NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Western Pacific Regional Office
Gardena, CA 90248

June 10, 2009

FIELD NOTES

I concur that the content of the following "Field Notes" document generated during the field phase of the investigation involving the weighing of the Carson Sikorsky S-61N long-body helicopters accurately reflects the information gathered during the field phase of the investigation.

Signature:_____Date: _____
Zoë Keliher
NTSB – Air Safety Investigator (Field)

Signature:_____Date: _____
Levi Phillips
Carson Helicopters Services, Inc.

Signature:_____Date: _____
Jim Morrison
United States Forest Service

A. ACCIDENT

NTSB Accident Number:	LAX08PA259
Location:	Weaverville, California
Date:	August 05, 2008
Time:	1950 Pacific Daylight Time
Aircraft:	Sikorsky S-61N

B. SUMMARY:

On August 5, 2008, about 1941 Pacific daylight time, a Sikorsky S-61N helicopter, N612AZ, impacted trees and crashed near Weaverville, California, during takeoff. The airline transport pilot, the safety crewmember, and seven passengers were killed; the commercial copilot and three passengers were seriously injured. Impact forces and a postcrash fire destroyed the helicopter. The helicopter was operated by the United States Forest Service (USFS) as a public use flight. The helicopter was registered to Carson Helicopters, Inc., (CHI) of Perkasie, Pennsylvania, and leased to Carson Helicopter Services, Inc., of Grants Pass, Oregon. The USFS had contracted with CHI for helicopter services. Visual meteorological conditions prevailed at the time of the accident, and a company visual flight rules flight plan had been filed.

C. DETAILS OF THE INVESTIGATION:

1. Description:

Investigators attempted to weigh the helicopter in accordance with the Naval Air Training and Operating Procedures Standardization Program I (NATOPS) NavAir 01-1B-50 Technical Manual. The helicopter could not be weighed according to the procedure specified due to either erroneous placement of the plumb-bob attached fitting (upper fuselage) of the floor board reference point. Therefore, in an effort to level the helicopter and configure it in the same known attitude, bubble levels were used near the floor board reference.

2. Examination:

Investigators observed the helicopter to be weighed in a dry hangar at the USFS facilities in Ogden, Utah on June 10, 2009. The helicopter was registration N1043T (serial 61083) and was registered as an S-61A model. The helicopter was owned by Croman Corporation and Leased by Construction Helicopters.

The NATOPS pre-weighing checklist was complied with prior to the weighing procedure. The helicopter was cleaned a dry. In accordance with the NATOPS the hydraulic fluid and oil was serviced (full); the fuel tanks were drained (with the exception of the unusable fuel noted). The main rotor blades were positioned in accordance with the NATOPS, with one blade over the fuselage. All extraneous equipment was removed.

Croman Owned Scales

Field Notes
Carson Helicopters- Weight and Balance
Page number 3 of 10

The scales utilized in the weighing were of the jack-point type (electronic load set kit) and labeled as follows:

Manufacturer: Revere Corporation of America
Part Number: C-55800-3-5
Serial Number: 5356A

Cell #1: s/n: 707773F Left (Red)
Cell #2: s/n 797886 Right (Blue)
Cell #3: s/n 797825 Tail (Yellow)

A calibration date was noted as July 17, 2008, with a due date of July 17, 2009.

The helicopter was initially jacked to a 1.8° nose-high configuration (+0.4° right down) with the cup attachments and floating jack stands. With the helicopter jacked, the previously rigged plumb-bob was aligned to the scale reference affixed on the floor of the aft fuselage [as designed originally by Sikorsky a scale is located for weighing purposes adjacent to the right aft fuselage doorway]. The alignment could not reach the zero reference without the helicopter being configured in an extreme nose-high attitude, and read about 3.75 inches forward.

The weights were taken at the 1.8° nose-high configuration (+0.4° right down) and recorded as follows:

LEFT (Red)	3897
RIGHT (Blue)	4131
TAIL (Yellow)	2563
TOTAL	10591

Figure 01: Weighing 1(with attachment cups; with floating jack stands)

Following the weighing recordation, the helicopter was lowered to the ground and the scales were zeroed. The helicopter was then lifted to just above the hangar surface. The configuration was recorded as 0.1° nose-high (-0.3° left down) with the cup attachments and floating jack stands. The second weights were recorded as follows:

LEFT (Red)	4082
RIGHT (Blue)	4014
TAIL (Yellow)	2513
TOTAL	10609

Figure 02: Weighing 2(with attachment cups; with floating jack stands)

Investigators recorded the weights and continued to jack the helicopter to the 1.8° nose-high configuration, with a lateral measurement of +0.6° right down (still utilizing the cup attachments and floating jack stands). The third weights were recorded as follows:

LEFT (Red)	3916
RIGHT (Blue)	4094
TAIL (Yellow)	2581
TOTAL	10591

Figure 03: Weighing 3(with attachment cups; with floating jack stands)

The helicopter was again lowered to the ground and the scales were zeroed. The helicopter was then lifted to just above the hangar surface in an effort to replicate the second weighing. The configuration was recorded as 0.1° nose-high (-0.3° left down) with the cup attachments and floating jack stands. The fourth weights were recorded as follows:

LEFT (Red)	4094
RIGHT (Blue)	3996
TAIL (Yellow)	2515
TOTAL	10605

Figure 04: Weighing 4 (with attachment cups; with floating jack stands)

Investigators continued to jack the helicopter and at 2.2° nose-high (+0.4° right down) with the attachment cups and floating jack stands, the weights were recorded as:

LEFT (Red)	3897
RIGHT (Blue)	4097
TAIL (Yellow)	2591
TOTAL	10585

Figure 05: Weighing 5(with attachment cups; with floating jack stands)

Investigators lowered the helicopter to better replicate the configuration of weighings 1 and 3 and obtained a configuration of 1.8° nose-high (+0.4° left down). The weighing was recorded as follows:

LEFT (Red)	4069
RIGHT (Blue)	3945
TAIL (Yellow)	2578
TOTAL	10592

Figure 06: Weighing 6(with attachment cups; with floating jack stands)

The helicopter was lowered to the ground and investigators removed the attachment cups in an effort to simulate the weighings performed in Redmond. The helicopter was then jacked to a 0.1° nose-high (-0.3° left down) configuration (the floating jack stands were utilized). The weights were recorded as follows:

LEFT (Red)	4077
RIGHT (Blue)	4027
TAIL (Yellow)	2520
TOTAL	10624

Figure 07: Weighing 7(without attachment cups; with floating jack stands)

The helicopter was raised to the 1.7° nose-high (+0.6° left down) configuration and the weights were recorded as follows:

LEFT (Red)	3909
RIGHT (Blue)	4128
TAIL (Yellow)	2559
TOTAL	10596

Figure 08: Weighing 8(without attachment cups; with floating jack stands)

The helicopter was lowered to the ground and subsequently jacked it to a 0.1° nose-high (-0.3° left down) configuration (the floating jack stands were utilized). The weights were recorded as follows:

LEFT (Red)	4077
RIGHT (Blue)	4032
TAIL (Yellow)	2521
TOTAL	10630

Figure 09: Weighing 9(without attachment cups; with floating jack stands)

The helicopter was raised to a 1.8° nose-high (+0.3° left down) configuration and the weights were recorded as follows:

LEFT (Red)	3949
RIGHT (Blue)	4098
TAIL (Yellow)	2545
TOTAL	10592

Figure 10: Weighing 10(without attachment cups; with floating jack stands)

The helicopter was set down and rigid jacks were used without the attachment cups, to simulate the Redding weighing equipment. In the 0.1° nose-high (-0.3° left down) configuration the weights were recorded as follows:

LEFT (Red)	4033
RIGHT (Blue)	4096
TAIL (Yellow)	2496
TOTAL	10625

Figure 11: Weighing 11(without attachment cups; with rigid jack stands)

Investigators continued to raise the helicopter to a 1.8° nose-high (+0.4° left down) configuration and the weights were recorded as follows:

LEFT (Red)	3973
RIGHT (Blue)	4064
TAIL (Yellow)	2565
TOTAL	10602

Figure 12: Weighing 12(without attachment cups; with rigid jack stands)

The helicopter was lowered to the ground and the scales were zeroed. The helicopter was raised to the 1.7° nose-high (+0.6° left down) configuration and the weights were recorded as follows:

LEFT (Red)	4047
RIGHT (Blue)	4062
TAIL (Yellow)	2517
TOTAL	10626

Figure 13: Weighing 13(without attachment cups; with rigid jack stands)

The helicopter was raised to a 1.8° nose-high (+0.4° left down) configuration and the weights were recorded as follows:

LEFT (Red)	4090
RIGHT (Blue)	3977
TAIL (Yellow)	2526
TOTAL	10593

Figure 14: Weighing 14(without attachment cups; with rigid jack stands)

The helicopter was set down and the scale was changed to the USFS scale that was used in Redmond.

The scales utilized in the weighing were of the jack-point type (electronic load set kit) and labeled as follows:

Manufacturer: Vishay
Part Number: 8500914-01
Serial Number: S190038H

Cell #1: s/n: R406391 Left (Red)
Cell #2: s/n R406394 Right (Blue)
Cell #3: s/n R406393 Tail (Yellow)

A calibration date was noted as January 07, 2009, with a due date of January 07, 2010.

In the 0.1° nose-high (-0.3° left down) configuration the weights were recorded as follows:

LEFT (Red)	4056
RIGHT (Blue)	4032
TAIL (Yellow)	2508
TOTAL	10596

Figure 15: Weighing 15(without attachment cups; with rigid jack stands)

Investigators continued to raise the helicopter to a 1.8° nose-high (+0.4° left down) configuration and the weights were recorded as follows:

LEFT (Red)	4051
RIGHT (Blue)	3988
TAIL (Yellow)	2542
TOTAL	10581

Figure 16: Weighing 16(without attachment cups; with rigid jack stands)

The helicopter was lowered to the ground and the scales were zeroed. The helicopter was raised to the 0.1 ° nose-high (-0.2° right down) configuration and the weights were recorded as follows:

LEFT (Red)	4062
RIGHT (Blue)	4018
TAIL (Yellow)	2513
TOTAL	10593

Figure 17: Weighing 17(without attachment cups; with rigid jack stands)

The helicopter was raised to a 1.8° nose-high (+0.4° left down) configuration and the weights were recorded as follows:

LEFT (Red)	4029
RIGHT (Blue)	3997
TAIL (Yellow)	2562
TOTAL	10588

Figure 18: Weighing 18(without attachment cups; with rigid jack stands)

The helicopter was lowered to the ground and the scales were zeroed with the cup attachment fittings installed. The helicopter was raised to the 0.1 ° nose-high (-0.0° no side down) configuration and the weights were recorded as follows:

LEFT (Red)	4015
RIGHT (Blue)	4052
TAIL (Yellow)	2525
TOTAL	10592

Figure 19: Weighing 19(with attachment cups; with rigid jack stands)

The helicopter was raised to the 1.7° nose-high (+0.4° left down) configuration and the weights were recorded as follows:

LEFT (Red)	4015
RIGHT (Blue)	4052
TAIL (Yellow)	2525
TOTAL	10592

Figure 20: Weighing 20 (with attachment cups; with rigid jack stands)

The helicopter was lowered to the ground and subsequently raised to the 0.1° nose-high (-0.2° left down) configuration and the weights were recorded as follows:

LEFT (Red)	4108
RIGHT (Blue)	4007
TAIL (Yellow)	2483
TOTAL	10598

Figure 21: Weighing 21 (with attachment cups; with rigid jack stands)

In an effort to obtain a record for a nose-low configuration, investigators 1.8° nose-high (-0.1° left down) configuration and the weights were recorded as follows:

LEFT (Red)	4120
RIGHT (Blue)	4021
TAIL (Yellow)	2430
TOTAL	10571

Figure 22: Weighing 22 (with attachment cups; with rigid jack stands)

That helicopter was then configured to a 0.4° nose-high (-2.0° left down) attitude without attachment cups, on e rigid jacks. The weights were as follows:

LEFT (Red)	4296
RIGHT (Blue)	3789
TAIL (Yellow)	2485
TOTAL	10570

Figure 23: Weighing 23 (without attachment cups; with rigid jack stands)

The helicopter was further jacked for the left side down and configures 0.5° nose-high (-3.0° left down) without attachment cups and rigid jacks. The weights were as follows:

LEFT (Red)	4422
RIGHT (Blue)	3630
TAIL (Yellow)	2495
TOTAL	10547

Figure 24: Weighing 24 (without attachment cups; with rigid jack stands)

Completed 06-10

CROMAN SCALES (Revere C-55800-3-5)

1.8° nose-high (0.4° right down) With Cups (Floating Jacks)

LEFT (Red)	3897
RIGHT (Blue)	4131
TAIL (Yellow)	2563
TOTAL	10591

1.8° nose-high (0.6° right down) With Cups (Floating Jacks)

LEFT (Red)	3916
RIGHT (Blue)	4094
TAIL (Yellow)	2581
TOTAL	10591

1.8° nose-high (0.4° right down) With Cups (Floating Jacks)

LEFT (Red)	4069
RIGHT (Blue)	3945
TAIL (Yellow)	2578
TOTAL	10592

1.7° nose-high (0.6° right down) Without Cups (Floating Jacks)

