

INTERDEPARTMENTAL COMMUNICATION

DATE: OCTOBER 12, 1988
CONTROL NUMBER: LTPE-88-125-ACF

TO: DISTRIBUTION DEPT. BLDG. MAIL
NO. NO. CODE

FROM: A.C. FERRITTO DEPT. BLDG. MAIL
NO. 17-11 NO. K6-744 CODE LSO-207 PHONE 6829

SUBJECT: STS 26R CREW DEBRIEF AT JSC

THE STS 26R CREW DEBRIEF WAS HELD AT JSC IN BUILDING 30 CONFERENCE ROOM ON FRIDAY OCTOBER 7, 1988. IT WAS CHAIRED BY LARRY BOURGEOUS WITH M. HEFLIN, C. SHAW, G. COEN, D. CAMP, T. WELCH, AND J. MECHELAY ALL FROM JSC AND THE SHUTTLE CREW COMMANDER RICK HAUCK, PILOT DICK COVEY, MISSION SPECIALISTS MIKE LOUNGE, DAVE HILMERS AND PINKY NELSON. THEY WENT OVER THE INFLIGHT ANOMALIES AND A LIST OF QUESTIONS THAT WAS COMPILED BY THE MISSION EVALUATION ROOM (MER). IN BRIEF THE CREW THOUGHT THIS FLIGHT WAS ONE OF THE BEST FLIGHTS YET. THEY HAD ONLY A FEW COMMENTS OTHER THAN THE RECORDED INFLIGHT PROBLEMS. SOME OF THESE COMMENTS ARE AS FOLLOWS:

-) WEARING THE SUIT BROUGHT THE CDR AND FLT FORWARD SO MUCH IT WAS HARD TO SEE THE KEYBOARD AND SOME OF THE SWITCHES. FIX/MOVE THE SEATS BACK.
-) RICK SAID THE RADAR ALTIMETER WAS NOT WORKING VERY WELL DURING LANDING.
-) THE VACUUM CLEANER MAKES TOO MUCH NOISE.
-) THEY ARE RECOMMENDING TO MONITOR/RECORD KU-BAND ANTENNA OPERATIONS WITH THE TV CAMERA IN CASE OF ANOTHER ANTENNA PROBLEM.
-) WHEN COMM OMI V1117 IS RUN, PERFORM A LONG COUNT INSTEAD OF SHORT COUNTS. THIS WILL BE A BETTER CHECK FOR THE ECHO PROBLEM.
-) THEY HAD A PROBLEM WITH STORING THE FLIGHT SUITS. IT WOULD HAVE BEEN A BIG PROBLEM IF THERE WERE MORE THAN 5 IN THE CREW. THE MS CHAIRS WERE ALSO REMOVED AND STOWED. ALL ITEMS EXCEPT ONE MS CHAIR WERE PUT IN THE AIR LOCK AND IT WAS GETTING FULL.
-) THEY WOULD LIKE A BETTER PLACE TO THROW THE TRASH OTHER THAN PUTTING IT IN PLASTIC BAGS AND TAPING IT TO THE WALL. IT TAKES TOO LONG TO CLEAN UP BEFORE THEY GO ON TV.
-) PINKEY REMARKED THAT THE PRIVACY CURTAIN AROUND THE POTTY HAS A SMALL HOLE AT THE TOP AND WITH A MIXED CREW IT COULD BE A PROBLEM. RICK SAID HE DIDN'T "SEE" ANY PROBLEM WITH THAT.

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THEY ALL AGREED THIS WAS THE CLEANEST CABIN IN WHICH THEY HAD EVER FLOWN. THE CABIN FAN FILTERS WERE NOT DIRTY. IN FACT, NONE OF THE FILTERS WERE VERY DIRTY.

RICK SAID THE NWS WAS ONLY USED TO PARK THE VEHICLE ON CENTER LINE AND WAS USED UNDER 30 MPH.

ATTACHED ARE COPIES OF THE MER QUESTIONS, ANOMALY LIST, PROBLEM TRACKING LIST AND THE ORBITER QUICK LOOK REPORT.

A. Ferritto

A. FERRITTO
TEST PROJECT ENGINEER



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ORBITER QUICK-LOOK REPORT

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ORBITER QUICK LOOK REPORT

VF3/FLIGHT EVALUATION OFFICE



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STS-26 MISSION STATISTICS

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- LAUNCH: LAUNCH WINDOW THREE HOURS. LAUNCH FROM LAUNCH COMPLEX 39-B.
SCHEDULED 9/29/88 8:59 CDT
OCCURRED 9/29/88 10:37 CDT
- LANDING: NOMINAL END OF MISSION ORBIT 65
SCHEDULED 10-3-88 9:55 CDT
OCCURRED 10/3/88 11:37 CDT
- INCLINATION: 28.45 DEGREES
- MISSION DURATION: 4 DAYS
- FLIGHT CREW MEMBERS:
 - COMMANDER : FREDERICK H. HAUCK, THIRD SHUTTLE FLIGHT
 - PILOT : RICHARD O. COVEY, SECOND SHUTTLE FLIGHT
 - MISSION SPECIALIST 1 : JOHN M. LOUNGE, SECOND SHUTTLE FLIGHT
 - MISSION SPECIALIST 2 : GEORGE D. NELSON, THIRD SHUTTLE FLIGHT
 - MISSION SPECIALIST 3 : DAVID C. HILMERS, SECOND SHUTTLE FLIGHT



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STS-26 MISSION STATISTICS CONT'D

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- TOTAL LIFT-OFF WEIGHT: APPROXIMATELY 4,533,338 POUNDS
- ORBITER WEIGHT, INCLUDING CARGO AT LIFT-OFF: APPROXIMATELY 254,666 POUNDS
- PAYLOAD WEIGHT UP: APPROXIMATELY 46,478 POUNDS
- PAYLOAD WEIGHT DOWN: APPROXIMATELY 8,964 POUNDS
- ORBITER WEIGHT AT LANDING: APPROXIMATELY 194,212 POUNDS
- PAYLOADS
 - TRACKING AND DATA RELAY SATELLITE (TDRS) INERTIAL UPPER STAGE (IUS)
 - ORBITER EXPERIMENT AUTONOMOUS SUPPORTING INSTRUMENTATION SYSTEM (OASIS)
 - 3M.PHYSICAL VAPOR TRANSPORT OF ORGANIC SOLIDS EXPERIMENT (PVTOS-2)
 - AUTOMATED DIRECTIONAL SOLIDIFICATION FURNACE (ADSF)
 - INFRARED COMMUNICATION FLIGHT EXPERIMENT (IRCFE)
 - PROTEIN CRYSTAL GROWTH (PCG) EXPERIMENT
 - ISOELECTRIC FOCUSING (IEF) EXPERIMENT
 - PHASE PARTITIONING EXPERIMENT (PPE)
 - AGGREGATION OF RED BLOOD CELLS (ARC)
 - MEOSCALE LIGHTING EXPERIMENT (MLE)
 - EARTH LIMB RADIANCE EXPERIMENT (ELRAD)
 - TWO SHUTTLE STUDENT INVOLVEMENT PROJECTS (SSIP)



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STS-26 MISSION OBJECTIVES MET

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- SUCCESSFULLY DEPLOYED IUS / TDRS-C
- OASIS-I PERFORMED NOMINAL
- SECONDARY PAYLOADS
 - PERFORMED NOMINAL - GOOD RESULTS FROM ALL PAYLOADS AND EXPERIMENTS



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STS-26 DTO/DSO ACCOMPLISHMENTS

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FLIGHT DAY 1

<u>DTO/</u>	<u>TITLE</u>	<u>ACTIVITY</u>	<u>TIME</u>	<u>ACCOM.</u>	<u>COMMENTS</u>
0301	ASCENT STRUCTURAL CAPABILITY EVALUATION	DATA ONLY-MADS CONTINUES RECORDING	L-12 TO POST OMS-2	Y	
0305	ASCENT COMPARTMENT VENTING EVALUATION	DATA ONLY-MADS CONTINUES RECORDING	L-12 TO POST OMS-2	Y	
0308	VIBRATION AND ACOUSTIC EVALUATION	DATA ONLY-MADS CONTINUES RECORDING	L-12 TO POST OMS-2	Y	
0311	POGO STABILITY PERFORMANCE	DATA ONLY-MADS CONTINUES RECORDING	L-12 TO SRB SEP	Y	
0318	DIRECT INSERTION ET TRACKING FOR ETR	PHOTO AND TRACKING OF ET AFTER SEPARATION	---	TBD	
0319	SHUTTLE PAYLOAD LOW FREQUENCY ENVIRONMENT	DATA ONLY-MADS CONTINUES	L-12 TO TDRS/IUS	Y	DATA FROM ONE TRIAX ACCELEROMETER
0623	CABIN AIR MONITORING	SAMPLES OF ORBITER ATMOSPHERE DURING FLIGHT	0/08:00	Y	USES SOLID SORBENT AIR SAMPLER



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FLIGHT DAY 1

<u>DTO DSO/</u>	<u>TITLE</u>	<u>ACTIVITY</u>	<u>TIME</u>	<u>ACCOM.</u>	<u>COMMENTS</u>
0787	ATTITUDE MATCH UPDATE	DATA TAKE 1 DATA TAKE 2 DATA TAKE 3 DATA TAKE 4 DATA TAKE 5	0/01:06 0/01:25 0/01:51 0/03:25 0/03:52	N Y Y Y Y	DATA TAKE # 1 MISSED. DOWNLINK ORBITER AND IUS DATA WILL BE COMPARED.
DSO 903	DOCUMENTARY STILL PHOTOGRAPHY	THROUGHOUT FLIGHT		Y	
DSO 901	DOCUMENTARY TELEVISION	THROUGHOUT FLIGHT		Y	
DSO 902	DOCUMENTARY MOTION PICTURE PHOTOGRAPHY	THROUGHOUT FLIGHT		Y	



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FLIGHT DAY 2

<u>DTO DSO/</u>	<u>TITLE</u>	<u>ACTIVITY</u>	<u>TIME</u>	<u>ACCOM.</u>	<u>COMMENTS</u>
DTO 0623	CABIN AIR MONITORING	SAMPLES OF ORBITER ATMOSPHERE DURING FLIGHT	1/06:00	Y	USED SOLID SORBENT AIR SAMPLER
DSO 460	CHANGES IN TOTAL BODY WATER			Y	
DSO 457	SALIVARY SCOP/DEX KINETICS			Y	
DSO 458	SALIVARY TYLENOL KINETICS			Y	
DSO 459	OTOLITH TILT - TRANSITION REINTERPRETATION			Y	

Handwritten notes and signatures in the right margin, including a large signature that appears to be "D. W. CAMP".



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FLIGHT DAY 3

<u>DTO</u> <u>DSO/</u>	<u>TITLE</u>	<u>ACTIVITY</u>	<u>TIME</u>	<u>ACCOM.</u>	<u>COMMENTS</u>
0623	CABIN AIR MONITORING	SAMPLES OF ORBITER ATMOSHERE DURING FLIGHT	2:05:00	Y	USES SOLID SORBENT AIR SAMPLER
DSO 459	OTOLITH TILT-TRANSITION REINTERPRETATION			Y	



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FLIGHT DAY 4

<u>DTO DSO/</u>	<u>TITLE</u>	<u>ACTIVITY</u>	<u>TIME</u>	<u>ACCOM.</u>	<u>COMMENTS</u>
DTO 0623	CABIN AIR MONITORING	SAMPLES OF ORBITER ATMOSPHERE DURING FLIGHT	3/05:00	Y	USES SOLID SORBENT AIR SAMPLER
DSO 458	SALIVARY TYLENOL KINETICS			Y	
DSO 459	OTOLITH TILT-TRANSITION REINTERPRETATION			Y	
DSO 460	CHANGES IN TOTAL BODY WATER			Y	



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FLIGHT DAY 5

<u>DTO DSO/</u>	<u>TITLE</u>	<u>ACTIVITY</u>	<u>TIME</u>	<u>ACCOM.</u>	<u>COMMENTS</u>
DTO 0623	CABIN AIR MONITORING	SAMPLES OF ORBITER ATMOSPHERE DURING FLIGHT	4:01:40	Y	USES SOLID SORBENT AIR SAMPLER
DTO 0307	ENTRY STRUCTURAL CAPABILITY	DATA ONLY - MADS CONTINUES RECORDING	TIG-15 MIN TO LANDING	Y	
DTO 0306	DESCENT COMPARTMENT VENTING EVALUATION	DATA ONLY - MADS CONTINUES RECORDING	TIG-15 MIN. TO LANDING	Y	
DSO 0466	VARIATIONS IN SUPINE AND STANDING HEART RATE, BLOOD PRESSURE, AND CARDIAC SIZE AS A F JUNCTION OF SPACE FLIGHT DURATION AND TIME POST FLIGHT.		N/A	Y	MEASUREMENTS ARE PRE AND POST FLIGHT
DTO 0784	SPACE GROUND LINK SYSTEM (SGLS) NAVIGATION CERTIFICATION	OBTAIN SUFFICIENT SGLS TRACKING DATA TO PERMIT CERTIFICATION OF THE CAPABILITY TO PROVIDE STS NAVIGATION SUPPORT	N/A	TBD	



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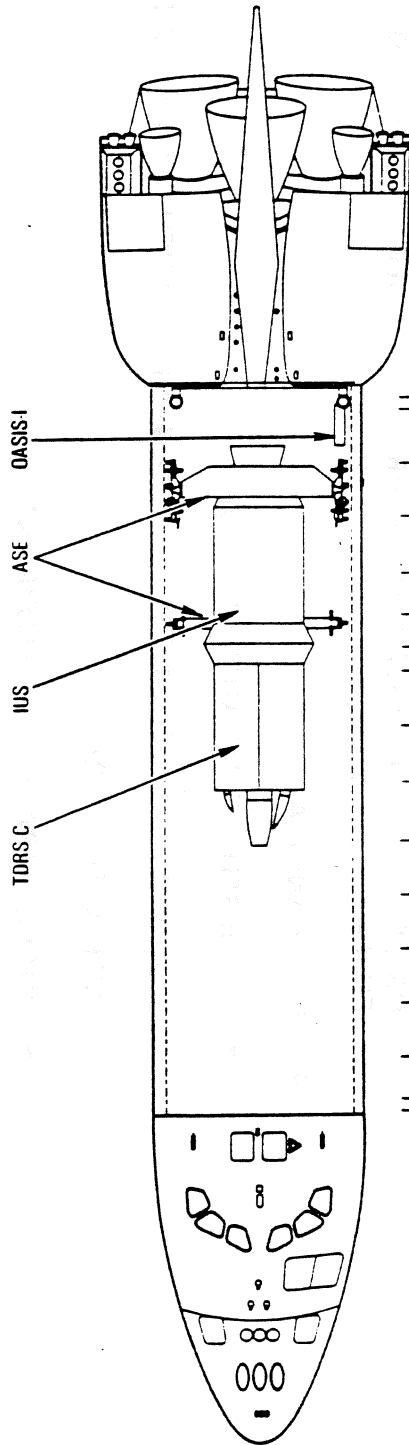
STS-26 CARGO BAY CONFIGURATION

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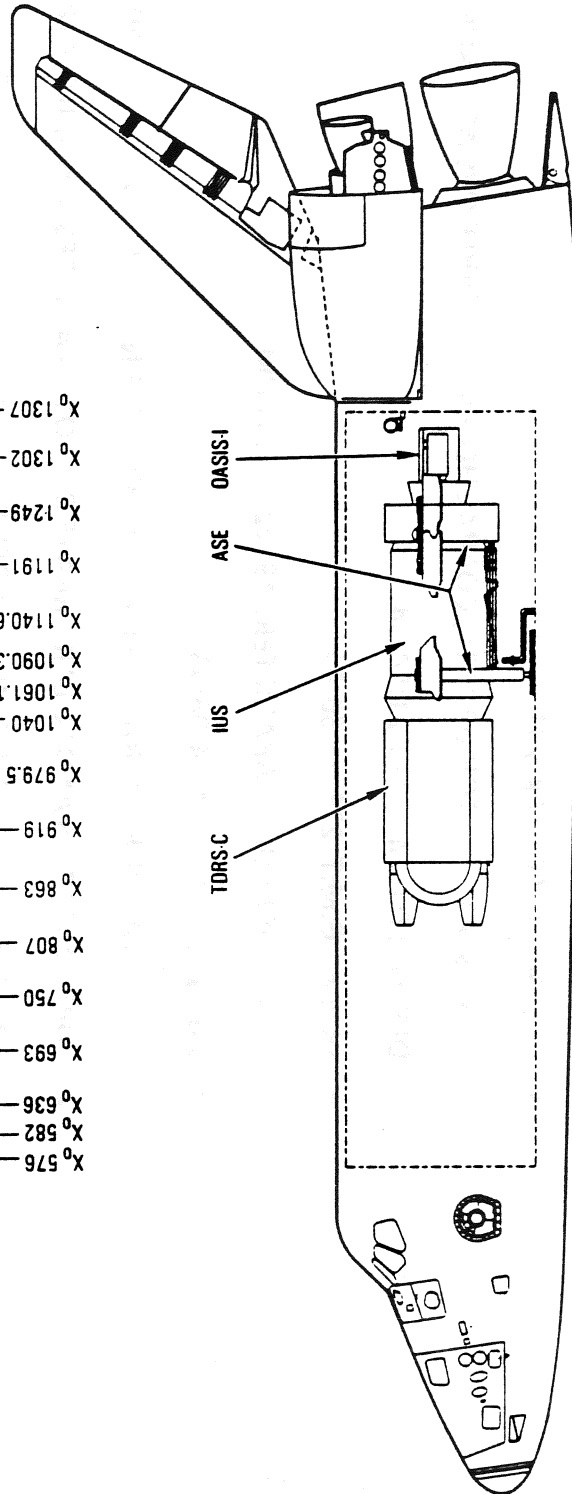
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- X⁰ 576
- X⁰ 582
- X⁰ 636
- X⁰ 693
- X⁰ 750
- X⁰ 807
- X⁰ 863
- X⁰ 919
- X⁰ 979.5
- X⁰ 1040
- X⁰ 1061.13
- X⁰ 1090.33
- X⁰ 1140.67
- X⁰ 1191
- X⁰ 1249
- X⁰ 1302
- X⁰ 1307



- X⁰ 576
- X⁰ 582
- X⁰ 636
- X⁰ 693
- X⁰ 750
- X⁰ 807
- X⁰ 863
- X⁰ 919
- X⁰ 979.5
- X⁰ 1040
- X⁰ 1061.13
- X⁰ 1090.33
- X⁰ 1140.67
- X⁰ 1191
- X⁰ 1249
- X⁰ 1302
- X⁰ 1307

- ASE - AIRBORNE SUPPORT EQUIPMENT
- IUS - INERTIAL UPPER STAGE
- OASIS - OEX (ORBITER EXPERIMENT) AUTONOMOUS SUPPORTING INSTRUMENTATION SYSTEM
- TDRS - TRACKING AND DATA RELAY SATELLITE



