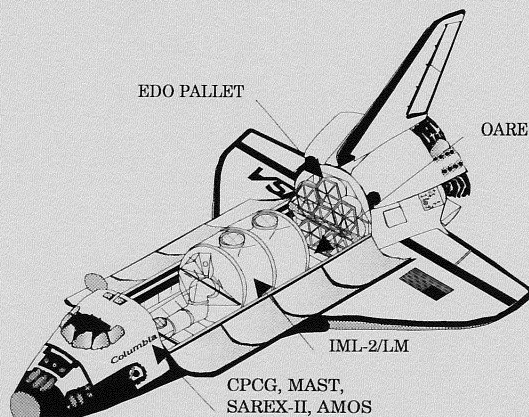


International Microgravity Laboratory -2

Crew

Robert D. Cabana	Commander
James D. Halsell, Jr.	Pilot
Richard J. Hieb	Payload Commander
Carl E. Walz	Mission Specialist
Leroy Chiao	Mission Specialist
Donald A. Thomas	Mission Specialist
Chiaki Mukai	Payload Specialist



Profile Summary

Nominal Launch Time: 11:43 AM CDT
 Orbit Inclination: 28.45 Degrees
 Initial Orbital Altitude: 160 nm
 Mission Duration: 13 Days, 18 Hours
 Landing Time at KSC: 5:43 AM CDT



STS-65
Columbia OV-102



NASA - JSC
 FLIGHT INTEGRATION OFFICE
 July 1994
 STS-65 Flight Integration Manager
 Gail Clark/TM2

STS - 65 EVENTS TIMELINE

TEAM	MAJOR EVENTS	FLIGHT DAY	MET**	CST***
FLIGHT DAY 1				
ASCENT				
BOTH	SRB IGNITION		00:00	11:43
	MAX DYNAMIC PRESSURE		00:58	11:44
	SRB SEPARATION		02:04	11:45
	MECO 157/36 NM (HA/HP*)		08:39	11:52
	ET SEPARATION		08:51	11:52
	OMS-2 TIG 163/37 NM		39:56	12:23
	OMS-2 CUT-OFF 163/160 NM		42:22	12:25
ON-ORBIT				
	SpaceLab Activation begins:		0/03:30	15:13
	Payload Activation begins:		0/04:30	16:13
	CPCG Activation		0/06:15	17:58
FLIGHT DAY 2				
BLUE	Fish Observation		0/11:45	23:28
	Slow Rotating Centrifuge Microscope (NIZEMI) facility is activated		0/12:00	23:43
	Containerless Processing (TEMPUS) facility is activated and checked-out		0/14:00	01:43
	Spinal Changes in Microgravity (SCM): Measurements		0/20:45	08:28
RED	SAREX setup/test		0/22:29	10:12
	Biorack Operations		0/23:00	10:43
	Medaka fish spawning is observed		0/23:30	11:13
	SAREX School Contact - Sunrise, FL		1/00:08	11:51
FLIGHT DAY 3				
BLUE	Critical Point Facility (CPF) critical point temperature crossing		1/09:45	21:28
	Biorack Operations		1/10:15	21:58
	TEMPUS: GOLD1 experiment begins		1/22:30	10:13
RED	Performance Assessment Workstation (PAWS) performance		1/23:00	10:43
	Extended Duration Orbiter Medical Project (EDOMP): LBNP ramp		2/04:45	16:28
FLIGHT DAY 4				
BLUE	Aquatic Animal Experiment Unit (AAEU): Goldfish light reflex test		2/10:20	22:03
	Newt egg observation		2/10:30	22:13
	NIZEMI Operations		2/10:30	22:13
RED	SAREX Contact - Ingolstadt, Germany		2/22:44	10:27
	NIZEMI: Slime mold experiment		2/23:20	11:03
	SCM SSEP		2/23:30	11:13
	Thermoelectric Incubator (TEI)/Cell Culture Kits (CCK)		3/05:20	17:03
FLIGHT DAY 5				
BLUE	TEMPUS		3/09:20	21:03
	Biorack Operations		3/10:05	21:48
	NIZEMI: Jellyfish		3/10:10	21:53
RED	EDOMP: LBNP ramp		3/21:30	09:13
	SAREX School Contact - Lake Charles, LA		3/22:52	10:35
	TEMPUS		4/00:30	12:13
	Bubble, Drop, and Particle Unit (BDPU)		4/01:45	13:28
FLIGHT DAY 6				
BLUE	TEMPUS		4/09:30	21:13
	Research Methods Using Space Electrophoresis (RAMSES) facility is activated		4/10:00	21:43
	Biorack		4/17:00	04:43
RED	Free-Flow Electrophoresis (FFEU)		5/00:10	11:53
	NIZEMI root growth status		5/04:45	16:28
	SAREX School Contact - Talebayashi, Japan		5/05:08	16:51
	Real-Time Radiation Monitoring Device (RRMD)		5/06:00	17:43
FLIGHT DAY 7				
BLUE	RAMSES		5/08:15	19:58
	AAEU: Goldfish light reflex test		5/14:45	02:28
	BDPU		5/15:00	02:43
RED	FFEU		5/18:45	06:28
	TEMPUS		6/01:45	13:28
	SAREX School Contact - Sandersonville, GA		6/03:40	15:23
	TEI/CCK		6/04:30	16:13

