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PROGRAM MANAGEMENT IN AEROSPACE INDUSTRY

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ABSTRACT

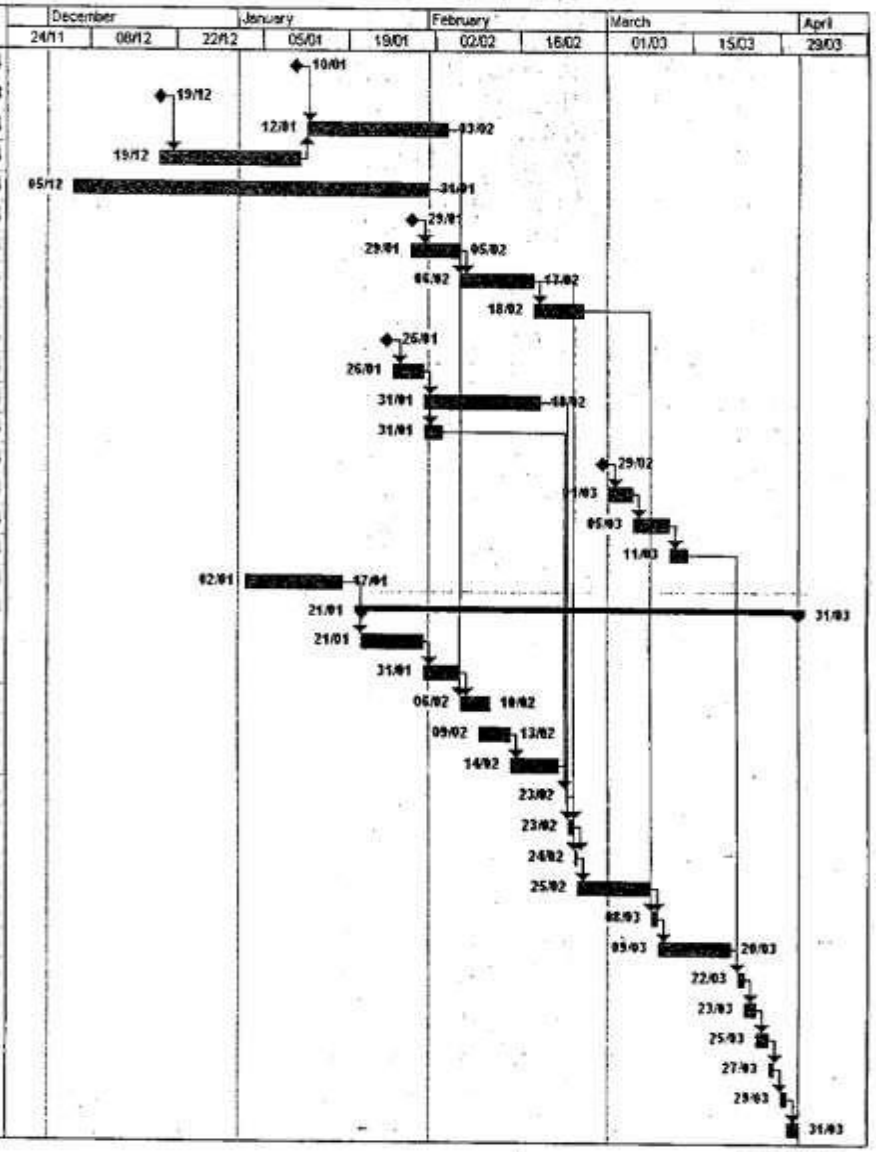
This paper describes Program Management activities in an aerospace industry is consolidated in the form of a document which happened during operational phase of aproject.
Proposal for workflow of Program management is also represented in this paper.

Key words: Program managemen

INDUSTRIAL ENGINEERING APPLICATIONAT ISRO

GSLV-F01 LAUNCH OPERATIONS SCHEDULE

ID	Task Name	Duration	Start	Finish
1	L40 - S1,S4-RECEIPT AT SPB	0 days	Sat 10/01/04	Sat 10/01/04
2	L40-S2,S3- RECEIPT AT SPB	0 days	Fri 19/12/03	Fri 19/12/03
3	L40-S1,S4 AT SPB	20 days	Mon 12/01/04	Tue 03/02/04
4	L40-S2,S3 AT SPB	20 days	Fri 19/12/03	Sat 10/01/04
5	CRYO STAGE PTC & AUTONOMOI	50 days	Fri 05/12/03	Sat 31/01/04
6	EB RECEIPT	0 days	Thu 29/01/04	Thu 29/01/04
7	EB AUTO CHECKS	7 days	Thu 29/01/04	Thu 05/02/04
8	COMPLEX CHECKS	10 days	Fri 06/02/04	Tue 17/02/04
9	CS PREPARATION	7 days	Wed 18/02/04	Wed 25/02/04
10	GS2, 1/2M,1/2V RECEIPT	0 days	Sun 25/01/04	Sun 25/01/04
11	GS2-1/2M CHECKS	5 days	Mon 26/01/04	Fri 30/01/04
12	GS2 CHECKS	16 days	Sat 31/01/04	Wed 18/02/04
13	1/2M PYRO ASSEMBLY	2 days	Sat 31/01/04	Mon 02/02/04
14	HS, PLA RECEIPT	0 days	Sun 29/02/04	Sun 29/02/04
15	HS,PLA CHECKS	4 days	Mon 01/03/04	Thu 04/03/04
16	SPACECRAFT FILLING	6 days	Fri 05/03/04	Wed 10/03/04
17	ENCAPSULATION	3 days	Thu 11/03/04	Sat 13/03/04
18	SMPF PREPARATION	14 days	Fri 02/01/04	Sat 17/01/04
19	LAUNCH CAMPAIGN	62 days	Wed 21/01/04	Wed 31/03/04
20	S139 ASSY	9 days	Wed 21/01/04	Fri 30/01/04
21	IGN,PYRO,1/2V,WT,FLSC	5 days	Sat 31/01/04	Thu 05/02/04
22	L40 ASSY	4 days	Fri 06/02/04	Tue 10/02/04
23	INTERCONNECTION PLUMBIN	5 days	Mon 09/02/04	Fri 13/02/04
24	EL&PNEU CHKS	7 days	Sat 14/02/04	Sat 21/02/04
25	1/2M ASSY	0.5 days	Mon 23/02/04	Mon 23/02/04
26	GS2 ASSY	1 day	Mon 23/02/04	Tue 24/02/04
27	EB ASSY	0.5 days	Tue 24/02/04	Tue 24/02/04
28	EL & PNEU CHKS	11 days	Wed 25/02/04	Sun 07/03/04
29	CS , EB ASSY	1 day	Mon 08/03/04	Mon 08/03/04
30	ELECTRICAL CHECKS-Ph-III L-	11 days	Tue 09/03/04	Sat 20/03/04
31	EA ASSY	1 day	Mon 22/03/04	Mon 22/03/04
32	ELECTRICAL CHECKS-Ph-III L-	2 days	Tue 23/03/04	Wed 24/03/04
33	PREPN AND REHEARSAL	2 days	Thu 25/03/04	Fri 26/03/04
34	ARMING	1 day	Sat 27/03/04	Sat 27/03/04
35	PRE COUNT DOWN	1 day	Mon 29/03/04	Mon 29/03/04
36	COUNT DOWN & LAUNCH	2 days	Tue 30/03/04	Wed 31/03/04



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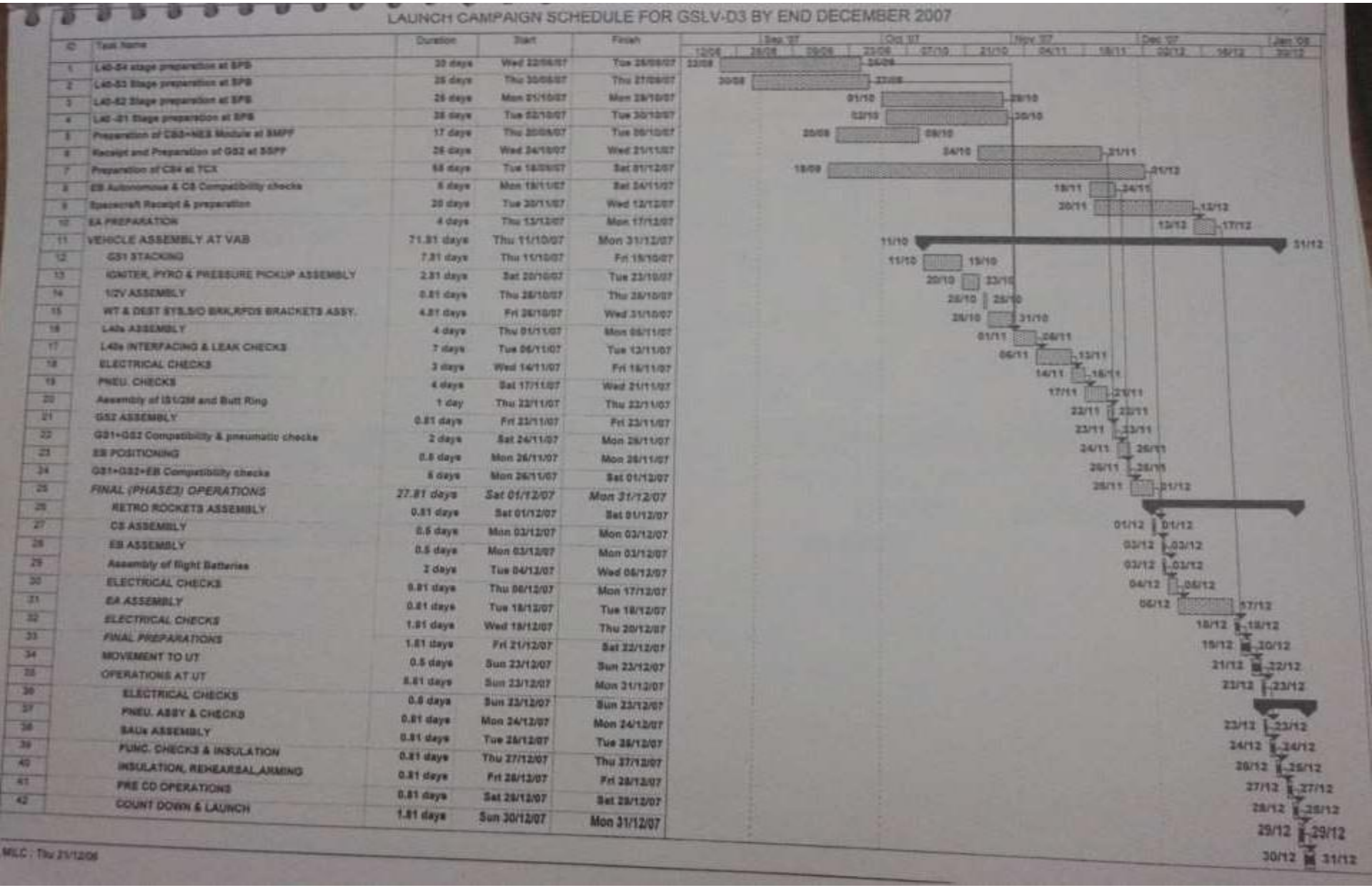
29/8/03

SLP MAIDEN LAUNCH -GSLV F02; PRESENTED FOR GSLV D3

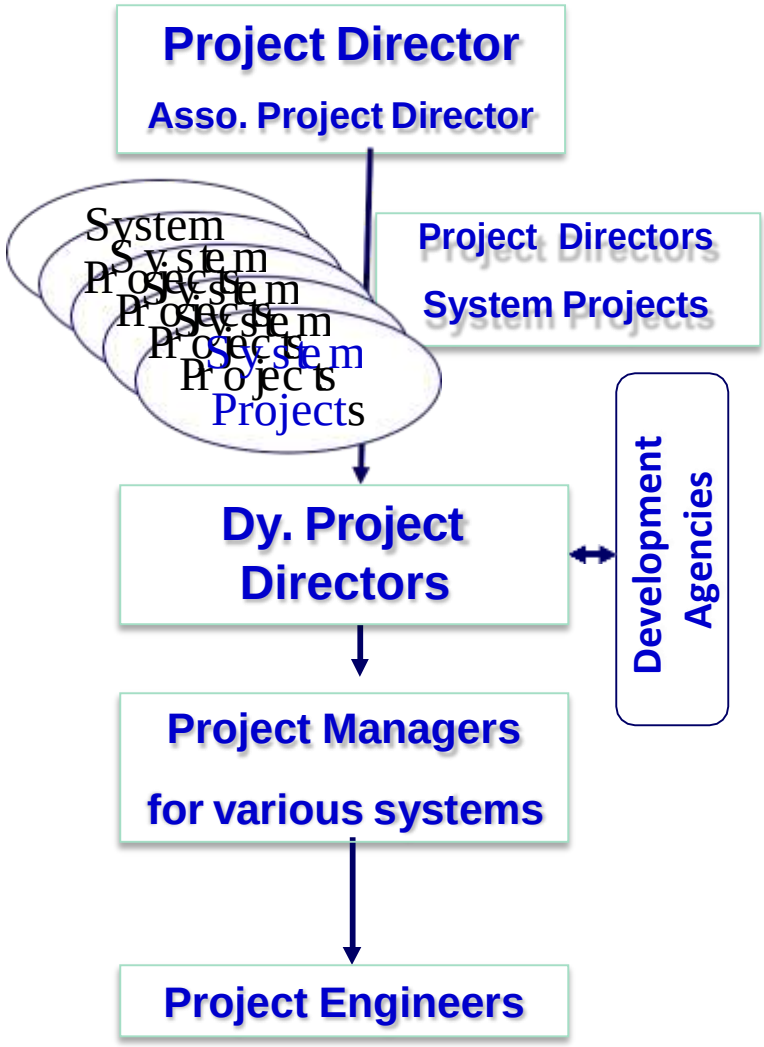


Management Structure

(For Launch Vehicle Programmes)

- **A Core Project team with overall responsibility**
- **System Projects in new / critical areas**
- **Distributed work environment (work centers all over India)**
- **New technology development at ISRO units**
- **Large scale facility build-up**
  - Launch complex, Propulsion systems development,testing, Avionics systems and Vehicle level testing & mock ups etc.
- **Large scale industrial production**
  - Motor cases, Light alloy structures & Propellant tanksLiquid / Cryo engine systems, Avionics system components, Propellants & chemicals, Sub assemblies integration etc.
- **Implementation of change & configuration control**

Matrix Management Structure



Core Project Responsibilities

Responsibilities of the Core Project have been :

- **Definition and implementation of project management plan &procedures.**
- **Communication of project objectives and plans to all levels**
- **Mission specification & interfaces with users.**
- **Launch complex and tracking network interfaces.**
- **Vehicle systems definition and specifications.**
- **Stage engineering and interfaces control.**
- **Vehicle / stage level configuration control & change management**
- **Direct monitoring of progress in all key areas**
- **Speedy execution without compromising performance and quality**
- **Programme management, cost/schedule monitoring and control.**
- **Organise project related reviews at micro and macro levels**

Programme Control Cycle
Used in Development

EstablishingTargets

Monitoring Performance

- Generated programme plans,system development plans, schedules & milestone plans.

- Monitored through weekly biweekly and monthly reviewmeetings, progress reports.

Programme Analysis

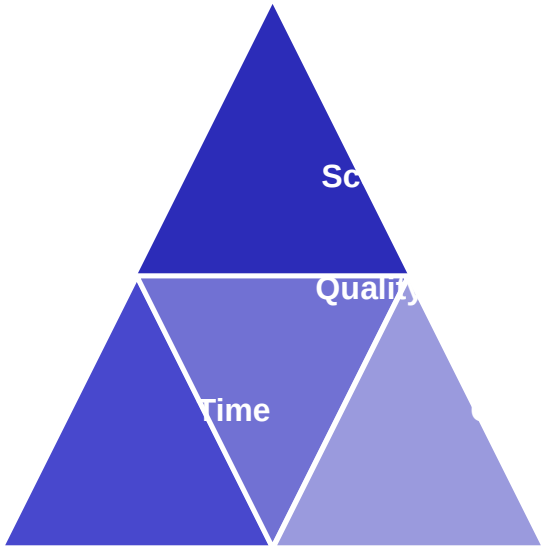
- Compared actual progress with expected performance.

ManagementReporting

- Identified solution options, implemented decisions & followup of needed actions.

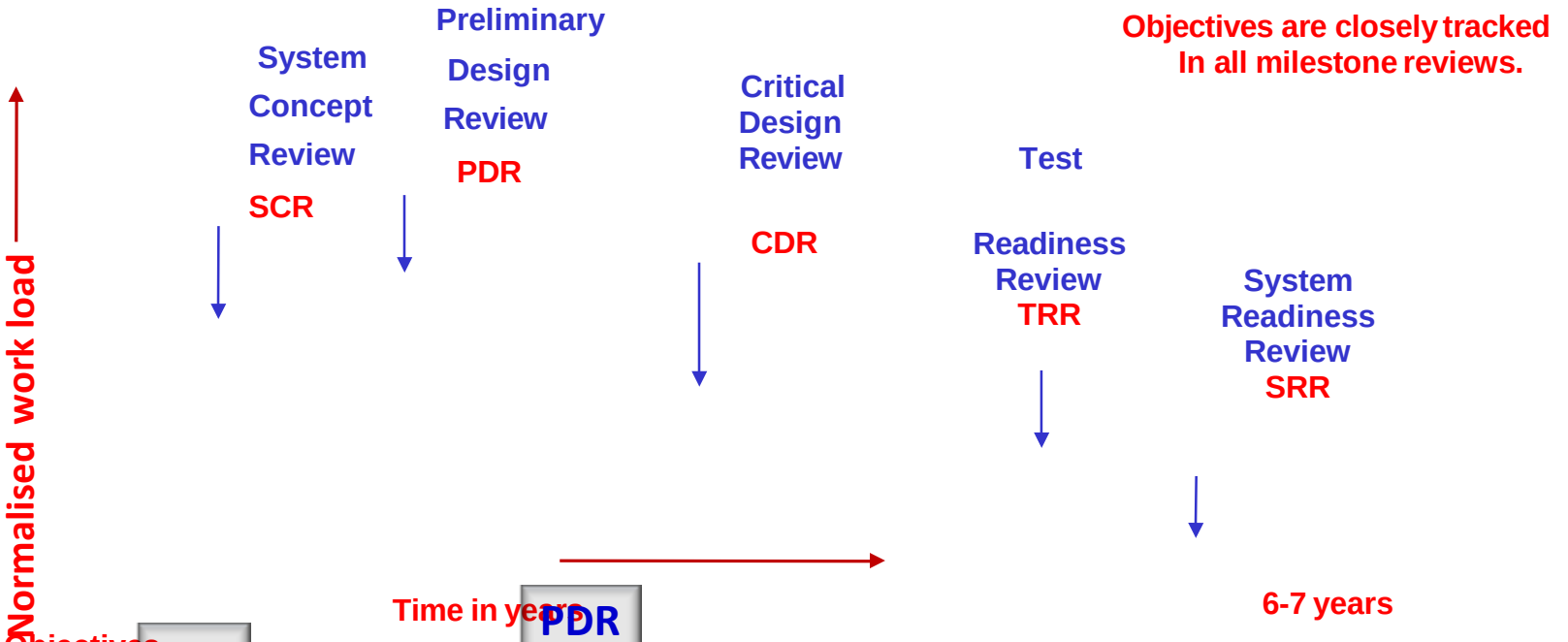
Techno-Managerial Review Mechanisms

Management of Scope, Time & Cost without compromising Quality



- **Project Review Meetings**
  - **Weekly review of project activity status**
- **Project Executive Reviews (PEX) : Tier - 1**
  - **Monthly reviews for resolving technical / managerial issues**
- **Reviews by Centre Director**
  - **Technical / managerial**
- **Reviews by Project Management Boards (PMB) : Tier - 2**
  - **General guidelines, budget approvals, schedules, facility & manpower**
- **Reviews by Project Management Council (PMC) : Tier - 3**
  - **Overall policy guidelines**
- **Reviews by Chairman, ISRO**
  - **Technical / managerial**

Technical Review Milestones followed



Objectives are closely tracked In all milestone reviews.

SCR

- System configuration.
- System /subsystem specs.
- Manufacturing & test facilities.
- Schedule & resource projections

PDR

- Technical adequacy of design approach
- Firm up specs. for system / subsystems
- Physical and functional interfaces definition.
- Clearance for detailed design.

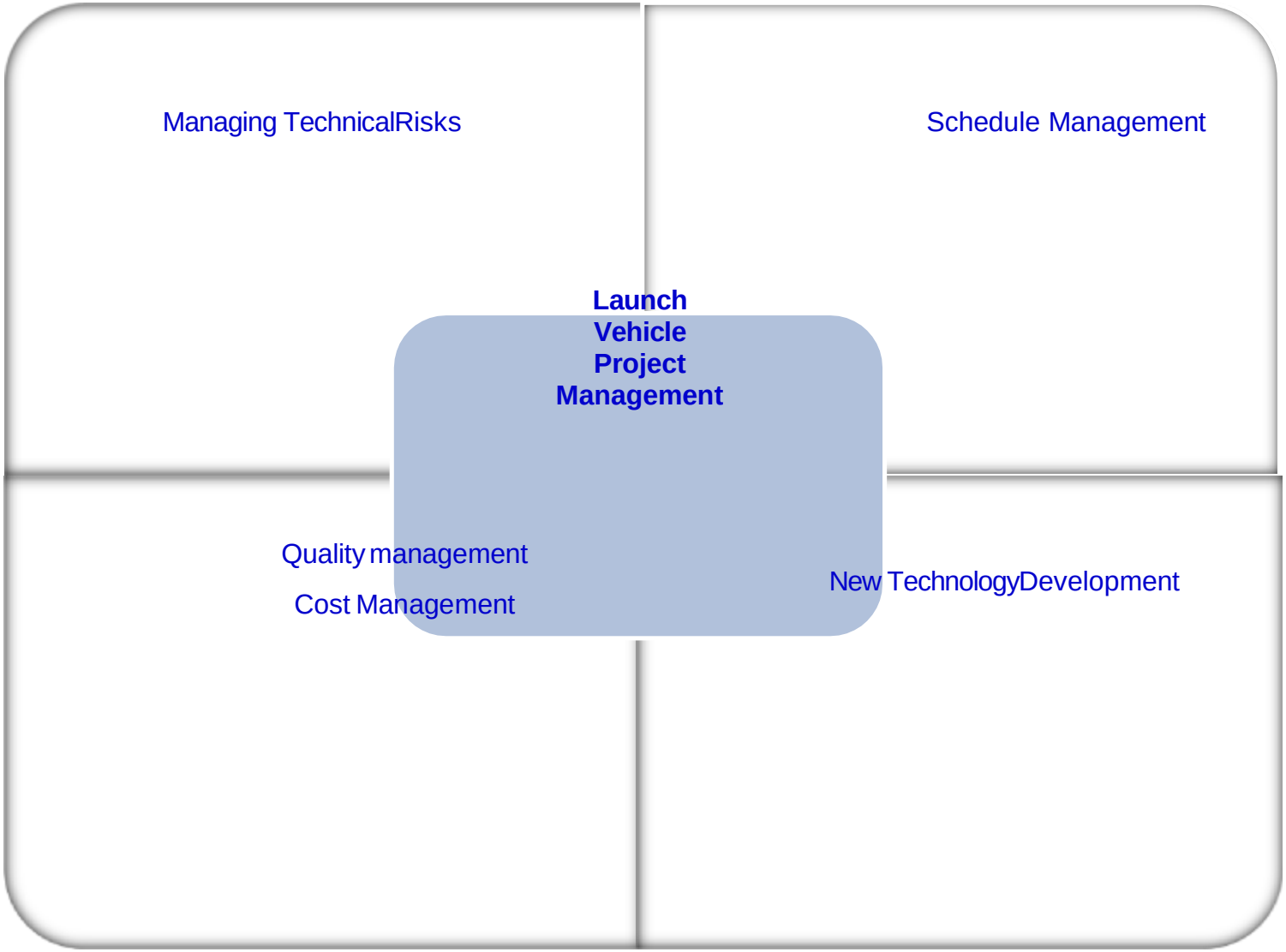
CDR

- Approval of specs. and design.
- Approval of baseline production
- Firm up interfaces
- Firm up detailed test plan

SRR

- Detailed interface performance checks
- Certify system performance meets requirements
- Finalise system configuration
- Approval for system commissioning

Overall Management Approach



The following procedures are strictly implemented.