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STS-26 TDRS-C/IUS

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- PERFORMANCE
- PRE-DEPLOY CHECKOUT
 - STATE VECTOR UPDATE, COMM CHECKS, TILT TABLE OPS AS PLANNED
 - DEPLOYED G.M.T. 273:21:50:04
 - SRM #1 G.M.T. 273:22:50:04
 - POST BURN PARAMETERS 19322 BY 151 NM
 - SRM # 2 G.M.T.274:04:06:48
 - POST BURN PARAMETERS 19335 BY 19311 NM (PLAN WAS 19323 NM CIRCULAR)
- TDRS ANTENNAS AND SOLAR ARRAYS DEPLOYED AND RESPONSIBILITY TRANSITIONED TO WSGT
- TWO BURNS PLANNED FOR 3 DEGREE PER DAY DRIFT TO 150 W LONGITUDE FROM 178 W
- ON-STATION PLANNING FOR ON OR ABOUT OCTOBER 11 FOLLOWED BY APPROXIMATELY 44 DAYS OF CHECKOUT
- PRE-DEPLOY ANOMALY
 - OCCURRED DURING AUTO CHECKOUT
 - CIU TO PDI TELEMETRY - PDI MAINTAINED SYNCH AFTER DATA RATE CHANGE
 - OBSERVED BEFORE
 - NOT CONSTRAINT TO DEPLOYMENT
 - CONDITION TO BE INVESTIGATED AND RESOLVED
 - PARTICIPANTS INCLUDE NASA AND CONTRACTORS
 - POST-FLIGHT INVESTIGATION TO BE CONCLUDED ASAP



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OASIS

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- PERFORMANCE
 - ASCENT THRU TDRS DEPLOY AND TILT TABLE STOW
 - NOMINAL
 - POST-TDRS DEPLOY OPS
 - TAPE STUCK IN SNAPSHOT MODE
 - CLEARED BY COMMANDING LOW BIT RATE
 - KNOWN ANOMALY
 - ON-ORBIT OPS THROUGH ENTRY AND LANDING
 - NOMINAL



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MIDDECK PAYLOADS

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- AUTOMATED DIRECTION SOLIDIFICATION FURNACE (ADSF)
- ALL SAMPLES (4) PROCESSED AND APPEAR NOMINAL
- AGGREGATION OF RED BLOOD CELLS (ARC)
 - OPERATION NOMINAL
- EARTH-LIMB RADIANCE EXPERIMENT (ELRAD)
- THREE OBSERVATIONS (TWO SUNSETS, ONE SUNRISE)
- ISOELECTRIC FOCUSING EXPERIMENT (IEF)
 - OPERATION NOMINAL
- INFRARED COMMUNICATIONS FLIGHT EXPERIMENT (IRCFE)
 - SEVERAL AIR-TO-GROUND COMMUNICATIONS
 - TWO THROUGH SOUTH ATLANTIC ANOMALY
 - VOICE QUALITY VERY GOOD
 - BACKGROUND NOISE INCREASED DURING VOICE CHECK FROM FLIGHT DECK IN DIRECT SUNLIGHT



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MIDDECK PAYLOADS

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- MESOSCALE LIGHTNING EXPERIMENT (MLE)
- THREE PHOTO TARGETS FLIGHT DAY 2
- ONE PHOTO TARGET FLIGHT DAY 3
- ONE EXCELLENT PHOTO TARGET WITH TV COVERAGE FLIGHT DAY 4
- PROTEIN CRYSTAL GROWTH EXPERIMENT (PCG)
 - OPERATION NOMINAL
- PHASE PARTITIONING EXPERIMENT (PPE)
 - OPERATION NOMINAL
- PHYSICAL VAPOR TRANSPORT OR ORGANIC SOLIDS (PVTOS)
 - ALL NINE SAMPLES PROCESSED
- STUDENT EXPERIMENT 82-4 (TITANIUM GRAIN FORMATION)
 - OPERATED EXTREMELY WELL
- STUDENT EXPERIMENT 82-5 (CRYSTAL MEMBRANE)
 - CRYSTAL GROWTH LARGER THAN EXPECTED
 - OPERATED EXTREMELY WELL



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ORBITER PERFORMANCE

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- 14 PROBLEMS TRACKED
- ALL PAYLOAD INTERFACES-NOMINAL
- SIGNIFICANT PROBLEMS
- FLASH EVAPORATOR SYSTEM PERFORMANCE
- KU-BAND ANTENNA FAILED TO FOLLOW COMMANDS
- FLOW CONTROL VALVE 1 AND 2 SLUGGISH
- APU 3 CHAMBER PRESSURE LOW



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MAIN PROPULSION SYSTEM

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- PERFORMANCE
 - OVERALL OPERATION NOMINAL
 - HELIUM LEAK FROM PNEUMATIC TO SSME-3 SYSTEMS DURING PURGE SEQUENCE 4 AND ASCENT WAS AS PREDICTED - MANUAL PNEUMATIC SYSTEM ISOLATION WAS NOT REQUIRED
- DTOs
 - NONE
- PROBLEMS
 - SSME-1 GO₂ FCV CYCLE 1 DEFINITELY SLOW, CYCLE 3 AND SSME-2 CYCLE 1 SLIGHTLY SLOW - GO₂ ULLAGE PRESSURE WAS MAINTAINED WITHIN CONTROL BAND
 - SSME-3 LH₂ INLET PRESS MEASUREMENT V41P1300C NOISY DURING ASCENT, FAILED POST MECO
 - SSME-2 LH₂ INLET PRESS MEASUREMENT V41P1200C ERRATIC DURING ASCENT
 - MPS 750 REG OUTLET PRESS CW - PROCEDURE REVISIONS WILL BE REQUIRED TO AVOID NUISANCE ALARMS WHICH COULD RESULT IN UNNECESSARY TERMINATION OF ENTRY AFT COMPARTMENT PURGE AND MPS MANIFOLD REPRESS



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STS-26 RCS

FLIGHT EVALUATION OFFICE

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- PERFORMANCE

- NOMINAL

- CONSUMPTION

	ASCENT	ON-ORBIT	DESCENT
FWD	86 lbm	414 lbm	1040 lbm
LEFT	53 lbm	461 lbm	367 lbm
RIGHT	53 lbm	491 lbm	413 lbm

- DTOs

- NONE

- PROBLEMS

- DURING ASCENT, 30 OF 38 PRIMARY THRUSTER OXIDIZER INJECTOR TEMPS DROPPED BETWEEN 5 AND 45° F
- ALL OXIDIZER INJECTOR TEMPS RECOVERED WITHIN ABOUT 4 MINUTES
- MOST PROBABLE CAUSE IS SMALL AMOUNT OF MOISTURE IN OXIDIZER INJECTOR
- LH OXID REG LOCKED UP ON LOWER LIMIT (242 PSIA) WHEN SWITCHED TO B-REGULATORS



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OMS

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- PERFORMANCE
 - EXCELLENT - ALL FEED SYSTEM/ENGINE PRESSURES & TEMPERATURES AS PREDICTED
 - SEVERAL HEATER CIRCUITS DID NOT CYCLE DURING MISSION, PRECLUDING VERIFICATION OF OMRSD INFLIGHT CHECKOUT (4 LH POD, 3 RH POD)
 - TWO HEATER CIRCUIT THERMOSTATS EXHIBITED DITHER DURING OPERATION
 - CROSSFEED LINE SYSTEM A ZONE 5 (CENTER)
 - LH POD SYSTEM A INBD Y-WEB
 - FLIGHT DATA FROM RH POD FUEL GAGE INDICATES FORWARD PROBE IS FUNCTIONING & CAN BE USED FOR LOADING NEXT FLIGHT
- DTOs - NONE
- PROBLEMS - NONE



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STS-26 PRSD

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- PERFORMANCE
- NOMINAL
- CONSUMABLES (3 TANK SETS)
 - 116.7 # HYDROGEN TO FUEL CELLS
 - 892 # OXYGEN TO FUEL CELLS
 - 44 # OXYGEN TO ECLSS
- 1417.4 # OXYGEN INDICATED AT TOUCHDOWN
- 158.4 # HYDROGEN INDICATED AT TOUCHDOWN
- DTOS
- NONE
- PROBLEMS
- NONE



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STS-26 FUEL CELLS

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- PERFORMANCE
- NOMINAL
- NO PROBLEMS WITH NEW ALTERNATE WATER FLOW PATH
- FIRST FLIGHT IMPROVED FUEL CELL IN POSITION #2 VERIFIED ZERO-G PERFORMANCE AS PREDICTED
- 13.6 KW AVERAGE POWER TO ORBITER
- DTOS
- NONE
- PROBLEMS
- PH SENSOR FC2 CAME ON AFTER LIFT-OFF FOR 5 SECONDS AND CLEARED. PROBABLE CAUSE IS METALLIC IONS IN STAGNANT H₂O IN H₂ PUMP. NO ACTION REQUIRED.



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STS-26 APU

FLIGHT EVALUATION OFFICE

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- PERFORMANCE
- NOMINAL DURING ASCENT, ON-ORBIT FCS C/O, AND ENTRY
- FUEL CONSUMPTION

APU#	ASC	POUNDS		TOTAL
		FCS C/O	ENTRY	
1	48	170		218
2	50	14	136	200
3	55	156		211

- RUN TIME

APU#	ASC	POUNDS		TOTAL
		FCS C/O	ENTRY	
1	18M 24S	1HR 22M 35S		1HR 40M 59S
2	18M 24S	4M 11S	58M 46S	81M 21S
3	18M 24S	58M 46S		77M 10S

- THE APU'S RAN FOR 15 MINUTES, 14 SECONDS AFTER TOUCH DOWN
- HYDRAULIC LOAD TESTS WERE PERFORMED
- DTO's
- NONE



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STS-26 APU

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- PROBLEMS
- EGT #2 (V46T0340A) MEASUREMENT FAILED ON APU #3 DURING ASCENT. NO MISSION IMPACT. R&R IS PLANNED.
- EGT #1 (V46T0142A) MEASUREMENT FAILED ON APU #1 DURING DESCENT. NO MISSIONS IMPACT. R&R IS PLANNED.
- APPARENT LOW CHAMBER PRESSURE AND HIGH FUEL CONSUMPTION OBSERVED ON APU #3 RELATIVE TO APU #1 AND APU #2.



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STS-26 HYDRAULICS

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- PERFORMANCE
- NOMINAL
- DTO's
- NONE
- PROBLEMS
- NONE



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STS-26 ECLSS

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- ARS PERFORMANCE
- AR'S AIR AND WATER COOLANT LOOPS PERFORMED NORMAL.
- THE CO₂ PARTIAL PRESSURE WAS MAINTAINED BELOW 3.8mm Hg
- ATCS RECONFIGURATION OF THE RADIATOR CONTROL TO HIGH SET POINT RESULTED IN THE FOLLOWING CABIN CONDITIONS:
 - CABIN AIR TEMPERATURE AND RELATIVE HUMIDITY PEAKED TO 88° F AND 64% RESPECTIVELY.
 - AVIONICS BAYS 1, 2 AND 3 AIR OUTLET TEMPERATURES PEAKED TO 116° F, 104° F AND 90° F RESPECTIVELY.
 - AVIONIC BAYS 1, 2 AND 3 WATER COLDPLATE TEMPERATURES PEAKED TO 98° F, 98° F AND 85° F RESPECTIVELY.
 - INTERCHANGE WCL WAS RECONFIGURED TO ZERO BYPASS IN AN ATTEMPT TO LOWER ORBIT TEMPERATURE.
 - CABIN AND AVIONIC BAY TEMPERATURES WERE OBSERVED TO DECREASE IN RESPONSE TO FES REACTIVATION.
 - FLIGHT DECK AVIONIC COOLING WAS MAINTAINED WITHIN SATISFACTORY LIMITS.
 - REDUNDANT COMPONENTS CHECKOUT WAS PERFORMED



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STS-26 ECLSS

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- HUMIDITY SEPARATOR PERFORMANCE
 - THE SWITCHOVER TO HUMIDITY SEPARATOR A FROM B WAS MAINTAINED DUE TO SUSPECTED PERFORMANCE DEGRADATION OF SEPARATOR B. DURING OPERATION OF SEPARATOR B, THE FES WAS DEACTIVATED AND HIGH CABIN TEMPERATURES RESULTED IN DECREASED CONDENSATION RATES. THE SUBSEQUENT WASTE TANK FILL RATE DID NOT INCREASE AS EXPECTED DURING THIS TIME PERIOD. IN A COMPARATIVE DATA EVALUATION, THE SEPARATORS EXHIBITED SIMILAR PERFORMANCE, THUS CONCLUDING NO APPARENT DEGRADATION OF SEPARATOR B SUSPECTED.
- INFLIGHT CLEANING OF THE CABIN FAN FILTERS WAS PERFORMED. NO PROBLEMS REPORTED.
- DTO's
 - CABIN ATMOSPHERE VERIFICATION AND ATCO PERFORMANCE EVALUATION COMPLETED.
 - ANALYSIS OF THE WHOLE GAS SAMPLES OF THE CABIN ATMOSPHERE WILL BE PERFORMED
- PROBLEMS
 - NONE



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STS-26 ARPCS

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- PERFORMANCE
- OVERALL SUBSYSTEM PERFORMANCE WAS VERY SATISFACTORY
- AUTOMATIC CABIN PRESSURE AND PPO2 CONTROL WAS UTILIZED
- CABIN PRESSURE AND PPO2 REMAINED WITHIN NORMAL LIMITS
- SYSTEM 1 AND SYSTEM 2 PCS UTILIZED TO ACCOMMODATE INFLIGHT CHECKOUT OF REDUNDANT SYSTEMS.
- A DIFFERENCE IN READINGS BETWEEN PPO2 SENSORS A AND B RANGED BETWEEN 0.04PSIA AND 0.12 PSIA DURING THE MISSION. VARIATIONS ARE BELIEVED TO BE THE RESULT OF CABIN TEMPERATURE EXCURSIONS. SENSOR B WILL BE SWITCHED WITH SENSOR C FOR THE STS-27 MISSION, ASSUMING A DECISION TO FLY THE 1065 PPO2 SENSORS IS APPROVED.
- SYSTEM 1 CABIN PRESSURE REGULATOR INLET VALVE WAS OPENED LATER THAN SCHEDULED DURING ON-ORBIT CONFIGURATION
- THE SYSTEM 1 CABIN PRESSURE REGULATOR EXHIBITED A SMALL LEAK OF APPROXIMATELY 0.2 SCCM. THIS LEAKAGE IS WITHIN THE SPECIFICATION ALLOWABLE LEAKAGE OF 10 SCCM AND IS OF NO CONSEQUENCE.
- A HIGH N₂ FLOW CW ALARM OCCURRED DURING NORMAL AUTOMATIC CABIN PRESSURE CONTROL. THE ALARM OCCURRED AT SWITCHOVER FROM O₂ TO N₂ FLOW (SYSTEM 2 PCS)
- THE REGULATOR CAN EXHIBIT THIS CHARACTERISTIC WHEN TWO CONDITIONS OCCUR SIMULTANEOUSLY
 - DEMAND FLOW AT OR NEAR HIGH FLOW TRIGGER POINT
 - SWITCHOVER FROM O₂ TO N₂ FLOW
 - BOTH CONDITIONS WERE PRESENT WHEN ALARM OCCURRED
 - CONTROLLED RECOVERY TO NORMAL DEMAND FLOW INDICATES REGULATOR PERFORMANCE WAS NORMAL
- CABIN LEAK RATE INDICATED A TIGHT CABIN WITH NO ADDITIONAL LEAKAGE ATTRIBUTED TO THE SIDE HATCH CREW ESCAPE MOD.



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- DTO's
- NONE
- PROBLEMS
- DP/DT LCC VIOLATION PRIOR TO LAUNCH
- O₂ FLOW TO THE CREW ESCAPE LAUNCH ENTRY SUITS (LES'S) APPEARED HIGHER THEN OBSERVED WITH PREVIOUS LEH's (LAUNCH ENTRY HELMETS). THE O₂ FLOW INCREASED PPO2 LEVELS AND CABIN PRESSURE AT LAUNCH.
- MASK OF LCC LIMIT IN GLS PERFORMED SINCE CONDITION UNDERSTOOD.
- CHANGE TO LCC REQUIRED FOR STS-27
- PPO2 LEVELS INCREASED PRIOR TO LAUNCH AND HIGH PPO2 CW OCCURRED AFTER MECO.
- CREW ESCAPE SUIT COMFORT PROCEDURE INCREASED PPO2 BEFORE LAUNCH
- DATA INDICATES THAT SOME HELMET VISORS MAY HAVE BEEN OPENED WITHOUT CLOSING O₂ SUIT ISOLATION VALVES
- ENHANCEMENT OF PROCEDURES REQUIRED FOR STS-27 POSSIBLE REDESIGN OF LES'S WILL BE PURSUED TO INCLUDE AUTOMATIC SHUTOFF OF O₂ FLOW WHEN VISOR OPENED.



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STS-26 ATCS

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- PERFORMANCE
 - FREON LOOPS, RADIATORS AND NH₃ BOILER NOMINAL
 - 2 FES ANOMALIES
 - DTO'S
 - NONE
 - PROBLEMS
 - FES HIGHLOAD DUCT LOW TEMPERATURES
- SUSPECTED HIGH LOAD EVAPORATOR FREEZING DURING ASCENT. PROCEDURES DEVELOPED THROUGHOUT ORBIT PHASE TO THAW HIGH LOAD FOR ENTRY. HIGH LOAD OPERATED NOMINALLY DURING DEORBIT PREP.
- FES OVERTEMP SHUTDOWN
- DURING DEORBIT BURN, FES CONTROLLER B HAD AN OVERTEMP SHUTDOWN. CREW SWITCHED TO SECONDARY CONTROLLER WHICH PERFORMED NOMINALLY.



