# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds: Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn: Tig Met, h:m:s | OMS-1 Burn: Burn Dura-tion, sec. | OMS-1 Burn: Apogee/ Perigee Alt.,nmi | OMS-2 Burn: Tig Met, h:m:s | OMS-2 Burn: Burn Dura-tion, sec. | OMS-2 Burn: Apogee/ Perigee Alt.,nmi |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 102 | | 4,457,111 | 617<br>1.06 | PBD WEB<br>Payload Bay Door Shear Hinge Fitting Web | 80.7 | 131.7 | 514 | 532.1 | 00 : 10 : 34.0 | 87 | | 00 : 44 : 02.0 | 75 | |
| 2 | 2 | 102 | | 4,470,308 | 640<br>1.09 | FWD FFOIN<br>Foward External Tank Attach Fitting Load | 90 | 130 | 513.8 | 537.2 | 00 : 10 : 33.9 | 77.6 | | 00 : 41 : 41.7 | 71 | |
| 3 | 3 | 102 | | 4,468,755 | 651<br>1.04 | OMSL-6<br>Left OMS Pod Frame<br>X = 232.7 | 91.8 | 127.9 | 513.4 | 531.5 | 00 : 10 : 34.4 | 86 | | 00 : 40 : 50.4 | 88 | |
| 4 | 4 | 102 | | 4,481,935 | 721<br>1.74 | ET 4-11<br>Midpoint Lefthand Vertical Strut (P4) | 97.4 | 130<br>156024 | 512.7<br>25677 | 530.4<br>354800 | 00 : 10 : 32.6 | 88 | 130<br>34 | 00 : 37 : 40.6 | 105 | 130<br>130 |
| 5 | 5 | 102 | | 4,487,268 | 738<br>1.7 | VT-6-R<br>Vertical Tail Root Rib | 96.6 | 129.08<br>155206 | 510.68<br>25672<br>361206 | 528.77<br>366193 | 00 : 10 : 30.8 | 137.8 | 160.2<br>51.8 | 00 : 44 : 40.8 | 116.8 | 160<br>160 |
| 6 | 6 | 99 | | 4,487,255 | 688<br>1.47 | WINGRA17<br>Right Wing Spar Web<br>X = 1249, Y = 130 | 104.6 | 129.42<br>151453 | 499.4<br>25672<br>361122 | 517.55<br>366139 | 00 : 10 : 19.6 | 135.3 | 154.2<br>50.6 | 00 : 43 : 37.6 | 117 | 154.6<br>154 |
| 7 | 7 | 99 | | 4,482,241 | 701<br>1.56 | WINGRA17<br>Right Wing Spar Web<br>X = 1249, Y =130 | 90.8 | 126.2<br>4319<br>149357 | 500.1<br>25595<br>361420 | 518.2<br>25668<br>366506 | 00 : 10 : 20.2 | 139.5 | 160.2<br>51.9 | 00 : 44 : 30.2 | 117.5 | 160.4<br>160.2 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
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Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 8 | 8 | 99 | | 4,492,074 | 701<br>1.53 | WINGRA17<br>Right Wing Spar Web<br>X = 1249, Y = 130 | 106.9 | 124.34<br>4235<br>152110 | 521.62<br>25593<br>360803 | 539.66<br>25669<br>365878 | 00 : 10 : 41.7 | 138.1 | 160<br>51.5 | 00 : 44 : 51.7 | 115.6 | 160.5<br>160.2 |
| 9 | 9 | 102 | | 4,503,361 | 676<br>1.52 | WINGLA22<br>Left Wing Spar Web<br>X = 1191, Y =130 | 93.7 | 126.24<br>4289<br>161689 | 509.18<br>25647<br>372249 | 527.32<br>25723<br>378580 | 00 : 10 : 29.3 | 63.8 | 135<br>44.6 | 00 : 40 : 37.3 | 101.5 | 134.9<br>134.4 |
| 10 | 41B | 99 | | 4,498,443 | 676<br>1.55 | WLE8R<br>Left Wing Leading Edge | 94.8 | 127.92<br>4330<br>152605 | 521.42<br>25589<br>361029 | 539.57<br>25667<br>366061 | 00 : 10 : 41.6 | 150.2 | 165.1<br>51.1 | 00 : 45 : 24.6 | 125 | 165<br>165 |
