800	2990	4170	5220	3980	4690		
5.2	-0.20	5090	3730	4440	4980	3660	4310		

NOTES

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ OFF
3. NO STRAKE
4. ① R.H. DOOR ≤ 7035
5. ① L.H. DOOR ≤ 6690

FIGURE E-3B

6009
ADS 15-A

RUN NUMBER	TIME ERR.			FLAP SETTING		ALTITUDE				
1A	1023	216,600	29.2	0	142	4945	HIGH	0.6	0.54	NA
1B	1069				141	4935		-5.8	-8.09	
1C	1096				138	4785	*	-16.0	-30.22	
1D	1157				141	4640		4.8	7.55	
1E	1190				141	5045	*	14.6	30.49	
2A	1384			20	140	5040		0.2	0	
3A	1481			50	140	4940		0.1	0.54	
3B	1519				140	4900	*	-14.2	-30.76	
3C	1569				142	5120	*	13.5	29.95	
4A	1657	214,000	24.5	88	140	5450		0.3	0.27	
4B	1708				142	5450		-6.7	-11.87	
4C	1742				141	5345	*	-12.0	-29.68	
4D	1782				138	5200		4.9	10.25	
4E	1822				140	4935	*	11.6	28.87	
7A	2062				112	5015		-0.4	0.81	
5B	2105				113	4960		-5.1	-11.33	
5C	2131				114	4850	*	-12.0	-32.38	
5D	2179				113	4705		5.1	10.25	
5E	2210				112	4540	*	NA	NA	
6A	2628	209,600	24.2	0	165	4925		0.6	1.08	
6B	2668				163	4965		-9.2	-14.30	
6C	2716				160	5010	*	13.3	28.06	
6D	2771				163	5025	*	-14.2	-26.44	
7A	2854			88	160	5105		0.3	1.08	
7B	2890				163	5200	*	-11.6	-25.63	
7C	2930				159	5120	*	10.6	26.44	
8A	3041	207,600	24.3	0	178	5105	LOW	0.5	1.35	
8B	3077				150	5000		-5.1	-7.55	
8C	3115				180	5190		5.2	9.44	
9A	3268				201	5370		0.2	1.08	
9B	3292				200	5300		-5.1	-8.09	
9C	3315				198	5225	*	-7.0	-10.52	
9D	3384				200	5020		4.7	8.09	
9E	3405				200	4950	*	5.4	9.71	
10A	3645			50	201	5360		0.2	0.81	
11A	3789	201,600	24.1	88	200	5295		0.1	1.08	
11B	3815				201	5310	*	-5.3	-11.33	

JOB NO ADS 74

ER 5473

MODEL SHIA

DATE 6-17-65

9.2	1.65	3050	1610	2340	3010	1750	2340	55
8.7	-0.83	2860	1390	2130	3490	150	2340	
8.4	-2.07	1940	300	790	5570	3580	4570	
9.4	-1.24	3490	2130	2890	3340	1960	2650	
9.5	-0.69	5550	3490	4250	1870	300	1070	
8.1	041	2670	1580	2130	2820	1560	2100	
4.6	041	2560	1200	1610	2630	1370	1810	
4.0	-0.41	4090	2940	3110	4120	2480	3300	
4.2	-1.10	4420	2450	3270	4500	3130	3720	
0.6	-4.27	1360	-490	410	1980	-190	800	
10	-3.17	3820	1280	3160	1100	-1180	-190	
17	-1.65	7940	5400	6490	4120	760	2210	
0.7	-4.00	650	-1040	-60	3430	1850	2570	
0.8	-4.69	4530	2440	3990	8420	6100	7200	
6.1	-1.38	1580	160	950	1720	530	1180	
5.9	-2.07	2040	760	1420	1100	-500	440	
4.8	-4.41	3270	2130	2590	1600	40	820	
5.9	-1.79	1140	2450	360	2250	990	1600	
NA	NA	760	270	840	3200	1940	2480	
6.7	0.41	3190	1440	2290	3450	1560	2940	
6.6	0.83	3710	2130	2890	4520	2380	3390	
6.9	-3.17	5340	3240	4090	2840	1370	2020	
5.6	-0.55	6160	1640	2320	5120	3530	4730	
-2.3	0	1440	-870	-60	1870	-550	290	
-0.8	0.97	10,940	7170	9190	4380	1470	3070	
-2.6	-3.03	5180	2130	3270	8320	7660	8540	**
4.2	0.55	4820	2400	3520	4990	2480	3680	
4.8	2.48	6160	3410	4610	5110	3200	4230	
4.5	-1.10	5730	3140	4250	6100	3700	4760	
3.1	-2.62	5340	2640	4090	5760	2860	4350	
3.4	-1.10	7120	3930	5450	5850	3070	4380	
3.6	-1.10	7500	4360	6080	5970	3490	4880	
3.1	-5.10	5940	2860	4472	6610	4100	5320	
3.1	-1.24	5970	3330	4720	6670	4120	5510	
-2.5	1.10	3990	540	1530	3580	570	2080	
-3.3	-3.31	-270	-3000	-1500	630	-1850	-860	
-3.0	3.72	5070	1720	3540	-300	-3640	-2230	

NOTES

1. * ~ Boost Cut-Off
2. Ramp Side Panels ~ ON
3. No Strake
4. ** ~ L.H. Galvonometer Became Non-Linear at Approximately 8300 #C.

FIGURE E-4A

6008
ADS 151B

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δ_F ~ d/s	AIRSPEED V_c ~ KNOTS	ALTITUDE H_p ~ F.T.	AUXILIARY BOOST SYSTEM POS.	SIDESLIP ANGLE β ~ DEG.	RUDDER POS. δ_r ~ DEG.	PITCH
11C	3855	200800	24.2	88	200	5370	HIGH	3.6	9.44	NA
12A	4728			0	134	5105	LOW	-2.1	-1.35	
12B	4772				133	5040		-5.1	-6.75	
12C	4808				135	4790		*-15.7	-30.76	
12D	4851				133	4580		4.9	7.01	
12E	4886				133	4320		*14.9	32.11	
13A	5090			20	134	5005		-0.6	-0.54	
14A	5138			50	133	5460		-0.3	-0.54	
14B	5183				133	5120		*-15.1	-30.49	
14C	5236				134	5285		*13.3	31.03	
15A	5324	195600	24.3	88	134	5245		-0.6	-0.27	
15B	5361				134	5170		-5.7	-8.09	
15C	5832				134	5760		*-13.1	-31.84	
15D	5875				133	5580		5.2	8.36	
15E	5905				134	5000		*NA	NA	
16A	5963				1.2 V_s					
16B	5996									
16C	6024							*		
16D	6062									
16E	6089							*		
17A	6384	192,800	23.5	0	158	5040		0.8	0.81	
17B	6422				163	4955		*-19.8	-27.52	
17C	6473				160	5910		*13.7	27.52	
18A	6611			88	160	5480		0.5	0.81	
18B	6639				162	5490		*NA	NA	
18C	6759				161	5640		*-12.2	-26.7	
18D	6818				160	5670		*11.7	26.17	
19A	6899	190,100	23.3	0	181	5205	HIGH	0.6	0.81	
19B	6943				180	5250		-5.8	-7.82	
19C	6972				181	5260		4.6	5.94	
20A	7129				200	5390		0.4	0.27	
20B	7164				200	5260		-5.3	-7.32	
20C	7193				200	5340		*-6.8	-9.98	
20D	7233				201	5100		5.2	7.62	
20E	7250				199	5020		*4.9	7.55	
21A	7453			50	200	5485		0.3	0	
22A	7513	185,600	23.2	88	199	5290		0.5	0.27	

GA FORM 9681-2 JOB NO ADS 74

ER 5473
MODEL C-141A

PETAL DOOR ACTUATOR LOADS - LBS + COMPRESSION

R.H. DOOR / L.H. DOOR

PITCH ANGLE - DEG	ANGLE OF ATTACK - DEG	BANK ANGLE - DEG	R.H. MAX	R.H. MIN	L.H. MAX	L.H. MIN	PETAL DOOR POSITION - DEG
NA	-3.0	-4.83	-140	-3680	-1910	4940	1680	3010	55
	9.2	-0.83	3350	1720	2450	3200	2100	2710	55
	9.8	0.28	3220	1690	2510	3470	2250	2780	
	8.8	3.72	1690	80	820	5180	3470	4480	
	10.0	-2.48	4040	2180	2940	3770	1940	2740	
	10.5	0.14	4850	3270	4310	1450	80	740	
	8.5	0	3990	1690	2430	3280	2100	2480	
	4.2	-0.69	2920	1090	1940	2630	1370	1920	
	2.7	-9.14	4360	2780	3650	3390	2020	2630	
	4.4	-4.96	3990	2100	2780	4380	3130	3660	
	0.7	-4.14	1640	-140	630	1330	-800	500	
	1.0	-6.34	3080	1310	2130	250	-1370	-530	
	1.6	-1.10	6050	3900	5130	2100	170	1140	
	0.7	-0.97	220	-1830	-930	2860	1180	2020	
	NA	NA	6000	1360	2400	6290	4540	5490	
			1990	490	1200	2290	1100	1680	
			NA	NA	NA	NA	NA	NA	
	6.5	-2.07	3710	2130	2890	3660	2290	2950	
	5.1	-1.10	3110	1170	2150	5620	3770	4840	
	6.7	-3.17	5620	3990	4420	3160	1330	2270	
	-2.5	-3.59	1120	-1580	-570	1640	-760	400	
	NA	NA	NA	NA	NA	NA	NA	NA	
	-0.6	1.93	9220	6490	8150	3670	1440	2630	
	-1.9	-2.07	4610	2130	3270	9450	7910	8840**	
	4.6	-0.97	5320	3270	4310	5340	3390	4200	
	4.5	-2.21	6520	3960	5290	5490	3340	4500	
	4.7	-4.00	5890	3220	4580	6290	4270	5200	
	3.1	-1.10	5840	3220	4310	5970	3050	4730	
	3.4	-2.48	7420	4550	6050	6020	3510	4500	
	3.6	1.10	7990	5130	6540	7700	3390	4920	
	3.0	-3.17	6240	3410	4610	7760	4560	6060	
	3.2	-1.52	6220	3990	4850	7760	4820	6160	
	-1.6	0.28	2290	-60	1040	3560	720	1680	
	-2.0	-0.25	-790	-4080	-2560	170	-2220	-900	

NOTES

1. * ~ Boost Cut-Off
2. Ramp Side Panels ~ On
3. No Strake
4. Ramp Side Panels On For Run 11C
5. ** ~ L.H. Galvonometer Became Non-Linear At Approximately 8300 * C

FIGURE E-4

600
ADS

6008 ADS 151C

RUN NUMBER	TIME CORR.	CROSS WEIGHT LBS	C.G. % M.A.C.	FLAP DEG. SE = S/S	AIRSPEED KNOTS	ALTITUDE HP - FT.	ENGINE BOOST INCHES HG	SIDESLIP ANGLE DEGREES	AILERON POSITION DEGREES
22B	7592			88	198	5195	LOW *	-6.1	-10.25
22C	7574			1	200	5000	1 *	NA	NA

GA FORM 9048-2 JOB NO ADS 74

6008
DS 151B

NA	-2.0	-3.03	5840	2340	4420	-1160	-3930	-2710	55
↓	NA	NA	NA	NA	NA	NA	NA	NA	↓

NOTES

1. * Boost Cut-Off
2. Ramp Side Panels
3. No Strake

FIGURE E-

6008
9DS-159

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δF ~ °	AIRSPEED KNOTS	ALTITUDE FT.	TURB. & BOUNDARY LAYER PROBE	CL/CL MAX	CL DIG. FLIGHT DATA RECORDER POS.
1A	985	168000	30.9	0	139	5590	HIGH	-0.4	0.8 *
B	1027				140	5570		-5.4	-6.3
C	1065				141	5520	*	-15.4	-28.9
D	1207				143	5400		5.2	8.0
E	1248				138	5300	*	14.4	31.9
2A	1481			20	140	5670		-0.3	0
3A	1653			50	143	5960		-0.1	-1.1
B	1704				132	6010	*	-13.0	-31.6
C	1764				110	6220	*	12.2	31.9
4A	1956			88	142	6350		-0.4	-0.3
B	1989				137	6420		-5.2	9.4
C	1922				139	6480	*	-13.6	30.8
D	1999				140	6660		5.4	10.4
E	2019				141	6800	*	12.5	28.9
[illegible]	2307				111	6030		-1.2	0.8
B	2368				118	6200		-5.0	-6.6
C	2406				109	6390	*	-13.4	-32.5
D	2453				114	6450		4.9	9.6
E	2493				113	6500	*	11.7	32.7
6A	2738			0	160	6160		-0.2	-0.3
B	2781				161	5940	*	-14.5	-26.7
C	2894				160	6800	*	13.7	28.1
7A	3003			88	162	6830		-0.5	-0.3
B	3074				160	7200	*	-12.4	-26.7
C	3127				160	7440	*	10.6	25.0
[illegible]	[illegible]	[illegible]	30.2	C	193	7010	LOW	-0.4	0
[illegible]	[illegible]			20	132	7200		-0.5	0
[illegible]	3497	[illegible]	30.1	0	200	7580		-0.1	-0.5
B	3518				202	7620		-5.2	-6.5
C	3552				200	7650	*	-6.4	-10.2
D	3636				203	7780		4.9	9.5
E	3662				200	7650	*	5.3	9.3
11A	3834	164000	30.0		151	8720	HIGH	-0.2	-0.5

GA FORM 904A-2

141A
C.G.
65
.5~QEF
E-4C
6008
ADS ISIC

PETAL DOOR ACTUATOR LOADS ~ LBS

+ = COMPRESSION

ER 5473
MODEL C-14
AFCRAFT AC
FLIGHT ~ 171
DATE ~ 8-26-6

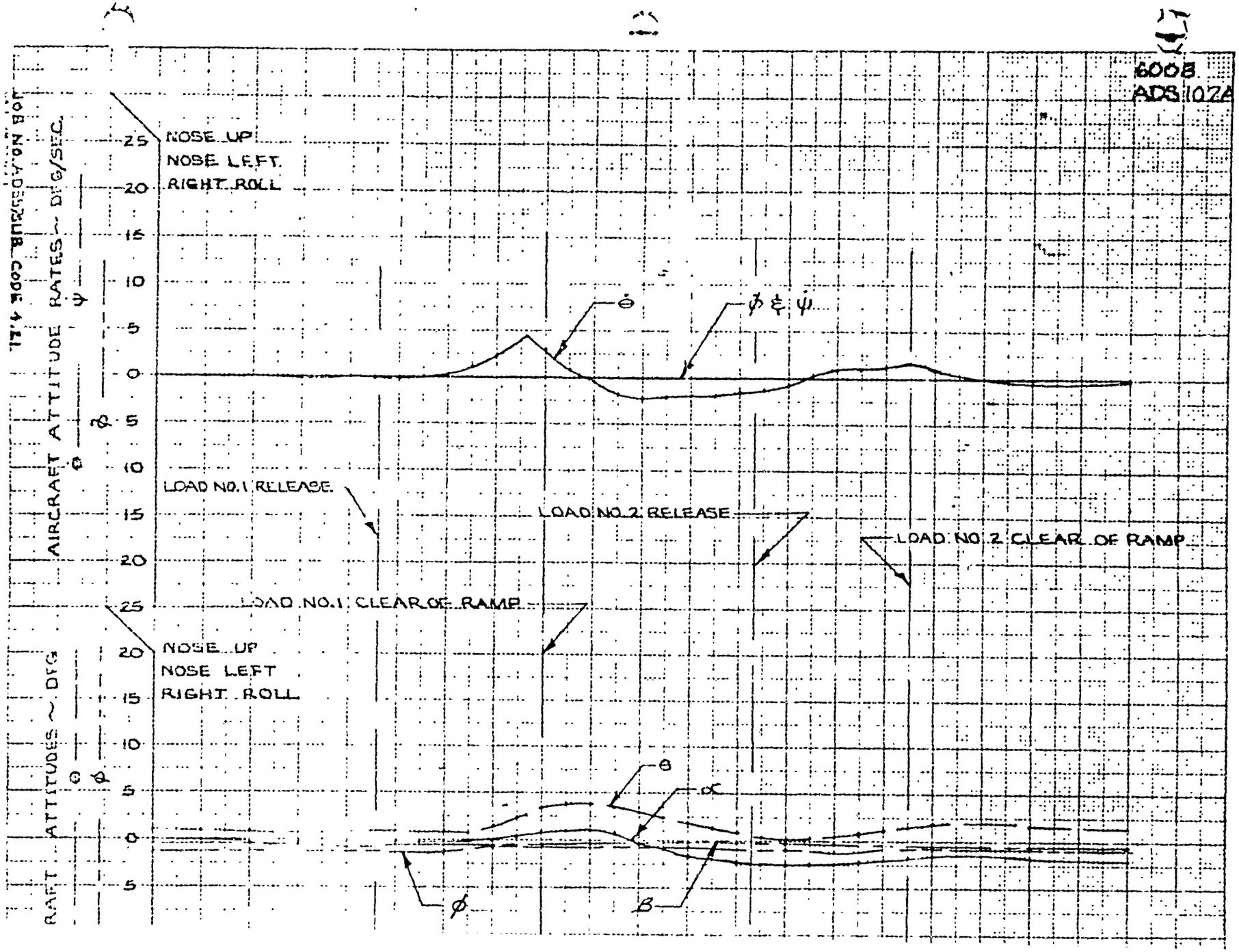
PITCH ANGLE DEG.	ANGLE OF ATTACK DEG.	SIDESLIP ANGLE DEG.	R.H. DOOR MAX	R.H. DOOR MIN	L.H. DOOR MAX	L.H. DOOR MIN	PETAL DOOR POSITION ~ DEG.
**	7.0	0.2	2780	1340	2060	2930	1430	2150	55
	7.0	-1.5	3160	1620	2340	3000	1690	2330	
	5.4	-1.9	2210	720	1400	4240	2720	3440	
	6.6	0.2	3290	1790	2450	3340	1980	2770	
	7.2	-1.5	4030	2500	3310	2000	1020	1520	
	5.9	0.6	2430	1290	1780	2720	1520	2030	
	0.9	0.2	2130	1960	1490	2280	1000	1640	
	2.3	0.4	2830	1860	2460	3280	2150	2690	
	1.0	0.8	5440	2210	3050	5190	3920	4610	
	-2.5	0.6	960	-790	-180	740	-1160	-70	
	-1.9	-0.6	3270	1470	2090	440	-1380	-420	
	-1.7	0.4	7650	5950	6880	3940	2210	3300	
	-2.4	-3.2	420	-1380	1690	3480	1890	2760	
	-2.4	-1.0	4080	1970	3090	8780	6480	7950	
	1.0	2.6	1030	-330	480	1710	-140	440	
	.0	0.6	1950	550	850	560	-1200	-530	
	2.2	-0.2	4450	2390	3090	2330	710	1390	
	1.7	-0.6	300	-1030	-390	2220	1060	1620	
	2.0	1.3	2500	590	1420	4180	2860	3370	
	4.6	-0.4	2740	1030	1840	2950	1390	2200	
	3.9	-0.2	3270	1690	2340	5260	3530	2270	
	4.4	-4.1	4890	3060	4100	3740	2450	2860	
	-3.0	1.7	370	-1300	-500	710	-1500	-850	
	-1.9	1.9	9360	6730	8320	3960	1480	3040	
	-3.0	-4.3	4090	1490	2900	10300	7290	8600	
	2.2	2.1	4400	1710	3470	4590	2630	3370	
	-0.4	-1.3	2440	1340	2610	3910	1790	2680	
	1.4	1.2	4090		3590	5030	2910	3970	
	1.5	1.1	6730	3790	4730	5590	2650	3350	
	2.3	0.6	7810	4970	5520	5720	3070	4310	
	1.3	-1.3	5500	2910	3700	7820	4520	5700	
	2.0	-0.2	5320	2530	3990	7240	4270	5460	
	5.5	0.6	870	-780	-180	390	-700	-90	32

NOTE:

1. * ~ BOOST CUT-
2. NO STRAKE
3. RAMP SIDE CUT INSTALLED.
4. ** ~ NO USEFUL OBTAINED

FIGURE E-

APPENDIX F


6008
ADS 102A
JOB NO. ADS 102B CODE 1.21
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
25
20
15
10
5
0
5
10
15
20
25
θ̇
φ̇ & ψ̇
LOAD NO.1 RELEASE
LOAD NO.2 RELEASE
LOAD NO.2 CLEAR OF RAMP
LOAD NO.1 CLEAR OF RAMP
AIRCRAFT ATTITUDES ~ DEG
NOSE UP
NOSE LEFT
RIGHT ROLL
θ
α
φ
β

PREPARED BY FCW
DATE 6-25-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63807 LAC 600B
TEST DATE 6-24-65
FLIGHT ~145 DROP NO. 27
SHEET 1 OF 7

CARGO WT. 34800 LBS-1
9450 LBS-2

RUN CONDITIONS : DROP 1 - DROP 2
1. G.W. ~ 201000 LBS - 166200 LBS.
2. C.G. PRIOR TO DROP ~ 33.6 & 27.8% MAC
3. C.G. AFTER DROP ~ 27.8 & 30.5% MAC
4. FLAPS ~ 65%
5. GEAR ~ UP
6. AVG. EPR ~ 1.31 (4 ENGINES)
7. i_H ~ 0.9 DEG. (A/C NO.)

CARGO DESCRIPTION
1. TYPE CARRIER ~ PLATFORMS
2. LENGTH ~ 288 IN & 96 IN
3. CARGO C.G. POSITIONS
LONG. ~ FS 1022 & FS 813
VERT. ~ WL 183 & WL 176

EXTRACTION CHUTE DESCRIPTION
1. NO. OF CHUTES ~ 2 & 1
2. CHUTE SIZE ~ 28 & 22
3. RATED CHUTE FORCE/CARGO WT. [illegible]
4. EXTRACTION LINE LENGTH ~ 100 FT & 140 FT

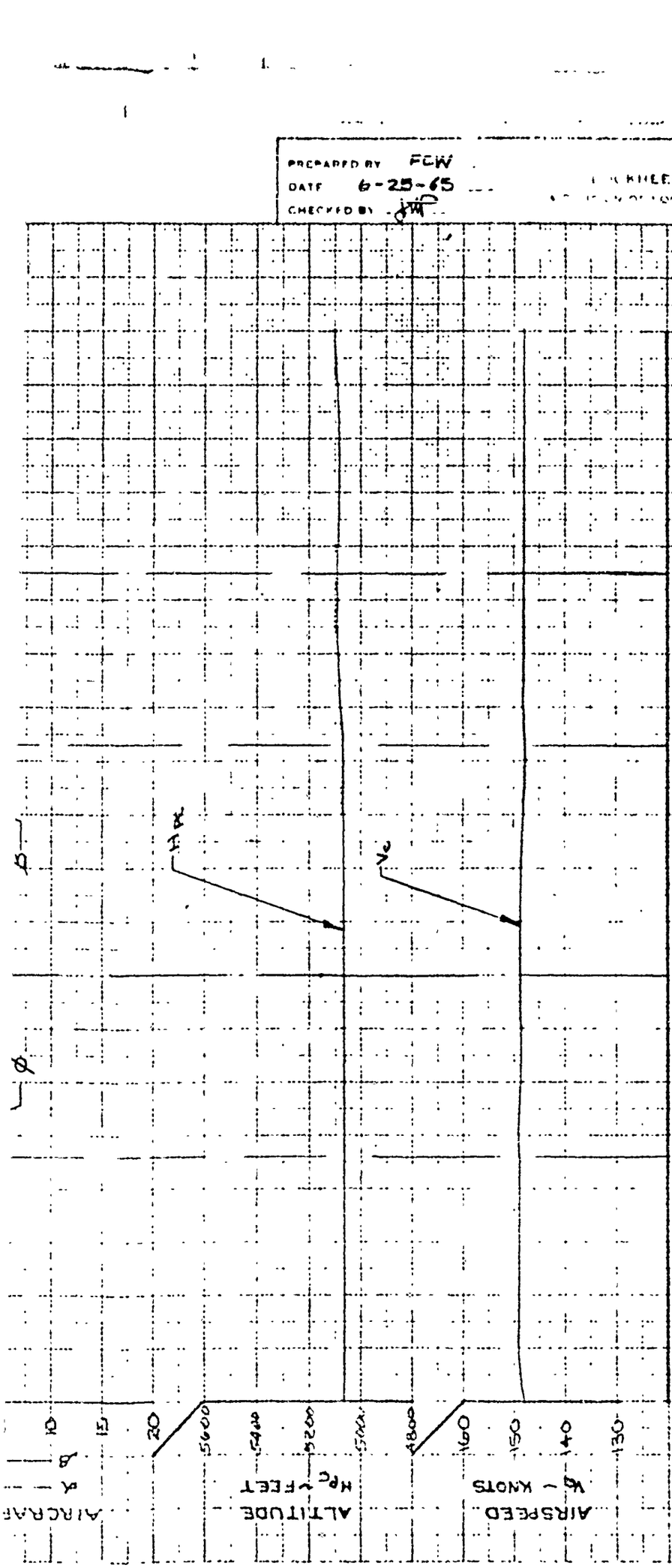
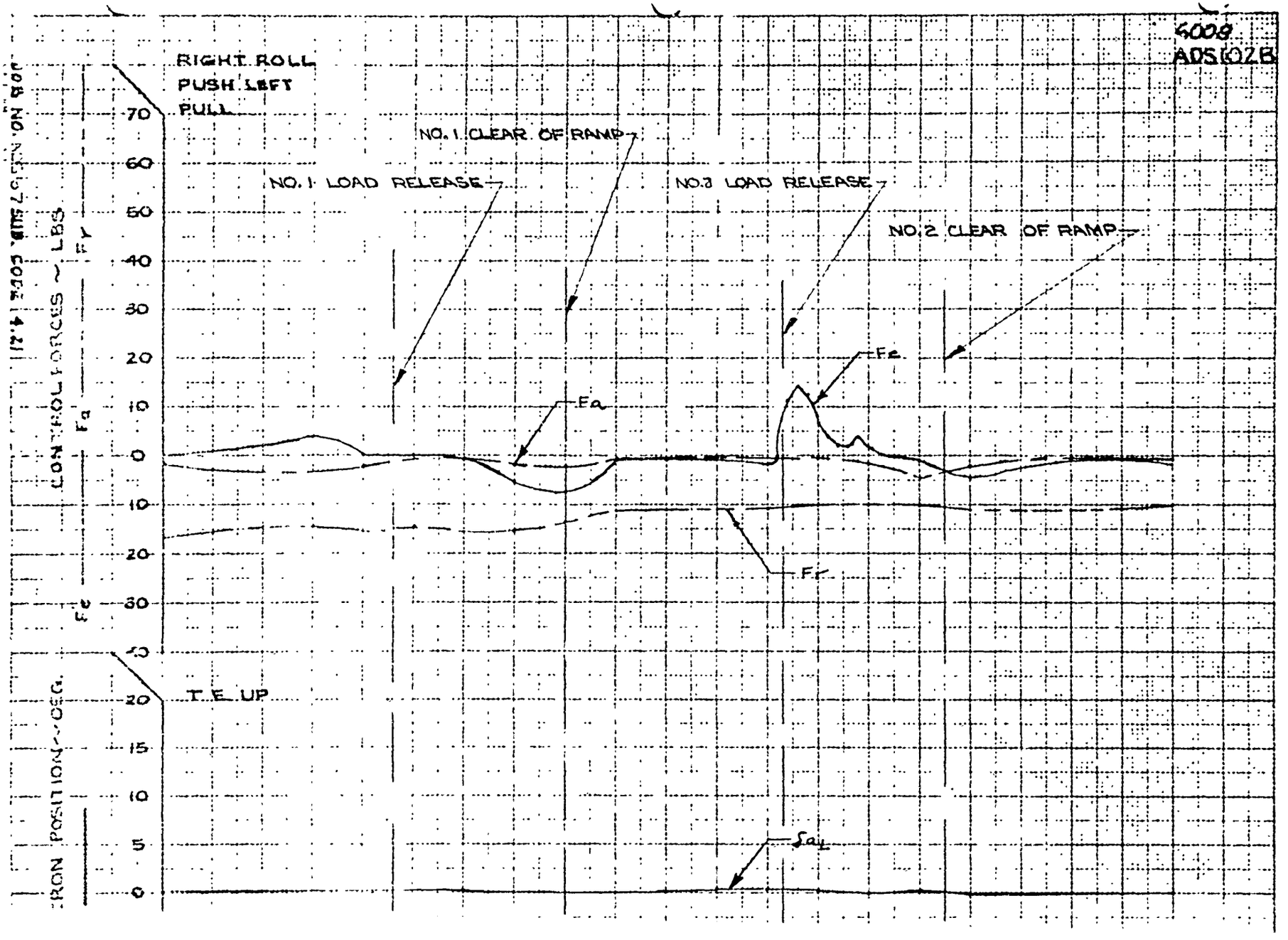


FIGURE F1-A

600B
ADS-02A
REVISED 12-15-65
MBH


4008
ADS 02B
RIGHT ROLL
PUSH LEFT
PULL
NO. 1 CLEAR OF RAMP
NO. 1 LOAD RELEASE
NO. 2 LOAD RELEASE
NO. 2 CLEAR OF RAMP
Fe
Fa
Fr
CONTROL FORCES ~ LBS
70
60
50
40
30
20
10
0
10
20
30
T. E. UP
20
15
10
5
0
δaL

PREPARED BY FCW
DATE 6-24-65
CHECKED BY JMP

REPORT NO ER 5473
MODEL C-141A
PAGE F-3

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 6-24-65

FLIGHT 145 DROP NO 37

SHEET 2 OF 7

CARGO WT. 34800 LBS -1
9450 LBS -2

NOTE:
SEE FIGURE E-1A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

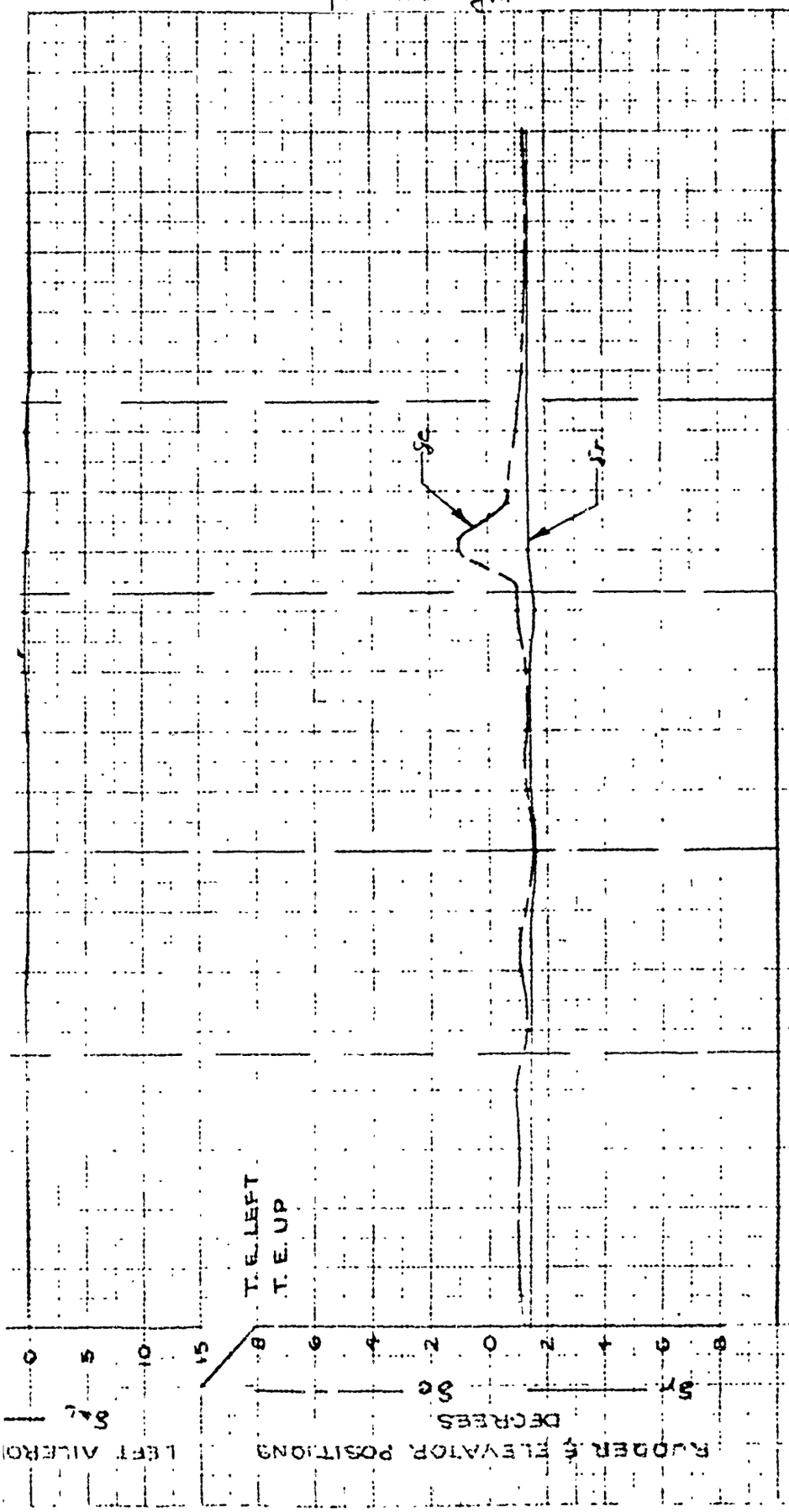
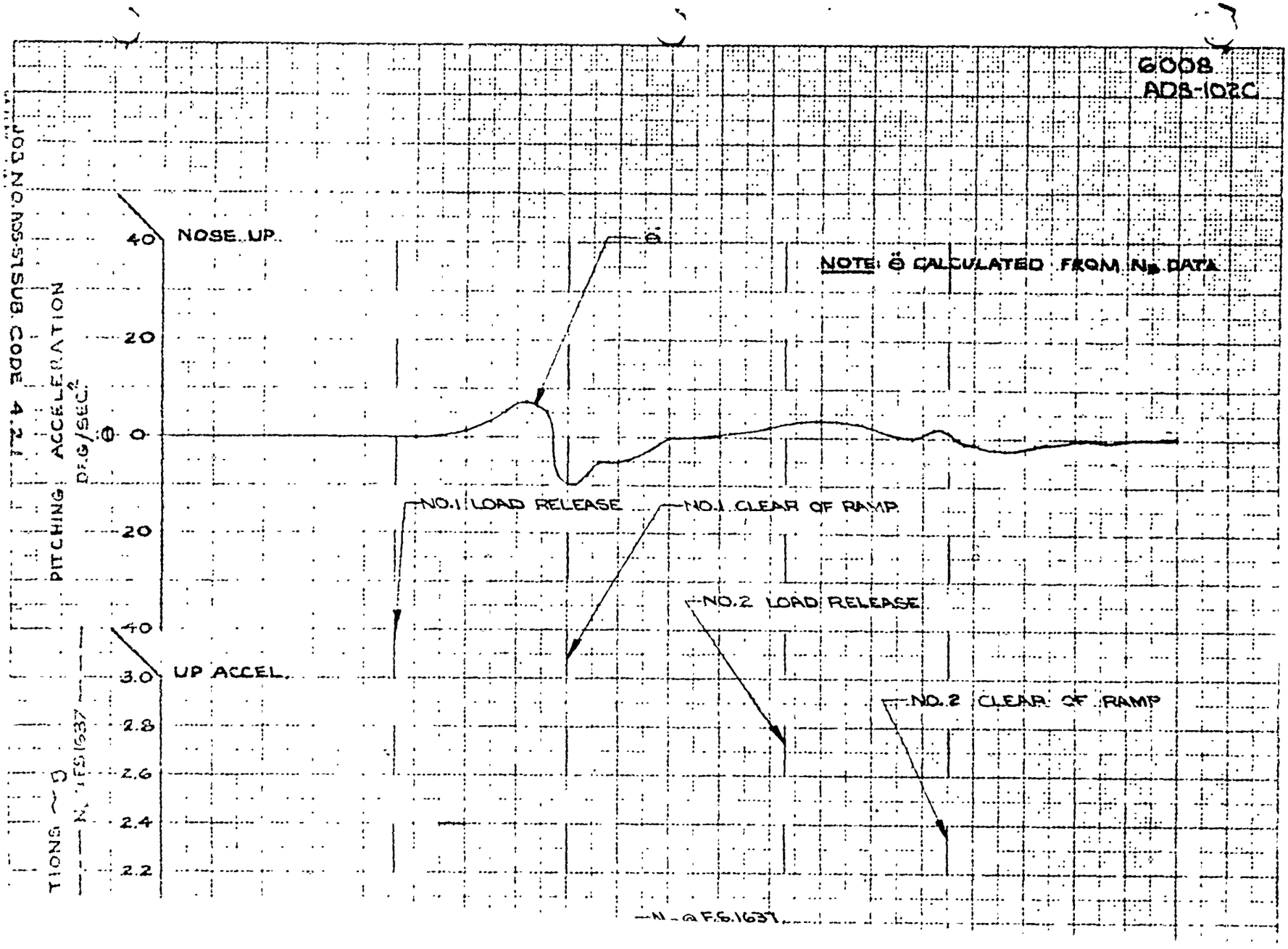


FIGURE E-1B


6008
AD8-102C
JOB NO. NAS-9-1510 SUB CODE 4.2.1
PITCHING ACCELERATION
DEG/SEC²
40
NOSE UP
20
0
20
40
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
θ̈
NOTE: θ̈ CALCULATED FROM Nz DATA
NO.1 LOAD RELEASE
NO.1 CLEAR OF RAMP
NO.2 LOAD RELEASE
NO.2 CLEAR OF RAMP
—N_z @ F.S. 1637
TIONS ~ G
N_z @ F.S. 1637

PREPARED BY T.E.D.
DATE 6-24-69
CHECKED BY JWP

REPORT ER 5473
MODEL C-141A
P-4

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC. 600B
TEST DATE: 6-24-69
FLIGHT-145 DROP NO.-31
SHEET 1 OF 1

CARGO WT. 34 800 LBS - 1
9450 LBS - 2

NOTE:
SEE FIGURE 178 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTIO
CHUTE DESCRIPTION.

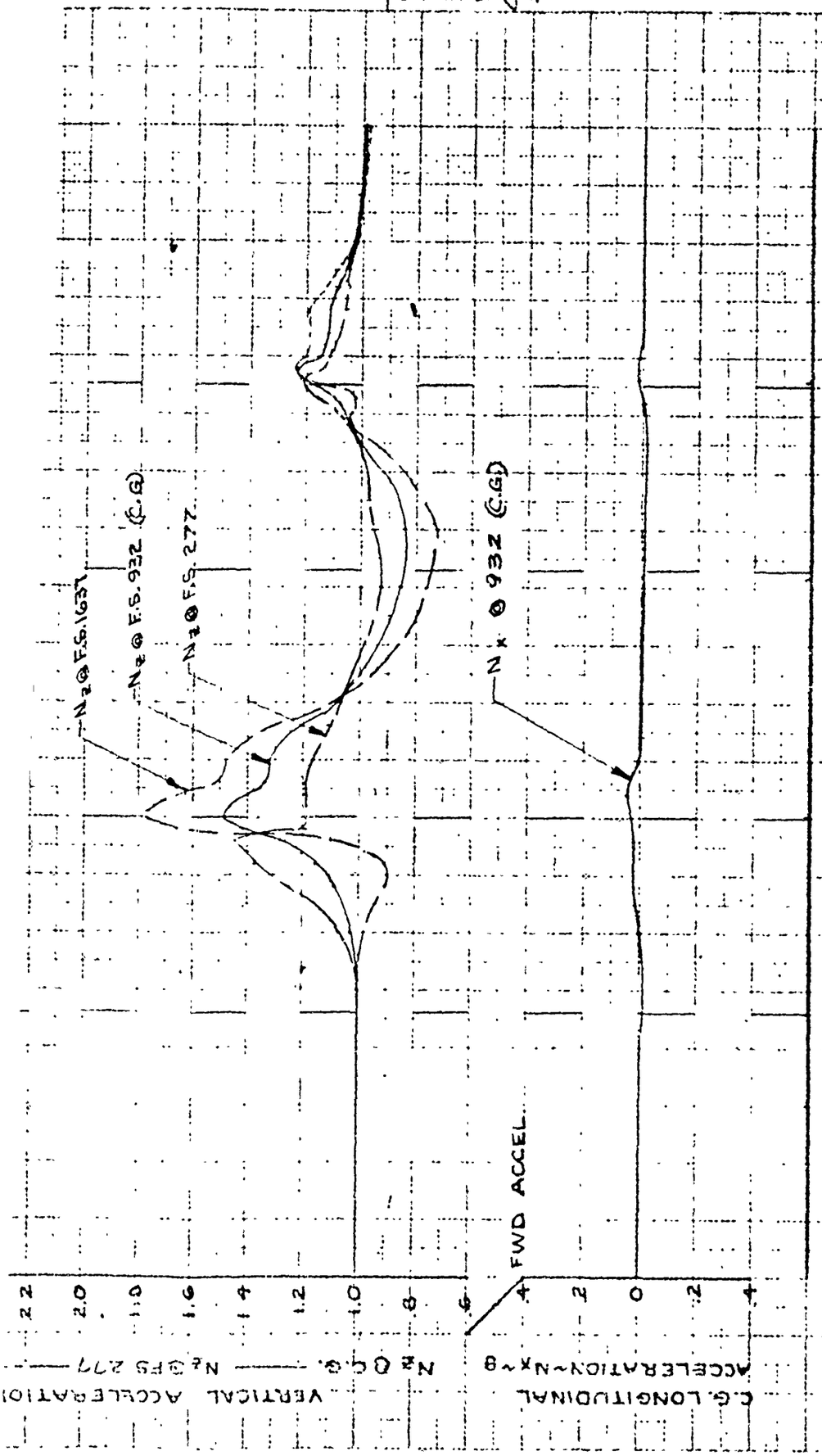
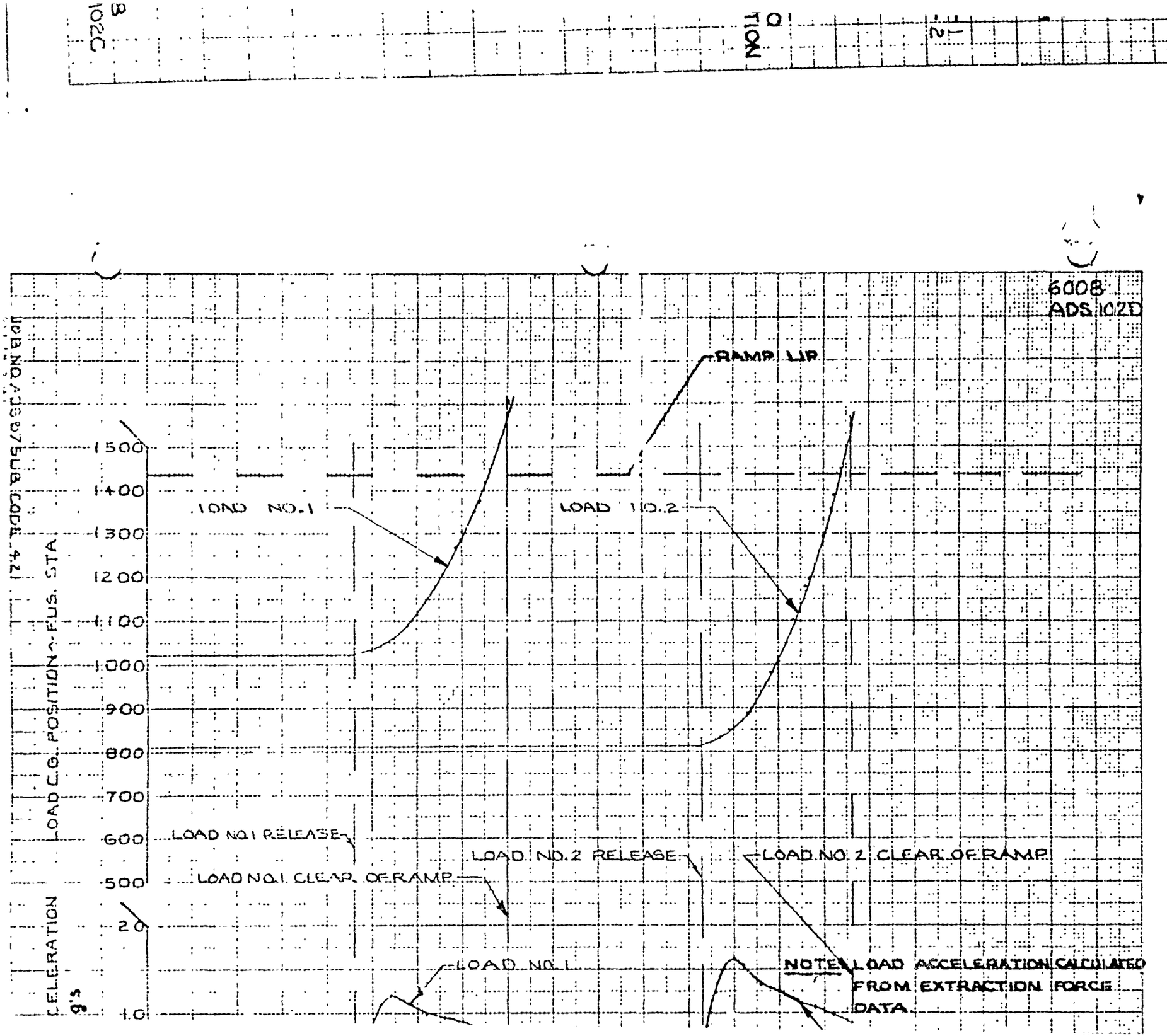


FIGURE F1-C

6008
ADS-102

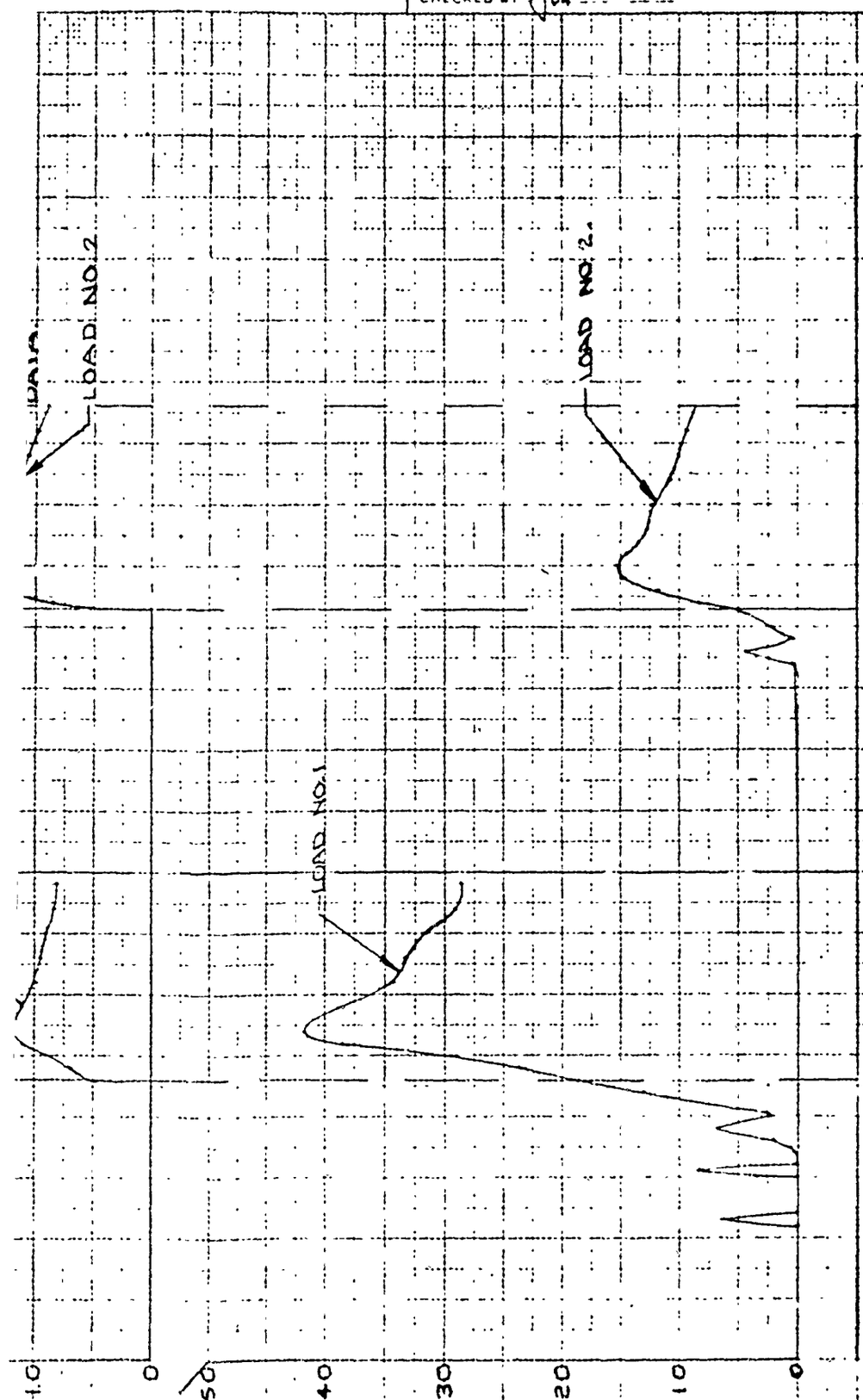

6008
ADS 102D
RAMP UP
LOAD NO.1
LOAD NO.2
LOAD NO.1 RELEASE
LOAD NO.1 CLEAR OF RAMP
LOAD NO.2 RELEASE
LOAD NO.2 CLEAR OF RAMP
LOAD NO.1
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
LOAD C.G. POSITION - FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
ACCELERATION g's
2.0
1.0

TIME HISTORY OF AERIAL DELIVE
MANEUVER

MODEL C-141A
AF 63-8077 LAC 60
TEST DATE 6-24-65
FLIGHT 145 DROP NO. 37

SHEET 4 OF 7

CARGO WT. 34800 LBS - 1
9450 LBS - 2



NOTE:
SEE FIGURE 178, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE F1-D

6008
ADS-102E

R.H. RAMP ACTUATOR LOAD

L.H. RAMP ACTUATOR LOAD

NO.1 LOAD RELEASE

NO.1 CLEAR OF RAMP

R.H. SPIDER ARM LOAD

L.H. SPIDER ARM LOAD

R.H. VERT. LOAD

L.H. VERT. LOAD

TENSION

TENSION

DOWN LOAD

4 2 0 -2 -4

30 20 10 0

15 10

R.H. L.H.

LBS. X 10⁻³

RAMP ACTUATOR LOAD

R.H. L.H.

LBS X 10⁻³

ADS LINK AXIAL LOAD

L.H.

35 X 10⁻³

ICAL LOAD

JOB NO. NAS 5T SUBI. CODE 4.2.1

TIME HISTORY OF AERIAL DELI MANEUVER

MODEL C-141A

AF 63-8077 LAC GC

TEST DATE: 6-24-65

FLIGHT 149 DROP NO.

SHEET 5 OF 7

CARGO WT. 34800 LBS
9450 LBS

NOTE:
SEE FIGURE 118 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTIO
CHUTE DESCRIPTION.

