EVLA Progress Report – 1 Jan to 30 June, 2004

8 June, 2004.

1. Project Description

The Very Large Array is the most productive radio telescope ever built. Because of its combination of sensitivity and flexibility, it has been used by thousands of astronomers from every continent for research that spans the entire breadth of modern astronomy. Yet the VLA is limited in its ability to address the key questions of twenty-first century astrophysics. The antennas, site, array layout, and infrastructure—the most expensive components of any array—are fundamentally sound, and will remain so for as long as the array is maintained. But the electronics on which the data transmission and processing are based, the heart of the instrument, has not been changed since the array's commissioning 25 years ago. Implementing modern data transmission and signal processing technologies will increase the observational capabilities of the telescope by an order of magnitude or more, providing the power demanded by current scientific requirements.

The VLA Expansion (EVLA) Project's key goal is to improve the array's observational capabilities by an order of magnitude or more. This will be done by: (a) adding new frequency bands, (b) upgrading or replacing current receivers, and, (c) replacing the data transmission system and correlator. In addition to these, new and more powerful on-line computing and data management software systems will enable better access to the array's data products, and will give a much improved interface with users. Funding for all this work has commenced and is scheduled for completion, according to the funding profile currently authorized by the NSF, in 2012 . The new systems will be compatible with the existing systems so that observing can continue while the upgrade is under way.

In addition, planning is underway for Phase 2 of the project which will require connecting nearby VLBA antennas to the array and incorporating new antennas at locations between the VLA and the VLBA. Another item to be included in this completion phase includes construction of an ultra-compact "E array" configuration of antenna pads. A Proposal for this completion phase of the project was submitted to the NSF on 15 April, 2004.

The remaining major milestone goals for the first phase of the project are currently as follows:

(2) Start production installation of new systems on VLA antennas	Sep 2004
(3) Start installation of new correlator in new screened room	Apr 2006
(4) First "shared risk" science with new correlator subset	Dec 2007
(5) New correlator fully operational	Feb 2009
(6) Last antenna converted to EVLA design	Jul 2010
(7) Last EVLA receiver installed	Apr 2012

2. Project Work Breakdown Structure

The EVLA is the 6th task within NRAO's overall WBS, so all EVLA tasks start with the Level 1 entry 6. The Project is broken down into the 12 Level 2 tasks shown in Table 1.

Table 1 Definition of Level 2 tasks for EVLA Project

WBS No.	Task Name	Task Description
6.01	Project Management	Project management including work definition, budget and schedule control. Advisory committee, design review and oversight activities.
6.02	System Integration and Testing	All system engineering activities during the design, integration, installation and test phases of the project. Management of the technical aspects of both the hardware and software systems. Provision of shared systems such as modules, racks and power supplies.
6.03	Civil Construction	Burial of the long-distance fiber optics cables along the arms of the array. Construction of a new shielded room to house the new EVLA correlator.
6.04	Antennas	Structural modifications to the VLA feed support structure on the antennas to allow installation of the new feed and receiver systems. Modifications to the vertex rooms on the antennas to allow installation of the new electronic systems.
6.05	Front End Systems	Design, construction and installation of all feeds and receivers for the eight new EVLA receiver bands. Modifications to the cryogenics systems on the antennas for compatibility with the new receivers.
6.06	Local Oscillator System	Provision of a central reference oscillator system and an antenna remote local oscillator (LO) system. Provision of a "round-trip-phase" monitoring system to stabilize the phase of the LO at each antenna.
6.07	Fiber Optic System	Provision of all fiber optics systems including the fiber, the optical transmitters and the optical receivers for LO distribution, IF transmission and M/C.
6.08	Intermediate Frequency System	Provision of all frequency converters required to convert the signal from the 8-12 GHz band at the output of each receiver to the 2-4 GHz baseband input to the digitizers. Provision of the wide band and narrow band digitizers. Provision of switching equipment required to direct the desired IF into each of the 8 digitizers.
6.09	Correlator	Construction and installation of the EVLA correlator, supplied by Canada, and NRAO interfaces.
6.10	Monitor and Control System	Provision of hardware and software for array monitor and control. Includes both the central computer system and the electronics system located in each module for interface to the M/C system.
6.11	Data Management and Computing	Provision of software and hardware for observation preparation and scheduling and for data post-correlation data processing. Includes a pipeline system for rapid image formation.
6.12	Education and Public Outreach	EVLA contribution of funds to NRAO's EPO program. No specific EPO work is done within the EVLA Project.

The full WBS for the project, down to Level 4, is defined in the attachment "EVLA WBS Level 4 Summary".

3. Project Schedule

The current complete project schedule is attached. Note that in the WBS numbers attached to the tasks, the Level 1 entry 6 and all preceding zeros have been omitted for brevity. Thus a task associated with WBS item 6.03.05 would be listed as task 3.5.

4. Project Milestones

The major activity for the project during the report period was the testing of prototypes of the new EVLA systems on the EVLA Test Antenna (VLA Antenna 13). Substantial progress was made on this activity with first interferometric fringes being obtained between the Test Antenna and the rest of the VLA antennas at X-Band in March and at L-Band in June. Figure 1 shows project progress against planned milestones. As discussed in the previous Progress Report, a schedule recovery plan has been put in place and Figure 1 shows that progress with respect to the recovery plan is satisfactory. The schedule is discussed further in Section 8.

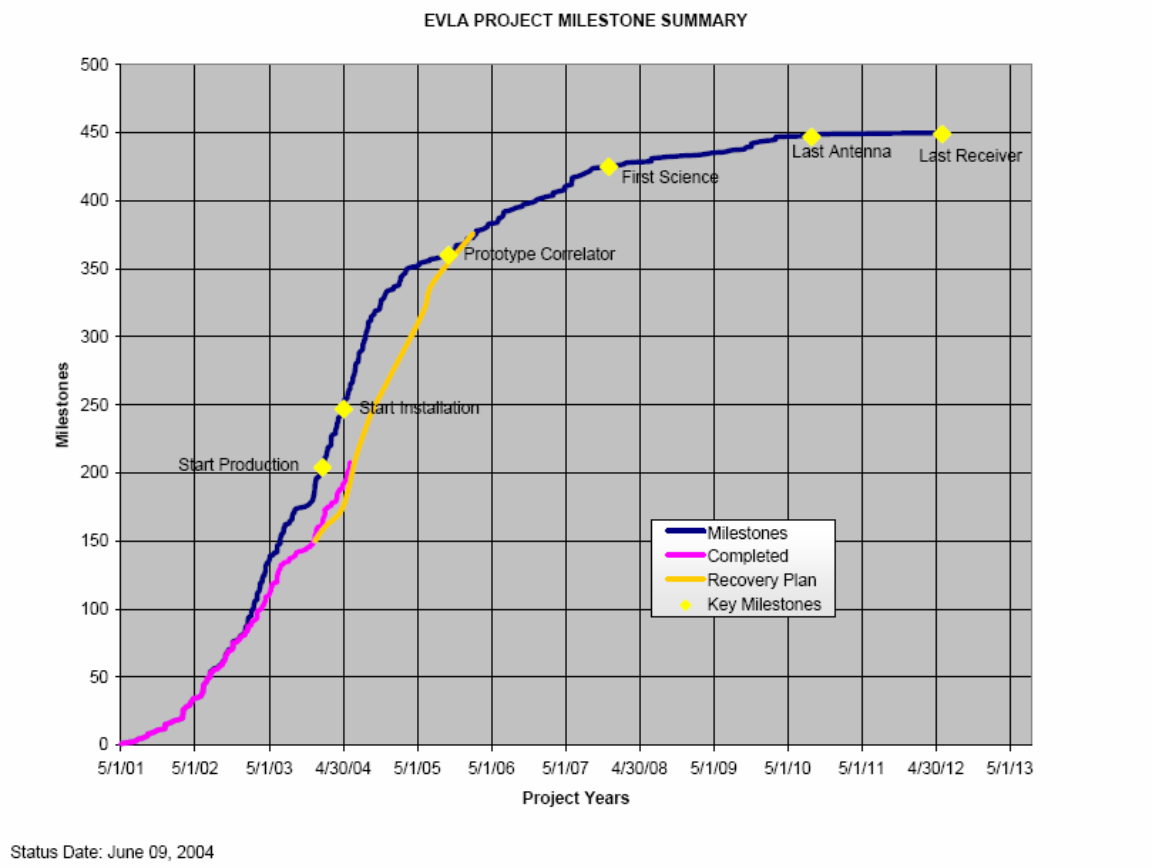


Figure 1 EVLA Project progress against planned milestones to June 2004.

A list of all Project milestones for the reporting period and for the second half of 2004 is attached. The milestones reported are for the six month period 12/03/03 to 6/08/04, which covers the period following the previous six month report.

The current critical path report for the Project is attached. This report shows that, in the short term, the critical path for the project is in the Monitor and Control area, a situation that resulted from inability to recruit software engineers in the first year of the project. This recruitment has been completed but it will take some time to recover from the early lost effort.

5. Significant Accomplishments Over Past 6 Months

Progress is reported by WBS Level 2 task:

5.6.1 Management

An additional $4M in accelerated funding was received half way through the FY2004 fiscal year and procurement plans have been developed to use these funds to purchase large orders of critical electronic and mechanical components. This will achieve cost savings due to economies of scale and will prevent future problems of component obsolescence. The overall EVLA schedule was accelerated by 5 months as a result of this acceleration in funding. Review meetings were held with the Level II Task Managers to update the project WBS and schedule. Reviews of EVLA Project status were provided to the NRAO/NSF Annual Review, the NRAO Visiting Committee, the AUI Trustees and the AUI President.

5.6.2 Systems Integration

A Critical Design Review (CDR) was held for the EVLA LO, IF and Fiber optics systems in May. Feedback from the review committee has been very positive and indicates that the electronics design is progressing very well. Presentations and the Review Panel Report from the CDR are available on-line (http://www.aoc.nrao.edu/evla/admin/reviews/lo-if-fo_cdr/lo-if-fo_cdr.html) Most of the prototype electronics modules are now functioning in the EVLA test racks. Design and prototyping of the more integrated, second generation modules are well underway. These modules are essentially the prototypes for the production designs that will be used in the array.

Interferometric fringes were obtained at both at X-band (see Figure 2) and L-band, demonstrating the correct functioning of most of the new EVLA IF and LO equipment. The L-band tests were completed using an existing L-band receiver from the VLA mated to the new EVLA feed. New, preproduction versions of module mechanical parts and DC power supplies have been designed and are being fabricated.

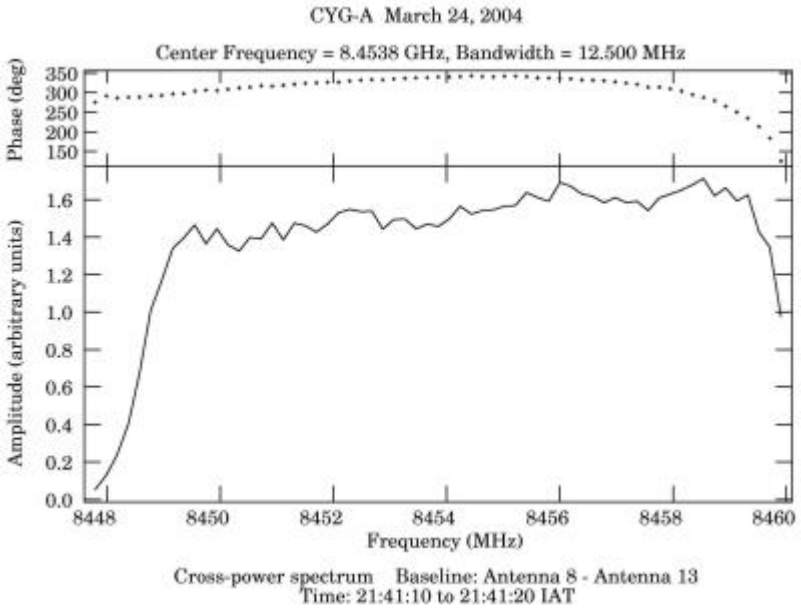


Figure 2 The "first fringes" bandpass at X-band on the EVLA Test Antenna

5.6.3 Civil Construction

Installation of buried fiber along the VLA arms was completed in February. The VLA Control Building's new chiller installation, designed to handle the increased thermal load of the new correlator, was completed in April. In addition to cooling the Control Building, the chillers

will provide the chilled water source to the shielded room of the WIDAR correlator. The VLA Control Building Annex has been remodeled for relocation of the Fiber Optics lab. Soon after the lab moves to its new space, preparations for the new shielded room will begin. To store the project's bulk production materials and supplies a new steel storage building was ordered. The foundation work for the steel structure has started, with building erection to begin shortly after foundation work is completed. Key milestone dates were established in May for the relocation of the VLA Modcomp computers and start of the new Shielded Room.

5.6.4 Antenna

The overhaul and outfitting of the second EVLA antenna (VLA Antenna 14) started in April. The antenna, which first required an azimuth bearing replacement, is now being structurally modified to accommodate the EVLA designed installations. As a first step to resolve cooling issues inside the feed cone of antenna 13, skirt insulation was added to improve temperature control.

5.6.5 Front End

The large (16 ft long, 700 lb) L-Band feed was tested on an antenna range at Composite Optics in San Diego and was determined to perform within specification. This confirms the validity of both the design and the laminated "band and ring" fabrication technique. The feed was successfully installed on the test antenna. Refinements to the design of the coaxial probes used in the broad band 1-2 GHz Ortho Mode Transducer (OMT) were made and are being tested. The new C-Band feed has been fabricated and will be shipped to MIT soon for beam pattern measurements. The cold-plate of the new C-Band receiver has been assembled and the drawing package is undergoing a final revision. The EVLA Test Antenna is now equipped with cooled L, X, K & Q-Band receivers and the F-Rack required for the control electronics has been installed. The blocks for the new Ka-Band Downconverter prototype module have been fabricated at the VLA Machine shop. The blocks for the first pair of NRAO Q-Band post-amps have also been fabricated and an attempt at the micro-assembly and wire-bonding of the first MMIC-based multifunction module will start soon. The new Front-end Card Cage design has entered the prototype stage. RFQ's and purchase orders for 102 cold-heads and orders for parts to build 28 compressors are being placed. Work continues on the development of an antenna test range for the VLA site with the completion of the software for controlling the transmitter and receiver. A design for a programmable gain-slope equalizer has been proposed that should allow the entire RF & IF system to comply fully with the EVLA gain flatness specification.

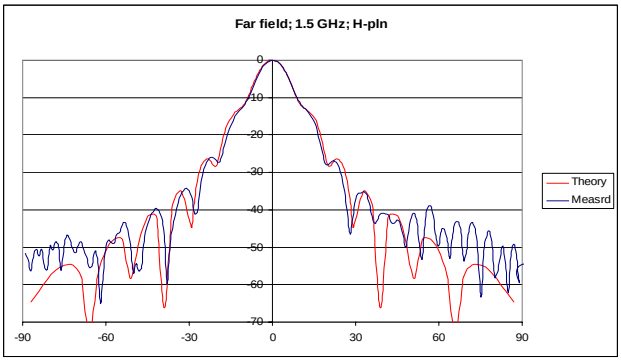


Figure 3a New L-Band feed pattern measured (blue) and design (red).

Figure 3b New L-band feed installation on the Test Antenna.

5.6.6 Local Oscillator (LO)

The first fringes at L-Band demonstrated the correct functioning of both the L301 and L302 synthesizers, although proof of the fringe rotation capability of L302 is still outstanding. The next generation synthesizers are under construction and are about 40% complete at the end of the reporting period. Preparations are underway to replace the RF section of the synthesizers with an RF module saving the project about $500K. The software for the synthesizers underwent much refinement. A sampling mixer circuit design has been completed but not tested. Second versions of modules L305, L350, L351, and L352 have been completed. Testing of the round trip phase system using 22Km of fiber is underway. Another design approach for the round-trip phase system is actively being sought to see if better performance can be obtained. The phase monitor circuit has been integrated and tested successfully in the L353.

5.6.7 Fiber Optics

A second generation 8-bit digitizer board design, which uses a new recently released digitizer, was completed. The 8-bit digitizer board and its Power Supply board in the Digital Transmission System (DTS) module are laid out and ready for assembly as soon as parts arrive. Feedback from the CDR reviewers indicated the DTS is in good shape and production can proceed with the exception of the half-transponder digital transmitter, which needs to be fully tested. Production quantities of all components have been ordered only for the deformatter board. Production quantities of some components have been ordered for the new 8-bit digitizer design. The earlier formatter board with discrete optical components will be replaced by the half-transponder formatter board. The half-transponder replaces all of the discrete optical components with a single RFI tight module.

The splicing of buried fiber along the array arms continues and twelve additional station pad boxes were placed in the array. An LO signal optically transmitted through 22 kilometers of array fiber was successfully recovered. Fiber cables were installed in the VLA Control Building between the MC bulkhead and the Ethernet network switch; the 1st floor termination and MC patch panel; the termination room and IF bulkhead; and between the demultiplexer and deformatter in the correlator room. The assembly of fiber cables for the 2nd test antenna (14) and replacement of the revised fiber watch spring on antenna 13 was started. An Optical Fiber Communication plan was written and is being reviewed for addition to the safety program.

5.6.8 Intermediate Frequency System

The coaxial version of the UX converter has been assembled and is ready to install on antenna 13. Vendor-supplied prototypes of the UX converter were delivered (Figure 4). It is anticipated that the integrated version of the UX converter will cost less than half of the coaxial version. The first LSC and 4P Band converters have been constructed and tested. The first M301 is still under construction and some software has been developed for it.

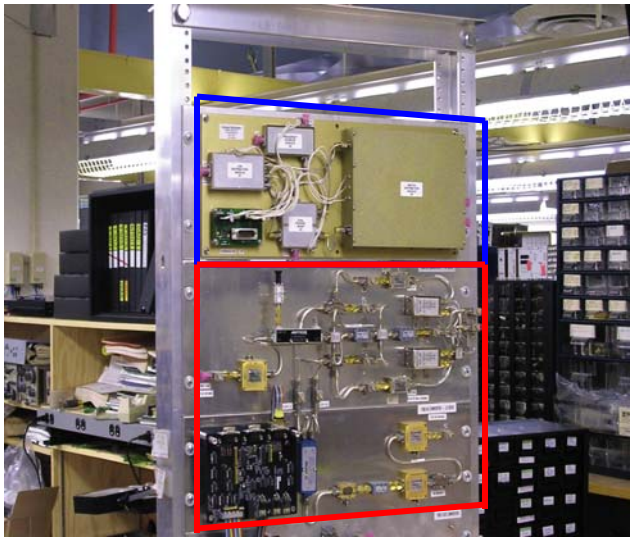


Figure 4 Integrated version of UX converter (blue) and coaxial version (red).

Three connectorized downconverters have been completed and are under MIB control. A fourth downconverter is under construction. This converter is using integrated components and will be manually controlled. Various test circuits for the integrated version have been constructed and are being tested.

5.6.9 Correlator

The Canadian Partners (Herzberg Institute of Astrophysics) are negotiating with two separate bidders for the new correlator chip in order to determine the best company to design and fabricate the chip. Small study contracts have been awarded to both companies to enable them to propose the most appropriate combination of chip technology and chip power consumption. Current power consumption estimates suggest that it will very probably be necessary to use some type of liquid cooling in some of the correlator racks. The impact of this new requirement on the design of the new correlator room in the VLA Control Building is being studied.

5.6.10 Monitor and Control (M/C)

In the area of MIB/module software, programming for the various module types continued. Additionally, the generic MIB framework software was enhanced and refined in several respects including the parsing and execution of commands, memory utilization, and the loading of boot images via Ethernet. Discussions are ongoing to come up with a solution for the MIB's slot identification scheme.

5.6.11 Data Management and Computing

A 'Distributed Objects Communications Team' was formed. Its charge is to formulate requirements on communications between EVLA software components, and assess the suitability of several alternatives to this issue.

The design team, charged with developing and overall end-to-end design for the EVLA software system, continued its activities. The third and final internal review took place in April. Between that date and June 14, the emphasis shifted to aligning the overall EVLA software design with the formalism and models developed in parallel by the NRAO-wide e2e oversight committee. A review by that committee took place June 14; though at the time of writing this report is not out yet, preliminary comments have been very encouraging. The next step is to move the design to the subsystem level with intention to have an overall software design review with participation from outside NRAO in the fall of 2004.

5.6.12 Education and Public Outreach (EPO)

EPO for the EVLA project is handled as part of NRAO's overall EPO program. The EVLA project is included on all NRAO brochures, displays and educational presentations. The contribution of project funds to a possible new Visitors' Center at the VLA site is currently not included in the budget but will be funded at the end of the project if contingency funds are available at that time.

6. Significant Challenges Over the Last 6 months

A major phase in the project was achieved with the completion of sufficient systems integration so that "first fringes" could be obtained at X-Band on the Test Antenna. Similarly, first fringes at L-Band required a significant additional amount of new equipment to be commissioned. At the time of first X-Band fringes it was determined that the Test Antenna had significantly lower sensitivity than the rest of the VLA antennas. After significant effort this was eventually traced to errors in the setup of the digital filter in the DTS module. Correcting this filter setup resulted in normal sensitivity on the Test Antenna.

7. Forecast Technical Problem Areas

At the time of first fringes, two additional technical problems were identified. First, fringe rotation did not work correctly on the test antenna. This is thought to be caused by problems of timing and control software in the L302 synthesizer module. Tests of the module on the bench indicate that the problem is solvable but a demonstration of correct fringe rotation on the antenna has not yet been made. Second, it was found that an unacceptably large phase curvature was present on interferometric bandpasses between the Test Antenna and VLA antennas. This was traced to the phase response of a circuit in the VLA antennas which had not been previously seen on the VLA because it is identical on all VLA antennas and therefore cancels out. It is planned to solve this problem by modifying the digital filter response in the EVLA DTS module. Bench tests indicate that this is possible but a demonstration on the antenna has not yet been made.

8. Forecast Schedule Problems

The project is now in the process of moving from prototype testing to equipment production. In a number of hardware areas it has been found necessary to redesign a prototype module either to improve performance or optimize cost for large quantity production. The time needed to carry out this redesign makes the schedule for achieving full outfitting of the second and third EVLA antennas very tight and it is possible that these antennas will come into initial operation with less than full bandwidth. This situation would be rectified as soon as the late modules are in full production, a month or two after initial operation of the antennas. Some additional temporary technician positions are being added to bring the late modules along as quickly as possible.

As noted in Section 9 below, the Project received $4M in accelerated funding in FY 2004. This has allowed the project to advance the completion of the retrofitting of the VLA antennas by 5 months to July, 2010. Due to the large number of new cryogenic receivers that must be produced, it will not be possible to install all receivers by July, 2010. The last two receivers will be installed on all antennas by the end of 2011.

9. Forecast Budget Problems

During the reporting period the Project was notified that an additional $4M in accelerated funding was being made available in FY 2004. The Project spending record for the reporting period and the baseline spending plan for FY2004, including these accelerated funds, is shown in Figure 5. Spending on Materials and Services (M/S) during the reporting period was less than planned because prototype testing had not progressed to a point where significant funds could be spent on large quantities of production hardware. This spending rate will increase in the second half of FY 2004 as large production orders begin to be placed. Due to the late arrival of the accelerated funding in the fiscal year, and the more time consuming competitive procurement procedures required for the large production orders, it is likely that some of the accelerated funding will not be committed by the end of the fiscal year, although the majority of it will be in an active procurement process.

During the reporting period the project carried out a review of its manpower requirements. The results of this review are shown in Figure 6 and 7 which shows the original and current plans for personnel costs charged to the EVLA construction budget and provided by the NRAO Operations Budget (Contributed Effort). These figures show that there has been growth in the estimated personnel costs for the Project, principally due to original underestimates in the personnel requirements for the electronics and software areas.

The current top level Budget for the Project, detailed at WBS Level 2, is defined in Table 2 below. Note that all funds in this table are in FY2004 dollars. The line "NSF Funded" represents the new funds required from the NSF each year and exactly matches the approved NSF baseline funding plan, corrected for the accelerated funding in FY 2004. Table 2 shows that project unallocated contingency is currently at $ 5300 K, approximately 10% of the estimated cost to complete. This amount of contingency is the contingency remaining after allocating funds to cover the personnel increases shown in Figure 6. NRAO has decided to provide the increased level of Contributed Effort shown in Figure 7 from its Operations Budget. In FY2004 this increased support is being provided at the expense of delaying work in other areas of operations such as improving the performance of the VLBA at 86 GHz, equipping the VLA with water vapor radiometers, providing pipeline processing for data contained in the VLA and VLBA archives and making improvements to VLBA operations software. We anticipate that these efforts will continue to be deferred for 1-2 years, in FY05 and perhaps FY06, in order to maintain the increased level of Contributed Effort. If, in the future, the Operations Budget is unable to cover the increases in Contributed Effort costs shown in Figure 7, these increases will have to be covered by project contingency. In this case the remaining contingency may be inadequate in which case budget descope options are available by reducing the number of EVLA receiver bands.

Finally, in 2004 and 2005 shortfalls in the NRAO operations budget has necessitated charging approximately $250 K/yr of EVLA-related AIPS++ personnel expenses to the EVLA Construction Budget. To keep contingency at an acceptable level $500 K of EPO budget planned as a contribution to a new Visitor's Center at the VLA has been descoped from the budget. This contribution will be reinstated if contingency funds are available at the end of the project.

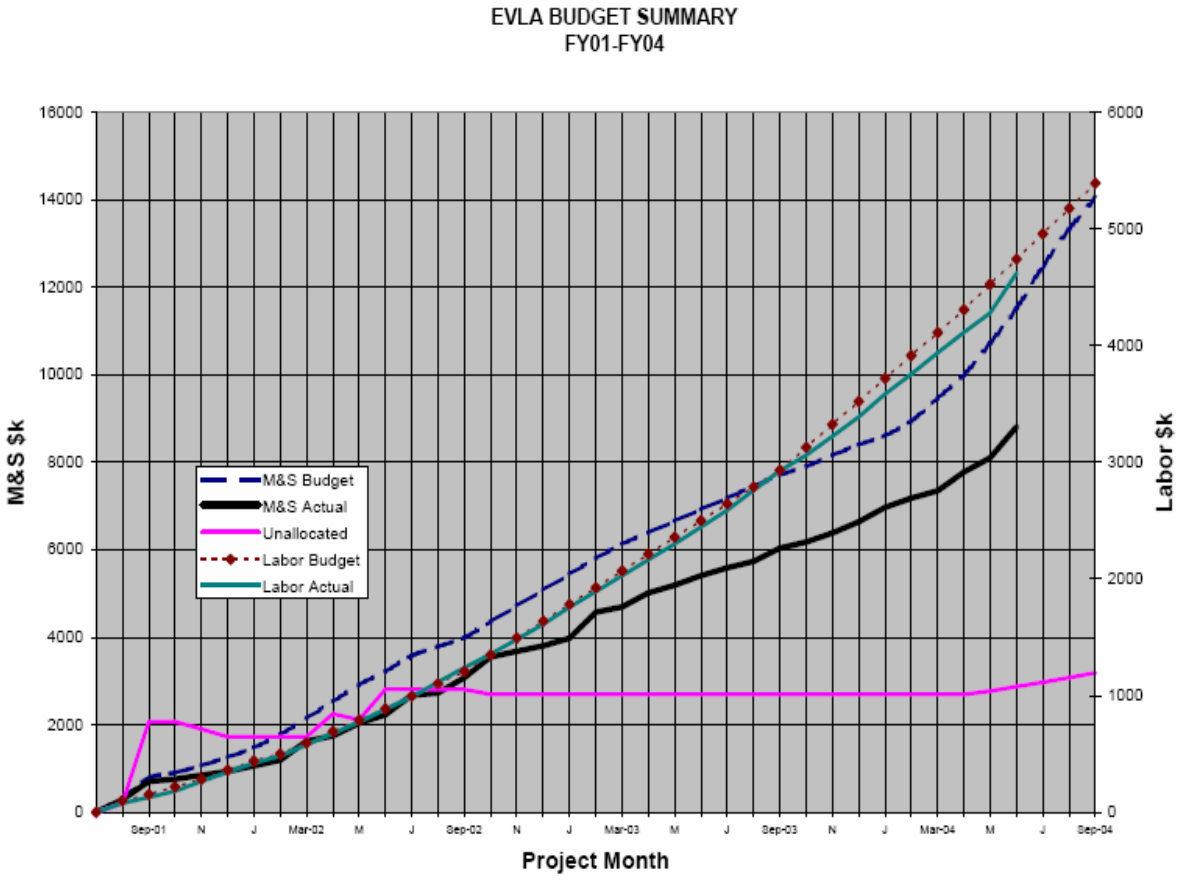


Figure 5. EVLA spending profile for reporting period and planned baseline spending profile for FY2004

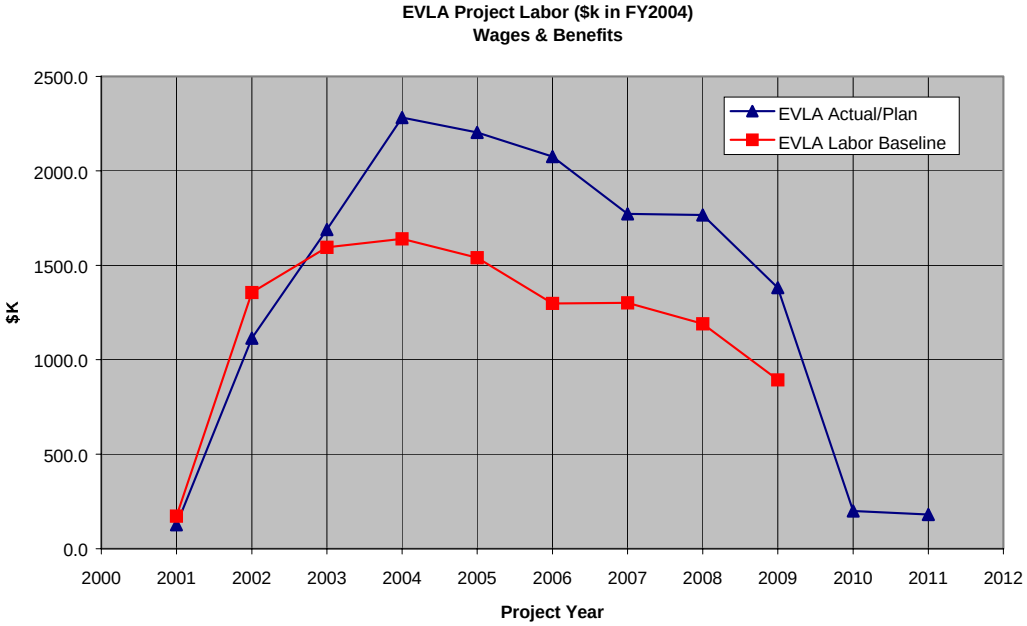


Figure 6 EVLA Construction budget annual personnel costs. The Actual/Plan curve shows actual numbers for 2001-2004 and current plan values for the remainder of the project. The Baseline curve shows the plan presented in the Sept 2001 Management Plan. Years are fiscal years not calendar years.

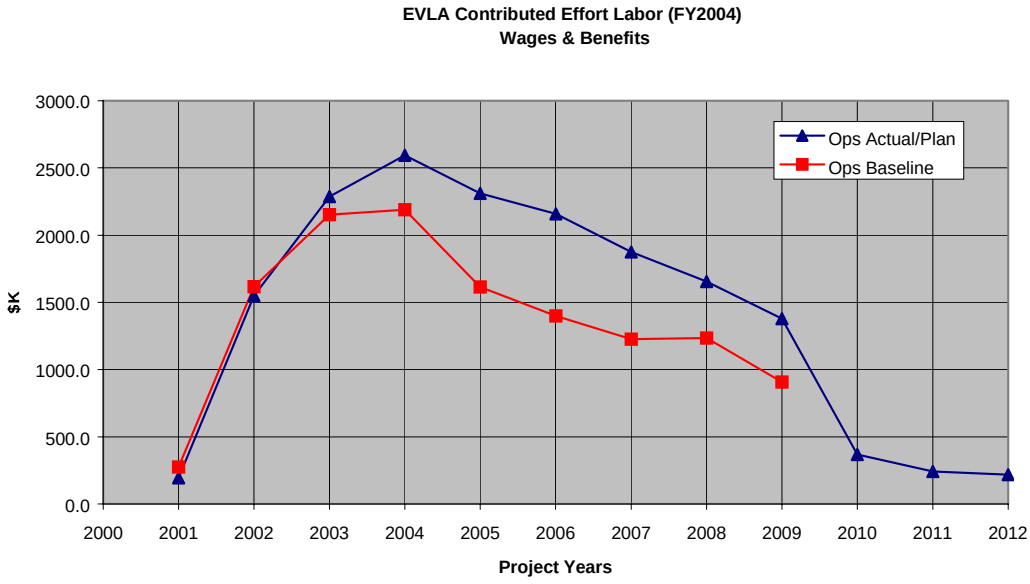


Figure 7 Annual budget for personnel effort contributed to the EVLA project by the NRAO Operations budget. The Baseline is the plan contained in the 2001 EVLA Management Plan. The Actual/Plan curve shows the actual values for 2001-2004 and the current plan for future years. Years are fiscal years not calendar years.

Table 2 Current Summary Budget Chart for EVLA Project

EVLA PROJECT PHASE 1 — All amounts are in $k dollars (FY2004) — As of 6/30/2004

WBS	Task Name	Actuals 2001	Actuals 2002	Actuals 2003	Budget 2004	2005	2006	2007	2008	2009	2010	2011	2012	Totals
6.01	Project Management	77.0	203.7	124.9	426.0	318.8	300.7	269.2	237.4	182.4	167.4	140.4	0.0	2448
6.02	System Integration & Testing	212.0	478.0	236.4	776.6	1028.4	119.4	123.9	82.2	22.9	0.0	0.0	0.0	3080
6.03	Civil Construction	0.2	252.0	40.1	241.1	579.0	31.8	0.0	0.0	0.0	0.0	0.0	0.0	1144
6.04	Antennas	0.0	46.7	98.5	451.3	123.3	85.5	55.5	35.5	14.2	8.0	0.0	0.0	919
6.05	Front End Systems	385.0	114.5	596.5	2689.4	2574.3	725.8	1308.8	786.9	366.8	192.1	152.9	47.0	9940
6.06	Local Oscillator System	14.1	292.4	253.0	669.6	504.3	484.0	384.0	372.0	353.0	238.4	0.0	0.0	3565
6.07	Fiber Optic System	4.7	603.8	735.5	2264.4	744.8	697.6	585.8	575.8	501.8	111.5	0.0	0.0	6826
6.08	Intermediate Frequency System	0.0	105.5	327.5	376.5	409.0	399.0	395.0	389.0	146.1	88.0	0.0	0.0	2636
6.09	Correlator	149.0	362.0	155.0	618.0	37.0	4281.5	1879.0	45.0	17.0	0.0	0.0	0.0	7544
6.10	Monitor & Control System	0.0	209.2	255.8	773.0	481.3	453.7	374.5	201.9	207.3	58.0	8.0	0.0	3023
6.11	Data Management & Computing	2.8	0.2	219.0	228.9	76.0	6.0	150.0	100.0	500.0	0.0	0.0	0.0	1283
6.12	Education & Public Outreach	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	M&S Total	845	2668	3042	9515	6876	7585	5526	2826	2311	863	301	47	42405
	Travel	8	65	67	125	160	170	103	63	48	32	0	0	841
	Direct Labor	126	1115	1689	2420	2491	2174	1886	1880	1455	200	181	0	15617
	NRAO Indirect Labor	195	1505	2197	2586	2325	2115	1935	1643	1380	393	211	198	16684
	NRAO Wages & Benefits	321	2620	3887	5006	4816	4289	3822	3523	2835	593	392	198	32300
	Canadian Labor	54	414	671	533	523	438	499	321	136	0	0	0	3589
	Sub Total	1227	5767	7667	15179	12375	12483	9949	6733	5331	1488	693	245	79136
	Contingency	0	0	0	0	0	0	0	606	1534	2973	217		5330
	Redirected NRAO Effort	-195	-1505	-2197	-2586	-2325	-2115	-1935	-1643	-1380	-393	-211	-198	-16684
	Canadian Contribution	-203	-776	-826	-1151	-560	-4720	-2378	-366	-153	0	0	0	-11133
	Mexican Contribution				-1000	-700								-1700
	EVLA Project Funds	829	3486	4643	10442	8790	5648	5635	5330	5332	4068	699	47	54950
	Carryover to next yr	2170	3685	4363	3266							47		
	Carryover from prior yr		-2170	-3685	-4363	-3266							-47	
	NSF Funded	3000	5000	5322	9344	5525	5648	5635	5330	5332	4068	746	0	54950
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Totals

EVLA antenna available		3	7	12	17	21	25	28		
Receivers available	3	13	43	73	105	140	174	208	231	240

Phase1summary.xls

10. Status of the International Aspects of the Project

There are currently no issues related to the Canadian Partnership.

Late in the reporting period the Mexican CONACyT notified the Mexican partner, UNAM, that the $20M pesos allocated for the EVLA must be expended by the end of 2004. The Project is currently preparing a proposal for UNAM that will use these funds to pay for 7 K-Band receivers, 5 Q-Band receivers and the electronic modules on the first two EVLA antennas. If this proposal is not acceptable to CONACyT there is a possibility that the allocated funds will be withdrawn, requiring a renegotiation of the partnership.

11. Procurement Status

There are currently no outstanding procurement issues. There are a number of large procurements now in process and it would assist the project if NSF could expedite the approval of these procurements when they are submitted to the NSF for approval.

12. Staffing Issues

There are currently no major staffing issues.