STS - 65 EVENTS TIMELINE

TEAM	MAJOR EVENTS	FLIGHT DAY	MET**	CST***
FLIGHT DAY 8				
BLUE	RAMSES		6/08:20	20:03
	AAEU: Newt egg count		6/11:00	22:43
	BDPU		6/13:30	01:13
RED	SCM		6/20:10	07:53
	PAWS		6/21:00	08:43
	SAREX School Contact - West Monroe, LA		6/21:38	09:21
	NIZEMI		6/22:30	10:13
	DTO 667		7/01:00	12:43
FLIGHT DAY 9				
BLUE	TEMPUS		7/12:25	00:08
	RAMSES		7/15:40	03:23
	BDPU		7/16:30	04:13
RED	CPF		7/18:45	06:28
	SAREX School Contact - Prescott, AZ		7/20:10	07:53
	AAEU: Medaka fish video		7/21:00	08:43
	TEMPUS		7/21:00	08:43
FLIGHT DAY 10				
BLUE	Large Isothermal Furnace (LIF)		8/6:20	18:03
	TEI/CCK		8/6:40	18:23
	Biorack		8/9:30	21:13
RED	BDPU		8/18:50	6:33
	NIZEMI		8/19:30	7:13
	TEMPUS		8/20:00	7:43
FLIGHT DAY 11				
BLUE	TEI/CCK		9/07:30	19:13
	LIF		9/12:30	00:13
	BDPU		9/16:30	04:13
RED	Biorack: Drosophila		9/21:00	08:43
	AAEU		9/23:30	11:13
	EDOMP: RAMP		10/02:03	13:46
FLIGHT DAY 12				
BLUE	RAMSES		10/05:30	17:13
	TEMPUS		10/14:15	01:58
	BDPU		10/14:30	02:13
RED	SCM		10/17:15	04:58
	CPF		11/00:35	12:18
FLIGHT DAY 13				
BLUE	Biorack		11/07:15	18:58
	NIZEMI		11/07:35	19:18
	RAMSES		11/10:00	21:43
RED	AAEU: Medaka fish observation		11/23:50	11:33
	Biorack: Drosophila		12/01:05	12:48
FLIGHT DAY 14				
BLUE	NIZEMI: Jellyfish		12/10:50	22:33
	RRMD		12/12:45	00:28
RED	AAEU: Goldfish		12/14:15	01:58
	SCM		12/14:55	02:38
	OARE Maneuver		12/17:55	05:38
	PAWS		12/21:00	08:43
	EDOMP: Soak		13/02:25	14:08
FLIGHT DAY 15				
BLUE	CPCG Deactivation		13/07:30	19:13
	SpaceLab Deactivation		13/09:45	21:28
BOTH	Deorbit Prep		13/12:55	00:38
	Deorbit Burn		13/17:00	04:43
	KSC Landing		13/18:00	05:43

*HEIGHT OF APOGEE/HEIGHT OF PERIGEE **MISSION ELAPSED TIME REFERENCED TO SRB IGNITION
 ***CENTRAL DAYLIGHT TIME ASSUMES LIFT-OFF AT 11:43 A.M. FOR 7/8/94.

PAYLOAD BAY PAYLOAD:

Second International Microgravity Laboratory (IML-2): The second IML SpaceLab flight focuses on research in both the Materials and Life Sciences disciplines in a microgravity environment. The IML-2 payload consists of 10 material, 8 life science, and 2 EDOMP experiments.

Orbital Acceleration Research Experiment (OARE): OARE will provide data for characterizing the low frequency microgravity environment in the orbiter in support of IML-2.

MIDDECK PAYLOADS:

Commercial Protein Crystal Growth (CPCG): CPCG produces large, high quality, protein crystals for analysis of protein molecular structures and to obtain information on the dynamics of protein crystallization.

Shuttle Amateur Radio Experiment-II (SAREX-II): SAREX-II communicates with amateur radio operators and schools using a hand-held transceiver in either voice or data transmission modes.

Air Force Maui Optical Site (AMOS): AMOS is manifested as a payload of opportunity and uses the orbiter to calibrate ground based infrared and optical sensors.