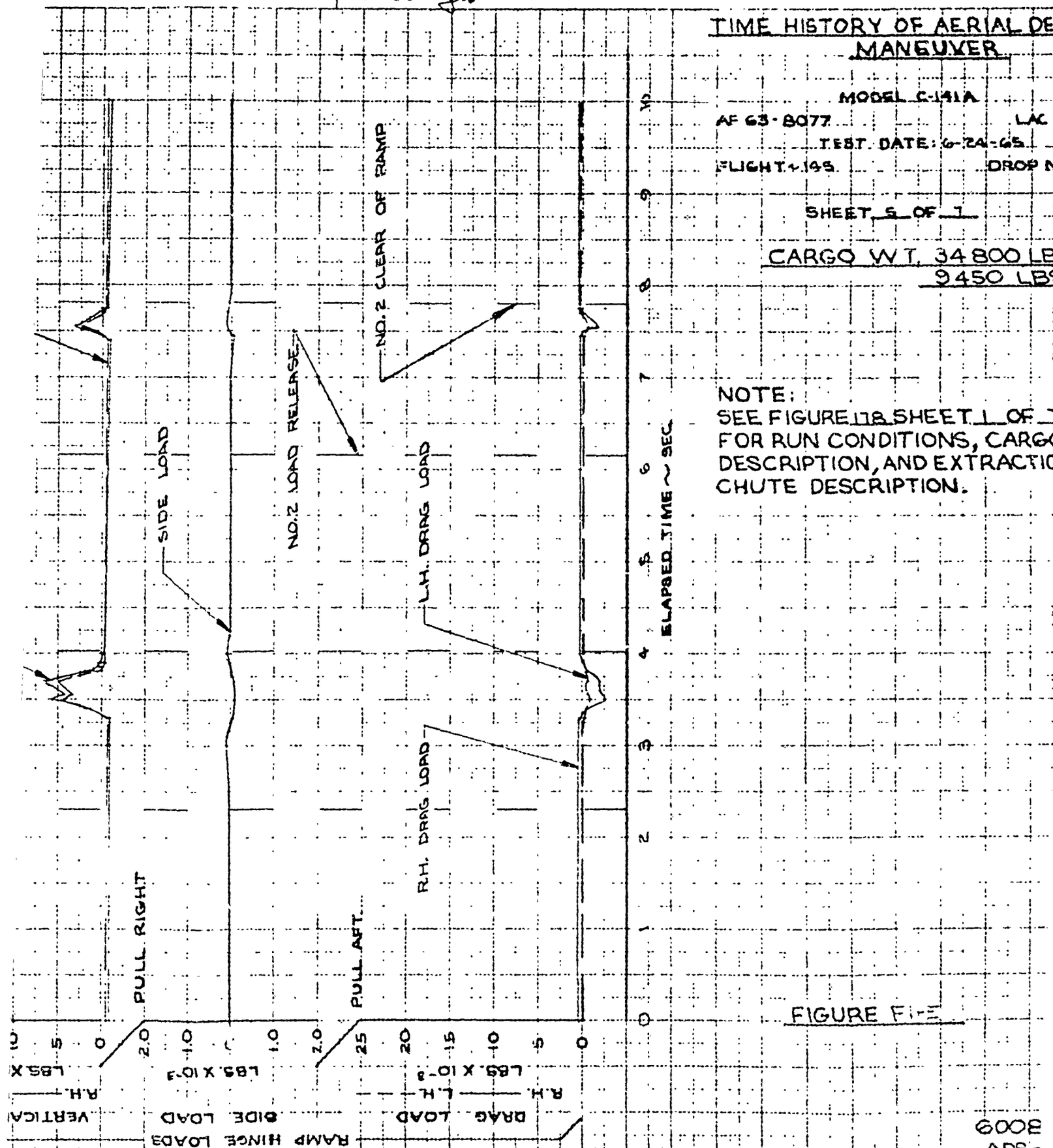


FIGURE F-6

6008
ADS-

6008
ADS-102F
COMPRESSION
R.H. PETAL DOOR ACT. LOAD
L.H. PETAL DOOR ACT. LOAD
NO.2 LOAD RELEASE
M_x @ F.S. 1500
NO.2 CLEAR OF RAMP
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X10-3
RH
LH
VERTICAL BENDING ~ FS 1500
INCH-LBS X 10-6
SUB-CODE 4.2.1

PREPARED BY TED
DATE 6-25-65
CHECKED BY JMP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO FR 5473
MODEL C-141A
PAGE F-7

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 65-8077 LAC 6008

TEST DATE: 6-24-65

FLIGHT 146 DROP NO 37

SHEET 6 OF 7

CARGO WT 34 800 LBS - 1
9450 LBS - 2

NOTE:
SEE FIGURE 18 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

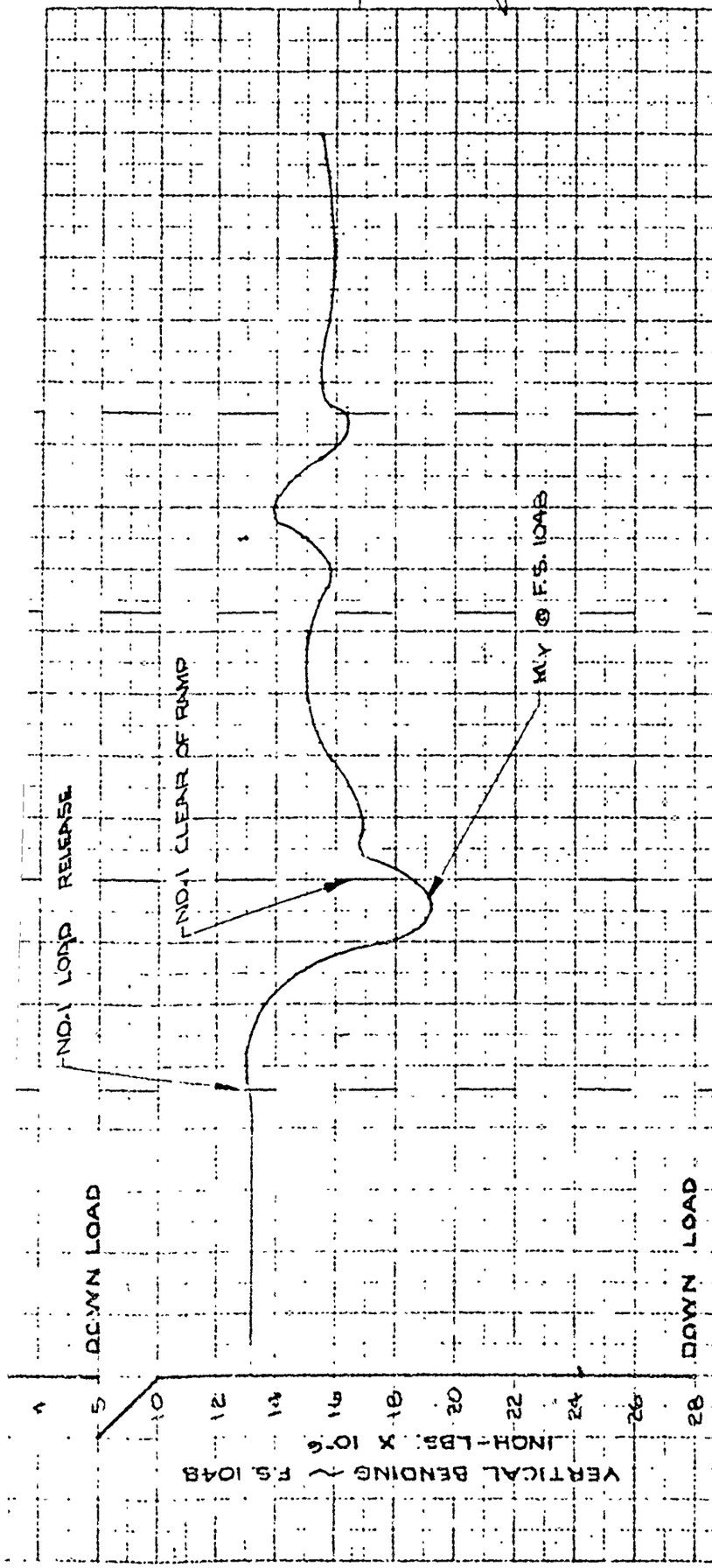


FIGURE F1-F

HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ S_z LBS x 10^{-3}
BENDING @ HBL 44L ~ M_x INCH - LBS x 10^{-6}
UP LOAD
UP LOAD
NO.1 LOAD RELEASE
NO.1 CLEAR OF RAMP
S_z @ HBL 44L
M_x @ HBL 44L
NO. 2 LOAD RELEASE
NO. 2 CLEAR OF RAMP
LOAD LEFT @ VS TIP
-2.0
-1.5
-1.0
-.5
0
.5
1.0
1.5
2.0
JOB NO. ADS-1525. CODE 4.2.1
6008
ADS-1525

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-24-65

FLIGHT ~ 145 DROP NO. ~ 31

SHEET 1 OF 1

CARGO WT. 34800 LBS. - 1
9450 LBS - 2

NOTE:
SEE FIGURE 1b SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

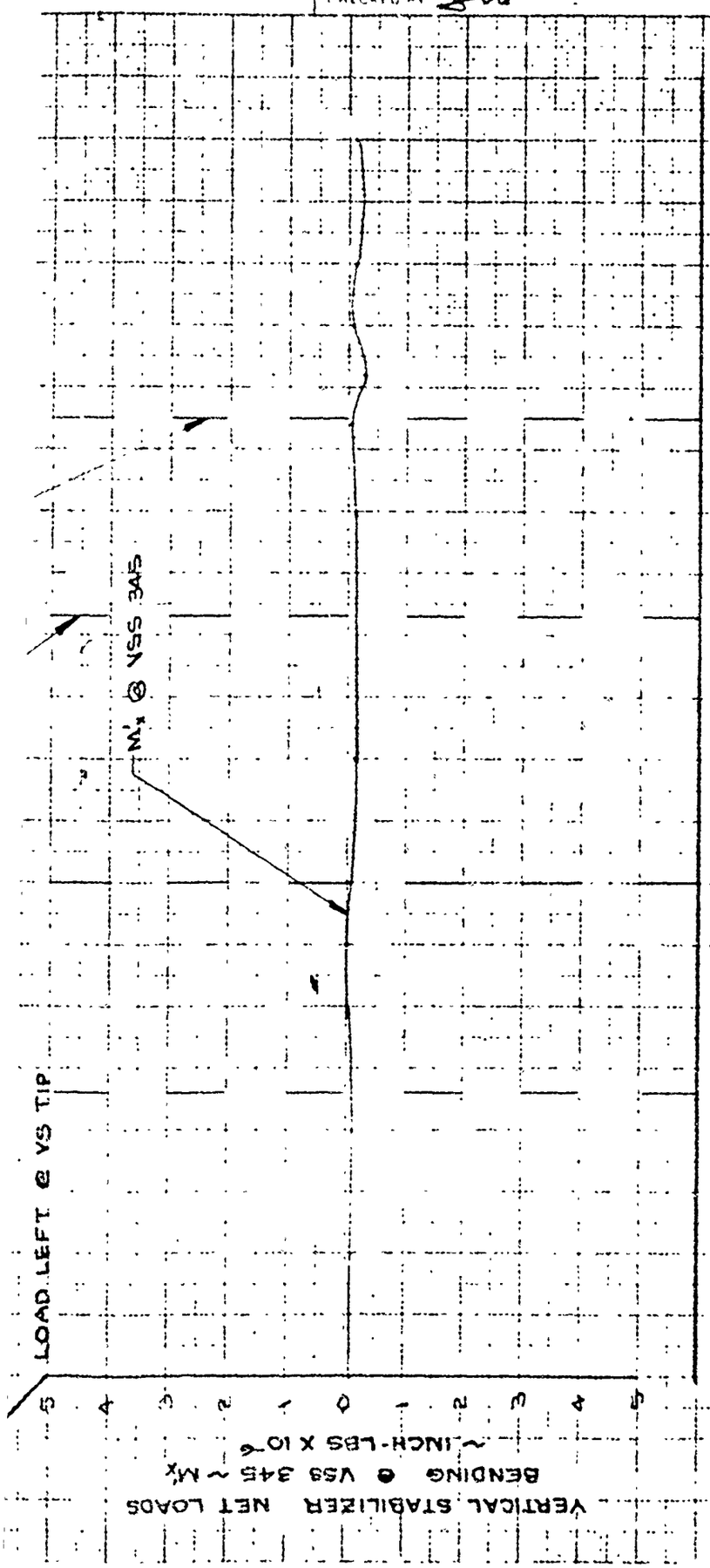


FIGURE F1-6

6008
ADS-103A
NO.2 LOAD RELEASE
NO.2 CLEAR OF RAMP
NO.1 LOAD RELEASE
NO.1 CLEAR OF RAMP
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
AIRCRAFT ATTITUDES ~ DEG
JOB NO.
SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 6-28-65

FLIGHT-146 DROP NO.-38

SHEET 1 OF 1

CARGO WT 34,900 LBS - 1
22,450 LBS - 2

RUN CONDITIONS DROP #1 DROP #2

1. G.W. 216,900 LBS - 182,000 LBS
2. C.G. PRIOR TO DROP - 33.5 - 24.7% MAC
3. C.G. AFTER DROP - 24.7 - 30.5 % MAC
4. FLAPS 65 %
5. GEAR UP
6. AVG. EPR 1.28 (AVG 4 ENGINES)
7. i_H - 0.3 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER PLATFORM
2. LENGTH ① 288 IN. ② 192 IN.
3. CARGO C.G. POSITIONS
   LONG. - FS ① 1074 ② 816
   VERT. - WL ① 179 ② 179

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES	2	1
2. CHUTE SIZE	28	28
3. RATED CHUTE FORCE/CARGO WT.		
4. EXTRACTION LINE LENGTH		

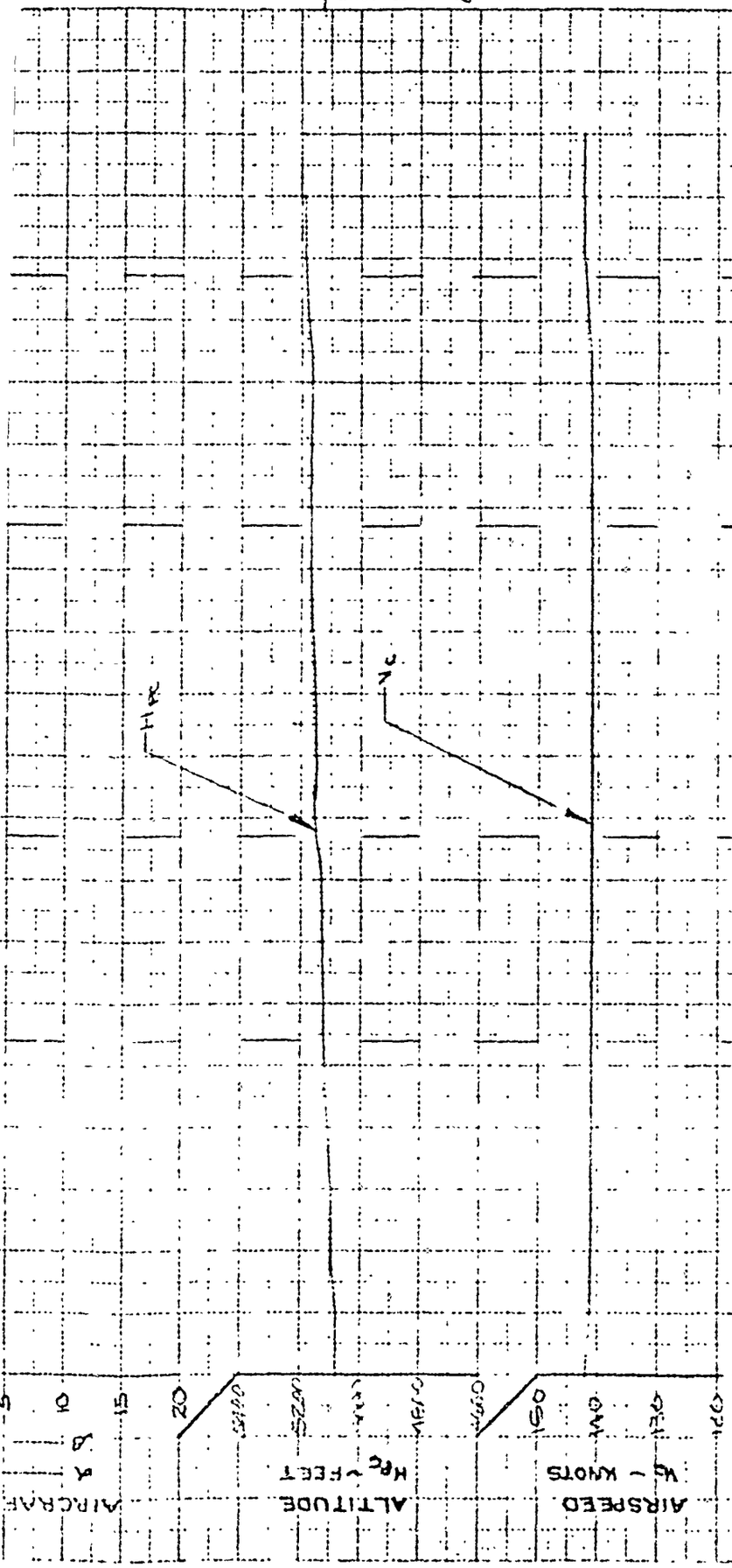
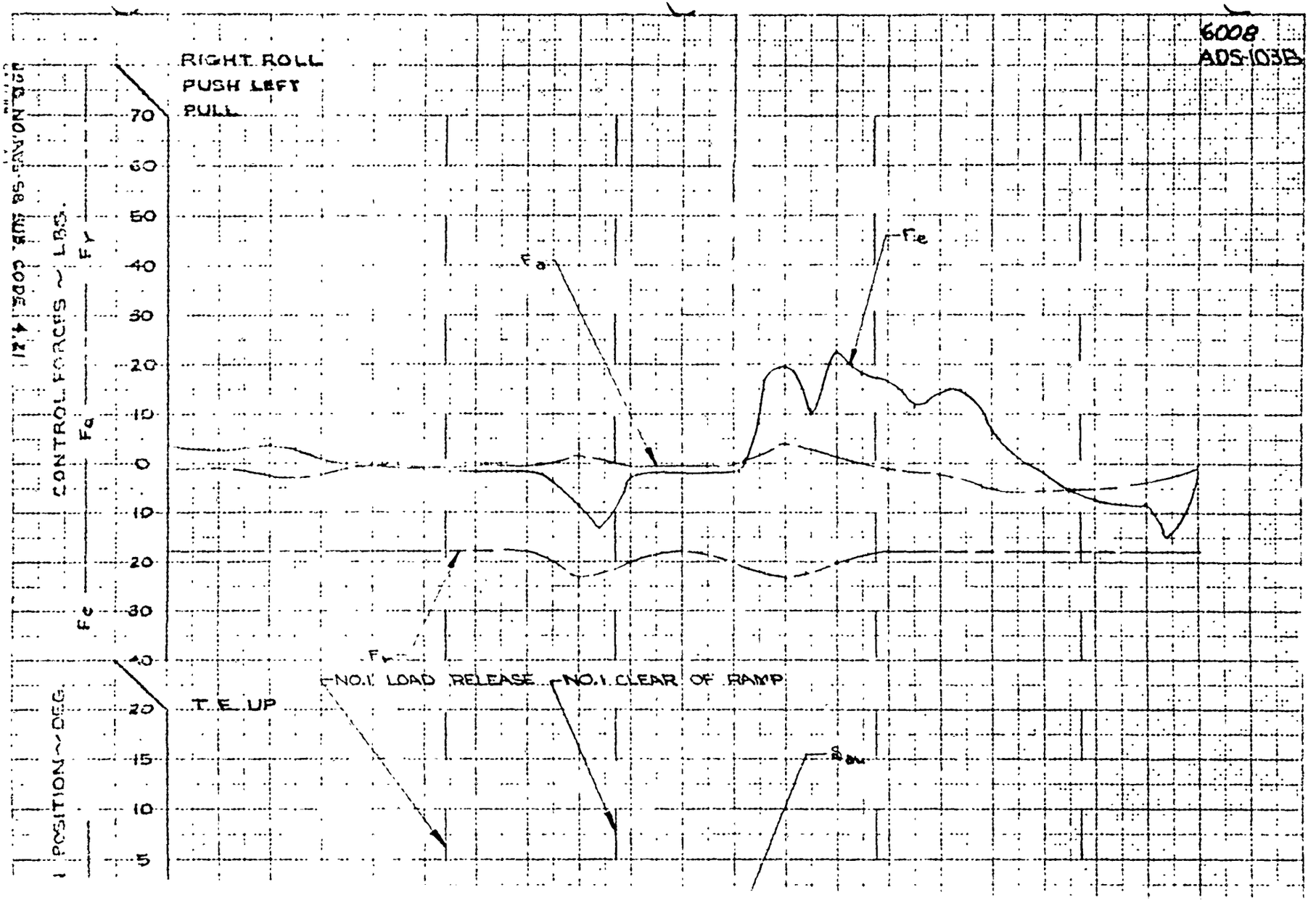


FIGURE F-2A

GCOB
ADS-103N

REVISED 12-3-65
MBH


6008
ADS-103B
RIGHT ROLL
PUSH LEFT
PULL
CONTROL FORCES ~ LBS.
70
60
50
40
30
20
10
0
10
20
30
40
Fa
Fe
Fr
Fa
Fe
Fr
NO.1 LOAD RELEASE
NO.1 CLEAR OF RAMP
T.E. UP
POSITION ~ DEG.
20
15
10
5

PREPARED BY TED
DATE 6-29-65
CHECKED BY JMD

REPORT NO ER 5473
MODEL C-141A
PAGE F-10

TIME HISTORY OF AERIAL DELIVE
MANEUVER

MODEL C-141A

AF 63 8077 LAC 60

TEST DATE 6-29-65

FLIGHT 146 DROP NO 38

SHEET 2 OF 3

CARGO WT 34,900 LBS - 1
22,450 LBS - 2

NOTE:
SEE FIGURE F-2 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

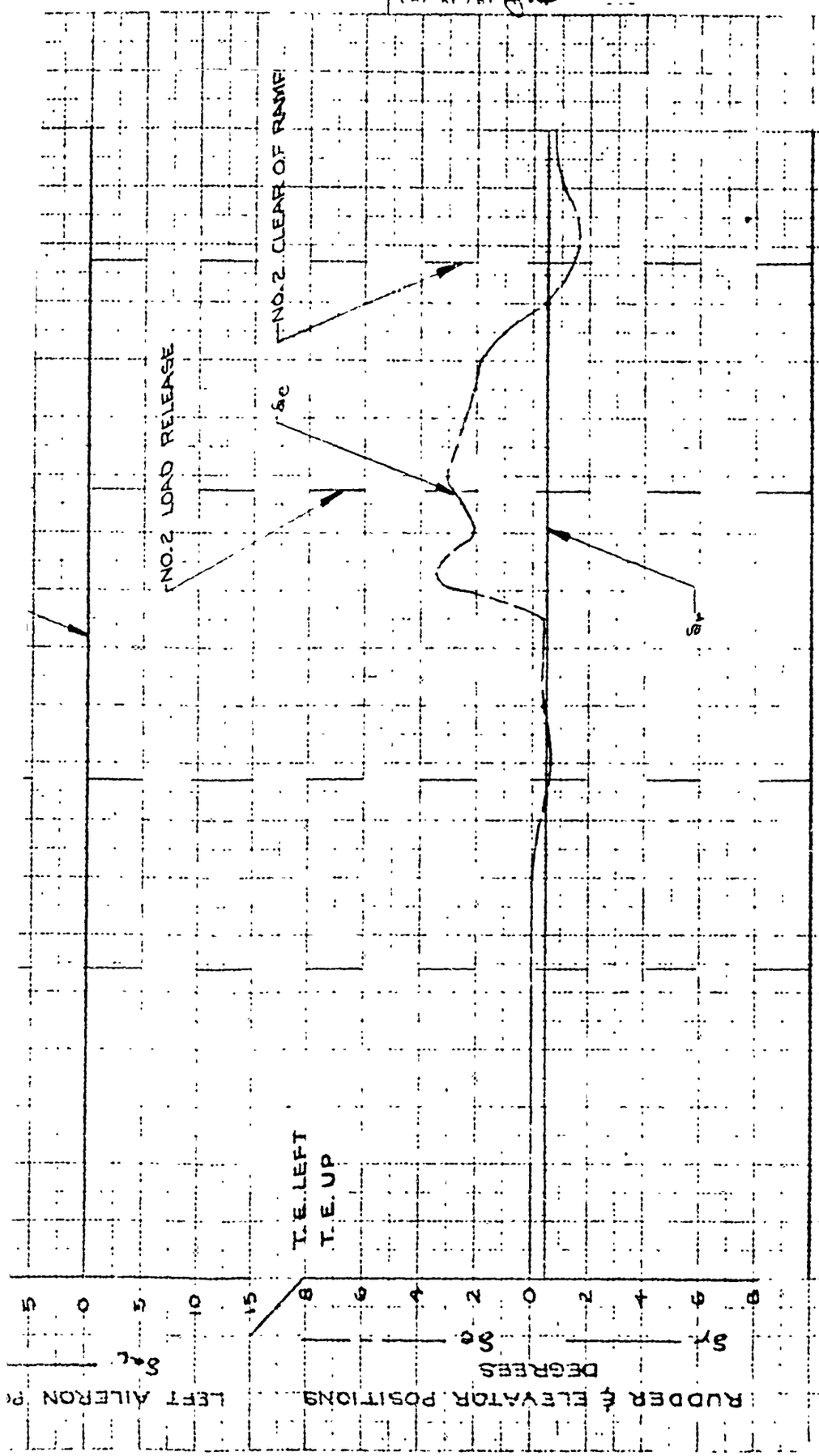


FIGURE F-2B

60C
ADS

6008
ADS-103C
NOTE: θ CALCULATED FROM N_z DATA
NO.1 LOAD CLEAR OF RAMP
NO.2 LOAD CLEAR OF RAMP
NO.1 LOAD RELEASE
NO.2 LOAD RELEASE
N_z @ F.S. 1.637
θ
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
θ
DEG/SEC²
PITCHING ACCELERATION
N_z F.S. 1.637
TIONS ~ g
JOB NO. ADS-6 SUB. CODE 4.2.1

PREPARED BY T.E.D.
DATE 6-30-65
CHECKED [illegible]

REPORT NO ER 5473
MODEL C-141A
PAGE F-11

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE 6-28-65
FLIGHT ~ 146 DROP NO ~ 3B
SHEET 3 OF 7

CARGO WT. 34,900 LBS. -1
22,450 LBS -2

NOTE:
SEE FIGURE F-2A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

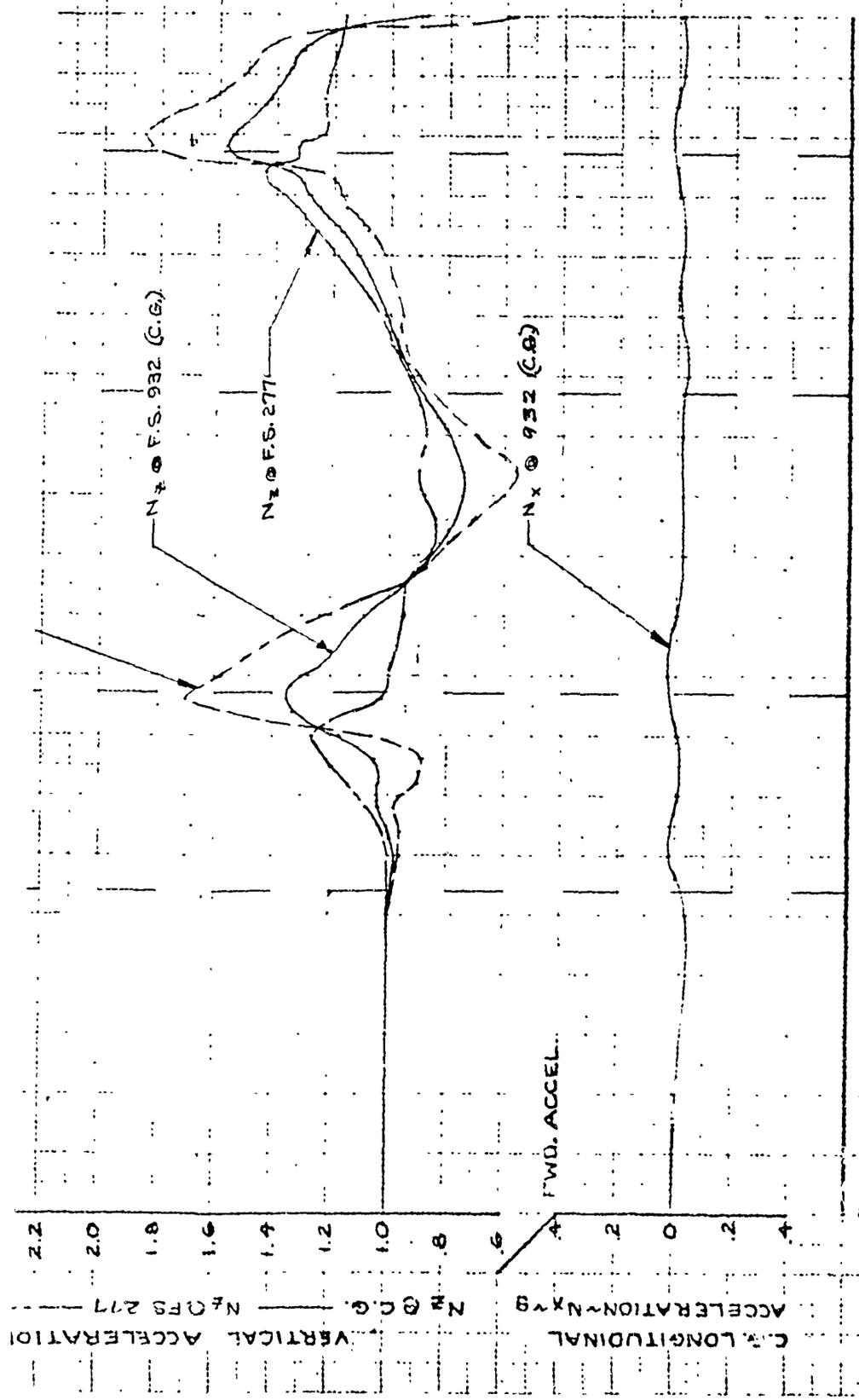
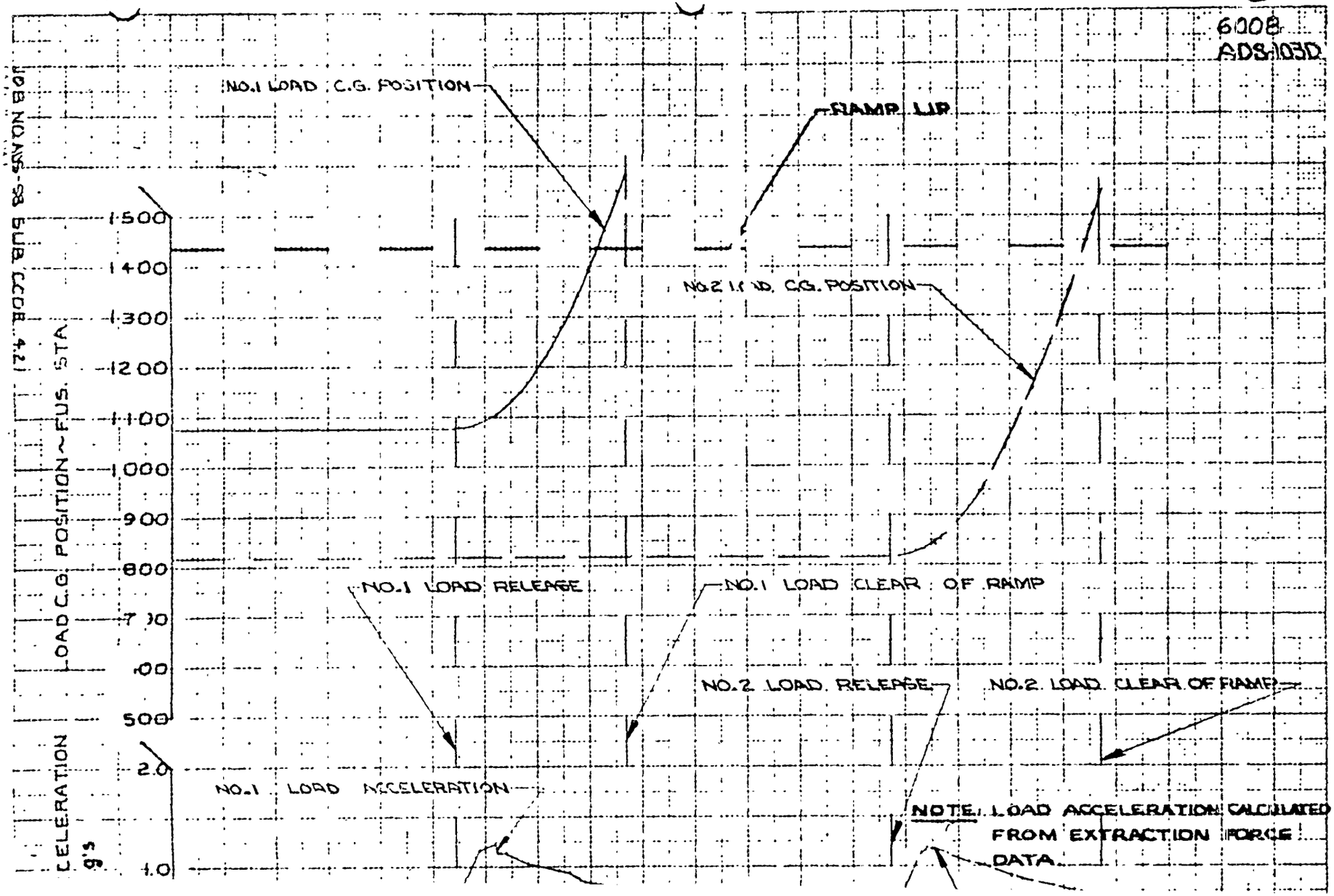


FIGURE F-2C

6008
ADS-103


6008
ADS-103D
JOB NO. ADS-98 SUB. CODE 4.2.1
NO.1 LOAD C.G. POSITION
RAMP LIP
NO.2 LOAD C.G. POSITION
NO.1 LOAD RELEASE
NO.1 LOAD CLEAR OF RAMP
NO.2 LOAD RELEASE
NO.2 LOAD CLEAR OF RAMP
NO.1 LOAD ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
ACCELERATION g's
2.0
1.0

TIME HISTORY OF AERIAL DELIVE
MANEUVER

MODEL C-141A
AF 63-8077 LAC SO
TEST DATE: 6-28-66
FLIGHT-146 DROP NO.-38

SHEET 4 OF 7

CARGO WT. 34,900 LBS -
22,450 LBS -

NOTE:
SEE FIGUREE-2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

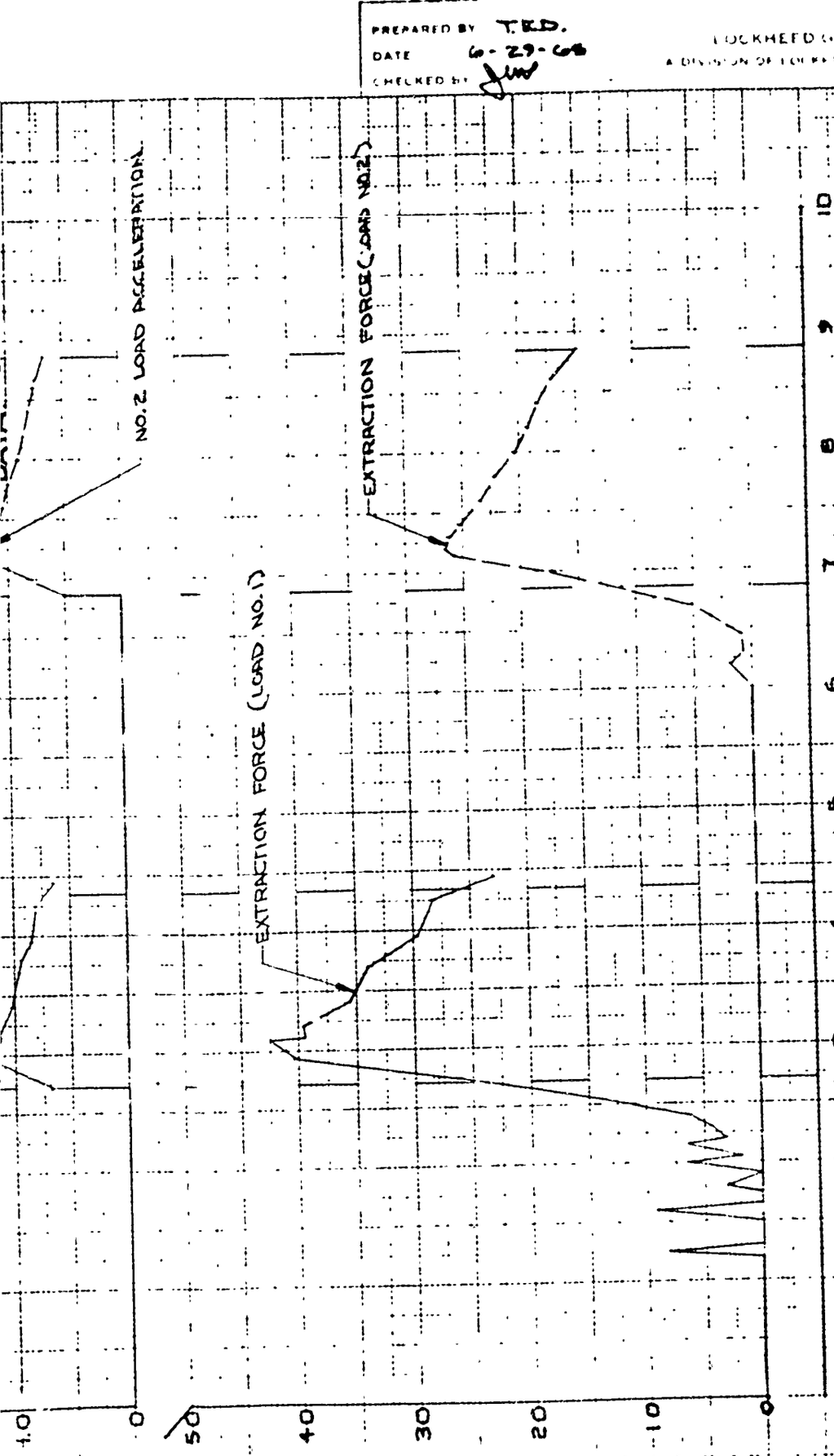
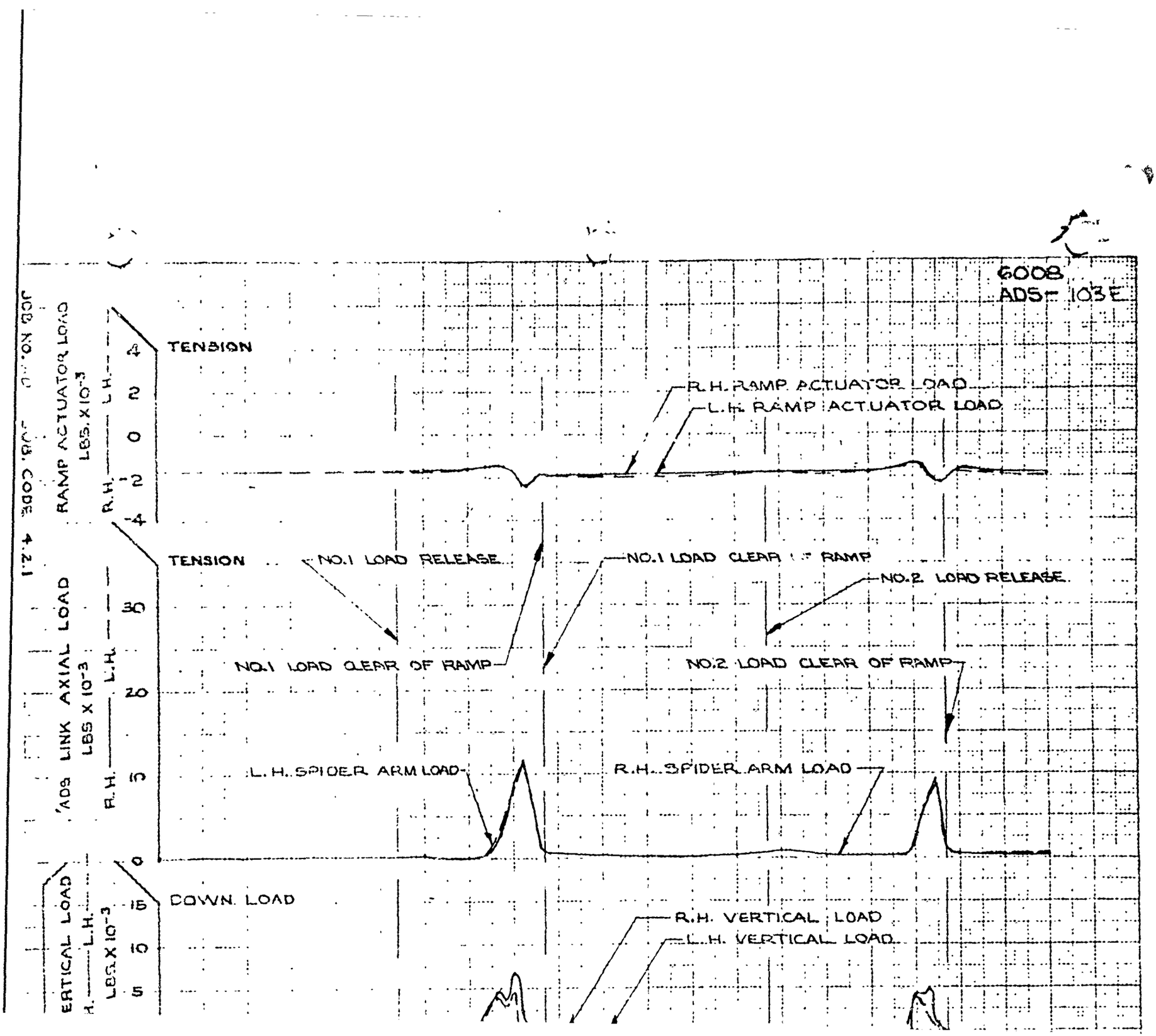


FIGURE F-2.0


6008
ADS- 103E
RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H. —— L.H.
TENSION
4
2
0
-2
-4
R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD
TENSION
LINK AXIAL LOAD
LBS X 10⁻³
R.H. —— L.H.
30
20
10
0
NO.1 LOAD RELEASE
NO.1 LOAD CLEAR OF RAMP
NO.2 LOAD RELEASE
NO.1 LOAD CLEAR OF RAMP
NO.2 LOAD CLEAR OF RAMP
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
ERTICAL LOAD
L.H.
LBS X 10⁻³
15
10
5
DOWN LOAD
R.H. VERTICAL LOAD
L.H. VERTICAL LOAD

PREPARED BY F.C.W.
DATE 6-30-65
CHECKED BY JWD

REPORT NO. ER 5473
MODEL C-141A
PAGE F-13

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-28-65

FLIGHT 146 DROP NO. 38

SHEET 5 OF 7

CARGO WT. 34900 LBS -1
22450 LBS -2

NOTE:
SEE FIGURE F-2A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

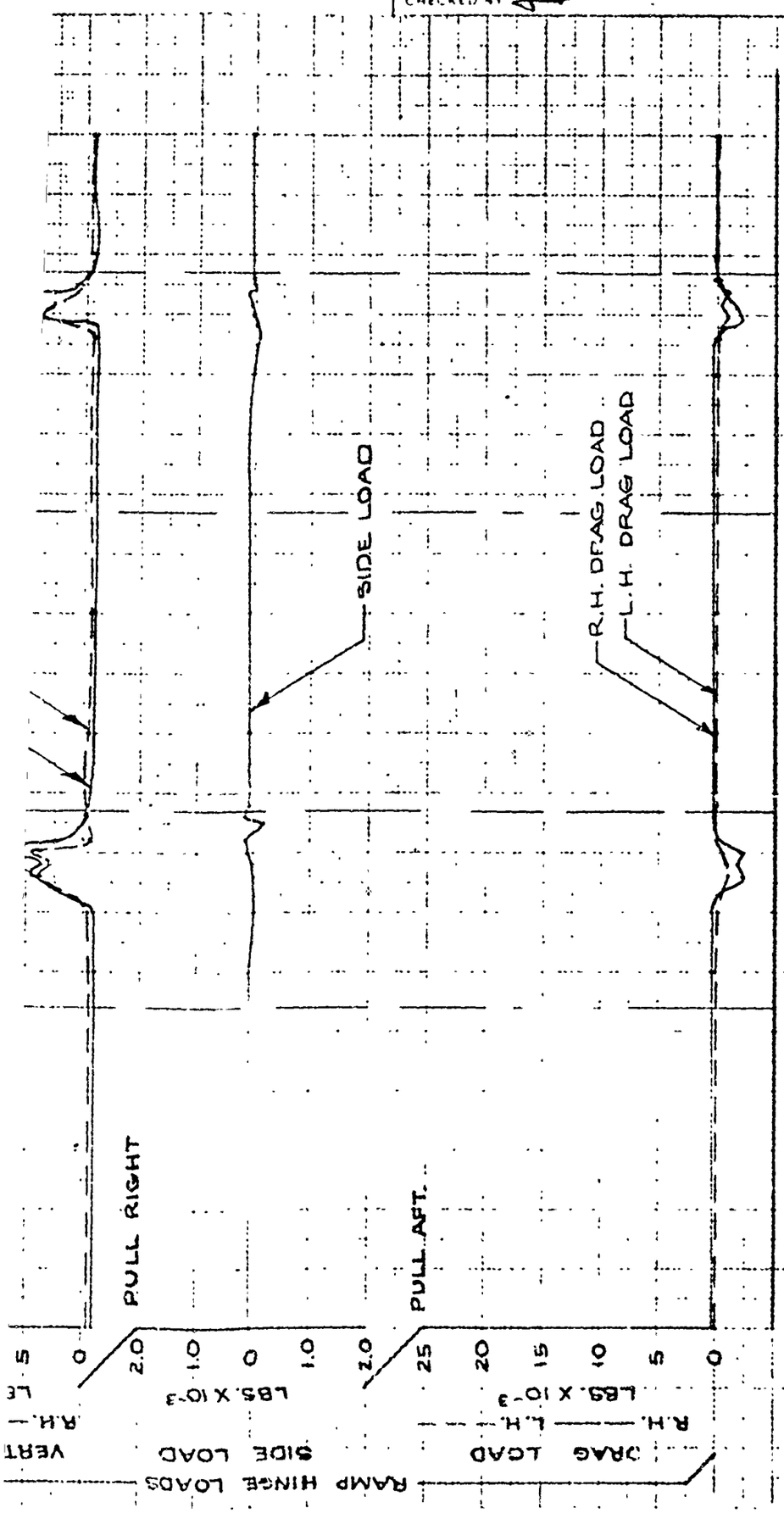


FIGURE F-2E

6008
ADS-103E
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
M Y @ F.S. 1568
COMPRESSION
-10 -9 -8 -7 -6 -5 -4 -3 -2
4 3 2 1 0 1 2 3 4
RH ——— LH - - - -
PETAL DOOR ACTUATOR ROD LOADS ~ LBS. X 10⁻³
VERTICAL BENDING ~ FS 1568 INCH-LBS. X 10⁻⁶
JOB NO. 105-58 SUB. CODE 4.2.1

T.E.D
6-30-65

ER 5473
C-141A
F-14

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-8077 LAC 6008

TEST DATE: 6-28-65

FLIGHT~146 DROP NO~38

SHEET 6 OF 7

CARGO WT. 34,900 LBS - 1
22,450 LBS - 2

NOTE:
SEE FIGURE F-2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

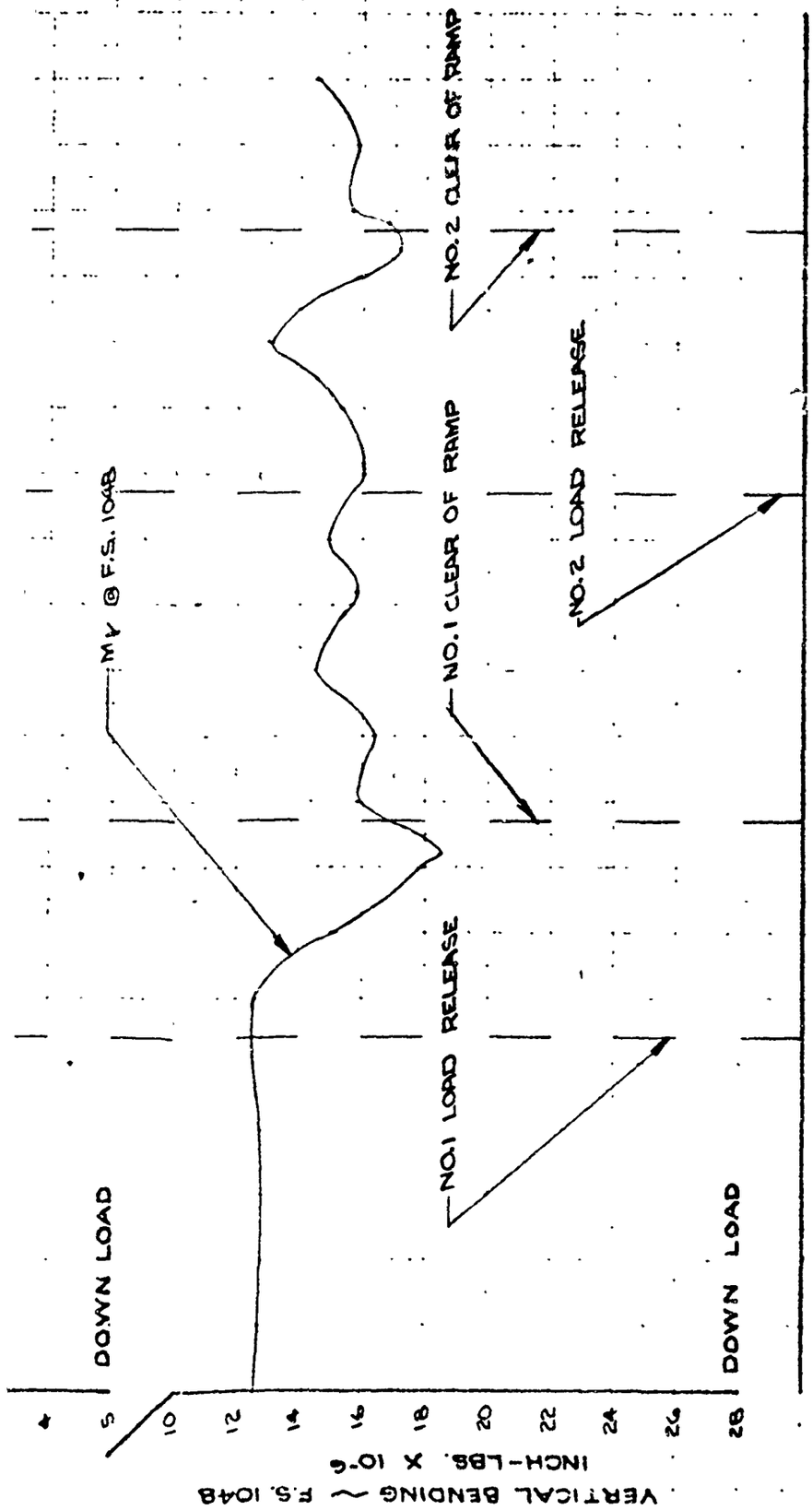


FIGURE F-2F

GOOD ADS
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'x
INCH - LBS x 10⁻⁶
SHEAR @ HBL 44L ~ S'z
LBS x 10⁻³
UP LOAD
UP LOAD
2.0 1.5 1.0 0.5 0 0.5 1.0 1.5
2.0 1.5 1.0 .5 0 .5 1.0 1.5 2.0
M'x @ HBL 44L
S'z @ HBL 44L
NO.1 CLEAR OF RAMP
NO.1 LOAD RELEASE
NO.2 LOAD RELEASE
JOB NO. AD5588UB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 6-28-65

FLIGHT 146 DROP NO. 38

SHEET 7 OF 7

CARGO WT. 34900 LBS. -1
22450 LBS. -2

NOTE:
SEE FIGURE F-24 SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

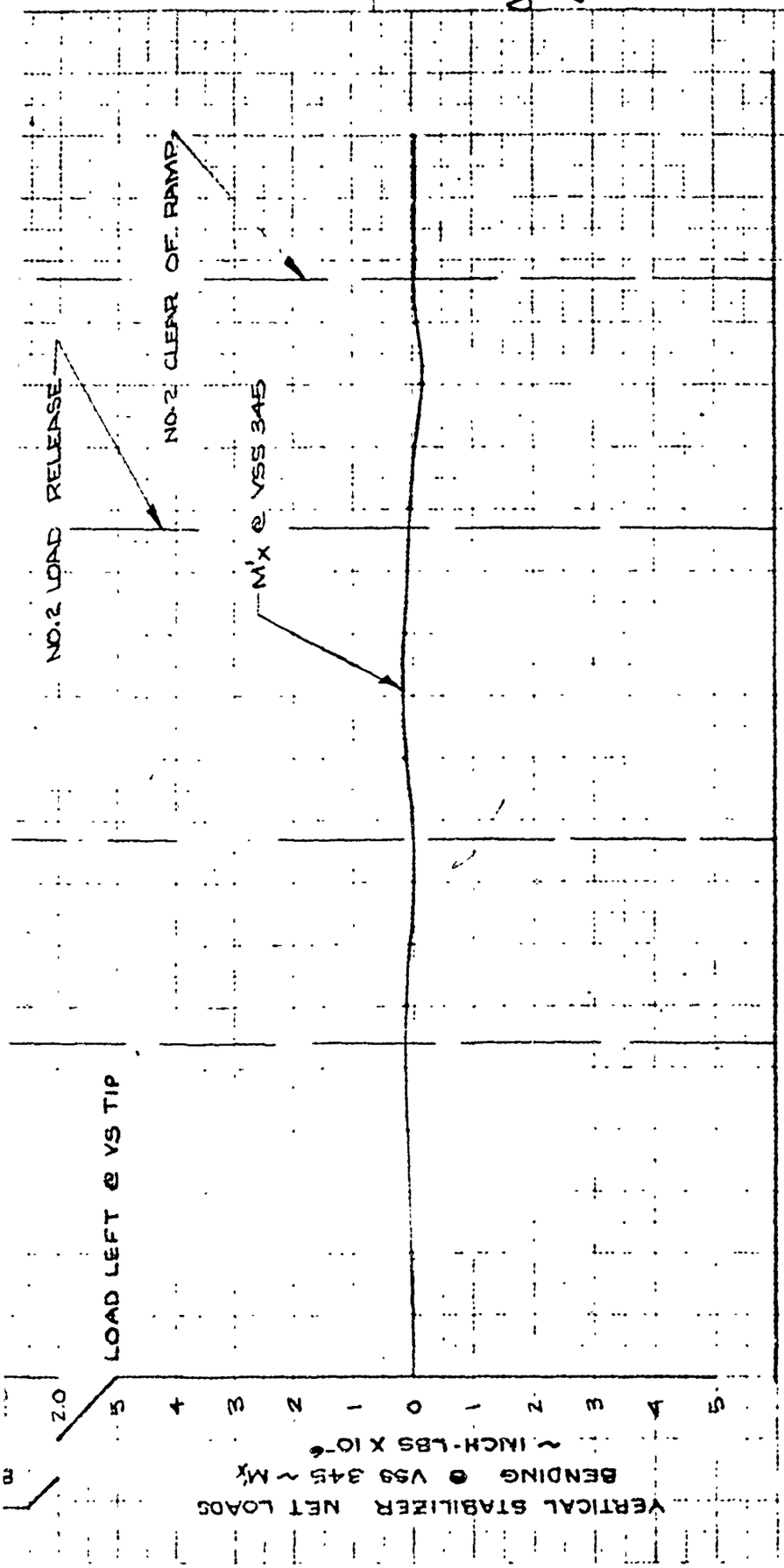
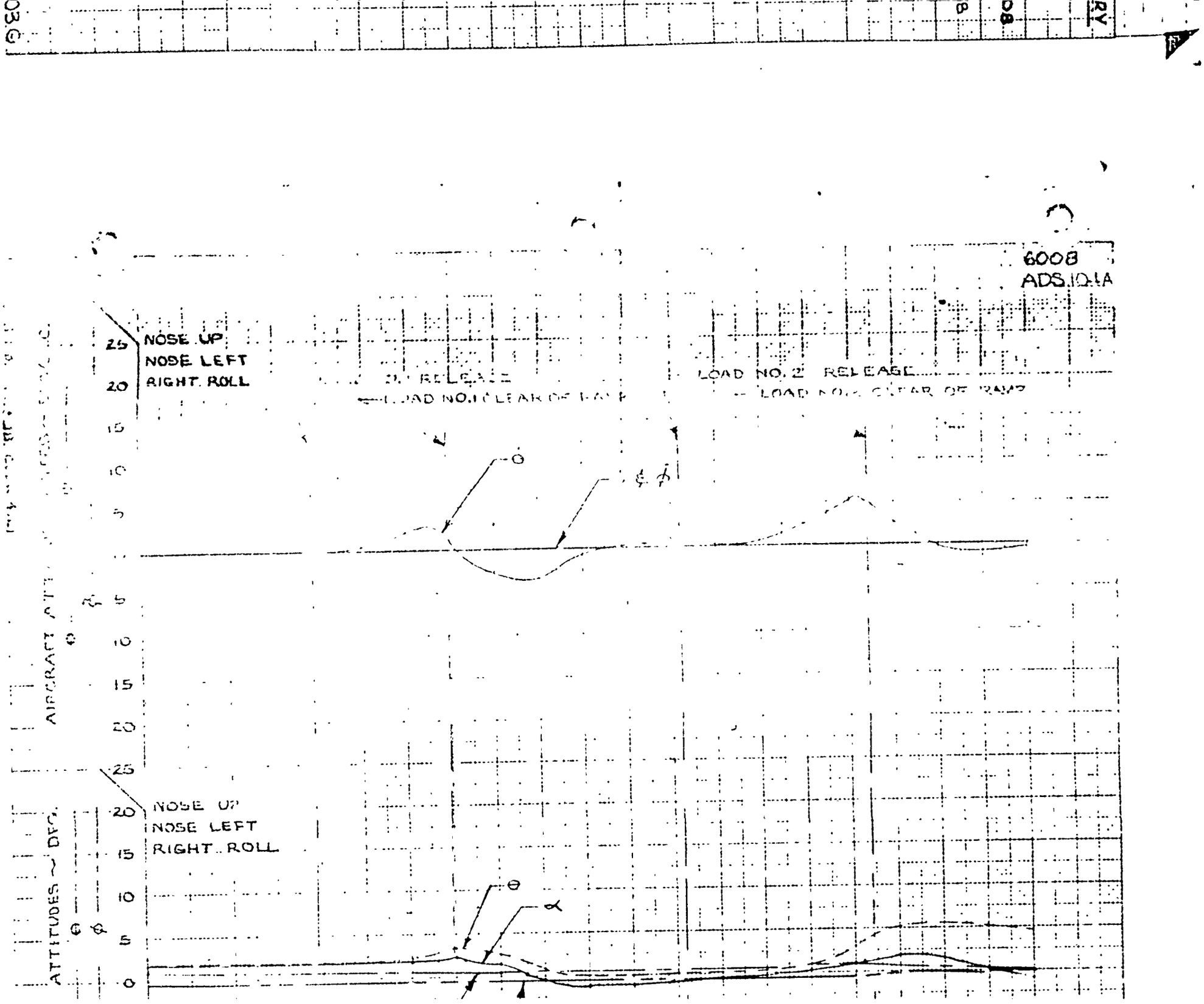


FIGURE F-26


6008
ADS 10-1A
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD NO. 2 RELEASE
LOAD NO. 1 CLEAR OF RAMP
ATTITUDES ~ DEG.
θ
φ
α
25
20
15
10
5
0

PREPARED BY FCW
DATE 7-1-65
CHECKED BY [illegible]

REPORT NO ER 5473
MODEL C-141A
PAGE F-16

TIME HISTORY OF AERIAL DELIV
MANEUVER

MODEL C-141A

AF63807 ... LAC 6

TEST DATE 6-30-65

FLIGHT ~ 148 ... DROP NO. 3

SHEET 1 OF 7

CARGO WT 35030 LBS.
29600 LBS.