Attachments

Project Milestones
Project Critical Path
EVLA WBS Level 4 Summary
Complete Project Schedule

Completed Milestones

WBS	NAME	DATE
2.1.2.3.2	P301 Power Supply Available	12/2/03
7.20.10.22	L353 MIB available	12/3/03
2.1.2.2.2	P301 (w/28V) Required	12/3/03
5.2.2.4.7	Require Feed	12/5/03
5.2.2.2.12	K-band Rcvr prototype complete	12/12/03
5.2.2.3.14	Q-band Rcvr prototype complete	12/12/03
6.20.10.5	L305 bench prototype complete	12/12/03
6.20.10.9	L305 ref gen/distr ready for test antenna	12/12/03
6.5.30.1	Sart L354 ref distrib prototype design	12/15/03
2.30.5	Develop CB ethernet port location plan	12/19/03
6.5.25.5	Develop L350 hardware ICD	12/19/03
6.5.10.6	Develop L351 hardware ICD	12/19/03
10.10.15	Network connection tested - antenna to CB	12/23/03
7.15.2.12	8-bit sampler ready for system bench testing	12/26/03
7.20.10.25	Add module to System bench integration	1/9/04
4.20.15	ACU/FR system ready for test antenna	1/15/04
7.3	Start 2nd test antenna preparation	1/19/04
7.10.10.1	Decide to change antenna cable wrap	1/19/04
2.25.10.9	Rack/bin assembly designs complete	1/22/04
6.5.30.6	Bench prototype L354 test ready	1/22/04
6.5.5	H Maser Frequency Standard (&Rb) delivery	1/23/04
7.20.10.27	Install L353 in Master LO rack	1/28/04
2.1.50.12	Functional design freeze	1/30/04
2.10.5	Test antenna power supplies built & tested	1/30/04
7.10.10.10.3	Prototype available on test antenna	1/30/04
3.5.5.69	East Arm trench fiber complete	1/30/04
7.5.15.8	Transmitter ready for sys bench integration	1/30/04
3.10.10.6	Old correlator room ready for EVLA equipment	2/11/04
3.5.5.80	Array fiber burial completed	2/13/04
11.1.1.1.3	EVLA science requirements	3/2/04
5.2.2.5.5.6	Require Septum Polarizer	3/3/04
6.5.30.9	Install L354 in Master LO rack	3/4/04
5.2.2.4.6	L-band transition Rcvr complete	3/24/04
6.5.25.11	Install L350 in Master LO rack	3/26/04
7.5.10.8	Deformatters ready for system test antenna	3/29/04
4.1.4.11	L-band feed prototype ready to install	3/31/04
11.1.1.1.4	EVLA operational requirements	4/1/04
7.10.10.5.7	Fab/assemble initial jumper cables	4/1/04
7.10.5.5.15.1	Splice @ DE5, Box @ DE8 & test	4/1/04
1.1.40.5	Start electronics production	4/5/04
7.5.25.3	Start DTS production specifications	4/12/04
5.3.2.13	L-band feed prototype complete	4/13/04
7.5.15.10	Start assembly of transponder design	4/27/04
6.5.10.9	Install L351 in Master LO rack	4/27/04
6.5.35.3	Master LO sys ready for functional tests	4/27/04
2.1.50.13	Physical design freeze	4/30/04
3.10.3	Determine new location of Modcomps, Miranda	5/6/04
2.30.15	Develop plan to move array computers	5/9/04
8.20.5.14	T304 down conv ready for test antenna	5/18/04
2.1.30.2	LO and Fiber Optics CDR incl pwr supp & packaging	5/19/04

7.1.25	Fiber Optic System CDR	5/19/04
7.10.10.10.5	Start assembly antenna fiber	5/19/04
1.1.40.4	Complete electronics CDRs	5/21/04
6.1.10	LO/IF CDR	5/21/04
2.10.16	Power supply P301&P302 redesign & review	5/24/04
5.2.2.7.10	Require Ka-band feed	5/26/04
7.10.10.5.12	Order 1st quantities of antenna hardware	6/1/04
7.10.5.5.15.4	West arm splices complete	6/1/04
2.1.50.10.6	L-Band receiver usable	6/3/04
5.2.2.7.6.5	Require LNAs	6/9/04

Planned Milestones

WBS	NAME	DATE
8.15.15.15	T303 U/X converter ready for test antenna	6/11/04
5.3.8.7	Mounting avail	6/11/04
3.20.6	Procure & install new CB transformer	6/14/04
2.25.10.21	Test antenna module/racks finished	6/14/04
8.10.10.10	Install T301 in test antenna	6/14/04
2.1.2.1.2.3	Doors and Side Panels Installed	6/15/04
5.2.2.6.5.5	Require LNAs	6/16/04
2.1.2.2.4	F14s(2) Required	6/18/04
10.20.20.15	Test & Dev Support for Enhanced Ants Rdy	6/18/04
10.20.15.37	Overall software design complete	6/18/04
6.1.15	Start LO/IF module production	6/18/04
5.3.8.9	Ka-band feed complete	6/18/04
10.20.30.5.18	Correlator board manuals available	6/18/04
4.1.2.17	Fiber cable wrap revision on antenna 13	6/18/04
8.10.5.10	Install T301 in test antenna	6/18/04
7.5.10.12	Order deformatter parts for production	6/18/04
8.5.7	Band switches ready for test antenna	6/21/04
10.32.18	Produce determined number of transition modules	6/22/04
2.10.17	CB/Master LO power supplies built & tested	6/24/04
2.1.2.2.3.8	F320 Available for Bin	6/25/04
10.15.7	Determine requirement of real-time database	7/1/04
1.12.13	C-band feed prototype ready to install	7/1/04
5.2.2.1.2.3	X-band transition FE complete	7/9/04
5.2.2.1.2.4	Require EVLA Feed	7/9/04
4.10.12	Test antenna mechanical retrofit complete	7/12/04
2.1.50.10.7	K & Q-band receivers usable	7/15/04
10.15.32	MIB Slot ID software developed	7/16/04
10.32.11	Start slot ID installation on antennas	7/16/04
11.1.4	Observation scripting toolkit	7/20/04
1.1.40.7	Start observing in transition mode	7/21/04
2.1.50.10.8	Antenna ready to move to W10	7/21/04
4.20.25	Start ACU/FR digital loop design	7/22/04
6.20.5.15.2	Develop L304 production specifications	7/23/04
5.3.4.10	C-band feed prototype complete	7/28/04
11.1.13.1	Routine test observing	7/30/04
7.5.15.12	Complete assembly of transponder design	7/30/04
8.15.15.25	Integrated U/X converter design available	7/30/04
8.20.10.10	Down conv integrated module assembled	8/2/04

11.1.10.6	Acceptance of VLA archive	8/5/04
6.7.5.16	Develop L352 production specifications	8/6/04
4.5.50.4	Start feed cone production	8/6/04
5.4.6.7	Start cryo compressor assembly	8/10/04
7.15.2.14	8-bit sampler redesign ready for use	8/12/04
7.15.2.16	Start production hardware assembly	8/12/04
2.10.20	Antenna 14 pwr supplies built	8/13/04
10.30.18	Start building production F320 modules	8/16/04
5.1.7.5.11	Begin Production	8/16/04
5.3.2.14	Begin L-band Feed Production	8/16/04
7.20.10.35	Order production parts & start assembly	8/19/04
7.5.10.14	Assembled board ready for antenna 14	8/20/04
7.5.20.8	IF interface cables for antenna 14 ready	8/20/04
2.25.30.3	Spec & order all LO and FE shielded racks	8/23/04
6.20.10.15.2	Develop L305 production specifications	8/23/04
6.20.5.15.4	Order 1st quantities of L304 hardware	8/23/04
10.5.15.8	FE card cage available	8/25/04
6.5.10.15	L351 module complete	8/26/04
6.5.25.11	L350 module complete	8/26/04
2.16.10.L	L-Band receiver	8/27/04
2.15.15.6	Verify linearity of RF designs - rcvr to correl	8/27/04
2.16.10.K	K-Band receiver	8/27/04
2.16.10.Q	Q-Band receiver	8/27/04
11.1.5	Observation evaluation toolkit	9/1/04
5.3.9.1	Start Feed Production	9/1/04
7.5.25.6	Order 1st quantities of DTS hardware	9/1/04
7.5.5.11	Start production WDM hardare	9/1/04
7.5.5.9	Start production DTS link hardware	9/1/04
5.2.2.5.7	Require card cage	9/9/04
5.2.2.5.8	Require Narrow Band H/C Load	9/9/04
7.10.5.3.5	Fiber lab moved to CB annex	9/13/04
2.1.30.6	M&C and Data Mgmt CDR	9/14/04
5.2.2.6.5.6	Require quad-ridge OMT	9/14/04
5.2.2.6.7.5	L-band OMT available for Rcvr test	9/14/04
10.1.25	Monitor & Control System CDR	9/15/04
2.16.10.C	C-Band receiver	9/16/04
10.5.5.38	Start MIB production	9/20/04
5.2.1.2.5.4	MIB Required	9/20/04
6.20.10.15.4	Order 1st quantities of L305 hardware	9/22/04
6.20.10.15.8	Order 2nd quantities of L305 hardware	9/22/04
2.6.1	Start production of M&C hardware	9/24/04
1.1.40.6	Start retrofitting antennas w/ new system	9/27/04
6.10.20.3	Develop L301 production specifications	9/28/04
6.5.30.15	L354 ref/distributor complete	9/29/04
6.5.35.9	Master LO system complete	9/29/04
2.30.13	Production specifications document complete	9/30/04
2.5.3	Start production assembly	9/30/04
2.2.14	Procure production assembly	10/1/04
4.2.10.14.2	Start C-band feed horn production	10/4/04
6.7.5.18	Order 1st quantities of L352 hardware	10/6/04
10.20.15.46	Hybrid array software online	10/15/04
2.1.30.4	FE and IF System CDR	10/19/04
4.1.21	Antenna/Feed Cone CDR	10/19/04

2.1.2.3.3.8	F317 Available for Test w/ Card Cage	10/19/04
2.16.10.A	Ka-Band receiver	10/22/04
6.10.18	L301 integrated module read for antenna 16	10/28/04
6.10.20.6	Order 1st quantities of L301 hardware	10/28/04
7.5.10.16	Assembled board ready for antenna 16	10/29/04
8.15.20	Rcvr converters assembled (2-8)x3ea	10/29/04
5.4.4	Prototype cryogenics system ready	10/29/04
6.5.35.13	Redundant Master LO rack functional	10/29/04
7.5.20.8	IF interface cables for antenna 16 ready	10/31/04
11.1.6	Real-time observing toolkit	11/1/04
5.2.2.2.15	Start K-band Rcvr upgrade production	11/9/04
5.2.2.3.17	Start Q-band Rcvr upgrade production	11/9/04
2.1.3.7	Start Production	11/11/04
2.10.24	Antenna 16 pwr supplies built	11/12/04
5.2.2.5.10	1ST C-band Rcvr prototype complete	11/15/04
5.2.2.5.11	Require C-band feed	11/15/04
5.3.4.11	Begin C-band Feed Production	11/15/04
10.20.35.12	Full Support, Enhanced Antennas	11/18/04
2.10.26	Order parts & start power supply production	11/26/04
6.10.18	L301 integrated module read for antenna 16	12/1/04
5.2.2.6.9	Require card cage (VLA Style)	12/1/04
5.2.1.1.1.14	Card cage prototypes complete	12/2/04
4.2.10.12.2	Start L-band feed horn production	12/7/04
11.1.13.2	Routine observing - EVLA antennas with VLA	12/13/04
3.10.6	Shielded room spec's written	12/15/04
2.1.50.17	Start interferometry tests w/two EVLA antennas	12/17/04
5.3.5.9	Mount design & Fab complete	12/20/04
11.1.12.5	MAL acceptance	12/23/04
6.25.12	Start LO/IF production outfitting	12/30/04

SELECTED CRITICAL PATH ACTIVITIES

WBS	TASK	START	FINISH
10.20.25.35	Antenna Control	1/2/03	9/8/04
10.20.30.10.6	System Specification	1/28/03	8/30/04
10.20.25.40	Monitor Data	6/2/03	10/21/04
10.20.20.10	Software Development	6/10/03	6/11/04
10.5.5.31	Write MIB to device software	8/5/03	9/29/04
10.5.5.33	Evaluate MIB on antenna	8/5/03	7/20/04
10.20.30.5.9	Device Driver Interface Specification	10/6/03	10/11/04
11.1.2.2	AIPS++/ACS prototype	3/2/04	3/28/05
11.1.2.3	Common Framework design	3/2/04	3/28/05
10.20.30.5.6	Test Sftwre Interface Specification	3/23/04	7/16/04
11.1.1.1.7	Data Mgt reorganization	6/10/04	6/10/04
11.1.3.3	Test prototype proposal tool	6/10/04	7/20/04
11.1.7.2	Prototype VLA sched	6/10/04	8/4/04
11.1.8.3	Second prototype pipeline	6/10/04	12/8/04
11.1.10.5	Testing of VLA archive	6/10/04	8/4/04
10.20.25.10.13	Real-time analysis calibration tool	6/14/04	6/14/04
10.20.25.10.14	Archive data from old to new correlator	6/14/04	6/14/04
10.20.25.20	Observing Layer	6/14/04	8/24/04
10.20.25.25	System Timing	6/14/04	8/10/04
10.20.25.30	Scan Setup & Supervision	6/14/04	7/27/04
10.15.9	Select & order real time database	7/1/04	8/31/04
11.1.10.7	Deployment of VLA archive	8/5/04	9/1/04
10.20.30.10.9	Coding & Testing	8/30/04	10/13/05
10.1.23	Preparation for M/C hardware CDR	9/1/04	9/15/04
10.1.30	CDR Analysis & Revision	9/16/04	11/11/04
10.20.30.5.12	Virtual Correl Sftwre Coding & Tsting	10/12/04	8/2/05
10.20.25.45	Hybrid Array Operation	10/22/04	1/20/05
10.20.35.3	Observing Layer	11/19/04	12/7/05
10.20.35.9	Antenna Control	11/19/04	12/30/05
10.20.35.15	Monitor Data	11/19/04	4/1/05
10.20.35.27	User Interfaces	11/19/04	12/26/06
10.20.35.30	Hybrid Array support	11/19/04	12/7/05
11.1.8.4	ACS-based pipeline prototype	12/9/04	8/17/05
10.15.13	Order Operations servers for support outside CB	3/15/05	3/28/05
10.20.35.18	Warnings & Alarms	4/4/05	10/7/05
10.20.35.6	Scan Setup & Supervision	6/1/05	6/15/06
10.20.30.5.15	Test Sftwre Coding & Testing	8/3/05	2/9/06
10.20.35.21	Data Flagging	10/10/05	4/19/06
10.20.30.10.12	FITS/AIPS++ Extensions	10/13/05	4/18/06
10.20.30.15	System Integration & Testing, Penticton	4/18/06	2/28/07
10.20.35.24	Logging	4/20/06	10/25/06
10.20.35.35.6	System Integration & Testing, VLA	7/31/06	7/16/07
10.20.35.35.9	Preparation for Correlator Observations	1/24/07	7/12/07
10.10.25	Acquire & setup network services servers	3/1/07	4/30/07
10.20.35.35.15	Coding of Operational Sftwre, Correlator	7/17/07	7/20/09
10.20.35.50	Data Archive Interface	2/18/09	11/25/09
10.20.35.55	Image Pipeline Interface	2/18/09	11/25/09

WBS		TASK NAME
6.01	**P. Napier**	**Project Management**
6.01.01		Management/Subsystem Engineering
6.01.06		Project Book
6.01.10		Office Equipment & Supplies
6.01.15		Drafting and Lab Services
6.01.20		Advisory Comm Support
6.02	**Jackson/ Clark/ Butler**	**System Integration and Testing**
6.02.01		Management/Subsystem Engineering
	6.02.01.05	Block Diagrams for Systems & Subsystems
	6.02.01.10	Engineering Performance Specifications
	6.02.01.15	Basic Engineering Interface Specifications
6.02.05		Test and Lab Equipment
	6.02.05.05	Production Test and Lab Equipment, FO
	6.02.05.10	Production Test and Lab Equipment, FE
	6.02.05.15	Production Test and Lab Equipment, LO
	6.02.05.20	Test and Lab Equipment General
	6.02.05.25	Engineering Software
6.02.10		Power Supply System
	6.02.10.05	Central Electronics Room
	6.02.10.10	Master LO Power Supply
	6.02.10.15	Antenna Vertex Room Power Supply
	6.02.10.20	Antenna Pedestal Room Power Supply
6.02.15		Site RFI Characterization & Suppression
	6.02.15.05	Facilities Development
	6.02.15.09	Limits for RFI Emmission Levels
	6.02.15.10	Acceptance Test Development
	6.02.15.15	RFI/EMC Analysis of Electronics & Computers
	6.02.15.20	Site RFI Mitigation
6.02.16		External RFI & System Immunity
	6.02.16.05	Measurement of PFD/BW Levels of RFI at Each Band
	6.02.16.10	EVLA Antenna Sidelobe Gain Patterns 2-120 Degrees
	6.02.16.15	Distribution of Gains, SNRs & Headroom of existing Rcvrs
	6.02.16.20	Spec's for Distribution of System/Subsystem Gains, SNRs
	6.02.16.25	Spec's/Development of RFI Filters for Rcvrs
	6.02.16.30	Spec's/Development of RFI Filters in IF System
6.02.20		Scientific Support
	6.02.20.05	Development of Scientific Performance Specifications
	6.02.20.10	Spec's for Minimum Limits for Angular Separation from Satellites
6.02.25		Modules, Bins and Racks
6.02.30		Transition Planning
6.03	**G. Stanzione**	**Civil Construction**
6.03.01		Management/Subsystem Engineering
6.03.05		FO Cable, Trench, Install
	6.03.05.05	FO Cable, Trench and Install (200 kft)
	6.03.05.10	FO Cable (550kft)
6.03.10		New Correlator Room
	6.03.10.05	New Correlator Shielded Chamber
	6.03.10.10	Remodeling and Demolition
	6.03.10.15	IPG Shielded Chamber
	6.03.10.20	Power Distribution
	6.03.10.25	Install New Correlator
6.03.15		Power Distribution
6.03.20		HVAC and Fire Suppression

6.04 J. Ruff		**Antennas**
6.04.01		Management/Subsystem Engineering
6.04.02		Precision Machining
6.04.05		Feed Cone
	6.04.05.05	Structure
6.04.10		Antenna Structural Modifications
6.04.15		Feedcone Electrical & HVAC Service
6.04.20		Pointing Improvements
6.05 P. Lilie		**Front End Systems**
6.05.01		Management/Subsystem Engineering
6.05.05		Receivers
	6.05.05.01	Front End Card Cage
	6.05.05.02	FE Control Modules
	6.05.05.03	F-Rack
	6.05.05.05	L Band
	6.05.05.10	S Band
	6.05.05.15	C Band
	6.05.05.20	X Band
	6.05.05.25	Ku Band
	6.05.05.30	K Band
	6.05.05.32	K Band Completion (7 units)
	6.05.05.35	Ka Band
	6.05.05.40	Q Band
	6.05.05.45	Q Band Completion (5 units)
6.05.10		Feeds
	6.05.10.05	L Band
	6.05.10.10	S Band
	6.05.10.15	C Band
	6.05.10.20	X Band
	6.05.10.25	Ku Band
	6.05.10.32	K Band
	6.05.10.30	K Band Completion (7 units)
	6.05.10.35	Ka Band
	6.05.10.40	Q Band
	6.05.10.45	Q Band Completion (5 units)
6.05.30		Cryogenics
	6.05.30.05	Vacuum Pump and Manifolds
	6.05.30.10	Compressors & He Lines
	6.05.30.15	Refrigerators
6.06 T. Cotter		**Local Oscillator System**
6.06.01		Management/Subsystem Engineering
6.06.05		Master LO System
	6.06.05.05	H Maser Frequency Standard (&Rb)
	6.06.05.10	PPS Generator & Distributor
	6.06.05.25	LO Ref Generator
	6.06.05.30	LO ref Distributor - Control Bldg
	6.06.05.35	LO Driver
	6.06.05.40	512 MHz Offset Generator
6.06.07		Central Antenna System
	6.06.07.05	Round Trip Phase Receiver
6.06.10		12-20 GHz Synthesizer
6.06.15		10.8-14.8 GHz Synthesizer
6.06.20		Antenna Reference System
	6.06.20.05	Antenna LO Reference Generator

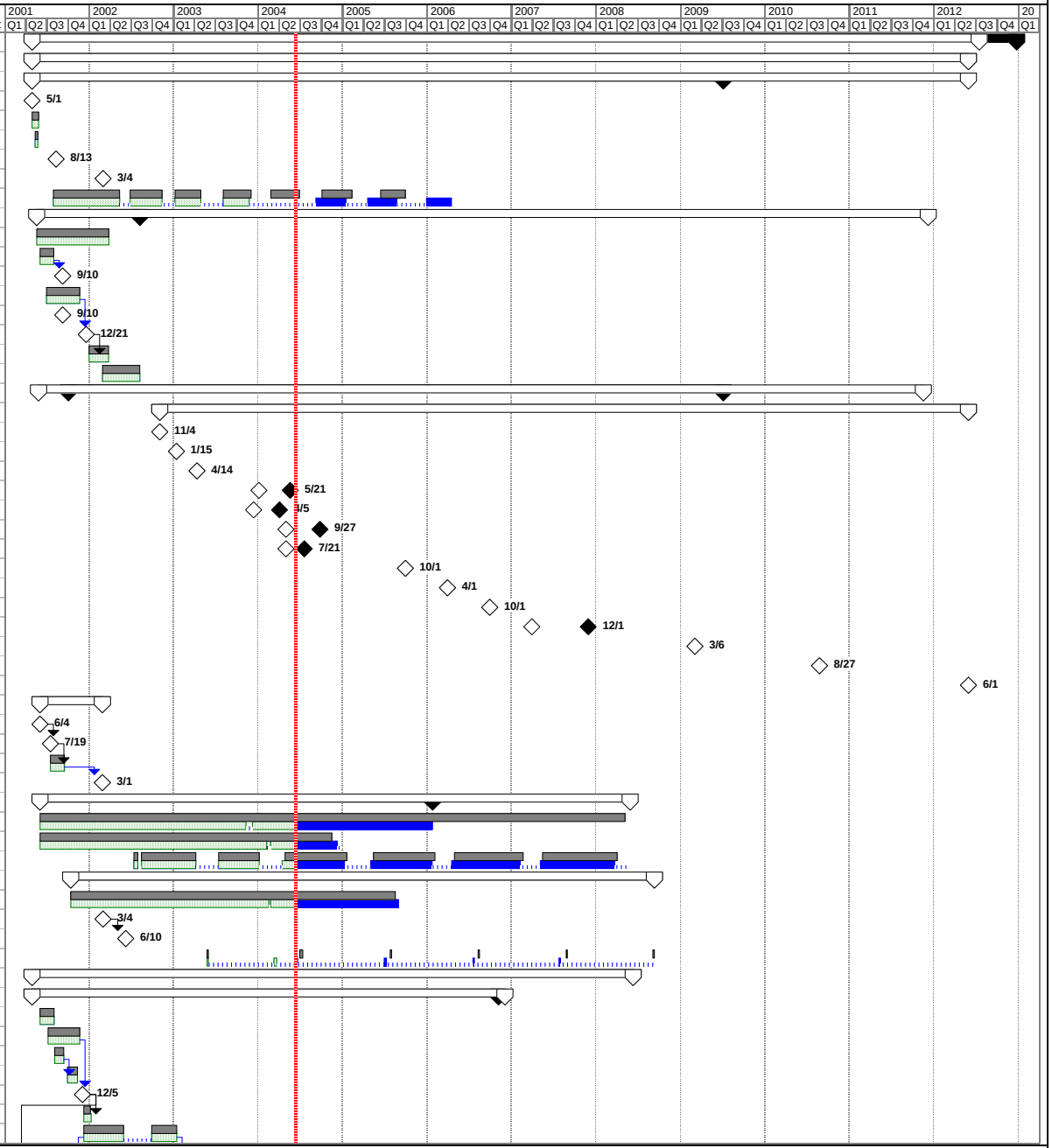
6.07 S. Durand		**Fiber Optic System**
	6.07.01	Management/Subsystem Engineering
	6.07.05	IF Fiber System
	6.07.05.05	Formatter
	6.07.05.10	Deformatter
	6.07.05.15	Laser Transmitter
	6.07.10	Antenna Outfitting
	6.07.10.05	Fiber Infrastructure
	6.07.10.10	Antennas
	6.07.15	Samplers & MCB
	6.07.15.05	Monitor and Control
	6.07.15.10	2-4 GHz Sampler
	6.07.15.15	1 GHz Sampler
	6.07.20	LO Fiber System
	6.07.20.10	LO/Reference
6.08 T. Cotter		**Intermediate Frequency System**
	6.08.01	Management/Subsystem Engineering
	6.08.05	Switches
	6.08.10	4/P & L/S/C-Band Converters
	6.08.15	U/X Converter Module
	6.08.20	IF Down Converter
6.09 B. Carlson		**Correlator**
	6.09.01	Management/Subsystem Engineering
	6.09.05	NRAO Correlator Interface
	6.09.10	Pre-project Tooling/Setup
	6.09.15	Station Board H/W Development
	6.09.15.02	Station Board
	6.09.15.05	FIR Filter Chip Development
	6.09.15.10	Course Delay Module
	6.09.20	Sub-band Distribution Backplane
	6.09.25	Station Data Fanout Board
	6.06.30	Baseline Entry Backplane
	6.09.35	Baseline Board H/W Development
	6.09.35.02	Baseline Board
	6.09.35.05	Correlator Chip Development
	6.09.40	Phasing Board
	6.09.45	Phasing Board Entry Backplane H/W Deployment
	6.09.50	TIMECODE Generator Box H/W Deployment
	6.09.55	Real-time S/W Development
	6.09.60	System Design (Racks, Main Pwr, Cabling, Computer)
	6.09.65	Production Model Test/Burn-in
	6.09.70	System Integration & Test (Pentecton)
	6.09.75	System Integration & Test (VLA off-line)
	6.09.80	Online Debug, Test (VLA on-line)

6.10	**B. Sahr**	**Monitor & Control System**
	6.10.01	Management/Subsystem Engineering
	6.10.05	M&C Electronic Hardware
	6.10.05.05	Physical Interface
	6.10.05.10	Utility Module
	6.10.10	M&C Network, Hardware & Software
	6.10.15	M&C Computing Systems Hrdwre & Sftwre
	6.10.20	M&C EVLA Software
	6.10.20.05	Stabilization of the VLA
	6.10.20.10	Requirements
	6.10.20.15	High Level Software Architecture & Design
	6.10.20.20	Test & Devel Support, Enhanced Antennas
	6.10.20.25	Mid Level Analysis & Design
	6.10.20.30	Test & Devel Support, Correlator
	6.10.20.35	Detailed Design & Coding
	6.10.25	Switch Interface Module
	6.10.30	M&C Transition Hardware
6.11	**G. van Moorsel**	**Data Management and Computing**
	6.11.01	Management/Subsystem Engineering
	6.11.05	Proposal Preparation and Submission
	6.11.05.05	Requirements
	6.11.05.10	Proposal submission toolkit
	6.11.10	Observation Preparation Software
	6.11.10.05	Requirements
	6.11.10.10	Observation description toolkit
	6.11.10.15	Observation planning toolkit
	6.11.15	Observation Scheduling
	6.11.15.05	Requirements
	6.11.15.10	Observation scheduling toolkit
	6.11.15.15	Observing toolkit
	6.11.15.20	EVLA-specific Observing toolkit
	6.11.20	Image Pipeline
	6.11.20.05	Requirements
	6.11.20.10	Pipeline toolkit
	6.11.20.15	Pipeline heuristics
	6.11.20.20	EVLA-specific pipeline heuristics
	6.11.25	Data Archive
	6.11.25.05	Requirements
	6.11.25.10	Archive toolkit
	6.11.30	Data Post Processing
	6.11.30.05	Requirements
	6.11.30.10	EVLA AIPS++ package
	6.11.35	Networking
	6.11.35.05	Upgrade Servers
	6.11.35.10	Replace copper by optical fiber
	6.11.35.15	Upgrade Clients
	6.11.35.20	Update VLA/AOC Datalink
	6.11.35.25	Update Non-Operations VLA Network
	6.11.40	Computing Hardware
	6.11.40.05	Development hardware
	6.11.40.10	Archive hardware
	6.11.40.15	Pipeline hardware
	6.11.45	System Administration Support
	6.1145.05	Upgrade System Administration Support
6.12	**R. Harrison**	**Education and Public Outreach**
	6.12.05	EVLA Contribution to new Visitor Center
6.13	**P. Napier**	**Project Contingency**
	6.13.05	Unallocated Funds

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
1	6	**EVLA PROJECT**	**5/1/01**	**12/26/12**	**49%**
2	**6.1**	**PROJECT MGMT**	**5/1/01**	**6/1/12**	**54%**
1	**1.1**	**Management/Subsystem Engineering**	**5/1/01**	**7/6/09**	**64%**
2	1.1.1	Start EVLA project	5/1/01	5/1/01	100%
3	1.1.1a	Institute roles & responsibilities	5/1/01	5/29/01	100%
4	1.1.2	Objectives & Scope	5/14/01	5/25/01	100%
5	1.1.3	Schedule of Reviews	8/13/01	8/13/01	100%
6	1.1.4	Change Control Procedures	3/4/02	3/4/02	100%
7	1.1.5	Research & design development	8/1/01	4/18/06	49%
8	**1.1.20**	**Management Plan**	**5/21/01**	**8/9/02**	**100%**
9	1.1.20.1	WBS development	5/21/01	3/28/02	100%
10	1.1.20.2	Preliminary cost estimate	6/4/01	8/2/01	100%
11	1.1.20.3	Management Plan published	9/10/01	9/10/01	100%
12	1.1.20.4	Resource assignments	7/2/01	11/22/01	100%
13	1.1.20.5	FY02 budget issue	9/10/01	9/10/01	100%
14	1.1.20.6	Cost estimates refined	12/21/01	12/21/01	100%
15	1.1.20.7	Preliminary detail schedules	1/2/02	3/27/02	100%
16	1.1.20.8	Earn Value Analysis baseline	3/1/02	8/9/02	100%
17	**1.1.21**	**Project Management & Tracking**	**10/5/01**	**7/6/09**	**30%**
27	**1.1.40**	**Key Milestones**	**11/4/02**	**6/1/12**	**0%**
28	1.1.40.1	Start installation of fiber optics on Wye	11/4/02	11/4/02	100%
29	1.1.40.2	Start prototype system lab integration & test	1/15/03	1/15/03	100%
30	1.1.40.3	Install prototype system on test antenna	4/14/03	4/14/03	100%
31	1.1.40.4	Complete electronics CDRs	5/21/04	5/21/04	100%
32	1.1.40.5	Start electronics production	4/5/04	4/5/04	100%
33	1.1.40.6	Start retrofitting antennas w/ new system	9/27/04	9/27/04	0%
34	1.1.40.7	Start observing in transition mode	7/21/04	7/21/04	0%
35	1.1.40.8	Test prototype correlator on 3 or 4 antennas	10/1/05	10/1/05	0%
36	1.1.40.9	Start outfitting new correlator room	4/1/06	4/1/06	0%
37	1.1.40.10	Start tests of 1st correlator subset at VLA	10/1/06	10/1/06	0%
38	1.1.40.11	1st shared risk science w/ new correlator subset	12/1/07	12/1/07	0%
39	1.1.40.12	New correlator declared operational	3/6/09	3/6/09	0%
40	1.1.40.13	Last antenna retrofitted to EVLA design	8/27/10	8/27/10	0%
41	1.1.40.14	Last receiver installed	6/1/12	6/1/12	0%
42	**1.6**	**Project Book**	**6/4/01**	**3/1/02**	**100%**
43	1.6.1	Scientific Requirements defined	6/4/01	6/4/01	100%
44	1.6.2	Technical Requirements defined	7/19/01	7/19/01	100%
45	1.6.3	Project Book draft	7/19/01	9/17/01	100%
46	1.6.4	Project Book version 1	3/1/02	3/1/02	100%
47	**1.10**	**Office Equipment & Supplies**	**6/4/01**	**1/26/06**	**74%**
48	1.10.1	Physical space allocation	6/4/01	1/26/06	65%
49	1.10.2	Direct labor workstations	6/4/01	12/30/04	85%
50	1.15	Drafting & Lab Services	7/15/02	5/22/08	33%
51	**1.20**	**Advisory Committee**	**10/15/01**	**9/11/08**	**40%**
52	1.20.1	Research & consultation	10/15/01	9/6/05	68%
53	1.20.2	Advisory Committee formed	3/4/02	3/4/02	100%
54	1.20.3	1st Advisory committee meeting	6/10/02	6/10/02	100%
55	1.20.4	Advisory Committee reviews	5/27/03	9/11/08	20%
3	**6.2**	**SYTEM INTEGRATION**	**5/1/01**	**6/11/08**	**58%**
1	**2.1**	**Management/Subsystem Engineering**	**5/1/01**	**11/7/06**	**63%**
2	2.1.3	Initial budget, manpower & schedule estimate	6/4/01	8/3/01	100%
3	2.1.5	Develop prelim block diagrams for systems & subsys	7/9/01	11/22/01	100%
4	2.1.7	Project Book requirements & specification	8/6/01	9/14/01	100%
5	2.1.9	System PDR preparation	10/1/01	11/13/01	100%
6	2.1.12	System PDR	12/5/01	12/5/01	100%
7	2.1.15	PDR review & analysis	12/10/01	1/11/02	100%
8	2.1.18	Develop engineering specifications document	12/10/01	1/16/03	100%



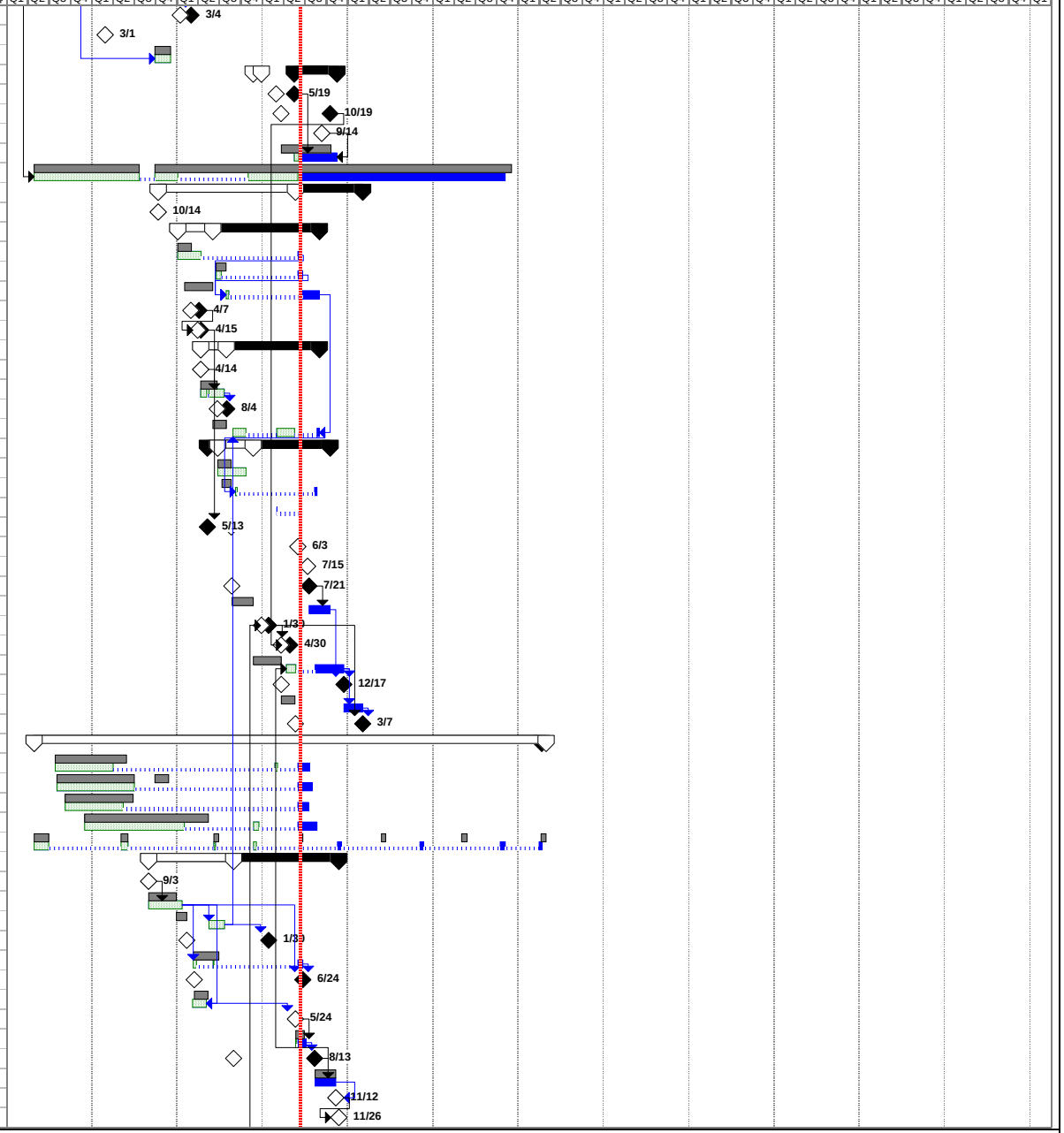
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
9	2.1.19	Engineering specifications document complete	3/4/03	3/4/03	100%
10	2.1.21	System block diagram under revision control	3/1/02	3/1/02	100%
11	2.1.24	Develop hardware definition document format	9/30/02	12/6/02	100%
12	**2.1.30**	**System CDRs & analysis**	**5/19/04**	**11/17/04**	**10%**
13	2.1.30.2	LO and Fiber Optics CDR incl pwr supp & packagir	5/19/04	5/19/04	100%
14	2.1.30.4	FE and IF System CDR	10/19/04	10/19/04	0%
15	2.1.30.6	M&C and Data Mgmt CDR	9/14/04	9/14/04	0%
16	2.1.30.8	CDR review & analysis	5/19/04	11/17/04	10%
17	2.1.40	System research, evaluation & analysis	5/1/01	11/7/06	56%
18	**2.1.50**	**Test Antenna Plan**	**10/14/02**	**3/7/05**	**26%**
19	2.1.50.1	EVLA test antenna chosen	10/14/02	10/14/02	100%
20	**2.1.50.2**	**Hardware Bench Integration**	**1/6/03**	**9/3/04**	**13%**
21	2.1.50.2.1	Phase 1 bench integration (prototype) tests	1/6/03	6/3/04	25%
22	2.1.50.2.2	Phase 2 bench integration tests	6/19/03	6/23/04	6%
23	2.1.50.2.3	Bench integration w/ MIBs	7/31/03	9/3/04	3%
24	2.1.50.3	Fiber optic cable tested at MP & W10	4/7/03	4/7/03	100%
25	2.1.50.4	M&C network - CB to MP tested	4/15/03	4/15/03	100%
26	**2.1.50.5**	**1st Test Antenna Outfit**	**4/14/03**	**9/3/04**	**77%**
27	2.1.50.4.1	Begin test antenna outfitting	4/14/03	4/14/03	100%
28	2.1.50.4.2	Overhaul and structural modifications	4/14/03	7/23/03	100%
29	2.1.50.4.3	Move antenna to master pad	8/4/03	8/4/03	100%
30	2.1.50.4.4	Electronic hardware outfitting	8/29/03	9/3/04	71%
31	**2.1.50.10**	**System Tests on Antenna**	**5/13/03**	**10/19/04**	**20%**
32	2.1.50.10.1	Antenna MCB/MIBs testing	6/26/03	10/24/03	100%
33	2.1.50.10.3	Hardware functionality tests	9/9/03	8/24/04	3%
34	2.1.50.10.4	Test antenna software developed	3/5/04	6/2/04	0%
35	2.1.50.10.5	M&C network - CB to W10 tested	5/13/03	5/13/03	100%
36	2.1.50.10.6	L-Band receiver usable	6/3/04	6/3/04	100%
37	2.1.50.10.7	K & Q-band receivers usable	7/15/04	7/15/04	0%
38	2.1.50.10.8	Antenna ready to move to W10	7/21/04	7/21/04	0%
39	2.1.50.10.9	Interferometry tests EVLA-VLA	7/21/04	10/19/04	0%
40	2.1.50.12	Functional design freeze	1/30/04	1/30/04	100%
41	2.1.50.13	Physical design freeze	4/30/04	4/30/04	100%
42	2.1.50.15	2nd test antenna outfit	4/15/04	12/17/04	17%
43	2.1.50.17	Start interferometry tests w/two EVLA antennas	12/17/04	12/17/04	0%
44	2.1.50.20	Evaluate hardware on 2nd antenna	12/17/04	3/7/05	0%
45	2.1.50.30	Start antenna production outfitting	3/7/05	3/7/05	0%
46	**2.5**	**Test and Lab Equipment**	**5/1/01**	**4/13/07**	**85%**
47	2.5.5	FO Equipment	7/30/01	7/23/04	95%
48	2.5.10	FE Equipment	8/6/01	8/3/04	70%
49	2.5.15	LO Equipment	9/10/01	7/19/04	95%
50	2.5.20	General Lab Equipment	12/3/01	8/24/04	85%
51	2.5.25	Engineering Software	5/1/01	4/13/07	63%
52	**2.10.1**	**Power Supply System**	**9/3/02**	**11/26/04**	**41%**
53	2.10.1	Start prototype power supplies	9/3/02	9/3/02	100%
54	2.10.3	Detemine power voltage, build prototype & test	9/3/02	1/24/03	100%
55	2.10.7	Antenna Vertex Room assembly	5/19/03	7/25/03	100%
56	2.10.5	Test antenna power supplies built & tested	1/30/04	1/30/04	100%
57	2.10.10	CB/Master LO power supply assembly	3/13/03	6/24/04	19%
58	2.10.17	CB/Master LO power supplies built & tested	6/24/04	6/24/04	0%
59	2.10.15	Build pwr supply modules for antenna test setup	3/10/03	5/7/03	100%
60	2.10.16	Power supply P301&P302 redesign & review	5/24/04	5/24/04	100%
61	2.10.17	Assemble 2nd version power supplies	5/25/04	7/9/04	4%
62	2.10.20	Antenna 14 pwr supplies built	8/13/04	8/13/04	0%
63	2.10.22	Evaluate power supplies on antenna	8/16/04	11/12/04	0%
64	2.10.24	Antenna 16 pwr supplies built	11/12/04	11/12/04	0%
65	2.10.26	Order parts & start power supply production	11/26/04	11/26/04	0%



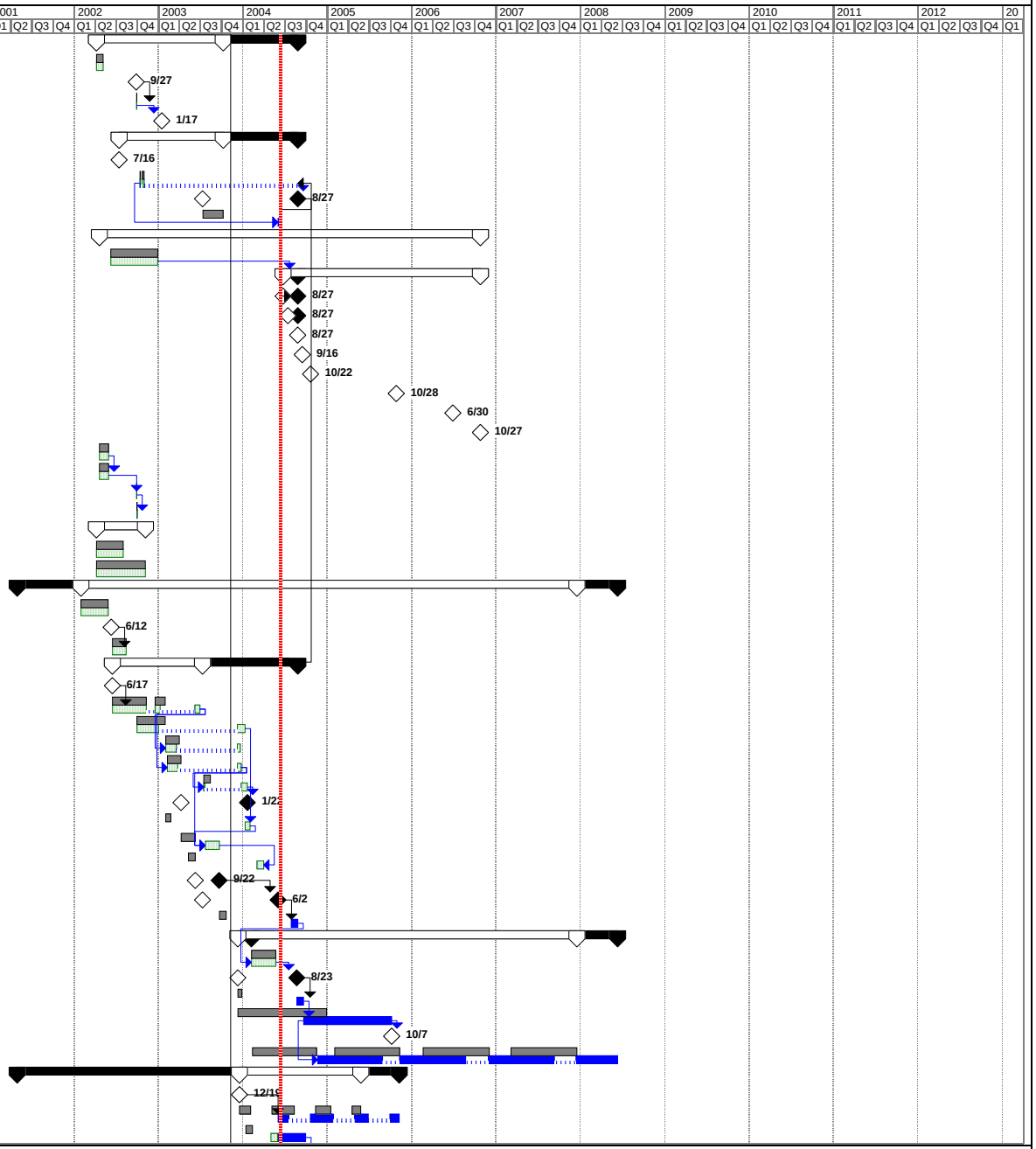
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
66	**2.15**	**Site RFI characterization & Suppression**	**4/9/02**	**8/27/04**	**17%**
67	2.15.5	Facilities Development	4/9/02	5/7/02	100%
68	2.15.5	Fill EMC/RFI position	9/27/02	9/27/02	100%
69	2.15.9	Limits for RFI Emission Levels	9/30/02	9/30/02	100%
70	2.15.10	Acceptance Test Development	1/17/03	1/17/03	100%
71	**2.15.15.1**	**RFI/EM Analysis of electronics & computers**	**7/16/02**	**8/27/04**	**7%**
72	2.15.15.1	Shielding requirements for racks and modules	7/16/02	7/16/02	100%
73	2.15.15.3	1st level RFI tests of rack/bin/module prototypes	10/14/02	8/27/04	8%
74	2.15.15.6	Verify linearity of RF designs - rcvr to correl	8/27/04	8/27/04	0%
75	2.15.15.9	Test & reduce internally generated RFI - L-band	6/3/04	6/16/04	0%
76	**2.16**	**External RFI & Systems Immunity**	**4/22/02**	**10/27/06**	**99%**
77	2.16.5	Test PFD/BW levels of RFI - each band	6/10/02	12/30/02	100%
78	**2.16.10**	**EVLA antenna sidelode gain patterns 2-120 degrees**	**8/27/04**	**10/27/06**	**0%**
79	2.16.10.K	K-Band receiver	8/27/04	8/27/04	0%
80	2.16.10.Q	Q-Band receiver	8/27/04	8/27/04	0%
81	2.16.10.L	L-Band receiver	8/27/04	8/27/04	0%
82	2.16.10.C	C-Band receiver	9/16/04	9/16/04	0%
83	2.16.10.A	Ka-Band receiver	10/22/04	10/22/04	0%
84	2.16.10.U	Ku-Band receiver	10/28/05	10/28/05	0%
85	2.16.10.S	S-Band receiver	6/30/06	6/30/06	0%
86	2.16.10.X	X-Band receiver	10/27/06	10/27/06	0%
87	2.16.15	Distribution of gains, SNRs & headroom of existing rcvr'	4/22/02	5/31/02	100%
88	2.16.20	Spec's for distribution of Sys/subsys gains, SNRs & hea	4/22/02	5/31/02	100%
89	2.16.25	Spec's & development of RFI filters - each Rcvr band	9/30/02	9/30/02	100%
90	2.16.30	Spec's & development of RFI filters in IF systems	10/1/02	10/1/02	100%
91	**2.20**	**Scientific Support**	**4/9/02**	**11/6/02**	**100%**
92	2.20.05	Develop scientific performance specifications	4/9/02	8/2/02	100%
93	2.20.10	Spec's for limits of angular separation from satellites	4/9/02	11/6/02	100%
94	**2.25**	**Modules Bins & Racks**	**5/1/01**	**6/11/08**	**47%**
95	2.25.1	Design development	2/1/02	5/29/02	100%
96	2.25.3	Internal review	6/12/02	6/12/02	100%
97	2.25.2	Review analysis & resolution	6/17/02	8/15/02	100%
98	**2.25.10**	**Prototype module, bin & rack assembly**	**6/17/02**	**8/27/04**	**98%**
99	2.25.10.1	Start prototype rack, bin, module	6/17/02	6/17/02	100%
100	2.25.10.2	Design, assemble & test G-rack	6/17/02	6/30/03	100%
101	2.25.10.3	Design & assemble prototype module packaging	10/1/02	1/12/04	100%
102	2.25.10.5	Design, assemble & test H-rack	2/3/03	12/22/03	100%
103	2.25.10.7	Design & assemble LO-rack	2/10/03	12/26/03	100%
104	2.25.10.8	Modify rack for FE modules	7/17/03	1/22/04	100%
105	2.25.10.9	Rack/bin assembly designs complete	1/22/04	1/22/04	100%
106	2.25.10.11	Sampler module package - re: new design	1/12/04	2/2/04	100%
107	2.25.10.13	LO/IF modules	7/24/03	9/22/03	100%
108	2.25.10.15	U/X converter module pkg design	3/4/04	4/1/04	100%
109	2.25.10.7	Initial module assemblies complete	9/22/03	9/22/03	100%
110	2.25.10.21	Test antenna module/racks finished	6/2/04	6/2/04	0%
111	2.25.10.22	Finalize module spec's for production order	7/30/04	8/27/04	0%
112	**2.25.30**	**Production**	**2/9/04**	**6/11/08**	**6%**
113	2.25.30.1	Initial order of modules parts	2/9/04	5/24/04	100%
114	2.25.30.3	Spec & order all LO and FE shielded racks	8/23/04	8/23/04	0%
115	2.25.30.4	Develop/send bid package to CONACyT (Mexican	8/23/04	9/21/04	0%
116	2.25.30.5	Mexican fabrication estimate	9/22/04	10/7/05	0%
117	2.25.30.7	Estimated completion of Mexican module parts	10/7/05	10/7/05	0%
118	2.25.30.9	Assemble bins & modules	11/22/04	6/11/08	0%
119	**2.30**	**Transition Planning**	**5/1/01**	**11/9/05**	**5%**
120	2.30.5	Develop CB ethernet port location plan	12/19/03	12/19/03	100%
121	2.30.7	Coordinate new correlator preparation	6/3/04	11/9/05	0%
122	2.30.10	Develop production specifications document	5/3/04	9/30/04	20%