- **Identification of single point failure**
- **Redundancy management for mission critical Avionics / Control systems**
- **Vendor directory /Preferred part list**
- **Well evolved part screening for electronic components**
- **Process documents & QA / QC plans**
- **Test & evaluation at different levels**
- **Integrated system level checks**
- **Detailed simulations at different levels**
- **FMECA analysis /Fault tree analysis**

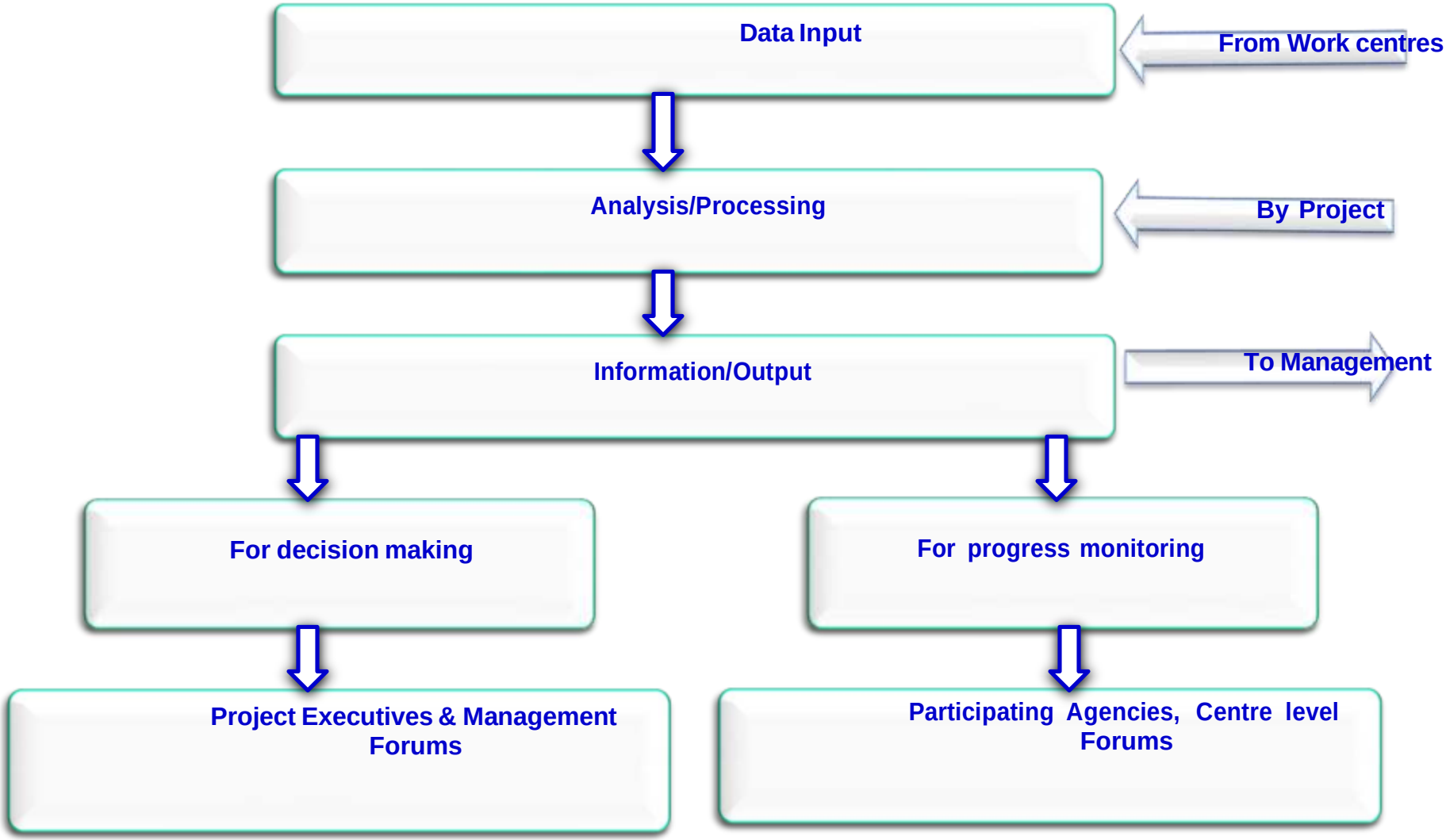
Project Schedule Management

- **Optimal sharing of resources between numerous operational anddevelopment p**
- **The following methodologies are strictly implemented throughout the Project phase**

Time management

- **Work Break down Structures (WBS)**
- **Schedule analysis (PERT/CPM) & simulations**
- **Identifying 'limiting factors'**
- **Anticipating criticalities**
- **'Feed forward' control– Real time correction of plans as work progresses, Work around plans**
- **Fast tracking through Concurrent Engineering approach**
- **Near critical paths & criticality index**
- **Integrated Information network for faster communication**

Management
Information System used



Quality Management

- Key processes and continuous Quality control during development and realisation of all launch vehicle subsytems are identified and carried out.
- The Strict Quality Assurance is ensured by meticulously following the various steps given below.
  - Approved specifications & design
  - Qualified materials, Process reviews
  - Inspection/Surveillance during production
  - Stage clearances
  - 3 tier non conformance management
  - Batch testing for VOQ, Acceptance testing
- The Quality Audit is given utmost importance
  - Using appropriate equipments
  - Reference Standards
  - Monitoring of key characteristics
  - Maintenance of records & traceability
  - Verification through audits

Change Management

- Control of intersystem interfaces has been the major responsibility of the project team.
- The evolution and changes in the design are continuouslymonitored and the impacts assessed.
- Traceability of changes, decisions and inputs are utilised to assess the impacts of a new change.
- Design changes and requirements are closely monitored duringdevelopment and changes are meticulously catalogued.
- Dissemination of the information across the system teams aredone expeditiously using management information tools.
- Management of changes is given high priority to ensure the success of operational launches.

Launch Campaign Management

Integrated Team Effort

- Launch vehicle
- Space craft
- Propellant servicing / Safety
- Tracking & ground station
- Logistics

Campaign management system

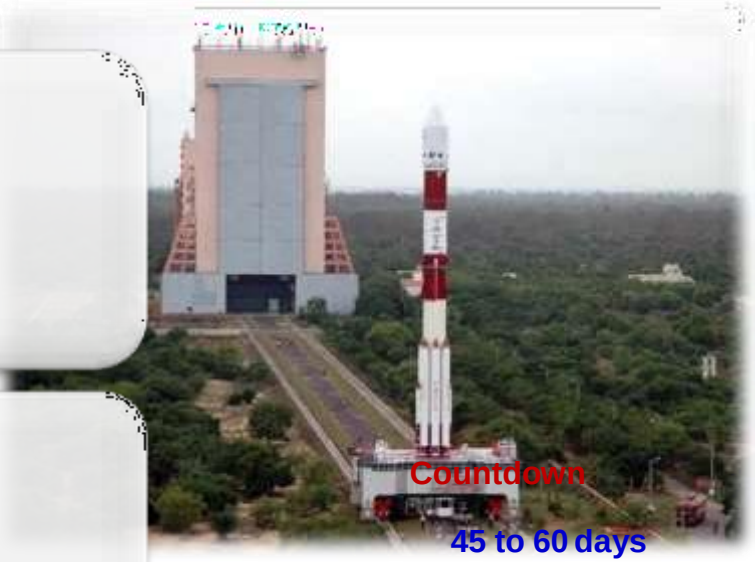
- Mission Director
- Vehicle Director
- Satellite Director
- Range Director

Planning methodology

- Micro level scheduling on day to day & hourly basis
- Orchestrated effort for resource deployment
- More than 100 people involved perlaunch at different phases of time

Reviews

- Technical /progress reviews
- Stage clearances
- Authorization reviews for launch Mission Readiness Review, Launch Authorization Board

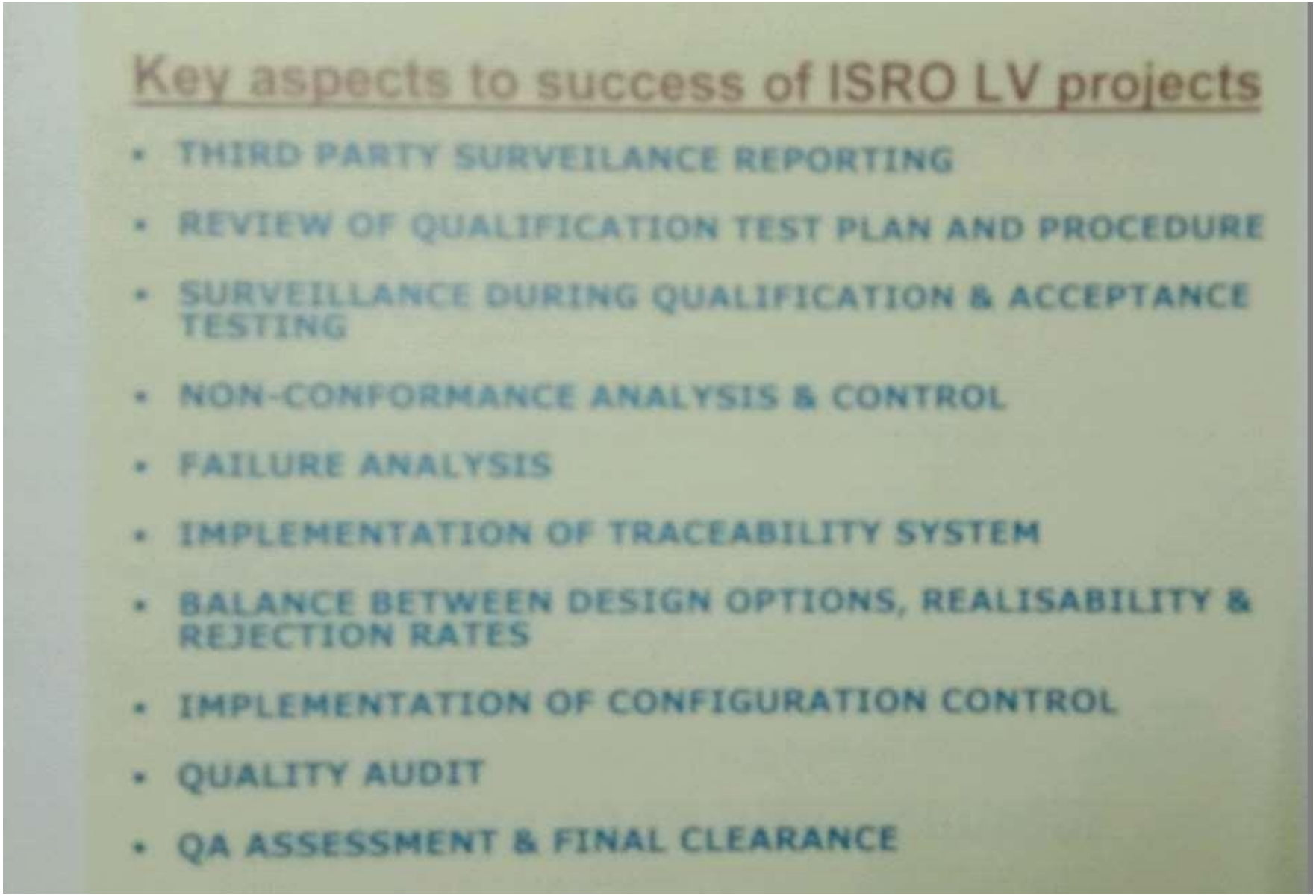


45 to 60 days activity at Sriharikota

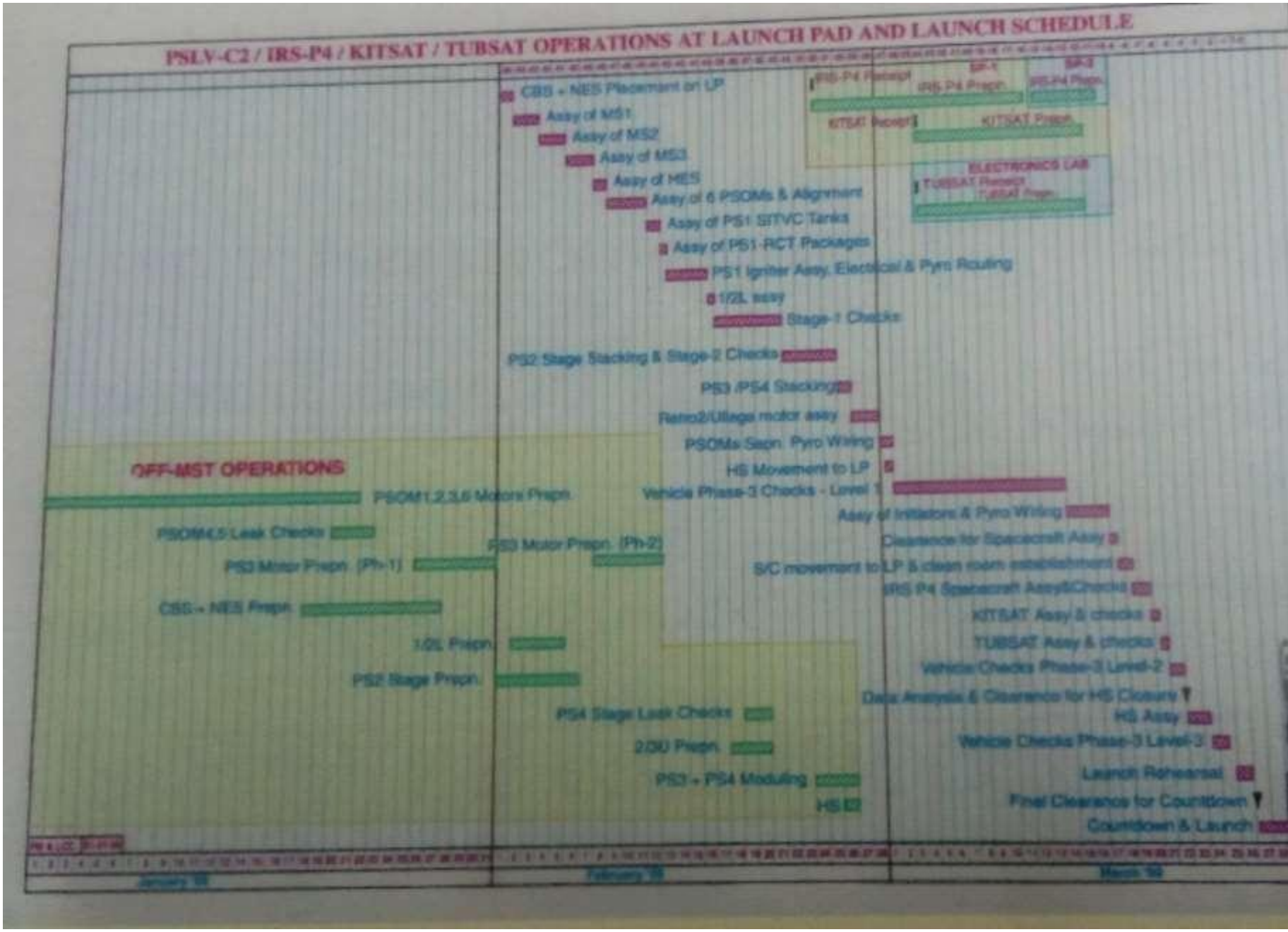
Conclusions. (Success through Team effort)

- **The Management Structure which is in vogue has been very effective .**
- **The Programme Control Cycle and the Overall Management approach havebeen very efficient , leading to successful space launches.**
- **Indian Space ia able to implement programmes with shoe string budget through effective Schedule and Cost controls.**
- **Focus has always been on achievement of collective results.**
- **Time tested review mechanisms have helped to achieve technical excellence.**
- **Some of the key factors for the effective management of Indian Space Programme are:**
  - **Engaging the teams into productive, constructive discussions around ideas and issues**
  - **Accepting and committing to decisions & plan of actions arrived at by the team.**
  - **Each identified team member is accountable for delivery as per the decidedplans.**
  - **Creative leadership, rewards and recognitions to the deserving team member/s who make significant contributions.**

BEST PRACTICES




Key aspects to success of ISRO LV projects
• REVIEW OF SPECIFICATION
• DESIGN REVIEW
• DRAWING REVIEW
• FMECA ANALYSIS
• VENDOR EVALUATION & VENDOR LIST
• PREFERRED PART LIST
• STANDARDISATION & INTERCHANGEABLE SYSTEMS
• REVIEW OF PROCESS , QUALITY & INSPECTION PLANS
• PROCESS CONTROL DURING FABRICATION
• ON LINE QUALITY CONTROL & SURVEILLANCE
• REVIEW OF ASSEMBLY & TESTING PROCEDURE
• SURVEILLANCE DURING ASSEMBLY & TESTING

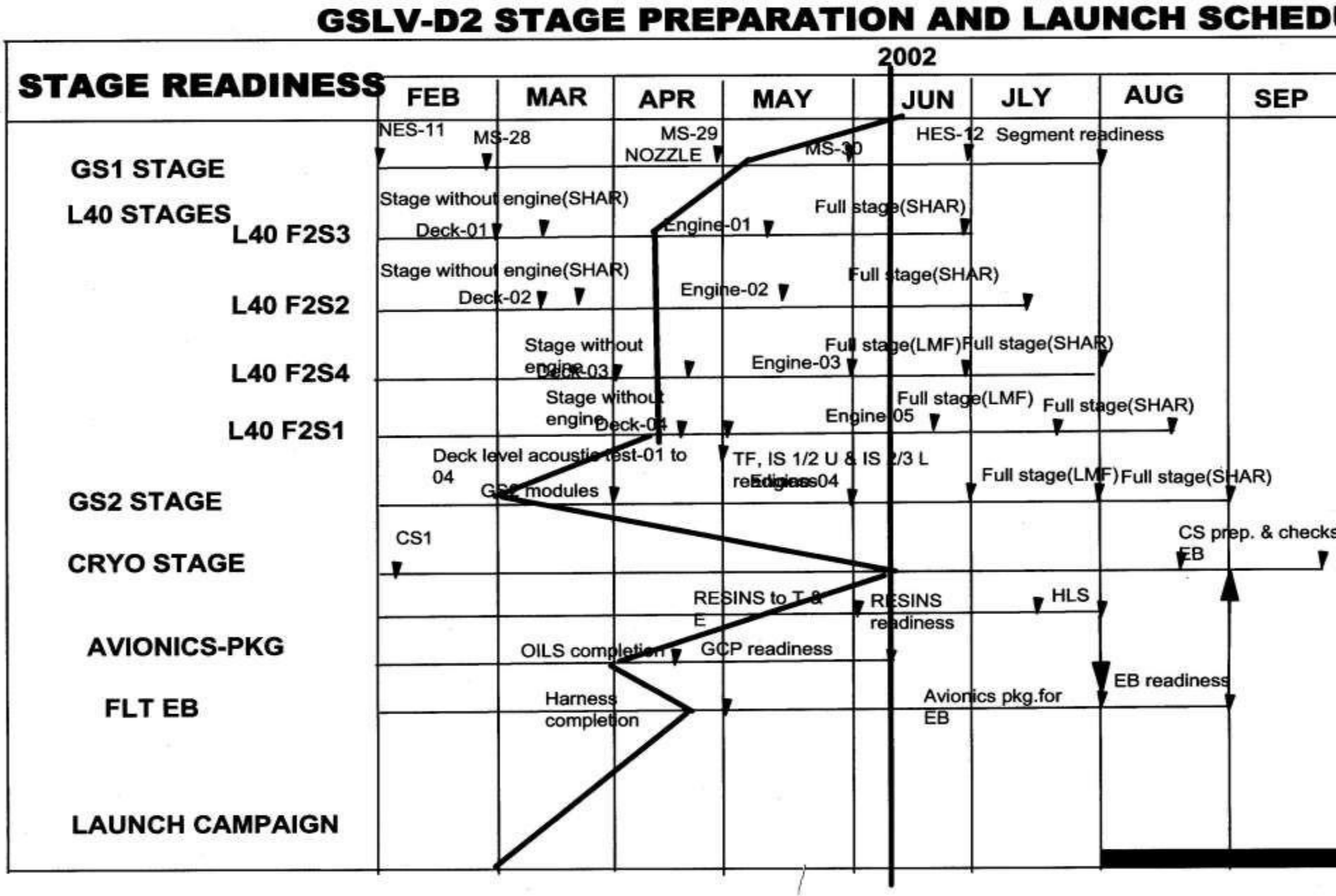

PSLV-C2 / IRS-P4 / KITSAT / TUBSAT OPERATIONS AT LAUNCH PAD AND LAUNCH SCHEDULE
CBS + NES Placement on LP
Assy of MS1
Assy of MS2
Assy of MS3
Assy of MES
Assy of 6 PSOMs & Alignment
Assy of PS1 SITVC Tanks
Assy of PS1 RCT Packages
PS1 Igniter Assy, Electrical & Pyro Routing
1/2L assy
Stage-1 Checks
PS2 Stage Stacking & Stage-2 Checks
PS3 /PS4 Stacking
Retro2/Ullage motor assy
PSOMs Segm. Pyro Wiring
HS Movement to LP
Vehicle Phase-3 Checks - Level 1
Assy of Initiators & Pyro Wiring
Clearance for Spacecraft Assy
S/C movement to LP & clean room establishment
IRS P4 Spacecraft Assy&Checks
KITSAT Assy & checks
TUBSAT Assy & checks
Vehicle Checks Phase-3 Level-2
Data Analysis & Clearance for HS Closure
HS Assy
Vehicle Checks Phase-3 Level-3
Launch Rehearsal
Final Clearance for Countdown
Countdown & Launch
OFF-MST OPERATIONS
PSOM1,2,3,6 Motors Prepn.
PSOM4,5 Leak Checks
PS3 Motor Prepn. (Ph-1)
PS3 Motor Prepn. (Ph-2)
CBS + NES Prepn.
1/2L Prepn.
PS2 Stage Prepn.
PS4 Stage Leak Checks
2/3U Prepn.
PS3 + PS4 Modules
HS
IRS-P4 Prepn.
KITSAT Prepn.
ELECTRONICS LAB
TUBSAT Prepn.

