

COST AND SCHEDULES

Gerry Stapfer

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- CONSTRUCTION SCHEDULES
 - CONSTRUCTION CONTRACTS
 - SITE CONSTRUCTION SCHEDULE
 - SCHEDULE ANALYSIS

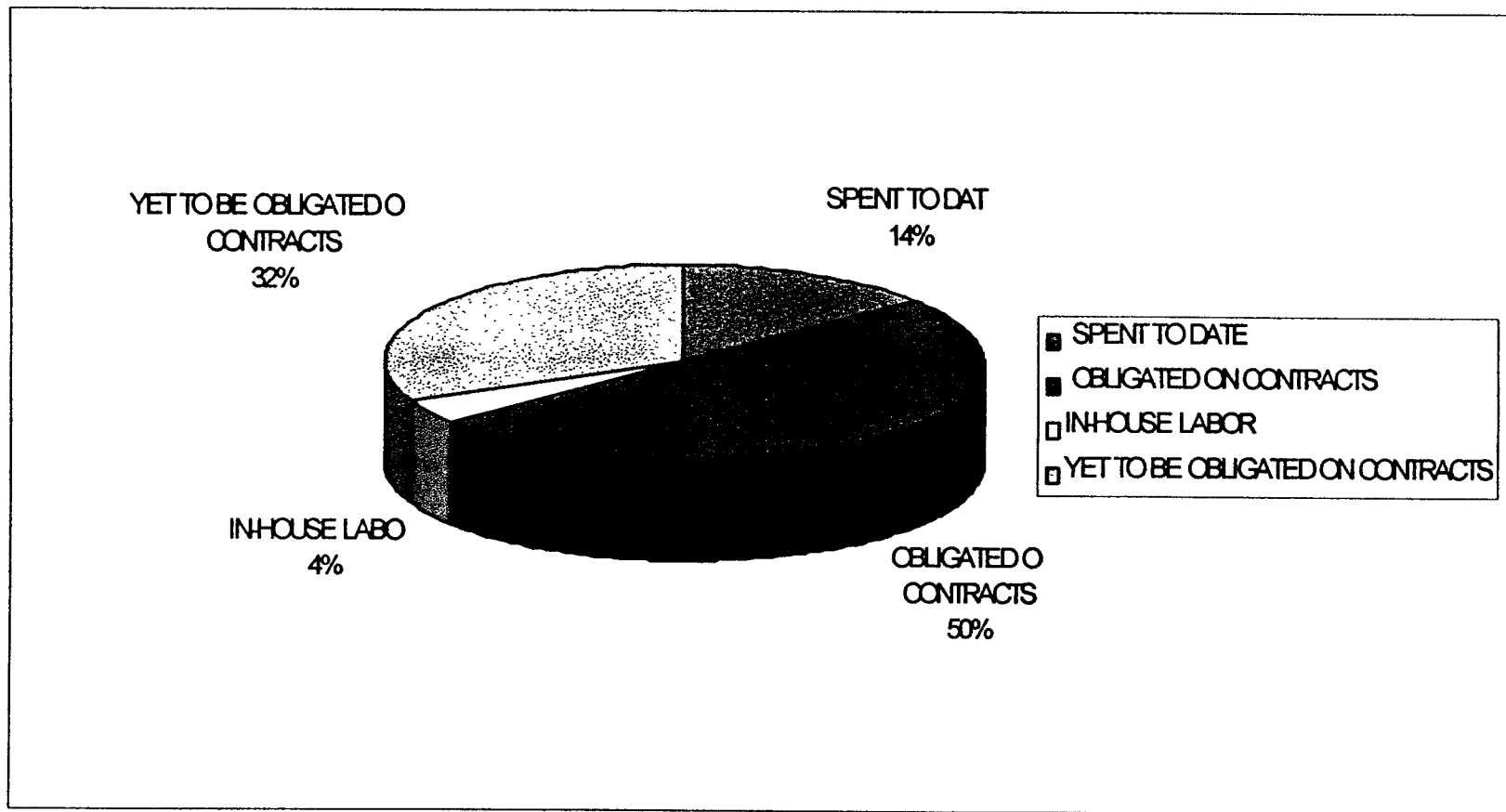
RE-BASELINE

- UPDATE COST ESTIMATES WHICH ARE BASED ON NEGOTIATED CONTRACTS
- INCORPORATE INTO THE FACILITIES BASELINE SCHEDULE (OPEN PLAN) THE UPDATED MILESTONE DATES AND ACTIVITIES PROVIDED BY THE CONTRACTORS
- SPREAD THE ALLOCATED RESOURCES (COBRA) TO REFLECT THE CONTRACTOR'S PERFORMANCE AND PAYMENT SCHEDULE

FACILITIES COST SUMMARY

ACCOUNT	1995 BUDGET	1996 BUDGET	CHANGE	REMARKS
TOTAL FACILITIES	156,657	159,650	2,993	FROM CONTINGENCY
VACUUM EQUIPMENT	45,061	42,210	(2,851)	SCOPE REDUCTIONS RETURNED TO CONTINGENCY
BEAM TUBE	43,785	48,653	4,868	4434 FOR CONTRACT NEGOTIATION AND ADDITIONAL SCOPE (FROM CONTINGENCY) 434 FOR ADDITIONAL SCOPE (TRANSFERRED FROM OTHER WBS ELEMENTS)
BT ENCLOSURE	18,062	19,687	1,625	ADDITIONAL SCOPE (TRANSFERRED FROM OTHER WBS ELEMENTS)
CIVIL CONSTRUCTION	49,751	49,100	(651)	TRANSFERRED SCOPE TO OTHER WBS ELEMENTS