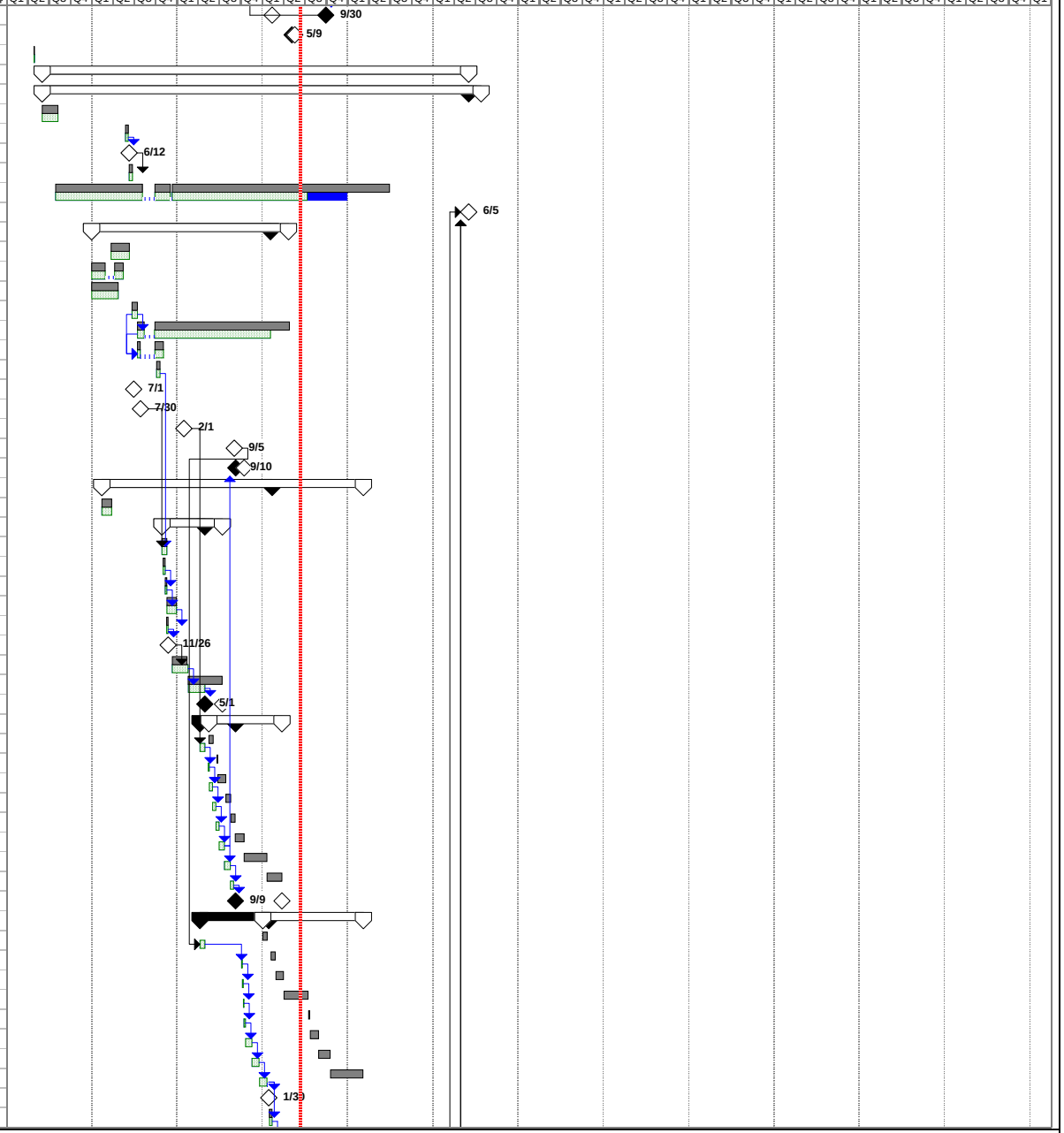
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
123	2.30.13	Production specifications document complete	9/30/04	9/30/04	0%
124	2.30.15	Develop plan to move array computers	5/9/04	5/9/04	100%
125	8.6.6		5/1/01	5/1/01	100%
4	**6.3**	**CIVIL CONSTRUCTION**	**6/4/01**	**6/5/06**	**74%**
1	**3.1**	**Management/Subsystem Engineering**	**6/4/01**	**6/5/06**	**87%**
2	3.1.5	Initial budget, labor & schedule estimate	6/4/01	8/10/01	100%
3	3.1.10	Preparation for installation internal CDR	5/27/02	6/7/02	100%
4	3.1.15	Fiber Underground Installation CDR	6/12/02	6/12/02	100%
5	3.1.20	CDR analysis & revisions	6/12/02	6/25/02	100%
6	3.1.25	Mgmt, R&D, documentation	8/1/01	12/30/04	86%
7	3.1.100	Civil Construction Completed	6/5/06	6/5/06	0%
8	**3.5**	**Fiber Optic Cable**	**1/2/02**	**2/6/04**	**99%**
9	3.5.3.3	Develop array fiber installation plan	3/26/02	6/12/02	100%
10	3.5.3.6	Prep Hvac room for array termination panel	1/2/02	5/17/02	100%
11	3.5.3.9	Procure heavy equipment	1/2/02	4/25/02	100%
12	3.5.3.10	Outfit trencher - cable chute and cab enclosure	6/24/02	7/16/02	100%
13	3.5.3.12	Procure BOM for installation	7/17/02	2/6/04	100%
14	3.5.3.14	Fabricate fiber reel stands/trailers	7/17/02	11/5/02	100%
15	3.5.3.16	Hire fiber crew	10/7/02	10/21/02	100%
16	3.5.3.18	Contact State & Utilities on impending w-arm crossings	7/1/02	7/1/02	100%
17	3.5.3.21	Delivery fiber cable	7/30/02	7/30/02	100%
18	3.5.3.24	Contact State & Utilities on impending e-arm crossings	2/1/03	2/1/03	100%
19	3.5.3.27	Contact State & Utilities on impending n-arm crossings	9/5/03	9/5/03	100%
20	3.5.3.28	Rock saw rental	9/10/03	9/10/03	100%
21	**3.5.5**	**Trench & install FO cable (200kft)**	**2/14/02**	**2/13/04**	**100%**
22	3.5.5.5	Install CB manhole	2/14/02	3/28/02	100%
23	**3.5.5.10**	**West Arm**	**10/30/02**	**5/1/03**	**100%**
24	3.5.5.12	Grade, trench path & locate U/G utils	10/30/02	11/19/02	100%
25	3.5.5.16	Pull fiber into array termination panel room	11/4/02	11/12/02	100%
26	3.5.5.18	Dismantle spur track & xptr fuel pump line	11/13/02	11/19/02	100%
27	3.5.5.20	Trench fiber from CB manhole to D2>C7	11/20/02	12/31/02	100%
28	3.5.5.22	Reconstruct spur track & fuel line	11/19/02	11/25/02	100%
29	3.5.5.23	Trench fiber to W10 & master pad complete	11/26/02	11/26/02	100%
30	3.5.5.24	Trench fiber from C7 to A5	12/13/02	2/18/03	100%
31	3.5.5.26	Trench fiber from A5 to A9	2/20/03	5/1/03	100%
32	3.5.5.27	West Arm trench fiber complete	5/1/03	5/1/03	100%
33	**3.5.5.30**	**East Arm**	**4/11/03**	**9/9/03**	**100%**
34	3.5.5.32	Grade, trench path & locate U/G utils	4/11/03	5/1/03	100%
35	3.5.5.36	Pull fiber into array termination panel room	5/16/03	5/20/03	100%
36	3.5.5.38	Trench fiber from CB manhole to D1>C5	5/21/03	6/3/03	100%
37	3.5.5.40	Trench fiber from C5 to RTE 52	6/4/03	6/17/03	100%
38	3.5.5.42	Trench fiber from RTE 52 to old RTE 60	6/18/03	7/1/03	100%
39	3.5.5.44	Trench fiber from old RTE 60 to A5	7/2/03	7/24/03	100%
40	3.5.5.46	Trench fiber from A5 to RTE 78	7/25/03	8/18/03	100%
41	3.5.5.48	Trench fiber from RTE 78 to A9	8/19/03	9/1/03	100%
42	3.5.5.49	East Arm trench fiber complete	9/9/03	9/9/03	100%
43	**3.5.5.50**	**North Arm**	**4/11/03**	**1/30/04**	**100%**
44	3.5.5.52	Grade, trench path & locate U/G utils	4/11/03	5/1/03	100%
45	3.5.5.56	Pull fiber into array termination panel room	10/6/03	10/9/03	100%
46	3.5.5.58	Dismantle main line track @ wye	10/10/03	10/13/03	100%
47	3.5.5.60	Trench fiber from CB manhole to D2	10/14/03	10/15/03	100%
48	3.5.5.62	Reconstruct main line track	10/16/03	10/22/03	100%
49	3.5.5.64	Trench fiber from D2 to B6	10/23/03	11/19/03	100%
50	3.5.5.66	Trench fiber from B6 to A5	11/20/03	12/19/03	100%
51	3.5.5.68	Trench fiber from A5 to A9	12/22/03	1/30/04	100%
52	3.5.5.69	East Arm trench fiber complete	1/30/04	1/30/04	100%
53	3.5.5.70	Trench fiber on South arm	2/2/04	2/13/04	100%



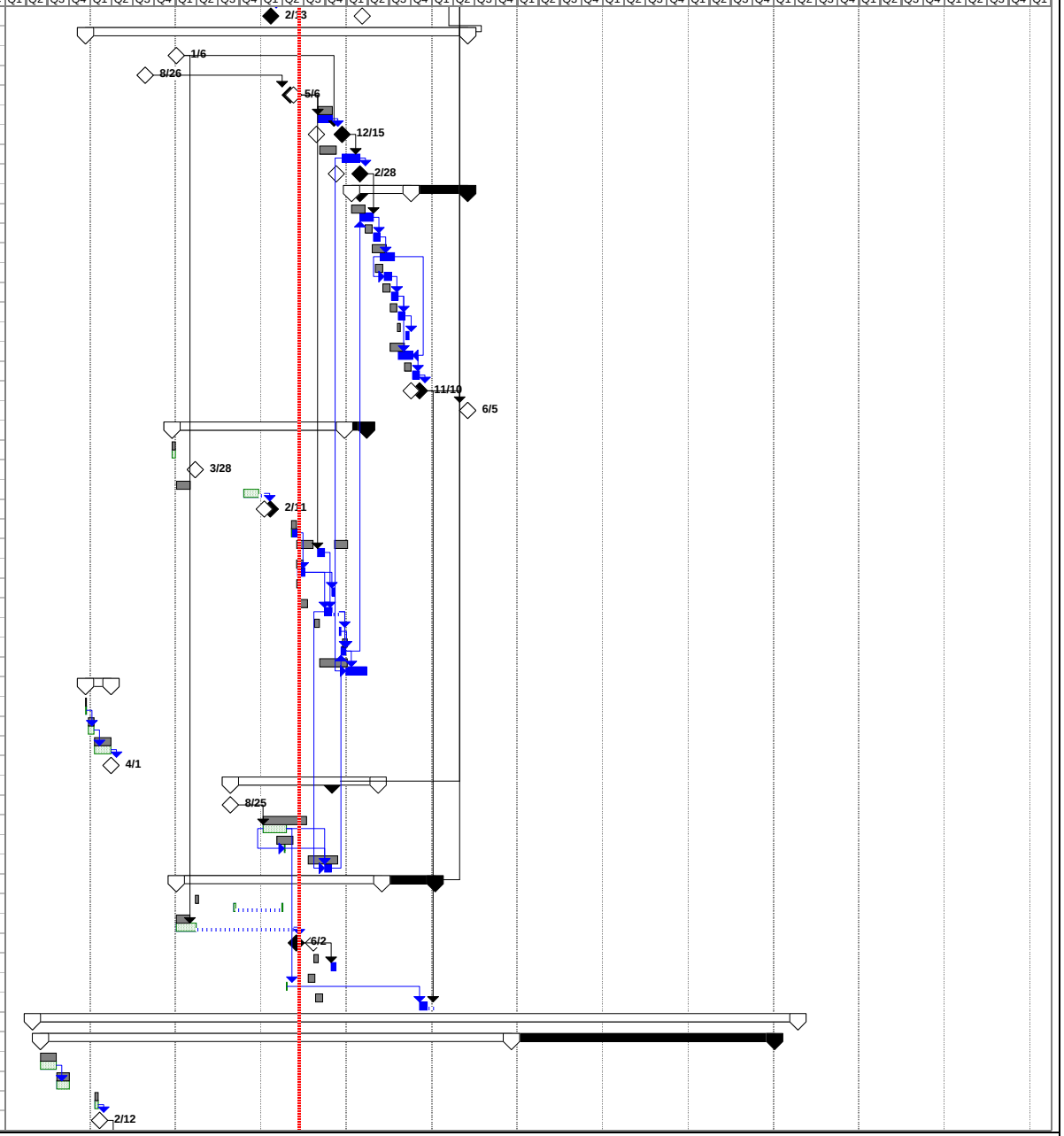
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
54	3.5.5.80	Array fiber burial completed	2/13/04	2/13/04	100%
55	**3.10**	**New Correlator Room**	**12/14/01**	**6/5/06**	**20%**
56	3.10.1	Propose relocation of Mod Comps, tape drives, computi	1/6/03	1/6/03	100%
57	3.10.2	Interim location of LO fiber panel determined	8/26/02	8/26/02	100%
58	3.10.3	Determine new location of ModComps, Miranda	5/6/04	5/6/04	100%
59	3.10.5	Develop correlator shielded room specifications	9/2/04	11/2/04	0%
60	3.10.6	Shielded room spec's written	12/15/04	12/15/04	0%
61	3.10.8	Order shielded room & start prepwork	12/15/04	2/28/05	0%
62	3.10.9	Shielded room delivered	2/28/05	2/28/05	0%
63	**3.10.5**	**Shielded Room**	**3/1/05**	**6/5/06**	**0%**
64	3.10.5.2	Erect new correlator shielded room	3/1/05	4/27/05	0%
65	3.10.5.4	Install main power feeds & panels	4/28/05	5/26/05	0%
66	3.10.5.6	Install new ductwork, piping, etc. in shielded room a	5/27/05	7/28/05	0%
67	3.10.5.8	Install cable tray & cable in floor	6/13/05	7/13/05	0%
68	3.10.5.10	Install shielded room floor & grounding	7/14/05	8/11/05	0%
69	3.15.10	Install new hvac units in shielded room	8/12/05	9/12/05	0%
70	3.15.12	Hook up & run correlator hvac units	9/13/05	9/26/05	0%
71	3.10.5.12	Install shielded room lighting, outlets & hvac pwr	8/12/05	10/11/05	0%
72	3.10.5.14	Install fire panel, alarms, interlocks	10/12/05	11/10/05	0%
73	3.10.5.16	Shielded room available	11/10/05	11/10/05	0%
74	3.10.5.20	Start New Correlator Installation	6/5/06	6/5/06	0%
75	**3.10.10**	**Remodeling**	**12/19/02**	**3/29/05**	**26%**
76	3.10.10.1	Relocate Fiber group - cryo to CB	12/19/02	1/1/03	100%
77	3.10.10.2	LO panel installed in interim location	3/28/03	3/28/03	100%
78	3.10.10.4	Prepare old correlator room for EVLA equipment	10/21/03	1/16/04	100%
79	3.10.10.6	Old correlator room ready for EVLA equipment	2/11/04	2/11/04	100%
80	3.10.10.7	Order mat'ls for new Fiber-lab	5/12/04	6/7/04	9%
81	3.10.10.8	Order mat'ls to move ModComps & FO-lab	9/1/04	9/30/04	0%
82	3.10.10.9	Remodel CB Annex - Fiber Lab	6/7/04	7/8/04	0%
83	3.10.10.10	Move fiber lab to new location	11/1/04	11/12/04	0%
84	3.10.10.12	Prepare space to move array computers	10/1/04	12/2/04	0%
85	3.10.10.14	Relocate tape storage	12/3/04	12/9/04	0%
86	3.10.10.18	Relocate Array computers	12/10/04	12/30/04	0%
87	3.10.10.16	Prepare area for new correlator installation	12/31/04	3/29/05	0%
88	**3.10.15**	**RFI Shielded Test Chamber**	**12/14/01**	**4/1/02**	**100%**
89	3.10.15.5	Ship chamber assembly to VLA from GB	12/14/01	12/17/01	100%
90	3.10.15.10	Prepare VLA warehouse space for chamber	12/26/01	1/18/02	100%
91	3.10.15.15	Assemble shielded chamber	1/21/02	4/1/02	100%
92	3.10.15.20	Shielded test chamber complete	4/1/02	4/1/02	100%
93	**3.15**	**CB HVAC**	**8/25/03**	**11/1/04**	**78%**
94	3.15.2	Develop CB interim cooling plan	8/25/03	8/25/03	100%
95	3.15.4	Replace CB existing chillers	1/12/04	4/21/04	100%
96	3.15.6	Piping modifications in mechanical room	4/12/04	4/14/04	100%
97	3.15.8	Rework ductwork, piping, etc. for array computers	10/1/04	11/1/04	0%
98	**3.20**	**Power Distribution**	**1/6/03**	**1/16/06**	**61%**
99	3.20.2	Provide power to Master LO racks	9/8/03	4/5/04	100%
100	3.20.4	Develop CB 2nd floor power distribution plan	1/6/03	5/21/04	50%
101	3.20.6	Procure & install new CB transformer	6/2/04	6/2/04	0%
102	3.20.8	Relocate CB 2nd floor distribution panel	10/29/04	11/18/04	0%
103	3.20.10	Provide power to replacement chillers	4/21/04	4/23/04	100%
104	3.20.12	Revisions to CB UPS system	11/11/05	1/16/06	0%
5	**6.4**	**ANTENNAS**	**5/1/01**	**4/16/10**	**40%**
1	**4.1**	**Management/Subsystem Engineering**	**6/4/01**	**1/6/10**	**84%**
2	4.1.1	Initial budget, labor estimates & schedule	6/4/01	8/10/01	100%
3	4.1.6	Provide Project Book requirements	8/13/01	10/5/01	100%
4	4.1.9	Feed cone PDR preparation	1/23/02	2/5/02	100%
5	4.1.12	Feed Cone PDR	2/12/02	2/12/02	100%



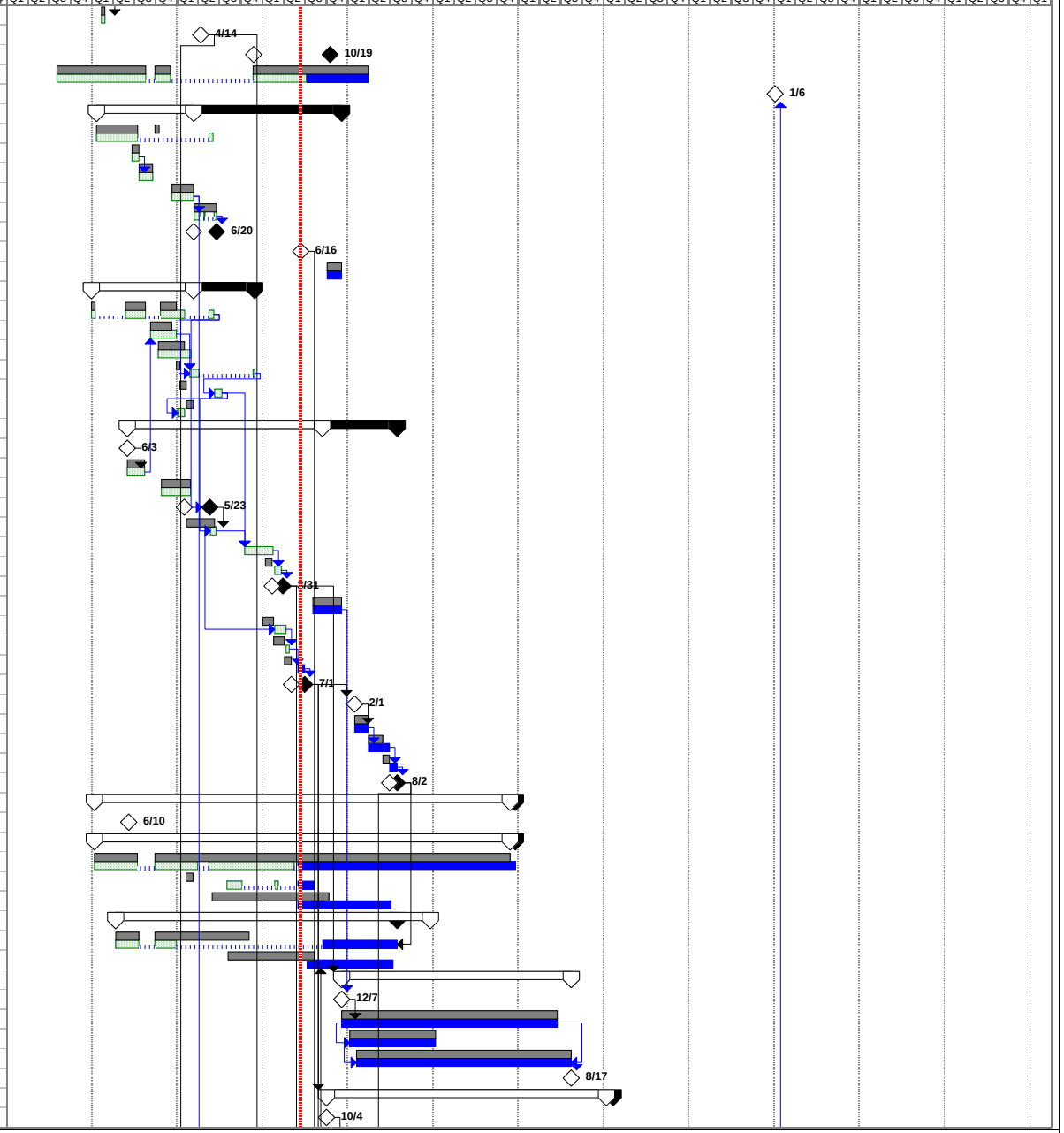
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
6	4.1.15	PDR analysis & review	2/13/02	2/27/02	100%
7	4.1.18	Test antenna available	4/14/03	4/14/03	100%
8	4.1.21	Antenna/Feed Cone CDR	10/19/04	10/19/04	0%
9	4.1.24	Mgmt, research, analysis & documentation	8/6/01	3/31/05	80%
10	1.9	Antenna Outfitting Complete	1/6/10	1/6/10	0%
11	**4.1.2**	**Design & Prototyping**	**1/23/02**	**12/7/04**	**93%**
12	4.1.2.3	Optical Tooling	1/23/02	6/6/03	100%
13	4.1.2.6	Design & assemble cable wrap test fixture	6/24/02	7/23/02	100%
14	4.1.2.9	Test fiber in cable wrap fixture - by FO	7/24/02	9/20/02	100%
15	4.1.2.12	Design/assemble fiber cable wrap for test antenna	12/12/02	3/14/03	100%
16	4.1.2.13	Test prototype cable wrap & build antenna unit	3/17/03	6/20/03	100%
17	4.1.2.15	Fiber cable wrap ready for test antenna	6/20/03	6/20/03	100%
18	4.1.2.17	Fiber cable wrap revision on antenna 13	6/16/04	6/16/04	0%
19	4.1.2.19	Design, fab & assemble receiver lifts	10/6/04	12/7/04	0%
20	**4.1.3**	**Laminated Feed Horn Design**	**1/1/02**	**12/1/03**	**100%**
21	4.1.3.5	Ring machine design & construction	1/1/02	6/9/03	100%
22	4.1.3.10	Xmas tree assembly design complete	9/11/02	12/30/02	100%
23	4.1.3.15	C-cast material for L & C-band feeds	10/14/02	3/3/03	100%
24	4.1.4.17	C-band Xmas tree assembly & fixtures	2/26/03	12/1/03	100%
25	4.1.4.20	L-band xmas tree design, assembly & fixtures	6/12/03	7/14/03	100%
26	4.1.4.25	Estimate C-band machine fabrication alternative	1/6/03	2/3/03	100%
27	**4.1.4**	**Prototype Assembly**	**6/3/02**	**8/2/05**	**56%**
28	4.1.4.3	C-band corrugation dwg by FE	6/3/02	6/3/02	100%
29	4.1.4.4	C-band mechanical design	6/4/02	8/16/02	100%
30	4.1.4.6	C-Band material procurement	10/28/02	2/28/03	100%
31	4.1.4.7	L-band feed & fixture drawings complete	5/23/03	5/23/03	100%
32	4.1.4.8	L-band prototype - order parts/machining/cutting	5/26/03	6/19/03	100%
33	4.1.4.9	L-band feed prototype assembly - by vendor	10/20/03	2/17/04	100%
34	4.1.4.10	L-band feed prototype testing	2/25/04	3/24/04	100%
35	4.1.4.11	L-band feed prototype ready to install	3/31/04	3/31/04	100%
36	1.12.9	L-band feed redesign - sectional version	8/6/04	12/7/04	0%
37	4.1.4.15	C-band feed prototype - order machined section	2/25/04	4/13/04	100%
38	4.1.4.16	C-band feed prototype assembly - by vendor	4/13/04	4/27/04	100%
39	4.1.4.17	C-band feed prototype testing	6/3/04	7/1/04	0%
40	1.12.13	C-band feed prototype ready to install	7/1/04	7/1/04	0%
41	4.1.4.20	S-band corrugation dwg by FE	2/1/05	2/1/05	0%
42	4.1.4.21	S-band corrugation - order parts/machining/cutting	2/1/05	3/31/05	0%
43	4.1.4.23	S-band prototype fab & assembly	4/1/05	6/30/05	0%
44	4.1.4.24	S-band feed prototype testing	7/1/05	8/2/05	0%
45	4.1.4.25	S-band feed prototype ready for testing	8/2/05	8/2/05	0%
46	**4.2**	**Precision Machining**	**1/14/02**	**12/21/06**	**33%**
47	4.2.1	Milling machine contribution	6/10/02	6/10/02	100%
48	**4.2.5**	**Mechanical fab & assembly**	**1/14/02**	**12/21/06**	**44%**
49	4.2.5.1	In house prototype fabrication	1/14/02	12/21/06	48%
50	4.2.5.3	Design, fab L,X,K,Q & C-band prototype rcvr moun	8/4/03	8/13/04	70%
51	4.2.5.5	Contracted (Mexican funded)	6/3/04	7/6/05	0%
52	**4.2.10**	**Front End & Feed**	**4/15/02**	**8/2/05**	**16%**
53	4.2.10.3	Feed prototypes - all bands assembled	4/15/02	8/2/05	22%
54	4.2.10.5	K, X & U-band feed production (Mexican Funded)	7/13/04	7/15/05	0%
55	**4.2.10.12**	**L-band horn production**	**12/7/04**	**8/17/07**	**0%**
56	4.2.10.12.2	Start L-band feed horn production	12/7/04	12/7/04	0%
57	4.2.10.12.4	Fabricate rings and bands 4-28	12/8/04	6/19/07	0%
58	4.2.10.12.6	Machine Flanges 3-28	1/11/05	1/13/06	0%
59	4.2.10.12.8	Lamination 3-28	2/9/05	8/17/07	0%
60	4.2.10.12.10	L-band feed assembly completed	8/17/07	8/17/07	0%
61	**4.2.10.14**	**C-band horn production**	**10/4/04**	**2/13/08**	**0%**
62	4.2.10.14.2	Start C-band feed horn production	10/4/04	10/4/04	0%



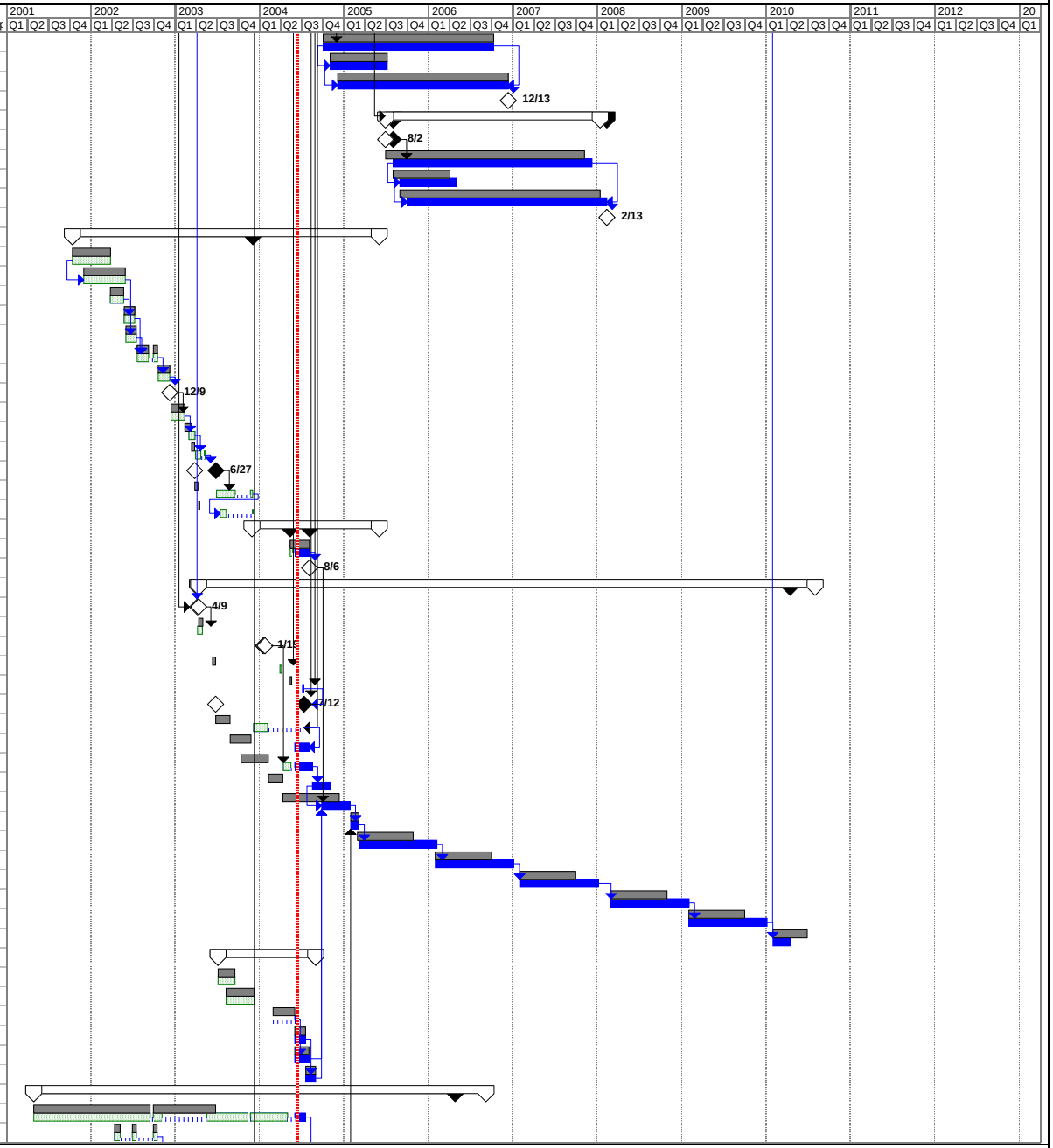
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
63	4.2.10.14.4	Fabricate rings and bands 3-28	10/4/04	10/11/06	0%
64	4.2.10.14.6	Machine Flanges 3-28	11/3/04	7/8/05	0%
65	4.2.10.14.8	Lamination 3-28	12/6/04	12/13/06	0%
66	4.2.10.14.10	C-band feed assembly completed	12/13/06	12/13/06	0%
67	**4.2.10.16**	**S-band horn production**	**8/2/05**	**2/13/08**	**0%**
68	4.2.10.16.2	S-band feed horn production	8/2/05	8/2/05	0%
69	4.2.10.16.4	Fabricate rings and bands 2-28	8/3/05	12/11/07	0%
70	4.2.10.16.6	Machine Flanges 2-28	9/1/05	5/5/06	0%
71	4.2.10.16.8	Lamination 2-28	10/3/05	2/13/08	0%
72	4.2.10.16.10	S-band feed assembly completed	2/13/08	2/13/08	0%
73	**4.5**	**Feed Cone Prototye**	**10/15/01**	**12/5/03**	**100%**
74	4.5.1	Finite Element Model	10/15/01	3/28/02	100%
75	4.5.3	Feed cone basic design	12/3/01	5/31/02	100%
76	4.5.5	Vertex room mockup	3/28/02	5/24/02	100%
77	4.5.7	Procure laminated panels for prototype	5/27/02	7/11/02	100%
78	4.5.9	Procure extrusions/ machine work	6/3/02	7/18/02	100%
79	4.5.12	Assemble prototype	7/22/02	10/18/02	100%
80	4.5.13	Assemble & install feed cone mock-ups	10/21/02	12/9/02	100%
81	4.5.15	Prototype ready for hardware fit testing	12/9/02	12/9/02	100%
82	4.5.16	Order material for 2 test antenna feed cones	12/16/02	2/12/03	100%
83	4.5.17	Assemble feed cone for test antenna	3/3/03	3/28/03	100%
84	4.5.18	Outfit feed cone for test antenna	3/31/03	5/12/03	100%
85	4.5.19	Feed cone ready for test antenna	6/27/03	6/27/03	100%
86	4.5.21	Feed Cone HVAC prepwork	6/30/03	12/4/03	100%
87	4.5.24	Feed Cone electrical prepwork	7/16/03	12/5/03	100%
88	**4.5.50**	**Feed Cone production**	**5/14/04**	**8/6/04**	**14%**
89	4.5.50.2	Procure feed cone panels	5/14/04	8/6/04	14%
90	4.5.50.4	Start feed cone production	8/6/04	8/6/04	0%
91	**4.10**	**Antenna Structural Modifications**	**4/9/03**	**4/16/10**	**5%**
92	4.10.3	Start 1st test antenna retrofit	4/9/03	4/9/03	100%
93	4.10.6	Remove feeds & vertex room equipment	4/9/03	4/30/03	100%
94	7.3	Start 2nd test antenna preparation	1/19/04	1/19/04	100%
95	4.10.9	L-band feed prototype on test antenna	3/31/04	4/6/04	100%
96	4.10.10	C-band feed prototype on test antenna	7/6/04	7/12/04	0%
97	4.10.12	Test antenna mechanical retrofit complete	7/12/04	7/12/04	0%
98	4.10.15	Evaluate modifications on test antenna	12/8/03	7/12/04	30%
99	4.10.16	Evaluate RFI characteristics of feedcone/vertex rm	6/3/04	8/3/04	0%
100	4.10.18	2nd test antenna mechanical outfitting	4/15/04	8/18/04	26%
101	4.10.21	Evaluate modifications on 2nd test antenna	8/18/04	11/2/04	0%
102	4.10.25	Antenna 16 mechanical outfitting	9/27/04	1/28/05	0%
103	7.12	Antenna 13 update	1/31/05	3/7/05	0%
104	4.10.30	Outfit 5 antennas	3/8/05	2/8/06	0%
105	4.10.35	Outfit 5 antennas	2/1/06	1/5/07	0%
106	4.10.40	Outfit 5 antennas	2/1/07	1/7/08	0%
107	4.10.45	Outfit 5 antennas	3/3/08	2/3/09	0%
108	4.10.50	Outfit 5 antennas	2/2/09	1/6/10	0%
109	4.10.55	Retrofit 2 antennas	2/1/10	4/16/10	0%
110	**4.15**	**Antenna Electrical & HVAC**	**7/7/03**	**9/1/04**	**44%**
111	4.15.2	Test antenna electrical outfit	7/7/03	9/18/03	100%
112	4.15.4	Test antenna HVAC outfit	8/11/03	12/10/03	100%
113	4.15.6	Evaluate vertex HVAC on test antenna	3/1/04	6/3/04	0%
114	4.15.8	Outfit 2nd test antenna (14)	6/3/04	7/20/04	0%
115	4.15.10	Procure production HVAC equipment quantities	6/3/04	8/3/04	0%
116	4.15.12	Procure production electrical quantities	7/20/04	9/1/04	0%
117	**4.20**	**Pointing Improvements**	**5/1/01**	**4/28/06**	**73%**
118	4.20.3	Encoder electronics upgrade	5/1/01	7/20/04	93%
119	4.20.5	Requirements & spec's of new servo sys	4/15/02	10/16/02	100%



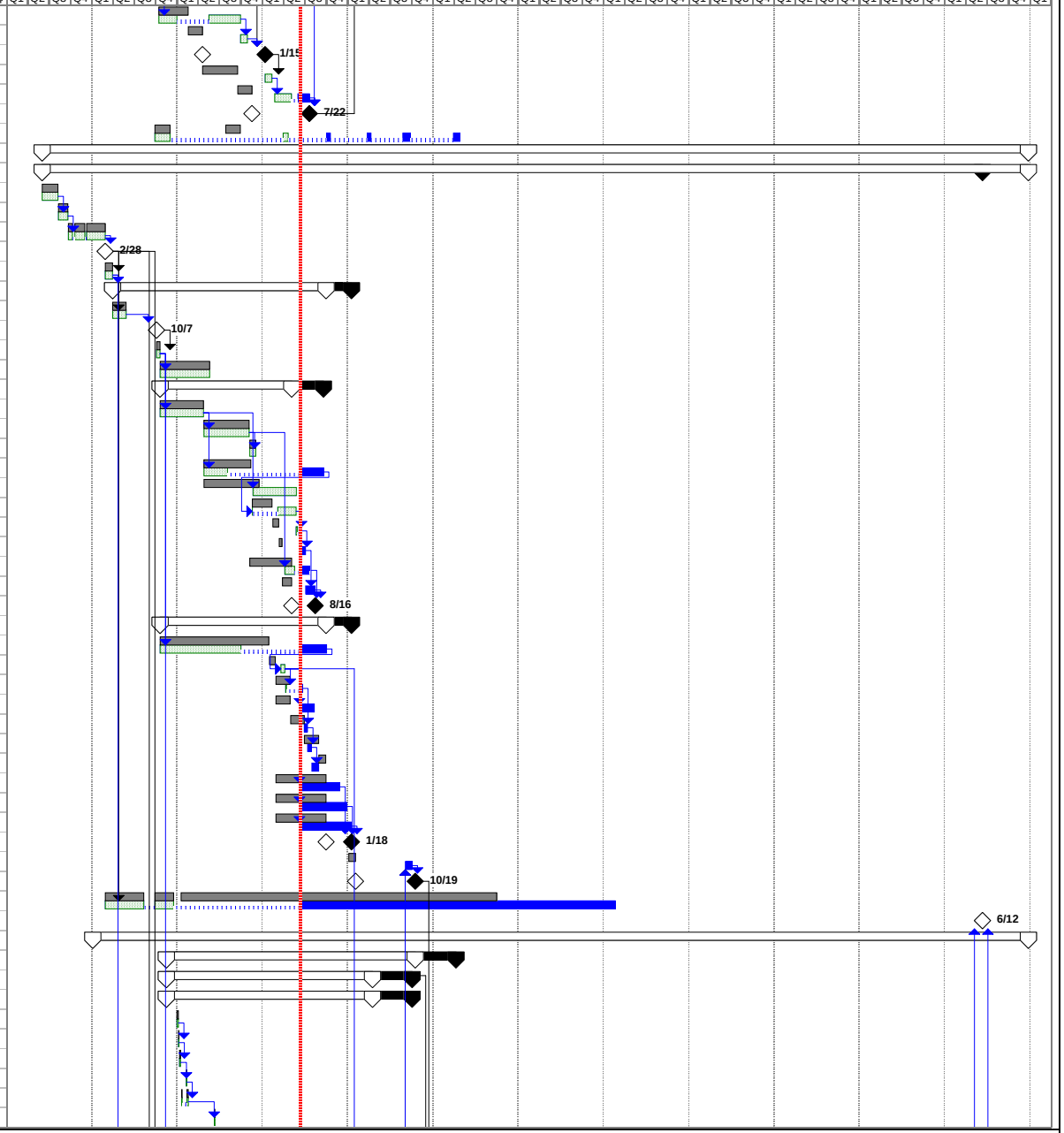
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
120	4.20.10	Design & develop antenna transition prototype	10/16/02	10/1/03	100%
121	4.20.12	Assemble ACU/FR module w/Mib for test antenna	10/1/03	10/31/03	100%
122	4.20.15	ACU/FR system ready for test antenna	1/15/04	1/15/04	100%
123	4.20.18	Evaluate ACU/FR system on antenna	1/15/04	2/12/04	100%
124	4.20.21	Assemble 2nd test antenna ACU/FR module	2/25/04	7/22/04	49%
125	4.20.25	Start ACU/FR digital loop design	7/22/04	7/22/04	0%
126	4.20.30	Azimuth bearing changes	9/30/02	4/28/06	45%
6	**6.5**	**FRONT END SYSTEMS**	**6/4/01**	**12/26/12**	**24%**
1	**5.1**	**Management/Subsystem Engineering**	**6/4/01**	**6/12/12**	**39%**
2	5.1.1	Initial budget, labor & schedule requirements	6/4/01	8/10/01	100%
3	5.1.3	Project Book requirements & specifications	8/13/01	9/21/01	100%
4	5.1.4	Reviews preparation	9/24/01	2/28/02	100%
5	5.1.5	Receiver/Feed Cone PDR	2/28/02	2/28/02	100%
6	5.1.6	PDR analysis & review	3/1/02	4/1/02	100%
7	**5.1.7**	**MMIC Development**	**4/2/02**	**1/18/05**	**49%**
8	5.1.7.1	MMIC design study & decision	4/2/02	5/29/02	100%
9	5.1.7.2	Receive CalTech proposal	10/7/02	10/7/02	100%
10	5.1.7.3	Review & accept CalTech proposal	10/7/02	10/21/02	100%
11	5.1.7.4	MMIC wafer received by CalTech	10/22/02	5/22/03	100%
12	**5.1.7.5**	**Q-Band Post Amp**	**10/22/02**	**9/20/04**	**64%**
13	5.1.7.5.1	Caltech Prototype complete	10/22/02	4/25/03	100%
14	5.1.7.5.2	Evaluate Caltech Prototype	4/28/03	11/7/03	100%
15	5.1.7.5.3	Test in Q-band Proto RX	11/10/03	12/5/03	100%
16	5.1.7.5.4	Design NRAO Block	4/28/03	9/20/04	20%
17	5.1.7.5.5	Design NRAO Bias Card	11/24/03	5/27/04	100%
18	5.1.7.5.6	Machine NRAO Block	11/21/03	5/26/04	100%
19	5.1.7.5.7	Assemble 1st NRAO Postamp Assy.	5/26/04	6/18/04	25%
20	5.1.7.5.8	Evaluate NRAO Prototype	6/18/04	7/6/04	0%
21	5.1.7.5.9	Rcv Parts from Raytheon Wafer	4/8/04	7/30/04	50%
22	5.1.7.5.10	Order CPW Circuits	7/6/04	8/16/04	0%
23	5.1.7.5.11	Begin Production	8/16/04	8/16/04	0%
24	**5.1.7.6**	**Ka Dowconverter**	**10/22/02**	**1/18/05**	**25%**
25	5.1.7.6.1	Caltech Prototype complete	10/22/02	10/4/04	49%
26	5.1.7.6.2	Redesign Block	3/22/04	4/8/04	100%
27	5.1.7.6.3	Machine Rcv2 Block	4/12/04	6/23/04	10%
28	5.1.7.6.4	Receive Prototype from Caltech	6/10/04	8/12/04	0%
29	5.1.7.6.5	Evaluate Caltech Prototype	6/30/04	7/14/04	0%
30	5.1.7.6.6	Machine 2nd Block	7/15/04	7/30/04	0%
31	5.1.7.6.7	Modify block or bias card design	8/2/04	8/31/04	0%
32	5.1.7.6.8	Assemble 1st NRAO prototype	6/10/04	11/29/04	0%
33	5.1.7.6.9	Evaluate NRAO prototype	6/10/04	12/30/04	0%
34	5.1.7.6.10	Ready for 1st receiver	6/10/04	1/18/05	0%
35	5.1.7.6.11	Begin Production	1/18/05	1/18/05	0%
36	5.1.8	CDR preparation	9/6/05	10/4/05	0%
37	5.1.9	Receiver/Feed/Cryo CDR	10/19/05	10/19/05	0%
38	5.1.10	Mgmt, research & engineering	3/1/02	2/21/08	15%
39	5.1.11	Last Receiver Installed	6/12/12	6/12/12	0%
40	**5.2**	**Receiver Build & Installation**	**1/7/02**	**12/26/12**	**19%**
41	**5.2.1**	**Front-end Subsystems Engineering**	**11/18/02**	**4/11/06**	**28%**
42	**5.2.1.1**	**Front-end**	**11/18/02**	**10/5/05**	**30%**
43	**5.2.1.1.1**	**Card Cage**	**11/18/02**	**10/5/05**	**41%**
44	5.2.1.1.1.1	Functional requirements definition	1/2/03	1/8/03	100%
45	5.2.1.1.1.2	Top-level requirements review	1/9/03	1/10/03	100%
46	5.2.1.1.1.3	Requirement allocation to cards	1/13/03	1/17/03	100%
47	5.2.1.1.1.4	Internal PDR - card cage	2/12/03	2/13/03	100%
48	5.2.1.1.1.5	Hardware/software description & ICD	1/22/03	2/19/03	100%
49	5.2.1.1.1.6	Internal CDR - card cage	6/11/03	6/13/03	100%