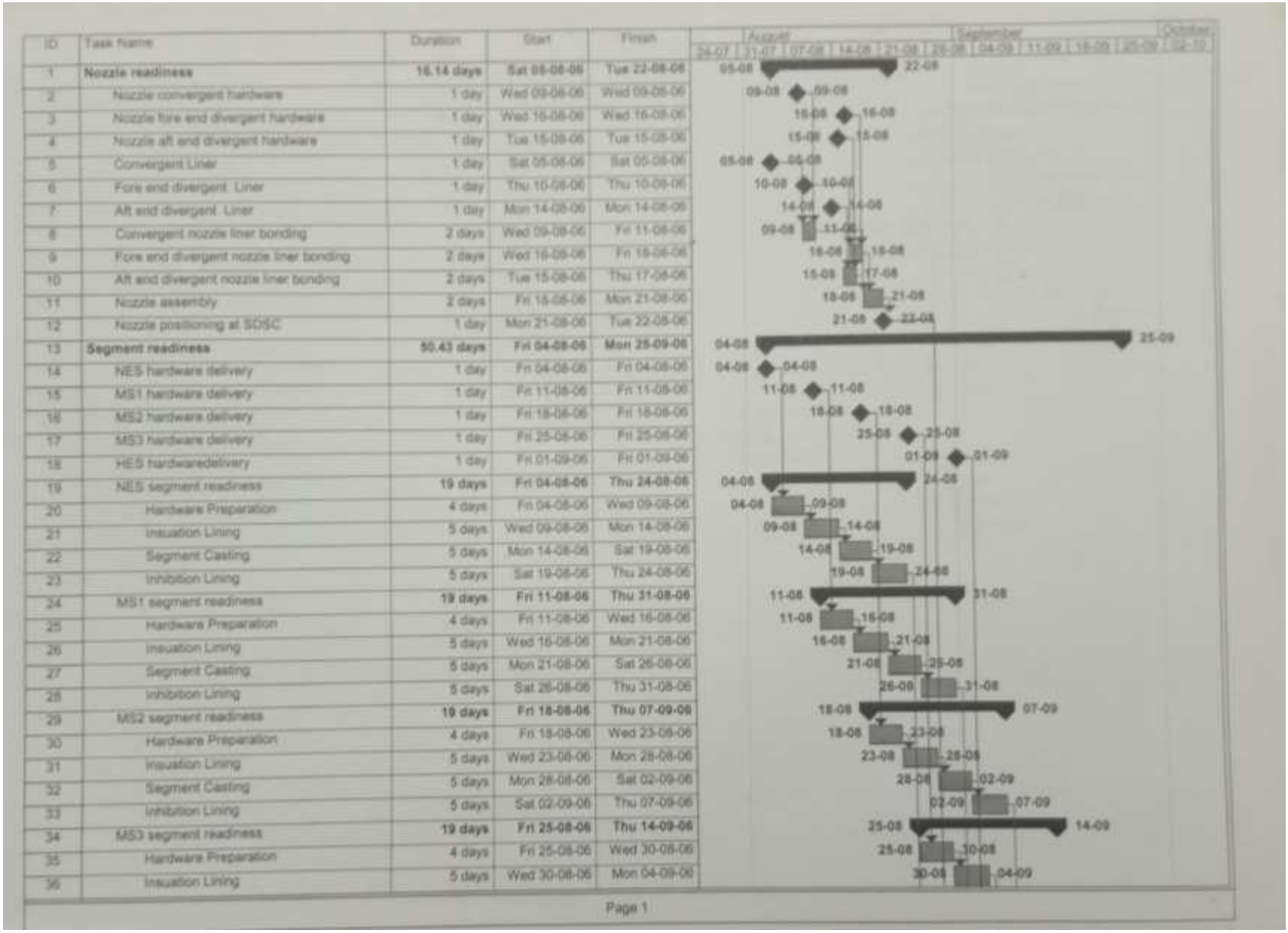
GSLV-F01 SCHEDULE

For March 2004 Launch

STAGE / SUBASSEMBLY PREPARATION AT WORKCENTRES

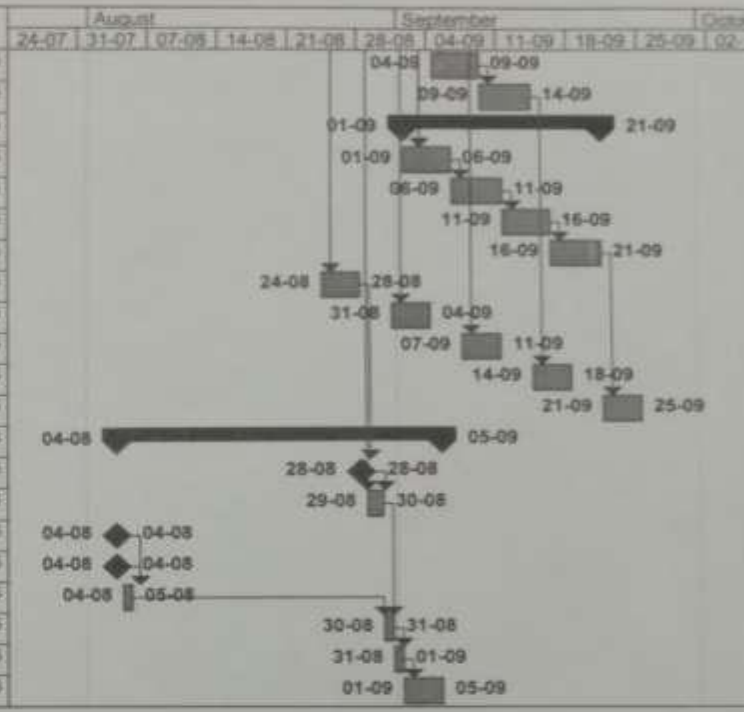
STAGE PREPARATION AT SDSC, SHAR


GSLV-D2 STAGE PREPARATION AND LAUNCH SCHED
STAGE READINESS
2002
FEB
MAR
APR
MAY
JUN
JLY
AUG
SEP
GS1 STAGE
L40 STAGES
L40 F2S3
L40 F2S2
L40 F2S4
L40 F2S1
GS2 STAGE
CRYO STAGE
AVIONICS-PKG
FLT EB
LAUNCH CAMPAIGN
NES-11
MS-28
MS-29
NOZZLE
MS-30
HES-12
Segment readiness
Stage without engine(SHAR)
Deck-01
Engine-01
Full stage(SHAR)
Stage without engine(SHAR)
Deck-02
Engine-02
Full stage(SHAR)
Stage without engine
Deck-03
Engine-03
Full stage(LMF)
Full stage(SHAR)
Stage without engine
Deck-04
Engine-05
Full stage(LMF)
Full stage(SHAR)
Deck level acoustic test-01 to 04
GSC modules
TF, IS 1/2 U & IS 2/3 L
Engine-04
Full stage(LMF)
Full stage(SHAR)
CS1
CS prep. & checks
EB
RESINS to T & E
RESINS readiness
HLS
OILS completion
GCP readiness
EB readiness
Harness completion
Avionics pkg.for EB



ID	Task Name	Duration	Start	Finish
1	**Nozzle readiness**	**16.14 days**	**Sat 05-08-06**	**Tue 22-08-06**
2	Nozzle convergent hardware	1 day	Wed 09-08-06	Wed 09-08-06
3	Nozzle fore end divergent hardware	1 day	Wed 16-08-06	Wed 16-08-06
4	Nozzle aft end divergent hardware	1 day	Tue 15-08-06	Tue 15-08-06
5	Convergent Liner	1 day	Sat 05-08-06	Sat 05-08-06
6	Fore end divergent Liner	1 day	Thu 10-08-06	Thu 10-08-06
7	Aft end divergent Liner	1 day	Mon 14-08-06	Mon 14-08-06
8	Convergent nozzle liner bonding	2 days	Wed 09-08-06	Fri 11-08-06
9	Fore end divergent nozzle liner bonding	2 days	Wed 16-08-06	Fri 18-08-06
10	Aft end divergent nozzle liner bonding	2 days	Tue 15-08-06	Thu 17-08-06
11	Nozzle assembly	2 days	Fri 18-08-06	Mon 21-08-06
12	Nozzle positioning at SDSC	1 day	Mon 21-08-06	Tue 22-08-06
13	**Segment readiness**	**50.43 days**	**Fri 04-08-06**	**Mon 25-09-06**
14	NES hardware delivery	1 day	Fri 04-08-06	Fri 04-08-06
15	MS1 hardware delivery	1 day	Fri 11-08-06	Fri 11-08-06
16	MS2 hardware delivery	1 day	Fri 18-08-06	Fri 18-08-06
17	MS3 hardware delivery	1 day	Fri 25-08-06	Fri 25-08-06
18	HES hardwaredelivery	1 day	Fri 01-09-06	Fri 01-09-06
19	NES segment readiness	19 days	Fri 04-08-06	Thu 24-08-06
20	Hardware Preparation	4 days	Fri 04-08-06	Wed 09-08-06
21	Insuation Lining	5 days	Wed 09-08-06	Mon 14-08-06
22	Segment Casting	5 days	Mon 14-08-06	Sat 19-08-06
23	Inhibition Lining	5 days	Sat 19-08-06	Thu 24-08-06
24	MS1 segment readiness	19 days	Fri 11-08-06	Thu 31-08-06
25	Hardware Preparation	4 days	Fri 11-08-06	Wed 16-08-06
26	Insuation Lining	5 days	Wed 16-08-06	Mon 21-08-06
27	Segment Casting	5 days	Mon 21-08-06	Sat 26-08-06
28	Inhibition Lining	5 days	Sat 26-08-06	Thu 31-08-06
29	MS2 segment readiness	19 days	Fri 18-08-06	Thu 07-09-06
30	Hardware Preparation	4 days	Fri 18-08-06	Wed 23-08-06
31	Insuation Lining	5 days	Wed 23-08-06	Mon 28-08-06
32	Segment Casting	5 days	Mon 28-08-06	Sat 02-09-06
33	Inhibition Lining	5 days	Sat 02-09-06	Thu 07-09-06
34	MS3 segment readiness	19 days	Fri 25-08-06	Thu 14-09-06
35	Hardware Preparation	4 days	Fri 25-08-06	Wed 30-08-06
36	Insuation Lining	5 days	Wed 30-08-06	Mon 04-09-06

ID	Task Name	Duration	Start	Finish
37	Segment Casting	5 days	Mon 04-09-06	Sat 09-09-06
38	Inhibition Lining	5 days	Sat 09-09-06	Thu 14-09-06
39	HES segment readiness	**19 days**	**Fri 01-09-06**	**Thu 21-09-06**
40	Hardware Preparation	4 days	Fri 01-09-06	Wed 06-09-06
41	Insuation Lining	5 days	Wed 06-09-06	Mon 11-09-06
42	Segment Casting	5 days	Mon 11-09-06	Sat 16-09-06
43	Inhibition Lining	5 days	Sat 16-09-06	Thu 21-09-06
44	NES segment preparation	3 days	Thu 24-08-06	Mon 28-08-06
45	MS1 segment preparation	3 days	Thu 31-08-06	Mon 04-09-06
46	MS2 segment preparation	3 days	Thu 07-09-06	Mon 11-09-06
47	MS3 segment preparation	3 days	Thu 14-09-06	Mon 18-09-06
48	HES segment preparation	3 days	Thu 21-09-06	Mon 25-09-06
49	**NES - CBS module readiness**	**31 days**	**Fri 04-08-06**	**Tue 05-09-06**
50	NES Segment positioning at SMPF	1 day	Mon 28-08-06	Mon 28-08-06
51	NES Nozzle assembly at SMPF	2 days	Tue 29-08-06	Wed 30-08-06
52	CBS positioning at SMPF	1 day	Fri 04-08-06	Fri 04-08-06
53	NPS positioning at SMPF	1 day	Fri 04-08-06	Fri 04-08-06
54	CBS NPS assembly	1 day	Fri 04-08-06	Sat 05-08-06
55	NES CBS module assembly	1 day	Wed 30-08-06	Thu 31-08-06
56	CBS aft end closure assembly	1 day	Thu 31-08-06	Fri 01-09-06
57	Thermal painting	3 days	Fri 01-09-06	Tue 05-09-06



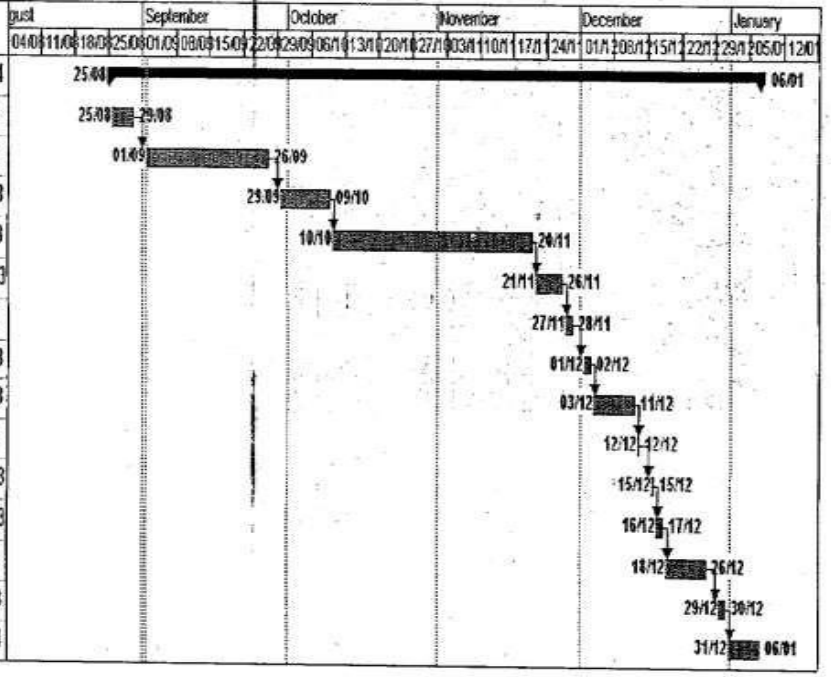
Page 2

STAGE/SUBASSEMBLY PREPARATION AT WORK CENTRES

GSLV-F01 LAUNCH OPERATIONS SCHEDULE

HEATSHIELD REALISATION SCHEDULE

ID	Task Name	Duration	Start	Finish
1	HEATSHIELD PREPARATION	97 days	Mon 25/08/03	Tue 06/01/04
2	MECHANICAL PREPARATION	5 days	Mon 25/08/03	Fri 29/08/03
3	THERMAL PAINTING	20 days	Mon 01/09/03	Fri 26/09/03
4	PYRO ASSEMBLY	9 days	Mon 29/09/03	Thu 09/10/03
5	PRE-ASSEMBLY	30 days	Fri 10/10/03	Thu 20/11/03
6	LBS ASSEMBLY& PYRO ROUTING	4 days	Fri 21/11/03	Wed 26/11/03
7	HS TRIAL ASSY.	2 days	Thu 27/11/03	Fri 28/11/03
8	BOLT CUTTER ASSY. TRIAL	2 days	Mon 01/12/03	Tue 02/12/03
9	EMBLEM PAINTING	7 days	Wed 03/12/03	Thu 11/12/03
10	BACKUP STR. ASSY.	1 day	Fri 12/12/03	Fri 12/12/03
11	SENSOR ASSEMBLY, HARNESSING	1 day	Mon 15/12/03	Mon 15/12/03
12	PREPARATION TO MOVE TO CLEAN	2 days	Tue 16/12/03	Wed 17/12/03
13	CLEAN ROOM OPERATIONS	7 days	Thu 18/12/03	Fri 26/12/03
14	PACKING FOR TRANSPORTATION	2 days	Mon 29/12/03	Tue 30/12/03
15	HS AT SDSC	5 days	Wed 31/12/03	Tue 06/01/04



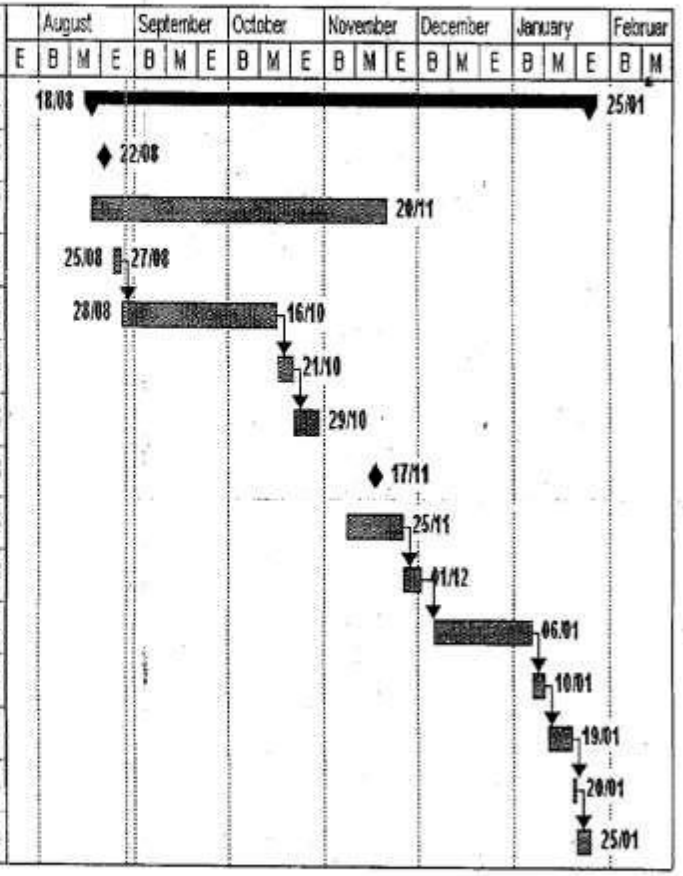
GSLV/MILC/2003

29/8/03

GSLV-F01 LAUNCH OPERATIONS SCHEDULE

EQUIPMENTBAY REALISATION SCHEDULE

ID	Task Name	Duration	Start	Finish
1	EQUIPMENT BAY REALISATION	139 days	Mon 18/08/03	Sun 25/01/04
2	HARNESS MOCKUP	0 days	Fri 22/08/03	Fri 22/08/03
3	HARNESSING ON MOCKUP	82 days	Mon 18/08/03	Thu 20/11/03
4	MARKING ON DECK	3 days	Mon 25/08/03	Wed 27/08/03
5	INSERTS BONDING	43 days	Thu 28/08/03	Thu 16/10/03
6	ISU MARKING &DRILLING	4 days	Fri 17/10/03	Tue 21/10/03
7	INSERT BONDING,DOUBLER	7 days	Wed 22/10/03	Wed 29/10/03
8	PACKAGES AVAILABILITY (I	0 days	Mon 17/11/03	Mon 17/11/03
9	PACKAGE ASSY., HARNESS	15 days	Sat 08/11/03	Tue 25/11/03
10	ISOLATION & CONTINUITY (	5 days	Wed 26/11/03	Mon 01/12/03
11	PHASE1 CHECKS	27 days	Sat 06/12/03	Tue 06/01/04
12	VIBRATION ASSY, WT., CG	4 days	Wed 07/01/04	Sat 10/01/04
13	VIBRATION TEST & CLEARA	7 days	Mon 12/01/04	Mon 19/01/04
14	PACKING & DESPATCH	1 day	Tue 20/01/04	Tue 20/01/04
15	EB AT TECH. COMPLEX	5 days	Wed 21/01/04	Sun 25/01/04



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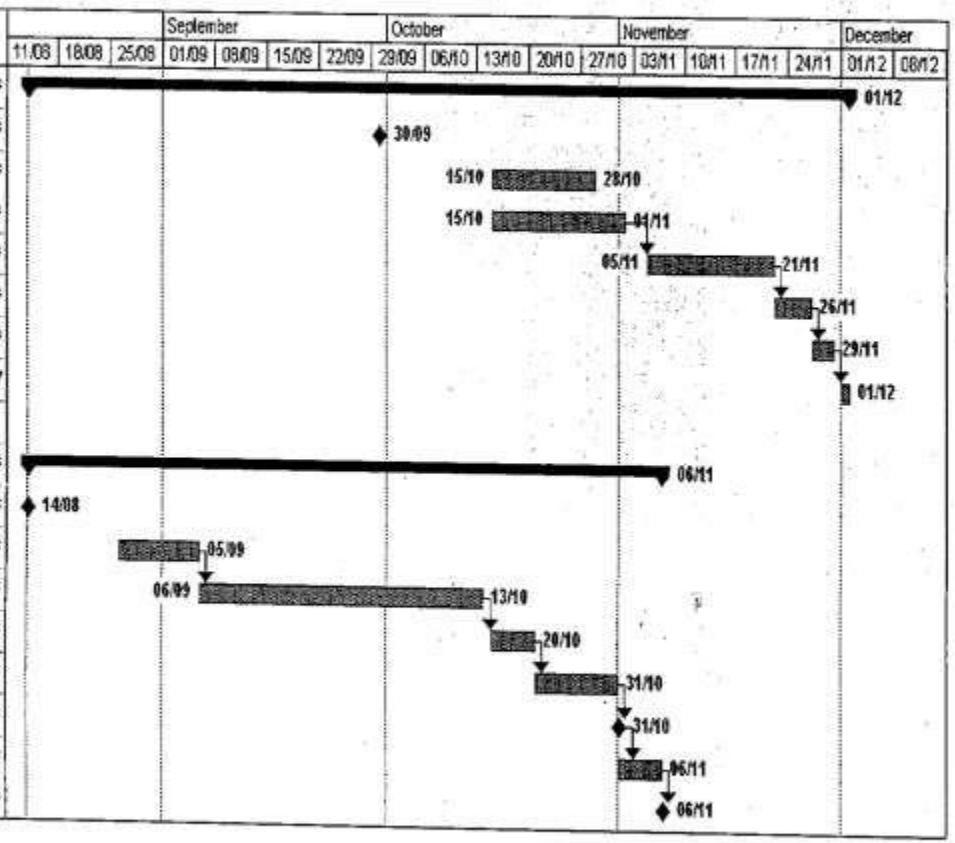
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

ENGINE & TANK REALISATION SCHEDULE

ID	Task Name	Duration
1	GS2 ENGINE PREPARATION	94 days
2	HARDWARE	0 days
3	THROAT ASSY & NDT	12 days
4	SUB ASSEMBLY	16 days
5	ASSEMBLY	15 days
6	HARNESSING	4 days
7	LEAK CHECKS	3 days
8	CLEARANCE	1 day
9		
10	GS2 TANK PREPARATION	73 days
11	HARDWARE	0 days
12	P P T	10 days
13	CLEANING	32 days
14	BONDPADS FIXING	5 days
15	PAINTING	10 days
16	LEVEL SENSOR AVAIL.	0 days
17	LEVEL SENSOR ASSY.	5 days
18	READINESS	0 days