FACILITIES BUDGET



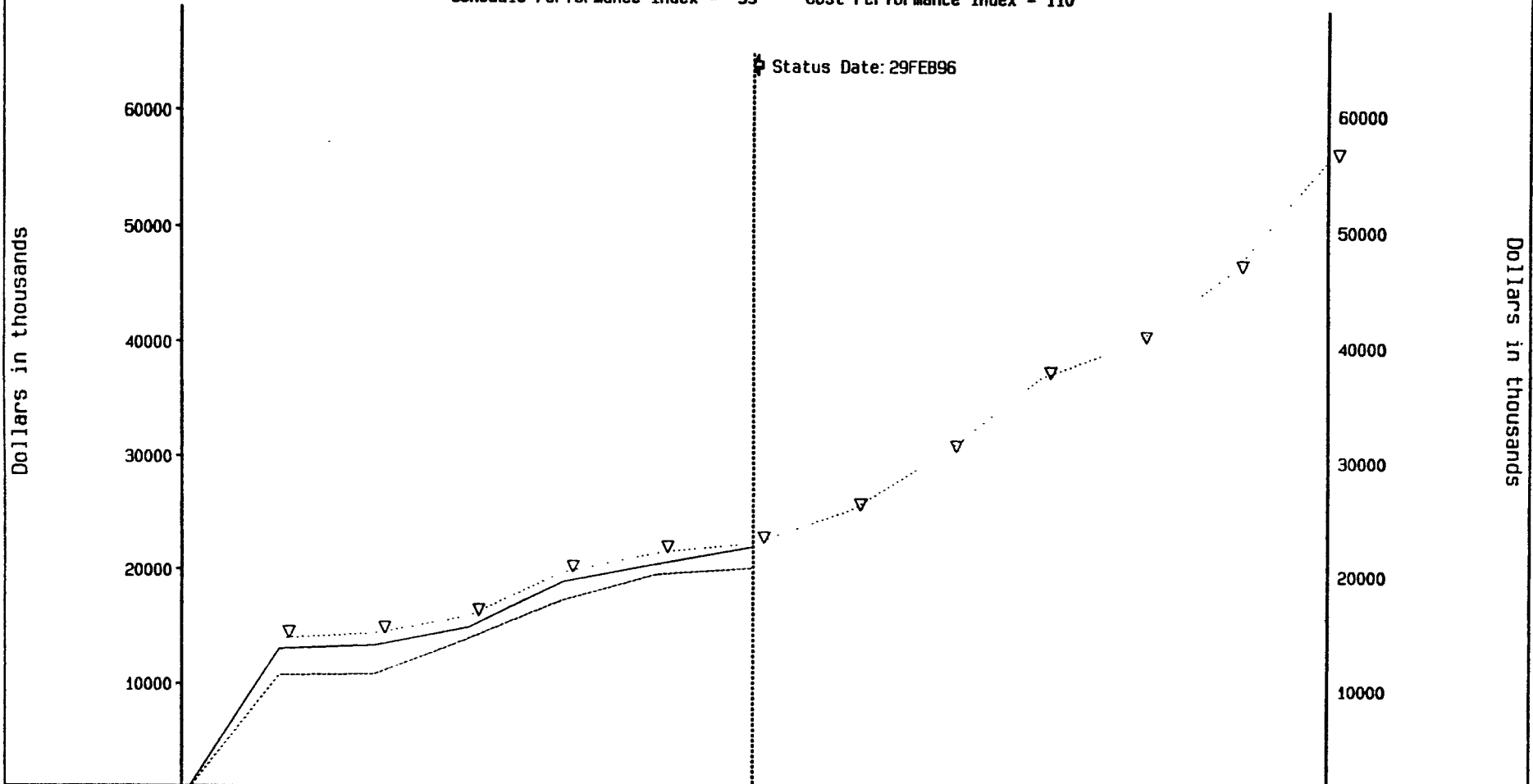
LIGO PROJECT

1.1 Facilities and Vacuum Systems

Date: 2APR96
 Program: PMB_0296
 Report: LIGOSPA
 COBRA (R)

LEGEND	
Bud	▽▽▽▽▽
Per	—————
ACT

Budget vs Performance vs Actual
 Schedule Performance Index = 99 Cost Performance Index = 110



	SEP95	OCT95	NOV95	DEC95	JAN96	FEB96	MAR96	APR96	MAY96	JUN96	JUL96	AUG96	SCALE
Planned Budget	13,945	14,375	15,917	19,808	21,589	22,468	25,414	30,590	37,025	40,175	46,368	55,990	K\$
Performance	13,065	13,373	14,955	18,998	20,594	22,179							K\$
Actuals	10,701	10,826	13,961	17,343	19,633	20,212							K\$
Schedule Variance	-880	-1,002	-962	-810	-995	-289							K\$
Cost Variance	2,364	2,547	994	1,655	961	1,967							K\$

Schedule Variance = Perf-Budg Cost Variance = Perf-Actual Schedule Performance Index = Perf/Budg Cost Performance Index = Perf/Actual

WASHINGTON MILESTONES

Milestone Description	Project Mgmt Plan Dates	Proposed Project Mgmt Plan Dates	Change
HANFORD, WA			
Initiate Site Development	Mar-94	Complete	
Beam Tube Final Design Review	Apr-94	Complete	
Select A&E Contractor	Nov-94	Complete	
Complete BT Qual Test	Feb-95	Complete	
Select VE Contractor	Mar-95	Complete	
Initiate Beam Tube Fabrication	Oct-95	Complete	
Initiate Slab Construction	Oct-95	Complete	
Initiate Building Construction	Jun-96	No Change	
Joint Occupancy	Sep-97	No Change	
Accept Vacuum Equipment	Mar-98	No Change	
Accept Tubes and Covers (Post B/O)	Mar-98	No Change	
Beneficial Occupancy	Mar-98	No Change	
Initiate Facility Shakedown	Mar-98	No Change	