RUN CONDITIONS

1. G.W. ~ 225100 LBS., 190070
2. C.G. PRIOR TO DROP ~ 33.5 – 23.0
3. C.G. AFTER DROP ~ 23.0 – 30.3%
4. FLAPS ~ 65 %
5. GEAR ~ UP.
6. AVG. EPR ~ 1.30 (4 ENGINES)
7. ΔH ~ 0.25 DEG (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORMS
2. LENGTH ~ ① 288 IN ② 240 IN
3. CARGO C.G. POSITIONS
   LONG. ~ FS ① 1099 ② 815
   VERT. ~ WL ① 179 ② 175

EXTRACTION CHUTE DESCRIPTI

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28' 62'
3. RATED CHUTE F[illegible]/CHUTE WT
4. EXTRACTION [illegible] LENGTH



FIGURE F-3A

6CC
ADS
REVISED 12-
MEH

6008
ADS 104B
LOAD NO.2 RELEASE
LOAD NO.2 CLEAR OF RAMP
LOAD NO.1 RELEASE
Fe
Fa
Fr
Sal
RIGHT ROLL
PUSH LEFT
PULL
T.E. UP
70 60 50 40 30 20 10 0 10 20 30 40
20 15 10
Fr Fa Fe
CONTROL FORCES ~ LBS.
POSITION ~ DEG.
JOB NO. A SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVE MANEUVER

MODEL C-141A

AF 63 8077 LAC 6

TEST DATE 6-30-65

FLIGHT 148 DROP NO 3

SHEET 2 OF 7

CARGO WT. 35030 LBS. +
29600 LBS. -

NOTE:
SEE FIGURE 3 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

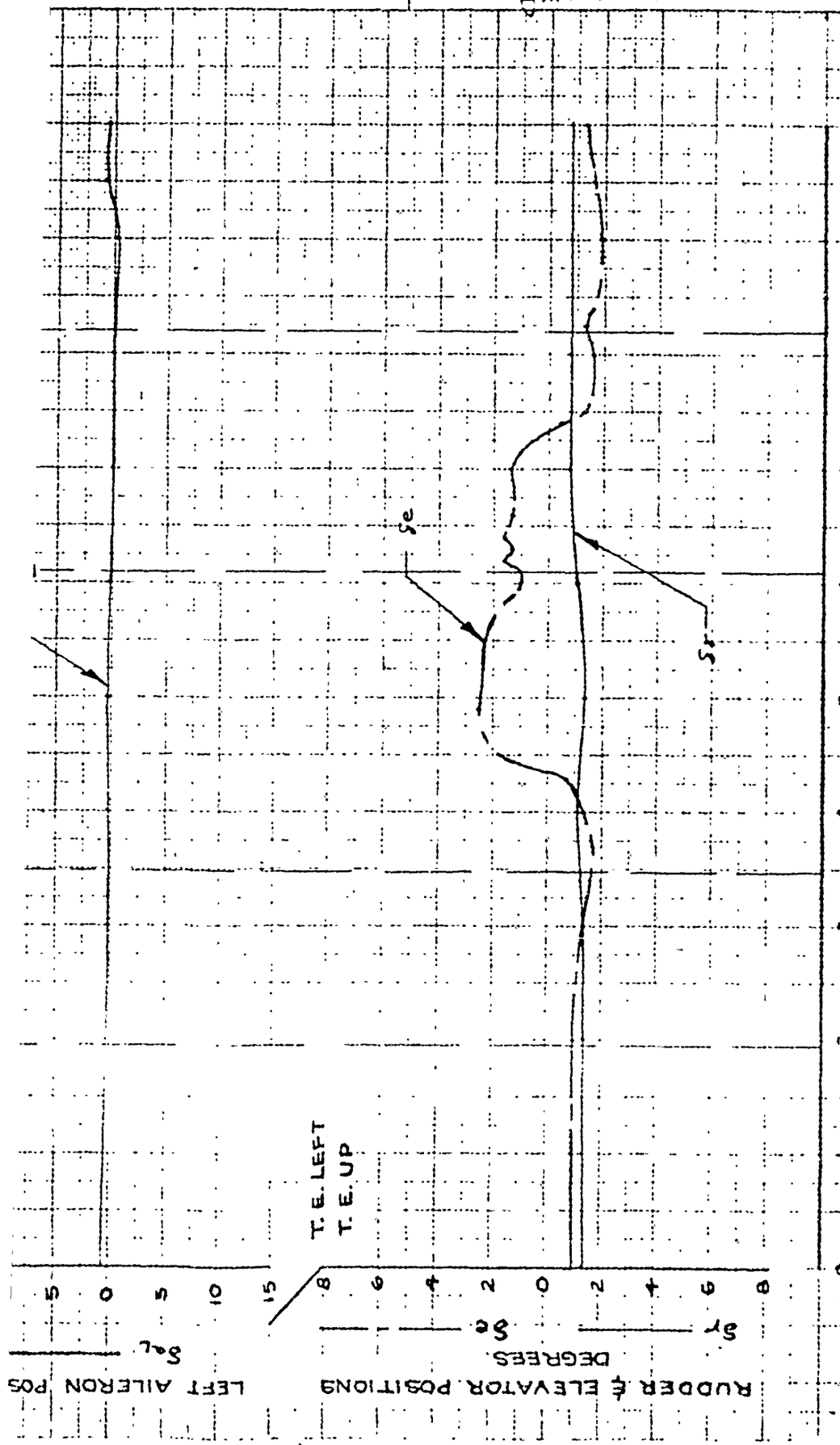
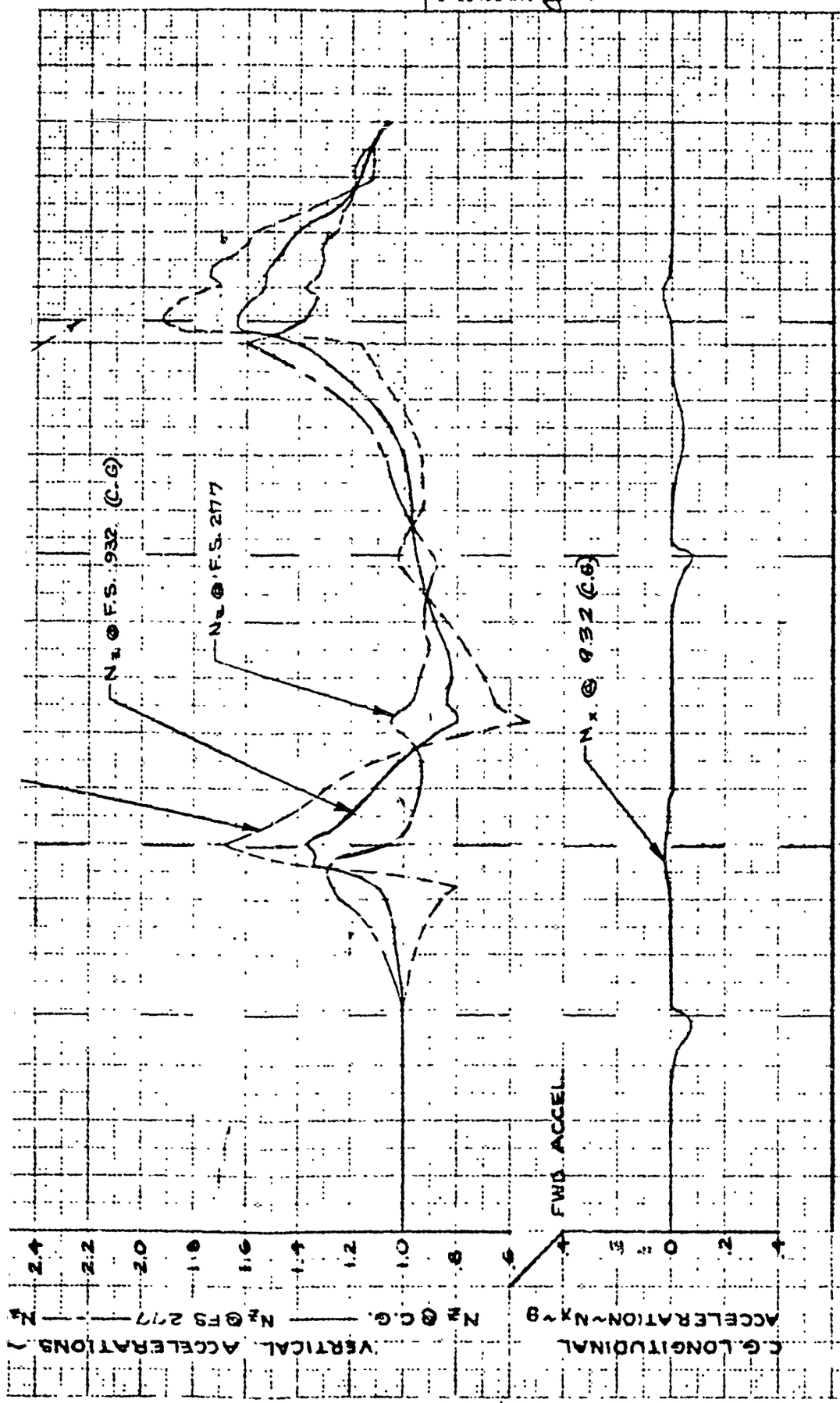


FIGURE F-3B

6008
ADS-104B



TIME HISTORY OF AERIAL DELIV
MANEUVER

MODEL C-141A

AF 63-8077 LAC 6DI

TEST DATE: 6-30-65

FLIGHT ~ 148 DROP NO ~

SHEET 3 OF 7

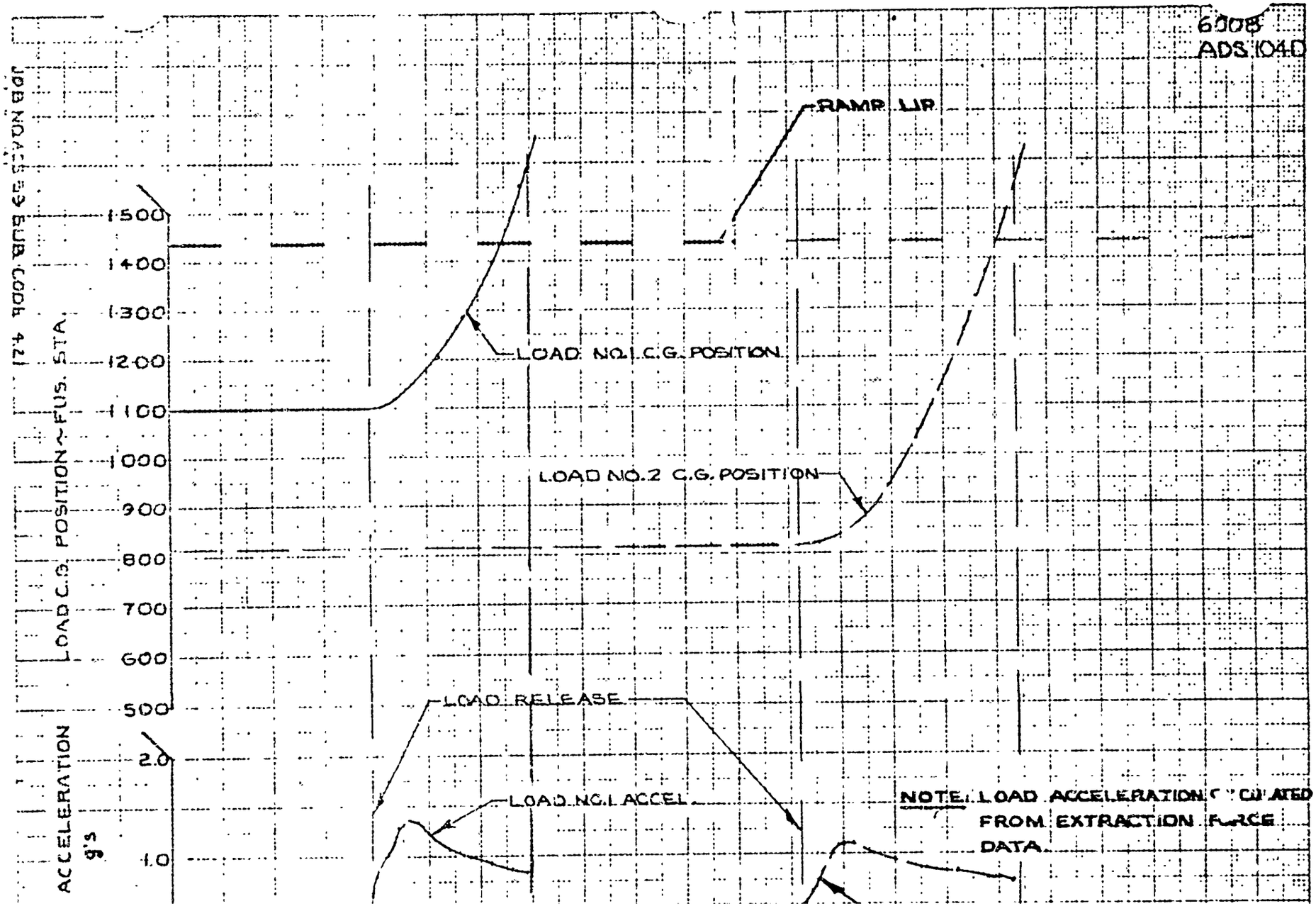
CARGO WT. 35,030 LB
29,600 LB

NOTE:
SEE FIGURE F-3 SHEET 1 OF
FOR RUN CONDITIONS, CAR
DESCRIPTION, AND EXTRA
CHUTE DESCRIPTION.

FIGURE F-3C

GO
ADS

6008
ADS 104D



PREPARED BY FCW
DATE 7-1-66
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-19

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A
AF 63-8077 LAC 600
TEST DATE 6-30-65
FLIGHT 148 DROP NO. 59

SHEET 4 OF 7

CARGO WT. 35030 LBS-1
29600 LBS-2

NOTE:
SEE FIGUREE-3A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

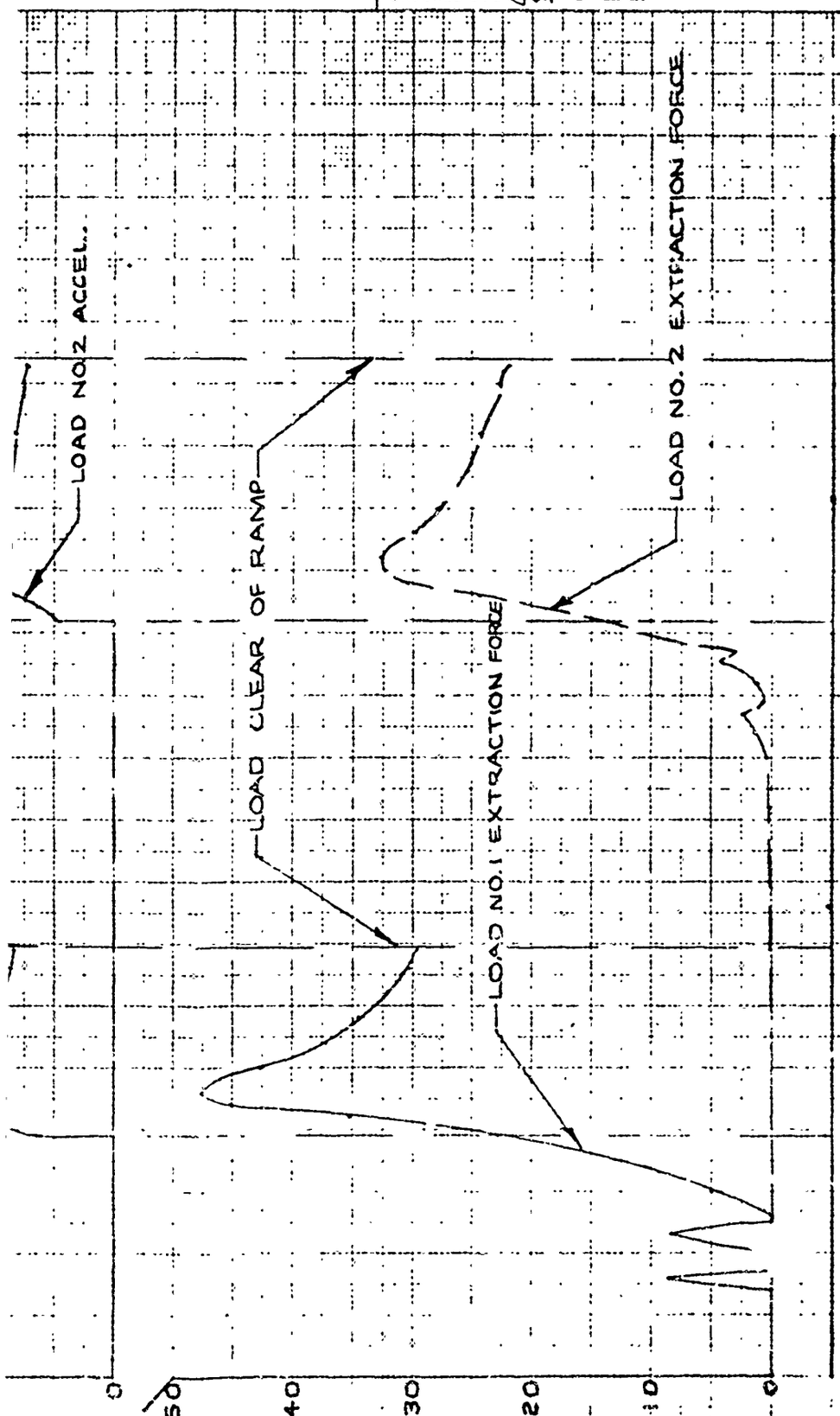


FIGURE F-3D

6008
ADS-104E
R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD
NO. 1 LOAD RELEASE
NO. 2 LOAD RELEASE
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
L.H. VERT. LOAD
R.H. VERT. LOAD
TENSION
TENSION
DOWN LOAD
4 2 0 -2 -4
R.H. L.H.
LBS. X 10-3
RAMP ACTUATOR LOAD
30 20 10 0
R.H. L.H.
LBS X 10-3
ADS LINK AXIAL LOAD
15 10 5
H. L.H.
LBS. X 10-3
VERTICAL LOAD
JOB NO. ADS-59 SUB. CODE 4.2.1

T.E.D.
DATE 9-1-66
JWP

ER 5473
MODEL C-141A
PAGE F-20

TIME HISTORY OF AERIAL DELIVE
MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 6-30-65

FLIGHT-148 DROP NO-3

SHEET 5 OF 7

CARGO WT. 35,030 LBS-1
29,600 LBS-2

NOTE:
SEE FIGURE F-3A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

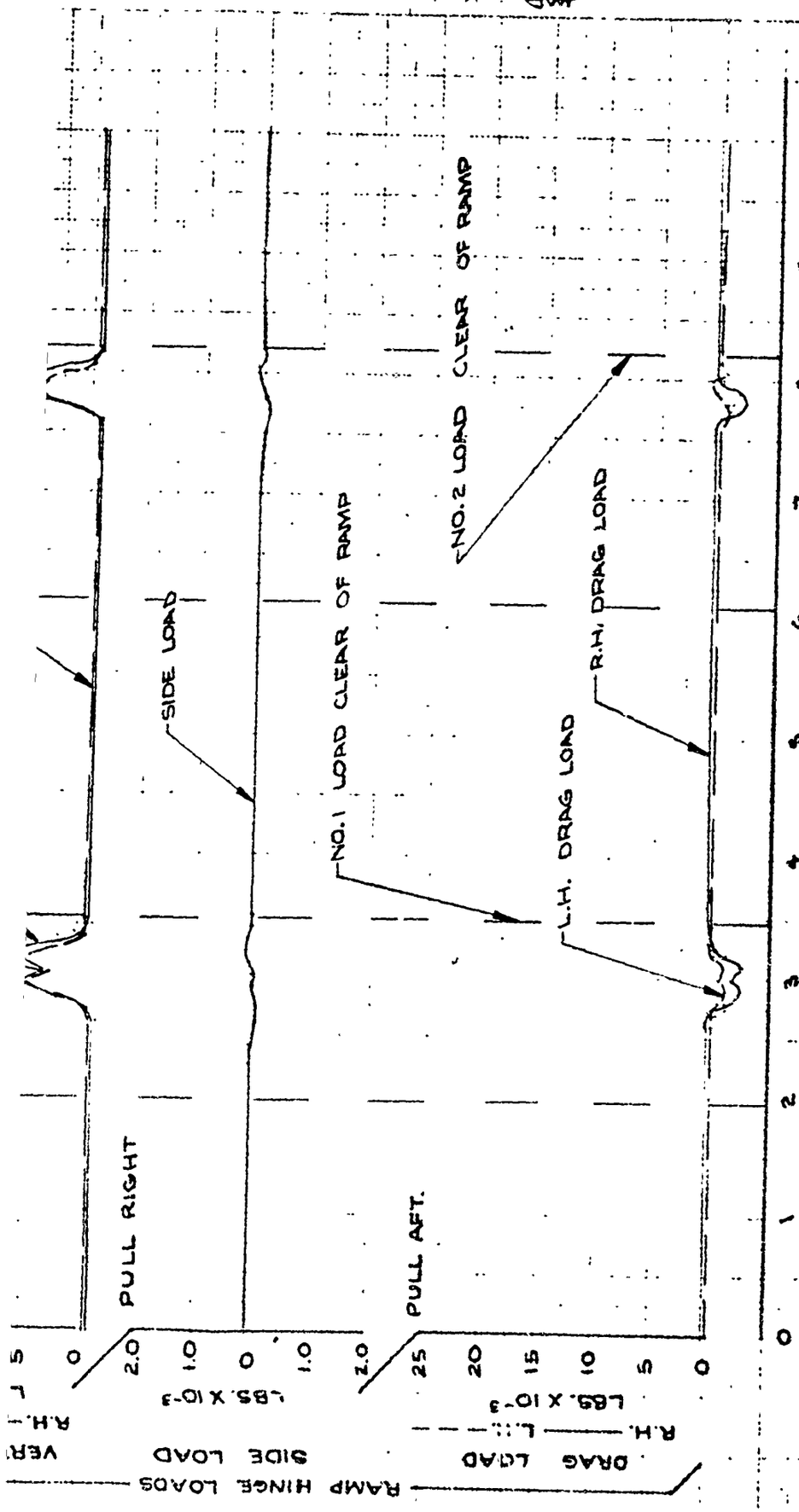


FIGURE F-3E

6008
ADS-104F
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
NO.1 LOAD CLEAR OF RAMP
NO.1 LOAD RELEASE
NO.2 LOAD RELEASE
NO.2 LOAD CLEAR OF RAMP
M.Y @ F.S. 1568
COMPRESSION
10 9 8 7 6 5 4 3 2
LH
RH
LOADS ~ LBS. X 10-3
PETAL DOOR ACTUATOR ROD
4 3 2 1 0 1 2 3
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10-6
JOB NO. AD-59 SUB. CODE 4.2.1

T.E.D.
7-1-68
JWP

ER 5473
C-141A
F-21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 6-30-68

FLIGHT-148 DROP NO. 39

SHEET 6 OF 7

CARGO WT. 35,030 LBS-1
29600 LBS-2

NOTE:
SEE FIGURE F-3A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.

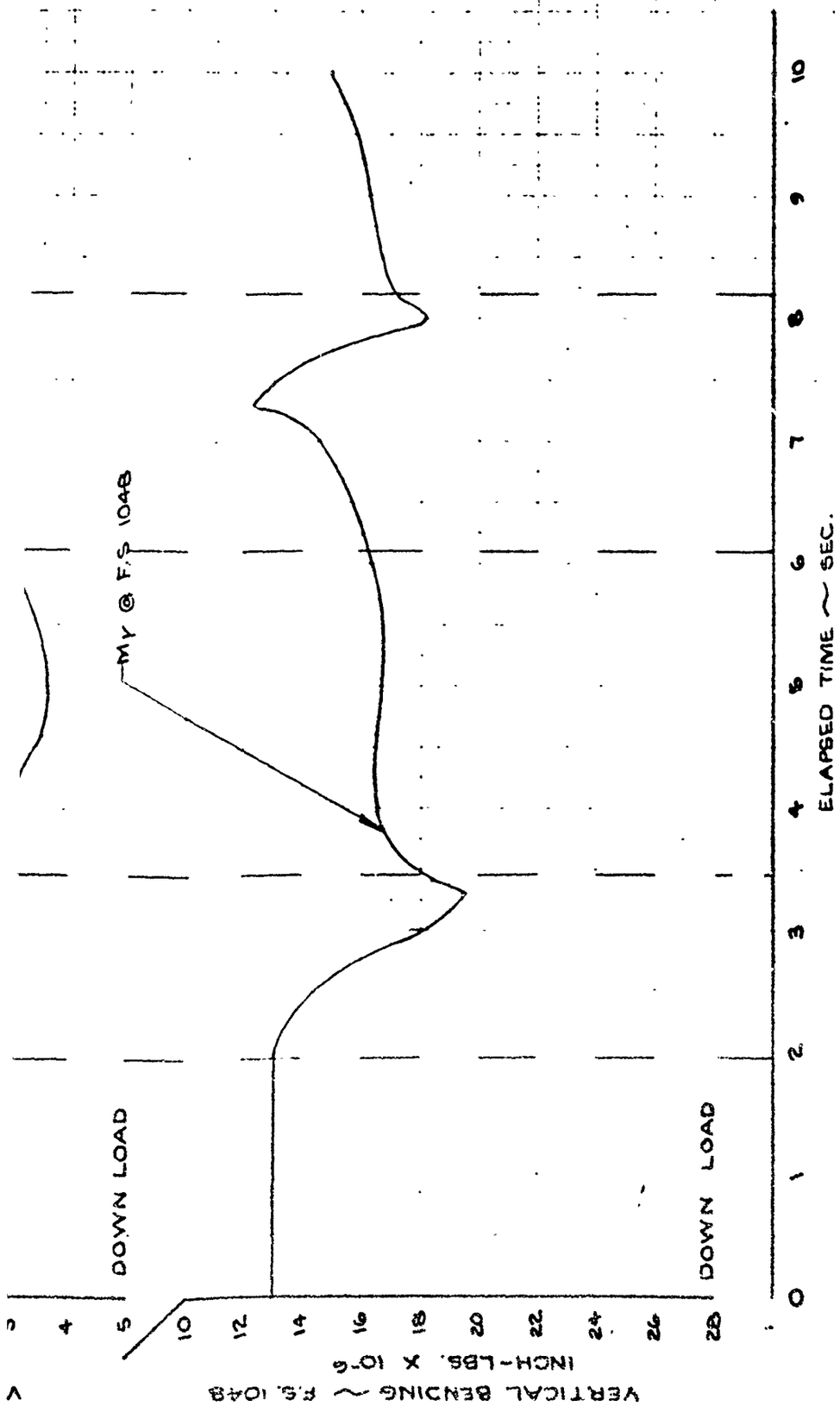


FIGURE F-3E

6008
ADS-104-G
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 441 ~ M'x
INCH - LBS x 10-6
SHEAR @ HBL 441 ~ S'z
LBS x 10-3
UP LOAD
NO. 1 LOAD RELEASE
NO. 2 LOAD RELEASE
NO. 1 LOAD CLEAR OF RAMP
JOB NO. ADS-598US. CODE 4.2.1

T.E.D.
7-1-66
Joop

ER 5473
C-141A
F-22

TIME HISTORY OF AERIAL DELIVER
MANEUVER

MODEL C-141A

AF 63-8077 LAC 6001

TEST DATE: 6-30-66

FLIGHT T-148 DROP NO. T-39

SHEET 1 OF 1

CARGO WT. 35,030 LBS - 1
29,600 LBS - 2

NOTE:
SEE FIGURE F-3A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

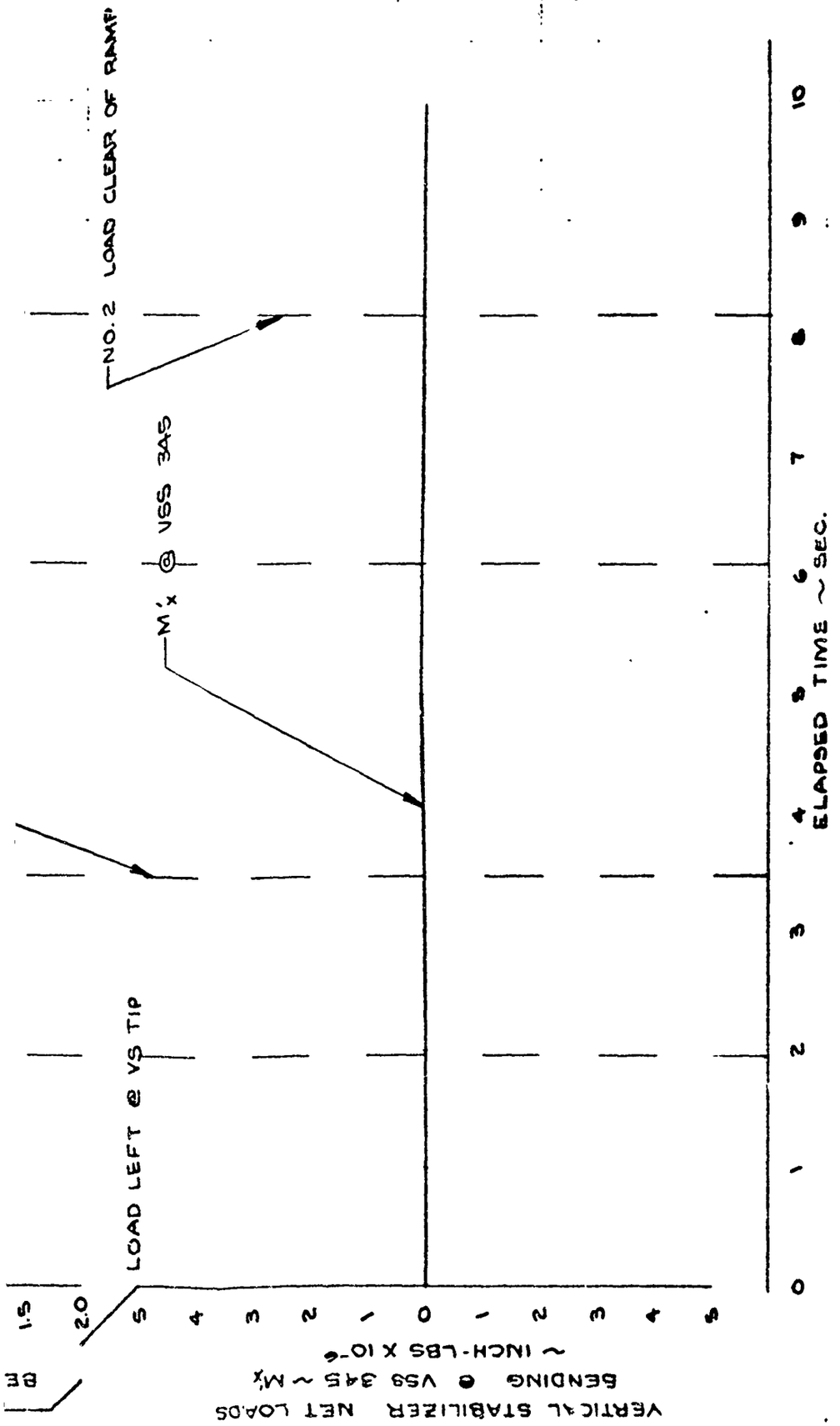
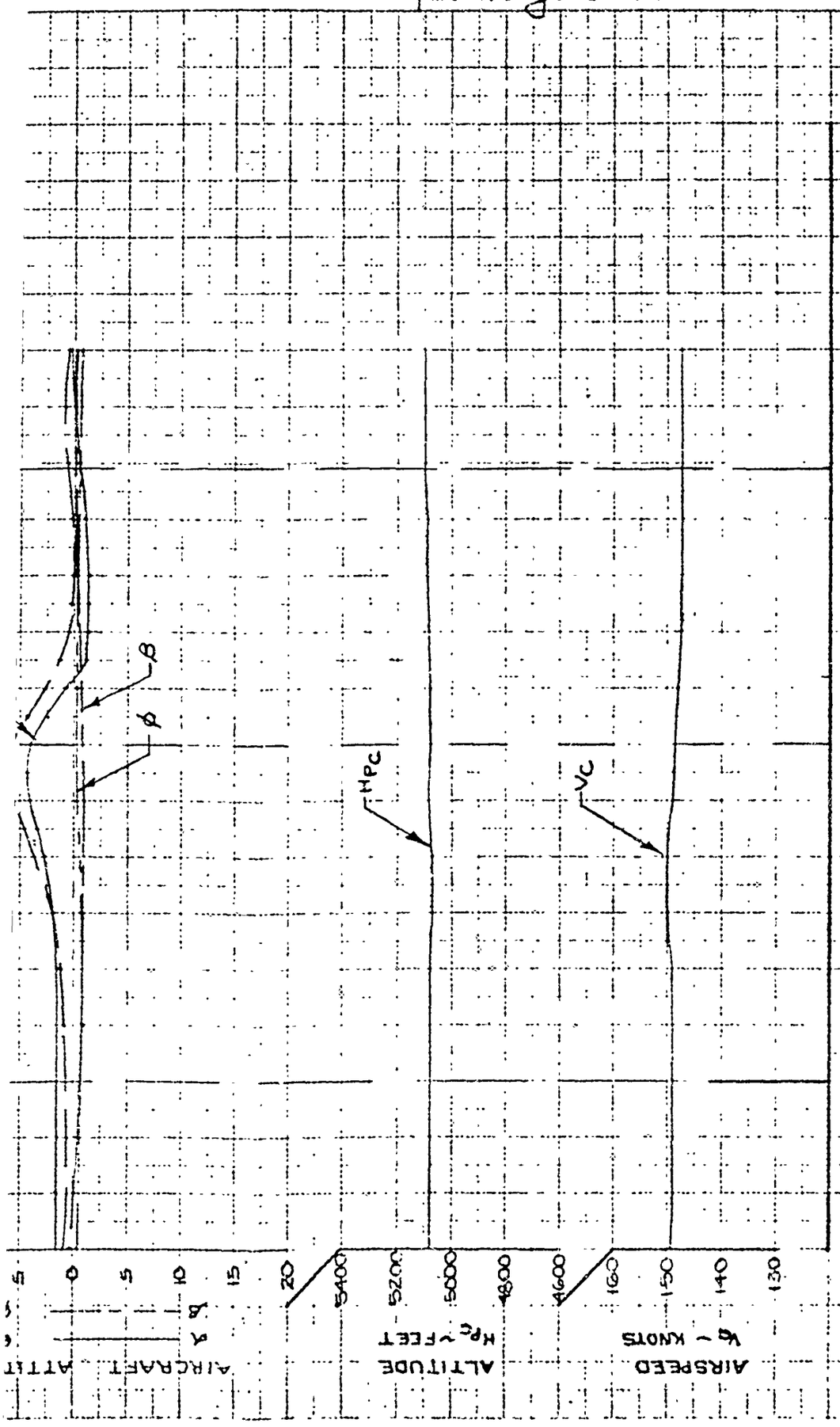


FIGURE F-3

6008
ADS-10

60018
ADS 1058
LOAD NO.2 EXTRACTION CHUTE
MANUAL CUTAWAY.
LOAD RELEASE
LOAD CLEAR OF RAMP
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
ATTITUDES ~ DEG.
JOB NO. ADS 61 SUB. CODE 4.21



TIME HISTORY OF AERIAL DEL MANEUVER

MODEL C-141A

AF63-8077 LAC

TEST DATE 7-2-65

FLIGHT ~ 149 DROP NO

SHEET 1 OF 7

CARGO WT 35360 LB
34650 LB

RUN CONDITIONS

1. G.W. ~ 227,700 LBS.
2. C.G. PRIOR TO DROP ~ 33.5%
3. C.G. AFTER DROP ~ 22.0%
4. FLAPS ~ 65%
5. GEAR ~ UP
6. AVG. EPR ~ 1.30 (4 ENGINES
7. Δ_H ~ 0.25 DEG. (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFOR
2. LENGTH ~ 266 IN. 288
3. CARGO C.G. POSITIONS

LONG. ~ FS	1114	822
VERT. ~ WL	179	179

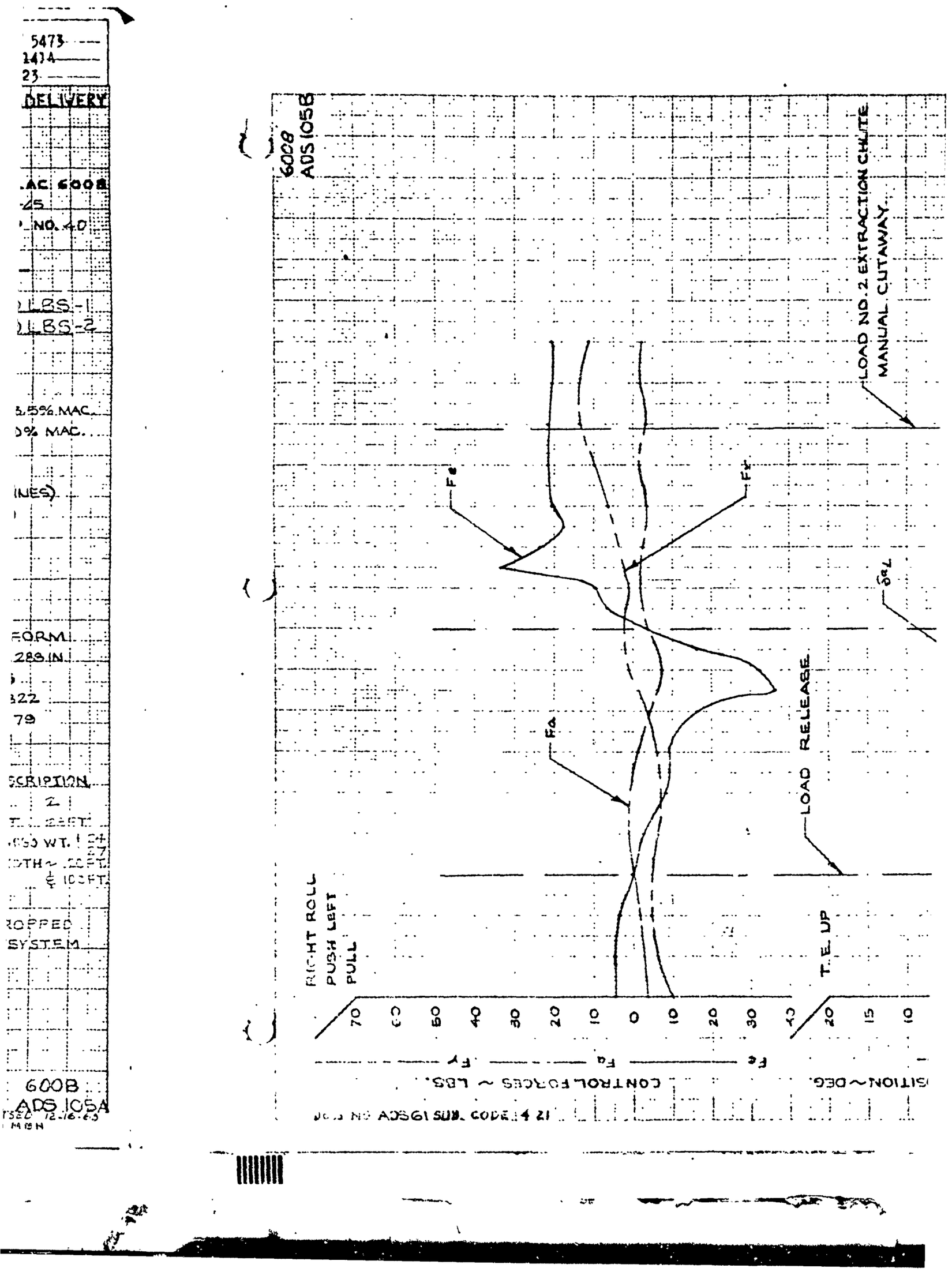
EXTRACTION CHUTE DESCRI

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CMPO
4. EXTRACTION LINE LENGTH

NOTE

SECOND LOAD NOT DROP
DUE TO EXTRACTION SYS
FAILURE.

FIGURE F-4-A


6008
ADS 1058
LOAD NO. 2 EXTRACTION CHUTE
MANUAL CUTAWAY
Fa
Fy
LOAD RELEASE
Fa
RIGHT ROLL
PUSH LEFT
PULL
T.E. UP
70 60 50 40 30 20 10 0 10 20 30 40
20 15 10
Fe Fa Fy
CONTROL FORCES ~ LBS.
SITION ~ DEG.
JOB NO ADS61 SUB. CODE 4 21

PREPARED BY FCW
DATE 7-7-66
CHECKED

ER 5473
C-141A
F-24

TIME HISTORY OF AERIAL DEL
MANEUVER

MODEL C-141A
AF 63 8077 LAC
TEST DATE-7-2-66
FLIGHT-149 DROP NO

SHEET 2 OF 7

CARGO WT 35360 LB
34650 LB

NOTE:
SEE FIGURE 4A SHEET 1 OF
FOR RUN CONDITIONS, CARG
DESCRIPTION, AND EXTRACT
CHUTE DESCRIPTION.

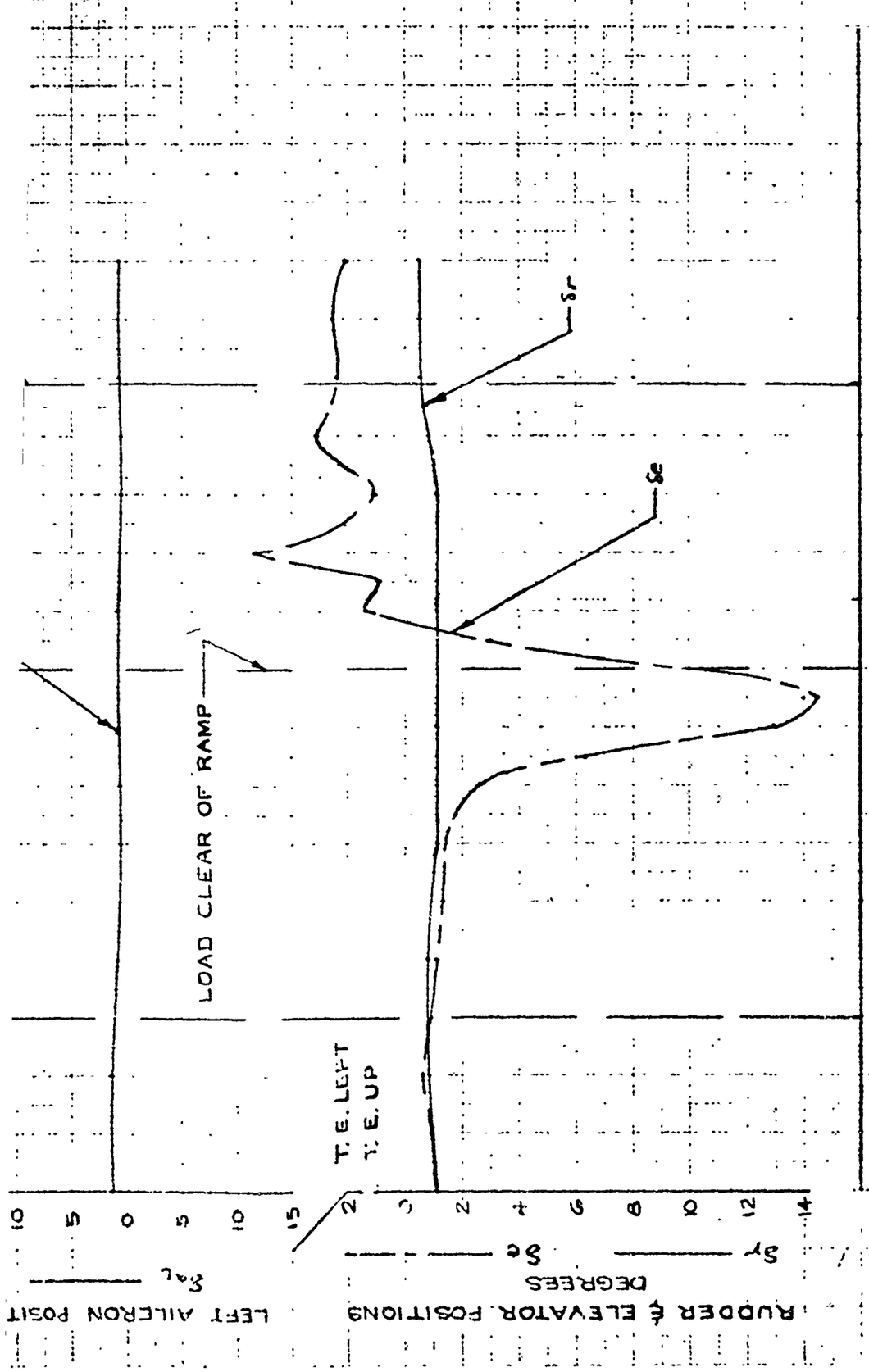
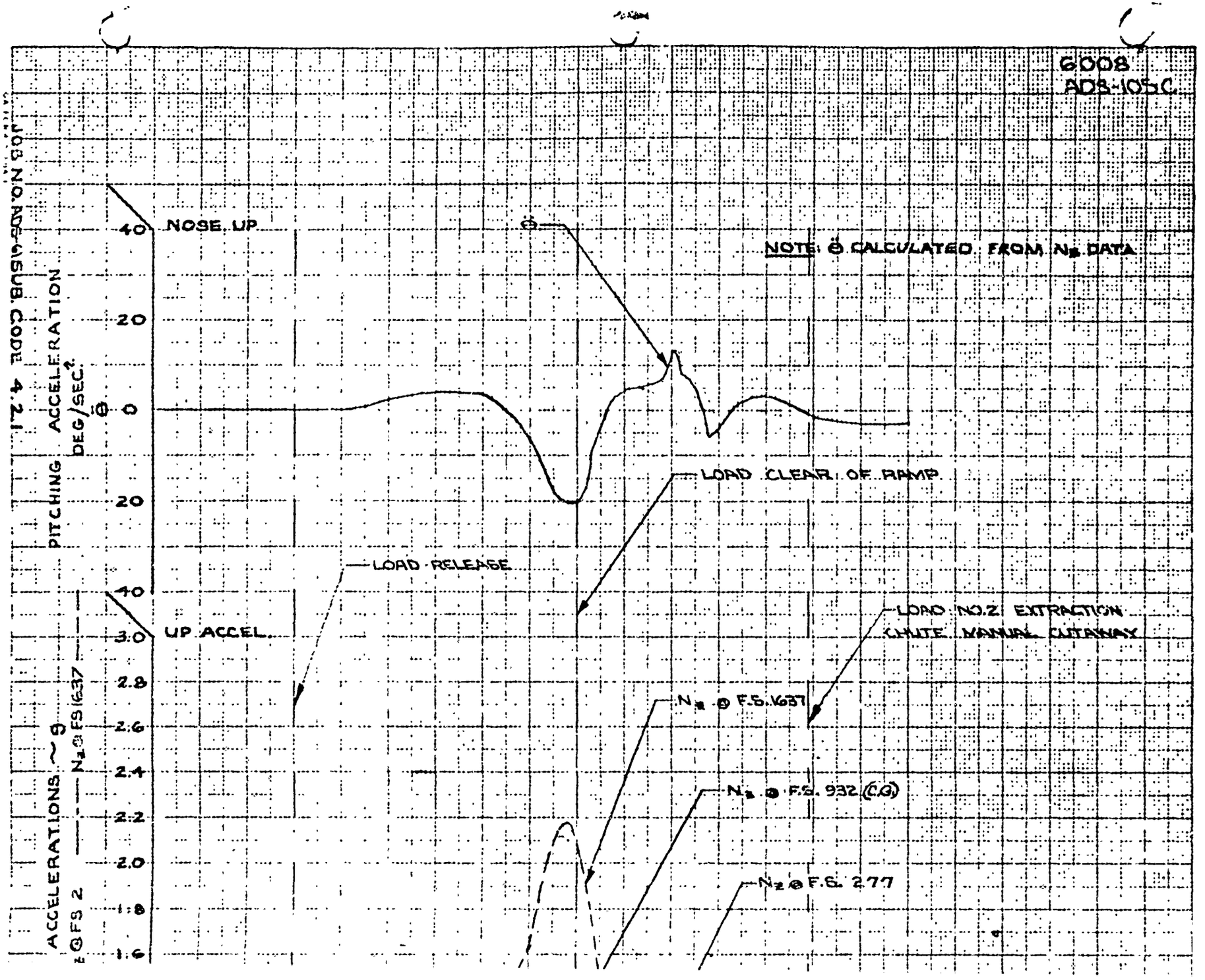


FIGURE F-4B


6008
AD8-105C
JOB NO. AD8-105 SUB. CODE 4.2.1
PITCHING ACCELERATION DEG/SEC²
NOSE UP
40
20
0
20
40
θ
NOTE: θ CALCULATED FROM N₂ DATA
LOAD CLEAR OF RAMP
LOAD RELEASE
LOAD NO.2 EXTRACTION CHUTE MANUAL CUTAWAY
ACCELERATIONS ~ g
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
N₂ @ FS 1637
N₂ @ F.S. 1637
N₂ @ F.S. 932 (C.G.)
N₂ @ F.S. 277
@FS 2

PREPARED BY TED
DATE 7-7-65
CHECKED BY JHP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-25

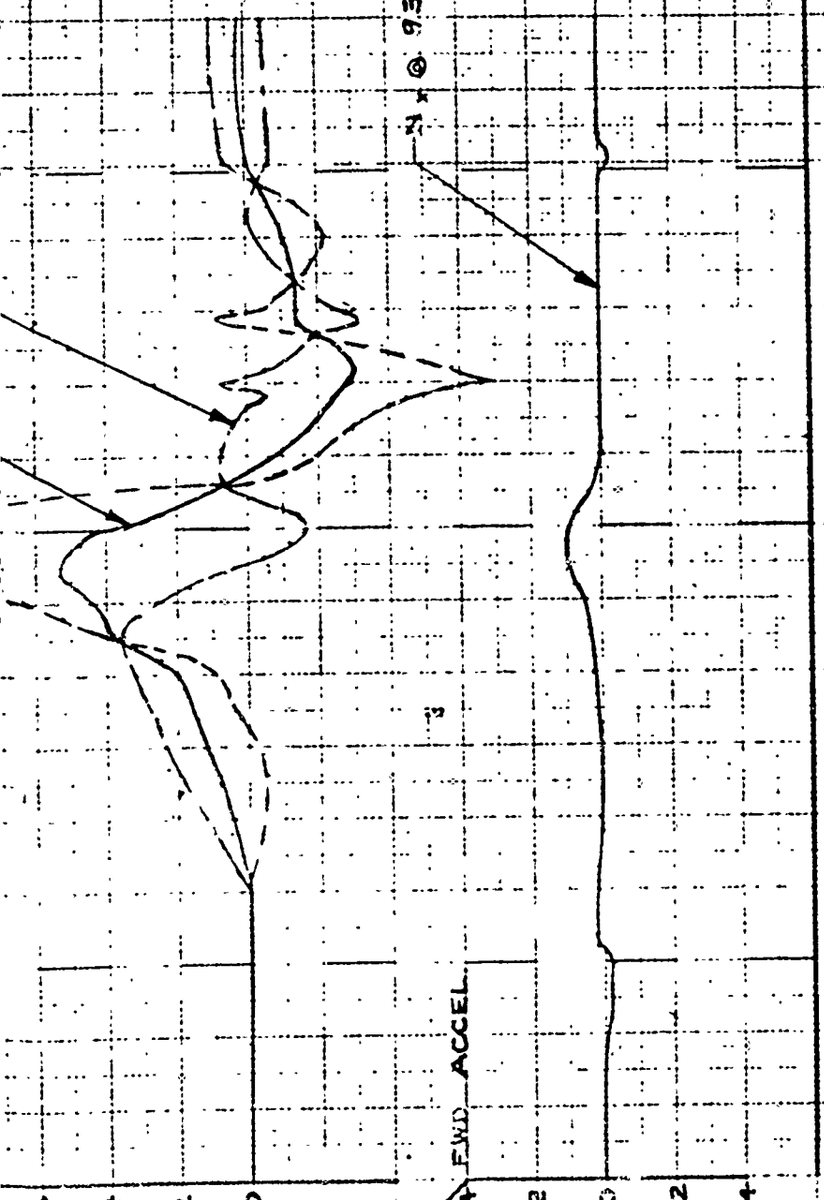
TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFGB-B077 LAC 6008
TEST DATE 1-2-65
FLIGHT 149 DROP NO 4-0

SHEET 3 OF 7

CARGO WT. 35,360 LBS-1
34,650 LBS-2

NOTE:
SEE FIGURE F-4A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

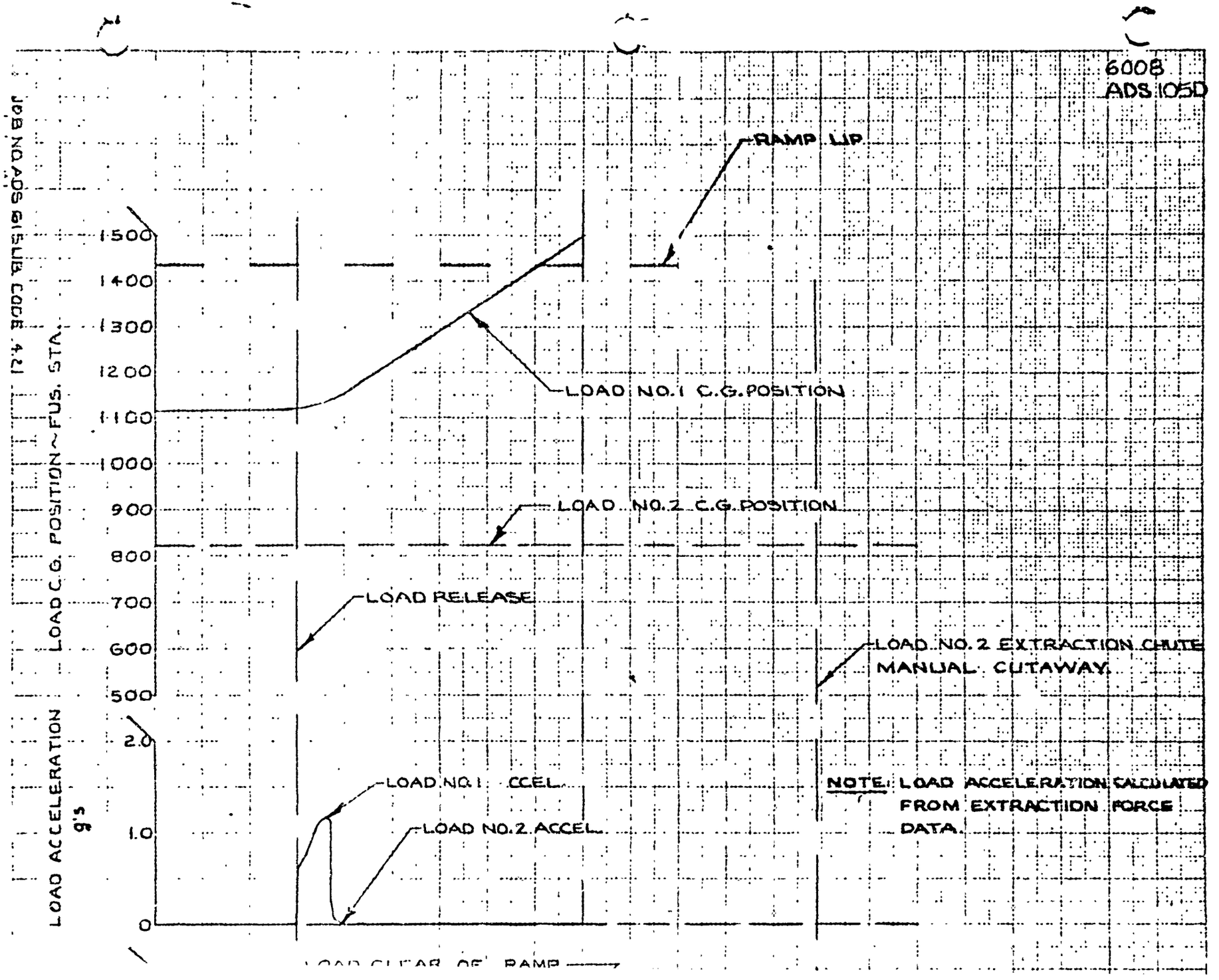


ELAPSED TIME ~ SEC.
10
9
8
7
6
5
4
3
2
1
0

FIGURE F-4C

VERTICAL AC — N_z @ C.G. — N_z @ F
C.G. LONGITUDINAL ACCELERATION ~ N_x ~ g

6008
ADS-105C


6008
ADS 105D
JOB NO ADS 615 SUB CODE 421
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP LIP
LOAD NO.1 C.G. POSITION
LOAD NO.2 C.G. POSITION
LOAD RELEASE
LOAD NO.2 EXTRACTION CHUTE MANUAL CUTAWAY
LOAD ACCELERATION g's
2.0
1.0
0
LOAD NO.1 ACCEL.
LOAD NO.2 ACCEL.
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.
LOAD CLEAR OF RAMP

PREPARED BY FCW
DATE 7-7-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5475
MODEL C-141A
PAGE F-26

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE - 7-2-65

FLIGHT - 149 DROP NO. 40

SHEET 4 OF 7

CARGO WT. 35360 LBS. - 1
34650 LBS. - 2

NOTE:
SEE FIGURE ~~4A~~ SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

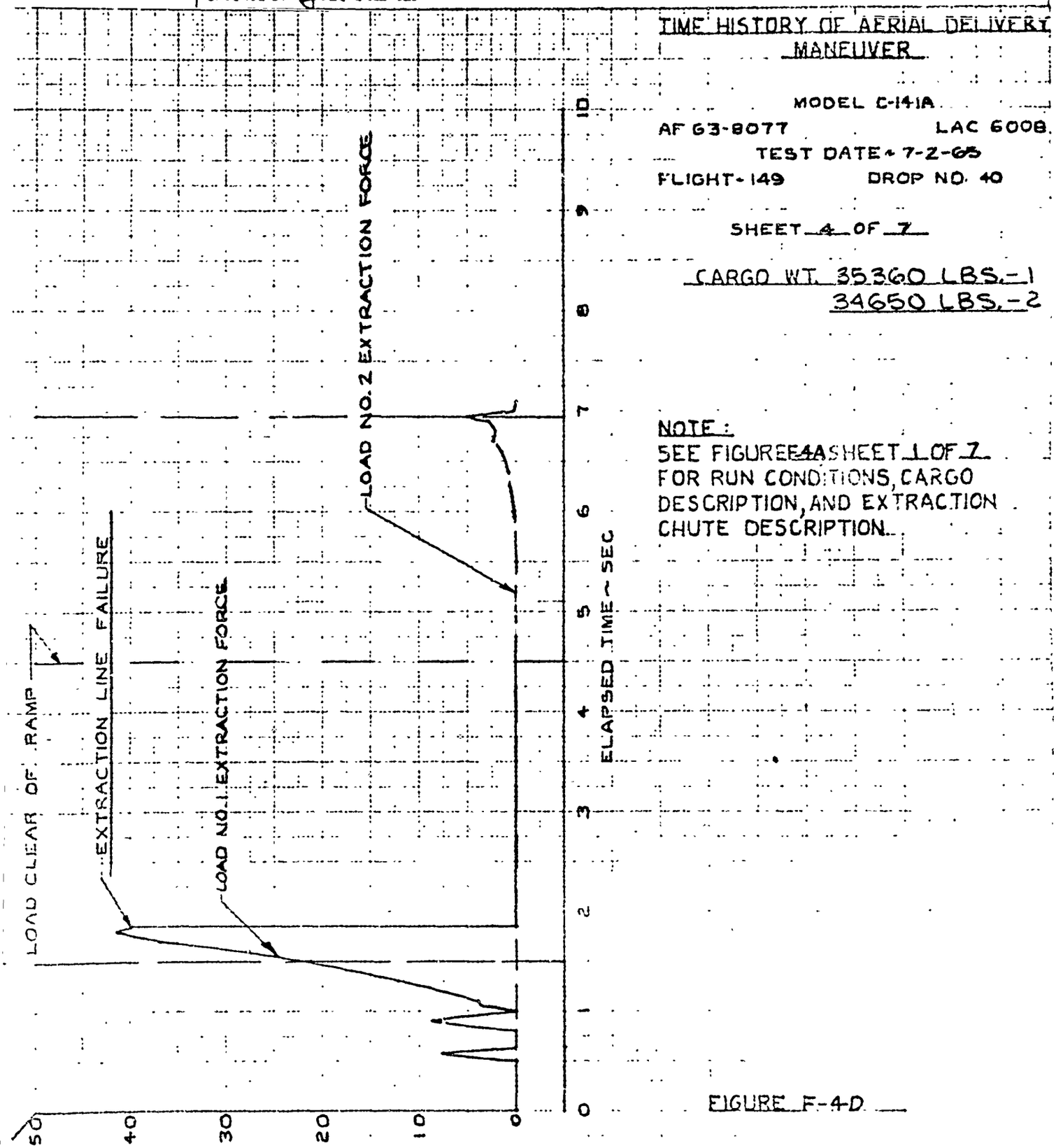


FIGURE F-4-D

6008
ADS 1050

6008
ADS-105.E

RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H. —— L.H.
4 2 0 -2 -4
TENSION