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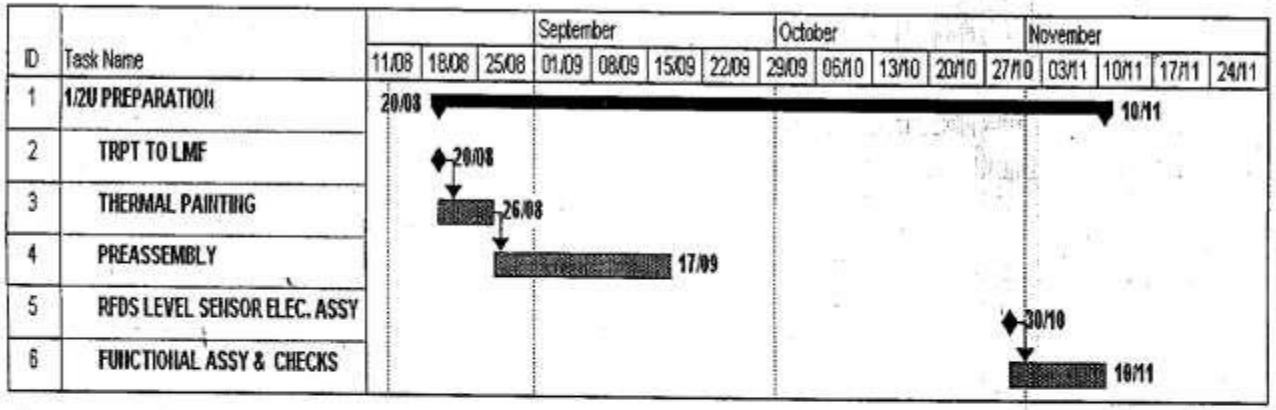
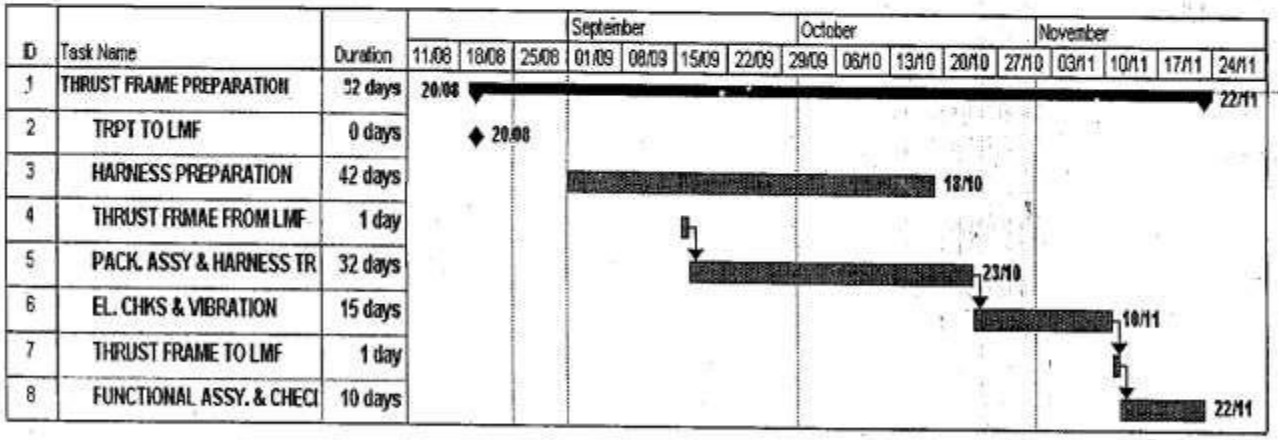
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

1/2U & THRUST FRAME REALISATION SCHEDULE





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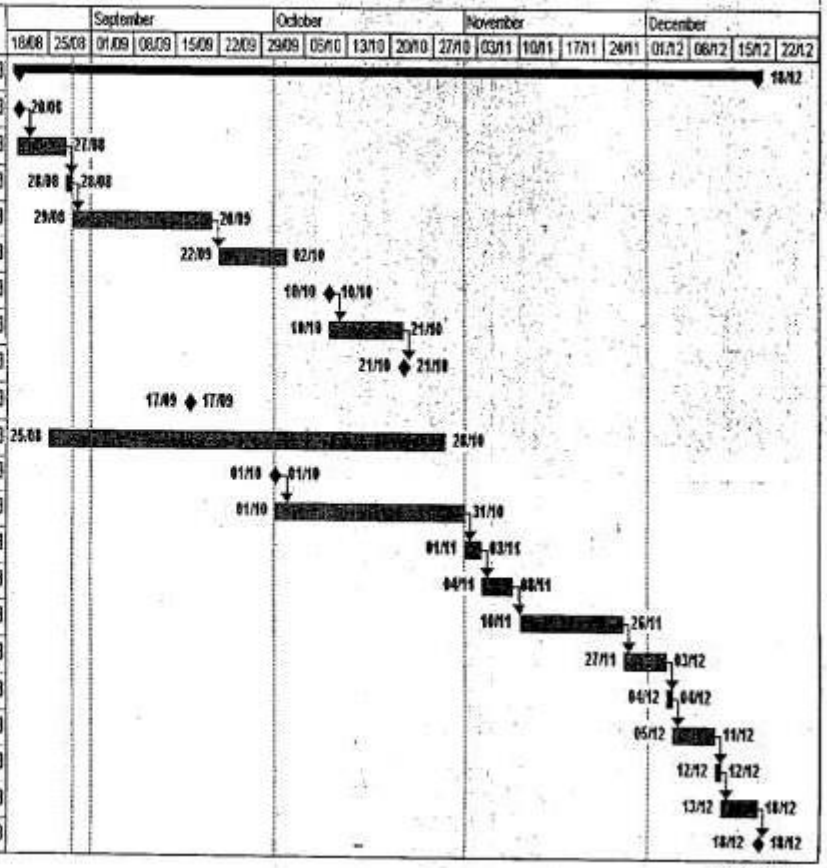
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

IS 2/3L REALISATION SCHEDULE

ID	Task Name	Duration	Start	Finish
1	2/3L REALISATION FOR F01	104 days	Wed 20/08/03	Thu 18/12/03
2	HARDWARE AVAILABILITY	0 days	Wed 20/08/03	Wed 20/08/03
3	MID PREASSEMBLY	7 days	Wed 20/08/03	Wed 27/08/03
4	TRPT TO LMF	1 day	Thu 28/08/03	Thu 28/08/03
5	LPSC PREASSEMBLY	20 days	Fri 29/08/03	Sat 20/09/03
6	THERMAL PAINTING	10 days	Mon 22/09/03	Thu 02/10/03
7	MODULES AVAILABILITY	0 days	Fri 10/10/03	Fri 10/10/03
8	FUNCTIONAL ASSEMBLY	10 days	Fri 10/10/03	Tue 21/10/03
9	2/3L TO ICF	0 days	Tue 21/10/03	Tue 21/10/03
10	DECK AVAILABILITY	0 days	Wed 17/09/03	Wed 17/09/03
11	HARNESSING ON MOCKUP	56 days	Mon 25/08/03	Tue 28/10/03
12	PACKAGES AVAILABILITY	0 days	Wed 01/10/03	Wed 01/10/03
13	PACKAGE ASSY & HARNESS TRFR	27 days	Wed 01/10/03	Fri 31/10/03
14	DECK ASSY TO 2/3L	2 days	Sat 01/11/03	Mon 03/11/03
15	ISOLATION & CONTINUITY CHKS	5 days	Tue 04/11/03	Sat 08/11/03
16	PHASE 1 CHECKS	15 days	Mon 10/11/03	Wed 26/11/03
17	VIBRATION ASSY	6 days	Thu 27/11/03	Wed 03/12/03
18	TRPT TO VMC	1 day	Thu 04/12/03	Thu 04/12/03
19	VIBRATION & CLEARANCE	6 days	Fri 05/12/03	Thu 11/12/03
20	TRPT TO LMF	1 day	Fri 12/12/03	Fri 12/12/03
21	HP LEAK CHECKS	5 days	Sat 13/12/03	Thu 18/12/03
22	READINESS	0 days	Thu 18/12/03	Thu 18/12/03



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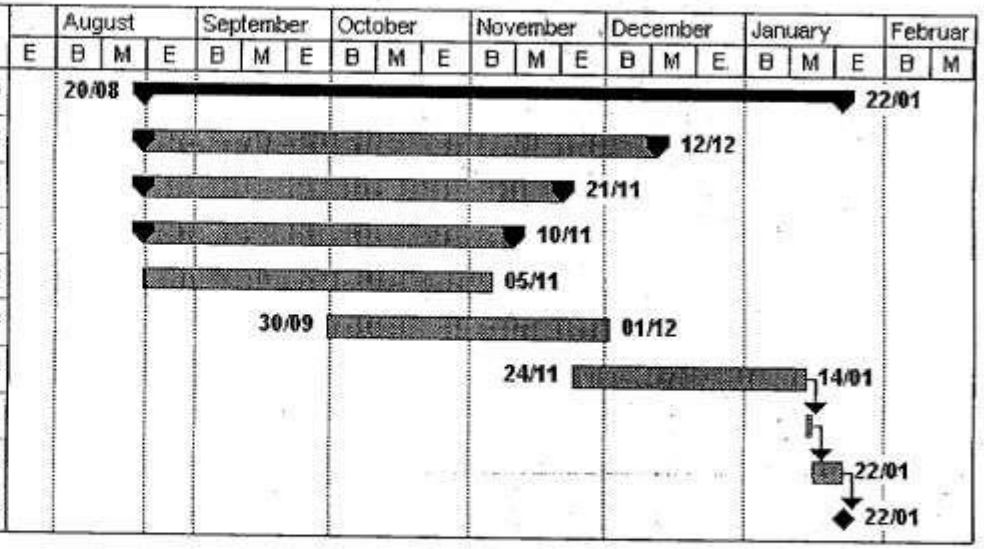
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

GS2 STAGE REALISATION - OVERALL SCHEDULE

ID	Task Name	Duration
1	GS2 STAGE SCHEDULE	112 days
2	2/3L PREPARATION	83 days
3	THRUST FRMAE PREPAI	68 days
4	1/2U PREPARATION	59 days
5	PROPELLANT TANK	56 days
6	ENGINE ASSEMBLY	45 days
7	STAGE ASSEMBLY	38 days
8	SRC CLEARANCE	1 day
9	TRPT TO SDSC	5 days
10	AT SDSC	0 days



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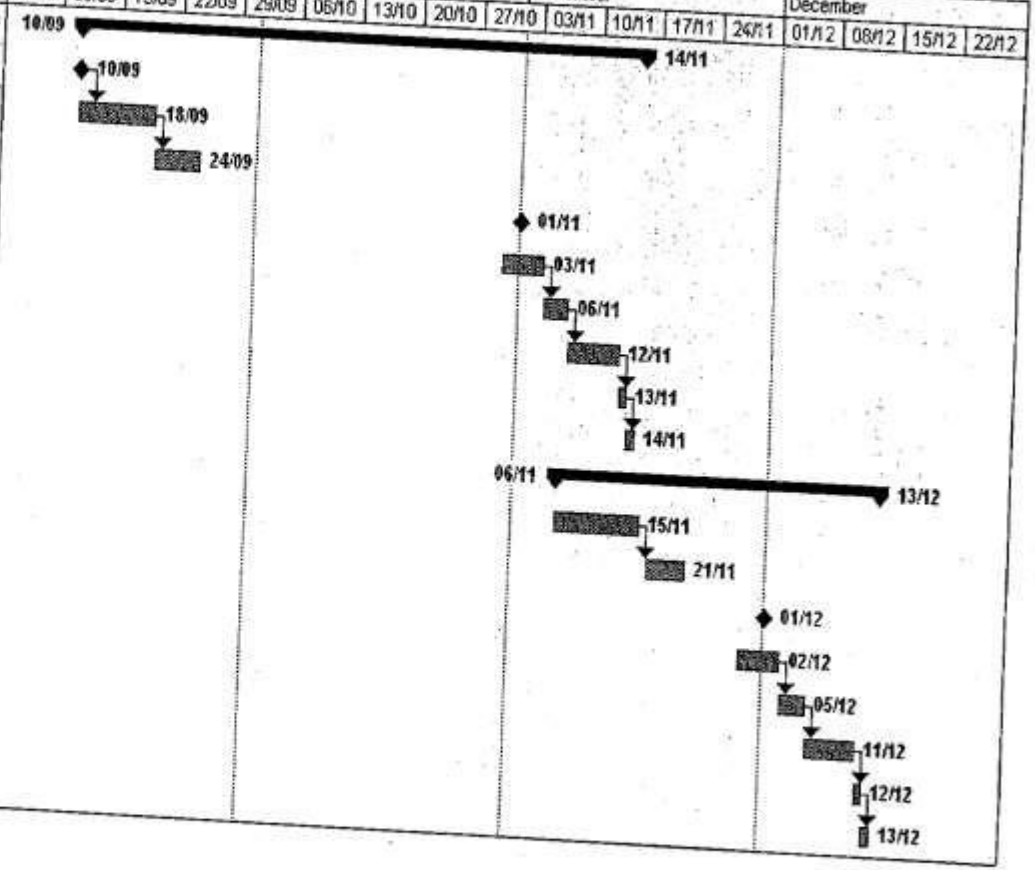
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

L40 F01-S3 AND S4 AVIONICS DECK REALISATION

ID	Task Name	Duration
24	AVIONICS DECK FOR F1S3	58 days
25	HARNESS MOCKUP REALISATI	0 days
26	HARNESS PREPARATION	9 days
27	CONTINUITY CHECKS	4.5 days
28	LAST PACKAGE AVAILABILIT	0 days
29	PACKAGE ASSY. & HARNESS	4 days
30	ISOLATION CHECKS	3 days
31	PHASE 1 CHECKS	5 days
32	CLEARANCES - RACM & RACI	1 day
33	TRANSPORT TO LMF	1 day
34	AVIONICS DECK FOR F1S4	33 days
35	HARNESS PREPARATION	9 days
36	CONTINUITY CHECKS	4.5 days
37	LAST PACKAGE AVAILABILIT	0 days
38	PACKAGE ASSY. & HARNESS	4 days
39	ISOLATION CHECKS	3 days
40	PHASE 1 CHECKS	5 days
41	CLEARANCES - RACM & RACI	1 day
42	TRANSPORT TO LMF	1 day



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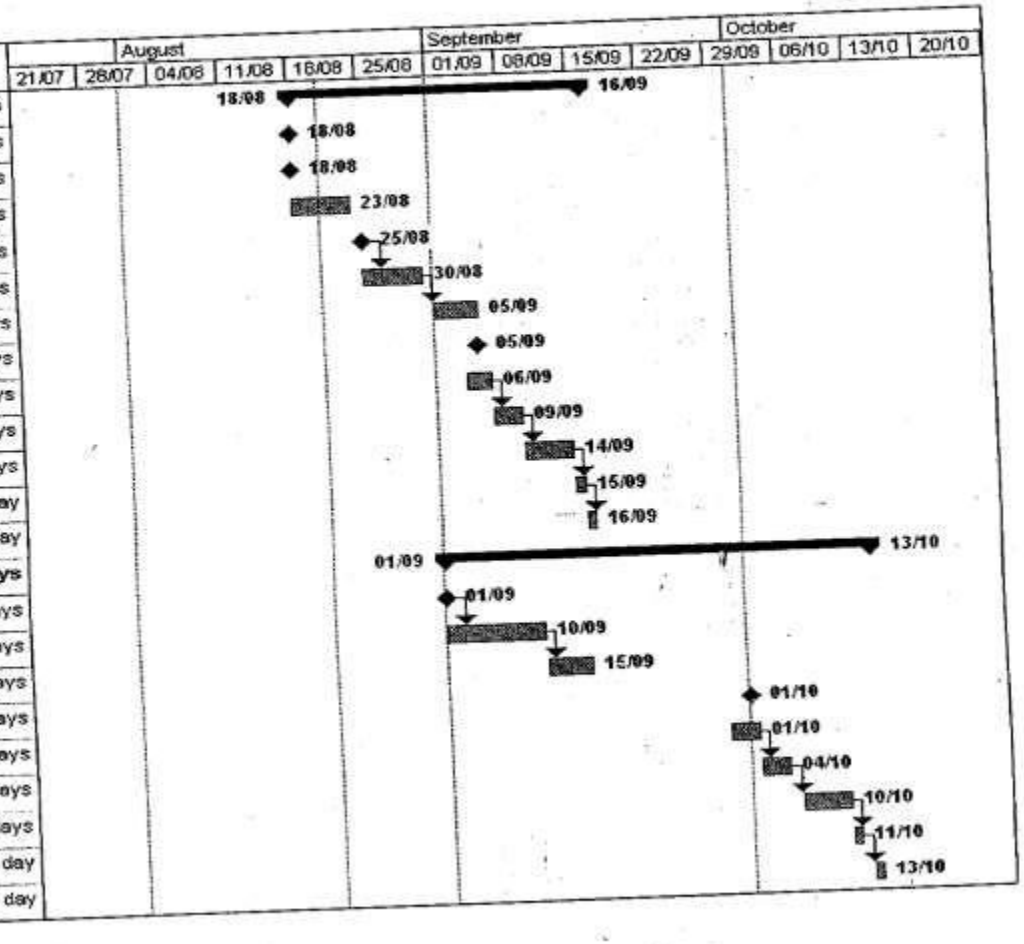
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

L40 F01-S1 AND S2 AVIONICS DECK REALISATION

ID	Task Name	Duration
1	AVIONICS DECK FOR F1S2	26.5 days
2	DECK AVAILABILITY	0 days
3	MEASUREMEIIT FIIALISATION	0 days
4	HARIIESS PLAII AIID DETAILIII	6 days
5	HARIIESS MOCKUP REALISATI	0 days
6	HARNESS PREPARATION	6 days
7	CONTIIIUITY CHECKS	4.5 days
8	LAST PACKAGE AVAILABILIT	0 days
9	PACKAGE ASSY. & HARIIESS	2.5 days
10	ISOLATION CHECKS	2 days
11	PHASE 1 CHECKS	5 days
12	CLEARAIICES - RACM & RACI	1 day
13	TRAIISPORT TO LMF	1 day
14	AVIONICS DECK FOR F1S1	38 days
15	HARIIESS MOCKUP REALISATI	0 days
16	HARIIESS PREPARATION	9 days
17	CONTIIIUITY CHECKS	4.5 days
18	LAST PACKAGE AVAILABILIT	0 days
19	PACKAGE ASSY. & HARIIESS	3 days
20	ISOLATION CHECKS	3 days
21	PHASE 1 CHECKS	5 days
22	CLEARAIICES - RACM & RACI	1 day
23	TRAIISPORT TO LMF	1 day



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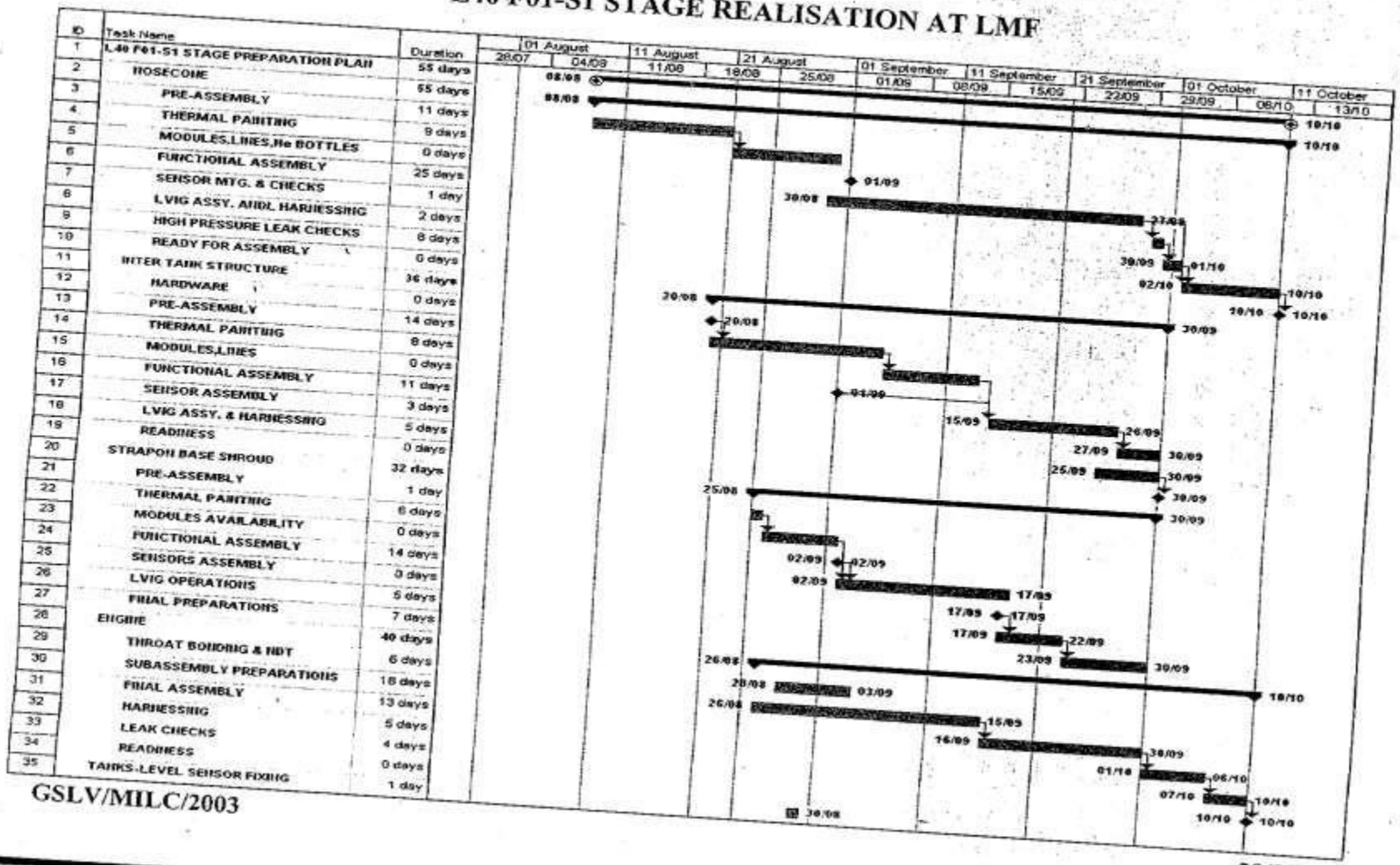
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

L40 F01-S1 STAGE REALISATION AT LMF

ID	Task Name	Duration
1	L40 F01-S1 STAGE PREPARATION PLAN	55 days
2	NOSECONE	55 days
3	PRE-ASSEMBLY	11 days
4	THERMAL PAINTING	9 days
5	MODULES,LINES,He BOTTLES	0 days
6	FUNCTIONAL ASSEMBLY	25 days
7	SENSOR MTG. & CHECKS	1 day
8	LVIG ASSY. AIDL HARNESSING	2 days
9	HIGH PRESSURE LEAK CHECKS	8 days
10	READY FOR ASSEMBLY	0 days
11	INTER TANK STRUCTURE	36 days
12	HARDWARE	0 days
13	PRE-ASSEMBLY	14 days
14	THERMAL PAINTING	8 days
15	MODULES,LINES	0 days
16	FUNCTIONAL ASSEMBLY	11 days
17	SENSOR ASSEMBLY	3 days
18	LVIG ASSY. & HARNESSING	5 days
19	READINESS	0 days
20	STRAPON BASE SHROUD	32 days
21	PRE-ASSEMBLY	1 day
22	THERMAL PAINTING	6 days
23	MODULES AVAILABILITY	0 days
24	FUNCTIONAL ASSEMBLY	14 days
25	SENSORS ASSEMBLY	0 days
26	LVIG OPERATIONS	5 days
27	FINAL PREPARATIONS	7 days
28	ENGINE	40 days
29	THROAT BONDING & NDT	6 days
30	SUBASSEMBLY PREPARATIONS	18 days
31	FINAL ASSEMBLY	13 days
32	HARNESSING	5 days
33	LEAK CHECKS	4 days
34	READINESS	0 days
35	TANKS-LEVEL SENSOR FIXING	1 day



