

LANDING DECELERATION

Miss Seq. No.	STS- No.	Orb. OV-	Notes	Velocities and Rates					Distance from Threshold, ft ^a				Total Rollout, ft	Rollout time, sec	Runway Data
				MGTD kgs b	Sink rates, ft/sec	NGTD, kgs a	Pitch rate, deg/sec	Brake init., kgs b	MGTD	NGTD	Brake init.	Stop			
1	1	102		190.3	0.8	152.9	4.8	104.7	6,053	9,152	12,025	15,046	8,993.00	60	Edwards 23 Lakebed
2	2	102		185.9	1.0	135	4.4	109.5	780	4,429	5,780	8,491	7,711.00	53	Edwards 23 Lakebed
3	3	102		232.5	5.7	177.4	7.2	149	1,092	6,261	8,159	14,824	13,732.00	83	White Sands 17 Lakebed
4	4	102		195.7	2.0	161.2	3.2	133.2	948	4,988	7,839	10,826	9,878.00	73	Edwards 22 Concrete
5	5	102		201	1.0	175.9	4	167	1,637	4,675	5,286	11,190	9,553.00	63	Edwards 22 Concrete
6	6	099		180	2.0	147	3.4	136	2,026	4,970	5,072	9,270	7,244.00	49	Edwards 22 Concrete
7	7	099		200	2.5	154.4	4.4	124.5	2,726	6,843	7,040	13,176	10,450.00	75	Edwards 15 Lakebed
8	8	099		196	1.6	174.6	3.7	154.3	2,793	5,515	7,403	12,164	9,371.00	50	Edwards 22 Concrete
9	9	102		204	2.5	144.6	8.5	126	1,649	5,897	6,749	10,105	8,456.00	53	Edwards 17L Lakebed
10	41B	099		198.2	<2.0	159.5	2.4	135.9	1,930	5,789	7,448	12,737	10,807.00	67	KSC 15 Concrete
11	41C	099		220	2.0	138	4	110	1,912	7,167	8,538	10,628	8,716.00	49	Edwards 17L Lakebed
12	41D	103		216.3	<2.0	166	4.8	106.5	2,510	6,713	10,018	12,785	10,275.00	60	Edwards 17L Lakebed
13	41G	099	c	209.4	1.8c	161	2.6	113	962	5,505	8,986	11,527	10,565.00	54	KSC 33 Concrete
14	51A	103	c	193.7	2.0c	157.8	4	141.6	2,724	6,380	7,550	12,178	9,454.00	58	KSC 15 Concrete
15	51C	103	c	179.1	0.7c	142.7	3.4	116.7	2,753	5,752	7,677	10,105	7,352.00	50	KSC 15 Concrete
16	51D	103	c	209	2.8c	180	5.1	156	1,639	4,303	6,667	11,937	10,298.00	63	KSC 33 Concrete
17	51B	099		206.5	<1.0	153	6.1	106	1,576	5,528	7,589	9,893	8,317.00	59	Edwards 17L Lakebed
18	51G	103		202.3	5.0	159.6	6.9	154.2	1,117	4,990	5,248	8,550	7,433.00	42	Edwards 23 Lakebed
19	51F	099		204.3	4.0	171.8	6.1	126.2	3,713	6,412	9,059	12,282	8,569.00	55	Edwards 23 Lakebed
20	51I	103		175	<2.0	142	4.8	114	2,101	4,384	5,571	8,201	6,100.00	47	Edwards 23 Lakebed
21	51J	104		187	3.0	154.8	4.8	117.2	2,476	4,873	7,421	10,532	8,056.00	65	Edwards 23 Lakebed
22	61A	099		209.9	1.0	173.8	6.7	110.9	1,829	4,767	7,923	10,133	8,304.00	45	Edwards 17L Lakebed
23	61B	104		201.3	1.0	165.7	3.1	126.4	2,386	5,909	9,321	13,145	10,759.00	78	Edwards 22 Concrete
24	61C	102		217	2.0	162.9	2.7	138.4	1,530	6,300	7,831	10,197	10,202.00	59	Edwards 22 Concrete
25	51L	099	d												
26	26	103		195	1.0	154	4	134	2,569	5,671	6,750	10,020	7,451.00	46	Edwards 17L Lakebed
27	27	104		204	1.0	168	3.8	134	1,469	4,423	5,908	8,592	7,123.00	43	Edwards 17L Lakebed
28	29	103		204	2.9	163	1.7	130	1,195	5,027	7,550	10,534	9,339.00	52.7	Edwards 22 Concrete
29	30	104		204	2.4	164	2	138	1,314	5,088	6,028	11,609	10,295.00	64.3	Edwards 22 Concrete
30	28	102		158	1.0	128	7.6	82	5,311	7,393	9,776	11,326	6,015.00	46.5	Edwards 17L Lakebed
31	34	104		204.7	1.0	157.9	3.4	77.6	1,871	5,355	10,063	11,548	9,677.00	60.4	Edwards 23L Lakebed
32	33	103		191.6	3.0	159.4	2.9	148	740	3,982	4,856	8,504	7,764.00	46.1	Edwards 04 Concrete
33	32	102		209.3	1.0	161.5	2.2	141.3	2,399	6,606	8,096	12,495	10,096.00	62.2	Edwards 22 Concrete
34	36	104		187.8	1.0	143.2	3.8	97	1,622	4,862	6,405	9,522	7,900.00	52.9	Edwards 23L Lakebed