R.H. RAMP ACTUATOR LOAD
L.H. RAMP ACTUATOR LOAD
LOAD RELEASE

ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H. —— L.H.
30 20 10 0
TENSION

L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD

VERTICAL LOAD
LBS X 10⁻³
R.H. —— L.H.
15 10 5 0
DOWN LOAD

R.H. VERT. LOAD
L.H. VERT. LOAD

2.0
PULL RIGHT

SIDE LOAD

JOB NO. SUB. CODE 4.2.1

PREPARED BY TED
DATE 7-7-66
CHECKED BY
REPORT NO ER 5473
MODEL C-141A
PAGE F-27

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 7-2-66

FLIGHT 149 DROP NO. 4D

SHEET 5 OF 7

CARGO WT. 35,360 LBS-1
34,650 LBS-2

NOTE:
SEE FIGURE F-4A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

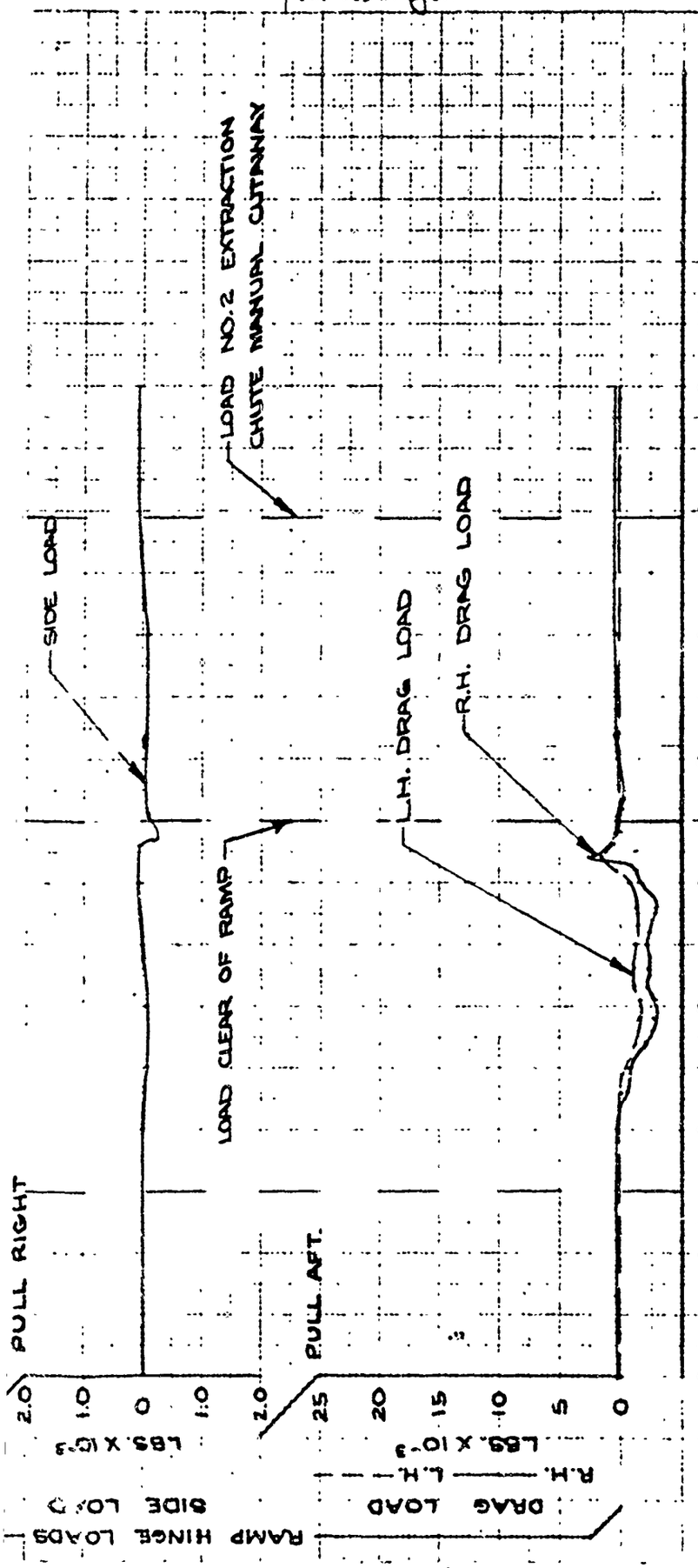


FIGURE F-4E

6008
ADS-105E

6008
ADS-105F
R.H. PETAL DOOR ACTUATOR LOAD
L.H. PETAL DOOR ACTUATOR LOAD
COMPRESSION
LOAD RELEASE
LOAD NO. 2 EXTRACTION CHUTE MANUAL CUTAWAY
MY @ F.S. 1568
MY @ F.S. 1048
LOAD CLEAR OF RAMP
DOWN LOAD
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10-3
RH ——— LH
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10-6
JOB NO. ADS-61 SUB. CODE 4.2.1

TED
7-7-68
dwp

ER 5473
C-141A
F-28

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFGS-8077 LAC 6008

TEST DATE 7-2-68

FLIGHT-149 DROP NO. A0

SHEET 6 OF 7

CARGO WT. 35,300 LBS - 1
34,650 LBS - 2

NOTE:
SEE FIGURE F-4A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

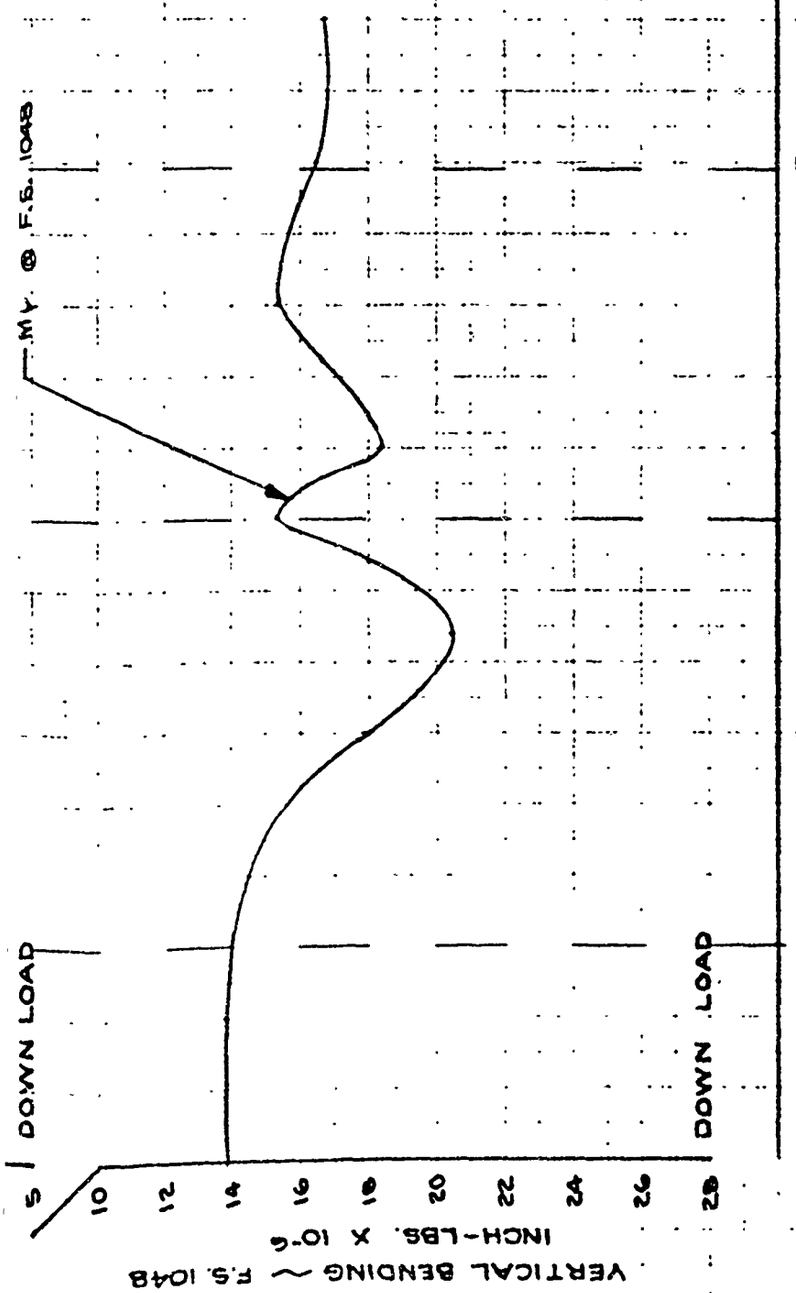


FIGURE F-4 F

6008
ADS-105F

6008
ADS-1056

HORIZONTAL STABILIZER NET LOADS

BENDING @ HBL 44L ~ M'_x

INCH-LBS x 10^{-6}

SHEAR @ HBL 44L ~ S'_z

LBS x 10^{-3}

UP LOAD

LOAD RELEASE

LOAD NO.2 EXTRACTION CHUTE MANUAL CUTAWAY

LOAD CLEAR OF RAMP

JOB NO. ADS-61SUS. CODE 4.2.1

TED
7-7-66
JWP

ER 5473
C-141A
F-29

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 7-2-66

FLIGHT # 149 DROP NO. ~ 90

SHEET 1 OF 1

CARGO WT. 35,360 LBS-1
34,650 LBS-2

NOTE:
SEE FIGURE F-4A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

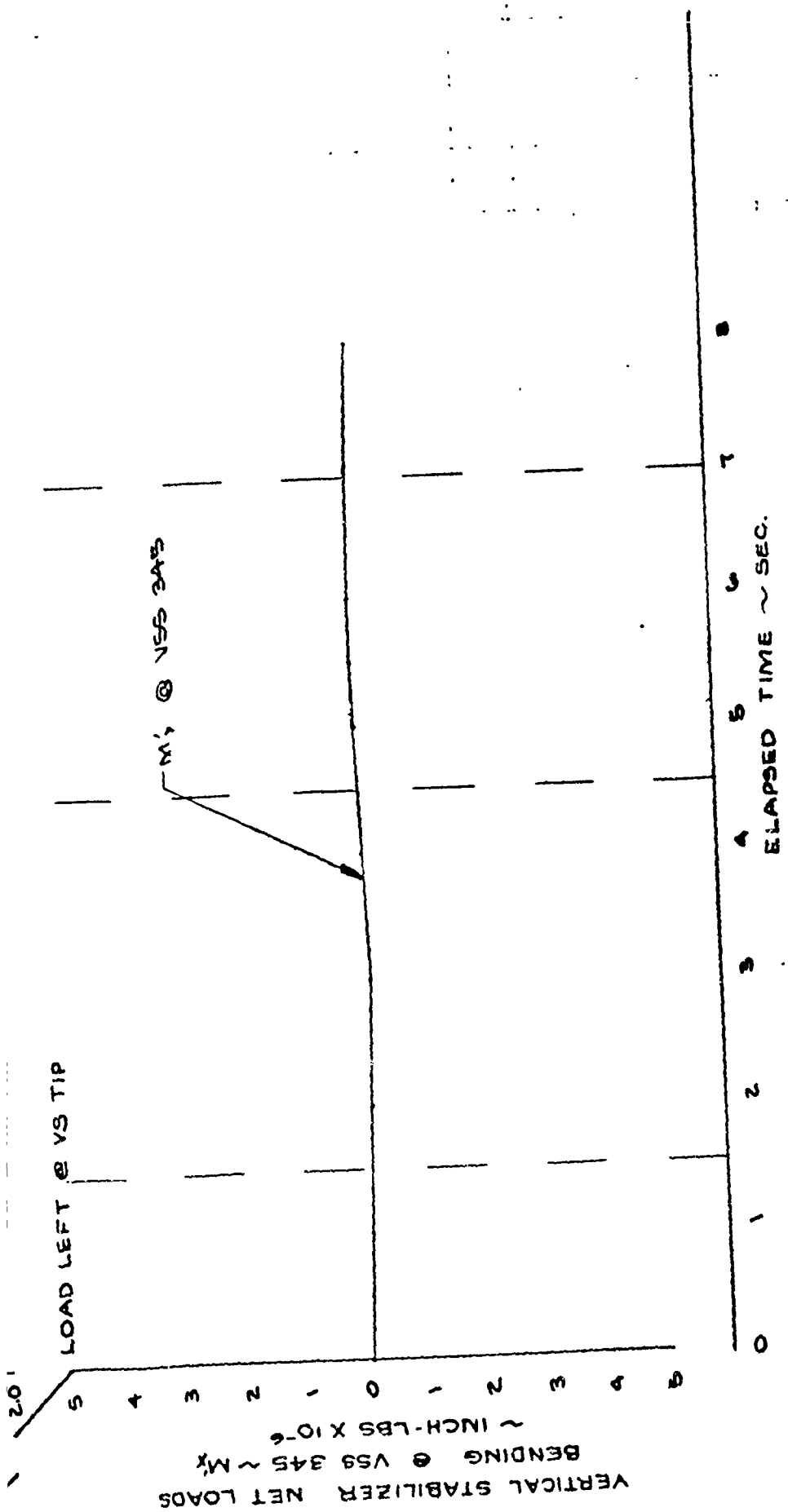


FIGURE F-4G

6008
ADS156A
NO.2 LOAD RELEASE
NO.1 LOAD RELEASE
NOSE UP
NOSE LEFT
RIGHT ROLL
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
JOB NO. 81 SUB. CODE 4.21

PREPARED BY MBH
DATE 9-3-65
CHECKED BY

REPORT NO ER 5473
MODEL C-142A
PAGE F-30

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 600B

TEST DATE 9-2-65

FLIGHT 175 DROP NO. 4 OR

SHEET 1 OF 13

CARGO WT. 35,390 LBS (LOAD-1)

RUN CONDITIONS (LOAD NO 1)

1. G.W. ~ 226,300 LBS.
2. C.G. PRIOR TO DROP ~ 33.0% MAC
3. C.G. AFTER DROP ~ 21.5% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.28
7. λ_H ~ 0.65° (A/C. N.U)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 336 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ F.S. ~ 1111
   VERT. ~ WL ~ 180

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.3
4. EXTRACTION LINE LENGTH ~ 80 FT

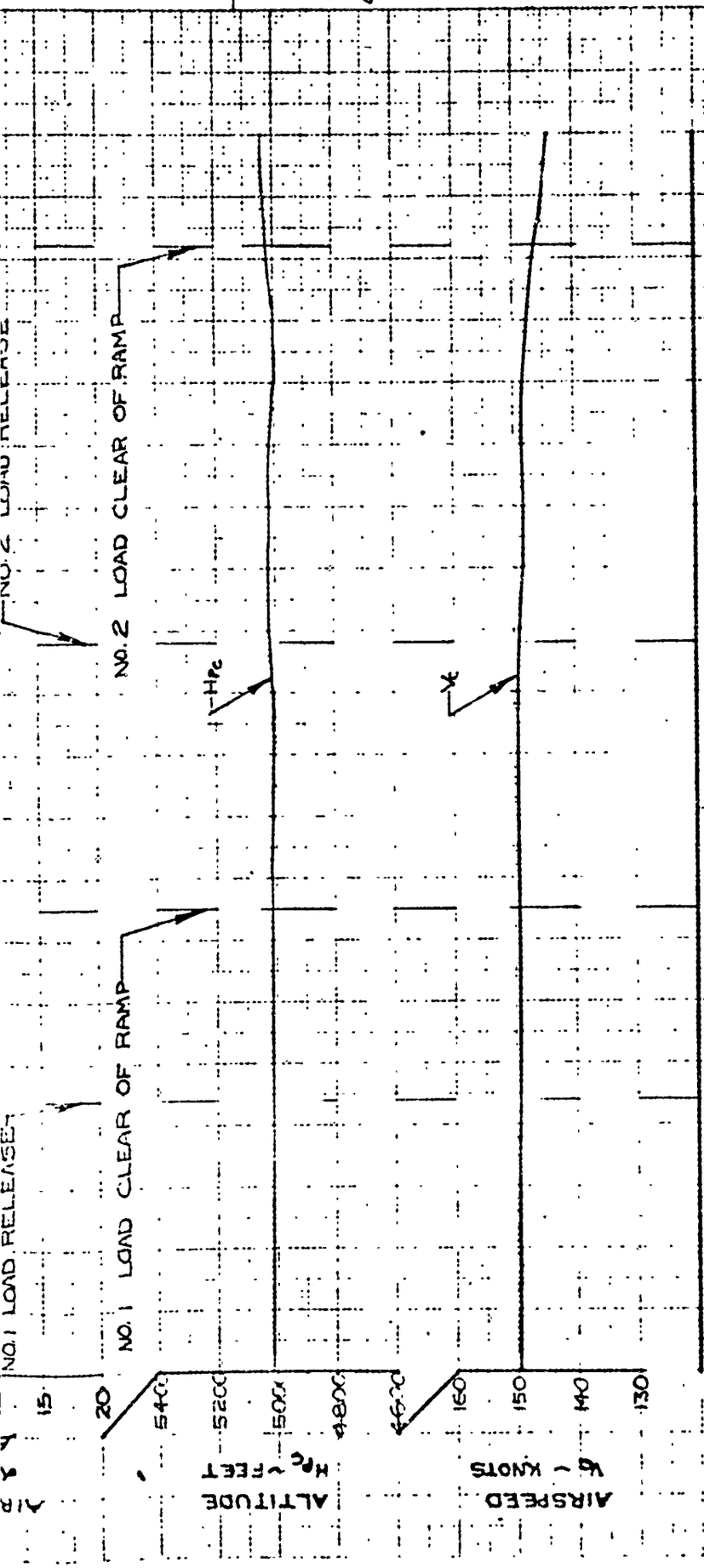


FIGURE F-5A

AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
25 20 15 10 5 0 5 10 15 20 25
JOB NO. 01 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 600B

TEST DATE 9-2-65

FLIGHT 175 DROP NO. 4 OR

SHEET 2 OF 13

CARGO WT 35,040 LBS (LOAD-2)

RUN CONDITIONS (LOAD NO. 2)

1. G.W. ~ 190,910 LBS.
2. C.G. PRIOR TO DROP ~ 21.5% MAC
3. C.G. AFTER DROP ~ 30.6% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.28 EPR
7. $\dot{\gamma}_H$ ~ 0.65° (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS ~ 808
   VERT. ~ WL ~ 182

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.3
4. EXTRACTION LINE LENGTH ~ 100 FT.

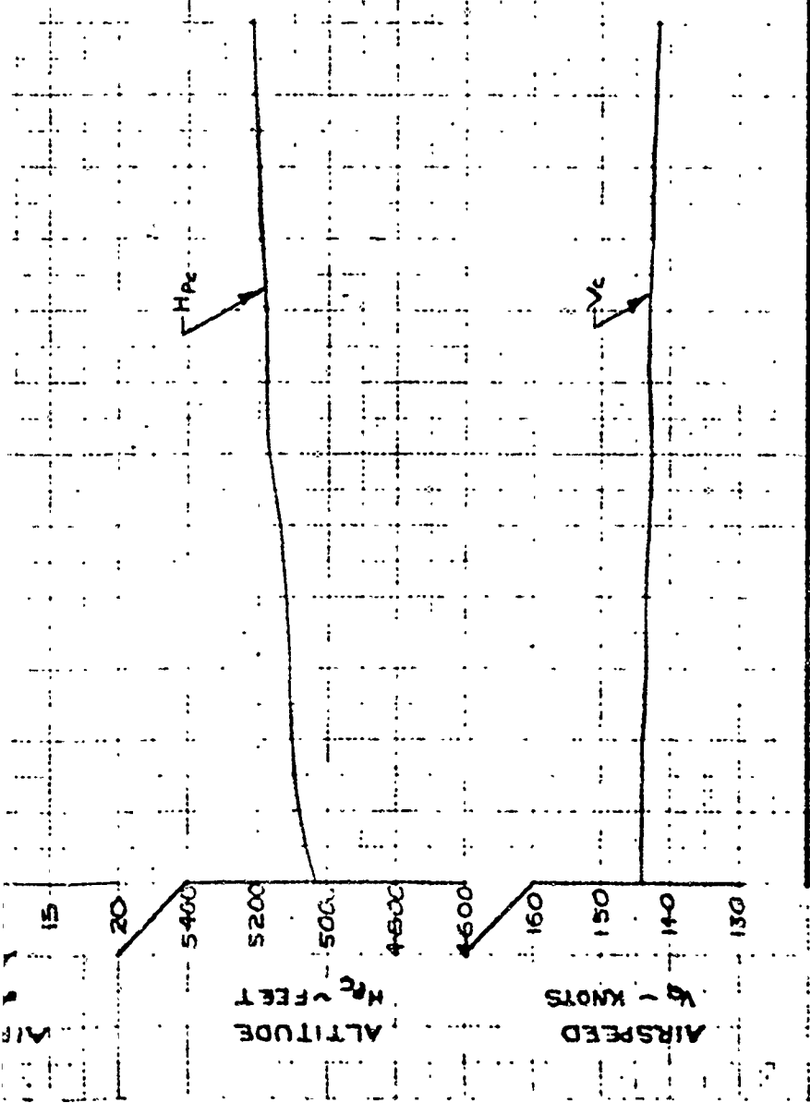


FIGURE F-5B

ADS 15 GC
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
CONTROL FORCES ~ LBS.
F_r
F_a
F_e
F_{e_0}
F_{a_0}
F_{r_0}
NO. 2 LOAD RELEASE
T.E. UP
20
15
10
5
0
5
AILERON POSITION ~ DEG
δ_{a_L}
NO. 2 LOAD CLEAR OF RAMP
JOB NO.
SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 9-2-65

FLIGHT 178 DROP NO 40R

SHEET 3 OF 13

CARGO WT ① 35,390 LBS
② 35,040 LBS

NOTE:
SEE FIGURE E-5 SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

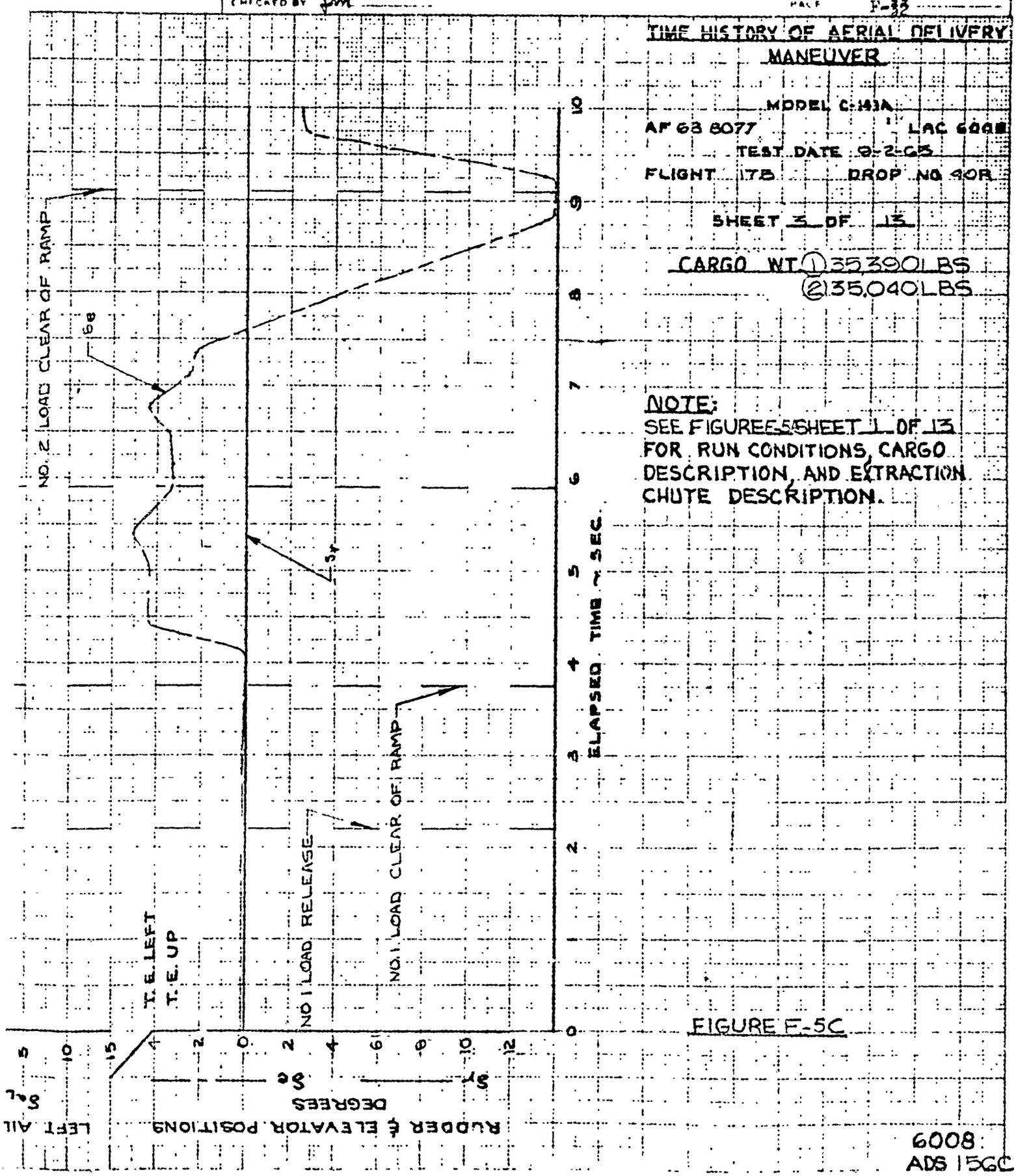
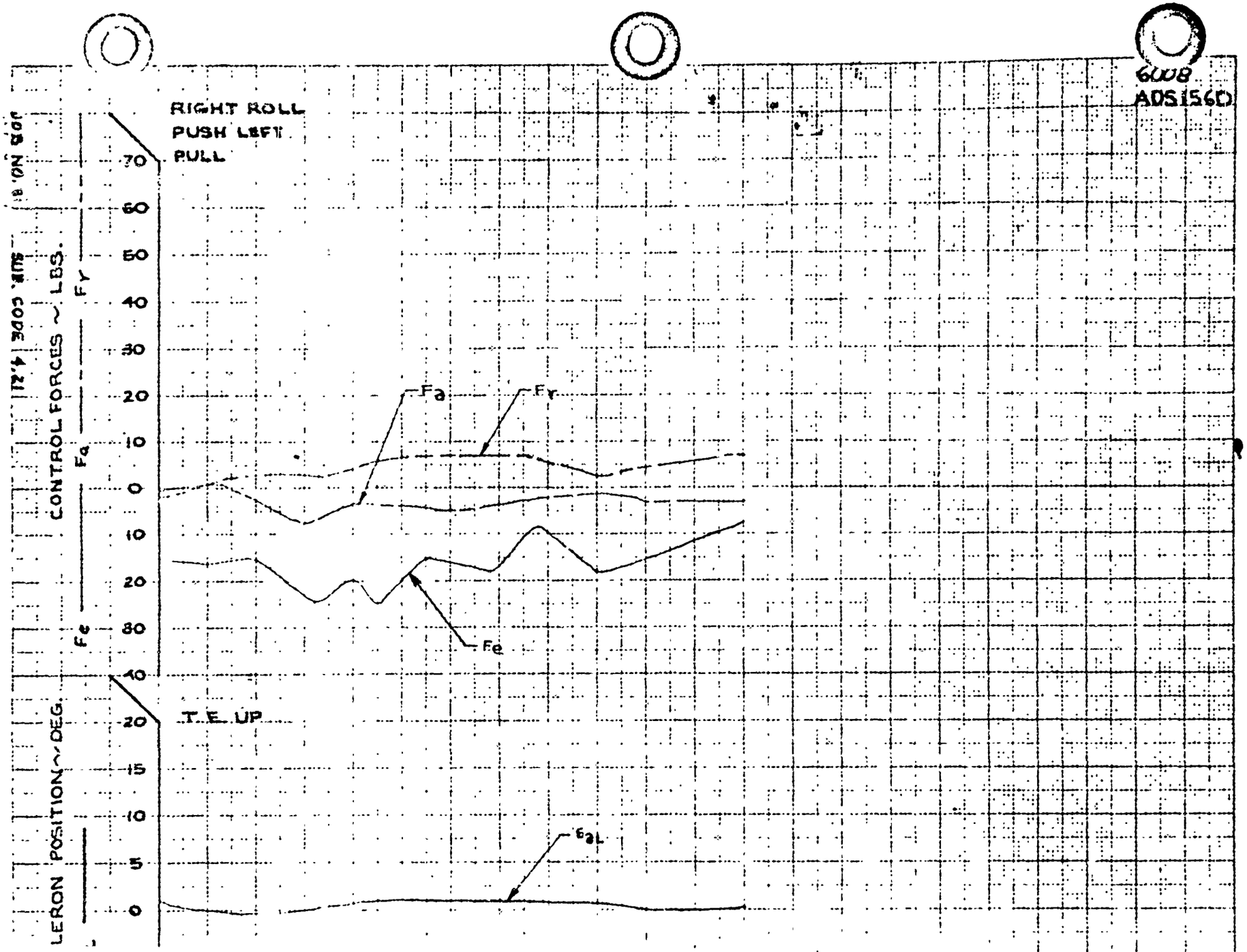


FIGURE F-5C


6008
ADS1560
RIGHT ROLL
PUSH LEFT
PULL
70
60
50
40
30
20
10
0
10
20
30
40
CONTROL FORCES ~ LBS.
Fy
Fa
Fe
Fa
Fy
Fe
T.E. UP
20
15
10
5
0
LERON POSITION ~ DEG.
δ_{aL}

FORMULATED BY JDG
DATE 9-8-65
CK BY LMD

ER 5473
MODEL C-141A
F-33

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 9-2-65

FLIGHT 175 DROP NO 4-0-R

SHEET 4 OF 13

CARGO WT. ① 35,390 LB.
② 35,040 LB.

NOTE:
SEE FIGURE F-5B SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

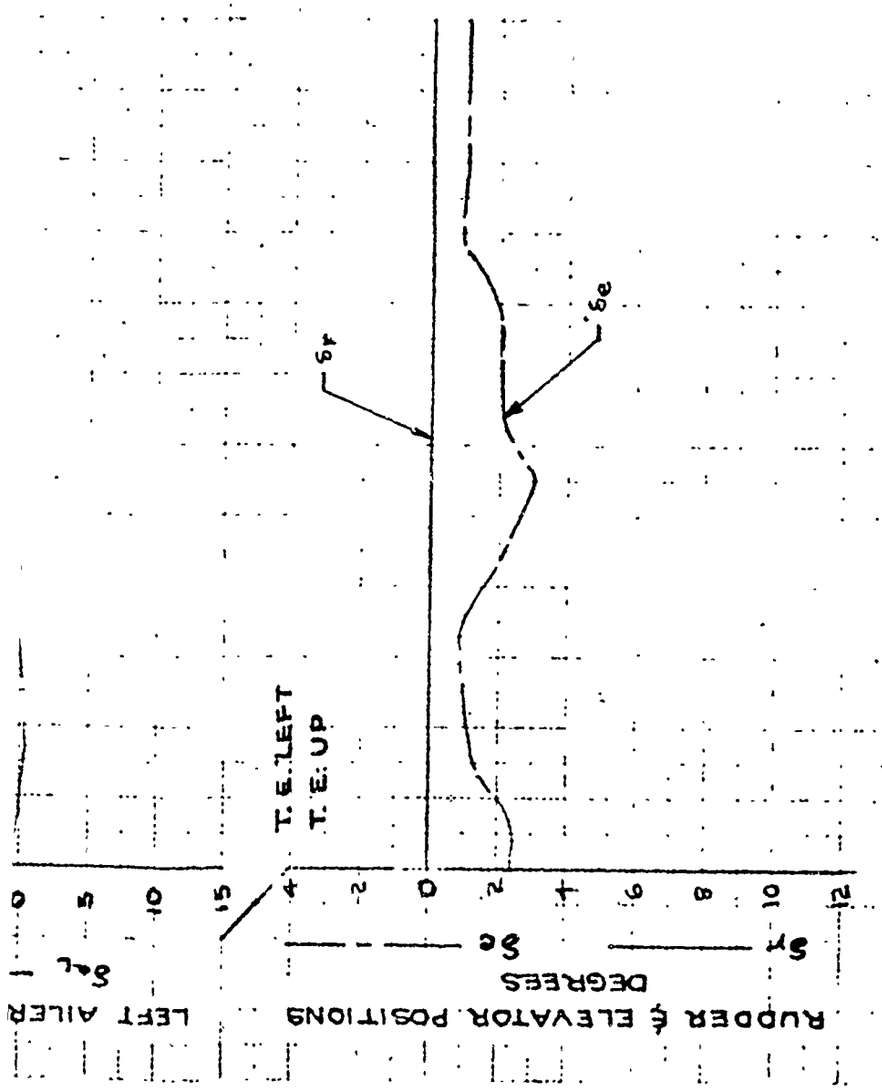


FIGURE F-5D

6008
ADS 156D

6008
ADS 15CE
NOTE: θ CALCULATED FROM Nz DATA
NO. 2 LOAD RELEASE
NO. 2 LOAD CLEAR OF RAMP
NO. 1 LOAD CLEAR OF RAMP
NO. 1 LOAD RELEASE
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
θ
PITCHING ACCELERATION
DEG/SEC²
Nz @ FS 1637
ELERATIONS ~ g
JOB NO. 61 SUB. CODE 4.2.1

PREPARED BY DTM
DATE 9-3-65
CHECKED BY JWF

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-34

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

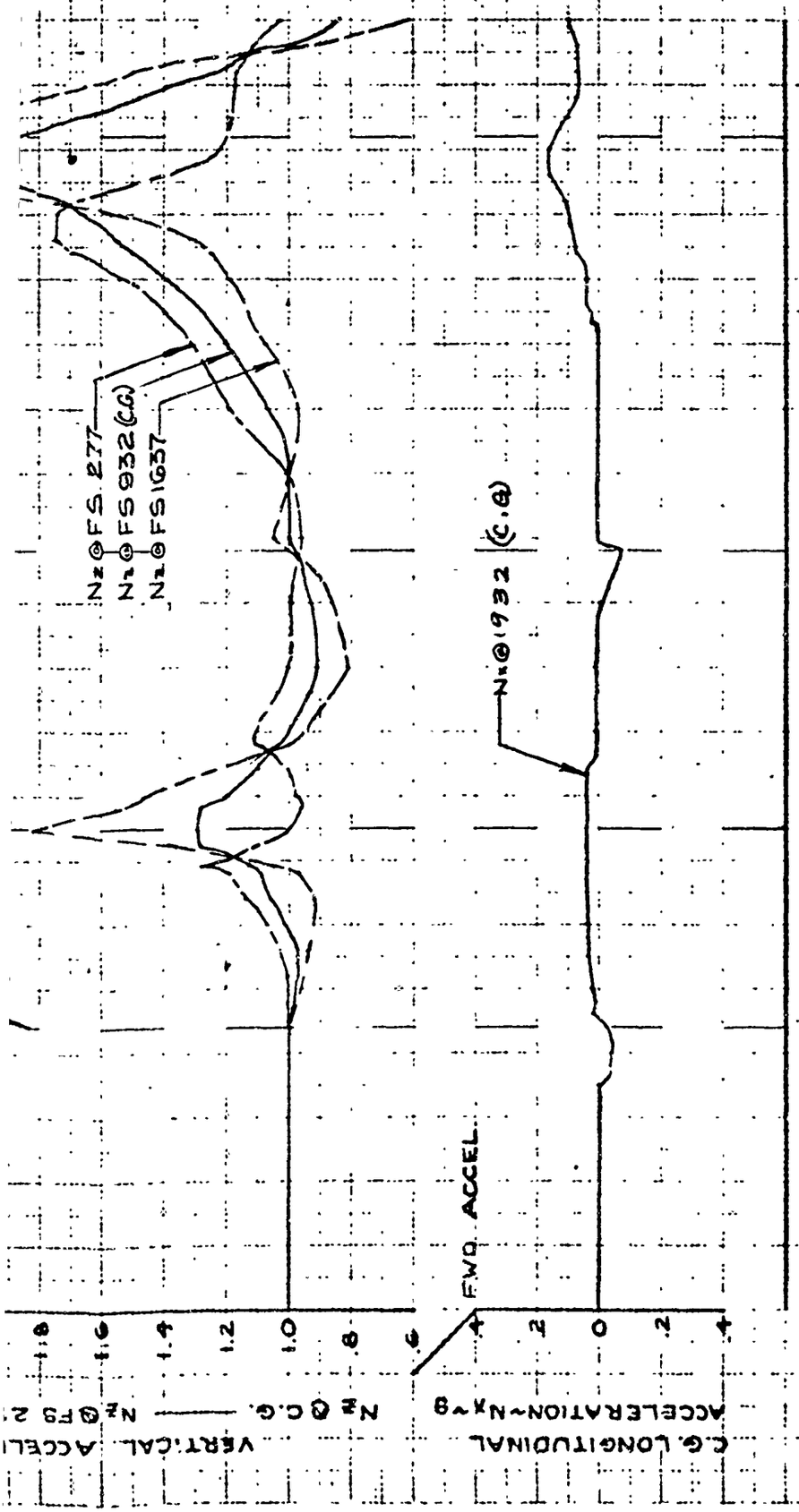
AF 63-8077 LAC 6008

TEST DATE: 9-2-65

FLIGHT LT5 DROP NO 40R

SHEET 5 OF 13

CARGO WTS ① 35390
② 35,040



NOTE:
SEE FIGURE F-5A SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE F-5E

6008
ADS 15GE

6008
AD815GF
NOTE: θ̈ CALCULATED FROM Nz DATA
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
θ̈
DEG/SEC²
PITCHING ACCELERATION
CELERATIONS ~ g
JOB NO. 81 SUB. CODE 4.2.1

DTM
9-3-65

ER 5473
C-141A
F-35

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

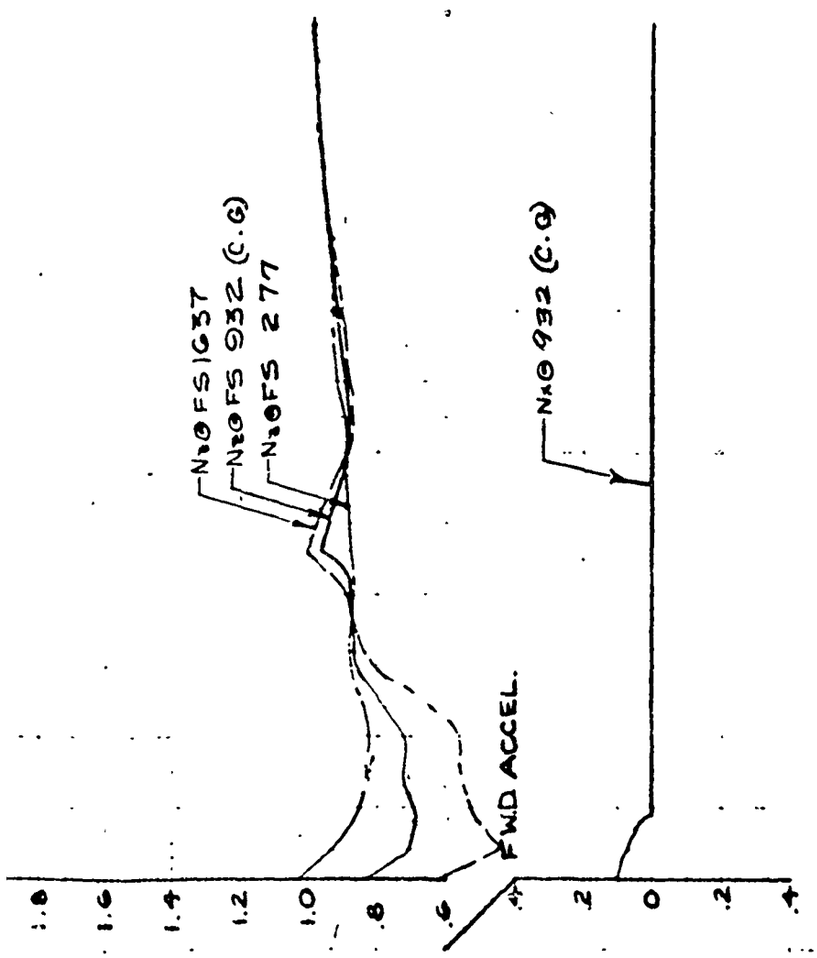
TEST DATE: 9-2-65

FLIGHT 175 DROP NO. 40R

SHEET 6 OF 13

CARGO WT. ① 35390 LBS
② 35040 LBS

NOTE:
SEE FIGURE F-5E SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.



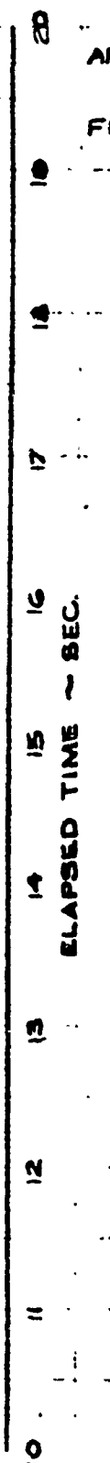
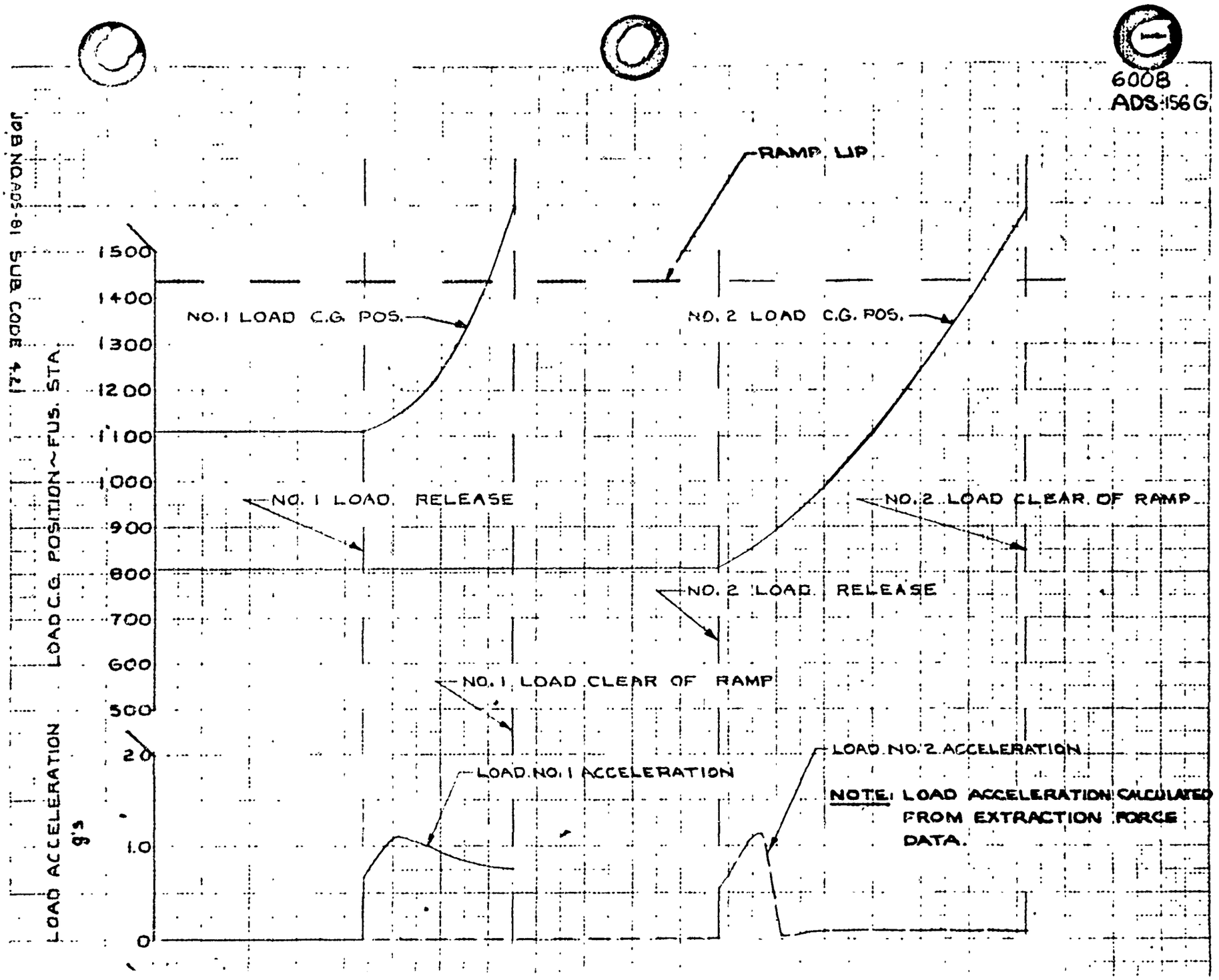


FIGURE F-5F

6008
ADS 15GF


6008
ADS-156G
JOB NO ADS-81 SUB CODE 121
LOAD C.G. POSITION ~ FUS. STA.
1500
1400
1300
1200
1100
1000
900
800
700
600
500
RAMP UP
NO. 1 LOAD C.G. POS.
NO. 2 LOAD C.G. POS.
NO. 1 LOAD RELEASE
NO. 2 LOAD CLEAR OF RAMP
NO. 2 LOAD RELEASE
NO. 1 LOAD CLEAR OF RAMP
LOAD ACCELERATION g's
2.0
1.0
0
LOAD NO. 1 ACCELERATION
LOAD NO. 2 ACCELERATION
NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

PREPARED BY JDG
DATE 9-3-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-36

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 9-2-65
FLIGHT 175 DROP NO. 40-R

SHEET 7 OF 13

CARGO WT. @ 35390 LBS
@ 35040 LBS

NOTE:
SEE FIGURE E-5, SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

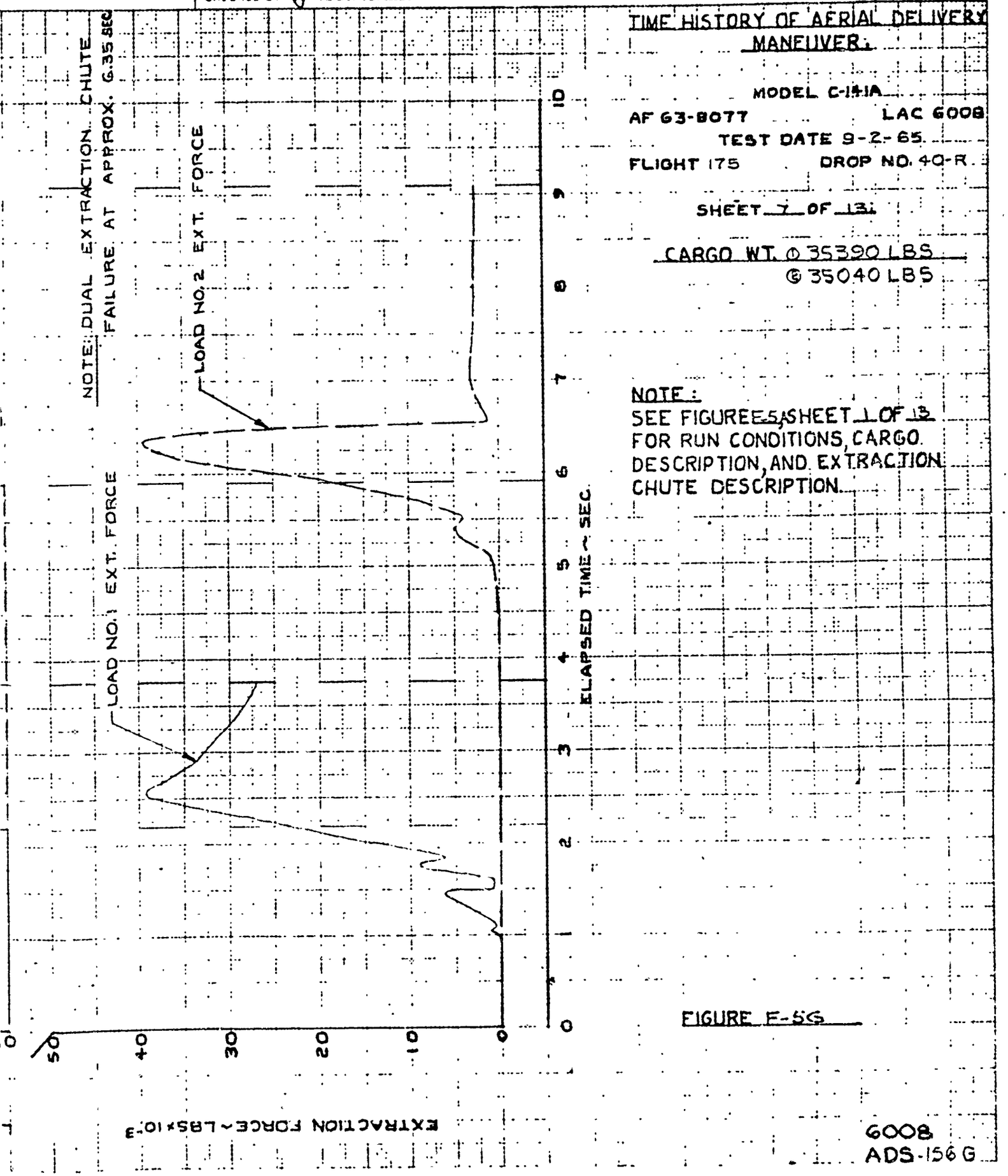
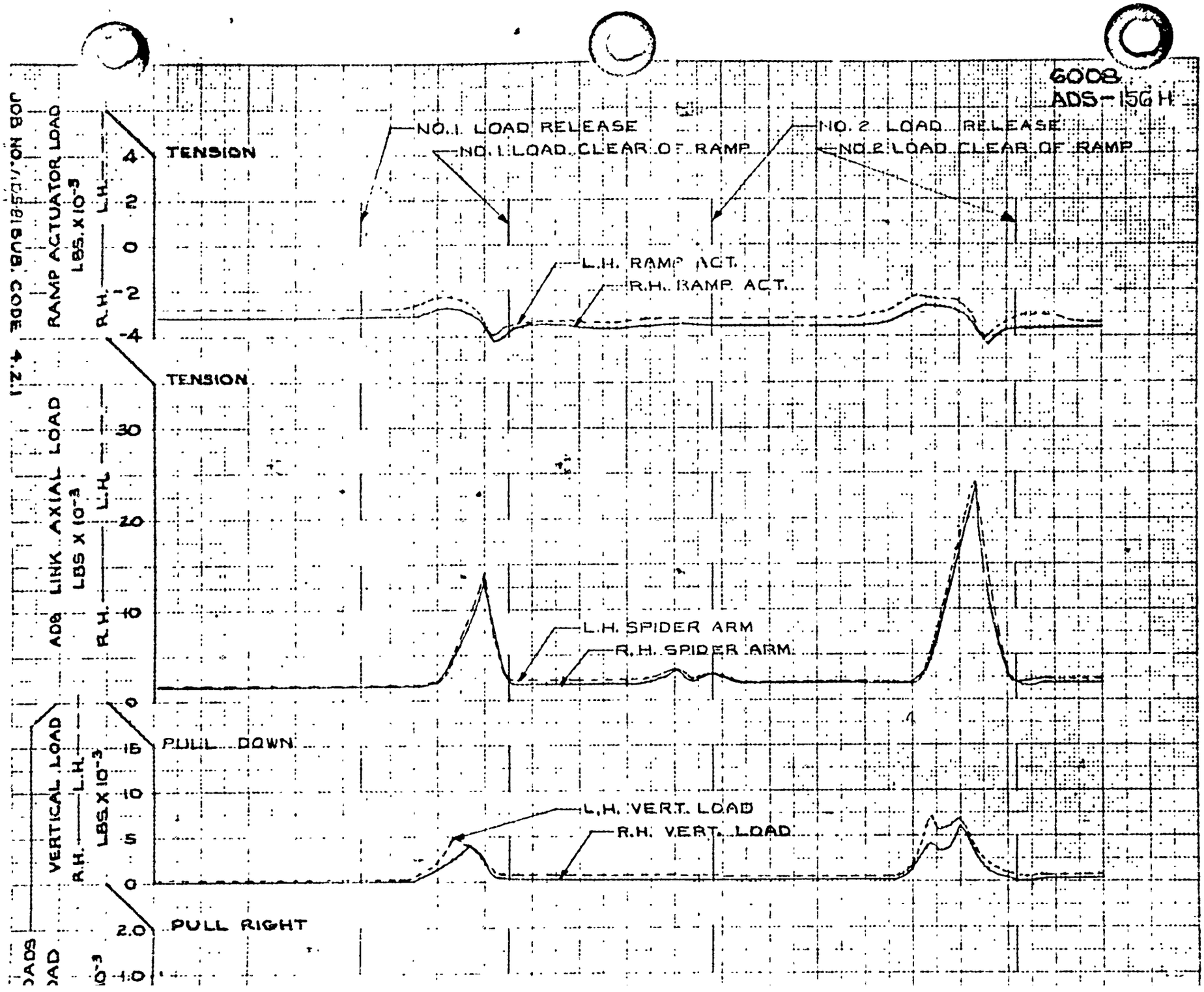


FIGURE E-56


6008
ADS-15G H
NO. 1 LOAD RELEASE
NO. 1 LOAD CLEAR OF RAMP
NO. 2 LOAD RELEASE
NO. 2 LOAD CLEAR OF RAMP
TENSION
RAMP ACTUATOR LOAD LBS. X 10⁻³
R.H. L.H.
4
2
0
-2
-4
L.H. RAMP ACT.
R.H. RAMP ACT.
TENSION
ADS LINK AXIAL LOAD LBS X 10⁻³
R.H. L.H.
30
20
10
0
L.H. SPIDER ARM
R.H. SPIDER ARM
PULL DOWN
VERTICAL LOAD LBS X 10⁻³
R.H. L.H.
15
10
5
0
L.H. VERT. LOAD
R.H. VERT. LOAD
PULL RIGHT
2.0
1.0

PREPARED BY [illegible] SUPERSEDES [illegible]
DATE [illegible]
CHECKED BY [illegible]
SPEC. NO. ER 5473
MODEL C-141A
PAGE F-37

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-2-65

FLIGHT 175 DROP NO. 4-C-R

SHEET 8 OF 13

CARGO WT. ① 35390 LBS
② 35040 LBS.

NOTE:
SEE FIGURE F-5A SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

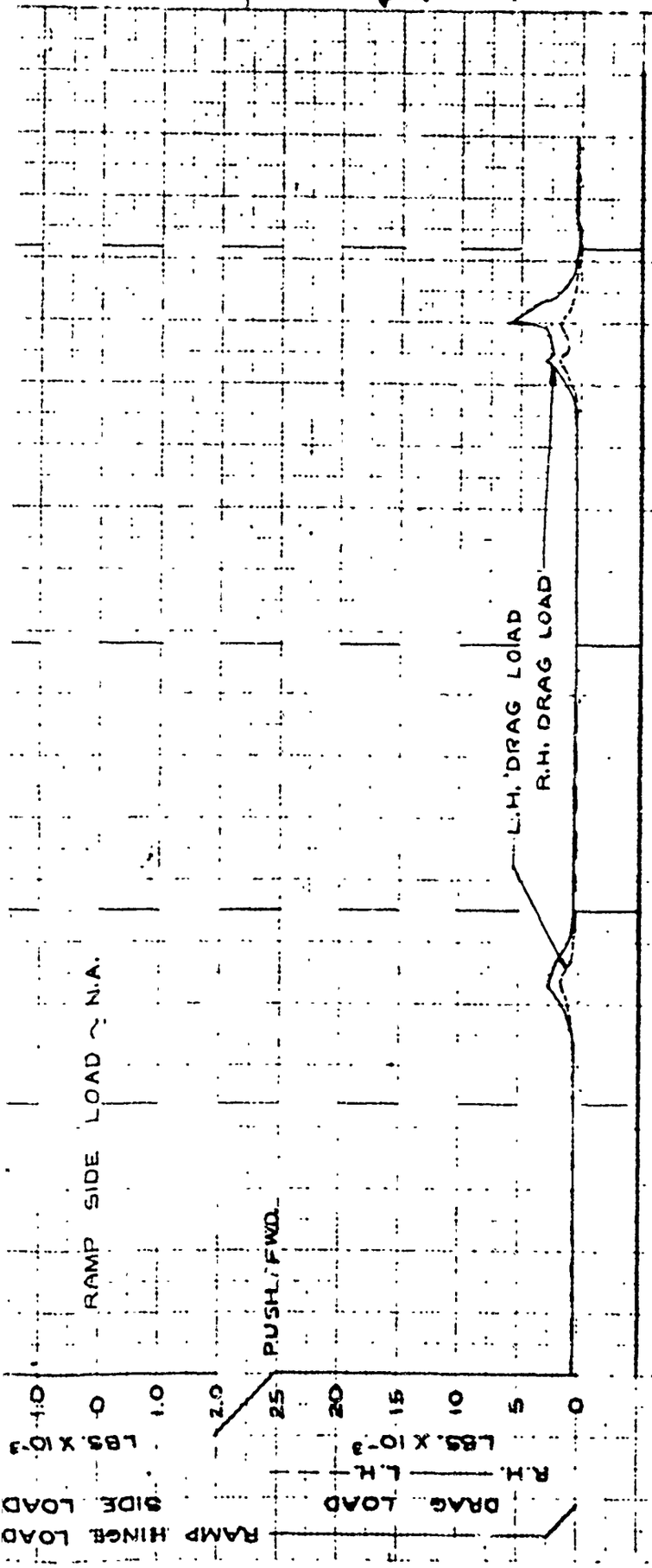


FIGURE F-5H

6008
ADB-158H

008
ADS-1&6 I

RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H. —— L.H. - - -
4 2 0 -2 -4
TENSION
L.H. RAMP ACT.
R.H. RAMP ACT.

ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H. —— L.H. - - -
30 20 10 0
TENSION
L.H. SPIDER ARM
R.H. SPIDER ARM

VERTICAL LOAD
LBS X 10⁻³
R.H. —— L.H. - - -
15 10 5 0
PULL DOWN
L.H. VERT. LOAD
R.H. VERT LOAD

2.0 1.0
PULL RIGHT

JOB NO. ADS-81 SUB. CODE 4.2.1

ER 5473
C-141A
F-38

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-2-65

FLIGHT 175 DROP NO. 40-B

SHEET 9 OF 13

CARGO WT. ① 35390 LBS.
② 35040 LBS.

NOTE:
SEE FIGURE F-58 SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

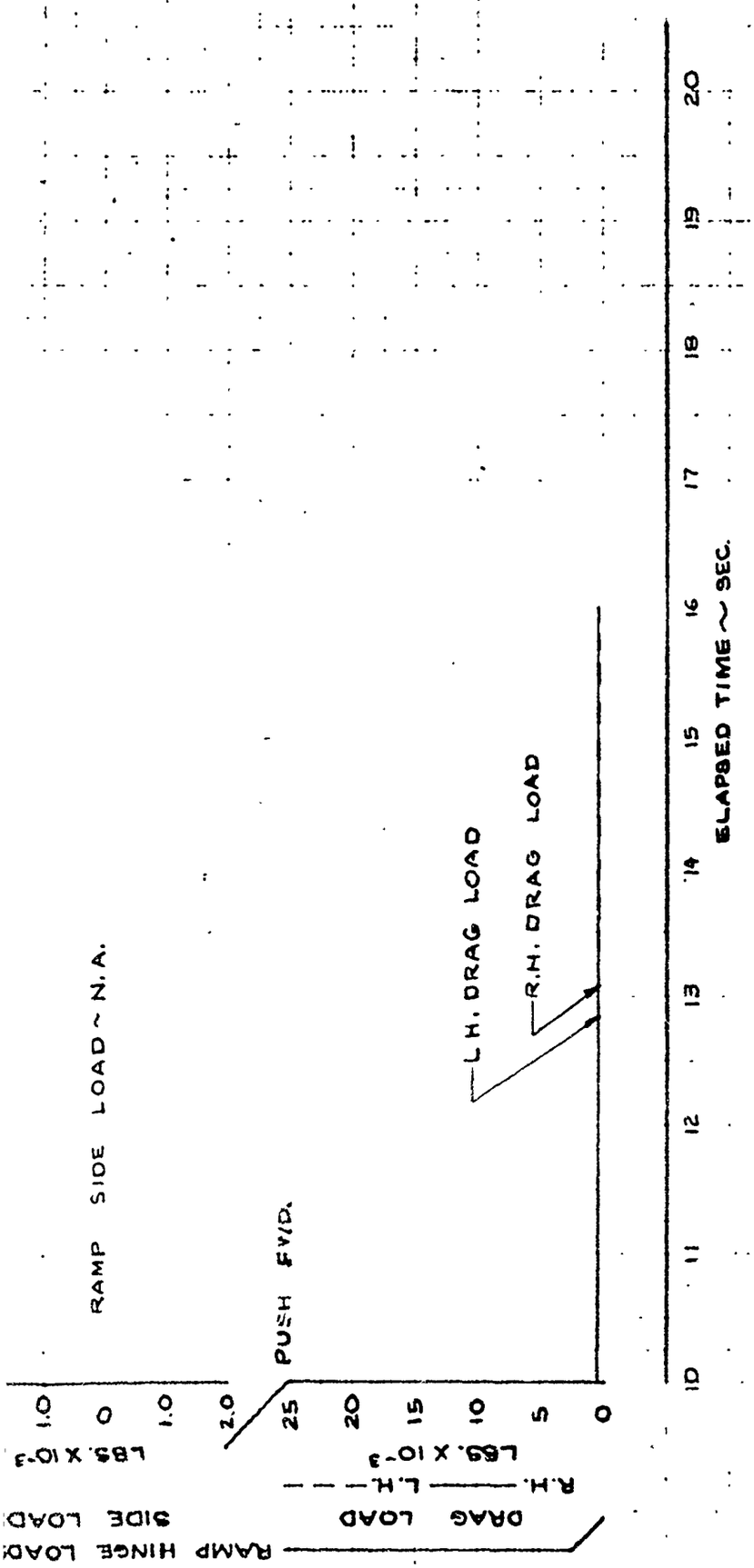
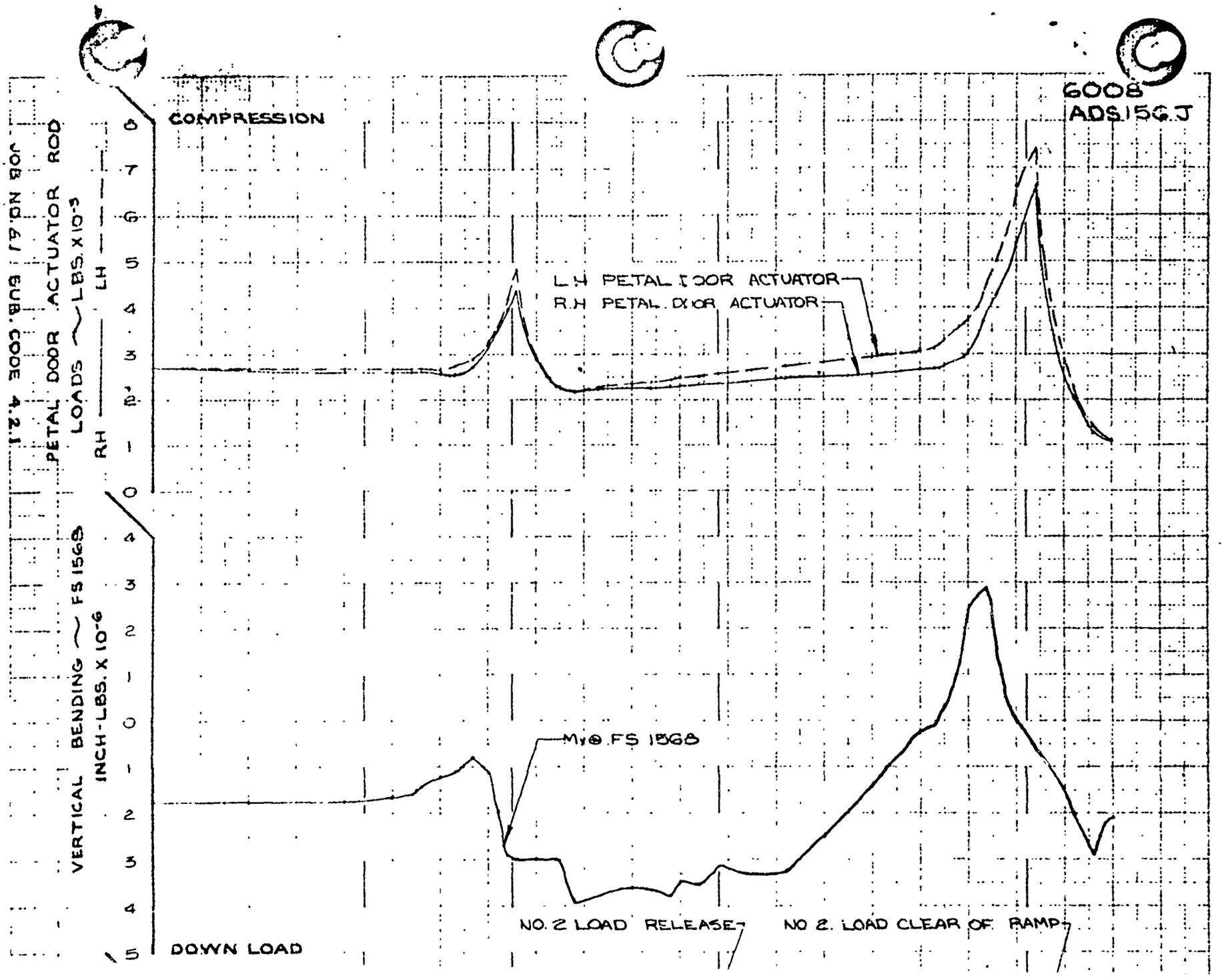


FIGURE F-5 I


6008
ADS15GJ
JOB NO. 67 SUB. CODE 4.2.1
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
RH — LH
COMPRESSION
L.H PETAL DOOR ACTUATOR
R.H PETAL DOOR ACTUATOR
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶
M_V @ FS 1568
NO. 2 LOAD RELEASE
NO 2. LOAD CLEAR OF RAMP
DOWN LOAD

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 8-2-65

FLIGHT 175 DROP NO 40R

SHEET 10 OF 13

CARGO WT. ① 35,390 LBS
② 35,040 LBS

NOTE
SEE FIGURE F-5A SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

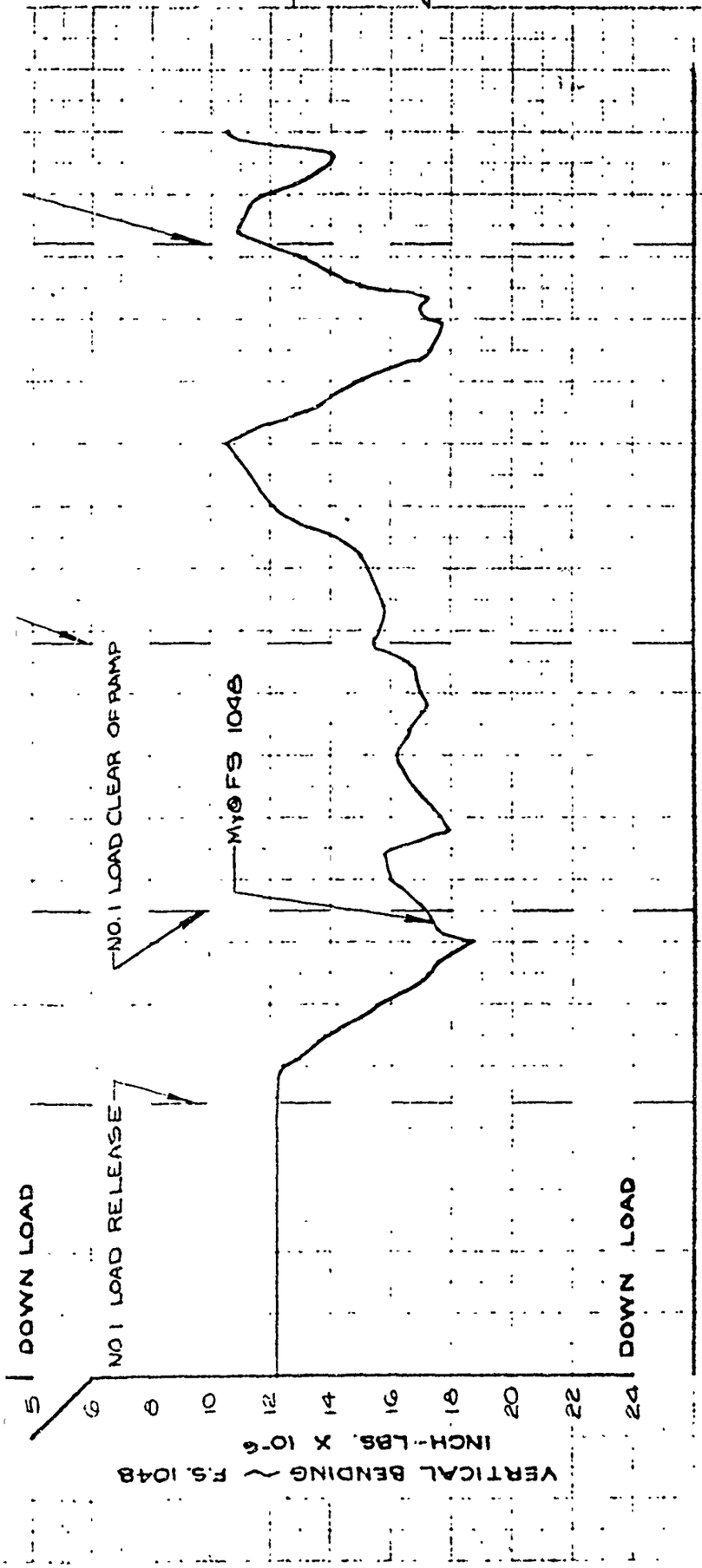


FIGURE F-5J

60DB
AD5156K
RH PETAL DOOR ACTUATOR
LH PETAL DOOR ACTUATOR
M@ FS 1568
COMPRESSION
6 5 4 3 2 1 0
4 3 2 1 0 1 2 3 4
RH
LH
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X 10⁻³
VERTICAL BENDING ~ FS 1568
INCH-LBS X 10⁻⁶
JOB NO. 81 SUB. CODE 4.2.1

DTM
9-5-65
JMP

ER 5473
C-141A
F-40

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

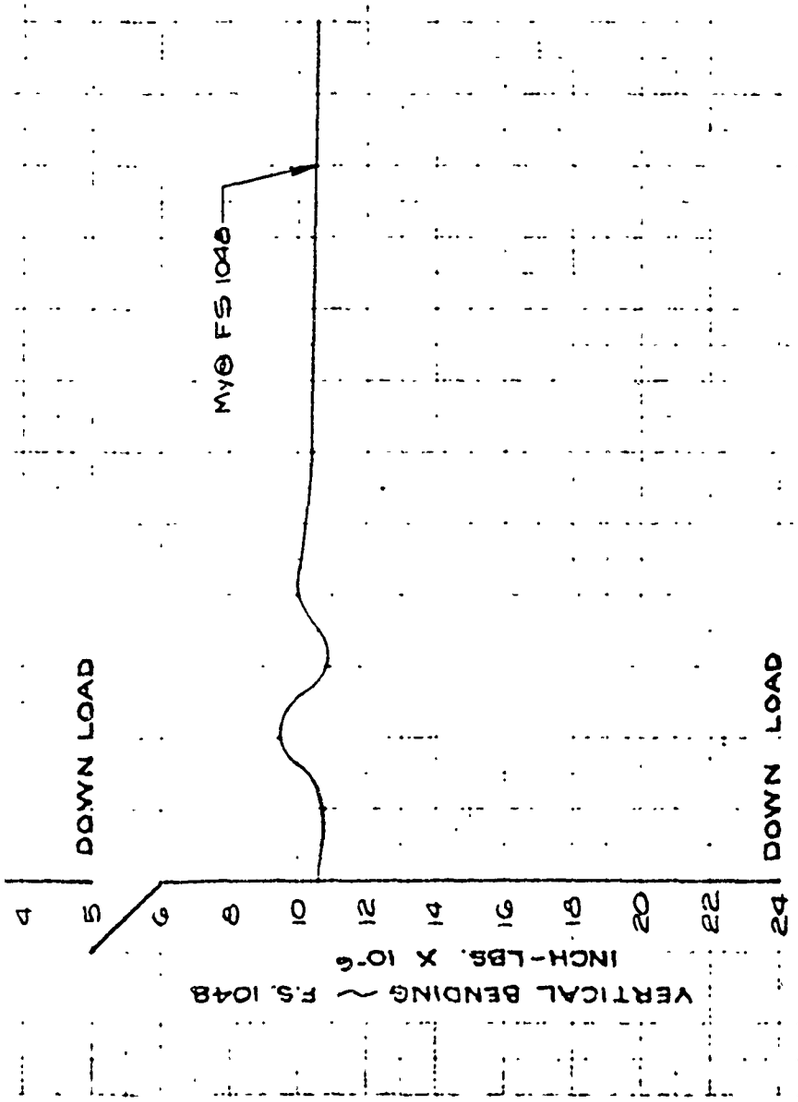
TEST DATE 9-2-65

FLIGHT 175 DROP NO 40R

SHEET 11 OF 13

CARGO WT. ①35,390 LBS
②35,040 LBS

NOTE:
SEE FIGURE F-5B SHEET 1 OF 13 FOR RUN CONDITIONS, CARGO DESCRIPTION AND EXTRACTION CHUTE DESCRIPTION.



ELAPSED TIME ~ SEC.
20
19
18
17
16
15
14
13
12
11
10

FIGURE F-5K

6008
ADS.15G.K

600b
ADS 15C
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'x
INCH - LBS x 10⁻⁶
SHEAR @ HBL 44L ~ S'z
LBS x 10⁻³
UP LOAD
UP LOAD
M'z @ HBL 44L
S'z @ HBL 44L
JOB NO. 81 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-2-65

FLIGHT 175 DROP NO. 40A

SHEET 12 OF 13

CARGO WT. ① 35390 LBS
② 35,040 LBS

NOTE:
SEE FIGURE E-5 SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

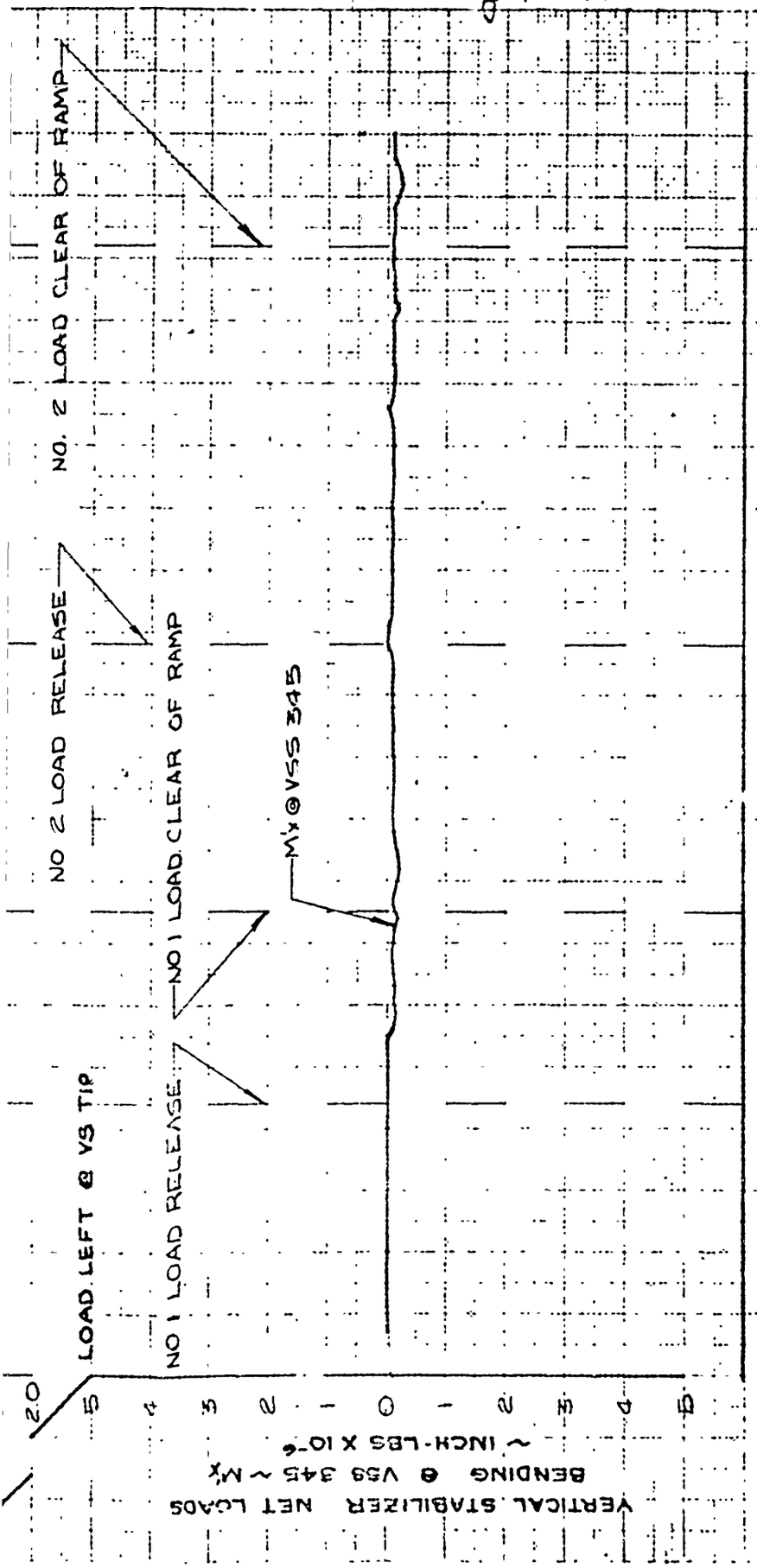


FIGURE E-5L

6008
ADS 156M
HORIZONTAL STABILIZER NET LOADS
BENDING @ HBL 44L ~ M'_x
INCH - LBS x 10^{-6}
SHEAR @ HBL 44L ~ S'_z
LBS x 10^{-3}
M'_x @ HBL 44L
S'_z @ HBL 44L
UP LOAD
UP LOAD
LOAD LEFT @ VS TIP
20 15 10 5 0 5 10 15 20
20 15 10 0.5 0 0.5 10 15 20
5 4
JOB NO. 61 SUB. CODE 4.2.1

DTM
9-3-65

ER 5473
C-141A
F-42

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-2-65

FLIGHT 175 DROP NO. 40R

SHEET 13 OF 13

CARGO WT. ① 35390 LBS.
② 35,040 LBS.

NOTE:
SEE FIGURE F-5B SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

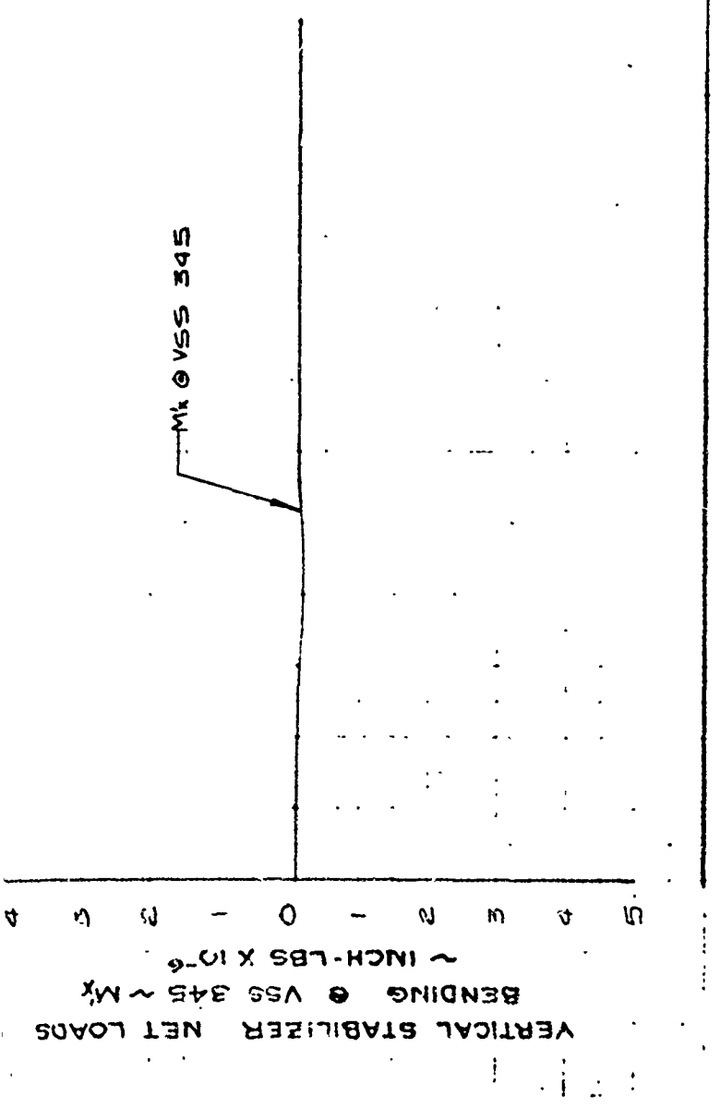


FIGURE F-5M

6008
ADS.106A
NO.2 LOAD RELEASE
NO.2 LOAD CLEAR OF RAMP
NO.1 LOAD RELEASE
NO.1 LOAD CLEAR OF RAMP
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
AIRCRAFT ATTITUDES ~ DEG
JOB NO./SUBSUB. CODE 4121

PREPARED BY ECW
DATE 7-8-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-43

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-8077 LAC 6008
TEST DATE 7-7-65
FLIGHT 50 DROP NO. 41-42
SHEET ___ OF 4

CARGO WT. 9750 LBS.-1
10130 LBS.-2

RUN CONDITIONS

1. G.W. ~ 195800 LBS. 186050 LBS.
2. C.G. PRIOR TO DROP ~ 33.6% MAC 29.5% MAC
3. C.G. AFTER DROP ~ 29.5% MAC 27.1% MAC
4. FLAPS ~ 63%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. Δ_H ~ 5.5° (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORMS
2. LENGTH ~ 96 IN & 96 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 1147 & FS 1049
   VERT. ~ WL 165 & WL 189

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES 1 & 1
2. CHUTE SIZE 22' (C-9)
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH ~ 60' ~ 60'

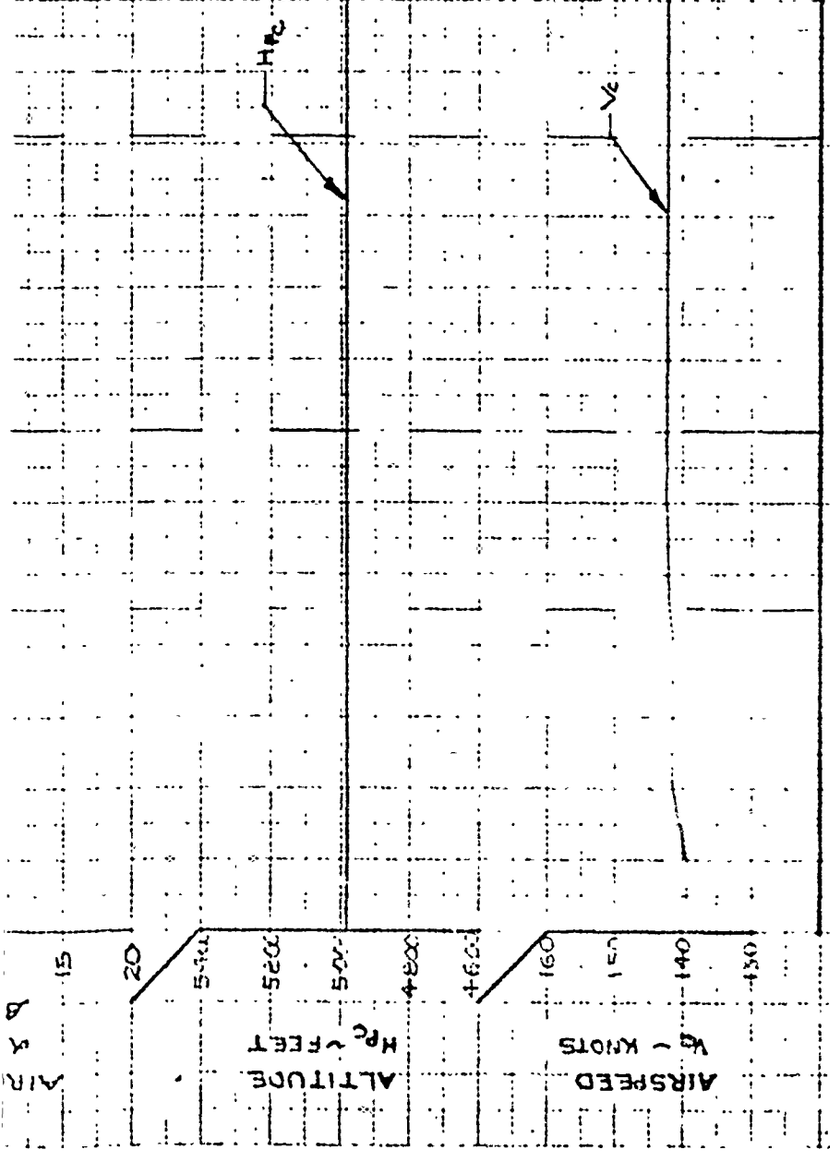


FIGURE F-61.

6008
ADS 106A
REVISED 12-16-65
MBH

6008
ADS 10613

JOB NO. AD3625 SUB. CODE 4.8.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC 6008

TEST DATE 7-7-65

FLIGHT 160 DROP NO. 4-3&4

SHEET 2 OF 14

CARGO WT. 10350 LBS - 3
9950 LBS - 4

RUN CONDITIONS

1. G.W. ~ 175920 LBS. 165570 LBS.
2. C.G. PRIOR TO DROP ~ 27.1% MAC 27.2% MAC
3. C.G. AFTER DROP ~ 27.2% MAC 29.9% MAC
4. FLAPS ~ 63%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. Δ_H ~ 0.55 DEG. (A/C ND)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORMS
2. LENGTH ~ 96 IN & 96 IN.
3. CARGO C.G. POSITIONS
   LONG. ~ FS 928 & FS 819
   VERT. ~ WL 165 & WL 189

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES 1 & 1
2. CHUTE SIZE 22' & 22'
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH ~ 20' ~ 15'

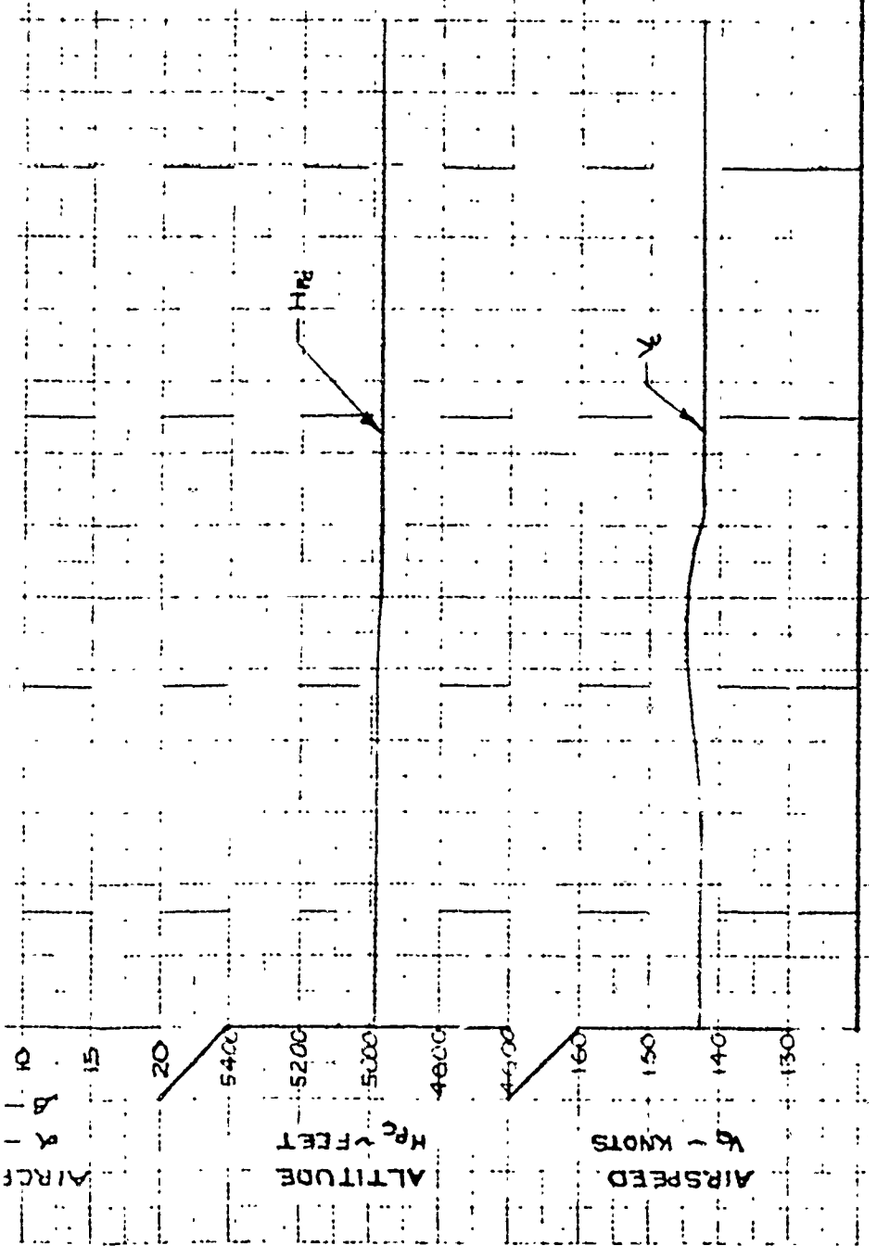


FIGURE F-6B

6008
ADS 106C

REF NO ADS 62 SUB. CODE 4.21

FCN
7-9-65
JWP

ER 5473
C-141A
F-45

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 7-7-65

FLIGHT 150 DROP NO 41-1&2

SHEET 3 OF 14

CARGO WT 9750 LBS-1
10130 LB -2

NOTE:
SEE FIGURE 6A SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

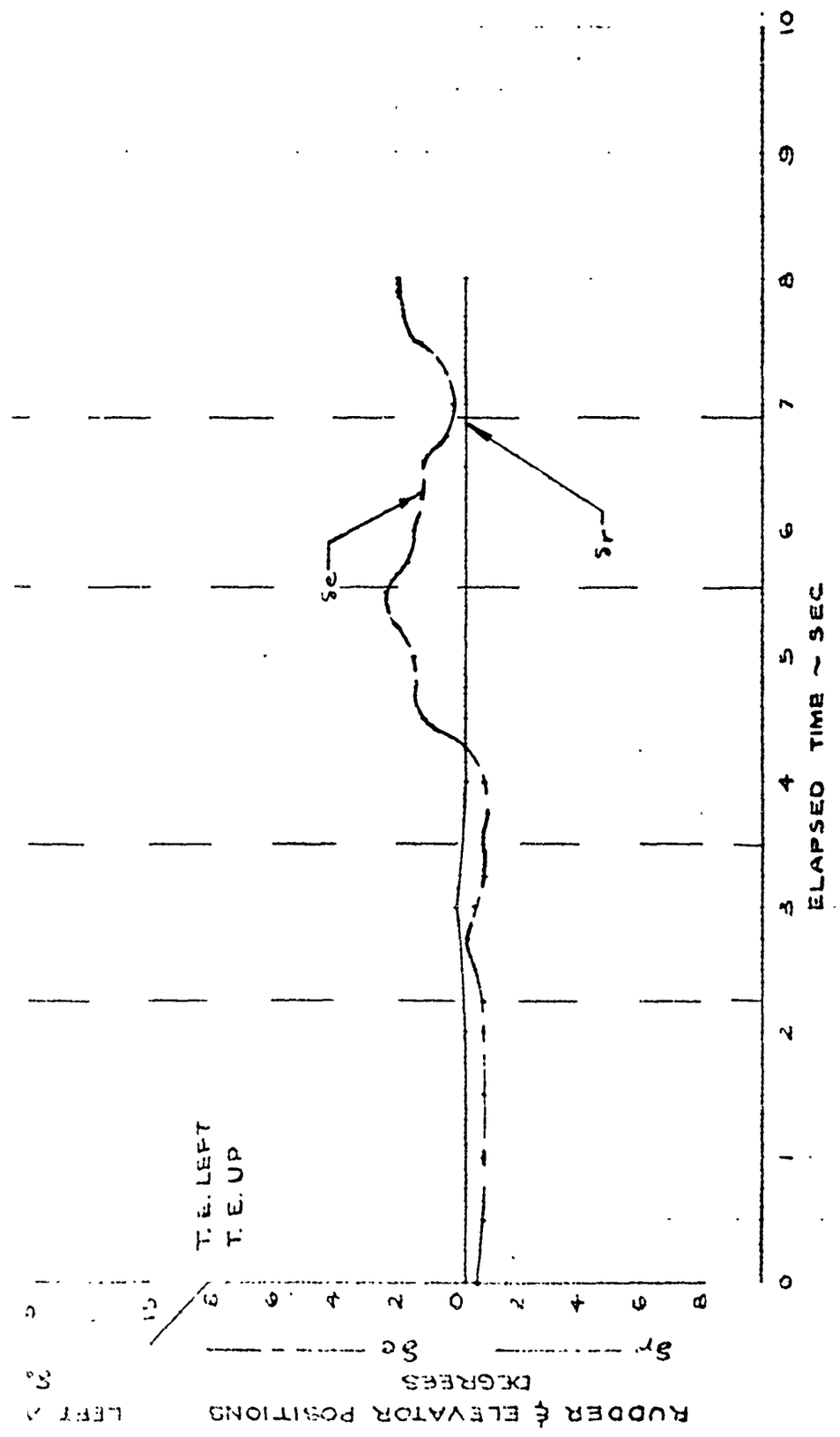
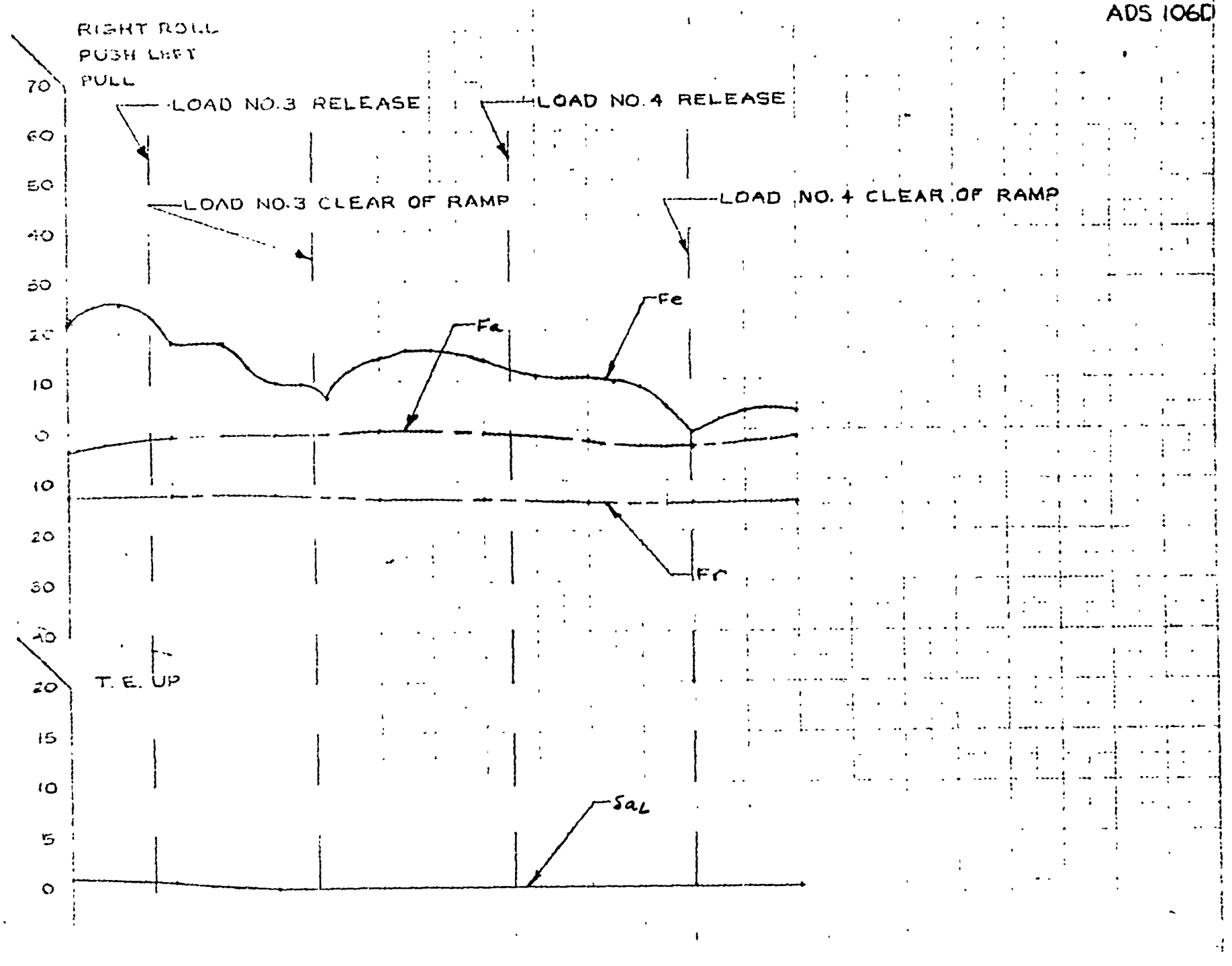


FIGURE F-6C

6008
ADS 106D



CONTROL POSITION ~ DEG.
Fe —— Fa ——
CONTROL FORCE ~ LBS.
Fr ——

JOB NO. AS 62 SUB. CONT. 4.21

TED
7-8-65
JWP

ER 5473
C-141A
F-46

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

TEST DATE 7-7-65

FLIGHT 160 DROP NO 41-3&4

SHEET 4 OF 14

CARGO WT 10350 LBS-3
9950 LBS-4

NOTE:
SEE FIGURE 6B, SHEET 2 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

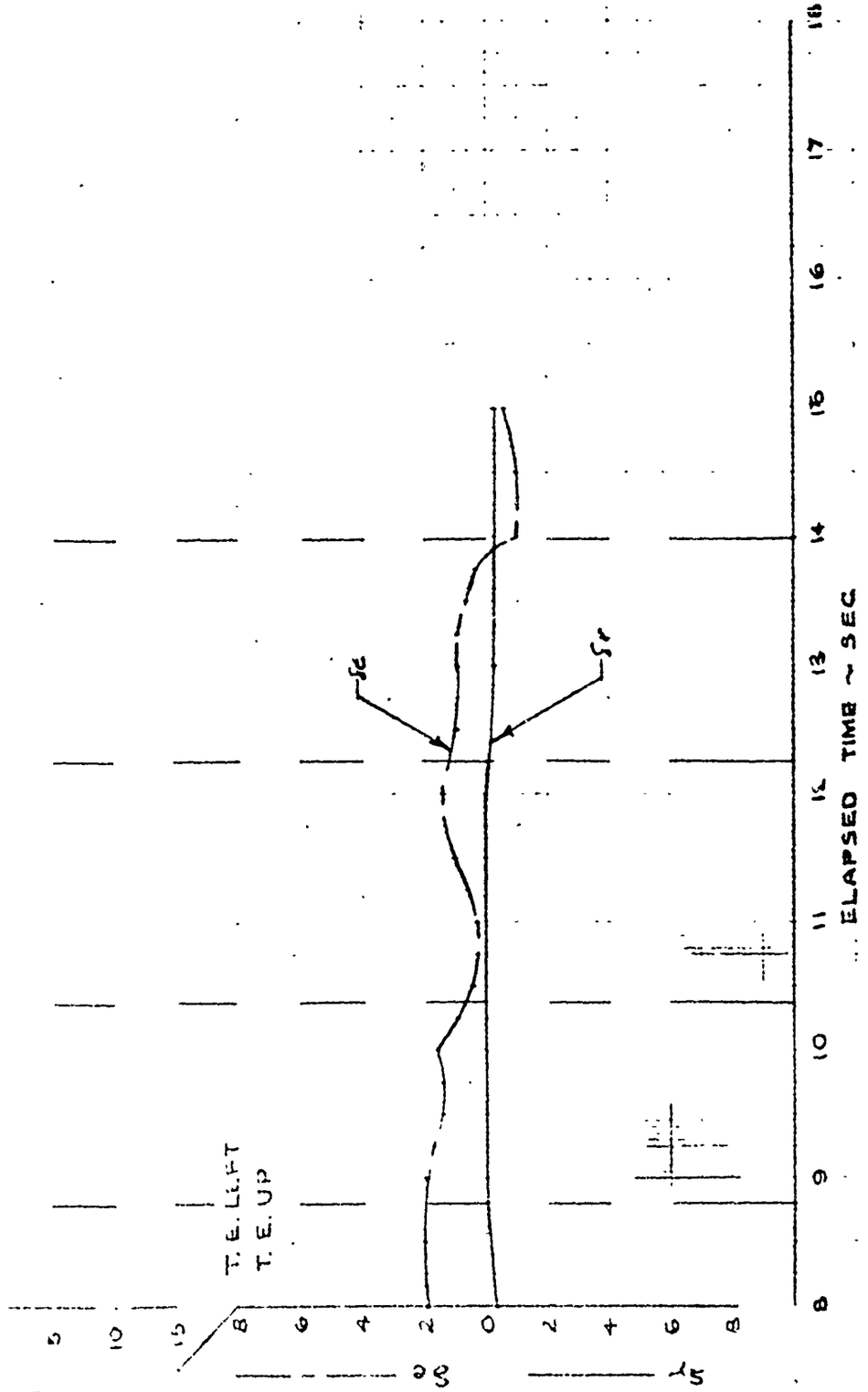


FIGURE F-6D

6008
AD5 106D

JCS NOADS-62 SUB. CODE 4.2.1

PREPARED BY T.E.D.
DATE 7-8-65
CHECKED BY [illegible]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. [illegible]-5173
MODEL C-[illegible]
PAGE F-[illegible]

TIME HISTORY OF AERIAL DE... MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE 7-7-65

FLIGHT ~150 DROP NO. ~A1

SHEET 5 OF 14

CARGO WT. 9750 LBS-1
10,130 LBS-2

NOTE:
SEE FIGURE F-6 SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

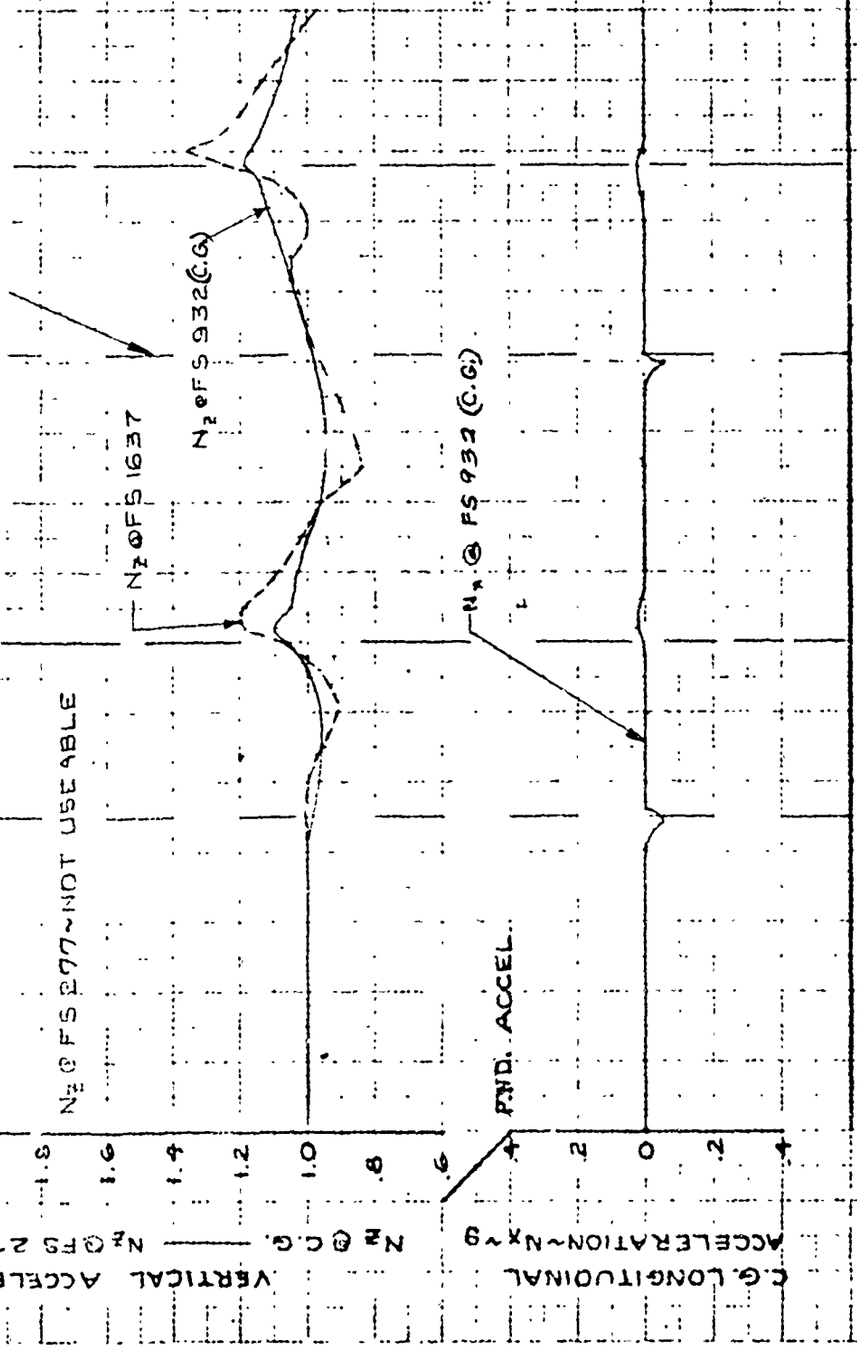


FIGURE F-6E

6008
ADS-106F
NOTE: θ̈ CALCULATED FROM Nz DATA
NO.4 LOAD RELEASE
NO.4 CLEAR OF RAMP
θ̈
NO.3 LOAD RELEASE
NO.3 CLEAR OF RAMP
Nz @ F.S. 1687
Nz @ F.S. 932 (C.G.)
NOSE UP
UP ACCEL.
40
20
0
20
40
3.0
2.8
2.6
2.4
2.2
2.0
1.8
θ̈
PITCHING ACCELERATION
DEG/SEC²
ACCELERATIONS ~ g
JOB NO. ADS-6 SUB. CODE 4.2.1

PREPARED BY TED
DATE 7-8-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-48

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 7-7-65

FLIGHT ~ 150 DROP NO ~ 41

SHEET 6 OF 14

CARGO WT. 10350 LBS-3
9,950 LBS-4

NOTE:
SEE FIGURE ~~5~~ SHEET 2 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

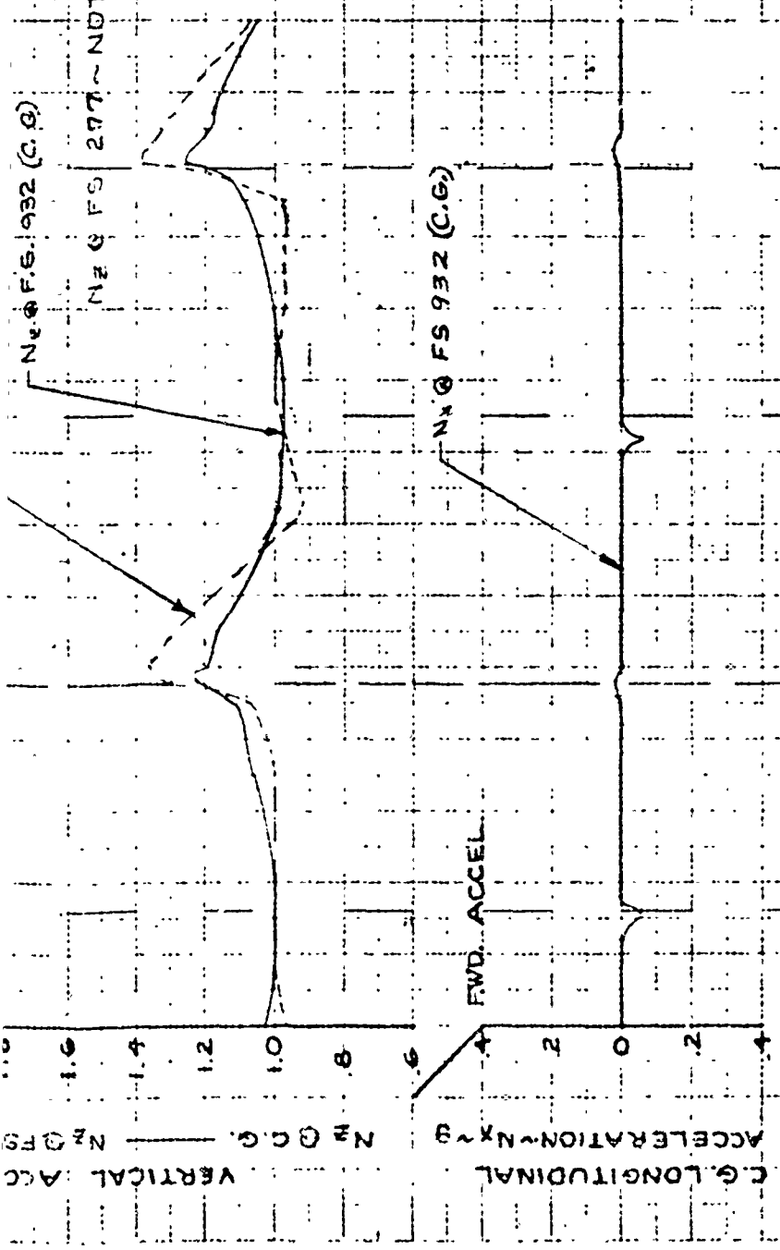


FIGURE F-6F

6008
ADS-106F

6008
ADS 1069

RAMP LIP

NO.1 LOAD RELEASE

NO.2 LOAD RELEASE

NO.1 LOAD CLEAR OF RAMP

NO.2 LOAD CLEAR OF RAMP

NO.1 LOAD POSITION

NO.2 LOAD POSITION

NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

NO.2 LOAD ACCEL

1500

1400

1300

1200

1100

1000

900

800

700

600

500

400

300

200

100

0

LOAD ACCELERATION

LOAD POSITION-FUS

82SUB CODE 4.0

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 7-7-65

FLIGHT 150 DROP NO. 4-1 & 2

SHEET 7 OF 12

CARGO WT. 7500 SQ-1
CG CLASS-2

NOTE:
SEE FIGURE 5, SHEET 1 OF
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

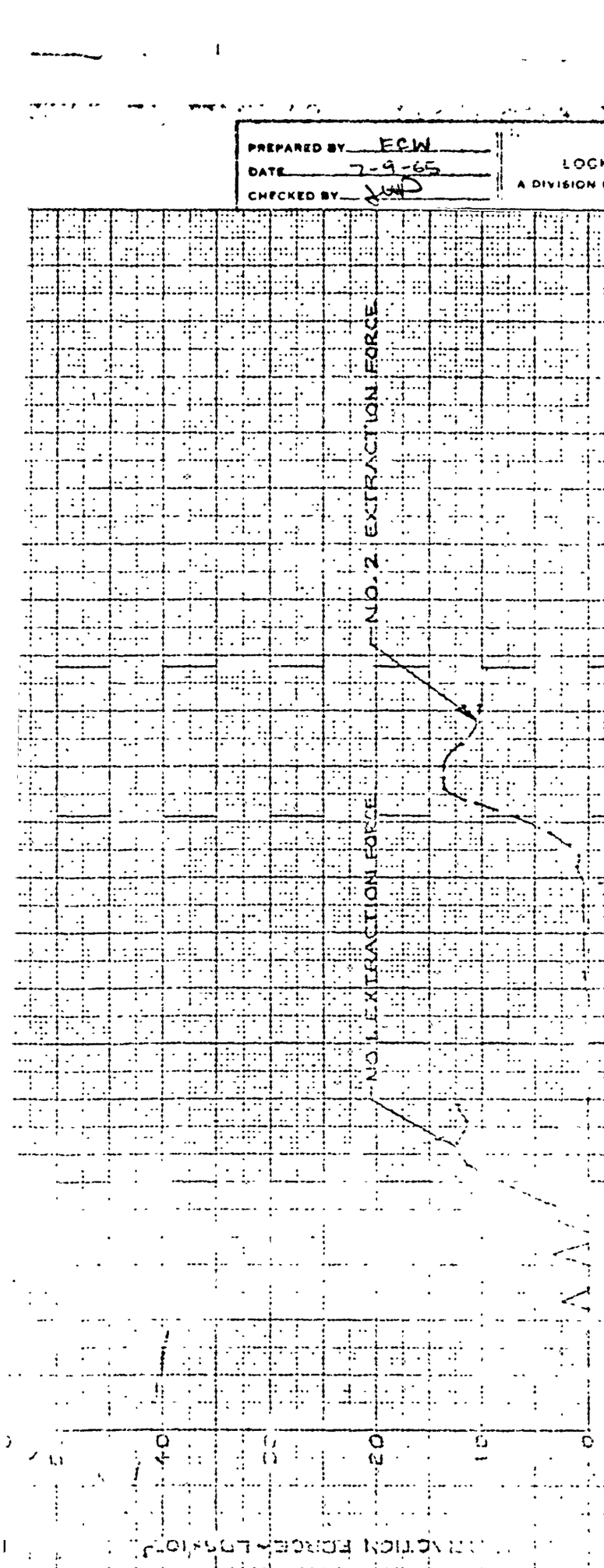


FIGURE 6

ADS

6008
ADS
RAMP LIP
NO.4 LOAD CLEAR OF RAMP
NO.4 LOAD C.G. POSITION
NO.3 LOAD C.G. POSITION
NO.3 LOAD RELEASE
NOTE: LOAD ACCELERATION CALCULATED FROM LOAD C.G. POSITION DATA
LOAD NO.4 Nx
LOAD NO.3 Nx
LOAD ACCELERATION g's
LOAD C.G. POSITION ~ FUS. STA.
2.0
1.0
0
1500
1400
1300
1200
1100
1000
900
800
700
600
500
JOB NO.
SUB CODE 4.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 2-7-65

