

QCX
Avro
CF105
R-70500-16
MILITARY



TECHNICAL REPORT



A. V. ROE CANADA LIMITED
MALTON - ONTARIO

ANALYZED

TECHNICAL DEPARTMENT (Aircraft)

AIRCRAFT: C 105

REPORT NO. 7/0500/16

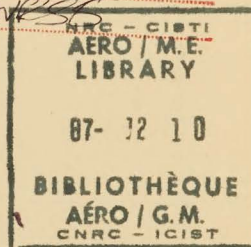
FILE NO.

NO. OF SHEETS

TITLE: DERIVATION OF LOADS FOR WING DESIGN CASES.

~~CONFIDENTIAL~~

Classification cancelled / Changed to UNCLASS
By authority of AVRS
Date 30 Sept 98
Signature [Signature]
Unit / Rank / Appointment AVRS



PREPARED BY D. BROWN DATE OCT. '56
S. K. HYBLE
CHECKED BY D. DRANE DATE
SUPERVISED BY DATE
APPROVED BY DATE

ISSUE NO.	REVISION NO.	REVISED BY	APPROVED BY	DATE	REMARKS

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AVRO AIRCRAFT LIMITED
MALTON, ONTARIO

TECHNICAL DEPARTMENT

AIRCRAFT:

C 105

LOADS FOR
RIGID WING
DESIGN CASES.

REPORT NO. 7/0500/16

SHEET NO. 1

PREPARED BY

DATE

D. BROWN.

19 JULY '56

CHECKED BY

DATE

INDEX.

CONFIDENTIAL

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AVRO AIRCRAFT LIMITED
MALTON, ONTARIO

TECHNICAL DEPARTMENT

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7/0500/16

SHEET NO.

2

AIRCRAFT:

C 105

LOADS FOR
RIGID WING
DESIGN CASES.

PREPARED BY

D. BROWN,

DATE

19 JULY '58

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INTRODUCTION,

THE PURPOSE OF THIS REPORT IS TO PROVIDE SETS OF POINT LOADS ' w_a ' AND ' P_a ' TO BE USED IN THE MATRIX ANALYSIS OF THE AIRCRAFT FOR STRESS AND DEFLECTION (SEE REP. 7/0510/13). THE FINAL VALUES ARE TO BE FOUND AT THE END OF THIS REPORT, AND A BRIEF DESCRIPTION IS GIVEN, ON THE FOLLOWING PAGES, OF THE WORK DONE IN CALCULATING ' w_a ' AND ' P_a ' IN THE REPORTS —

7/0500/11	WEIGHTS, $C.G.$ AND I_x FOR STRESSING CASES.
" " /12	AIRLOADS FOR CASES 2, 7, 8, 11
" " /13	" " " " " 1, 5, 6, 12
" " /14	ENGINE REACTIONS FOR WING DESIGN CASES.
" " /15	CONVERSION MATRIX FOR STRUCTURAL GRID
" " /17	DETAILED WEIGHT DISTRIBUTIONS FOR WING DESIGN CASES.

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CASES TO BE CONSIDERED

(a) THREE DIFFERENT AIRCRAFT ARE TO BE CONSIDERED — THOSE WITH C.G.'S AT 28%, 30% AND 32% OF M.A.C. RESPECTIVELY. EACH OF THESE A/C HAS A DIFFERENT WEIGHT AND MOMENT OF INERTIA, AS DEFINED IN "WEIGHTS, C.G.'S AND I'S FOR STRESSING CASES", 7/0500/11.

(b) FOR EACH C.G. POSITION THERE ARE EIGHT MAJOR SYMMETRIC CASES (1, 2, 5, 6, 7, 8, 11 AND 12) FROM THE SEA-LEVEL AND 30,000 FT. FLIGHT ENVELOPES, AS WELL AS THREE R.P.O. CASES (15, 16 AND 17), AND CASES WHICH ARE CRITICAL FOR THE ENGINE MOUNTINGS. THESE LATTER CASES WILL BE USED FOR STRESSING OF THE STRUCTURE LOCAL TO THE ENGINES.

(c) EACH OF THE MAJOR CASES IS SUB-DIVIDED FOR TWO EXTREME POSITIONS OF C.P., AND INTO ZERO PITCH AND CHECK-PITCHING MANOEUVRES.

THUS THERE ARE TWELVE SUB-CASES FOR EACH MAJOR CASE.



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WEIGHTS DATA, FOR EACH OF THE THREE C.G.
POSITIONS : —

(a) WING. INITIALLY, THE WEIGHT DISTRIBUTION ON THIS COMPONENT IS OBTAINED FROM WEIGHTS DEPT. DWG. 7-0460-0005, ISS. 3, WHICH GIVES A SERIES OF POINT MASSES ' m_n^w ' AT THE CENTRES OF '20" SQUARES WHICH COVER THE WING (THIS GRID SYSTEM IS SHOWN ON p. OF REPORT 7/0500/15). THE VALUES OF ' m_n^w ' ARE MODIFIED (IN REPORT 7/0500/17) TO GIVE CORRECT FUEL DISTRIBUTION (SEE p. 1.6 OF 7/0500/11) AND A REALISTIC UNDERCARRIAGE WEIGHT DISTRIBUTION (SEE REP. 7/0500/17). THEN THE ' m_n^w ' WEIGHTS ARE TRANSFERRED TO THE NODES OF THE IDEALISED STRUCTURE USED FOR THE STRESS AND DEFLECTION MATRIX (SEE 7/0510/13), TO GIVE WEIGHTS ' m_a^w '.
i.e., $|m_n^w| \times |K| = |m_a^w|$

WHERE $|K|$ IS THE CONVERSION MATRIX (SEE 7/0500/15). THE MULTIPLICATION OF THESE MATRICES IS CARRIED OUT BY THE COMPUTING DEPT.



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AIRCRAFT:

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DESIGN CASES.

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18 JULY '56

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(b) FUSELAGE AND FIN. WEIGHTS ARE APPLIED DIRECTLY TO THE STRUCTURAL NODES IN REPORT 7/0500/17 IN SUCH A WAY THAT WEIGHTS AND CGs ARE AS GIVEN IN 7/0500/11. ALSO, IT IS ARRANGED THAT THE INERTIA B.M. AND SF. AT FUSE. STN. 254.5 ARE CORRECT (SINCE THE FUSELAGE IS ASSUMED TO BE 'BUILT-IN' AT THIS SECTION IN THE FINAL ANALYSIS).

(c) ENGINES. ENGINE MOUNT REACTIONS ARE INCLUDED IN THE AIR LOAD FIGURES (P_a), SO THAT THEY WILL NOT BE AFFECTED BY INACCURACIES IN THE EVALUATION OF $\ddot{u}$ AND $\ddot{\theta}$, DUE TO THE USE OF AN 'EQUIVALENT AIRCRAFT' HAVING COMPARATIVELY FEW CONCENTRATED MASSES ALL IN ONE PLANE.

ON pp. 24, 25 AND 26 OF REPORT 7/0500/17 IS CARRIED OUT THE ADDITION:-

$$\left| \frac{W}{m_a} \right| + \left| \frac{F_{USE+FIN}}{m_a} \right| = \left| m_a \right|_{3 \text{ cam.}}$$



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AIRCRAFT:

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LOADS FOR
RIGID WING
DESIGN CASES.

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DATE

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AIRLOAD DATA, FOR THE FLIGHT ENVELOPE CASES, LIFT LOAD DISTRIBUTIONS ARE OBTAINED FROM AERODYNAMICS DEPT. MEMO. P/LOADS/III.

(a) WING. FOR THIS COMPONENT, P/LOADS/III GIVES SETS OF CHORDWISE SHEAR DISTRIBUTIONS FOR

(1) FLAT PLATE LIFT (ONE DISTRIBUTION FOR EACH MAJOR CASE, WITH A MULTIPLYING FACTOR f^{FP} FOR EACH SUB-CASE), (2) ELEVATOR LIFT (ONE DISTRIBUTION FOR EACH MAJOR CASE, WITH A FACTOR f^{EL} FOR EACH SUB-CASE AND (3) LIFT DUE TO CAMBER (ONE DISTRIBUTION FOR SUBSONIC CASES AND ONE FOR SUPERSONIC, WITH A MULTIPLYING FACTOR f^{CAM} FOR EACH SUB-CASE). THE POINT AIR LOADS P_n^W AT THE CENTRES OF THE 20" SQUARES (MENTIONED ON p.4) ARE OBTAINED BY TAKING THE DIFFERENCES BETWEEN THE SHEARS AT THE TRAILING EDGES OF SUCCESSIVE SQUARES.

$$\text{i.e., } P_n^W = S_n^W - S_{n+1}^W = \left(S_n \cdot f^{FP} + S_n \cdot f^{EL} + S_n \cdot f^{CAM} \right) - \left(S_{n+1} \cdot f^{FP} + S_{n+1} \cdot f^{EL} + S_{n+1} \cdot f^{CAM} \right)$$

THIS IS INDICATED IN THE FIGURE ON p.7.



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SHEET NO.

7

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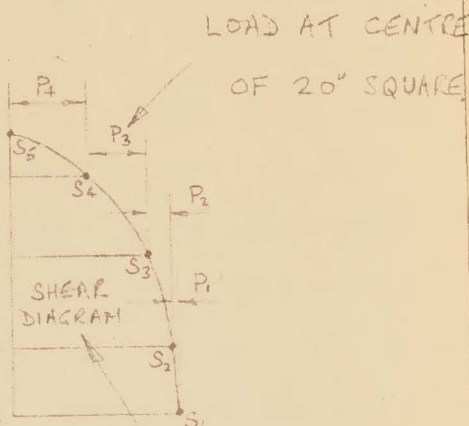
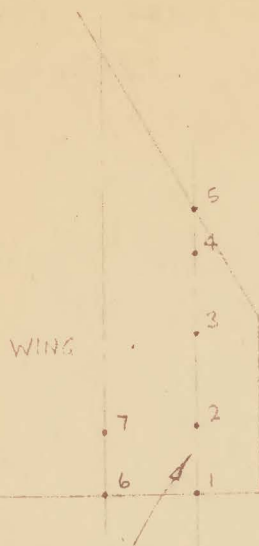
D. BROWN.

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THESE NUMBERS REPRESENT CENTRES
OF TRAILING EDGES OF 20" SQUARES.

THE CURVES THAT ARE CROSS-PLOTTED FROM THE
AERODYNAMICS INFORMATION, THE VALUES OF SHEAR
THAT ARE READ OFF, AND THE VALUES OF P_n^w
THAT ARE CALCULATED (BY THE COMPUTING DEPT.)
FROM THEM ARE FOUND IN REPORTS 7/0500/12 AND
7/0500/13.

THEN THESE LOADS P_n^w ARE TRANSFORMED INTO LOADS
 P_a^w AT THE NODES OF THE IDEALISED STRUCTURE
AS ON p. 4, i.e.,

$$|P_n^w| \times |K| = |P_a^w|$$

AGAIN, THIS PROCESS IS CARRIED OUT BY THE
COMPUTING DEPT THE CALCULATIONS BEING FILED IN



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PREPARED BY

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REPORTS 7/0500/12 AND

(b) FUSELAGE, AERODYNAMICS DEPT. MEMO. P/LOADS/III GIVES TWO AIR LOAD SHEAR FORCE CURVES FOR THIS COMPONENT; ONE THAT IS USED FOR ALL CASES (SHT. 37), AND ANOTHER WHICH IS DIFFERENT FOR EVERY MAJOR CASE. BOTH ARE USED WITH APPROPRIATE MULTIPLYING FACTORS FOR EACH SUB-CASE. THE LOAD P_a^F ON A STRUCTURAL NODE (OR ON A SPANWISE SET OF NODES) IS FOUND BY TAKING THE DIFFERENCE BETWEEN THE VALUES OF SHEAR AT THE POINTS MIDWAY BETWEEN NODES (OR SPANWISE SETS OF NODES).

THESE FIGURES ARE TO BE FOUND IN 7/0500/12 AND 7/0500/13

(c) FUSELAGE AND FIN DRAG MOMENTS.

THESE ARE APPLIED TO THE STRUCTURE AS DIFFERENTIAL, VERTICAL FORCES, AS INDICATED ON PP. 9-18 OF THIS REPORT.

