## **SPACE SHUTTLE MISSIONS SUMMARY**

			O.	PACE SF		L 1411			<i>)</i>		Page 95 - STS-79
FLT	ORBITER	CREW (7) 6 UP / 6 DOWN	LAUNCH SITE, LIFTOFF TIME,	LANDING SITE/ RUNWAY, CROSSRANGE	SSME-TL NOM-ABORT EMERG	SRB RSRM		ORBIT	FSW	PAYLOAD WEIGHTS,	MISSION HIGHLIGHTS (LAUNCH SCRUBS/DELAYS,
NO.		TITLE, NAMES & EVA'S	LANDING SITES, ABORT TIMES	LANDING TIMES FLT DURATION, WINDS	THROTTLE PROFILE ENG. S.N.	AND ET	INC	HA/HP		PAYLOADS/ EXPERIMENTS	TAL WEATHER, ASCENT I-LOADS, FIRSTS, SIGNIFICANT ANOMALIES, ETC.)
STS-79 SEQ FLT #79 KSC-79 PAD 39A-45 MLP-1	OV-104 (Flight 17) Atlantis Spacehab 5 OMS PODS: LP03-21 RP04-17 FRC4-17	CDR: William F. Ready (Flt 3 - STS-42, STS-51) P449/R140/V96/M125  PLT: Terrence W. Wilcutt (Flt 2 - STS-68) P450/R183/V130/M160  M/S 1: Jay Apt (Flt 4 - STS-37, STS-47, STS-59) P451/R123/V79/M110  M/S 2: Thomas D. Akers (Flt 4 - STS-41, STS-49, STS-61) P452/R115/V74/M103  M/S 3: Carl E. Walz (Flt 3 - STS-51, STS-65) P453/R170/V106/M148  M/S 4: Ascent John E. Blaha (Flt 5 - STS-29, STS-33, STS-43, STS-58, stay on Mir 22, and return on STS-43) P454/R97/V48/M88  M/S 4: Descent Shannon Lucid (Flt 5 - STS-51-G, STS-34, STS-43, STS-58, Ascent on STS-76, on-orbit stay on Mir 21 and Mir 22) P455/R65/V45/F6  MCC WHITE FCR (9)  FLIGHT DIRECTORS: ASC - R. D. Jackson ENT- L. J. Ham LD/O 1 - P. F. Dye O 2 - R. E. Castle PLNG - W. D. Reeves MOD - A. L. Briscoe	4:54:49 AM EDT (A) Monday 11 9/16/96 (8)  LAUNCH WINDOW: 5:47M MIR PLANAR/ PHASE WINDOW  EOM PLS: KSC TAL: ZZA TAL WX: MRN, BEN  SELECTED: RTLS: KSC 33/N/SF TAL: ZZA 30/N/SF TAL: ZZA 30/N/SF AOA: KSC 15/CI/N PLS: EDW 22/N/N  TDEL: 0.06 -0.018/0.02  MAX Q NAV: 697 705  SRB STG: 2:02.4 2:05  PERF: NOMINAL 2 ENG TAL (ZZA): 2:38 2:35  NEG RETURN: 4:06 4:03  PTA (U/S 260): 4:46 4:48  PTM (U/S 260): 5:20 5:24  DROOP (BYD): 5:28 5:28  MECO CMD: 8:33 8:34.6  VI: 25878 25880  OMS-2*	MLGTD: 807 FT 270:12:13:13Z VEL: 217 KGS 217 KEAS HDOT: -4.3 FPS  TD NORM 195: 2496 FT  DRAG CHUTE DEPLOY: 192 KEAS 270:12:13:22Z  NLGTD: 5760 FT 270:12:13:29Z VEL: 150 KGS HDOT: -4.2 FPS  BRK INIT: 89 KGS  DRAG CHUTE JETTISON: 55 KGS 270:12:13:57Z  AVE BRK DECEL: 3.1FPS/S  WHEELS STOP: 270:12:14:34Z 11788 FT  ROLLOUT: 10981 FT 81 SEC  WINDS: H4, L3 KTS OFFICIAL: 1206P09	104/104/ 109%  PREDICTED: 100/104/104/ 67/104  ACTUAL: 100/104/104 67/104  1 = 2012 (18) 2 = 2031 (14) 3 = 2033 (8)  M 3 EOM: WEIGHT: 215990 LBS X CG: 1081.31  LANDING: WEIGHT: 215904 LBS X CG: 1083.02	BI-083 RSRM 56 ET-82 LWT 75 ET PRED RPT: 271.3K ET BRKUP: 214K ET IMPACT 1:26:47 MET LAT: 0.65°S LONG: 125.96°W	51.67 (5)	DIRECT INSERTION  POST OMS-2: 158.6 X 85.3 NM  NC6: 2:14:05:33 MET 203.7 X 201 NM  NC2: 2:15:38:10 MET 208.8 X 201.9 NM  SEP BURN: 7:16:49:15 MET 211 X 201.3 NM  DEORBIT: 209.1 X 197.7 NM  VELOCITY: 25892 FPS  ENTRY  RANGE: 4276 NM	(1)	DEPLOYED: 3170 LBS  NON-DEPLOYED: 15151 LBS  MIDDECK: 718 LBS  SHUTTLE ACCUMULATED WEIGHTS: DEPLOYED: 822995 LBS NON-DEPLOYED: 1129291 LBS CARGO TOTAL: 2371203 LBS  PERFORMANCE MARGINS (LBS): FPR: 4456 FUEL BIAS: 432 FINAL TDDP: 462 RECON: 716  PAYLOADS: PLB: SHUTTLE/MIR MISSION 4 SPACEHAB 5 (DOUBLE MODULE) ODS  MIDDECK: SAREX IMAX MSX CPCG MGM