Military Application of Ship Tracks (MAST): MAST is manifested as a payload of opportunity and will define ship track and related cloud characteristics using high resolution imagery.

DEVELOPMENT TEST OBJECTIVES (DTOS):

- DTO 251 Entry Aerodynamic Control Surfaces Test - Alternate Elevon Schedule (Part 7)
- DTO 254 Subsonic Aerodynamics Verification (Part 2)
- DTO 301D Ascent Structural Capability Evaluation
- DTO 307D Entry Structural Capability Evaluation
- DTO 312 ET TPS Performance (Methods 1 and 3)
- DTO 319D Orbiter/Payload Acceleration and Acoustics Environment Data
- DTO 414 APU Shutdown Test (Sequence A)
- DTO 623 Cabin Air Monitoring
- DTO 655 Foot Restraint Evaluation
- DTO 663 Acoustic Noise Dosimeter Data
- DTO 665 Acoustic Noise Sound Level Data
- DTO 667 Portable In-Flight Landing Operations Trainer (PILOT)
- DTO 674 Thermo-Electric Liquid Cooling System Evaluation
- DTO 682 Inertial Vibration Isolation System (IVIS)
- ‡ DTO 805 Crosswind Landing Performance
- DTO 913 Microgravity Measurement Device (MMD)

A "D" suffix to a DTO number identifies it as a data only test

‡ "D" DTO of opportunity.

DETAILED SUPPLEMENTARY OBJECTIVES (DSO'S):

- DSO 314 OV-102 Acceleration Data Collection
- DSO 326 Window Impact Observation
- # DSO 484 Assessment of Circadian Shifting in Astronauts by Bright Light
- DSO 485 Inter Mars Tissue Equivalent Proportional Counter (ITEPC)
- DSO 487 Immunological Assessment of Crewmembers
- DSO 491 Characterization of Microbial Transfer Among Crewmembers During Space Flight
- # DSO 603 Orthostatic Function During Entry, Landing, and Egress
- # DSO 604 Visual-Vestibular Integration as a Function of Adaptation
- # DSO 605 Postural Equilibrium Control During Landing/Egress
- # DSO 608 Effects of Space Flight on Aerobic and Anaerobic Metabolism During Exercise
- # DSO 610 In-Flight Use of Flornet to Improve Orthostatic Intolerance Postflight
- # DSO 614 The Effect of Prolonged Space Flight on Head and Gaze Stability
- # DSO 626 Cardiovascular and Cerebrovascular Responses to Standing Before and After Space Flight
- DSO 901 Documentary Television
- DSO 902 Documentary Motion Picture Photography
- DSO 903 Documentary Still Photography

"#" Indicates Extended Duration Orbiter (EDO) buildup medical evaluation

STS-45

Atlantis OV-104

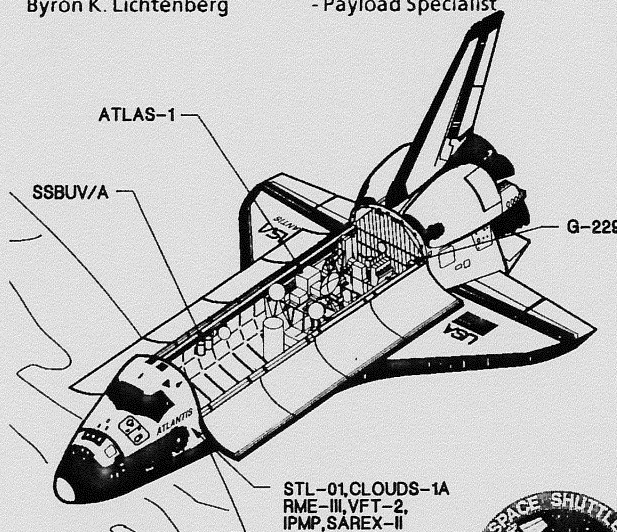


NASA-JSC
FLIGHT INTEGRATION OFFICE
MARCH 1992

STS-45 Flight Integration Manager
 Dianne Murphy/TM2

CREW:

Charles F. Bolden	- Commander
Brian K. Duffy	- Pilot
Kathryn D. Sullivan	- Mission Specialist
David C. Leestma	- Mission Specialist
C. Michael Foale	- Mission Specialist
Dirk D. Frimout	- Payload Specialist
Byron K. Lichtenberg	- Payload Specialist