LEFT (Red)	3909
RIGHT (Blue)	4128
TAIL (Yellow)	2559
TOTAL	10596

1.8° nose-high (0.3° right down) Without Cups (Floating Jacks)

LEFT (Red)	3949
RIGHT (Blue)	4098
TAIL (Yellow)	2545
TOTAL	10592

1.8° nose-high (0.4° right down) Without Cups (Rigid Jacks)

LEFT (Red)	3973
RIGHT (Blue)	4064

TAIL (Yellow) 2565

TOTAL 10602

1.8° nose-high (0.4° right down) Without Cups (Rigid Jacks)

LEFT (Red) 4090
RIGHT (Blue) 3977
TAIL (Yellow) 2526

TOTAL 10593

2.2° nose-high (0.4° right down) With Cups (Floating Jacks)

LEFT (Red) 3897
RIGHT (Blue) 4097
TAIL (Yellow) 2591

TOTAL 10585

0.1° nose-high (-0.3° left down) With Cups (Floating Jacks)

LEFT (Red) 4082
RIGHT (Blue) 4014
TAIL (Yellow) 2513

TOTAL 10609

0.1° nose-high (-0.3° left down) With Cups (Floating Jacks)

LEFT (Red) 4094
RIGHT (Blue) 3996
TAIL (Yellow) 2515

TOTAL 10605

0.1° nose-high (-0.3° left down) Without Cups (Floating Jacks)

LEFT (Red) 4077
RIGHT (Blue) 4027
TAIL (Yellow) 2520

TOTAL 10624

0.1° nose-high (-0.3° left down) Without Cups (Floating Jacks)

LEFT (Red) 4077

RIGHT (Blue) 4032
TAIL (Yellow) 2521

TOTAL 10630

0.1° nose-high (-0.3° left down) Without Cups (Rigid Jacks)

LEFT (Red) 4033
RIGHT (Blue) 4096
TAIL (Yellow) 2496

TOTAL 10625

0.1° nose-high (-0.3° left down) Without Cups (Rigid Jacks)

LEFT (Red) 4047
RIGHT (Blue) 4062
TAIL (Yellow) 2517

TOTAL 10626

USFS SCALES (Vishay 8500914-01)

1.8° nose-high (0.4° right down) Without Cups (Rigid Jacks)

LEFT (Red) 4051
RIGHT (Blue) 3988
TAIL (Yellow) 2542

TOTAL 10581

1.8° nose-high (0.4° right down) Without Cups (Rigid Jacks)

LEFT (Red) 4029
RIGHT (Blue) 3997
TAIL (Yellow) 2562

TOTAL 10588

1.7° nose-high (0.4° right down) With Cups (Rigid Jacks)

LEFT (Red) 4063
RIGHT (Blue) 3956
TAIL (Yellow) 2562

TOTAL 10581

1.8° nose-low (-0.1° left down) Without Cups (Rigid Jacks)

LEFT (Red)	4120
RIGHT (Blue)	4021
TAIL (Yellow)	2430
TOTAL	10571

0.1° nose-high (-0.2° left down) Without Cups (Rigid Jacks)

LEFT (Red)	4056
RIGHT (Blue)	4032
TAIL (Yellow)	2508
TOTAL	10596

0.1° nose-high (-0.2° left down) Without Cups (Rigid Jacks)

LEFT (Red)	4062
RIGHT (Blue)	4018
TAIL (Yellow)	2513
TOTAL	10593

0.1° nose-high (-0.0° no side down) With Cups (Rigid Jacks)

LEFT (Red)	4015
RIGHT (Blue)	4052
TAIL (Yellow)	2525
TOTAL	10592

0.1° nose-high (-0.2° left down) With Cups (Rigid Jacks)

LEFT (Red)	4108
RIGHT (Blue)	4007
TAIL (Yellow)	2483
TOTAL	10598

0.4° nose-high (-2.0° left down) Without Cups (Rigid Jacks)

LEFT (Red)	4296
RIGHT (Blue)	3789
TAIL (Yellow)	2485

TOTAL 10570

0.5° nose-high (-3.0° left down) Without Cups (Rigid Jacks)

LEFT (Red)	4422
RIGHT (Blue)	3630
TAIL (Yellow)	2495
TOTAL	10547

Completed 06-11

USFS SCALES (Vishay 8500914-01)

0.0° nose-high (0.0° no side down) Without Cups (Rigid Jacks)

LEFT (Red)	4014
RIGHT (Blue)	4087
TAIL (Yellow)	2493
TOTAL	10594

0.8° nose-high (-0.4° left down) Without Cups (Rigid Jacks)

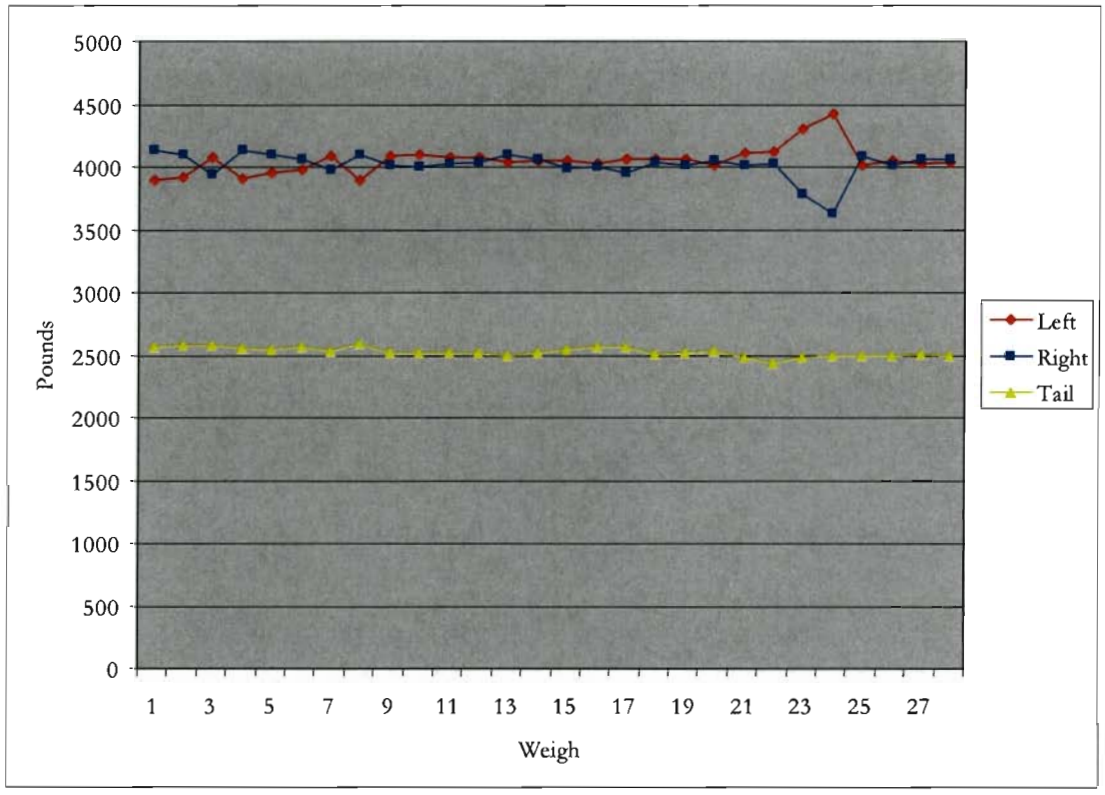
LEFT (Red)	4048
RIGHT (Blue)	4017
TAIL (Yellow)	2490
TOTAL	10555

0.0° nose-high (0.0° no side down) Without Cups (Rigid Jacks)

LEFT (Red)	4028
RIGHT (Blue)	4063
TAIL (Yellow)	2503
TOTAL	10594

0.0° nose-high (0.0° no side down) Without Cups (Rigid Jacks)

LEFT (Red)	4031
RIGHT (Blue)	4062
TAIL (Yellow)	2500
TOTAL	10593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4500
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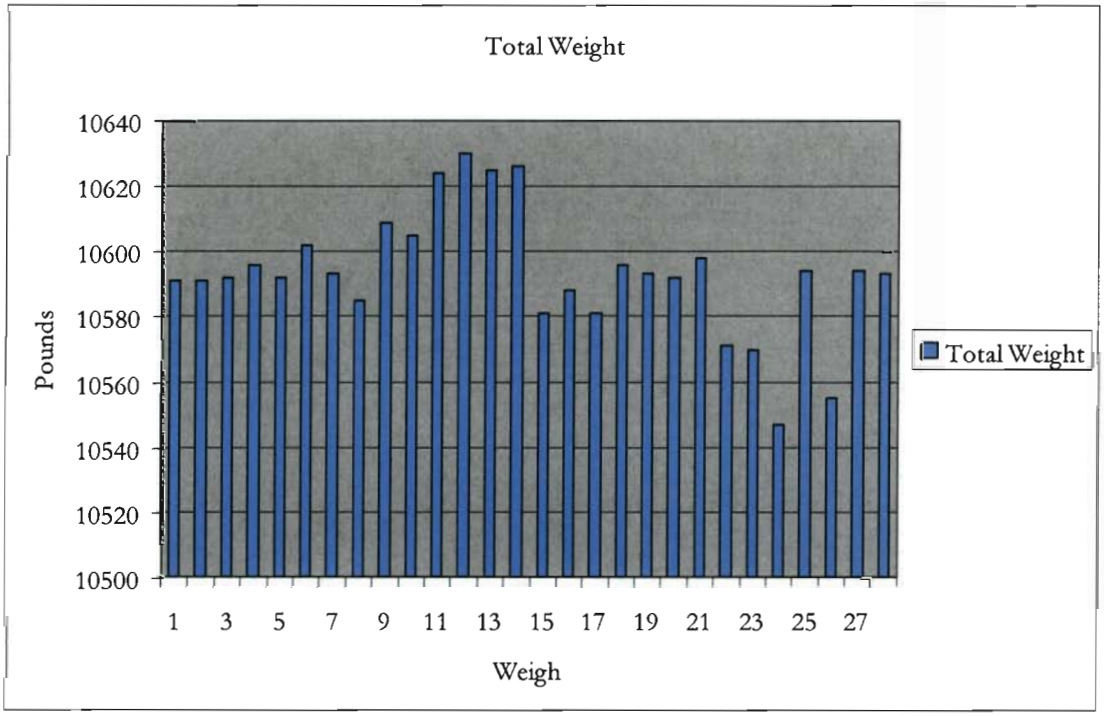
Weigh
Left
Right
Tail


Total Weight
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10620
10600
10580
10560
10540
10520
10500
Pounds
1 3 5 7 9 11 13 15 17 19 21 23 25 27
Weigh
Total Weight

	CROMAN SCALES (Revere C-55800-3-5)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CUPS	1.8 (c;fj)	1.8 (c;fj)	1.8 (c;fj)	1.7 (nc;fj)	1.8 (nc;fj)	1.8 (nc; rj)	1.8 (nc; rj)	2.2 (c;fj)	0.1 (c;fj)	0.1(c;fj)	0.1(nc;fj)	0.1(nc;fj)	0.1 (nc; rj)	0.1 (nc; rj)
LEFT (Red)	3897	3916	4069	3909	3949	3973	4090	3897	4082	4094	4077	4077	4033	4047
RIGHT (Blue)	4131	4094	3945	4128	4098	4064	3977	4097	4014	3996	4027	4032	4096	4062
TAIL (Yellow)	2563	2581	2578	2559	2545	2565	2526	2591	2513	2515	2520	2521	2496	2517
TOTAL	10591	10591	10592	10596	10592	10602	10593	10585	10609	10605	10624	10630	10625	10626

	USFS SCALES (Vishay)							nose low	left down	left down	next day	next day	next day	next day
	15	16	17	18	19	20	21	22	23	24	25	26	27	28
CUPS	1.8 (nc;fj)	1.8 (nc;fj)	1.7 (c;fj)	0.1 (nc; rj)	0.1 (nc; rj)	0.1 (c; rj)	0.1 (nc; rj)	1.8 (nc; rj)	0.4 (nc; rj)	0.5 (nc; rj)	0.0 (nc; rj)	1.8 (nc; rj)	0.0 (nc; rj)	0.0 (nc; rj)
LEFT (Red)	4051	4029	4063	4056	4062	4015	4108	4120	4296	4422	4014	4048	4028	4031
RIGHT (Blue)	3988	3997	3956	4032	4018	4052	4007	4021	3789	3630	4087	4017	4063	4062
TAIL (Yellow)	2542	2562	2562	2508	2513	2525	2483	2430	2485	2495	2493	2490	2503	2500
TOTAL	10581	10588	10581	10596	10593	10592	10598	10571	10570	10547	10594	10555	10594	10593
								NON-STANDARD						

Seemingly Level (dies not include weigh 22, 23, 24)

Ave	10597.04
Min	10555
Max	10630
Delta (min/max)	75
Standard Deviation	16.32095

WASHINGTON, DC 20361

IN REPLY REFER TO
13060
AIR-5222C1/91-057

JUL 1 1991

From: Commander, Naval Air Systems Command
To: Distribution

Subj: MODEL SH-3D/H, WEIGHT AND BALANCE CHART E, REVISION TO

Encl: Revised pages for Weight and Balance Chart E Model SH-3D/H

1. The revision of pages 15, 16, and 17 of the SH-3D/H Chart E concerning externally mounted fuel, external stores, and internal stores, respectively is forwarded as enclosure (1). It is requested that these pages be reproduced and distributed to SH-3D/H custodians under your cognizance.