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SUPPLY AND WASTE WATER

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- PERFORMANCE:
 - SUPPLY WATER WAS MANAGED SUCCESSFULLY THROUGH THE OVERBOARD DUMP SYSTEM AND PERIODIC USAGE OF THE FES
 - 3 SUPPLY WATER DUMPS WERE SUCCESSFULLY COMPLETED
 - ONE WASTE WATER DUMP WAS SUCCESSFULLY COMPLETED
- DTO'S
 - NONE
- PROBLEMS
 - NONE



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WASTE COLLECTION SYSTEM (WCS)

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- PERFORMANCE
 - PERFORMANCE INFO TO BE OBTAINED DURING CREW DEBRIEFING
- DTO's
 - NONE
- PROBLEMS
 - WCS FAN SEPARATOR #1 FAILED AT 3 DAYS, 3 HOURS
 - DATA SHOWS STALL CURRENT
 - SEPARATOR #2 USED SUCCESSFULLY FOR THE REMAINDER OF THE MISSION
 - POSTFLIGHT TROUBLESHOOTING REQUIRED



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SMOKE DETECTION & FIRE SUPPRESSION

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- PERFORMANCE
- THERE WHERE NO SMOKE ALARMS AND THE FIRE SUPPRESSION SYSTEM WAS NOT USED
- DTO's
- NONE
- PROBLEMS
- NONE



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AVIONICS SUMMARY

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SYSTEM

PERFORMANCE

PROBLEMS

IGN&C

- PRELAUNCH NOMINAL
- ASCENT ● ADAPTIVE GUIDANCE INDICATES SLIGHTLY HOT SRB
- FIRST STAGE THROTTLE 102% VS 104% PREDICTED TO COMPENSATE FOR HOT SRB
- SRB SEP AT 124.7 SEC VS 125.1 SEC PREDICTED
- NO UNSCHEDULED LOAD RELIEF
- SECOND STAGE NOMINAL, MET MECO TARGETS AND ET SEP CONDITIONS
- OMS 2 BURN NOMINAL
- ON-ORBIT ● TDRS DEPLOY NOMINAL
- OMS 3 SEP BURN NOMINAL
- FCS C/O & RCS HOT FIRE NOMINAL (INCLUDING CHIPPED THRUSTER F3F)
- DESCENT ● DEORBIT BURN NOMINAL
- PITCH OSCILLATIONS AT MACH 1 ATTRIBUTED TO PROBABLE RHC INPUTS
- AUTO LAND NOMINAL
- AUTO LOAD RELIEF NOMINAL
- TOUCHDOWN SMOOTH AT 175 - 180 KNOTS
- MAX NWS DEFLECTION 1°

NONE

NONE

NONE

NONE



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AVIONICS SUMMARY CONT'D

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SYSTEM

PERFORMANCE

PROBLEMS

FLIGHT CONTROL • NOMINAL OVERALL

- SSME ACTUATOR COMMAND VS POSITION DELTAS BEFORE REPRESS 1.63°. AFTER REPRESS 0.6°, POST LANDING POSITIONING TO RAIN DRAIN NOMINAL.

IMU • NOMINAL

STAR TRACKER • NOMINAL. TEN IMU-TO-ST ALIGNMENTS

- FREQUENT SHUTTER CLOSURE/TARGET SUPPRESSION DUE TO BACKGROUND LIGHT INTENSITY (BOTH ST'S)

COAS • NOMINAL IN AFT (-Z) STATION. BIAS ANGLE 0.95°.

- NOT USABLE IN FWD (+ X) STATION

DPS • NOMINAL

EPD&C • NOMINAL

D&C • NOMINAL

COMM& TRACKING • NOMINAL

- L OMS GIMBAL STANDBY ENABLE FAIL (PROBLEM #1)

• NONE

• NONE

- MISSING NUT ON FWD (+ X) MOUNTING LOCATION. (PROBLEM #08)

- "I/O ERROR CRT 3" ANNUNCIATED BY BFS (UNDER INVESTIGATION)

• NONE

• NONE

- NSP #1 FRAME SYNC UNLOCK (PROBLEM #02)

- KU-BAND POINTING ERRORS (PROBLEM #06)



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AVIONICS PROBLEMS

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- LEFT OMS GIMBAL STANDBY ENABLE FAIL (PROBLEM #01)
- DURING PRE-FLIGHT GIMBAL PROFILE TEST, LEFT STANDBY OMS ACTUATORS DID NOT DRIVE WITH ONLY RPC #1 ENABLED.
- WITH RPC #2 ENABLED, PROPER RESPONSE WAS OBSERVED. INDICATING GOOD CONTROLLER AND ACTUATOR. PROBLEM IS WITH RPC #1 ENABLE.
- NOT A VIOLATION OF LCC. (ALLOWS LOSS OF ACTIVE OR STANDBY FROM ONE SIDE)
- POST OMS-2 GIMBAL DRIVE CHECK CONFIRMED FAILURE.
- STANDBY CHANNEL CONSIDERED FAILED BECAUSE BOTH ENABLES (1 AND 2) REQUIRED TO DRIVE PITCH AND YAW ACTUATORS SIMULTANEOUSLY
- DEORBIT BURN UTILIZED BOTH ENGINES IN NORMAL PARALLEL CONFIGURATION WITHOUT ANOMALIES. NO BURN RESIDUALS.
- KSC TROUBLESHOOTING PLANNED. POSSIBLE RECESSED CONNECTOR PIN OR RPC FAILURE.
- COAS ADAPTER PLATE MOUNTING (PROBLEM #08)
- CREW REPORTED CAPTIVE SCREW IN COAS ADAPTER BRACKET WOULD NOT ENGAGE ORBITER MOUNTING PANEL ON FORWARD (+ X) POSITION.
- SIGHTINGS TAKEN WITH COAS SECURED WITH GUIDE PINS AND TAPE. BUT BIAS ANGLE WAS EXCESSIVE (1.97°)
- AFT COAS STATION (-Z) CALIBRATED AND AVAILABLE FOR IMU ALIGNMENTS.
- INSPECTION OF MOUNTING PANEL PLANNED AT KSC.



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AVIONICS PROBLEMS (CONT'D)

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- NETWORK SIGNAL PROCESSOR (NSP) 1 FRAME SYNC NOT LOCKED (PROBLEM #02)
 - PRELAUNCH NSP 1 FAILED TO ACHIEVE FRAME SYNC LOCK WHEN CROSS-STRAPPED TO XPNDR #2.
 - PROBLEM CLEARED BY SELECTING XPNDR #1 AND COULD NOT BE REPEATED
 - POSSIBLY CAUSED BY DATA SWITCH RELAYS IN TRANSPONDER THAT ROUTE UPLINK DATA TO APPROPRIATE NSP
 - PLAN ESTL TESTS TO INVESTIGATE POSSIBLE SIGNATURES AND OV103 TESTS TO ASSURE PROBLEM WAS AN ISOLATED INCIDENT
- KU-BAND POINTING ERRORS (PROBLEM #06)
 - FAILED SELF-TEST, ANTENNA DID NOT FOLLOW COMMANDED ANGLES, AND EXPERIENCED OSCILLATIONS DURING STOW SEQUENCE
 - SUSPECT PARTIAL/INCOMPLETE RETRACTION OF GIMBAL MOTOR STOW PINS
 - FUTURE ACTIONS:
 - PULL KU-BAND DEPLOYED ASS'Y OFF OV-102 AS SPARE FOR OV-103 TURNAROUND REPAIR EFFORT
 - TEST OV-104 DA FOR SIMILAR PROBLEM
 - RETURN SUSPECT HARDWARE TO HUGHES FOR ANALYSIS ONCE CAUSE HAS BEEN PIN POINTED.
- I/O ERROR CRT 3 ANNUNCIATED BY BFS
 - OCCURRED DURING ENTRY
 - DATA ANALYSIS IN PROGRESS
 - BFS PROGRAM NOTES D019A AND D027 BEING REVIEWED FOR POSSIBLE EXPLANATION



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OPERATIONAL INSTRUMENTATION

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- PERFORMANCE
- THE OPERATIONAL INSTRUMENTATION SUBSYSTEM HARDWARE OPERATED NOMALLY THROUGHOUT THE MISSION
- DTO's - NONE
- PROBLEMS
 - V46T0340A APU 3 EXHAUST GAS TEMPERATURE WAS ERRATIC DURING APU OPERATION REF FLIGHT PROBLEM NUMBER 4A
 - V41P1300C MPS E3 LH₂ INLET PRESSURE DROPPED TO 0 PSI POST MECO REF FLIGHT PROBLEM NUMBER 4B
 - V58P0115A HYDRAULIC SYSTEM 1 SUPPLY PRESSURE "B" HAS NEGATIVE BIAS EXCEEDING 60 PSIA REFERENCE FLIGHT PROBLEM NUMBER 4D
 - V58P0337A HYDRAULIC SYSTEM 3 CIRC PUMP PRESSURE BIASED LOW 80 PSI AT OPERATING PRESSURE REFERENCE FLIGHT PROBLEM 4E
 - V46T0142A APU 1 EXHAUST GAS TEMPERATURE WAS ERRATIC DURING ENTRY REFERENCE FLIGHT PROBLEM NUMBER 4C
 - V41P1200C SSME 2 LH₂ INLET PRESSURE WAS ERRATIC REFERENCE FLIGHT PROBLEM NUMBER 4F
 - V41T1407A FREON LOOP 2 EVAP OUT TEMP WAS BIASED LOW REFERENCE FLIGHT PROBLEM NUMBER 4G



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MECHANICAL SYSTEMS

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- PERFORMANCE
- NOMINAL
- DTO'S
- NONE
- PROBLEMS
 - DURING CLOSURE OF THE STARBOARD PAYLOAD BAY DOOR THE FORWARD READY-TO-LATCH INDICATION 1 DID NOT INDICATE ON. THE REMAINING TWO READY-TO-LATCH INDICATIONS AND DOOR CLOSE INDICATION IN THE SAME SWITCH MODULE DID OPERATE PROPERLY. THIS IMPROPER INDICATION DID NOT AFFECT PLBD CLOSURE.
- POST FLIGHT INSPECTION
 - DEBRIS FELL ON RUNWAY AFTER ET UMBILICAL DOORS WERE OPENED. DEBRIS INCLUDED PART ABOUT 2 1/2 INCHES LONG IDENTIFIED AS V072-565471: YOKE ORB/ET UMBILICAL HOLD DOWN/RELEASE FRANGIBLE NUT/STUD LOCK (SEE FIGURE)



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THERMAL CONTROL

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- PERFORMANCE:
NOMINAL
- DTO's:
NONE
- PROBLEMS:
NONE



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THERMAL HEATING

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- PERFORMANCE
- ASCENT
- NOMINAL
 - FLAMES SEEN BETWEEN ORBITER AND SRB/ET ARE NORMAL
 - AT HIGHER ALTITUDES, RECIRCULATION ZONE MOVES UP BETWEEN ORBITER AND ET
- ANALYSIS CONTINUING
- ENTRY (SSME)
- INSPECTION OF TPS INDICATES NOMINAL HEATING
- ANALYSIS CONTINUING
- DTO's
 - NONE
- PROBLEMS
- ORBITER
 - POSSIBLE TILE DAMAGE
 - ANALYSIS CONTINUING
- SRB
 - POSSIBLE LOSS OF TPS
 - ANALYSIS CONTINUING



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THERMAL INTERFACES

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- PERFORMANCE
 - PRELAUNCH
 - ET/ORBITER UMBILICAL CAVITY - NOMINAL
 - ANALYSIS CONTINUING FOR OTHER AREAS
 - LAUNCH
 - NOMINAL (ASCENT HEATING NOMINAL)
 - ANALYSIS CONTINUING
- DTO'S
 - NONE
- PROBLEMS
 - NONE



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AEROTHERMODYNAMICS

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- PERFORMANCE
- ENTRY TRAJECTORY
 - ANALYSIS CONTINUING FOR $M > 12$ (HIGH HEATING)
 - NOMINAL HEATING FOR $M < 12$ (LOW HEATING)
- BOND LINE TEMPERATURE MEASUREMENTS INDICATE NOMINAL HEATING & TRANSITION
- INSPECTION OF TPS INDICATES NOMINAL HEATING
- DTO'S
 - NONE
- PROBLEMS
 - DAMAGED TILES
 - LARGE GOUGE IN HRSI TILES AFT & OUTBOARD OF RIGHT MAIN LANDING GEAR DOOR
 - SIGNS OF AEROHEATING
 - ANALYSIS CONTINUING



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DEBRIS DAMAGE ASSESSMENT

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- APPROXIMATE TOTAL OF 150 DEBRIS HITS WERE OBSERVED
- APPROXIMATELY 50 OF THESE HITS HAD A MAJOR DIMENSION (LENGTH, WIDTH OR DEPTH OF ONE INCH OR GREATER).
- LARGEST CONCENTRATION OF HITS LOCATED ON THE AFT PORTION OF THE LOWER RIGHT WING SURFACE AND THE OUTBOARD SECTION OF THE LOWER LEFT WING SURFACE.



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RUNWAY INSPECTION REPORT

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- OVERALL THE TPS IS AS CLEAN AS ANY FLIGHT
- THE NOSECAP AND WING L.E. LOOKED GOOD
- THE MOST SIGNIFICANT DAMAGE WAS A LARGE GOUGE ON THE LOWER RH WING (APPROXIMATELY 6 INCHES WIDE, 18 INCHES LONG AND 1 1/4 TO 1 1/2 INCH DEEP).
- THE CHIN PANEL TILE MODIFICATION LOOKED EXTREMELY GOOD.
- THE ELEVON COVE MODIFICATION LOOKED UNFLOWN (VIRGIN).
- TYPICAL BROKEN TILE CORNERS ON LH AND RH MLGD FWD OB CORNER (PIECES FOUND ON RUNWAY). FRAYING OF MLGD THERMAL BARRIERS IN AREA OF BROKEN TILES.
- DISSOLVED TPS-11 REPAIRS; NOTICEABLY WHITER.
- IMPACT DAMAGE MINIMAL; APPROXIMATELY 50 HITS GREATER THAN 1 INCH
- BASE HEAT SHIELD PEPPERING MORE CONCENTRATED BETWEEN THE THREE ENGINE BELLS, BUT SMALLER.
- ONE BROKEN TILE ON LH OMS BOLT COVER BOX (V070-396085).
- SEVERAL INSTANCES OF AFRSI LEADING EDGE FRAYING OR PROTRUSION. VERTICAL TEAR IN OML FABRIC AFT OF 50-1 DOOR AND ABOVE VENT DOOR #9 ON LH SIDE.
- AFRSI OML FABRIC PROTRUSION ON FWD EDGE OF LWR AFT CLOSEOUT CORNER PANEL ON RH SIDE.
- ET DOOR THERMAL BARRIERS LOOKED GOOD BUT WERE SCORCHED AND STIFF AT THE OML.



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RUNWAY INSPECTION REPORT CONT'D

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- ELEVON GAP HAD 5 BREACHED G/F's ON LH SIDE AND 7 ON THE RH SIDE. HEAT DAMAGE LOOKED USUAL.
- WINDOW #3 APPEARED TO HAVE MORE HAZING THAN THE OTHERS.
- ET ARROWHEAD AND ATTACHMENTS LOOKED GOOD.
- EROSION OF CARRIER PLATE TILE (AFT OB. CORNER OF WINDOW #4).
- PROTRUDING GAP FILLER SLEEVING ON RH OMS POD EYEBALL AREA.
- ENGINE MOUNTED HEAT SHIELD BLANKET DAMAGE AS USUAL.



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LANDING/DECEL.

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- PERFORMANCE
- NOMINAL
- LANDING DATA

<u>EVENT</u>	<u>G.M.T.</u>	<u>VELOCITY (KEAS)</u>	<u>DISTANCE FROM THRESHOLD (FEET)</u>
RMG TD	277:16:37:07	188	2569
LMG TD			2587
LMG OFF RW			2781
LMG ON RW			2825
NLG TD	277:16:37:18	154	5671
BRAKING	277:16:37:23	132	
WHEEL STOP	277:16:37:57		10020

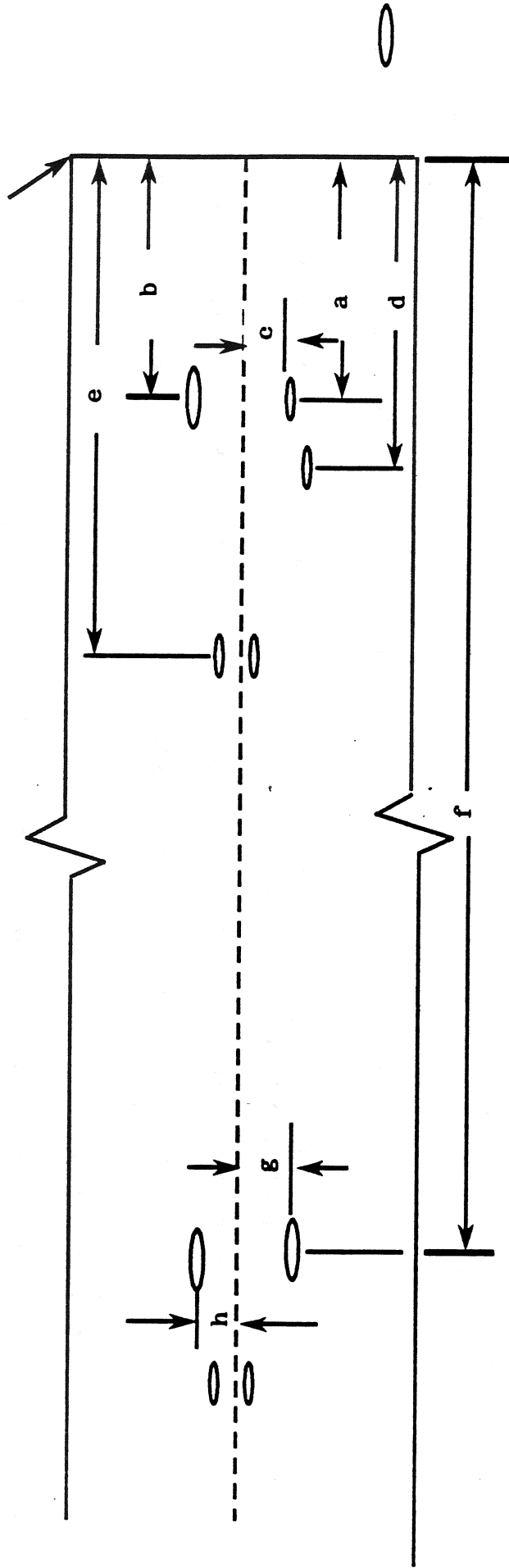
ROLLOUT DISTANCE 7451 FT.