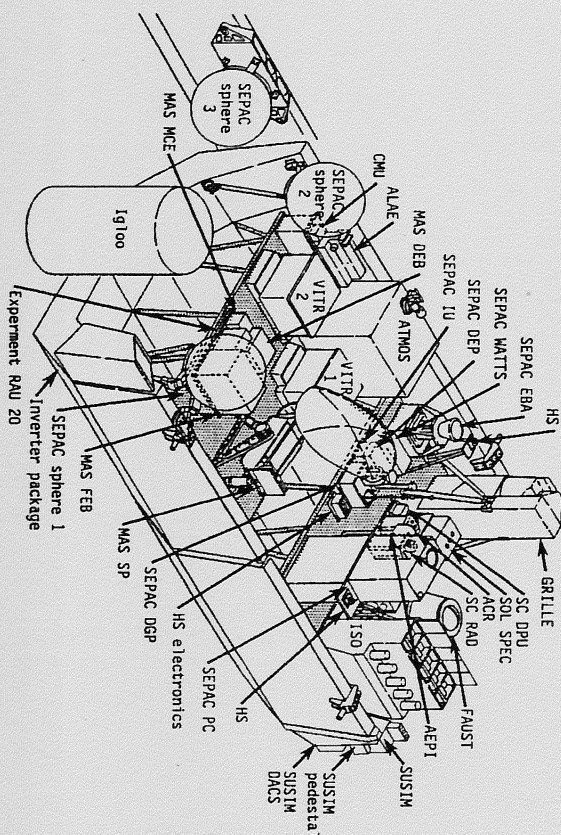


Profile Summary

Nominal Launch Time: 7:01 AM CST
 Orbit Inclination: 57 Degrees
 Initial Orbital Altitude: 160 NM
 Mission Duration: 190 Hours
 Landing Time at KSC: 5:08 AM CST



Atmospheric Laboratory for Applications and Science Satellite Operational Configuration



STS-45 EVENTS TIMELINE

TEAM	MAJOR EVENTS	MET** D/H:M:S	CST*** HR:MIN
BOTH	SRB IGNITION	0/00:00:00	7:01
	MAX DYNAMIC PRESSURE	0/00:00:56	7:02
	SRB SEPARATION	0/00:02:05	7:03
	MECO 157/19 (HA/HP*)	0/00:08:41	7:10
	ET SEP	0/00:08:53	7:10
	OIMS-2 CUT-OFF 160 NM	0/00:38:39	7:40
BLUE	PAYLOAD BAY DOORS OPEN	0/01:28	8:29
	SPACELAB ACTIVATION	0/02:10	9:11
	KU-BAND ANTENNA DEPLOY	0/02:45	9:46
	STL ACTIVATION	0/04:15	11:16
RED	SSBUV/A ACTIVATION	0/08:45	15:46
	SAREX HOUSTON	0/10:58	17:59
BLUE	G-229 ACTIVATION	0/11:45	18:46
	SOLCON SUN-CRISSCROSS	0/23:43	6:44
	AEPI	1/05:10	12:11
	VFT-2	1/06:00	13:01
RED	SUSIM	1/10:23	17:24
	DSO 0802	1/13:20	20:21
	FAUST SCAN	1/15:56	22:57
	ISO	1/17:57	00:58
BLUE	SSBUV/A	1/19:50	2:51
	MAS	2/00:29	7:30
	IPMP	2/02:30	9:31
	AEPI	2/06:54	13:55
	SEPAC	2/07:46	14:47
RED	SAREX HOUSTON	2/09:38	16:39
	FAUST SCAN	2/14:36	21:37
	ISO	2/16:42	23:43
BLUE	AEPI	2/19:23	2:24
	SSBUV/A	3/02:05	9:06
	ISO	3/04:42	11:43
	SEPAC	3/06:23	13:24
	AEPI	3/07:11	14:12
RED	DSO 0802	3/12:40	19:41
	VFT-2	3/17:42	00:43
BLUE	MAS	3/21:38	4:39
	SEPAC	3/23:30	6:31
	SSBUV/A	4/01:51	8:52
	VFT-2	4/05:10	12:11
RED	AEPI	4/07:06	14:07
	SEPAC	4/10:03	17:04
	MAS	4/10:50	17:51
	AEPI	4/14:37	21:38
	ISO	4/18:23	1:24
BLUE	SEPAC	4/22:12	5:13
	AEPI	5/02:44	9:45
RED	SAREX MSFC	5/06:53	13:54
	ISO	5/10:26	17:27
	SSBUV/A	5/11:25	18:26
	VFT-2	5/15:30	22:31
	SEPAC	5/19:33	2:34
BLUE	FAUST SCAN	5/22:33	5:34
	AEPI	5/23:50	6:51
	MAS	6/06:45	13:46
BOTH	CREW CONFERENCE	6/08:30	15:31
RED	SSBUV/A	6/09:55	16:56
	SEPAC	6/11:52	18:53
	FAUST SCAN	6/15:02	22:03
	ISO	6/18:40	1:41
BLUE	FCS C/O	6/19:55	2:56