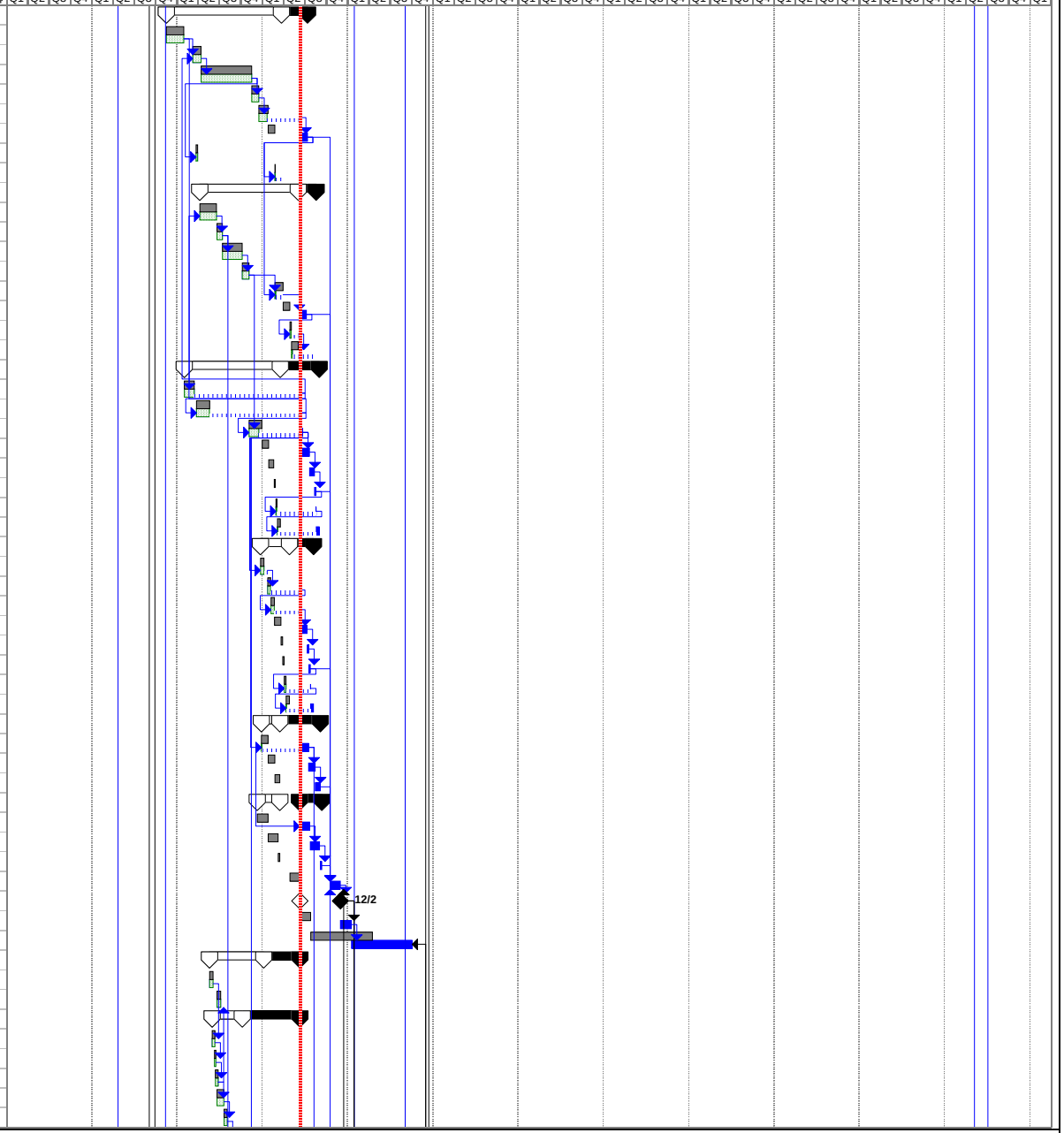
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
50	**5.2.1.1.1.7**	**Bias Card Prototype**	**11/18/02**	**7/14/04**	**88%**
51	5.2.1.1.1.7.1	Design	11/18/02	1/31/03	100%
52	5.2.1.1.1.7.2	Schematic	3/11/03	4/15/03	100%
53	5.2.1.1.1.7.3	Layout	4/16/03	11/18/03	100%
54	5.2.1.1.1.7.4	PCB Fabrication	11/19/03	12/18/03	100%
55	5.2.1.1.1.7.5	Assembly	12/19/03	6/14/04	90%
56	5.2.1.1.1.7.6	Testing (stand alone)	6/14/04	7/14/04	0%
57	5.2.1.1.1.7.7	Mechanical Interface	3/25/03	3/31/03	100%
58	5.2.1.1.1.7.8	Documentation	2/26/04	3/24/04	20%
59	**5.2.1.1.1.8**	**Controller Card Prototype**	**4/10/03**	**8/20/04**	**60%**
60	5.2.1.1.1.8.1	Design	4/10/03	6/20/03	100%
61	5.2.1.1.1.8.2	Schematic	6/23/03	7/15/03	100%
62	5.2.1.1.1.8.3	Layout	7/16/03	10/8/03	100%
63	5.2.1.1.1.8.4	PCB Fabrication	10/9/03	11/6/03	100%
64	5.2.1.1.1.8.5	Assembly	2/26/04	3/31/04	10%
65	5.2.1.1.1.8.6	Testing (stand alone)	6/10/04	7/9/04	0%
66	5.2.1.1.1.8.7	Mechanical Interface	4/30/04	6/4/04	75%
67	5.2.1.1.1.8.8	Documentation	5/7/04	8/20/04	10%
68	**5.2.1.1.1.9**	**Back Plane**	**2/3/03**	**9/2/04**	**29%**
69	5.2.1.1.1.9.1	Design	2/3/03	6/10/04	9%
70	5.2.1.1.1.9.2	schematic	3/27/03	6/14/04	13%
71	5.2.1.1.1.9.3	Layout	11/7/03	6/23/04	80%
72	5.2.1.1.1.9.4	PCB Fabrication	6/23/04	7/23/04	0%
73	5.2.1.1.1.9.5	Assembly	7/23/04	8/13/04	0%
74	5.2.1.1.1.9.6	Testing (stand alone)	8/13/04	8/20/04	0%
75	5.2.1.1.1.9.7	Mechanical Interface	3/1/04	8/20/04	90%
76	5.2.1.1.1.9.8	Documentation	3/8/04	9/2/04	10%
77	**5.2.1.1.1.10**	**Voltage Regulator Board**	**12/26/03**	**8/9/04**	**50%**
78	5.2.1.1.1.10.1	Design	12/26/03	1/23/04	95%
79	5.2.1.1.1.10.2	schematic	1/26/04	6/10/04	95%
80	5.2.1.1.1.10.3	Layout	2/9/04	6/10/04	11%
81	5.2.1.1.1.10.4	PCB Fabrication	6/11/04	7/12/04	0%
82	5.2.1.1.1.10.5	Assembly	7/13/04	7/19/04	0%
83	5.2.1.1.1.10.6	Testing (stand alone)	7/20/04	7/26/04	0%
84	5.2.1.1.1.10.7	Mechanical Interface	4/6/04	7/27/04	90%
85	5.2.1.1.1.10.8	Documentation	4/14/04	8/9/04	10%
86	**5.2.1.1.1.11**	**Internal Cables and Wiring**	**12/30/03**	**9/7/04**	**8%**
87	5.2.1.1.1.11.1	Design (drawings)	12/30/03	7/19/04	10%
88	5.2.1.1.1.11.2	Fabrication Prototype	7/19/04	8/16/04	0%
89	5.2.1.1.1.11.3	Assembly and Test Fit	8/16/04	9/7/04	0%
90	**5.2.1.1.1.12**	**Chassis Mechanical Prototype**	**6/10/04**	**9/13/04**	**0%**
91	5.2.1.1.1.12.1	Design (drawings)	6/10/04	7/23/04	0%
92	5.2.1.1.1.12.2	Fabrication Prototype	7/26/04	9/3/04	0%
93	5.2.1.1.1.12.3	Assembly and Test Fit	9/7/04	9/13/04	0%
94	5.2.1.1.1.13	Bench Integrated Test	10/19/04	12/2/04	0%
95	5.2.1.1.1.14	Card cage prototypes complete	12/2/04	12/2/04	0%
96	5.2.1.1.1.15	Assemble card cages for L & Ka-band re	12/2/04	1/18/05	0%
97	5.2.1.1.1.16	Design for Production	1/18/05	10/5/05	0%
98	**5.2.1.1.2**	**Dewar Wiring Harness**	**5/22/03**	**6/11/04**	**28%**
99	5.2.1.1.2.1	Design (Assy. Dwg.)	5/22/03	6/5/03	100%
100	5.2.1.1.2.2	Mechanical Details (drawings)	6/23/03	7/8/03	100%
101	**5.2.1.1.2.3**	**LNA Protection Board Prototype**	**6/2/03**	**6/11/04**	**23%**
102	5.2.1.1.2.3.1	Design	6/2/03	6/13/03	100%
103	5.2.1.1.2.3.2	schematic	6/11/03	6/18/03	100%
104	5.2.1.1.2.3.3	Layout	6/16/03	6/27/03	100%
105	5.2.1.1.2.3.4	PCB Fab	6/23/03	7/22/03	100%
106	5.2.1.1.2.3.5	Assembly	7/23/03	8/5/03	100%



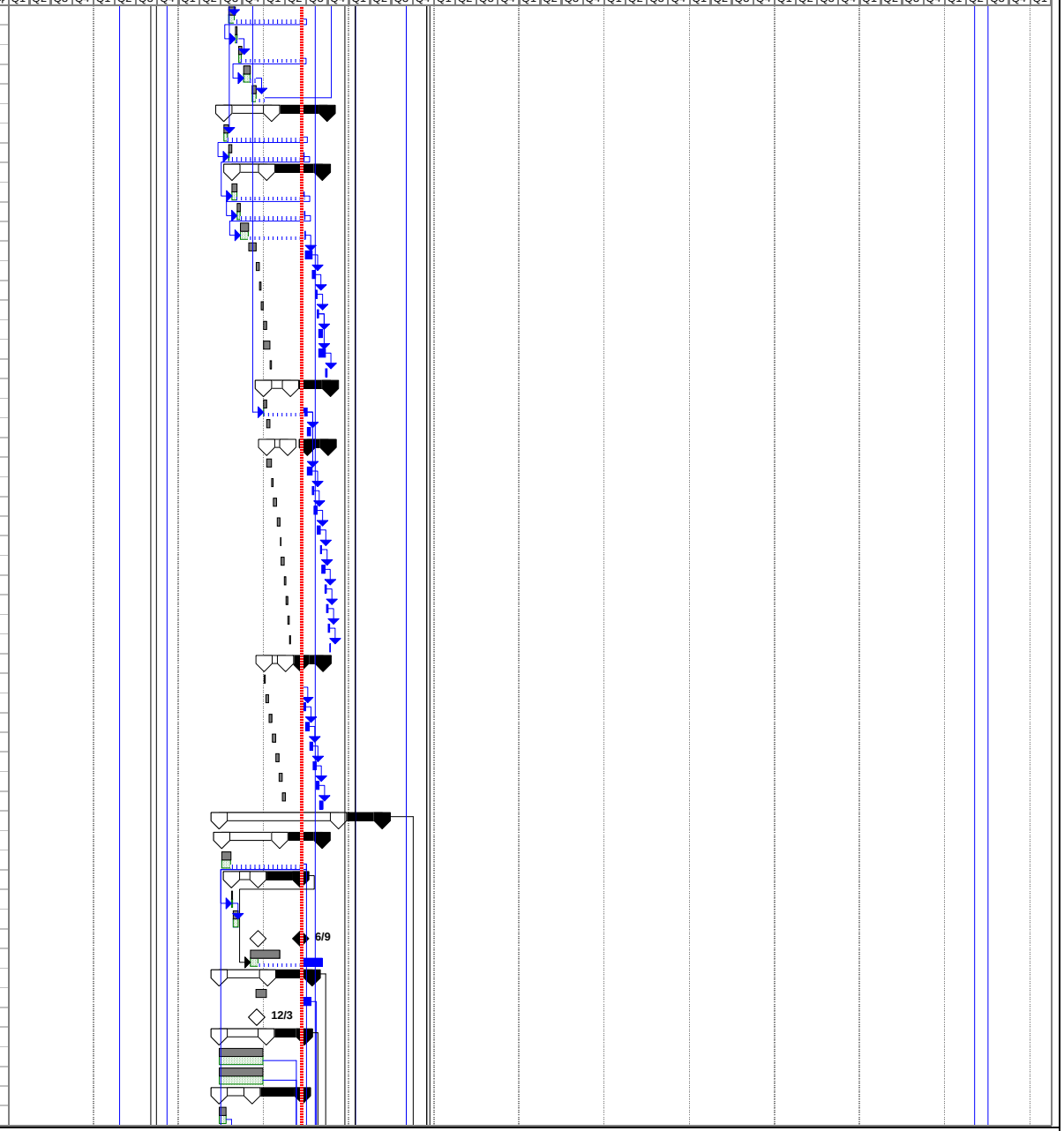
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
107	5.2.1.1.2.3.6	Testing (stand alone)	8/6/03	6/11/04	8%
108	5.2.1.1.2.3.7	Mechanical Interface	9/4/03	9/17/03	50%
109	5.2.1.1.2.3.8	Documentation	9/18/03	6/10/04	15%
110	5.2.1.1.2.4	Fabrication	10/9/03	12/1/03	54%
111	5.2.1.1.2.5	Assembly and Test	11/14/03	1/8/04	29%
112	**5.2.1.1.3**	**AC Box**	**7/16/03**	**10/1/04**	**13%**
113	5.2.1.1.3.1	Design (Assy. Dwg.)	7/16/03	6/14/04	5%
114	5.2.1.1.3.2	Mechanical Details (drawings)	8/6/03	6/24/04	1%
115	**5.2.1.1.3.3**	**AC Box Board Prototype**	**8/20/03**	**9/10/04**	**20%**
116	5.2.1.1.3.3.1	Design	8/20/03	6/25/04	7%
117	5.2.1.1.3.3.2	schematic	9/11/03	6/28/04	15%
118	5.2.1.1.3.3.3	Layout	9/25/03	6/29/04	44%
119	5.2.1.1.3.3.4.	PCB Fabrication	6/29/04	7/29/04	0%
120	5.2.1.1.3.3.5	Assembly	7/29/04	8/12/04	0%
121	5.2.1.1.3.3.6	Testing (stand alone)	8/12/04	8/19/04	0%
122	5.2.1.1.3.3.7	Mechanical Interface	8/19/04	8/26/04	0%
123	5.2.1.1.3.3.8	Documentation	8/26/04	9/10/04	0%
124	5.2.1.1.3.4	Fabrication	8/26/04	9/24/04	0%
125	5.2.1.1.3.5	Assembly and Test	9/24/04	10/1/04	0%
126	**5.2.1.1.4**	**RF/IF BOX**	**1/2/04**	**10/15/04**	**6%**
127	5.2.1.1.4.1	Design (Assy. Dwg.)	1/2/04	7/8/04	10%
128	5.2.1.1.4.2	Mechanical Details (drawings)	7/8/04	7/22/04	0%
129	**5.2.1.1.4.3**	**RF/IF Box Board Prototype**	**7/8/04**	**10/5/04**	**0%**
130	5.2.1.1.4.3.1	Design	7/8/04	7/29/04	0%
131	5.2.1.1.4.3.2	schematic	7/29/04	8/5/04	0%
132	5.2.1.1.4.3.3	Layout	8/5/04	8/19/04	0%
133	5.2.1.1.4.3.4.	PCB Fabrication	8/19/04	9/2/04	0%
134	5.2.1.1.4.3.5	Assembly	9/2/04	9/7/04	0%
135	5.2.1.1.4.3.6	Testing (stand alone)	9/7/04	9/21/04	0%
136	5.2.1.1.4.3.7	Mechanical Interface	9/21/04	9/28/04	0%
137	5.2.1.1.4.3.8	Documentation	9/28/04	10/5/04	0%
138	5.2.1.1.4.4	Fabrication	10/5/04	10/12/04	0%
139	5.2.1.1.4.5	Assembly and Test	10/12/04	10/15/04	0%
140	**5.2.1.1.5**	**Front-end Cabling**	**6/10/04**	**9/13/04**	**0%**
141	5.2.1.1.5.1	Cabling Diagram	6/10/04	6/16/04	0%
142	5.2.1.1.5.2	Cable, CC to Dewar	6/17/04	6/30/04	0%
143	5.2.1.1.5.3	Cable, CC to RF/IF Box	7/1/04	7/16/04	0%
144	5.2.1.1.5.4	Cable, CC to AC Box	7/19/04	7/30/04	0%
145	5.2.1.1.5.5	Cable, CC to Vac Sensors	8/2/04	8/13/04	0%
146	5.2.1.1.5.6	Cable, AC Box to Solenoid	8/16/04	8/27/04	0%
147	5.2.1.1.5.7	Cable, AC Box to Fridge	8/30/04	9/13/04	0%
148	**5.2.1.2**	**Front-end Rack**	**6/26/03**	**5/25/05**	**38%**
149	**5.2.1.2.1**	**Rack Mechanical**	**7/7/03**	**9/9/04**	**22%**
150	5.2.1.2.2	Design Prototype	7/7/03	6/11/04	12%
151	**5.2.1.2.3**	**Prototype Assembly/Integration/Test**	**8/18/03**	**6/9/04**	**99%**
152	2.1.2.1.2.1	Mechanical Fit	8/18/03	8/22/03	100%
153	2.1.2.1.2.2	Temperary Bin/Analog Supply Wirin	8/25/03	9/15/03	100%
154	2.1.2.1.2.3	Doors and Side Panels Installed	6/9/04	6/9/04	0%
155	5.2.1.2.4	Design Production Unit	11/7/03	9/9/04	25%
156	**5.2.1.2.2**	**EVLA Transition Bin**	**6/26/03**	**7/28/04**	**61%**
157	2.1.2.2.1	Bin Wiring	6/10/04	7/23/04	0%
158	2.1.2.2.2	P301 (w/28V) Required	12/3/03	12/3/03	100%
159	**5.2.1.2.3**	**F320 FE Interface Transition Module**	**6/26/03**	**6/25/04**	**63%**
160	5.2.1.2.3.1	Design (Assembly Drawing)	6/26/03	12/30/03	100%
161	5.2.1.2.3.2	Machanical Details (drawings)	6/26/03	12/30/03	100%
162	**5.2.1.2.3.3**	**F320 FE Transition Interface Boar**	**6/26/03**	**6/17/04**	**43%**
163	5.2.1.2.3.3.1	Design	6/26/03	7/25/03	100%



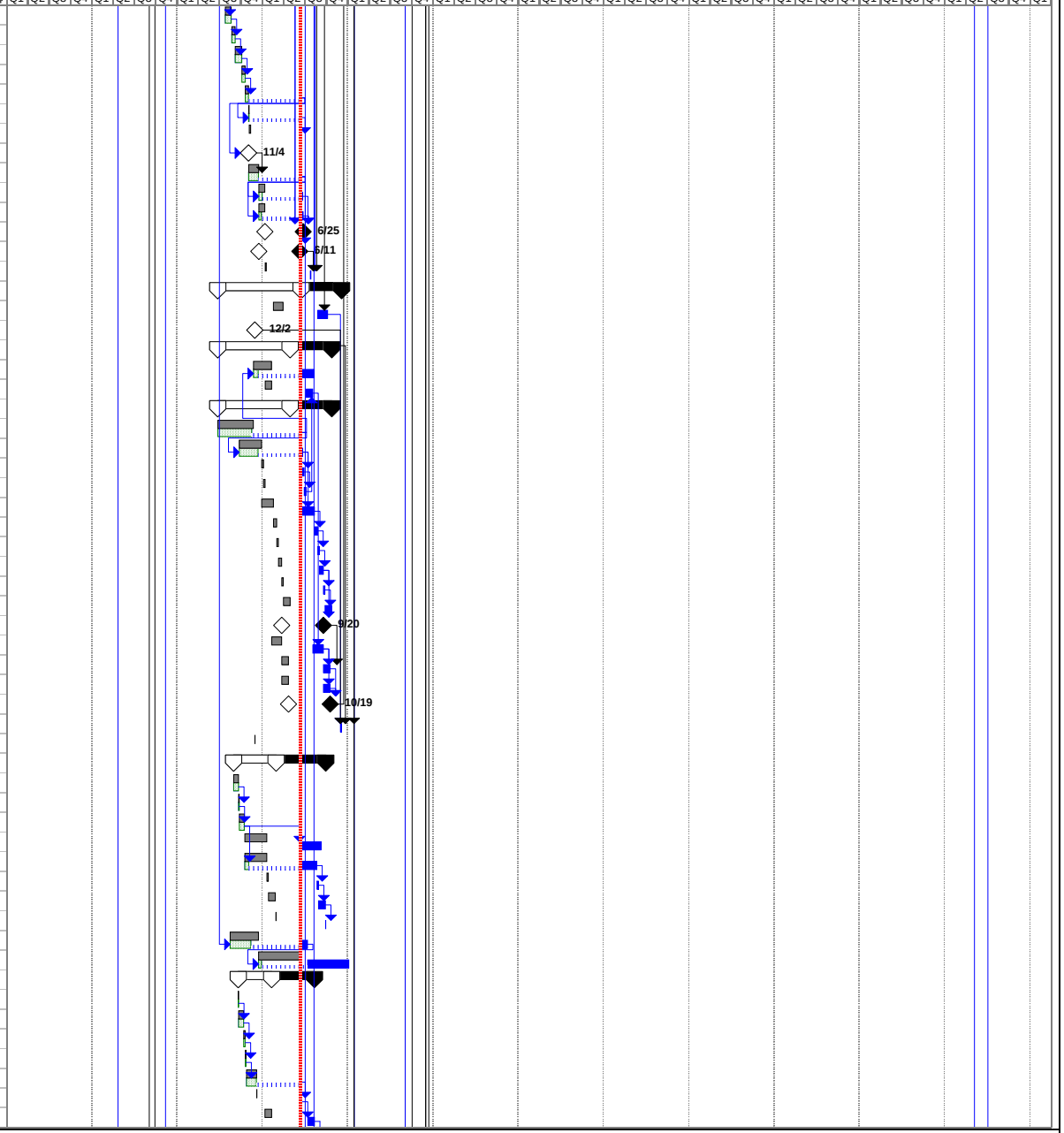
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

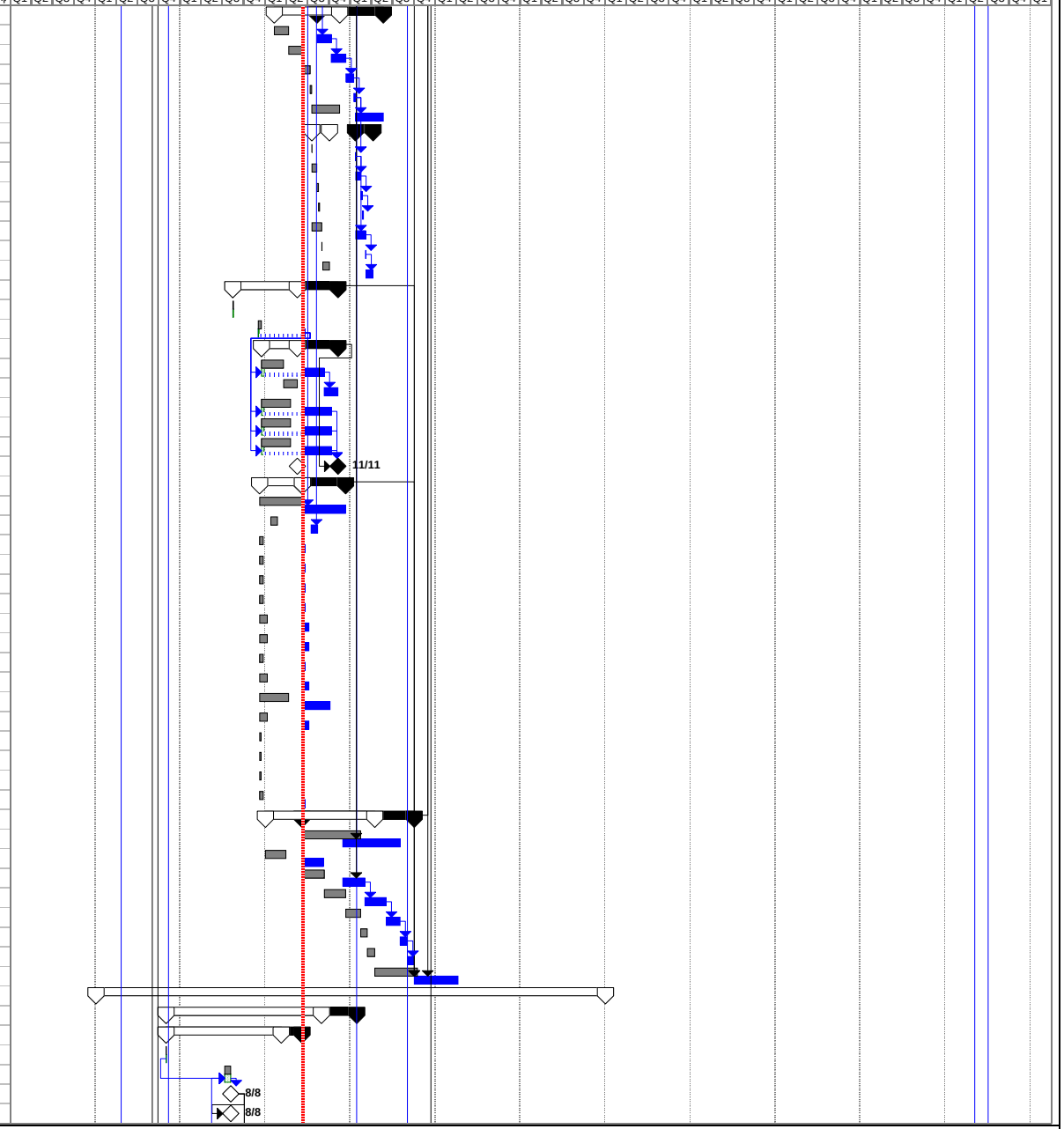
ID	WBS	Task Name	Start	Finish	% Comp
164	5.2.1.2.3.3.2	schematic	7/28/03	8/22/03	100%
165	5.2.1.2.3.3.3	Layout	8/25/03	9/8/03	100%
166	5.2.1.2.3.3.4	PCB Fabrication	9/9/03	10/6/03	100%
167	5.2.1.2.3.3.5	Assembly	10/7/03	10/21/03	100%
168	5.2.1.2.3.3.6	Testing (stand alone)	10/22/03	6/10/04	40%
169	5.2.1.2.3.3.7	Mechanical Interface	11/5/03	6/10/04	17%
170	5.2.1.2.3.3.8	Documentation	6/10/04	6/17/04	0%
171	5.2.1.2.3.4	MIB Available	11/4/03	11/4/03	100%
172	5.2.1.2.3.5	Fabrication	11/5/03	6/11/04	95%
173	5.2.1.2.3.6	Assembly and Test	12/19/03	6/22/04	50%
174	5.2.1.2.3.7	Initial Preliminary MIB Software	12/19/03	6/25/04	30%
175	5.2.1.2.3.8	F320 Available for Bin	6/25/04	6/25/04	0%
176	2.1.2.2.4	F14s(2) Required	6/11/04	6/11/04	0%
177	2.1.2.2.5	Bin Intstalled in Rack	7/26/04	7/28/04	0%
178	**5.2.1.2.4**	**EVLA BIN**	**6/26/03**	**12/7/04**	**37%**
179	2.1.2.3.1	Bin Wiring	8/27/04	10/8/04	0%
180	2.1.2.3.2	P301 Power Supply Available	12/2/03	12/2/03	95%
181	**5.2.1.2.5**	**F317 FE Interface Module**	**6/26/03**	**10/26/04**	**38%**
182	5.2.1.2.5.1	Design (Assembly Drawing)	11/26/03	8/11/04	25%
183	5.2.1.2.5.2	Machanical Details (drawings)	7/9/04	8/6/04	0%
184	**5.2.1.2.5.3**	**F317 FE Transition Interface Boar**	**6/26/03**	**10/26/04**	**49%**
185	5.2.1.2.5.3.1	Design	6/26/03	6/17/04	41%
186	5.2.1.2.5.3.2	schematic	9/26/03	6/23/04	85%
187	2.1.2.3.3.3.3	Complete BoM	6/23/04	6/30/04	0%
188	2.1.2.3.3.3.4	Order Material	6/30/04	7/9/04	0%
189	5.2.1.2.5.3.3	Layout	6/23/04	8/13/04	0%
190	5.2.1.2.5.3.4	PCB Fabrication	8/13/04	8/27/04	0%
191	5.2.1.2.5.3.5	Assembly	8/27/04	9/3/04	0%
192	5.2.1.2.5.3.6	Testing (stand alone)	9/3/04	9/20/04	0%
193	5.2.1.2.5.3.7	Mechanical Interface	9/20/04	9/27/04	0%
194	5.2.1.2.5.3.8	Documentation	9/27/04	10/26/04	0%
195	5.2.1.2.5.4	MIB Required	9/20/04	9/20/04	0%
196	5.2.1.2.5.5	Fabrication	8/6/04	9/20/04	0%
197	5.2.1.2.5.6	Assembly and Test	9/20/04	10/19/04	0%
198	5.2.1.2.5.7	Initial PreliminaryMIB Software	9/20/04	10/19/04	0%
199	2.1.2.3.3.8	F317 Available for Test w/ Card Cag	10/19/04	10/19/04	0%
200	2.1.2.3.4	Bin Installed in Rack	12/2/04	12/7/04	0%
201	2.1.2.3.5	Utility Module Available	6/10/04	6/10/04	0%
202	**5.2.1.2.8**	**Scott -T**	**9/2/03**	**9/30/04**	**21%**
203	2.1.2.4.1	Preliminary Design	9/2/03	9/22/03	100%
204	2.1.2.4.2	Assembly Bench Prototype	9/23/03	9/25/03	100%
205	2.1.2.4.3	Test Bench Prototype	9/26/03	10/17/03	100%
206	2.1.2.4.4	Install Bench Prototype in Ant13	6/10/04	9/9/04	0%
207	2.1.2.4.5	Package for Module Prototype	10/20/03	8/23/04	17%
208	2.1.2.4.6	Review Prototype Designs	8/23/04	8/30/04	0%
209	2.1.2.4.7	Final Prototype Complete and Installed	8/30/04	9/29/04	0%
210	2.1.2.4.8	Begin Production	9/29/04	9/30/04	0%
211	2.1.2.5	Block Diagram	8/18/03	7/14/04	28%
212	5.2.1.2.11	Internal Cabling/Wiring	12/18/03	1/7/05	5%
213	**5.2.1.2.10**	**327 MHz Front-end**	**9/22/03**	**8/13/04**	**85%**
214	2.1.2.7.1	Select FE	9/22/03	9/22/03	100%
215	2.1.2.7.2	Standard Performance Tests	9/23/03	10/14/03	100%
216	2.1.2.7.3	Out of Band Perfromance Tests	10/15/03	10/21/03	100%
217	2.1.2.7.4	Modify to use 28V cals	10/22/03	10/24/03	100%
218	2.1.2.7.5	Fabricate Transitions Cables	10/27/03	6/11/04	95%
219	2.1.2.7.6	Install on Ant13	6/11/04	6/14/04	0%
220	2.1.2.7.7	Test on Ant13	7/15/04	8/13/04	0%



Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

ID	WBS	Task Name	Start	Finish	% Comp
221	**2.1.2.8**	**Improved P/4 Band Cabling Scheme**	**8/13/04**	**5/25/05**	**0%**
222	2.1.2.8.1	Design New P-band Cabling scheme	8/13/04	10/13/04	0%
223	2.1.2.8.2	Order Parts	10/13/04	12/15/04	0%
224	2.1.2.8.3	Fabricate and Test Cables	12/15/04	1/18/05	0%
225	2.1.2.8.4	Install Cables and cable protection	1/18/05	1/25/05	0%
226	2.1.2.8.5	Production Cables	1/25/05	5/25/05	0%
227	**5.2.1.2.9**	**74 MHz Front-end**	**1/25/05**	**4/11/05**	**0%**
228	2.1.2.9.1	Select FE	1/25/05	1/26/05	0%
229	2.1.2.9.2	Standard Performance Tests	1/26/05	2/17/05	0%
230	2.1.2.9.3	Out of Band Perfromance Tests	2/17/05	2/24/05	0%
231	2.1.2.9.4	Modify to use 28V cals	2/24/05	3/1/05	0%
232	2.1.2.9.5	Fabricate Transitions Cables	1/26/05	3/10/05	0%
233	2.1.2.9.6	Install on Ant13	3/10/05	3/11/05	0%
234	2.1.2.9.7	Test on Ant13	3/11/05	4/11/05	0%
235	**5.2.1.3**	**Vacuum Pump Subsystem Interface**	**8/18/03**	**11/11/04**	**8%**
236	5.2.1.3.2	Pump Location and Mounting	8/18/03	8/20/03	100%
237	2.1.3.2	Subsystem Design	12/5/03	6/21/04	20%
238	**5.2.1.3.1**	**Pump Request Box Prototype**	**12/19/03**	**11/11/04**	**8%**
239	2.1.3.3.1	PWB Design, Schematic, & Layout	12/19/03	9/13/04	10%
240	2.1.3.3.2	PWB Fab, Assy, & Test	9/13/04	11/11/04	0%
241	5.2.1.3.3	Cable, AC Service to Pump Req. Box	12/19/03	10/14/04	5%
242	5.2.1.3.4	Cable, Pump Req. Box to Pump	12/19/03	10/14/04	5%
243	5.2.1.3.6	Cables, FE to Pump Reqest Box	12/19/03	10/14/04	5%
244	2.1.3.7	Start Production	11/11/04	11/11/04	0%
245	**5.2.1.4**	**Vertex Room Interface Cabling**	**6/10/04**	**12/14/04**	**0%**
246	5.2.1.4.1	Cable Design (Cabling Diagram)	6/11/04	12/14/04	0%
247	5.2.1.4.2	Cable, FE to F317	7/19/04	8/16/04	0%
248	5.2.1.4.3	Cable, FE to AC Power	6/10/04	6/23/04	0%
249	5.2.1.4.4	Cable, FE to Pump Request	6/10/04	6/23/04	0%
250	5.2.1.4.5	Cable, FE to DC Power Distribution	6/10/04	6/23/04	0%
251	5.2.1.4.6	Cable , F14 to Transition FE's	6/10/04	6/23/04	0%
252	5.2.1.4.7	Cable, 19.2 Hz, LoIF Rack to FE Rack	6/10/04	7/9/04	0%
253	5.2.1.4.8	Cable, 9.6 Hz, LoIF Rack to FE Rack	6/10/04	7/9/04	0%
254	5.2.1.4.9	Cable, AC to FE Rack	6/10/04	6/23/04	0%
255	5.2.1.4.10	Cable, DC to FE Rack	6/10/04	7/9/04	0%
256	5.2.1.4.11	FE DC Distribution	6/10/04	10/8/04	0%
257	5.2.1.4.12	FE AC Dirtribution	6/10/04	7/9/04	0%
258	5.2.1.4.11	Cable, RF, FE Rack to LO/IF Rack	6/10/04	6/16/04	0%
259	5.2.1.4.12	Cable, RF, FE Rack to Vertex Room Blkhd Pa	6/10/04	6/16/04	0%
260	5.2.1.4.13	Cable, MIB (F320/F317) to M&C Rack	6/10/04	6/16/04	0%
261	5.2.1.4.16	Cable, RF, MW&MMW FE's to LO/IF Rack	6/10/04	6/23/04	0%
262	**5.2.1.8**	**Test Fixtures**	**6/10/04**	**10/5/05**	**0%**
263	5.2.1.8.1	Card Cage Test Fixture	12/2/04	8/5/05	0%
264	5.2.1.8.2	Bench Power Supplies	6/10/04	9/9/04	0%
265	5.2.1.8.3	Bias Card Test Fixture	12/2/04	3/7/05	0%
266	5.2.1.8.4	Control Card Test Fixture	3/7/05	6/6/05	0%
267	5.2.1.8.5	Dewar Harness Test Fixture	6/6/05	8/5/05	0%
268	5.2.1.8.6	AC Box Test Fixture	8/5/05	9/6/05	0%
269	5.2.1.8.7	RF/IF Box Board Test Fixture	9/6/05	10/5/05	0%
270	5.2.1.9	Final Documentation	10/5/05	4/11/06	0%
271	**5.2.2**	**Prototype Receivers**	**1/7/02**	**1/4/08**	**27%**
272	**5.2.2.1**	**X-band Transition Rcvr**	**11/4/02**	**1/31/05**	**12%**
273	**5.2.2.1.1**	**Antenna 13**	**11/4/02**	**6/10/04**	**16%**
274	5.2.2.1.1.1	Choose receiver to modify	11/4/02	11/4/02	100%
275	5.2.2.1.1.2	Test X-band prototype	7/14/03	8/8/03	100%
276	5.2.2.1.1.3	X-band transition prototype complete	8/8/03	8/8/03	100%
277	5.2.2.1.1.4	Require Feed	8/8/03	8/8/03	100%