| 11 | 41C | 99 | b | 4,508,234 | 635<br>1.03 | WINGLA17<br>Left Wing Spar Web | 94.8 | 125.57<br>4137<br>169426 | 510.76<br>25942<br>360986 | 528.9<br>26013<br>37011 | : : | | | 00 : 42 : 54.0 | 95.2 | 251.6<br>115.4 |
| 12 | 41D | 103 | | 4,517,534 | 611<br>1.26 | F2L<br>Left Wing Carry-through Structure<br>X = 1365, Y = 82 | 96.1 | 124.5<br>3990<br>162535 | 515.19<br>25595<br>360945 | 533<br>25666<br>365877 | 00 : 10 : 36.9 | 153.5 | 160.8<br>50.9 | 00 : 44 : 52.2 | 126.2 | 160.8<br>160.8 |
| 13 | 41G | 99 | | 4,493,317 | 716<br>1.42 | OMS PT6R<br>Left OMS Pod Point 6 | 85 | 124.12<br>4157<br>157374 | 530.34<br>25644<br>372883 | 548.41<br>25719<br>378859 | 00 : 10 : 50.4 | 134.5 | 190.5<br>53.4 | 00 : 46 : 30.4 | 143.3 | 191.7<br>190.4 |
| 14 | 51A | 103 | | 4,519,901 | 651<br>1.1 | WINGRA20<br>Right Wing Spar Web<br>X = 1365, Y = 240 | 91.1 | 125.72<br>4095<br>156242 | 513.16<br>25593<br>361491 | 531.29<br>25669<br>366591 | 00 : 10 : 33.3 | 151 | 160.2<br>51.7 | 00 : 44 : 43.0 | 114.8 | 160.1<br>150.4 |

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# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 15 | 51C | 103 | c | | | | | | | | : : | | | : : | | 185<br>185 |
| 16 | 51D | 103 | b | 4,505,245 | 666<br>1.25 | WINGLA20<br>Left Wing Spar Web<br>X = 1365, Y = 240 | 98.3 | 126.84<br>4077<br>153102 | 531.96<br>25938<br>360594 | 550<br>26014<br>369603 | : : | | | 00 : 43 : 15.0 | 142.6 | 248.6<br>160.4 |
| 17 | 51B | 99 | | 4,512,009 | 700<br>1.31 | WINGLA15<br>Left Wing Spar Web<br>X = 1307, Y = 136 | 87.2 | 125.88<br>4195<br>156700 | 514.96<br>25647<br>372561 | 533.05<br>25723<br>378806 | 00 : 10 : 35.0 | 133.4 | 190.6<br>53.6 | 00 : 46 : 15.0 | 145.2 | 190.6<br>190.4 |
| 18 | 51G | 103 | b | 4,516,613 | 648<br>1.24 | WINGLA20<br>Left Wing Spar Web<br>X = 1365, Y = 240 | 88.7 | 124.68<br>3973<br>164000 | 515.77<br>25842<br>360915 | 533.93<br>25914<br>368228 | : : | | | 00 : 40 : 29.0 | 177.6 | 192.1<br>190.5 |
| 19 | 51F | 99 | d | 4,515,554 | 762<br>1.63 | ROWINDOW<br>Right Overhead Window | 91.3 | 125.24<br>4284<br>157308 | 581.24<br>25690<br>372077 | 599.29<br>25756<br>381932 | 00 : 11 : 41.0 | 106.4 | 142.6<br>2.96 | 00 : 33 : 00 | 119.4 | 142.9<br>108.7 |
| 20 | 51I | 103 | b | 4,512,130 | 735<br>1.61 | WINGLA8<br>Left Wing Spar Web<br>X = 1365, Y = 334 | 101.5 | 121<br>4235<br>154479 | 507.59<br>25839<br>361481 | 525.77<br>25912<br>368863 | : : | | | 00 : 40 : 28.0 | 183.2 | 190.3<br>189.7 |
| 21 | 51J | 104 | c | | | | | | | | : : | | | : : | | |

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# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 22 | 61A | 99 | | 4,508,496 | 665<br>1.25 | LWINGMX<br>Left Wing Root Bending Moment | 85.7 | 125.08<br>4190<br>162256 | 514.96<br>25646<br>372707 | 533.05<br>25721<br>379121 | 00 : 10 : 35.0 | 121.2 | 178<br>52.4 | 00 : 44 : 40.0 | 131.6 | 177.7<br>175.8 |
