TRMM-490-165
REVISION: INITIAL

TROPICAL RAINFALL MEASURING MISSION (TRMM)

PROJECT SCHEDULE BASELINE DOCUMENT (PSBD)

NOVEMBER 23, 1993

GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

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PROJECT SCHEDULE BASELINE DOCUMENT FOR THE TROPICAL RAINFALL MEASURING MISSION CHANGE RECORD PAGE

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TRMM 490-165
REVISION: INITIAL
NOVEMBER 23, 1993

TROPICAL RAINFALL MEASURING MISSION

PROJECT SCHEDULE BASELINE DOCUMENT

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1.0 INTRODUCTION

The TRMM Project Schedule Baseline Document (PSBD) establishes the formal TRMM baseline schedule. It is developed and maintained by the Code 490 Project Office and consists of three parts: 1) TRMM major project milestones, 2) TRMM project control milestones, and 3) the TRMM observatory integration & test schedule. The purpose of the PSBD is twofold: to identify a basis against which to measure current schedule progress, and to provide a mechanism to control schedule changes.

2.0 MAJOR PROJECT MILESTONES

TRMM's major project milestones and corresponding schedule dates are:

(1) System Concept Review (SCR) - COMPLETED FEBRUARY 1991

(2) Preliminary Design Review (PDR) - COMPLETED JULY 1992

(3) Critical Design Review (CDR) - COMPLETED OCTOBER 1993

(4) Pre-Environmental Test Review (PER) - JANUARY 10 - 11, 1996

(5) Pre-Shipment Review (PSR) - FEBRUARY 6 - 10, 1997

(6) Launch Readiness - AUGUST 16, 1997

Major project milestones provide the framework for overall planning and scheduling of the TRMM spacecraft segment, instrument segment, and ground segment developments, system integration and test, shipping and delivery, and launch site preparations.

The schedule for these milestones can only be changed with the approval of the TRMM Configuration Control Board (CCB).

3.0 PROJECT CONTROL MILESTONES

The project control milestones are events which the TRMM Project Office considers critical. These include, but are not limited to, interface milestones such as the delivery of hardware or software between TRMM subsystems or elements. These milestones can also represent the completion of major stages of work within a given subsystem or element. The completion dates of the project control milestones are commitments by the responsible organizations (e.g. Code 712, Code 902, Marshall Space Flight Center, etc.) to the TRMM Project Office to accomplish these events as planned. These milestones are incorporated into the TRMM intermediate schedules.

Baseline project control milestones cannot be changed without the approval of the TRMM Project Office. As milestone changes are approved, the project schedulers will maintain a change notice log of the outstanding changes which must be incorporated into the PSBD. When five or more changes have accumulated in the change notice log, or when otherwise required, a Configuration Change Request (CCR) will be generated to formally revise the PSBD. As planning continues on TRMM, additional project control milestones can be added to the PSBD.

TRMM's project control milestone list is contained in Appendix A.

4.0 OBSERVATORY I&T SCHEDULE

The detailed observatory integration & test (I&T) schedule as contained in the project logic network is the third part of the TRMM baseline schedule. It identifies the sequence of activities and events beginning with the installation of the RCS Propellant Tank Module into the Spacecraft Structure and ends with the completion of the TRMM End-To-End System Test. Changes to the observatory I&T schedule require approval of the CCB.

Three months of schedule contingency has been allocated for problems that may occur during integration and test. This contingency is similar to a

4.0 OBSERVATORY I&T SCHEDULE - cont'd.

financial management reserve and can only be allocated by the Project Manager with the review and concurrence of the TRMM CCB.

Also included in the observatory integration & test schedule are activities for: 1) pre-shipment review, 2) packing, 3) shipment to Japan, 4) launch site preparations, 5) launch site TDRS end-to-end test, 6) launch site hard-Line data flow, and 7) launch readiness. These activites have been allocated a preliminary schedule budget and will be definitized as future planning continues.