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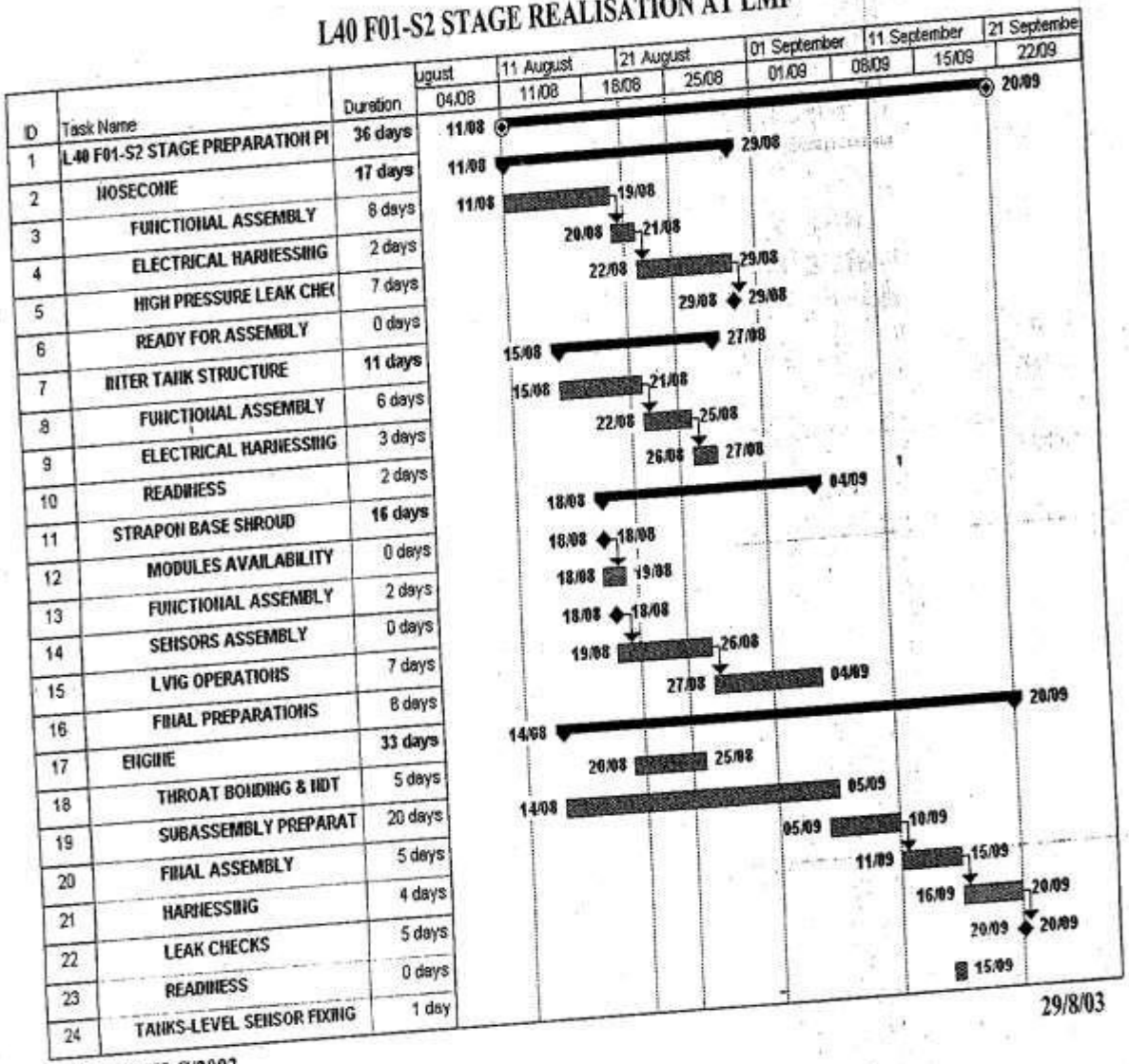
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

L40 F01-S2 STAGE REALISATION AT LMF

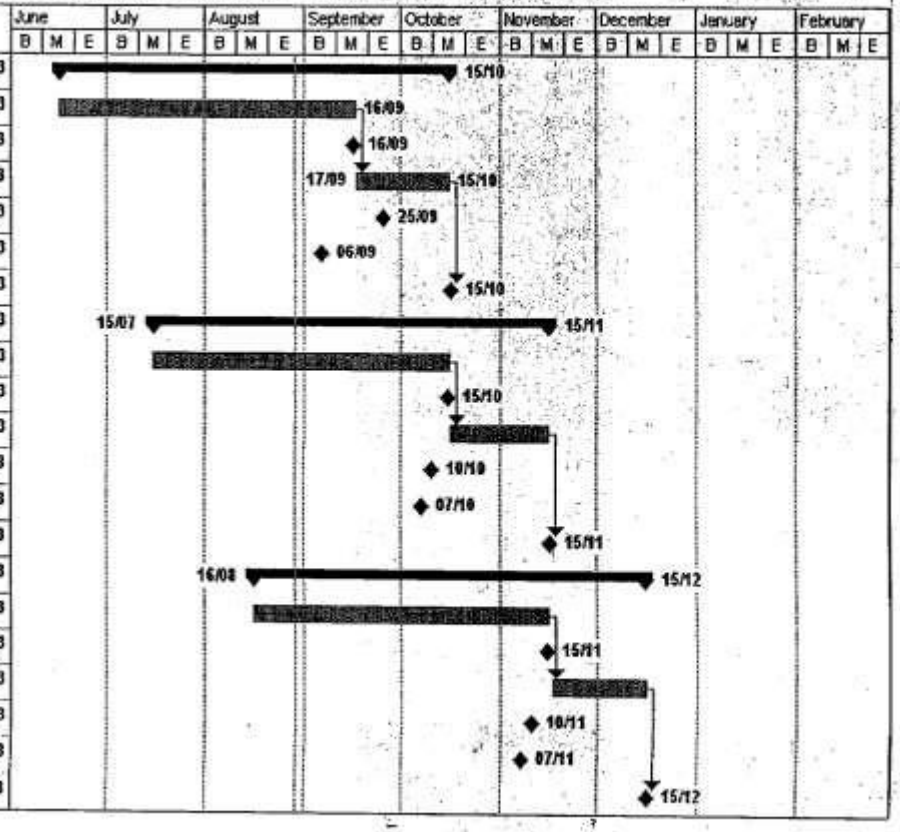
ID	Task Name	Duration
1	L40 F01-S2 STAGE PREPARATION PI	36 days
2	NOSECONE	17 days
3	FUNCTIONAL ASSEMBLY	8 days
4	ELECTRICAL HARNESSING	2 days
5	HIGH PRESSURE LEAK CHEC	7 days
6	READY FOR ASSEMBLY	0 days
7	INTER TANK STRUCTURE	11 days
8	FUNCTIONAL ASSEMBLY	6 days
9	ELECTRICAL HARNESSING	3 days
10	READINESS	2 days
11	STRAPON BASE SHROUD	16 days
12	MODULES AVAILABILITY	0 days
13	FUNCTIONAL ASSEMBLY	2 days
14	SENSORS ASSEMBLY	0 days
15	LVIG OPERATIONS	7 days
16	FINAL PREPARATIONS	8 days
17	ENGINE	33 days
18	THROAT BONDING & HDT	5 days
19	SUBASSEMBLY PREPARAT	20 days
20	FINAL ASSEMBLY	5 days
21	HARNESSING	4 days
22	LEAK CHECKS	5 days
23	READINESS	0 days
24	TANKS-LEVEL SENSOR FIXING	1 day



GSLV-F01 LAUNCH OPERATIONS SCHEDULE

L40 STAGES REALISATION AT LMF

ID	Task Name	Duration	Start	Finish
1	L40-S2 PREPARATION	105 days	Mon 16/06/03	Wed 15/10/03
2	PRE ASSY OPERATIONS	80 days	Mon 16/06/03	Tue 16/09/03
3	AVIONICS DECK AVAILABILITY	0 days	Tue 16/09/03	Tue 16/09/03
4	STAGE ASSEMBLY	25 days	Wed 17/09/03	Wed 15/10/03
5	ENGINE AVAILABILITY	0 days	Thu 25/09/03	Thu 25/09/03
6	EGC AVAILABILITY	0 days	Sat 06/09/03	Sat 06/09/03
7	TRPT TO SDSC	0 days	Wed 15/10/03	Wed 15/10/03
8	L40-S1 PREPARATION	107 days	Tue 15/07/03	Sat 15/11/03
9	PRE ASSY OPERATIONS	80 days	Tue 15/07/03	Wed 15/10/03
10	AVIONICS DECK AVAILABILITY	0 days	Wed 15/10/03	Wed 15/10/03
11	STAGE ASSEMBLY	27 days	Thu 16/10/03	Sat 15/11/03
12	ENGINE AVAILABILITY	0 days	Fri 10/10/03	Fri 10/10/03
13	EGC AVAILABILITY	0 days	Tue 07/10/03	Tue 07/10/03
14	TRPT TO SDSC	0 days	Sat 15/11/03	Sat 15/11/03
15	L40-S3 PREPARATION	104 days	Sat 16/08/03	Mon 15/12/03
16	PRE ASSY OPERATIONS	79 days	Sat 16/08/03	Sat 15/11/03
17	AVIONICS DECK AVAILABILITY	0 days	Sat 15/11/03	Sat 15/11/03
18	STAGE ASSEMBLY	25 days	Mon 17/11/03	Mon 15/12/03
19	ENGINE AVAILABILITY	0 days	Mon 10/11/03	Mon 10/11/03
20	EGC AVAILABILITY	0 days	Fri 07/11/03	Fri 07/11/03
21	TRPT TO SDSC	0 days	Mon 15/12/03	Mon 15/12/03



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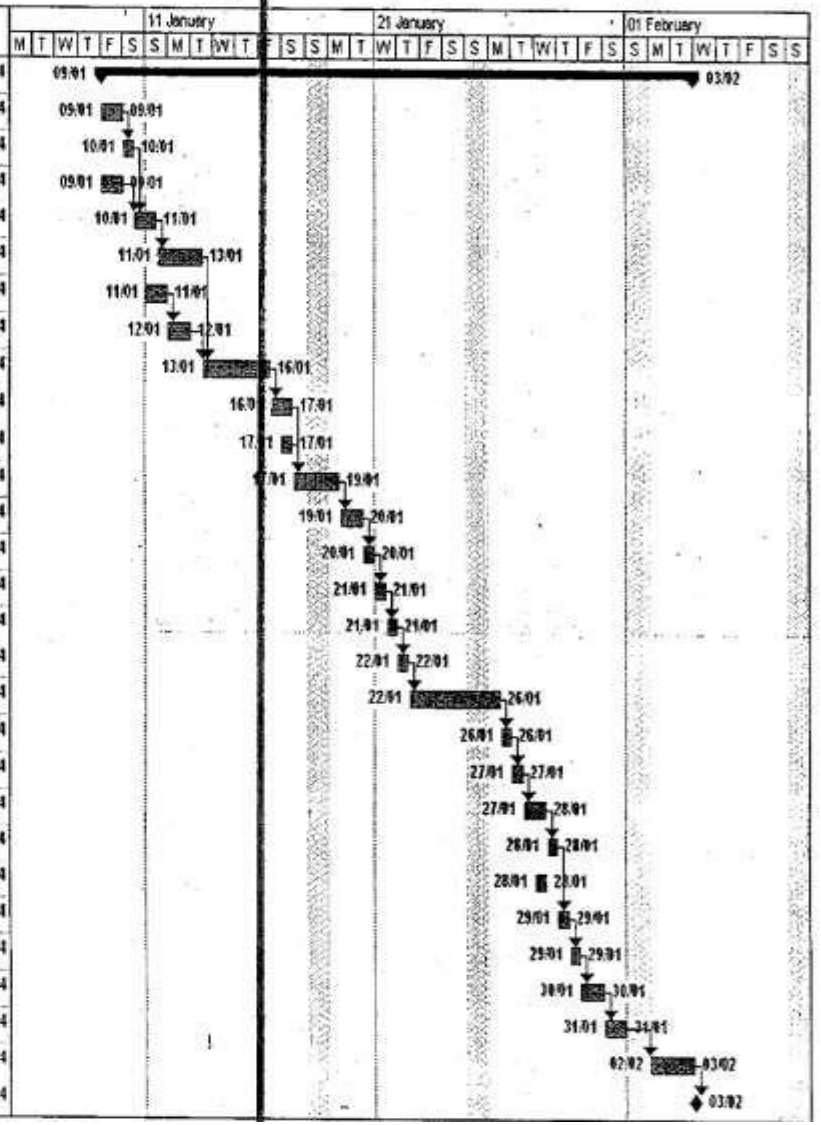
PREPARATION ACTIVITIES AT SDSC, SHAR

GSLV-F01 LAUNCH OPERATIONS SCHEDULE

L40 S1 (S3) PREPARATION AT SPB,SDSC

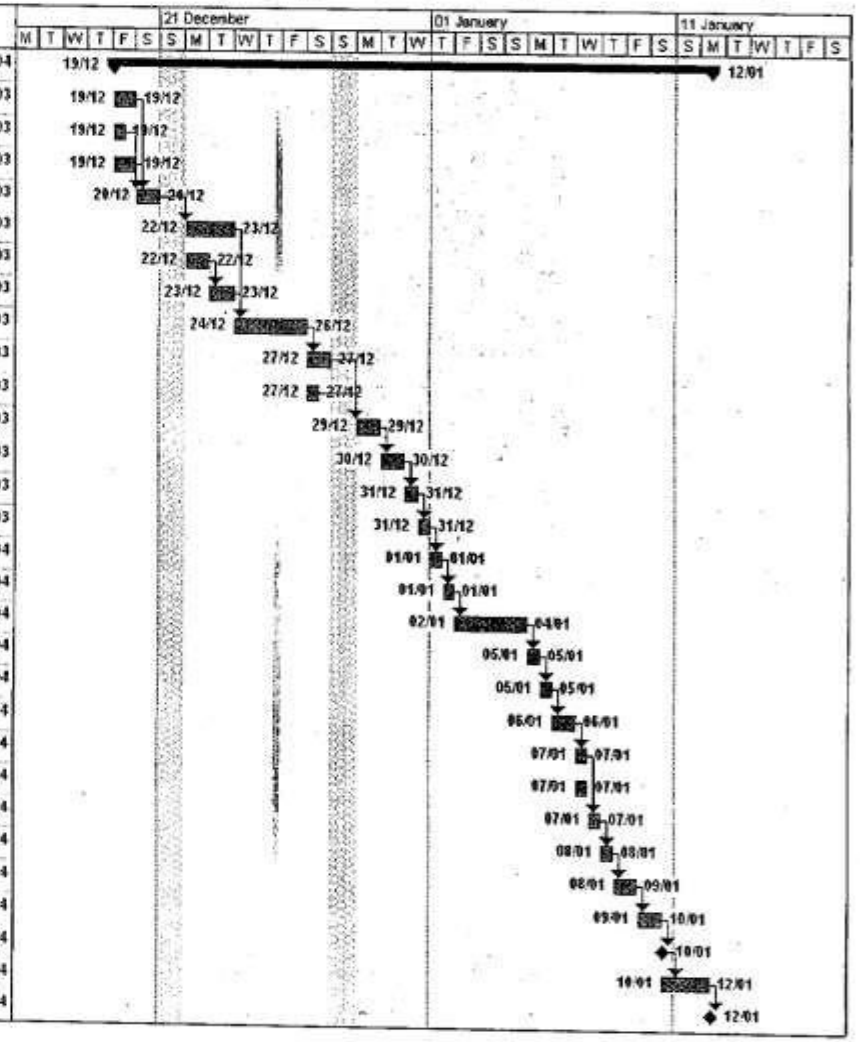
ID	Task Name	Duration	Start	Finish
1	L40 STAGE F01-S1 PREPARATION AT SPB	23 days	Fri 09/01/04	Tue 03/02/04
2	RECEIPT,UNLOAD, ALIGN AE	1 day	Fri 09/01/04	Fri 09/01/04
3	RECEIPT,UNLOAD, ALIGN FE;REMOVE SONIC FE	0.5 days	Sat 10/01/04	Sat 10/01/04
4	READINESS OF PNEUMATIC TEST RIG	1 day	Fri 09/01/04	Fri 09/01/04
5	He SNIFFER TEST	1 day	Sat 10/01/04	Sun 11/01/04
6	UT OF PROPELLANT TANKS	2 days	Sun 11/01/04	Tue 13/01/04
7	READINESS OF DECK,CBS ELEMENTS FOR CHE(	1 day	Sun 11/01/04	Sun 11/01/04
8	ELECTRICAL INTERFACING AND CLEARANCE	1 day	Mon 12/01/04	Mon 12/01/04
9	PHASE 1 CHECKS	3 days	Tue 13/01/04	Fri 16/01/04
10	FE ASSY. LEAK CHECK	1 day	Fri 16/01/04	Sat 17/01/04
11	FH ASSY.	0.5 days	Sat 17/01/04	Sat 17/01/04
12	AE ASSY. LEAK CHECKS	1 day	Sat 17/01/04	Mon 19/01/04
13	RMSA ASSY.,ETA ROUTING ETC.	1 day	Mon 19/01/04	Tue 20/01/04
14	FLSC ASSY. & HOLDER ASSY.	0.5 days	Tue 20/01/04	Tue 20/01/04
15	RMSA ACTUATION CHECKS , CLEARANCE	0.5 days	Wed 21/01/04	Wed 21/01/04
16	STAGE INTEGRATION	0.5 days	Wed 21/01/04	Wed 21/01/04
17	EQ. REGULATOR FILLING &TEST	0.5 days	Thu 22/01/04	Thu 22/01/04
18	STAGE LEAK CHECKS	3 days	Thu 22/01/04	Mon 26/01/04
19	FINAL DECK ASSY & HARNESSING	0.5 days	Mon 26/01/04	Mon 26/01/04
20	EQ. REGULATOR REPEAT TEST	0.5 days	Tue 27/01/04	Tue 27/01/04
21	DESTRUCT CORDS ASSY & COVER ASSY.	1 day	Tue 27/01/04	Wed 28/01/04
22	WIRE TUNNEL ASSY.	0.5 days	Wed 28/01/04	Wed 28/01/04
23	EGC ASSY.	0.5 days	Wed 28/01/04	Wed 28/01/04
24	RFDS LINE, TH. SHROUD ASSY.	0.5 days	Thu 29/01/04	Thu 29/01/04
25	THERMALBOOT, HOSECONE FE ASSY	0.5 days	Thu 29/01/04	Thu 29/01/04
26	COLD GIMBAL CHECKS	1 day	Fri 30/01/04	Fri 30/01/04
27	FINAL PREPN & WEIGHING	1 day	Sat 31/01/04	Sat 31/01/04
28	THERMAL PROTN PADS ASSY	2 days	Mon 02/02/04	Tue 03/02/04
29	FINAL CLEARANCE FOR LOADING	0 days	Tue 03/02/04	Tue 03/02/04



GSLV-F01 LAUNCH OPERATIONS SCHEDULE

L40 S2 (S4) PREPARATION AT SPB,SDSC

ID	Task Name	Duration	Start	Finish
1	L40 STAGE F01-S2 PREPARATION AT SPB	22.5 days	Fri 19/12/03	Mon 12/01/04
2	RECEIPT,UNLOAD, ALIGN AE	1 day	Fri 19/12/03	Fri 19/12/03
3	RECEIPT,UNLOAD, ALIGN FE;REMOVE SONIC FE	0.5 days	Fri 19/12/03	Fri 19/12/03
4	READINESS OF PNEUMATIC TEST RIG	1 day	Fri 19/12/03	Fri 19/12/03
5	He SNIFFER TEST	1 day	Sat 20/12/03	Sat 20/12/03
6	UT OF PROPELLANT TANKS	2 days	Mon 22/12/03	Tue 23/12/03
7	READINESS OF DECK,CBS ELEMENTS FOR CHEC	1 day	Mon 22/12/03	Mon 22/12/03
8	ELECTRICAL INTERFACING AND CLEARANCE	1 day	Tue 23/12/03	Tue 23/12/03
9	PHASE 1 CHECKS	3 days	Wed 24/12/03	Fri 26/12/03
10	FE ASSY. LEAK CHECK	1 day	Sat 27/12/03	Sat 27/12/03
11	FIN ASSY.	0.5 days	Sat 27/12/03	Sat 27/12/03
12	AE ASSY. LEAK CHECKS	1 day	Mon 29/12/03	Mon 29/12/03
13	PMSA ASSY.,ETA ROUTING ETC.	1 day	Tue 30/12/03	Tue 30/12/03
14	FLSC ASSY. & HOLDER ASSY.	0.5 days	Wed 31/12/03	Wed 31/12/03
15	PMSA ACTUATION CHECKS , CLEARANCE	0.5 days	Wed 31/12/03	Wed 31/12/03
16	STAGE INTEGRATION	0.5 days	Thu 01/01/04	Thu 01/01/04
17	EQ. REGULATOR FILLING & TEST	0.5 days	Thu 01/01/04	Thu 01/01/04
18	STAGE LEAK CHECKS	3 days	Fri 02/01/04	Sun 04/01/04
19	FINAL DECK ASSY & HARNESSING	0.5 days	Mon 05/01/04	Mon 05/01/04
20	EQ. REGULATOR REPEAT TEST	0.5 days	Mon 05/01/04	Mon 05/01/04
21	DESTRUCT CORDS ASSY & COVER ASSY.	1 day	Tue 06/01/04	Tue 06/01/04
22	WIRE TUNNEL ASSY.	0.5 days	Wed 07/01/04	Wed 07/01/04
23	EGC ASSY.	0.5 days	Wed 07/01/04	Wed 07/01/04
24	RFDS LINE, TH. SHROUD ASSY.	0.5 days	Wed 07/01/04	Wed 07/01/04
25	THERMALBOOT, NOSECONE FE ASSY	0.5 days	Thu 08/01/04	Thu 08/01/04
26	COLD GIMBAL CHECKS	1 day	Thu 08/01/04	Fri 09/01/04
27	FINAL PREPN. & WEIGHING	1 day	Fri 09/01/04	Sat 10/01/04
28	UNLOAD ON STORAGE CRADLE	0 days	Sat 10/01/04	Sat 10/01/04
29	THERMAL PROTN. PADS ASSY	2 days	Sat 10/01/04	Mon 12/01/04
30	FINAL CLEARANCE FOR LOADING	0 days	Mon 12/01/04	Mon 12/01/04



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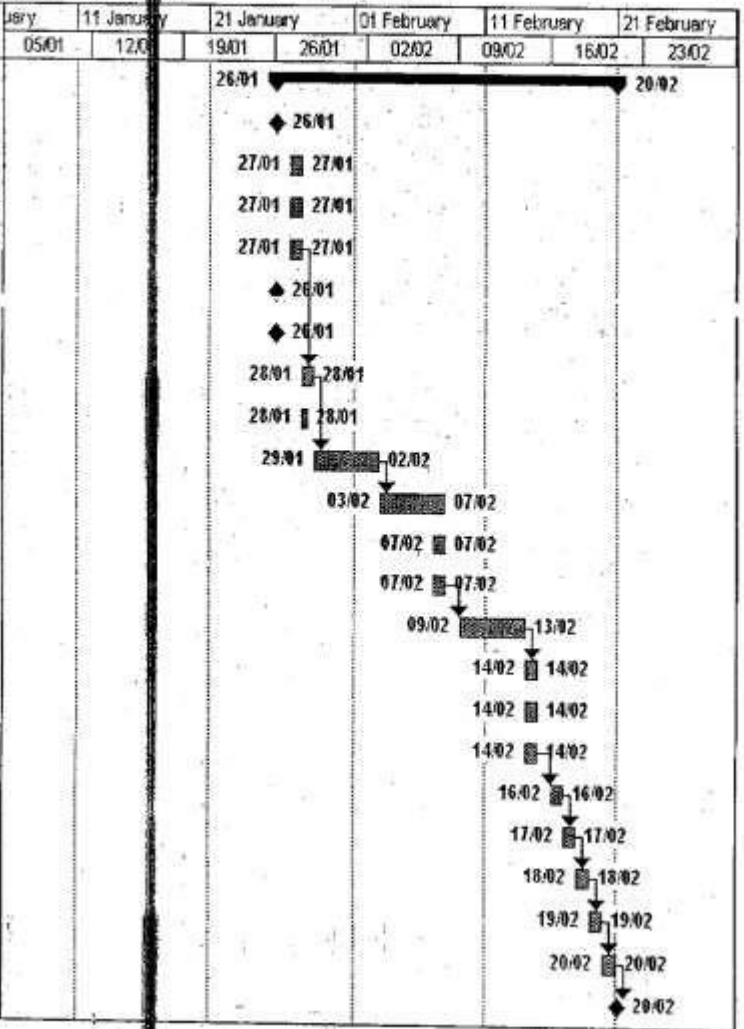
GSLV-F01 LAUNCH OPERATIONS SCHEDULE