(d) ENGINES. THE LOADS DUE TO ENGINE REACTIONS ARE INCLUDED IN THE AIR LOADS FOR THE REASONS STATED ON P. 5, UNDER SECTION (c), AND THE VALUES OF THE LOADS ARE CALCULATED IN REPORT 7/0500/14. $|P_2| = |Airload| + |Engine reaction|$



AVRO AIRCRAFT LIMITED
MALTON, ONTARIO

TECHNICAL DEPARTMENT

AIRCRAFT:

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DRAG MOMENT BALANCE

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9

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D. A. DRANE

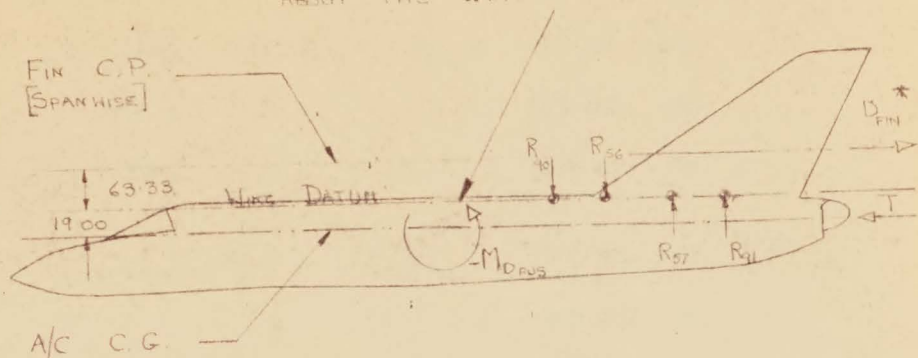
20th JUNE 56

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DATE

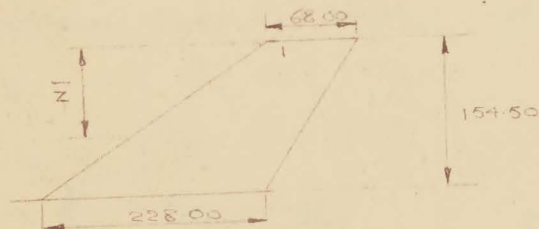
DRAG MOMENT BALANCE

THRUST & FIN DRAG MOMENTS CALCULATED
ABOUT THE WING DATUM LINE.



THE MOMENT ABOUT A HORIZONTAL AXIS THROUGH THE
WING DATUM OF THE THRUST AND THE FIN DRAG IS BALANCED
BY THE MOMENT OF THE FUSELAGE DRAG.

THE THRUST & FIN DRAG MOMENTS ARE APPLIED TO THE
WING AND BALANCED BY THE VERTICAL FUSELAGE REACTIONS AT
NODES 49, 56, 57, & 91



THE FIN SPANWISE C.P. IS TAKEN AT ITS CENTRE
OF AREA

$$Z = \frac{154.50 [2 \times 228.00 + 68.00]}{3 [228 + 68]}$$

$$91.17 \text{ INS}$$

$$Z_{CP} = 154.50 - 91.17$$

$$63.33 \text{ INS}$$



TECHNICAL DEPARTMENT

AIRCRAFT:

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DRAG MOMENT
BALANCE.

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D A DRANE

20th JUNE 20

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LINE OF ACTION OF THRUST—

THIS IS TAKEN THROUGH THE AVERAGE VERTICAL POSITION OF THE C.G.

② $28\frac{3}{4}$ M.A.C. $Z_H \cdot 131.74$ INS

30% 132.67 155

32 1/2 134.47 145.

Z_NAV, 132.96 INCH.

2 133 00 152

FOR NING DATUM $z_w = 152.00$ INS

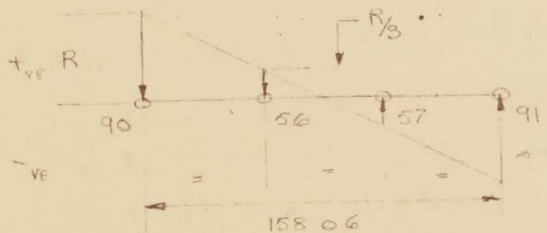
* SEE NEXT SHEET

THRUST ACTS, 19.00 INS BELOW WING DOWN.

$$(T \times 19) + (63.33 D_{FIN}) = M_{D_{FUS}}$$

ASSUME A SYMMETRICAL DISTRIBUTION OF $\frac{1}{2} M_{DFUS}$ OVER NODES

90, 56, 57 $\neq$ 91



LOAD EXERTED BY
FUSELAGE ON WINGS



AVRO AIRCRAFT LIMITED

TECHNICAL DEPARTMENT (Aircraft)

AIRCRAFT

C105

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DATE

S.K. HAWLEY

24-8-56

CHECKED BY

DATE

THRUST MOMENT CORRECTION

AS A RESULT OF BALANCING THE AIR FOR A TRIAL CASE (7.5a) IT WAS FOUND THAT THE 19.0" OFFSET USED FOR DETERMINING THE MOMENT OF THRUST ABOUT WING DATUM WAS NOT CONSISTANT WITH THE THRUST MOMENT CONTAINED IN THE ENGINE LOGS.

∴ USE OF THE 19.0" DIM. IS NOW DROPPED AND ACTUAL THRUST MOMENT APPLIED IS USED IN DETERMINATION OF REACTIONS AT RIGIDS 30, 56, 57 AND 91.

CALCULATIONS FOR THE DETERMINATION OF THESE REACTIONS ARE GIVEN IN REPORT -



AVRO AIRCRAFT LIMITED
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TECHNICAL DEPARTMENT

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DRAG MOMENT
BALANCE.

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SHEET NO.

13

PREPARED BY

DATE

D. A. DRANE

21st JUNE '56

CHECKED BY

DATE

CASES 11, 13, 17: $M = 120 @ 30000$, $D_{FM} = 800$, $T = 36400$ LB

$$M_{DRUG} = 19 \times 36400 + 68.33 \times 800 = 742,264 \text{ LB}$$

$$2R = 4226.53 \text{ LB}$$

$$R = R_{90} + R_{91} = 2113.27 \text{ LB}$$

$$\frac{1}{3}R = R_{56} + R_{57} = 704.42 \text{ LB}$$

CASES 12, 14, 16: $M = 160 @ 30000$, $D_{FM} = 1573$ LB, $T = 49800$ LB

$$M_{DRUG} = 19 \times 49800 + 68.33 \times 1573 = 1045,818 \text{ LB-INS.}$$

$$2R = 5955 \text{ LB}$$

$$R = R_{90} + R_{91} = 2977.50 \text{ LB}$$

$$\frac{1}{3}R = R_{56} + R_{57} = 992.50 \text{ LB}$$

Adjustments To Corrections of M Due To Thrust And Drag

CASE		1	2	3	4	5	6	7	8	9	10	
Node	YF	2.5 (a)	2.5 (b)	2.6 (a)	2.6 (b)	2.7 (a)	2.7 (b)	2.8 (a)	2.8 (b)	2.9 (a)	2.9 (b)	2.9 (c)
61	624-5303	P _E	3127.50	5229.60	3123.80	5088.30	3112.30	4973.10	3118.30	5428.30	3121.00	5274.40
		P _E /F	1984493.5	3318339.7	1982209.2	3228690.5	194848.6	3155581.6	1578655.8	3444420.8	1980350.1	3246666.6
62	624-5303	P _E	349.90	585.00	349.50	569.20	348.20	556.30	348.80	607.20	349.10	590.00
		P _E /F	242997.4	314761.5	241812.6	393855.3	240923.2	384909.7	243383.0	420127.9	24195.5	408777.1
66	624-149	P _E	641400	10725.0	6406.60	10435.30	6332.80	10199.00	6395.20	11132.6	6400.00	10817.00
		P _E /F	4008266.0	6634017.5	3998647.4	6513140.7	3987792.7	636564.7	315321.6	483766.6	2414902.5	675176.7
67	686-215	P _E	201440	2017.30	2014.30	1934.50	2016.60	1856.20	2032.00	2170.20	2016.10	2077.80
		P _E /F	1382042.0	1389308.6	1382247.7	1371487.8	1383816.2	127123.73	1394394.0	148906.6	1390653	1425222.7
68	742.50	P _E	11312.20	14149.00	11308.40	13667.90	11301.00	12339.70	11363.20	1435.00	1175.00	14421.20
		P _E /F	8399368.5	10505632.5	8396487.0	10148415.8	8390992.5	9830497.3	1037176.0	1104830.0	944400.0	108268.8
69	742.50	P _E	5605.60	5623.50	5606.40	5393.40	5612.80	5177.40	5655.50	6050.20	5650.10	5791.40
		P _E /F	4162158.0	4175448.8	4162752.0	4004579.5	4167500.0	384219.5	449226.8	449227.3	418767.8	430014.5
70	742.50	P _E	4017.20	2556.20	4020.50	2400.10	4035.80	2241.40	4079.00	2870.40	4050.00	2711.30
		P _E /F	2982771.0	1877978.5	2985221.3	178207.3	2996581.5	166473.7	3028657.5	21461100.3	30187.5	2013140.3
91	697-603	P _E	4038.70	5051.50	4537.40	4879.80	4034.80	4726.20	4056.90	5339.70	4050.30	5149.00
		P _E /F	2817409.2	3523941.6	2816502.4	3404163.1	2814683.6	3297499.6	2836105.6	3724990.7	28218.5	2559195.18
61	624-5303	P _E	4213.80	2085.50	4678.20	2130.80	4551.00	2162.20	4440.70	4348.20	5033.30	4351.70
		P _E /F	2637883.8	1323312.3	2968903.8	352057.2	2888255.0	1371931.4	2817758.7	2759583.6	375.68	4276285.5
62	624-5303	P _E	471.40	233.30	523.40	238.40	509.20	241.90	406.30	486.50	664.50	486.80
		P _E /F	326166.5	16422.7	362145.2	164351.4	352320.7	16773.1	34374.0	33614.2	457698.7	37782.9
66	624-145	P _E	8641.60	4211.10	9595.80	4263.20	8355.00	4434.30	9107.20	8918.20	12127.30	8224.00
		P _E /F	5308736.7	2695301.6	5989710.6	2727451.0	5876370.6	2767146.2	664423.3	5766363.7	7569193.7	5576144373.7
67	686-215	P _E	1656.30	2067.80	1900.00	2044.90	1821.00	2028.40	1749.50	1863.40	2084.50	1864.50
		P _E /F	136582.0	148960.5	1303813.3	1408246.2	1289602.1	139122.6	1200557.2	127843.2	143064.9	1272590.4
68	742.50	P _E	1158.00	10083.20	12984.00	10069.40	12535.00	1005360	2134.90	1242.30	1525.80	2329.30
		P _E /F	8340225.0	7491221.0	9645620.0	747650.9	9391237.5	7464796.0	9009792.0	9215785.3	1176477.0	926480.3
69	742.50	P _E	4614.70	5747.20	5752.30	5683.70	5011.70	5638.60	4843.60	5192.70	5810.80	5169.40
		P _E /F	3426444.8	4167147.5	3929532.8	4220147.3	3766179.8	4486287.2	3618796.5	3855579.8	4317489.0	3838279.5
70	742.50	P _E	2154.90	4312.10	2380.00	4810.00	2425.10	4737.10	2232.90	2697.20	2260.20	2669.20
		P _E /F	1600013.3	3647234.3	1915650.0	3571425.0	1801182.3	3517226.8	1691653.3	2002671.0	1697583.5	1981881.0
91	697-603	P _E	4106.50	3602.10	4135.60	3535.30	4475.40	5589.40	4332.30	4426.10	5465.50	4426.20
		P _E /F	2864766.7	2512855.8	3233658.5	2507982.8	312082.5	2503916.2	307225.5	3046636.7	2812149.2	2088216.7
CASE		8.1 (b)	8.2 (a)	8.8 (b)	8.9 (a)	8.5 (b)	8.10 (a)	8.10 (b)	11.5 (a)	11.5 (b)	11.6 (a)	11.6 (b)

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO
ENGINEERING DIVISION

REPORT NO.