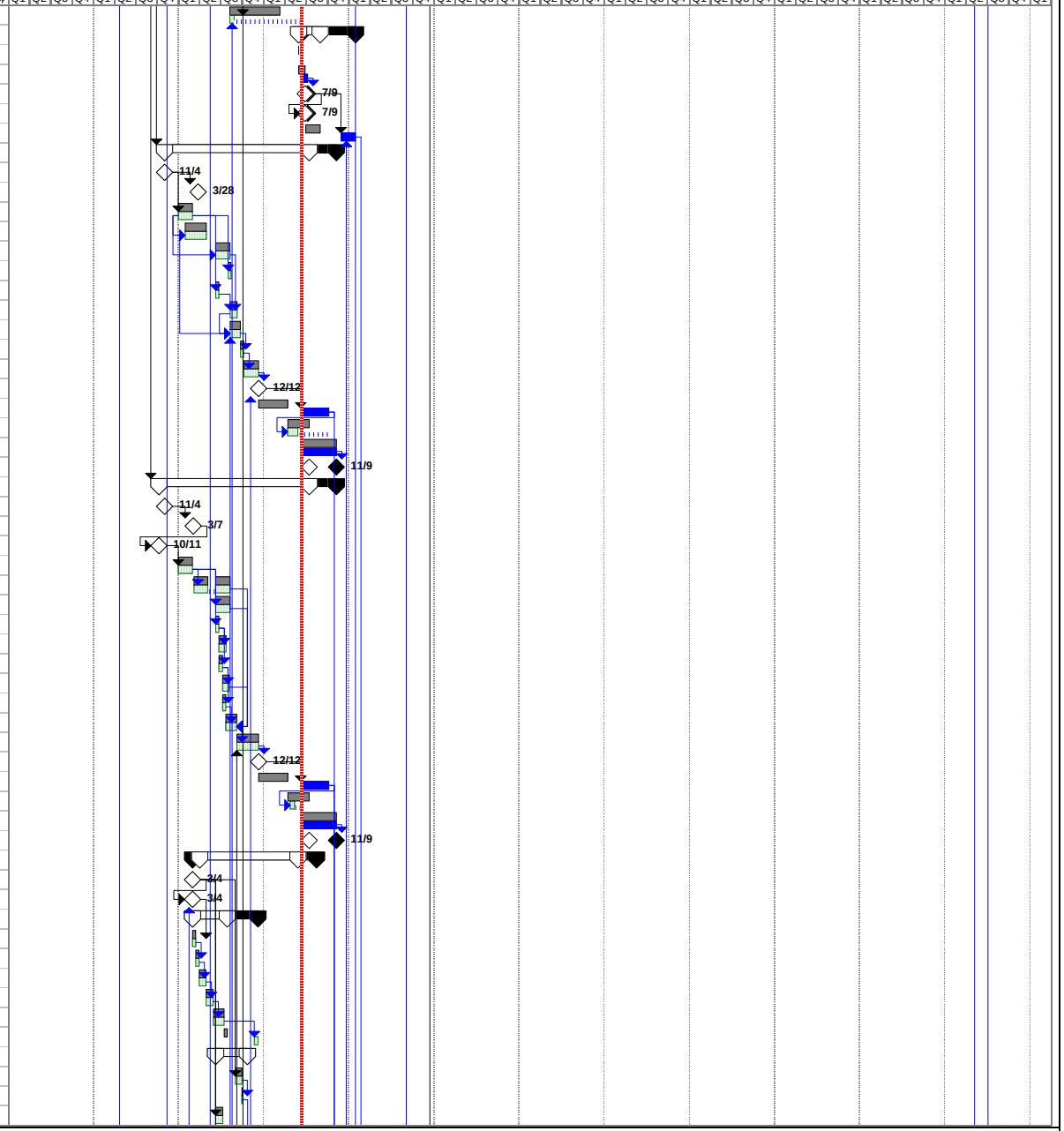
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
278	5.2.2.1.1.5	Test on Antenna with VLA Feed	8/11/03	6/10/04	7%
279	**5.2.2.1.2**	**2nd Test Antenna**	**6/10/04**	**1/31/05**	**0%**
280	5.2.2.1.2.1	Choose receiver to modify	6/10/04	6/10/04	0%
281	5.2.2.1.2.2	Test X-band FE	6/10/04	7/9/04	0%
282	5.2.2.1.2.3	X-band transition FE complete	7/9/04	7/9/04	0%
283	5.2.2.1.2.4	Require EVLA Feed	7/9/04	7/9/04	0%
284	5.2.2.1.2.5	Test on Ant with EVLA Feed	11/29/04	1/31/05	0%
285	**5.2.2.2**	**K-band Prototype Rcvr**	**11/4/02**	**11/9/04**	**57%**
286	5.2.2.2.1	Choose K-band receiver to modify	11/4/02	11/4/02	100%
287	5.2.2.2.2	Finalize EVLA K-band requirements	3/28/03	3/28/03	100%
288	5.2.2.2.3	Specify & design K-band RF/IF mods	1/2/03	3/3/03	100%
289	5.2.2.2.4	Order K-band components	1/31/03	5/1/03	100%
290	5.2.2.2.5	Design & Fab new dewar top plate	6/11/03	8/11/03	100%
291	5.2.2.2.6	Add Isolators	8/4/03	8/15/03	100%
292	5.2.2.2.7	Remove narrowband components	6/11/03	6/24/03	100%
293	5.2.2.2.8	Evaluate W/G 'tree' components	8/12/03	9/10/03	100%
294	5.2.2.2.9	Assemble prototype K-band Rcvr	8/12/03	9/25/03	100%
295	5.2.2.2.10	Test RF/IF assembly	9/25/03	10/9/03	100%
296	5.2.2.2.11	Lab test K-band prototype	10/9/03	12/12/03	100%
297	5.2.2.2.12	K-band Rcvr prototype complete	12/12/03	12/12/03	100%
298	5.2.2.2.13	Evaluate K-band Rcvr on test antenna	6/10/04	10/8/04	0%
299	5.2.2.2.14	Assemble & test 2nd K-band Rcvr	4/15/04	10/11/04	50%
300	2.2.2.15	Documentation/Test Procedures	6/10/04	11/9/04	0%
301	5.2.2.2.15	Start K-band Rcvr upgrade production	11/9/04	11/9/04	0%
302	**5.2.2.3**	**Q-band Prototype Rcvr**	**10/11/02**	**11/9/04**	**65%**
303	5.2.2.3.1	Choose Q-band receiver to modify	11/4/02	11/4/02	100%
304	5.2.2.3.2	Finalize EVLA Q-band requirements	3/7/03	3/7/03	100%
305	5.2.2.3.3	Decide on Q-band post amps	10/11/02	10/11/02	100%
306	5.2.2.3.4	Specify & design Q-band Rcvr	1/2/03	3/3/03	100%
307	5.2.2.3.5	Order Q-band components	3/10/03	8/11/03	100%
308	5.2.2.3.6	Machine parts	6/11/03	8/11/03	100%
309	5.2.2.3.7	Remove narrowband components	6/11/03	6/24/03	100%
310	5.2.2.3.8	Evaluate W/G components	6/25/03	7/25/03	100%
311	5.2.2.3.9	Measure plzr ellipticity	6/25/03	7/10/03	100%
312	5.2.2.3.10	Install new post amplifiers	7/11/03	8/8/03	100%
313	5.2.2.3.11	Install IF isolators	7/11/03	7/24/03	100%
314	5.2.2.3.12	Assemble prototype Q-band Rcvr	7/25/03	9/9/03	100%
315	5.2.2.3.13	Test & refine Q-band prototype	9/9/03	12/12/03	100%
316	5.2.2.3.14	Q-band Rcvr prototype complete	12/12/03	12/12/03	100%
317	5.2.2.3.15	Evaluate Q-band Rcvr on test antenna	6/10/04	10/8/04	0%
318	5.2.2.3.16	Assemble & test 2nd Q-band Rcvr	4/26/04	6/7/04	50%
319	2.2.3.17	Documentation/ Test Procedures	6/10/04	11/9/04	0%
320	5.2.2.3.17	Start Q-band Rcvr upgrade production	11/9/04	11/9/04	0%
321	**5.2.2.4**	**L-band Transition Rcvr**	**3/4/03**	**8/16/04**	**82%**
322	5.2.2.4.1	Choose L-band receiver to modify	3/4/03	3/4/03	100%
323	5.2.2.4.2	Define L-band circular W/G diameter	3/4/03	3/4/03	100%
324	**5.2.2.4.3**	**Circular w/g transition**	**3/4/03**	**12/9/03**	**100%**
325	5.2.2.4.3.1	Requirements	3/4/03	3/17/03	100%
326	5.2.2.4.3.2	Design	3/18/03	3/31/03	100%
327	5.2.2.4.3.3	Drawings	4/1/03	4/30/03	100%
328	5.2.2.4.3.4	Order material	5/1/03	5/30/03	100%
329	5.2.2.4.3.5	Machine prototype	6/2/03	7/17/03	100%
330	5.2.2.4.3.6	Integration	11/24/03	12/9/03	100%
331	**5.2.2.4.4**	**Hybrid Coupler/Amp Modifications**	**6/11/03**	**10/24/03**	**100%**
332	5.2.2.4.4.1	Repairs and Baseline Testing	9/3/03	10/1/03	100%
333	5.2.2.4.4.2	Determine phase match	10/2/03	10/2/03	100%
334	5.2.2.4.4.3	Order cables	6/11/03	7/11/03	100%



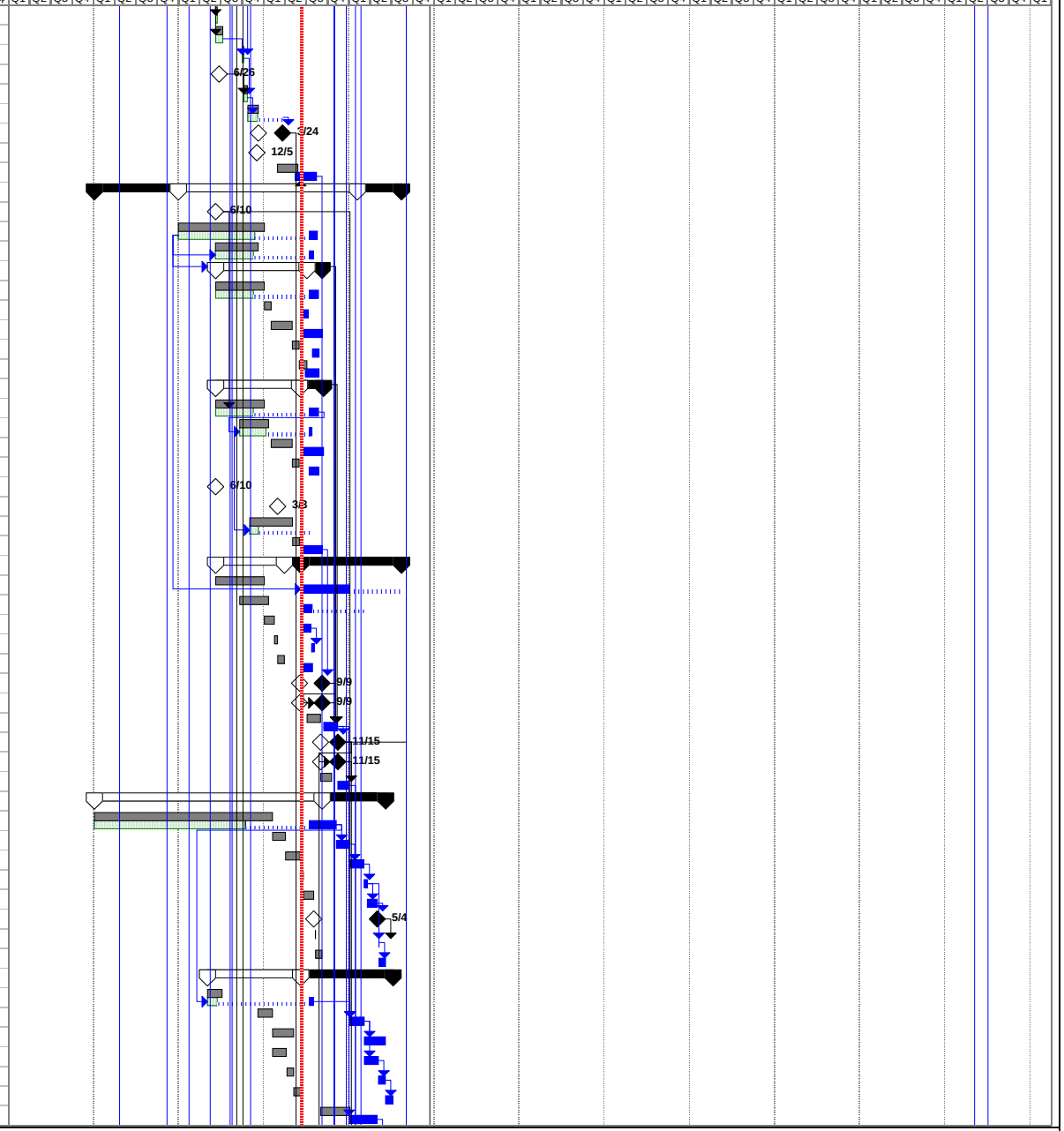
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
335	5.2.2.4.4.4	Design 15K plate modifications	6/11/03	6/17/03	100%
336	5.2.2.4.4.5	Order material	6/11/03	7/11/03	100%
337	5.2.2.4.4.6	Machine prototype plate	10/3/03	10/9/03	100%
338	5.2.2.4.4.7	Receiver new balanced amps	6/26/03	6/26/03	100%
339	5.2.2.4.4.8	Integration	10/10/03	10/24/03	100%
340	5.2.2.4.5	Test & refine L-band prototype	10/27/03	3/25/04	100%
341	5.2.2.4.6	L-band transition Rcvr complete	3/24/04	3/24/04	100%
342	5.2.2.4.7	Require Feed	12/5/03	12/5/03	100%
343	5.2.2.4.8	Testing on Ant13	5/17/04	8/16/04	0%
344	**5.2.2.5**	**C-band Prototype Rcvr**	**1/7/02**	**8/16/05**	**30%**
345	5.2.2.5.1	Require C-band polarizer dimensions	6/10/03	6/10/03	100%
346	5.2.2.5.2	Specify & design C-band Rcvr	1/2/03	8/20/04	55%
347	5.2.2.5.3	Order long lead components	6/10/03	8/4/04	39%
348	**5.2.2.5.4**	**Dewar**	**6/11/03**	**9/9/04**	**25%**
349	5.2.2.5.4.1	Drawings	6/11/03	8/25/04	37%
350	5.2.2.5.4.2	Order material	6/10/04	7/12/04	0%
351	5.2.2.5.4.3	Machining	6/10/04	9/9/04	0%
352	5.2.2.5.4.4	Evaluate/rework	7/30/04	8/27/04	0%
353	5.2.2.5.4.5	Assembly	6/29/04	8/27/04	0%
354	**5.2.2.5.5**	**C-band RF Path**	**6/10/03**	**9/15/04**	**25%**
355	5.2.2.5.5.1	Drawings	6/11/03	8/25/04	37%
356	5.2.2.5.5.2	Order components	9/22/03	7/28/04	36%
357	5.2.2.5.5.3	Machining	6/10/04	9/15/04	0%
358	5.2.2.5.5.4	Evaluation/rework	7/16/04	8/26/04	0%
359	5.2.2.5.5.5	Require LNAs	6/10/03	6/10/03	100%
360	5.2.2.5.5.6	Require Septum Polarizer	3/3/04	3/3/04	100%
361	5.2.2.5.5.7	Evaluate components	11/4/03	7/16/04	14%
362	5.2.2.5.5.8	Assembly	6/10/04	9/9/04	0%
363	**5.2.2.5.6**	**RF Box**	**6/10/04**	**8/16/05**	**0%**
364	5.2.2.5.6.1	Drawings	6/10/04	8/16/05	0%
365	5.2.2.5.6.2	Order components	6/10/04	3/15/05	0%
366	5.2.2.5.6.3	Machining	6/24/04	7/23/04	0%
367	5.2.2.5.6.4	Evaluation/rework	7/26/04	8/6/04	0%
368	5.2.2.5.6.5	Assembly	6/24/04	7/30/04	0%
369	5.2.2.5.7	Require card cage	9/9/04	9/9/04	0%
370	5.2.2.5.8	Require Narrow Band H/C Load	9/9/04	9/9/04	0%
371	5.2.2.5.9	Test & refine C-band prototype	9/16/04	11/15/04	0%
372	5.2.2.5.10	1ST C-band Rcvr prototype complete	11/15/04	11/15/04	0%
373	5.2.2.5.11	Require C-band feed	11/15/04	11/15/04	0%
374	5.2.2.5.12	Evaluate C-band Rcvr on 1st test antenna	11/16/04	12/29/04	0%
375	**5.2.2.5.13**	**C-Band OMT**	**1/7/02**	**6/9/05**	**67%**
376	5.2.2.5.13.1	Design/Analysis	1/7/02	11/9/04	85%
377	5.2.2.5.13.2	Drawings (Prototype)	11/9/04	1/4/05	0%
378	5.2.2.5.13.3	Fab. (Prototype)	1/4/05	3/8/05	0%
379	5.2.2.5.13.4	Bench Test (Prototype)	3/8/05	3/22/05	0%
380	5.2.2.5.13.5	Test (with feed)	3/22/05	5/4/05	0%
381	5.2.2.5.13.6	C-band OMT available for Rcvr test	5/4/05	5/4/05	0%
382	5.2.2.5.13.7	Internal design review	5/11/05	5/12/05	0%
383	5.2.2.5.13.8	Finalize Dwg	5/12/05	6/9/05	0%
384	**5.2.2.5.14**	**Broadband H/C Load (OMT+Hybrid)**	**5/7/03**	**7/11/05**	**6%**
385	5.2.2.5.14.1	Detail design	5/7/03	8/4/04	9%
386	5.2.2.5.14.2	Drawings	1/7/05	3/9/05	0%
387	5.2.2.5.14.3	Order components	3/9/05	6/8/05	0%
388	5.2.2.5.14.4	Machining	3/9/05	5/9/05	0%
389	5.2.2.5.14.5	Evaluation/rework	5/9/05	6/8/05	0%
390	5.2.2.5.14.6	Assembly	6/8/05	7/11/05	0%
391	5.2.2.5.15	2nd C-band prototype complete	1/4/05	5/3/05	0%



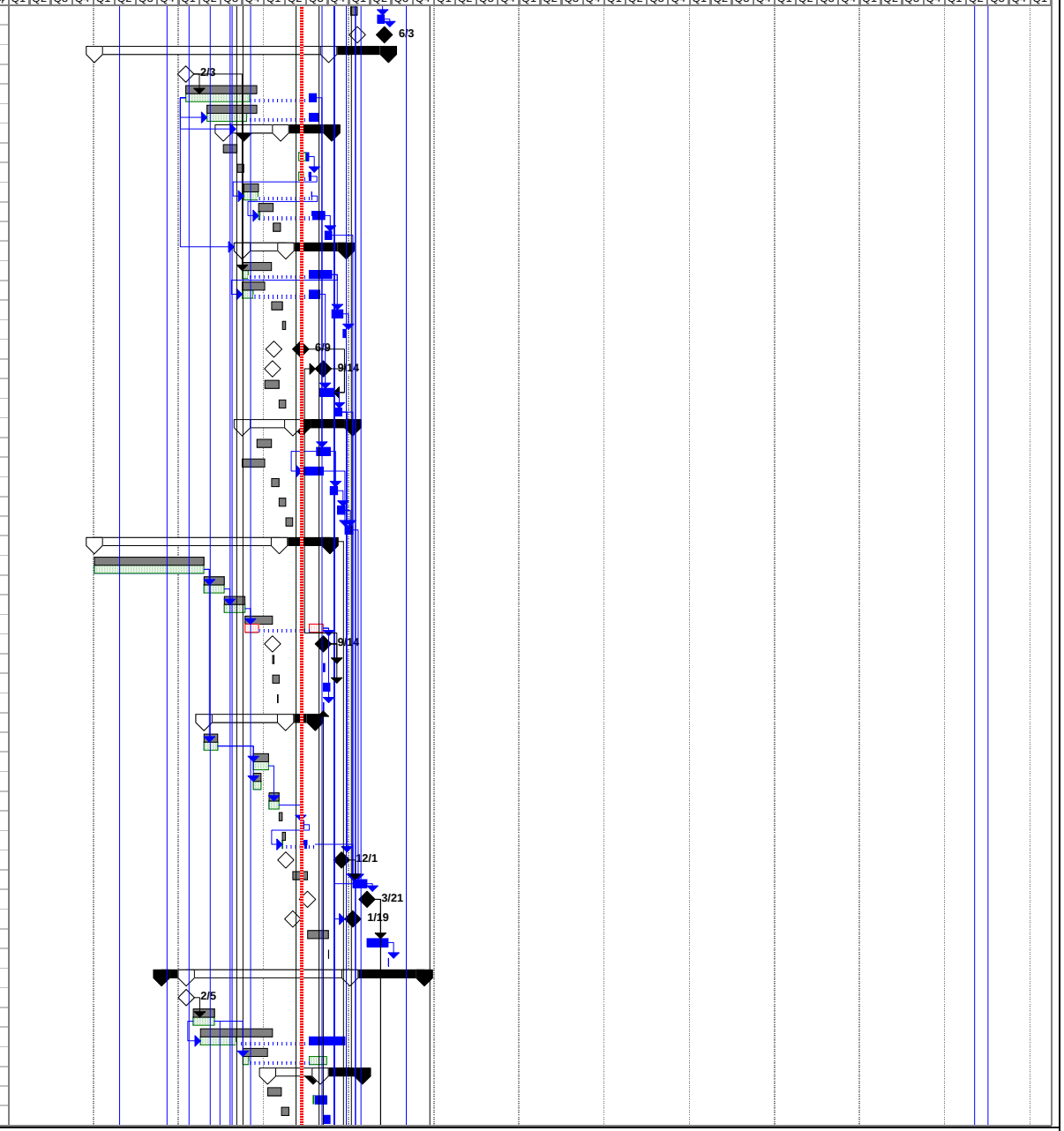
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

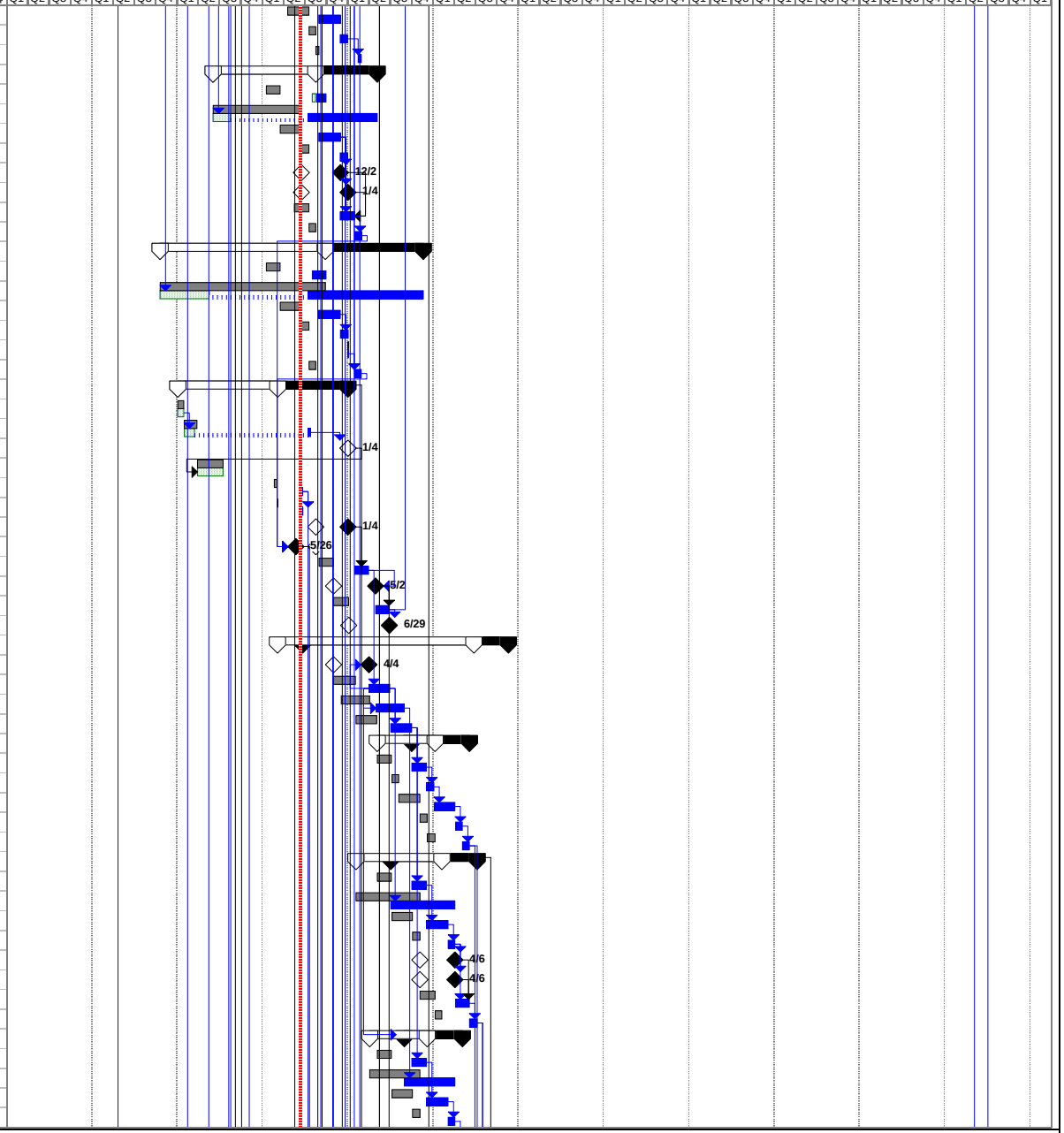
ID	WBS	Task Name	Start	Finish	% Comp
392	5.2.2.5.16	Evaluate C-band Rcvr on 2nd Test Antenna	5/5/05	6/3/05	0%
393	5.2.2.5.17	Start C-band Rcvr Production	6/3/05	6/3/05	0%
394	**5.2.2.6**	**L-band Prototype Rcvr**	**1/7/02**	**6/21/05**	**37%**
395	5.2.2.6.1	Require L-band polarizer dimensions	2/3/03	2/3/03	100%
396	5.2.2.6.2	Specify & design L-band Rcvr	2/3/03	8/16/04	49%
397	5.2.2.6.3	Order long lead components	5/5/03	8/26/04	36%
398	**5.2.2.6.4**	**Dewar**	**10/10/03**	**10/21/04**	**17%**
399	5.2.2.6.4.1	Drawings	6/1/04	7/14/04	75%
400	5.2.2.6.4.2	Order material	6/1/04	7/26/04	39%
401	5.2.2.6.4.3	Machining	10/10/03	7/28/04	20%
402	5.2.2.6.4.4	Evaluate/rework	12/12/03	9/21/04	2%
403	5.2.2.6.4.5	Assembly	9/21/04	10/21/04	0%
404	**5.2.2.6.5**	**L-band RF Path**	**10/3/03**	**12/22/04**	**8%**
405	5.2.2.6.5.1	Drawings	10/3/03	10/21/04	6%
406	5.2.2.6.5.2	Order components	10/3/03	8/30/04	14%
407	5.2.2.6.5.3	Machining	10/21/04	12/8/04	0%
408	5.2.2.6.5.4	Evaluation/rework	12/8/04	12/22/04	0%
409	5.2.2.6.5.5	Require LNAs	6/9/04	6/9/04	0%
410	5.2.2.6.5.6	Require quad-ridge OMT	9/14/04	9/14/04	0%
411	5.2.2.6.5.7	Evaluate components	8/31/04	10/29/04	0%
412	5.2.2.6.5.8	Assembly	11/1/04	12/1/04	0%
413	**5.2.2.6.6**	**RF Box**	**6/15/04**	**1/19/05**	**0%**
414	5.2.2.6.6.1	Drawings	8/16/04	10/14/04	0%
415	5.2.2.6.6.2	Order components	6/15/04	9/15/04	0%
416	5.2.2.6.6.3	Machining	10/14/04	11/15/04	0%
417	5.2.2.6.6.4	Evaluation/rework	11/15/04	12/16/04	0%
418	5.2.2.6.6.5	Assembly	12/16/04	1/19/05	0%
419	**5.2.2.6.7**	**L-Band OMT**	**1/7/02**	**10/13/04**	**88%**
420	5.2.2.6.7.1	Design/Analysis	1/7/02	4/21/03	100%
421	5.2.2.6.7.2	Drawings (Prototype)	4/22/03	7/17/03	100%
422	5.2.2.6.7.3	Fab. (Prototype Qty. 2 ea.)	7/18/03	10/14/03	100%
423	5.2.2.6.7.4	Bench Test (Prototype)	10/15/03	9/14/04	50%
424	5.2.2.6.7.5	L-band OMT available for Rcvr test	9/14/04	9/14/04	0%
425	5.2.2.6.7.6	Design Review (Internal)	9/14/04	9/21/04	0%
426	5.2.2.6.7.7	Fixtures & Finalize Dwg	9/14/04	10/13/04	0%
427	5.2.2.6.7.8	Test OMT with Feed	9/14/04	9/17/04	0%
428	**5.2.2.6.8**	**Broadband H/C Load (OMT+Hybrid)**	**4/22/03**	**8/10/04**	**57%**
429	5.2.2.6.8.1	Detail design	4/22/03	6/19/03	100%
430	5.2.2.6.8.2	Drawings	11/20/03	1/23/04	100%
431	5.2.2.6.8.3	Order components	11/20/03	12/22/03	100%
432	5.2.2.6.8.4	Machining	1/26/04	3/8/04	100%
433	5.2.2.6.8.5	Evaluation/rework	6/10/04	6/23/04	0%
434	5.2.2.6.8.6	Assembly	3/23/04	8/10/04	3%
435	5.2.2.6.9	Require card cage (VLA Style)	12/1/04	12/1/04	0%
436	5.2.2.6.10	Test & refine L-band prototype	1/19/05	3/21/05	0%
437	5.2.2.6.11	1st L-band prototype complete	3/21/05	3/21/05	0%
438	5.2.2.6.12	Require L-band feed	1/19/05	1/19/05	0%
439	5.2.2.6.13	Evaluate L-Band Rcvr on 2nd Test Ant	3/21/05	6/20/05	0%
440	5.2.2.6.14	Start L-band Rcvr Production	6/20/05	6/21/05	0%
441	**5.2.2.7**	**Ka-band Prototype Rcvr**	**10/22/02**	**11/22/05**	**35%**
442	5.2.2.7.1	Require Ka-band polarizer dimensions	2/5/03	2/5/03	100%
443	5.2.2.7.2	Specify & design Ka-band Rcvr	3/7/03	6/5/03	100%
444	5.2.2.7.3	Order long lead components	4/7/03	12/16/04	25%
445	5.2.2.7.4	Prelim Dwgs to Drafting	10/6/03	9/29/04	100%
446	**5.2.2.7.5**	**Dewar**	**8/2/04**	**3/1/05**	**3%**
447	5.2.2.7.5.1	Drawings	8/2/04	9/29/04	10%
448	5.2.2.7.5.2	Order material	9/15/04	10/13/04	0%



Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

ID	WBS	Task Name	Start	Finish	% Comp
449	5.2.2.7.5.3	Machining	9/1/04	12/2/04	0%
450	5.2.2.7.5.4	Evaluate/rework	12/1/04	12/31/04	0%
451	5.2.2.7.5.5	Assembly	2/16/05	3/1/05	0%
452	**5.2.2.7.6**	**Ka-band RF Path**	**6/6/03**	**5/9/05**	**37%**
453	5.2.2.7.6.1	Drawings	8/4/04	10/1/04	25%
454	5.2.2.7.6.2	Order components	6/6/03	5/9/05	50%
455	5.2.2.7.6.3	Machining	9/1/04	12/2/04	0%
456	5.2.2.7.6.4	Evaluation/rework	12/1/04	12/31/04	0%
457	5.2.2.7.6.5	Require LNAs	12/2/04	12/2/04	100%
458	5.2.2.7.6.6	Require OMT & Polarizer	1/4/05	1/4/05	0%
459	5.2.2.7.6.7	Evaluate W/G components	12/1/04	2/1/05	0%
460	5.2.2.7.6.8	Assembly	2/2/05	3/3/05	0%
461	**5.2.2.7.7**	**RF/IF Chain**	**10/22/02**	**11/22/05**	**16%**
462	5.2.2.7.7.1	Drawings	8/4/04	10/1/04	0%
463	5.2.2.7.7.2	Order components	10/22/02	11/22/05	19%
464	5.2.2.7.7.3	Machining	8/31/04	12/1/04	0%
465	5.2.2.7.7.4	Evaluation/rework	12/2/04	1/4/05	0%
466	2.2.7.7.5	Require Ka DCM	1/4/05	1/4/05	0%
467	5.2.2.7.7.5	Assembly	1/31/05	3/1/05	0%
468	**5.2.2.7.8**	**Ka-Band Polarizer**	**1/6/03**	**1/4/05**	**87%**
469	5.2.2.7.8.1	Design/Analysis	1/6/03	1/31/03	100%
470	5.2.2.7.8.2	Drawings (Prototype)	2/3/03	7/28/04	80%
471	2.2.7.8.3	Require OMT & Phase Shifter	1/4/05	1/4/05	0%
472	5.2.2.7.8.3	Fab. (Prototype)	3/31/03	7/18/03	100%
473	5.2.2.7.8.4	Bench Test (Prototype)	6/10/04	6/23/04	0%
474	5.2.2.7.8.5	Test (with feed)	6/24/04	6/24/04	0%
475	5.2.2.7.9	Require card cage	1/4/05	1/4/05	0%
476	5.2.2.7.10	Require Ka-band feed	5/26/04	5/26/04	100%
477	5.2.2.7.11	Test & refine Ka-band prototype	2/2/05	4/1/05	0%
478	5.2.2.7.12	1st Ka-band Rcvr prototype complete	5/2/05	5/2/05	0%
479	5.2.2.7.13	Evaluate Ka-band Rcvr 3rd EVLA Ant	5/2/05	6/29/05	0%
480	5.2.2.7.14	Start Ka-band Rcvr production	6/29/05	6/29/05	0%
481	**5.2.2.8**	**Ku-band Prototype Rcvr**	**6/24/04**	**11/21/06**	**0%**
482	5.2.2.8.1	Require Ku-band polarizer dimensions	4/4/05	4/4/05	0%
483	5.2.2.8.2	Specify & design Ku-band Rcvr	4/4/05	7/1/05	0%
484	5.2.2.8.3	Order long lead components	5/4/05	9/1/05	0%
485	5.2.2.8.4	Prelim Dwgs to Drafting	7/6/05	10/3/05	0%
486	**5.2.2.8.5**	**Dewar**	**10/4/05**	**6/7/06**	**0%**
487	5.2.2.8.5.1	Drawings	10/4/05	12/5/05	0%
488	5.2.2.8.5.2	Order material	12/6/05	1/6/06	0%
489	5.2.2.8.5.3	Machining	1/9/06	4/6/06	0%
490	5.2.2.8.5.4	Evaluate/rework	4/10/06	5/8/06	0%
491	5.2.2.8.5.5	Assembly	5/9/06	6/7/06	0%
492	**5.2.2.8.6**	**Ku-band RF Path**	**7/6/05**	**7/10/06**	**0%**
493	5.2.2.8.6.1	Drawings	10/4/05	12/5/05	0%
494	5.2.2.8.6.2	Order components	7/6/05	4/6/06	0%
495	5.2.2.8.6.3	Machining	12/6/05	3/8/06	0%
496	5.2.2.8.6.4	Evaluation/rework	3/9/06	4/6/06	0%
497	5.2.2.8.6.5	Require LNAs	4/6/06	4/6/06	0%
498	5.2.2.8.6.6	Require OMT+PS+trans	4/6/06	4/6/06	0%
499	5.2.2.8.6.7	Evaluate W/G components	4/10/06	6/7/06	0%
500	5.2.2.8.6.8	Assembly	6/8/06	7/10/06	0%
501	**5.2.2.8.7**	**RF/IF Box**	**9/2/05**	**5/8/06**	**0%**
502	5.2.2.8.7.1	Drawings	10/4/05	12/5/05	0%
503	5.2.2.8.7.2	Order components	9/2/05	4/6/06	0%
504	5.2.2.8.7.3	Machining	12/6/05	3/8/06	0%
505	5.2.2.8.7.4	Evaluation/rework	3/9/06	4/6/06	0%



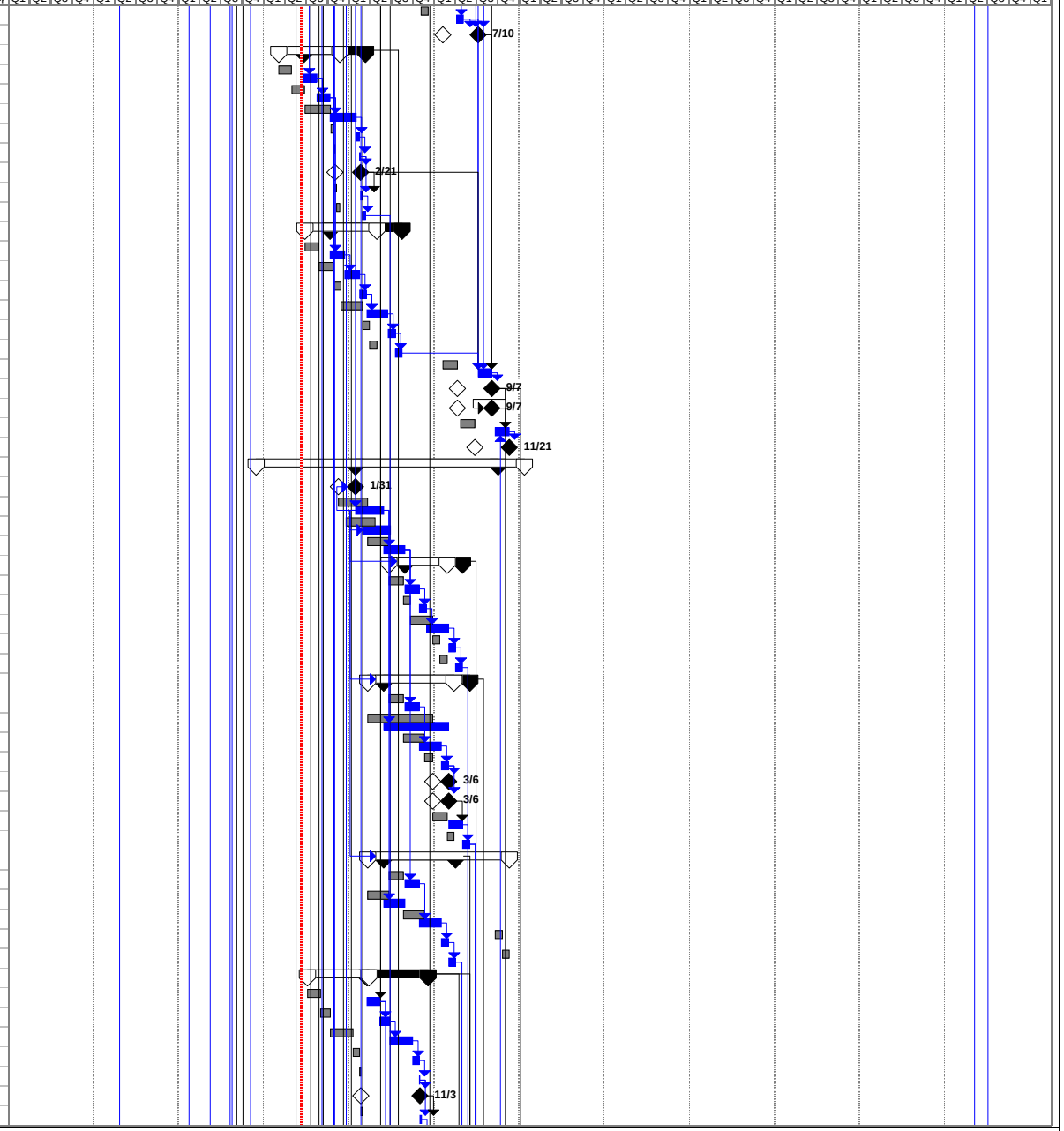
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

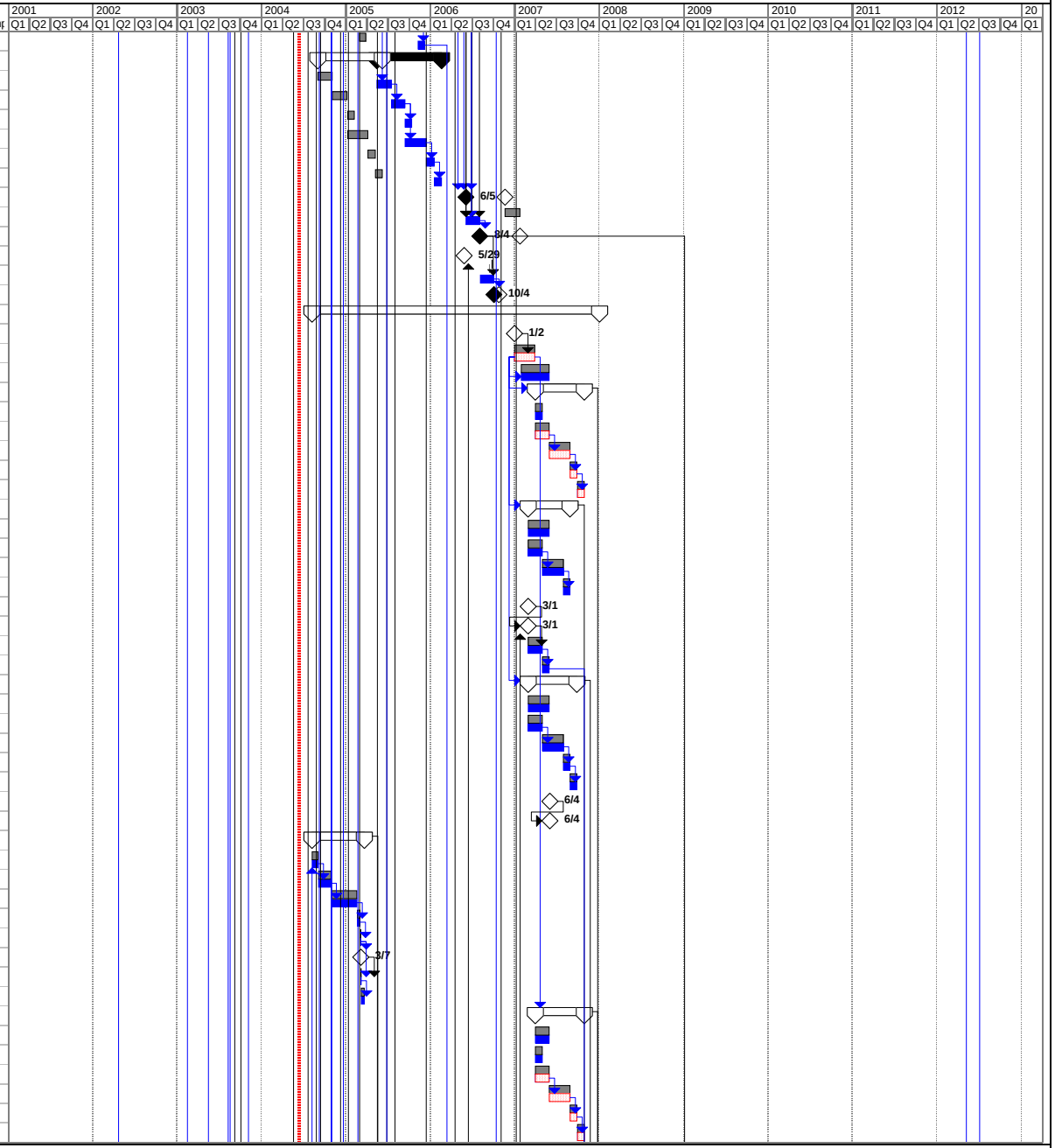
ID	WBS	Task Name	Start	Finish	% Comp
506	5.2.2.8.7.5	Assembly	4/10/06	5/8/06	0%
507	5.2.2.8.8	Require card cage	7/10/06	7/10/06	0%
508	**5.2.2.8.9**	**Ku-Band Polarizer**	**6/24/04**	**3/14/05**	**0%**
509	5.2.2.8.9.1	Design/Analysis	6/24/04	8/18/04	0%
510	5.2.2.8.9.2	Drawings (Prototype)	8/19/04	10/13/04	0%
511	5.2.2.8.9.3	Fab. (Prototype)	10/14/04	2/2/05	0%
512	5.2.2.8.9.4	Bench Test (Prototype)	2/3/05	2/16/05	0%
513	5.2.2.8.9.5	Test (with feed)	2/17/05	2/21/05	0%
514	5.2.2.8.9.6	Available for Rcvr Test	2/21/05	2/21/05	0%
515	5.2.2.8.9.7	Design Review (Internal)	2/22/05	2/28/05	0%
516	5.2.2.8.9.8	Finalize Dwg	3/1/05	3/14/05	0%
517	**5.2.2.8.10**	**Broadband H/C Load (OMT+Hybrid)**	**10/14/04**	**8/18/05**	**0%**
518	5.2.2.8.10.1	Detail design	10/14/04	12/15/04	0%
519	5.2.2.8.10.2	Drawings	12/16/04	2/17/05	0%
520	5.2.2.8.10.3	Order components	2/18/05	3/18/05	0%
521	5.2.2.8.10.4	Machining	3/21/05	6/17/05	0%
522	5.2.2.8.10.5	Evaluation/rework	6/20/05	7/20/05	0%
523	5.2.2.8.10.6	Assembly	7/21/05	8/18/05	0%
524	5.2.2.8.11	Test & refine Ku-band prototype	7/11/06	9/7/06	0%
525	5.2.2.8.12	1st Ku-band Rcvr prototype complete	9/7/06	9/7/06	0%
526	5.2.2.8.13	Require Ku-band feed	9/7/06	9/7/06	0%
527	5.2.2.8.14	Evaluate Ku-band Rcvr on test antenna	9/22/06	11/21/06	0%
528	5.2.2.8.15	Start Ku-band Rcvr upgrade production	11/21/06	11/21/06	0%
529	**5.2.2.9**	**S-band Prototype Rcvr**	**1/31/05**	**10/4/06**	**0%**
530	5.2.2.9.1	Require S-band polarizer dimensions	1/31/05	1/31/05	0%
531	5.2.2.9.2	Specify & design S-band Rcvr	1/31/05	5/31/05	0%
532	5.2.2.9.3	Order long lead components	3/2/05	6/29/05	0%
533	5.2.2.9.4	Prelim Dwgs to Drafting	6/1/05	8/30/05	0%
534	**5.2.2.9.5**	**Dewar**	**8/31/05**	**5/4/06**	**0%**
535	5.2.2.9.5.1	Drawings	8/31/05	10/31/05	0%
536	5.2.2.9.5.2	Order material	11/1/05	12/1/05	0%
537	5.2.2.9.5.3	Machining	12/2/05	3/6/06	0%
538	5.2.2.9.5.4	Evaluate/rework	3/7/06	4/4/06	0%
539	5.2.2.9.5.5	Assembly	4/5/06	5/4/06	0%
540	**5.2.2.9.6**	**S-band RF Path**	**6/1/05**	**6/5/06**	**0%**
541	5.2.2.9.6.1	Drawings	8/31/05	10/31/05	0%
542	5.2.2.9.6.2	Order components	6/1/05	3/6/06	0%
543	5.2.2.9.6.3	Machining	11/1/05	2/2/06	0%
544	5.2.2.9.6.4	Evaluation/rework	2/3/06	3/6/06	0%
545	5.2.2.9.6.5	Require LNAs	3/6/06	3/6/06	0%
546	5.2.2.9.6.6	Require quad-ridge OMT	3/6/06	3/6/06	0%
547	5.2.2.9.6.7	Evaluate components	3/7/06	5/4/06	0%
548	5.2.2.9.6.8	Assembly	5/5/06	6/5/06	0%
549	**5.2.2.9.7**	**RF Box**	**6/1/05**	**4/4/06**	**0%**
550	5.2.2.9.7.1	Drawings	8/31/05	10/31/05	0%
551	5.2.2.9.7.2	Order components	6/1/05	8/30/05	0%
552	5.2.2.9.7.3	Machining	11/1/05	2/2/06	0%
553	5.2.2.9.7.4	Evaluation/rework	2/3/06	3/6/06	0%
554	5.2.2.9.7.5	Assembly	3/7/06	4/4/06	0%
555	**5.2.2.9.8**	**S-Band OMT**	**3/21/05**	**12/8/05**	**0%**
556	5.2.2.9.8.1	Design/Analysis	3/21/05	5/16/05	0%
557	5.2.2.9.8.2	Drawings (Prototype)	5/16/05	6/27/05	0%
558	5.2.2.9.8.3	Fab. (Prototype)	6/27/05	10/3/05	0%
559	5.2.2.9.8.4	Bench Test (Prototype)	10/3/05	10/31/05	0%
560	5.2.2.9.8.5	Test (with feed)	10/31/05	11/3/05	0%
561	5.2.2.9.8.6	Available for Rcvr Test	11/3/05	11/3/05	0%
562	5.2.2.9.8.7	Design Review (Internal)	11/3/05	11/10/05	0%



Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

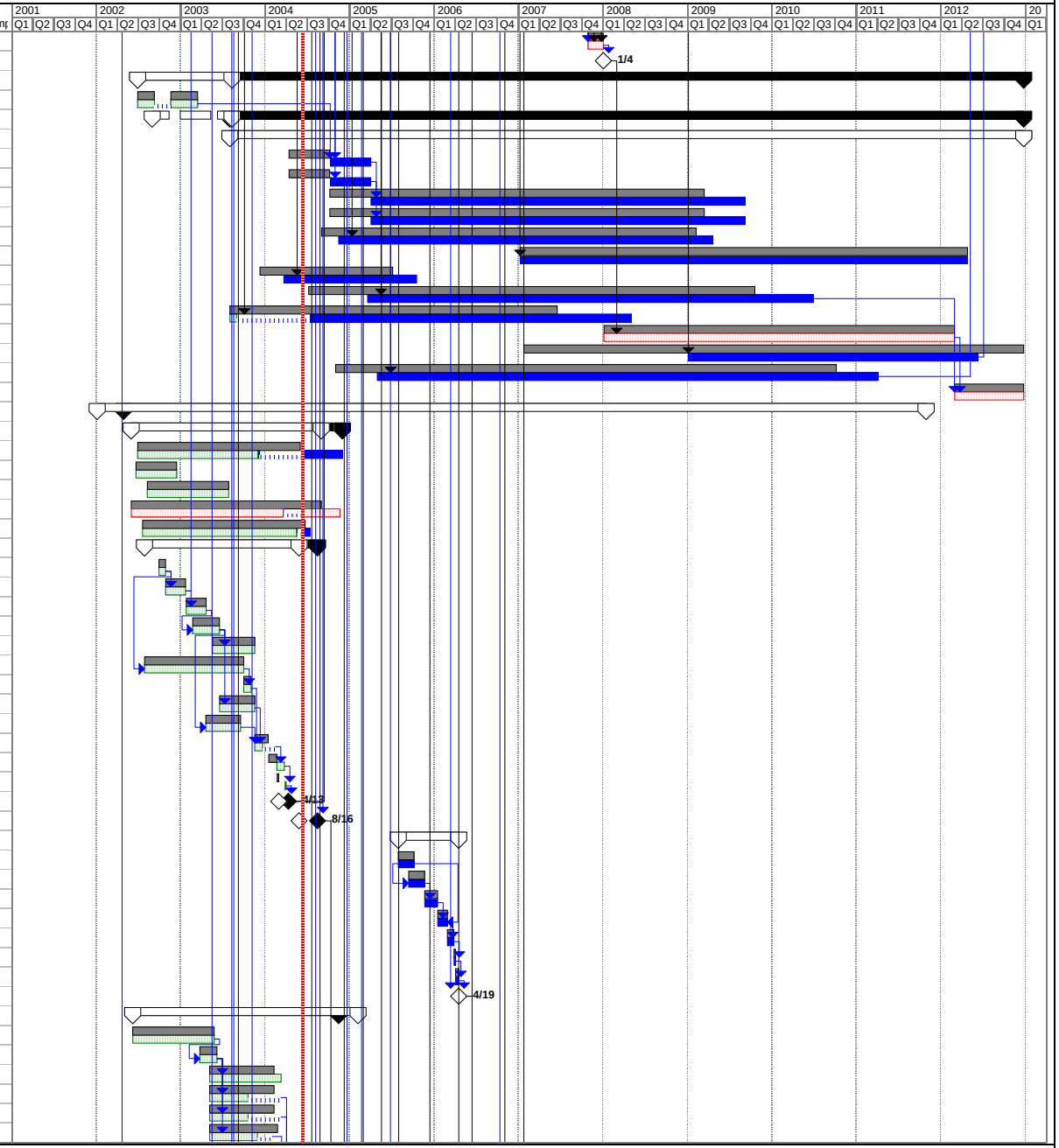
ID	WBS	Task Name	Start	Finish	% Comp
563	5.2.2.9.8.8	Fixtures & Finalize Dwg	11/10/05	12/8/05	0%
564	**5.5.2.9.9**	**Broadband H/C Load (OMT+Hybrid)**	**5/16/05**	**2/20/06**	**0%**
565	5.5.2.9.9.1	Detail design	5/16/05	7/18/05	0%
566	5.5.2.9.9.2	Drawings	7/18/05	9/15/05	0%
567	5.5.2.9.9.3	Order components	9/15/05	10/14/05	0%
568	5.5.2.9.9.4	Machining	9/15/05	12/16/05	0%
569	5.5.2.9.9.5	Evaluation/rework	12/16/05	1/19/06	0%
570	5.5.2.9.9.6	Assembly	1/19/06	2/20/06	0%
571	5.2.2.9.10	Require card cage	6/5/06	6/5/06	0%
572	5.5.2.9.11	Test & refine S-band prototype	6/6/06	8/4/06	0%
573	5.5.2.9.12	1st S-band prototype complete	8/4/06	8/4/06	0%
574	5.5.2.9.13	Require S-band feed	5/29/06	5/29/06	0%
575	5.5.2.9.14	Evaluate S-Band Rcvr on Antenna	8/7/06	10/4/06	0%
576	5.5.2.9.15	Start S-Band Rcvr Production	10/4/06	10/4/06	0%
577	**5.2.2.10**	**X-Band Prototype Rcvr**	**8/9/04**	**1/4/08**	**0%**
578	5.2.2.10.1	Require X-band polarizer dimensions	1/2/07	1/2/07	0%
579	5.2.2.10.2	Specify & design X-band Rcvr	1/2/07	3/30/07	0%
580	5.2.2.10.3	Order long lead components	1/31/07	5/31/07	0%
581	**5.2.2.10.4**	**Dewar**	**4/2/07**	**10/30/07**	**0%**
582	5.2.2.10.4.1	Order material	4/2/07	5/1/07	0%
583	5.2.2.10.4.2	Drawings	4/2/07	5/31/07	0%
584	5.2.2.10.4.3	Machining	6/1/07	8/29/07	0%
585	5.2.2.10.4.4	Evaluate/rework	8/30/07	9/28/07	0%
586	5.2.2.10.4.5	Assembly	10/1/07	10/30/07	0%
587	**5.2.2.10.5**	**X-band RF Path**	**3/1/07**	**8/29/07**	**0%**
588	5.2.2.10.5.1	Order components	3/2/07	5/31/07	0%
589	5.2.2.10.5.2	Drawings	3/2/07	5/1/07	0%
590	5.2.2.10.5.3	Machining	5/2/07	7/31/07	0%
591	5.2.2.10.5.4	Evaluation/rework	8/1/07	8/29/07	0%
592	5.2.2.10.5.5	Require LNAs	3/1/07	3/1/07	0%
593	5.2.2.10.5.6	Require OMT+45+PS+trans	3/1/07	3/1/07	0%
594	5.2.2.10.5.7	Evaluate W/G components	3/2/07	5/1/07	0%
595	5.2.2.10.5.8	Assembly	5/2/07	5/31/07	0%
596	**5.2.2.10.6**	**RF/IF Box**	**3/2/07**	**9/28/07**	**0%**
597	5.2.2.10.6.1	Order components	3/2/07	5/31/07	0%
598	5.2.2.10.6.2	Drawings	3/2/07	5/1/07	0%
599	5.2.2.10.6.3	Machining	5/2/07	7/31/07	0%
600	5.2.2.10.6.4	Evaluation/rework	8/1/07	8/29/07	0%
601	5.2.2.10.6.5	Assembly	8/30/07	9/28/07	0%
602	5.2.2.10.7	Require X-band feed	6/4/07	6/4/07	0%
603	5.2.2.10.8	Require card cage	6/4/07	6/4/07	0%
604	**5.2.2.10.9**	**X-Band Polarizer**	**8/9/04**	**3/23/05**	**0%**
605	5.2.2.10.9.1	Design/Analysis	8/9/04	9/3/04	0%
606	5.2.2.10.9.2	Drawings (Prototype)	9/6/04	10/29/04	0%
607	5.2.2.10.9.3	Fab. (Prototype)	11/1/04	2/18/05	0%
608	5.2.2.10.9.4	Bench Test (Prototype)	2/21/05	3/4/05	0%
609	5.2.2.10.9.5	Test (with feed)	3/7/05	3/7/05	0%
610	5.2.2.10.9.6	X-band feed available for Rcvr test	3/7/05	3/7/05	0%
611	5.2.2.10.9.7	Design Review (Internal)	3/8/05	3/9/05	0%
612	5.2.2.10.9.8	Finalize Dwg	3/9/05	3/23/05	0%
613	**5.2.2.10.10**	**Broadband H/C Load (OMT+PS ?)**	**4/2/07**	**10/30/07**	**0%**
614	5.2.2.10.10.1	Detail design	4/2/07	5/31/07	0%
615	5.2.2.10.10.2	Order components	4/2/07	5/1/07	0%
616	5.2.2.10.10.3	Drawings	4/2/07	5/31/07	0%
617	5.2.2.10.10.4	Machining	6/1/07	8/29/07	0%
618	5.2.2.10.10.5	Evaluation/rework	8/30/07	9/28/07	0%
619	5.2.2.10.10.6	Assembly	10/1/07	10/30/07	0%



EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
620	5.2.2.10.11	Test & refine X-band prototype	10/31/07	1/4/08	0%
621	5.2.2.10.12	X-band prototype complete	1/4/08	1/4/08	0%
622	**5.2.3**	**Current Receiver build**	**7/1/02**	**12/26/12**	**2%**
623	5.2.3.1	Q-band completion (5 units)	7/1/02	3/17/03	100%
624	**5.2.3.2**	**K-band completion (7 units)**	**8/4/03**	**12/26/12**	**0%**
625	**5.2.4**	**Receiver Production**	**8/4/03**	**12/26/12**	**0%**
626	5.2.4.1	Order K-band Cpts	10/11/04	4/4/05	0%
627	5.2.4.2	Order Q-band Cpts	10/11/04	4/4/05	0%
628	5.2.4.3	Retrofit & Install K-band receivers #2-30	4/5/05	9/9/09	0%
629	5.2.4.4	Retrofit & Install Q-band receivers #2-30	4/5/05	9/9/09	0%
630	5.2.4.5	Build & install C-band Rcvr	11/16/04	4/22/09	0%
631	5.2.4.6	Build & install Ku-band Rcvr	1/9/07	4/27/12	0%
632	5.2.4.7	Modify existing L-band Rcvr	3/24/04	10/19/05	0%
633	5.2.4.8	Build & install new L-band Rcvr	3/21/05	7/1/10	0%
634	5.2.4.9	Test & install existing X-band Rcvr	8/4/03	5/5/08	2%
635	5.2.4.10	Build & install new X-band Rcvr	1/7/08	3/2/12	0%
636	5.2.4.11	Build & install new S-band Rcvr	1/6/09	6/12/12	0%
637	5.2.4.12	Build & install new Ka-band Rcvr	5/2/05	4/6/11	0%
638	5.2.4.13	Spare component assemblies	3/2/12	12/26/12	0%
639	**5.3**	**Feed Design, Prototype & Production**	**5/1/02**	**10/31/11**	**35%**
640	**5.3.1**	**Design and Prototype**	**6/3/02**	**12/2/04**	**86%**
641	5.3.1.1	Moisture Reduction	7/1/02	12/2/04	75%
642	5.3.1.2	Plating and Surface Finish Assessment	6/24/02	12/16/02	100%
643	5.3.1.3	General Window & Radome Assessment	8/12/02	7/29/03	100%
644	5.3.1.4	Manufacturing Assessment	6/3/02	11/22/04	80%
645	5.3.1.5	Effects of Phase Center Variation	7/22/02	7/15/04	95%
646	**5.3.2**	**L-Band Feed Prototype**	**7/31/02**	**8/16/04**	**99%**
647	5.3.2.1	Design analysis & optimization	10/1/02	10/29/02	100%
648	5.3.2.2	Dwgs (scaled prototype)	10/30/02	1/24/03	100%
649	5.3.2.3	Fab, test & review scaled prototype	1/27/03	4/23/03	100%
650	5.3.2.4	Feed drawings complete - full size	2/24/03	6/19/03	100%
651	5.3.2.5	Order material	5/21/03	11/19/03	100%
652	5.3.2.6	Design Fab Test Ring Machine	7/31/02	10/2/03	100%
653	5.3.2.7	Cut Rings	10/3/03	11/3/03	100%
654	5.3.2.8	Machining	6/20/03	11/19/03	100%
655	5.3.2.9	Design Fab Test Xmas Tree Fixture	4/22/03	9/19/03	100%
656	5.3.2.10	Fab full size prototype	11/20/03	2/16/04	100%
657	5.3.2.11	Test & final assembly	2/23/04	3/26/04	100%
658	5.3.2.12	Mount Test (Mockup)	3/29/04	4/2/04	100%
659	5.3.2.13	L-band feed prototype complete	4/13/04	4/13/04	100%
660	5.3.2.14	Begin L-band Feed Production	8/16/04	8/16/04	0%
661	**5.3.3**	**S-Band Feed Prototype**	**8/1/05**	**4/19/06**	**0%**
662	5.3.3.1	Design analysis & optimization	8/1/05	10/7/05	0%
663	5.3.3.2	Dwgs (scaled prototype)	9/14/05	11/23/05	0%
664	5.3.3.3	Fab, test & review scaled prototype	11/23/05	1/18/06	0%
665	5.3.3.4	Feed Dwgs (FS)	1/18/06	3/1/06	0%
666	5.3.3.5	Fab & test full size prototype	3/1/06	3/29/06	0%
667	5.3.3.6	Final Assembly	3/29/06	4/5/06	0%
668	5.3.3.7	Mount Test (Mockup)	4/5/06	4/19/06	0%
669	5.3.3.8	S-band feed complete	4/19/06	4/19/06	0%
670	**5.3.4**	**C-Band Feed Prototype**	**6/10/02**	**11/15/04**	**97%**
671	5.3.4.1	Design/Analysis	6/10/02	5/27/03	100%
672	5.3.4.2	Feed Dwgs	3/27/03	6/9/03	100%
673	5.3.4.3	Order material	5/8/03	3/12/04	100%
674	5.3.4.4	Cut Rings	5/8/03	3/12/04	100%
675	5.3.4.5	Machining	5/8/03	3/12/04	100%
676	5.3.4.6	Design Fab Test Xmas Tree Fixture	5/8/03	2/2/04	100%



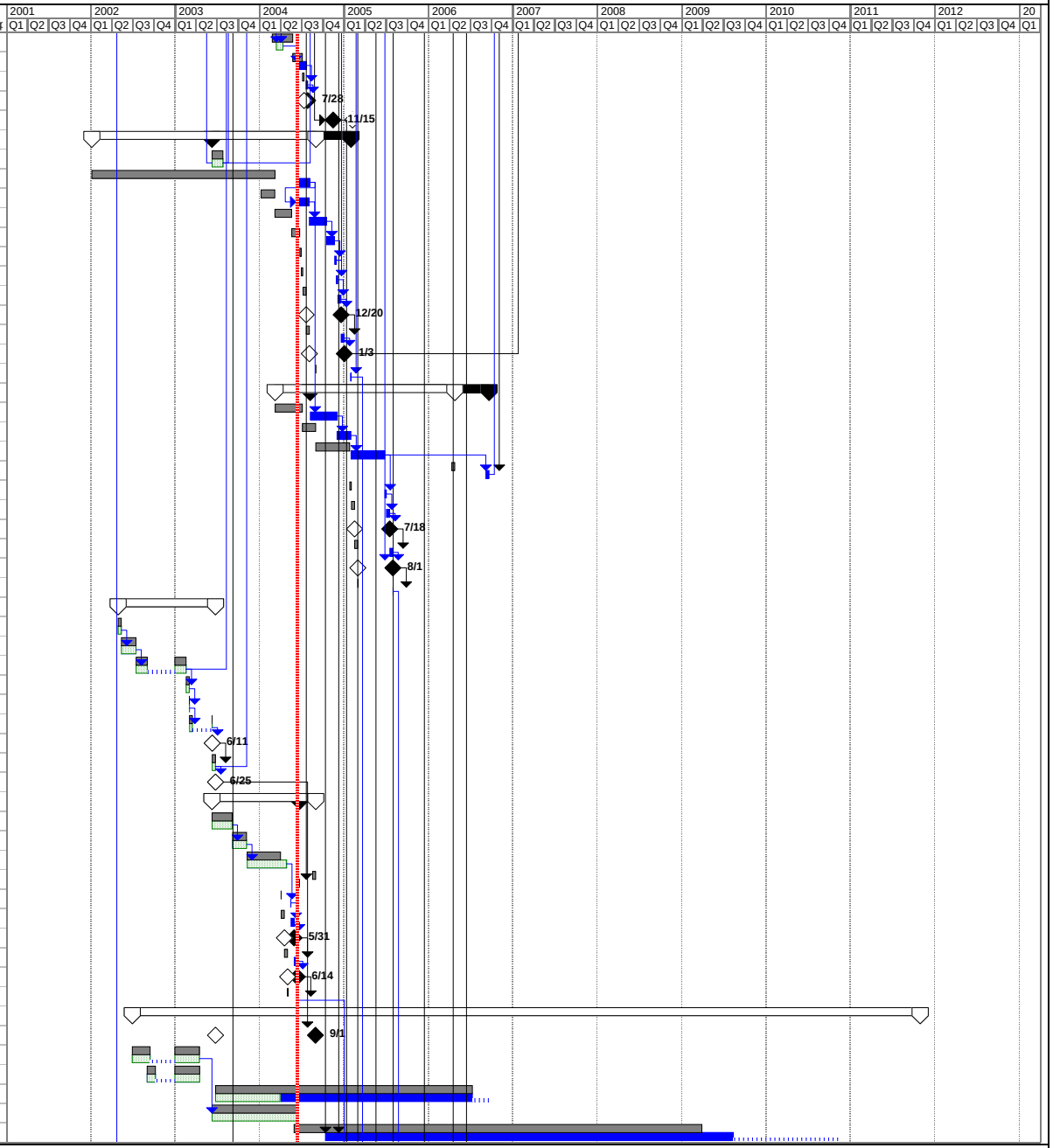
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

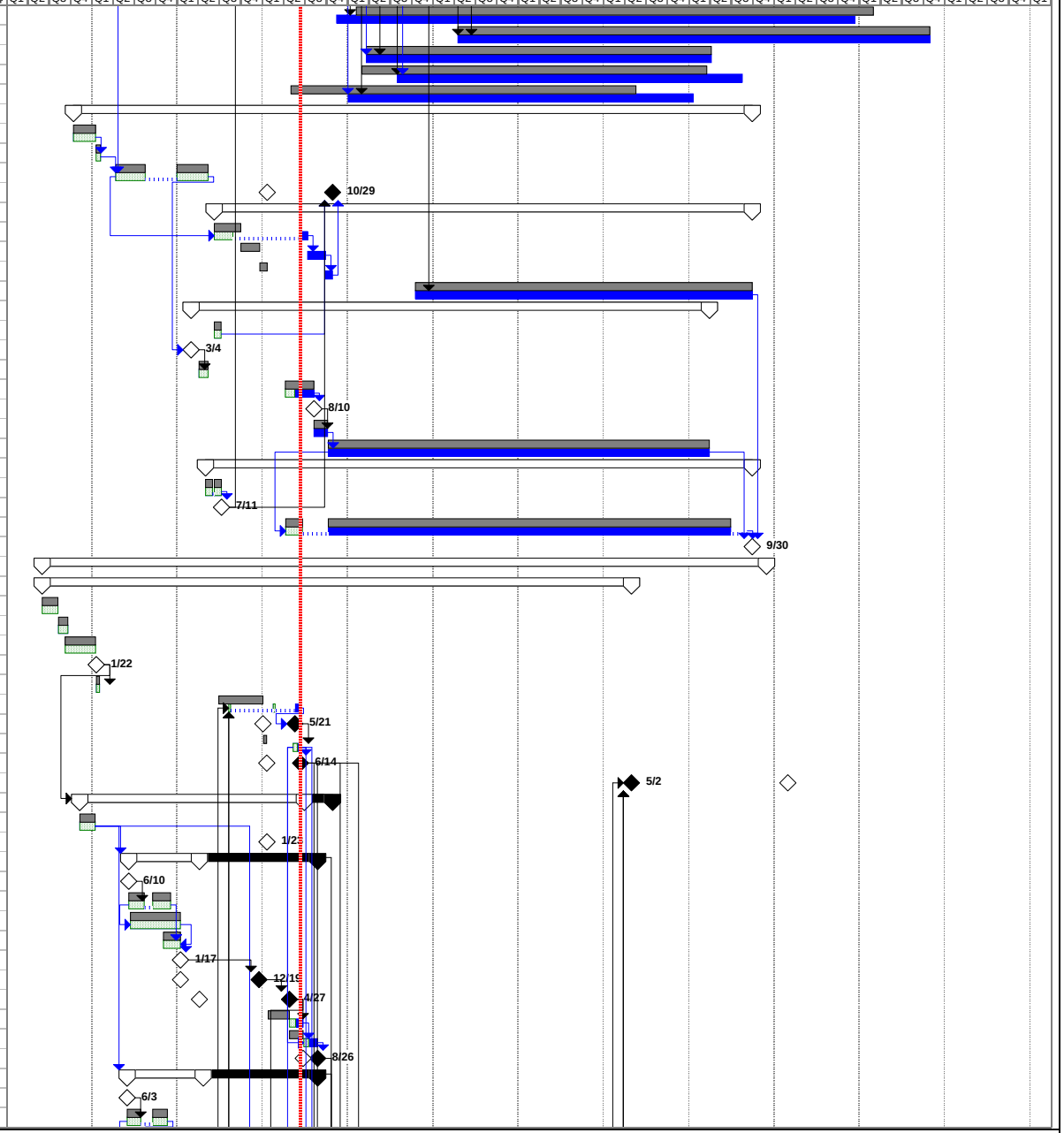
ID	WBS	Task Name	Start	Finish	% Comp
677	5.3.4.7	Fab full size prototype	3/15/04	4/12/04	100%
678	5.3.4.8	Test & final assembly	6/10/04	7/21/04	0%
679	5.3.4.9	Mount Test (Mockup)	7/22/04	7/28/04	0%
680	5.3.4.10	C-band feed prototype complete	7/28/04	7/28/04	0%
681	5.3.4.11	Begin C-band Feed Production	11/15/04	11/15/04	0%
682	**5.3.5**	**X-Band Feed Prototype**	**6/11/03**	**2/1/05**	**14%**
683	5.3.5.1	Modify existing feed for test antenna	6/11/03	7/28/03	100%
684	5.3.5.2	Design/Analysis	6/10/04	8/6/04	0%
685	5.3.5.3	Feed Dwgs (Prototype)	6/8/04	8/4/04	0%
686	5.3.5.4	Fab. (Prototype)	8/5/04	10/18/04	0%
687	5.3.5.5	Test (Prototype)	10/18/04	11/22/04	0%
688	5.3.5.6	Test w/ Receiver	11/22/04	11/29/04	0%
689	5.3.5.7	Design Review (Internal)	11/29/04	12/6/04	0%
690	5.3.5.8	Finalize Dwg	12/6/04	12/20/04	0%
691	5.3.5.9	Mount design & Fab complete	12/20/04	12/20/04	0%
692	5.3.5.10	Mount Test (Mockup)	12/20/04	1/3/05	0%
693	5.3.5.11	X-band feed prototype complete	1/3/05	1/3/05	0%
694	5.3.5.12	Begin X-band Feed Production	1/31/05	2/1/05	0%
695	**5.3.6**	**Ku-Band Feed Prototype**	**8/9/04**	**9/21/06**	**0%**
696	5.3.6.1	Design/Analysis	8/9/04	12/2/04	0%
697	5.3.6.2	Feed Dwgs (Prototype)	12/3/04	1/31/05	0%
698	5.3.6.3	Fab & test prototype	2/1/05	6/27/05	0%
699	5.3.6.4	Test w/ Receiver	9/8/06	9/21/06	0%
700	5.3.6.5	Internal design review	6/28/05	7/4/05	0%
701	5.3.6.6	Finalize Dwg	7/5/05	7/18/05	0%
702	5.3.6.7	Mounting avail	7/18/05	7/18/05	0%
703	5.3.6.8	Mount Test (Mockup)	7/19/05	8/1/05	0%
704	5.3.6.9	Ku-band feed complete	8/1/05	8/1/05	0%
705	5.3.6.10	Begin Ku-band Feed Production	8/2/05	8/2/05	0%
706	**5.3.7**	**K-Band Feed Modification**	**5/1/02**	**6/25/03**	**100%**
707	5.3.7.1	Design/Analysis	5/1/02	5/14/02	100%
708	5.3.7.2	Feed Dwgs (Prototype)	5/15/02	7/16/02	100%
709	5.3.7.3	Fab & test prototype	7/17/02	2/18/03	100%
710	5.3.7.4	Test w/ Receiver	2/19/03	3/4/03	100%
711	5.3.7.5	Internal design review	3/5/03	3/5/03	100%
712	5.3.7.6	Finalize Dwg	3/5/03	6/11/03	100%
713	5.3.7.7	Require K-band feed mount	6/11/03	6/11/03	100%
714	5.3.7.8	Mount Test (Mockup)	6/12/03	6/25/03	100%
715	5.3.7.9	K-band feed Modification complete	6/25/03	6/25/03	100%
716	**5.3.8**	**Ka-Band Feed Prototype**	**6/11/03**	**6/23/04**	**88%**
717	5.3.8.1	Design/Analysis	6/11/03	9/5/03	100%
718	5.3.8.2	Feed Dwgs (Prototype)	9/8/03	11/7/03	100%
719	5.3.8.3	Fab & test prototype	11/10/03	4/28/04	100%
720	5.3.8.4	Test w/ Receiver	6/10/04	6/23/04	0%
721	5.3.8.5	Internal design review	5/17/04	5/17/04	0%
722	5.3.8.6	Finalize Dwg	5/17/04	5/31/04	0%
723	5.3.8.7	Mounting avail	5/31/04	5/31/04	0%
724	5.3.8.8	Mount Test (Mockup)	5/31/04	6/14/04	0%
725	5.3.8.9	Ka-band feed complete	6/14/04	6/14/04	0%
726	5.3.8.10	Begin Ka-band Feed Production	6/14/04	6/15/04	0%
727	**5.3.9**	**Feed Production**	**7/1/02**	**10/31/11**	**9%**
728	5.3.9.1	Start Feed Production	9/1/04	9/1/04	0%
729	5.3.9.2	Q-band completion (5 units)	7/1/02	4/17/03	100%
730	5.3.9.3	K-band completion (7 units)	9/3/02	4/18/03	100%
731	5.3.9.4	K-band feed mod production	6/26/03	9/19/06	23%
732	5.3.9.5	Q-band feed modifications	6/11/03	6/14/04	100%
733	5.3.9.6	L-band feed & OMT production	10/13/04	11/10/10	0%



Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

ID	WBS	Task Name	Start	Finish	% Comp
734	5.3.9.7	C-band feed & OMT production	11/16/04	12/14/10	0%
735	5.3.9.8	S-band feed & OMT production	4/19/06	10/31/11	0%
736	5.3.9.9	X-band feed & OMT production	3/23/05	4/9/09	0%
737	5.3.9.10	Ku-band feed & polarizer production	8/3/05	8/19/09	0%
738	5.3.9.11	Ka-band feed & OMT production	1/4/05	1/20/09	0%
739	**5.4**	**Cryogenics**	**10/16/01**	**9/30/09**	**13%**
740	5.4.1	Evaluate existing systems	10/16/01	1/18/02	100%
741	5.4.2	Develop cryo system plan	1/21/02	2/8/02	100%
742	5.4.3	Specify & design refinements	4/15/02	5/15/03	100%
743	5.4.4	Prototype cryogenics system ready	10/29/04	10/29/04	0%
744	**5.4.5**	**Vacuum Pump & Manifolds**	**6/11/03**	**9/30/09**	**4%**
745	5.4.5.1	Upgrade vacuum pump	6/11/03	7/14/04	21%
746	5.4.5.2	Test vacuum pump upgrade	7/15/04	9/29/04	0%
747	5.4.5.3	Assemble & install vacuum pumps & manifold	9/30/04	10/29/04	0%
748	5.4.5.4	Production vacuum pumps & manifolds	10/19/05	9/30/09	0%
749	**5.4.6**	**Compressors & Helium Lines**	**3/4/03**	**3/31/09**	**6%**
750	5.4.6.1	Modify He lines to facilitate new receiver tests	6/11/03	7/10/03	100%
751	5.4.6.2	Decision on 3rd compressor	3/4/03	3/4/03	100%
752	5.4.6.3	Order test antenna compressors	4/7/03	5/15/03	100%
753	5.4.6.5	Procure production compressor parts	4/10/04	8/10/04	35%
754	5.4.6.7	Start cryo compressor assembly	8/10/04	8/10/04	0%
755	5.4.6.9	Assemble 3rd antenna compressor	8/11/04	10/8/04	0%
756	5.4.6.11	Production compressors & He lines	10/11/04	3/31/09	0%
757	**5.4.7**	**Refrigerators**	**5/5/03**	**9/30/09**	**7%**
758	5.4.7.1	Specify & order CT350 refrigerators	5/5/03	7/11/03	100%
759	5.4.7.2	CT350 refrigerators ready for test antenna	7/11/03	7/11/03	100%
760	5.4.7.3	Order, prepare & install CT350 on antennas	4/12/04	9/9/09	4%
761	5.4.8	Last antenna cryo oufitting	9/30/09	9/30/09	0%
7	**6.6**	**LO/IF SYSTEMS**	**6/4/01**	**12/1/09**	**49%**
1	**6.1**	**Management/Subsystem Engineering**	**6/4/01**	**5/2/08**	**92%**
2	6.1.1	Initial budget, labor& schedule development	6/4/01	8/10/01	100%
3	6.1.3	Project Book requirements & specifications	8/13/01	9/21/01	100%
4	6.1.4	Overall design development	9/10/01	1/18/02	100%
5	6.1.5	LO/IF PDR, Start prototype development	1/22/02	1/22/02	100%
6	6.1.7	PDR review & analysis	1/22/02	2/4/02	100%
7	6.1.6	Evaluate LO/IF system performance on test antenna	8/12/03	6/4/04	60%
8	6.1.10	LO/IF CDR	5/21/04	5/21/04	100%
9	6.1.12	CDR review & analysis	5/13/04	6/14/04	60%
10	6.1.15	Start LO/IF module production	6/14/04	6/14/04	0%
11	6.1.50	LO/IF System Complete	5/2/08	5/2/08	0%
12	**6.5**	**Master LO System**	**11/12/01**	**10/29/04**	**76%**
13	6.5.1	Conceptual design	11/12/01	1/16/02	100%
14	6.5.5	H Maser Frequency Standard (&Rb) delivery	1/23/04	1/23/04	100%
15	**6.5.10**	**L351- 512MHz Offset Generator**	**6/10/02**	**8/26/04**	**86%**
16	6.5.10.1	Start L351 offset generator	6/10/02	6/10/02	100%
17	6.5.10.2	Circuit board design & layout	6/10/02	12/6/02	100%
18	6.5.10.3	Order parts	6/17/02	1/17/03	100%
19	6.5.10.4	Assemble & test prototype L351	11/5/02	1/17/03	100%
20	6.5.10.5	Bench prototype L351 test ready	1/17/03	1/17/03	100%
21	6.5.10.6	Develop L351 hardware ICD	12/19/03	12/19/03	100%
22	6.5.10.9	Install L351 in Master LO rack	4/27/04	4/27/04	100%
23	6.5.10.11	Evaluate L351 in functional system	4/28/04	6/25/04	45%
24	6.5.10.13	Assemble spares of L351 module	6/28/04	8/26/04	33%
25	6.5.10.15	L351 module complete	8/26/04	8/26/04	0%
26	**6.5.25**	**L350 Central Reference Generator**	**6/3/02**	**8/26/04**	**82%**
27	6.5.25.1	Start L350 ref generator	6/3/02	6/3/02	100%
28	6.5.25.2	Design & layout	6/3/02	11/22/02	100%



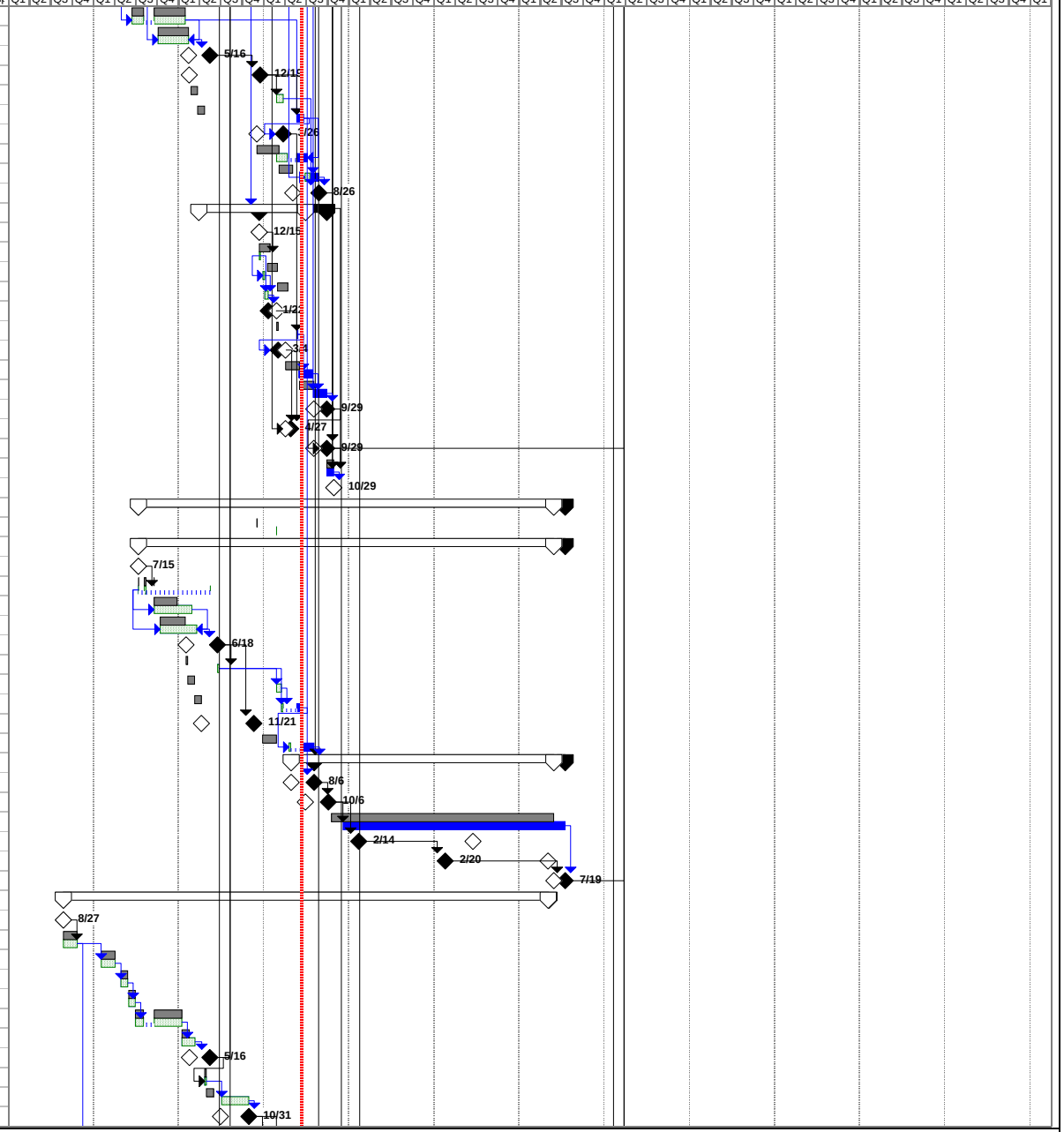
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
29	6.5.25.3	Order parts	6/17/02	1/31/03	100%
30	6.5.25.4	Assemble & test prototype	10/7/02	2/14/03	100%
31	6.5.25.6	Bench prototype L350 test	5/16/03	5/16/03	100%
32	6.5.25.5	Develop L350 hardware ICD	12/19/03	12/19/03	100%
33	6.5.25.7	Add L350 MIB, adater cards & test	2/27/04	3/26/04	100%
34	6.5.25.9	Develop L350 MIB software	5/24/04	6/22/04	0%
35	6.5.25.11	Install L350 in Master LO rack	3/26/04	3/26/04	100%
36	6.5.25.13	Evaluate L350 in functional system	2/27/04	7/9/04	50%
37	6.5.25.15	Assemble spares of L350 module	6/28/04	8/26/04	33%
38	6.5.25.11	L350 module complete	8/26/04	8/26/04	0%
39	**6.5.30**	**L354 Central Reference Distributor**	**12/15/03**	**9/29/04**	**19%**
40	6.5.30.1	Sart L354 ref distrib prototype design	12/15/03	12/15/03	100%
41	6.5.30.2	Circuit board design	12/15/03	12/19/03	100%
42	6.5.30.4	Order parts	12/31/03	1/7/04	100%
43	6.5.30.5	Assemble & test	1/8/04	1/22/04	100%
44	6.5.30.6	Bench prototype L354 test ready	1/22/04	1/22/04	100%
45	6.5.30.5	Develop L354 hardware HDD	5/24/04	5/28/04	0%
46	6.5.30.9	Install L354 in Master LO rack	3/4/04	3/4/04	100%
47	6.5.30.11	Evaluate L354 in functional system	6/1/04	7/30/04	0%
48	6.5.30.13	Assemble spares of L354 module	8/2/04	9/29/04	0%
49	6.5.30.15	L354 ref/distributor complete	9/29/04	9/29/04	0%
50	6.5.35.3	Master LO sys ready for functional tests	4/27/04	4/27/04	100%
51	6.5.35.9	Master LO system complete	9/29/04	9/29/04	0%
52	6.5.35.11	Complete wiring on LO rack	9/30/04	10/29/04	0%
53	6.5.35.13	Redundant Master LO rack functional	10/29/04	10/29/04	0%
54	**6.7**	**Central Antenna System**	**7/15/02**	**7/19/07**	**27%**
55	6.7.2	Procure & install back-end racks	2/27/04	2/27/04	100%
56	**6.7.5**	**L352 RTP Measurement**	**7/15/02**	**7/19/07**	**27%**
57	6.7.5.1	Start L352 RTP prototype	7/15/02	7/15/02	100%
58	6.7.5.2	Circuit board design & layout	7/15/02	5/19/03	100%
59	6.7.5.3	Order parts	9/20/02	2/28/03	100%
60	6.7.5.5	Assemble & test module	10/16/02	3/21/03	100%
61	6.7.5.7	L352 bench prototype test ready	6/18/03	6/18/03	100%
62	6.7.5.9	Develop L352 hardware ICD	6/19/03	6/25/03	100%
63	6.7.5.11	Add L352 MIB & test	2/27/04	3/18/04	100%
64	6.7.5.12	Develop L352 MIB software	3/19/04	6/15/04	25%
65	6.7.5.13	Install RTP module in back-end rack	11/21/03	11/21/03	100%
66	6.7.5.14	Evaluate L352 RTP in functional system	4/20/04	8/6/04	15%
67	**6.7.5.14**	**L352 RTP Hardware Production**	**8/6/04**	**7/19/07**	**0%**
68	6.7.5.16	Develop L352 production specifications	8/6/04	8/6/04	0%
69	6.7.5.18	Order 1st quantities of L352 hardware	10/6/04	10/6/04	0%
70	6.7.5.20	L352 RTP module assembly	12/8/04	7/19/07	0%
71	6.7.5.24	Order 2nd quantities of L352 hardware	2/14/05	2/14/05	0%
72	6.7.5.24	Order final quantities of L352 hardware	2/20/06	2/20/06	0%
73	6.7.5.29	Round Trip Phase module complete	7/19/07	7/19/07	0%
74	**6.10**	**L301 12-20 GHz Synthesizer**	**8/27/01**	**5/11/07**	**39%**
75	6.10.1	Start L301 1st LO prototype	8/27/01	8/27/01	100%
76	6.10.2	Conceptual design	8/27/01	10/25/01	100%
77	6.10.3	Circuit board design	2/5/02	4/5/02	100%
78	6.10.4	Mechanical design	5/1/02	5/29/02	100%
79	6.10.5	Order parts	6/3/02	7/1/02	100%
80	6.10.6	Assemble L301 prototype	7/2/02	1/17/03	100%
81	6.10.7	Test L301 prototype	1/17/03	3/14/03	100%
82	6.10.8	L301 bench prototype test ready	5/16/03	5/16/03	100%
83	6.10.9	Develop L301 hardware interface	4/25/03	5/1/03	100%
84	6.10.11	Add L301 MIB, software & test	7/7/03	10/31/03	100%
85	6.10.12	L301 12-20 Ghz synth ready for test antenna	10/31/03	10/31/03	100%



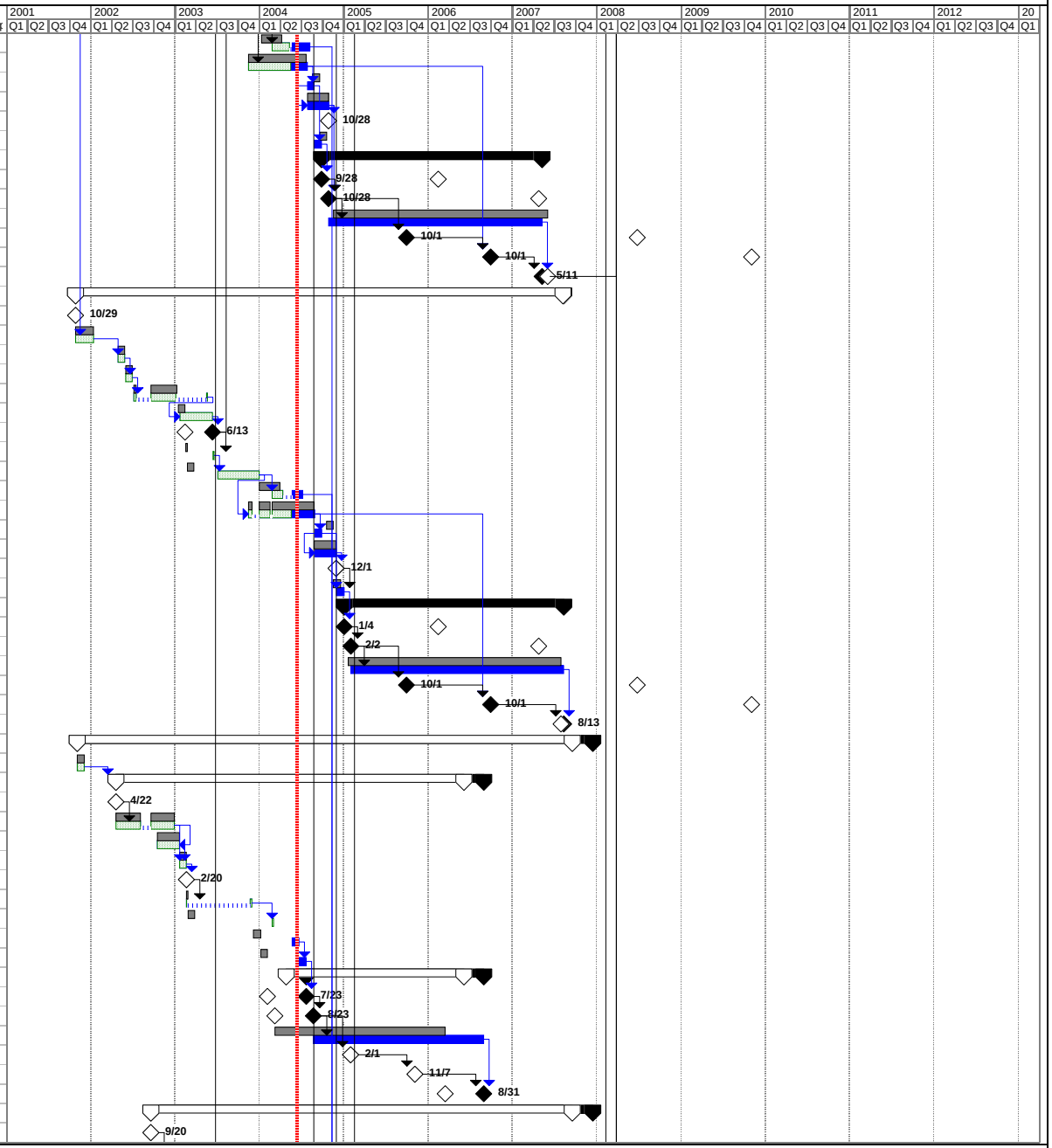
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