GS2 PREPARATION AT SSPF,SDSC

ID	Task Name	Duration	Start	Finish
1	GS2 STAGE PREPARATION AT SSPF	23 days	Mon 26/01/04	Fri 20/02/04
2	STAGE RECEIPT	0 days	Mon 26/01/04	Mon 26/01/04
3	UNLOAD,INSPECT & CLEAR	1 day	Tue 27/01/04	Tue 27/01/04
4	STAGE LEVELLING & EGC ASSY.	1 day	Tue 27/01/04	Tue 27/01/04
5	UCA GROUND HALVES MATING	1 day	Tue 27/01/04	Tue 27/01/04
6	[illegible] CHECKOUT READINESS	0 days	Mon 26/01/04	Mon 26/01/04
7	LSSF READINESS FOR LEAK CHECK	0 days	Mon 26/01/04	Mon 26/01/04
8	DEPRESSURISATION OF TANKS & bottles	1 day	Wed 28/01/04	Wed 28/01/04
9	DESTRUCT RMSA ASSY	0.5 days	Wed 28/01/04	Wed 28/01/04
10	PHASE-1 ELECTRICAL CHECKS-PART A WITH 1/	4 days	Thu 29/01/04	Mon 02/02/04
11	PHASE-1 ELECTRICAL CHECKS-PART B	5 days	Tue 03/02/04	Sat 07/02/04
12	EQ. REGULATOR FILLING & TEST	1 day	Sat 07/02/04	Sat 07/02/04
13	EGC ASSY TO ENGINE END	1 day	Sat 07/02/04	Sat 07/02/04
14	LEAK & FUNCTIONAL CHECKS	5 days	Mon 09/02/04	Fri 13/02/04
15	WIRE TUNNEL ASSEMBLY	1 day	Sat 14/02/04	Sat 14/02/04
16	CLEARANCE OF STAGE OPERATIONS	1 day	Sat 14/02/04	Sat 14/02/04
17	GS2 SEPARATION SYS. ASSY.	1 day	Sat 14/02/04	Sat 14/02/04
18	DESTRUCT CORD & COVER ASSEMBLY	1 day	Mon 16/02/04	Mon 16/02/04
19	EMBLEM PAINTING ON TANK	1 day	Tue 17/02/04	Tue 17/02/04
20	THERMAL PROTECTION PADS ASSEMBLY	1 day	Wed 18/02/04	Wed 18/02/04
21	EMBLEM PAINTING ON PADS	1 day	Thu 19/02/04	Thu 19/02/04
22	FINAL CLEARANCE AND LOADING TO TRANSTIL	1 day	Fri 20/02/04	Fri 20/02/04
23	READINESS	0 days	Fri 20/02/04	Fri 20/02/04

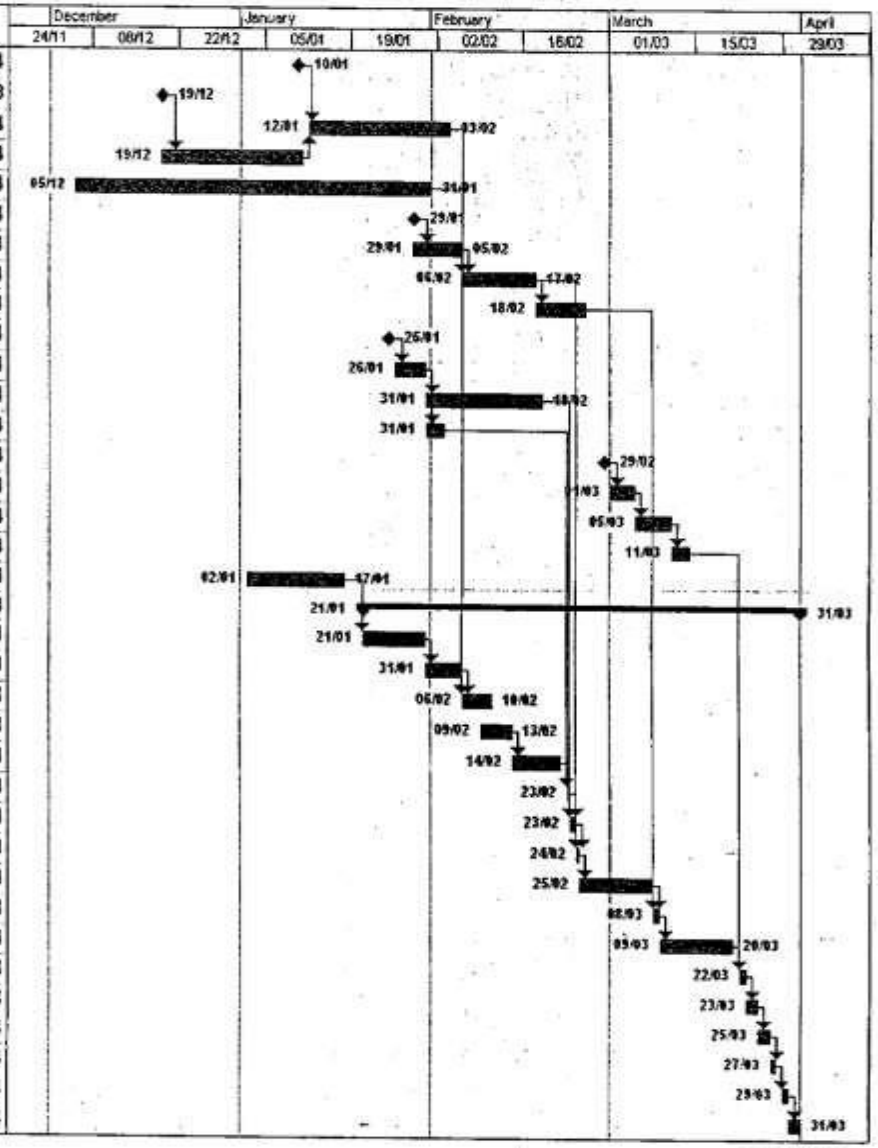


GSLV/MILC/2003

29/8/03

GSLV-F01 LAUNCH OPERATIONS SCHEDULE

ID	Task Name	Duration	Start	Finish
1	L40 - S1,S4-RECEIPT AT SPB	0 days	Sat 10/01/04	Sat 10/01/04
2	L40-S2,S3- RECEIPT AT SPB	0 days	Fri 19/12/03	Fri 19/12/03
3	L40-S1,S4 AT SPB	20 days	Mon 12/01/04	Tue 03/02/04
4	L40-S2,S3 AT SPB	20 days	Fri 19/12/03	Sat 10/01/04
5	CRYO STAGE PTC & AUTONOMOI	50 days	Fri 05/12/03	Sat 31/01/04
6	EB RECEIPT	0 days	Thu 29/01/04	Thu 29/01/04
7	EB AUTO CHECKS	7 days	Thu 29/01/04	Thu 05/02/04
8	COMPLEX CHECKS	10 days	Fri 06/02/04	Tue 17/02/04
9	CS PREPARATION	7 days	Wed 18/02/04	Wed 25/02/04
10	GS2, 1/2M,1/2V RECEIPT	0 days	Sun 25/01/04	Sun 25/01/04
11	GS2-1/2M CHECKS	5 days	Mon 26/01/04	Fri 30/01/04
12	GS2 CHECKS	16 days	Sat 31/01/04	Wed 18/02/04
13	1/2M PYRO ASSEMBLY	2 days	Sat 31/01/04	Mon 02/02/04
14	HS, PLA RECEIPT	0 days	Sun 29/02/04	Sun 29/02/04
15	HS,PLA CHECKS	4 days	Mon 01/03/04	Thu 04/03/04
16	SPACECRAFT FILLING	6 days	Fri 05/03/04	Wed 10/03/04
17	ENCAPSULATION	3 days	Thu 11/03/04	Sat 13/03/04
18	SMPF PREPARATION	14 days	Fri 02/01/04	Sat 17/01/04
19	LAUNCH CAMPAIGN	62 days	Wed 21/01/04	Wed 31/03/04
20	S139 ASSY	9 days	Wed 21/01/04	Fri 30/01/04
21	IGN,PYRO,1/2V,WT,FLSC	5 days	Sat 31/01/04	Thu 05/02/04
22	L40 ASSY	4 days	Fri 06/02/04	Tue 10/02/04
23	INTERCONNECTION PLUMBIN	5 days	Mon 09/02/04	Fri 13/02/04
24	EL&PNEU CHKS	7 days	Sat 14/02/04	Sat 21/02/04
25	1/2M ASSY	0.5 days	Mon 23/02/04	Mon 23/02/04
26	GS2 ASSY	1 day	Mon 23/02/04	Tue 24/02/04
27	EB ASSY	0.5 days	Tue 24/02/04	Tue 24/02/04
28	EL & PNEU CHKS	11 days	Wed 25/02/04	Sun 07/03/04
29	CS , EB ASSY	1 day	Mon 08/03/04	Mon 08/03/04
30	ELECTRICAL CHECKS-Ph-III L-	11 days	Tue 09/03/04	Sat 20/03/04
31	EA ASSY	1 day	Mon 22/03/04	Mon 22/03/04
32	ELECTRICAL CHECKS-Ph-III L-	2 days	Tue 23/03/04	Wed 24/03/04
33	PREPN AND REHEARSAL	2 days	Thu 25/03/04	Fri 26/03/04
34	ARMING	1 day	Sat 27/03/04	Sat 27/03/04
35	PRE COUNT DOWN	1 day	Mon 29/03/04	Mon 29/03/04
36	COUNT DOWN & LAUNCH	2 days	Tue 30/03/04	Wed 31/03/04



GSLV/MILC/2003

29/8/03

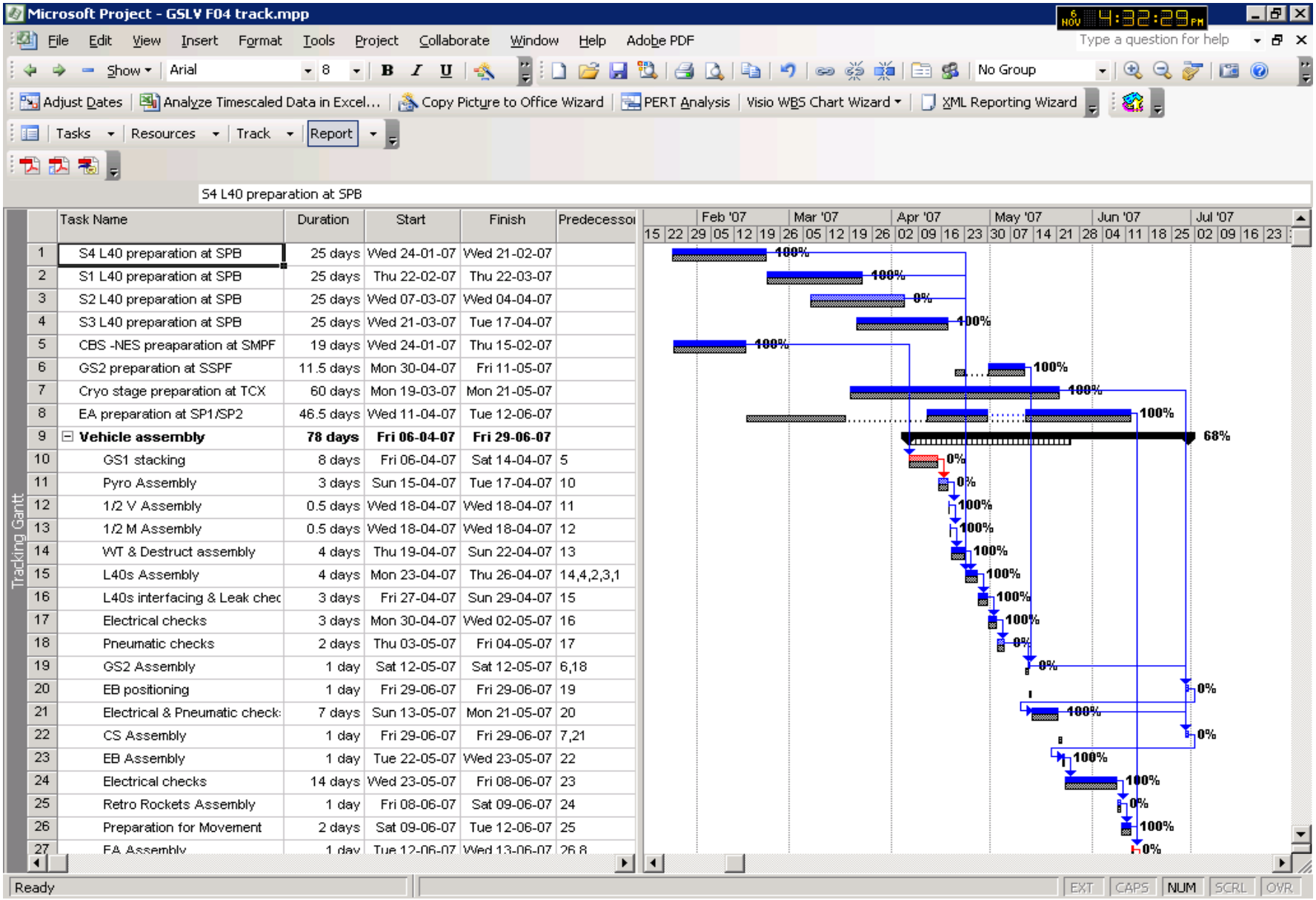
PROPOSAL FOR WORKFLOW OF PROJECTMANAGEMENT IN A MULTIPROJECT ENVIRONMENT

INVESTMENT PROJECT –PSLV (CARTOSAT)

- **Project Structuring–WBS from MS Project (MSP).**
- **Planning Dates - MSP**
- **Planning costs- MSP/COWAA**
- **Budget- Zero based budgeting and COWAA**
- **Execution- MSP**
- **Updating actual costs, commitments- COWAA/MSP**
- **Calculating Overhead & Asset under Construction.**

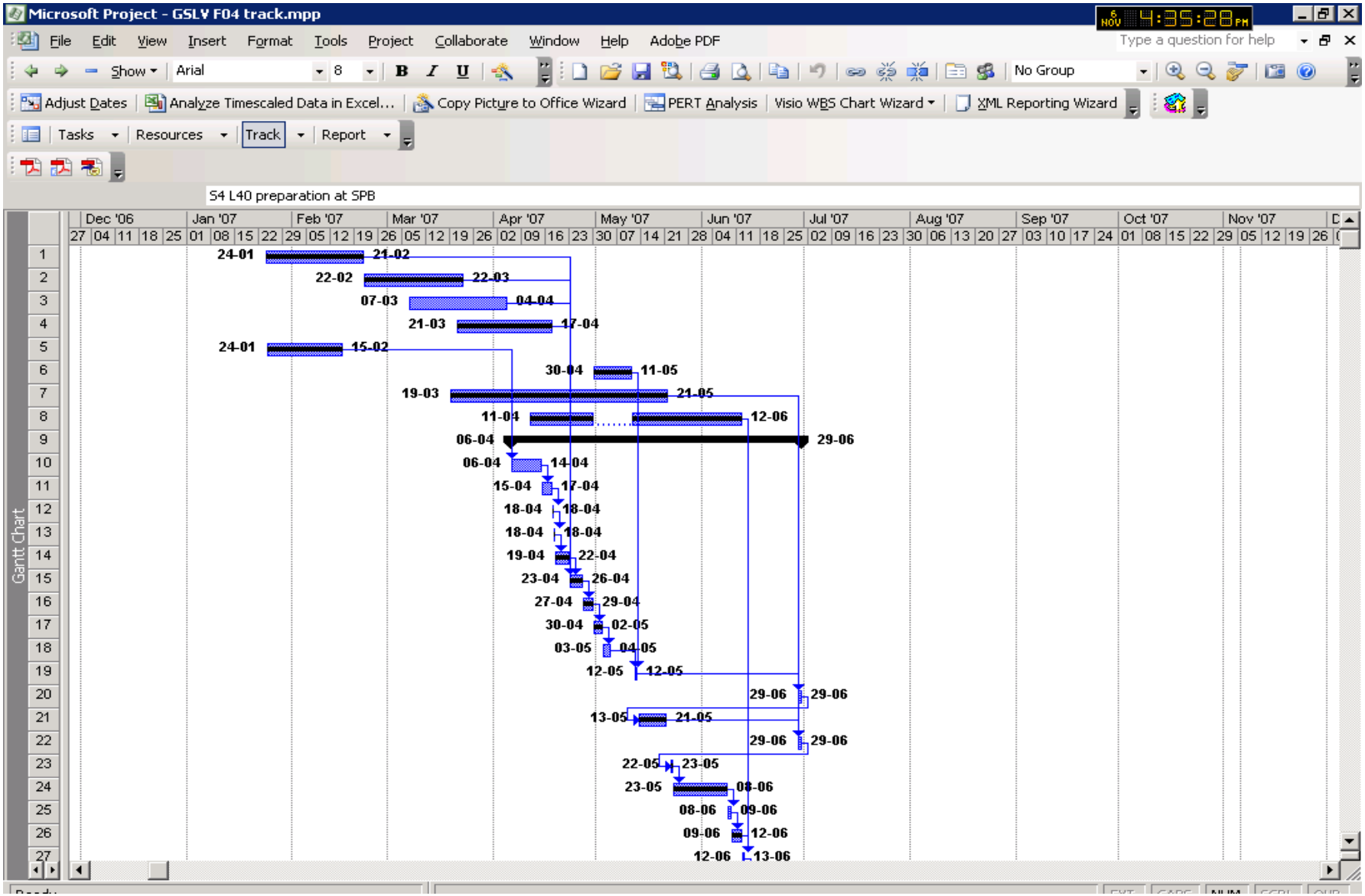
-COWAA.

❖ **Project Structuring–WBS from MS Project (MSP).**



	Task Name	Duration	Start	Finish	Predecessor
1	S4 L40 preparation at SPB	25 days	Wed 24-01-07	Wed 21-02-07	
2	S1 L40 preparation at SPB	25 days	Thu 22-02-07	Thu 22-03-07	
3	S2 L40 preparation at SPB	25 days	Wed 07-03-07	Wed 04-04-07	
4	S3 L40 preparation at SPB	25 days	Wed 21-03-07	Tue 17-04-07	
5	CBS -NES preaparation at SMPF	19 days	Wed 24-01-07	Thu 15-02-07	
6	GS2 preparation at SSPF	11.5 days	Mon 30-04-07	Fri 11-05-07	
7	Cryo stage preparation at TCX	60 days	Mon 19-03-07	Mon 21-05-07	
8	EA preparation at SP1/SP2	46.5 days	Wed 11-04-07	Tue 12-06-07	
9	**Vehicle assembly**	**78 days**	**Fri 06-04-07**	**Fri 29-06-07**	
10	GS1 stacking	8 days	Fri 06-04-07	Sat 14-04-07	5
11	Pyro Assembly	3 days	Sun 15-04-07	Tue 17-04-07	10
12	1/2 V Assembly	0.5 days	Wed 18-04-07	Wed 18-04-07	11
13	1/2 M Assembly	0.5 days	Wed 18-04-07	Wed 18-04-07	12
14	WT & Destruct assembly	4 days	Thu 19-04-07	Sun 22-04-07	13
15	L40s Assembly	4 days	Mon 23-04-07	Thu 26-04-07	14,4,2,3,1
16	L40s interfacing & Leak chec	3 days	Fri 27-04-07	Sun 29-04-07	15
17	Electrical checks	3 days	Mon 30-04-07	Wed 02-05-07	16
18	Pneumatic checks	2 days	Thu 03-05-07	Fri 04-05-07	17
19	GS2 Assembly	1 day	Sat 12-05-07	Sat 12-05-07	6,18
20	EB positioning	1 day	Fri 29-06-07	Fri 29-06-07	19
21	Electrical & Pneumatic check:	7 days	Sun 13-05-07	Mon 21-05-07	20
22	CS Assembly	1 day	Fri 29-06-07	Fri 29-06-07	7,21
23	EB Assembly	1 day	Tue 22-05-07	Wed 23-05-07	22
24	Electrical checks	14 days	Wed 23-05-07	Fri 08-06-07	23
25	Retro Rockets Assembly	1 day	Fri 08-06-07	Sat 09-06-07	24
26	Preparation for Movement	2 days	Sat 09-06-07	Tue 12-06-07	25
27	EA Assembly	1 day	Tue 12-06-07	Wed 13-06-07	26,8

❖ Planning Dates - MSP



❖ **Planning costs- MSP/COWAA (RE/BE)**

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Tasks | Resources | Track | Report