LOUISIANA MILESTONES

Milestone Description	Project Mgmt Plan Dates	Proposed Project Mgmt Plan Dates	Change
LIVINGSTON, LA			
Beam Tube Final Design Review	Apr-94	Complete	
Select A&E Contractor	Nov-94	Complete	
Complete BT Qual Test	Feb-95	Complete	
Select VE Contractor	Mar-95	Complete	
Initiate Site Development	Aug-95	Complete	
Initiate Beam Tube Fabrication	Oct-95	Complete	
Initiate Slab Construction	Jan-97	No Change	
Initiate Building Construction	Jan-97	No Change	
Joint Occupancy	Mar-98	No Change	
Accept Vacuum Equipment	Sep-98	No Change	
Beneficial Occupancy	Sep-98	No Change	
Accept Tubes and Covers (Post B/O)	Sep-98	Mar-99	(109)
Initiate Facility Shakedown	Sep-98	Mar-99	(109)

SITE CONSTRUCTION

- THE LIGO FACILITIES WILL BE FABRICATED-
INSTALLED AND CONSTRUCTED BY DIFFERENT
CONTRACTORS
 - LIGO IN ESSENCE ASSUMES THE ROLE OF A GENERAL
CONTRACTOR
- MINIMIZING CONTRACTOR INTERFERENCE IS
KEY FOR SUCCESSFUL COMPLETION
 - THE TIME PHASING AND SPATIAL SEPARATION OF
CONTRACTORS IS LIGO'S RESPONSIBILITY