2. Aircraft custodians are requested to remove the existing pages 15, 16, and 17 from the SH-3D/H Chart E in the Weight and Balance Handbook for each aircraft, and replace them with the enclosed revised pages. The pages removed may be discarded.

3. Any questions on these matters may be forwarded to Paul Kachurak, AIR-5222C1, or Ken Bocam, AIR-5222B2, at (703) 692-7541 or Autovon 222-7541.

[redacted]

D. M. Cate
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6/2/86

AN 01-1B-40

SPECIAL WEIGHING INSTRUCTIONS

1. Aircraft Condition

   A. The basic weight condition is established with wheels down, the rear sliding door closed, the pylon closed, and the main rotor blades in the auto-rotation position. If weighed with the sliding door open, the moment/1000 correction is plus (+) 2. If weighed with the pylon folded; the moment/1000 correction is plus (+) 40.

   NOTE: To achieve auto-rotation position of the main rotor blades remove the rubber boot that encloses the shock absorber and the body of each main rotor damper. Insert S6170-10044 Positioner Tool (5 required) on the piston rod between the shock absorber and the damper body.

2. Fuel & Oil Draining

   A. Defuel in a three-point attitude through the pressure fueling and defueling valve located inside the starboard step at Sta. 351.5, W.L. 90 and B.L. 41.0. The remaining usable fuel is drained by opening the sump drain valves located at Sta. 216.0, 227.1, 316.9 and 328.1, W.L. 80 and Sta. 248.5, W.L. 81. Fuel remaining aboard after draining in the above manner is trapped fuel. (See Chart A for quantity.)

   B. Oil draining is accomplished by draining both the engine oil tanks and the engines. A drain valve is located at the bottom of each engine oil tank at Sta. 184.7, W.L. 186.0, port and starboard B.L. 11.2. The engine oil drain valve is located at approximately Sta. 183, W.L. 182, port and starboard B.L. 14. The oil is drained through a permanent drain line to the underside of the ship. The oil remaining aboard after draining in the above manner is the trapped oil. (See Chart A for quantity.)

   C. If the aircraft is weighed with completely dry fuel and oil systems, the "trapped fuel and oil" weight and moment listed on Chart A shall be added to the "as weighed" condition to obtain the Basic Weight.

3. Leveling

   A. Plumb bob leveling suspension fitting and target are located inside the sliding door opening at Sta. 362.0. See detail on Sheet 11/12 of 32.

   B. When weighing on jack points, place three weighing cells on jacks and position two of them at the forward jack points (Sta. 221.0) and one at the aft jack point (Sta. 459.0). For ease of jacking release the air from the main and tail landing gear struts and compress the struts by the use of rope or cable under the wheel axles and secured to the tie-down fittings located on the struts. Raise the jacks until the wheels are clear and the aircraft is level.

   C. For wheel weighing follow the instructions given in Section III of the basic AN 01-1B-40 Handbook.

AN 01-1B-40

SPECIAL WEIGHING INSTRUCTIONS (CONTINUED)

4. Measuring

A. When weighing on jack points, actual measurements during weighing are not necessary. After leveling, the following dimensions may be inserted directly in the weighing form:

(Fuselage) Forward jack and jig points to reference datum = 221.0.
(Fuselage) Aft jack point to reference datum = 459.0.

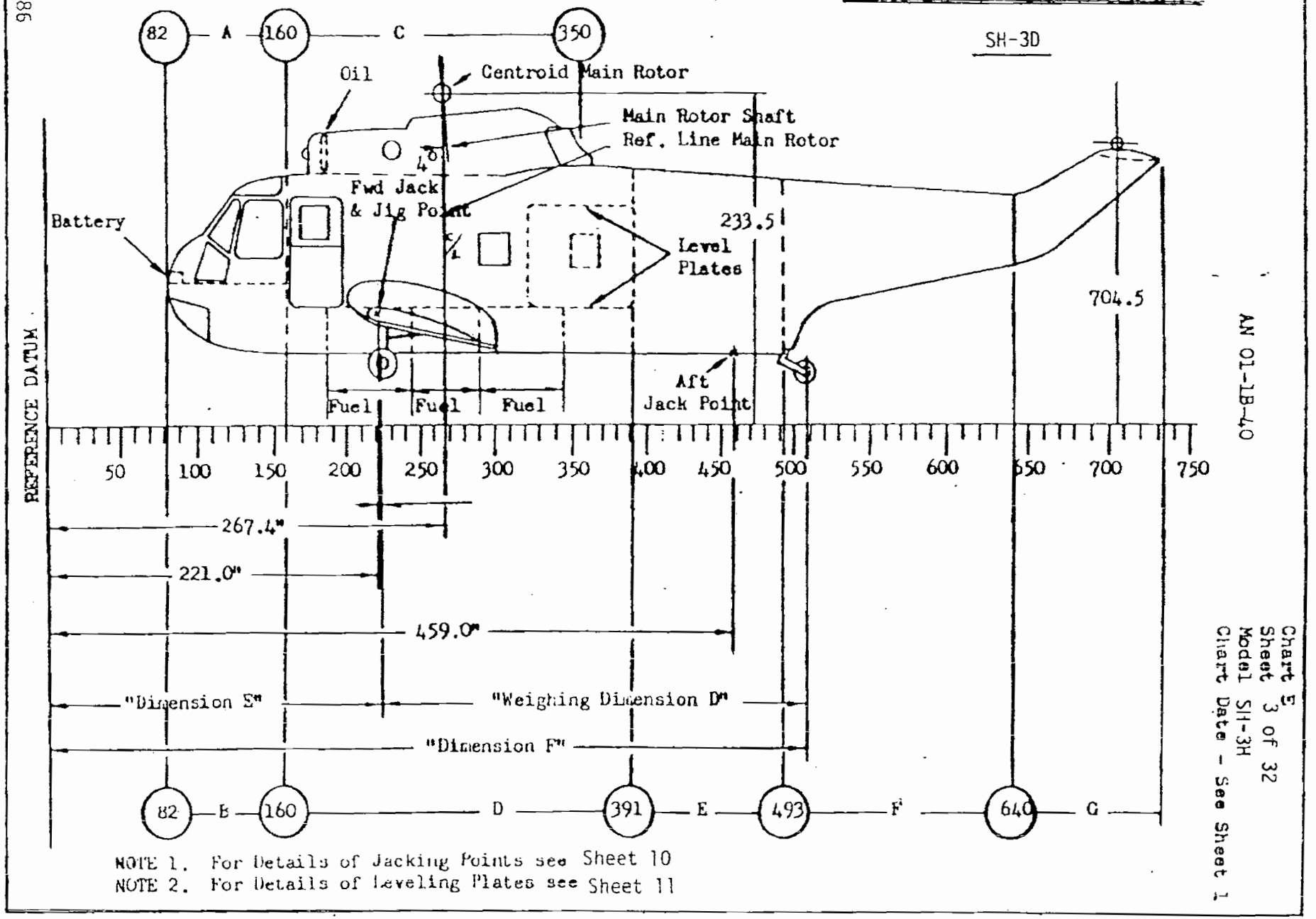
B. When weighing on wheels, measure dimensions "B" and "D" during weighing and after leveling. Using these actual dimensions, and the jig point (Sta. 221.0), determine "E" and "F". For checking purposes, approximate dimensions "E", "F" and "D" are as follows:

Reference datum to ℄ of main wheels. Dimension "E" = 227.0.
Reference datum to ℄ of tail wheel. Dimension "F" = 508.5.
℄ of main wheels to ℄ of tail wheel. Dimension "D" = 281.5.

98/2/9

AIRCRAFT DIAGRAM

SH-3D

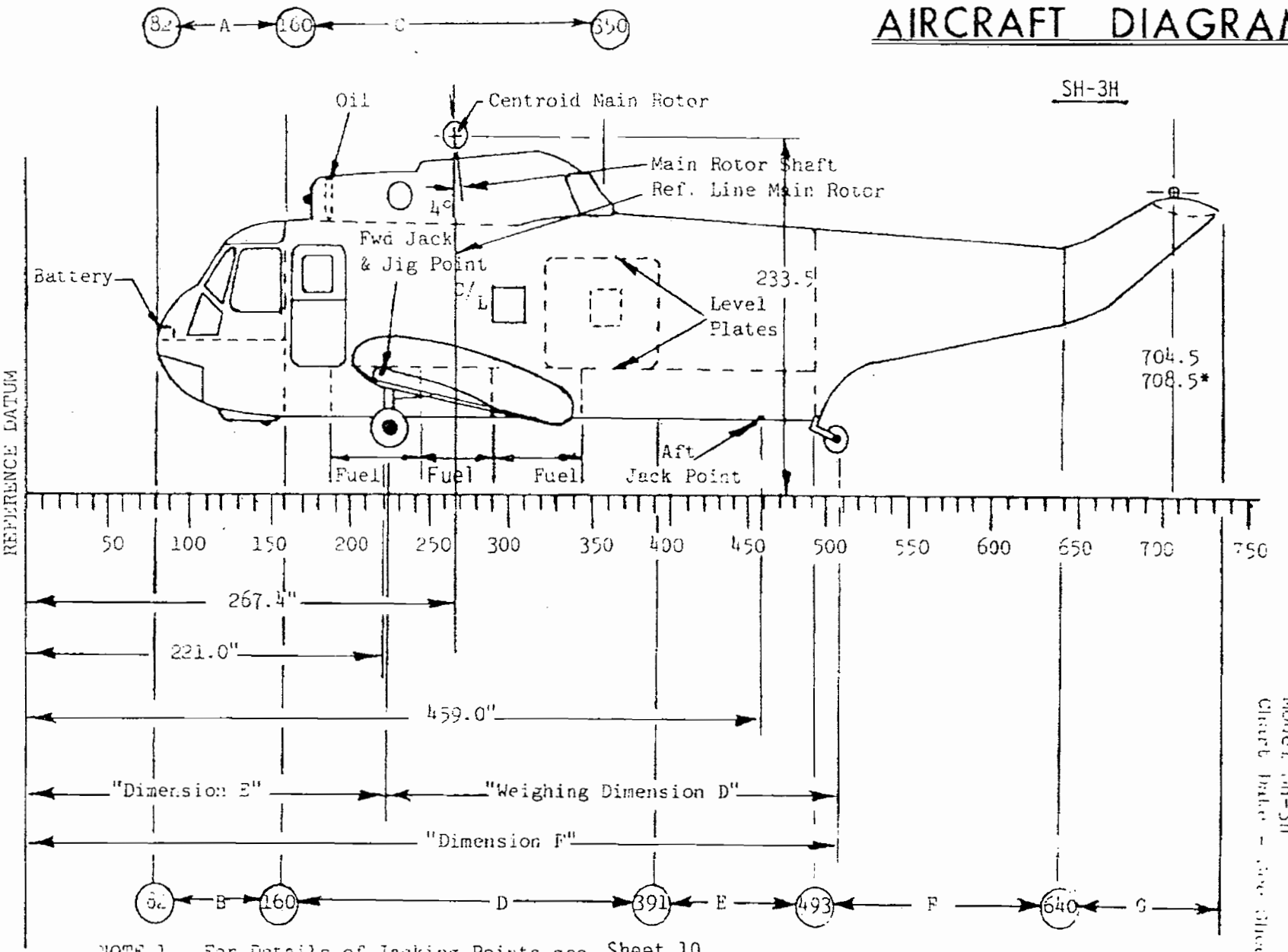


NOTE 1. For Details of Jacking Points see Sheet 10
NOTE 2. For Details of Leveling Plates see Sheet 11

AN 01-1B740

Chart 5
Sheet 3 of 32
Model SH-3H
Chart Date - See Sheet 1

AIRCRAFT DIAGRAM



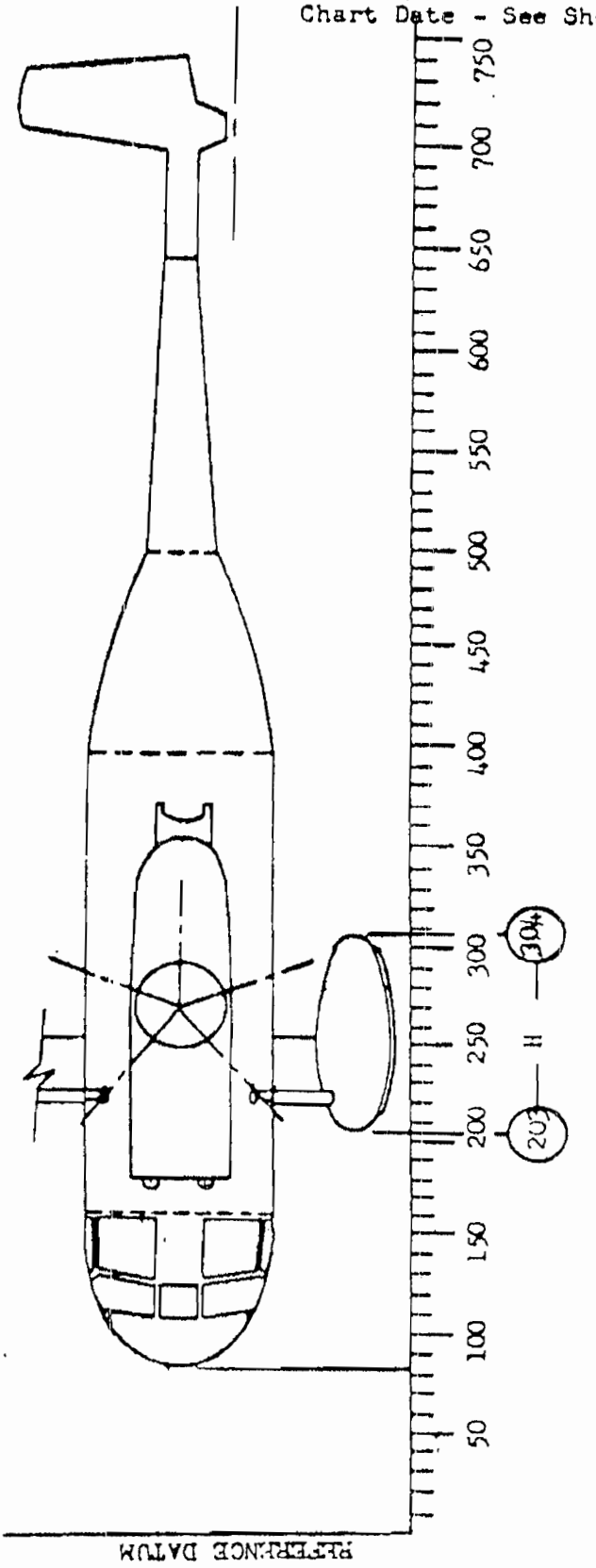
NOTE 1. For Details of Jacking Points see Sheet 10.
NOTE 2. For Details of Leveling Plates see Sheet 12.