a. Based on runway measurements except for brake initiation (onboard service)

b. kgs = knots, ground speed

c. Sink rate based on LaRC analysis of KSC spin-up measurement

d. Data not available

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				MGTD kgs b	Sink rates, ft/sec	NGTD, kgs a	Pitch rate, deg/sec	Brake init., kgs b	MGTD	NGTD	Brake init.	Stop			
35	31	103		180.1	3.0	144.4	2.9	118.6	1,176	4,560	6,718	10,065	8,889.00	60.7	Edwards 22 Concrete
36	41	103		194.6	1.0	155.5	2.3	135.7	2,295	6,359	7,713	10,827	8,532.00	49.2	Edwards 22 Concrete
37	38	104		196.5	1.0	162.9	2.6	130.5	1,414	4,600	6,966	10,417	9,003.00	56.3	KSC 33 Concrete
38	35	102		207.9	1.0	169.5	3.4	134.5	1,535	5,559	8,465	12,101	10,566.00	57.7	Edwards 22 Concrete
39	37	104		156.6	2.3	131.8	7.3	93.6	623	1,200	3,197	5,741	6,364.00	53.9	Edwards 33 Lakebed
40	39	103		210.4	2.0	159.8	2.5	136.5	168	4,700	6,316	9,403	9,235.00	55.5	KSC 15 Concrete
41	40	102		199.8	2.0	153.3	3.5	135.2	1,485	5,914	7,323	10,923	9,438.00	54.6	Edwards 22 Concrete
42	43	104		203.4	2.0	166.6	2.4	132.5	1,986	5,517	8,243	11,876	9,890.00	58.9	KSC 15 Concrete
43	48	103		215.7	1.0	172	2.5	145.4	1,235	4,882	6,851	10,619	9,384.00	49.6	Edwards 22 Concrete
44	44	104		183.4	1.0	150	4.5	15.2	2,607	5,077	13,570	13,798	11,191.00	106.6	Edwards 05R Lakebed
45	42	103		199.5	2.0	169	3.7	134.8	2,835	5,901	8,769	12,676	9,841.00	58.3	Edwards 22 Concrete
46	45	104		187.7	1.0	162.6	3.6	135.3	1,765	4,393	6,721	10,992	9,227.00	59.6	KSC 33 Concrete
47	49	105		211	1.0	175.1	3	96.3	2,156	5,770	9,923	11,646	9,490.00	57.7	Edwards 22 Concrete
48	50	102		209.4	2.0	151.2	4.4	112.9	2,321	7,832	10,573	12,995	10,674.00	58.6	KSC 33 Concrete
49	46	104		203.8	2.0	156	3.7	132.2	1,865	6,521	8,510	12,725	10,860.00	65.6	KSC 33 Concrete
50	47	105		210.6	1.0	137	1.9	115.6	2,458	7,651	8,591	11,025	8,567.00	50.9	KSC 33 Concrete
51	52	102		219.6	1.0	151.4	3	101.1	1,080	6,949	9,321	11,788	10,708.00	63.1	KSC 33 Concrete
52	53	103		208.8	3.0	144.9	1.9	106.2	1,108	6,329	7,927	11,273	10,165.00	72.8	Edwards 22 Concrete
53	54	105		205	2.0	150.2	2.7	106.8	1,536	6,249	8,233	10,260	8,724.00	49.2	KSC 33 Concrete
54	56	103		196.1	3.0	143.8	2.9	128	1,075	5,587	6,295	10,605	9,530.00	63.1	KSC 33 Concrete
55	55	102		210.3	3.5	149	3.9	85	1,819	7,283	10,030	11,944	10,125.00	60.9	Edwards 22 Concrete
56	57	105		203	1.5	135	2.9	99.7	2,297	7,498	9,371	12,251	9,954.00	65.3	KSC 33 Concrete
57	51	103		198.4	1.5	144.1	3.3	113.4	2,099	6,539	7,977	10,370	8,271.00	50.1	KSC 15 Concrete
58	58	102		204.9	2.0	167.6	3.2	137.2	3,380	6,948	8,772	13,020	9,640.00	60.9	Edwards 22 Concrete
59	61	105		192.1	1.5	148.7	3	118	2,903	6,635	8,029	10,825	7,922.00	53.4	KSC 33 Concrete
60	60	103		191.9	2.0	118.2	3.52	97.5	2,463	7,455	8,295	10,234	7,771.00	49.8	KSC 15 Concrete
61	62	102		210.5	3.0	148.2	3.2	122.4	3,004	8,746	10,044	13,155	10,151.00	54.5	KSC 33 Concrete
62	59	105		228.3	3.5	171.4	3.8	117.9	1,664	7,067	9,819	12,355	10,691.00	53.7	EAFB 22 Concrete
63	65	102		206.9	3.0	138.7	-4.9	114.6	2,996	8,313	9,655	13,207	10,211.00	68.4	KSC 33 Concrete
64	64	103		207.8	1.0	163.4	-5.8	133.3	3,386	7,192	7,595	13,042	9,656.00	61.5	EAFB 4 Concrete
65	68	105		196.8	1.0	137.9	-4.4	81.8	3,522	7,299	9,888	12,107	8,495.00	61.8	EAFB 22 Concrete
66	66	104		195.8	1.0	150.6	-3.8	108.5	3,224	6,390	8,376	10,866	7,642.00	51.5	EAFB 22 Concrete
67	63	103		205.9	3.0	149.2	-4.2	57.1	1,349	5,437	10,617	12,351	11,002.00	80.4	KSC 15 Concrete
68	67	105		201	2.5	151.5	-5.4	141.6	17	6,240	6,936	11,634	11,617.30	60.9	EAFB 22 Concrete