SHEET 17

DATE 23 AUG. '56

AIRCRAFT C105

WEIGHT

C. G. POSITION

PREPARED BY S.K. HARLEY

17	18	19	20	21	22	23	24	25	26	27	28	29
7.7(a)	7.7(b)	7.8(a)	7.8(b)	7.9(a)	7.9(b)	7.10(a)	7.10(b)	8.5(a)	8.5(b)	8.6(a)	8.6(b)	8.7(a)
617.80	5713.80	4755.60	6210.70	4741.80	6046.50	4725.90	5903.20	2423.50	4450.50	2521.50	4324.40	2538.40
3024.00	36255.90	301763.7	3945277.3	3008815.3	3836687.2	22933980.0	37451572.1	15822.13	2873371.1	5338662.2	2743362.8	1610631.7
16.60	639.20	531.00	634.80	530.40	676.40	528.70	660.40	278.20	497.20	282.10	483.80	284.00
7440.34	4422.20	363096.3	470737.3	366389.2	463006.1	365812.9	456337.6	192973.8	344502.1	195127.9	334746.2	196502.5
70.30	11718.10	9735.20	12737.10	9724.30	12400.40	9692.90	12106.60	5113.70	9127.30	5171.20	8868.80	5206.00
21084.40	7313.90	960741.0	77497.70	606768.3	77796477.6	49775.1	755677.9	3191620.5	5696758.1	3227578.0	553547.2	3247298.9
718.80	1824.20	1734.20	2155.50	1733.50	2060.20	1733.20	1972.20	1891.40	1784.40	1883.00	1717.30	1875.60
20642.70	125179.70	119002.40	147914.8	1189556.0	14374.3	1189352.2	1353358.2	127722.2	1224486.5	1292147.6	117844.3	1287069.5
496.00	14128.80	12524.00	15962.00	12503.30	15406.10	12431.60	14904.10	10023.90	12270.40	10025.00	11864.80	10021.80
2782.80	104904.95	92994.13	11351765.09	283700.3	1143029.3	9267588.0	11066244.3	744274.58	110772.0	7443562.5	884764.0	7441186.5
4961.30	5092.30	4838.80	6013.30	4876.70	5748.30	4836.00	5503.70	5265.10	4970.70	5236.30	4784.00	5215.20
68210.80	278103.8	35928090	446737.3	3591247.8	4765112.8	3590730.2	4086477.3	3909336.8	3690714.8	3887752.8	352120.0	3872605.8
499.30	1622.20	2015.40	2295.50	2022.90	2116.70	2033.10	1945.90	4089.10	2383.80	4037.60	2265.20	4003.00
67010.53	1204483.5	146474.5	17044.88	1502003.3	1511647.8	1507576.8	1444830.0	20362.053	1769771.5	2997918.0	1681911.0	2977227.5
461.40	40.5	44.30	4471.60	5638.80	4464.00	5500.40	4456.30	5321.10	3578.80	4380.80	3579.20	4236.00
112236.00	518911.4	3117401.6	3975999.9	3114097.8	3837095.5	3108728.4	3712015.3	249658.6	3056057.2	2496860.7	2495346.3	2496023.5
974.30	4327.70	5823.40										
730874.42	4615683.67	5123.7										
668.30	424.10	6511.40										
62403773425.3	456716.3											
2251.00	2875.50	1143.00										
64726.6	553957.9	745416.4										
1148.30	1903.60	2010.10										
47467.8	326265.6	1014019.8										
5615.20	12539.70	15101.30										
5342760	3310727.3	1123160.8										
5321.20	505.30	5746.20										
449208.5	3977183.3	4267073.7										
2440.48	2827.10	2274.20										
811997.0	2106546.1	1678597.5										
5573.00	4477.00	5331.80										
4891367	31131863	7161335.9										
1.2(b)	11.10(a)	11.11(b)										

DERIVATION OF DRAG MOMENT LOADS

DUE TO THRUST & FIN DRAG

NE (i)

(ii)

(iii)

		1	2	3	4	5	6	7	8	9	10	
A	$\sum P_F Y_F$	25 973 571.63	25 965 918.64	25 953 819.41	26 101 091.92	26 058 281.07	26 087 621.83		31 704 444.36	30 632 437.24	24 816 249.13	32 771 874
B	$\sum P_E$	36 877.10	36 867.00	36 894.30	37 344.90	36 791.70	36 912.40		43 167.00	41 362.50	42 175.30	48 175.30
C	$[\bar{Y} - \bar{Y}]$ $[\bar{Y} - \bar{Y}]$	14.75	14.77	14.83	14.86	14.50	14.82		4.99	4.70	4.35	5.6
D	$\sum P_E [\bar{Y} - \bar{Y}]$	543,816.3	544,525.97	543,143.18	554,251.54	551,176.23	547,242.09		229,220.63	208,711.15	186,000.55	276,276.27
E	$M_{D,FIN}$	136,176.15					136,176.15		136,176.15			
F	D + E	680,142.88	681,001.75	684,719.33	640,727.61	687,652.48	684,318.20		365,747.8	317,422.10	229,797.8	412,552.27
G	$R_{90.11} = \frac{F}{W}$	3874.52	3877.70	3818.87	3783.0	3915.57	3816.53		2082.36	1944.51	1741.47	225.5
H	$R_{90.17} = \frac{G}{3}$	1,291.51	1,292.57	1,272.62	1,261.03	1,305.19	1,272.86		694.12	648.17	580.49	75.0
I	CASE 2	5(a)	6(a)	7(a)	8(a)	9(a)	10(a)		514	630	710	800
A	$\sum P_F Y_F$	23 151, 118.95	23 141, 176.13	23 125, 305.93	23 491, 675.26	23 423, 840.52	23 371, 284.47		27 717, 271.88	26 711, 299.83	25 961, 638.32	24 371, 644
B	$\sum P_E$	32,736.60	32,735.90	32,722.70	33,014.10	32,942.10	32,825.00		31,865.80	30,543.30	37,361.40	40,175.30
C	$[\bar{Y} - \bar{Y}]$	17.65	17.37	17.18	20.02	21.52	21.16		5.72	5.64	5.34	5.6
D	$\sum P_E [\bar{Y} - \bar{Y}]$	577,800.99	568,622.52	562,175.99	726,970.48	708,913.99	695,846.40		228,823.8	198,811.40	149,551.88	251,551.88
E	$M_{D,FIN}$	169,407.75					169,407.75		169,407.75			
F	D + E	747,208.74	738,030.33	731,223.74	816,378.23	788,217.4	765,254.35		397,410.13	380,945.17	349,417.63	427,103.27
G	$R_{90.11}$	4254.69	4222.43	4165.72	5104.08	5001.26	4906.80		2250.07	2180.52	2100.46	2398.88
H	$R_{90.17}$	1,418.23	1,407.81	1,388.57	1,701.36	1,667.09	1,635.27		750.02	726.84	700.15	799.78
I	CASE 8	5(a)	6(a)	7(a)	8(a)	9(a)	10(a)		514	630	710	800

$$NB \text{ (i) } \sum P^e Y_e = P_{e1}^e Y_{e1} + \dots + P_{eN}^e Y_{eN}$$

* REF :- 7-0500-14, H 42-45

** REF :- 7-0500-15, H 12

$$(ii) \bar{Y} = \sum P^e Y_e / \sum P^e$$

$$(iii) \bar{Y} = Y_{e1} P_{e1} = 63159 \text{ NO. REF :- 7-0500-11, H 6-1}$$

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO
ENGINEERING DIVISION

AIRCRAFT C-105

WEIGHT 47,000 LB

C.G. POSITION N/A

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	81.816	82.770	82.745	81.453				8.410	24.271	28.163	24.171	28.126	34.050		33.798
	82.012	82.446	82.820	82.809				82.820	540.61	177.8	545.86	187.26	581.33		61.76
10	48.170	48.572	48.727	48.820				48.820	48.820	48.820	48.820	48.820	48.820		48.820
	4.35	5.69	5.39	5.09				5.31	5.10	4.1	3.90	3.91	4.01		5.07
15	126.55	276.513	276.426	230.472				817.113	3.764	21.54	84.446	169.273	16.1722		16.1455
				136.176				277.112					277.9182		277.9184
10	323.787	412.829	282.244	316.174				447.513	27.827	27.827	126.4012	182.1978	70.9114		187.12641
51	1.431	2.350	2.214	2.021				13.47	13.41	13.07	106.156	1071.54	1083.87		730.82
4	613.82	723.64	738.16	816.50				465.21	447.10	435.27	253.25	257.20	261.29		40.11
	7(6)	8(6)	9(8)	10(6)		CASE 7		5(6)	6(6)	7a	8(6)	9(6)	10(6)		5(6)
3	25.961	29.343	28.315	27.392				18.119	28.055	28.055	17.234	28.506	28.406		34.403
	638.32	644.73	423.35	112.82				905.84	801.73	452.71	409.74	384.84	521.02		383.91
80	37.361	42.190	40.765	39.417				40.368	40.282	40.282	11.025	40.8500	40.7500		49.66190
	5.34	5.47	5.68	5.88				7.04	6.44	6.97	7.10	7.69	7.55		3.82
45	144.55	251.774	231.225	212.466				284.947	71.501	394.667	144.7102	314.4656	307.6650		159.91122
				167.407				79.669					70.664		50.66400
17	364.417	42.282	40.7502	34.474				334.5894	12.223	33.1205	375.04103	365.06965	342.250		219.57332
2	2100.66	2298.83	2381.80	2472.16				1906.72	1900.33	1905.4	2135.32	2078.75	2040.25		1144.04
1	150.22	744.61	760.60	784.65				65.57	626.78	628.42	71.77	692.40	680.12		271.62
	7(6)	8(6)	9(8)	10(6)		CASE 11		5(6)	6(6)	7a	8(6)	9(6)	10(6)		5(6)

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO
ENGINEERING DIVISION

REPORT NO. 7-0500-16

SHEET 18

DATE 24TH AUG, 1966

AIRCRAFT C-105

WEIGHT 47,000 LB

C G POSITION N/A

PREPARED BY D.A. DRANE

17	18	19	20	21	22	23	24	25	26	27	28	29
8 410	28 371	28 163	28 171	28 126	28 050		33 798	32 850	31 628	30 47	29 574	28 428
329 30	540 61	177 8	505 26	131 36	581 63		611 76	587 89	406 46	174 51	624 46	413 44
46 8 60	40 59 30	40 35 10	40 625 40	40 557 10	40 488 10		48 382 10	47 285 70	45 727 0	31 767 70	49 465 00	48 217 20
5 31	5 10	4 11	3 30	3 17	4 01		207	169	1 50	2 92	2 56	2 18
217 113 16	3 756 41	2 154 8	84 110	103 2 78	16 1 728		101 44 55	79 828 67	54 517 51	151 161 68	127 884 8	105 328 50
27 911 6					27 991 86		27 991 61					27 991 56
45 1 13	5 358 27	27 330 6	106 20 12	122 125 51	70 49 14		109 126 41	107 820 53	87 509 37	179 150 54	155 276 66	133 323 36
39 1 55	134 1 29	1207 00	1061 56	1071 54	1083 87		785 82	613 94	498 29	1020 12	217 58	251 16
465 2	447 10	486 87	253 25	257 20	361 29		45 11	204 65	166 10	240 04	245 86	252 05
5(6)	6(6)	7(6)	8(6)	9(6)	10(6)		5(6)	6(6)	7(6)	8(6)	9(6)	10(6)
8 119	28 055	28 025	28 234	28 506	28 406		34 403	33 218	31 967	30 487	28 919	28 944
305 84	801 73	452 91	469 74	384 84	521 02		383 91	084 87	791 68	701 72	855 65	118 9 19
40 368 00	40 282 10	40 357 3	110 55 70	40 85 00	40 750 00		49 661 80	47 975 40	46 862 30	52 544 20	50 666 80	48 993 20
7 04	6 14	6 47	7 10	7 64	7 55		3 22	2 85	2 87	3 43	3 61	3 24
284 94 14	215 51 26	284 567	224 70 03	314 40 56	307 62 50		159 911 32	136 731 38	109 477 45	26 718 71	182 907 15	161 167 63
50 664 3					50 664 00		50 664 00					50 664 00
224 538 74	136 223 6	331 126 7	375 009 03	365 269 65	363 32 50		219 573 32	187 795 82	169 163 45	257 162 71	233 571 5	211 851 63
190 672	136 235	150 8 14	235 32	207 875	209 0 05		11 941 04	1007 05	911 99	1464 31	1329 98	1206 31
65 57	526 78	628 42	71 77	592 43	680 12		89 1 0	255 168	304 100	483 10	443 23	440 2 10
5(6)	6(6)	7(6)	8(6)	9(6)	10(6)		5(6)	6(6)	7(6)	8(6)	9(6)	10(6)

DERIVATION OF "DRAG MOMENT" LOADS

DUE TO THRUST & FIN DRAG

N.B. (i) ΣP

(ii)

(iii)