*(Applicable to aircraft with AFC 314 "Improved Tail Package," installed.

Chart E
Sheet 5 of 32
Model SH-3H
Chart Date - See Sheet 1

AIRCRAFT DIAGRAM

SH-3D



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AIRCRAFT DIAGRAM

SH-3H

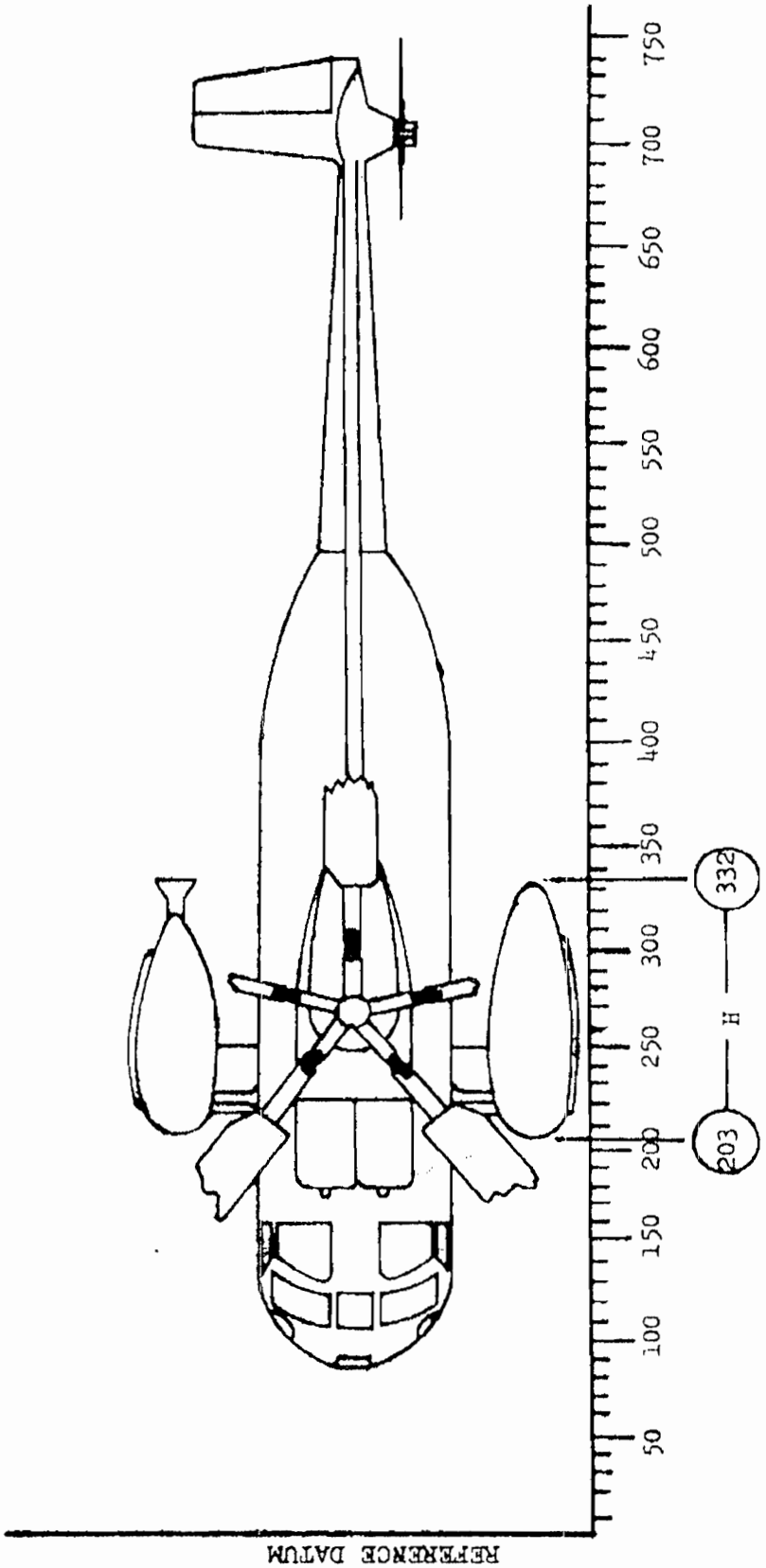

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Chart E
Sheet 7 of 32
Model SH-3H
Chart Date - See Sheet 1

AIRCRAFT DIAGRAM

SH-3D

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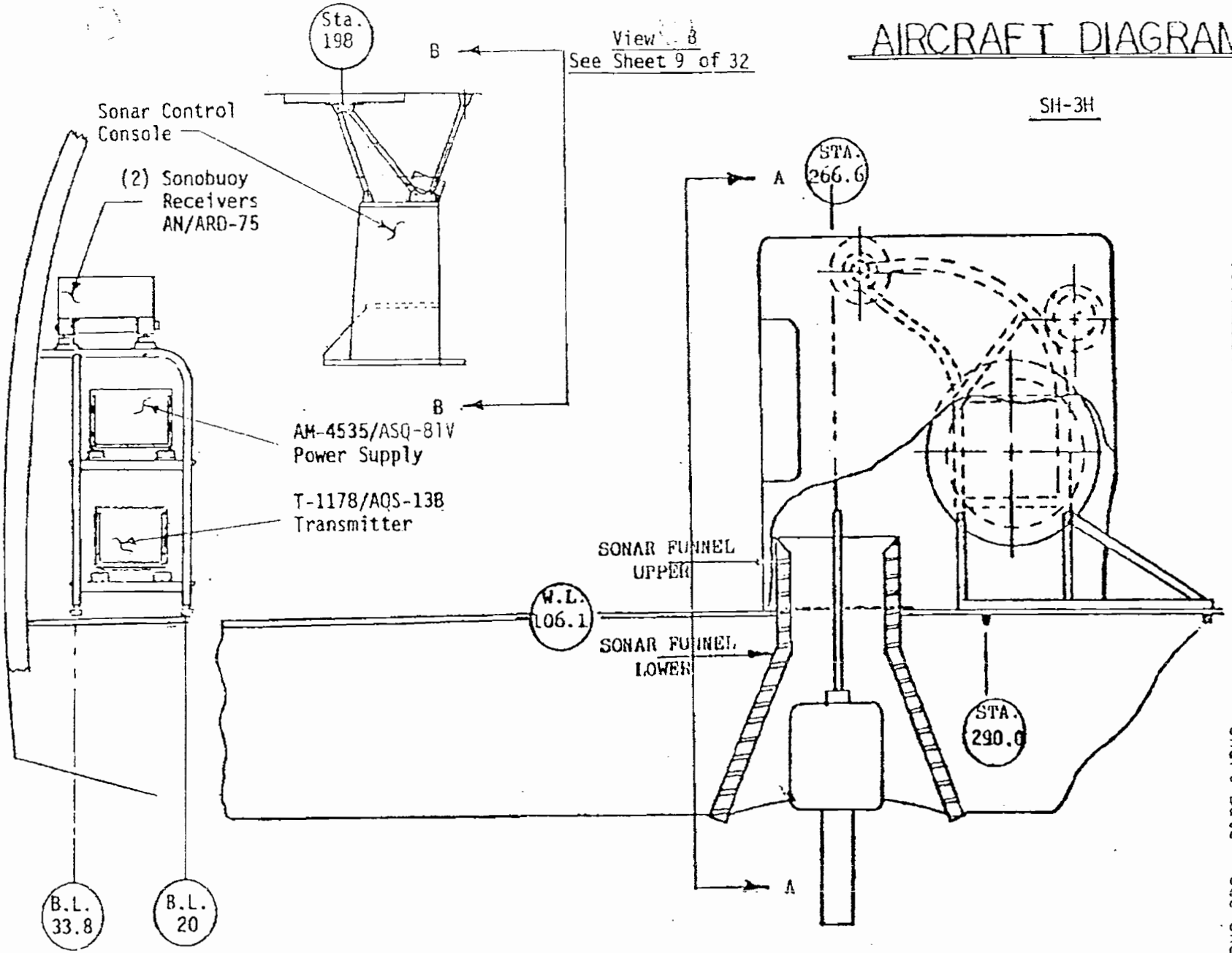
AIRCRAFT DIAGRAM

SH-3H



View A-A
Looking at Equipment Rack @ Sta. 276

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Chart E
Sheet 8 of 32
Model SH-3H
Chart Date - See Sheet 1

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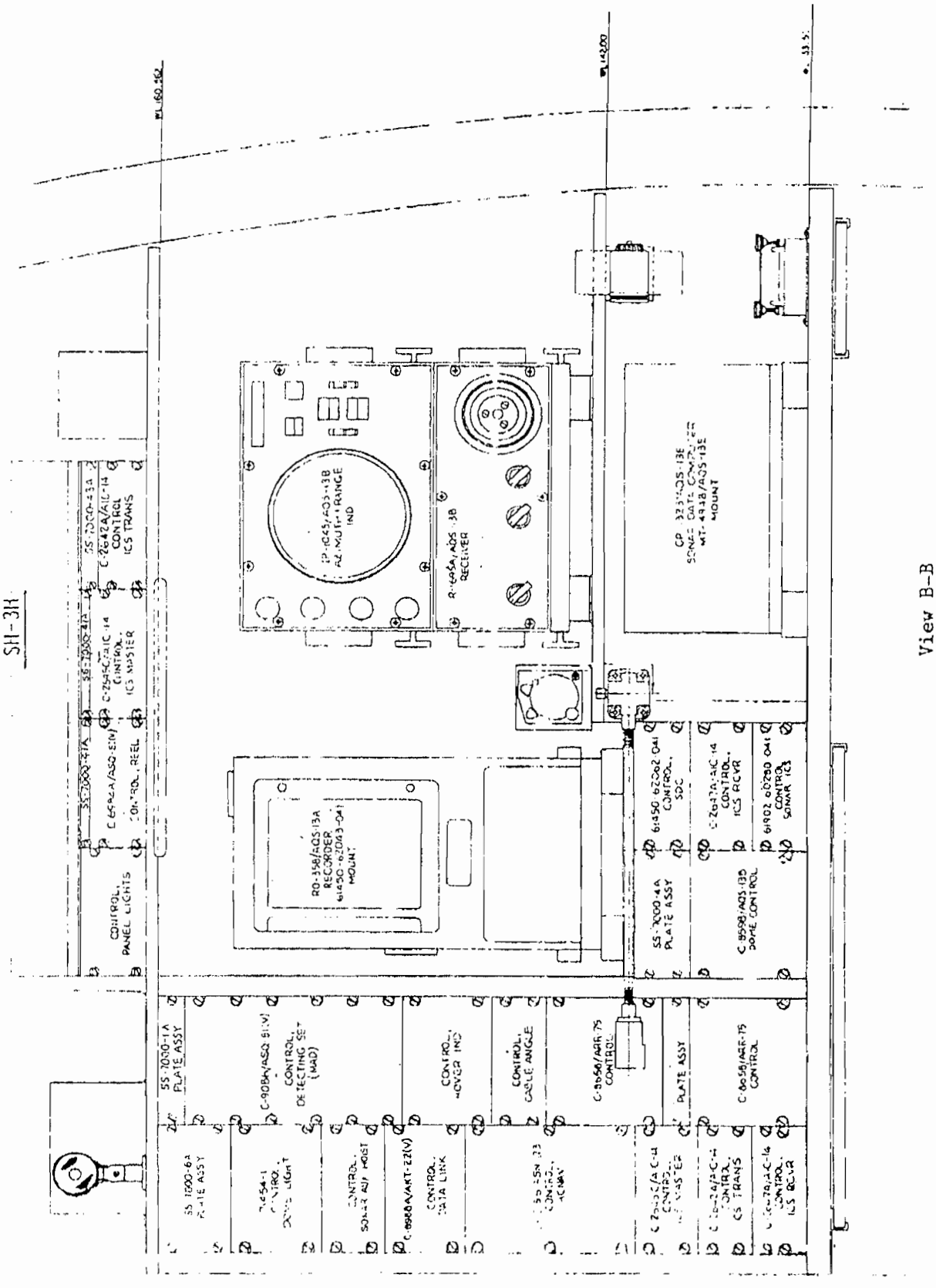
AIRCRAFT DIAGRAM