| 23 | 61B | 104 | b | 4,514,530 | 723<br>1.16 | LWINGMX<br>Left Wing Root Bending Moment | 89.1 | 123.56<br>4274<br>146782 | 511.29<br>25643<br>360661 | 529.45<br>25915<br>367881 | : : | | | 00 : 40 : 25.0 | 180.4 | 191.2<br>190.6 |
| 24 | 61C | 102 | | 4,509,360 | 696<br>1.13 | WINGLA14<br>Left Wing Upper Spar Cap<br>X = 1307, Y = 131 | 92.1 | 127.23<br>4442<br>152555 | 501.64<br>25594<br>360985 | 519.77<br>25670<br>36643 | 00 : 10 : 22.0 | 164.2 | 175.1<br>53.9 | 00 : 46 : 06.0 | 134.6 | 176.5<br>175.1 |
| 25 | 51L | 99 | e | 4,526,583 | 720<br>1.35 | ET 3-42<br>External Tank Barrel Panel<br>THETA = 43 °, X = 1859 | 83.2 | | | | : : | | | : : | | |
| 26 | 26 | 103 | b,f | 4,523,334 | 707<br>1.16 | WLE-14R<br>WLE-14L | 102 | 124.8<br>4127<br>151816 | 513.43<br>25871<br>360878 | 530.5<br>25869<br>367122 | : : | | | 00 : 39 : 56.0 | 141.6 | 178<br>162 |
| 27 | 27 | 104 | c | 4,509,447 | | L-2, WRA 18<br>Upper Spar Cap Mid Right<br>X = 1307 | | | | | : : | | | : : | | 244<br>239 |
| 28 | 29 | 103 | b | 4,524,484 | 710<br>1.44 | L-2<br>AFT OMS Frame inner cap<br>X = 1360 | 98 | 124.5<br>4200<br>154800 | 510.8<br>25827<br>361300 | 528<br>25868<br>367500 | : : | | | 00 : 39 : 58.0 | 141.6 | 166.6<br>162.5 |

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# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 29 | 30 | 104 | | 4,527,349 | 676<br>1.07 | L-2<br>WING LA18<br>Upper Spar Cap Mid Left<br>X = 1307 | 97 | 125.26<br>4190<br>155000 | 509.37<br>25664<br>360962 | 526.67<br>25677<br>365579 | : 10 : 29.0 | 141.8 | 160.5<br>50.7 | 00 : 44 : 27.0 | 125.6 | 166.3<br>160 |
| 30 | 28 | 102 | c | 4,512,795 | 679<br>1.12 | LP-2.0<br>AFT OMS F<br>OMS Frame Inner Cap<br>X=1360 | 93.2 | | | | : : | | | : : | | 166<br>160 |
| 31 | 34 | 104 | b | 4,524,262 | 687.9<br>1.63 | LP-2.0<br>Aft OMS F<br>OMS Frame Inner Cap<br>X=1360 | 89.8 | 124.98<br>5277.04<br>156990 | 511.88<br>25780.63<br>365780 | 530.08<br>25868.83<br>371779 | : : | | | 00 : 39 : 55.0 | 140.6 | 168.46<br>161.35 |
| 32 | 33 | 103 | c | 4,531,977 | 729.3<br>1.5 | LP-2.0<br>AFT OMS F<br>OMS Frame Inner Cap<br>X=1360 | 96.1 | | | | : : | | | : : | | 302<br>126 |
| 33 | 32 | 102 | b | 4,520,125 | 641.1<br>1.05 | L-2.0<br>AFT OMS F<br>OMS Frame Inner Cap<br>X=1360 | 91.3 | 125<br>5281.42<br>157254 | 511<br>25750.66<br>361119 | 530<br>25911.68<br>368882 | : : | | | 00 : 40 : 25.6 | 139.5 | 178<br>173 |
| 34 | 36 | 104 | c | 4,508,125 | 743.9<br>1.49 | L-2.0<br>AFT OMS F<br>OMS Frame Inner Cap<br>X=1360 | 94 | | | | : : | | | : : | | 132<br>115 |
| 35 | 31 | 103 | b | 4,511,496 | 656.3<br>1.08 | L-2.0<br>Aft OMS F<br>OMS Frame Inner Cap<br>X=1360 | 92.7 | 125<br>5324.21<br>155453 | 510<br>26016.36<br>360068 | 528<br>26134.83<br>372084 | : : | | | 00 : 42 : 35.9 | 304.4 | 333<br>327 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 36 | 41 | 103 | b | 4,526,408 | 665<br>1.1 | L-2.0<br>AFT OMS F<br>OMS Inner Frame Cap | 88 | 126.16<br>4113<br>156553 | 510.39<br>25868.2 | 528.37 | : : | | | 00 : 39 : 53.4 | 143.6 | 160.2<br>159.4 |
