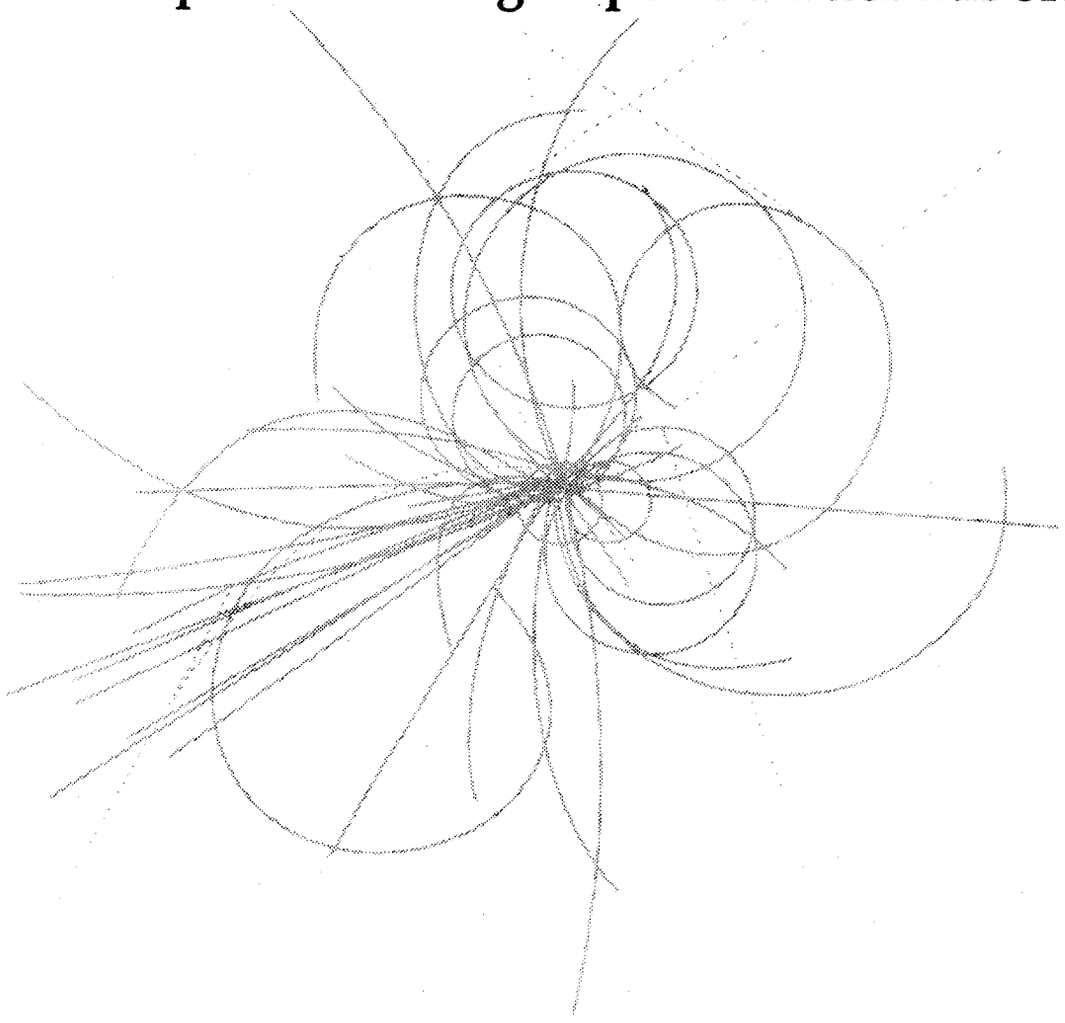
SSCL-480

SSCL-480

Superconducting Super Collider Laboratory



SSC Revised Baseline Schedule Based on Funding Profile (OMB Review)

FY91 Schedule Performance Measurement Baseline

November 1990

SSCL-480

SSC Revised Baseline Schedule Based on Funding Profile (OMB Review)

FY91 Schedule Performance Measurement Baseline

Superconducting Super Collider Laboratory*
2550 Beckleymeade Ave.
Dallas, TX 75237

November 1990

*Operated by the Universities Research Association, Inc., for the U.S. Department of Energy under Contract No. DE-AC35-89ER40486.

November 1990 Baseline Schedule

(prepared for review with OMB; correlated to cost estimating funding profile)

1. Refinement of the June 1990 Baseline Schedule (separate document)
2. Allows underground construction as early as required.
3. Uses baseline cost estimate applied by WBS to activities in 1990 dollars.
4. Uses escalation as calculated in the cost estimate rather than calculating within the schedule.
5. This schedule is the basis of establishing the final list and target dates of the Level 1 Major Milestones.
6. The schedule based funding profile utilized multi-year funding of contracts on experimental halls and most collider tunnel, HEB and MEB construction contracts.
7. The remaining annual variance error between the scheduling and cost estimating profiles was adjusted by smoothing contingency and escalation once this schedule funding profile was developed.

dcormell
File: PM 11/90 BASELINE SCH

Superconducting Super Collider

Summary Barchart

Current date: 12NOV90

Summary Master Schedule

Baseline Master Schedule: Ver. 12, Rev. 6

PROJSUM

BL12R6

Major Functional Area/Major Component	89	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Baseline Validation	Baseline Validation Complete												
Environmental Compliance	SEIS Record of Decision (ROD)												
AECM Start-up	Start SSC Civil Construction												
TNRLC Land Acquisition	A/E-CM Letter Contract & NTP												
Collider Technical Components				First Collider Half Sector - Start Install'n		First Collider Half Sector - Start Cooldown							
Collider Conventional Construction													
Collider Magnets	CDM Authoriz. to Incur Costs			Start First Half Sector CDM Delivery									
Collider Magnet & Sector System Test													
SSC Testing & Commissioning									Collider - Start Commissioning (beam)	Beam to Experiment (End of Project/Begin O			
Linear Accelerator					LINAC Start Commissioning (600 MeV)								
Low Energy Booster						LEB Start Commissioning							
Medium Energy Booster							MEB Start Commissioning	MEB Test Beams Available					
High Energy Booster							HEB Start Installation		HEB Start Commissioning				
Test Beam Area													
Detectors			Begin Conceptual Design for Detectors	Notice to Proceed (NTP) Experiment Halls		BOD Large Experiment Halls			West Detectors - Start Commissioning				
West Complex													
East Complex													
Accelerator Surface System Test (ASST)			Accelerator String Test Complete										
Magnet Lab Complex													
Central Office/Laboratory Complex													
Heavy Works													
Shops													
Support Facilities													
Infrastructure - Campus													
Infrastructure - Injector Complex													
Infrastructure - Interaction Halls													

General SSCL Actions

Critical Segment

Milestone

KEY ASSUMPTIONS:

Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

APPROVALS:

Tech Dir: DATE:
PMO DPM: DATE:
PMO PMGR: DATE:
Director: DATE:

SSC Laboratory Project Management

SSC MILESTONES-FOR EXPERIMENTS 10/98

MACHINE		INITIAL REQUEST	SCHEDULED DATE
LINAC	Set Coordinates	6/1/90	3/1/91
	Preliminary Design Complete	2/1/90	12/1/90
	Final Design Complete	8/1/91	8/1/91
	Facilities Beneficial Occupancy Date (BOD)	10/1/92	10/1/92
	Start Commissioning	10/1/94	10/1/94
LEB	Set Coordinates	8/1/90	4/1/91
	Preliminary Design Complete	1/1/91	1/1/91
	Magnet Requirements Complete	1/1/91	1/1/91
	Start Prototype Magnet	7/1/91	7/1/91
	Start Magnet Production	6/1/93	6/1/93
	Facilities BOD	8/1/93	8/1/93
	Start Commissioning	5/1/95	5/1/95
MEB	Set Coordinates	8/1/90	4/1/91
	Dipole Magnet Requirements Complete	1/1/91	1/1/91
	Preliminary Design Complete	/1/91	4/1/91
	Quadrupole Magnet Requirements Complete	4/1/91	4/1/91
	Start Prototype Magnet	7/1/91	7/1/91
	Start Magnet Production	6/1/93	6/1/93
	Facilities BOD	8/1/93	8/1/93 Part I
			3/15/94Part 2
	Start Commissioning	10/1/95	10/1/95

WAS 6/18/90

SSC Laboratory Project Management

SSC MILESTONES (Continued)

		INITIAL REQUEST	SCHEDULED DATE	
HEB	Set Coordinates (*Date not fixed)	11/1/90*	7/1/91	
	Conceptual Design Complete	10/1/92	10/1/92	
	Start Magnet Design	1/1/93	1/1/93	
	Start Prototype Magnet	7/1/93	7/1/93	
	Facilities BOD	8/1/95	8/1/95	Part 1
			11/1/95	Part 2
			4/1/96	Part 3
	Start Installation	1/1/96	8/1/95	
	Start Commissioning	10/1/97	10/1/97	
TEST BEAM	Set Coordinates		9/1/91	
	Facilities BOD	5/1/94	5/1/94	
	Test Beams Available	4/1/96	4/1/96	

SSC MILESTONES (Continued)

	INITIAL REQUEST	SCHEDULED DATE	
COLLIDER			
1st 1/2 Sector BOD	9/1/93	9/1/93	
2nd 1/2 Sector BOD	6/1/94	6/1/94	
Start 1st 1/2 Sector Cooldown	1/1/95	1/1/95	
3 Sectors BOD	1/1/95	9/30/93	E3-E2
		3/1/94	E5-E4
		9/1/94	E4-E3
Start 2nd 1/2 Sector Cooldown	5/1/95	8/1/95	
3 Sectors BOD	1/1/96	6/1/94	E7-E8
		11/1/94	E8-E9
		12/1/94	E9-E10
Start 3 Sectors Cooldown	5/1/96	5/1/96	
3 (Last) Sectors BOD	1/1/97	11/1/95	E7-E6
		11/1/96	E10-E1
		6/1/96	E6-E5
Start 3 Sector Cooldown	5/1/97	5/1/97	
Last Sector Cooldown - Start Commissioning	5/1/98	2/1/98	Cooldown
		5/1/98	Commissioning
Beam to Experiments	10/1/98	10/1/98	

Superconducting Super Collider

CCD Baseline Summary Barchart

Current date:

Summary Master Schedule

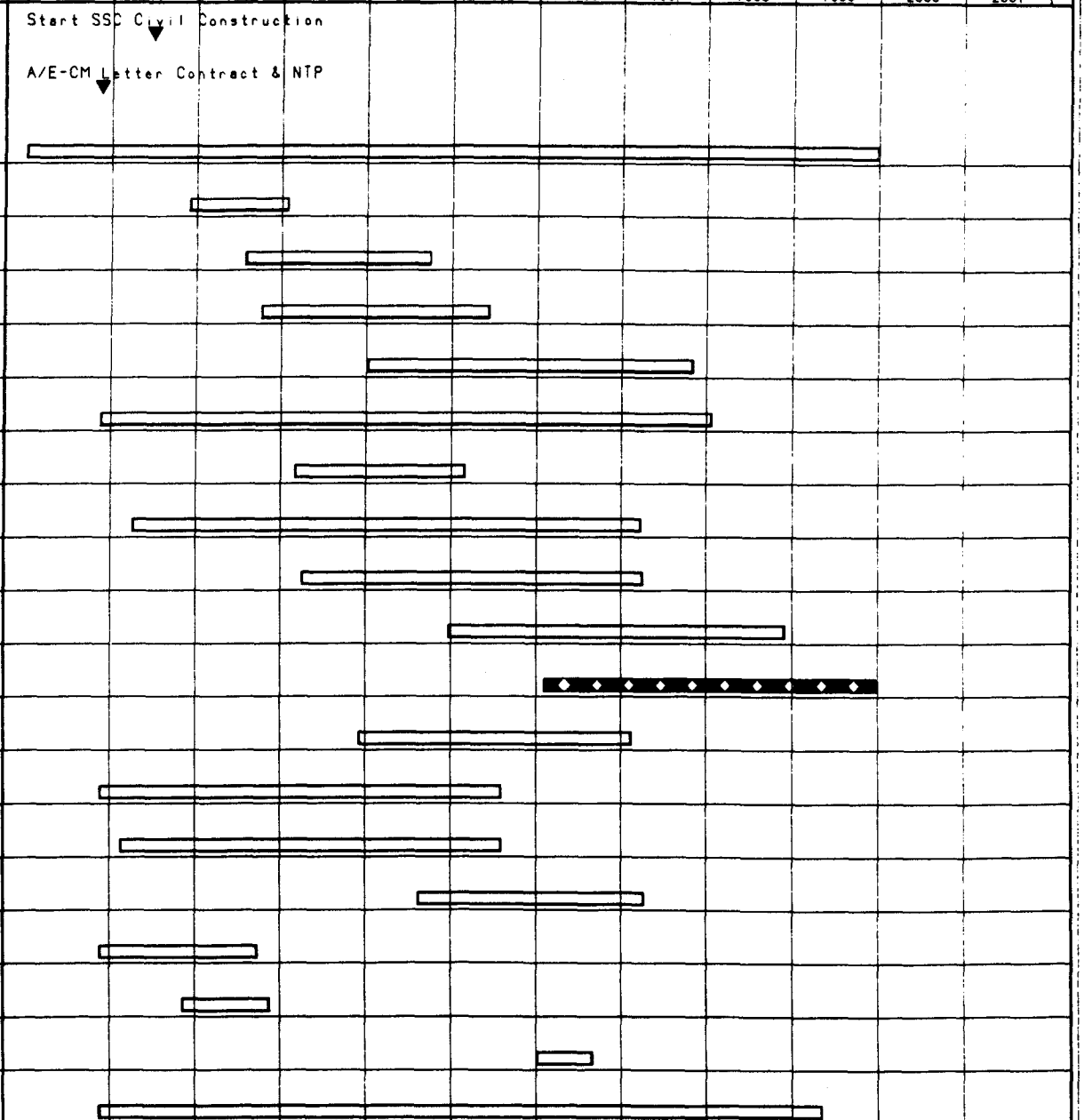
Calendar is in Fiscal Years

Baseline Master Schedule: Ver. 12, Rev. 6

CCDSUMW

BL12R6UN

WBS	Major Functional Area/Major Component
2.01.01	CONVENTIONAL CONSTRUCTION ADMINISTRATION
2.01.02	LINAC
2.01.03	LEB
2.01.04	MEDIUM ENERGY BOOSTER (MEB)
2.01.05	HEB
2.01.06	COLLIDER
2.01.07	TEST BEAM
2.02.01	WN REGION
2.02.02	WS REGION
2.02.03	EN REGION
2.02.04	ES REGION
2.02.05	SUPPORT FUNCTIONS
2.03.02	PRIMARY SYSTEMS - ON-SITE
2.03.03	SECONDARY SYSTEMS - ON-SITE
2.04.01	CENTRAL LAB/OFFICE AREA
2.04.02	MAGNET LABORATORY
2.04.03	ACCELERATOR FACILITIES
2.04.04	ENVIRONMENTAL HEALTH FACILITIES
2.05.01	ARCHITECTURAL ENGINEERING