SH-3H



View B-B

From Sheet 8 of 32

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AIRCRAFT DIAGRAM

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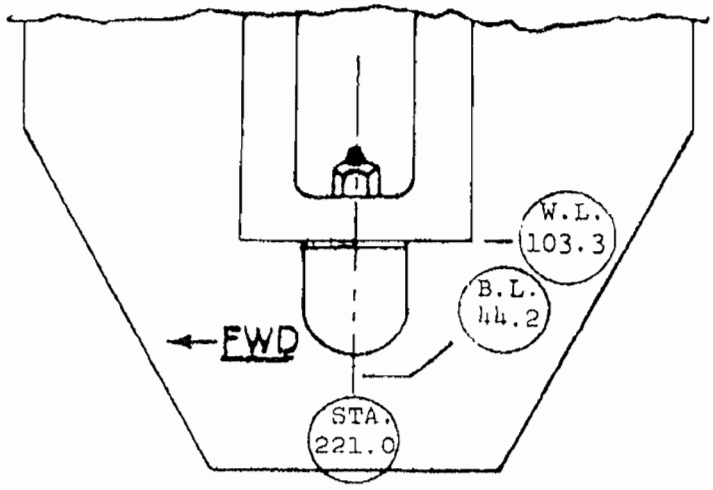
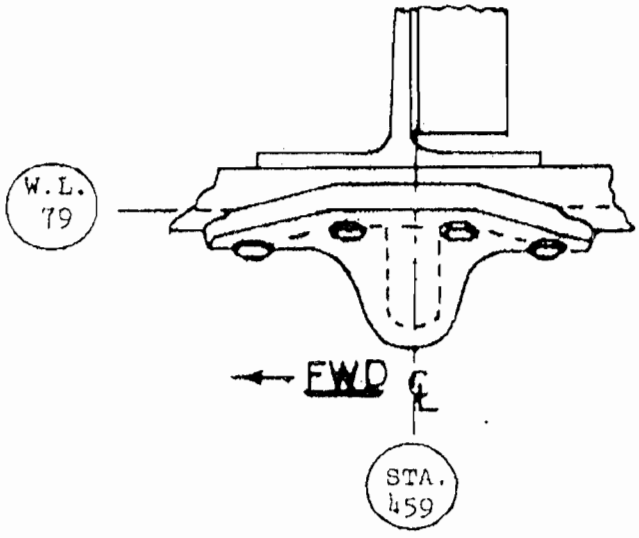
FORWARD JACK & JIG POINT



AFT JACK POINT



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LEVELING DEVICE

AIRCRAFT DIAGRAM

SH-3D

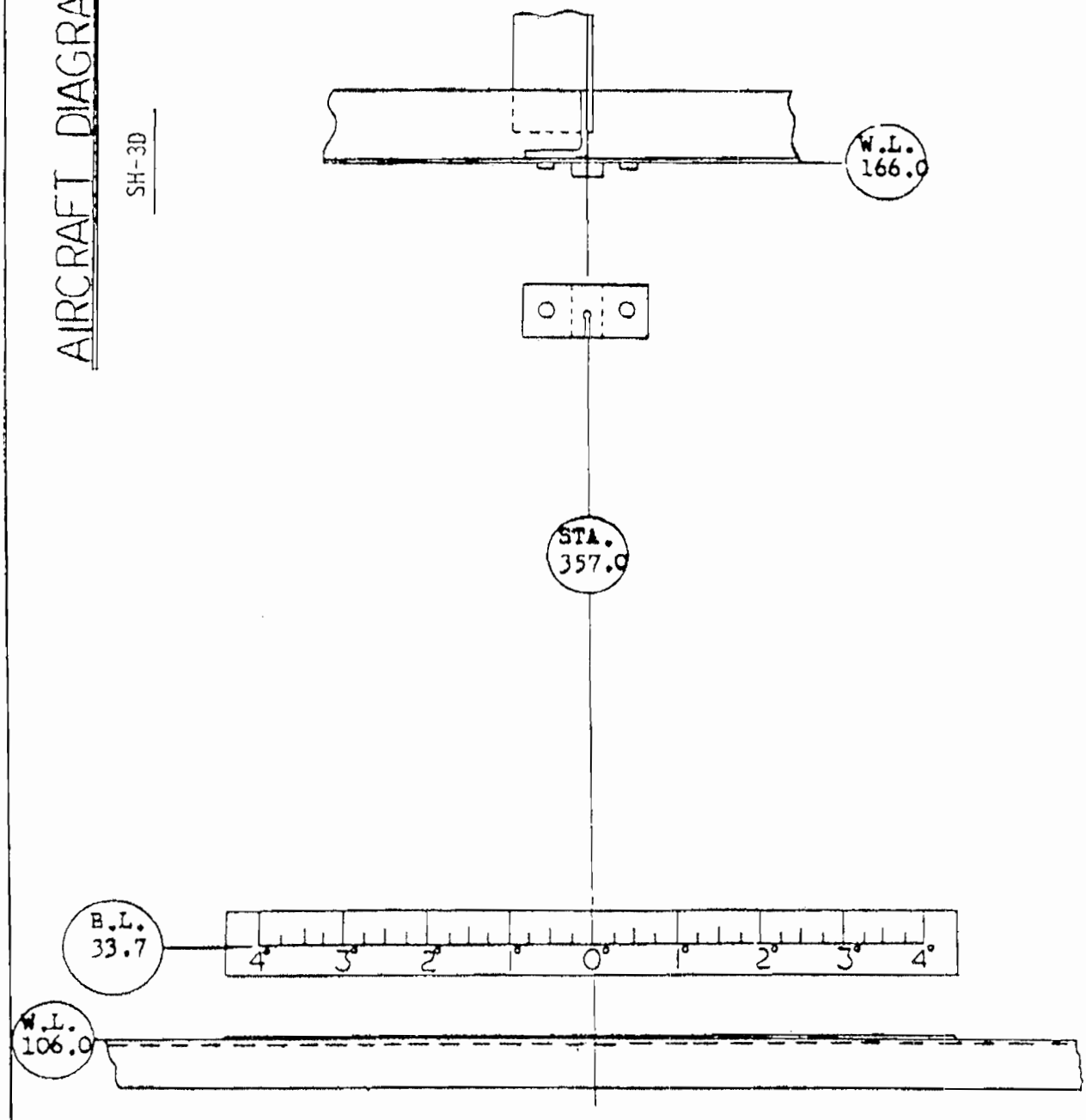

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Chart E
Sheet 12 of 32
Model SH-3H
Chart Date - See Sheet 1

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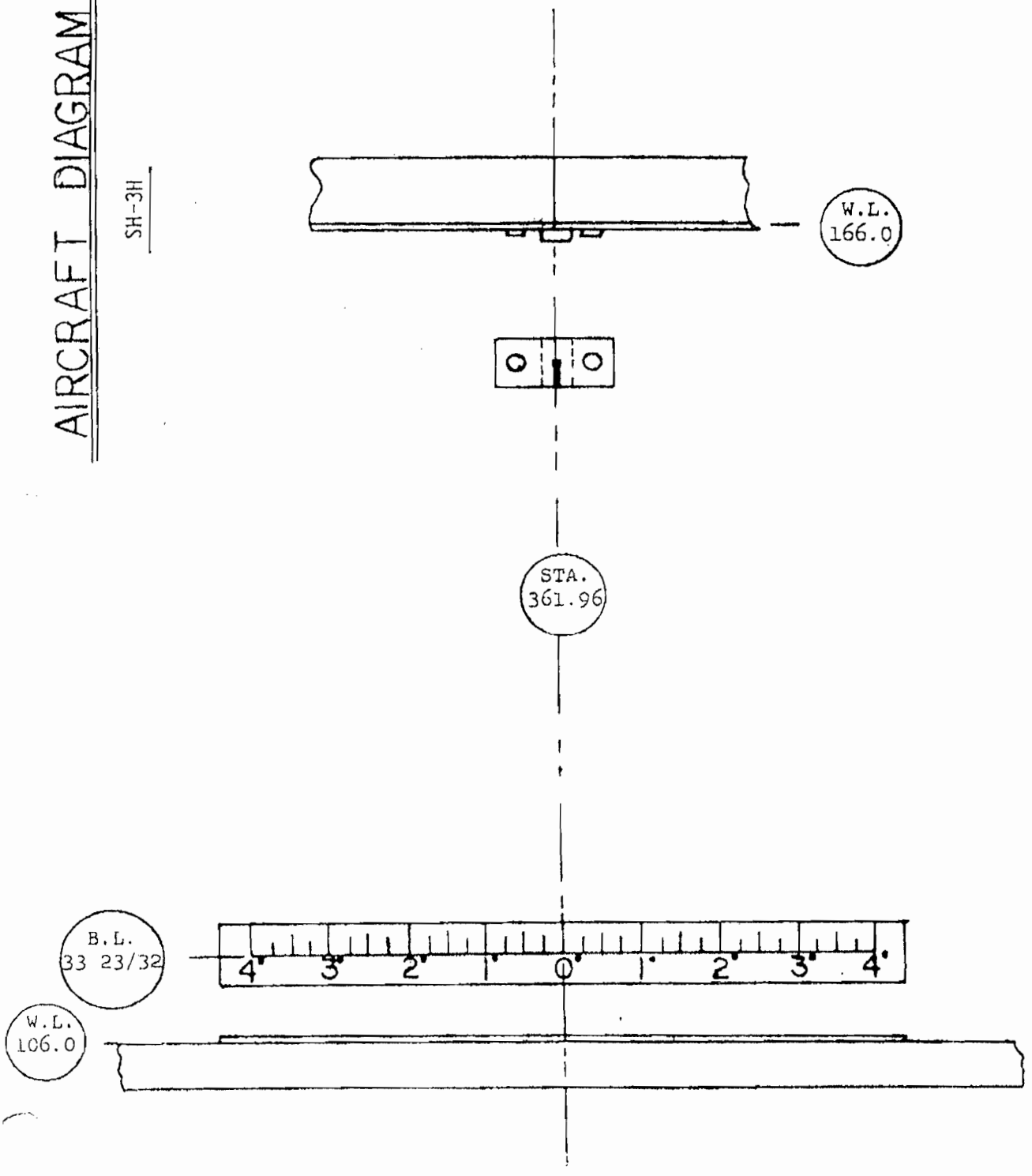
AIRCRAFT DIAGRAM

SH-3H

LEVELING DEVICE



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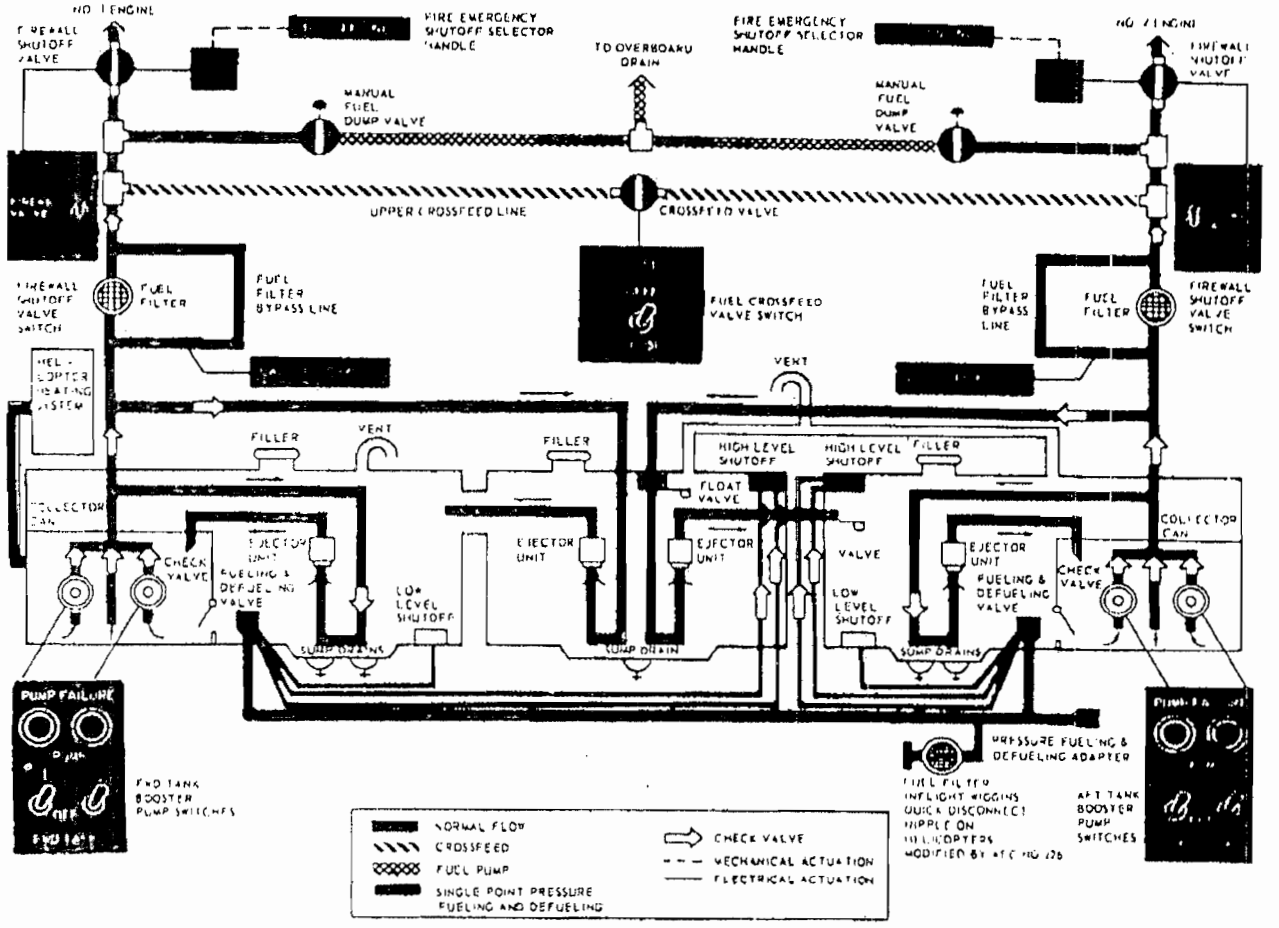
FUEL LOADING DATA

FUEL SYSTEM SCHEMATIC



This helicopter is equipped with a three tank fuel system. During normal operations the forward tank provides fuel for the No. 1 engine, the aft tank provides fuel for the No. 2 engine, and the center tank replenishes consumed fuel through the ejector system. Transfer of fuel to the aft tank through the ejector system is prevented by float valve actuation until approximately 550 pounds of fuel remains in the center tank.