| 37 | 38 | 104 | c | 4,533,057 | | | | | | | : : | | | : : | | 142<br>115 |
| 38 | 35 | 102 | b | 4,521,590 | 696<br>0 | L-2.0<br>WING LA 20<br>Left Wing Spar Shear<br>X = 1362, y = 235 | 92 | 125.68<br>4200<br>152000 | 511.6 | 529.67 | : : | | | 00 : 40 : 24.7 | 179.2 | 190.2<br>187.7 |
| 39 | 37 | 104 | b | 4,519,695 | 681<br>1.57 | L-2.0<br>Wing LA20 | 85 | 125.28<br>5294.5<br>156097 | 512.71<br>25912<br>361246 | 530.16<br>26000.7<br>369797 | : : | | | 00 : 41 : 43.1 | 234.7 | 247<br>239 |
| 40 | 39 | 103 | b | 4,512,885 | 706.6<br>1.65 | L-2.0<br>Aft OMS | 99 | 124.76<br>5035.9<br>152683 | 514.51<br>25720.4<br>361306 | 531.4<br>25793.3<br>367696 | : : | | | 00 : 36 : 07.5 | 129 | 140<br>138 |
| 41 | 40 | 102 | b | 4,520,674 | 688.9<br>1.12 | L-2.0<br>Wing LA21 | 88 | 124.74<br>5275.1<br>153002 | 509.8<br>25803.2<br>361444 | 527.86<br>25869<br>366809 | : : | | | 00 : 42 : 17.6 | 124.1 | 157<br>146 |
| 42 | 43 | 104 | b | 4,522,967 | 775<br>1.62 | L-2.0<br>Throttle low<br>yaw positive<br>WLE-P7 | 91 | 125.6<br>4265.2<br>149261 | 507.8<br>25796<br>360846 | 526.04<br>25689<br>366906 | : : | | | 00 : 39 : 51.0 | 142.7 | 174<br>161 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 43 | 48 | 103 | b | 4,503,383 | 767.4<br>0 | L-2.0<br>DOLILU<br>Wing L-A21 | 96 | 125.04<br>4148.9<br>155365 | 516.12<br>26002<br>372308 | 534.52<br>26074<br>382935 | : : | | | 00 : 43 : 40.0 | 266.2 | 313<br>302 |
| 44 | 44 | 104 | b | 4,520,772 | 730<br>1.45 | L-2.0<br>Nominal<br>Aft OMS F | 90 | 126.56<br>4229.3<br>152899 | 509.7<br>25826<br>360535 | 528.07<br>25924<br>367944 | : : | | | 00 : 40 : 48.0 | 183.8 | 197<br>194 |
| 45 | 42 | 103 | b | 4,506,634 | 685<br>1.39 | L-2.0<br>Nominal<br>WLE P7 | 87 | 127.84<br>4252.7<br>155716 | 510.1<br>24938<br>373301 | 528.6<br>24994<br>382889 | : : | | | 00 : 36 : 08.1 | 159.2 | 163<br>161 |
| 46 | 45 | 104 | b | 4,496,505 | 670<br>1.4 | L-2.0<br>Yaw neg<br>Aft OMS F | 91 | 128<br>4221.5<br>155044 | 510.4<br>24845<br>372180 | 528.6<br>24994<br>382889 | : : | | | 00 : 36 : 20.0 | 145.6 | 162<br>159 |
| 47 | 49 | 105 | b | 4,520,042 | 675<br>1.55 | L-2.0<br>DOLILU<br>Wing L-A21 | 83 | 127.2<br>4215.8<br>156553 | 509.4<br>24350.6<br>360713 | 527.6<br>24446<br>368365 | : : | | | 00 : 39 : 57.8 | 124.3 | 182<br>148 |
| 48 | 50 | 102 | b | 4,519,688 | 659.8 | L-2.0<br>NOMINAL<br>WING L-A14 | 96 | 126.24<br>4215.7<br>157456 | 507.2<br>25794<br>360806 | 526.5<br>25868<br>366831 | : : | | | 00 : 39 : 50.7 | 141.3 | 160<br>160 |