	1	2	3	4	5	6	7	8	9	10	11
CASE 1.	5(a)	6(a)	7(a)	8(a)	9(a)	10(a)		5(b)	6(b)	7(b)	8(b)
A $\Sigma P^E Y_F$	29,905, 776.71	29,490, 250.95	29,198, 612.98	31,261, 589.46	30,879, 824.28	30,403, 393.64		30,767, 907.78	29,843, 078.64	28,972, 013.01	33,211, 596.46
B ΣP^E	42,817.70	42,230.30	41,828.10	44,789.10	44,232.20	43,573.10		44,711.70	43,397.80	42,675.50	48,164.00
C $[\bar{Y} - \bar{Y}]$	8.90	8.77	8.52	8.43	8.59	8.68		1.40	1.38	2.47	0.1
D $\Sigma P^E [\bar{Y} - \bar{Y}]$	381,077.53	370,364.12	356,375.41	377,572.11	379,934.51	378,214.51		62,963.82	21,537.86	109,153.72	481.64
E $M_{D,FIN}$	18,175.71	←				→ 18,175.71		18,175.71	←		
F D+E	399,253.24	388,539.83	374,551.12	395,747.88	398,130.30	396,390.22		414,300.69	63,121.66	85,978.21	18,657.35
G $R_{10,41}$ [E 00564411228 F]	2,273.39	2,212.39	2,132.74	2,258.43	2,267.00	2,257.09		252.94	361.08	489.57	106.24
H $R_{56,57}$ [E 00159303242 F]	757.80	737.46	710.91	751.14	755.67	752.36		84.31	120.36	163.19	35.41
A $\Sigma P^E Y_F$	27,411 545.92	27,379 156.05	27,346 603.56	27,668 980.91	27,605 620.53	27,558 647.96		27,775, 245.42	28,855, 150.98	28,024, 921.89	31,743, 941.95
B ΣP^E	32,983.00	32,939.00	32,894.00	39,333.30	39,250.40	39,185.10		43,055.10	41,781.10	40,575.00	45,855.80
C $\bar{Y} - \bar{Y}$	13.63	13.59	13.57	13.91	13.78	13.75		2.62	1.60	1.15	2.83
D $\Sigma P^E [\bar{Y} - \bar{Y}]$	531,238.29	529,181.01	527,791.58	547,126.20	540,270.58	538,795.13		66,171.30	64,001.76	56,661.25	129,770.50
E $M_{D,FIN}$	56,680.35	←				→ 56,680.35		56,680.35	←		
F D+E	588,018.64	585,761.36	584,471.93	603,806.55	597,550.86	597,475.48		143,651.65	129,482.11	103,341.60	189,730.80
G $R_{10,41}$	3,348.24	3,335.39	3,322.05	3,438.14	3,402.52	3,390.70		317.97	703.12	588.44	1061.67
H $R_{56,57}$	1,116.08	1,111.80	1,109.35	1,146.05	1,134.17	1,130.23		272.66	234.37	196.15	353.89
CASE 6	5(a)	6(a)	7(a)	8(a)	9(a)	10(a)		5(b)	6(b)	7(b)	8(b)

$$N.B \text{ on } \Sigma P^E Y_i = P_{e1}^E \times Y_{e1}^{**} + \dots + P_{e1}^E \times Y_{e1}^E$$

* REF: - 7-0500-14, pp 42-43

** REF: - 7-0510-13, pp 12.

$$(ii) \bar{Y} = \Sigma P^E Y_i / \Sigma P^E$$

$$(iii) \bar{Y} = Y_{FCG} \text{ PS. 13} = 689.57 \text{ IN. REF: - 7-0500-11, pp 6, 1}$$

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO
ENGINEERING DIVISION

AIRCRAFT - C-105

WEIGHT - 47,000 LBS

C. G. POSITION - N/A

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	7.6	8.6	9.6	10.6		CASE 5		5.6	6.6	7.6	8.6	9.6	10.6		5.6
23	28,972	33,211	32,121	31,131				28,097	28,047	28,039	28,513	28,006	28,400		28,748
24	013.01	596.46	251.62	217.30				502.56	127.30	000.44	529.52	146.00	523.70		049.8
30	42,675.0	48,164.00	46,616.00	45,213.1				40,129.70	40,062.10	40,057.30	40,445.20	40,715.70	40,269.40		43,105.9
	2.47	0.1	.47	1.00				10.55	10.54	10.75	10.50	10.61	10.66		1.74
36	109,133.72	481.64	22842.13	45,213.1				422,263.4	422,262.97	422,119.25	422,262.97	431,113.58	422,467.80		75,004
				18,175.71				31,854.77					31,854.77		3,854
	25,478.21	13,657.35	4,666.13	27,057.40				45,023.33	45,117.46	46,224.15	46,705.80	463,848.48	40,324.79		106,251.1
	489.57	106.24	26.57	153.95				2572.01	2585.80	2,632.34	2,623.48	2,641.21	2,643.42		2,684.7
36	123.19	35.41	8.26	51.32				864.03	821.93	877.41	874.49	880.40	881.31		202.8
35-98	28,024	31,743	30,701	29,771				26,944	26,900	26,821	27,566	27,438	27,306		28,173
	921.59	941.75	707.38	003.72				860.46	192.34	959.35	997.01	960.79	486.50		007.43
1-10	40,575.00	45,855.30	44,377.00	43,044.60				32,470.20	32,574.60	32,505.40	32,121.70	32,019.60	32,871.20		47,796.70
	1.15	2.83	2.49	2.07				11.60	11.45	11.24	13.87	13.41	12.94		4.47
70	46,612.5	124,70.50	110,054.96	89,728.21				44,740.12	43,174.17	43,077.71	44,543.11	53,352.84	52,794.62		213,401.17
				21,600.35				7968.01					7968.01		7968.0
2-11	10,341.60	18,450.95	166,735.31	146,003.56				545,400.01	370,079.26	532,317.38	43,125.00	622,870.93	602,132.71		313,782.28
12	588.44	1061.67	441.41	835.06				3,105.61	3,061.17	3,020.15	3,632.5	3,646.70	3,481.34		1,783.8
7	176.15	352.89	216.47	278.25				1,025.00	1,023.00	1,006.72	220.76	1,122.23	1,143.78		744.6
	7.6	8.6	9.6	10.6		CASE 12		5.6	6.6	7.6	8.6	9.6	10.6		5.6



AVRO AIRCRAFT LIMITED
MALTON, ONTARIO

TECHNICAL DEPARTMENT

REPORT NO. 7/0500/16.

SHEET NO. 20

AIRCRAFT:

C 105

DRAG MOMENT
BALANCE.

PREPARED BY

D. BROWN.

DATE

26 JUNE '56

CHECKED BY

DATE

FIN DRAG MOMENT LOADS.

ASSUME THAT THE MOMENT IS REACTED BY A PAIR OF DIFFERENTIAL LOADS P , ACTING UPWARDS AT NODE 67, AND DOWNWARDS AT 70.

ARM BETWEEN 67 AND 70 = $(742.50 - 686.22) = 56.28$.

FROM p. 9, VERTICAL ARM OF DRAG LOAD = 63.33.

SO $P = \frac{63.33}{56.28} \times D = 1.125 D$.

DRAG LOADS ARE GIVEN ON p.

CASE	$D^\dagger$ (lb).	P^* (lb).	$\frac{1}{2} P$ (lb).
1	287	322.88	161.44
2	2,155	2,424.38	1212.19
5	503	565.88	282.94
6	895	1,006.88	503.44
7	442	497.25	248.63
11, 17	800	900.00	450.00
12, 16	1,573	1,763.63	884.82
8, 15	2,675	3,000.38	1504.69

$\dagger$ SEE p. 17.

* FOR WHOLE A/C — USE HALF OF THESE VALUES IN
FINAL TABLES

NODE		1	2	3	4	5	6	7	8	9	10
SUB-CASE 7.5(b)	WING AIRLOAD	312.48	35.45	3563.50	15.44	5673.61	1306.01	6252.52	101.13	93.29	221.72
	FUSE. "										
	ENG. REACTIONS										
	DRAG MOMENTS										
	ADJUSTMENTS										
Pa											
SUB-CASE 7.6(b)	WING AIRLOAD	312.48	34.00	3573.50	14.39	5666.94	1305.32	6231.57	101.13	93.29	221.72
	FUSE. "										
	ENG. REACTIONS										
	DRAG MOMENTS										
	ADJUSTMENTS										
Pa											
SUB-CASE 7.7(b)	WING AIRLOAD	312.48	29.90	3561.15	14.35	5643.67	1303.63	6209.33	101.13	93.29	221.72
	FUSE. "										
	ENG. REACTIONS										
	DRAG MOMENTS										
	ADJUSTMENTS										
Pa											
SUB-CASE 7.8(b)	WING AIRLOAD	233.90	115.75	3478.01	144.57	5414.87	1231.79	6027.65	153.14	92.46	214.47
	FUSE. "										
	ENG. REACTIONS										
	DRAG MOMENTS										
	ADJUSTMENTS										
Pa											
SUB-CASE 7.9(b)	WING AIRLOAD	240.05	115.58	3467.29	145.79	5401.12	1231.02	6004.98	1513.00	93.66	225.51
	FUSE. "										
	ENG. REACTIONS										
	DRAG MOMENTS										
	ADJUSTMENTS										
Pa											
SUB-CASE 7.10(b)	WING AIRLOAD	240.04	115.38	3454.17	147.02	5383.69	1229.46	5977.70	1472.63	94.91	236.94
	FUSE. "										
	ENG. REACTIONS										
	DRAG MOMENTS										
	ADJUSTMENTS										
Pa											

10	11	12	13	14	15	16	17	18	19	20	21	22	23
221.72	167.47	1023.05	7042.05	733.81	536.87	2199.75	2676.79	3998.86	8160.72	4178.62	392.25	1000.56	530.75

68.36	121.31	1211.71	2165.02	764.46	576.50	2366.71	2680.86	4239.35	8119.50	4107.59	390.43	386.38	533.81
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256.00	86.51	1325.87	2289.18	795.70	616.70	7536.26	2683.34	4483.16	3071.17	4082.87	388.41	392.57	536.08
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214.47	536.81	1768.33	2317.00	874.51	467.75	727.07	1689.60	2819.86	7677.79	4130.33	147.00	338.36	1133.11
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225.51	575.70	1823.79	2444.73	906.46	509.76	1905.03	1909.15	3078.37	7634.22	4106.87	146.20	934.59	1135.04
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236.94	615.77	1942.28	2575.40	938.46	552.82	2087.54	2134.53	3843.26	7584.65	4080.25	14521	930.14	1136.42
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23	24	25	26	27	28	29	30	31	32	33	34	35	36
330.75	350.56	358.76	76.26	62.458	655.53	215.62	4778.27	163.71	830.45	788.65	723.32	506.32	324

- Pa LOADS AS WITH AIRLOADS ABOVE

33.11	402.08	354.57	5.5	29.35	53.33	208.33	7153.24	151.57	880.08	781.50	708.74	5035.66	32.11
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- Pa LOADS AS WITH AIR LOADS ABOVE

536.23	456.49	3543.26	75.05	625.62	750.27	500.68	7125.29	161.03	780.67	777.42	632.31	5005.50	320.76
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- Pa LOADS AS WITH AIRLOADS ABOVE

1733.11	216.29	3460.54	237.76	600.20	865.08	582.76	4763.33	746.23	850.38	7014.49	1265.75	748.66	624.51
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- Pa LOADS AS WITH AIRLOADS ABOVE

11350.4	274.86	3440.91	236.39	600.47	861.44	380.17	4736.88	466.53	845.76	1008.70	1247.40	4870.83	620.93
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- Pa LOADS AS WITH AIRLOADS ABOVE

1136.42	332.40	3418.58	234.88	546.57	857.24	371.13	4706.17	463.56	840.27	1002.20	1227.92	4839.22	616.95
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- Pa LOADS AS WITH AIRLOADS ABOVE

36	37	38	39	40	41	42	43	44	45	46	47	48	49
2 324.38	726.56	1230.05	4455.87	72.31	1401.34	7921.54	1470.11	7110.65	1658.63	1218.53	356.20	2058.69	1703.69

6 323.11	725.29	1232.56	4433.28	79.13	1394.52	7891.21	1462.03	2100.31	1650.28	1211.48	37.76	2344.13	1700.93
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0 20.76	721.00	1215.76	4406.71	79.07	1386.12	7843.75	1451.08	2058.37	1640.52	1202.53	216.06	2341.35	1690.53
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2 624.51	666.14	1542.25	4386.87	233.28	1245.58	782606	2304.51	1570.88	1515.17	1786.14	1325.63	2235.69	1776.16
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3 620.93	662.36	1538.45	4302.02	231.92	1238.53	7781.64	2291.33	1562.02	1506.58	1775.94	1247.63	2223.09	1766.06
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2 616.95	658.06	1523.56	4274.11	230.47	1230.47	7731.17	2276.61	1551.81	1496.80	1764.51	1166.67	2208.55	1754.63
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48	49	50	51	52	53	54	55	56	57	58	59	60	61
158.69	1702.69	1392.49	1188.98	4126.15	2154.41	1674.45	350.41	1780.75	1561.42	2253.31	2117.04	2036.92	1740.30
								1448.00	130.54		810.24	345.82	120.84
								245.11	240.11				5085.5
										2393.91			
								1091.82	1676.19		1331.14	1655.10	+375.54
144.13	1700.93	1384.86	75.67	4105.79	2143.15	1665.10	458.65	1771.27	1552.56	2386.76	2115.73	2087.55	1730.30
								441.25			464.3	441.35	181.45
								204.65	204.65				5840.0
										2326.76			
								1125.27	1627.56		1324.81	1646.20	+4239.35
147.35	1630.53	1375.50	15.76	4082.27	2122.67	1653.48	570.33	1752.81	1541.46	2372.48	2202.44	2073.66	1717.71
								+256			485.33	438.56	108.33
								166.10	166.10				5713.8
										2172.08			
								1155.15	1578.72		1317.11	1635.10	4124.93
2235.69	1776.16	2135.60	1589.34	3203.65	2562.09	2827.94	1521.10			2310.37	2171.81	2045.20	1511.10
								476.86			461.43	476.63	131.72
								340.04	340.04				1630.7
										2310.37			
								1538.85	3039.45		1210.38	2571.97	3019.51
2223.09	1766.06	2123.38	1488.89	3185.57	2547.49	2811.74	1397.55			2307.74	2163.35	2031.17	1511.97
								473.28			463.34	473.23	131.11
								253.86	295.86				16346.5
										222.721			
								1572.38	2979.80		1203.64	2557.34	3873.62
2208.55	1754.63	2109.75	1384.71	3164.76	2531.05	2793.71	1269.69			2307.74	2145.47	2011.67	1510.79
								473.28	132.11		449.54	470.09	138.14
								253.05	253.05				5803.2
										2232.02			
								1603.24	2919.82		1195.93	2541.00	2750.60