FLIGHT 150 DROP NO. 41-3&4

SHEET 8 OF 14

CARGO WT. 10350 LBS.-3
9950 LBS.-4

NOTE:
SEE FIGURE E-6B SHEET 2 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

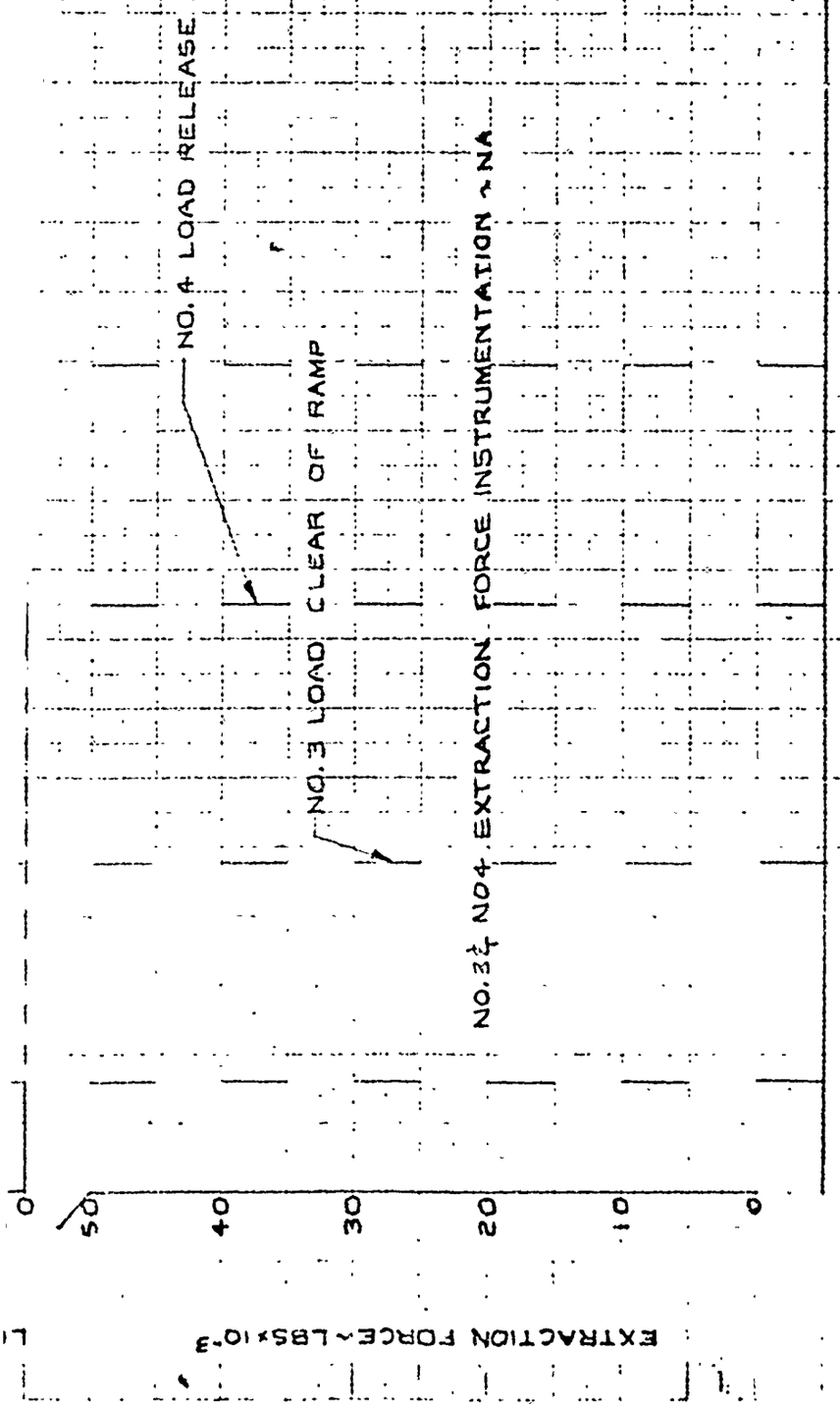


FIGURE E-6H

6008
ADS-106I

RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H. —— L.H.
4 2 0 -2 -4
TENSION

ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H. —— L.H.
30 20 10 0
TENSION

VERTICAL LOAD
LBS X 10⁻³
R.H. —— L.H.
15 10 5 0
DOWN LOAD

L.H. ACTUATOR LOAD
R.H ACTUATOR LOAD
NO.2 LOAD RELEASE
NO.1 LOAD RELEASE
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
L.H. VERT. LOAD
R.H. VERT LOAD
PULL RIGHT

JOB NO. SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 7-7-65

FLIGHT-150 DROP NO.-41

SHEET 9 OF 14

CARGO WT. 9750 LBS - 1
10130 LBS - 2

NOTE:
SEE FIGURE F-6A SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

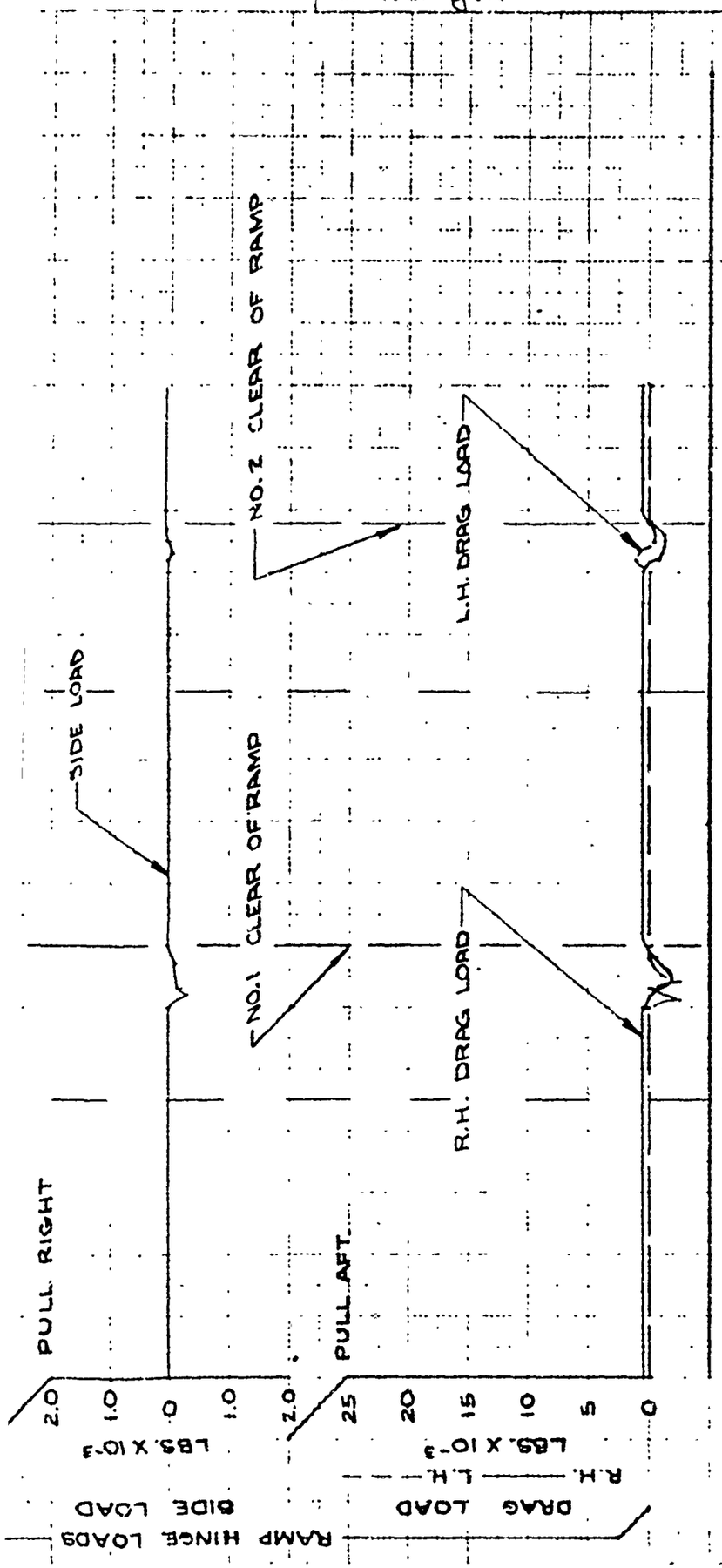
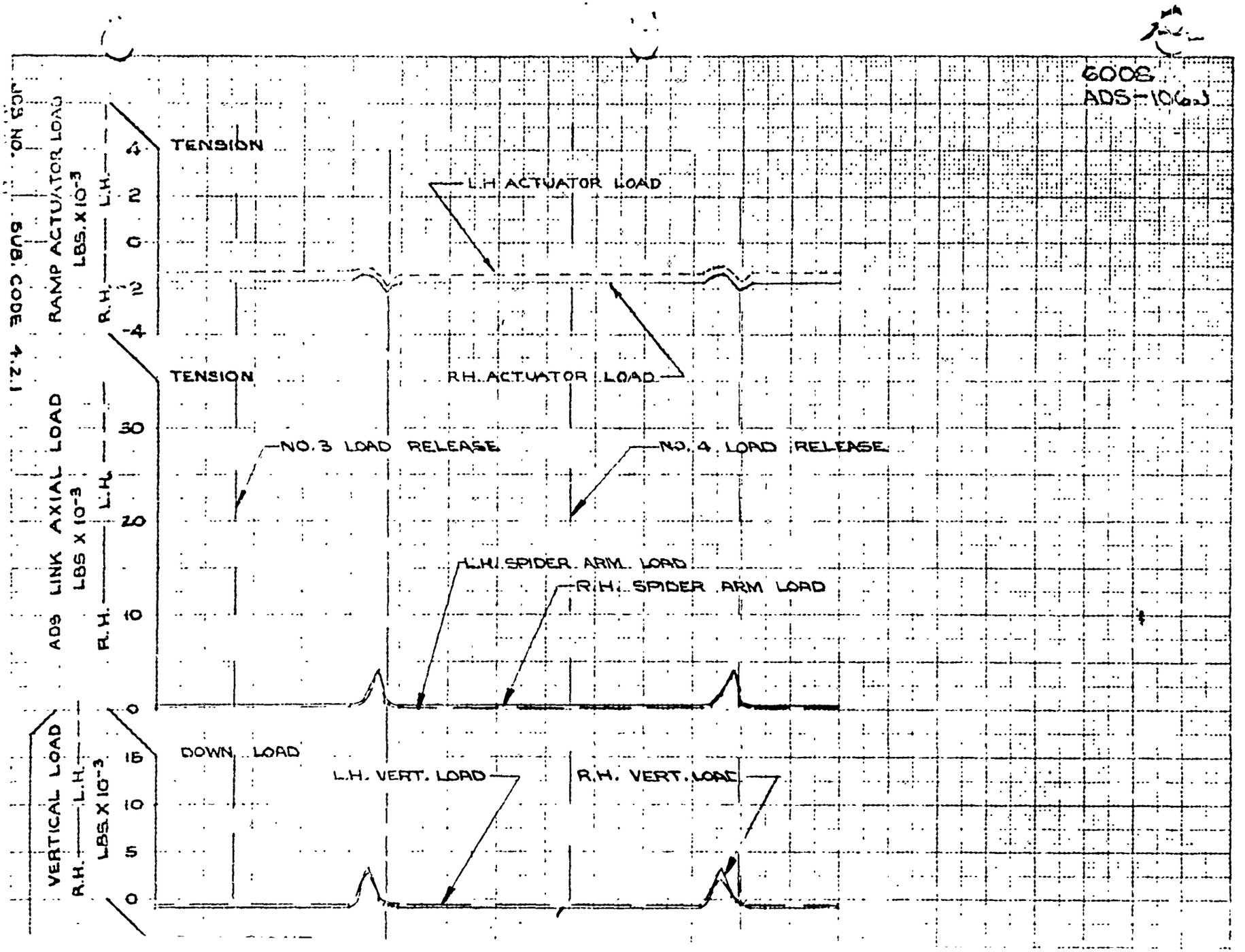


FIGURE F-6I


6008
ADS-106J
RAMP ACTUATOR LOAD
LBS. X 10⁻³
R.H. — L.H.
4
2
0
-2
-4
TENSION
L.H. ACTUATOR LOAD
R.H. ACTUATOR LOAD
ADS LINK AXIAL LOAD
LBS X 10⁻³
R.H. — L.H.
30
20
10
0
TENSION
NO. 3 LOAD RELEASE
NO. 4 LOAD RELEASE
L.H. SPIDER ARM LOAD
R.H. SPIDER ARM LOAD
VERTICAL LOAD
R.H. — L.H.
LBS. X 10⁻³
15
10
5
0
DOWN LOAD
L.H. VERT. LOAD
R.H. VERT. LOAD

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 7-7-65

FLIGHT-150 DROP NO. 4)

SHEET 10 OF 14

CARGO WT. 10350 LBS-3
9950 LBS-4

NOTE:
SEE FIGURE F-6B SHEET 2 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

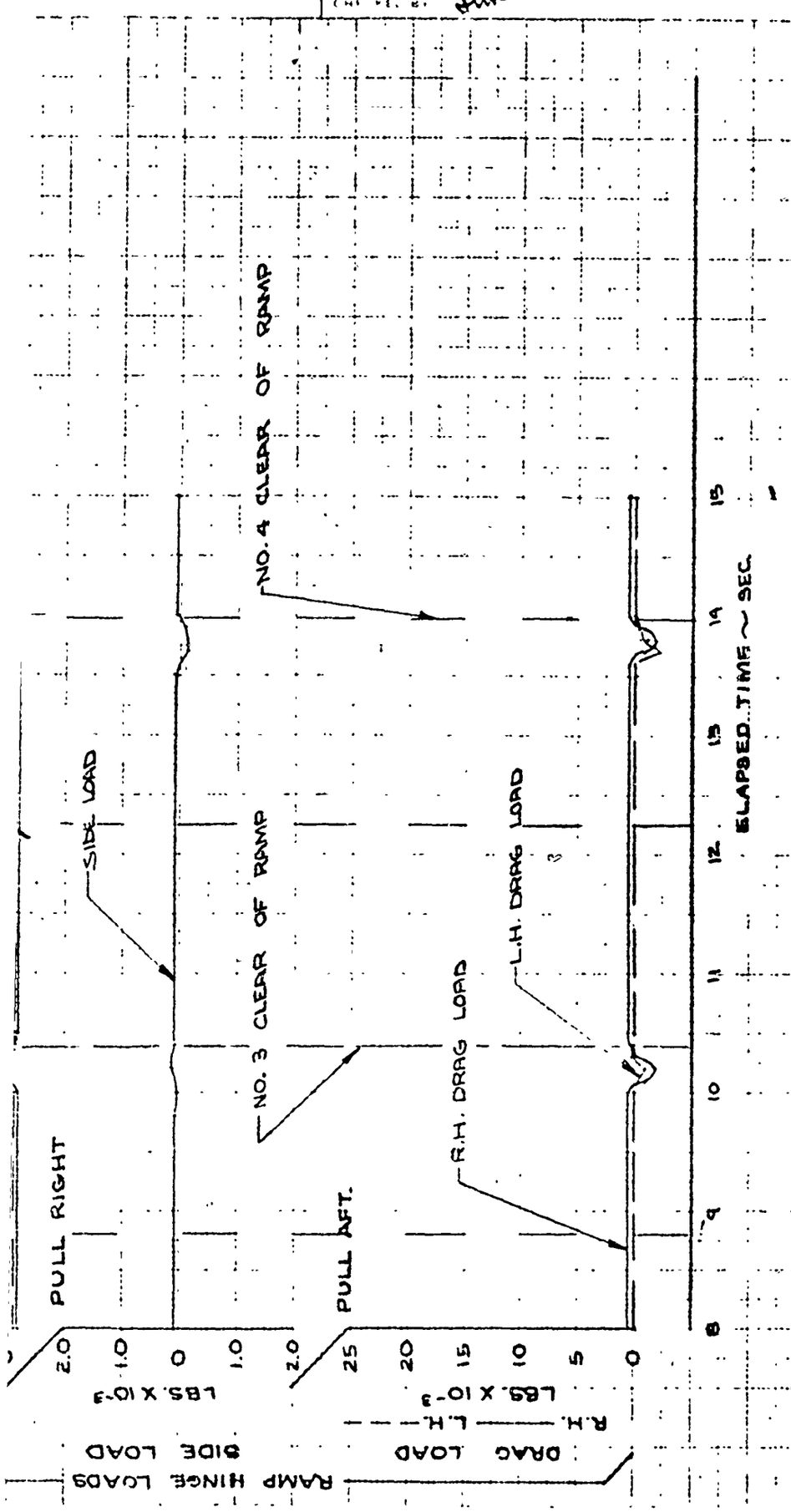


FIGURE F-6J

6008
ADS-104.5
L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD
NO.2 LOAD RELEASE
NO.1 LOAD RELEASE
My @ F6.1348
COMPRESSION
10
9
8
7
6
5
4
3
2
4
3
2
1
0
1
2
3
L.H
RH
VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
JOB NO. SUB. CODE 4.2.1

TED
7-9-69
Loop

ER 5473
C-141A
F-53

TIME HISTORY OF AERIAL DELIVER
MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 7-7-69

FLIGHT-150 DROP NO 14

SHEET 11 OF 14

CARGO WT. 9750 LBS - 1
10130 LBS - 2

NOTE:
SEE FIGURE 6A SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

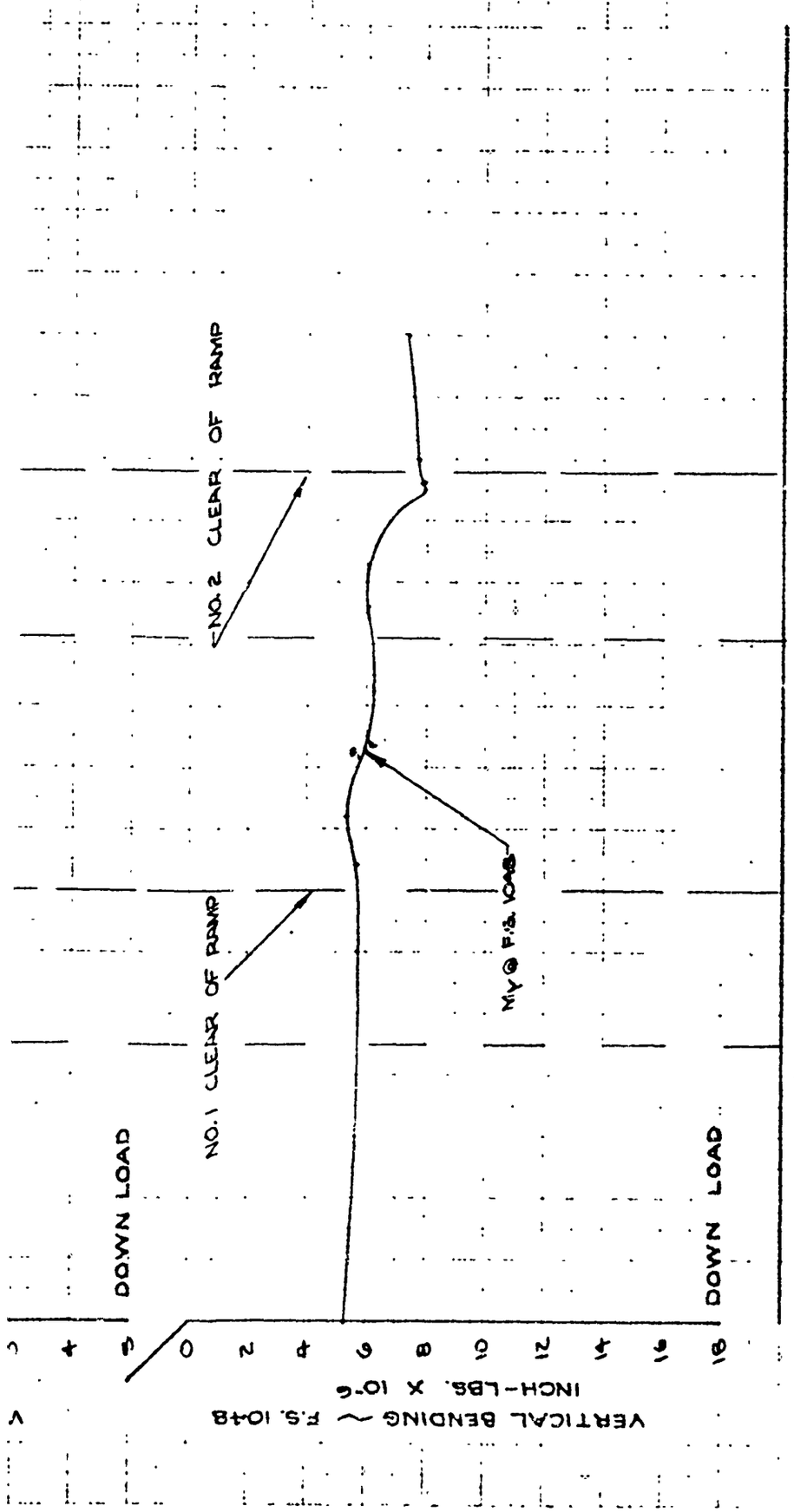


FIGURE F-6K

6008
ADS-10(

6008
ADS-1061

L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD

NO.4 LOAD RELEASE

MV @ FS. 1568

NO.3 LOAD RELEASE

COMPRESSION

DOWN LOAD

PETAL DOOR ACTUATOR ROD
LOADS — LBS. X 10⁻³
LH — RH

VERTICAL BENDING — FS 1568
INCH-LBS. X 10⁻⁶

JOB NO. 1 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 7-1-65

FLIGHT-150 DROP NO 1-11

SHEET 12 OF 14

CARGO WT. 10350 LBS-3
9950 LBS-4

NOTE:
SEE FIGURE F-6B SHEET 2 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

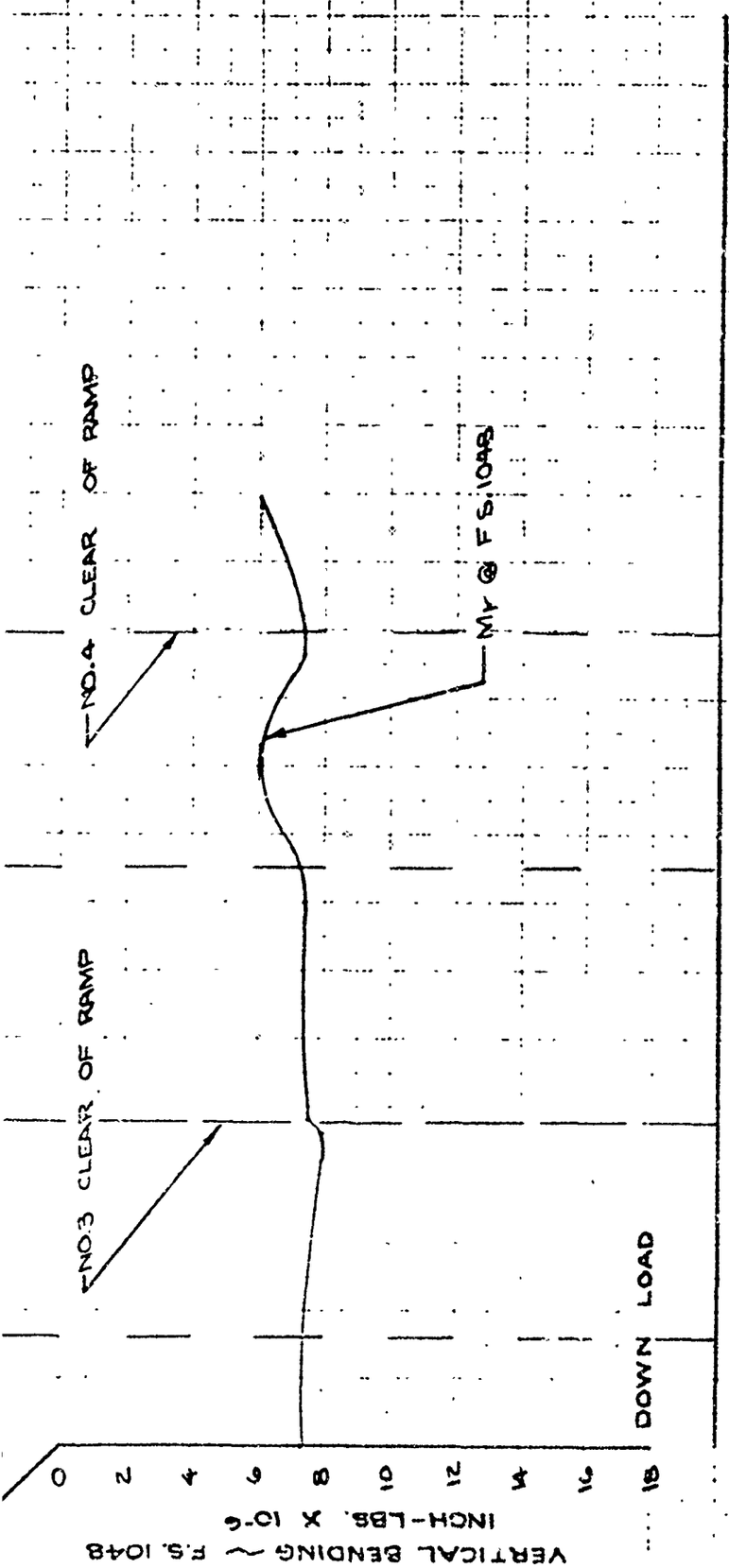


FIGURE F-6L

6008
ADS 106M

HORIZONTAL STABILIZER NET LOADS

BENDING @ HBL 44L ~ M'_X
INCH - LBS x 10^{-6}

SHEAR @ HBL 44L ~ S'_Z
LBS x 10^{-3}

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

M'_X HBL 44L

NO.1 LOAD RELEASE

NO.1 LOAD CLEAR OF RAMP
S'_Z @ HBL 44L

NO.2 LOAD RELEASE

NO.2 LOAD CLEAR OF RAMP

JOB NO. SUB. CODE 4.2.1

MJM
7-9-65

ER 5473
MODEL C-141A
F-55

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 7-7-65

FLIGHT ~ 150 DROP NO. ~ 41-1E2

SHEET 13 OF 14

CARGO WT. 9750 LBS. -1
10,130 LBS. -2

NOTE:
SEE FIGURE E-6A SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

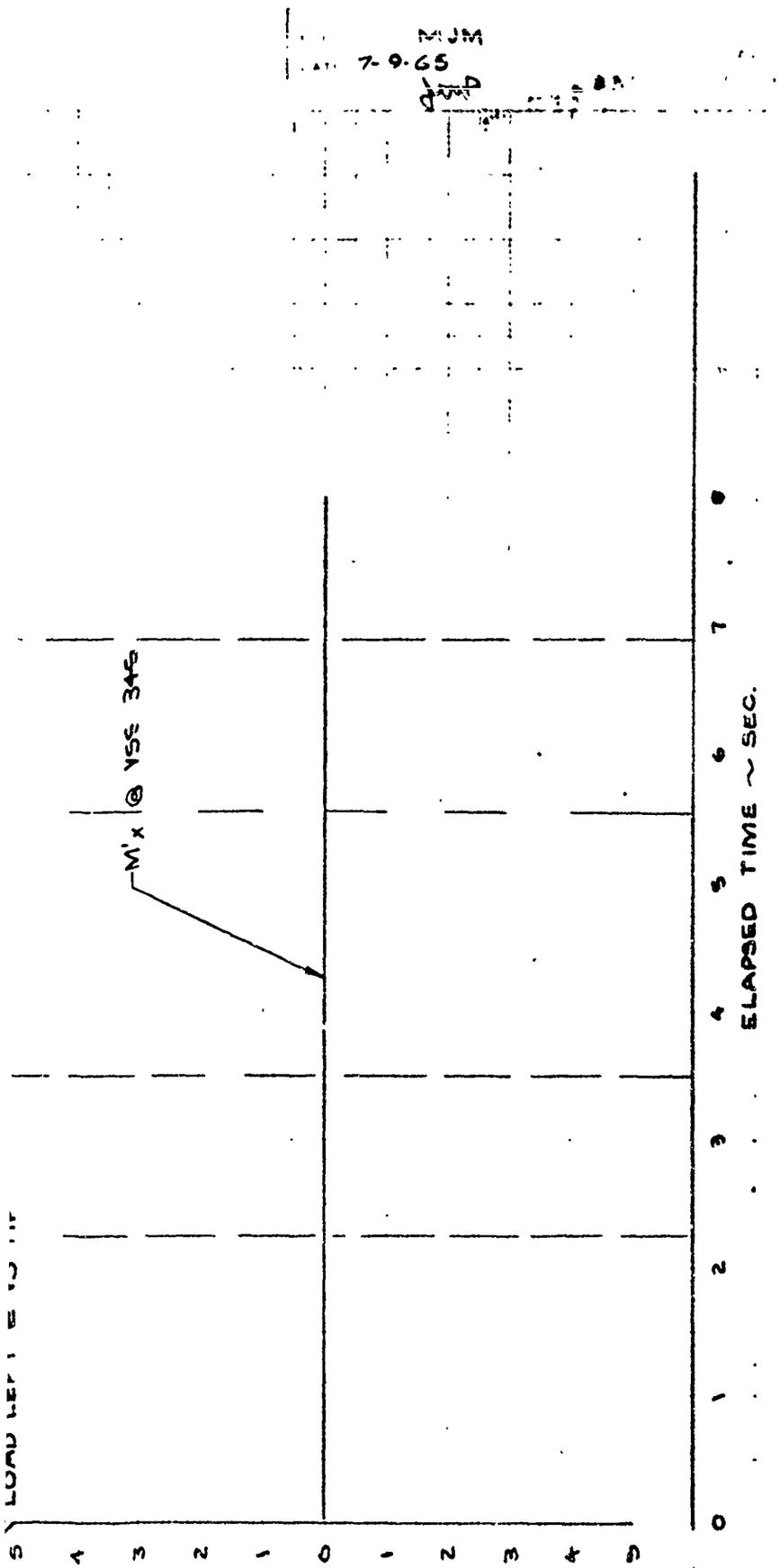


FIGURE E-6M

6008
ADS106M

GOOD ADS 10 6 N

JOB NO. SUB. CODE 4.2.1

HORIZONTAL STABILIZER NET LOADS

SHEAR @ HBL 44L ~ S'_Z LBS x 10^{-3}

BENDING @ HBL 44L ~ M'_X INCH - LBS x 10^{-6}

UP LOAD

NO 3 LOAD RELEASE

NO 3 LOAD CLEAR OF RAMP

NO 4 LOAD RELEASE

NO 4 LOAD CLEAR OF RAMP

S'_Z @ HBL 44L

M'_X @ HBL 44L

UP LOAD

LOAD LEFT @ VS TIP

2.0 1.5 1.0 .5 0 .5 1.0 1.5 2.0

2.0 1.5 1.0 .5 0 .5 1.0 1.5 2.0

MJM
7-9-65

ER 5473
C-141A
F-56

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 68-8077 LAC 6008

TEST DATE: 7-7-65

FLIGHT-150 DROP NO.- 11-24

SHEET 14 OF 14

CARGO WT. 10350 LBS.-3
9950 LBS.-4

NOTE:
SEE FIGURE E-6A SHEET 2 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

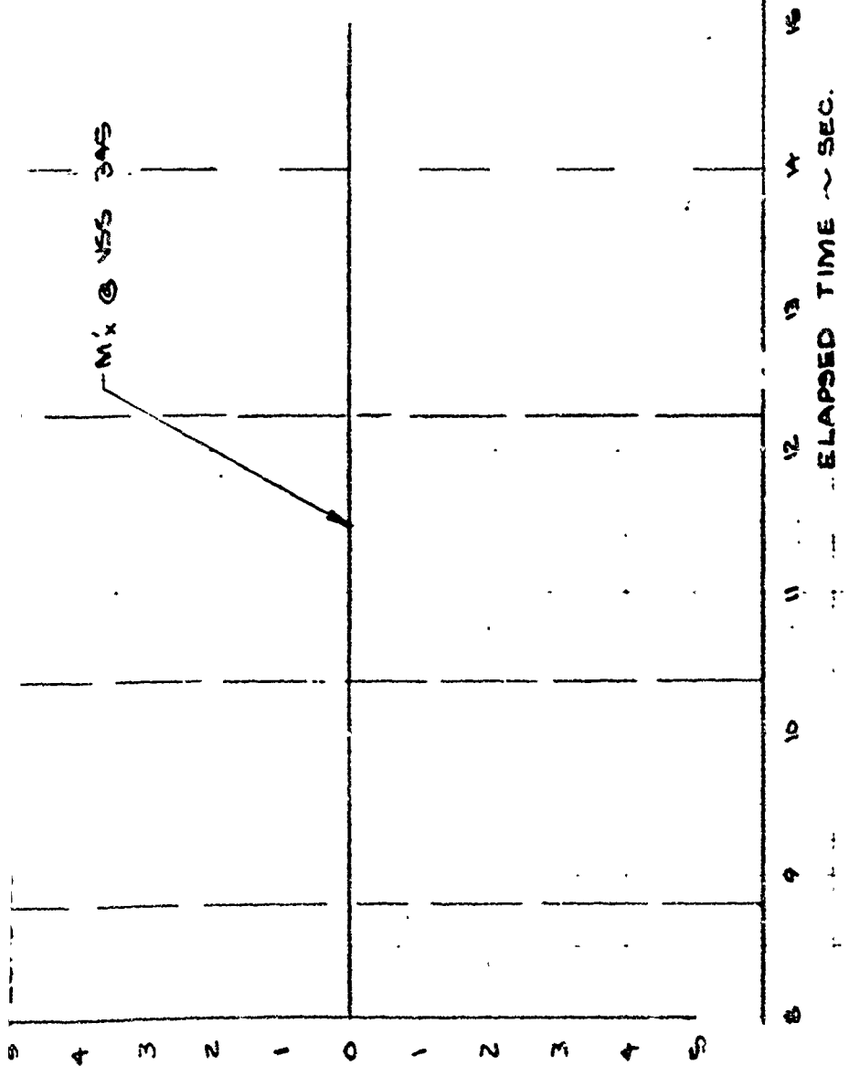
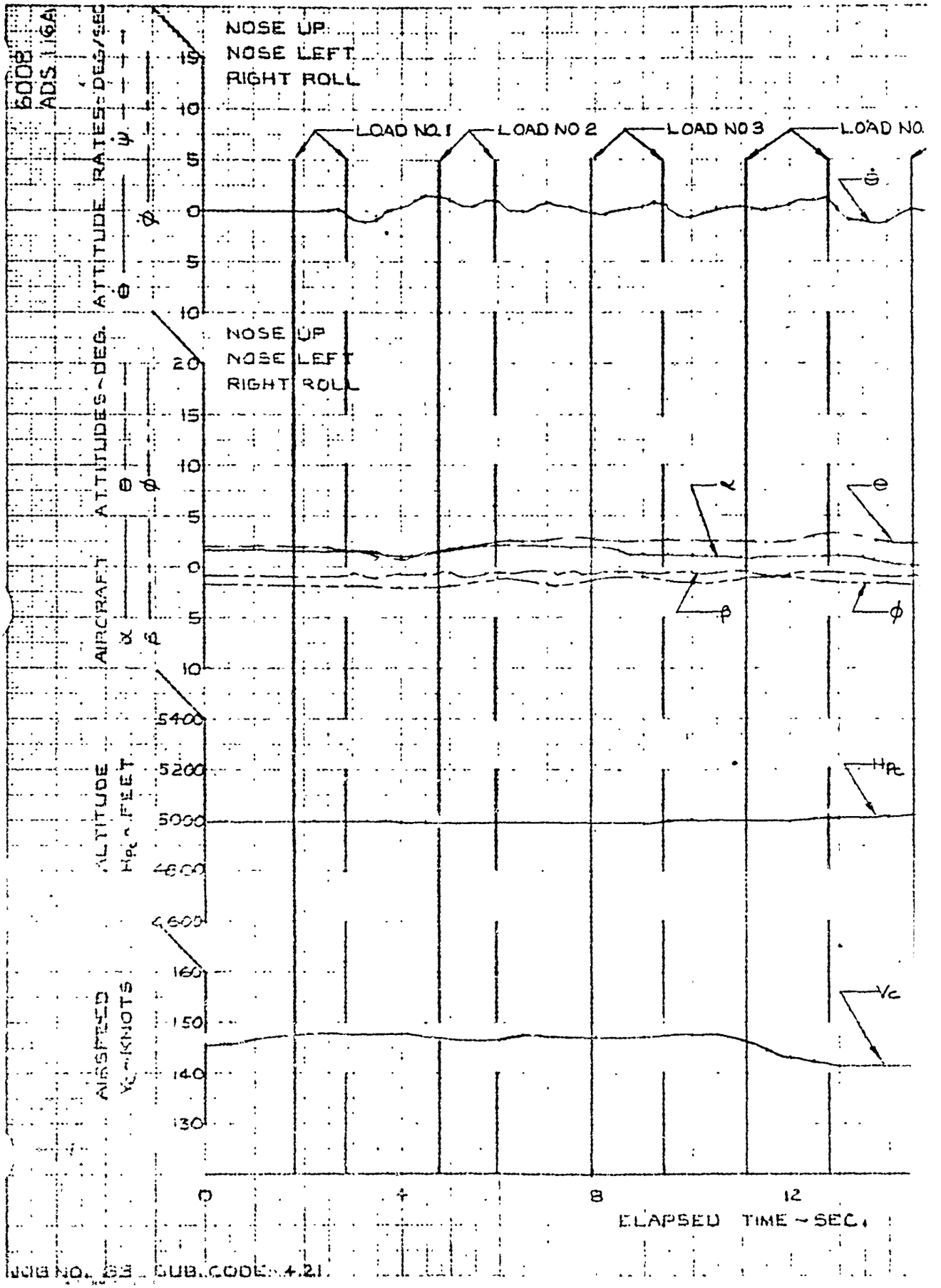


FIGURE F-6N

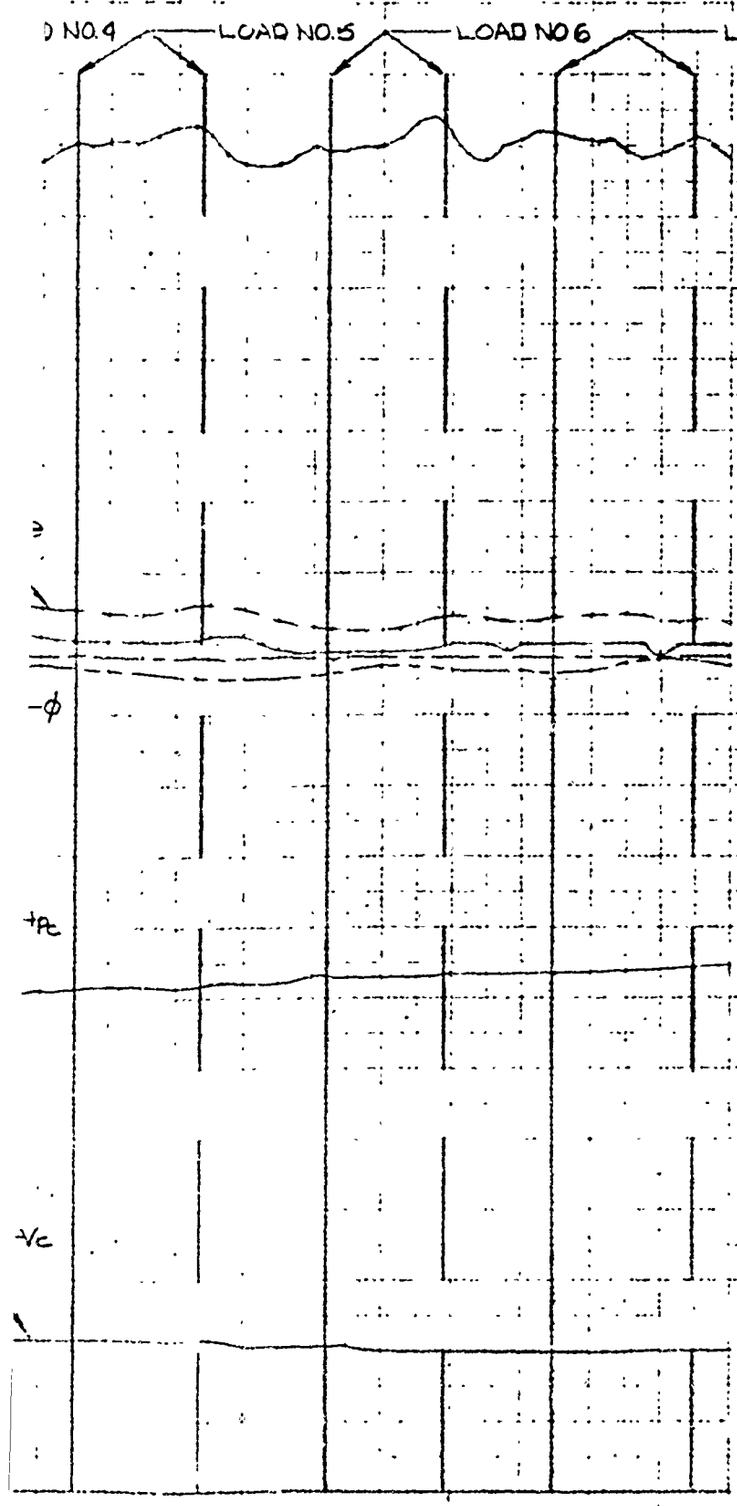
6008
ADS106N


6008
ADS 1.16A
AIRSPEED Vc - KNOTS
ALTITUDE Hpc - FEET
AIRCRAFT ATTITUDES - DEG. ATTITUDE RATES - DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD NO 1
LOAD NO 2
LOAD NO 3
LOAD NO.
ELAPSED TIME - SEC.
JOB NO. 68 SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 7-12-65
FLIGHT 151 DROP NO. 4-2
SHEET 1 OF 7

CARGO WTS. ~①101,150 LBS.
~②10,490 LBS.
~③10,210 LBS.
~④9,920 LBS.
~⑤9,710 LBS.
~⑥10,110 LBS.
~⑦9,530 LBS.

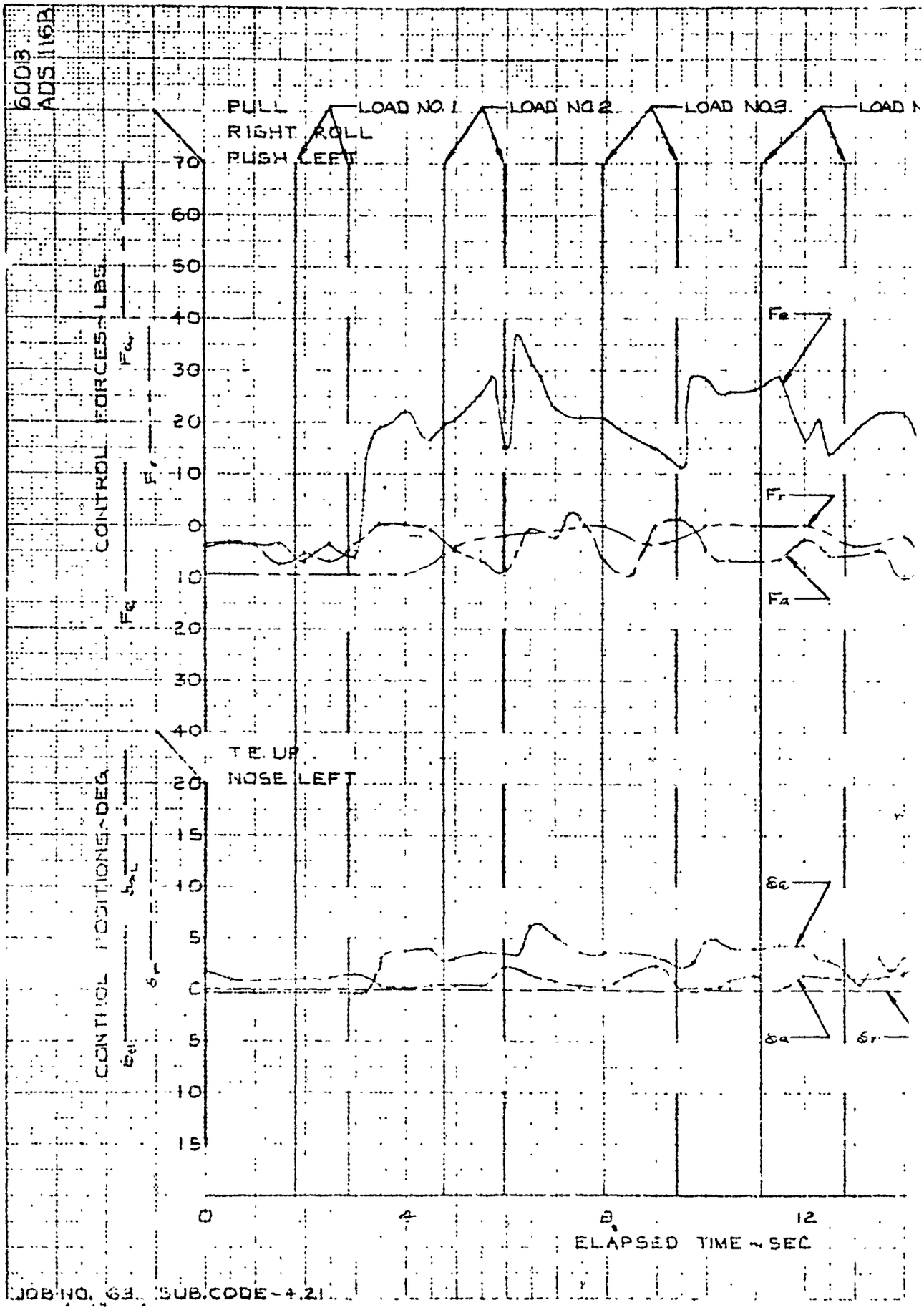


RUN CONDITIONS	DROP 1	DROP 2	DROP 3	DROP 4	DROP 5	DROP 6	DROP 7
1. G.W. ~ LBS.	223900	213,750	203,260	93,050	83,180	73,420	63,310
2. C.G. PRIOR TO DROP	23.3%	17.4%	13.1%	11.3%	11.7%	14.6%	20.3%
3. C.G. AFTER DROP	17.4%	13.1%	11.3%	11.7%	14.6%	20.3%	29.1%
4. FLAPS	63%	63%	63%	63%	63%	63%	63%
5. GEAR	UP	UP	UP	UP	UP	UP	UP
6. AVG. EPR	1.29	1.29	1.29	1.29	1.29	1.29	1.29
7. λ_N ~ A/C N.U.	3.1°	3.1°	3.1°	3.1°	3.1°	3.1°	3.1°
CARGO DESCRIPTION							
1. TYPE CARRIER	←		PLATFORM				→
2. LENGTH (IN)	96	96	96	96	96	96	96
3. LONG C.G.~FS	1247	1,127	985	866	757	645	537
4. VERT. C.G.~WL	164	189	164	188	164	130	164
EXTRACTION CHUTE DESCRIPTION							
1. NO. OF CHUTES	1	1	1	1	1	1	1
2. CHUTE SIZE (FT)	22	22	22	22	22	22	22
3. CHUTE POSITION	1.4	1.4	1.4	1.4	1.4	1.4	1.4
4. EXT. LINE LENGTH	80'	80'	100'	100'	120	120	120'

LOAD RELEASE; LOAD CLEAR RAMP

FIGURE F-7A

6003
ADS
REVISED 7-16-65
MBH


6003
ADS 1163
LOAD NO. 1
LOAD NO. 2
LOAD NO. 3
PULL
RIGHT ROLL
PUSH LEFT
CONTROL FORCES - LBS.
70
60
50
40
30
20
10
0
10
20
30
40
Fe
Fr
Fa
T.E. UP
NOSE LEFT
CONTROL POSITIONS - DEG.
20
15
10
5
0
5
10
15
δe
δa
δr
0
4
8
12
ELAPSED TIME - SEC.
JOB NO. 63, SUB CODE - 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AD NO.4 LOAD NO.5 LOAD NO.6 LOAD NO.7 AF63-8077 LAC 6008

TEST DATE 7-12-65

FLIGHT 151 DROP NO. 42

SHEET 2 OF 7

CARGO WTS. ~①10,150 LBS.
~②10,490 LBS.
~③10,210 LBS.
~④9,920 LBS.
~⑤9,710 LBS.
~⑥10,110 LBS.
~⑦9,530 LBS.

NOTE:
SEE FIGURE F-7A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION,
AND EXTRACTION CHUTE DESCRIPTION.

—— LOAD RELEASE
---- LOAD CLEAR RAMP

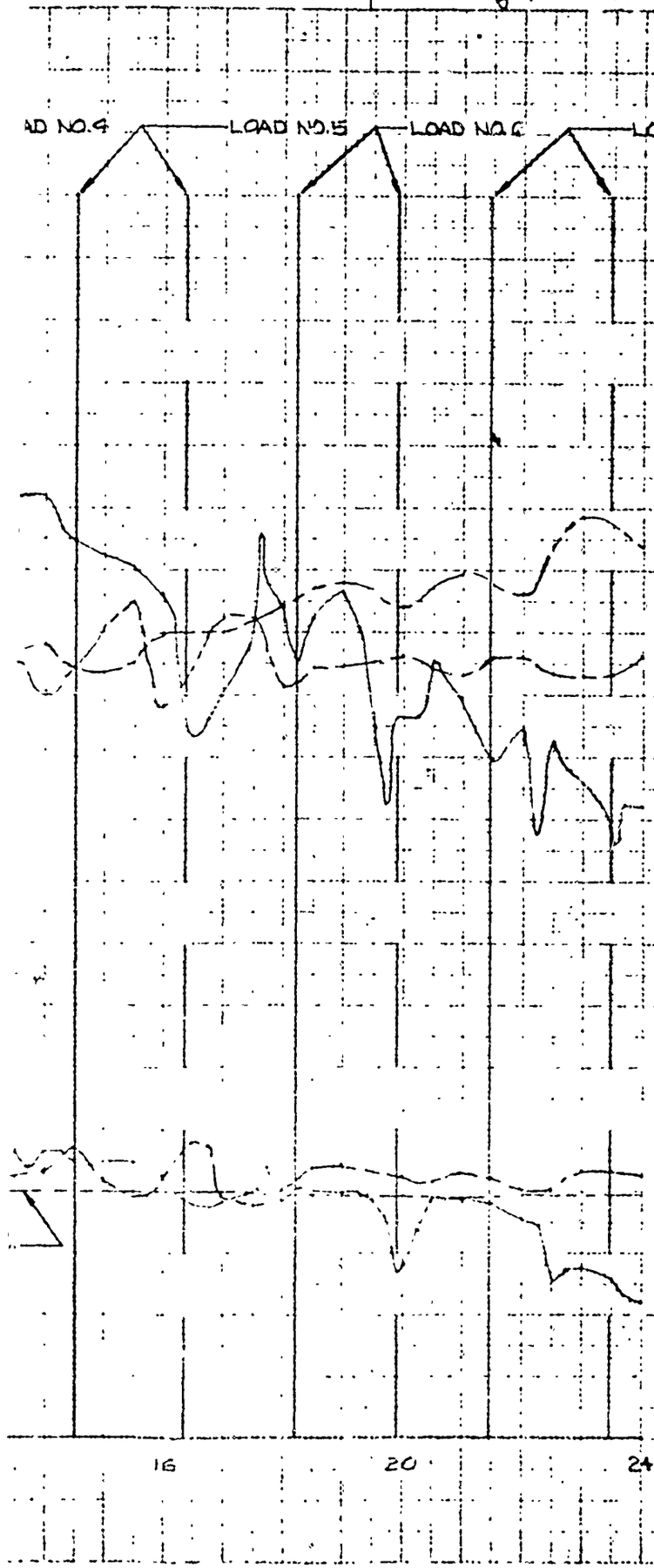
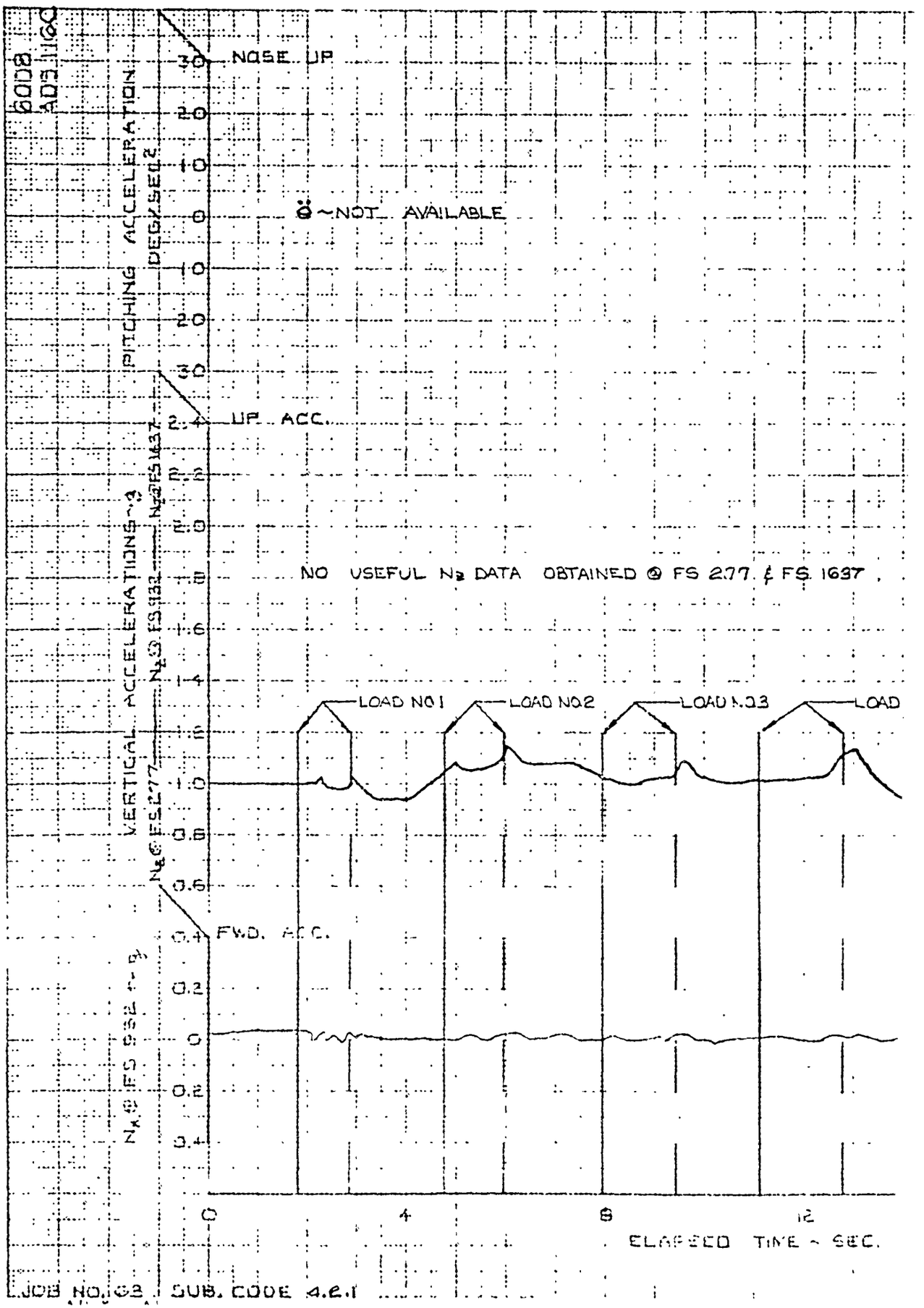


FIGURE F-7B


6008
AD3 1160
VERTICAL ACCELERATIONS~g
PITCHING ACCELERATION DEG/SEC²
NOSE UP
θ̈ ~NOT AVAILABLE
UP ACC.
FWD. ACC.
N₂ @ FS 277
N₂ @ FS 1337
N₂ @ FS 332
N₂ @ FS 1337
NO USEFUL N₂ DATA OBTAINED @ FS 277 & FS 1697
LOAD NO 1
LOAD NO 2
LOAD NO 3
LOAD
ELAPSED TIME ~ SEC.
JOB NO. 63 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG3-80TT LAC 600B
TEST DATE 7-12-65
FLIGHT 151 DROP NO. 42

SHEET 3 OF 7

CARGO WTS. ~(1) 10,150 LBS.
~(2) 10,490 LBS.
~(3) 10,210 LBS.
~(4) 9,920 LBS.
~(5) 9,710 LBS.
~(6) 10,110 LBS.
~(7) 9,530 LBS.

NOTE:
SEE FIGURE E-7A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION,
AND EXTRACTION CHUTE DESCRIPTION.