Resource Sheet

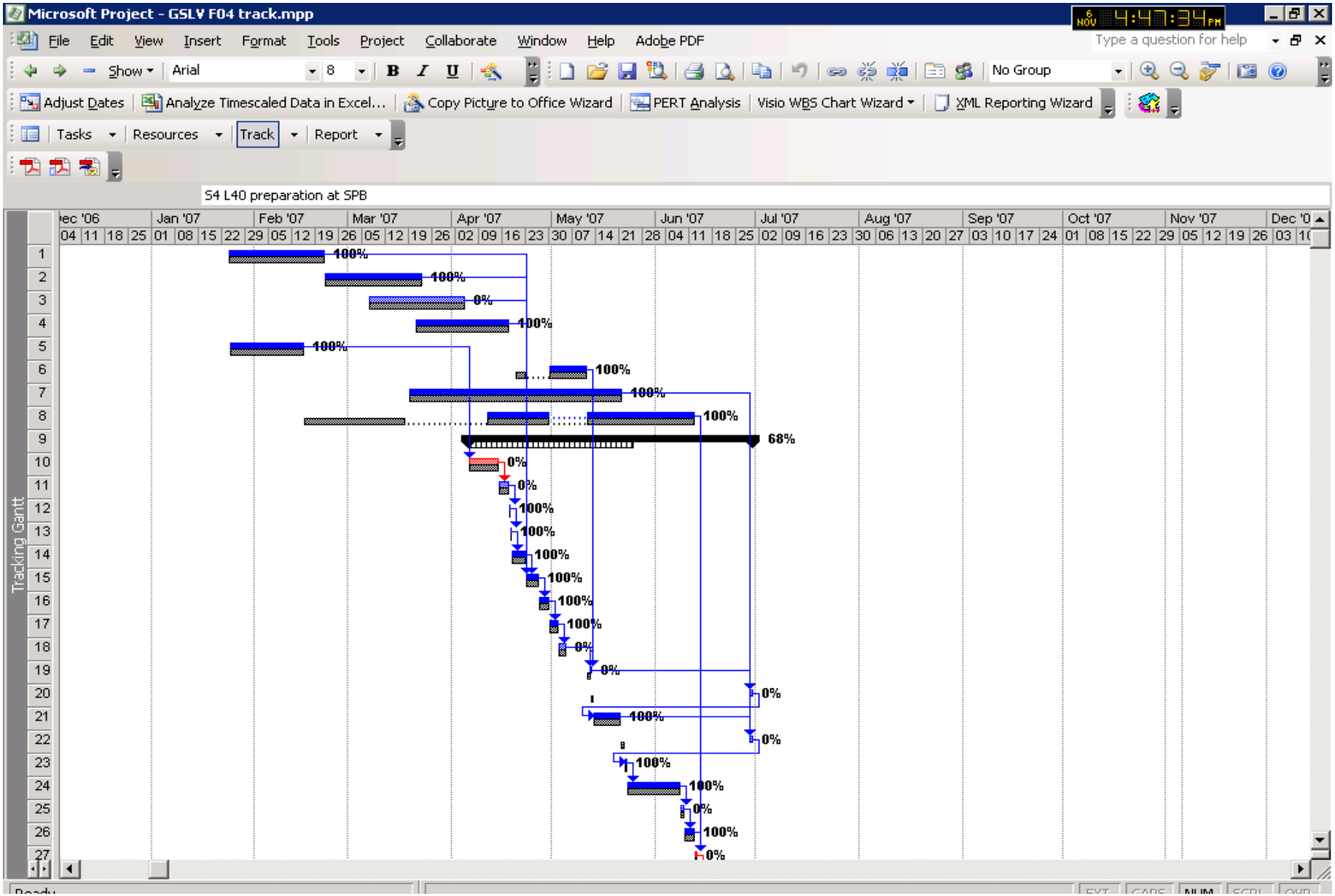
	Resource Name	Type	Material Label	Initials	Group	Max. Units	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar	Code
1	ss	Work		s		100%	£25.00/hr	£10.00/hr	£0.00	Prorated	Standard	
2	kj	Material		lk			£12.00		£50.00	Start		
3	hsd	Work		h		100%	£65.00/hr	£12.00/hr	£20.00	End	Standard	
4	lko	Material		l			£35.00		£45.00	Prorated		
5	mhj	Work		m		100%	£25.00/hr	£12.00/hr	£5.00	Start	Standard	
6	xcvb	Work		x		100%	£25.00/hr	£18.00/hr	£6.00	End	Standard	
7	sdfsd	Material		s			£54.00		£5.00	Prorated		
8	cvbvcb	Work		c		100%	£25.00/hr	£35.00/hr	£15.00	Prorated	Standard	

Ready

❖ **Budget- Zero based budgeting and COWAA**

- ✓ **COWAA RE/BE link with MSP**
- ✓ **All Line items to be linked to MSP WBS Elements accordingly**
- ✓ **Zero Based Budgeting**

❖ Execution- MSP



❖ Updating actual costs, commitments- COWAA/MSP

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Tasks | Resources | Track | Report

Unassigned

Resource Usage

	Resource Name	Cost	Baseline Cost	Variance	Actual Cost	Remaining
	CBS-NES prea	£3,800.00	£3,800.00	£0.00	£3,800.00	£0.00
	Cryo stage prej	£12,000.00	£12,000.00	£0.00	£12,000.00	£0.00
	EA preparation	£9,000.00	£9,000.00	£0.00	£9,000.00	£0.00
2	kj	£310.00	£310.00	£0.00	£124.00	£186.00
	S4 L40 prepara	£62.00	£62.00	£0.00	£62.00	£0.00
	GS2 preparatio	£62.00	£62.00	£0.00	£62.00	£0.00
	Pyro Assembly	£62.00	£62.00	£0.00	£0.00	£62.00
	EB positioning	£62.00	£62.00	£0.00	£0.00	£62.00
	CS Assembly	£62.00	£62.00	£0.00	£0.00	£62.00
3	hsd	£3,440.00	£3,440.00	£0.00	£2,380.00	£1,060.00
	1/2 M Assembl	£280.00	£280.00	£0.00	£280.00	£0.00
	WT & Destruct	£2,100.00	£2,100.00	£0.00	£2,100.00	£0.00
	Pneu Assy & cl	£1,060.00	£1,060.00	£0.00	£0.00	£1,060.00
4	lko	£480.00	£480.00	£0.00	£80.00	£400.00
	S2 L40 prepara	£80.00	£80.00	£0.00	£0.00	£80.00
	GS1 stacking	£80.00	£80.00	£0.00	£0.00	£80.00
	L40s interfacin	£80.00	£80.00	£0.00	£80.00	£0.00
	Pneumatic che	£80.00	£80.00	£0.00	£0.00	£80.00
	Final Preparati	£80.00	£80.00	£0.00	£0.00	£80.00
	Fun checks an	£80.00	£80.00	£0.00	£0.00	£80.00
5	mhj	£10,140.00	£10,140.00	£0.00	£9,530.00	£610.00
	S3 L40 prepara	£5,005.00	£5,005.00	£0.00	£5,005.00	£0.00
	GS2 preparatio	£2,305.00	£2,305.00	£0.00	£2,305.00	£0.00
	L40s Assembly	£805.00	£805.00	£0.00	£805.00	£0.00
	L40s interfacin	£605.00	£605.00	£0.00	£605.00	£0.00
	Electrical chec	£605.00	£605.00	£0.00	£605.00	£0.00
	FB Assembly	£205.00	£205.00	£0.00	£205.00	£0.00

Details	T	W	T	F	S	S
Work		4h	8h	8h	8h	
Work						
Work						
Work		0.04	0.04	0.04	0.04	
Work		0.04	0.04	0.04	0.04	
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❖ **Calculating Overhead & Asset under Construction.**

-COWAA.

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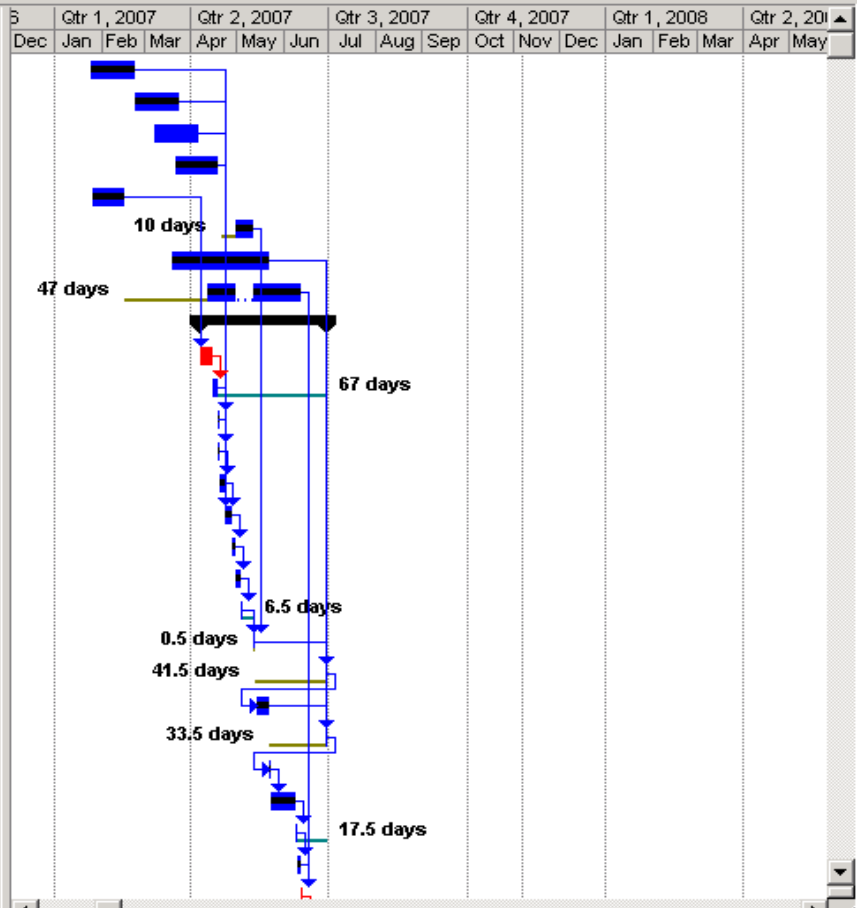
Tasks | Resources | Track | Report

Detail Gantt

	Task Name	Leveling Delay	Duration	Start	Finish	S
1	S4 L40 preparation at SPB	0 edays	25 days	Wed 24-01-07	Wed 21-02-07	1
2	S1 L40 preparation at SPB	0 edays	25 days	Thu 22-02-07	Thu 22-03-07	1
3	S2 L40 preparation at SPB	0 edays	25 days	Wed 07-03-07	Wed 04-04-07	1
4	S3 L40 preparation at SPB	0 edays	25 days	Wed 21-03-07	Tue 17-04-07	1
5	CBS -NES preaparation at	0 edays	19 days	Wed 24-01-07	Thu 15-02-07	1
6	GS2 preparation at SSPF	0 edays	11.5 days	Mon 30-04-07	Fri 11-05-07	1
7	Cryo stage preparation at	0 edays	60 days	Mon 19-03-07	Mon 21-05-07	2
8	EA preparation at SP1/SP2	0 edays	46.5 days	Wed 11-04-07	Tue 12-06-07	2
9	**Vehicle assembly**	**0 edays**	**78 days**	**Fri 06-04-07**	**Fri 29-06-07**	
10	GS1 stacking	0 edays	8 days	Fri 06-04-07	Sat 14-04-07	1
11	Pyro Assembly	0 edays	3 days	Sun 15-04-07	Tue 17-04-07	1
12	1/2 V Assembly	0 edays	0.5 days	Wed 18-04-07	Wed 18-04-07	1
13	1/2 M Assembly	0 edays	0.5 days	Wed 18-04-07	Wed 18-04-07	1
14	WT & Destruct assemk	0 edays	4 days	Thu 19-04-07	Sun 22-04-07	1
15	L40s Assembly	0 edays	4 days	Mon 23-04-07	Thu 26-04-07	1
16	L40s interfacing & Lea	0 edays	3 days	Fri 27-04-07	Sun 29-04-07	1
17	Electrical checks	0 edays	3 days	Mon 30-04-07	Wed 02-05-07	1
18	Pneumatic checks	0 edays	2 days	Thu 03-05-07	Fri 04-05-07	1
19	GS2 Assembly	0 edays	1 day	Sat 12-05-07	Sat 12-05-07	2
20	EB positioning	0 edays	1 day	Fri 29-06-07	Fri 29-06-07	2
21	Electrical & Pneumatic	0 edays	7 days	Sun 13-05-07	Mon 21-05-07	2
22	CS Assembly	0 edays	1 day	Fri 29-06-07	Fri 29-06-07	2
23	EB Assembly	0 edays	1 day	Tue 22-05-07	Wed 23-05-07	2
24	Electrical checks	0 edays	14 days	Wed 23-05-07	Fri 08-06-07	2
25	Retro Rockets Assemk	0 edays	1 day	Fri 08-06-07	Sat 09-06-07	2
26	Preparation for Movem	0 edays	2 days	Sat 09-06-07	Tue 12-06-07	2
27	EA Assembly	0 edays	1 day	Tue 12-06-07	Wed 13-06-07	2



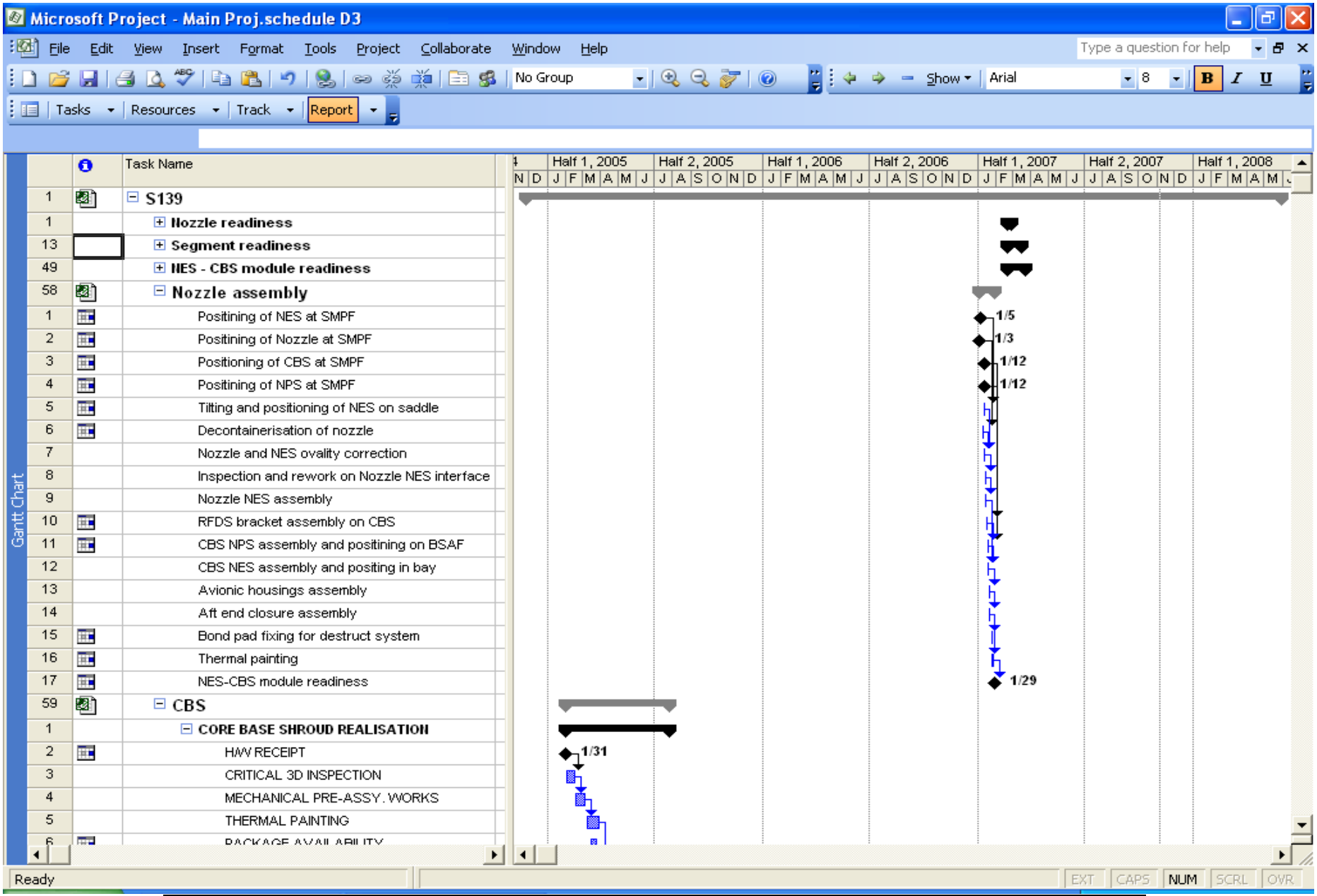
CUSTOMER PROJECT (PSLV – AGILE)

- **Customer Inquiry- From Other countries**
- **Create a Project – After vetted by ISRO HQ's, using MSP**
- **Plan dates- MSP**
- **Plan resources- MSP**
- **Plan materials by transferring BOM- MSP**
- **Plan Costs- COWAA**
- **Create sales pricing and sales order with billing plan- S&D at HQ's**
- **Enter Confirmations- MSP**
- **Purchase materials and services - MSP**
- **Document variances - MSP**
- **Post revenues using milestone billing- MSP**
- **Sales Order- Invoice Closed- S&D AT ISRO HQ's**
- **Calculate Overhead costs and carry out result analysis and settle it to profitability segment- COWAA/MSP**
- **Defect liability period (Post live and Go support) – ISRO HQ's.**

❖ Customer Inquiry- From Other countries

- ✓ Customer Inquiry from different countries
- ✓ Feasibility study at ISRO HQ's
- ✓ Time frame to launch
- ✓ Choice of Launch Vehicle from VSSC

❖ **Create a Project – After vetted by ISRO HQ's, using MSP**



❖ Plan dates- MSP

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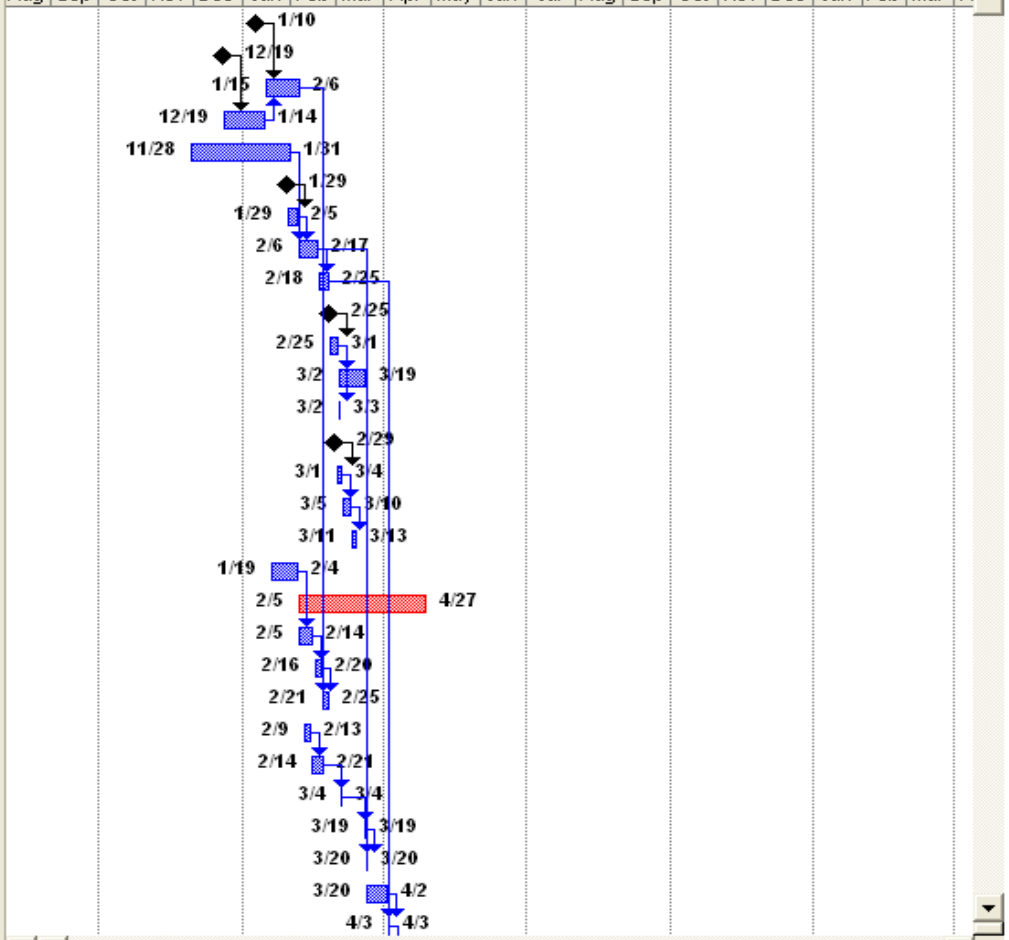
Tasks | Resources | Track | Report

Gantt Chart

	Task Name	Duration	Start	Finish	Prec
1	L40-S1,S4- RECEIPT AT SI	0 days	Sat 1/10/04	Sat 1/10/04	
2	L40-S2,S3- RECEIPT AT SI	0 days	Fri 12/19/03	Fri 12/19/03	
3	L40-S1,S4 AT SPB	20 days	Thu 1/15/04	Fri 2/6/04	1,4
4	L40-S2,S3 AT SPB	20 days	Fri 12/19/03	Wed 1/14/04	2
5	CRYO STAGE PTC & AUTO	50 days	Fri 11/28/03	Sat 1/31/04	
6	EB RECEIPT	0 days	Thu 1/29/04	Thu 1/29/04	
7	EB AUTO CHECKS	7 days	Thu 1/29/04	Thu 2/5/04	6
8	COMPLEX CHECKS	10 days	Fri 2/6/04	Tue 2/17/04	5,7
9	CS PREPARATION	7 days	Wed 2/18/04	Wed 2/25/04	8
10	GS2,1/2M,1/2V RECEIPT	0 days	Wed 2/25/04	Wed 2/25/04	
11	GS2-1/2M CHECKS	5 days	Wed 2/25/04	Mon 3/1/04	10
12	GS2 CHECKS	16 days	Tue 3/2/04	Fri 3/19/04	11
13	1/2M PYRO ASSEMBLY	2 days	Tue 3/2/04	Wed 3/3/04	11
14	HS,PLA RECEIPT	0 days	Sun 2/29/04	Sun 2/29/04	
15	HS, PLA CHECKS	4 days	Mon 3/1/04	Thu 3/4/04	14
16	SPACECRAFT FILLING	5 days	Fri 3/5/04	Wed 3/10/04	15
17	ENCAPSULATION	3 days	Thu 3/11/04	Sat 3/13/04	16
18	SMPF PREPARATION	15 days	Mon 1/19/04	Wed 2/4/04	
19	LAUNCH CAMPAIGN	71 days	Thu 2/5/04	Tue 4/27/04	
20	S139 ASSEMBLY	9 days	Thu 2/5/04	Sat 2/14/04	18
21	IGN,PYRO,1/2V,WT,FLSC	5 days	Mon 2/16/04	Fri 2/20/04	20
22	L40 ASSY	4 days	Sat 2/21/04	Wed 2/25/04	3,21
23	INTERCONNECTION PLUME	5 days	Mon 2/9/04	Fri 2/13/04	
24	EL&PNEU CHKS	7 days	Sat 2/14/04	Sat 2/21/04	23
25	1/2M ASSY	0.5 days	Thu 3/4/04	Thu 3/4/04	24
26	GS2 ASSY	1 day	Fri 3/19/04	Fri 3/19/04	25
27	EB ASSY	0.5 days	Sat 3/20/04	Sat 3/20/04	8,26
28	EL& PNEU CHKS	12 days	Sat 3/20/04	Fri 4/2/04	
29	CS,EB ASSY	1 day	Sat 4/3/04	Sat 4/3/04	28,9