SAMS CGBA MGBX 5 CRYO TK SETS 4 GN2 TANKS NO RMS	KSC W/D: OPF 73 (2), VAB 17 (3), PAD 25 (3) = 115 days total  LAUNCH POSTPONEMENTS: - Baselined 8/1/96 launch date on 5/4/95 5/4/95 launch date was postponed when the shuttle was rolled back from pad A to VAB on 7/10/96 under threat from Hurricane Bertha Due to STS-78 booster sooting and heat effects in field joints, decision was made to restack using STS-80 SRB's (and ET) which used old process. Set launch date to 9/12/96 Rolled out to pad A on 8/30/96 Rolled out to pad A on 8/30/96 Rolled oak to VAB 9/4/96 under threat of Hurricane Fran. Postponed launch to 9/16/96. Rolled to pad on 9/6/96.  LAUNCH SCRUBS: None  LAUNCH WINDOW: - Mir rendezvous planar/phase window was 7M00S; however, it was limited to 5M47S due to a negative performance margin (-523 lbs) at window opening. Liftoff was delayed (per plan) for 36 seconds for zero performance margin plus an additional 10 seconds (total delay 46 seconds) which allowed approx + 200 lbs APM (wind, loads allowance).  SHUTTLE NIGHT LAUNCH #14  DOLILU-II I-LOADS: DOLILU-II uplink #10, I-load uplink #29.  FLIGHT DURATION CHANGES: Extended 1 day for additional science.  FIRSTS: - First U.S. spaceflight with female flight director for entry/ landing (Linda Ham).  RENDEZVOUS #32: Rendezvous and dock with Mir (fourth docking).  EVENTS: - Shannon Lucid was carried to Mir 21 on STS-76 and was replaced on Mir 22 by John Blaha on this flight Shannon Lucid's total flight time: 188:04:00:09 and total Mir time: 178:22:23:45 Docking complete at 263:03:21:20Z, 2:18:26:31 MET Transferred 2025 lbm H2O, 69 lbm O2, and 43 lbm N2 to Mir At 3:02:11 MET, Shannon Lucid transferred to STS-79 and John Blaha transferred to Mir-22 crew. (263:11:05:492) - Undocking at 268:01:31:29Z, 07:16:36:40 MET.  RADIATOR DEPLOY #19: - Both port and starboard radiators were deployed for cooling and to conserve water for transfer to Mir Transferred 20 CWC's with 2025 lbs water.

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FLT NO.	ORBITER	CREW (6)	LAUNCH SITE, LIFTOFF TIME,	LANDING SITE/ RUNWAY, CROSSRANGE	SSME-TL NOM-ABORT EMERG	SRB RSRM	ORBIT		FSW	PAYLOAD WEIGHTS,	MISSION HIGHLIGHTS (LAUNCH SCRUBS/DELAYS,
		TITLE, NAMES & EVA'S	LANDING SITES, ABORT TIMES	LANDING TIMES FLT DURATION, WINDS	THROTTLE PROFILE ENG. S.N.	AND ET	INC	HA/HP		PAYLOADS/ EXPERIMENTS	TAL WEATHER, ASCENT I-LOADS, FIRSTS, SIGNIFIC:T ANOMALIES, ETC.)
STS-79 Continued				Continued							Continued
Continued				DENS ALT: 1084 FT  FLT DURATION: 10:03:18:24  S/T: 641:13:48:49  OV-104: 120:16:54:18  DISTANCE: 3,900,000 sm							SIGNIFICANT ANOMALIES:  RH RSRM nozzle erosion beginning in throat ring and extending aft into forward exit cone (approx 60 longitudinal erosion areas up to 0.4 inches diameter).  Supply water tank B quantity transducer dropouts.  Fuel cell O2 flow transducer degraded.  Cryo H2 tank 3 B heater failure.  Single string GPS erroneous time reference, loss of lock and runaway. (Firmware problem.)  TCS range discrepancy.  APU 2 underspeed shutdown at 13:14 MET. Two-APU entry/landing.  APU 2 fuel pump seal cavity drain line pressure decay to vacuum.