General SSCL Actions — Critical Segment — Milestone

KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

APPROVALS:
Tech Dir: DATE:
PMO PMgr: DATE:
Gen'l Mgr: DATE:
Director: DATE:

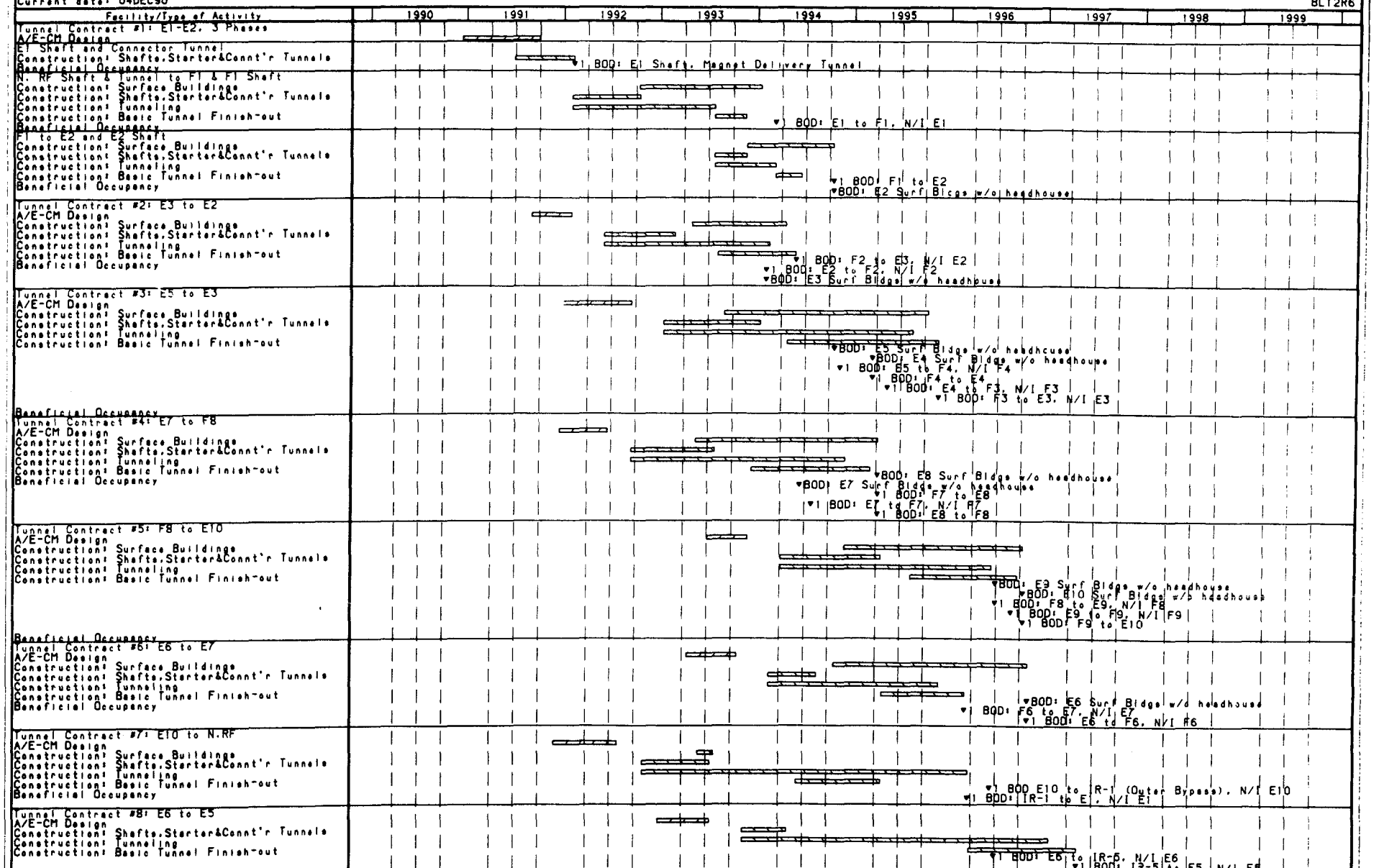
Baseline Master Schedule: Ver. 12, Rev. 6

Superconducting Super Collider
Activities & Milestones Barchart

COLLIDER: Underground & Surface Buildings

COLLIDER
BL12R6

Current date: 04DEC90



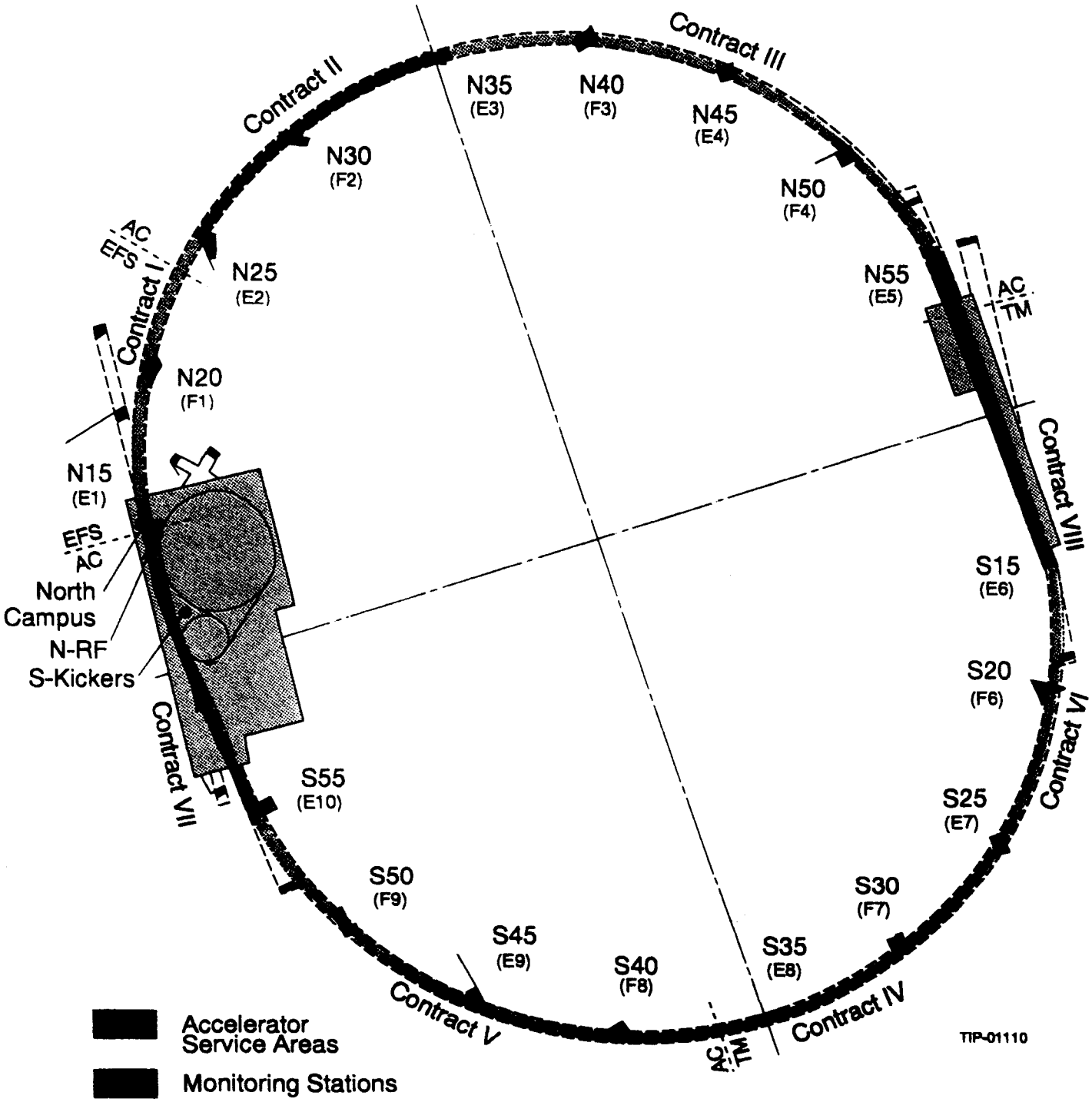
KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

Predesign
Design
Procurement
Construction
Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor
-SSCL Procurement
Critical Activities
Level 3 or lower MS
Level 1 Milestone
Level 2 Milestone

NOTATION:
BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

APPROVALS:
CCD ADir: DATE:
ADiv. AD: DATE:
TECH DIR: DATE:
PMD DPM : DATE:
PMD PMgr: DATE:

Data transmitted to PMRS on:


Contract I
Contract II
Contract III
Contract IV
Contract V
Contract VI
Contract VII
Contract VIII
N15 (E1)
N20 (F1)
N25 (E2)
N30 (F2)
N35 (E3)
N40 (F3)
N45 (E4)
N50 (F4)
N55 (E5)
S15 (E6)
S20 (F6)
S25 (E7)
S30 (F7)
S35 (E8)
S40 (F8)
S45 (E9)
S50 (F9)
S55 (E10)
AC
EFS
AC
EFS
AC
TM
AC
TM
North Campus
N-RF
S-Kickers
Accelerator Service Areas
Monitoring Stations
TIP-01110

UNDERGROUND PRODUCTIONS

GENERAL:

1. Infrastructure, i.e. roads, utilities, general earthworks/landscaping, are separate predesign, design and contract efforts paced to match each underground contract.

2. The surface buildings included in the schedule are adjacent cyrogenic, power and etc. exclusive of the headhouse over the shaft and the elevator in the shaft. The headhouse and elevators will be added later after primary equipment installation activities by Accelerator Division.

3. Beneficial occupancy of a tunnel half sector provides only a bare concreted shaft, bare tunnel with temporary lighting and a temporary elevator in the shaft. Fit out with permanent lighting, cable trays, 13.8 Kv power and a ventilation system will be added to the schedule during development of the equipemnt installation activities by Accelerator Division.

SPECIFIC:

1. TBM tunneling advance rates are as follows:

	CHALK	SHALE	MARL	efficiency
Daily rate (LF/DAY)	150	100	125	
1st Month rate (LF/MO)	990	660	825	30%
2nd Month rate (LF/MO)	1,485	990	1,238	45%
3rd Month rate (LF/MO)	1,980	1,320	1,650	60%
4th Month+ rate (LF/MO)	3,300	2,200	2,750	100%

All Road Header rates are 35 LF/DAY for all material.
These rates are based on a five day week, 2 ten hour shifts.

2. Excavation of niches along the tunnel is done after TBM tunneling and shifting of the muck train and time for these excavations is included in the total time allotted for tunnel finish out.

3. Other rates are:

Construction shafts	3 MO/EA	if first shaft in a contract or E1,E3,E5,E7 or E9 shafts
	2 MO/EA	if not.
Starter tunnels (at bottom of shafts for TBM installation)	3 MO/EA.	
Connector tunnels (at bottom of shaft but not for TBM installation)	2 MO/EA.	
Shift Muck Train	1 WK/EA.	
TBM Mobilization in tunnel	1 MO/EA.	

TBM Demobilization	1 MO/EA if at removal shaft, 2 MO/EA if not.
Road Header Mobilization	1 MO/EA.
Road Header Demobilization	1 MO/EA.
Backstop Tunneling by R.H.	4 MO/EA.
Gallery/RF/HEB T.T. Road Header Tunneling	8 MO.
Backstop/Gallery Finish-out	6 MO.

4. Surface buildings allow, in general and not in all cases, two phases of construction as follows:

<u>PHASE 1</u>

E buildings for foundations and structure starting after site infrastructure completion and finishing of the connector/ starter tunnel	4 MO/EA.
F buildings as above	3 MO/EA.

<u>PHASE 2</u>

E buildings for finishing and building systems starting after switching the muck train to the next shaft from the site and concurrant with starting of tunnel finish out for the last reach	6 MO/EA.
F buildings as above	4 MO/EA.

5. Tunnel finish out includes excavation of the niches along the tunnel, concreting of the invert, installation of the sump drain (leaving a temporary pump until final mechanical finish out), concreting of the shaft, and provision of temporary lighting in the tunnel. Rates are:

200 LF/DAY or
3.2 MO/half sector.

Rates inclusive of mechanical and electrical fit out would add:

180 LF/DAY, linearly, or
a total tunnel finish out at 6.9 MO/half sector.

6. Procurement/Refurbishment of TBM times are:

<u>Contract Nos.</u>	<u>Months</u>
1, 2 and 7	6
3 and 4	8
5, 6 and 8	9

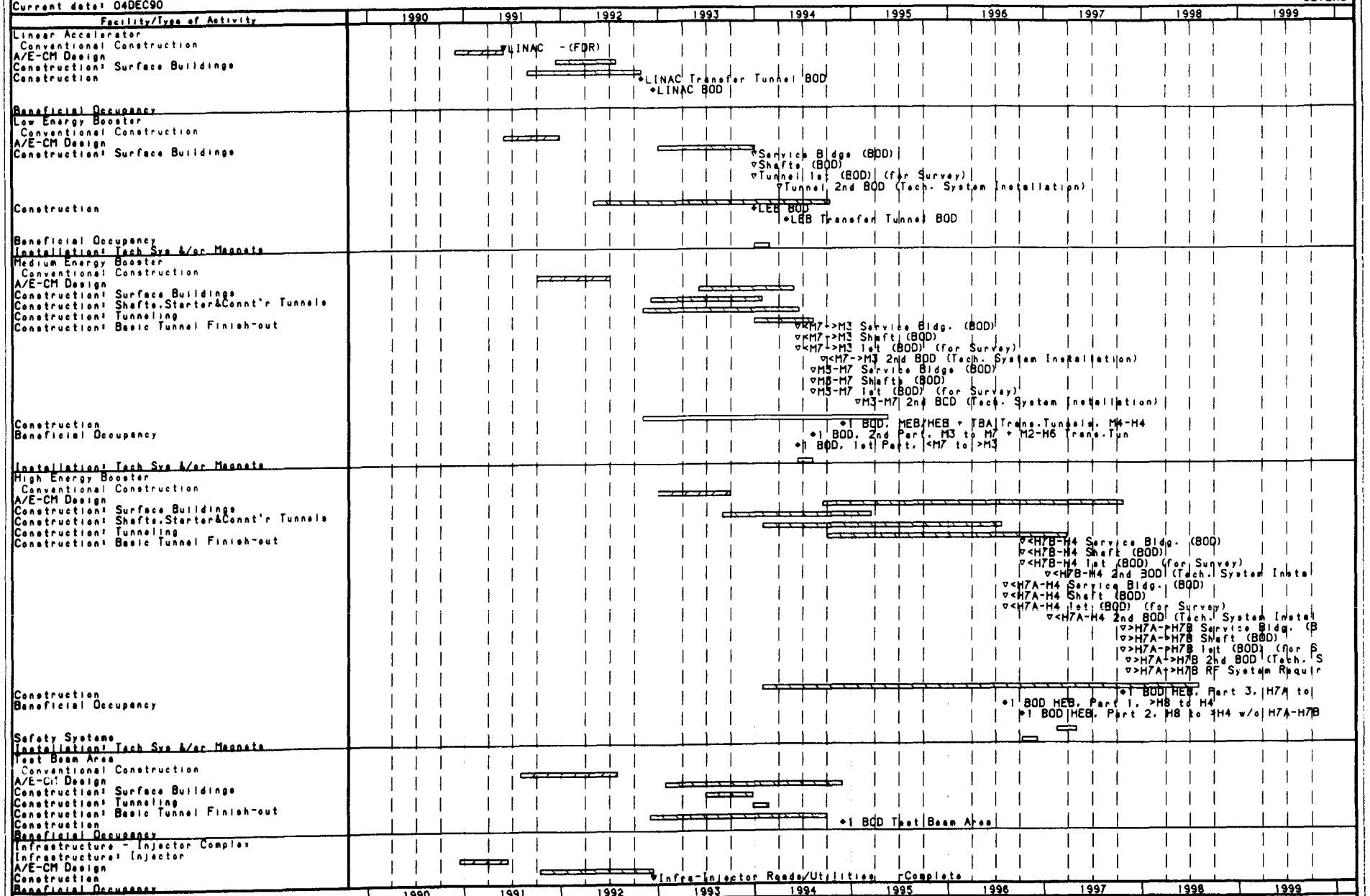
Baseline Master Schedule: Ver. 12, Rev. 6

Superconducting Super Collider
Activities & Milestones Barchart

INJECTOR: Injector Facilities w/Infrastr

INJECTOR
BL12R6

Current date: 04DEC90



KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cryogenic Plant contract in NOV 1990.

Predesign
Design
Procurement
Construction
Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor
-SSCL Procurement
Critical Activities
Level 3 or lower MS
Level 1 Milestone
Level 2 Milestone

NOTATION:
BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

APPROVALS:
CCD ADir: DATE:
ADiv. AD: DATE:
TECH DIR: DATE:
PMO DPM: DATE:
PMO PMgr: DATE:

Data transmitted to PMRS on:

Baseline Master Schedule: Ver. 12, Rev. 6

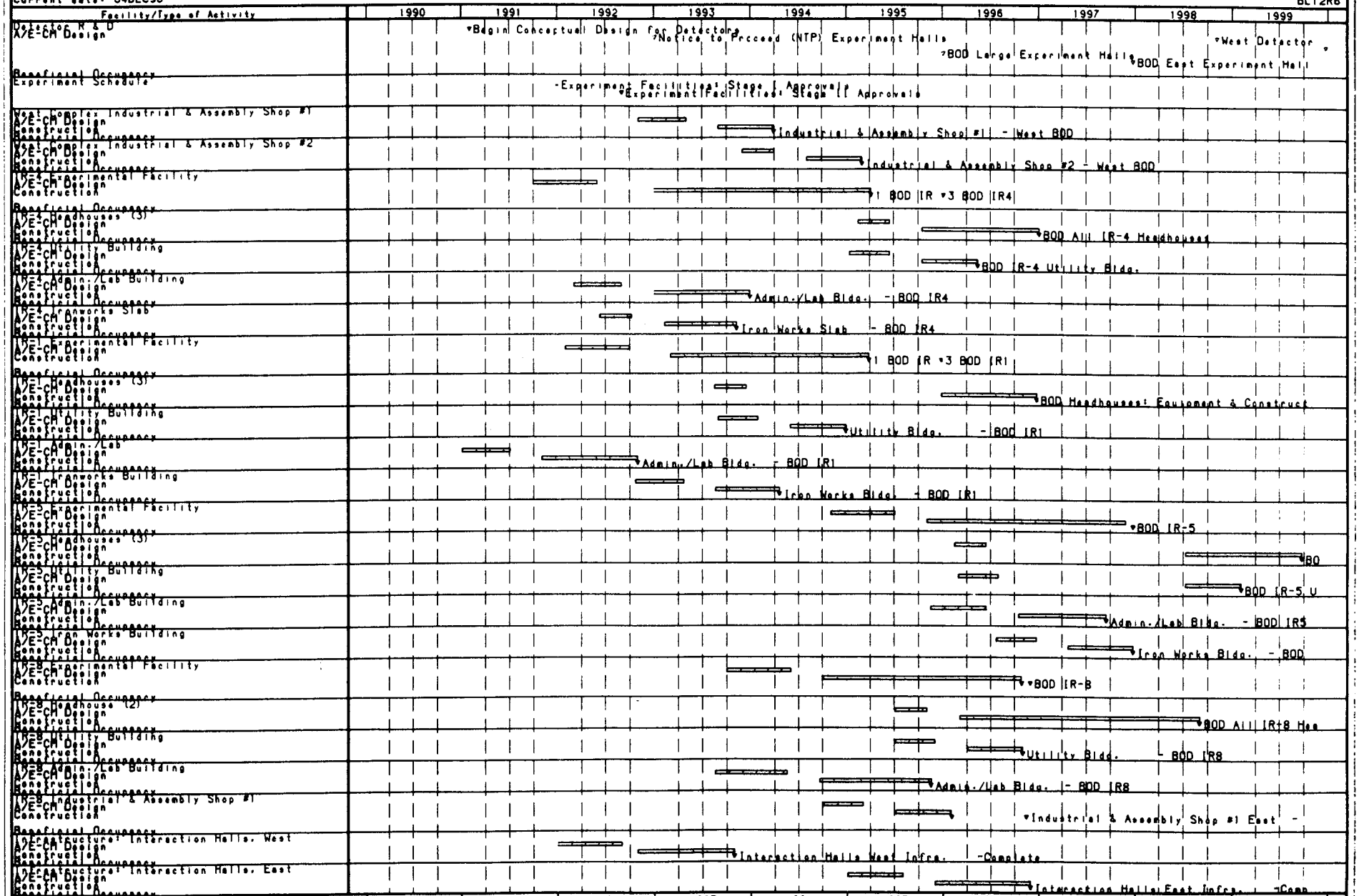
Superconducting Super Collider
Activities & Milestones Barchart

EXPERIMENT FACILITIES: Halls/Bldgs/Infra

EXPERIM

Current date: 04DEC90

BL12R6



KEY ASSUMPTIONS:

Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

Predesign
Design
Procurement
Construction
Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor
-SSCL Procurement
Critical Activities
Level 3 or lower MS
Level 1 Milestone
Level 2 Milestone

NOTATION:

BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

APPROVALS:

CCD ADir:	DATE:
ADiv. AD:	DATE:
TECH DIR:	DATE:
PMO DPM :	DATE:
PMO PMgr:	DATE:

Date transmitted to PMRS on:

Baseline Master Schedule: Ver. 12, Rev. 6

Current date: 06DEC90

Superconducting Super Collider

Activities & Milestones Barchart

CAMPUS: Buildings & Infrastructure

CAMPUS BL12R60

Facility/Type of Activity	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Magnet Test Laboratory (MTL)										
Magnet Test Laboratory (MTL) -Design										
Magnet Test Laboratory -Constructn										
Magnet Development Lab (MDL)										
Magnet Development Lab (MDL) -Design										
Magnet Development Lab -Constructn										
Magnet Complex Sitework -Constructn										
Magnet Acceptance & Storage Facility (MAAS)										
Magnet Acceptance & Storage (MAAS) -Design										
Magnet Acceptance & Storage (MAAS) -Constructn										
Central Office Complex, Building 1										
Office/Lab Complex: Phase I -Design										
Office/Lab Complex: Phase I -Constructn										
Central Office Complex, Building 2										
Office/Lab Complex: Phase II -Design										
Office/Lab Complex: Phase II -Constructn										
Central Office Complex, Building 3										
Office/Lab Complex: PhaseIII -Design										
Office/Lab Complex: PhaseIII -Constructn										
Central Office Complex, Common Services										
Office/Lab Complex: ComServ. Ph IV -Design										
Office/Lab Complex: ComServ. Ph IV -Constructn										
Central Office Complex, Auditorium										
Office/Lab Complex: Audit. Ph. V -Design										
Office/Lab Complex: Audit. Ph. V -Constructn										
Accelerator Surface Systems Test Facility										
String Test Fac & El Bldg -Design -Preliminar										
String Test Facility & El Bldgs. -Design										
String Test Facility -Constructn										
El Surface Buildings & Final Infrastructure										
El Surface Bldgs -Fdn/Str										
El Surf Bldgs Finish										
Accelerator Shop (ASB)										
Accelerator Shop (ASB) -Design										
Accelerator Shop (ASB) -Constructn										
Emergency Facility: West										
Emergency Facility: West -Design										
Emergency Facility: West -Constructn										
Emergency Facility: East										
Emergency Facility: East -Design										
Emergency Facility: East -Constructn										
Emergency Facility: East -Complete										
TechServices Welding, Machine & Model Shop										
TechServ #1: Welding, Machine&Model -Design										
TechServ #1: Welding, Machine&Model -Constructn										
TechServices Bldg/Grounds Maint. Facility										
TechServ #2: Bldg/Grnds Maint. -Design										
TechServ #2: Bldg/Grnds Maint. -Constructn										
TechServices Warehouse										
TechServ #3: Warehouse -Design										
TechServ #3: Warehouse -Constructn										
Accelerator Warehouse										
Accelr. Div: Warehouse -Design										
Accelr. Div: Warehouse -Constructn										
El Infrastructure										
El Infrastructure -Constructn										
Infrastructure - Campus										
Infra-Campus: Roads/Utilities -Design										
Infra-Campus Roads: -Constructn										
Infra-Campus Utils -Constructn										
Infra-Environ/Health Fac -Constructn										
Infrastructure - Water Plant & Main										
Infra-Campus Water Plant: -Design										
Infrastructure - Sewage Treatment Plant										
Infra-Campus SewagePlant: -Design										

Magnet Test Laboratory (MTL) - (FDR) REVIEW
MTL PBOD
MTL BOD
Magnet Development Lab (MDL) Degn Rvw (FDR)
MDL PBOD
MDL BOD
MAAS BOD
Ph I -Complete
Ph II -Complete
Ph III -Complete
Ph IV -Complete
Ph V -Complete
ASST Fac - Final Design Revisions
String Test Facility (BOD)
BOD: El Surf Bldgs w/o headhouse
ASB - TA Review & Signoff
Accelerator Shop (ASB) -Complete
Emergency Facility: West -Complete
TechServ #1: Welding, Machine&Model -Complete
TechServ #2: Bldg/Grnds Maint. -Complete
TechServ #3: Warehouse -Complete
Accelr. Div: Warehouse -Complete
Infra-Campus Roads/Utilities -Complete
Infra-Environ/Health Fac. -Complete

KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 31 MAY 1990.
DOE has SEIS ROD on 30 NOV 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in July 1990.

Predesign
Design
Procurement
Construction
Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor
-SSCL Procurement
Critical Activities
Level 3 or lower MS
Level 1 Milestone
Level 2 Milestone

NOTATION:
BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

APPROVALS:
CCD ADir: DATE:
ADiv. AD: DATE:
TECH DIR: DATE:
PMO DPM: DATE:
PMO PMgr: DATE:

Data transmitted to PMRS on:

Baseline Master Schedule: Ver. 12, Rev. 6

Superconducting Super Collider

Activities & Milestones Barchart

INFRASTRUCTURE: Col'dr/Camp./Inj./ExpHall

INFRA

BL12R6

Current date: 04DEC90

Facility/Type of Activity	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
E1 Infrastructure										
A/E-CM Design										
Construction			N. RF to F1 Infrastructure			-Complete				
Beneficial Occupancy										
Contract Set #2 Infrastructure										
A/E-CM Design										
Construction				E3 to E2 Infrastr			-Complete			
Beneficial Occupancy										
Contract Set #3 Infrastructure										
A/E-CM Design										
Construction					E5 to E3 Infrastructure			-Complete		
Beneficial Occupancy										
Contract Set #4 Infrastructure										
A/E-CM Design										
Construction					E7 to F8 Infrastr		-Complete			
Beneficial Occupancy										
Contract Set #5 Infrastructure										
A/E-CM Design										
Construction						F8 to E10 Infrastr			-Complete	
Beneficial Occupancy										
Contract Set #6 Infrastructure										
A/E-CM Design										
Construction						E6 to E7 Infrastr			-Complete	
Beneficial Occupancy										
Contract Set #7 Infrastructure										
A/E-CM Design										
Construction					E10 to N.RF Infrastructure		-Complete			
Beneficial Occupancy										
Contract Set #8 Infrastructure										
A/E-CM Design										
Construction						E6 to E5 Infrastructure		-Complete		
Beneficial Occupancy										
Infrastructure - Campus										
A/E-CM Design										
Construction				Infra-Campus Roads/Utilities			-Complete			
							Infra-Environ/Health Fac.			-Complete
Beneficial Occupancy										
Infrastructure - Water Plant & Main										
A/E-CM Design										
Construction				Water Plnt Complete						
Beneficial Occupancy										
Infrastructure - Sewage Treatment Plant										
A/E-CM Design										
Construction				SEWAGE TRTMT PRIMARY ONLINE						
				SEWAGE TRTMT 2ND'ARY ONLINE						
				SewageTrtmt Complete						
Beneficial Occupancy										
Infrastructure - Injector										
A/E-CM Design										
Construction				Infra-Injector Roads/Utilities		-Complete				
Beneficial Occupancy										
Infrastructure - West Experiment Facilities										
A/E-CM Design										
Construction					Interaction Halls West Infra.		-Complete			
Beneficial Occupancy										
Infrastructure - East Experiment Facilities										
A/E-CM Design										
Construction								Interaction Halls East Infra.		-Comp
Beneficial Occupancy										

KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

Predesign
Design
Procurement
Construction
Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor
-SSCL Procurement

NOTATION:
BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

APPROVALS:
CCD ADir: DATE:
ADiv. AD: DATE:
TECH DIR: DATE:
PMO DPM : DATE:
PMO PMgr: DATE:

Date transmitted to PMRS on:

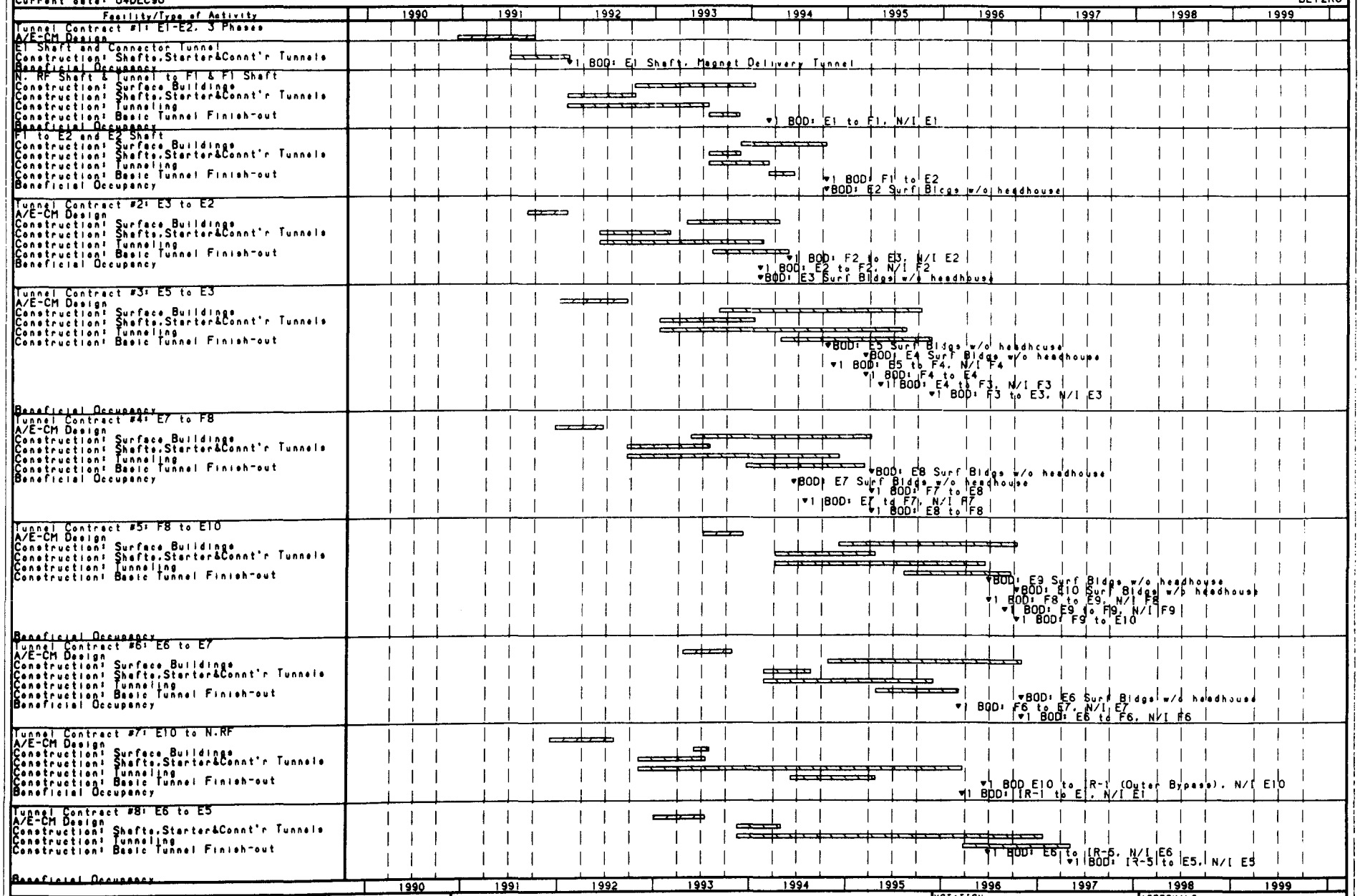
Baseline Master Schedule: Ver. 12, Rev. 6

Superconducting Super Collider
Activities & Milestones Barchart

COLLIDER: Underground & Surface Buildings

COLLIDER
BL12R6

Current date: 04DEC90



KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS RDD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

Predesign
Design
Procurement
Construction
Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor
-SSCL Procurement
Critical Activities
Level 3 or lower MS
Level 1 Milestone
Level 2 Milestone

NOTATION:
BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

APPROVALS:
CCD ADir: DATE:
ADiv. AD: DATE:
TECH DIR: DATE:
PMO OPM: DATE:
PMO PMgr: DATE:
Data transmitted to PMRS on:

Prototypical Collider Half Sector

Installation Model Shaft and Tunnels

Install Model
INSTG-1
INSTALL

Current date: 22JUN90

Activities & Milestones Barthart

-1 | 1 | 2

-4 -3 -2 -1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Service Bldg. (BOD)
Cryo Plant Delivery
Cryo Plant Installation
Cooling Water & Power Avail.
Power System Installation
Instrumentation System Installation
Cryo Distribution System Installation
CW System Installed
Control System Installation
Headhouse Fndn/Struct.
Magnet Moist & Struct.
Cryo Plant Checkout
Power Loop Check
Headhouse Weather...

Shaft (BOD)
Shaft Cryo System Installation
Shaft Power System Installation
Motor Racks Installation
Shaft Cabling
Perm. Elev. Installed
System Test
Ready to Support Lockdown

Tunnel (BOD) (For Survey)
Survey & Benchmark
Install Light
Install Transport Guidance Cable
Application of Floor Sealant
Power Cable (69 KV) Installation
2nd BOD (for Tech. System Installation)
Lighting Installation
Install Tray Installation
Ventilation System Installation
Niche Electrical Equipment Racks Installed
Safety Equipment (Electrical)
Safety Equipment (Air Qual)
Safety Equipment (Radiation)
By-Pass Diode Motes
Magnet Installation Vech. Avail.
Soldering/Welding Equip. Avail.
Misc. Cables Installed
Magnet Stand Installation & Alignment
Magnet Installation & Alignment
Quad Pieces (96) Installed & Alignment
Dipole Magnets (472) Installed & Alignment
Short Dipole Magnets (8) Installed & Align
Quadrupole Magnets (96) Install. & Alignment
Vacuum Cert' & General Test Equipment Avail
Install Electrical in Niche Racks
Control & Instrumentation Connected & Test
String Pre-Test (Hi-pot & Leakcheck)
Refrig/Cryo Connected
Magnet Installation Complete
Misc. Cable Connected
Tech. System Installation Complete
System & Cryo Safety Check-Out Revie
Cryo Cool Down
Power Safety Check Review
Power UP

KEY ASSUMPTIONS:

Magnet CDR Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 31 MAY 1990.
DOE has SEIS ROD on 30 NOV 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in July 1990.

Construct. Predesign
Construction Design
Bid & Award
Construction
Research & Developmt
Engineering Design
Procurement/Fabricat
Installation
Testing/Commission'g
Director/PM Office
Multiple Division
Magnet Systems Div.
Conv.Constr.Division
Texas (TNRLC)
Physics Research Div

BOD = Full Beneficial Occupancy
1 BOD = CCD to AD Tunnel for Surveying
2 BOD = CCD to AD for Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

APPROVALS:

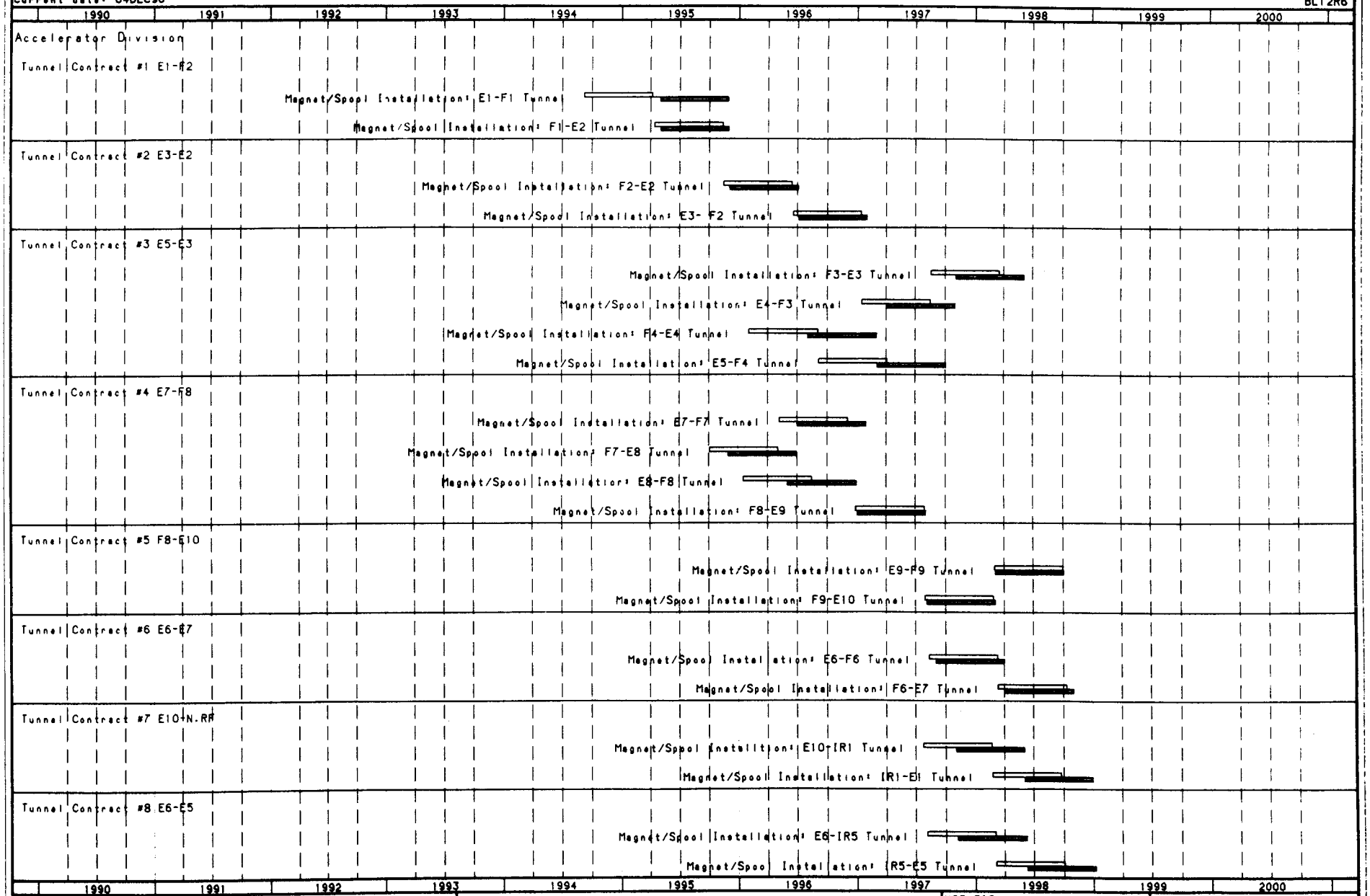
CCD ADir:	DATE:
ADiv AD:	DATE:
TECH DIR:	DATE:
PMD DPM:	DATE:
PMD PMgr:	DATE:

Baseline Master Schedule: Ver. 12, Rev. 6

Superconducting Super Collider
Activities & Milestones Barchart

Collider Magnet Installation Barchart
COL-MINS
BL12R6

Current date: 04DEC90



KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

Predesign
Design
Procurement
Construction
Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor

NOTATION:
BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed (to a contractor)

APPROVALS:
CCD ADir: DATE:
ADiv. AD: DATE:
TECH DIR: DATE:
PMO DPM: DATE:
PMO PMgr: DATE:

Data transmitted to PMRS on:

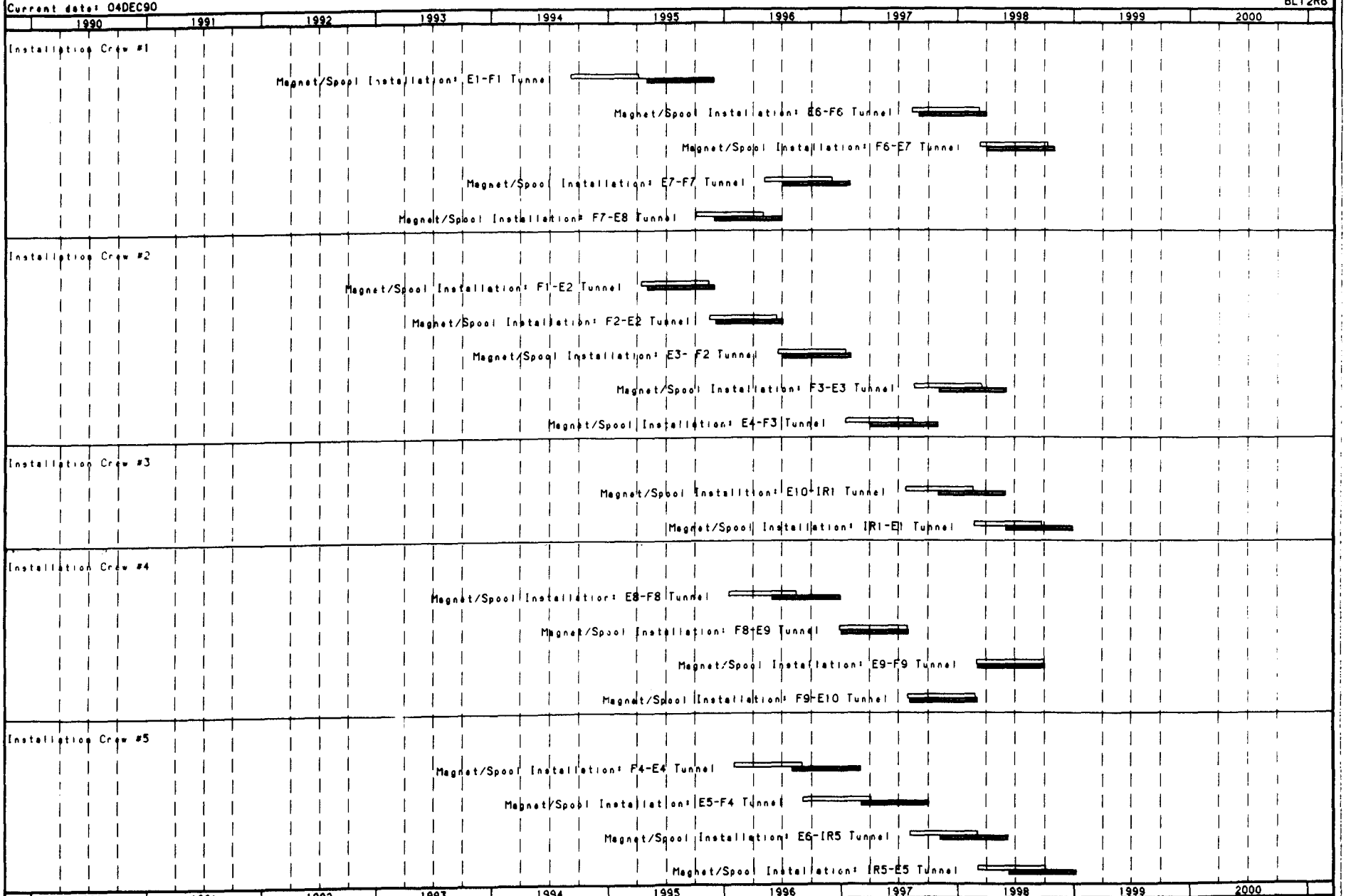
Baseline Master Schedule: Ver. 12, Rev. 6