| 49 | 46 | 104 | b | 4,516,704 | 730 | L-2.0<br>DOLILU<br>WING L-A14 | 94 | 125.12<br>4232.6<br>152815 | 509.4<br>25907<br>350589 | 527.7<br>25978<br>369300 | : : | | | 00 : 41 : 23.4 | 222.4 | 230<br>228 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 50 | 47 | 105 | b | 4,504,773 | 682.4 | L-2.0<br>NOMINAL<br>RO WINDOW | 96 | 124<br>4121.8<br>157413 | 513.6<br>25746<br>372695 | 532<br>25822<br>381731 | : : | | | 00 : 39 : 50.7 | 158.7 | 160<br>160 |
| 51 | 52 | 102 | b | 4,515,323 | 706.4 | L-2.0<br>DOLILU<br>TANK LT 1-14 | 101 | 123.12<br>4107.9<br>149168 | 512.08<br>25795<br>360888 | 530.4<br>25866<br>367142 | : : | | | 00 : 39 : 55.5 | 137.4 | 163<br>160 |
| 52 | 53 | 103 | b | 4,507,048 | 699.81<br>1.3 | L-2.0<br>DOLILU<br>WING A16L | 102 | 126.32<br>4216.2<br>153648 | 513.36<br>25805<br>371923 | 531.57<br>25875.5<br>383692 | : : | | | 00 : 36 : 53.8 | 204 | 200.9<br>200.7 |
| 53 | 54 | 105 | b | 4,522,968 | 697.44<br>1.55 | L-2.0<br>DOLILU<br>PLBT BOX | 96 | 125.68<br>4212.1<br>152106.7 | 509.92<br>25797<br>360792 | 528.29<br>25868.9<br>366833 | : : | | | 00 : 38 : 53.4 | 143.8 | 164.1<br>160.3 |
| 54 | 56 | 103 | b | 4,501,523 | 707<br>1.5 | L-2.0<br>NOMINAL<br>PLBT BOX | 94 | 125.84<br>4178.9<br>151247.7 | 514.3<br>25749<br>372390 | 532.7<br>25820.1<br>381364 | : : | | | 00 : 37 : 18.2 | 148.8 | 160.7<br>158.9 |
| 55 | 55 | 102 | b | 4,518,260 | 703.43<br>1.55 | L-2.0<br>DOLILU<br>PLBT BOX | 95 | 125.52<br>4171.9<br>154325.6 | 510.28<br>25758<br>360743 | 528.62<br>25866.6<br>367076 | : : | | | 00 : 39 : 54.9 | 140.2 | 162.9<br>157.2 |
| 56 | 57 | 105 | b | 4,516,626 | 780.57<br>1.65 | L-2.0<br>NOMINAL<br>PLBT BOX | 96 | 124.72<br>4224.29<br>146296 | 512.16<br>25914.6<br>361543 | 531.41<br>26019.6<br>370822 | : : | | | 00 : 42 : 12.4 | 198.6 | 252.2<br>210.5 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 57 | 51 | 103 | b | 4,522,949 | 709.21<br>1.5 | L-2.0<br>DOLILU<br><br>PLBT BOX | 92 | 124.72<br>4202.9<br>154673 | 509.52<br>25797<br>360970 | 528.78<br>25866.5<br>367409 | : : | | | 00 : 39 : 53.8 | 145.2 | 160.4<br>160 |
| 58 | 58 | 102 | b | 4,516,930 | 693.36<br>1.35 | L-2.0<br>NOMINAL<br><br>PLBT BOX | 96 | 123.6<br>4073.82<br>152511.2 | 515.56<br>24584.18<br>367699.1 | 534.43<br>24659.49<br>373247.4 | : : | | | 00 : 41 : 54.9 | 124.88 | 155.2<br>152 |
| 59 | 61 | 105 | b | 4,510,263 | 695<br>1.5 | L-2.0<br>DOLILU<br><br>PLBT BOX | 97 | 126.48<br>4229.32<br>154032 | 511.36<br>26041.1<br>361401 | 530.56<br>26107.6<br>372736 | : : | | | 00 : 43 : 30.2 | 201.4 | 308.4<br>214.9 |
| 60 | 60 | 103 | b | 4,508,310 | 706.05<br>1.44 | L-2.0<br>DOLILU<br><br>PLBT BOX | 98 | 125.04<br>4216.1<br>154650 | 512.04<br>25839.2<br>372670 | 531.26<br>25911.6<br>380432 | : : | | | 00 : 42 : 16.3 | 163.5 | 191.4<br>189.6 |
| 61 | 62 | 102 | b | 4,519,392 | 674.99<br>1.1 | L-2.0<br>DOLILU<br><br>PLBT BOX | 96 | 126.32<br>4227<br>155483 | 510.72<br>25806.5<br>367277 | 529.74<br>25882.4<br>372880 | : : | | | 00 : 42 : 20.0 | 132.2 | 163<br>160 |