In addition to ejector operation, the forward and center tanks are joined by a common opening as shown in the above schematic. When fuel is at the level of the interconnect, there are approximately 1300 pounds and 500 pounds, respectively, in the forward and center tanks.

Fuel distribution varies according to aircraft flight attitude and fuel quantity. For level flight the effect of varying fuel distribution on fuel arm during normal usage is shown in the following Fuel Arm Table.

FUEL QUANTITY	ARM
FULL	266
3/4 FULL	262
1/2 FULL	255
1/4 FULL	266

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FUEL LOADING TABLE

WEIGHT (LB)	MOMENT/1000		
	FORWARD TANK 346 GAL ARM = 215.3	CENTER TANK 147 GAL ARM = 263.7	AFT TANK 352 GAL ARM = 317.3
50	11	13	16
100	22	26	32
200	43	53	63
300	65	79	95
400	86	105	127
500	108	132	159
600	128	-	190
700	151	-	222
800	172	-	254
900	194	-	286
1000	215	-	317
1100	237	-	349
1200	258	-	381
1300	280	-	412
1400	-	-	444
1500	-	-	476
1600	Combined Forward and Center Tanks ARM = 229.7		508
1700			539
1800			571
1900	436		603
2000	459		635
2100	482		666
*2112	-		670
2200	505		698
**2288	-		726
2300	528		730
***2394	-		760
2400	551		
2500	574		
2600	597		
2700	620		
2800	643		
2900	666		
*2958	679		
3000	689		
3100	712		
3200	735		
**3204	736		
3300	758		
***3352	770		

NOTES

1. (*) Single asterisk indicates approximate weights and moments for full tanks based on gasoline (MIL-F-5572A-2) at 6.0 lb per gallon.
2. (**) Double asterisk indicates approximate weights and moments for full tanks based on JP-4 fuel (MIL-J-5624) at 6.5 lb per gallon.
3. (***) Triple asterisk indicates approximate weights and moments for full tanks based on JP-5 fuel (MIL-J-5624) at 6.8 lb per gallon.

CAUTION

Total weight of fuel is dependent upon the specific gravity and temperature. Therefore, the notation "full" does not appear on the fuel quantity gages. Variation should be anticipated in gage readings when tanks are full.

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FUEL TABLE FOR EXTERNALLY MOUNTED JETTISONABLE AUXILIARY TANKS (SARGENT FLETCHER MODEL NO. 19-110-48047)

Weight lbs	Moment/1000 Arm 250.7	Weight lbs	Moment/1000 Arm 250.7	Weight lbs	Moment/1000 Arm 250.7
Empty Tanks 110 Gallons Each		450	112.8	1000	250.7
		500	125.4	1050	263.2
(one) 73	18.3	550	137.9	1100	275.8
(two) 146	36.6	600	150.4	1150	288.3
Fuel		650	163.0	1200	300.8
50	12.5	700	175.5	1250	313.4
100	25.1	* 715	179.3	1300	325.9
150	37.6	** 748	187.5	1350	338.4
200	50.1	750	188.0	1400	351.0
250	62.7	800	200.6	* 1430	358.6
300	75.2	850	213.1	1450	363.5
350	87.7	900	225.6	**1496	375.0
400	100.3	950	238.2		

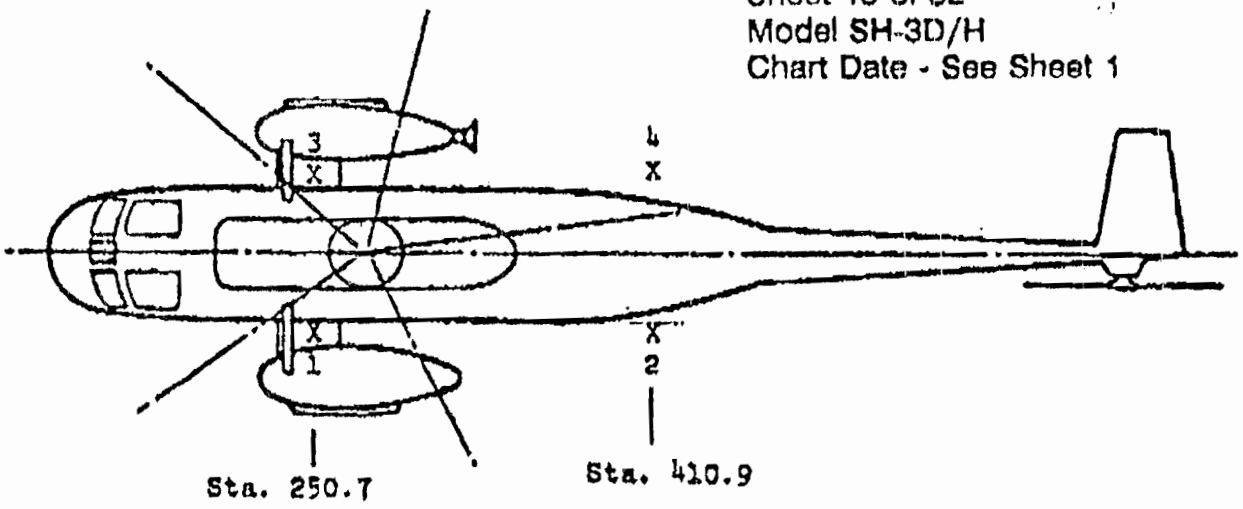
NOTES

1. (*) Single asterisk indicates approximate weights and moments for full tank(s) based on JP-4 fuel (MIL-J-5624) at 6.5 lb/gallon.
2. (**) Double asterisk indicates approximate weights and moments for full tank(s) based on JP-5 fuel (MIL-J-5624) at 6.8 lb/gallon.

CAUTION

Total weight of fuel is dependent upon the specific gravity and temperatur Therefore, the notation "full" does not appear in the fuel quantity gauges. Variation shou be anticipated on gauge readings when tanks are fuel.

Chart E
Sheet 16 of 32
Model SH-3D/H
Chart Date - See Sheet 1

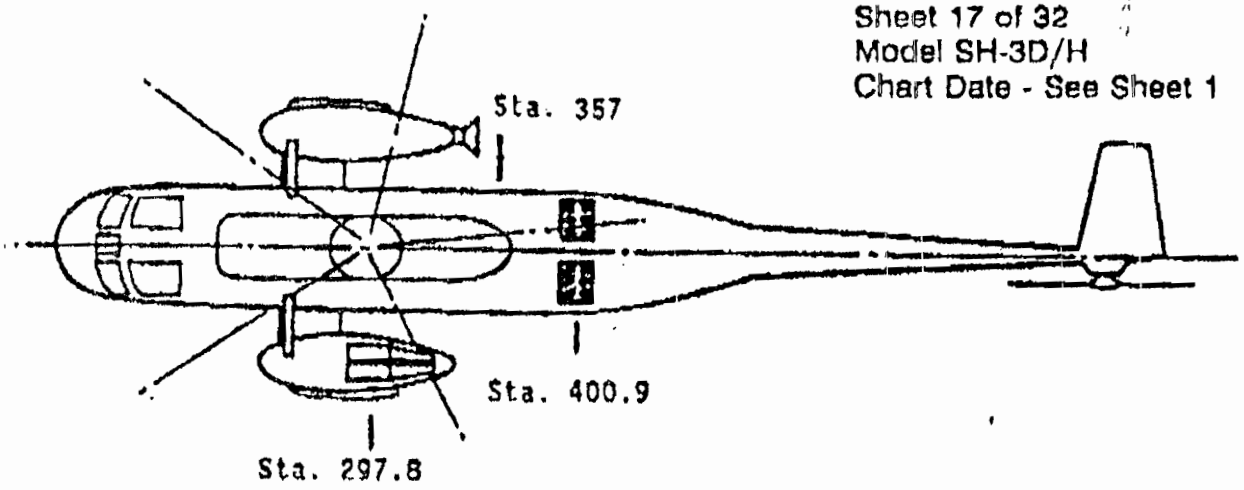


EXTERNAL STORES TABLE

Item	Unit Weight lb	Sta. 1 & 3 Arm 250.7 Moment/1000	Sta. 2 & 4 Arm 410.9 Moment/1000
Weapons			
Mk 44 Torpedo	420	105.3	-
Mk 46 Mod 1 Torpedo (w/stabilizer)	530	132.9	-
Mk 50 Torpedo (exercise)	773	193.8	-
Mk 50 Torpedo (warshot)	770	193.0	-
Mk 84 Depth Bomb	350	87.7	-
B57 Bomb	510	127.9	-
BDU-11A/E Training Shape	400	100.3	-
BDU-20C Shape	510	127.8	-
Multiple Bomb Racks and Stores			
A/A37B-3 PMBR - Empty	90	22.6	-
Mk 76 Practice Bomb	25	6.3	-
Mk 106 Practice Bomb	5	1.3	-
SUS: Mk 61	7	1.8	-
Mk 64	7	1.8	-
Mk 64	7	1.8	-
Marine Markers: Mk 25	4	1.0	-
Mk 58	13	3.3	-
Chaff Dispensers			
AN/ALE-37 Dispenser - Empty	186	-	76.4
AN/ALE-37 Dispenser - Loaded	282	-	115.9

Note: These data are provided for weight and balance purposes only, and do not constitute a list of authorized stores. The SH-3D/H NATOPS Manual must be consulted to obtain store limitations information.

Chart E
Sheet 17 of 32
Model SH-3D/H
Chart Date - See Sheet 1



INTERNAL STORES TABLE

Item Side Door Launched Stores	Arm	Weight lb	Moment/1000
Smoke Light Mk 6	357	1	0.4
Matrix Light	357	3	1.1
Sus: Mk 61 Mk 64 Mk 84	357 357 357	7 7 7	2.5 2.5 2.5
Marine Markers: Mk 25 Mk 58	357 357	4 13	1.4 4.6

Sonobuoy Stores	Arm	Unit Weight lb	Unit Moment /1000	Total Weight (12)	Total Moment /1000
SSQ-36BT	400.9	19	7.6	228	91.4
SSQ-41B	400.9	18	7.2	216	86.6
SSQ-47	400.9	23	9.2	276	110.6
SSQ-53 DIFAR	400.9	22	8.8	264	105.8
SSQ-53A DIFAR	400.9	25	10.0	300	120.3
SSQ-57A	400.9	20	8.0	240	96.2
SSQ-62/62A	400.9	39	15.6	468	187.6
SSQ-77A	400.9	29	11.6	348	139.5
AIRBOC Chaff Buoy	400.9	32	12.8	384	153.9

Smoke Marker Dispenser Stores	Arm	Unit Weight lb	Unit Moment /1000	Total Weight (12)	Total Moment /1000
SUS: Mk 61	297.8	7	2.1	168	50.0
Mk 64	297.8	7	2.1	168	50.0
Mk 84	297.8	7	2.1	168	50.0
Marine Markers: Mk 25	297.8	4	1.2	96	28.6

Note: These data are provided for weight and balance purposes only, and do not constitute a list of authorized stores. The SH-3D/H NATOPS Manual must be consulted to obtain store limitations information.