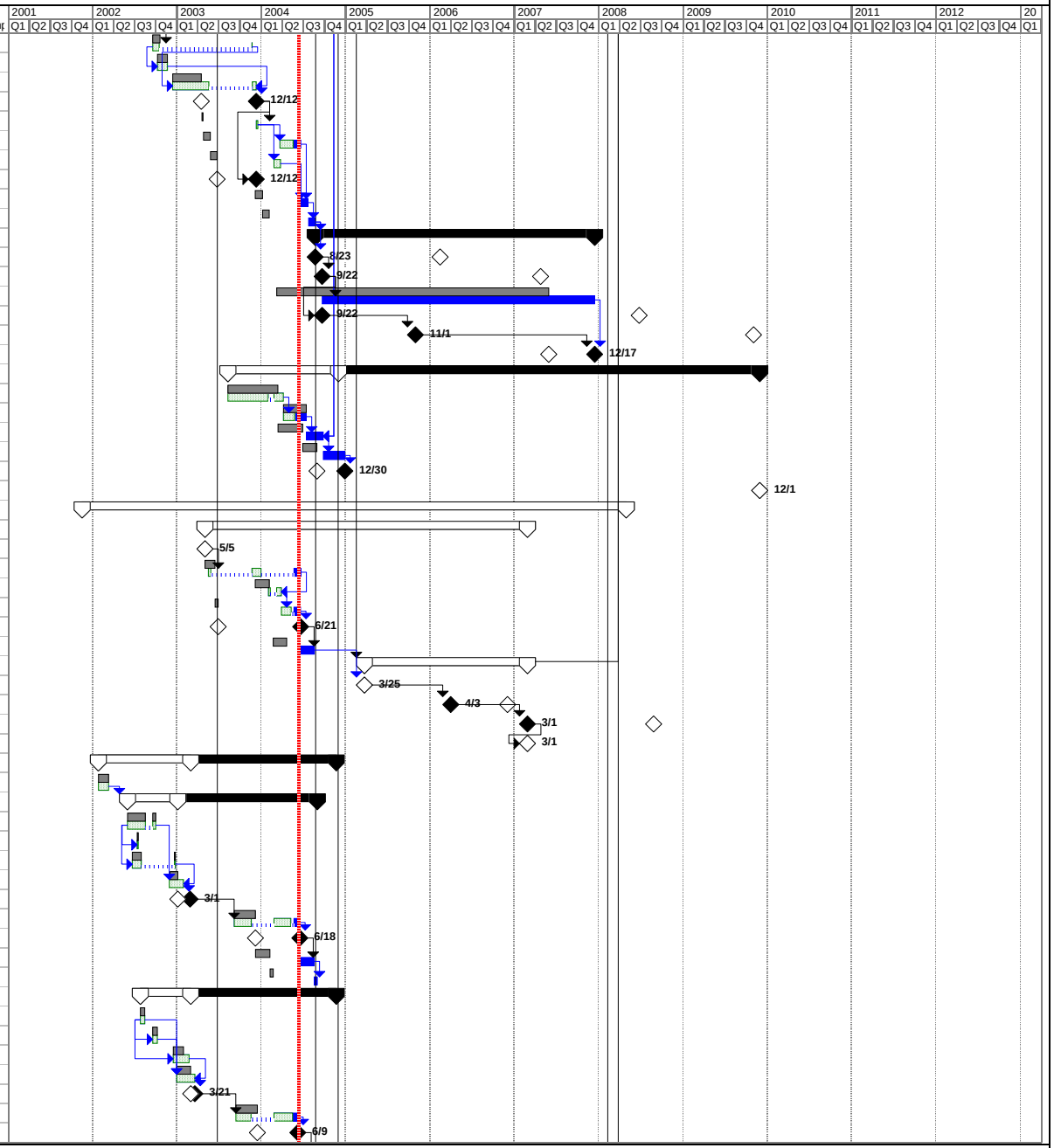
ID	WBS	Task Name	Start	Finish	% Comp
86	6.10.13	Assemble 4 additional L301 modules - ant 14	2/27/04	8/9/04	50%
87	6.10.15	Start integrated designed L301	11/17/03	7/29/04	73%
88	6.10.16	Bench test integrated L301 w/ MIB	7/29/04	8/27/04	0%
89	6.10.17	Assemble 4 integrated L301s - ant 16	7/29/04	10/28/04	0%
90	6.10.18	L301 integrated module read for antenna 16	10/28/04	10/28/04	0%
91	6.10.18	Evaluate integrated L301 module in system	8/27/04	9/28/04	0%
92	**6.10.20**	**L301Synthesizer Hardware Production**	**9/28/04**	**5/11/07**	**0%**
93	6.10.20.3	Develop L301 production specifications	9/28/04	9/28/04	0%
94	6.10.20.6	Order 1st quantities of L301 hardware	10/28/04	10/28/04	0%
95	6.10.20.9	L301 module assembly	10/28/04	5/11/07	0%
96	6.10.20.12	Order 2nd quantities of L301 hardware	10/1/05	10/1/05	0%
97	6.10.20.15	Order final quantities of L301 hardware	10/1/06	10/1/06	0%
98	6.10.25	L301 synthesizer module complete	5/11/07	5/11/07	0%
99	**6.15**	**L302 10.8-14.8 GHz synthesizer**	**10/29/01**	**8/13/07**	**39%**
100	6.15.1	Start L302 2nd LO prototype	10/29/01	10/29/01	100%
101	6.15.2	Circuit board design	10/29/01	1/14/02	100%
102	6.15.3	Mechanical design	5/1/02	5/29/02	100%
103	6.15.4	Order parts	6/3/02	7/1/02	100%
104	6.15.5	Assemble L302 prototype	7/8/02	5/23/03	100%
105	6.15.6	Test & debug L302 prototype	1/23/03	6/13/03	100%
106	6.15.7	L302 bench prototype test ready	6/13/03	6/13/03	100%
107	6.15.9	Develop L302 hardware interface	6/16/03	6/20/03	100%
108	6.15.11	Add L302 MIB, software & test	7/7/03	1/2/04	100%
109	6.15.13	Assemble additional L302 modules	2/27/04	7/9/04	50%
110	6.15.15	Start integrated designed L302	11/17/03	8/30/04	60%
111	6.15.16	Bench test integrated L302 w/ MIB	8/30/04	9/29/04	0%
112	6.15.17	Assemble 4 integrated L302s - ant 16	8/30/04	12/1/04	0%
113	6.10.18	L301 integrated module read for antenna 16	12/1/04	12/1/04	0%
114	6.15.20	Evaluate integrated L302 module in system	12/1/04	1/4/05	0%
115	**6.15.20**	**L302 Synthesizer Hardware Production**	**1/4/05**	**8/13/07**	**0%**
116	6.15.20.3	Develop L302 production specifications	1/4/05	1/4/05	0%
117	6.15.20.6	Order 1st quantities of L302 hardware	2/2/05	2/2/05	0%
118	6.15.20.9	L302 module assembly	2/2/05	8/13/07	0%
119	6.15.20.12	Order 2nd quantities of L302 hardware	10/1/05	10/1/05	0%
120	6.15.20.15	Order final quantities of L302 hardware	10/1/06	10/1/06	0%
121	6.15.25	L302 synthesizer module complete	8/13/07	8/13/07	0%
122	**6.20.1**	**Antenna Reference System**	**11/5/01**	**12/17/07**	**26%**
123	6.20.2	Conceptual design	11/5/01	12/5/01	100%
124	**6.20.5**	**L304 Reference Receiver**	**4/22/02**	**8/31/06**	**30%**
125	6.20.5.1	Start L304 ant ref rcvr	4/22/02	4/22/02	100%
126	6.20.5.2	Circuit board design & layout	4/22/02	12/30/02	100%
127	6.20.5.3	Order parts	10/18/02	1/21/03	100%
128	6.20.5.4	Assemble & test prtotype	1/22/03	2/20/03	100%
129	6.20.5.5	L304 bench prototype bench ready	2/20/03	2/20/03	100%
130	6.20.5.7	Develop L304 hardware ICD	2/21/03	12/1/03	100%
131	6.20.5.9	Add L304 MIB	2/27/04	3/4/04	100%
132	6.20.5.11	Develop L304 MIB software	5/24/04	6/22/04	0%
133	6.20.5.13	Evaluate L304 module in functional system	6/23/04	7/23/04	0%
134	**6.20.5.15**	**L304 Ref. Rcvr Hardware Production**	**7/23/04**	**8/31/06**	**0%**
135	6.20.5.15.2	Develop L304 production specifications	7/23/04	7/23/04	0%
136	6.20.5.15.4	Order 1st quantities of L304 hardware	8/23/04	8/23/04	0%
137	6.20.5.15.6	L304 module assembly	8/24/04	8/31/06	0%
138	6.20.5.15.8	Order 2nd quantities of L304 hardware	2/1/05	2/1/05	0%
139	6.20.5.15.10	Order final quantities of L304 hardware	11/7/05	11/7/05	0%
140	6.20.5.20	L304 Ref Reciever complete	8/31/06	8/31/06	0%
141	**6.20.10**	**L305 Reference Generator/Distributor**	**9/20/02**	**12/17/07**	**21%**
142	6.20.10.1	Start L305 ant ref gen/distr prototype	9/20/02	9/20/02	100%



Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

ID	WBS	Task Name	Start	Finish	% Comp
143	6.20.10.2	Circuit board design	9/20/02	11/25/03	100%
144	6.20.10.3	Order parts	10/11/02	11/22/02	100%
145	6.20.10.4	Assemble & test module	12/16/02	12/12/03	100%
146	6.20.10.5	L305 bench prototype complete	12/12/03	12/12/03	100%
147	6.20.10.6	Develop L305 hardware interface	12/12/03	12/19/03	100%
148	6.20.10.7	Add L305 MIB, analog board & test	3/24/04	6/22/04	65%
149	6.20.10.8	Build L305 for test antenna	2/27/04	3/26/04	100%
150	6.20.10.9	L305 ref gen/distr ready for test antenna	12/12/03	12/12/03	100%
151	6.20.10.11	Bench test L305 w/ MIB	6/23/04	7/23/04	0%
152	6.20.10.13	Evaluate L305 module in system	7/26/04	8/23/04	0%
153	**6.20.10.15**	**L305 Hardware Production**	**8/23/04**	**12/17/07**	**0%**
154	6.20.10.15.2	Develop L305 production specifications	8/23/04	8/23/04	0%
155	6.20.10.15.4	Order 1st quantities of L305 hardware	9/22/04	9/22/04	0%
156	6.20.10.15.6	L305 module assembly	9/23/04	12/17/07	0%
157	6.20.10.15.8	Order 2nd quantities of L305 hardware	9/22/04	9/22/04	0%
158	6.20.10.15.10	Order final quantities of L305 hardware	11/1/05	11/1/05	0%
159	6.20.10.20	L305 synthesizer module complete	12/17/07	12/17/07	0%
160	**6.25**	**Antenna Outfitting**	**8/12/03**	**12/1/09**	**55%**
161	6.25.3	Out fit test antenna 13	8/12/03	4/8/04	100%
162	7.2	Test & bebug LO/IF hardware in antenna 13	4/8/04	7/16/04	50%
163	6.25.6	Outfit 2nd test antenna 14	7/16/04	9/27/04	0%
164	6.25.9	Evaluate LO/IF on 2nd test antenna	9/27/04	12/30/04	0%
165	6.25.12	Start LO/IF production outfitting	12/30/04	12/30/04	0%
166	6.25.15	Finish LO/IF production outfitting	12/1/09	12/1/09	0%
167	**8.0**	**Band Switches & Converters**	**11/19/01**	**5/2/08**	**73%**
168	**8.5**	**Band Switches**	**5/5/03**	**3/1/07**	**50%**
169	8.5.1	Decision on band switches	5/5/03	5/5/03	100%
170	8.5.2	Order parts	5/19/03	6/23/04	60%
171	8.5.3	Design & prototype switch	2/3/04	3/29/04	100%
172	8.5.5	Order, assembly & test band switches	3/30/04	6/21/04	60%
173	8.5.7	Band switches ready for test antenna	6/21/04	6/21/04	0%
174	8.5.9	Evaluate band switches on antenna	6/22/04	8/20/04	0%
175	**8.5.10**	**Band Switch Production Cycle**	**3/25/05**	**3/1/07**	**0%**
176	8.5.10.3	Order & assemble switches 1st 10 ant	3/25/05	3/25/05	0%
177	8.5.10.6	Order & assemble switches 11-20 ant	4/3/06	4/3/06	0%
178	8.5.10.9	Order & assemble switches 21-28 ant	3/1/07	3/1/07	0%
179	8.5.15	Band switches complete	3/1/07	3/1/07	0%
180	**8.10**	**4/P & L/S/C Converter Modules**	**1/28/02**	**11/23/04**	**72%**
181	8.10.1	Conceptual design	1/28/02	3/13/02	100%
182	**8.10.5**	**T301 4/P-band Converter**	**6/3/02**	**9/2/04**	**78%**
183	8.10.5.1	Circuit board design	6/3/02	10/3/02	100%
184	8.10.5.2	Mechanical design	7/15/02	7/19/02	100%
185	8.10.5.3	Order parts	6/24/02	12/27/02	100%
186	8.10.5.4	Assemble & test module	12/1/02	1/31/03	100%
187	8.10.5.6	T301 bench prototype complete	3/1/03	3/1/03	100%
188	8.10.5.8	Assemble test antenna T301	9/8/03	6/18/04	85%
189	8.10.5.10	Install T301 in test antenna	6/18/04	6/18/04	0%
190	8.10.5.12	Evaluate T301 on test antenna	6/18/04	8/19/04	0%
191	8.10.5.14	Develop T301 production specifications	8/19/04	9/2/04	0%
192	**8.10.10**	**T302 L/S/C-band Converter**	**7/29/02**	**11/23/04**	**65%**
193	8.10.10.1	Circuit board design	7/29/02	8/16/02	100%
194	8.10.10.2	Mechanical design	9/20/02	10/10/02	100%
195	8.10.10.3	Order parts	12/18/02	2/24/03	100%
196	8.10.10.4	Assemble & test T302 prototype	1/2/03	3/21/03	100%
197	8.10.10.6	T302 bench prototype complete	3/21/03	3/21/03	100%
198	8.10.10.8	Assemble test antenna T301	9/15/03	6/9/04	90%
199	8.10.10.10	Install T301 in test antenna	6/9/04	6/9/04	0%



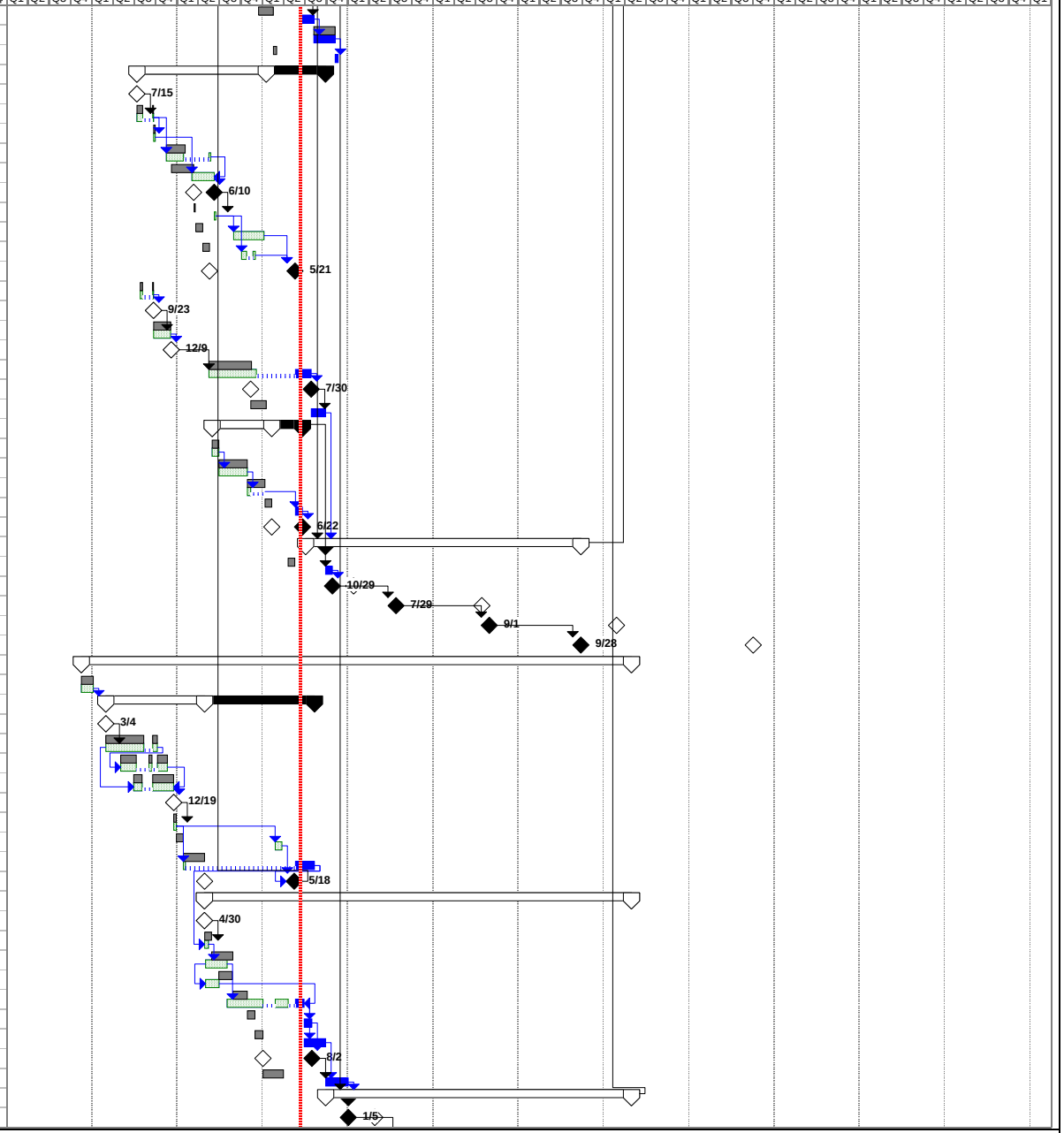
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
200	8.10.10.12	Evaluate T301 on test antenna	6/9/04	8/10/04	0%
201	8.10.10.13	Respin T301 board design	8/10/04	11/9/04	0%
202	8.10.10.14	Develop T301 production specifications	11/9/04	11/23/04	0%
203	**8.15.15**	**T303 U/X-band Converter**	**7/15/02**	**9/29/04**	**84%**
204	8.15.15.1	Start U/X-band converter prototype	7/15/02	7/15/02	100%
205	8.15.15.2	Test antenna design	7/15/02	9/24/02	100%
206	8.15.15.3	Mechanical design	9/24/02	10/1/02	100%
207	8.15.15.4	Order parts	11/18/02	5/27/03	100%
208	8.15.15.5	Assemble & test module	3/7/03	6/10/03	100%
209	8.15.15.7	T303 bench prototype complete	6/10/03	6/10/03	100%
210	8.15.15.9	Develop T303 hardware ICD	6/11/03	6/17/03	100%
211	8.15.15.11	M301 design & build controller	9/2/03	1/9/04	100%
212	8.15.15.13	Build T303 for test antenna	10/6/03	12/4/03	100%
213	8.15.15.15	T303 U/X converter ready for test antenna	5/21/04	5/21/04	0%
214	8.15.15.17	Develop specifications for CICESE	7/29/02	9/23/02	100%
215	8.15.15.18	Send module specifications to CICESE	9/23/02	9/23/02	100%
216	8.15.15.19	U/X Converter development proposal	9/24/02	12/6/02	100%
217	8.15.15.20	CICESE proposal submitted to CONACyT	12/9/02	12/9/02	100%
218	8.15.15.21	Re-bid & order U/X converter	5/19/03	7/30/04	75%
219	8.15.15.25	Integrated U/X converter design available	7/30/04	7/30/04	0%
220	8.15.15.30	Evaluate integrated U/X converter on antenna	7/30/04	9/29/04	0%
221	**10.32**	**Converter Interface - M301**	**6/2/03**	**6/22/04**	**79%**
222	10.32.3	Specify & design M301 conveter interface	6/2/03	6/30/03	100%
223	10.32.6	Build prototype M301 module	7/1/03	10/30/03	100%
224	10.32.9	Add MIB & test prototype M301	10/31/03	1/14/04	50%
225	10.32.15	Evavuate M301 module on antenna	5/24/04	6/22/04	0%
226	10.32.18	Produce determined number of transition modules	6/22/04	6/22/04	0%
227	**8.15.20**	**T301, 302 & 303 Converter Production**	**9/29/04**	**9/28/07**	**0%**
228	8.15.20	RFQ T301,2&3 parts /include M301-M303	9/29/04	10/29/04	0%
229	8.15.20	Rcvr converters assembled (2-8)x3ea	10/29/04	10/29/04	0%
230	8.15.20	Rcvr converters assembled (9-16)x3ea	7/29/05	7/29/05	0%
231	8.15.20	Rcvr converters assembled (16-23)x3ea	9/1/06	9/1/06	0%
232	8.15.20	Rcvr converters assembled (24-30)x3ea	9/28/07	9/28/07	0%
233	**8.20**	**IF Down Converters**	**11/19/01**	**5/2/08**	**73%**
234	8.20.1	Conceptual design	11/19/01	1/9/02	100%
235	**8.20.5**	**T304 Down Converters**	**3/4/02**	**8/13/04**	**85%**
236	8.20.5.0	Start down converter prototype	3/4/02	3/4/02	100%
237	8.20.5.1	Conectorized module design	3/4/02	10/10/02	100%
238	8.20.5.3	Order parts	5/6/02	11/22/02	100%
239	8.20.5.4	Assemble & test T304 prototype	7/1/02	12/19/02	100%
240	8.20.5.6	T304 bench prototype test ready	12/19/02	12/19/02	100%
241	8.20.5.8	Develop T304 hardware interface	12/19/02	12/30/02	100%
242	8.20.5.10	Add T304 MIB, adapter card & test	2/27/04	3/26/04	100%
243	8.20.5.12	Build T304 for test antenna	1/29/03	8/13/04	10%
244	8.20.5.14	T304 down conv ready for test antenna	5/18/04	5/18/04	100%
245	**8.20.10**	**Down Converter Integrated Design**	**4/30/03**	**5/2/08**	**60%**
246	8.20.10.1	Start down conv integrated version	4/30/03	4/30/03	100%
247	8.20.10.1	Test & evaluate candidate components	4/30/03	5/16/03	100%
248	8.20.10.2	Design integrated module	5/5/03	8/4/03	100%
249	8.20.10.3	Order parts	5/5/03	7/1/03	100%
250	8.20.10.4	Assemble & test module	8/5/03	6/30/04	84%
251	8.20.10.6	Add MIB, software & test	6/30/04	8/2/04	0%
252	8.20.10.8	Build 4 for test antenna 14	6/30/04	9/30/04	0%
253	8.20.10.10	Down conv integrated module assembled	8/2/04	8/2/04	0%
254	8.20.10.15	Evaluate integrated T304	9/30/04	1/5/05	0%
255	**8.20.10.30**	**IF Down Converter Production**	**1/5/05**	**5/2/08**	**0%**
256	8.20.10.30	T304 modules assembled (2-24)	1/5/05	1/5/05	0%



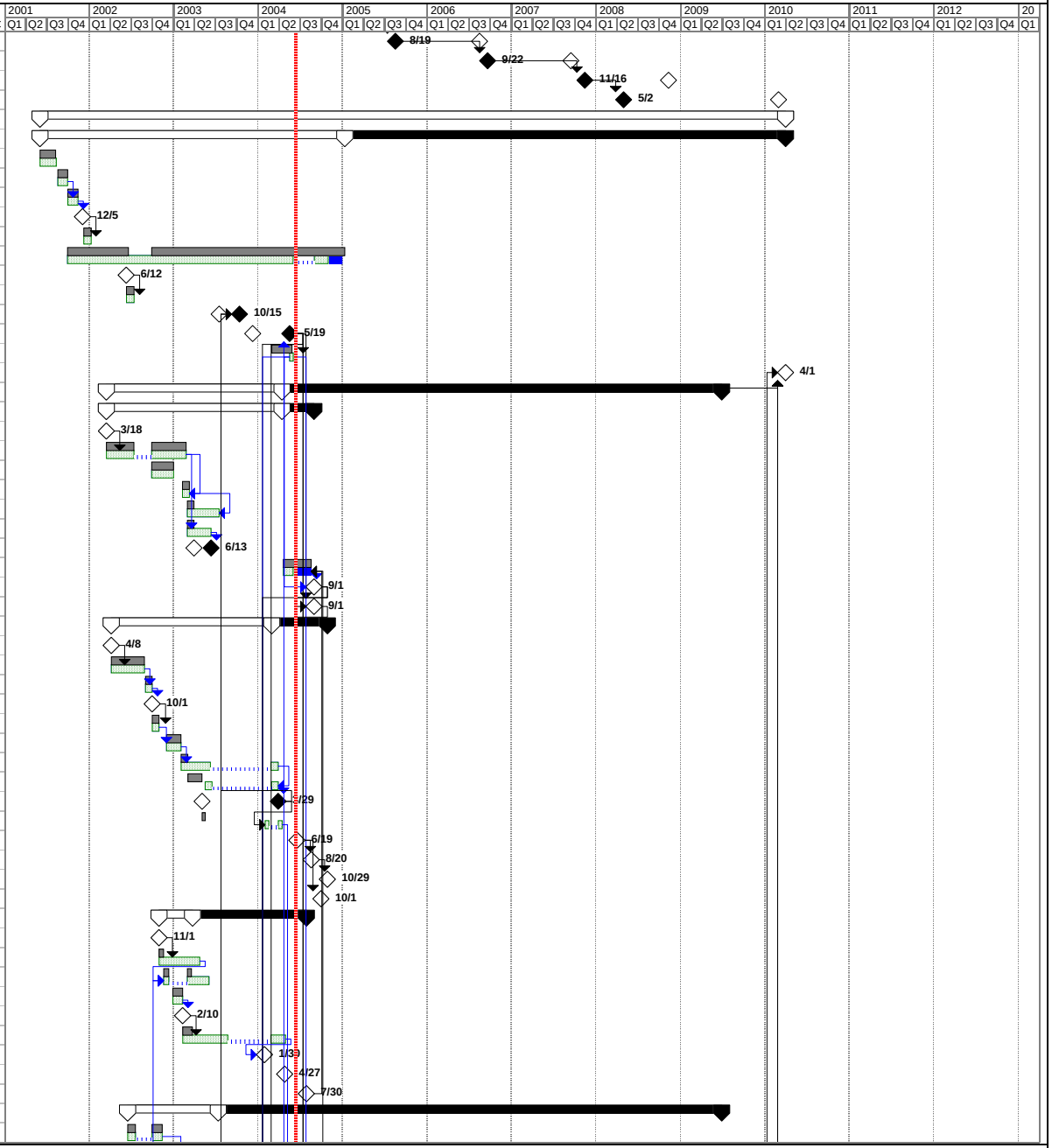
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
257	8.20.10.30	T304 modules assembled (25-48)	8/19/05	8/19/05	0%
258	8.20.10.30	T304 modules assembled (49-72)	9/22/06	9/22/06	0%
259	8.20.10.30	T304 modules assembled (73-96)	11/16/07	11/16/07	0%
260	8.20.10.30	T304 modules assembled (97-120)	5/2/08	5/2/08	0%
8	**6.7**	**FIBER OPTIC SYSTEM**	**6/4/01**	**4/1/10**	**73%**
1	**7.1**	**Management/Subsystem Engineering**	**6/4/01**	**4/1/10**	**95%**
2	7.1.2	Initial budget, labor requirements & schedule	6/4/01	8/13/01	100%
3	7.1.4	Project Book requirements & specification	8/20/01	10/1/01	100%
4	7.1.6	PDR preparation	10/2/01	11/15/01	100%
5	7.1.8	Fiber Optics System PDR	12/5/01	12/5/01	100%
6	7.1.10	Fiber PDR analysis & review	12/10/01	1/11/02	100%
7	7.1.12	Research & Development	10/1/01	12/31/04	95%
8	7.1.20	Fiber Underground Installation CDR	6/12/02	6/12/02	100%
9	7.1.20	U/G Installation CDR analysis & review	6/13/02	7/15/02	100%
10	7.1.18	Antenna internal review	10/15/03	10/15/03	100%
11	7.1.25	Fiber Optic System CDR	5/19/04	5/19/04	100%
12	7.1.30	CDR review and analysis	5/19/04	6/17/04	50%
13	7.1.99	Fiber Optics System Complete	4/1/10	4/1/10	0%
14	**7.5**	**IF Fiber System**	**3/18/02**	**6/30/09**	**88%**
15	**7.5.5**	**Formatter**	**3/18/02**	**9/1/04**	**91%**
16	7.5.5.1	Start Formatter	3/18/02	3/18/02	100%
17	7.5.5.2	Prototype design & development	3/18/02	2/26/03	100%
18	7.5.5.3	Design & develop RFI enclosures	9/30/02	1/2/03	100%
19	7.5.5.4	DTS link hardware bench prototype	2/10/03	3/11/03	100%
20	7.5.5.5	WDM hardware bench prototype	3/3/03	7/18/03	100%
21	7.5.5.6	Build RFI enclosures	3/3/03	6/13/03	100%
22	7.5.5.7	Test antenna formatter assembled	6/13/03	6/13/03	100%
23	7.5.5.8	Redesign & build next 4 DTS modules	4/21/04	8/19/04	36%
24	7.5.5.9	Start production DTS link hardware	9/1/04	9/1/04	0%
25	7.5.5.11	Start production WDM hardare	9/1/04	9/1/04	0%
26	**7.5.10**	**Deformatter**	**4/8/02**	**10/29/04**	**99%**
27	7.5.10.1	Start Deformatter prototype	4/8/02	4/8/02	100%
28	7.5.10.2	Design & schematic	4/8/02	8/29/02	100%
29	7.5.10.3	Test & evaluate prototype deformatter board	9/3/02	10/1/02	100%
30	7.5.10.4	Deformatter prototype assembled	10/1/02	10/1/02	100%
31	7.5.10.6	Deformatters ready for integration tests	10/2/02	10/31/02	100%
32	7.5.10.5	Order deformatter board	12/3/02	2/3/03	100%
33	7.5.10.6	Assemble deformatter for test antenna	2/4/03	3/29/04	100%
34	7.5.10.7	Write device software	5/19/03	3/29/04	100%
35	7.5.10.8	Deformatters ready for system test antenna	3/29/04	3/29/04	100%
36	7.5.10.10	Deformatter ICDoc	2/2/04	4/16/04	100%
37	7.5.10.12	Order deformatter parts for production	6/19/04	6/19/04	0%
38	7.5.10.14	Assembled board ready for antenna 14	8/20/04	8/20/04	0%
39	7.5.10.16	Assembled board ready for antenna 16	10/29/04	10/29/04	0%
40	2.2.14	Procure production assembly	10/1/04	10/1/04	0%
41	**7.5.15**	**Laser Transmitter**	**11/1/02**	**7/30/04**	**99%**
42	7.5.15.1	Jodrell Bank Observatory design available	11/1/02	11/1/02	100%
43	7.5.15.2	Optical controller board & daughter cards	11/1/02	4/25/03	100%
44	7.5.15.3	Develop & test IF fiber components	11/21/02	6/4/03	100%
45	7.5.15.5	Test IF link	12/30/02	2/10/03	100%
46	7.5.15.6	Order parts for test antenna	2/10/03	2/10/03	100%
47	7.5.15.7	Build & test antenna transmitter	2/11/03	4/30/04	100%
48	7.5.15.8	Tranmitter ready for sys bench integration	1/30/04	1/30/04	100%
49	7.5.15.10	Start assembly of transponder design	4/27/04	4/27/04	100%
50	7.5.15.12	Complete assembly of transponder design	7/30/04	7/30/04	0%
51	**7.5.20**	**IF Interface**	**6/18/02**	**6/30/09**	**99%**
52	7.5.20.1	Build fiber cable bulkhead for VLA correlator acces	6/18/02	11/14/02	100%



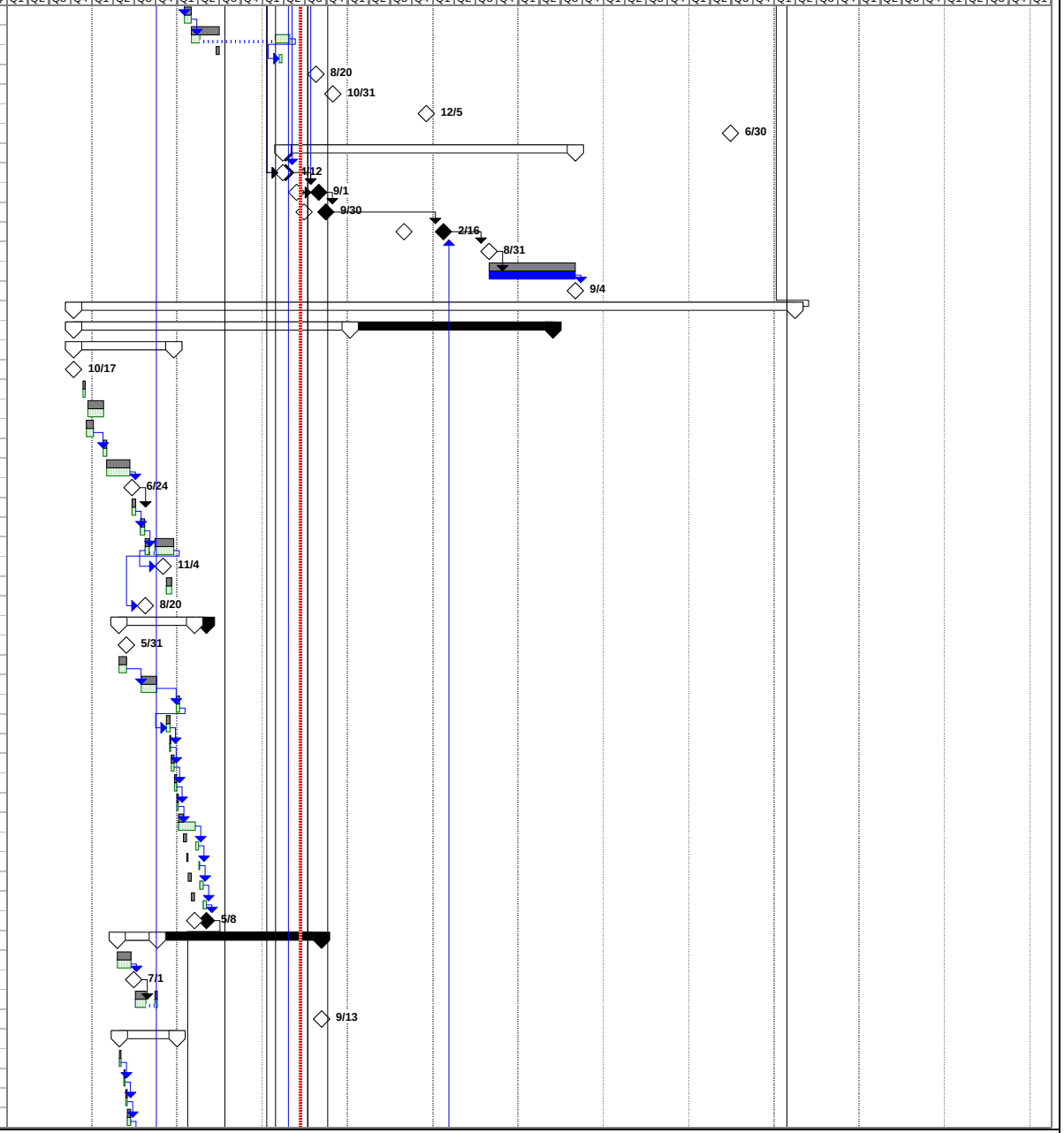
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
53	7.5.20.3	Specify & design transition hardware	2/3/03	3/4/03	100%
54	7.5.20.5	Modify D-rack for EVLA to correlator interface	3/5/03	4/29/04	100%
55	7.5.20.7	Fabricate coaxial cables deformatter to D-rack	3/15/04	3/26/04	100%
56	7.5.20.8	IF interface cables for antenna 14 ready	8/20/04	8/20/04	0%
57	7.5.20.8	IF interface cables for antenna 16 ready	10/31/04	10/31/04	0%
58	7.5.20.10	Start interfaces to new shielded room	12/5/05	12/5/05	0%
59	2.4.8	Complete interfaces to WIDAR correlator	6/30/09	6/30/09	0%
60	**7.5.25**	**IF System Production**	**4/12/04**	**9/4/07**	**0%**
61	7.5.25.3	Start DTS production specifications	4/12/04	4/12/04	100%
62	7.5.25.6	Order 1st quantities of DTS hardware	9/1/04	9/1/04	0%
63	2.5.3	Start production assembly	9/30/04	9/30/04	0%
64	7.5.25.9	Order 2nd quantities of DTS hardware	2/16/06	2/16/06	0%
65	7.5.25.12	Order final quanties of DTS hardware	8/31/06	8/31/06	0%
66	7.5.25.15	Finish DTS hardware assembly	8/31/06	9/4/07	0%
67	7.5.25.18	IF System hardware complete	9/4/07	9/4/07	0%
68	**7.10**	**Fiber Infrastructure & Antennas**	**10/17/01**	**4/1/10**	**46%**
69	**7.10.5**	**Fiber Infrastructure**	**10/17/01**	**6/1/07**	**53%**
70	**7.10.5.1**	**Fiber Optics Selection & Testing**	**10/17/01**	**12/19/02**	**100%**
71	7.10.5.1.1	Fiber Selection Review	10/17/01	10/17/01	100%
72	7.10.5.1.2	Fiber Selection CDR	11/26/01	12/5/01	100%
73	7.10.5.1.3	Setup AOC lab	12/17/01	2/22/02	100%
74	7.10.5.1.4	Test fiber performance	12/10/01	1/10/02	100%
75	7.10.5.1.5	Develop fiber specifications	2/20/02	3/7/02	100%
76	7.10.5.1.6	RFQ array fiber cable	3/7/02	6/14/02	100%
77	7.10.5.1.7	Award fiber cable bid	6/24/02	6/24/02	100%
78	7.10.5.1.8	Procure array fiber for burial	6/24/02	7/9/02	100%
79	7.10.5.1.9	Fiber delivery	7/30/02	8/16/02	100%
80	7.10.5.1.10	Fiber acceptance tests	8/19/02	12/19/02	100%
81	7.10.5.1.11	Fiber ready for burial	11/4/02	11/4/02	100%
82	7.10.5.1.12	Resolve cable quality issues	11/18/02	12/10/02	100%
83	7.10.5.1.13	Storage of fiber	8/20/02	8/20/02	100%
84	**7.10.5.2**	**Control Bldg Main Distribution Frame (MDF)**	**4/29/02**	**5/8/03**	**100%**
85	7.10.5.2.1	ATP room complete	5/31/02	5/31/02	100%
86	7.10.5.2.2	Complete MDF design	4/29/02	5/31/02	100%
87	7.10.5.2.3	Order MDF materials	8/2/02	10/8/02	100%
88	7.10.5.2.4	Complete CB cable lists, order cable	12/30/02	1/13/03	100%
89	7.10.5.2.5	Assemble splice panel & AFTP	11/18/02	12/3/02	100%
90	7.10.5.2.6	Hang trough - splice panel to AFTP	12/2/02	12/6/02	100%
91	7.10.5.2.8	Hang trough - AFTP to LO/MCB patch pnls	12/9/02	12/20/02	100%
92	7.10.5.2.9	Assemble cables for W-arm TCW	12/23/02	12/31/02	100%
93	7.10.5.2.10	Run cables - splice panel to AFTP	1/2/03	1/8/03	100%
94	7.10.5.2.11	Assemble cables for LO/MCB patch panels	1/9/03	3/21/03	100%
95	7.10.5.2.12	Run cables to LO & MCB panels locations	3/24/03	4/4/03	100%
96	7.10.5.2.7	Set LO/MCB patch panels in place	4/7/03	4/9/03	100%
97	7.10.5.2.13	Assemble 50 AFTP patch cords	4/10/03	4/24/03	100%
98	7.10.5.2.14	Connect fiber between panels	4/25/03	5/8/03	100%
99	7.10.5.2.15	MDF ready for tests - AAB, MP W10	5/8/03	5/8/03	100%
100	**7.10.5.3**	**VLA FO Lab**	**4/22/02**	**9/13/04**	**99%**
101	7.10.5.3.1	Order cable lab equip & matl's	4/22/02	6/19/02	100%
102	7.10.5.3.2	Send connector samples to Krell	7/1/02	7/1/02	100%
103	7.10.5.3.3	Polisher training, Krell report	7/8/02	10/10/02	100%
104	7.10.5.3.5	Fiber lab moved to CB annex	9/13/04	9/13/04	0%
105	**7.10.5.4**	**Underground Preparation**	**5/1/02**	**1/3/03**	**100%**
106	7.10.5.4.1	Order manhole materials	5/1/02	5/7/02	100%
107	7.10.5.4.2	Develop lightning plan	5/20/02	5/24/02	100%
108	7.10.5.4.3	Develop cable acceptance test procedue	5/28/02	6/3/02	100%
109	7.10.5.4.4	Assmble cable tray in manhole	6/4/02	6/17/02	100%