STS-45 EVENTS TIMELINE (CONCLUDED)

TEAM	MAJOR EVENTS	MET** D/H:M:S	CST*** HR:MIN
	SSBUV/A	7/00:34	7:35
	SUSIM	7/05:19	12:20
	SOLCON SUN-CRISSCROSS	7/06:44	13:45
RED	FAUST SCAN	7/09:06	16:07
	DTO 0728	7/11:30	18:31
	ATLAS DEACTIVATION	7/12:30	19:31
	STL ENTRY PREPARATION	7/14:30	21:31
	SPACELAB DEACTIVATION	7/15:37	22:38
BOTH	DEORBIT PREPARATION	7/17:05	00:06
	DEORBIT BURN	7/21:07	4:08
	KSC LANDING	7/22:07	5:08

*HEIGHT OF APOGEE/PERIGEE ** MISSION ELAPSED TIME REFERENCED TO SRB IGNITION *** CENTRAL STANDARD TIME

PAYLOAD BAY PAYLOADS:

ATLAS-1 - (Atmospheric Laboratory for Applications and Science Mission-1): Measures the variations in the solar output and its effects on the Earth's atmosphere.

SSBUV/A - (Shuttle Solar Backscatter Ultraviolet): Provides global ozone data for support of NASA's Upper Atmospheric Research program and National Oceanic and Atmospheric Administration's (NOAA's) ozone monitoring program.

G-229 (Get-Away Special (GAS)): Melts and regrows the Gallium-Arsenide crystals

MIDDECK PAYLOADS:

STL-01 - (Space Tissue Loss-01): Tests muscle, bone, and tissue cells for integrity, activity, and functional loss induced by microgravity stress.

RME-III - (Radiation Monitoring Equipment-III): Measures ionizing radiation over repeated intervals and digitally stores the resulting data.

SAREX-II - (Shuttle Amateur Radio Experiment): Communications with amateur radio operators using hand-held transceiver in one of four transmission modes; voice, data, slow scan TV, or fast scan TV.

VFT-2 - (Visual Function Tester-2): Measures a number of basic vision performance parameters.

CLOUDS-1A - (Cloud Logic to Optimize Use of Defense System): Obtain photographic sequences of certain types of cloud fields including sequences of cloud fields over specific ground target locations.

IPMP - (Investigations into Polymer Membrane Processing): Demonstrate technology that could be used to regulate the porosity and uniformity of a polymer membrane by using flash evaporation units.

NO FLIGHT HARDWARE:

UVPI - (Ultraviolet Plume Instrument): Obtain images in ultraviolet spectrum of plumes from Orbiter jet firings as it passes beneath the on-orbit Low-Power Atmospheric Compensation Experiment spacecraft

DEVELOPMENT TEST OBJECTIVES (DTO'S):

- DTO 250** Forward RCS Flight Test - Control Surface Effects
- DTO 301D** Ascent Wing Structural Capability Evaluation
- DTO 312** ET TPS Performance (Method 2)
- DTO 520** Edwards Lakebed Runway Bearing Strength and Rolling Friction Assessment for Orbiter Landings
- DTO 623** Cabin Air Monitoring
- DTO 624** Radiator Performance
- DTO 633** VTR Demonstration
- DTO 648** Electronic Still Photography Test (without the Playback Downlink Unit and the downlink capability)
- DTO 728** Ku-band Antenna Friction
- DTO 805** Crosswind Landing Performance

DETAILED SUPPLEMENTARY OBJECTIVES (DSO'S):

- DSO 317** Collection of Shuttle Humidity Condensate for Analytical Evaluation
- * **DSO 603B** Orthostatic Function During Entry, Landing & Egress
- * **DSO 604** Visual Vestibular Integration OI-1
- * **DSO 607** Lower Body Negative Pressure Following Space Flight
- * **DSO 608** Effects of Space Flight on Aerobic and Anaerobic Metabolism at Rest and During Exercise
- * **DSO 611** Air Monitoring Instrument Evaluation and Atmosphere Characterization (Configuration 2)
- * **DSO 612** Energy Utilization
- * **DSO 613** Changes in the Endocrine Regulation of Orthostatic Tolerance
- * **DSO 614** Head and Gaze Stability During Locomotion
- * **DSO 621** In Flight Use of Forinef to Improve Orthostatic Intolerance Postflight
- DSO 802** Educational Activities (The Atmosphere Below)
- DSO 901** Documentary Television
- DSO 902** Documentary Motion Picture Photography
- DSO 903** Documentary Still Photography