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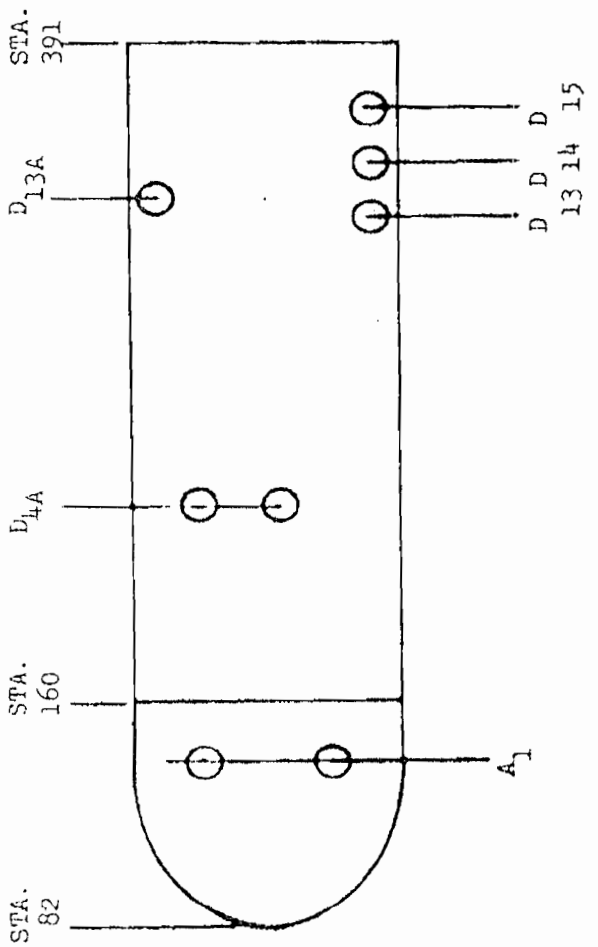
CREW AND PASSENGER LOADING DATA
ASW CONFIGURATION



SEAT/LOCATION	CREW AND PASSENGERS	ARM
A_1	Pilot & Co-Pilot	138.6
D_{4A}	Sonar Operators	228.5
D_{13A}	Rescue Hoist Operator	340.0
D_{13}	Passenger	333.4
D_{14}	Passenger	353.4
D_{15}	Passenger	373.4

NOTE: When the rescue hoist is in operation, one of the sonar operators becomes the rescue hoist operator.

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CREW AND PASSENGER LOADING TABLE
ASW CONFIGURATION

Weight (Lb)	SEAT NO.				
	A_1	D_{4A}	D_{13}	D_{14}	D_{15}
	Pilot and Co-Pilot ARM = 138.6	Sonar Operators ARM = 228.5	Passenger ARM = 333	Passenger ARM = 353	Passenger ARM = 373
	MOMENT/1000				
140	19	32	47	49	52
160	22	37	53	56	60
180	25	41	60	64	67
200	28	46	67	71	75
220	30	50	73	78	82
240	33	55			
260	36	59			
280	39	64			
300	42	69			
320	44	73			
340	47	78			
360	50	82			
380	53	87			
400	55	91			
420	58	96			
440	61	101			
460	64	105			
480	67	110			
500	69	114			

TABLE OF MOMENTS FOR CREW MOVEMENT (MOMENT/1000)

COMPARTMENT	A_1	D_{4A}	D_{13A}
ARM (Inches)	138.6	228.5	340.0
ONE CREW MEMBER	28	46	68
D_{13A} (Rescue Hoist Operator)	40	22	
D_{4A} (Sonar Operator)	18		

NOTE: Add moment/1000 for personnel movement aft (Plus (+) Sign). Subtract moment/1000 for personnel movement forward (Minus (-) Sign). Based on 200 lb per man, including parachute.

PASSENGER LOADING TABLE FOR LOGISTICS SUPPORT

WEIGHT (LB)	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	D_{12}	D_{13}	D_{14}	D_{15}
	195.6	209.4	215.6	229.4	235.6	249.4	258.7	273.3	277.5	293.3	298.7	313.2	333.4	353.4	373.4
	MOMENT/1000														
140	27	29	30	32	33	35	36	38	39	41	42	44	47	49	52
160	31	33	34	37	38	40	42	44	44	47	48	50	53	57	60
180	35	38	39	41	42	45	47	49	50	53	54	56	60	64	67
200	39	42	43	46	47	50	52	55	55	59	60	63	67	71	75
220	43	46	47	50	52	55	57	60	61	65	66	69	73	78	82
240	47	50	52	55	57	60	62	66	67	70	72	75	80	85	90

NOTICE: Passenger loading data on this page are only applicable to aircraft equipped with NARF Airframe Change No. 316.

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CREW AND PASSENGER MOVEMENT TABLE

COMPARTMENT	A	*D_1	*D_2	*D_3	*D_4	*D_5	*D_6	*D_7	*D_8	*D_9	*D_{10}	*D_{11}	*D_{12}	D_{13}	D_{13a}	D_{14}	D_{15}	E
ARM (INCHES)	138.6	195.6	209.4	215.6	229.4	235.6	249.4	258.7	273.3	277.5	293.3	298.7	313.2	333.4	340.0	353.4	373.4	493.0
ONE CREW MEMBER	28	39	42	43	46	47	50	52	55	56	59	60	63	67	68	71	75	99
E Transition	71	60	57	56	53	52	49	47	44	43	40	39	36	32	31	28	24	
D_{15} Cabin	47	36	33	32	29	28	25	23	20	19	16	15	12	8	7	4		
D_{14}	43	32	29	28	25	24	21	19	16	15	12	11	8	4	3			
D_{13a}	40	29	26	25	22	21	18	16	13	12	9	8	5	1				
D_{13}	39	28	25	24	21	20	17	15	12	11	8	7	4					
D_{12}	35	24	21	20	17	16	13	11	8	7	4	3						
D_{11}	32	21	18	17	14	13	10	8	5	4	1							
D_{10}	31	20	17	16	13	12	9	7	4	3								
D_9	28	17	14	13	10	9	6	4	1									
D_8	27	16	13	12	9	8	5	3										
D_7	24	13	10	9	6	5	2											
D_6	22	11	8	7	4	3												
D_5	19	8	5	4	1													
D_4	18	7	4	3														
D_3	15	4	1															
D_2	14	3																
D_1 Cabin	11																	
A Cockpit																		

NOTES:
1. Asterisk seats removed for ASW/ASMD configuration.
2. Add moment/1000 for personnel movement aft, plus (+) sign. Subtract moment/1000 for personnel movement forward, minus (-) sign.
3. Based on 200 lb per man.

NOTICE: Passenger movement data on this page are only applicable to aircraft equipped with NARF Airframe Change No. 316.

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EXTERNAL RESCUE HOIST TABLE

WEIGHT (POUNDS)	ARM = 340.0 MOMENT/1000	WEIGHT (POUNDS)	ARM = 340.0 MOMENT/1000
25	8	325	110
50	17	350	119
75	26	375	128
100	34	400	136
125	42	425	144
150	51	450	153
175	60	475	162
200	68	500	170
225	76	525	178
250	85	550	187
275	94	575	196
300	102	*600	204

* Maximum Capacity

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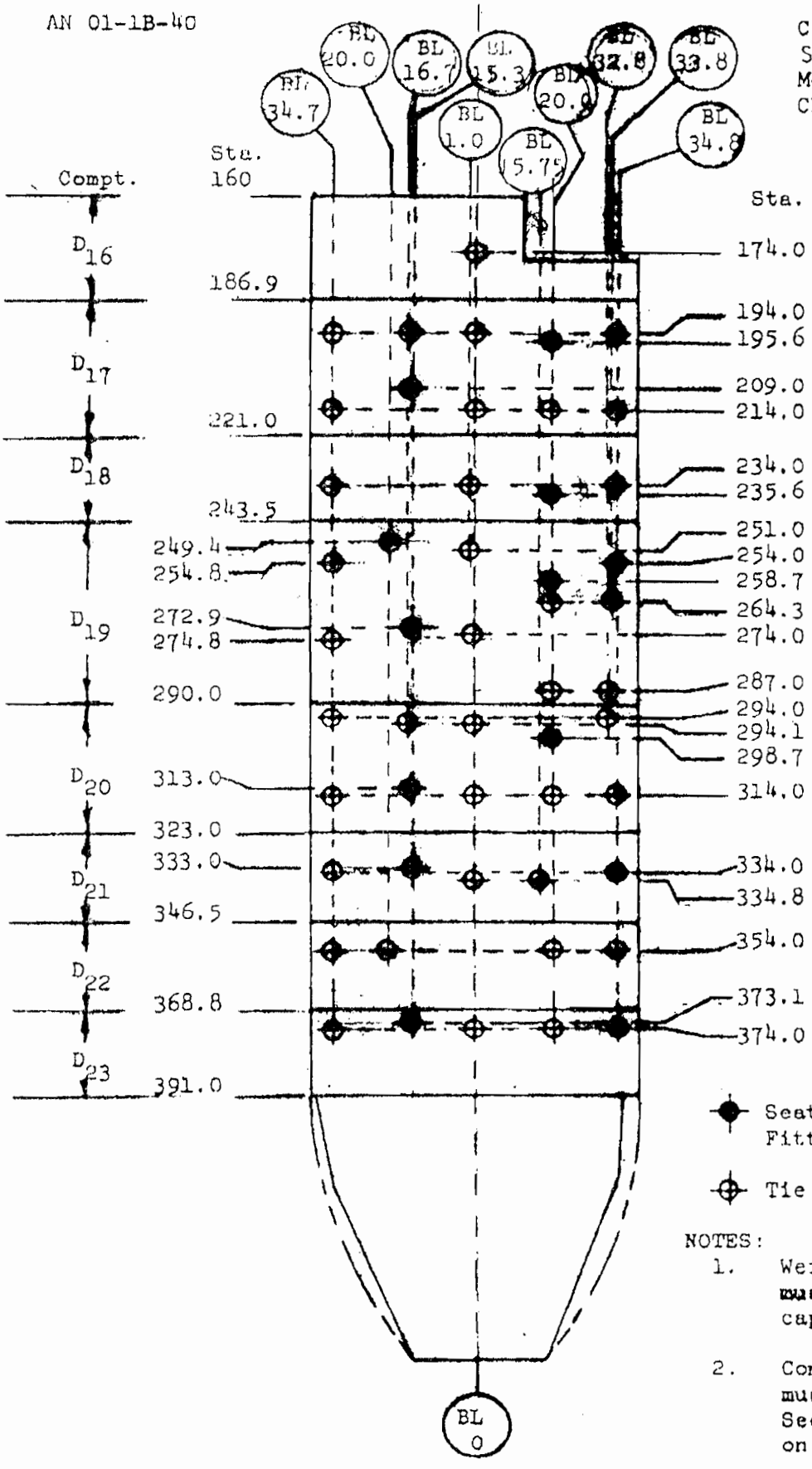
CARGO TIE DOWN DATA



Seat, Cargo Tie Down Fitting 2,500 lb.

Tie Down Fitting 2,500 lb.

NOTES:

1. Weight of cargo secured must not exceed fitting capacities.

2. Compartment capacities must not be exceeded. See compartment capacities on Sheet 24 of 32.

NOTICE: Cargo tie down data on this page are only applicable to aircraft equipped with NARF Airframe Change No. 316.

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CARGO COMPARTMENT DATA

COMPARTMENT	D_{16}	D_{17}	D_{18}	D_{19}	D_{20}	D_{21}	D_{22}	D_{23}
Forward Limit - Station	160.0	186.9	221.0	243.5	290.0	323.0	346.5	368.8
Aft Limit - Station	186.9	221.0	243.5	290.0	323.0	346.5	368.8	391.0
Floor Area - Ft^2	12.0	18.5	12.0	24.9	17.6	12.6	12.4	12.4
*Maximum Capacity - Lb	2400	3700	2400	4980	3520	2520	2480	2480
Maximum Capacity - Lb/Ft^2	200	200	200	200	200	200	200	200
Centroid - Station	174.8	203.8	232.3	266.8	306.5	334.8	357.6	379.9

* Airframe structural limits.

NOTICE: Cargo compartment data on this page are only applicable to aircraft equipped with NARF Airframe Change No. 316.

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CARGO COMPARTMENT LOADING TABLE

COMPARTMENT	D_{16}	D_{17}	D_{18}	D_{19}	D_{20}	D_{21}	D_{22}	D_{23}
ARM	175	204	232	267	307	335	358	380
WEIGHT (LB)	MOMENT/1000							
20	4	4	5	5	6	7	7	8
40	7	8	9	11	12	13	14	15
60	11	12	14	16	18	20	21	23
80	14	16	19	21	25	27	29	30
100	18	20	23	27	31	34	36	38
200	35	41	46	53	61	67	72	76
400	70	82	93	107	123	134	143	152
600	105	122	139	160	184	201	215	228
800	140	163	186	214	246	268	286	304
1000	175	204	232	267	307	335	358	380
1200	210	245	278	320	368	402	430	456
1400	245	286	325	374	430	469	501	532
1600	280	326	371	427	491	536	573	608
1800	315	367	418	481	553	603	644	684
2000	350	408	464	534	614	670	716	760
2200	385	449	510	587	675	737	788	836
* 2400	420	490	557	641	737	804	859	912
*** 2480		506		662	761	831	888	942
** 2520		514		673	774	844		
2600		530		694	798			
2800		571		748	860			
3000		612		801	921			

NOTE: Caution must be taken to insure that cargo loading does not cause aircraft maximum gross weight and/or C.G. limits to be exceeded.

* Maximum capacity of compartments D_{16} and D_{18}

** Maximum capacity of compartment D_{21}.

*** Maximum capacity of compartments D_{22} and D_{23}

NOTICE: Cargo compartment loading data on this page are only applicable to aircraft equipped with NARF Airframe Change No. 316.