FACILITIES CONSTRUCTION CONTRACTS

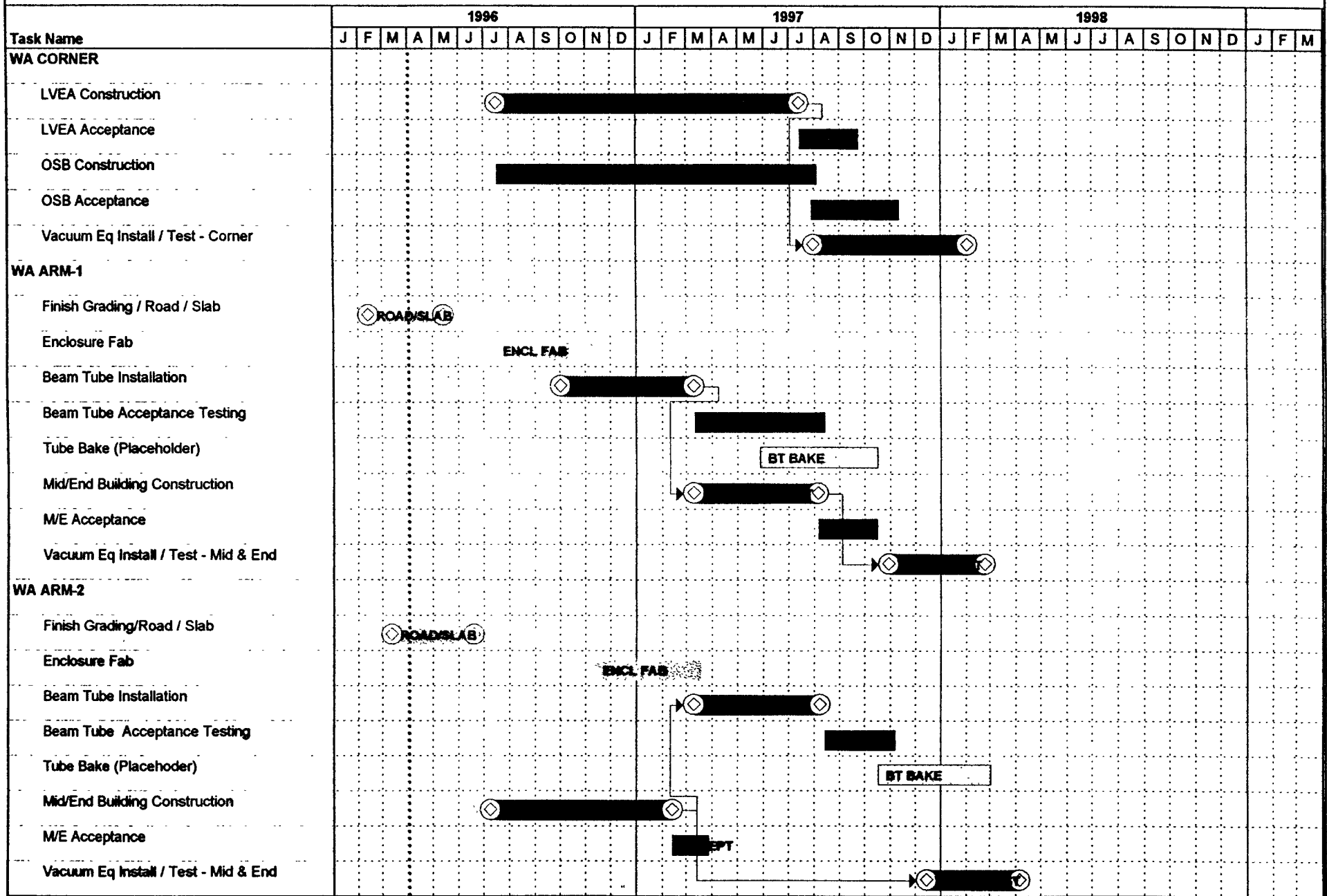
Task Name	1996												1997												1998													
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
WASHINGTON CONSTRUCTION																																						
Finish Grading / Road / BT-Slab	ACME																																					
Building Construction	[Redacted]																																					
Vacuum Equipment Fabrication	[Redacted]																																					
Vacuum Equipment Install / Test	[Redacted]																																					
Beam Tube Fabrication	[Redacted]																																					
Beam Tube Installation	[Redacted]																																					
Tube Bake	TBD Bake Contractor																																					
LOUISIANA CONSTRUCTION																																						
Rough Grading	co Inc.																																					
Ground Settlement	[Redacted]																																					
Finish Grading / Road / BT-Slab	TBD Specialty Contractor																																					
Building Construction	[Redacted]																																					
Vacuum Equipment Fabrication	[Redacted]																																					
Vacuum Equipment Install / Test	[Redacted]																																					
Beam Tube Fabrication	[Redacted]																																					
Beam Tube Installation	[Redacted]																																					
Tube Bake	TBD Bake Contractor																																					