| 62 | 59 | 105 | b | 4,510,997 | 678.09<br>1.45 | L-2.0<br>DOLILU<br>LEFT OVHD WINDOW | 86 | 124.08<br>4196.4<br>150886 | 513.08<br>25698.4<br>372933 | 532.4<br>25774.6<br>379629 | : : | | | 00 : 35 : 10.3 | 100.2 | 121.3<br>120.5 |
| 63 | 65 | 102 | b | 4,521,154 | 710.5<br>1.55 | L-2.0<br>NOMINAL<br>LO WINDOW | 92 | 123.44<br>4138.1<br>150801 | 510.6<br>25798.7<br>361251.7 | 529.9<br>25872.3<br>367744 | : : | | | 00 : 39 : 55.2 | 141.3 | 162.9<br>160.3 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 64 | 64 | 103 | b | 4,502,604 | 687.23<br>1.61 | L-2.0<br>NOMINAL<br>LO WINDOW | 87 | 122.48<br>4155.8<br>148952 | 514.6<br>25723.2<br>373194 | 533.84<br>25798.8<br>381528 | : : | | | 00 : 36 : 04.8 | 125.4 | 140.8<br>139.9 |
| 65 | 68 | 105 | b | 4,510,709 | 679.91<br>1.67 | L-2.0<br>NOMINAL<br>LO WINDOW | 87 | 123.6<br>4158<br>151793 | 513.72<br>25695.4<br>372898.4 | 532.72<br>25771.2<br>379587 | : : | | | 00 : 35 : 09.0 | 99 | 119.7<br>119.4 |
| 66 | 66 | 104 | b | 4,508,175 | 726.64<br>1.41 | L-2.0<br>NOMINAL<br>WING LA8 | 89 | 124.72<br>4196.5<br>149107 | 513.88<br>25748.6<br>372849 | 533.12<br>25822.1<br>383039 | : : | | | 00 : 36 : 13.1 | 160 | 165.1<br>164 |
| 67 | 63 | 103 | b | 4,510,822 | 663.97<br>1.04 | L-2.0<br>NOMINAL<br>LO WINDOW | 86 | 124.88<br>4241.8<br>155357 | 511.1<br>25809.6<br>368745 | 530.1<br>25884<br>377632 | : : | | | 00 : 42 : 10.0 | 155.7 | 183.9<br>168.8 |
| 68 | 67 | 105 | b | 4,519,438 | 676.3<br>1.1 | L-2.0<br>DOLILU<br>ET 3-73 | 102 | 125.04<br>4263.6<br>152923 | 507<br>25841.2<br>360925 | 526.27<br>25908.9<br>368592 | : : | | | 00 : 40 : 21.5 | 177.6 | 190.4<br>187.3 |
| 69 | 71 | 104 | b | 4,511,856 | 716.21<br>1.734 | L-2.0<br>DOLILU<br>FTO-8 | 91 | 123.52<br>4280<br>150973 | 510.56<br>25871.3<br>371041 | 529.62<br>24868<br>377285 | : : | | | 00 : 42 : 57.7 | 47.1 | 160<br>84 |
| 70 | 70 | 103 | b | 4,519,889 | 686.32<br>1.128 | L-3.0<br>DOLILU II<br>FTO-8 | 89 | 122.72<br>4157.4<br>152664 | 510.6<br>25871.2<br>367444 | 529.82<br>24432<br>36714 | : : | | | 00 : 38 : 49.4 | 143.2 | 160.6<br>160.3 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 71 | 69 | 105 | b | 4,518,478 | 714.59<br>1.14 | L-2.0<br>DOLILU II<br><br>FTO-8 | 90 | 122.4<br>4205.6<br>151749 | 510.15<br>25937.6<br>360853 | 529.3<br>24464<br>368783 | : : | | | 00 : 41 : 44.4 | 187.1 | 200.8<br>199.2 |
| 72 | 73 | 102 | b | 4,521,440 | 713.41<br>1.127 | L-4.5<br>DOLILU II<br><br>RO WINDOW | 93 | 123.52<br>4216.6<br>153975 | 509.36<br>26858.3<br>367753 | 528.58<br>24638<br>373585 | : : | | | : 41 : 28.7 | 118.4 | 150.5<br>146.6 |
| 73 | 74 | 104 | b | 4,511,500 | 711.32<br>1.138 | L-2<br>DOLILU II<br><br>RO WINDOW | 87 | 122.88<br>4205.1<br>151230 | 512.64<br>25871.5<br>371138 | 532.82<br>24930<br>377862 | : : | | | : 41 : 51.9 | 131.1 | 162.5<br>162.3 |