- DTO 0518 NOMINAL BRAKING RESULTS:TBD.
- PROBLEMS
 - POST FLIGHT INSPECTION ON LAKEBED
 - NO DAMAGE TO BRAKES
 - NO SIGNIFICANT TIRE DAMAGE
 - TEMPERATURE OF RHOB BRAKE ABOVE OTHER 3
- UNDER EVALUATION

RUNWAY 17

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RUNWAY THRESHOLD (DISPLACED)



- a. LEFT MAIN TOUCHDOWN TO THRESHOLD
- b. RIGHT MAIN TOUCHDOWN TO THRESHOLD
- c. LEFT MAIN LATERAL DISPLACEMENT FROM RUNWAY CENTER LINE
- d. SUBSEQUENT TOUCHDOWN (RT MAIN STAYED DOWN, LT MAIN OFF AT 27166 FT)
- e. NOSE GEAR TOUCHDOWN
- f. MAIN GEAR STOP TO THRESHOLD
- g. LEFT MAIN LATERAL DISPLACEMENT
- h. RIGHT MAIN LATERAL DISPLACEMENT
- i. ROLLOUT DISTANCE

2587 FT
2569 FT
16 FT LT OF CL
2825 FT LT MAIN TD
5671 FT 16 FT LT OF CL
10020 FT
~ 16 FT LT OF CL
~ 8 FT RT OF CL
7451 FT



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ORBITER MAJOR MODIFICATIONS/ IMPROVEMENTS

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- ORBITAL MANEUVERING SYSTEM/REACTION CONTROL SYSTEM AC-MOTOR-OPERATED VALVES.
- 64 VALVES OPERATED BY AC MOTORS MODIFIED TO INCORPORATE DETECTION OF PROPELLANT IN THE ELECTRICAL PORTION OF THE VALVES.
- PRIMARY RCS THRUSTERS
- WIRING OF FUEL AND OXIDIZER INJECTOR SOLENIOD VALVES WAS WRAPPED AROUND EACH OF 38 PRIMARY THRUST CHAMBERS TO REMOVE ELECTRICAL POWER FROM VALVES IN EVENT OF THRUSTER INSTABILITY.
- FUEL CELL POWER PLANT
- IMPROVED FUEL CELL #2
- ELECTRICAL END CELL HEATERS DELETED AND REPLACED WITH COOLANT PLATES TO MAINTAIN UNIFORM TEMPERATURE
- HYDROGEN PUMP AND WATER SEPARATOR IMPROVED TO MINIMIZE HYDROGEN GAS ENTRAINED IN PRODUCT WATER.
- CURRENT MEASUREMENT DETECTOR ADDED TO MONITOR HYDROGEN PUMP FOR OVERLOAD
- THE STARTING AND SUSTAINING HEATER SYSTEM MODIFIED TO PREVENT OVERHEATING AND LOSS OF HEATER ELEMENTS.
- VEHICLE MODS
- PRODUCT WATER LINE FROM FUEL CELLS MODIFIED TO INCORPORATE A REDUNDANT PATH OF PRODUCT WATER TO POTABLE WATER TANK B IN EVENT OF FREEZE UP.
- WATER PURITY SENSOR ADDED TO PROVIDE REDUNDANT MEASUREMENT OF WATER PURITY MANIFOLDED TO ALL THREE FUEL CELLS.
- STACK INLET TEMPERATURE ADDED TO DOWNLIST TELEMETRY.



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ORBITER MAJOR MODIFICATIONS/ IMPROVEMENTS CONT'D

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- MAIN LANDING GEAR
- STIFFNESS OF MAIN LANDING GEAR AXLE WAS INCREASED TO REDUCE BRAKE TO AXLE RELATIVE DEFLECTIONS.
- ORIFICES WERE ADDED TO HYDRAULIC PASSAGES IN THE BRAKE PISTON HOUSINGS TO PREVENT BRAKE DAMAGE DUE TO PRESSURE SURGES.
- ELECTRONIC BRAKE CONTROL BOXES MODIFIED TO BALANCE HYDRAULIC PRESSURE BETWEEN ADJACENT BRAKES AND EQUALIZE ENERGY APPLICATIONS.
- REMOVED FLAT TIRE PROTECTION FEATURE IN THE BRAKE/SKID CONTROL BOX.
- TWO OF THREE CARBON-LINED BERYLLIUM DISKS IN EACH MAIN LANDING GEAR BRAKE WERE REPLACED WITH THICKER DISKS TO INCREASE BRAKE ENERGY CAPACITY.
- STRAIN GAGES WERE ADDED TO EACH NOSE AND MAIN LANDING GEAR WHEEL TO MONITOR TIRE PRESSURES.
- STRONGER MOUNTING TECHNIQUE FOR BRAKE/SKID CONTROL CAPACITORS.
- NOSE WHEEL STEERING
- MODIFICATION ALLOWS A SAFE HIGH-SPEED ENGAGEMENT OF THE SYSTEM AND PROVIDES POSITIVE LATERAL DIRECTIONAL CONTROL OF THE VEHICLE DURING ROLLOUT IN THE PRESENCE OF HIGH CROSSWINDS AND BLOWN TIRES.
- SOFTWARE CHANGE MADE TO PITCH AXIS FLIGHT CONTROL TO AUTOMATICALLY SET THE LOAD RELIEF FUNCTION FOLLOWING SETTING OF ROLLOUT FLAG.
- TPS
- CHIN PANEL COVERED WITH REINFORCED CARBON - CARBON. PREVIOUSLY COVERED WITH RSI TILES.



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ORBITER MAJOR MODIFICATIONS/ IMPROVEMENTS CONT'D

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- LOW TEMPERATURE TILES OF LOWER WING TRAILING EDGE, ELEVON LEADING EDGE AT THE OUTBOARD ELEVON TIP, AND INBOARD ELEVON ARE REPLACED BY FIBROUS REFRACTORY COMPOSITE INSULATION AND HIGH TEMPERATURE TILES ALONG WITH GAP FILLERS.
- WING STRUCTURE
- TO MAINTAIN POSITIVE MARGINS OF SAFETY DURING ASCENT STRUCTURAL MODIFICATIONS WERE INCORPORATED INTO SECTION AREAS OF THE WING.
- MIDFUSELAGE STRUCTURE
- TORSIONAL STRAPS ADDED TO TIE ALL THE MIDFUSELAGE STRINGERS IN LOOP 1 THROUGH 11 TOGETHER
- SILICONE RUBBER MATERIAL BONDED TO THE LOWER MIDFUSELAGE FROM LOOPS 4 THROUGH 11 TO ACT AS A HEAT SINK
- CREW ESCAPE SYSTEM/EMERGENCY EGRESS SLIDE
 - INCORPORATES ESCAPE SYSTEM - SLIDE POLE
 - PROVIDES RAPID EGRESS FROM SIDE HATCH AT END OF MISSION
- 17" ORBITER/EXTERNAL TANK DISCONNECTS
 - LATCH MECHANISM WAS ADDED IN EACH ORBITER HALF OF THE DISCONNECT. MECHANISM PROVIDES A MECHANICAL BACKUP TO THE NORMAL FLUID -INDUCED OPEN FORCES. LATCH OVERLAPS BOTH FLAPPERS AND OBSTRUCTS CLOSURE FOR ANY REASON

STS 26
PRELIMINARY MISSION EVENTS LIST

DATE 10/4/88.

PAGE 1 OF 3

EVENT	SOURCE	DESCRIPTION	ACTUAL
APU ACTIVATION	V46P0120A V46P0220A V46P0320A	APU-1 GG CHAMBER PRESS APU-2 GG CHAMBER PRESS APU-3 GG CHAMBER PRESS	<u>273</u> : <u>15</u> : <u>32</u> : <u>09.85</u> <u>273</u> : <u>15</u> : <u>32</u> : <u>10.93</u> <u>273</u> : <u>15</u> : <u>32</u> : <u>12.07</u>
MPS START	CALCULATED CALCULATED CALCULATED	ENG 3 START CMD TO EIU ENG 2 START CMD TO EIU ENG 1 START CMD TO EIU	<u>273</u> : <u>15</u> : <u>36</u> : <u>53.4433</u> <u>273</u> : <u>15</u> : <u>36</u> : <u>53.4833</u> <u>273</u> : <u>15</u> : <u>36</u> : <u>53.5233</u>
SRB IGN COMMAND	CALCULATED	SRB IGN CMD TO SRB	<u>273</u> : <u>15</u> : <u>37</u> : <u>00.0093</u>
INIT THROT DOWN	V90U1948C	COMMANDED THROTTLE	<u>273</u> : <u>15</u> : <u>37</u> : <u>27.</u> ___
MAX Q	V95P0500C	DERIVED ASC DYN PRESS	<u>273</u> : <u>15</u> : <u>37</u> : <u>51.</u> ___
INIT THROT UP	V90U1948C	COMMANDED THROTTLE	<u>273</u> : <u>15</u> : <u>37</u> : <u>58.</u> ___
BOTH SRMS AT 50 PSIA OR BELOW	B47P1300C B47P1301C B47P1302C B47P2300C B47P2301C B47P2302C	LH PRESS A SRM CHMBR LH PRESS B SRM CHMBR LH PRESS C SRM CHMBR RH PRESS A SRM CHMBR RH PRESS B SRM CHMBR RH PRESS C SRM CHMBR	<u>273</u> : <u>15</u> : <u>38</u> : <u>59.6</u> The event occurs when 2 out of 3 pressures for each booster are less than 50.
END SRM ACTION	B55V1607C B55V1608C B55V1609C B55V1610C B55V1611C B55V1612C B55V2607C B55V2608C B55V2609C B55V2610C B55V2611C B55V2612C	LH V AFT UP BR PC CP A LH V AFT UP BR PC CP B LH V AFT MI BR PC CP A LH V AFT MI BR PC CP B LH V AFT LW BR PC CP A LH V AFT LW BR PC CP B LH V AFT UP BR PC CP A LH V AFT UP BR PC CP B LH V AFT MI BR PC CP A LH V AFT MI BR PC CP B LH V AFT LW BR PC CP A LH V AFT LW BR PC CP B	<u>273</u> : <u>15</u> : <u>39</u> : <u>03.3</u> The event occurs when the last MISD voltage value climbs. This will happen after the SRM are at or below 50 PSIA.
SRB SEP COMMAND	V90X8331X	SRB SEPARATION CMD FLG	<u>273</u> : <u>15</u> : <u>39</u> : <u>04.</u> ___
SRB PHYSICAL SEPARATION	B46R1408C B46R2408C	SRB PHYSICAL SEP SRB PHYSICAL SEP	<u>273</u> : <u>15</u> : <u>39</u> : <u>03.4</u> ___
THROT DOWN FOR 3G ACCELERATION	V90U1948C	COMMANDED THROTTLE	<u>273</u> : <u>15</u> : <u>44</u> : <u>33.</u> ___
3G ACCELERATION	V95U0163C	TOT LOAD FACTOR (FT/S2)	<u>273</u> : <u>15</u> : <u>44</u> : <u>33.</u> ___
MECO	V90X8569X V90X8561X	MECO COMMAND FLAG MECO CONFIRM FLAG	<u>273</u> : <u>15</u> : <u>45</u> : <u>32.</u> ___ <u>273</u> : <u>15</u> : <u>45</u> : <u>33.</u> ___
ET SEPARATION	V90X8250X	ET SEPARATION CMD FLAG	<u>273</u> : <u>15</u> : <u>45</u> : <u>50.5</u> ___

STS 26
PRELIMINARY MISSION EVENTS LIST

DATE 10/4/88

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EVENT	SOURCE	DESCRIPTION	ACTUAL
APU DEACTIVATION	V46P0120A	APU-1 GG CHAMBER PRESS	<u>273</u> : <u>15</u> : <u>50</u> : <u>34</u> <u>21</u>
	V46P0220A	APU-2 GG CHAMBER PRESS	<u>273</u> : <u>15</u> : <u>50</u> : <u>34</u> <u>48</u>
	V46P0320A	APU-3 GG CHAMBER PRESS	<u>273</u> : <u>15</u> : <u>50</u> : <u>35</u> <u>53</u>
OMS 2 IGNITION	V43H4655C	L ENG BI-PROP VLV POS	<u>273</u> : <u>16</u> : <u>16</u> : <u>55</u> <u>9</u>
	V43H5655C	R ENG BI-PROP VLV POS	<u>273</u> : <u>16</u> : <u>16</u> : <u>55</u> <u>7</u>
OMS 2 CUTOFF	V43H4655C	L ENG BI-PROP VLV POS	<u>273</u> : <u>16</u> : <u>19</u> : <u>17</u> <u>7</u>
	V43H5655C	R ENG BI-PROP VLV POS	<u>273</u> : <u>16</u> : <u>19</u> : <u>17</u> <u>5</u>
TDRS/IUS DEPLOY	VOICE CALL	NOMINAL MET 6:13	<u>273</u> : <u>21</u> : <u>50</u> : <u>04</u> ____
OMS 3 IGNITION	V43H4655C	L ENG BI-PROP VLV POS	<u>273</u> : <u>22</u> : <u>05</u> : <u>02</u> <u>1</u>
	V43H5655C	R ENG BI-PROP VLV POS	<u>273</u> : <u>22</u> : <u>05</u> : <u>02</u> <u>1</u>
OMS 3 CUTOFF	V43H4655C	L ENG BI-PROP VLV POS	<u>273</u> : <u>22</u> : <u>05</u> : <u>19</u> <u>1</u>
	V43H5655C	R ENG BI-PROP VLV POS	<u>273</u> : <u>22</u> : <u>05</u> : <u>18</u> <u>9</u>
IUS FIRST STAGE BURN	VOICE CALL	NOMINAL MET 7:13	<u>273</u> : <u>22</u> : <u>50</u> : <u>04</u> ____
IUS SECOND STAGE BURN	VOICE CALL	NOMINAL MET 12:30	<u>274</u> : <u>04</u> : <u>06</u> : <u>48</u> ____

STS 26
PRELIMINARY MISSION EVENTS LIST

DATE 10/4/88

PAGE 3 OF 3

EVENT	SOURCE	DESCRIPTION	ACTUAL
FCS CHECKOUT APU START APU STOP	V46P0220A V46P0220A	APU <u>2</u> GG CHAMBER PRES APU <u>2</u> GG CHAMBER PRES	<u>276</u> : <u>12</u> : <u>53</u> : <u>43</u> . <u>45</u> <u>276</u> : <u>12</u> : <u>57</u> : <u>54</u> . <u>72</u>
APU ACTIVATION	V46P0120A V46P0220A V46P0320A	APU-1 GG CHAMBER PRESS APU-2 GG CHAMBER PRESS APU-3 GG CHAMBER PRESS	<u>277</u> : <u>15</u> : <u>29</u> : <u>47</u> . <u>02</u> <u>277</u> : <u>15</u> : <u>53</u> : <u>40</u> . <u>46</u> <u>277</u> : <u>15</u> : <u>53</u> : <u>40</u> . <u>90</u>
DEORBIT BURN	V43H4655C V43H5655C	L ENG BI-PROP VLV POS R ENG BI-PROP VLV POS	<u>277</u> : <u>15</u> : <u>34</u> : <u>45</u> . <u>1</u> <u>277</u> : <u>15</u> : <u>34</u> : <u>45</u> . <u>1</u>
DEORBIT BURN CUTOFF	V43H4655C V43H5655C	L ENG BI-PROP VLV POS R ENG BI-PROP VLV POS	<u>277</u> : <u>15</u> : <u>37</u> : <u>33</u> . <u>3</u> <u>277</u> : <u>15</u> : <u>37</u> : <u>33</u> . <u>3</u>
ENTRY INTERFACE (400K)	V95H0175C	CURR ORB ALT ABOVE REF ELLIPSOID	<u>277</u> : <u>16</u> : <u>06</u> : <u>33</u> . <u> </u>
BLACKOUT END	ANY MSID	DATA LOCKED (HIGH S.R.)	<u>277</u> : <u>16</u> : <u>23</u> : <u>20</u> . <u> </u>
TAEM	V90Q8001C	MAJOR MODE CODE	<u> </u> : <u> </u> : <u> </u> : <u> </u> . <u> </u>
MLG CONTACT	V51X0130X V51X0230X	LH MLG WT ON WHEELS RH MLG WT ON WHEELS	<u>277</u> : <u>16</u> : <u>37</u> : <u>11</u> . <u> </u>
NLG CONTACT	V51X0330X	NLG WT ON WHEELS-1	<u>277</u> : <u>37</u> : <u>16</u> : <u>17</u> . <u> </u>
WHEEL STOP	V95L0255C	VELOC WRT RUNWAY (F/S)	<u>277</u> : <u>16</u> : <u>37</u> : <u>57</u> . <u> </u>
APU DEACTIVATION	V46P0120A V46P0220A V46P0320A	APU-1 GG CHAMBER PRESS APU-2 GG CHAMBER PRESS APU-3 GG CHAMBER PRESS	<u>277</u> : <u>16</u> : <u>52</u> : <u>22</u> . <u>5</u> <u>277</u> : <u>16</u> : <u>52</u> : <u>23</u> . <u>16</u> <u>277</u> : <u>16</u> : <u>52</u> : <u>23</u> . <u>62</u>

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PROBLEM TRACKING LIST		STS-26		DATE	PAGE
				10-05-88	1
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -1	OMSGimbal Standby Enable 1 Fail	273:06:40	During prelaunch OMS Gimbal Profile Test, left secondary (standby) TVC did not drive actuators with RPC 1 enable. During post OMS 2 Gimbal check RPC-2 tripped off after some movement of OMS TVC which indicates RPC-2 functional. No mission impact <u>Planned Turnaround Action:</u> <u>Trouble shoot to isolate the problem.</u> Replace defective component. Change LCC/OMRS.	GNC-01	J. Vernon
STS-26 -2	NSP-1 Frame Synchronization Unlock(Transponder-2)	273:02:30	During prelaunch comm c/o uplink was switched from xponder 1 to xponder 2. NSP 1 did not indicate bit or frame sync. Troubleshooting couldn't repeat. Could lose cross strap capability if problem repeats. <u>Planned Turnaround Action:</u> <u>Trouble shoot to isolate the problem.</u>	INCO-1	M. Schmalz Chit in Dwyn to JSC COB 10/4. PRCB Thurs 10/6.
STS-26 -3	MS-1/PLT suit vent fans failed	273:12:33 273:12:48	During prelaunch ingress both MS-1 and PLT suit fans failed. Fuses replaced with 10 Amp fuses prelaunch. Crew replaced 10 Amp fuses with 5 Amp fuses from IFM kit. <u>Planned Turnaround Action:</u> <u>JSC review design and modify.</u> KSC review VIT procedures to include SR&QA.	MMACS-01	F. McAllister

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PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -4	Instrumentation a) APU 3 EGT transducer -erratic V46T0340A b) SSME3 LH ₂ inlet pressure-erratic (V41P 300C) c) APU #1 EGT (46T0142A) d) HYD SYS #1 "B" supply press- biased (V58P0115A) e) Circ pump press #3 (V58P0367A)-biased f) SSME LH ₂ (V41P1200C)-erratic g) Freon loop 2 evap out temp V61T1407A didn't track freon loop 1 TDCR.		<u>Planned Turnaround Action:</u> Trouble shoot to isolate the problem. Replace defective component	MMACS-02 BOOSTER- 02	
STS-26 -5	Flash evaporator system a) Ascent high load evaporator freezing b) Entry FES shutdown	273:15:41	Suspected high load evap freezing during ascent. FES temp adjusted to high set point (57° vs 38°F) during first night in order to warm FES. Reentry procedure developed to determine if the high load evaporator FES will be available for entry. FES shutdown occurred after initiation of OMS deorbit burn. <u>Planned Turnaround Action:</u> Check controllers, system "A" valves, boroscope cannister. Depending on results, remove & replace.	EECOM-02	H. Rotter Chit J2776 PRCB thurs 10/6.