a. Based on runway measurements except for brake initiation (onboard service)

b. kgs = knots, ground speed

c. Sink rate based on LaRC analysis of KSC spin-up measurement

d. Data not available

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69	71	104		206.2	2.0	166	-5.2	143.9	2,243	5,474	5,471	10,607	8,364.00	53.8	KSC 15 Concrete
70	70	103		198.7	1.6	163.4	-5.2	89.4	2,601	5,478	9,051	11,066	8,465.00	58.4	KSC 33 Concrete
71	69	105		218.1	4.4	167.1	-5.6	118	1,912	6,325	8,710	12,142	10,230.00	59.9	KSC 33 Concrete
72	73	102		213.3	2.0	157.1	-4.9	125.3	2,500	7,098	8,541	11,617	9,117.00	55.6	KSC 33 Concrete
73	74	104		195.8	2.2	156.6	-5.8	71.5	2,471	5,567	9,732	11,162	8,691.00	57.8	KSC 33 Concrete
74	72	105		191	1.4	145.5	-5.8	86.3	3,386	6,574	10,049	12,115	8,729.00	65.3	KSC 15 Concrete
75	75	102		189.3	0.4	130.4	-4.4	99.5	2,175	6,451	7,739	10,635	8,460.00	64.3	KSC 33 Concrete
76	76	104		204.1	4.2	154.1	-4.2	116	2,185	5,747	7,579	10,645	8,460.00	55	Edwards 22 Concrete
77	77	105		215.1	3.0	150.5	-4.1	107.4	1,688	6,612	8,688	10,978	9,290.00	52.3	KSC 33 Concrete
78	78	102		214	1.3	158	-4.5	124.3	2,304	6,537	8,145	11,639	9,335.00	57.1	KSC 33 Concrete

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- d. Data not available

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