Superconducting Super Collider
Activities & Milestones Barchart

Collider Magnet Installation Barchart

COLMINSC
BL12R6

Current date: 04DEC90



KEY ASSUMPTIONS:
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

Predesign
Design
Procurement
Construction

Conv.Constr.Division
-State of Texas
A/E-CM
Constr.Contractor

NOTATION:
BOD = Full Beneficial Occupancy
1 BOD = CCD to AD turnover for Surveying
2 BOD = CCD to AD Equip. Installation
3 BOD = CCD Headhouse/Shaft completion
NTP = Notice to Proceed(to a contractor)

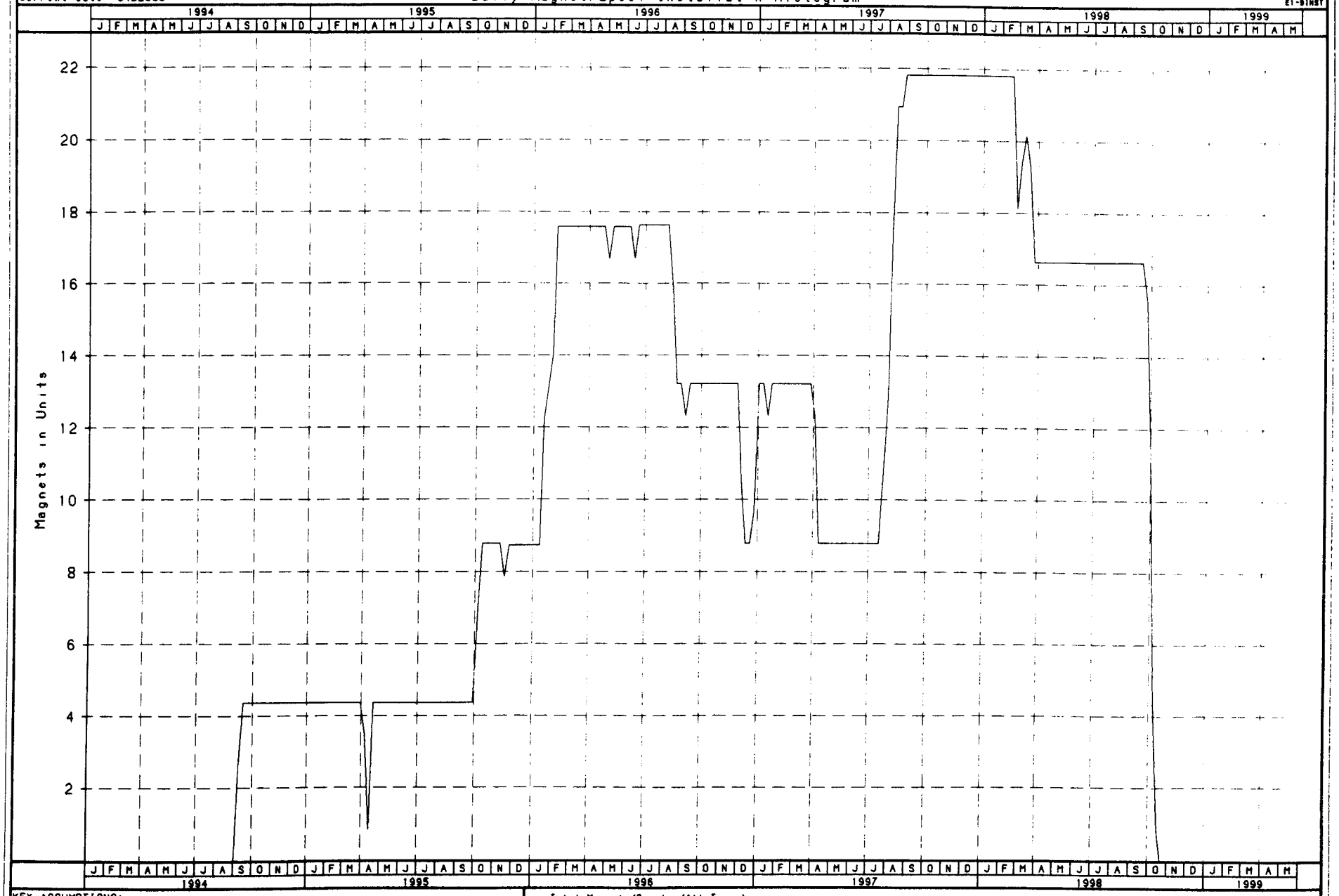
APPROVALS:

CCD ADir:	DATE:
ADiv. AD:	DATE:
TECH DIR:	DATE:
PMO DPM :	DATE:
PMO PMgr:	DATE:

Data transmitted to PMRS on:

Baseline Master Schedule: Ver. 12, Rev. 6 — Superconducting Super Collider — Installations Through All E Shafts

Current date: 04DEC90 — Daily Magnet/Spool Installat'n Histogram



KEY ASSUMPTIONS:

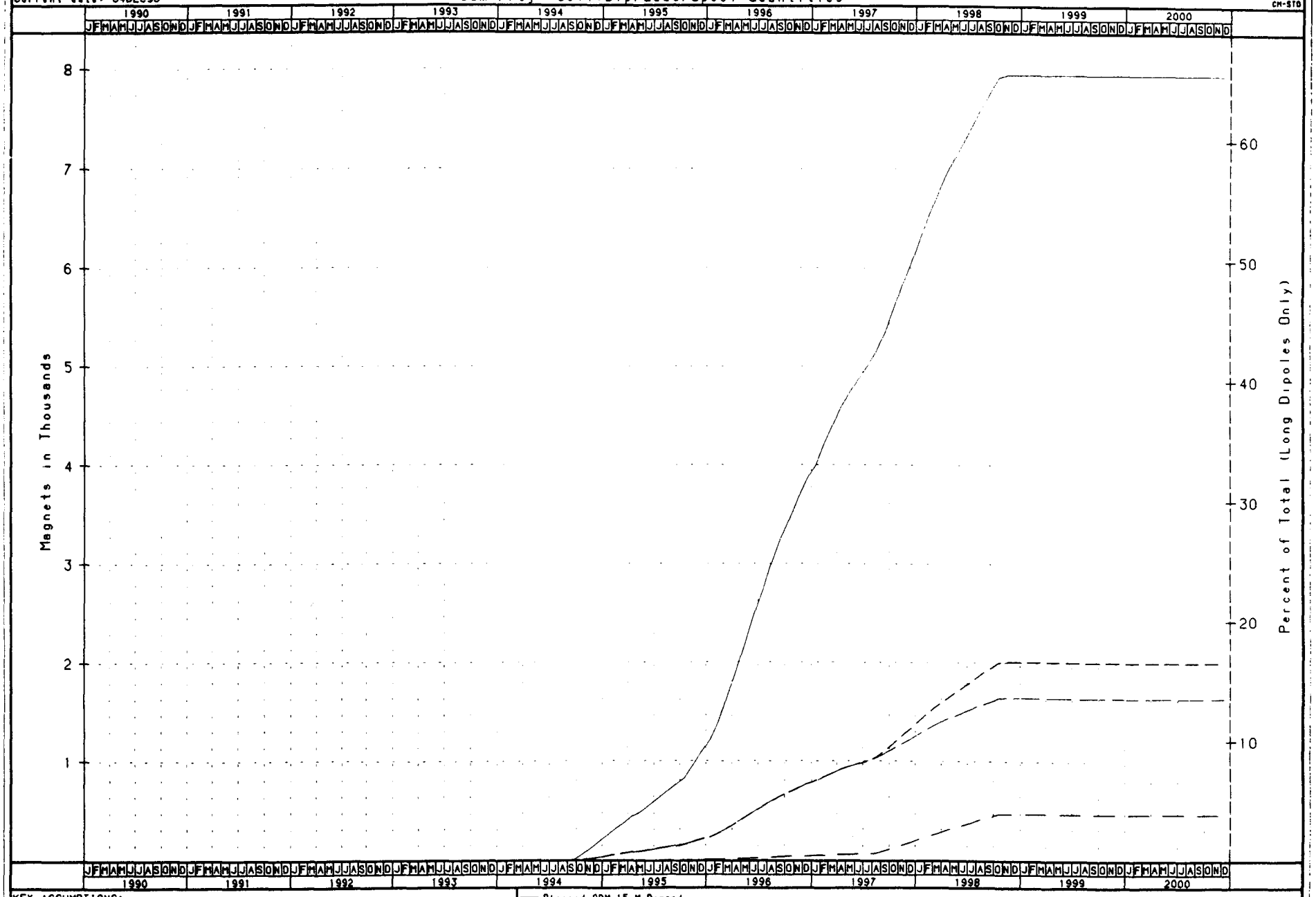
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

— Total Magnets/Spools (All Types)

Baseline Master Schedule: Ver. 12, Rev. 6 — Superconducting Super Collider — Scheduled Std. Collider Magnets/Spools

Current date: 04DEC90 — Cum.Proj. Coll.Dip/Quad/Spool Quantities

BL12R6
CM-STD



KEY ASSUMPTIONS:

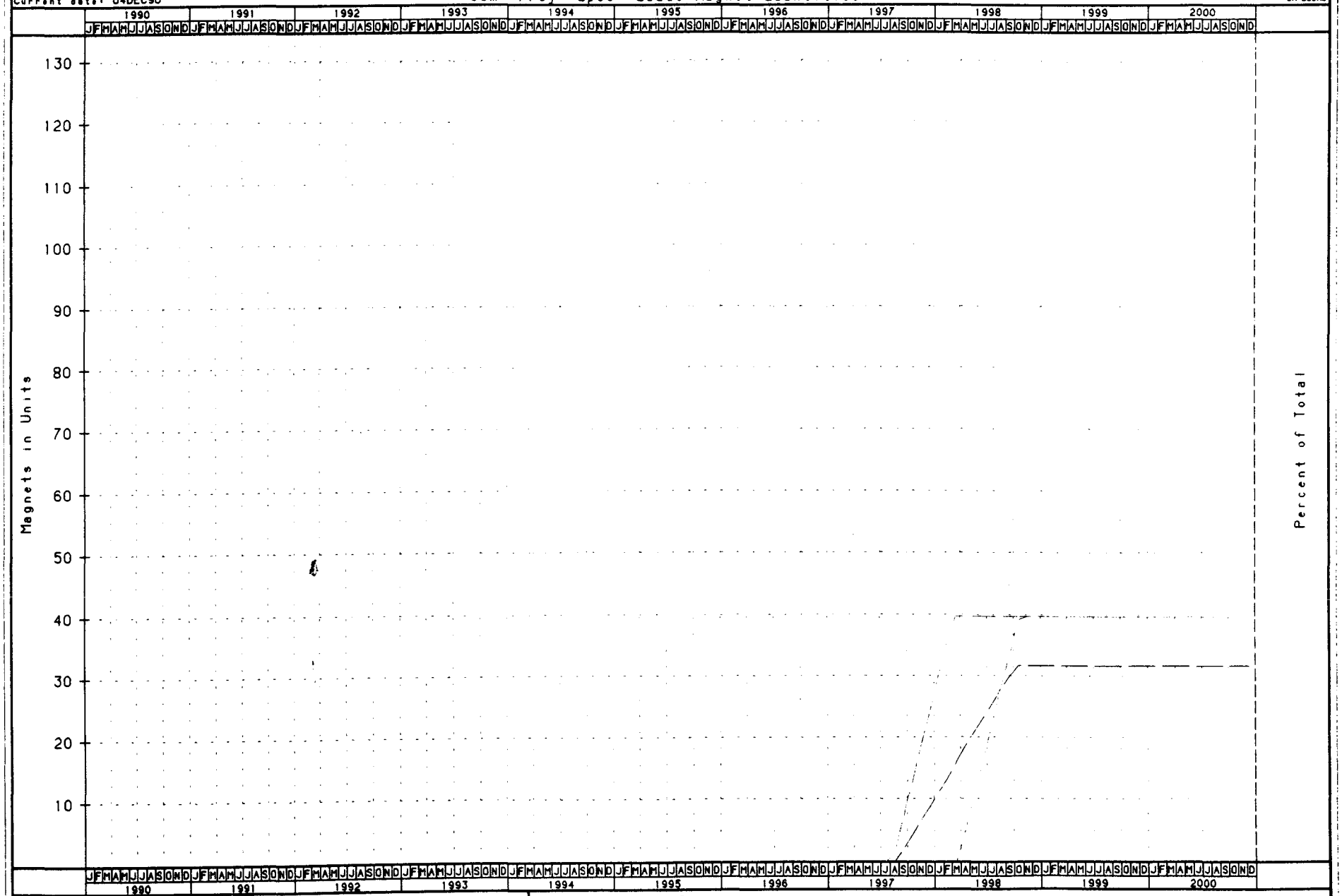
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

— Planned CDM 15 M Demand
— Planned CDM 13 M Demand
— Planned Std. Arc Quads Demand
- - Planned Collider Spools

Baseline Master Schedule: Ver. 12, Rev. 6 — Superconducting Super Collider — Scheduled Collider Special Quadrupoles

BL1286

Current date: 04DEC90 — Cum. Proj. Spec. Quads Magnet Quantities — CM-SQUAD



KEY ASSUMPTIONS:

Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

- Planned Disp.Suppr. Demand
- Planned M-1 Demand
- Planned Low Beta Quad Demand
- Planned Med Beta Quad Demand
- Planned Special Quad (SUD) Demand

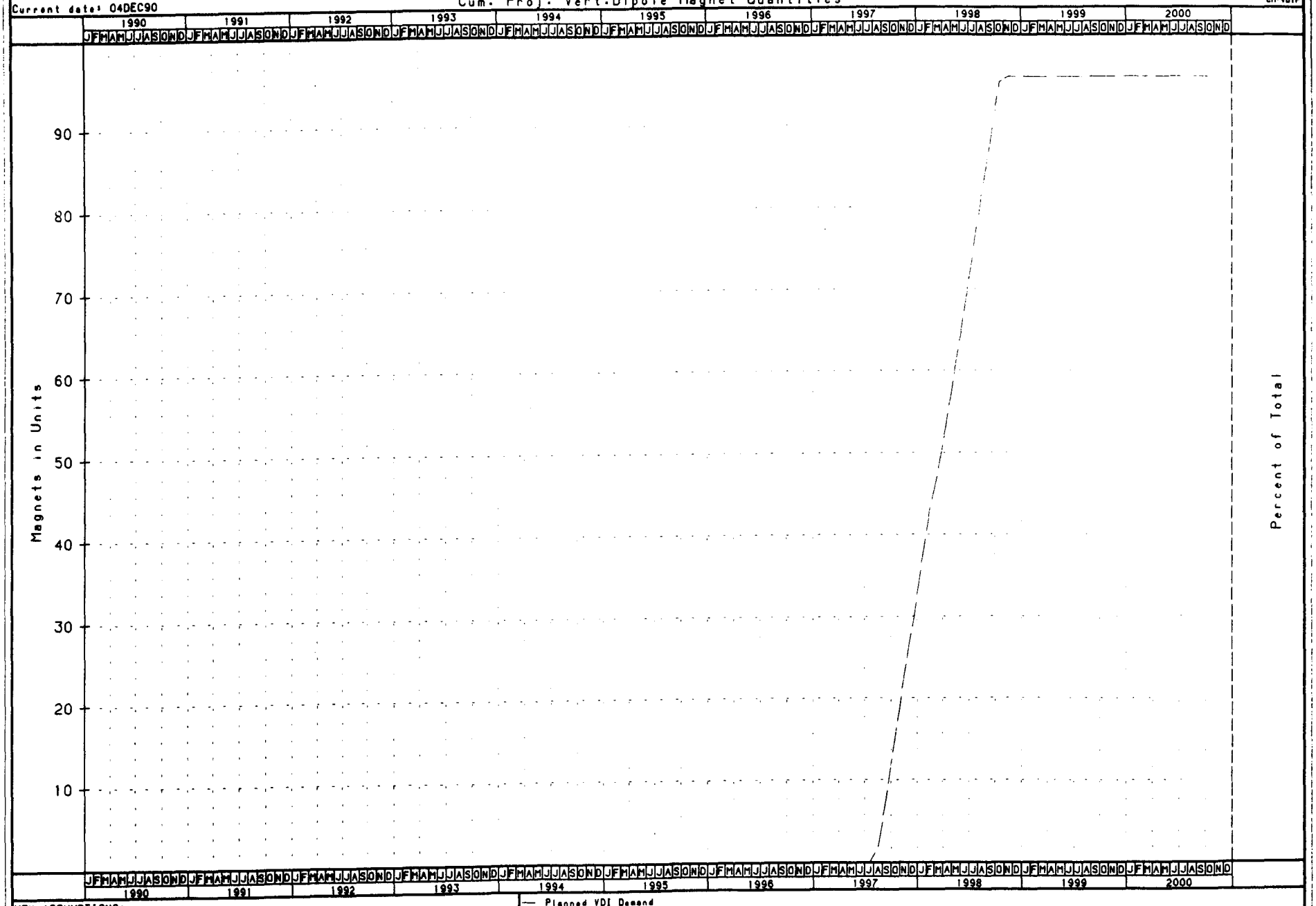
Baseline Master Schedule: Ver. 12, Rev. 6 — Superconducting Super Collider — Scheduled Collider Vertical Dipoles

BL12R6

CM-VDIP

Current date: 04DEC90

Cum. Proj. Vert.Dipole Magnet Quantities



KEY ASSUMPTIONS:

Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

— Planned VDI Demand
- - Planned VDQ Demand

SSC PROJECT BASELINE
FUNDING PROFILE

BASELINE (10 YEAR SCHEDULE) ($ in 1000) **11/5/90**

WBS	DESCRIPTION	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	TOTAL
1.1.1	ACCELERATOR MANAGEMENT	56	2,570	3,623	3,088	3,575	3,665	3,544	3,463	3,323	3,323	30,230
1.1.2	LINAC SYSTEM	0	13,407	10,837	9,965	2,822		0	0	0	0	37,031
1.1.3	LEB SYSTEM	0	0	9,538	19,077	9,538	4,814		0	0	0	42,967
1.1.4	MEB SYSTEM	0	0	13,228	39,709	39,709	16,421	9,094	0	0	0	118,161
1.1.5	HEB SYSTEM	0	0	0		14,420	54,967	54,967	20,236	18,022	0	162,612
1.1.6	COLLIDER SYSTEM	1879	25,094	22,552	110,180	116,032	113,614	113,823	72,350	47,648	23,934	647,106
1.1.7	TEST BEAMS	0	0	0	0	5,616	5,615	0	0	0	0	11,231
1.1.8	GLOBAL ACCELERATOR SYSTEM	0	5,875	9,746	7,754	7,754	7,690	5,127	5,127	5,127	3,235	57,435
1.2.1	MAGNET MANAGEMENT	2,829	3,449	3,180	3,100	3,023	2,980	2,850	2,605	2,200	728	26,944
1.2.2	HEB MAGNET PRODUCTION	0	0	21,750	23,100	40,400	49,436	38,700	4,470	0	0	177,856
1.2.3	COLLIDER MAGNET PRODUCTION	7,144	68,420	115,307	247,966	275,894	283,297	275,856	250,372	220,660	0	1,744,916
1.2.4	SSCL EQUIPMENT/TOOLING	0	20,045	18,576	0	0	0	0	0	0	0	38,621
2.1.1	CONVENTIONAL CONST ADMIN	16,329	2,652	2,466	2,466	2,466	2,466	2,466	2,288	2,119	1,944	37,662
2.1.2	LINAC FACILITY	0	2,878	0	0	0	0	0	0	0	0	2,878
2.1.3	LEB FACILITY	0	0	5,172		0		0	0	0	0	5,172
2.1.4	MEB FACILITY	0	0	10,434	17,391	6,956		0	0	0	0	34,781
2.1.5	HEB FACILITY	0	0	0	12991	28,158	28,158	4,930	0	0	0	74,237
2.1.6	COLLIDER FACILITY	0	8368	91,000	60,481	64,919	104,350	126,417	15,455	0	0	470,990
2.1.7	TEST BEAM FACILITY	0	0	0	8,573	8,573	0	0	0	0	0	17,146
2.2.1	WN REGION FACILITY	0	0	3,329	9,168	17,322	0	0	0	0	0	29,819
2.2.2	WS REGION FACILITY	0	0	0	0	19,188	14,041	5,824	0	0	0	39,053
2.2.3	EN REGION FACILITY	0	0	0	0	3,188	8,095	10,085	0	0	0	21,368
2.2.4	ES REGION FACILITY	0	0	0	0	0	0	15,109	10,298	3,224	0	28,631
2.2.5	SUPPORT FUNCTIONS	0	0	0	2,734	0	5,466	0	0	0	0	8,200
2.3.1	PRIMARY SYSTEMS OFFSITE	0	0	0	0	0	0	0	0	0	0	0
2.3.2	PRIMARY SYSTEMS ONSITE	0	4,470	51,776	5,131	10,641	0	0	0	0	0	72,018
2.3.3	SECONDARY SYSTEMS ONSITE	0	0	32,494	9,332	1,736	0	0	0	0	0	43,562
2.4.1	CENTRAL LAB/OFFICE AREA	0	0	0	1,156	11,657	19,369	0	0	0	0	32,182
2.4.2	MAGNET LABORATORY	1,410	15,067	0	0	0	0	0	0	0	0	16,477
2.4.3	ACCELERATOR FACILITY	0	5,435	694	0	0	0	0	0	0	0	6,129
2.4.4	ENVIRO/HEALTH FACILITY	0	0	0	0	5,878	0	0	0	0	0	5,878
2.5.	AE/CM	6,040	18,133	35,800	24,024	14,375	13,118	9,278	5,944	0	0	126,712
3.1.	PROJECT MANAGEMENT	5,533	2,877	2,781	2,335	2,102	2,035	2,035	2,035	1,895	1,422	25,050
3.2.	SYSTEM ENGINEERING	2,584	2,219	2,226	3,115	3,294	3,296	2,987	2,816	1,105	0	23,642

SUBTOTAL	43,804	200,959	466,509	622,836	719,236	742,893	683,092	397,459	305,323	34,586	4,216,697
ESCALATION	0	5,868	33,076	76,173	131,117	185,055	218,863	157,235	145,089	19,340	971,815
CONTINGENCY	0	18,533	78,421	16,534	87,936	60,620	159,734	144,082	146,685	142,564	855,109
TOTAL WBS 1,2, & 3	**43,804**	**225,360**	**578,005**	**715,543**	**938,289**	**988,567**	**1,061,689**	**698,775**	**597,098**	**196,491**	**6,043,621**

Developed by PMO Cost Estimating Group

SSC PROJECT BASELINE
FUNDING PROFILE

BASELINE (10 YEAR SCHEDULE) ($ in 1000) **11/5/90**

WBS	DESCRIPTION	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	TOTAL
4.1	ACCELERATOR PRE-OPERATIONS				0	6,475	13,618	21,806	30,675	33,665	24,525	130,764
4.2.1	ACCELERATOR R&D	27,437	[illegible],054	51,496	33,230	21,557	5,963	3,584	2,373	1,585	0	192,279
4.2.2	MAGNET R&D	59,714	58,179	39,231	28,778	6,340	3,739	3,478	3,379	964	0	203,802
4.2.3	PHYSICS R&D	0	0	0	0	0	0	0	0	0	0	0
4.3	LAB ADMINISTRATION SERVICE	11,583	10,488	9,214	6,805	6,805	6,805	6,805	6,805	6,805	5,242	77,337
4.4	LAB TECHNICAL SUPPORT	14,003	20,838	32,033	31,560	32,042	32,712	32,364	31,024	30,982	28,530	286,088
4.5	LAB DIRECTORATE	3,003	4,305	3,536	2,475	2,474	2,474	2,474	2,474	2,474	2,474	28,163
4.6	LAB EXPERIMENTAL SUPPORT	954	3,100	4,854	5,607	6,937	7,626	8,578	9,028	9,915	10,707	67,306
4.7	PRIME CONTRACTORS FEE	2,454	3,778	3,778	3,778	5,102	3,778	3,778	3,778	3,777	3,777	37,778
4.8.	FY88 & FY89 COST											123,085
5.1	EXPERIMENTAL SYSTEM R&D	16,602	22,000	1,398	0	0	0	0	0	0	0	40,000
5.2	DETECTORS	11,063	8,297	30,000	55000	71,000	90,000	100,000	100,000	93,000	79,370	637,730
5.3	EXPER SYSTEM COMPUTERS		2,680	6,000	8000	9,000	10,000	10,000	10,000	10,000	8,710	74,390
5.4.	FY88 & FY89 COST											7,500
	SUBTOTAL	146,793	178,719	181,540	175,233	167,732	176,715	192,867	199,536	193,167	163,335	1,906,222
	ESCALATION	0	4,575	11,455	18,224	24,019	31,879	41,852	50,822	56,713	54,490	294,030
	TOTAL WBS 4 & 5	**146,793**	**183,294**	**192,995**	**193,457**	**191,751**	**208,594**	**234,719**	**250,358**	**249,880**	**217,825**	**2,200,252**
	TOTAL PROJECT FUNDING	**190,597**	**408,654**	**771,000**	**909,000**	**1,130,040**	**1,197,162**	**1,296,408**	**949,133**	**846,978**	**414,316**	**8,243,873**

Developed by PMO Cost Estimating Group

10YR. BASELINE SCHEDULE FUNDING PROFILE
19 NOV 1990
(1990 $ IN THOUSANDS)