PROBLEM TRACKING LIST		STS-26		DATE	PAGE
				10-05-88	3
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -6.	.Ku-band antenna: a) Failed self test b) Did not follow pointing commands c) Oscillated when attempting to stow	274:15:15	The antenna failed self test shortly after deployment. Also, antenna would not follow pointing commands. When antenna was manually slewed to stow position, antenna oscillations were observed. Antenna power switched to standby and oscillations ceased. Stow procedures developed and used successfully. Loss of KU band antenna will not significantly impact any mission objective. OV104 guide lock pin operation verified. Planned Turnaround Action: System test & trouble shoot. Remove DA from orbiter 102 in case we need it.	INCO-04	M. Schmalz 3 Chits J2774 OV103 STS-29 J2772 OV102 DA removal J2775 OV104 test
STS-26 -7	Gox flow control valves on SSME 1 and 2 operated sluggishly.	273:15:37	Gox flow control valve 1 and 2 (SSME 1 and 2) operated sluggishly during first cycle. This operation did not impact ET tank pressurization. Planned postflight inspection of valves. Planned Turnaround Action: Boroscope inspection of body for contamination. Remove 3 valves & send back to vendor. Clean & send to KSC for reinstallation.	BOOSTER-03	P. Cota Chit J2779

EQ

PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26-8	COAS adapter plate could not be mounted properly	275:11:02	During COAS alignment at forward station, crew could not secure adapter plate with the hold down screw. Nut plate may be missing on panel 01. Planned Turnaround Action: JSC will evaluate crew debriefing item, and take corrective action.	GNC-02	F. McAllister
STS-26-9	WSB Sys 1 GN ₂ Relief Valve Leak	273:15:11	GN ₂ pressure showed a 3 psi decay over the first 15 hours on-orbit. Decay then stopped. Indicates that GN ₂ relief valve did not fully seat for the first 15 hours on-orbit. Planned Turnaround Action: KSC Cycle valve & leak check. Remove & replace if required.	MMACS-5	W. Tuthill
STS-26-10	Waste collection system fan separator 1 showed indications of flooding	276:18:51	WCS fan separator 1 exhibited stall currents for 80 seconds. Inverter bus 1 current and voltage measurements verify WCS switch to fan separator 2 which is operating normally. Planned Turnaround Action: Remove & replace. It comes out with potty module which is removed post flight	EECOM-6	E. Winkler Chit J2777 at JSC
STS-26-11	Starboard payload bay door forward ready to latch indicator 'A' talkback did not function.	277:13:07	During payload bay door closing the starboard forward ready to latch indicator did not work. Planned Turnaround Action: Trouble shoot to isolate fault. Remove & replace indicator if required.	MMACS-08	L. Moore

PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -12	APU-3 low chamber press	273:15:37	APU #3 performance indicated low chamber pressure during all APU runs. <u>Planned Turnaround Action:</u> JSC evaluate. Remove & replace if required.	MMACS-4	W. Scott
STS-26 -13	Rt wing TPS damage		Approx. 6" x 18" x 1 1/2" TPS damage on Rt wing leading edge noted post flight. Possible debris during ascent. <u>Planned Turnaround Action:</u> Inspect & repair damage to OV103 JSC/KSC review & analyze photo coverage. Trajectory analysis.		J. Smith
STS-26 -14	4" LH2 ET/Orbiter disconnect leak.		Internal leak occurred prelaunch 'audible' leak reported postlanding. <u>Planned Turnaround Action:</u> Troubleshoot to isolate fault.		L. Jenkins
			18:30 10-5-88 <u>David W. Camp</u> David W. Camp, Manager, Flight Evaluation Office		

NASA-JSC

LD

**STS 26
MISSION OPERATIONS
AND
MISSION EVALUATION ROOM
CREW DEBRIEF**

**BUILDING 30 CONFERENCE ROOM
FRIDAY, OCTOBER 7, 1988
0800 TO 1200 HOURS, CDT**

AGENDA

**MOD SYSTEMS ANOMALY LIST
FLIGHT DIRECTORS
ECLSS
AVIONICS
CREW EQUIPMENT**

**Attendance by invitation only - Flight controllers
and Mission Evaluation Team members working
the above mentioned systems, and
Mission Management Team members**

For information, contact Troy Welch, VF3, ext. 3335

Mission Evaluation Room
STS-26 Crew Debriefing Questions

ORBITER SYSTEMS

1. ECLSS

a. During prelaunch and ascent prior to orbit insertion, did any crewmember(s) raise LES visors without closing the Suit O2 Isolation Valve? If so, how many crewmembers and at what times?

b. During periods of high cabin temperature and high humidity levels, was any condensation noticed on surfaces in the cabin?

c. A N2 high flow alarm occurred on flight day 2. Was there any crew activity in the vicinity of the WCS/M010W control panel at this time?

d. What procedure was used for the prelaunch LES suit pressurization procedure? How many times were each suit pressurized? In order to minimize O2 added to cabin, is one adjustment per crewmember sufficient? If not, how many are sufficient?

e. Did any crewmember enter airlock? If so, was any water present?

f. During the three day thaw out of the FES, was any ice exhausted from the ducts or evidence of ice present?

AVIONICS

1. Several blips in the vehicle rates were noticed on-orbit. Is the crew aware of any reason?

2. The ground displays showed radar altimeter data present for landing, but it was reported that the crew had no radar altimeter data for landing. Did the crew have radar altimeter data for landing?

FLIGHT CREW EQUIPMENT

1. STOWAGE LOCKERS

a. Were there any difficulties (alignment, etc.) encountered in opening/closing or relatching the old or new? Was any prying required to open or close? Locations?

b. How did the new locker latches perform? Preferences on

h. Was there any difficulty stowing or reinstalling the seats?

i. Are there general or specific comments on the Launch/Entry Suit and related equipment?

j. How were the various forms of communications? (Launch/Entry Suit Communications, the in-orbit VLHS, the WCCS, and the Handheld Mike) Is the hand held mike preferable to headset mikes?

k. Were there any problems removing and stowing the escape pole?

l. Were there any unexpected problems ingressing or egressing with the escape pole in place?

m. Did the pole stowage location present any significant problems on orbit?

n. Were there any difficulties reinstalling the pole?

o. Did the slide present any unexpected ingress or egress problems?

p. Did the slide cause any problem on orbit?

4. DEBRIS/CONTAMINATION CONTROL

a. Describe air quality as the mission progressed from the first through the fifth day. Compare with prior missions.

b. Describe cabin/surface cleanliness. Any lint stuck to air outlets or on panel surfaces?

c. Were any of the filters clogged?

d. Describe debris on, and how often the following filters were cleaned: IMU tape-on, DDU1-3, DEU1-4, RSU, VSU & AMI/AVVI.

e. WMS return air filter - How often was the WMS return air filter cleaned (vacuumed)? How dirty was it?

f. Were there any problems with filter cleaning through panels L8, R9, R17, R18, L18? Were they dirty - describe.

g. Was the vacuum probe adequate?

h. What steps do you recommend to keep cabin more clean during mission?

- b. Was the interdeck shield adequate?
- c. Which window shades were used? How did the new window shades work (W1- W6)? When were they used?
- d. Was there any problems with the overhead window shields? Did they get hot? When were they removed?
- e. Were there any through the window glare problems during re-entry?
- f. Did you use the photo shroud? If so, were there any problems?

9. TRASH MANAGEMENT

- a. General comments on wet trash stowage in volume F.
- b. Was wet trash volume adequate?
- c. Were there any odors?

10. COAS

- a. Were there any problems installing the COAS in the overhead windows, including fit?
- b. Were the COAS cables adequate?
- c. Was the forward COAS's nut plate missing from the spacecraft?

11. CABLE ROUTING

- a. Were there any problems with cable routing?
- b. Did the cables present a hangup problem?

12. HUD COVER

- a. Were there any problems installing or removing the HUD cover?

13. PERSONAL HYGIENE STATION EQUIPMENT

- a. Were there any problems installing or using the portable wet trash canister?
- b. Was the WCS port wall stowage adequate? Anything in

i. Was hot and cold water rapidly available as each one was dispensed?

j. Was the temperature of the hot and cold water close to the desired temperature?

k. Was the temperature of the hot and cold water consistent during multiple dispenses?

l. Was the auxiliary port used during this mission? If yes, please comment.

m. Did the galley function quietly, especially during sleep periods? Compare with previous galleys during wake and sleep periods.

o. Did the galley malfunction at all during this mission?

16. MISCELLANEOUS

c. How did the treadmill work?

d. Were the IFM tools used? If so, what was the experience in location, usage, and restowage of tools?

e. Were the flight data files accessible, complete, readable?

f. Does the crew have any comments not previously expressed relative to the medical DSO's, the medical kits, and the dosimeters?

g. To what extent was work performance, concentration, or efficiency degraded, if at all, during the sustained higher temperatures in the crew cabin? What compensation was used?

h. To what extent, if any, were the interior video cameras intrusive? (Were they turned off for this reason?)

j. Are there any other crew-related equipment items which the crew would like to comment on?

**DISTRIBUTION 'M'
ANOMALY LIST (STS-26)
9/29/88**

JOB NO. 1476

FCR-1 ROOM 231

1a 397 GC (MCC/GSTDN)
1 385 FDO
~~1 386 FDO~~
1 365 GNC
1 391 PROP
1 396 EECOM
1a 387 PAYLOADS (PYLD)
1 394 DPS
1 390 INCO
1 389 FD
2* 384 CAPCOM
1 388 FAO
1 395 PAO
1 383 MOD MGR
1 392 MMACS
1 304 DRS-EVA-BOOSTER

ROOM 343 (go thru 331)

1 311 SIM SUPV

ROOM 313

1 303 GDSM

ROOM 337 (Knock on Door)

3 489 DET 2 DUTY OFFICER

ROOM 210

1 366 ASCENT/ENTRY
1 368 LSO
1 322 GNAV
1 367 ONAV

ROOM 217

8 370 SYSTEM 1 thru 8

ROOM 242

1 344 SENSORS
1 345 CONTROL
1 347 OMS/RCS 2

ROOM 241

1 352 THERMAL
1 353 LIFE SUPPORT
1 355 EPS
2 354 POWER MGR

ROOM 240

1 363 TIMELINE
1 361 PADS

ROOM 237 (Give to sec or put on table)

1 321 SPAN CB REP
1 285 SPAN MGR
1 286 SPAN SYS
1 N/A NSTS SPAN

ROOM 225C

1 PAO OPS

ROOM 236 (inbasket on table)

1 381 NSTSPO
1 382 MOD
4 N/A CUSTOMER WORKSTATIONS

ROOM 225 (Rack on Wall)

9 N/A ACTION CENTER
1 N/A NASA HQS

ROOM 233

1 349 IFM
1 351 MECH
1 457 RMS
1 350 MPS
1 452 PHASE SUPPORT

ROOM 239 (go thru 233)

1 356 COMM SUPPORT 2
1 358 INSTR
1 399 DPS SUPPORT 2

ROOM 3100 (SEND TO P-TUBE 38)

1 503 MER

TOTAL 74 + 1 for file copy

TOTAL 75

NOTE: FOR ANY CHANGES TO DISTRIBUTION CALL EXTENSION 31085 OR 31087

ANOMALY COVER SHEET - STS-26
October 3, 1988 12:00 p. m.

*Denotes New Items

!Denotes Change

Position	Rev	Title	Position	Rev	Title
BSTR-01		MPS PNEUMATIC HELIUM INTERNAL LEAK/J. DINGLER	MMACS-02		HYD SYS 3 CIRC PUMP PRESS XDCER BIASED LOW/T. TAMERLER
BSTR-02		RIGHT SSME LH2 INLET PRESSURE/ M. DINGLER	MMACS-03		APU 3 EGT XDCR/J. MEDFORD
BSTR-03		MPS GOX FLOW CONTROL VALVE/ J. GRIFFIN	MMACS-04		APU 3 LOW CHAMBER P/J. MEDFORD
DPS-01		MTU BITE INDICATION/ D. TEE	MMACS-05		WSB SYS 1 GN2 RELIEF VALVE LEAK/ M. SCHWARTZ
	A	B. JACKSON	MMACS-06		APU HEATER A DITHER/J. MEDFORD
DPS-02*		BFS I/O ERROR CRT 3 FAULT MESSAGES/T. KEELER	MMACS-07		APU HEATERS WIDE CONTROL RANGE/ T. TAMERLER
EECOM-01		FC2 PH HIGH/L. MINTER	MMACS-08		PLBD READY-TO-LATCH IND/ J. MEDFORD
EECOM-02!		FES HI LOAD DUCT FREEZE-UP/ D. MOLINA	MMACS-09*		APU 1 EGT XDCR/J. MEDFORD
	A	R. WANG	PROP-01		OMS CROSSFEED LINE (CENTER) TEMP SENSOR/W. POWERS
	B	D. MOLINA		A	D. BARRY
	C	Q. CARELOCK	PROP-02	A	RIGHT OME COVER HEATER A/ W. POWERS
EECOM-03		O2 PCS SYS 1.2 SPLY P TRACKING O2 MANF P/J. GREER	PYLD-01!		OASIS TAPE STICKING/ K. EDWARDS
	A	D. WILLIAMS		A	T. BAUM
EECOM-04		EVAP OUT T DEBOND/D. MOLINA	PYLD-02		BIT HIT/T. BROWN
EECOM-05	A	DEGRADATION OF HUM SEP B/ P. CERNA	PYLD-03	A	POSSIBLE ROW/DRIVER CROSSTRAP FAILURE/T. BROWN
EECOM-06		DEGRADED WCS SEPARATOR 1/ D. WILLIAMS	PYLD-04		IUS RCS TANK 2 ISO VALVE/N. CARR
EECOM-07!		SPLY AND WST NOZZLE TEMPS/ D. WILLIAMS	PYLD-05		IUS TILT TABLE/K. EDWARDS
	A	P. CERNA	STDN-01		MILA S-BAND TRACK/B. CULBERTSON
GNC-01	D	LEFT OMS SEC TVC RPC FAILURE/ S. ELSNER	STDN-02		DAKAR RECORDER DUMP PROCESSING PROBLEM/B. CULBERTSON
GNC-02		+ X COAS MOUNTING NUT MISSING/ D. MILLER	STDN-03		WTR S-BAND UPLINK/N. TALBOTT
GNC-03		DEDICATED DISPLAY CHECKOUT DISCREPANCIES/J. BANTLE	STDN-04		WTR UHF DOWNLINK/N. TALBOTT
INCO-01		NSP 1/XPNDR 2 INTERFACE ANOMALY/ H. BLACK			
INCO-02	A	PDI DECOM 4 BIT SYNC WITHOUT DATA/C. COUNTS			
INCO-03		OPS RCDR 2 MODULATION ANOMALY/ J. MURATORE			
INCO-04		KU-BAND ANTENNA FAILURE/ J. STAFFORD			
INCO-05		KU-BAND MODE 1 FRAME SYNC TELEMETRY FAIL/C. COUNTS			
INCO-06		PA 2 RF POWER OUT DROPS/ T. KALVELAGE			
INCO-07*		MADS BOT PERCENT TAPE ANOMALY/ R. LABRODE			
MCC-01		MITS LAN WORSTATIONS/ B. CULBERTSON			
MCC-02		HOST #3 OC6 ABENDS/A. DAVIS			
MMACS-01		PERSONAL SUIT VENTILATION SYSTEM (PSVS) FUSE FAILURE/ M. MAHER			
	A	J. SHIMP			
	B	M. MAHER			

P O S I T I O N	A P P R O X G M T/ M E T D D: H H: M M	T I T L E/ A U T H O R	D E S C R I P T I O N / I M P A C T / R E S O L U T I O N	I N F L I T	P L L	O R B	V E H I C L E #	F L T R #
B S T R - 0 1	273:15:39 / 000:00:02	MPS PNEUMATIC HELIUM INTERNAL LEAK/ J. DINGLER	MPS PNEUMATIC HELIUM TANK PRESSURE (V41P1600A) DECAYED APPROXIMATELY 60 PSI DURING PURGE SEQUENCE 4. DURING ASCENT THE PNEUMATIC PRESSURE DECAYED APPROXIMATELY 40 PSI UNTIL 273:15:39:35, AT WHICH TIME THE LEAK STOPPED. THIS WAS AN EXPECTED ANOMALY (IPR-26RV-0809). NO IMPACT TO FLIGHT OR ENTRY.	C L	N	N	1 0 3	S T S - 2 6
B S T R - 0 2	273:15:45 / 000:00:08	RIGHT SSME LH2 INLET PRESSURE/ M. DINGLER	THE RIGHT SSME LH2 INLET PRESSURE READING (V41P1300C) TOGGLED PRIOR TO SSME SHUTDOWN (MET = 7 MIN 50 SEC). AT MECO, THE READING WENT TO ZERO. NO IMPACT. OTHER MEASUREMENTS ARE AVAILABLE (3) TO MONITOR LH2 MANIFOLD PRESSURE.	C L	N	N	1 0 3	S T S - 2 6
B S T R - 0 3	273:15:37 / 000:00:00	MPS GOX FLOW CONTROL VALVE/ MERI. GRIFFIN	DURING SSME OPERATION GOX FLOW CONTROL VALVE 1 AND 2 DEMONSTRATED SLUGGISH PERFORMANCE ON INITIAL CYCLES. SUBSEQUENT PERFORMANCE APPEARS SATISFACTORY. IMPACT: NO IMPACT ON OX TANK PRESSURIZATION. RESOLUTION: POST FLIGHT INSPECTION IS REQUIRED FOR RESOLUTION.	C L	N	N	1 0 3	S T S - 2 6

END OF ANOMALIES **BOLDTYPE DENOTES CHANGES**

FLT: STS-26

CUTOFF MET: 004:01:00

SYSTEMS ANOMALY LIST

Date: 10/3/88

DPS Page: 1

DESCRIPTION / IMPACT / RESOLUTION	INFLUENTIAL	OPERATIONAL	VEHICLE #	FLTR
<p>DESCRIPTION / IMPACT / RESOLUTION</p> <p>SINCE LIFTOFF, THE MTU BITE STATUS WORD HAS RANDOMLY INDICATED THAT EITHER ACCUMULATOR 1 OR 3 HAS FAILED COMPARISON TESTS. NO GPC ACCUMULATOR SWITCHES HAVE BEEN OBSERVED AND THE MTU IS HEALTHY.</p> <p>IMPACT: PASS DOES NOT USE THE MTU BITE STATUS WORD. BFS USES IT ONLY DURING INITIALIZATION, AND THE BFS WILL NOT USE ANY ACCUMULATOR THAT HAS ITS CORRESPONDING BITE BIT SET AT THAT TIME. WITH NO BITE BIT SET AGAINST ACCUMULATOR 2, THE BFS WILL INITIALIZE ITS TIME PROPERLY.</p> <p>RESOLUTION: THIS PHENOMENON IS DUE TO PCMMU READS OF THE MTU VIA MDM OF 1 OCCURRING DURING A SMALL WINDOW (< 1 MICROSECOND) WHEN THE 3 MTU ACCUMULATORS ARE SLIGHTLY OUT-OF-PHASE. THE MET RESET AT LIFTOFF CAUSED THIS OUT-OF-PHASE WINDOW TO "MOVE" INTO THE PCMMU READ TIMES. THIS PHENOMENON HAS ALSO BEEN NOTED ON STS-7 AND 8.</p> <p>DURING ENTRY THE BFS ANNUNCIATED I/O ERROR CRT 3 TWO DIFFERENT TIMES WITHOUT LOGGING ANY GPC I/O ERRORS. CRT 3 FUNCTION APPEARED TO BE OK.</p> <p>IMPACT: COULD MEAN A BFS SOFTWARE PROBLEM OR A MOC FAULT PROCESSING PROBLEM.</p>	CL	CL	103	ST26
<p>MTU BITE INDICATION/ D. TEE</p> <p>P. TICE</p>				
<p>273:15:37 / 000:00:00</p>				
<p>277:16:28 / 004:00:51</p>				
<p>BFS I/O ERROR CRT 3 FAULT MESSAGES/ T. KEELER</p>				
<p>DPS - 02 *</p>				