The observatory integration & test schedule is contained in Appendix B.

5.0 PROJECT LOGIC NETWORK

As a "living" plan which is continually evolving, the detailed TRMM project logic network (PLN) is not a formal part of the PSBD. Rather, it is the "roadmap" to accomplishing the work necessary to meet the major project milestones and project control milestones. However, a baseline version of the PLN is maintained against which current progress is measured. Unilateral modifications to the PLN by the responsible subsystem or technical managers are permitted provided they do not impact the project control milestones or the program operating plan (POP) budget phasing for the current period.

APPENDIX A

TRMM PROJECT CONTROL MILESTONE LIST

TROPICAL RAINFALL MEASURING MISSION
PROJECT CONTROL MILESTONE & TOTAL FLOAT REPORT

PREPARED BY: TRMM SCHEDULING
QUESTIONS/COMMENTS: W. MAJEROWICZ 6-5622

DATA DATE 15APR94
REPORT DATE 10MAY94
PAGE NO. 12:05

ACTIVITY IDENTIFIER	ACTIVITY DESCRIPTION	BASELINE DELIVERY DATE	BASELINE TOTAL FLOAT
S/C STRUCTURE SUBSYSTEM			
STX0040	CENTRAL CYLINDER (CC) TOOLING AND ASSEMBLY	10JAN94	12
STX0070	LBS TOOLING AND ASSEMBLY	25APR94	14
STX0130	UISP ASSEMBLY	21APR94	21
STX0140	LISP ASSEMBLY	21APR94	16
STX0180	LISP / LBS INTEGRATION	09MAY94	14
ST0903	S/C STRUCTURE ASSY READY FOR MECHANICAL TESTING	30JUN94	12
ST1010	S/C STRUCTURE READY FOR OBS I&T	30DEC94	12
ST2220	LBS MOCK-UP READY FOR HARNESS FABRICATION	01DEC93	55
REACTION CONTROL SUBSYSTEM			
RCS0279	ISO VALVE READY FOR PCM I&T	01JUN94	75
RCS0052	THRUSTER READY FOR I&T	12JAN95	35
RCS0097	PRESSURANT TANK READY FOR I & T	01APR94	218
RCS0189	TRANSDUCER READY FOR PCM I&T	01JUN94	75
RCS0142	PROPELLANT TANKS READY FOR I&T WITH PTM	01JUL94	39
RCS12027	FILL & DRAIN MODULE READY FOR OBS I&T	21DEC94	14
RCS16052	PROPELLANT TANK MODULE READY FOR OBS I&T	21DEC94	14
RCS04042	PROPELLANT CONTROL MODULE READY FOR OBS I&T	21DEC94	14
ELECTRICAL SUBSYSTEM			
ELHA1025	ISP & LBS HARNESSES READY FOR OBS I&T	26JAN95	55
ELPSD100	SPSDU READY FOR OBS I&T	19OCT94	176
ELPSD200	IPSDU READY FOR OBS I&T	13MAR95	79
ELPSI170	PSIB READY FOR PSE CHECKOUT	30NOV94	53
EG0270	EGSE READY FOR OBS I&T	10JAN95	86
POWER SUBSYSTEM			
POSA695	SOLAR ARRAY FLT PANELS READY FOR FLIGHT WING I&T	18AUG95	30
POBAT850	TRMM FLT SUPER NiCd BATTERIES READY FOR OBS I&T	20JUL95	311
POBAT980	SPARE SUPER NiCd (OPT A) BATTERIES READY FOR I&T	28MAR96	139
POPOW146	REFURBISHED SPRU READY FOR PSE CHECK-OUT	26APR94	203
POPOW136	SPRU (NEW BUILD) READY FOR PSE CHECKOUT	22NOV94	118
POPOW271	PBIU READY FOR PSE CHECK-OUT	09DEC94	46
POPOW241	PSE C/O COMPLETE, PSE READY FOR OBS I&T	09MAR95	46