SUMMARY

61	62	63	64	65	66	67	68	69	70	71	72	73	74
1740.30	2232.54	0	669.93	966.78	762.47	468.61	1324.55	397.22	1086.10	521.23	760.40	6190.39	8688.69
5085.5	+669.6				2275.4	1988.7		5549.8	1939.1				
+375.54	1801.91	1423.12	+226.71	523.01	+1643.27	+1032.49	+13264.54	+4728.27	+678.02	2428.10	2252.27	4767.27	8688.69
1730.30	2251.09	0	668.52	961.51	768.44	459.14	1452.76	715.00	1114.86	575.62	766.37	6159.06	8645.26
5840.0	+653.3				11376.5	1002.6	14534.0	5310.3	1775.5				
+4239.35	1835.47	1416.02	+225.40	520.16	+11348.51	+957.15	+12699.90	+4473.96	+487.93	2459.30	2280.05	4743.06	8645.26
1717.71	2267.41	0	661.49	955.13	752.44	449.67	1521.49	432.22	1146.77	1010.53	832.82	6121.38	8594.68
5713.8	+659.2				11718.1	1824.2	14128.6	5022.3	1622.2				
+4124.93	1864.38	1407.77	+223.84	516.57	+11094.50	+870.55	+12183.44	+4241.41	+368.79	2494.62	2306.85	4714.61	8594.68
1691.1	2228.88	0	672.73	952.84	752.86	449.41	1456.8	343.01	1010.55	549.36	784.8	5862.16	7527.35
1517.2	2257.78		961.43	972.63	139.92	286.8	165.71	406.07	55.07	185.63	1605.68		
6510.7	+694.8				12737.1	2155.5	7596.0	6013.3	2295.5				
+3019.51	3290.86	1208.54	+282.70	916.26	+11355.66	+559.68	+14069.95	+5215.22	+848.71	2155.04	2029.86	4653.62	7527.35
8211.97	340.84	0	674.89	1214.95	1018.62	1077.12	1521.31	721.36	1201.77	1077.5	462.53	3619.91	7484.75
1311.1	269.28		951.64	173.83	139.11	255.32	45.41	242.23	13.19	516.6	1014.53		
6346.5	+616.4				12400.4	2060.2	1546.1	574.8	2116.7				
+2873.62	3319.12	1201.69	+280.87	911.10	+11026.89	+479.17	+13445.41	+4934.70	+643.31	2193.88	2059.61	4627.22	7484.75
3010.79	3750.4	0	676.50	1246.02	1002.94	1061.17	1581.97	349.77	1041.2	1047.49	732.94	5791.07	7484.75
136.14	275.32		919.54	420.61	132.19	25.56	149.34	744.04	441.6	175.11	1085.11		
5503.2	+660.4				12106.6	1151.2	14504.1	503.7	1945.3				
+2750.60	3343.50	1193.87	+279.04	905.33	+10741.85	+407.04	+12873.64	+4674.54	+416.02	2232.60	2089.05	4597.20	7436.03

SUMMATION OF LOADS FOR Pa OF 7/0510/13

AIRCRAFT C-105
PREPARED BY D.D. AME
CHECKED BY 2539

74	75	76	77	78	79	80	81	82	83	84	85	86	87
8688.69	7379.86	5252.68	844.37	1159.81	1674.52	1738.32	2582.24	2099.02	3438.14	2167.16	2920.91	601.22	2562.18
		1051.02	1051.02	647.22	277.22	1721	1051.02	549.02	539.02	118.02	418.02	172.16	157.16
								591.62		1807.82			
8688.69	7379.86	4201.66	+206.65	551.83	1066.54	1579.21	2422.53	3169.67	3477.16	3624.43	2510.90	+974.94	987.02
8645.26	7342.55	5227.14	840.19	1154.24	1666.36	1730.57	2569.85	2098.74	3424.04	2126.21	2906.62	578.15	2550.34
		1051.02	1051.02	647.22	277.22	1721	1051.02	549.02	539.02	118.02	418.02	172.16	157.16
								591.62		1807.82			
8645.26	7342.55	4181.64	+205.31	549.52	1061.64	1571.88	2411.16	3154.12	3460.48	3606.31	2498.90	+969.75	982.44
8594.68	7278.79	5197.91	835.32	1147.91	1657.02	1711.10	2515.99	2076.91	3408.04	2143.28	2890.21	534.52	2535.37
		1051.02	1051.02	647.22	277.22	1721	1051.02	549.02	539.02	118.02	418.02	172.16	157.16
								591.62		1807.82			
8574.68	7278.79	4158.94	+203.64	547.03	1056.14	1563.61	2398.30	3136.06	3441.42	3585.06	2485.18	+963.62	977.23
7527.35	6983.56	3556.12	624.02	241.22	1108.02	1079.02	1511.04	1581.10	1757.78	2336.16	2437.74	645.87	2257.05
		1127.89	1127.89	624.02	1108.02	1079.02	1511.04	1581.10	1757.78	2336.16	2437.74	645.87	2257.05
								591.62		1807.82			
7527.35	6983.56	2428.23	+443.33	37.97	-499.05	854.56	1340.47	2616.18	2301.80	3393.03	1651.95	+1075.32	566.89
7484.75	6943.96	2414.78	+440.67	37.96	-496.42	850.01	1333.20	2601.50	2289.07	3374.00	1642.89	+1068.98	563.92
		1121.36	1121.36	624.02	1108.02	1079.02	1511.04	1581.10	1757.78	2336.16	2437.74	645.87	2257.05
								591.62		1807.82			
7484.75	6943.96	2414.78	+440.67	37.96	-496.42	850.01	1333.20	2601.50	2289.07	3374.00	1642.89	+1068.98	563.92
7436.03	6898.87	2398.93	+437.75	37.75	-493.24	844.62	1324.61	2584.90	2274.31	3362.28	1632.28	+1062.00	560.21

0510/13

AIRCRAFT CLOS

REPORT NO.

PREPARED BY S. HARRIS

SHEET

CHECKED BY

DATE

31-8-56

80	81	82	83	84	85	86	87	88	89	90	91
1738.52	2582.24	2077.02	2438.14	2167.16	2920.01	601.22	2562.18	672.81	0	3855.64	1372.15
1737.21	1552.1	549.03	537.02	416.01	416.01	776.16	1776.16	3710.41	548.84	2387.17	2387.17
										735.32	735.32
		541.69		1207.8							
1579.21	2422.53	3169.67	3477.16	3624.43	2510.90	974.74	987.02	6089.25	552.93	2224.68	3034.86
1730.57	2569.05	2098.74	2924.04	2156.21	2906.62	571.15	2550.34	667.41	0	3836.53	1371.85
1732.41	1552.1	549.03	537.02	416.01	416.01	776.16	1776.16	3710.41	548.84	2387.17	2387.17
										735.32	735.32
		541.69		1207.8							
1571.88	2411.16	3154.12	3460.48	3606.31	2498.90	969.75	982.44	6058.08	548.84	2331.72	2973.85
1721.10	2569.05	2098.74	2924.04	2156.21	2906.62	571.15	2550.34	667.41	0	3814.52	1381.58
1724.1	1552.1	549.03	537.02	416.01	416.01	776.16	1776.16	3710.41	548.84	2387.17	2387.17
										735.32	735.32
		541.69		1207.8							
1563.61	2398.30	3136.06	3441.42	3585.06	2485.18	963.62	977.23	6021.23	544.08	2430.90	2927.86
1710.10	2569.05	2098.74	2924.04	2156.21	2906.62	571.15	2550.34	667.41	0	3814.52	1381.58
1714.1	1552.1	549.03	537.02	416.01	416.01	776.16	1776.16	3710.41	548.84	2387.17	2387.17
										735.32	735.32
		541.69		1207.8							
1544.56	2340.47	2616.18	2301.80	3393.03	1651.95	1075.32	586.89	6433.58	609.36	1067.83	2116.69
1722.81	2569.05	2098.74	2924.04	2156.21	2906.62	571.15	2550.34	667.41	0	3836.53	1371.85
1724.1	1552.1	549.03	537.02	416.01	416.01	776.16	1776.16	3710.41	548.84	2387.17	2387.17
										735.32	735.32
		541.69		1207.8							
1500.01	1333.20	2601.50	2289.07	3374.00	1642.89	1068.98	563.92	6397.13	604.61	1188.74	2051.45
1715.24	2569.05	2098.74	2924.04	2156.21	2906.62	571.15	2550.34	667.41	0	3814.52	1381.58
1718.1	1552.1	549.03	537.02	416.01	416.01	776.16	1776.16	3710.41	548.84	2387.17	2387.17
										735.32	735.32
		541.69		1207.8							
844.62	1324.61	2584.90	2274.31	3352.28	1632.28	1062.00	560.21	6356.02	571.15	1303.67	2002.45

[illegible]

10	11	12	13	14	15	16	17	18	19	20	21	22	23
+ 906.81	+ 2151.86	+ 4478.53	+ 4036.46	+ 797.02	+ 1432.28	+ 6107.50	+ 7495.69	+ 7962.38	- 10448.12	- 5305.31	- 484.63	- 1206.99	- 814.48

+ 816.47	+ 1864.08	+ 3670.21	+ 3155.90	+ 575.36	+ 1147.00	+ 4903.98	+ 6021.90	+ 6229.80	- 10114.37	- 5133.67	- 471.11	- 1176.80	- 831.12
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+ 722.52	+ 1566.90	+ 2834.58	+ 2244.90	+ 345.96	+ 852.09	+ 3659.56	+ 4497.69	+ 4437.29	- 9774.10	- 4958.62	- 457.38	- 1146.16	- 848.81
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+ 525.99	+ 2053.66	+ 5950.08	+ 6136.21	+ 1233.72	+ 2314.37	+ 10059.81	+ 12856.31	+ 14234.78	- 10703.70	- 5783.97	- 209.17	- 1211.35	- 1026.21
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+ 442.80	+ 1765.38	+ 5101.79	+ 5201.14	+ 1000.40	+ 2006.95	+ 8757.77	+ 11250.44	+ 12400.3	- 10413.49	- 5599.61	- 201.57	- 1180.66	- 1038.19
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+ 360.20	+ 1473.55	+ 4234.85	+ 4243.95	+ 761.58	+ 1691.22	+ 7419.69	+ 9598.10	+ 10456.59	- 10067.50	- 5413.15	- 195.25	- 1150.11	- 1050.02
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	20	21	22	23	24	25	26	27	28	29	30	31	32	33
8.12	5305.31	484.63	1208.99	814.48	2267.48	4594.09	+110.77	810.58	797.41	592.11	6138.83	+258.66	1141.10	1031.3

'P₁' LOADS AS IN WING AIRLOADS ABOVE

37	5133.67	471.11	1176.80	831.12	1888.11	4446.54	+105.76	784.61	776.71	537.50	5940.36	+247.78	1104.54	995.9
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'P₂' LOADS AS IN WING AIRLOADS ABOVE

10	4958.62	457.38	1146.16	848.81	1495.92	4296.19	+100.63	758.13	755.68	481.18	5737.97	+236.62	1067.26	959.8
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'P₃' LOADS AS IN WING AIRLOADS ABOVE

3.70	5783.97	209.17	1211.35	1026.21	3491.03	4847.70	+330.77	846.07	1122.20	964.95	6671.47	+653.24	1191.67	1417.6
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'P₄' LOADS AS IN WING AIRLOADS ABOVE

49	5599.61	201.57	1180.66	1038.19	3081.05	4692.71	+320.84	818.99	1094.03	901.54	6458.76	+633.51	1158.53	1373.2
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'P₅' LOADS AS IN WING AIRLOADS ABOVE

7.50	5413.15	195.25	1150.11	1050.02	2660.00	4536.65	+309.89	791.76	1064.50	835.83	6243.72	+611.95	1115.19	1327.1
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'P₆' LOADS AS IN WING AIRLOADS ABOVE

32	33	34	35	36	37	38	39	40	41	42	43	44	45	
141.10	1031.30	1497.59	6490.80	+441.30	931.32	1605.28	5715.48	77.17	1788.36	10183.49	+1955.10	2669.45	2119.94	17