| 74 | 72 | 105 | b | 4,512,954 | 712.63<br>1.114 | L-2.0<br>DOLILU II<br><br>FTO-8 | 92 | 124.32<br>4216.5<br>156819 | 506.68<br>26018.4<br>361546 | 529.62<br>24868<br>377285 | : : | | | : 43 : 30.0 | 71.6 | 248.9<br>95.2 |
| 75 | 75 | 102 | b | 4,527,738 | 701.75<br>1.571 | L-2:15<br>DOLILU II<br><br>FT08 | 94 | 126.24<br>4244.7<br>155143 | 508.01<br>25871.1<br>360865 | 527.3<br>24511<br>367741 | : : | | | : 39 : 52.4 | 144.2 | 161<br>159.3 |
| 76 | 76 | 102 | b | 4,510,934 | 682.27<br>1.116 | L-2:15<br>DOLILU II<br><br>RO WINDOW | 87 | 125.76<br>4248<br>153959 | 512.58<br>25870.6<br>371183 | 531.82<br>24922<br>377247 | : : | | | : 42 : 21.9 | 47.4 | 159.4<br>85.3 |
| 77 | 77 | 105 | b | 4,517,872 | 685.37<br>1.057 | L-2:15<br>DOLILU II<br><br>RO WINDOW | 89 | 124.16<br>4236.4<br>154408 | 507.74<br>25859.2<br>367683 | 526.98<br>24605<br>373450 | : : | | | : 41 : 47.1 | 126.1 | 153.2<br>152.8 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 78 | 78 | 102 | b | 4,516,637 | 698.36<br>1.313 | L-2:15<br>DOLILU II<br><br>RO WINDOW | 93 | 123.68<br>4226.8<br>155249 | 509.3<br>25858.6<br>367709 | 528.5<br>24653<br>373616 | : : | | | : 41 : 28.6 | 117.5 | 153.6<br>146.7 |
| 79 | 79 | 104 | b | 4,511,714 | 707.84<br>1.49 | g<br>DOLILU II<br><br>g | 0 | 121.92<br>4177.5<br>152913 | 514.03<br>25869<br>371116 | 533.36<br>25866<br>377680 | : : | | | : 42 : 53.3 | 47.4 | 159<br>85.4 |
| 80 | 80 | 102 | b | 4,522,305 | 699.78<br>1.55 | g<br>DOLILU II<br><br>g | 0 | 124.74<br>4213<br>154621 | 510.34<br>25914<br>363670 | 535.3<br>25907<br>370959 | : : | | | : 40 : 24.4 | 182 | 190.4<br>187.9 |
| 81 | 81 | 104 | b | 4,511,710 | 687.33<br>1.55 | g<br>DOLILU II<br><br>g | 0 | 125.12<br>4222<br>153816 | 512.64<br>24841<br>371416 | 531.92<br>25877<br>377525 | : : | | | : 43 : 00.1 | 47.3 | 160.1<br>85.2 |
| 82 | 82 | 103 | b | 4,513,793 | 670.73<br>1.23 | g<br>DOLILU II<br><br>LWING | 83 | 123.68<br>4214.3<br>155372 | 509.35<br>26122<br>361323 | 528.7<br>26116<br>372748 | : : | | | : 44 : 33.6 | 172 | 313<br>186.3 |
| 83 | 83 | 102 | b | 4,521,943 | 695.85<br>1.26 | g<br>DOLILU II<br><br>g | 0 | 123.04<br>4178<br>151302 | 510.41<br>25871<br>360974 | 530.02<br>25867<br>367486 | : : | | | 00 : 39 : 54.7 | 142.8 | 310<br>186.3 |
| 84 | 84 | 104 | b | 4,511,290 | 681.95<br>1.25 | g<br>DOLILU II<br><br>g | 0 | 123.84<br>4233.6<br>152341 | 512.88<br>25868<br>371149 | 532.22<br>25866<br>377380 | : : | | | 00 : 44 : 04.1 | 47.3 | 160.9<br>85.6 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 85 | 94 | 102 | b | 4,519,811 | 0<br>0 | g<br>DOLILU II<br>g | 0 | 123.56<br>4195.1<br>154302 | 528.73<br>25873<br>360975 | 527.94<br>25867<br>371149 | : : | | | 00 : 39 : 53.0 | 142.7 | 163.4<br>159.5 |