*INDICATES EDO DTO/DSO

STS-54

Endeavour OV-105

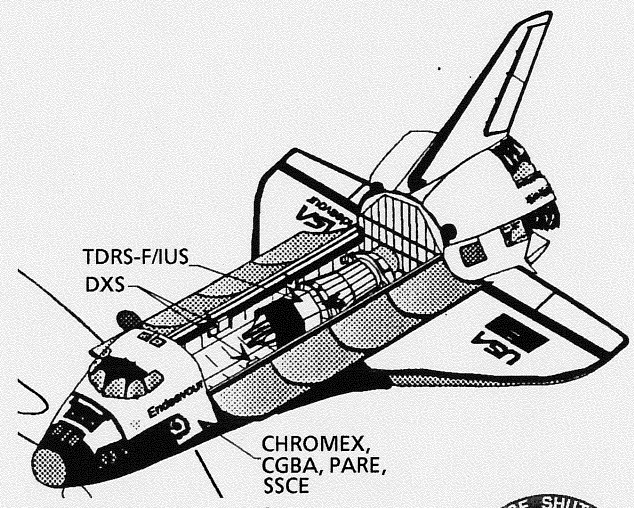


NASA-JSC
FLIGHT INTEGRATION OFFICE
JANUARY 1993

STS-54 Flight Integration Manager
 Anne Sweet/TM2

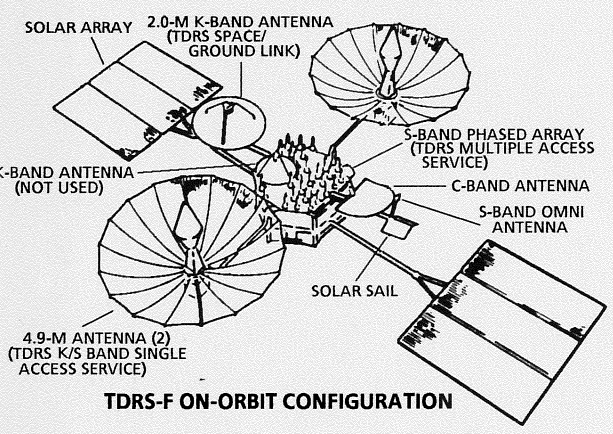
CREW:

- | | |
|---------------------|----------------------|
| John H. Casper | - Commander |
| Donald R. McMonagle | - Pilot |
| Gregory J. Harbaugh | - Mission Specialist |
| Susan J. Helms | - Mission Specialist |
| Mario Runco, Jr. | - Mission Specialist |

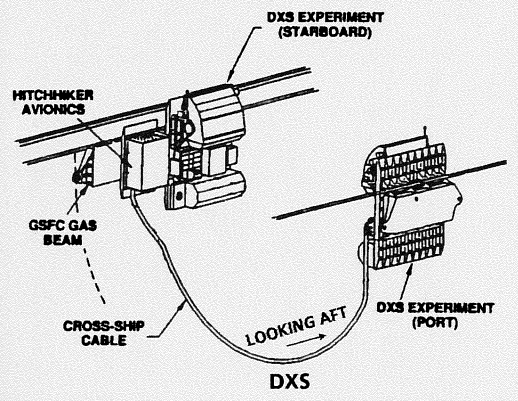


Profile Summary

Nominal Launch Time: 7:52 AM CST
 Orbit Inclination: 28.45 Degrees
 Initial Orbital Altitude: 160 NM
 Mission Duration: 143 Hours, 32 Minutes
 Landing Time at KSC: 7:24 AM CST