104.54	995.95	1385.22	6282.26	+424.38	902.14	1550.60	5531.72	77.43	1731.88	9854.98	+1884.50	2587.85	2052.63	16
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1067.26	959.86	1269.57	6069.61	+407.08	871.97	1494.78	5344.34	77.75	1674.31	9519.98	+1812.34	2504.73	1984.00	160
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1191.67	1417.60	2502.23	6862.09	+870.50	933.69	2153.49	6060.55	322.45	1746.38	10960.82	3215.90	2267.11	2123.75	24
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1158.53	1373.28	2366.49	6642.74	+843.88	903.68	2087.97	5866.88	+313.35	1690.12	10611.04	+3116.55	2134.71	2056.50	24
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1115.19	1327.18	2225.09	6421.81	+815.31	873.70	2017.95	5671.73	+302.43	1634.09	10257.88	+3011.45	2064.48	1987.29	233
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[illegible]

	56	57	58	59	60	61	62	63	64	65	66	67	68	69
45	333.70 56.90	2107.61 164.11	3070.94 2075.54	2857.32 1161.84	2772.20 576.90	2562.13 167.11	1496.27 311.10	0	260.34 1161.84	1273.95 576.10	1021.81 131.10	184.98 111.10	1424.43 550.13	147.61 450.93
	+465.22	-465.22				+4615.20	+516.30							
	1291.58	2403.62		1695.43	2195.30	+2,422.18	1,231.07	1,811.68	+301.50	699.05	+8771.50	+264.69	+14030.90	+1991.13
4	2283.16 357.42	2028.09 163.46	2476.83	2765.37 1123.02	2674.16 557.48	2271.71 163.46	1551.26 300.57	0	832.42 1123.02	1030.73 557.48	999.41 123.46	909.20 300.57	+1476.45 532.77	+125.15 532.37
	+447.10	-447.10				+4618.70	+516.70							
	1248.57	2311.73		1642.35	2116.68	+2510.45	1,335.13	1,754.97	+290.60	673.45	+8636.17	+332.60	+13,504.68	+1788.78
9	3170.26 537.67	1446.84 157.70	2876.17	2671.61 1088.42	2573.14 537.67	2179.18 157.70	1671.26 284.85	0	203.45 1088.42	1124.72 537.67	952.27 157.70	389.28 284.85	191.47 113.43	198.42 513.43
	+435.67	-435.67				+4617.80	+516.40							
	1197.54	2224.81		1588.20	2036.32	+2596.32	1,444.51	1,697.17	+279.47	747.00	+688.97	+108.04	+12974.04	+1646.89
6	3894.83 672.82	3158.23 197.05	3236.57	3042.09 1852.56	4256.23 672.82	+610.27 197.05	3025.23 363.05	0	410.38 1363.56	1944.80 672.82	2120.20 197.05	1985.41 363.05	5276.57 642.65	558.48 249.64
	+358.85	-358.85				+4755.70	+512.00							
	2264.16	4115.63		1688.53	3583.51	+309.48	2856.28	1,631.22	+403.23	1271.98	+7830.05	862.97	+15,157.45	+5054.64
10	3122.10 651.02	3897.50 190.70	3133.07	2944.91 1310.01	4124.26 651.03	3501.30 140.70	3105.87 351.25	0	920.08 1310.01	1824.49 651.03	2055.50 190.70	1857.74 651.25	2651.53 621.81	725.61 621.81
	+357.20	-357.20				+4741.80	+520.40							
	2179.87	4004.00		1634.90	3473.23	+431.20	2126.72	1,640.45	+389.93	1233.40	+7860.00	754.17	+14,533.02	+1740.73
5	3081.04 628.82	3707.68 184.23	3028.29	2246.93 1265.60	2986.43 628.82	+345.88 134.23	3122.34 339.21	0	821.43 1265.60	1821.00 628.82	1985.85 184.23	794.83 331.21	2220.15 600.57	589.38 600.57
	+361.29	-361.29				+4726.30	+528.70							
	2090.93	3884.74		1531.33	3356.61	+561.65	2992.85	1586.16	+376.17	1192.18	+7891.28	639.47	+14,101.16	+1824.81

SIMULATION OF LOADS FOR P. OF 7/05 0/3

68	69	70	71	72	73	74	75	76	77	78	79	80	81
+1524.13	+147.61	+319.61	+1277.81	+1230.32	-748.11	-11072.81	-451.58	-3415.32	-1072.25	-453.25	-910.34	-2170.23	-2233.60
-550.13	-550.13	-550.13	-7962.44	-7452.44				+1237.05	+1302.05	+731.14	+791.19	+216.63	+216.63
+597.40	+2044.50	+2341.40											
		+248.63											
					+1811.63								
+1030.90	+1991.18	+2854.22	-674.59	-982.06	-6116.84	-11,072.86	-9451.58	-5,253.27	+289.70	-662.06	-1319.20	-1,961.62	-3,016.97
+1416.45	+185.13	+110.97	+957.93	+771.05	+724.12	+5794.87	+9147.31	+9162.25	+1071.11	+410.26	+3016.72	+2114.01	+3152.34
-531.37	-528.37	-528.37	-1887.24	-528.37				-1316.69	-1316.69	-1316.69	-764.47	-201.57	-202.33
+1443.60	+1136.23	+316.70											
		+248.63											
					+1754.97								
+13,504.68	+478878	+2113.95	-92735	-1114.23	-5919.95	-10,724.87	-9,149.31	-5,099.56	+277.62	-645.89	-1282.25	-1905.71	-2930.06
+11.47	+98.42	+98.42	+676.94	+528.69	+7416.72	+1091.22	+241.12	+823.54	+1235.14	+1235.72	+1411.28	+2447.57	+3091.11
-112.43	-112.43	-112.43	-1516.76	-1814.78				+1570.41	+1570.41	+737.22	+737.22	+197.86	+197.86
+2416.30	+1161.40	+3247.30											
		+248.63											
					+1697.17								
+12974.04	+146.89	+1885.54	-1189.93	-1314.13	-5719.19	-10370.22	-8841.12	-4943.14	+265.26	-629.50	-1244.66	-1848.83	-2841.65
+3235.57	+178.44	+2074.42	+2655.55	+1181.22	-8213.64	+1532.77	+7241.92	+5000.49	+600.00	+181.30	+1600.71	+144.45	+184.44
+642.61	+245.64	+642.61	+2884.18	+2284.18				+586.07	+586.07	+183.15	+425.15	+257.64	+657.64
+1524.50	+1348.20	+2012.40											
		+248.63											
					+1631.32								
+15,157.45	+5054.64	+2302.21	+371.37	-102.96	-6582.32	-10,556.74	-9,784.93	-3416.75	+625.27	-51.15	-497.56	-1,192.02	-1877.30
+2651.53	+724.64	+468.65	+232.24	+1849.07	+7150.88	+10215.02	+4171.53	+4820.04	+921.56	+144.47	+1567.07	+1400.76	+2062.54
-621.81	-621.81	-621.81	-2208.82	-2208.82				+1535.19	+1535.19	+875.17	+292.17	+248.32	+248.32
+12503.90	+132670	+202070											
		+248.63											
					+1640.45								
+14,533.02	+194073	+2,118.02	+93.42	-314.75	-2310.13	-10,215.88	-9471.53	-3301.73	+605.63	-48.30	-673.90	-1,152.44	-1814.52
+2220.18	+597.32	+250.41	+1937.62	+1547.64	+7722.11	+1277.54	+1102.74	+4672.57	+335.20	+110.54	+1715.75	+1355.24	+1945.87
-620.57	-600.57	-600.57	-2152.00	-2152.00				+1483.33	+1483.33	+202.61	+862.61	+238.83	+238.83
+12421.40	+4826.00	+2023.10											
		+248.63											
					+1522.12								
+14,101.16	+4824.81	+1,931.77	-194.32	-534.36	-6100.20	-9877.56	-9,156.78	-3,195.27	+584.44	-48.25	-653.09	-7,116.41	-1757.04

7/05 2/3

AIRCRAFT C 105
 PREPARED BY D. A. HARVEY
 CHECKED BY D. A. HARVEY
 REPORT NO. 7-0500-16
 SHEET
 DATE 24TH AUGUST 1956

0	30	81	82	83	84	85	86	87	88	89	90	91
0.87	2178.25	2233.60	2252.10	2271.55	2291.10	2310.65	2330.20	2349.75	2369.30	2388.85	2408.40	2427.95
1.19	+216.63	+216.63	-684.67	-684.67	+532.62	+532.62	-2091.62	-2091.62	6781.99	781.44	1161.84	311.10
												+147.60
											+1395.65	+1375.65
1.20	1961.62	3016.97	4018.35	4264.25	4629.74	3149.23	+1267.90	1227.86	7843.16	781.44	2331.10	+1620.95
1.62	2114.04	3132.39	2571.32	3571.21	2603.20	2575.22	745.55	2165.40	2432.29	0	+4734.49	1132.99
4.47	+208.33	+208.33	-663.43	-663.43	+519.86	+519.86	1973.74	+1973.74	6733.67	748.11	+1123.02	300.57
												+477.30
											+1341.29	1341.29
2.25	1905.71	2930.06	3894.46	4234.64	4483.06	3055.96	+1225.19	1192.66	7587.36	748.11	2275.18	+1636.43
1.38	2044.57	3091.51	2455.02	3460.93	2545.97	2421.74	712.90	3061.35	205.67	0	+4555.54	1224.77
2.22	+199.86	+199.86	-641.77	-641.77	+500.73	+500.73	1904.50	1904.50	6430.20	714.12	+1028.42	284.85
												+440.40
											+1307.00	1307.00
4.66	1848.83	2841.65	3764.23	4102.70	4333.51	2961.01	+1181.60	1156.83	7326.47	714.12	2195.12	+1634.83
0.71	1447.66	2184.94	2147.07	2134.50	2202.57	3243.20	242.25	3166.17	883.14	0	+4281.13	2779.46
1.15	+257.64	+257.64	-189.57	-781.57	631.24	631.24	2376.86	2376.86	2107.56	146.02	+1353.56	323.05
												+447.60
											+1061.56	1061.56
1.56	1192.02	1877.30	3655.93	3224.07	4740.63	2311.96	+1514.61	789.31	5192.70	946.02	1866.04	+767.53
7.07	1400.76	2062.84	2578.43	2552.31	2762.11	2246.25	234.82	3061.57	854.83	0	+4141.61	2222.30
3.17	+248.32	+248.32	-765.76	-765.76	+610.19	+610.19	2300.71	2300.71	7863.48	908.61	1310.01	351.25
												+424.00
											+1071.59	1071.59
9.0	1152.44	1814.52	3538.52	3118.07	4590.66	2236.06	+1465.89	763.38	8703.31	908.61	1760.04	+757.33
7.0	1355.24	1995.27	2010.13	2275.91	2676.35	2752.79	207.00	2962.55	826.43	0	+4005.01	2224.42
6.1	+238.83	+238.83	-741.45	-741.45	+588.75	+588.75	9223.07	2223.07	7542.21	870.50	+1265.65	339.21
												+415.30
											+1023.87	1023.87
0.9	1116.41	1757.04	3422.82	3017.36	4439.25	2164.04	+1416.07	739.48	8418.72	870.50	1655.54	+748.30

[illegible]

10	11	12	13	14	15	16	17	18	19	20	21	22	23
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+1964.16	+1798.06	+5499.71	+2922.84	+131.70	+985.64	+815.18	+2359.26	+5164.93	+9864.81	+4599.17	+523.04	+374.87	+818.97
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+1624.14	+553.65	+527.99	+689.20	+44.95	+820.19	+2414.92	+2342.20	+3469.84	+5558.75	+4443.89	+507.12	+939.79	+783.40
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+1275.10	+82.00	+356.92	+415.48	+227.31	+242.87	+969.14	+1275.79	+1719.58	+9242.10	+4283.11	+490.66	+903.50	+746.59
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+2600.29	+5040.84	+10171.31	+9866.73	+1117.71	+2969.99	+11421.04	+12533.28	+13372.61	+10045.41	+5261.51	+518.44	+1213.14	+1298.77
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+2251.63	+152.39	+8558.03	+8538.60	+527.65	+2577.53	+9917.22	+10904.88	+11565.71	+9736.88	+5097.15	+501.59	+1175.41	+1256.66
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+7891.65	+3235.21	+6892.58	+1167.25	+731.46	+2172.32	+2364.51	+5219.12	+5515.01	+9417.44	+4926.99	+486.17	+1135.72	+1213.07
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22	23	24	25	26	27	28	29	30	31	32	33	34	35.
74.87	818.97	2376.41	4079.78	36.02	620.98	612.73	394.78	5002.77	71.76	838.57	739.66	1137.17	5909.40

Pa LOADS AS IN WING AIRLOADS ABOVE.