END OF ANOMALIES *BOLDTYPE DENOTES CHANGES

DESCRIPTION / IMPACT / RESOLUTION	INFLUENCING FACTORS	OPERATOR	VEHICLE #	FLIGHT #
<p>AT AN MET OF 15 SECONDS, FC2 HAD A PH HIGH INDICATION FOR 3 SECONDS WHICH CAUSED A CLASS 3 ALARM. THIS INDICATION WAS APPARENTLY DUE TO A SMALL AMOUNT OF HIGH CONDUCTIVITY H2O PASSING BY SENSOR. NO ACTION TAKEN. NOT CONSIDERED A PROBLEM.</p>	<p>C N L</p>	<p>N</p>	<p>1 0 3</p>	<p>S T S - 2 6</p>
<p>DURING ASCENT PRIOR TO FES ACTIVATION, COOLING WAS EXPERIENCED INDICATING WATER IN THE FES CORE. AFTER FES ACTIVATION HI LOAD IN-BOARD DUCT TEMP (V63T1820A) DECREASED TO BELOW NOMINAL TEMPERATURES. THIS DUCT LATER SHOWED SIGNS OF FREEZING WATER WHICH IS POSSIBLY ALSO IN THE FES HI LOAD CORE AND TOPPING DUCT. 10 LB/HR EXCESS WATER USE RATES WERE ALSO OBSERVED.</p> <p>SUBSEQUENTLY, FES PRI A CONTROLLER WAS TURNED ON TO DUMP SUPPLY WATER. TOTAL TIME OF FES TOPPING OPERATION ON PRI A CONTROLLER IS 3 HRS 21 MIN. ALL EVAP OUT TEMP AND TOPPING DUCT TEMPERATURES WERE NORMAL. FES TOPPING MODE OPERATION IS VERIFIED TO BE GOOD.</p> <p>IMPACT: POWERDOWN MAY BE REQUIRED FOR ENTRY IF EITHER HI LOAD OR BOTH FES FAIL.</p> <p>RESOLUTION: SWITCH TO SECONDARY CONTROLLER USING TOPPER ONLY UNTIL RAD FLOW INITIATED. USE RADIATOR HI SET POINT IN ATTEMPT TO THAW OUT ICE.</p> <p>AFTER APPROXIMATELY 72 HOURS OF OPERATING ON THE HIGH RAD SET POINT AND DUAL TOPPING AND HI LOAD DUCT HEATERS FOR 94 HOURS, THE HI LOAD FES WAS CHECKED OUT DURING DEORBIT PREP. THIS CHECK OUT INDICATED THAT ICE WAS NO LONGER IN THE HI LOAD CORE OR DUCT. NOMINAL ENTRY FES USE WAS RESUMED. DUAL DUCT HEATERS WILL CONTINUE THROUGH LANDING.</p> <p>AT DEORBIT BURN, MET 3/23 + 58; THE FES PRI B CONTROLLER SHUTDOWN.</p> <p>RESOLUTION: CREW RECONFIGURED TO THE FES SECONDARY CONTROLLER FOR ENTRY. EVAP OUT WAS CONTROLLING AT 62°F UNTIL RAD ACTIVATION.</p>	<p>C N L</p>	<p>N Y</p>	<p>1 0 3</p>	<p>S T S - 2 6</p>

BOLDTYPE DENOTES CHANGES

P O S N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P / L	O R B	V E H #	F L T R
E E C O M - 0 3		273:16:07 / 000:00:30	O2 PCS SYS 1 AND 2 SPLY P TRACKING O2 MANF P/ J. GREER	AFTER VISORS WERE LIFTED AND THE O2 SUIT MANF VLVS CLOSED, THE O2 SPLY P SHOULD LOCK UP AT THE HIGHEST O2 MANF PRESSURE. O2 SPLY P SYS 1 - V61P2102A O2 TK1 MANF P - V45P1140A O2 SPLY P SYS 2 - V61P2202A O2 TK2 MANF P - V45P1145A PRESENTLY, THE O2 SPLY P IS TRACKING THE O2 MANF P. ASSUMPTIONS ARE THAT THE CHECK VALVE UPSTREAM OF THE SPLY P DUCER IS FAILING TO CHECK COMPLETELY OR THERE IS AN O2 LEAK INTO THE CABIN DOWNSTREAM OF THE CHECK VALVE. CURRENTLY, THERE ARE NO INDICATIONS OF AN O2 LEAK INTO THE CABIN. THE PCS O2 CHECK VLV IS NOW CHECKING. (273:20:19 GMT, 000:04:42 MET)	C N Y			1 0 3	S T S - 2 6
E E C O M - 0 4		273:15:40 / 000:00:03	EVAP OUT T DEBOND/ D. MOLINA	EVAP OUT T (V63T1407A) ON FREON COOLANT LOOP 2 APPEARED TO LAG BEHIND FCL 1 EVAP OUT T (V63T1207A) BY AS MUCH AS 10°F IN TEMPERATURE AND ABOUT 5 SECONDS IN TIME. THIS MAY INDICATE SENSOR DEBONDING AS WAS SEEN IN A SIMILAR EVAP OUT T SIGNATURE DURING FLIGHT 61-C (OV-102). IMPACT: NONE	C N Y			1 0 3	S T S - 2 6
E E C O M - 0 5	A	275:09:18 / 001:17:42	DEGRADATION OF HUM SEP B/ P. CERNA	THE WASTE WATER COLLECTION RATE WHILE OPERATING HUM SEP B HAS BEEN SIGNIFICANTLY REDUCED SINCE THE END OF THE FIRST SLEEP PERIOD. THE REDUCED HUM SEP B COLLECTION RATE HAS CONTINUED FOR APPROXIMATELY 30 HOURS. IMPACT: DEGRADED HUM SEP B RESOLUTION: THE PLAN IS TO LEAVE HUM SEP A ON AT THE END OF THE ECLSS REDUNDANT COMPONENT CHECKOUT (EZ CAP FD 3). HUM SEP A HAS BEEN COLLECTING WASTE WATER AT THE EXPECTED RATE SINCE THE BEGINNING OF ITS OPERATING PERIOD. HISTORY: STS 5 HAD DEGRADED HUM SEP A AND B (RESTRICTION IN CABIN HEAT EXCHANGER SLURPER OR WATER SEPARATOR PACKAGE) STS 6 HAD DEGRADED HUM SEP A (LOW AIR FLOW)	C N Y			1 0 3	S T S - 2 6

*BOLDTYPE DENOTES CHANGES

SYSTEMS ANOMALY LIST

P O S N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P /	O R B	V E H #	F L D R
E E C O M - 0 6		276:18:51 / 003:03:34	DEGRADED WCS SEPARATOR 1/ D. WILLIAMS	<p>MCC SAW STALL CURRENTS WHILE THE CREW TRIED TO USE SEPARATOR 1. THE CREW REPORTED LOW AIR FLOW AND SWITCHED TO WCS SEPARATOR 2. THE CREW REPORTED GOOD AIRFLOW AND MCC SAW NORMAL START UP/RUN CURRENTS FOR WCS FAN SEP 2.</p> <p>IMPACT: CREW SHOULD USE WCS SEPARATOR 2 FOR NORMAL OPS. IF WCS SEPARATOR 2 SHOULD FAIL CREW CAN USE WCS SEPARATOR 1 BUT THEY WILL HAVE DEGRADED AIRFLOW.</p>	C L	N Y	1 0 3	S T S - 2 6	1 0
E E C O M - 0 7 !		276:20:38 / 003:05:01	SPLY AND WST NOZZLE TEMPS/ D. WILLIAMS P. CERNA	<p>CREW REPORTED THAT THE SPLY H2O NOZZLE TEMPS (V62T0439A/0440A) WERE READING APPROXIMATELY -10°F AND THE WST H2O NOZZLE TEMPS (V62T0519A/0520A) WERE READING APPROXIMATELY -20°F. THIS IS NOT POSSIBLE UNLESS THE DSC OR THE TEMPERATURE SNRS ARE OUTPUTTING A NEGATIVE VOLTAGE SINCE THE 0 VOLTS READING IS -1.99°F. A GPC MEMORY READ WAS PERFORMED AND THE A₀ AND A₁ CALCULATE VALUES WERE THE CORRECT VALUES.</p> <p>THE SUPPLY AND WASTE NOZZLE TEMPERATURE TRANSDUCERS DO OUTPUT NEGATIVE VOLTAGES. SINCE THE FOUR CITED MSID'S ARE UNIPOLAR DESIGNATED, THE CREW WILL SEE THE PROCESSED NEGATIVE VOLTAGE AS A NEGATIVE TEMPERATURE READING WITH AN OVERBRIGHT "L" IN THE PARAMETER STATUS INDICATOR FIELD. THE CREW CONFIRMED THIS EVENT IN THE AIR-TO-GROUND AND A SAIL TEST CONFIRMED PROPER GPC PROCESSING. THE GROUND WILL SEE 0 PCM COUNTS FOR ANY NEGATIVE PCM COUNT INPUT TO THE MOC DUE TO UNIPOLAR PARAMETER TYPE DESIGNATION WHICH EXPLAINS THE MOC READOUT.</p> <p>RESOLUTION: CHANGE THE UNIPOLAR PARAMETER TYPE TO A BIPOLAR PARAMETER TYPE IN THE LEVEL C FLIGHT SOFTWARE REQUIREMENTS (FSR) FOR THE FOUR MSID'S IN QUESTION TO ALLOW THE MOC TO PROCESS NEGATIVE PCM COUNTS AND TO RID THE CREW CRT OUTPUT OF THE OVERBRIGHT "L" WHEN THE GPC PROCESSES NEGATIVE PCM COUNTS.</p>	O P	N Y	1 0 3	S T S - 2 6	1 0 3

END OF ANOMALIES **BOLDTYPE DENOTES CHANGES**

P O S I T I O N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L I T	P / L	O R B	V E H #	F L T R
G N C - 0 1		273:06:12 / 000:09:25	LEFT OMS SEC TVC RPC FAILURE/ S. ELSNER	<p>DURING THE PRELAUNCH OMS GIMBAL PROFILE TEST, THE LEFT SECONDARY (STANDBY) TVC DID NOT DRIVE THE ACTUATORS WHEN ONLY RPC #1 WAS ENABLED. WITH RPC #2 ENABLED, THE ACTUATORS RESPONDED PROPERLY TO COMMANDS. TROUBLESHOOTING AND ANALYSIS INDICATE THAT ONLY RPC #2 WILL PROVIDE POWER TO THE CONTROLLER WHEN BOTH RPCS ARE ENABLED ON ORBIT (BOTH RPCS ARE ENABLED WHENEVER THE SECONDARY TVC IS SELECTED). THESE RPCS ARE NOT CONSIDERED TO BE REDUNDANT; BOTH ARE REQUIRED TO ENSURE THAT THE PITCH AND YAW ACTUATORS CAN BE DRIVEN SIMULTANEOUSLY. DURING THE POST-OMS 2 GIMBAL CHECK, BOTH ACTUATORS MOVED SLIGHTLY (0.3 DEGREES) BEFORE RPC #2 FAILED.</p> <p>IMPACT: THE SECONDARY SYSTEM IS CONSIDERED FAILED FOR NOMINAL ORBIT OPERATION.</p> <p>RESOLUTION: THE LEFT OMS ENGINE WILL BE PARKED THROUGH THE CG WHEN NOT IN USE.</p>	C L	N	Y	1 0 3	S T S - 2 6
G N C - 0 2		275:11:00 / 001:19:23	+ X COAS MOUNTING NUT MISSING/ D. MILLER	<p>FOLLOWING THE + X COAS CALIBRATION, THE CREW REPORTED THE NUT ON PANEL 01 WHICH THE COAS FORWARD ADAPTER PLATE MOUNTING FASTENER SCREWS INTO HAD COME OFF. THE CREW REPORTED THAT THE 3 GUIDE PINS WERE SNUG. THEY TAPED THE ADAPTER IN PLACE AND PROCEEDED WITH THE CALIBRATION.</p> <p>IMPACT: THE PRIMARY PURPOSE OF THE + X COAS CALIBRATION ON THIS FLIGHT WAS TO GATHER ENGINEERING DATA. THIS CALIBRATION IS NOT REQUIRED FOR NOMINAL FLIGHT OPERATIONS. THIS CALIBRATION SHOULD NOT BE CONSIDERED A VALID CALIBRATION. THIS WILL HAVE NO IMPACT ON NOMINAL FLIGHT OPERATIONS.</p> <p>RESOLUTION: -Z COAS WILL BE USED IF REQUIRED IN FLIGHT. MISSING NUT SHOULD BE REPAIRED DURING VEHICLE TURNAROUND. THE + X COAS WAS NOT PLANNED TO BE USED FOR IMU ALIGNMENT IN FLIGHT AND WILL NOT BE USED.</p>	C L	N	Y	1 0 3	S T S - 2 6

BOLDTYPE DENOTES CHANGES

P O S I T I O N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L I T	P /	O R B	V E H	F L T #	D R
G N C - 0 3		276:13:26 / 002:23:49	DEDICATED DISPLAY CHECKOUT DISCREPAN- CIES/ J. BANTLE	<p>DURING THE DEDICATED DISPLAY C/O OF THE FCS C/O PROCEDURE THE CREW REPORTED SOME MINOR DISCREPANCIES FOR THE FOLLOWING DISPLAYS:</p> <p>L ADI ROLL AND YAW ATT. ERROR, LOW TEST : 1.5 TICKS L (VS. THE REQD. 2.0) L ADI PITCH ATT. ERROR, LOW TEST : 1.0 TICKS L (VS. THE REQD. 2.0) L AMI, MACH/VEL TAPE, LOW TEST : 20250 (VS. THE REQD. 20000) L AVVI ALT RATE, LOW TEST : -185 (VS. THE REQD. -200) L AVVI ALT, LOW TEST : -180 (VS. THE REQD. -200)</p> <p>A COMPARISON BETWEEN ADI'S AND DAP ERRORS WHILE IN OPS 201 SHOWED ATT. ERROR NEEDLES WERE FUNCTIONING PROPERLY. THE CREW HAS COMMENTED THAT ALL OF THESE DISPLAY DELTAS ARE ACCEPTABLE. WE BELIEVE THESE TYPES OF DISCREPANCIES HAVE BEEN SEEN ON PREVIOUS MISSIONS.</p> <p>IMPACT: NO IMPACT FOR ENTRY.</p> <p>RESOLUTION: WE WILL PURSUE ADDING LIMITS TO THE PROCEDURE FOR FUTURE FLIGHTS. WE RECOMMEND THIS HARDWARE BE TESTED DURING TURNAROUND.</p>	C L	N	Y	1 0 3	S T S - 2 6	

END OF ANOMALIES ***BOLD TYPE DENOTES CHANGES**

FLT: STS-26

CUTOFF MET: 004:01:00

SYSTEMS ANOMALY LIST

Date: 10/3/88

INCO Page: 1

P O S N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P L L	O R B	V E H	F L D R
I N C O - 0 1		273:02:00 / -000:11:59	NSP 1/XPNDR 2 INTERFACE ANOMALY/ H. BLACK	<p>DURING COMM CHECKOUT WHEN THE UPLINK WAS SWITCHED FROM XPNDR 1 TO XPNDR 2, NSP 1 DID NOT INDICATE BIT OR FRAME SYNC LOCK. TROUBLESHOOTING COULD NOT REPRODUCE THE SAME CONDITIONS AND ALL COMBINATIONS OF NSP/XPNDR OPERATED PROPERLY.</p> <p>THE SYSTEMS WILL BE USED NOMINALLY FOR THE FLIGHT. NO FURTHER TROUBLE SHOOTING IS ANTICIPATED.</p>	C N I	N Y	1 0 3	S T S	- 2 6
I N C O - 0 2	A	273:22:32 / 000:08:33	PDI DECOM 4 BIT SYNC WITHOUT DATA/ C. COUNTS	<p>AFTER IUS DATA RATE CHANGE TO 64KBPS AT DEPLOY + 32 MIN, PDI DECOM 4 MAINTAINED A BIT SYNC WITH NO DATA PRESENT.</p> <p>JSC FLIGHT CONTROL TEAMS HAVE SEEN A SIMILAR SIGNATURE TWO OTHER TIMES. THE FIRST TIME WAS DURING THE IUS/TDRS END-TO-END TEST CONDUCTED DURING THE STS-26 PRE-LAUNCH FLOW. THE SECOND TIME WAS DURING THE FLIGHT AT GMT 273:18:50. THE FIRST TWO TIMES THAT THIS OCCURRED, THE IUS WAS SENDING 64KBPS DATA VIA HARDLINE TO THE CIU AND THEN TO DECOM 3. BOTH TIMES THE BER WAS OUT OF TOLERANCE ON DECOM 4. WE FELT THAT WITH THIS SIGNATURE THAT WE HAD AN ALIASING OCCURRING DUE TO THE HARMONIC FREQUENCIES INVOLVED. WHEN THE BIT SYNC OCCURRED POST DEPLOY WE SAW THAT THE BER FOR DECOM 4 WAS IN TOLERANCE BUT NO SIGNAL WAS BEING RECEIVED FROM THE IUS. DECOM 4 WAS SOURCED TO 0 AND BIT SYNC AND BER WAS ELIMINATED. DECOM 4 WAS THEN TAKEN BACK TO SOURCE 5 AND THERE WAS NO RETURN OF THE BIT SYNC INDICATION. IT IS NOT CLEAR THAT THE CIU WAS STILL POWERED AT THIS TIME. WE INITIALLY CLOSED THE ANOMALY BUT NOW ARE PLANNING SOME TROUBLESHOOTING DURING PLANNED CSTC DSM COMMAND TESTS TO BE CONDUCTED DURING FD2 OR FD3. OUR PLAN IS TO RELOAD DECOM 4 TO SOURCE 5 DURING THE DSM TEST AND SEE IF THE BIT SYNC RETURNS.</p> <p>IMPACT: NONE PAYLOAD DEPLOYED, NO IMPACT TO ORBITER.</p> <p>RESOLUTION: CLOSED - DSM NASCOM TESTING HAS BEEN CANCELLED.</p>	C N L	N N	1 0 3	S T S	- 2 6