TDRS-F ON-ORBIT CONFIGURATION



DXS

STS-54 EVENTS TIMELINE

MAJOR EVENTS	HA/HP* N.MI.	MET** D/H:M:S	CST*** HR:MIN
FLIGHT DAY 1			
ASCENT		MIN:SEC	HR:MIN
SRB IGNITION		00:00	7:52 AM
MAXIMUM DYNAMIC PRESSURE		01:02	7:53 AM
SRB SEPARATION		02:05	7:55 AM
MECO	156/35	08:37	8:01 AM
ET SEPARATION		08:49	8:01 AM
OMS-2 IGNITION	162/37	39:55	8:32 AM
OMS-2 CUT-OFF	162/160	42:19	8:34 AM
ON-ORBIT		DAYS/HR:MIN	
DXS ACTIVATION		0/01:35	9:27 AM
"HOT MIKE" AUDIO CONFIGURATION		0/02:30	10:22 AM
CHROMEX/PARE STATUS CHECK		0/03:35	11:27 AM
IUS/TDRS-F DEPLOY		0/06:13	2:05 PM
SEPARATION BURN (OMS-3)	178/162	0/06:28	2:20 PM
TDRS-F/IUS INJECTION		0/07:13	3:05 PM
LYMPHOCYTE LOCOMOTION ACTIVATION (DSO 322)		0/07:15	3:07 PM
CGBA ACTIVITIES (INITIALIZE SETS)		0/07:20	3:12 PM
VTR PLAYBACK - DEPLOY		0/08:00	3:52 PM
FIRST DXS SCAN		0/10:08	6:00 PM
FLIGHT DAY 2			
CREW WAKEUP		0/18:30	2:22 AM
CGBA ACTIVITIES (INITIALIZE SETS)		0/21:30	5:22 AM
GROUP B POWERDOWN		0/21:30	5:22 AM
VISUAL VESTIBULAR TESTS (DSO 604)		0/21:45	5:37 AM
EXERCISE - ROWER		0/23:00	6:52 AM
CIRCULARIZATION BURN (OMS-4)	162/162	1/02:09	10:01 AM
CHROMEX/PARE STATUS CHECK		1/02:40	10:32 AM
BIOREACTOR TEST 1 (DSO 316)		1/03:05	10:57 AM
CGBA ACTIVITIES (GBA BEGIN SET 1)		1/05:55	1:47 PM
FREQ. INTER. MEASUREMENT ACTIVATION (DSO 321)		1/06:20	2:12 PM
FLIGHT DAY 3			
CREW WAKEUP		1/17:30	1:22 AM
FREQ. INTER. MEASUREMENT DEACTIVATION		1/18:30	2:22 AM
BIOREACTOR TEST 2		1/20:30	4:22 AM
SSCE BURN 1		1/21:30	5:22 AM
EXERCISE - ROWER		1/21:55	5:47 AM
10.2 PSI CABIN DEPRESSURIZATION		1/22:40	6:32 AM
CGBA ACTIVITIES (GBA END SET 1/BEGIN SET 2)		1/23:55	7:47 AM
EDUCATIONAL ACTIVITIES (DSO 802)		2/01:45	9:37 AM
BIOREACTOR DEACTIVATION		2/03:10	11:02 AM
"PHYSICS OF TOYS" R/T DOWNLINK (DSO 802)		2/03:25	11:17 AM
CHROMEX/PARE STATUS CHECK		2/04:05	11:57 AM
CGBA ACTIVITIES (GBA END SET 2/BEGIN SET 3)		2/04:50	12:42 PM
SSCE BURN 2		2/05:05	12:57 PM
FLIGHT DAY 4			
CREW WAKEUP		2/16:30	12:22 AM
CGBA ACTIVITIES (INITIALIZE SETS)		2/19:30	3:22 AM
EVA EQUIPMENT PREPARATION/EMU CHECKOUT		2/19:30	3:22 AM
EXERCISE - ROWER		2/19:45	3:37 AM
CGBA ACTIVITIES (GBA END SET 3/BEGIN SET 4)		2/21:20	5:12 AM
FREQ. INTER. MEASUREMENT ACTIVATION		3/04:20	12:12 PM
CHROMEX/PARE STATUS CHECK		3/04:30	12:22 PM

STS-54 EVENTS TIMELINE (CONCLUDED)