TROPICAL RAINFALL MEASURING MISSION
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ACTIVITY IDENTIFIER	ACTIVITY DESCRIPTION	BASELINE DELIVERY DATE	BASELINE TOTAL FLOAT
C&DH SUBSYSTEM			
CDH5046	FIBER OPTIC BUS ETU HDWR READY FOR HARNESS WORK	15OCT93	86
CDH9022	FREQ STANDARD READY FOR SDS FLT UNIT BUILD	01APR94	151
CDH9015	FIBER OPTIC FLT HDWR READY FOR HARNESS FAB	16DEC93	224
CDH2024A	C&DH BREADBOARD SET #2 READY FOR FDS BUILD 3	06JUL93	0
CDH2172	C&DH ETU SDS BOX READY FOR FSW IV&V LAB	08FEB94	101
CDH2360	C&DH FLT UNIT SDS BOX READY FOR OBS I&T	06JAN95	83
FLIGHT DATA SOFTWARE SUBSYSTEM			
FDS106	FDS B1 READY FOR ACS S/W LAB USAGE	26MAR93	0
FDS111	FDS B2 READY FOR S/C SIM DEV USAGE	15JUN93	0
FDS117	FDS BUILD 3 READY FOR ACS S/W BUILD 3 DEV	15DEC93	83
FDS122	FDS BUILD 4 READY FOR INTEGRATION W/ACS B4	18JUL94	110
ATTITUDE CONTROL SUBSYSTEM			
ACP519	MAGNETIC TORQUER BAR READY FOR OBS I&T	13DEC93	395
ACP077A	3 AXIS MAGNETOMETER READY FOR OBS I&T	28FEB94	344
ACP320A	REACTION WHEEL ASSEMBLY READY FOR OBS I&T	18OCT94	182
ACP146	COARSE SUN SENSORS READY FOR OBS I&T	10APR95	64
ACP286	EARTH SENSOR ASSEMBLY READY FOR OBS I&T	20JAN95	119
ACP181	IRU READY FOR OBS I&T	14DEC94	143
ACP425A	DIGITAL SUN SENSOR READY FOR OBS I&T	10APR95	64
ACS060A	ENGINE VALVE DRIVER READY FOR OBS I&T	22DEC94	137
ACS147	ACE S/W B1 READY FOR B2 DEVELOPMENT USAGE	01OCT92	0
ACS152	ACE S/W B2 READY FOR B3 DEVELOPMENT USAGE	14MAY93	0
ACS156	ACE S/W B3 READY FOR B4 DEVELOPMENT USAGE	01NOV93	79
ACS159	ACE S/W B4 READY FOR FLT UNIT INTEGRATION	16MAY94	79
ACS175A	ACS S/W B1 READY FOR B2 DEVELOPMENT USAGE	06OCT93	32
ACS182	ACS S/W BUILD 2 READY FOR BUILD 3 DEV USAGE	30MAR94	50
ACS187	ACS S/W BUILD 3 READY FOR FDS INTEG TESTING	22JUL94	49
ACS192	ACS S/W BUILD 4 READY FOR FDS INTEG TESTING	07NOV94	32
ACS197	ACS S/W BUILD 5 READY FOR INTEGRATION TESTING	15MAR95	32
COMMUNICATIONS SUBSYSTEM			
COM353	SOLID STATE POWER AMP READY FOR OBS I&T	24APR95	89
COM473	HIGH GAIN ANTENNA READY FOR HGADS I&T	26MAY95	46