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EXTERNAL CARGO TABLE

Weight (Pounds)	Arm = 266.8 Moment/1000	Weight (Pounds)	Arm = 266.8 Moment/1000	Weight (Pounds)	Arm = 266.8 Moment/1000
25	7	2600	694	5400	1441
50	13	2700	720	5500	1467
75	20	2800	747	5600	1494
100	27	2900	774	5700	1521
200	53	3000	800	5800	1547
300	80	3100	827	5900	1574
400	107	3200	854	6000	1601
500	133	3300	880	6100	1627
600	160	3400	907	6200	1654
700	187	3500	934	6300	1681
800	213	3600	960	6400	1708
900	240	3700	987	6500	1734
1000	267	3800	1014	6600	1761
1100	293	3900	1041	6700	1788
1200	320	4000	1067	6800	1814
1300	347	4100	1094	6900	1841
1400	374	4200	1121	7000	1868
1500	400	4300	1147	7100	1894
1600	427	4400	1174	7200	1921
1700	454	4500	1201	7300	1948
1800	480	4600	1227	7400	1974
1900	507	4700	1254	7500	2001
2000	534	4800	1281	7600	2028
2100	560	4900	1307	7700	2054
2200	587	5000	1334	7800	2081
2300	614	5100	1361	7900	2108
2400	640	5200	1387	*8000	2134
2500	667	5300	1414		

* Maximum Capacity

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CENTER OF GRAVITY TABLE

Gross Weight (Pounds)	Sta. 258*	Sta. 261	Sta. 264	Sta. 267	Sta. 270	Sta. 273	Sta. 276**
10,500	2709	2740	2772	2804	2835	2866	2898
600	2735	2767	2798	2830	2862	2894	2926
700	2761	2793	2825	2857	2889	2921	2953
800	2786	2819	2851	2884	2916	2948	2981
900	2812	2845	2878	2910	2943	2976	3008
11,000	2838	2871	2904	2937	2970	3003	3036
100	2864	2897	2930	2964	2997	3030	3064
200	2890	2923	2957	2990	3024	3058	3091
300	2915	2949	2983	3017	3051	3085	3119
400	2941	2975	3010	3044	3078	3112	3146
500	2967	3002	3036	3070	3105	3140	3174
600	2993	3028	3062	3097	3132	3167	3202
700	3019	3054	3089	3124	3159	3194	3229
800	3044	3080	3115	3151	3186	3221	3257
900	3070	3106	3142	3177	3213	3249	3284
12,000	3096	3132	3168	3204	3240	3276	3312
100	3122	3158	3194	3231	3267	3303	3340
200	3148	3184	3221	3257	3294	3331	3367
300	3173	3210	3247	3284	3321	3358	3395
400	3199	3236	3274	3311	3348	3385	3422
500	3225	3262	3300	3338	3375	3412	3450
600	3251	3289	3326	3364	3402	3440	3478
700	3277	3315	3353	3391	3429	3467	3505
800	3302	3341	3379	3418	3456	3494	3533
900	3328	3367	3406	3444	3483	3522	3560
13,000	3354	3393	3432	3471	3510	3549	3588
100	3380	3419	3458	3498	3537	3576	3616
200	3406	3445	3485	3524	3564	3604	3643
300	3431	3471	3511	3551	3591	3631	3671
400	3457	3497	3538	3578	3618	3658	3698
500	3483	3524	3564	3604	3645	3686	3726
600	3509	3550	3590	3631	3672	3713	3754
700	3535	3576	3617	3658	3699	3740	3781
800	3560	3602	3643	3685	3726	3767	3809
900	3586	3628	3670	3711	3753	3795	3836
14,000	3612	3654	3696	3738	3780	3822	3864
100	3638	3680	3722	3765	3807	3849	3892
200	3664	3706	3749	3791	3834	3877	3919
300	3689	3732	3775	3818	3861	3904	3947
400	3715	3758	3802	3845	3888	3931	3974
500	3741	3784	3828	3872	3915	3958	4002
600	3767	3811	3854	3898	3942	3986	4030
700	3793	3837	3881	3925	3969	4013	4057
800	3818	3863	3907	3952	3996	4040	4085
900	3844	3889	3934	3978	4023	4068	4112

CENTER OF GRAVITY TABLE

Gross Weight (Pounds)	Sta. 258*	Sta. 261	Sta. 264	Sta. 267	Sta. 270	Sta. 273	Sta. 276**
15,000	3870	3915	3960	4005	4050	4095	4140
100	3896	3941	3986	4032	4077	4122	4168
200	3922	3967	4013	4058	4104	4150	4195
300	3947	3993	4039	4085	4131	4177	4223
400	3973	4019	4066	4112	4158	4204	4250
500	3999	4046	4092	4138	4185	4232	4278
600	4025	4072	4118	4165	4212	4259	4306
700	4051	4098	4145	4192	4239	4286	4333
800	4076	4124	4171	4219	4266	4313	4361
900	4102	4150	4198	4245	4293	4341	4388
16,000	4128	4176	4224	4272	4320	4368	4416
100	4154	4202	4250	4299	4347	4395	4444
200	4180	4228	4277	4325	4374	4423	4471
300	4205	4254	4303	4352	4401	4450	4499
400	4231	4280	4330	4379	4428	4477	4526
500	4257	4306	4356	4406	4455	4504	4554
600	4283	4333	4382	4432	4482	4532	4582
700	4309	4359	4409	4459	4509	4559	4609
800	4334	4385	4435	4486	4536	4586	4637
900	4360	4411	4462	4512	4563	4614	4664
17,000	4386	4437	4488	4539	4590	4641	4692
100	4412	4463	4514	4566	4617	4668	4720
200	4438	4489	4541	4592	4644	4696	4747
300	4463	4515	4567	4619	4671	4723	4775
400	4489	4541	4594	4646	4698	4750	4802
500	4515	4568	4620	4672	4725	4778	4830
600	4541	4594	4646	4699	4752	4805	4858
700	4567	4620	4673	4726	4779	4832	4885
800	4592	4646	4699	4753	4806	4859	4913
900	4618	4672	4726	4779	4833	4887	4940
18,000	4644	4698	4752	4806	4860	4914	4968
100	4670	4724	4778	4833	4887	4941	4996
200	4696	4750	4805	4859	4914	4969	5023
300	4721	4776	4831	4886	4941	4996	5051
400	4747	4802	4858	4913	4968	5023	5078
500	4773	4828	4884	4940	4995	5050	5106
600	4799	4855	4910	4966	5022	5078	5134
700	4825	4881	4937	4993	5049	5105	5161
800	4850	4907	4963	5020	5076	5132	5189
900	4876	4933	4990	5046	5103	5160	5216
19,000	4902	4959	5016	5073	5130	5187	5244

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CENTER OF GRAVITY TABLE

Gross Weight (Pounds)	Sta. 258*	Sta. 261	Sta. 264	Sta. 267	Sta. 270	Sta. 273	Sta. 276**
19,100	4928	4985	5042	5100	5157	5214	5272
200	4954	5011	5069	5126	5184	5242	5299
300	4979	5037	5095	5153	5211	5269	5327
400	5005	5063	5122	5180	5238	5296	5354
500	5031	5090	5148	5206	5265	5324	5382
600	5057	5116	5174	5233	5292	5351	5410
700	5083	5142	5201	5260	5319	5378	5437
800	5108	5168	5227	5287	5346	5405	5465
900	5134	5194	5254	5313	5373	5433	5492
20,000	5160	5220	5280	5340	5400	5460	5520
100	5186	5246	5306	5367	5427	5487	5548
200	5212	5272	5333	5393	5454	5515	5575
300	5237	5298	5359	5420	5481	5542	5603
400	5263	5324	5386	5447	5508	5569	5630
500	5289	5350	5412	5474	5535	5596	5658
600	5315	5377	5438	5500	5562	5624	5686
700	5341	5403	5465	5527	5589	5651	5713
800	5366	5429	5491	5554	5616	5678	5741
900	5392	5455	5518	5580	5643	5706	5768
21,000	5418	5481	5544	5607	5670	5733	5796

* Forward Limit - Sta. 258
** Aft Limit - Sta. 276
"Moment/1000 for retraction of the landing gear is plus (+) 7."

GROSS WEIGHT LIMITATIONS

Take off - - - - - - - - pounds ***
Landing - - - - - - - - pounds ***

*** Service activities shall insert, or substitute, current figures from the latest applicable Flight Handbook.

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MISCELLANEOUS DATA

COMP'T.	CREW	ARM
A_1	Pilot & Co-Pilot - Neutral Position	138.6
	- Forward Position	134.6
	- Aft Position	142.6
$*D_{4a}$	Sonar Operators - Neutral Position	228.5
	- Forward Position	222.0
	- Aft Position	235.0
$*D_{13a}$	Rescue Hoist Operator	340.0

NOTE: When the rescue hoist is in operation, one of the sonar operators becomes the rescue hoist operator.

* For ASW configuration.

DIMENSIONAL DATA		
Span	62 ft.	
Span (blades folded)	16 ft.	4 in.
Length	72 ft.	8 in.
Length (blades & pylon folded)	47 ft.	3 in.
Height	16 ft.	10 in.
Main Rotor Blade Radius	31 ft.	
Tail Rotor Blade Radius	5 ft.	3.625 in.
Approximate Wheel Base	23 ft.	5 in.
Approximate Wheel Tread	13 ft.	

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TYPICAL SERVICE LOAD CONDITIONS (SEE NOTE 1)

ITEM	ARM	ASW		ASMD		SEARCH	
		Weight	Moment 1000	Weight	Moment 1000	Weight	Moment 1000
Pilot and Co-Pilot (Note 2)	138.6	400	55	400	55	400	55
Sonar Operators (2) (Note 2)	228.5	400	91	400	91	400	91
Fuel - Forward	229.7	2970	682	3352	770	3352	770
- Center							
- Aft	317.3	2080	660	2394	760	2394	760
Oil - Engine (5 Gal)	182.5	42	8	42	8	42	8
Torpedoes, MK-46 (2)	250.7	1060	266	-	-	-	-
Sonobuoys, SSQ-47 Active (12)	400.9	420	168	-	-	420	168
Smoke Markers, MK-25 (24)	297.8	96	29	-	-	96	29
Chaff Dispensers, AN/ALE-37 (2)	410.9	-	-	372	153	-	-
Chaff (96 Lb Per Dispenser)	410.9	-	-	192	79	-	-
TOTALS (Note 3)	-	7468	1959	7152	1916	7104	1881

NOTE 1. Sample load conditions - determine actual loading for each flight using latest basic weight.
NOTE 2. Weight of parachutes at 20 lb is included in normal crew member weight.
NOTE 3. Add to up-to-date basic weight.
NOTE 4. When aft weapon system is used, add the weight of the aft bomb shackles and sway braces to the basic weight.

RECOMMENDED MAXIMUM TAKE-OFF GROSS WEIGHT - - - - - - LB *
RECOMMENDED MAXIMUM LANDING GROSS WEIGHT - - - - - - LB *

* Service activities shall insert, or substitute, current figures from latest applicable flight handbook covering operating restrictions.

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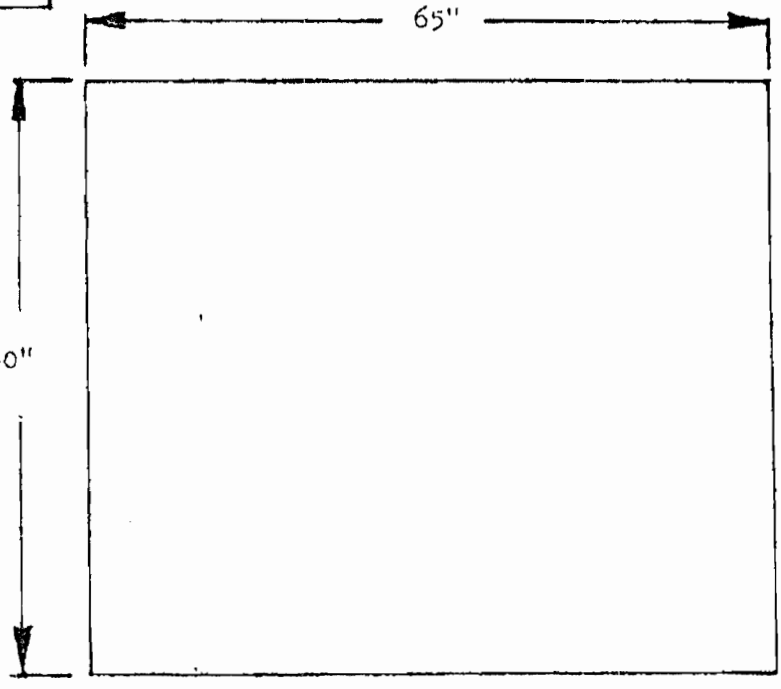
MAXIMUM PACKAGE SIZE TABLE

Side Cargo Door
Maximum Height

LENGTH IN INCHES \ WIDTH IN INCHES	10	15	20	25	30	35	40	45	50	55	60	65
60	60	60	60	60	60	60	60	60	60	60	60	55
70	60	60	60	60	60	60	60	60	60	60	55	
80	60	60	60	60	60	60	60					
90	60	60	60	60	60	60						
100	60	60	60	60	60							
110	60	60	60	60								
120	60	60	60	60								
130	60	60	60									
140	60	60	60									
150	60	60										
160	60											
170	60											
175	60											



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