| 86 | 85 | 103 | b | 4,511,117 | 0<br>0 | g<br>g<br>g | 0 | 123.87<br>4225<br>156447 | 512.12<br>25825<br>372578 | 531.38<br>26820<br>372586 | : : | | | 00 : 37 : 04.0 | 160 | 160.7<br>159.6 |
| 87 | 86 | 104 | b | 4,513,814 | 0<br>0 | g<br>DOLILU II<br>g | 0 | 123.06<br>4231<br>153405 | 510.86<br>24843<br>371693 | 530.06<br>25869<br>377982 | : : | | | 00 : 41 : 51.0 | 108 | 161.2<br>138.9 |
| 88 | 87 | 102 | b | 4,521,645 | 0<br>0 | g<br>DOLILU II<br>g | 0 | 124.22<br>4220<br>151750 | 510.02<br>24428<br>361503 | 529.22<br>25864<br>366604 | : : | | | 00 : 41 : 08.0 | 128 | 154.5<br>150.8 |
| 89 | 89 | 105 | b | 4,512,426 | 0<br>0 | L-6:15<br>DOLILU II<br>g | 76 | 123.28<br>4231.8<br>155386 | 509.04<br>25791<br>371741 | 528.38<br>25873<br>378254 | : : | | | 00 : 41 : 48.4 | 136 | 163.4<br>102.5 |
| 90 | 90 | 102 | b | 4,523,791 | 0<br>0 | g<br>DOLILU II<br>g | 0 | 125.42<br>4234<br>153988 | 508.42<br>24588<br>368146 | 527.62<br>25855<br>373938 | : : | | | 00 : 41 : 27.0 | 112 | 153.8<br>137.7 |
| 91 | 91 | 103 | b | 4,514,378 | 0<br>0 | g<br>DOLILU II<br>g | 0 | 123.1<br>4238<br>154520 | 510.1<br>25928<br>343878 | 529.3<br>25924<br>347352 | : : | | | 00 : 44 : 10.8 | 104.8 | 177.2<br>129.3 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.

# ASCENT AND ORBIT INSERTION

| Miss Seq. No. | STS-No. | Orb. OV- | Notes | Shuttle Lift-off Weight, lb | Max Q, psf, at M= | Calculated Wind Load Data, L-3.5 Hour Winds | | SRB Sep Met, sec/ Vel,fps/ Alt, ft | MECO Met, sec/ Vel,fps/ Alt, ft | ET Sep Met, sec/ Vel,fps/ Alt, ft | OMS-1 Burn | | | OMS-2 Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top Load Indicator Code/Description/ Location | Load (a) Value, Percent | | | | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi | Tig Met, h:m:s | Burn Dura-tion, sec. | Apogee/ Perigee Alt.,nmi |
| 92 | 95 | 103 | b | 4,521,292 | 0<br>0 | g<br>g<br>g | 0 | 122.6<br>4402<br>153662 | 501.24<br>25100.5<br>361056 | 520.46<br>26093<br>373176 | : : | | | 00 : 41 : 57.0 | 305.4 | 295.4<br>303.2 |
| 93 | 88 | 105 | b | 4,519,508 | 0<br>0 | g<br>g<br>g | 0 | 123.88<br>4376<br>154436 | 502.12<br>25929.8<br>341405 | 521.31<br>25927<br>367414 | : : | | | 00 : 43 : 41.0 | 66.8 | 175<br>87.2 |

a = STS-1 thru STS-4 based on a systems dispersion of 99 percent, all other flights based on a systems dispersion of 90 percent.
b = OMS-1 Not Performed - Direct Insertion
c = Data not available - Department of Defense Mission
d = Abort to orbit
e = Vehicle lost at approximately 73 seconds
f = Comparison of launch-day wind load conditions with an existing stress analysis that has conparable wind loads showed positive margins of safety for the winds, and as a result, the launch countdown was resumed
g = Data not available at time of publication.

Source: JSC/VF Orbiter Mass Properties Summary, STS-1 and subsequent missions. Rockwell International, Postflight Summary, STS-1 and subsequent missions.