TROPICAL RAINFALL MEASURING MISSION
PROJECT CONTROL MILESTONE & TOTAL FLOAT REPORT

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ACTIVITY IDENTIFIER	ACTIVITY DESCRIPTION	BASELINE DELIVERY DATE	BASELINE TOTAL FLOAT
COMMUNICATIONS SUBSYSTEM			
COM093	RF COMBINER BOX READY FOR OBS I&T	29MAR95	107
COM393	RF TRANSFER SWITCHES READY FOR OBS I&T	28MAR95	108
COM563	RF TEST SET READY FOR TRANSPONDER #1 CHECKOUT	27OCT94	190
COM513	OMNI DIRECTIONAL ANTENNA FOR OBS I & T	29MAR95	107
COM309	TRANSPONDER #1 READY FOR OBS I&T	28NOV94	190
COM310	TRANSPONDER #2 READY FOR OBS I&T	29NOV94	189
DEPLOYABLES SUBSYSTEM			
GIM047	LOT 1 GS ETU'S (2) READY FOR ETU GIMBAL/SADA I&T	11FEB94	110
GIM276	LOT 2 GS FLIGHT READY FOR SADA & HGA INTEG	04MAR94	232
GIM274	LOT 3 ACTUATORS READY FOR SADA INTEGRATION	11MAR94	229
GIM067	FLIGHT GIMBAL READY FOR HGAS I&T	30MAR95	87
GIM068	FLIGHT GSACE READY FOR S/C I&T	30MAR95	87
DEHGAS1031	HGAS READY FOR OBS I&T	20SEP95	46
DES105	SADDS FLIGHT SUBSTRATE FAB & DELIVERY	07FEB94	163
DES101	QUAL SUBSTRATE READY FOR SOLAR ARRAY TESTING	20JUL93	41
DES08021	SADDS READY FOR OBS I&T	24APR96	30
DES02016	FLIGHT SADA READY FOR NEXT HIGHER ASSEMBLY	09MAY95	149
THERMAL CONTROL SUBSYSTEM			
TH032	THERMISTORS READY FOR OBSERVATORY I&T	28FEB95	33
TH063	HEATERS READY FOR OBSERVATORY I&T	14FEB95	42
TH083	HEAT PIPES READY FOR OBS I&T	22AUG95	42
TH092	LOUVERS READY FOR OBSERVATORY I&T	16OCT95	39
PRECIPITATION RADAR			
PREND1	PR READY FOR OBS I&T	25OCT95	12
CLOUDS & EARTH'S RADIANT ENERGY SYSTEM (CERES)			
CERES001	CERES READY FOR OBS I&T	15SEP95	29
LIGHTNING IMAGING SENSOR (LIS)			
LIS001	LIS READY FOR OBS I&T	28JUN95	53
TRMM MICROWAVE IMAGER (TMI)			
TMI001	TMI READY FOR OBS I&T	28AUG95	32
VISIBLE AND INFRARED SCANNER (VIRS)			
VIRS001	VIRS READY FOR OBS I&T	31JUL95	42

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ACTIVITY IDENTIFIER	ACTIVITY DESCRIPTION	BASELINE DELIVERY DATE	BASELINE TOTAL FLOAT
VISIBLE AND INFRARED SCANNER (VIRS)			
I&T COMPUTER SYSTEM			
GSI221	I&T CS B2 HDWR READY FOR S/W LAB USAGE	12MAY93	0
GSI321	I&T CS B3 (UPGRADE) READY FOR S/W LAB USAGE	15JUL93	93
GSI417	I&T CS B4 (HDWR) READY FOR THE OBS I&T LAB	09JUN94	41
GSI517	I&T CS B5 (UPGRADE) READY FOR USE IN S/W LABS	27JAN95	69
GSI617	I&T CS B6 (LAUNCH SITE HDWR) READY FOR DEL.	21SEP95	151
IV&V FACILITY DEVELOPMENT			
VNV0003	IV&V FACILITY READY FOR USE	30JUN94	84
IV&V TESTING DEVELOPMENT			
VNV0037	FORMAL FSW IV&V COMPLETE	08NOV95	32