MAJOR EVENTS	HA/HP* N.MI.	MET** D/H:M:S	CST*** HR:MIN
FLIGHT DAY 5			
CREW WAKEUP		3/15:30	11:22 PM
FREQ. INTER. MEASUREMENT DEACTIVATION		3/17:05	12:57 AM
EVA PREPARATION		3/17:45	1:37 AM
EVA (DTO 1210)		3/20:08	4:00 AM
POST EVA ACTIVITY		4/01:15	9:07 AM
EVA EVALUATION		4/01:55	9:47 AM
CHROMEX/PARE STATUS CHECK		4/03:35	11:27 AM
14.7 PSI CABIN REPRESSURIZATION		4/03:45	11:37 AM
FREQ. INTER. MEASUREMENT ACTIVATION		4/03:50	11:42 AM
FLIGHT DAY 6			
CREW WAKEUP		4/15:00	10:52 PM
LAST DXS SCAN		4/15:30	11:22 PM
FREQ. INTER. MEASUREMENT DEACTIVATION		4/16:00	11:52 PM
FUEL CELL 2 SHUTDOWN (DSO 412)		4/18:00	1:52 AM
FCS CHECKOUT/RCS HOT FIRE		4/18:15	2:07 AM
VISUAL VESTIBULAR TESTS		4/18:15	2:07 AM
POST EVA ENTRY PREPARATION		4/21:00	4:52 AM
CGBA ACTIVITIES (GBA END SET 4/DATA TRANSFER)		4/21:15	5:07 AM
CGBA ACTIVITIES (GBA DEACTIVATION)		4/21:40	5:32 AM
CABIN STOW		5/01:00	8:52 AM
FUEL CELL 2 POWERUP (DTO 412)		5/03:30	11:22 AM
CHROMEX/PARE STATUS CHECK		5/03:35	11:27 AM
FLIGHT DAY 7			
CREW WAKEUP		5/15:00	10:52 PM
DXS DEACTIVATION		5/17:10	1:02 AM
CHROMEX/PARE STATUS CHECK		5/17:20	1:12 AM
DSO ENTRY PREPARATION		5/18:00	1:52 AM
GROUP B POWERUP		5/18:00	1:52 AM
DEORBIT PREPARATION		5/18:30	2:22 AM
DEORBIT BURN		5/22:32	6:24 AM
KSC LANDING		5/23:32	7:24 AM
*HEIGHT OF APOGEE/PERIGEE ** MISSION ELAPSED TIME REFERENCED TO SRB IGNITION *** CENTRAL STANDARD TIME ASSUMES LIFTOFF AT 7:52 AM			
PAYLOAD BAY PAYLOADS:			
TRACKING AND DATA RELAY SATELLITE-F/INERTIAL UPPER STAGE (TDRS-F/IUS):			
TDRS-F/IUS will be the fifth in a final configuration of six satellites forming the space segment of the Tracking and Data Relay Satellite System (TDRSS) developed to provide user services telecommunications/tracking support to scientific and applications satellites in near Earth orbit and to the Space Shuttle. The TDRS is boosted to geosynchronous orbit by the IUS.			
DIFFUSE X-RAY SPECTROMETER (DXS): The DXS payload is sponsored by Goddard Space Flight Center (GSFC) and will collect data on X-ray radiation from diffuse sources in deep space. The DXS is designed to determine the wavelength and intensity of the strongest X-ray lines emitted by the hot stellar gases released by supernovas.			
MIDDECK PAYLOADS:			
CHROMOSOME AND PLANT CELL DIVISION IN SPACE (CHROMEX): The CHROMEX payload is designed to gain an understanding of the reproductive abnormalities which apparently occur in plants exposed to microgravity.			

COMMERCIAL GENERIC BIOPROCESSING APPARATUS (CGBA): The CGBA payload performs two functions: biological sample processing and stowage. The Generic Bioprocessing Apparatus (GBA) module is a self-contained mixing and incubation module for the samples. Temperature-controlled stowage is achieved in the Commercial Refrigerator Incubator Module (CRIM).

PHYSIOLOGICAL AND ANATOMICAL RODENT EXPERIMENT (PARE): The PARE payload is a series of experiments designed to determine whether exposure to microgravity results in physiological or anatomical changes in rodents.

SOLID SURFACE COMBUSTION EXPERIMENT (SSCE): The primary objective of the SSCE is to measure flame spread rate, solid-phase temperature, and gas-phase temperature for flames. These data will be used to validate flamespread models to improve fire safety of space travel.

DEVELOPMENT TEST OBJECTIVES (DTO'S):

DTO 301D	Ascent Structural Capability Evaluation
DTO 305D	Ascent Compartment Venting Evaluation
DTO 306D	Descent Compartment Venting Evaluation
DTO 307D	Entry Structural Capability
DTO 312	ET TPS Performance
DTO 412	Fuel Cell On-Orbit Shutdown/Restart
#DTO 520	Edwards Lakebed Runway Bearing Strength and Rolling Friction Assessment for Orbiter Landings
DTO 521	Orbiter Drag Chute System
DTO 648	Electronic Still Photography Test
DTO 656	PGSC Single Event Upset Monitor
DTO 662	EDO WCS Evaluation
DTO 700-3	Atmospheric Effects on Star Tracker Performance
#DTO 805	Crosswind Landing Performance
DTO 1210	EVA Operations Procedures/Training DTO

A "D" suffix to a DTO number identifies it as a data only test.
#DTO of opportunity

DETAILED SUPPLEMENTARY OBJECTIVES (DSO'S):

DSO 316	Bioreactor/Flow and Particle Trajectory in Microgravity
DSO 321	Frequency Interference Measurement
DSO 322	Human Lymphocyte Locomotion in Microgravity
#DSO 476	In-Flight Aerobic Exercise (Rower)
DSO 487	Immunological Assessment of Crewmembers
#DSO 603	Orthostatic Function During Entry, Landing, and Egress
#DSO 604	Visual-Vestibular Integration
#DSO 605	Postflight Recovery of Postural Equilibrium Control
DSO 802	Educational Activities
DSO 901	Documentary Television
DSO 902	Documentary Motion Picture Photography
DSO 903	Documentary Still Photography

#Indicated Extended Duration Orbiter (EDO) build-up medical evaluations.