39.79	783.40	7635.01	3948.55	34.93	598.79	586.51	522.22	4836.96	67.01	807.19	708.09	853.51	5720.20
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Pa LOADS AS IN WING AIRLOADS ABOVE.

03.50	746.59	869.45	3812.79	33.80	575.83	559.38	247.28	4665.40	62.09	774.73	675.43	763.81	5524.46
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Pa LOADS AS IN WING AIRLOADS ABOVE.

23.14	1298.77	6221.54	4366.89	35.51	765.96	953.46	7054.58	5579.13	188.54	1099.94	1147.21	2591.10	6285.21
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Pa LOADS AS IN WING AIRLOADS ABOVE.

75.41	1256.66	6118.29	4231.76	34.43	741.80	521.62	573.05	5405.46	182.20	1064.11	1110.10	2387.95	6090.90
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Pa LOADS AS IN WING AIRLOADS ABOVE.

35.72	1213.07	5288.78	7091.84	33.30	716.78	590.64	888.81	5225.66	175.64	1027.96	1107.68	2177.77	5889.71
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Pa LOADS AS IN WING AIRLOADS ABOVE.

35.	36	37	38	39	40	41	42	43	44	45	46	47	48
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5909.40	385.51	757.37	1165.28	5007.59	115.44	1485.29	9242.65	1749.96	2369.96	1760.67	1223.78	2533.68	3345.09
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5720.20	570.96	731.22	1116.34	4844.52	114.46	1434.02	8946.43	1685.42	2296.37	1699.16	1169.53	1885.47	3242.31
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5524.46	355.90	704.18	1065.70	4675.81	113.45	1380.36	8639.96	1614.57	2220.23	1635.52	1113.40	1216.10	3135.99
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6285.21	511.05	892.16	1768.13	5451.42	1.44	1750.03	9844.37	2342.11	2416.20	2107.77	1985.99	6521.87	3360.04
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6090.90	494.79	864.17	1713.94	5282.31	10.82	1695.15	9539.95	2267.51	2341.98	2041.53	1925.92	5821.34	3257.06
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5889.71	477.95	812.00	1645.32	5107.22	10.19	1638.12	9224.78	2190.27	2265.13	1972.95	1858.26	5095.86	3150.44
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46	47	48	49	50	51	52	53	54	55	56	57	58	59
1223.78	2533.68	3345.09	1742.56	1221.76	2687.93	4516.04	2049.42	1361.26	3149.73	1629.03	1185.89	3095.62	2202.35
										450.69	10.83		617.04
										1291.51	1291.51		
												3095.62	
									113.17	2457.57			1525.31
169.53	1885.47	3242.31	1677.35	1162.02	1984.65	4375.66	1266.54	1297.29	2337.96	1558.72	1114.09	3006.49	2122.61
										431.37	18.62		648.15
										1292.57	1292.57		
												3006.49	
									165.22	2338.14			1474.36
1113.40	1216.10	3135.29	1609.88	1100.20	1258.38	4230.43	1880.71	1210.52	1439.63	1485.96	1039.76	2882.43	2040.10
										411.29	7.35		618.34
										1299.62	1299.62		
												2882.43	
									224.95	2328.03			1421.76
1985.42	6521.81	3360.04	2284.33	2242.49	7227.41	4610.70	2972.54	2844.63	8330.34	2562.36	2808.89	2835.99	2764.71
										622.82	50.70		533.49
										1311.03	1311.03		
												2835.99	
									624.01	4089.22			1831.22
1925.92	5821.34	3257.06	2211.74	2168.84	6462.30	4409.03	2817.02	2750.31	7448.01	2479.84	2114.99	2750.40	2677.30
										601.12	29.34		301.14
										1305.19	1305.19		
												2750.40	
									573.53	3990.84			1776.16
1858.26	5035.86	3150.44	2136.59	2092.63	5678.55	4322.35	2778.14	2652.66	6520.73	2393.90	2617.77	2661.77	2586.88
										518.65	2.791		807.67
										1298.86	1298.86		
												2661.77	
									516.39	3888.72			1719.15

	59	60	61	62	63	64	65	66	67	68	69	70	71	72
62	2302.35 +617.04	1838.58 +50.69	1240.92 +9.83 +317.50	353.83 +24.21 +349.20	0	-664.22 +617.04	-861.66 +50.69	-520.27 +641.00	-266.32 +2014.00	-803.44 +11312.20	+330.43 +5605.60	+66.34 +4017.20	+801.00	+702.5
5.62														
	1525.31	1387.89	1806.11	342.84	1475.98	+12.82	+410.97	+5413.56	+140877	+164375	+5464.14	+3721.67	315.96	503.4
49	2122.61 +648.75	1752.55 +31.37	1158.69 +8.62 +3123.30	336.03 +324.63 +349.50	0	-639.64 +648.25	-821.33 +431.27	-483.58 +8.62	-223.81 +324.63	-526.18 +451.77	-238.98 +451.77	+151.22 +451.77	+664.34 +1146.04	+528.5
49														
	1474.36	1321.18	1983.83	311.16	1432.20	+8.61	-390.16	+5991.24	+1465.86	+1382.81	+5393.61	+3719.95	-481.70	-617.5
43	2040.40 +618.34	1663.54 +411.29	1073.58 +7.35 +3112.30	317.40 +308.80 +349.20	0	-614.20 +618.34	-780.62 +411.29	-445.61 +7.35	-179.84 +308.80	+239.98 +430.85	+444.57 +430.85	+125.35 +430.85	+431.40 +1083.79	+348.52
46														
	1421.76	1252.25	2056.07	279.00	1386.89	+4.14	-369.33	+5954.54	+1526.96	+1110.13	+5326.50	3130.00	652.39	734.86
29	2764.71 +333.49	3197.22 +622.82	3263.43 +50.70 +3118.30	3407.36 +466.08 +348.30	0	-858.33 +333.49	-1476.04 +622.82	-1469.74 +50.70	-1186.08 +466.08	+7221.73 +651.20	+498.30 +651.20	+1179.46 +651.20	+1403.71 +1739.65	+1131.60
29														
	1831.22	2574.40	1144.3	3524.58	1411.50	+75.16	-858.22	+4956.56	+379.84	+1933.73	+5502.60	+2842.34	-336.34	-608.05
40	2677.30 +201.14	3092.71 +601.12	3157.66 +23.34 +2121.00	3347.94 +450.05 +349.10	0	-831.10 +201.14	-1427.85 +601.12	-1419.73 +23.34	-1131.04 +459.05	+538.79 +628.59	+404.57 +628.59	+186.15 +628.59	+1170.65 +1672.35	+951.77
40														
	2776.16	2491.59	3332	3448.89	1368.59	+7004	-826.73	+5010.21	+445.01	+1656.20	+5115.08	+2244.26	-501.70	-720.58
11	2586.82 +367.67	2984.51 +578.65	3040.04 +27.21 +3126.60	3236.27 +433.44 +349.80	0	-802.91 +367.67	-1371.57 +578.65	-1368.38 +27.21	-1074.11 +433.44	+646.75 +605.18	+367.80 +605.18	+1192.91 +605.18	+930.50 +1602.67	+766.74
77														
	1719.15	2403.86	+114.47	3369.91	1324.15	+64.76	-799.32	+5071.83	+514.25	+1380.17	+5324.92	+2243.71	-672.17	-830.03

SUMMATION OF LOADS FOR Pa OF 7/0510/13

AIRCRA
PREPAR
CHECK

71	72	73	74	75	76	77	78	79	80	81	82	83	84
702.52	7154.40	10,858.18	7437.17	6518.84	861.32	1294.12	1765.52	2169.00	2917.51	2942.19	3751.54	3163.01	
1205.36	1205.36			817.85	817.85	707.24	707.24	248.32	248.32	313.17	313.17	1622.65	
		1475.98								686.03		2409.59	
315.96	503.44	5678.42	10858.18	9437.17	5700.89	43.47	586.88	1058.28	1920.08	2668.59	3941.39	4064.71	3950.02
264.34	528.53	6932.55	10541.71	9163.05	6337.95	832.73	1257.79	1711.93	2112.15	2836.23	2867.69	3654.91	3073.86
1146.04	1146.04			783.87	783.87	676.91	676.91	237.37	237.37	307.03	307.03	1556.06	
		1482.20								666.43		2340.21	
481.70	617.51	5500.35	10541.71	9163.05	5554.08	48.86	580.82	1034.96	1878.18	2602.26	3841.00	3961.94	3863.95
731.40	348.22	6707.04	10214.33	8862.16	6153.99	803.17	1220.26	1656.48	2052.34	2752.14	2720.64	3554.98	2993.65
1083.19	1083.19			748.58	748.58	645.52	645.52	218.42	218.42	300.65	300.65	1486.88	
		1386.89								636.79		2243.64	
652.39	734.86	5316.15	10214.33	8863.16	5405.41	54.59	524.68	1010.96	1834.92	2533.72	3730.08	3855.60	3750.41
1407.31	1131.60	7279.46	10122.88	8756.02	5660.94	961.72	1143.28	1743.78	1731.22	2548.51	2228.16	2916.51	2541.65
1733.65	1733.65			1120.48	1120.48	576.88	576.88	382.13	382.13	367.83	367.83	2215.79	
		1111.50								628.50		2207.49	
336.34	608.05	5867.96	10122.88	8756.02	4540.46	158.76	166.40	766.90	1349.09	2166.38	3224.41	3284.34	2533.35
1170.65	951.77	7055.92	9816.47	8491.17	5491.14	931.78	1109.00	1690.48	1680.33	2472.24	2163.38	2831.25	2466.82
1672.35	1672.35			1082.72	1082.72	542.88	542.88	365.33	365.33	360.94	360.94	140.32	
		1368.59								609.53		2140.87	
501.70	720.58	5687.33	9816.47	8491.17	4409.42	150.54	166.12	747.60	1315.00	2106.98	3133.85	3192.19	2466.70
930.50	766.14	6814.46	9499.13	8216.94	5316.54	900.78	1073.50	1625.29	1611.63	2233.30	2096.32	2742.26	2369.35
1602.67	1602.67			1042.81	1042.81	507.63	507.63	347.94	347.94	353.80	353.80	2067.54	
		1324.15								582.89		2071.88	
672.17	886.53	5500.31	9499.13	8216.94	4273.73	1420.8	1658.2	727.61	1277.69	2045.36	3040.01	3096.76	2397.69

[illegible]

	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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7	728.96	7587.40	8603.29	6848.82	1,267.34	1,909.08	7,276.35	7,657.72	8,262.40	7,437.13	3,367.00	396.78	696.61	536.77
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— 'Pa' L

3	778.87	5,013.25	8,526.58	7,027.91	1,293.25	1,962.74	7,481.91	7,880.41	8,511.21	7,391.86	3,344.02	344.43	691.42	531.50
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— 'Pa' L

7	830.57	5,141.71	9,058.01	7,217.52	1,320.12	2,018.30	7,694.84	8,111.11	8,769.01	7,345.59	3,320.54	342.02	686.14	526.13
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— 'Pa'

2	910.22	3,904.26	6,071.21	3,506.44	795.83	981.67	3,720.63	3,862.69	4,820.68	6,400.00	3,604.41	358.58	827.27	874.25
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— 'Pa'

5	962.32	4,037.02	6,312.34	3,705.00	824.21	1,040.84	3,945.43	4,106.12	5,090.76	6,888.01	3,579.60	356.19	821.48	867.89
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— 'Pa'

0	1,014.13	4,169.80	6,553.50	3,903.46	852.62	1,098.98	4,170.11	4,349.39	5,360.75	6,842.38	3,555.24	353.84	815.80	861.65
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— 'Pa'

18	19	20	21	22	23	24	25	26	27	28	29	30	31
-8,262.40	-7,437.13	-3,367.00	-3,967.8	-696.61	-536.77	+3,496.65	-3,038.90	+27.36	-444.98	-404.75	+180.10	-3,687.44	+34.06

— 'Pa' LOADS AS IN WING AIRLOADS ABOVE —

-8,511.21	-7,391.86	-3,344.02	-3,444.3	-691.42	-531.50	+3,605.53	-3,019.44	+27.20	-441.69	-400.87	+190.77	-3,662.96	+33.36
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— 'Pa' LOADS AS IN WING AIRLOADS ABOVE —

-8,769.01	-7,345.59	-3,320.54	-3,720.2	-686.11	-526.13	+3,718.25	-2,999.65	+27.04	-438.34	-396.91	+201.79	-3,637.89	+32.64
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— 'Pa' LOADS AS IN WING AIRLOADS ABOVE —

-4,820.68	-6,411.11	-3,604.11	-3,58.58	-827.27	-874.25	+1,167.12	-3,004.40	+24.57	-522.35	-642.38	-233.35	-3,828.16	+124.61
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— 'Pa' LOADS AS IN WING AIRLOADS ABOVE —