CONTRACTOR INTERFERENCE

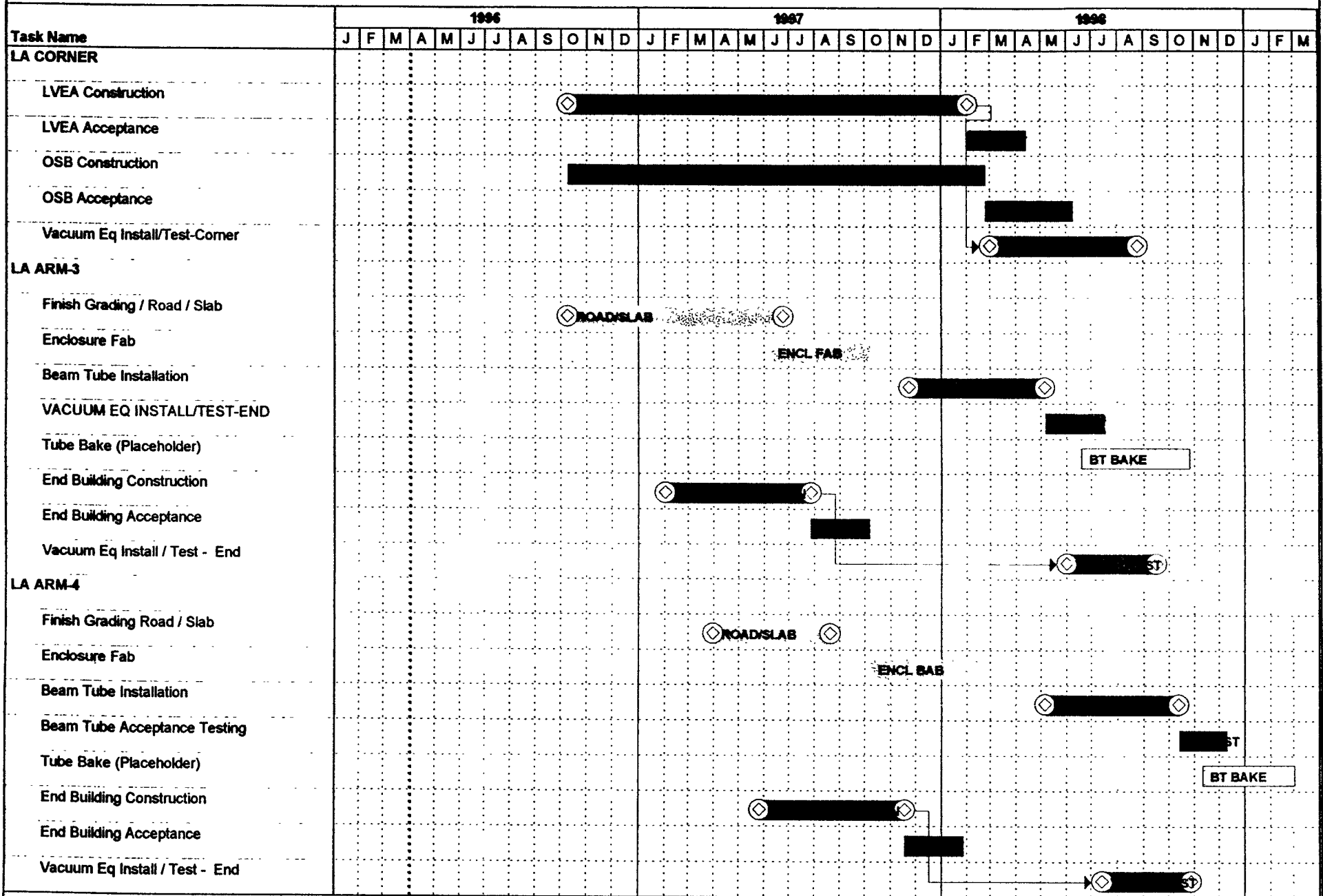
- CORNER STATION
 - LARGE AREA
 - EASY ACCESS
- MID/END STATION
 - WIDELY SEPARATE
 - POTENTIAL FOR RESTRICTED ACCESS
- SERVICE ROAD
 - OCCUPIED DURING BT INSTALLATION
 - BY-PASS IS READILY AVAILABLE IN WASHINGTON
 - ALTERNATE ROADS MAY BE USED IN LOUISIANA

***SCHEDULED SITE ACTIVITIES TO MINIMIZE
POTENTIAL FOR INTERFERENCE***

SITE CONSTRUCTION SCHEDULE



SITE CONSTRUCTION SCHEDULE



SUMMARY

- THE COST FOR THE LIGO FACILITIES HAS GROWN BY LESS THAN 2% SINCE THE CONSTRUCTION WORK STARTED IN 1993
- THE SCHEDULE FOR THE COMPLETION OF THE WASHINGTON SITE REMAINS UNCHANGED
- THE LOUISIANA SITE COMPLETION IS DELAYED BY 6 MONTHS
- CONTRACTOR INTERFERENCES AT THE SITES ARE MINIMAL AND MANAGEABLE