—— LOAD RELEASE
- - - - LOAD CLEAR RAMP

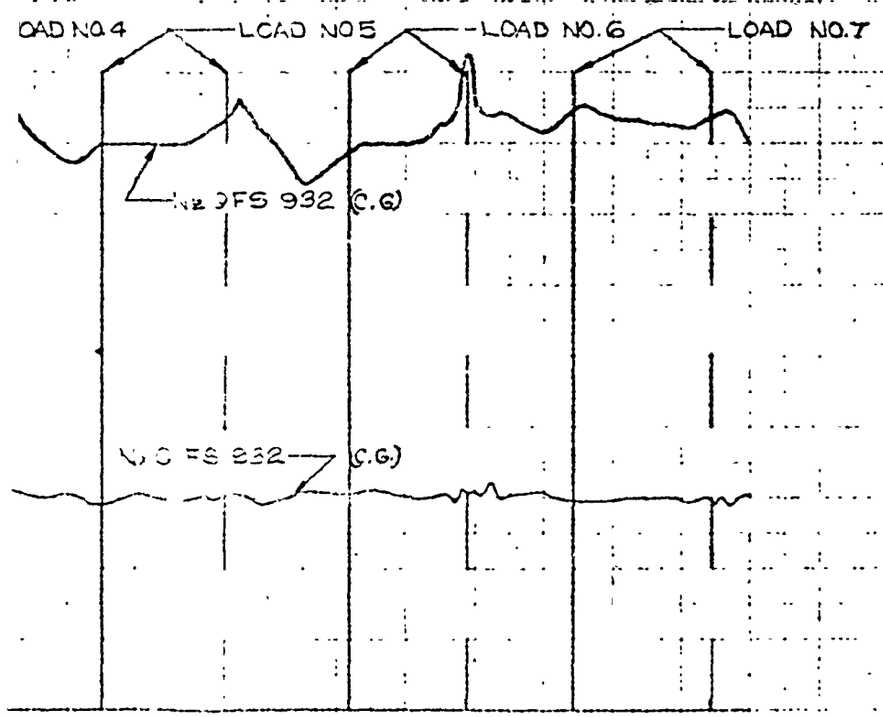
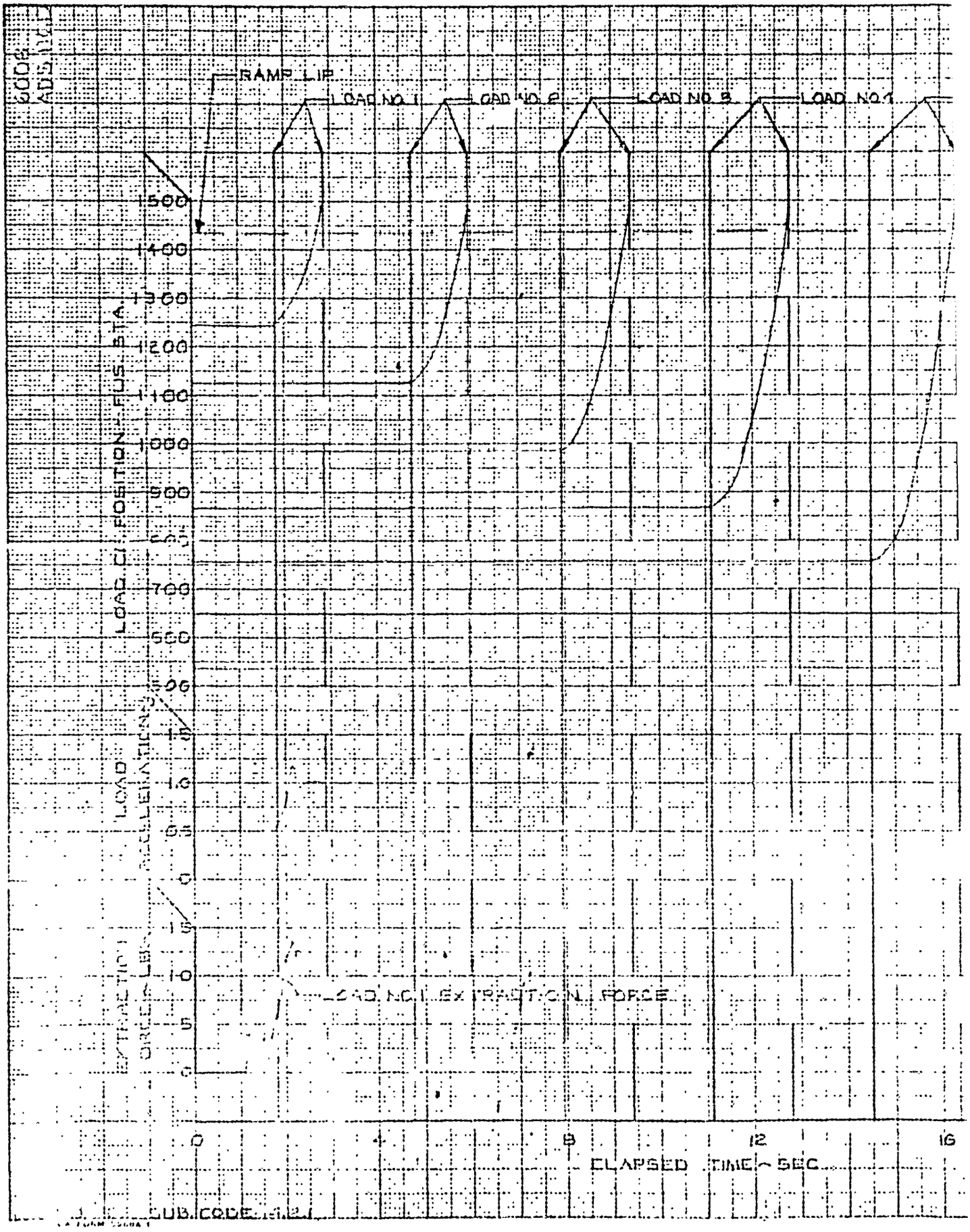
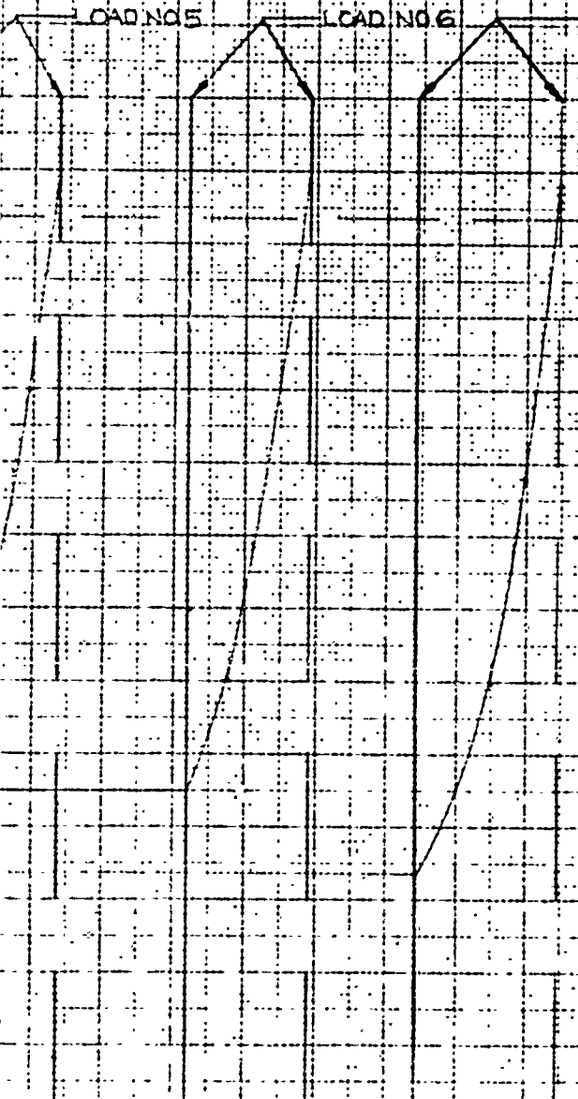


FIGURE F-7 C.


RAMP UP
LOAD NO. 1
LOAD NO. 2
LOAD NO. 3
LOAD NO. 4
LOAD CLOSTION FUS STA
1500
1400
1300
1200
1100
1000
900
800
700
600
500
1.5
1.0
0.5
0
.5
1.0
5
0
LOAD ACCELERATIONS
EXTRACTION FORCE - LBS
LOAD NO. 1 EXTRACTION FORCE
0
4
8
12
16
ELAPSED TIME - SEC
SUB. CODE

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AEGS-8077 LAC 6008
TEST DATE 7-12-65
FLIGHT 151 DROP NO 42

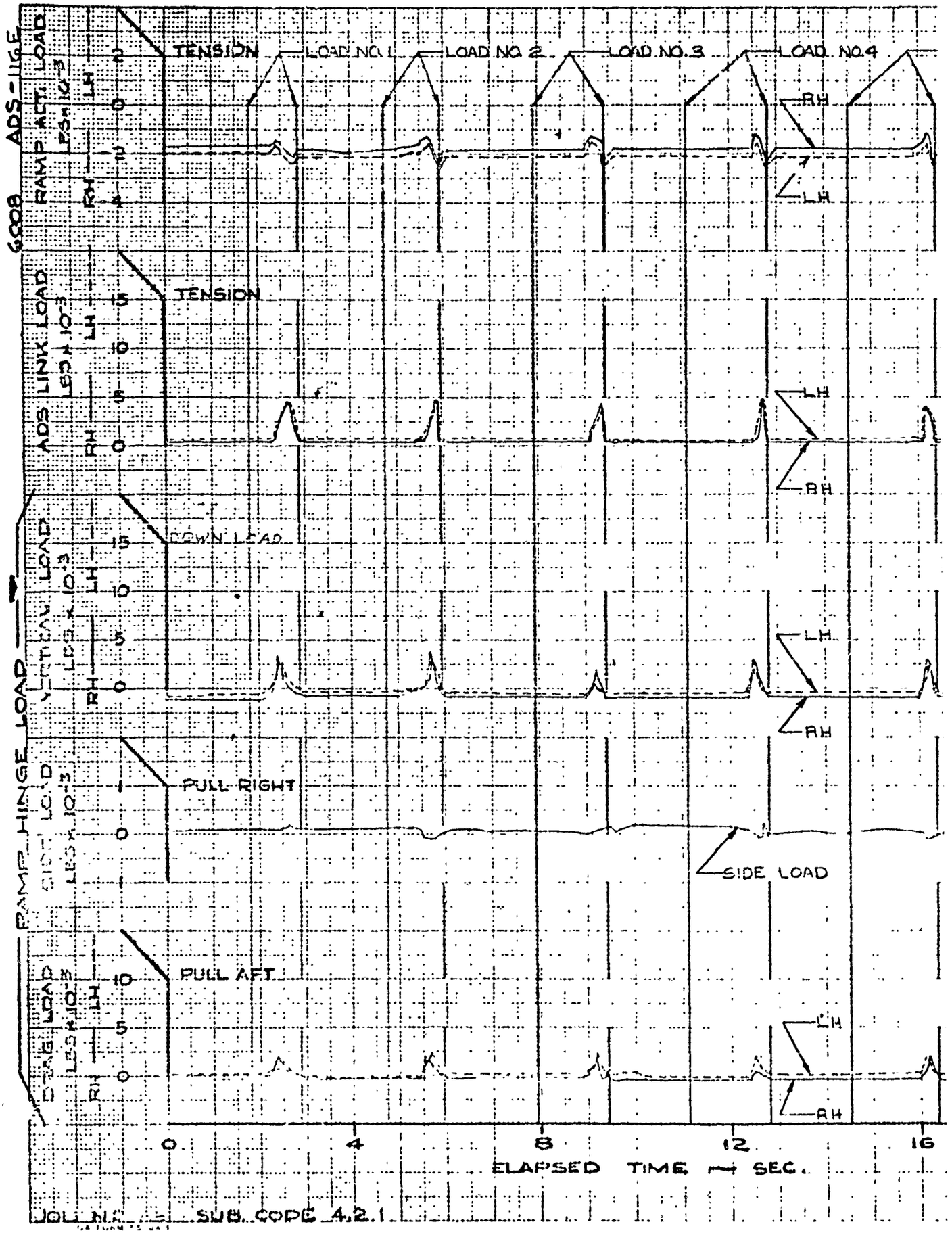


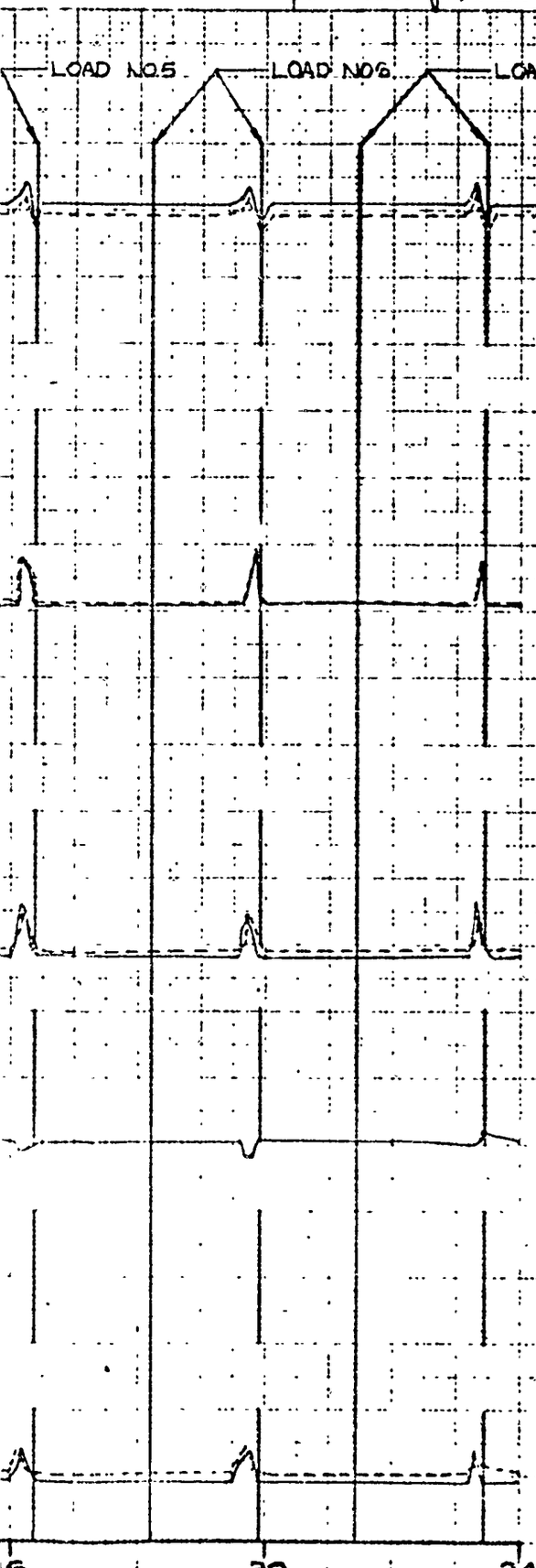
CARGO WTS.
~① 10,150 LBS
~② 10,490 LBS
~③ 10,210 LBS
~④ 9,920 LBS
~⑤ 9,710 LBS
~⑥ 10,110 LBS
~⑦ 9,530 LBS

NOTE:

1. SEE FIGURE E-7A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.
2. LOAD RELEASE POINT FOR LOAD NO 6 IS ESTIMATED DUE TO INSTRUMENTATION MALFUNCTION.
3. CARGO N_X DATA AND EXTRACTION FORCE DATA NOT AVAILABLE FOR LOADS NO 2 - NO 7
4. ——— LOAD RELEASE
   — — — LOAD CLEAR OF RAMP

FIGURE F-7D


6908 ADS-II GE
RAMP HINGE LOAD
ADS LINK LOAD
RAMP ACT. LOAD
LBS x 10-3
LH
RH
TENSION
LOAD NO. 1
LOAD NO. 2
LOAD NO. 3
LOAD NO. 4
VERTICAL LOAD
DOWN LOAD
SIDE LOAD
PULL RIGHT
PULL AFT
DRAG LOAD
0
4
8
12
16
ELAPSED TIME — SEC.
JOLLNS SUB. CODE 4.2.1



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 7-12-65

FLIGHT 151 DROP NO 42

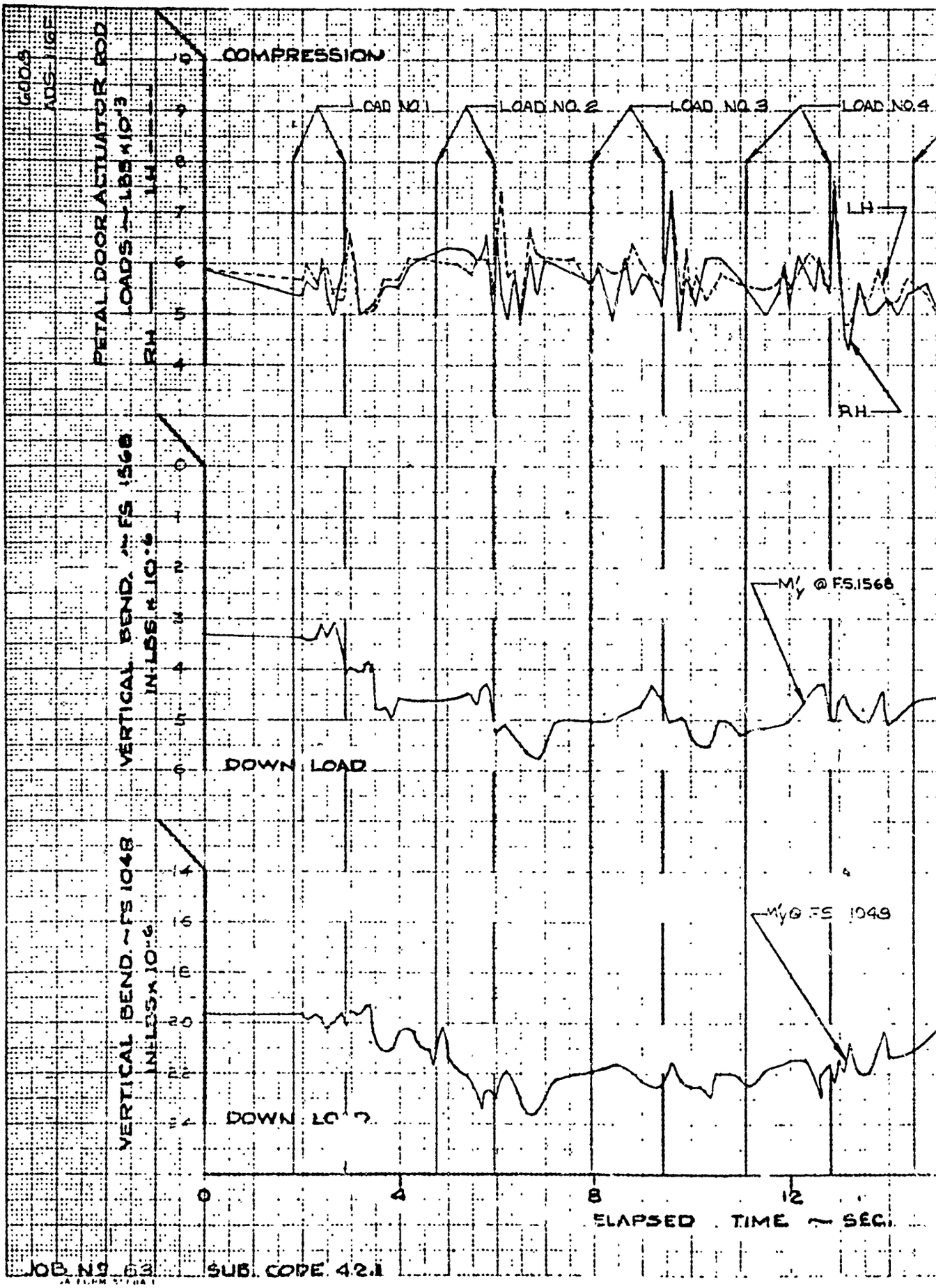
SHEET 5 OF 7

CARGO WEIGHT: ~① 10,150 LBS
~② 10,990 LBS
~③ 10,210 LBS
~④ 9,920 LBS
~⑤ 9,710 LBS
~⑥ 10,110 LBS
~⑦ 9,530 LBS

NOTE:
SEE FIGURE F-7A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

—— LOAD RELEASE
---- LOAD CLEAR RAMP

FIGURE F-7E


PETAL DOOR ACTUATOR ROD
LOADS — LBS x 10⁻³
RH
LH
COMPRESSION
LOAD NO. 1
LOAD NO. 2
LOAD NO. 3
LOAD NO. 4
LH
RH
VERTICAL BEND. — FS 1568
IN-LBS x 10⁻⁶
M'y @ FS.1568
DOWN LOAD
VERTICAL BEND. — FS 1048
IN-LBS x 10⁻⁶
M'y @ FS 1049
DOWN LOAD
0
4
8
12
ELAPSED TIME — SEC.
JOB NO. 63
SUB. CODE 42.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 7-12-65

FLIGHT 151 DROP NO 4-2

SHEET 6 OF 7

CARGO WEIGHT: ~ ① 10,150 LBS
~ ② 10,490 LBS
~ ③ 10,210 LBS
~ ④ 9,920 LBS
~ ⑤ 9,710 LBS
~ ⑥ 10,110 LBS
~ ⑦ 9,530 LBS

NOTE:
SEE FIGURE F-7A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRITION, AND EXTRACTION
CHUTE DESCRIPTION

——— LOAD RELEASE
- - - - LOAD CLEAR RAMP

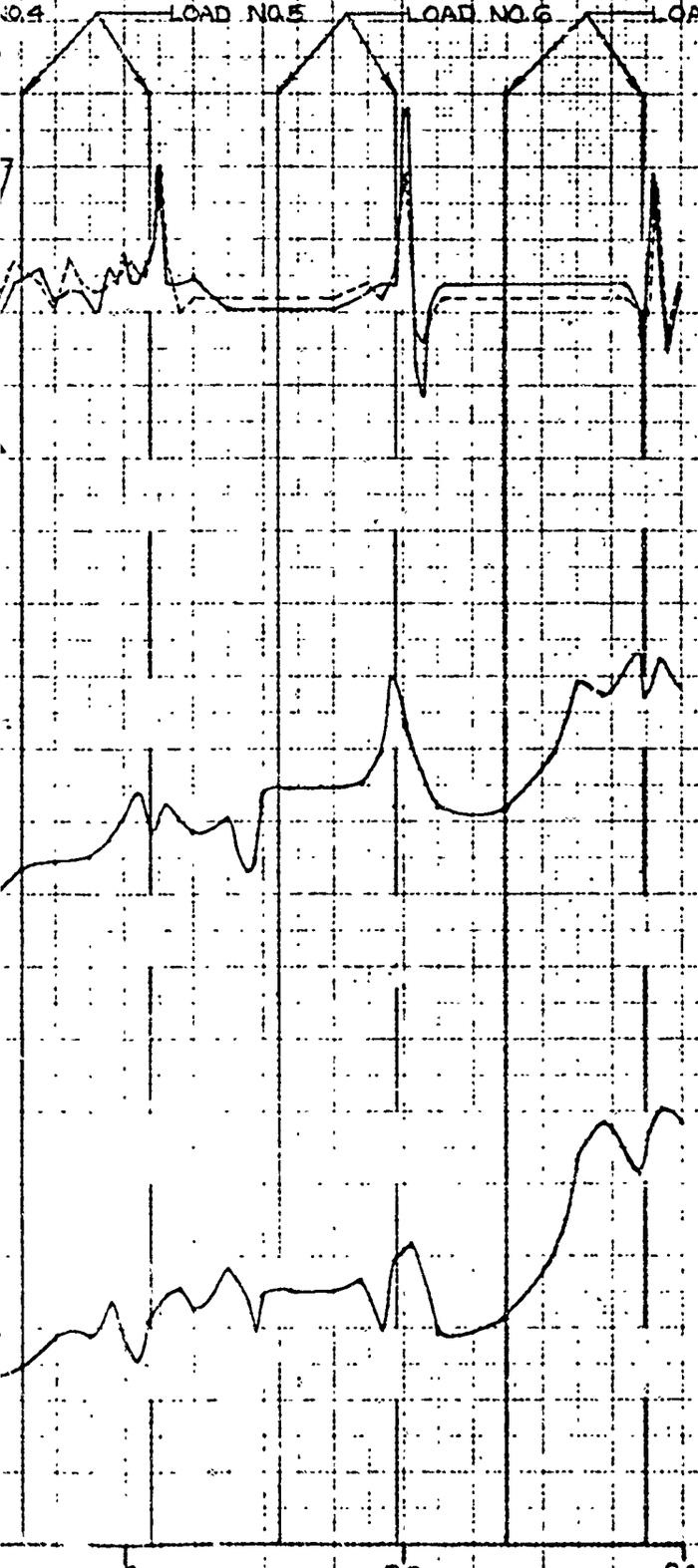


FIGURE F-7F

6000 LBS
ADS-116-G
HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44 ~ S_z LBS x 10^{-3}
BEND @ HBL 44 ~ M_x IN-LBS x 10^{-6}
UP LOAD
LOAD NO 1
LOAD NO 2
LOAD NO 3
S_z @ HBL
M_x @ HBL
VERT. STAB. NET LOAD
BEND @ YS 345 ~ M_x
IN-LBS x 10^{-6}
LOAD LEFT @ VS TIP
M_x @ VSS
ELAPSED TIME — SEC.
SUB CODE 4-2-1

PREPARED BY MORGAN
DATE 7-19-65
CHECKED BY JWP

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE F-63

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 61-2077 LAC 6008

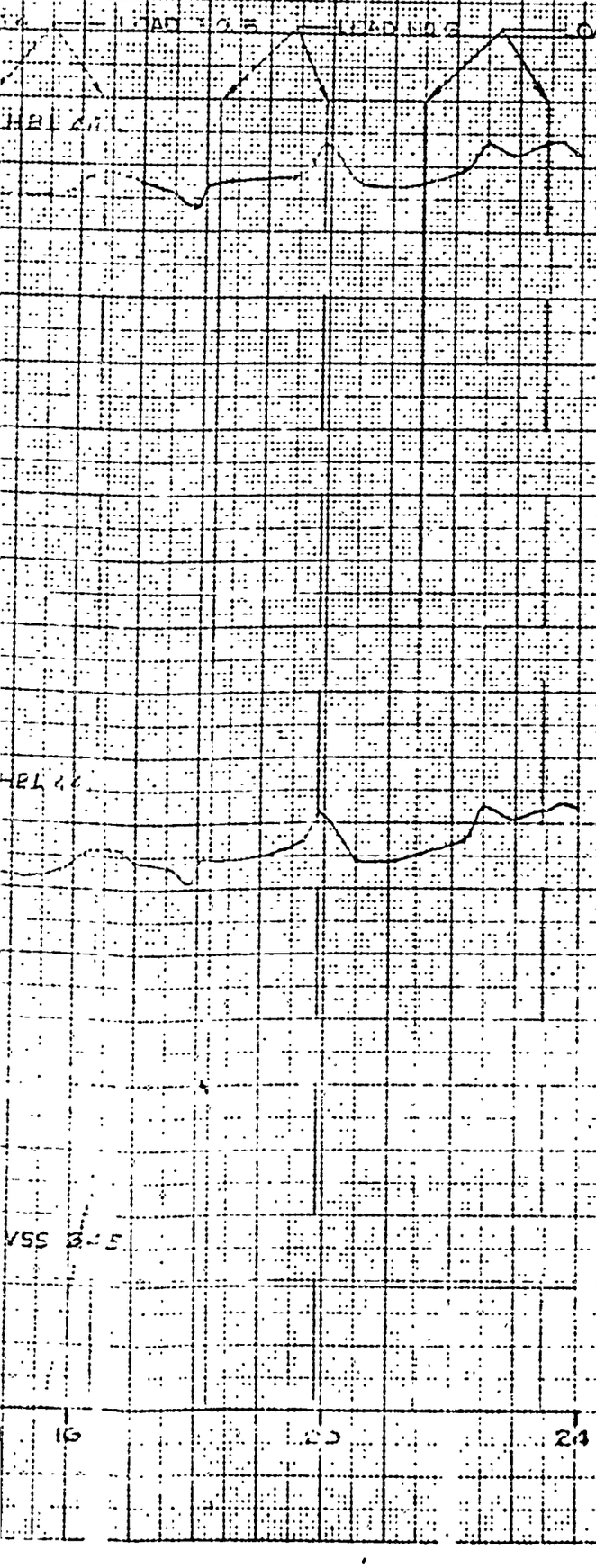
TEST DATE 7-12-65

FLIGHT 151 DROP NO 42

SHEET 7 OF 7

CARGO WEIGHT ①10,550 LBS
②10,990 LBS
③10,810 LBS
④9,920 LBS
⑤9,710 LBS
⑥10,110 LBS
⑦9,550 LBS

NOTE 1
SEE FIGURE F-7A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION



——— LOAD RELEASE
- - - - LOAD CLEAR RAMP

FIGURE F-7G

ADS

ADS 60A
LOAD NO. 1 CLEAR OF RAMP
LOAD NO. 2 RELEASE
LOAD NO. 2 CLEAR OF RAMP
LOAD NO. 1 RELEASE
NOSE UP
NOSE LEFT
RIGHT ROLL
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.
AIRCRAFT ATTITUDES ~ DEG
JOB NO. 33 SUB. CODE 4.21

PREPARED BY JDG & MBH
DATE 9-9-65
CHECKED BY JHP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE F-64

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63807 LAC 600B
TEST DATE 9-8-65
FLIGHT 178 DROP NO. 4-3
SHEET 1 OF 14

CARGO WT ① 10,465 LBS.
② 35,025 LBS.

RUN CONDITIONS

1. G.W. ~ ① 229,100 LBS. ~ ② 218,635 LBS
2. C.G. PRIOR TO DROP ① 33.7% ② 28.7%
3. C.G. AFTER DROP ① 28.7% ② 21.1%
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.29 EPR
7. $\dot{\gamma}_H$ ~ 0.45°/(A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ ① 8 FT. ~ ② 24 FT.
3. CARGO C.G. POSITIONS
   LONG. ~ FS ① 1228 ~ ② 1041
   VERT. ~ WL ① 178 ~ ② 162

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ① ~ 1 ~ ② ~ 2
2. CHUTE SIZE ~ ① ~ 22 FT ② ~ ~32 FT
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH ~ ① 60 FT ② 100 FT

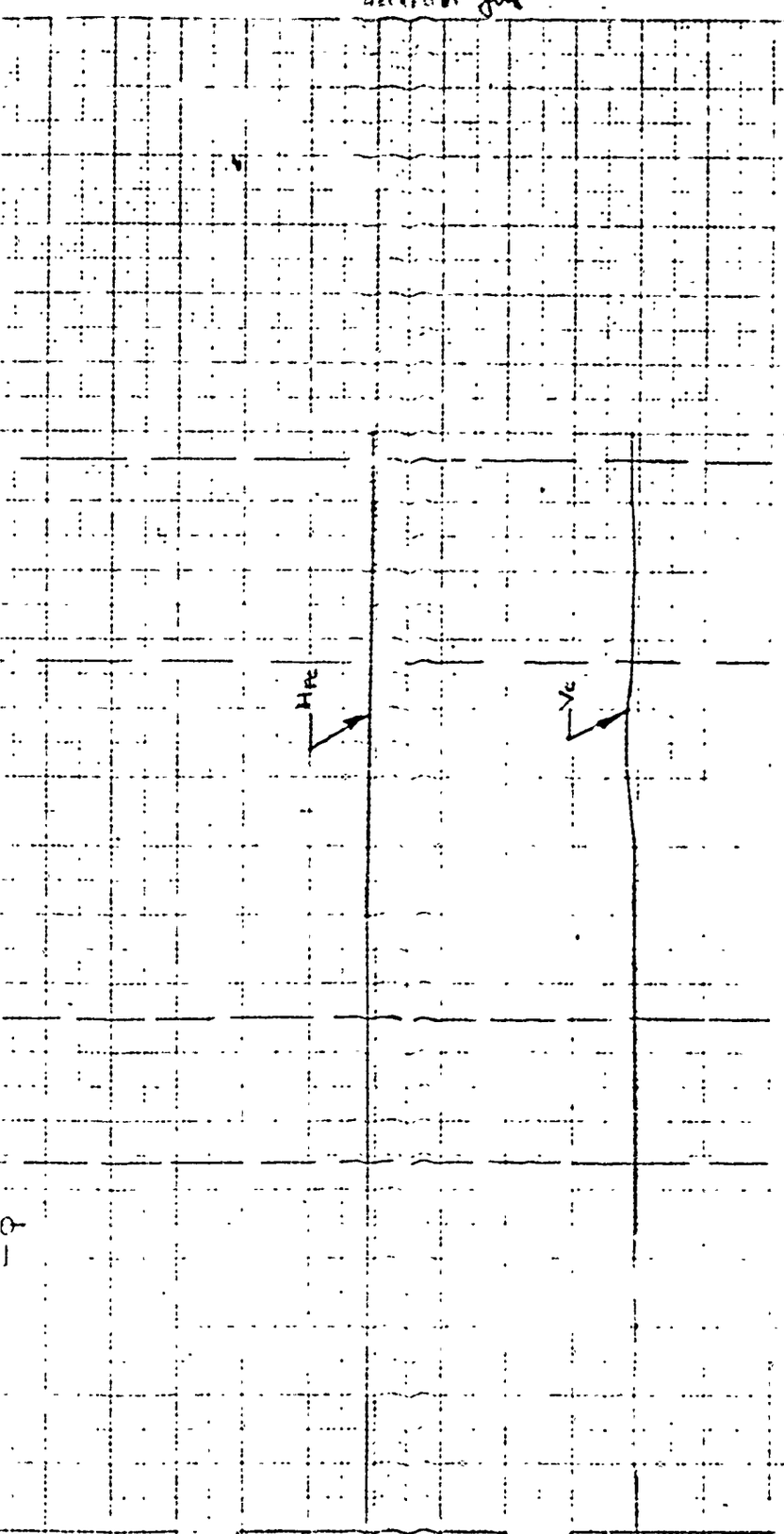
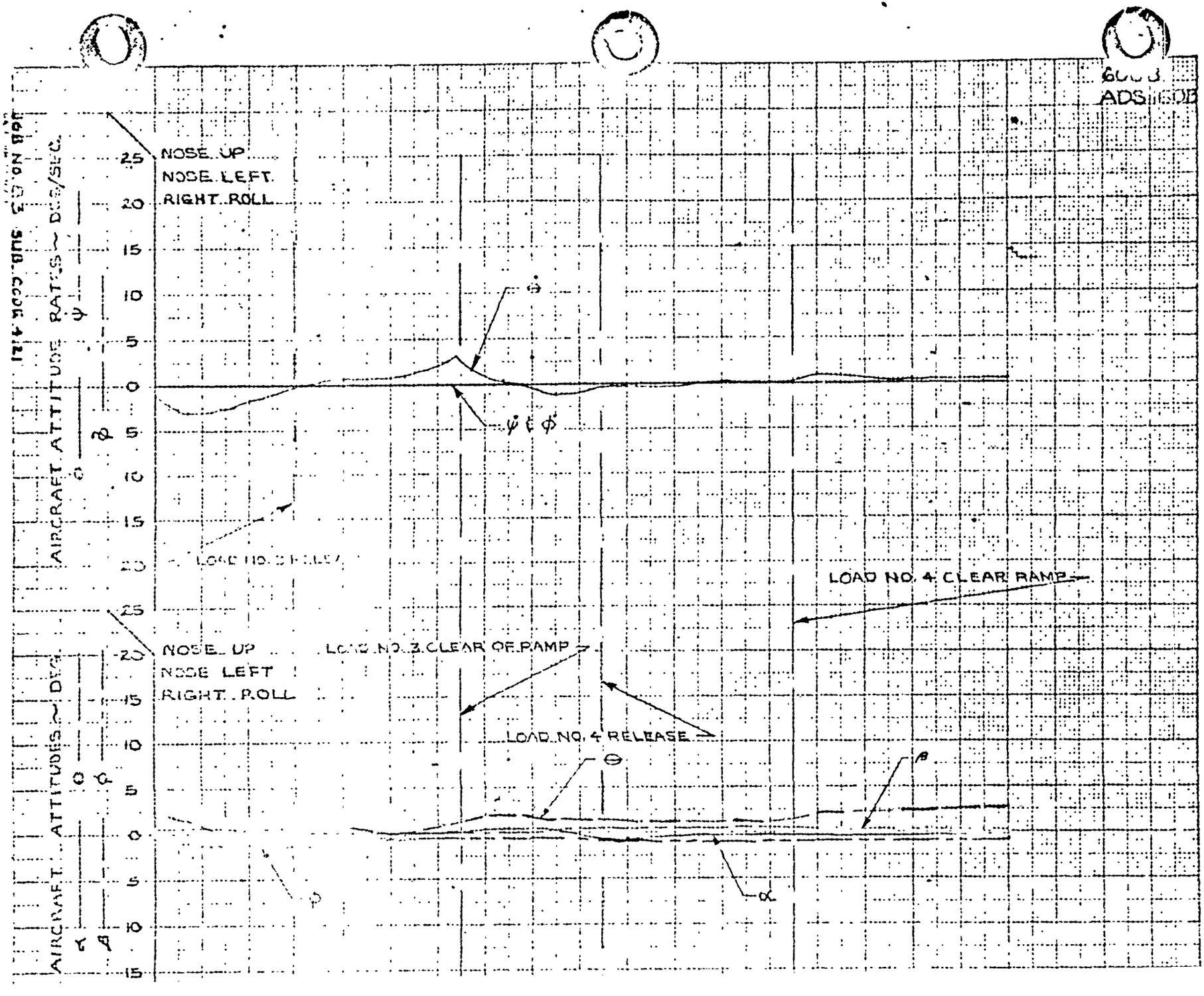


FIGURE F-8A


AIRCRAFT ATTITUDES ~ DEG
AIRCRAFT ATTITUDE RATES ~ DEG/SEC
NOSE UP
NOSE LEFT
RIGHT ROLL
NOSE UP
NOSE LEFT
RIGHT ROLL
LOAD NO. 3 RELEASE
LOAD NO. 3 CLEAR OF RAMP
LOAD NO. 4 CLEAR RAMP
LOAD NO. 4 RELEASE
θ
ψ & φ
α
β

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63807 LAC. 6008

TEST DATE 9-8-65

FLIGHT 178 DROP NO. 43

SHEET 2 OF 14

CARGO WT ③ 20,565 LBS.
④ 5,055 LBS.

RUN CONDITIONS

1. G.W. ~ ③ 163,610 LBS. ④ 163,045 LBS.
2. C.G. PRIOR TO DROP ③ 21.1% ④ 26.6%
3. C.G. AFTER DROP ③ 26.6% ④ 30.0%
4. FLAPS ~ 60%
5. GEAR ~ UP.
6. AVG. EPR ~ 1.29 EPR
7. Δ_H ~ 0.45° (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ ② 16 FT. ~ ④ 8 FT.
3. CARGO C.G. POSITIONS
   LONG. ~ FS ~ ② 795 ~ ④ 648
   VERT. ~ WL ~ ③ 170 ~ ④ 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ ③ 1 ~ ④ 1
2. CHUTE SIZE ~ ③ 35 FT. ~ ④ 15 FT.
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH ③ 35 FT. ④ 120 FT.

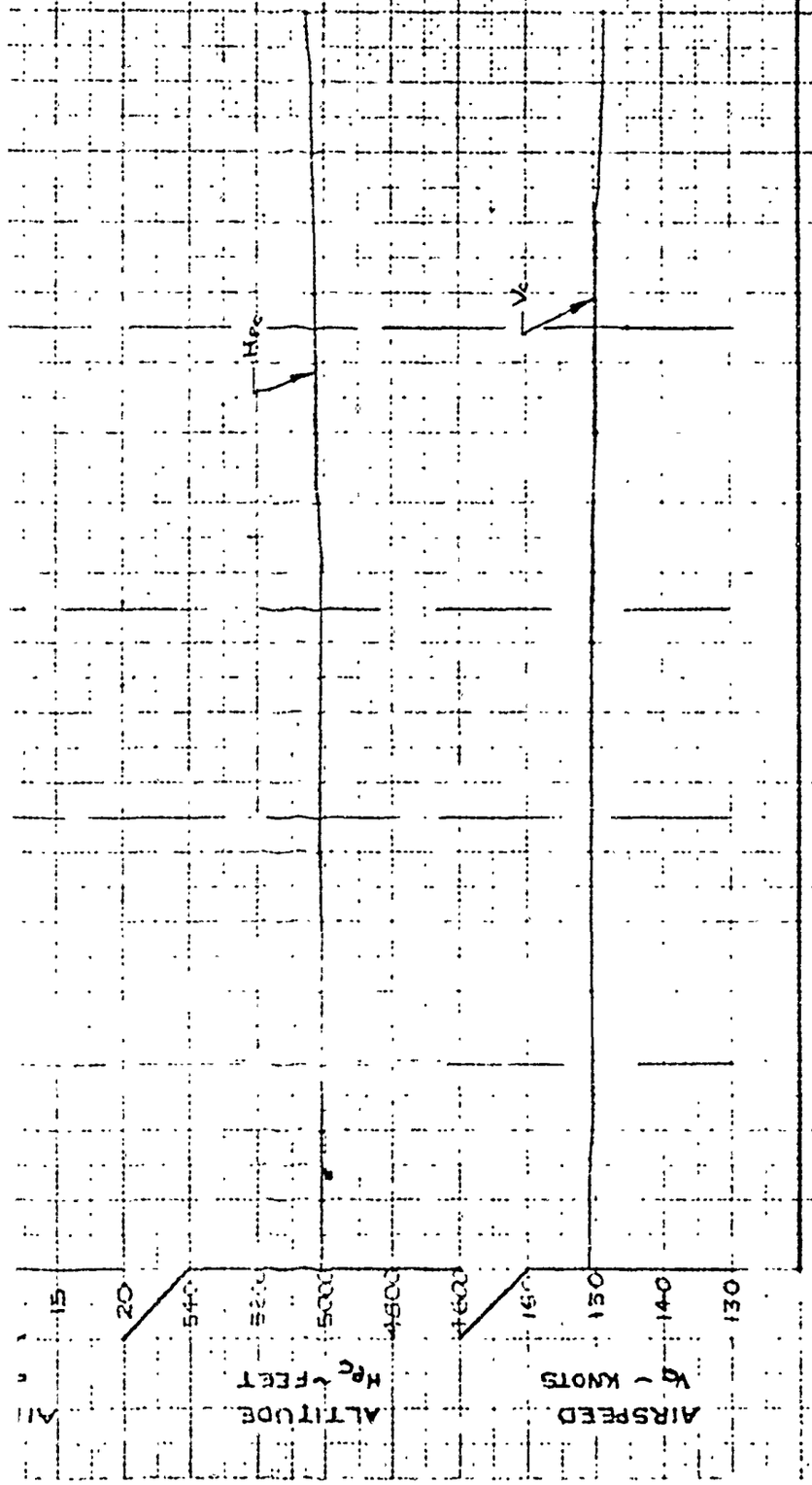


FIGURE F-8B

RIGHT ROLL
PUSH LEFT
PULL
70 60 50 40 30 20 10 0 10 20 30 40
20 15 10 5 0 5 10
F_r
F_a
F_e
δ_{aL}
CONTROL FORCES ~ LBS.
LEFT AILERON POSITION ~ DEG.
F_r
F_e
F_a
F_B
δ_{aL}
LOAD NO. 1 RELEASE
LOAD NO. 1 CLEAR OF RAMP
T.E. UP
LOAD NO. 2 RELEASE
LOAD NO. 2 CLEAR OF RAMP
JOB NO. 83 SUB. CODE 4.21

JDG
DATE 9-9-65
JMP

ER 5473
C-141A
F-66

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077 LAC 6008

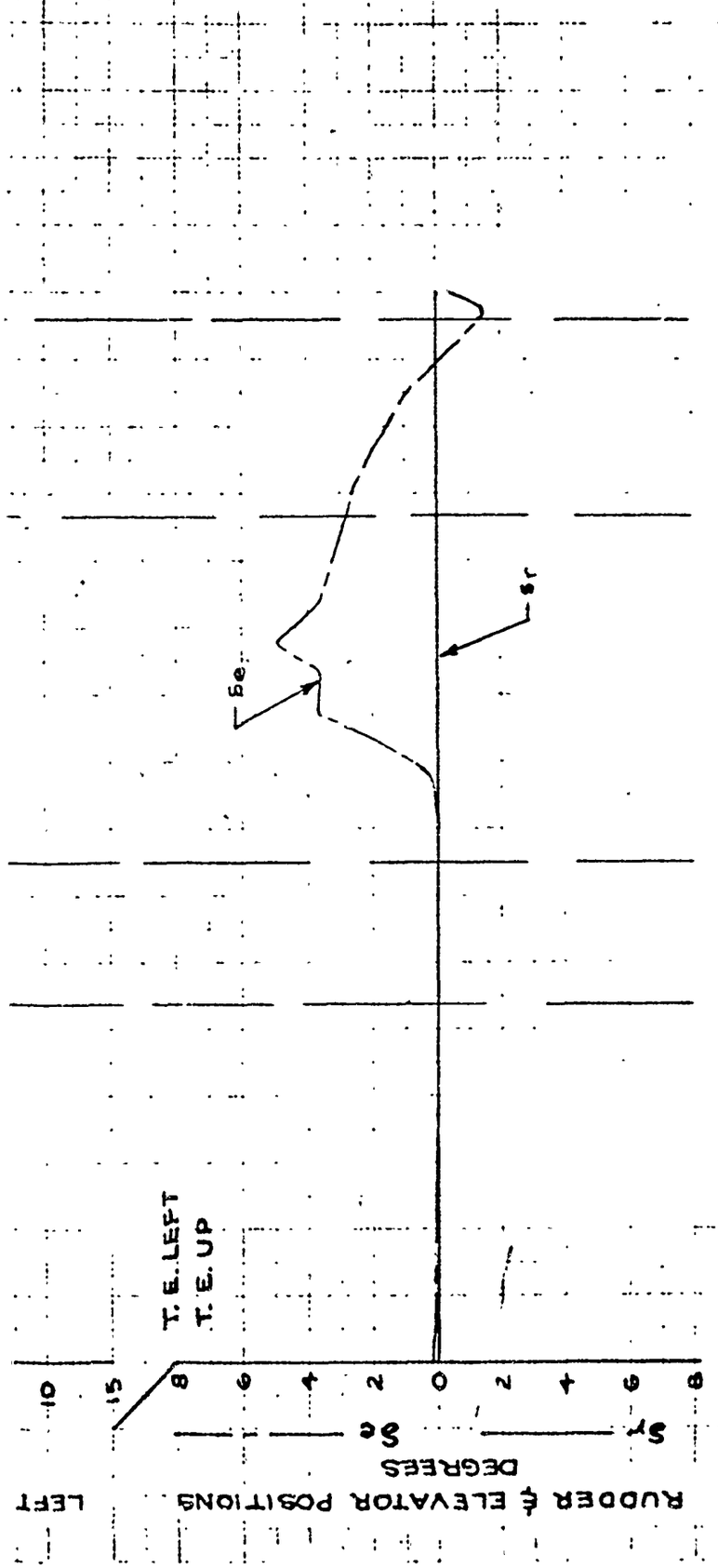
TEST DATE 9-8-65

FLIGHT 178. DROP NO 43

SHEET 3 OF 14

CARGO WT ① 10,465 LBS.
② 35,025 LBS.

NOTE:
SEE FIGURE ~~2~~ SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.



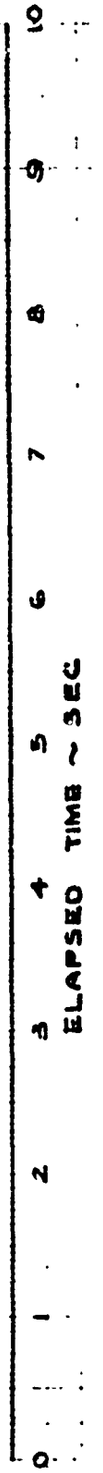
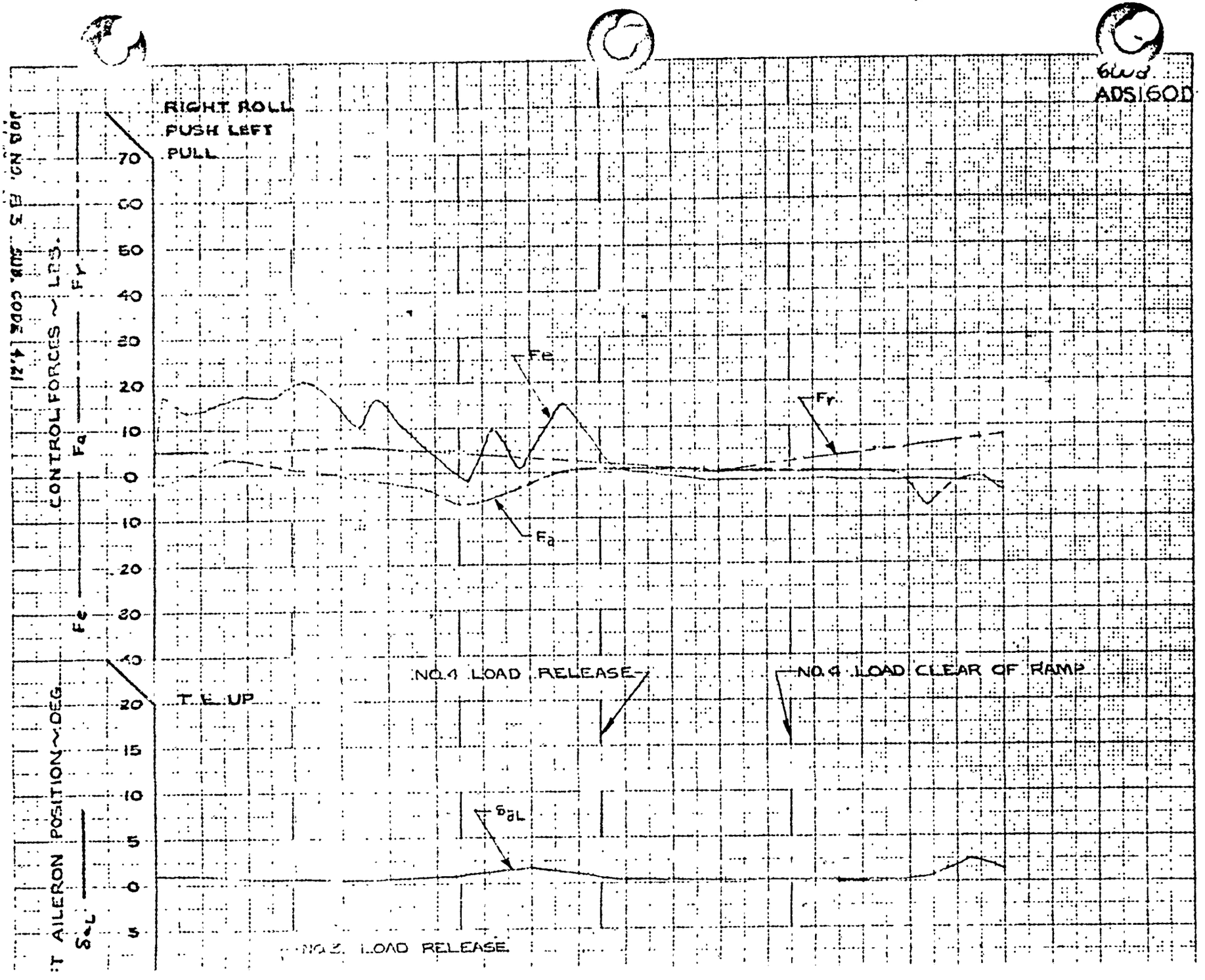


FIGURE F-8C

6008
ADS160C


RIGHT ROLL
PUSH LEFT
PULL
T.E. UP
CONTROL FORCES ~ LBS.
Fr
Fa
Fe
LEFT AILERON POSITION ~ DEG.
δaL
70
60
50
40
30
20
10
0
10
20
30
40
20
15
10
5
0
5
Fe
Fr
Fa
NO.4 LOAD RELEASE
NO.4 LOAD CLEAR OF RAMP
δaL
NO.2 LOAD RELEASE
6W8
AD51600

PREPARED BY JDG
DATE 9-9-65
CHECKED BY JHP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-67

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 9-8-65
FLIGHT 178 DROP NO 43

SHEET 4 OF 14

CARGO WT @ 20,565 LBS
@ 5,055 LBS.

NOTE:
SEE FIGURE F-8 SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

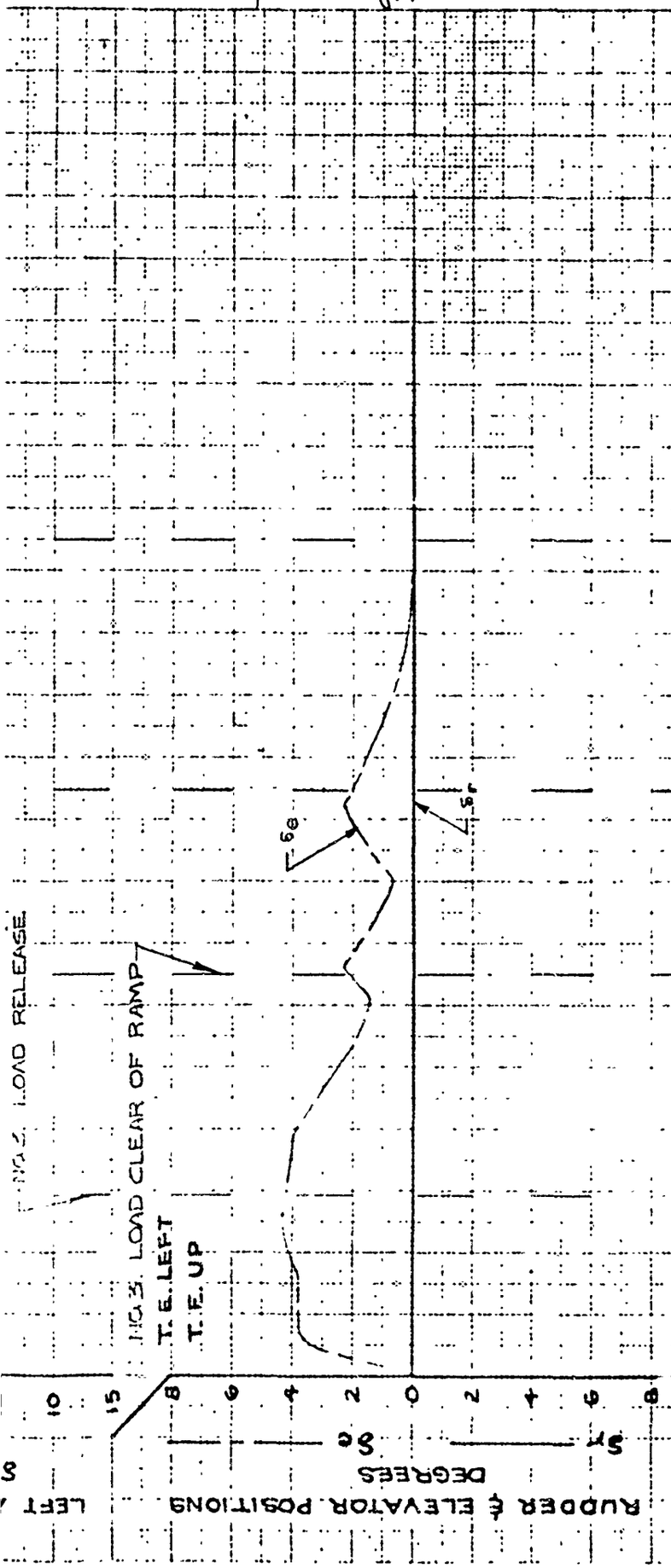
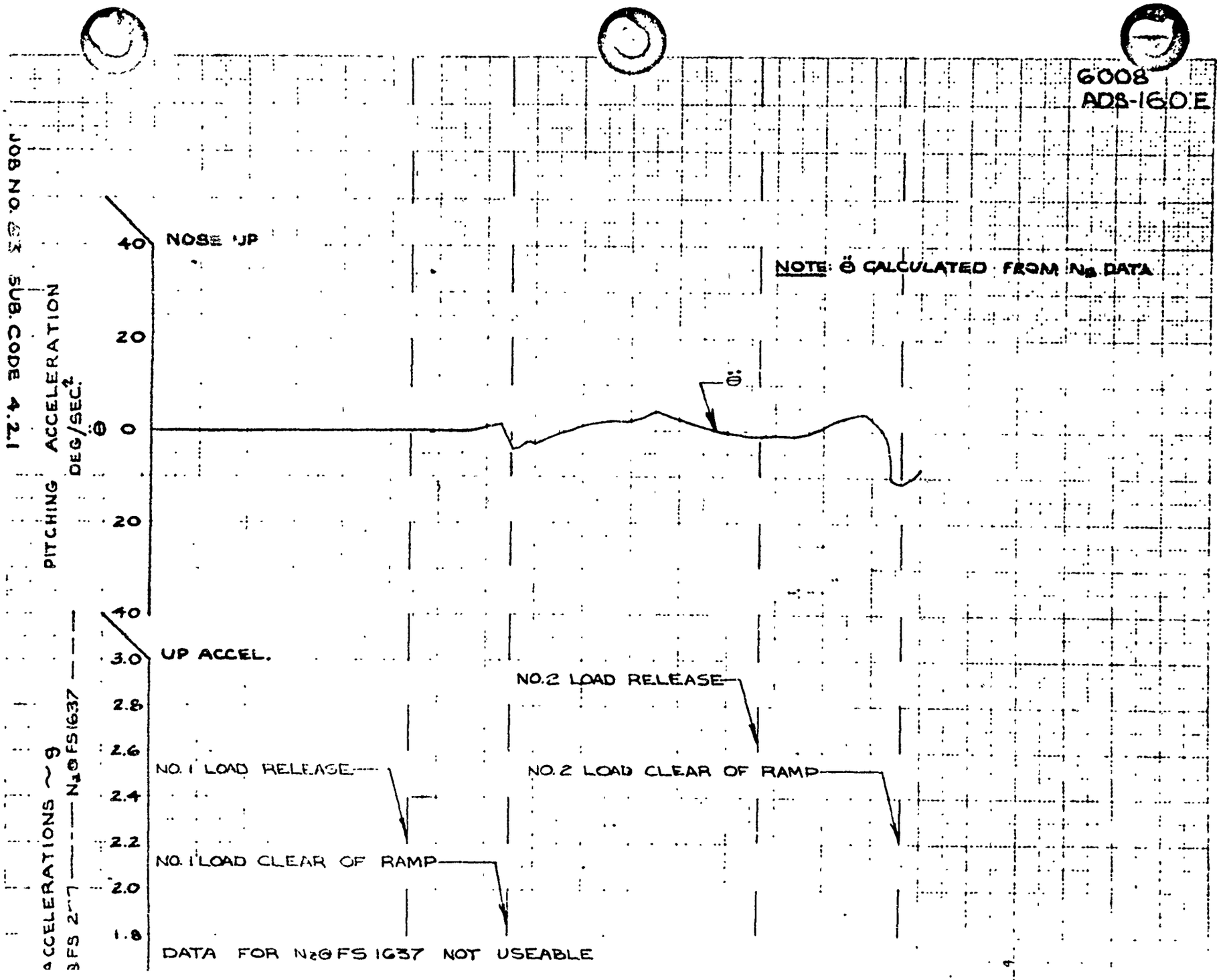


FIGURE F-8D

6008
ADS 1600


6008
AD8-160E
JOB NO. 8 SUB CODE 4.2.1
NOSE UP
PITCHING ACCELERATION
θ̈ DEG/SEC.²
40
20
0
20
40
NOTE: θ̈ CALCULATED FROM N₂ DATA
θ̈
UP ACCEL.
3.0
2.8
2.6
2.4
2.2
2.0
1.8
ACCELERATIONS ~ g
3FS 2ND ——— N₂@FS1637 ———
NO.2 LOAD RELEASE
NO. 1 LOAD RELEASE
NO.2 LOAD CLEAR OF RAMP
NO. 1 LOAD CLEAR OF RAMP
DATA FOR N₂@FS 1637 NOT USEABLE

MBH
9-9-65

ER 5473
C-141A
F-68

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 9-8-65

FLIGHT 178 DROP NO. 4-3

SHEET 5 OF 14

CARGO WT @ 104651 LBS.
@ 35,065 LBS.