BOLDTYPE DENOTES CHANGES

P O S N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P L L	O R B	V E H	F L D R
I N C O - 0 3		274:13:42 / 000:22:05	OPS RCDR 2 MODULATION ANOMALY/ J. WILLIAMS	<p>WHILE REPOSITIONING OPS 2 OVER DKRS VIA A REWIND COMMAND DKRS REPORTED THAT THEY SAW MODULATION ON THE FM. FURTHER TROUBLESHOOTING WAS PERFORMED OVER CANS 15 SCENARIO AS FOLLOWS:</p> <p>OPS 1 RCDR SER; OPS 2 REWIND EOT AND THEN OPS 2 REWIND BOT. CANS REPORTED MODULATION ON BOTH FORWARD AND REVERSE DIRECTIONS, AND WERE ABLE TO LOCK ONTO AND PROCESS THE DATA.</p> <p>IMPACT: CANNOT REPOSITION OPS 2 WHILE DUMPING OPS 1, LINK INTERFERENCE.</p> <p>RESOLUTION: OPS 2, MODEL #4411900-005, SERIAL #1019 IS A NEW RCDR AND DOES NOT HAVE THE CAPABILITY OF INHIBITING SERIAL OUTPUT DURING REPOSITIONING.</p>	C N L	Y	1 0 3	S T S - 2 6	
I N C O - 0 4		274:15:42 / 001:00:06	KU-BAND ANTENNA FAILURE/ J. STAFFORD	<p>SHORTLY AFTER TDRS 17 AOS AT APPROXIMATELY 274:15:42 THE KU-BAND ANTENNA EXHIBITED POINTING PROBLEMS. AT HAW 18 AOS THE ANTENNA STARTED POINTING CORRECTLY, APPARENTLY WITHOUT INTERVENTION FROM THE CREW OR MCC. WHILE IN VIEW OF HAW AND WITH THE ANTENNA VIDEO AVAILABLE TO MCC IN REALTIME THE CREW MANUALLY SLEWED THE KU-BAND TO THE STOW ANGLES. AFTER STOPPING INPUT TO THE GIMBALS THE ANTENNA BEGAN TO OSCILLATE. THE OSCILLATIONS WERE STOPPED BY PLACING THE KU-BAND TO STANDBY. A STOW PROCEDURE WAS DEVELOPED JOINTLY BY THE MCC AND THE MER AND WAS SUCCESSFULLY PERFORMED BY THE CREW AT HAW 22. (REFERENCE MAR #16).</p> <p>IMPACT: ALL TV AND RECORDER DUMPS WILL BE ACCOMPLISHED VIA GROUND STATIONS USING S-BAND FM STATIONS.</p> <p>RESOLUTION: CLOSED - KU-BAND HAS BEEN STOWED AND WILL REMAIN STOWED FOR REMAINDER OF FLIGHT.</p>	C N L	Y	1 0 3	S T S - 2 6	
I N C O - 0 5		274:17:21 / 001:01:44	KU-BAND MODE 1 FRAME SYNC TELEMETRY FAIL/ C. COUNTS	<p>AT TIME SHOWN MSID V74X2612J FAILED HIGH. THIS IS A FALSE INDICATION OF A MODE 1 (216 KBPS) FORWARD LINK FRAME SYNC LOCK. IT IS NOT KNOWN WHETHER THIS FAILURE IS ASSOCIATED WITH THE KU-BAND SYSTEM FAILURE DESCRIBED IN INCO 4. THIS PARAMETER IS ROUTED VIA PF1, CARD 8, CHANNEL 2 KU SERIAL I/O CHANNEL. EVALUATION OF OTHER PARAMETERS ON THIS CHANNEL (PRIOR TO KU STOW AND POWER DOWN) DID NOT REVEAL ANY THAT WERE NOT IN THE EXPECTED CONFIGURATION. WITH THE KU SYSTEM POWERED OFF THERE IS NO FURTHER TROUBLESHOOTING THAT CAN BE PERFORMED.</p> <p>IMPACT: NONE - KU BAND FORWARD LINK NOT AVAILABLE FOR STS-26</p> <p>RESOLUTION: CLOSED - WILL REQUIRE POST FLIGHT CHECKOUT.</p>	C N L	Y	1 0 3	S T S - 2 6	

SYSTEMS ANOMALY LIST

P O S I T I O N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P O R B #	V E H #	F L L D R
I N C O - 0 6		277:02:12 / 003:10:35	PA 2 RF POWER OUT DROPS/ T. KALVELAGE	DOWNLINK SHOWED MORE DROPOUTS THAN EXPECTED. PLAYBACK DATA SHOWED THAT POWER AMP 2 RF OUT HAD SEVERAL ONE SECOND DURATION DROPS TO APPROXIMATELY HALF NORMAL OUTPUT. THIS WAS COMMON TO SEVERAL DROPOUT PERIODS. IMPACT: UNEXPECTED DROPOUTS COULD OCCUR. RESOLUTION: NONE. TROUBLESHOOTING IN WORK.	O P	N Y	1 0 3	S T S - 2 6
I N C O - 0 7 *		277:13:50 / 003:22:13	MADS BOT PERCENT TAPE ANOMALY/ R. LABRODE	AT LISTED GMT, THE MODULAR ANCILLIARY DATA SYSTEM (MADS) TAPE RECORDER WAS OBSERVED DURING ONE OF ITS NOMINAL "SNAPSHOT" MODE DATA TAKES. WE NOTICED THAT THE PERCENT TAPE (MSID V78Q9602A), WHICH HAS A RANGE OF 0 TO 100, READ 7% AS THE RECORDER REACHED BEGINNING OF TAPE (BOT), INSTEAD OF 0% AS EXPECTED. WE LATER COMMANDED THE RECORDER TO BOT, AND SAW THE SAME INDICATION (7% TAPE QUANTITY). IMPACT: ALL PERCENT TAPE READINGS WILL BE INACCURATE FOR THE MADS. NOMINAL MADS OPERATION IS POSSIBLE.	C L	N Y	1 0 3	S T S - 2 6

END OF ANOMALIES *BOLDTYPE DENOTES CHANGES

P O S N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P L L	O R B	V E H	F L T #	D R
M M A C S - 0 1	A	273:12:32 / -000:03:05	PERSONAL SUIT VENTILATION SYSTEM (PSVS) FUSE FAILURE/ M. MAHER J. SHIMP	TWO FAILED 3 AMP FUSES WERE REPLACED ON THE PAD WITH 5 AMP FUSES. FANS STARTED AND OPERATED NOMINALLY. ADDITIONALLY THREE 3 AMP FUSES, ONE 5 AMP FUSE AND SIX 6 AMP FUSES WERE GIVEN TO THE PLT AS SPARES (TEN SPARES TOTAL) FOR USE SHOULD SIMILAR FAILURES OCCUR DURING FAN START-UP FOR DEORBIT. DURING CREW INGRESS BOTH THE PLT'S AND MS1'S PSVS FANS EXPERIENCED BLOWN FUSES DURING ATTEMPT TO POWER FANS ON. FAN MOTOR START-UP CURRENTS CAUSED THE FAILURE. LATER DATA REVEALED THE 3 AMP FUSES IN THE PLT AND MS1'S VENTILATION FAN ASSEMBLY WERE INADVERTENTLY REPLACED WITH 10 AMP FUSES (REF SPAN-MER CHIT #010). ADDITIONALLY ONE 10 AMP AND SIX 15 AMP FUSES WERE GIVEN TO THE PLT TO STOW AS SPARES. THESE 10 AND 15 AMP FUSES HAVE TOO HIGH A RATING FOR SAFE PROTECTION OF THIS SYSTEM.	C N L	N N	N 1	0 3	S T S - 2 2 6	3
M M A C S - 0 2	B	273:14:37 / -000:01:00	M. MAHER	THE CREW HAS INSTALLED 5A FUSES FROM THE IFM PIN KIT IN ALL FIVE PSVS FANS AT GMT 275:16:30. THIS WILL PRECLUDE FURTHER FUSE FAILURES WHILE STILL PROVIDING ADEQUATE CIRCUIT PROTECTION. PRELAUNCH THE HYD SYS 3 CIRC PUMP PRESS XDUCER (V58P0337A) WAS BIASED LOW 80 PSI (AT OPERATING PRESSURE) IMPACT: NONE RESOLUTION: POST FLIGHT INSPECTION REQUIRED.	C N L	N N	N 1	0 3	S T S - 2 2 6	4
M M A C S - 0 3		273:15:37 / 000:00:00	APU 3 EGT XDCR/ J. WEDFORD	AT LIFT OFF, APU 3 EGT (EXHAUST GAS TEMPERATURE) 2 TRANSDUCER (V46T0340A) BECAME EXTREMELY ERRATIC, CYCLING BETWEEN 38° AND 957° F. IT IS CURRENTLY READING A CONSTANT 44° F. EGT 1 INDICATED NORMAL TEMPERATURES. IMPACT: NONE RESOLUTION: THE TRANSDUCER HAS FAILED.	C N L	N Y	N 1	0 3	S T S - 2 2 6	4

*BOLDTYPE DENOTES CHANGES

SYSTEMS ANOMALY LIST

P O S N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P / L	O R B	V E H #	F L D R
M M A C S - 0 4		273:15:51 / 000:00:14	APU 3 LOW CHAMBER P/ J. MEDFORD	DURING ASCENT, APU 3 GAS GENERATOR CHAMBER PRESSURE (V46P0320A) PEAKED ABNORMALLY LOW (ABOUT 930 PSI) EVEN AFTER BUBBLES IN THE SYSTEM HAD DISSIPATED. THE OTHER TWO APU'S PEAKED AT 1050-1100 PSI. IMPACT: NONE RESOLUTION: ENGINEERING HAS REQUESTED A POST-LANDING HYDRAULIC LOAD CHECKOUT TO LOOK FOR POSSIBLE CHAMBER ROUGHNESS.	C L	N	N	1 0 3	S T S - 2 6
M M A C S - 0 5		274:12:00 / 000:20:23	WSB SYS 1 GN2 RELIEF VALVE LEAK/ M. SCHWARTZ	WSB SYS 1 GN2 REGULATOR PRESSURE SHOWED A 3 PSI DECAY OVER THE FIRST 15 HOURS ON-ORBIT. DECAY THEN STOPPED. THIS INDICATES THAT THE GN2 RELIEF VALVE DID NOT FULLY SEAT FOR THE FIRST 15 HOURS ON-ORBIT. IMPACT: NONE RESOLUTION: POST FLIGHT INSPECTION REQUIRED.	C L	N	N	1 0 3	S T S - 2 6
M M A C S - 0 6		274:16:00 / 001:00:23	APU HEATER A DITHER/ J. MEDFORD	HEATERS DRIVEN BY THE FOLLOWING THERMOSTATS EXHIBITED ABNORMALLY NARROW CONTROL RANGE WITH THE "A" HEATERS SELECTED. S24A : APU 2 FUEL LINE HEATERS S37A : APU 3 FUEL PUMP HEATERS S11A : FUEL PUMP/PLV COOL SYS A H20 LINE HEATER TO APU 1 IMPACT: NONE RESOLUTION: POST FLIGHT INSPECTION REQUIRED.	C L	N	N	1 0 3	S T S - 2 6

BOLDTYPE DENOTES CHANGES

P O S N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P L L	O R B	V E H	F L D #
M M A C S - 0 7		275:10:00 / 001:18:23	APU HEATERS WIDE CONTROL RANGE/ T. TAMERLER	<p>THE FOLLOWING HEATERS EXHIBITED ABNORMALLY WIDE CONTROL RANGES:</p> <p>A HEATERS: APU 2 FUEL PUMP BYPASS LN - <u>MSID</u> V46TO228A APU 2 H2O SYS INJECTOR LN - V46TO502A S4A</p> <p>B HEATERS: APU 3 FUEL LN T2 - V46TO308A S34B APU 1 FUEL TEST LN T1 - V46TO183A S16B</p> <p>IMPACT: NONE</p> <p>RESOLUTION: POST FLIGHT INSPECTION REQUIRED.</p>	C L	N	N	1 0 3	S T S - 2 6
M M A C S - 0 8		277:12:55 / 003:21:18	PLBD READY- TO-LATCH IND/ J. MEDFORD	<p>DURING PLBD CLOSING, THERE WAS NO READY-TO-LATCH "A" INDICATION FOR THE STARBOARD FORWARD READY-TO-LATCH MODULE (V37X3435Y).</p> <p>IMPACT: NONE</p> <p>RESOLUTION: FAILED INDICATION OR POORLY RIGGED READY-TO-LATCH SWITCH.</p>	C L	N	N	1 0 3	S T S - 2 6
M M A C S - 0 9 *		277:16:42 / 004:01:05	APU 1 EGT XDCR/ J. MEDFORD	<p>ABOUT 5 MINUTES AFTER TOUCHDOWN, APU 1 EGT (EXHAUST GAS TEMPERATURE) 1 (V46TO142A) BECAME ERRATIC, CYCLING BETWEEN 38° AND ~950°F. EGT 2 INDICATED NORMAL TEMPERATURES.</p> <p>IMPACT: NONE</p> <p>RESOLUTION: THE TRANSDUCER HAS FAILED.</p>	C L	N	N	1 0 3	S T S - 2 6

END OF ANOMALIES *BOLDTYPE DENOTES CHANGES

SYSTEMS ANOMALY LIST

P O S I T I O N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P L L	O R B	V E H #	F L T R #
P R O P - 0 1		274:06:07 / 000:14:30	OMS CROSSFEED LINE (CENTER) TEMP SENSOR/ W. POWERS M. BARRY	OMS XFD LN C TEMP, V43T 6242A, APPEARED TO CYCLE NORMALLY UNTIL APPROXIMATELY 6 HOURS MET. SINCE THEN, THE MEASUREMENT HAS BEEN NEARLY CONSTANT AT 68°F, VERIFYING THE PROBLEM IS EITHER INSTRUMENTATION OR A DITHERING THERMOSTAT WITH EXCEPTIONALLY SMALL CYCLE. INTEND TO TROUBLESHOOT BY SWITCHING TO B XFEED HEATERS AS SOON AS PRACTICAL. AFTER SWITCHING TO THE B HEATER CIRCUIT ON THE OMS XFD LINES, THE OMS XFD LN C TEMP (V43T6242A) APPEARS TO BE CYCLING NORMALLY. THE ANOMALY APPEARS TO BE A FAILURE OF THE A THERMOSTAT AND NOT THE INSTRUMENTATION. NO FURTHER TROUBLESHOOTING IS PLANNED.	C L	N Y	1 0 3	1 0 3	S T S - 2 6
P R O P - 0 2		276:01:55 / 002:10:18	RIGHT OME COVER HEATER A/ W. POWERS	R OME COVER A HEATER THERMOSTAT (S-54) APPEARS TO BE CONTROLLING AT APPROXIMATELY 53 - 65 DEG. F. VICE 58.5 - 73 DEG. F. AS EXPECTED. INSTRUMENTATION IS V43T5720A. B HEATER IS CYCLING BETWEEN 60 AND 73 DEG. F. AS PREDICTED. INSTRUMENTATION IS NOT SUSPECT. 61-A DATA SHOWED SIMILAR CYCLE. IMPACT: PROBLEM IS EITHER A HEATER THERMOSTAT SET POINT SHIFT OR THERMOSTAT HAS BEEN CHANGED WITHOUT NOTIFICATION. RESOLUTION: 'A' HEATER CONTROLLING WITHIN ACCEPTABLE LIMITS. BOTH HEATERS USABLE AS IS. NO TROUBLESHOOTING PLANNED.	C L	N N	1 0 3	1 0 3	S T S - 2 6

END OF ANOMALIES **BOLDTYPE DENOTES CHANGES**

P O S I T I O N	R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L I M E N T	P L L	O R B	V E H	F L T #	D R
M C C - 0 1		273:12:00 /	MITS LAN WORK- STATIONS/B. CULBERTSON	MITS LAN WORKSTATIONS "LINUS" "FLASH" AND "MPAD" MEDS ARE BEING TRANSMITTED TO MOC AND NOT TO THE DSC. IMPACT: POSSIBLE DATA LOSS IF MOC/DSC SELECTOVER IS EXECUTED. RESOLUTION: WORKSTATION SOFTWARE WILL BE CORRECTED POST MISSION. WORKAROUND INCLUDES USE OF MEGADATA TERMINALS FOR MED INPUTS.	O P	N	N	1 0 3	S T S - 2 6	
M C C - 0 2		275:07:50 / 001:16:13	HOST #4 OC6 ABENDS/ A. DAVIS	HOST #4 DOWN BECAUSE OF CONTINUOUS OC6 ABENDS AND CPU USAGE AT 100%. IMPACT: THE OSC (HOST #3) WAS IMMEDIATELY SELECTED OVER TO, RESULTING IN A MINOR IMPACT OF 30 SECONDS WITHOUT TDRS DATA. RESOLUTION: DISCREPANCY REPORT #089100 WAS OPENED AND A STANDALONE DUMP WAS TAKEN FOR TROUBLESHOOTING.	O P	N	N	1 0 3	S T S - 2 6	

END OF ANOMALIES ***BOLDTYPE DENOTES CHANGES**

FLT: STS-26

CUTOFF MET: 004:01:00

MCCISTDN ANOMALY LIST

Date: 10/3/88

STDN Page: 1

P O S I T I O N	A P P R O X G M T / M E T D D: H H: M M	T I T L E / A U T H O R	D E S C R I P T I O N / I M P A C T / R E S O L U T I O N	I N F L I T	P L L	O R B I T	V E H I C L E #	F L T #	D R
STDN - 01	273:15:37 / 000:00:00	MILA S-BAND TRACK/B. CULBERTSON	MILA RANGING DATA HAD A LARGE BIAS AT LIFT-OFF. IMPACT: MILA S-BAND TRACKING DATA COULD NOT BE USED BY NAVIGATION PROCESSORS. RESOLUTION: TRACKING DATA GOOD AT HANDOVER FROM PDL BACK TO MILA. PROBLEM RESOLUTION UNKNOWN AT THIS TIME.	C	N	N	1	S	
STDN - 02	273:17:00 / 000:01:23	DAKAR RECORDER DUMP PROCESSING PROBLEM/B. CULBERTSON	DAKAR TRACKING STATION RECORDER DUMP PROCESSING SYSTEM IS RED. IMPACT: UNABLE TO PROCESS RECORDER DUMP DATA DURING ORBITS 1 + 2 THRU DAKAR. RESOLUTION: PATCH PANEL REPAIRED ON SITE. SYSTEM OPERATIONAL AT 273:18:15	C	N	N	1	S	
STDN - 03	276:14:31 / 002:22:54	WTR S-BAND UPLINK/ N. TALBOTT	UNABLE TO LOCK THE NSP FRAME SYNC USING THE WTR VANS SYSTEM. NO COMMAND/VOICE OR TRACK CAPABILITY USING THIS STATION. DOWNLINK TM AND VOICE IS GOOD.	O	N	N	1	S	
STDN - 04	276:14:31 / 002:22:54	WTR UHF DOWNLINK/ N. TALBOTT	WTR UHF TRANSCIVER UNABLE TO RECEIVE UHF DOWNLINK ON EITHER 259.7 OR 296.8.	O	N	N	1	S	