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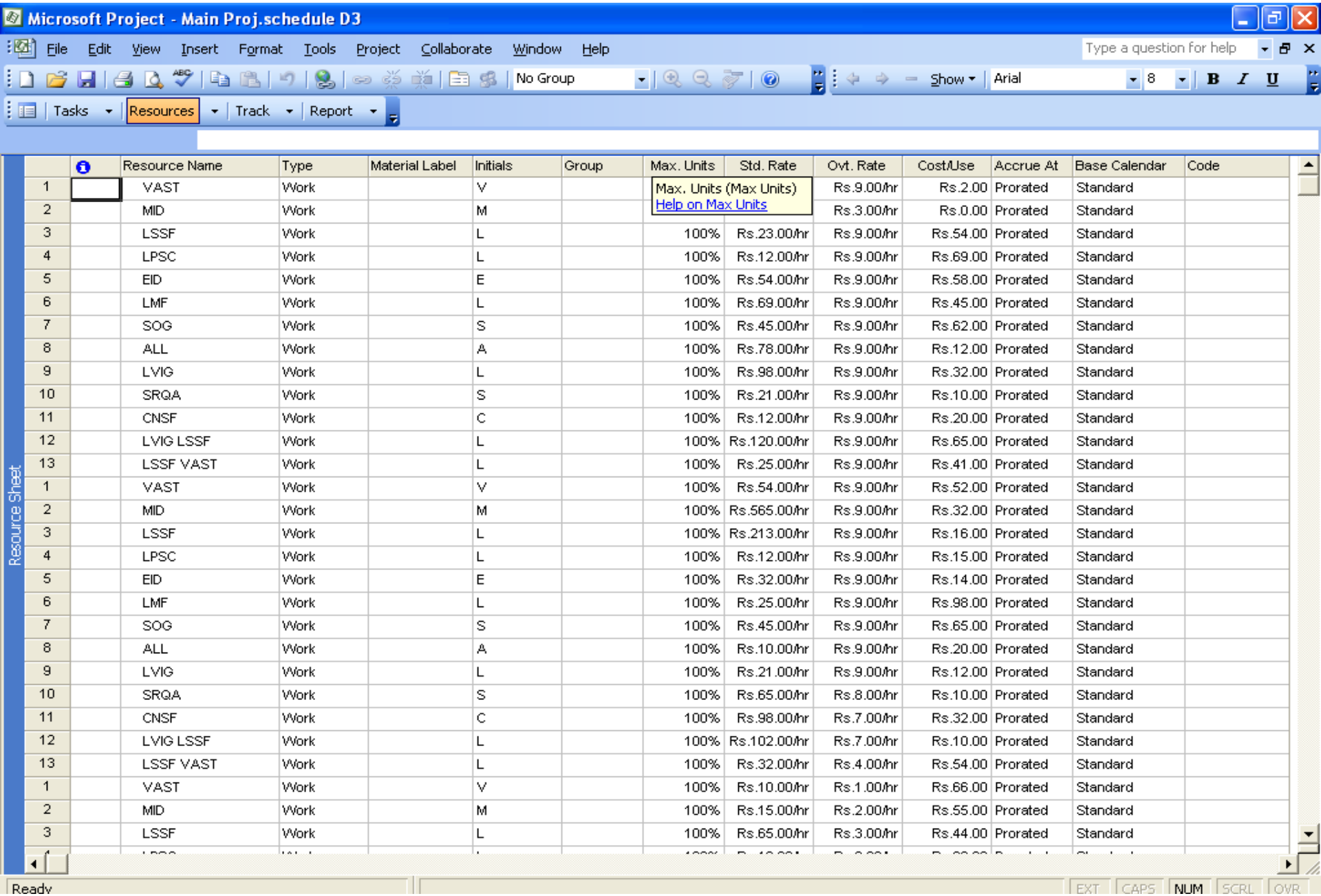

	Resource Name	Type	Material Label	Initials	Group	Max. Units	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar	Code
1	VAST	Work		V				Rs.9.00/hr	Rs.2.00	Prorated	Standard	
2	MID	Work		M				Rs.3.00/hr	Rs.0.00	Prorated	Standard	
3	LSSF	Work		L		100%	Rs.23.00/hr	Rs.9.00/hr	Rs.54.00	Prorated	Standard	
4	LPSC	Work		L		100%	Rs.12.00/hr	Rs.9.00/hr	Rs.69.00	Prorated	Standard	
5	EID	Work		E		100%	Rs.54.00/hr	Rs.9.00/hr	Rs.58.00	Prorated	Standard	
6	LMF	Work		L		100%	Rs.69.00/hr	Rs.9.00/hr	Rs.45.00	Prorated	Standard	
7	SOG	Work		S		100%	Rs.45.00/hr	Rs.9.00/hr	Rs.62.00	Prorated	Standard	
8	ALL	Work		A		100%	Rs.78.00/hr	Rs.9.00/hr	Rs.12.00	Prorated	Standard	
9	LVIG	Work		L		100%	Rs.98.00/hr	Rs.9.00/hr	Rs.32.00	Prorated	Standard	
10	SRQA	Work		S		100%	Rs.21.00/hr	Rs.9.00/hr	Rs.10.00	Prorated	Standard	
11	CNSF	Work		C		100%	Rs.12.00/hr	Rs.9.00/hr	Rs.20.00	Prorated	Standard	
12	LVIG LSSF	Work		L		100%	Rs.120.00/hr	Rs.9.00/hr	Rs.65.00	Prorated	Standard	
13	LSSF VAST	Work		L		100%	Rs.25.00/hr	Rs.9.00/hr	Rs.41.00	Prorated	Standard	
1	VAST	Work		V		100%	Rs.54.00/hr	Rs.9.00/hr	Rs.52.00	Prorated	Standard	
2	MID	Work		M		100%	Rs.565.00/hr	Rs.9.00/hr	Rs.32.00	Prorated	Standard	
3	LSSF	Work		L		100%	Rs.213.00/hr	Rs.9.00/hr	Rs.16.00	Prorated	Standard	
4	LPSC	Work		L		100%	Rs.12.00/hr	Rs.9.00/hr	Rs.15.00	Prorated	Standard	
5	EID	Work		E		100%	Rs.32.00/hr	Rs.9.00/hr	Rs.14.00	Prorated	Standard	
6	LMF	Work		L		100%	Rs.25.00/hr	Rs.9.00/hr	Rs.98.00	Prorated	Standard	
7	SOG	Work		S		100%	Rs.45.00/hr	Rs.9.00/hr	Rs.65.00	Prorated	Standard	
8	ALL	Work		A		100%	Rs.10.00/hr	Rs.9.00/hr	Rs.20.00	Prorated	Standard	
9	LVIG	Work		L		100%	Rs.21.00/hr	Rs.9.00/hr	Rs.12.00	Prorated	Standard	
10	SRQA	Work		S		100%	Rs.65.00/hr	Rs.8.00/hr	Rs.10.00	Prorated	Standard	
11	CNSF	Work		C		100%	Rs.98.00/hr	Rs.7.00/hr	Rs.32.00	Prorated	Standard	
12	LVIG LSSF	Work		L		100%	Rs.102.00/hr	Rs.7.00/hr	Rs.10.00	Prorated	Standard	
13	LSSF VAST	Work		L		100%	Rs.32.00/hr	Rs.4.00/hr	Rs.54.00	Prorated	Standard	
1	VAST	Work		V		100%	Rs.10.00/hr	Rs.1.00/hr	Rs.66.00	Prorated	Standard	
2	MID	Work		M		100%	Rs.15.00/hr	Rs.2.00/hr	Rs.55.00	Prorated	Standard	
3	LSSF	Work		L		100%	Rs.65.00/hr	Rs.3.00/hr	Rs.44.00	Prorated	Standard	

❖ Plan materials by transferring BOM- MSP

Microsoft Project - Main Proj.schedule D3

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Tasks Resources Track Report

Work

Resource Sheet

	Resource Name	Type	Material Label	Initials	Group	Max. Units	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar	Code
11	CNSF	Work		C		100%	Rs.98.00/hr	Rs.7.00/hr	Rs.32.00	Prorated	Standard	
12	LVIG LSSF	Work		L		100%	Rs.102.00/hr	Rs.7.00/hr	Rs.10.00	Prorated	Standard	
13	LSSF VAST	Work		L		100%	Rs.32.00/hr	Rs.4.00/hr	Rs.54.00	Prorated	Standard	
1	VAST	Work		V		100%	Rs.10.00/hr	Rs.1.00/hr	Rs.66.00	Prorated	Standard	
2	MID	Work		M		100%	Rs.15.00/hr	Rs.2.00/hr	Rs.55.00	Prorated	Standard	
3	LSSF	Work		L		100%	Rs.65.00/hr	Rs.3.00/hr	Rs.44.00	Prorated	Standard	
4	LPSC	Work		L		100%	Rs.12.00/hr	Rs.6.00/hr	Rs.33.00	Prorated	Standard	
5	EID	Work		E		100%	Rs.254.00/hr	Rs.5.00/hr	Rs.22.00	Prorated	Standard	
6	LMF	Work		L		100%	Rs.147.00/hr	Rs.7.00/hr	Rs.11.00	Prorated	Standard	
7	SOG	Work		S		100%	Rs.213.00/hr	Rs.8.00/hr	Rs.20.00	Prorated	Standard	
8	ALL	Work		A		100%	Rs.120.00/hr	Rs.9.00/hr	Rs.15.00	Prorated	Standard	
9	LVIG	Work		L		100%	Rs.150.00/hr	Rs.4.00/hr	Rs.45.00	Prorated	Standard	
10	SRQA	Work		S		100%	Rs.321.00/hr	Rs.6.00/hr	Rs.48.00	Prorated	Standard	
11	CNSF	Work		C		100%	Rs.15.00/hr	Rs.5.00/hr	Rs.49.00	Prorated	Standard	
12	LVIG LSSF	Work		L		100%	Rs.20.00/hr	Rs.1.00/hr	Rs.97.00	Prorated	Standard	
13	LSSF VAST	Work		L		100%	Rs.120.00/hr	Rs.2.00/hr	Rs.98.00	Prorated	Standard	
1	VAST	Work		V		100%	Rs.45.00/hr	Rs.3.00/hr	Rs.65.00	Prorated	Standard	
2	MID	Work		M		100%	Rs.12.00/hr	Rs.2.00/hr	Rs.32.00	Prorated	Standard	
3	LSSF	Work		L		100%	Rs.32.00/hr	Rs.1.00/hr	Rs.31.00	Prorated	Standard	
4	LPSC	Work		L		100%	Rs.56.00/hr	Rs.4.00/hr	Rs.20.00	Prorated	Standard	
5	EID	Work		E		100%	Rs.54.00/hr	Rs.5.00/hr	Rs.25.00	Prorated	Standard	
6	LMF	Work		L		100%	Rs.154.00/hr	Rs.6.00/hr	Rs.65.00	Prorated	Standard	
7	*SOG*	*Material*		*S*			*Rs.654.00*		*Rs.23.00*	*Prorated*		
8	***ALL***	***Material***		***A***			***Rs.254.00***		***Rs.12.00***	***End***		
9	***LVIG***	***Material***		***L***			***Rs.365.00***		***Rs.25.00***	***Start***		
10	***SRQA***	***Material***		***S***			***Rs.986.00***		***Rs.65.00***	***End***		
11	***CNSF***	***Material***		***C***			***Rs.125.00***		***Rs.32.00***	***Prorated***		
12	LVIG LSSF	Work		L		100%	Rs.65.00/hr	Rs.0.00/hr	Rs.56.00	Prorated	Standard	
13	LSSF VAST	Work		L		100%	Rs.32.00/hr	Rs.2.00/hr	Rs.54.00	Prorated	Standard	

Ready EXT CAPS NUM SCRL OVR

❖ **Plan Costs- COWAA**

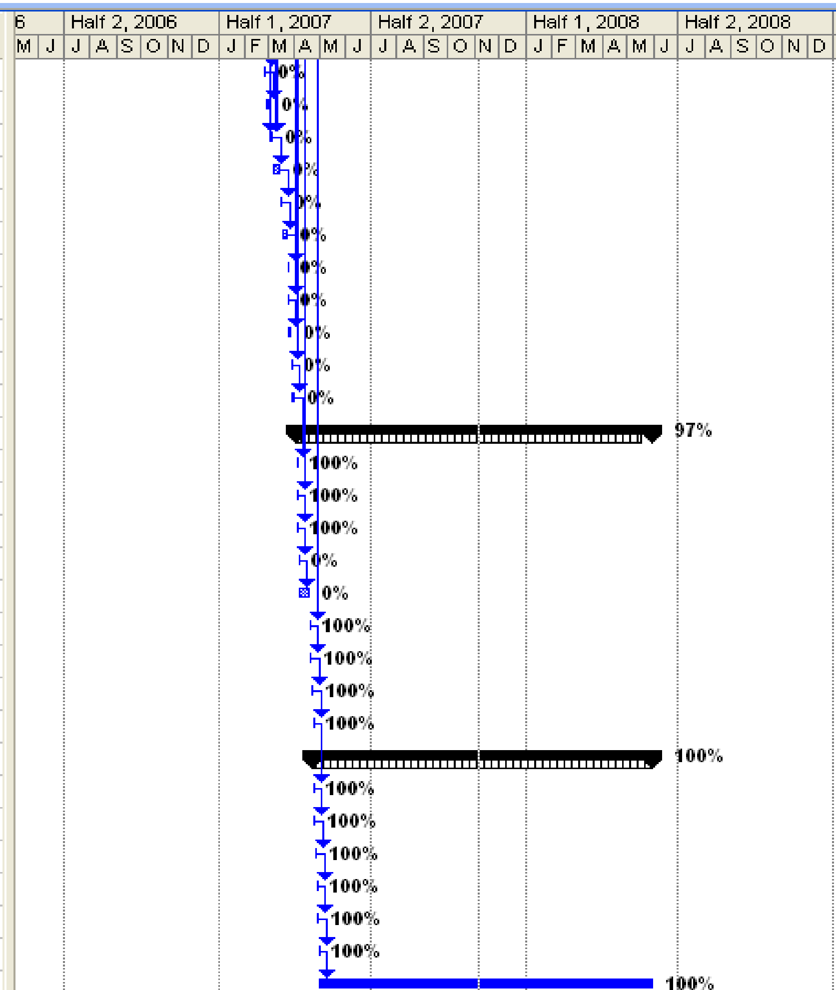
- ✓ Plan Costs using COWAA/MSP Interface
- ✓ Zero Based budgeting
- ✓ Line items to be linked with Project's WBS

❖ **Create sales pricing and sales order with billing plan- S&D at HQ's**

- ✓ Separate Sales module from ISRO HQ's
- ✓ To be linked to all centres
- ✓ Rights to be given to PMO's

Microsoft Project - Main Proj.schedule D3

	Task Name	Start	Finish
14	1/2V ASSEMBLY	Fri 2/23/07	Fri 2/23/07
15	WT & DEST SYS,S/O BRK,RFDS BRACKETS A	Sat 2/24/07	Thu 3/1/07
16	L40s ASSEMBLY	Thu 3/1/07	Mon 3/5/07
17	L40s INTERFACING & LEAK CHECKS	Tue 3/6/07	Tue 3/13/07
18	ELECTRICAL CHECKS	Wed 3/14/07	Fri 3/16/07
19	PNEU. CHECKS	Sat 3/17/07	Wed 3/21/07
20	Assembly of IS1/2M and Butt Ring	Thu 3/22/07	Thu 3/22/07
21	GS2 ASSEMBLY	Fri 3/23/07	Fri 3/23/07
22	GS1+GS2 Compatibility & pneumatic checks	Fri 3/23/07	Mon 3/26/07
23	EB POSITIONING	Mon 3/26/07	Mon 3/26/07
24	GS1+GS2+EB Compatibility checks	Tue 3/27/07	Sat 3/31/07
25	**FINAL (PHASE3) OPERATIONS**	**Mon 4/2/07**	**Fri 5/30/08**
26	RETRO ROCKETS ASSEMBLY	Mon 4/2/07	Mon 4/2/07
27	CS ASSEMBLY	Tue 4/3/07	Tue 4/3/07
28	EB ASSEMBLY	Tue 4/3/07	Tue 4/3/07
29	Assembly of flight Batteries	Wed 4/4/07	Thu 4/5/07
30	ELECTRICAL CHECKS	Fri 4/6/07	Tue 4/17/07
31	EA ASSEMBLY	Tue 4/17/07	Tue 4/17/07
32	ELECTRICAL CHECKS	Wed 4/18/07	Thu 4/19/07
33	FINAL PREPARATIONS	Fri 4/20/07	Sat 4/21/07
34	MOVEMENT TO UT	Sun 4/22/07	Sun 4/22/07
35	**OPERATIONS AT UT**	**Sun 4/22/07**	**Fri 5/30/08**
36	ELECTRICAL CHECKS	Sun 4/22/07	Sun 4/22/07
37	PNEU. ASSY & CHECKS	Mon 4/23/07	Mon 4/23/07
38	SAUs ASSEMBLY	Tue 4/24/07	Wed 4/25/07
39	FUNC. CHECKS & INSULATION	Thu 4/26/07	Thu 4/26/07
40	INSULATION, REHEARSAL,ARMING	Fri 4/27/07	Fri 4/27/07
41	PRE CD OPERATIONS	Sat 4/28/07	Sat 4/28/07
42	COUNT DOWN & LAUNCH	Sun 4/29/07	Fri 5/30/08



❖ **Purchase materials and services - COWAA**

- ✓ Purchasing happening through COWAA to be linked with MS Project
- ✓ Control should be line item wise and it should be updated automatically in WBS of Master schedule.

❖ **Document variances - MSP**

- ✓ Changes in documentation during different processes

❖ **Post revenues using milestone billing- MSP**

- ✓ Revenues made out of the project after milestone is achieved to be given to the concerned PMO's
- ✓ Above function link to be given between PMO's and ISRO HQ's

❖ **Sales Order- Invoice Closed- S&D AT ISRO HQ's**

- ✓ In the separate sales module at ISRO HQ'sshould intimate formal closure of payment
- ✓ Rights to be given to concerned PMO's

❖ **Calculate Overhead costs and carry out result analysis and settle it to profitability segment- COWAA/MSP**

Microsoft Project - Main Proj.schedule D3

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Tasks | Resources | Track | Report

Rs.0.00

	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Actual	Remaining
34	**SHAR SPB RE**	**$0.00**	**Prorated**	**$33,095.00**	**$0.00**	**$33,095.00**	**$0.00**	**$33,095.00**
1	Receipt of A/	Rs.0.00	Start	Rs.102.00	Rs.0.00	Rs.102.00	Rs.0.00	Rs.102.00
2	Disassy of TS	Rs.0.00	Prorated	Rs.62.00	Rs.0.00	Rs.62.00	Rs.0.00	Rs.62.00
3	Alignment of .	Rs.0.00	Prorated	Rs.42.00	Rs.2.00	Rs.40.00	Rs.0.00	Rs.42.00
4	Recipt of F/E	Rs.0.00	Prorated	Rs.102.00	Rs.10.00	Rs.92.00	Rs.0.00	Rs.102.00
5	Alignment of I	Rs.0.00	Prorated	Rs.42.00	Rs.0.00	Rs.42.00	Rs.0.00	Rs.42.00
6	Certification c	Rs.0.00	Prorated	Rs.31.00	Rs.0.00	Rs.31.00	Rs.0.00	Rs.31.00
7	Removal of S	Rs.0.00	Prorated	Rs.66.00	Rs.0.00	Rs.66.00	Rs.0.00	Rs.66.00
8	Pending activ	Rs.0.00	Prorated	Rs.2,352.00	Rs.0.00	Rs.2,352.00	Rs.0.00	Rs.2,352.00
9	Helium sniffer	Rs.0.00	Prorated	Rs.998.00	Rs.0.00	Rs.998.00	Rs.0.00	Rs.998.00
10	UT of propell	Rs.0.00	Prorated	Rs.1,086.00	Rs.0.00	Rs.1,086.00	Rs.0.00	Rs.1,086.00
11	Assy of sens	Rs.0.00	Prorated	Rs.194.00	Rs.0.00	Rs.194.00	Rs.0.00	Rs.194.00
12	Readiness of	Rs.0.00	Prorated	Rs.620.00	Rs.0.00	Rs.620.00	Rs.0.00	Rs.620.00
13	Electrically cc	Rs.0.00	Prorated	Rs.1,600.00	Rs.0.00	Rs.1,600.00	Rs.0.00	Rs.1,600.00
14	Phase I electr	Rs.0.00	Prorated	Rs.3,756.00	Rs.0.00	Rs.3,756.00	Rs.0.00	Rs.3,756.00
15	FEA leak che	Rs.0.00	Prorated	Rs.3,013.00	Rs.0.00	Rs.3,013.00	Rs.0.00	Rs.3,013.00
16	AEA leak che	Rs.0.00	Prorated	Rs.1,221.00	Rs.0.00	Rs.1,221.00	Rs.0.00	Rs.1,221.00
17	Insulation wir	Rs.0.00	Prorated	Rs.403.00	Rs.0.00	Rs.403.00	Rs.0.00	Rs.403.00
18	Final assy of	Rs.0.00	Prorated	Rs.467.00	Rs.0.00	Rs.467.00	Rs.0.00	Rs.467.00
19	RMSA actuati	Rs.0.00	Prorated	Rs.523.00	Rs.0.00	Rs.523.00	Rs.0.00	Rs.523.00
20	Inspection an	Rs.0.00	Prorated	Rs.402.00	Rs.0.00	Rs.402.00	Rs.0.00	Rs.402.00
21	Integration of	Rs.0.00	Prorated	Rs.759.00	Rs.0.00	Rs.759.00	Rs.0.00	Rs.759.00
22	Eq. Regulator	Rs.0.00	Prorated	Rs.848.00	Rs.0.00	Rs.848.00	Rs.0.00	Rs.848.00
23	Leak check o	Rs.0.00	Prorated	Rs.6,320.00	Rs.0.00	Rs.6,320.00	Rs.0.00	Rs.6,320.00
24	Eq. Regulator	Rs.0.00	Prorated	Rs.549.00	Rs.0.00	Rs.549.00	Rs.0.00	Rs.549.00
25	Fin assembly	Rs.0.00	Prorated	Rs.194.00	Rs.0.00	Rs.194.00	Rs.0.00	Rs.194.00
26	Avionic deck	Rs.0.00	Prorated	Rs.1,096.00	Rs.0.00	Rs.1,096.00	Rs.0.00	Rs.1,096.00
27	EGC assy	Rs.0.00	Prorated	Rs.314.00	Rs.0.00	Rs.314.00	Rs.0.00	Rs.314.00
28	Disassy of V:	Rs.0.00	Prorated	Rs.827.00	Rs.0.00	Rs.827.00	Rs.0.00	Rs.827.00

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Tracking Gantt

Ready

❖ **Defect liability period (Post live and Go support) – ISRO HQ's.**

- ✓ After launching successfully and placing the satellite in orbit ISRO HQ's should give adequate information about the satellite healthand how customer's feedback.
- ✓ It should be linked from ISRO HQ's through mailing services for all centre's.

CONCLUSION:

Thus the program management in an aerospace industry was discussed in detail in this paper.

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Mr.D.Suresh, working as Assistant Professor, Department of Mechanical Engineering in Roever Engineering College, Perambalur and worked as Assistant Professor (Senior Grade), Department of Mechanical Engineering, Kongu Engineering College, Erode, Tamil Nadu, completed BE (Mechanical Engineering) from Kongu Engineering College in 2001(Secured 10th Rank in Bharathiyar University Coimbatore), M.E (Industrial Engineering) from REC Trichy (presently NIT Trichy) in January 2003, MBA from IGNOU and SAP PS Certified Consultant. He has work experieexperience of over 15 years which includes MM Forgings, ISRO, Keane, SAT Infotech, SPML, Mphasis an HP Company, Sterling and Wilson, Integrity Solutions, Seal Infotech, Oxford Engineering College, Indra Ganesan College of Engineering. He has worked in Strategic Planning, Functional Consultant,Program Management,Project Management/System, Solid Propulsion System, Estimation and Materials Management, Academician and contributed significantly for growth of organisations/companies worked. Holds Distinction in Obtaining GSLV Model for completing service period of four years (2004-2008) at VSSC-GSLV Project and Successful GSLV PMO for Approval from DOS for ISRO-GSLV Operational Flights F04-F10 costing Rs.1325 crores. and prepared (approval from centre) for F11-F16 flights costing Rs.1280.96 crores. Mentored project “Chainless Bicycle” which was granted -Design Patent- by Indian Patent Office. His research interested areas are Project Management, ERP, and Operations Management. He has published few papers in these areas. Member of ISTE and IEI India.

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