DEVELOPED BY PMO SCHEDULING GROUP

WBS	ITEM DESCRIPTION	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	PROJECT TOTALS
1.01.01	MANAGEMENT/SUPPORT	$0	$0	$56	$2,570	$3,623	$3,088	$3,575	$3,665	$3,544	$3,463	$3,323	$3,323	$30,230
1.01.02	LINAC SYSTEM	$0	$0	$0	$13,407	$10,837	$9,965	$2,822	$0	$0	$0	$0	$0	$37,031
1.01.03	LEB SYSTEM	$0	$0	$0	$0	$9,538	$19,077	$9,538	$4,814	$0	$0	$0	$0	$42,967
1.01.04	MEB SYSTEM	$0	$0	$0	$0	$13,228	$39,709	$39,709	$16,421	$9,094	$0	$0	$0	$118,161
1.01.05	HEB SYSTEM	$0	$0	$0	$0	$0	$0	$14,420	$54,967	$54,967	$20,236	$18,022	$0	$162,612
1.01.06	COLLIDER SYSTEM	$0	$0	$1,879	$25,094	$22,552	$110,180	$116,032	$113,614	$113,823	$72,350	$47,648	$23,934	$647,106
1.01.07	TEST BEAMS	$0	$0	$0	$0	$0	$0	$5,616	$5,615	$0	$0	$0	$0	$11,231
1.01.08	GLOBAL ACCELERATOR SYSTEM	$0	$0	$0	$5,875	$9,748	$7,754	$7,754	$7,690	$5,127	$5,127	$5,127	$3,235	$57,435
1.01	*ACCELERATOR SYSTEMS*	*$0*	*$0*	*$1,935*	*$46,946*	*$69,524*	*$189,773*	*$199,466*	*$206,786*	*$186,555*	*$101,176*	*$74,120*	*$30,492*	*$1,106,773*
1.02.01	SYSTEM MANAGEMENT	$0	$0	$2,829	$3,449	$3,180	$3,100	$3,023	$2,980	$2,850	$2,605	$2,200	$728	$26,944
1.02.02	HEB MAGNET PRODUCTION	$0	$0	$0	$0	$21,750	$23,100	$40,400	$49,436	$38,700	$4,470	$0	$0	$177,856
1.02.03	COLLIDER RING (CR) MAGNET PRODUCTION	$0	$0	$7,144	$68,420	$115,305	$247,966	$275,894	$283,297	$275,856	$250,372	$220,660	$0	$1,744,914
1.02.04	SSCL EQUIPMENT/TOOLING	$0	$0	$0	$20,045	$18,576	$0	$0	$0	$0	$0	$0	$0	$38,621
1.02	*MAGNET SYSTEMS*	*$0*	*$0*	*$9,973*	*$91,914*	*$158,811*	*$274,166*	*$319,317*	*$335,713*	*$317,406*	*$257,447*	*$222,860*	*$728*	*$1,988,335*
1	**TECHNICAL SYSTEMS**	**$0**	**$0**	**$11,908**	**$138,860**	**$228,335**	**$463,939**	**$518,783**	**$542,499**	**$503,961**	**$358,623**	**$296,980**	**$31,220**	**$3,095,108**
2.01.01	CONVENTIONAL CONSTRUCTION ADMINISTRATION	$0	$0	$16,329	$2,652	$2,466	$2,466	$2,466	$2,466	$2,466	$2,288	$2,119	$1,944	$37,662
2.01.02	LINAC	$0	$0	$0	$2,878	$0	$0	$0	$0	$0	$0	$0	$0	$2,878
2.01.03	LEB	$0	$0	$0	$0	$5,172	$0	$0	$0	$0	$0	$0	$0	$5,172
2.01.04	MEDIUM ENERGY BOOSTER (MEB)	$0	$0	$0	$0	$0	$27,825	$6,956	$0	$0	$0	$0	$0	$34,781
2.01.05	HEB	$0	$0	$0	$0	$0	$0	$19,594	$19,594	$19,594	$15,455	$0	$0	$74,237
2.01.06	COLLIDER	$0	$0	$0	$8,368	$91,000	$74,628	$119,301	$111,253	$66,440	$0	$0	$0	$470,990
2.01.07	TEST BEAM	$0	$0	$0	$0	$0	$8,573	$8,573	$0	$0	$0	$0	$0	$17,146
2.01	*CONVENTIONAL CONSTRUCTION ACCELERATOR*	*$0*	*$0*	*$16,329*	*$13,898*	*$98,638*	*$113,492*	*$156,890*	*$133,313*	*$88,500*	*$17,743*	*$2,119*	*$1,944*	*$642,865*
2.02.01	WN REGION	$0	$0	$0	$0	$3,329	$12,754	$13,736	$0	$0	$0	$0	$0	$29,819
2.02.02	WS REGION	$0	$0	$0	$0	$0	$12,170	$21,068	$0	$5,824	$0	$0	$0	$39,062
2.02.03	EN REGION	$0	$0	$0	$0	$0	$0	$3,188	$8,095	$10,084	$0	$0	$0	$21,367
2.02.04	ES REGION	$0	$0	$0	$0	$0	$0	$0	$0	$15,109	$10,298	$3,224	$0	$28,631
2.02.05	SUPPORT FUNCTIONS	$0	$0	$0	$0	$0	$2,734	$2,733	$2,733	$0	$0	$0	$0	$8,200
2.02	*CONVENTIONAL SYSTEM, EXPERIMENTAL*	*$0*	*$0*	*$0*	*$0*	*$3,329*	*$27,658*	*$40,725*	*$10,828*	*$31,017*	*$10,298*	*$3,224*	*$0*	*$127,079*
2.03.02	PRIMARY SYSTEMS - ON-SITE	$0	$0	$0	$3,000	$51,776	$16,413	$829	$0	$0	$0	$0	$0	$72,018
2.03.03	SECONDARY SYSTEMS - ON-SITE	$0	$0	$0	$0	$32,494	$7,332	$3,736	$0	$0	$0	$0	$0	$43,562
2.03	*SITE & INFRASTRUCTURE*	*$0*	*$0*	*$0*	*$3,000*	*$84,270*	*$23,745*	*$4,565*	*$0*	*$0*	*$0*	*$0*	*$0*	*$115,580*
2.04.01	CENTRAL LAB/OFFICE AREA	$0	$0	$0	$0	$0	$0	$1,156	$11,658	$19,369	$0	$0	$0	$32,183
2.04.02	MAGNET LABORATORY	$0	$0	$1,410	$15,067	$0	$0	$0	$0	$0	$0	$0	$0	$16,477
2.04.03	ACCELERATOR FACILITIES	$0	$0	$0	$5,110	$1,019	$0	$0	$0	$0	$0	$0	$0	$6,129
2.04.04	ENVIRONMENTAL HEALTH FACILITE	$0	$0	$0	$0	$0	$0	$0	$0	$5,878	$0	$0	$0	$5,878
2.04	*CAMPUS*	*$0*	*$0*	*$1,410*	*$20,177*	*$1,019*	*$0*	*$1,156*	*$11,658*	*$25,247*	*$0*	*$0*	*$0*	*$60,667*
2.05	*AE/CM*	*$0*	*$0*	*$2,329*	*$25,234*	*$47,973*	*$20,642*	*$16,659*	*$6,462*	*$5,912*	*$1,308*	*$193*	*$0*	*$128,712*
2.0	**CONVENTIONAL CONSTRUCTION**	**$0**	**$0**	**$20,068**	**$62,310**	**$235,229**	**$186,536**	**$219,995**	**$162,261**	**$150,676**	**$29,349**	**$5,536**	**$1,944**	**$1,072,903**
3.01	PROJECT MANAGEMENT	$0	$0	$5,830	$2,877	$2,781	$2,335	$2,102	$2,035	$2,035	$2,035	$1,895	$1,125	$25,050
3.02	PROJECT SYSTEMS ENGINEERING	$0	$0	$2,584	$2,219	$2,226	$3,115	$3,294	$3,296	$2,987	$2,816	$1,105	$0	$23,642
3.0	**PROJECT MANAGEMENT**	**$0**	**$0**	**$8,414**	**$5,096**	**$5,007**	**$5,450**	**$5,396**	**$5,331**	**$5,022**	**$4,851**	**$3,000**	**$1,125**	**$48,692**
********	**TEC SUBTOTAL W/O CONTINGENCY & ESCALATION**	**$0**	**$0**	**$40,390**	**$206,266**	**$468,571**	**$654,925**	**$744,174**	**$710,091**	**$659,859**	**$392,823**	**$305,516**	**$34,289**	**$4,216,703**
	TEC FUNDING PROFILE TARGET SUBTOTAL	**$0**	**$0**	**$43,804**	**$200,959**	**$466,508**	**$622,836**	**$719,236**	**$742,892**	**$683,092**	**$397,458**	**$305,324**	**$34,587**	**$4,216,696**
7.03	*CONTINGENCY (COST ESTIMATING)*	*$0*	*$0*	*$0*	*$18,533*	*$78,421*	*$16,534*	*$87,936*	*$60,620*	*$159,734*	*$144,082*	*$146,685*	*$142,564*	*$855,109*
7.03	*ESCALATION (COST ESTIMATING)*	*$0*	*$0*	*$0*	*$5,868*	*$33,076*	*$76,173*	*$131,117*	*$185,055*	*$218,863*	*$157,235*	*$145,089*	*$19,340*	*$971,816*
	TOTAL TEC FUNDING PROFILE TARGET (COST EST.)	**$0**	**$0**	**$43,804**	**$225,360**	**$578,005**	**$715,543**	**$938,289**	**$988,567**	**$1,061,689**	**$698,775**	**$597,098**	**$196,491**	**$5,043,621**

TPC-TEC FUNDING PROFILE COMPARISON
(1990 $ IN THOUSANDS)

DEVELOPED BY PMO SCHEDULING GROUP

WBS	ITEM DESCRIPTION	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	PROJECT TOTALS
4.01	ACCELERATOR PRE-OPERATION	$0	$0	$0	$0	$0	$0	$6,475	$13,618	$21,806	$30,675	$33,665	$24,525	$130,764
4.02.01	ACCELERATOR R&D	$0	$0	$28,637	$45,054	$51,496	$32,030	$21,557	$5,963	$3,584	$2,373	$1,585	$0	$192,279
4.02.02	MAGNET R&D	$0	$0	$60,917	$58,197	$39,231	$28,778	$5,140	$3,739	$3,478	$3,379	$961	$0	$203,820
4.02	*RESEARCH & DEVELOPMENT*	*$0*	*$0*	*$89,554*	*$103,251*	*$90,727*	*$60,808*	*$26,697*	*$9,702*	*$7,062*	*$5,752*	*$2,546*	*$0*	*$396,099*
4.03	LAB ADMINISTRATION SERVICES & SUPPORT	$0	$0	$11,583	$10,488	$9,214	$6,805	$6,805	$6,805	$6,805	$6,805	$6,805	$5,242	$77,357
4.04	LAB TECHNICAL SUPPORT	$0	$0	$15,432	$20,838	$32,033	$28,031	$30,042	$36,212	$32,364	$31,024	$30,982	$29,130	$286,088
4.05	LAB DIRECTORATE	$0	$0	$3,003	$4,305	$3,536	$2,475	$2,474	$2,474	$2,474	$2,474	$2,474	$2,474	$28,163
4.06	EXPERIMENTAL FACILITIES SUPPORT	$0	$0	$954	$3,100	$4,854	$5,607	$6,937	$7,626	$8,578	$9,028	$9,915	$10,707	$67,306
4.07	LAB PRIME CONTRACTOR FEES	$0	$0	$2,454	$3,778	$3,778	$3,778	$5,102	$3,778	$3,778	$3,778	$3,777	$3,777	$37,778
4.08	FY88 & FY89 COSTS	$30,085	$93,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$123,085
4.0	**LABORATORY TECHNICAL SUPPORT**	**$30,085**	**$93,000**	**$122,990**	**$145,760**	**$144,142**	**$107,504**	**$84,532**	**$80,215**	**$82,867**	**$89,536**	**$90,164**	**$75,855**	**$1,146,840**
5.01	EXPERIMENTAL SYSTEMS RESEARCH & DEVELOPMENT	$0	$0	$16,602	$22,000	$1,398	$0	$0	$0	$0	$0	$0	$0	$40,000
5.02	DETECTORS	$0	$0	$11,063	$8,297	$30,000	$55,000	$70,000	$90,000	$100,000	$100,000	$94,000	$79,370	$637,730
5.03	EXPERIMENTAL SYSTEMS COMPUTERS	$0	$0	$0	$2,680	$6,000	$8,000	$9,000	$10,000	$10,000	$10,000	$10,000	$8,710	$74,390
5.04	FY88 & FY89 COSTS	$3,500	$4,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7,500
5.0	**EXPERIMENTAL SYSTEMS**	**$3,500**	**$4,000**	**$27,665**	**$32,977**	**$37,398**	**$63,000**	**$79,000**	**$100,000**	**$110,000**	**$110,000**	**$104,000**	**$88,080**	**$759,620**
**********	**WBS 4 & 5 SUBTOTAL W/O CONTING. & ESCAL.**	**$33,585**	**$97,000**	**$150,645**	**$178,737**	**$181,540**	**$170,504**	**$163,532**	**$180,215**	**$192,867**	**$199,536**	**$194,164**	**$163,935**	**$1,906,260**
	WBS 4 & 5 FUNDING PROFILE TARGET SUBTOTAL	**$33,585**	**$97,000**	**$146,793**	**$178,719**	**$181,540**	**$175,233**	**$167,732**	**$176,715**	**$192,867**	**$199,536**	**$193,167**	**$163,335**	**$1,906,222**
7.03	*ESCALATION (COST ESTIMATING)*	*$0*	*$0*	*$0*	*$4,575*	*$11,455*	*$18,224*	*$24,019*	*$31,879*	*$41,852*	*$50,822*	*$56,713*	*$54,490*	*$294,029*
	WBS 4 & 5 FUNDING PROFILE TARGET (COST EST.)	**$33,585**	**$97,000**	**$146,793**	**$183,294**	**$192,995**	**$193,457**	**$191,751**	**$208,594**	**$234,719**	**$250,358**	**$249,880**	**$217,825**	**$2,200,251**

FUNDING PROFILE OVERALL COMPARISONS
(1990 $ IN THOUSANDS)

DEVELOPED BY PMO SCHEDULING GROUP

		FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	PROJECT TOTALS
FROM SCHEDULE														
********	**TEC SUBTOTAL W/O CONTINGENCY & ESCALATION**	**$0**	**$0**	**$40,390**	**$206,266**	**$468,571**	**$654,925**	**$744,174**	**$710,091**	**$659,659**	**$392,823**	**$305,516**	**$34,289**	**$4,216,703**
**********	**WBS 4 & 5 SUBTOTAL W/O CONTING. & ESCAL.**	**$33,585**	**$97,000**	**$150,645**	**$178,737**	**$181,540**	**$170,504**	**$163,532**	**$180,215**	**$192,867**	**$199,536**	**$194,164**	**$163,935**	**$1,906,260**
'====>	**FUNDING PROFILE PER SCHEDULE**	**$33,585**	**$97,000**	**$191,035**	**$385,003**	**$650,111**	**$825,429**	**$907,706**	**$890,306**	**$852,526**	**$592,359**	**$499,680**	**$198,224**	**$6,122,963**
FROM COST ESTIMATE														
	TOTAL TEC FUNDING PROFILE TARGET (COST EST.)	**$0**	**$0**	**$43,804**	**$225,360**	**$578,005**	**$715,543**	**$938,289**	**$988,567**	**$1,061,689**	**$698,775**	**$597,096**	**$196,491**	**$6,043,621**
	WBS 4 & 5 FUNDING PROFILE TARGET (COST EST.)	**$33,585**	**$97,000**	**$146,793**	**$183,294**	**$192,995**	**$193,457**	**$191,751**	**$208,594**	**$234,719**	**$250,358**	**$249,880**	**$217,825**	**$2,200,251**
	SUBTOTAL	**$33,585**	**$97,000**	**$190,597**	**$408,654**	**$771,000**	**$909,000**	**$1,130,040**	**$1,197,161**	**$1,296,408**	**$949,133**	**$846,976**	**$414,316**	**$8,243,872**
	LESS ALL ESCALATION & CONTINGENCY	*$0*	*$0*	*$0*	*$26,976*	*$122,952*	*$110,931*	*$243,072*	*$277,554*	*$420,449*	*$352,139*	*$348,487*	*$216,394*	*$2,120,954*
'====>	**MATCH VALUES FOR SCHEDULE FUNDING PROFILE**	**$33,585**	**$97,000**	**$190,597**	**$379,678**	**$648,048**	**$798,069**	**$886,968**	**$919,607**	**$875,959**	**$596,994**	**$498,491**	**$197,922**	**$6,122,918**
	ERROR: SCHEDULE FUNDING PROFILE VS. COST EST. PROFIL	$0	$0	$438	$5,325	$2,063	$27,360	$20,738	($29,301)	($23,433)	($4,635)	$1,189	$302	$45