***BOLDTYPE DENOTES CHANGES**

POS N	REV	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	INFLIT	PORLB	VEH	FLDR #
5		276:20:25 / 003:04:48	GWM WB LINES/J. WELLS	LOST GWM DUPLEX 56KBS PRIOR TO THEIR REV 52. NO CMD, A/G VOICE, OR TLM DATA. HAD UHF A/G VOICE AT GWM AND TLM DATA THROUGH GTS. LOST THE OTHER 2 56KBS LINES AT 2040Z. ALL LINES STILL DOWN AT GWM REV 53, 276/2213Z, MET 003:06:36. LINES BACK UP FOR REV 54.	CL	1	0	3

END OF ANOMALIES **BOLDTYPE DENOTES CHANGES**

PAYLOAD ANOMALY LIST

P O S N	P R E V	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	I N F L T	P L L	O R B	V E H	F L D #
P Y L D - 0 1 !	A	273:05:29 / -000:09:20	OASIS TAPE STICKING/ K. EDWARDS T. BAUM L. SHALINSKY	DURING THE L-9HR 20 MIN OASIS COMMANDING (SEQ 15-0444), WHEN COMMANDED TO LOW BIT RATE THE TAPE STUCK FOR APPROX 30 SEC BEFORE BEGINNING TO PULL TAPE. THIS IS A KNOWN ANOMALY AND IS NOT A CONSTRAINT TO OASIS COMMANDING. SUBSEQUENTLY, THE OASIS TAPE STUCK FOR APPROXIMATELY 10 SECONDS AT THE BEGINNING OF THE OMS-2 DATA TAKE. IT RESPONDED NOMINALLY THROUGHOUT THE DEPLOY ACTIVITIES AND THEN STUCK AGAIN DURING SNAPSHOT DATA TAKES AT 7 + 43 MET AND 8 + 20 MET. TO TROUBLESHOOT, THE OASIS WAS MANUALLY COMMANDED TO LOWBIT RATE. IT TOOK 39 SECONDS TO START PULLING TAPE. THE OASIS WAS THEN COMMANDED BACK TO SNAPSHOT MODE AND RESPONDED NOMINALLY UNTIL END OF MISSION.	C L	Y	N	1	S
P Y L D - 0 2	B	273:16:50 / 000:01:13	BIT HIT/ T. BROWN	GYRO 4 BIT COUNTER INCREMENTED FROM -25 TO -24. RESULT OF A DATA HIT DURING ONE 20 MSEC DATA CHECK IN COMPUTER. STILL CONFIGURED TO PENTAD OF GYROS. IMPACT: NONE	C L	N	N	1	S
P Y L D - 0 3	A	273:19:34 / 000:03:57	POSSIBLE ROW/DRIVER CROSSSTRAP FAILURE/ T. BROWN	DURING B-SIDE TT&C TEST AT PDCO, ROW DRIVERS 7, 8, AND 9 DID NOT EVENT OUT IN THE TELEMETRY DISPLAY. PROBLEM IS PROBABLY TLM DISPLAY BUFFER OVERFLOW. IF PROBLEM IS ONBOARD VEHICLE, THERE IS NO IMPACT UNLESS AVONICS STRING A GOES NOT OK. IF A SIDE WENT NOT OK BEFORE XFER TO STAGE II POWER, SIDE A WOULD NOT XFER TO STAGE II POWER. ALSO POSSIBLE LOSS OF ANTENNA SWITCHING. THIS HAS BEEN DETERMINED TO BE A GROUND PROCESSING PROBLEM AND NOT A PAYLOAD ANOMALY.	C L	N	N	1	S

*BOLDTYPE DENOTES CHANGES

PAYLOAD ANOMALY LIST

POSN	REV	APPROX GMT/MET DD:HH:MM	TITLE/AUTHOR	DESCRIPTION / IMPACT / RESOLUTION	INFL	PNL	ORBL	VEH#	FLTR
PYLD-04		273:22:02 / 000:06:25	IUS RCS TANK 2 ISOVALVE/ N. CARR	POSTDEPLOY TELEMETRY INITIALLY INDICATED ONLY RCS TANK 1 ISO VALVE OPENED. RESOLUTION: SUBSEQUENT TELEMETRY SHOWED THE PROPER TANK 1 & 2 PRESSURE SIGNATURES INDICATING BOTH ISO VALVES WERE OPEN. SUSPECT TRANSDUCER PROBLEM. IMPACT: NONE	CL	CL	CL	CL	CL
PYLD-05		273:21:50 / 000:06:13	IUS TILT TABLE/ K. EDWARDS	THE IUS TILT TABLE SEEMED TO BE UNSTABLE AT DEPLOYMENT. AT THE MOMENT OF DEPLOY THE TILT TABLE MOVED MORE THAN NORMAL. THIS WAS VERIFIED BY LOOKING AT PLAYBACKS OF THE STS-26 DEPLOYMENT AND THE STS-6 DEPLOYMENT. THE REASON FOR THE FAILURE CAN ONLY BE VERIFIED POST FLIGHT. CURRENTLY, THE TILT TABLE IS LOCKED AT THE -6 DEG POSITION AND IS NOT A PROBLEM FOR ENTRY AND LANDING. IMPACT: NONE RESOLUTION: TBD POSTLANDING	CL	CL	CL	CL	CL

END OF ANOMALIES ***BOLDTYPE DENOTES CHANGES**

10/3/88 STS-26
CHRONOLOGICAL SORT

Position	Revision	Flight	GMT	Title
INCO-01		STS-26	273:02:00	NSP 1/XPNDR 2 INTERFACE ANOMALY/ H. BLACK
			-000:11:59	
PYLD-01		STS-26	273:05:29	OASIS TAPE STICKING/ K. EDWARDS
	A		-000:09:20	
GNC-01	B	STS-26	273:06:12	LEFT OMS SEC TVC RPC FAILURE/ S. ELSNER
	C		000:09:25	
MCC-01	D	STS-26	273:12:00	MITS LAN WORK-STATIONS/ B. CULBERTSON
MMACS-01		STS-26	273:12:32	PERSONAL SUIT VENTILATION SYSTEM (PSVS) FUSE FAILURE/ M. MAHER
	A		-000:03:05	
MMACS-02	B	STS-26	273:14:37	HYD SYS 3 CIRC PUMP PRESS XDUCER BIASED LOW/ T. TAMERLER
			-000:01:00	
BSTR-03		STS-26	273:15:37	MPS GOX FLOW CONTROL VALVE/ MER/J. GRIFFIN
			000:00:00	
DPS-01		STS-26	273:15:37	MTU BITE INDICATION/ D. TEE
	A		000:00:00	
				P. TICE

10/3/88 STS-26
CHRONOLOGICAL SORT

Position	Revision	Flight	GMT	Title
EECOM-01		STS-26	273:15:37 / 000:00:00	FC2 PH HIGH/ L. MINTER
MMACS-03		STS-26	273:15:37 / 000:00:00	APU 3 EGT XDCR/ J. MEDFORD
STDN-01		STS-26	273:15:37 / 000:00:00	MILA S-BAND TRACK/ B. CULBERTSON
BSTR-01		STS-26	273:15:39 / 000:00:02	MPS PNEUMATIC HELIUM INTERNAL LEAK/ J. DINGLER
EECOM-04		STS-26	273:15:40 / 000:00:03	EVAP OUT T DEBOND/ D. MOLINA
EECOM-02	A B C	STS-26	273:15:41 / 000:00:04	FES HI LOAD DUCT FREEZE-UP/ D. MOLINA
BSTR-02		STS-26	277:15:35 / 003:23:58	R. WANG D. MOLINA Q. CARELOCK
MMACS-04		STS-26	273:15:45 / 000:00:08	RIGHT SSME LH2 INLET PRESSURE/ M. DINGLER
EECOM-03		STS-26	273:15:51 / 000:00:14	APU 3 LOW CHAMBER P/ J. MEDFORD
	A	STS-26	273:16:07 / 000:00:30	O2 PCS SYS 1 AND 2 SPLY P TRACKING O2 MANF P/ J. GREER
				D. WILLIAMS

10/3/88 STS-26
CHRONOLOGICAL SORT

Position	Revision	Flight	GMT	Title
PYLD-02		STS-26	273:16:50 / 000:01:13	BIT HIT/ T. BROWN
STDN-02		STS-26	273:17:00 / 000:01:23	DAKAR RECORDER DUMP PROCESSING PROBLEM/ B. CULBERTSON
PYLD-03	A	STS-26	273:19:34 / 000:03:57	POSSIBLE ROW/DRIVER CROSTRAP FAILURE/ T. BROWN
PYLD-05		STS-26	273:21:50 / 000:06:13	IUS TILT TABLE/ K. EDWARDS
PYLD-04		STS-26	273:22:02 / 000:06:25	IUS RCS TANK 2 ISOVALVE/ N. CARR
INCO-02		STS-26	273:22:32 / 000:08:33	PDI DECOM 4 BIT SYNC WITHOUT DATA/ C. COUNTS
PROP-01	A B	STS-26	274:06:07 / 000:14:30	OMS CROSSFEED LINE (CENTER) TEMP SENSOR/ W. POWERS M. BARRY
MMACS-05	A	STS-26	274:12:00 / 000:20:23	WSB SYS 1 GN2 RELIEF VALVE LEAK/ M. SCHWARTZ
INCO-03		STS-26	274:13:42 / 000:22:05	OPS RCDR 2 MODULATION ANOMALY/ J. WILLIAMS

10/3/88 STS-26
CHRONOLOGICAL SORT

Position	Revision	Flight	GMT	Title
INCO-04		STS-26	274:15:42 / 001:00:06	KU-BAND ANTENNA FAILURE/ J. STAFFORD
MMACS-06		STS-26	274:16:00 / 001:00:23	APU HEATER A DITHER/ J. MEDFORD
INCO-05		STS-26	274:17:21 / 001:01:44	KU-BAND MODE 1 FRAME SYNC TELEMETRY FAIL/ C. COUNTS
MCC-02		STS-26	275:07:50 / 001:16:13	HOST #4 0C6 ABENDS/ A. DAVIS
EECOM-05	A	STS-26	275:09:18 / 001:17:42	DEGRADATION OF HUM SEP B/ P. CERNA
MMACS-07		STS-26	275:10:00 / 001:18:23	APU HEATERS WIDE CONTROL RANGE/ T. TAMERLER
GNC-02		STS-26	275:11:00 / 001:19:23	+ X COAS MOUNTING NUT MISSING/ D. MILLER
PROP-02	A	STS-26	276:01:55 / 002:10:18	RIGHT OME COVER HEATER A/ W. POWERS
GNC-03		STS-26	276:13:26 / 002:23:49	DEDICATED DISPLAY CHECKOUT DISCREPANCIES/ J. BANTLE
STDN-03		STS-26	276:14:31 / 002:22:54	WTR S-BAND UPLINK/ N. TALBOTT

10/3/88 STS-26
CHRONOLOGICAL SORT

Position	Revision	Flight	GMT	Title
STDN-04		STS-26	276:14:31 / 002:22:54	WTR UHF DOWNLINK/ N. TALBOTT
EECOM-06		STS-26	276:18:51 / 003:03:34	DEGRADED WCS SEPARATOR 1/ D. WILLIAMS
STDN-05		STS-26	276:20:25 / 003:04:48	GWM WB LINES/ J. WELLS
EECOM-07	A	STS-26	276:20:38 / 003:05:01	SPLY AND WST NOZZLE TEMPS/ D. WILLIAMS
INCO-06		STS-26	277:02:12 / 003:10:35	P. CERNA PA 2 RF POWER OUT DROPS/ T. KALVELAGE
MMACS-08		STS-26	277:12:55 / 003:21:18	PLBD READY-TO-LATCH IND/ J. MEDFORD
INCO-07		STS-26	277:13:50 / 003:22:13	MADS BOT PERCENT TAPE ANOMALY/ R. LABRODE
DPS-02		STS-26	277:16:28 / 004:00:51	BFS I/O ERROR CRT 3 FAULT MESSAGES/ T. KEELER
MMACS-09		STS-26	277:16:42 / 004:01:05	APU 1 EGT XDCR/ J. MEDFORD

PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -1	OMS Gimbal Standby Enable 1 Fail	273:06:40	During prelaunch OMS Gimbal Profile Test, left secondary (standby) TVC did not drive actuators with RPC 1 enable. During post OMS 2 Gimbal check RPC-2 tripped off after some movement of OMS TVC which indicates RPC-2 functional. No mission impact <u>Planned Turnaround Action:</u> Trouble shoot to isolate the problem. Replace defective component. JSC change LCC/OMRS.	GNC-01	J. Vernon J2781 to be scheduled at PRCB
STS-26 -2	NSP-1 Frame Synchronization Unlock(Transponder-2)	273:02:30	During prelaunch comm c/o uplink was switched from xponder 1 to xponder 2. NSP 1 did not indicate bit or frame sync. Troubleshooting couldn't repeat. Could lose cross strap capability if problem repeats. <u>Planned Turnaround Action:</u> Trouble shoot to isolate the problem.	INCO-1	M. Schmalz Chit in Dwyn to JSC COB 10/6.
STS-26 -3	MS-1/PLT suit vent fans failed	273:12:33 273:12:48	During prelaunch ingress both MS-1 and PLT suit fans failed. Fuses replaced with 10 Amp fuses prelaunch. Crew replaced 10 Amp fuses with 5 Amp fuses from IFM kit. <u>Planned Turnaround Action:</u> JSC review design and modify. KSC review VIT procedures to include SR&QA.	MMACS-01	F. McAllister

NASA-JSC

PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -4	Instrumentation a) APU 3 EGT transducer -erratic V46T0340A b) SSME3 LH ₂ inlet pressure-erratic (V41P1300C) c) APU #1 EGT (46T0142A) d) HYD SYS #1 "B" supply press- biased (V58P0115A) e) Circ pump press #3 (V58P0367A)-biased f) SSME LH ₂ (V41P1200C)-erratic g) Freon loop 2 evap out temp V61T1407A didn't track freon loop 1 TDCR.		Planned Turnaround Action: Trouble shoot to isolate the problem. Replace defective component	MMACS-02 BOOSTER- 02	J. Miller
STS-26 -5	Flash evaporator system a) Ascent high load evaporator freezing b) Entry FES shutdown	273:15:41	Suspected high load evap freezing during ascent. FES temp adjusted to high set point (57° vs 38°F) during first night in order to warm FES. Reentry procedure developed to determine if the high load evaporator FES will be available for entry. FES shutdown occurred after initiation of OMS deorbit burn. Planned Turnaround Action: Check controllers, system "A" valves, boroscope cannister. Depending on results, remove & replace.	EECOM-02	H. Rotter Chit J2776 PRCB Fri. 10/7 Chit J2780 OV104 FES c/o PRCB Thurs 10/6

PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -6.	.Ku-band antenna: a) Failed self test b) Did not follow pointing commands c) Oscillated when attempting to stow	274:15:15	The antenna failed self test shortly after deployment. Also, antenna would not follow pointing commands. When antenna was manually slewed to stow position, antenna oscillations were observed. Antenna power switched to standby and oscillations ceased. Stow procedures developed and used successfully. Loss of KU band antenna will not significantly impact any mission objective. OV104 guide lock pin operation verified. <u>Planned Turnaround Action:</u> System test & trouble shoot. Remove DA from orbiter 102 in case we need it.	INCO-04	M. Schmalz 3 Chits J2774 OV103 STS-29 J2772 Closed OV102 DA removal J2775 Closed OV104 test All Chits approved work scheduled for Wed. 10/12
STS-26 -7	Gox flow control valves on SSME 1 and 2 operated sluggishly.	273:15:37	Gox flow control valve 1 and 2 (SSME 1 and 2) operated sluggishly during first cycle. This operation did not impact ET tank pressurization. Planned postflight inspection of valves. <u>Planned Turnaround Action:</u> Boroscope inspection of body for contamination. Remove 3 valves & send back to vendor. Clean & send to KSC for reinstallation.	BOOSTER-03	P. Cota Chit J2779 in work at . RI- Dwny. PRCB Thurs. 10/6

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PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26-8	COAS adapter plate could not be mounted properly	275:11:02	During COAS alignment at forward station, crew could not secure adapter plate with the hold down screw. Nut plate may be missing on panel 01. <u>Planned Turnaround Action:</u> JSC will evaluate crew debriefing item, and take corrective action.	GNC-02	F. McAllister
STS-26-9	WSB Sys 1 GN ₂ Relief Valve Leak	273:15:11	GN ₂ pressure showed a 3 psi decay over the first 15 hours on-orbit. Decay then stopped. Indicates that GN ₂ relief valve did not fully seat for the first 15 hours on-orbit. <u>Planned Turnaround Action:</u> KSC Cycle valve & leak check. Remove & replace if required.	MMACS-5	W. Tuthill
STS-26-10	Waste collection system fan separator 1 showed indications of flooding	276:18:51	WCS fan separator 1 exhibited stall currents for 80 seconds. Inverter bus 1 current and voltage measurements verify WCS switch to fan separator 2 which is operating normally. <u>Planned Turnaround Action:</u> Remove & replace. It comes out with potty module which is removed post flight	EECOM-6	E. Winkler Chit J2777 at JSC. PRCB Thurs 10/6 KSC will work Thurs 10/13
STS-26-11	Starboard payload bay door forward ready to latch indicator 'A' talkback did not function.	277:13:07	During payload bay door closing the starboard forward ready to latch indicator did not work. <u>Planned Turnaround Action:</u> Trouble shoot to isolate fault. Remove & replace indicator if required.	MMACS-08	L. Moore

PROBLEM TRACKING LIST		STS-26		DATE	PAGE
				10-06-88	5
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -12	APU-3 low chamber press	273:15:37	APU #3 performance indicated low chamber pressure during all APU runs. Planned Turnaround Action: JSC evaluate. Remove & replace if required.	MMACS-4	W. Scott KSC will recommend when to change.
STS-26 -13	Rt wing TPS damage		Approx. 6" x 18" x 1 1/2" TPS damage on Rt wing lower surface noted post flight. Possible debris during ascent. Planned Turnaround Action: Inspect & repair damage to OV103 JSC/KSC review & analyze photo coverage. Trajectory analysis.		J. Smith Chit J2771 approved 10/4 PRCB
STS-26 -14	4" LH2 ET/Orbiter disconnect leak.		Internal leak occurred prelaunch 'audible' leak reported postlanding. Planned Turnaround Action: Troubleshoot to isolate fault.		L. Jenkins Dydrren reports contamina- tion on seat

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PROBLEM TRACKING LIST		STS-26		DATE	PAGE
NO.	TITLE	TIME	COMMENTS	MOD NO.	RESP. MGR.
STS-26 -15	OPS RCDR 2 modulation anomaly	274:13:42	<p>While repositioning OPS 2 over DKRS via a rewind command DKRS reported they saw molulation on the FM. Confirmed over cans.</p> <p><u>Planned Turnaround Action</u></p> <p>Confirmed that RCDR had improper configuration. Will change configuration to conform to design.</p> <p>13:00 CDT 10-7-88</p> <p>David W. Camp</p> <p>David W. Camp, Manager, Flight Evaluation Office</p>	INCO-3	Edmiston

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