APPENDIX B

TRMM OBSERVATORY INTEGRATION & TEST SCHEDULE

TRMM OBSERVATORY I & T SCHEDULE

EARLY START	EARLY FINISH	ORIG DUR	Activity
3JAN95	12JAN95	8	PTM INSTALLATION INTO FLT STRUCTURE (B#10
13JAN95	20JAN95	5	"ROUGH" S/C CLEANING (B#10
23JAN95	8MAR95	32	RCS INSTALLATION & MECHANICAL INTEGRATION (B#
9MAR95	9MAR95	1	MOVE OBS TO PROPULSION PRESSURE TEST AREA (B#15
10MAR95	23MAR95	10	PROPULSION PRESSURE TEST (B#15
24MAR95	28MAR95	3	CLEAN OBS (B#15)
29MAR95	29MAR95	1	MOVE OBS TO B#7 SCA (B#15-7
30MAR95	26APR95	20	ELECT HARN I&T, SET UP & INTEG EGSE (B#7 SCA
27APR95	10MAY95	10	SPRU, PBIU, PSIB & I&T BATTERIES I&T (B#7 SCA
11MAY95	8JUN95	20	C&DH I&T, SDS/FREQ STNDS/FIBER OPT BUS (B#7 SCA
9JUN95	15JUN95	5	COMPLETE POWER SYSTEM ELEC INT (B#7 SCA
16JUN95	22JUN95	5	PSDU I&T (B#7 SCA)
23JUN95	4AUG95	30	ACS I&T & ALIGN-ACE/FSD/SNSRS/ACTUATRS (B#7 SCA)
7AUG95	11AUG95	5	ACS ELEC INTERFACE VERIFICATION (B#7 SCA)
14AUG95	25AUG95	10	COMMUNICATIONS I&T, CLEAN OBS (B#7 SCA
28AUG95	11SEP95	10	CIS INTEGRATION & ALIGNMENT (B#7 SCA
12SEP95	12SEP95	1	MOVE OBS TO SSDIF (B#7-29)
13SEP95	26SEP95	10	VIRS INTEGRATION & ALIGNMENT (SSDIF)
27SEP95	11OCT95	10	TMI INTEGRATION & ALIGNMENT (SSDIF)
12OCT95	25OCT95	10	CERES INTEGRATION & ALIGNMENT (SSDIF)
7NOV95	21NOV95	10	PRECIP RADAR INTEGRATION & ALIGNMENT (SSDIF)
22NOV95	6DEC95	10	HGAS INTEG HGADS/HGA/GSACE/GIMBAL (SSDIF)
7DEC95	13DEC95	5	SAGA I&T, CONTAMINATION CONTROL CLEANING (SSDIF)
14DEC95	20DEC95	5	HGA/TMI DEPLOYMENT TESTS (SSDIF)
21DEC95	22JAN96	20	OBS COMPREHENSIVE PERF TEST #1/CTV TEST (SSDIF)
23DEC95	28DEC95	5	GDS TEST 1st S/C HARD-LINE DATA FLOW
2JAN96	3JAN96	2	GDS TEST 1st TDRS RF END-TO-END TEST (W/ CTV)
23JAN96	24JAN96	2	PRE-ENVIRONMENTAL REVIEW (PER)
25JAN96	25JAN96	1	MOVE OBS TO EMI/EMC TEST FACILITY (B#29-7)
26JAN96	23FEB96	20	EMI/EMC & PR/TMI/HGA RFI TESTS (B#7 RFI), CLEAN
26FEB96	26FEB96	1	MOVE OBS TO SSDIF (B#7-29)
27FEB96	11MAR96	10	THERMAL BLANKET CLOSEOUT (SSDIF)
12MAR96	25MAR96	10	OBS MAGNETICS TEST (SSDIF)
26MAR96	26MAR96	1	FIT CHECK FLT PAF (SSDIF)
27MAR96	27MAR96	1	CLEAN & BAG MOVE TO THRM VAC/BAL AREA (B#29-10)
28MAR96	8MAY96	30	OBS THERMAL VAC/TH BAL TEST, CTV TEST (B #10)
1APR96	3APR96	3	GDS TEST END-TO-END MISSION SIMULATION #1