-5,090.76	-6,888.09	-3,579.60	-3,56.19	-821.48	-867.89	+1,287.27	-2,984.00	+24.41	-518.70	-637.72	-221.14	-3,801.94	+123.65
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— 'Pa' LOADS AS IN WING AIRLOADS ABOVE —

-5,360.75	-6,842.38	-3,555.24	-3,53.84	-815.80	-861.65	+1,407.25	-2,963.97	+24.25	-515.12	-633.15	-208.98	-3,776.21	+122.71
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— 'Pa' LOADS AS IN WING AIRLOADS ABOVE —

31	32	33	34	35	36	37	38	39	40	41	42	43	44	
49	+ 34.06	- 589.66	- 489.26	+ 317.98	- 4,408.68	+ 270.08	- 550.00	- 777.07	- 3,714.13	- 107.68	- 1,078.55	- 6,543.02	+ 1,222.10	- 1,726.23

96	+ 33.36	- 585.02	- 154.58	+ 344.99	- 4,380.69	+ 267.92	- 546.13	- 769.83	- 3,610.01	- 107.54	- 1,070.96	- 6,849.20	+ 1,212.26	- 1,775.34
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87	+ 32.64	- 580.78	- 479.19	+ 372.88	- 4,352.09	+ 265.72	- 542.18	- 762.43	- 3,665.26	- 107.34	- 1,063.21	- 6,804.43	+ 1,202.20	- 1,764.22
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16	+ 124.61	- 746.92	- 773.02	- 542.30	- 4,326.03	+ 347.10	- 610.07	- 1,194.58	- 3,746.37	- 4.73	- 1,196.66	- 6,775.11	+ 1,589.92	- 1,667.85
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94	+ 123.65	- 741.65	- 767.42	- 511.82	- 4,296.69	+ 344.65	- 605.85	- 1,185.95	- 3,720.84	- 4.32	- 1,188.40	- 6,729.14	+ 1,578.66	- 1,656.64
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21	+ 122.71	- 736.48	- 761.92	- 481.47	- 4,267.90	+ 342.24	- 601.70	- 1,177.47	- 3,695.78	- 4.91	- 1,180.27	- 6,684.04	+ 1,567.60	- 1,645.64
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[illegible]

55	56	57	58	59	60	61	62	63	64	65	66	67	68
+ 3,251.28	1071.26	616.18	2388.69	1569.78	1156.18	588.51	211.63	0	449.19	545.73	229.19	70.80	1392.41
+ 297.31	10.15		448.51	297.31	10.15	225.58			448.51	297.31	10.15	225.58	312.
					528.60	525.00					10725.10	201730	14,141.00
	694.12	694.12											
			2388.69					1128.63					
→	29.83	1300.15		1121.27	858.87	1,651.24	147.79	1,128.63	20.68	248.12	10506.06	1,862.52	12,444.48
+ 3,400.51	1060.85	605.54	2375.51	1557.98	1143.45	576.33	208.88	0	465.55	539.83	223.76	77.07	1433.05
+ 294.44	9.97		444.22	294.44	9.97	223.46			444.22	294.44	9.97	223.46	309.12
						5088.00	564.20				10,435.30	1934.50	13,667.10
	654.84	654.84											
			2375.51					1,122.15					
→	111.57	1,250.41		1,113.76	849.01	1,521.94	136.86	1,122.15	21.33	245.39	10,221.51	1,788.11	11,925.73
+ 3,523.91	1050.23	594.69	2362.03	1540.93	1130.45	563.90	206.26	0	461.84	533.81	218.21	83.51	1475.25
+ 291.47	9.79		439.80	291.47	9.79	221.27			439.80	291.47	9.79	221.27	306.03
						4973.10	556.30				10,199.00	1856.10	13,831.70
	613.82	613.82											
			2362.03					1,115.53					
→	144.94	1,198.72		1,106.13	838.98	1,418.99	128.77	1,115.53	22.09	242.34	9990.58	1,719.14	11,458.42
+ 3,554.71	1725.79	1862.12	1972.98	1883.48	2143.47	2156.76	2807.78	0	583.79	990.19	969.18	631.42	1626.80
+ 404.22	16.90		607.79	404.22	16.90	304.57			607.79	404.22	16.90	304.57	423.49
						5488.50	607.20				11,132.60	2,170.90	4,956.00
	783.64	783.64											
			1972.98					978.20					
→	537.93	2,628.86		1,275.69	1,739.25	3,288.44	2,505.15	978.80	24.00	585.97	10,180.32	1,234.91	12,905.71
+ 3,686.69	1713.26	1847.96	1960.05	1870.29	2127.70	2140.21	2792.73	0	579.68	982.92	961.70	623.15	1667.04
+ 400.96	16.69		602.94	400.96	16.69	302.16			602.94	400.96	16.69	302.16	420.10
						5,274.40	590.00				10,817.00	2,077.80	4,421.90
	738.16	738.16											
			1960.05					972.32					
→	574.14	2,569.43		1,267.35	1,726.74	3,150.88	2,510.89	972.32	23.26	581.96	9871.99	1,152.49	12,332.76
+ 3,818.45	1700.76	1834.02	1947.37	1857.33	2112.21	2123.92	2790.00	0	575.64	975.78	954.34	614.96	1711.36
+ 397.72	16.49		598.10	397.72	16.49	299.77			598.10	397.72	16.49	299.77	416.71
						5,140.80	575.10				10,543.00	1,993.80	4,446.80
	696.50	696.50											
			1,947.37					965.96					
→	606.74	2,514.03		1,259.23	1,714.49	3,033.37	2,514.67	965.96	22.46	578.06	9,605.15	1,079.07	11,818.73

SUMMARY OF LOADS FOR Pa. OF 7/05/0

	67	68	69	70	71	72	73	74	75	76	77	78	79	80
19	70.80	1342.41	393.89	22.36	847.31	675.48	5394.76	8348.11	7262.11	6584.16	634.66	1005.43	1340.43	1718.02
15	225.58	212.11	312.11	312.11	730.34	730.36				548.17	548.17	466.15	466.15	130.02
	2017.30	14141.00	5623.50	2556.20										
							1,128.63							
06	1,862.52	12,444.73	4,917.50	2,221.73	1,627.67	1,405.84	4,266.13	8,348.11	7,262.91	4,535.99	86.49	538.48	873.47	1,587.87
6	77.07	1,433.05	407.30	85.49	930.31	701.00	5861.94	8,001.31	7,222.57	5,057.41	630.43	1,000.56	1,322.44	1,703.63
77	223.46	304.12	304.12	304.12	721.46	721.46				543.12	543.12	462.46	462.46	127.99
30	1934.50	13,667.10	5343.40	2400.10										
							1,122.15							
51	1,788.11	11,425.73	4,676.98	2,064.99	1,651.85	1,422.46	4,239.79	8,301.31	7,222.37	4,514.29	87.31	538.10	870.03	1,581.64
21	83.51	1,475.25	421.21	24.85	944.71	727.46	5328.41	8,253.48	7,150.13	5,030.07	626.11	445.07	1,324.39	1,701.08
74	231.27	306.03	306.03	306.03	712.26	712.26				537.90	537.90	457.81	457.81	125.69
00	1,556.10	13,831.70	5177.40	2241.40										
							1,115.53							
58	1,714.14	11,458.42	4,450.16	1,905.52	1,676.97	1,434.72	4,212.88	8,253.43	7,180.93	4,492.17	88.21	537.26	866.58	1,375.39
8	631.42	1,626.80	445.40	1,246.10	938.94	678.84	5,025.54	7,033.03	6,285.61	3,454.70	659.84	797.63	1,206.39	1,218.06
10	304.57	423.49	423.49	423.49	1,061.85	1,061.85				736.14	736.14	624.43	624.43	212.74
60	2,170.90	14,956.00	5,050.20	2,870.40										
							978.30							
32	1,234.91	12,905.71	5,181.31	1,220.81	2,000.79	1,740.69	4,046.74	7,033.05	6,085.61	3,218.76	76.30	163.20	571.96	1,005.12
0	623.15	1,664.04	459.41	1,247.03	973.71	705.71	4,991.72	6,926.75	6,045.60	3,924.33	650.32	792.45	1,198.34	1,210.37
9	302.16	420.10	420.10	420.10	1,051.76	1,051.76				730.41	730.41	624.33	624.33	210.43
0	2,077.80	14,421.90	5,144.40	2,711.30										
							972.32							
19	1,152.49	12,332.76	4,911.81	1,044.17	2,025.47	1,757.47	4,041.46	6,986.75	6,045.60	3,198.92	75.09	163.12	569.01	999.94
4	614.96	1,711.36	473.42	1,248.09	1,008.47	732.59	4,158.67	6,941.37	6,006.39	3,104.28	650.89	787.38	1,190.49	1,202.84
19	241.71	416.71	416.71	416.71	1,041.69	1,041.69				724.71	724.71	624.25	624.25	207.92
00	1,943.80	13,446.30	5,557.90	2,545.90										
							965.96							
5	1,079.07	11,818.73	4,667.77	881.10	2,050.16	1,774.25	3,942.71	6,941.37	6,006.38	3,179.57	73.82	163.13	566.19	994.92

7/0510/13

AIRCRAFT C-105

REPORT NO. 7-0500-110

PREPARED BY S.K. HARKLEY
D. DRANE

SHEET

CHECKED BY S.K. HARKLEY
D. DRANE

DATE 17 SEPT. 56

9	80	81	82	83	84	85	86	87	88	89	90	91
40.42	1718.08	2272.84	2351.33	2435.13	2502.55	3436.49	781.44	3167.90	1204.10	0	3043.26	632.25
46695	130.21	130.21	264.46	264.46	1074.10	1074.10	1007.07	1007.07	5572.20	354.05	448.51	245.58
												7051.50
											2032.35	2032.35
			529.37		1854.32							
73.47	1,587.87	2,142.61	3,145.21	3,249.59	3,267.77	2,392.35	+ 285.63	2,160.83	2,716.30	+ 354.05	513.40	+ 2,112.22
38.49	1709.68	2260.80	2340.37	2470.84	2470.24	3471.20	717.54	3153.94	1198.92	0	3725.04	641.32
42.46	127.99	127.99	263.55	263.55	1084.21	1084.21	+ 948.13	948.13	5468.63	+ 358.73	+ 444.22	223.46
												7,879.80
											1961.51	1961.51
			526.45		849.06							
70.03	1,581.69	2,132.81	3,130.37	3,234.39	3,255.09	2,386.99	+ 280.59	2,155.81	6,667.55	+ 358.73	616.31	+ 2,050.51
44.39	1701.08	2248.52	2329.11	2456.23	2477.45	3455.60	713.55	3139.66	1193.63	0	3005.40	650.73
57.81	125.69	125.69	262.60	262.60	1073.93	1073.93	+ 988.87	988.87	5423.57	+ 363.56	+ 439.80	221.27
												4,726.90
											1841.47	1841.47
			523.46		1838.57							
66.58	1,375.39	2,122.83	3,115.17	3,218.83	3,242.24	2,381.62	+ 275.32	2,150.79	6,617.20	+ 363.56	724.13	+ 2,013.43
46.39	1,218.06	1,779.62	1,575.07	2,056.71	1,787.23	2,134.38	681.20	1,958.05	720.50	0	2,967.45	1,699.24
44.43	212.94	212.94	298.41	298.41	1,462.50	1,462.50	+ 1,340.57	1,340.57	7,135.03	+ 179.03	+ 607.79	304.57
												5,339.70
											2,350.92	2,350.92
			437.24		1,585.74							
71.96	1,005.12	1,566.68	2,310.72	2,355.20	1,860.47	671.88	+ 759.37	617.48	7,855.53	+ 179.23	874	984.97
18.84	1,210.37	1,768.10	1,565.28	2,043.91	1,775.92	2,121.47	577.41	1,946.17	716.18	0	2,947.34	1,706.15
29.33	210.43	210.43	297.37	297.37	1,451.29	1,451.29	+ 1,335.42	1,335.42	7,085.64	+ 185.13	+ 602.94	302.46
												5,149.00
											2,214.47	2,214.47
			434.37		1,525.68							
69.01	999.94	1,557.67	2,297.02	2,341.28	1,850.31	670.18	+ 753.01	615.75	7,801.82	+ 185.13	129.93	926.22
0.44	1,202.84	1,756.81	1,555.69	2,031.29	1,764.85	2,108.84	573.70	1,934.55	711.95	0	2,927.62	1,713.22
4.25	217.92	207.92	296.34	296.34	1,440.10	1,440.10	+ 1,320.30	1,320.30	7,025.31	+ 190.43	+ 598.10	299.77
												4,979.40
											2,087.48	2,087.48
			431.56		1,515.81							
26.19	994.92	1,548.89	2,283.59	2,327.63	1,840.36	668.74	+ 746.60	614.25	7,148.34	+ 190.43	240.04	876.93