Major Project Milestones (Level 1)
24 MAY 1991

WBS	DESCRIPTION	BASELINE (DEC 90)	PROJECTED* (A indicates actual date)	EXTENDED DESCRIPTION
3.0	Baseline Validation Complete	JUL-90	1 JUL-90 A	Completion of documents and briefings on Baseline Cost Estimate & Schedule and Supplemental Concept Design Report.
2.5.1	A-E/CM Letter Contract & NTP	AUG-90	17 AUG-90 A	DOE Approval and release of a letter contract, pending a full contract, for PB/MK to begin formal design & construction work.
1.2.3	CDM Authorization to Incur Costs	NOV-90	15 NOV 90 A	DOE permission for the CDM contractors to incur costs toward their contract in beginning the Collider Dipole Magnet industrial program.
3.0	SEIS Record of Decision (ROD)	JAN-91	1 FEB-91 A	Secretary signature and formal filing of the Environmental Record of Decision. This allows non-reversible project construction to begin.
5.2	Begin Conceptual Design for Detectors	FEB-91	1 MAR-91 A	Start the detector concept design and Title I conventional facilities design effort.
2.1.6	Start SSC Civil Construction	MAR-91	MAY-91[1]	The first construction notice to proceed after the SEIS ROD. The first facility is currently the ASST.[1]
2.2.1	Notice to Proceed (NTP) Experimental Halls	JUN-93[3]	NOV-92	The first notice to proceed for construction of the experimental (interaction region) halls; IR-4 and IR-1.
4.2.1	Accelerator System String Test (Phase I)Complete	OCT-92	OCT-92	Cooldown, power up and testing of the 1/2 cell with accelerator components including the string test of 5 Collider Dipole magnets of industrial fabrication.
1.2.3	Full-rate Production Contract Awarded on Collider Magnets	APR-94[2]	JAN-95	SSCL awarded the full rate production contract(s) for collider magnets. Requires prior DOE approval.
1.2.3	Start First Half Sector CDM Delivery from vendor plant	APR-94[2]	JUL-94	Start Delivery of the first contractor production magnet (CDM) from the contractor's dock to the MAAS.

1 = May as currently defined: Pending CCB Request #E12-000035 would redefine from start of ASST to start of sitework at E1 which started 13 March 1991.

2 = Forthcoming CCB Requests to incorporate recent effect of CDM/CQM contractual actions & vendor schedule development.

3 = Forthcoming CCB Requests to reconcile dates from Large Detector program schedule replanning effort and SAC actions.

1.1.6	First Collider Half Sector - Start Magnet Installation	JUN-94[2]	OCT-94	Start magnet and spool installation after completion of tunnel finish-out including power, lights & ventilation and primary technical components e.g. piping, electrical components cryogenics, etc.
4.1	LINAC Start Commissioning (600 MeV)	OCT-94	OCT-94	Start commission with beam of the full 600 MEV LINAC and signoff after suitable checkout of engineering and safety systems.
1.1.6	First Collider Half Sector Start Cooldown	MAR-95[2]	AUG-95	Cooldown of the first complete half sector (E1-F1) and the concurrent power safety check of a full half sector. Requires last magnetic component (472 15M, 8 13M, 96 CQM & 96 spools) delivered to tunnel 4 months prior to this date.
4.1	LEB Start Commissioning	OCT-95	OCT-95	Beginning of the LEB beam commissioning installation and suitable checkout of the subsystems and safety signoff. Requires the LINAC to be able to provide test beam.
5.0	Beneficial Occupancy of Large Experimental Halls	JAN-96	JAN-96	Beneficial occupancy of the experimental (interaction region) halls. This BOD includes lighting, power & ventilation, etc. and is 9 months after the first BOD where just the unfinished chamber is turned over for technical survey.
4.1	MEB Start Commissioning	JUN-96	JUN-96	Beginning of the MEB commissioning after installation and suitable checkout of the subsystems and safety signoff. Requires the LEB to be able to provide test beam.
1.1.5	HEB Start Installation	AUG-96	AUG-96	HEB installation of major technical components after completion of tunnel out fitting (e.g. power, lights, ventilation) technical components include piping, electrical components cryogenic components, spools, magnets etc.
1.1.4	MEB Test Beams Available	JAN-97	JAN-97	Completion of the MEB and test beam commissioning activity so that beam for detector component testing is available some fraction of the time.
4.1	HEB Start Commissioning	SEP-98	SEP-98	Beginning of the HEB commissioning after installation and suitable checkout of the subsystems and safety sign off. Requires the MEB to able to provide test beam.

1 = May as currently defined: Pending CCB Request #E12-000035 would redefine from start of ASST to start of sitework at E1 which started 13 March 1991.

2 = Forthcoming CCB Requests to incorporate recent effect of CDM/CQM contractual actions & vendor schedule development.

3 = Forthcoming CCB Requests to reconcile dates from Large Detector program schedule replanning effort and SAC actions.

5.2	West Detectors - Start Commissioning	MAR-99	MAR-99	Beginning of the Detector commissionings. Includes operable beamline through detectors to support Collider commissioning.
4.1	Collider - Start Commissioning (Beam)	MAR-99	MAR-99	Beginning of the full Collider beam commissioning after sector testing is successfully completed. Requires the HEB to be able to provide beam. Requires accelerator components to be previously installed and checked in both IR halls.
4.1	Beam to Exp. (End of Project/Begin Operations Phase)	SEP-99	SEP-99	Completion of the Collider and West detectors and Collider commissioning activities. The SSC is now ready to perform experiments in two experiment (interaction regions) halls.

* These dates are current projected dates from schedule updates and pending Change Control Board proposals.

1 = May as currently defined: Pending CCB Request #E12-000035 would redefine from start of ASST to start of sitework at E1 which started 13 March 1991.

2 = Forthcoming CCB Requests to incorporate recent effect of CDM/CQM contractual actions & vendor schedule development.

3 = Forthcoming CCB Requests to reconcile dates from Large Detector program schedule replanning effort and SAC actions.

SSC Laboratory Project Management

LEVEL 1 MILESTONE AGREEMENTS

Accepted ADOD	Date 4/2/91	Accepted ASD	Date 4/2/91
Accepted MSD	Date 4/5-/91	Accepted CCD	Date 4-3-91
Accepted PRD	Date 4/2/91	Accepted LTS	Date 4-4-91
Accepted ADMIN	Date 4/2/91	Accepted PMO	Date 4-7-91
Accepted Tech Dir.	Date 4/2/91	Accepted General Manager	Date 4/12/91
Accepted Directorate	Date	Accepted SSCPO	Date

1 = CCB Request #E12-000004 Approved 6 March 1991

2 = CCB Request #E12-000012 Approved 6 March 1991

3 = CCB Request #E12-000013 Approved 6 March 1991

Superconducting Super Collider

Summary Barchart

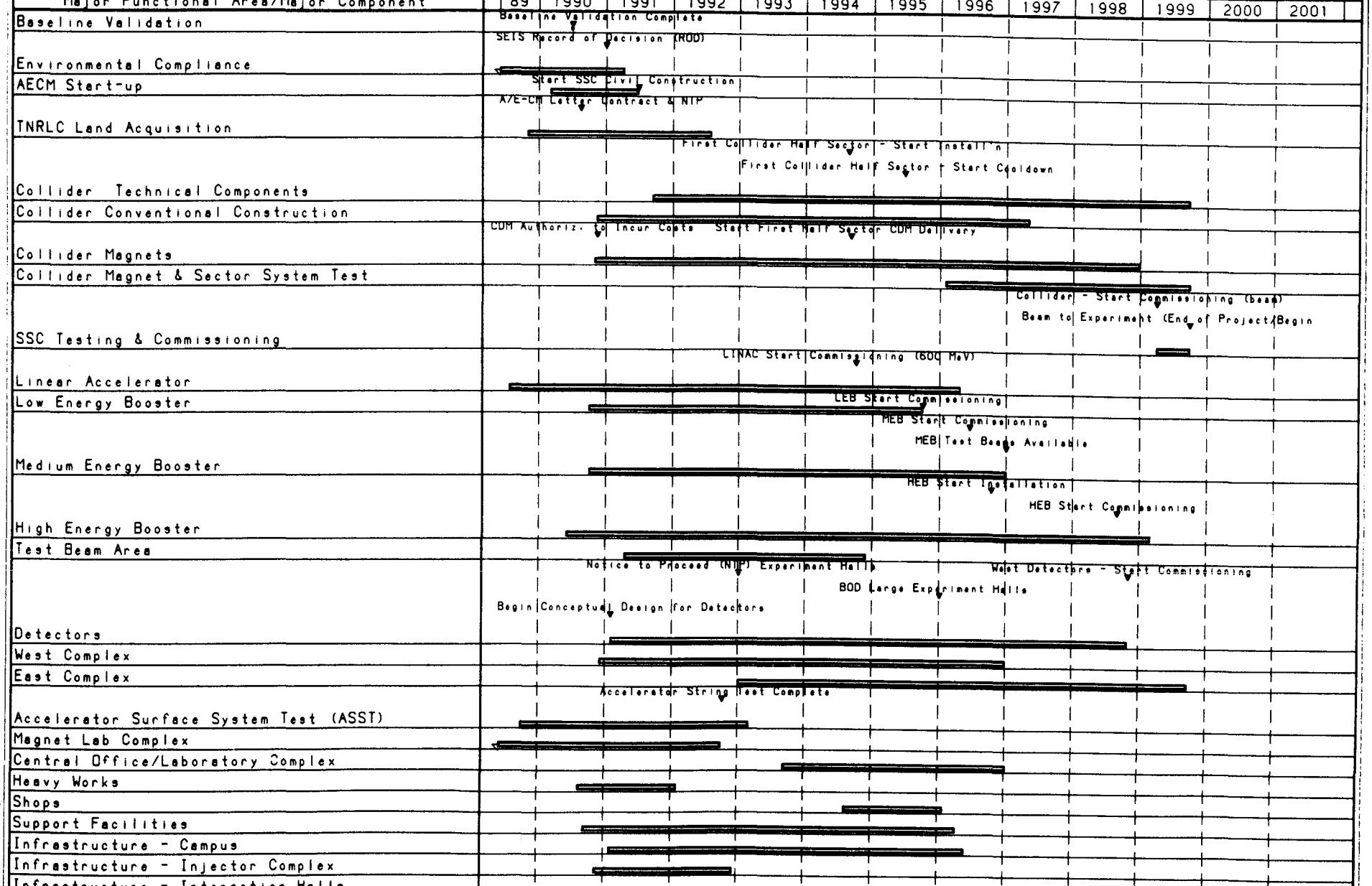
Current date: 12NOV90

Summary Master Schedule

Baseline Master Schedule: Ver. 12, Rev. 6

PROJSUMO

BL12R6



General SSCL Actions

Critical Segment

Milestone

KEY ASSUMPTIONS:

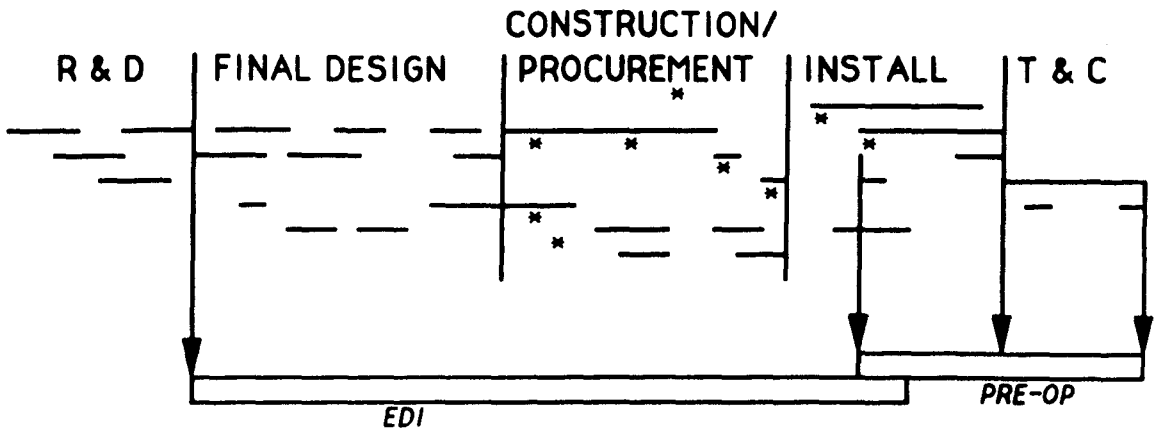
Magnet CDM Authorization to incur cost Nov.1990.
A/E-CM Letter Contract & NTP on 17 August 1990.
DOE has SEIS ROD on 30 DEC 1990 & no EAs/Ltrs.
Award of Cyrogenic Plant contract in NOV 1990.

APPROVALS:

Tech Dir: DATE:
PMO DPM: DATE:
PMO PMGR: DATE:
Director: DATE:

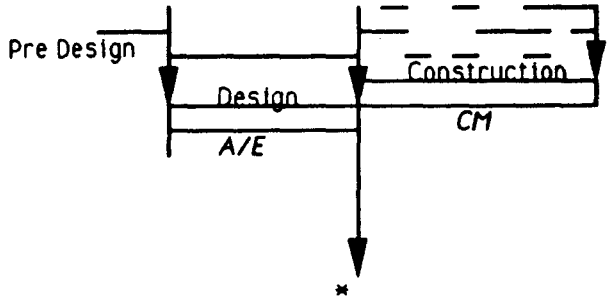
Typical Injector System

(ASD & MSD)

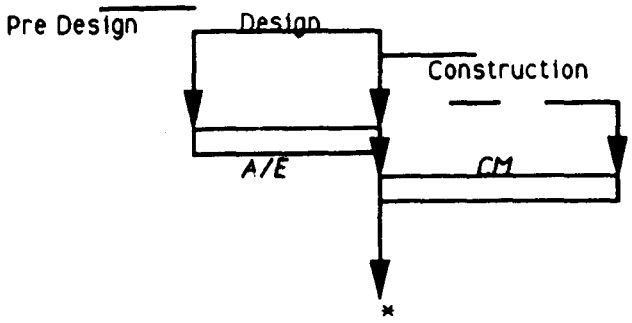


Construction

FACILITY



INFRA



* COMMITTMENTS