9MAY96	30MAY96	15	COMPREHENSIVE PERFORMANCE TEST #2 (B#10)
31MAY96	31MAY96	1	CONTAM CNTRL INSP & BAG, MOVE TO SSDIF (B#10-29)
3JUN96	14JUN96	10	SOLAR ARRAY FLIGHT WING(S) INTEGRATION (SSDIF)
17JUN96	8JUL96	15	S/A DEPLOY SETUP & TEST, CONT INSP & BAG (SSDIF)
9JUL96	15JUL96	5	OBS-TO-MOC INTERFACE VER TEST (FOS/GDS) (SSDIF)
16JUL96	29JUL96	10	OBS MASS PROPERTIES TEST (SSDIF)
30JUL96	30JUL96	1	CONT CNTRL CLEAN/INSP/BAG, MOVE TO B#29-10
31JUL96	27AUG96	20	OBS SINE-SWEEP VIBRATION TEST (B#10)
28AUG96	4SEP96	5	ALIVENESS/SHORT FORM FUNCT TST, INSP & BAG (B#10)
5SEP96	5SEP96	1	MOVE OBS TO ACOUSTIC TEST FACILITY (B#10)
6SEP96	12SEP96	5	OBS ACOUSTIC TEST (B#10)
13SEP96	19SEP96	5	ALIVENESS/SHORT FUNC TEST, CONT INSP & BAG (B#10)
20SEP96	26SEP96	5	OBS SHOCK/PYRO FIRING TEST (B#10)
27SEP96	10OCT96	3	ALIVENESS/SHORT FUNC TEST, CONT INSP & BAG (B#10)
20OCT96	20OCT96	1	MOVE OBS TO SSDIF (B#10-29)
30OCT96	7OCT96	3	REMOVE SOLAR ARRAY FLT WINGS (SSDIF)
8OCT96	8OCT96	1	REMOVE I&T/GSE BATTERIES FROM OBS (SSDIF)
9OCT96	11OCT96	3	FLT BATT INTEG. TEST & REMOVAL FROM OBS (SSDIF)
15OCT96	15OCT96	1	RE-INSTALL I&T/GSE NiCd BATTERIES (SSDIF)
16OCT96	22OCT96	5	TRMM END-TO-END SYS TEST (CPT #3) (SSDIF)
16OCT96	18OCT96	3	GDS TEST END-TO-END MISSION SIMULATION #2
23OCT96	22OCT96	0	◇ACS LEAK & CALIBRATION TESTS
23OCT96	17JAN97	59	I&T SCHED CONTINGENCY
21JAN97	18FEB97	20	PACK OBS GSE S/A BATT ETC FOR SHIP (SSDIF)
19FEB97	21FEB97	3	PRE-SHIPMENT REVIEW
24FEB97	18APR97	40	SHIP OBS GSE, S/A, BATT, ETC TO TNSC, JAPAN
21APR97	12AUG97	80	LAUNCH SITE PREPARATIONS AT TNSC, JAPAN
21APR97	12AUG97	80	GDS TEST 1st LAUNCH SITE HARD-LINE DATA FLOW
2JUL97	3JUL97	2	GDS TEST LAUNCH SITE TDRS END-TO-END TEST
19AUG97	18AUG97	0	TRMM LAUNCH READINESS ◇

SCHEDULE REFLECTS A PRECIP. RADAR DELIVERY DATE OF 07NOV95 VS. A NEED DATE OF 26OCT95

Plot Date 21JAN94
Data Date 1JAN94
Project Start 1JAN91
Project Finish 25SEP97

Activity Bar/Early Dates
Critical Activity
Progress Bar
Milestone/Flag Activity

TRMM
Sheet 1 of 1

TROPICAL RAINFALL MEASURING MISSION
DAVE AMASON - x4294
OBSERVATORY I&T SCHEDULE

Date	Revision	Checked	Approved

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