NOTE:
SEE FIGURE 2 SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

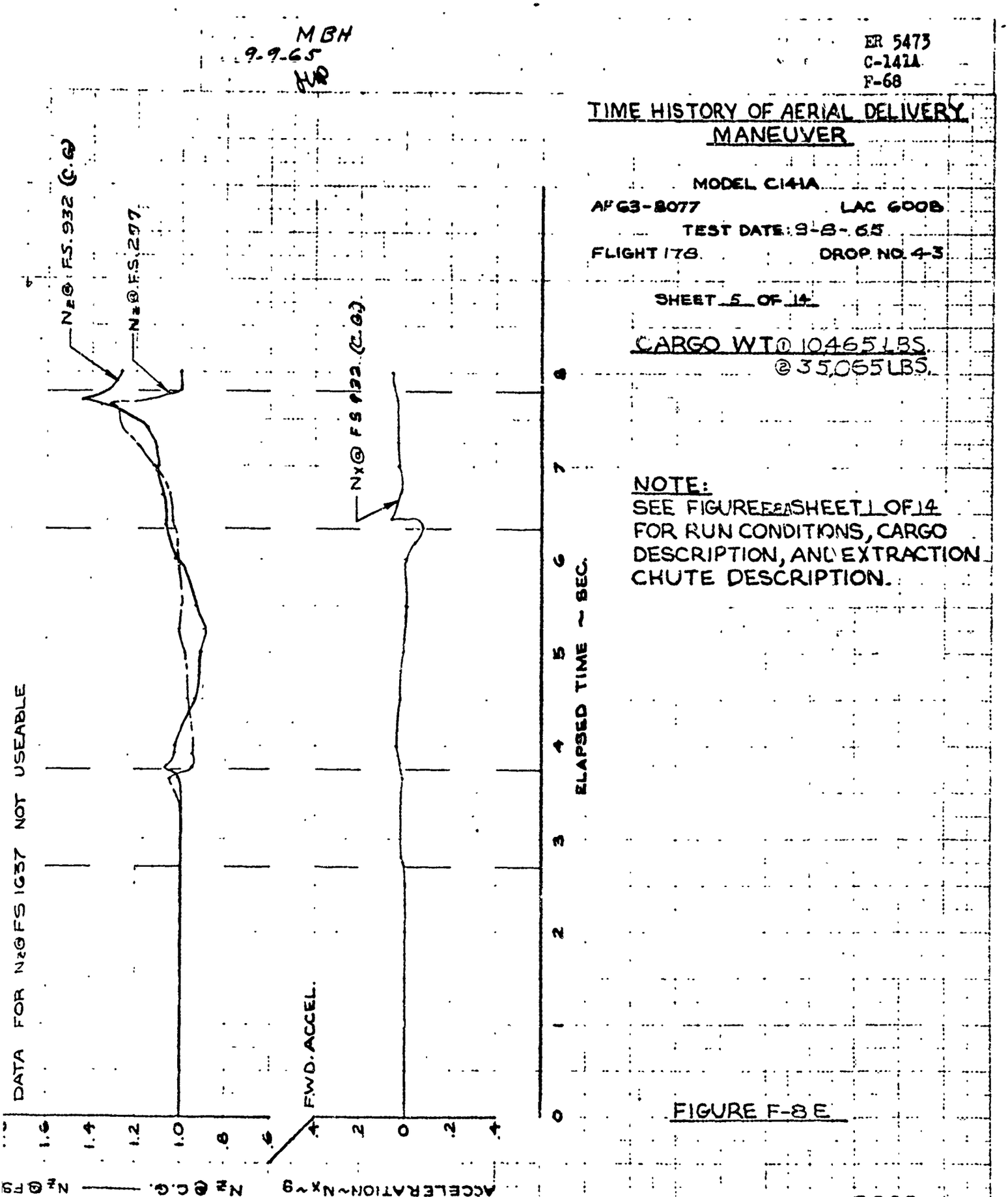
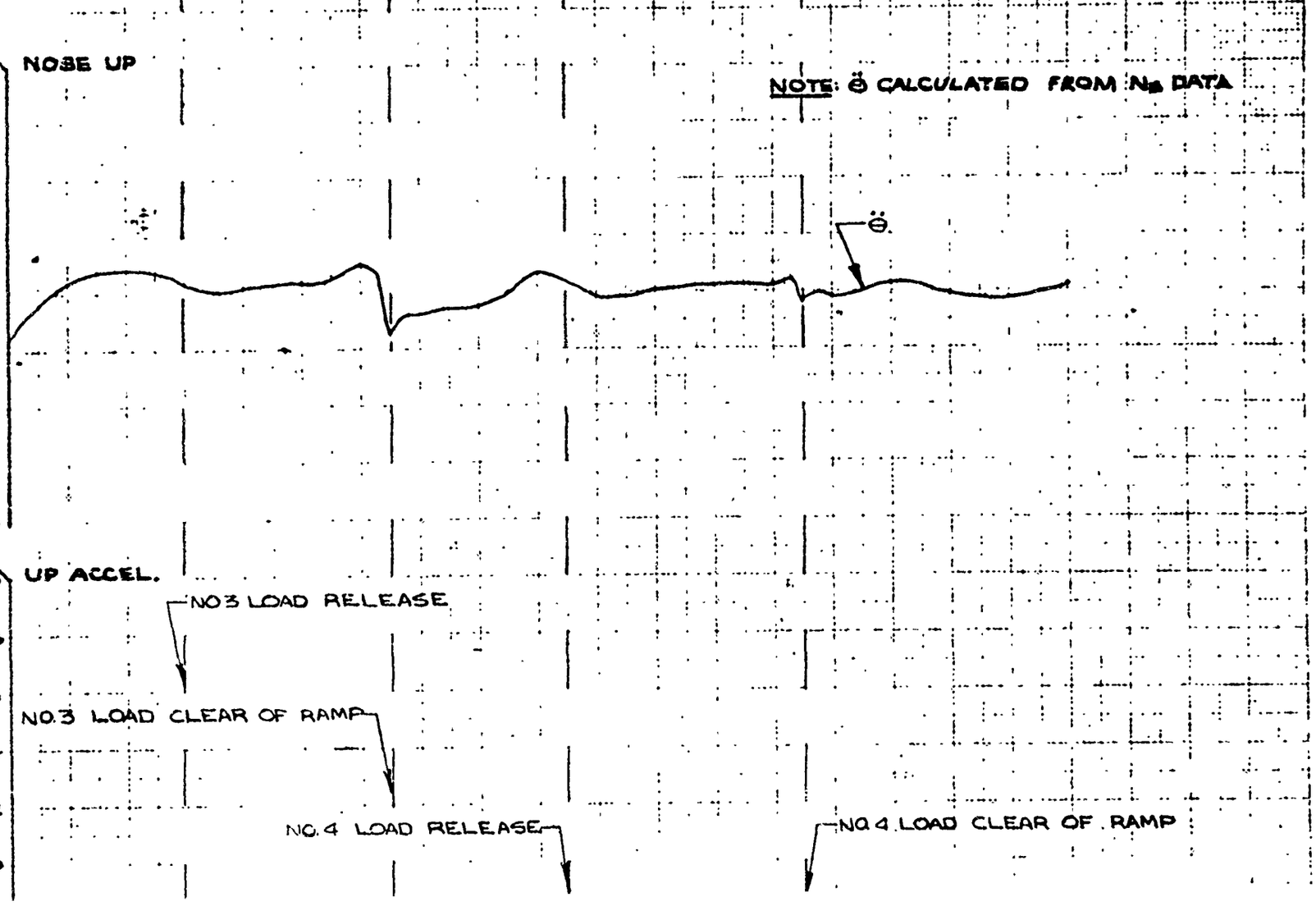


FIGURE F-8 E

JOB NO. 63 SUB CODE 4.2.1



MBH
9-9-65
jmp

ER 5473
C-141A
F-69

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077 LAC 6008

TEST DATE: 9-9-65

FLIGHT 178 DROP NO. 43

SHEET 6 OF 14

CARGO WT @ 20,565 LBS.
@ 5,055 LBS.

NOTE:
SEE FIGURE F-8B SHEET 1 OF 14. FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

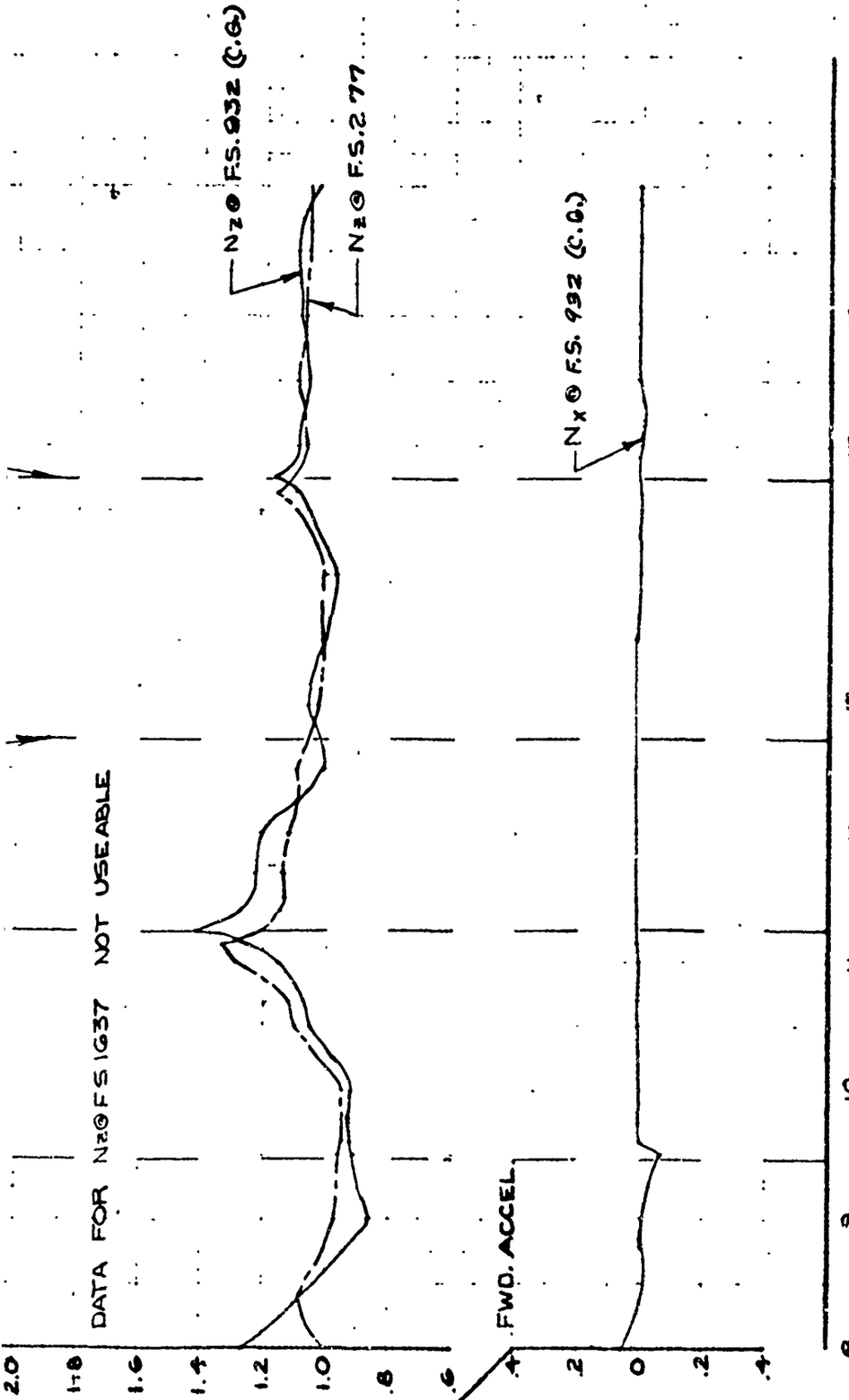
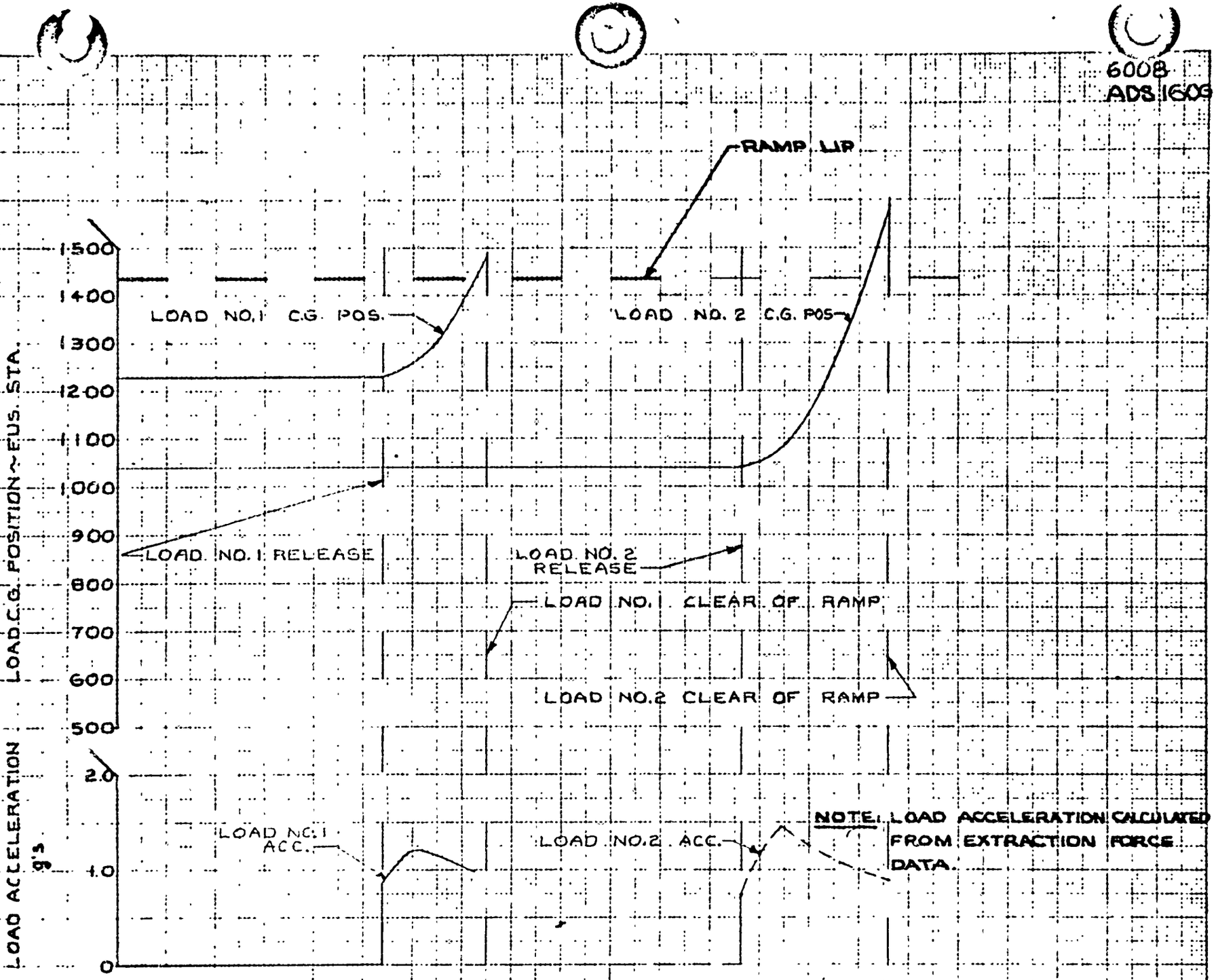


FIGURE F-8 F

6008
ADS 1609



PREPARED BY JDG
DATE 9-2-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 8-8-65
FLIGHT 178 DROP NO. 43

SHEET 7 OF 14

CARGO WTS @ 10,465 LBS.
@ 35,025 LBS.

NOTE:
SEE FIGURE 8, SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

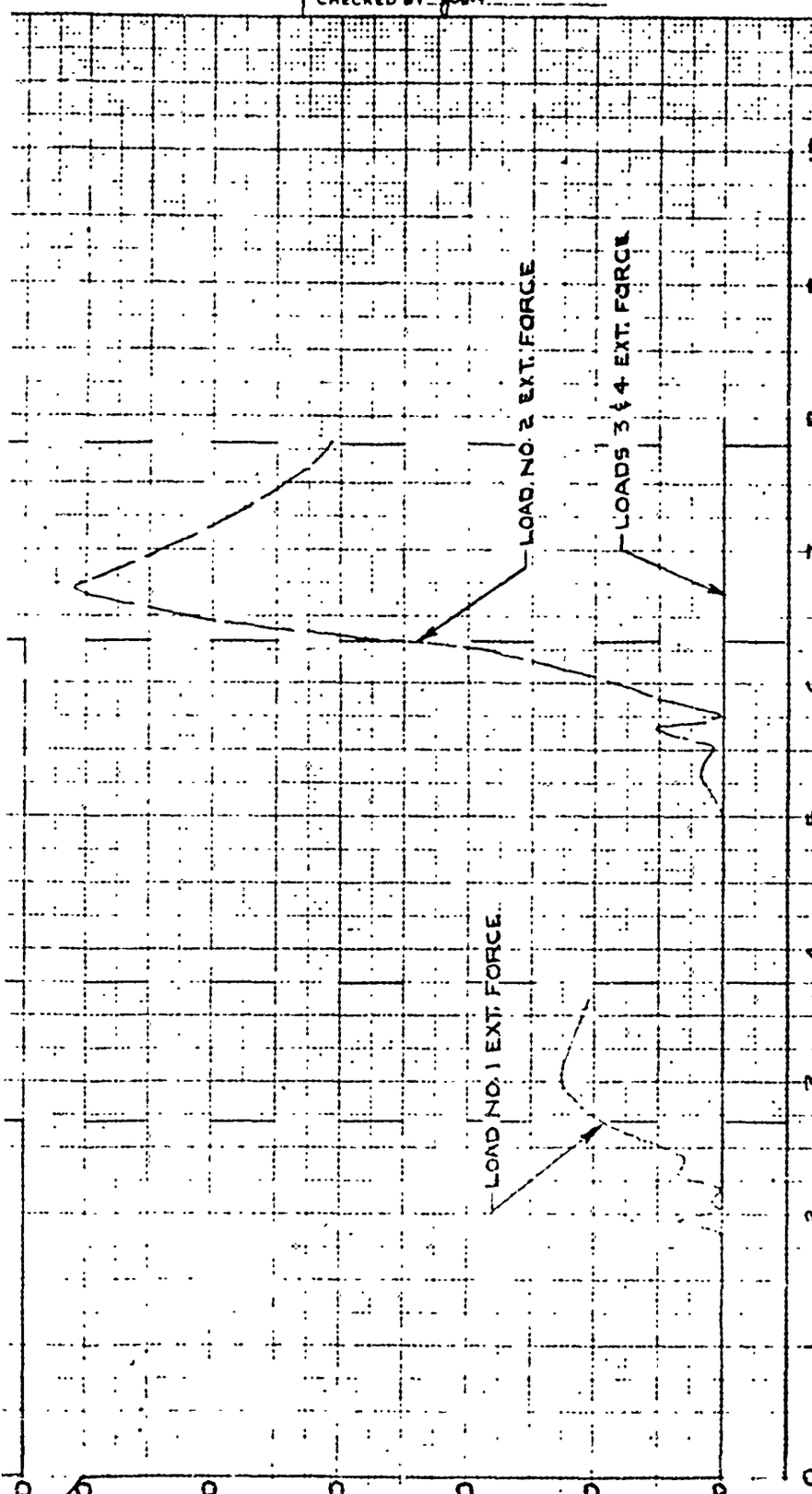
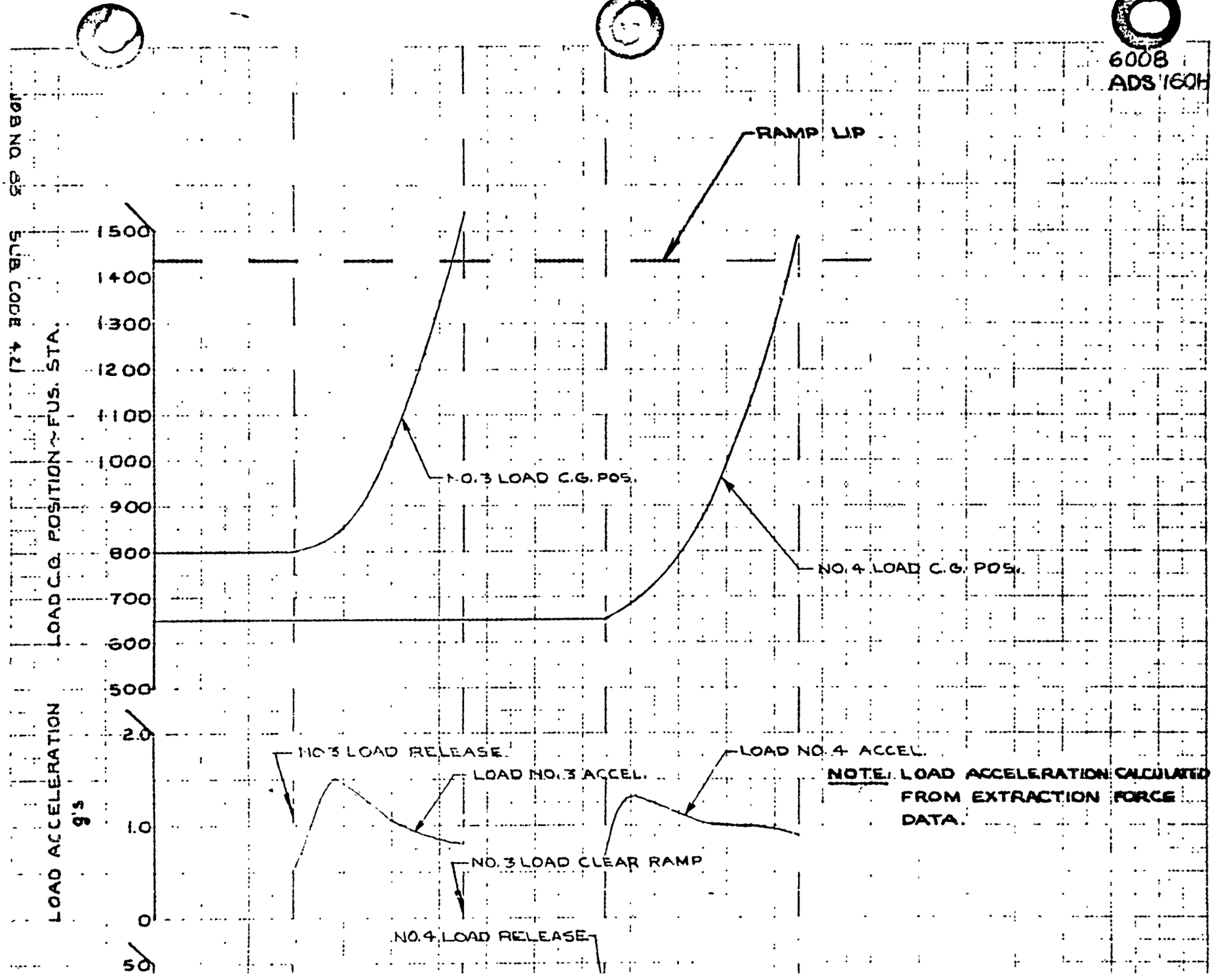


FIGURE F-8G

6008
ADS 160H

JOB NO. 83 SUB. CODE 421



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 9-8-65

FLIGHT 178 DROP NO. 43

SHEET 8 OF 14

CARGO WTS ③ 20,565 LBS
④ 5,055 LBS

NOTE:
SEE FIGURE ~~8~~, SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

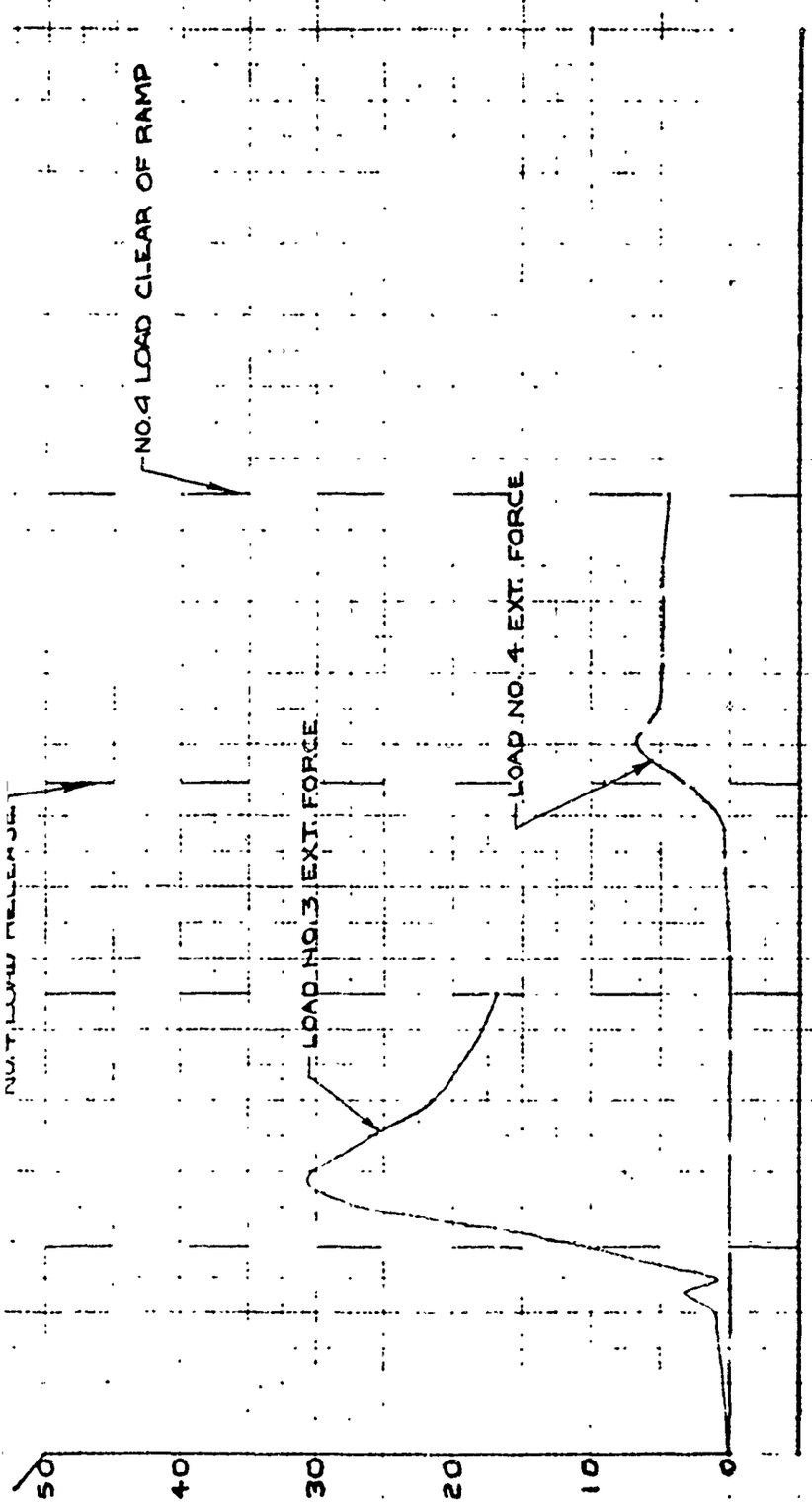


FIGURE F-8H

6008
ADS-1GOT
LH RAMP ACTUATOR
RH RAMP ACTUATOR
LH SPIDER ARM
RH SPIDER ARM
LH VERT. LOAD
RH VERT. LOAD
TENSION
TENSION
PULL DOWN
PULL RIGHT
4
2
0
-2
-4
30
20
10
0
15
10
5
0
2.0
1.0
R.H.
L.H.
LBS. X 10-3
LBS X 10-3
LBS. X 10-3
X 10-3
RAMP ACTUATOR LOAD
ADS LINK AXIAL LOAD
VERTICAL LOAD
LOADS
LOAD
JOB NO. 65 SUB. CODE 4.2.1

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9-9-65

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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-8-65

FLIGHT 178 DROP NO. 13

SHEET 9 OF 14

CARGO WTS. ① 10,465 LBS.
② 35,025 LBS.

NOTE:
SEE FIGURE F-8A SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

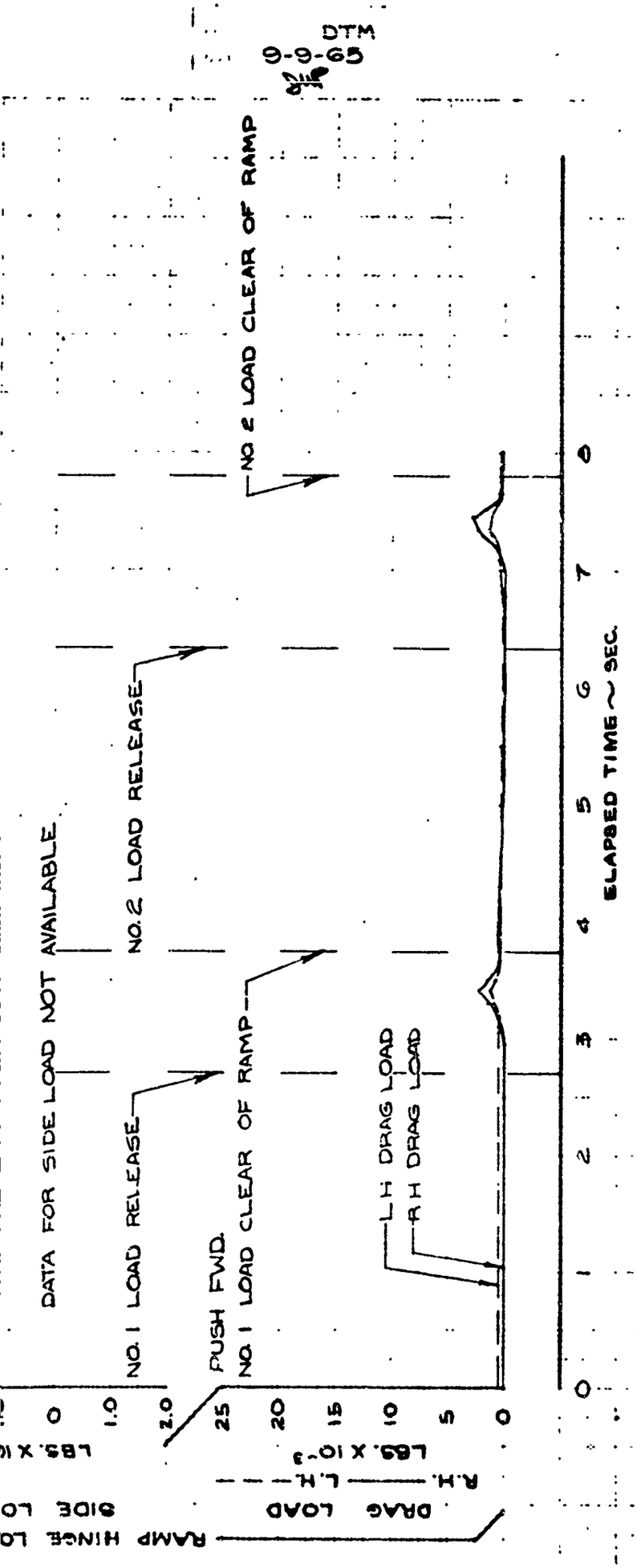


FIGURE F-8 I

JOB NO. 65 SUB. CODE 4.2.1
RAMP ACTUATOR LOAD
LBS. X 10-3
L.H.
R.H.
4
2
0
-2
-4
TENSION
ADS LINK AXIAL LOAD
LBS X 10-3
L.H.
R.H.
30
20
10
0
TENSION
VERTICAL LOAD
LBS X 10-3
L.H.
R.H.
15
10
5
0
PULL DOWN
2.0
1.0
PULL RIGHT
LH RAMP ACTUATOR
RH RAMP ACTUATOR
LH SPIDER ARM
RH SPIDER ARM
RH VERT. LOAD
LH VERT. LOAD

PREPARED BY DTM
DATE 9-9-65
CHECKED BY JWR

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE: 9-8-65

FLIGHT 178 DROP NO 43

SHEET 9 OF 14

CARGO WTS. ③ 20,565 LBS
④ 5055 LBS

NOTE:
SEE FIGURE F-8B SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

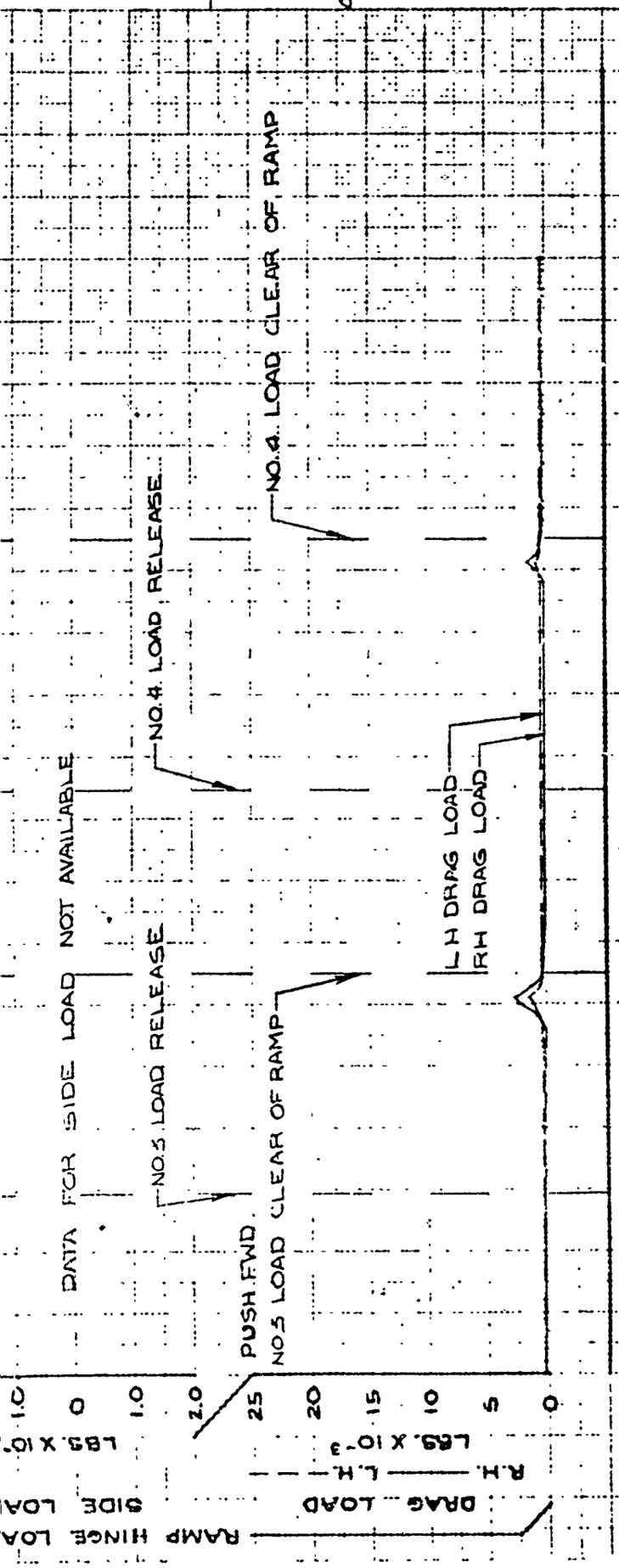


FIGURE F-8J

6009
AD$160.K
JOB NO. 85 SUB. CODE 4.2.1
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X10-3
LH
RH
7 6 5 4 3 2 1 0 1
COMPRESSION
VERTICAL BENDING ~ FS 156.3
INCH-LBS. X 10-6
4 3 2 1 0 1 2 3 4 5
DOWN LOAD
LH PETAL DOOR ACTUATOR
RH PETAL DOOR ACTUATOR
NO. 2 LOAD RELEASE
M1@FS 156.3
NO. 2 LOAD CLEAR OF RAMP
NO. 1 LOAD RELEASE

PREPARED BY DTM
DATE 9-9-65
CHECKED BY JHP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 9-8-65

FLIGHT 178 DROP NO 43

SHEET 11 OF 14

CARGO WT. ① 10,465 LBS.
② 35,025 LBS.

NOTE:
SEE FIGURE F-8A SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

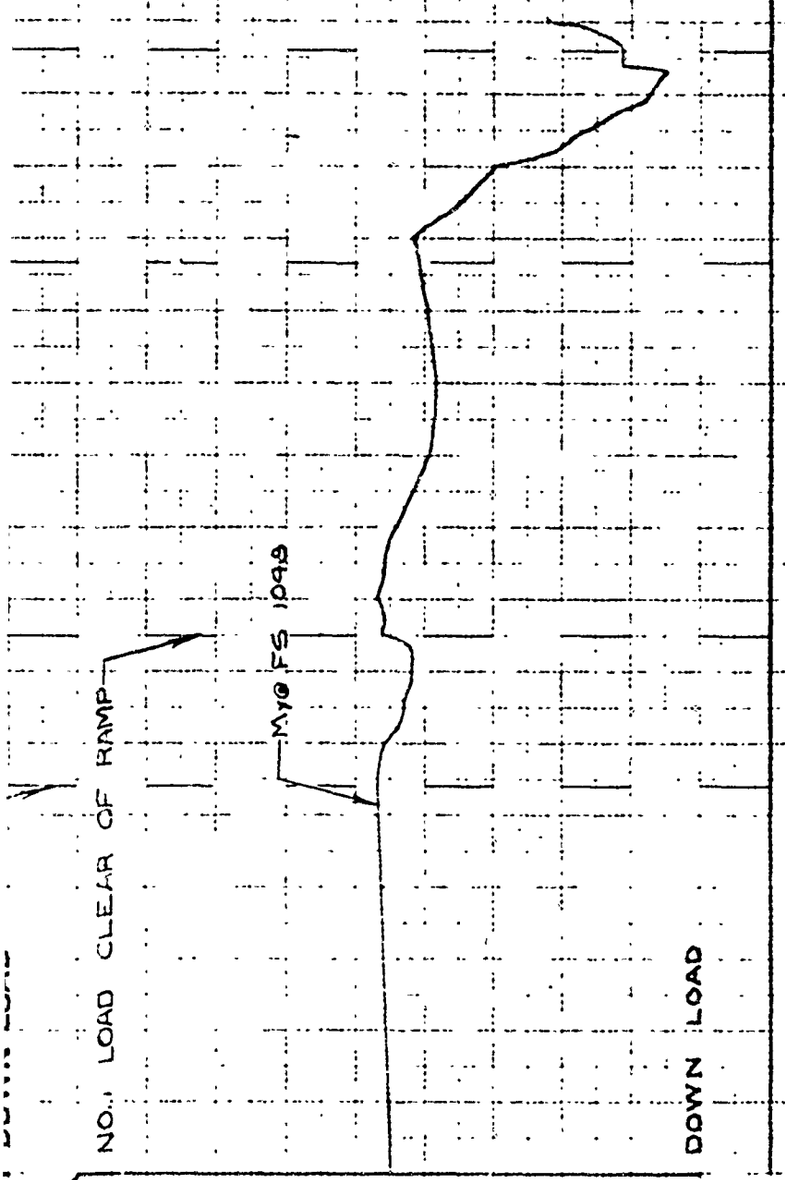
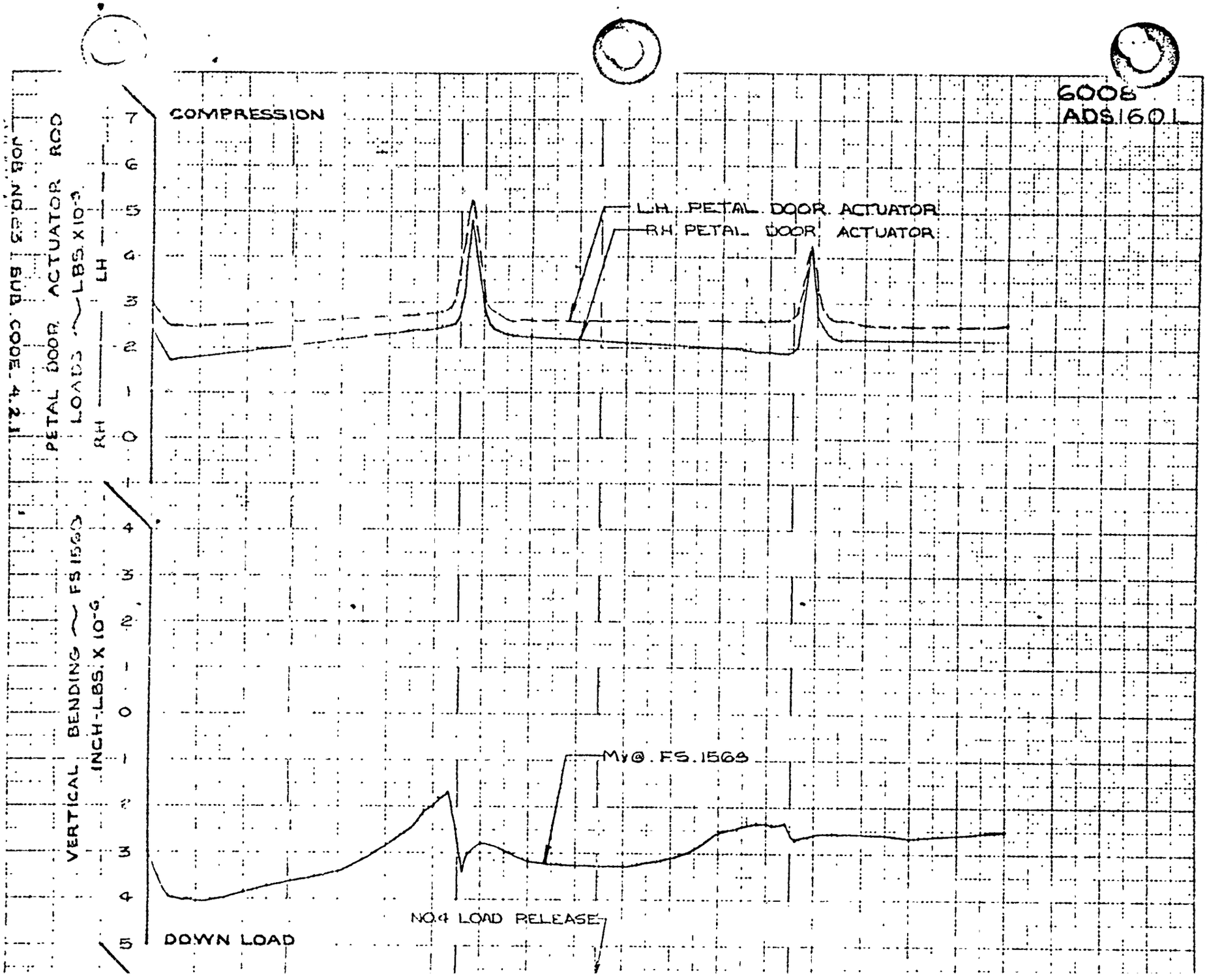


FIGURE F-8K

6008
ADS160.K


6008
ADS1601
JOB NO. 63 SUB CODE 4.2.1
PETAL DOOR ACTUATOR ROD LOADS ~ LBS. X 10⁻³
RH
LH
COMPRESSION
L.H. PETAL DOOR ACTUATOR
R.H. PETAL DOOR ACTUATOR
VERTICAL BENDING ~ FS 1569 INCH-LBS. X 10⁻³
My @ FS. 1569
NO.4 LOAD RELEASE
DOWN LOAD

PREPARED BY DTM
DATE 9-9-65
CHECKED BY DMP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
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TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE 9-8-65

FLIGHT 178 DROP NO 43

SHEET 12 OF 14

CARGO WT @ 20,565 LBS.
@ 5,055 LBS.

NOTE:
SEE FIGURE F-8B SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

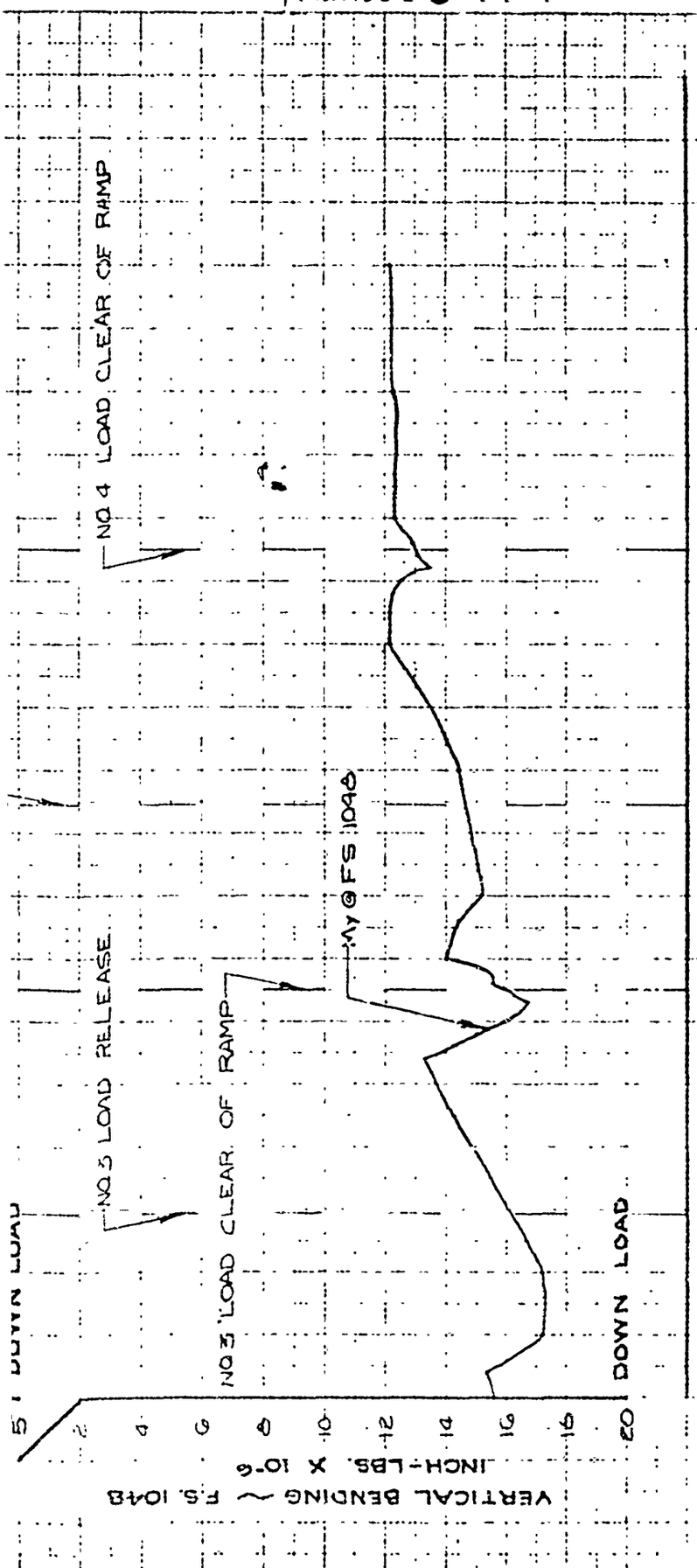


FIGURE F-8L

JOB NO. 83 SUB. CODE 4.2.1

DTM
8-9-65

ER 5473
C-141A
F-76

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

TEST DATE: 9-8-65

FLIGHT 178 DROP NO. 43

CARGO WTS ① 10,465 LBS
② 35,025 LBS

NOTE:
SEE FIGURE E-8A SHEET 1 OF 14 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

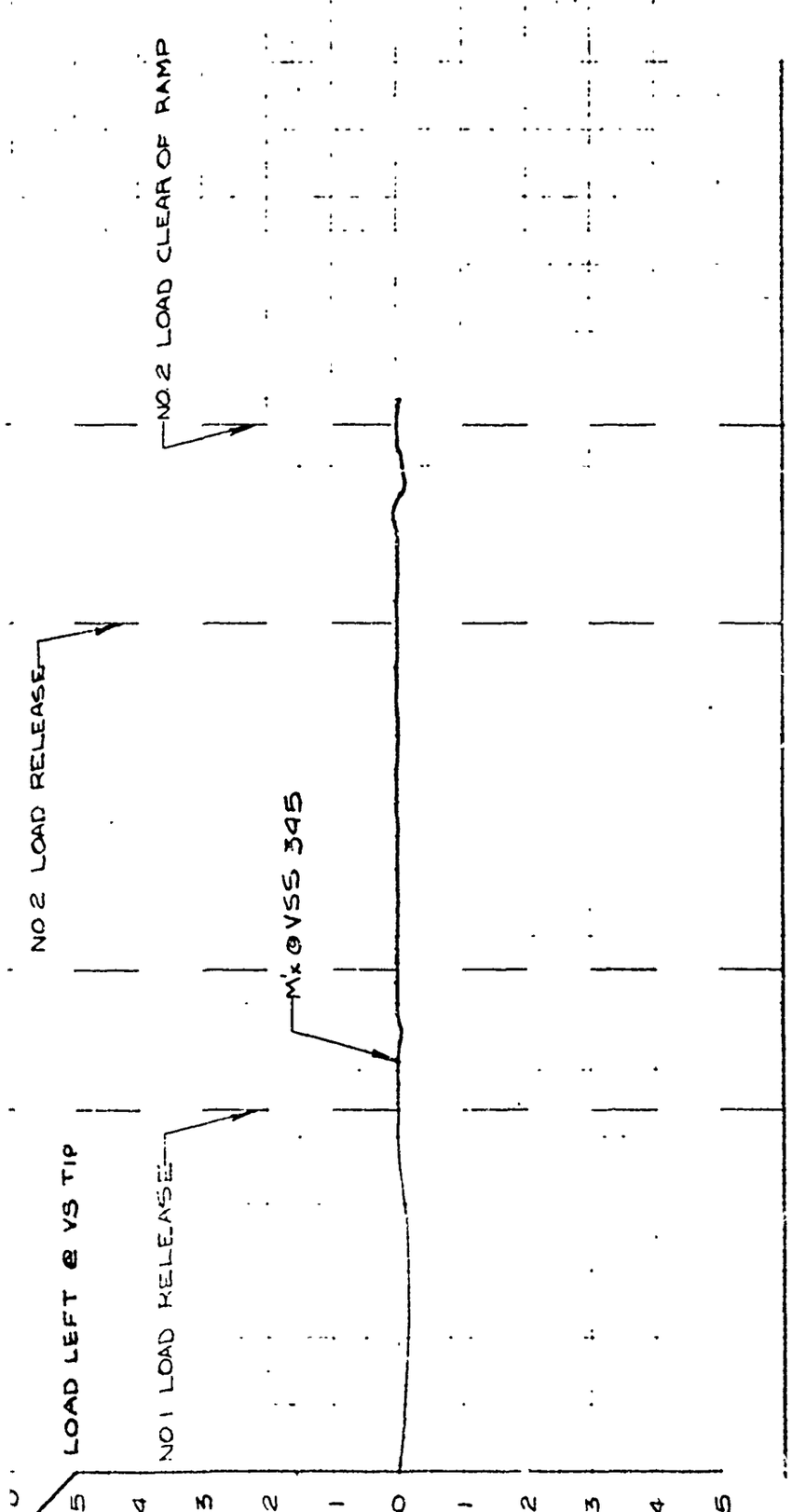


FIGURE E-8M

JOB NO. 65 SUB. CODE 4.2.1

DTM
9-9-65

ER 5473
C-141A
F-77

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077 LAC 6008

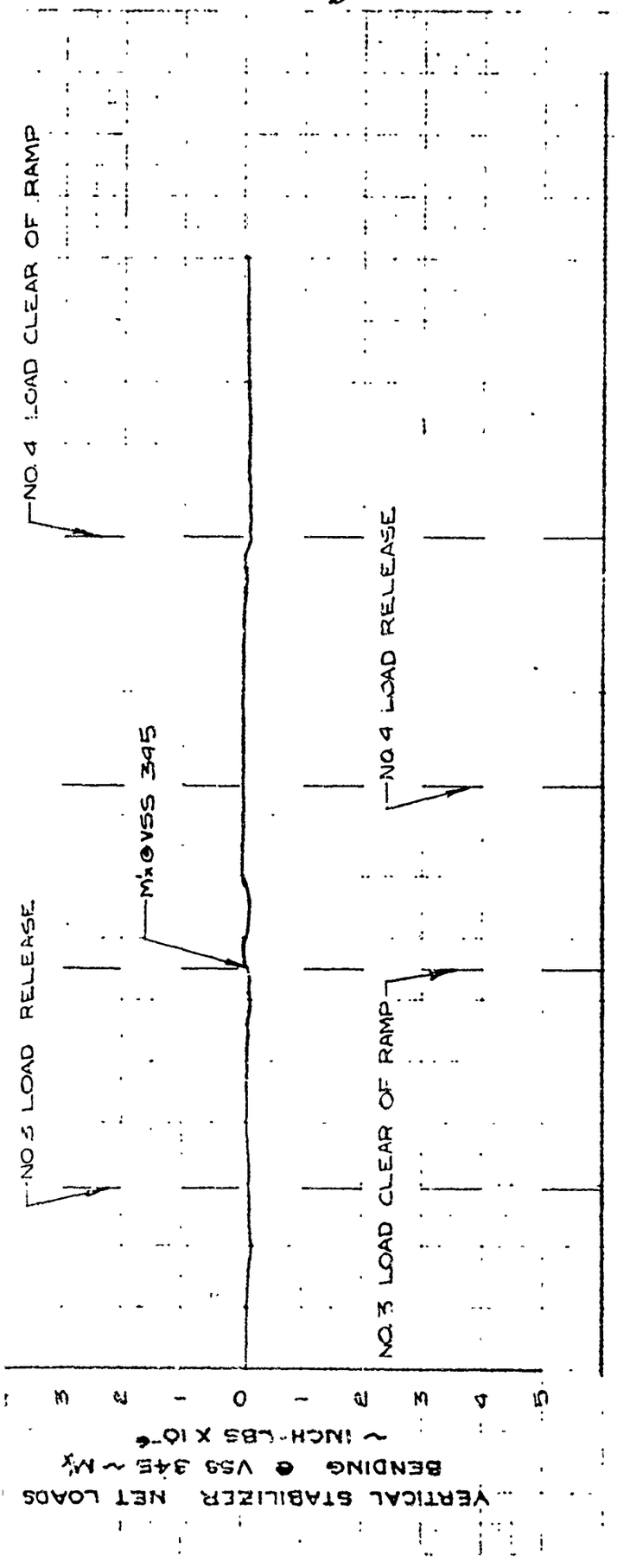
TEST DATE: 9-8-65

FLIGHT 178 DROP NO. 43

SHEET 14 OF 14

CARGO WT @ 20,565 LBS.
@ 5,055 LBS.

NOTE:
SEE FIGURE F-8S SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.



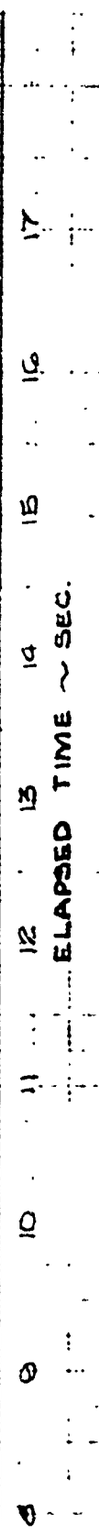


FIGURE F-8N

6008
ADS 160N