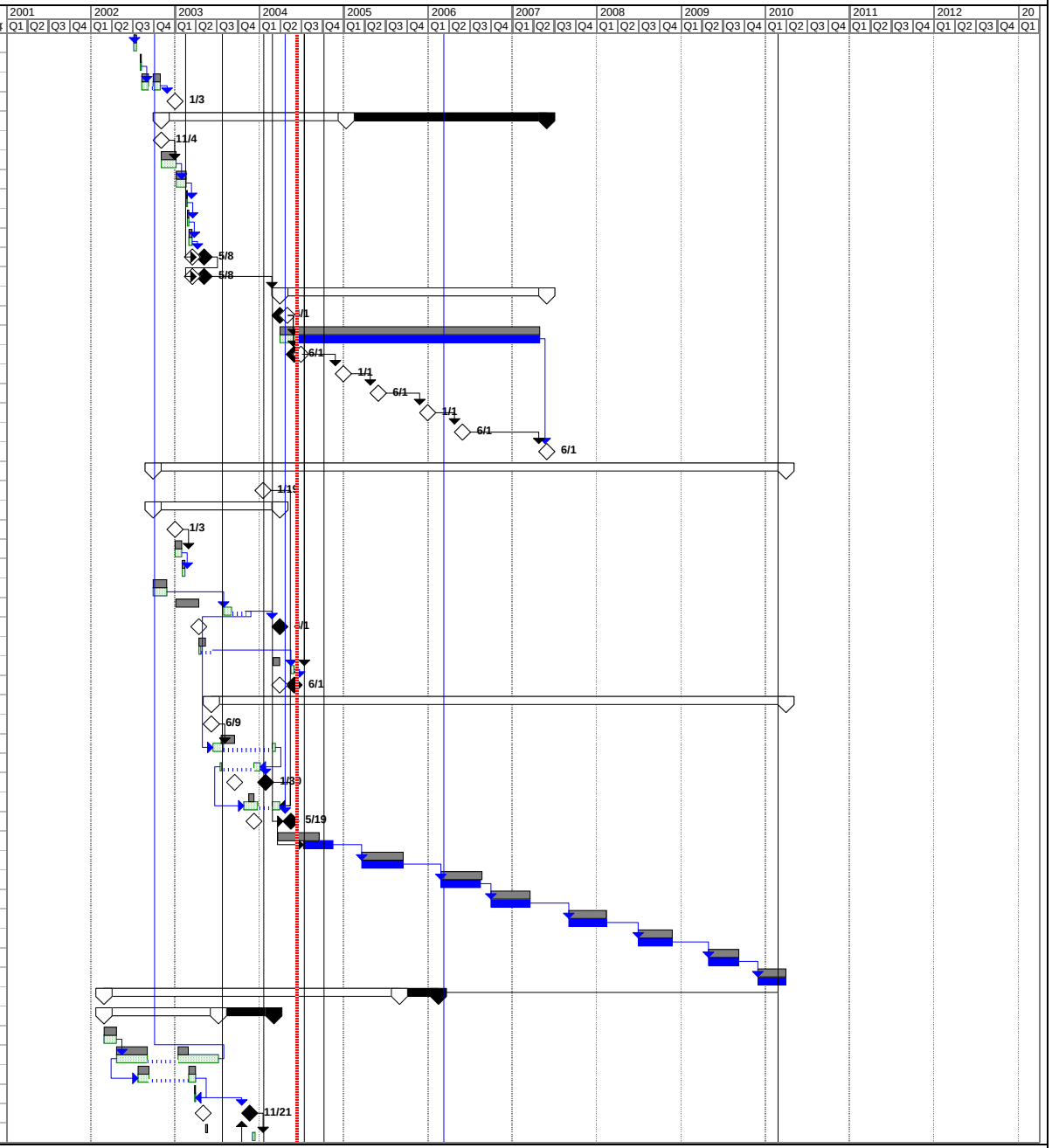
Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
110	7.10.5.4.5	Fab cable storage rings for manhole	7/8/02	7/19/02	100%
111	7.10.5.4.9	Purchase splice trailer	8/5/02	8/9/02	100%
112	7.10.5.4.10	Setup splice trailer	8/12/02	10/31/02	100%
113	7.10.5.4.15	Splice trailer outfitted	1/3/03	1/3/03	100%
114	**7.10.5.5**	**Underground Installation**	**11/4/02**	**6/1/07**	**16%**
115	7.10.5.5.1	Start fiber installation	11/4/02	11/4/02	100%
116	7.10.5.5.2	Order station pedestal materials	11/4/02	1/7/03	100%
117	7.10.5.5.3	Assemble pedestal hardware for test station	1/8/03	2/19/03	100%
118	7.10.5.5.5	Install pedestal hardware at test station	2/20/03	2/24/03	100%
119	7.10.5.5.7	Field splice STDW	2/25/03	3/3/03	100%
120	7.10.5.5.9	Slpice at W10 pedestal & CB splice panel	3/4/03	3/17/03	100%
121	7.10.5.5.11	Final Acceptance test W10	5/8/03	5/8/03	100%
122	7.10.5.5.13	Final Acceptance test Master Pad	5/8/03	5/8/03	100%
123	**7.10.5.5.15**	**Array Fiber Terminations**	**4/1/04**	**6/1/07**	**6%**
124	7.10.5.5.15.1	Splice @ DE5, Box @ DE8 & test	4/1/04	4/1/04	100%
125	7.10.5.5.15.2	Install antenna station J-boxes	4/1/04	5/1/07	6%
126	7.10.5.5.15.4	West arm splices complete	6/1/04	6/1/04	100%
127	7.10.5.5.15.7	E/N-arm D-array splices complete	1/1/05	1/1/05	10%
128	7.10.5.5.15.1	E/N-arm C-array splices complete	6/1/05	6/1/05	0%
129	7.10.5.5.15.1	E/N-arm B-array splices complete	1/1/06	1/1/06	0%
130	7.10.5.5.15.1	E/N-arm A-array splices complete	6/1/06	6/1/06	0%
131	7.10.5.5.15.2	Station pedestal fiber complete	6/1/07	6/1/07	0%
132	**7.10.10**	**Antenna Fiber**	**9/30/02**	**4/1/10**	**37%**
133	7.10.10.1	Decide to change antenna cable wrap	1/19/04	1/19/04	100%
134	**7.10.10.5**	**Antenna Development**	**9/30/02**	**4/1/04**	**100%**
135	7.10.10.5.1	Begin antenna structure design	1/3/03	1/3/03	100%
136	7.10.10.5.2	Order preliminary antenna jumper parts	1/3/03	1/31/03	100%
137	7.10.10.5.3	Complete antenna jumper design	2/3/03	2/14/03	100%
138	7.10.10.5.5	Specify and order fiber amplifiers	9/30/02	11/27/02	100%
139	7.10.10.5.6	Fabricate test antenna cables	8/1/03	11/3/03	100%
140	7.10.10.5.7	Fab/assemble initial jumper cables	4/1/04	4/1/04	100%
141	7.10.10.5.8	Prepare hardware for test antenna	4/16/03	6/13/03	100%
142	7.10.10.5.9	Start antenna production specifications	5/19/04	6/1/04	100%
143	7.10.10.5.12	Order 1st quantities of antenna hardware	6/1/04	6/1/04	100%
144	**7.10.10.10**	**Antenna Outfitting**	**6/9/03**	**4/1/10**	**27%**
145	7.10.10.10.1	Start Antenna Outfitting	6/9/03	6/9/03	100%
146	7.10.10.10.1	Outfit test antenna	6/16/03	3/12/04	100%
147	7.10.10.10.2	Test fiber system on test antenna	7/17/03	1/6/04	100%
148	7.10.10.10.3	Prototype available on test antenna	1/30/04	1/30/04	100%
149	7.10.10.10.4	Evaluate Test antenna fiber system	10/28/03	3/31/04	100%
150	7.10.10.10.5	Start assembly antenna fiber	5/19/04	5/19/04	100%
151	7.10.10.10.6	Outfit 2 antennas - `04	7/12/04	11/16/04	0%
152	7.10.10.10.7	Outfit 4 antennas - `05	3/21/05	9/16/05	0%
153	7.10.10.10.8	Outfit 4 antennas - `06	2/27/06	8/17/06	0%
154	7.10.10.10.9	Outfit 4 antennas - `07	10/2/06	3/20/07	0%
155	7.10.10.10.10	Outfit 4 antenna - `08	9/4/07	2/13/08	0%
156	7.10.10.10.11	Outfit 4 antenna - `09	7/1/08	11/25/08	0%
157	7.10.10.10.12	Outfit 4 antenna - `10	5/1/09	9/9/09	0%
158	7.10.10.10.13	Spare components & retrofitting	12/1/09	4/1/10	0%
159	**7.15**	**Samplers & MCB**	**3/1/02**	**2/16/06**	**84%**
160	**7.15.5**	**Monitor & Control**	**3/1/02**	**3/5/04**	**100%**
161	7.15.3	Develop MCB block diagram	3/1/02	4/23/02	100%
162	7.15.6	Prototype MCB	4/24/02	7/9/03	100%
163	7.15.9	MCB RFI tests	7/26/02	4/1/03	100%
164	7.15.12	MCB test - 22km, no MIB	3/28/03	4/1/03	100%
165	7.15.16	MCB switch available	11/21/03	11/21/03	100%
166	7.15.24	MCB prototype tests - final layout	12/4/03	12/15/03	100%



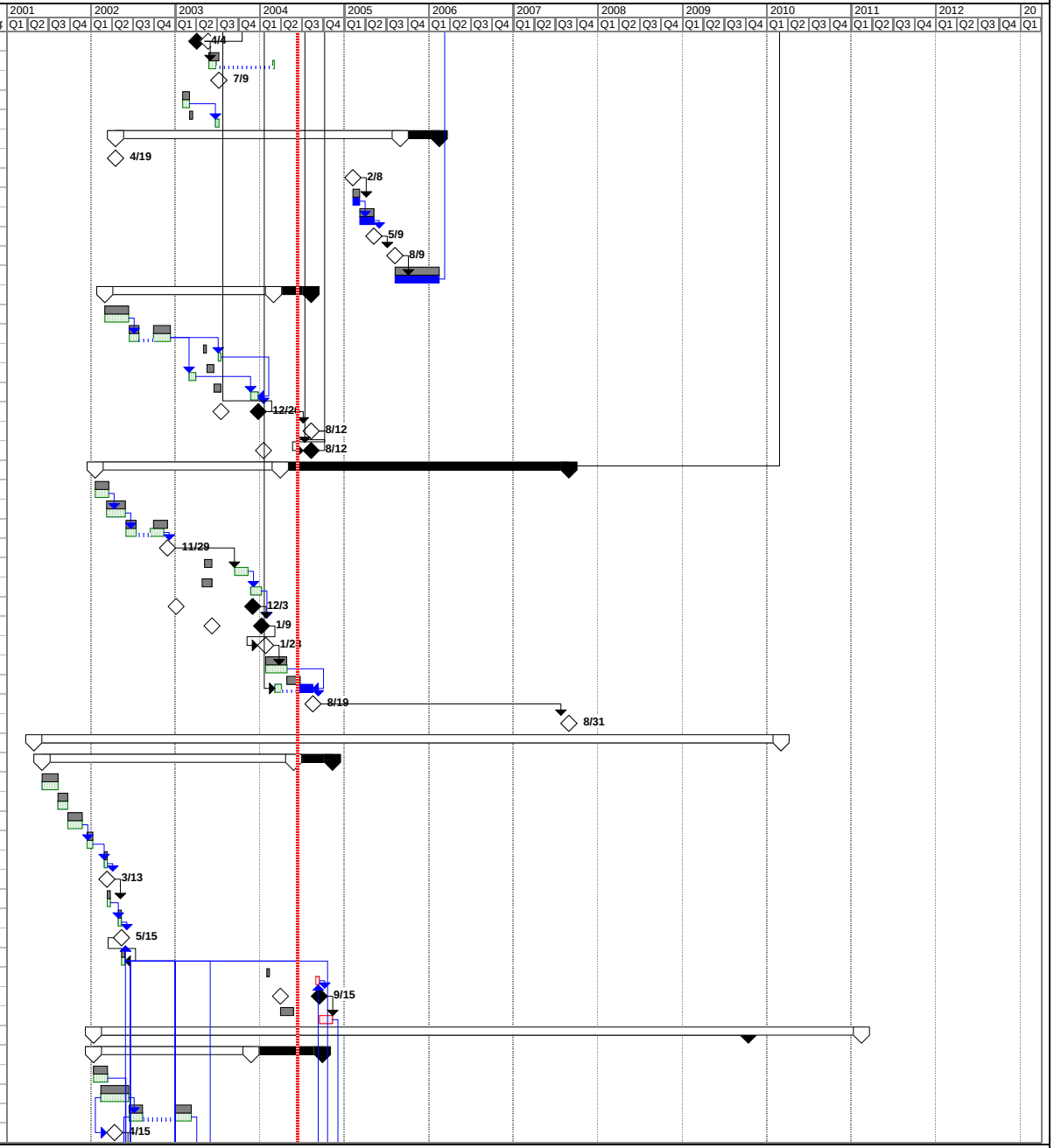
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

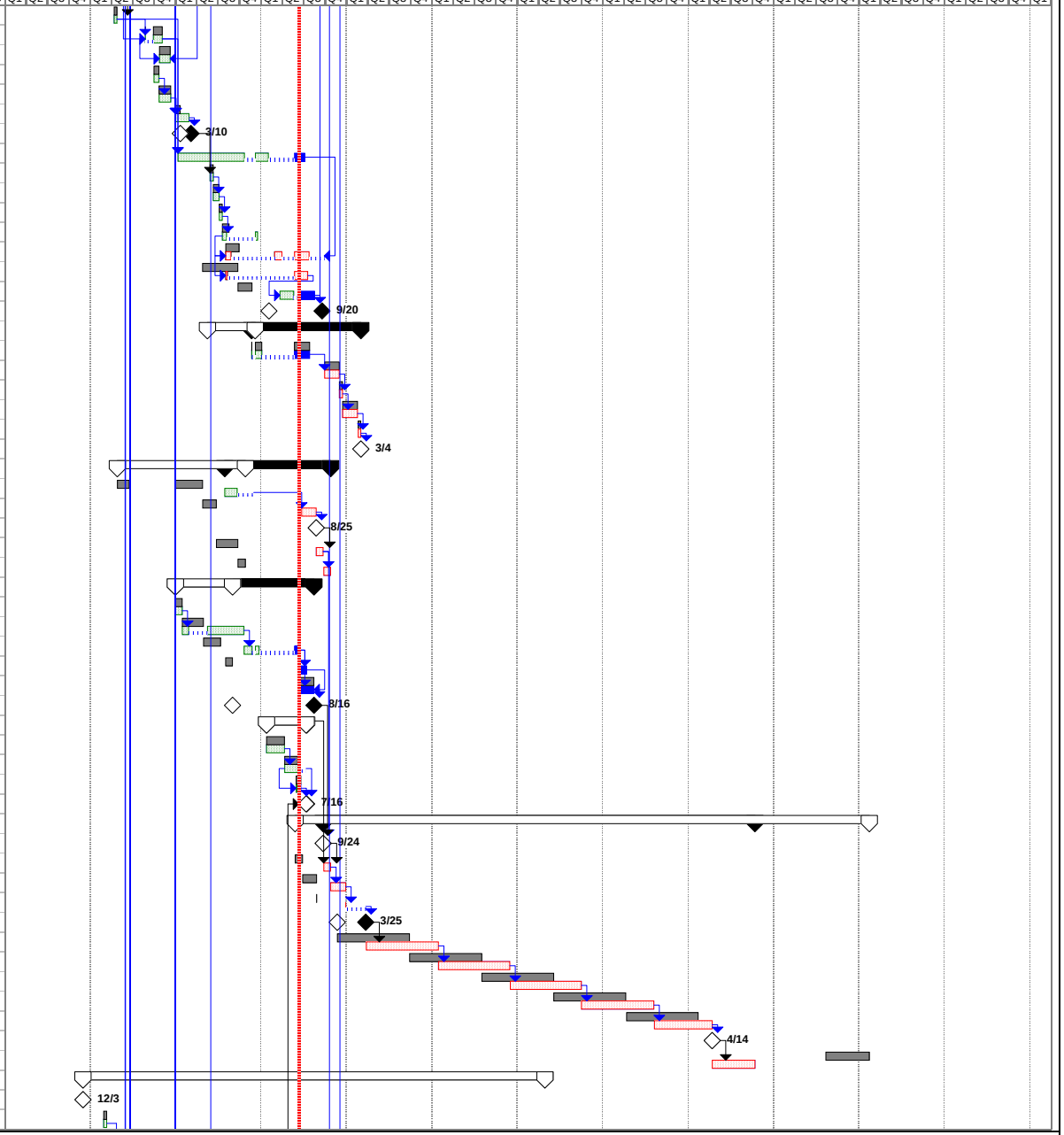
ID	WBS	Task Name	Start	Finish	% Comp
167	7.15.21	Order parts for test antenna & CB	4/4/03	4/4/03	100%
168	7.15.27	Build test antenna module/H-Rack	5/27/03	3/5/04	100%
169	7.15.28	Test antenna MCB ready for installation	7/9/03	7/9/03	100%
170	7.15.33	Order/assemble routers/ethernet switches	2/3/03	3/4/03	100%
171	7.15.36	Install ethernet switches in Correlator rm	6/25/03	7/10/03	100%
172	**7.15.10**	**2-4 GHz Sampler 3-Bit**	**4/19/02**	**2/16/06**	**0%**
173	7.15.1.3	Obtain technical specification from French	4/19/02	4/19/02	100%
174	7.15.1.5	Prototype board delivered from French	2/8/05	2/8/05	0%
175	7.15.1.7	3 bit board evaluation	2/8/05	3/9/05	0%
176	7.15.1.8	Test prototype board on antenna	3/10/05	5/9/05	0%
177	7.15.1.9	Make EVLA/ALMA purchase contract w/ French	5/9/05	5/9/05	0%
178	7.15.1.13	Delivery of 1st production boards	8/9/05	8/9/05	0%
179	7.15.1.11	Assemble 3-bit samplers - add to DTS	8/9/05	2/16/06	0%
180	**7.15.15**	**1 GHz Sampler 8-Bit**	**3/4/02**	**8/12/04**	**99%**
181	7.15.2.1	Specify & design prototype	3/4/02	6/14/02	100%
182	7.15.2.3	Build prototype, test & evaluate	6/17/02	12/12/02	100%
183	7.15.2.5	Add MIB interface	7/7/03	7/18/03	100%
184	7.15.2.7	Bench integration testing	3/3/03	3/31/03	100%
185	7.15.2.9	Assemble test antenna sampler	11/24/03	12/26/03	100%
186	7.15.2.12	8-bit sampler ready for system bench testing	12/26/03	12/26/03	100%
187	7.15.2.14	8-bit sampler redesign ready for use	8/12/04	8/12/04	0%
188	7.15.2.16	Start production hardware assembly	8/12/04	8/12/04	0%
189	**7.20.10**	**LO Transmitter Module - L353**	**1/21/02**	**8/31/07**	**78%**
190	7.20.10.1	Specify & design LO RTP measurement system	1/21/02	3/20/02	100%
191	7.20.10.5	Develop & test LO xmtr-rtp components	3/11/02	5/31/02	100%
192	7.20.10.10	Complete module design	6/3/02	11/13/02	100%
193	7.20.10.15	Order fiber parts	11/29/02	11/29/02	100%
194	7.20.10.17	Build digital interface	9/15/03	11/12/03	100%
195	7.20.10.20	Build test antenna module	11/24/03	1/9/04	100%
196	7.20.10.22	L353 MIB available	12/3/03	12/3/03	100%
197	7.20.10.25	Add module to System bench integration	1/9/04	1/9/04	100%
198	7.20.10.27	Install L353 in Master LO rack	1/28/04	1/28/04	100%
199	7.20.10.30	Evaluate L353 in functional system	1/28/04	4/30/04	100%
200	7.20.10.33	Assembly next 3ea L353 modules	3/8/04	8/19/04	18%
201	7.20.10.35	Order production parts & start assembly	8/19/04	8/19/04	0%
202	7.20.10.36	L353 module assembly complete	8/31/07	8/31/07	0%
9	**6.10**	**MONITOR & CONTROL**	**5/1/01**	**3/4/10**	**45%**
1	**10.1**	**Management/Subsystem Engineering**	**6/5/01**	**11/11/04**	**78%**
2	10.1.3	Initial Budget, Labor Requirements & Schedule	6/5/01	8/13/01	100%
3	10.1.6	Project Book requirements & specifications	8/13/01	9/24/01	100%
4	10.1.7	Prepare for System Integration PDR	9/25/01	11/26/01	100%
5	10.1.8	System PDR Analysis & review	12/17/01	1/10/02	100%
6	10.1.9	Preparation for M&C Antenna Hardware PDR	3/1/02	3/14/02	100%
7	10.1.10	Hardware PDR	3/13/02	3/13/02	100%
8	10.1.15	PDR analysis and revisions	3/14/02	3/27/02	100%
9	10.1.16	Preparation for M&C Software PDR	5/1/02	5/14/02	100%
10	10.1.18	M&C Software PDR	5/15/02	5/15/02	100%
11	10.1.19	PDR Analysis & Revision	5/15/02	5/29/02	100%
12	10.1.23	Preparation for M/C hardware CDR	9/1/04	9/15/04	0%
13	10.1.25	Monitor & Control System CDR	9/15/04	9/15/04	0%
14	10.1.30	CDR Analysis & Revision	9/16/04	11/11/04	0%
15	**10.5**	**M&C Electronic Hardware**	**1/14/02**	**10/14/09**	**40%**
16	**10.5.5**	**Physical Interface**	**1/14/02**	**9/29/04**	**68%**
17	10.5.5.3	Select module interface board (MIB) processor	1/14/02	3/15/02	100%
18	10.5.5.6	Specify & purchase development board	2/14/02	6/14/02	100%
19	10.5.5.9	Design & develop prototype MIB	6/17/02	3/12/03	100%
20	10.5.5.12	Issue MIB serial peripheral interface (SPI) applicati	4/15/02	4/15/02	100%



Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split

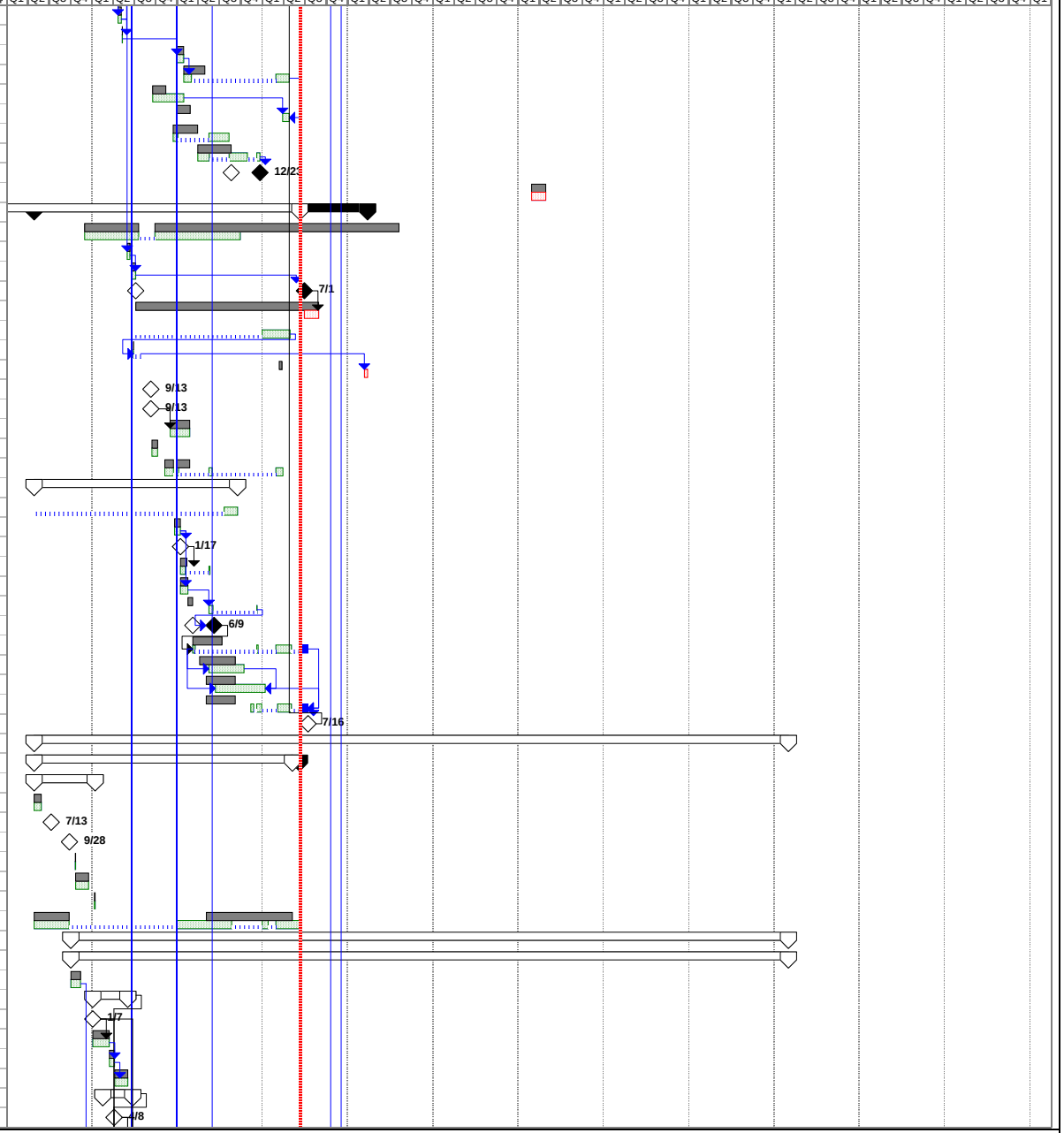
ID	WBS	Task Name	Start	Finish	% Comp
21	10.5.5.13	Responses on MIB SPI applications	4/15/02	4/26/02	100%
22	10.5.5.15	MIB Layout	8/26/02	11/6/02	100%
23	10.5.5.14	MIB parts order/delivery	10/25/02	12/10/02	100%
24	10.5.5.16	Order printed circuit board	10/2/02	10/23/02	100%
25	10.5.5.18	MIB PC board in-house	10/23/02	12/12/02	100%
26	10.5.5.19	MIB prototype assembly	1/2/03	2/28/03	100%
27	10.5.5.20	RTOS available for MIB	3/10/03	3/10/03	100%
28	10.5.5.22	Hardware ICDs received	1/13/03	7/8/04	71%
29	10.5.5.24	Test SPI - GP10 on existing board	5/30/03	6/12/03	100%
30	10.5.5.26	MIB revisions, tests	6/13/03	7/7/03	100%
31	10.5.5.28	Order 2nd iteration board	7/8/03	7/21/03	100%
32	10.5.5.30	Assemble, test & issue new boards	7/22/03	12/19/03	100%
33	10.5.5.31	Write MIB to device software	8/5/03	9/29/04	60%
34	10.5.5.33	Evaluate MIB on antenna	8/5/03	7/20/04	2%
35	10.5.5.36	Revisions to MIB design	3/24/04	8/18/04	41%
36	10.5.5.38	Start MIB production	9/20/04	9/20/04	0%
37	**10.5.10**	**Utility Module - M302**	**11/24/03**	**3/4/05**	**10%**
38	10.5.10.3	Specify & design antenna utility module	11/24/03	7/28/04	16%
39	10.5.10.6	Build test devopment module & issue applications	10/1/04	12/2/04	0%
40	10.5.10.9	Responses on utilty module applications	12/3/04	12/16/04	0%
41	10.5.10.12	Test prototype utility module	12/17/04	2/18/05	0%
42	10.5.10.15	Utility module added to bench integration testing	2/21/05	3/4/05	0%
43	10.5.10.18	Install prototype utility module on test antenna	3/4/05	3/4/05	0%
44	**10.5.15**	**Front End Interface Module - F317**	**8/1/03**	**10/26/04**	**38%**
45	10.5.15.3	Specify & design FE interface module	8/1/03	12/2/03	75%
46	10.5.15.6	Build 2ea prototype FE interface modules	6/25/04	8/25/04	0%
47	10.5.15.8	FE card cage available	8/25/04	8/25/04	0%
48	10.5.15.10	Add MIB & test prototype FE interface module	8/26/04	9/24/04	0%
49	10.5.15.15	Bench integration of FE interface module	9/27/04	10/26/04	0%
50	**10.30**	**Transition Module - F320**	**1/2/03**	**8/16/04**	**57%**
51	10.30.3	Specify & design F320 transition module (for L,X,K	1/2/03	1/30/03	100%
52	10.30.6	Build prototype F320 transistion module	1/31/03	10/22/03	100%
53	10.30.9	Add MIB & test prototype F320 transition module	10/22/03	6/15/04	27%
54	10.30.15	Test F320 transition module with FE receivers	6/15/04	7/16/04	0%
55	10.30.16	F320 design revisions	6/15/04	8/16/04	0%
56	10.30.18	Start building production F320 modules	8/16/04	8/16/04	0%
57	**10.32**	**MIB Slot Identification**	**1/27/04**	**7/16/04**	**73%**
58	10.32.3	Design & assemble prototype slot ID	1/27/04	4/12/04	100%
59	10.32.6	Test & evaluate slot ID prototype	4/13/04	7/13/04	63%
60	10.32.9	Assemble interface cabling to slot ID	6/1/04	6/21/04	25%
61	10.32.11	Start slot ID installation on antennas	7/16/04	7/16/04	0%
62	**10.35**	**Production of M&C hardware modules**	**9/24/04**	**10/14/09**	**0%**
63	2.6.1	Start production of M&C hardware	9/24/04	9/24/04	0%
64	10.35.1	Confirm production specifications	9/27/04	10/26/04	0%
65	10.35.2	RFQ components & materials	10/27/04	12/29/04	0%
66	10.35.3	Order production components & materials	12/29/04	3/25/05	0%
67	10.35.4	Start M&C hardware assembly	3/25/05	3/25/05	0%
68	10.35.5	Fab, assmble M&C hrdwr, 6 antennas outfited	3/28/05	1/30/06	0%
69	10.35.6	Fab, assmble M&C hrdwr, 11 antennas outfited	1/31/06	12/1/06	0%
70	10.35.7	Fab, assmble M&C hrdwr, 17 antennas outfited	12/4/06	10/3/07	0%
71	10.35.8	Fab, assmble M&C hrdwr, 23 antennas outfited	10/4/07	8/8/08	0%
72	10.35.9	Fab, assmble M&C hrdwr, 28 antennas outfited	8/11/08	4/14/09	0%
73	2.6.11	M&C hardware outfitting complete	4/14/09	4/14/09	0%
74	10.35.12	Retrofit & spare components	4/15/09	10/14/09	0%
75	**10.10**	**M&C Network Hardware/ Software**	**12/3/01**	**4/30/07**	**94%**
76	10.10.2	Specify & design network system	12/3/01	12/3/01	100%
77	10.10.4	Preparation for M&C Antenna Hardware PDR	3/1/02	3/14/02	100%



EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
78	10.10.5	Preparation for M&C Software PDR	4/25/02	5/8/02	100%
79	10.10.6	Analysis & review of software PDR	5/13/02	5/13/02	100%
80	10.10.7	Identify & prepare interim location of network hardware	1/2/03	1/30/03	100%
81	10.10.9	Procure network hardware & software	1/31/03	4/27/04	100%
82	10.10.10	Install AOC-based bench test networks	9/20/02	1/31/03	100%
83	10.10.12	Install site-based bench test network	3/29/04	4/27/04	100%
84	10.10.13	Install M&C network: contrl bldg & master pad	12/17/02	8/13/03	100%
85	10.10.14	EVLA M&C network: test antenna array pad(s)	4/1/03	12/23/03	100%
86	10.10.15	Network connection tested - antenna to CB	12/23/03	12/23/03	100%
87	10.10.25	Acquire & setup network services servers	3/1/07	4/30/07	0%
88	**10.15**	**M&C Computing Systems, Hardware & Software**	**5/1/01**	**3/28/05**	**94%**
89	10.15.1	Purchase Development tools & workstations	12/3/01	9/30/03	100%
90	10.15.3	Order MIB Software	6/3/02	6/14/02	100%
91	10.15.5	Select & order RTOS	6/24/02	7/9/02	100%
92	10.15.7	Determine requirement of real-time database	7/1/04	7/1/04	0%
93	10.15.9	Select & order real time database	7/1/04	8/31/04	0%
94	10.15.9	Order debug & test tools for MIB	6/30/02	4/30/04	100%
95	10.15.11	Debug & test tools training	6/30/02	7/30/02	100%
96	10.15.13	Order Operations servers for support outside CB	3/15/05	3/28/05	0%
97	10.15.11	MIB software dev toolset licensed	9/13/02	9/13/02	100%
98	10.15.13	MIB communication protocol specified	9/13/02	9/13/02	100%
99	10.15.15	MIB comm protocol, test & dev (TriBoard)	12/4/02	2/26/03	100%
100	10.15.17	Install & test MIB simulation env	9/17/02	10/11/02	100%
101	10.15.19	MIB technician/engnr screens	11/11/02	3/31/04	100%
102	**10.15.20**	**MIB prototype board, design & dev**	**5/1/01**	**9/18/03**	**100%**
103	10.15.20.1	Begin design & dev	5/1/01	9/18/03	100%
104	10.15.20.2	MIB prototype, Assembly/Test	12/23/02	1/17/03	100%
105	10.15.20.3	MIB prototype board available	1/17/03	1/17/03	100%
106	10.15.20.4	Design & dev completed	1/17/03	5/23/03	100%
107	10.15.21	Systems software ported to MIB prototype board	1/17/03	2/18/03	100%
108	10.15.22	MIB comm protocol ported to MIB prototype board	5/19/03	12/11/03	100%
109	10.15.23	MIB prototype board completed	6/9/03	6/9/03	100%
110	10.15.25	MIB module/device software	3/11/03	7/16/04	71%
111	10.15.27	MIB prototype with modules, test/eval	5/19/03	10/16/03	100%
112	10.15.29	Build MIB boards for test antenna	6/16/03	1/15/04	100%
113	10.15.30	MIB prototype with all devices in test rack	11/14/03	7/16/04	73%
114	10.15.32	MIB Slot ID software developed	7/16/04	7/16/04	0%
115	**10.20**	**M&C EVLA Software**	**5/1/01**	**3/4/10**	**31%**
116	**10.20.5**	**Stabilization of the VLA**	**5/1/01**	**6/10/04**	**100%**
117	**10.20.5.1**	**Modcomp to Modcomp Replacement**	**5/1/01**	**1/16/02**	**100%**
118	10.20.5.1.5	Prep - space, power, other	5/1/01	5/31/01	100%
119	10.20.5.1.10	Purchase Order Issued	7/13/01	7/13/01	100%
120	10.20.5.1.15	Delivery (14 to 35 days ARO)	9/28/01	9/28/01	100%
121	10.20.5.1.20	System Cabling, Load OS	10/24/01	10/25/01	100%
122	10.20.5.1.25	System Config, Test Appl Software	10/25/01	12/19/01	100%
123	10.20.5.1.30	Switchover to New CPUs	1/14/02	1/16/02	100%
124	10.20.5.1.40	Correlator Controller Upgrade	5/1/01	6/10/04	100%
125	**10.20.10**	**Requirements (High Level, Raw)**	**10/5/01**	**3/4/10**	**27%**
126	**10.20.10.5**	**Engineering**	**10/5/01**	**3/4/10**	**26%**
127	10.20.10.5.3	1st draft	10/5/01	11/15/01	100%
128	**10.20.10.15**	**Correlator Backend**	**1/7/02**	**6/5/02**	**100%**
129	10.20.10.15.3	Fill vacany, Correl Backend	1/7/02	1/7/02	100%
130	10.20.10.15.6	1st draft	1/7/02	3/18/02	100%
131	10.20.10.15.9	comments	3/19/02	4/9/02	100%
132	10.20.10.15.1	2nd draft	4/11/02	6/5/02	100%
133	**10.20.10.20**	**Correlator M & C**	**2/19/02**	**6/26/02**	**100%**
134	10.20.10.20.3	Fill vacancy, Correl M&C	4/8/02	4/8/02	100%



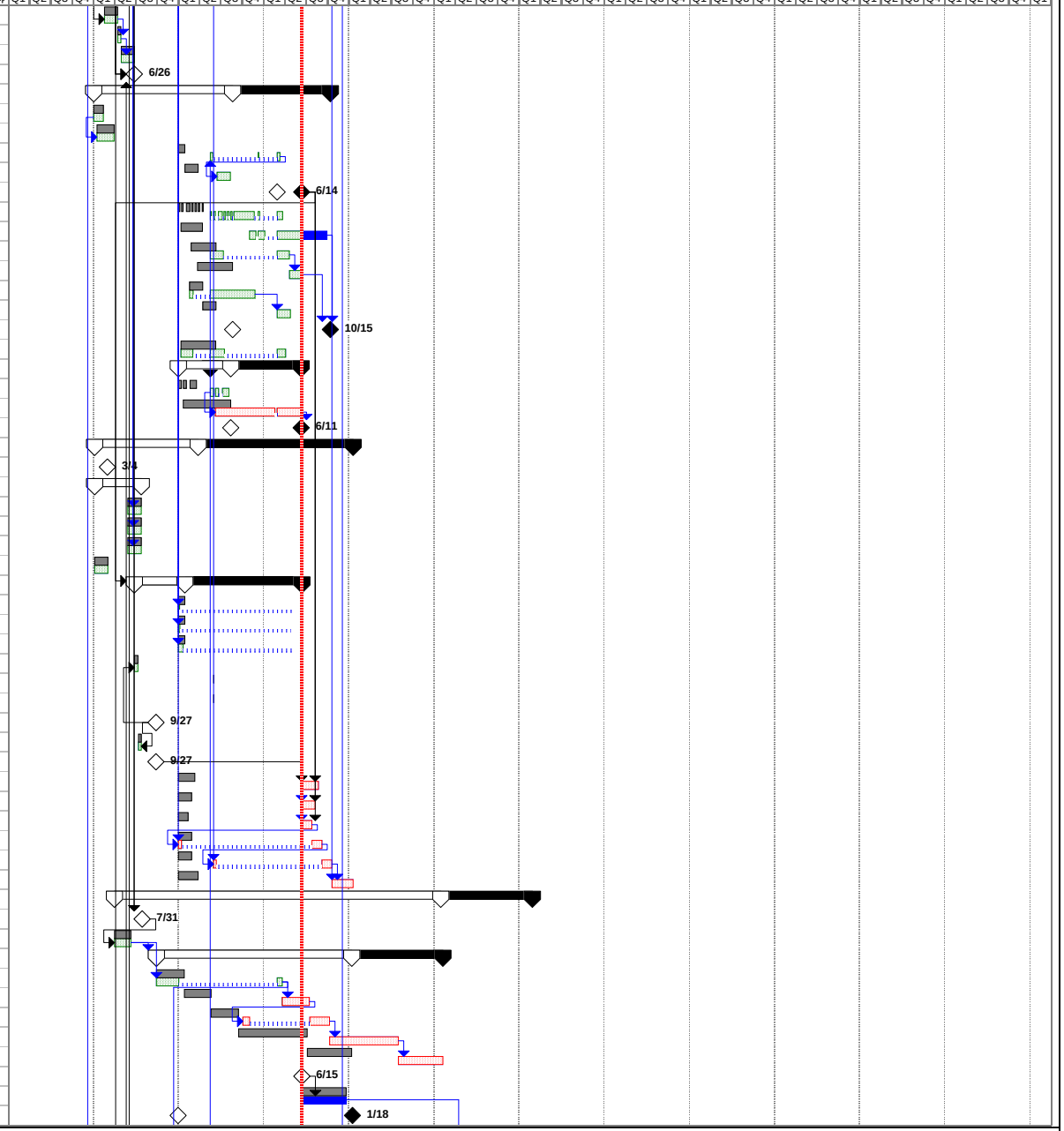
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
135	10.20.10.20.6	1st draft	2/19/02	4/16/02	100%
136	10.20.10.20.9	comments	4/17/02	4/30/02	100%
137	10.20.10.20.1	2nd draft	5/2/02	6/26/02	100%
138	10.20.10.25	High Level (Raw) Requirements complete	6/26/02	6/26/02	100%
139	**10.20.15**	**High Level Sftwre Arch & Design**	**1/4/02**	**10/15/04**	**91%**
140	10.20.15.5	Antenna RTOS selection	1/4/02	2/14/02	100%
141	10.20.15.10	Antenna M&C Initial Design	1/18/02	4/1/02	100%
142	10.20.15.30	User Interface, Prototypical Screens	5/19/03	3/12/04	100%
143	10.20.15.35	System Timing, Initial Specifications	6/17/03	8/13/03	100%
144	10.20.15.37	Overall software design complete	6/14/04	6/14/04	0%
145	10.20.15.40	Transition Planning	5/19/03	3/24/04	100%
146	10.20.15.41	Overall design for hybrid array control	11/3/03	9/30/04	58%
147	10.20.15.42	Hybrid array sftwre, for test ant on maste	5/19/03	4/22/04	100%
148	10.20.15.43	Hybrid array sftwre, for test ant in array	4/22/04	6/11/04	96%
149	10.20.15.44	Configure & purchase test ant & hybrid ai	2/19/03	11/26/03	100%
150	10.20.15.45	Install test ant & hybrid array crates	3/1/04	4/26/04	100%
151	10.20.15.46	Hybrid array software online	10/15/04	10/15/04	0%
152	10.20.15.47	Test antenna monitor data archive	1/13/03	4/6/04	100%
153	**10.20.20**	**Test & Dev Support, Enhanced Ants**	**5/19/03**	**6/11/04**	**99%**
154	10.20.20.5	Task Specifications	5/19/03	8/6/03	100%
155	10.20.20.10	Software Development	6/10/03	6/11/04	99%
156	10.20.20.15	Test & Dev Support for Enhanced Ants R	6/11/04	6/11/04	0%
157	**10.20.25**	**Mid-Level Analysis & Design**	**1/8/02**	**1/20/05**	**26%**
158	10.20.25.3	Fill vacancy, Gen'l OOA/D/P	3/4/02	3/4/02	100%
159	**10.20.25.5**	**Detailed (Well-Formed) Requirements**	**1/8/02**	**7/26/02**	**100%**
160	10.20.25.5.3	Scientific	5/30/02	7/26/02	100%
161	10.20.25.5.6	Engineering	5/30/02	7/26/02	100%
162	10.20.25.5.9	Operations	5/30/02	7/26/02	100%
163	10.20.25.5.12	Correlator (M&C, Backend)	1/8/02	3/5/02	100%
164	**10.20.25.10**	**e2e IF Specifications**	**6/27/02**	**6/14/04**	**96%**
165	10.20.25.10.3	Observation Scheduling Software	1/2/03	5/6/04	100%
166	10.20.25.10.6	Data Archive Requirements	1/2/03	4/28/04	100%
167	10.20.25.10.9	Image Pipeline Requirements	1/2/03	5/14/04	100%
168	10.20.25.10.1	Preparation for e2e PDR, M&C Inter	6/27/02	7/12/02	100%
169	10.20.25.10.1	Real-time analysis calibration tool	6/14/04	6/14/04	0%
170	10.20.25.10.1	Archive data from old to new correla	6/14/04	6/14/04	0%
171	10.20.25.10.1	e2e PDR, M&C Interfaces	9/27/02	9/27/02	100%
172	10.20.25.10.1	PDR Analysis & Revision	7/15/02	7/26/02	100%
173	10.20.25.15	Fill vacancy, Astronomy Appls	9/27/02	9/27/02	100%
174	10.20.25.20	Observing Layer	6/14/04	8/24/04	0%
175	10.20.25.25	System Timing	6/14/04	8/10/04	0%
176	10.20.25.30	Scan Setup & Supervision	6/14/04	7/27/04	0%
177	10.20.25.35	Antenna Control	1/2/03	9/8/04	2%
178	10.20.25.40	Monitor Data	6/2/03	10/21/04	25%
179	10.20.25.45	Hybrid Array Operation	10/22/04	1/20/05	0%
180	**10.20.30**	**Test & Dev Support, Correlator**	**4/3/02**	**2/28/07**	**21%**
181	10.20.30.2	Correl M&C, Correl Backend vacancies fi	7/31/02	7/31/02	100%
182	10.20.30.3	Training, Correl Arch (Penticton)	4/3/02	6/12/02	100%
183	**10.20.30.5**	**Correlator Monitor & Control**	**9/30/02**	**2/9/06**	**22%**
184	10.20.30.5.3	Virtual Correl Interface Specification	9/30/02	3/22/04	100%
185	10.20.30.5.6	Test Sftwre Interface Specification	3/23/04	7/16/04	69%
186	10.20.30.5.9	Device Driver Interface Specificatior	10/6/03	10/11/04	25%
187	10.20.30.5.12	Virtual Correl Sftwre Coding & Tstin(	10/12/04	8/2/05	0%
188	10.20.30.5.15	Test Sftwre Coding & Testing	8/3/05	2/9/06	0%
189	10.20.30.5.18	Correlator board manuals available	6/15/04	6/15/04	0%
190	10.20.30.5.21	Device Driver Sftwre Coding & Testi	6/15/04	12/21/04	0%
191	10.20.30.5.24	Correlator PDR	1/18/05	1/18/05	0%



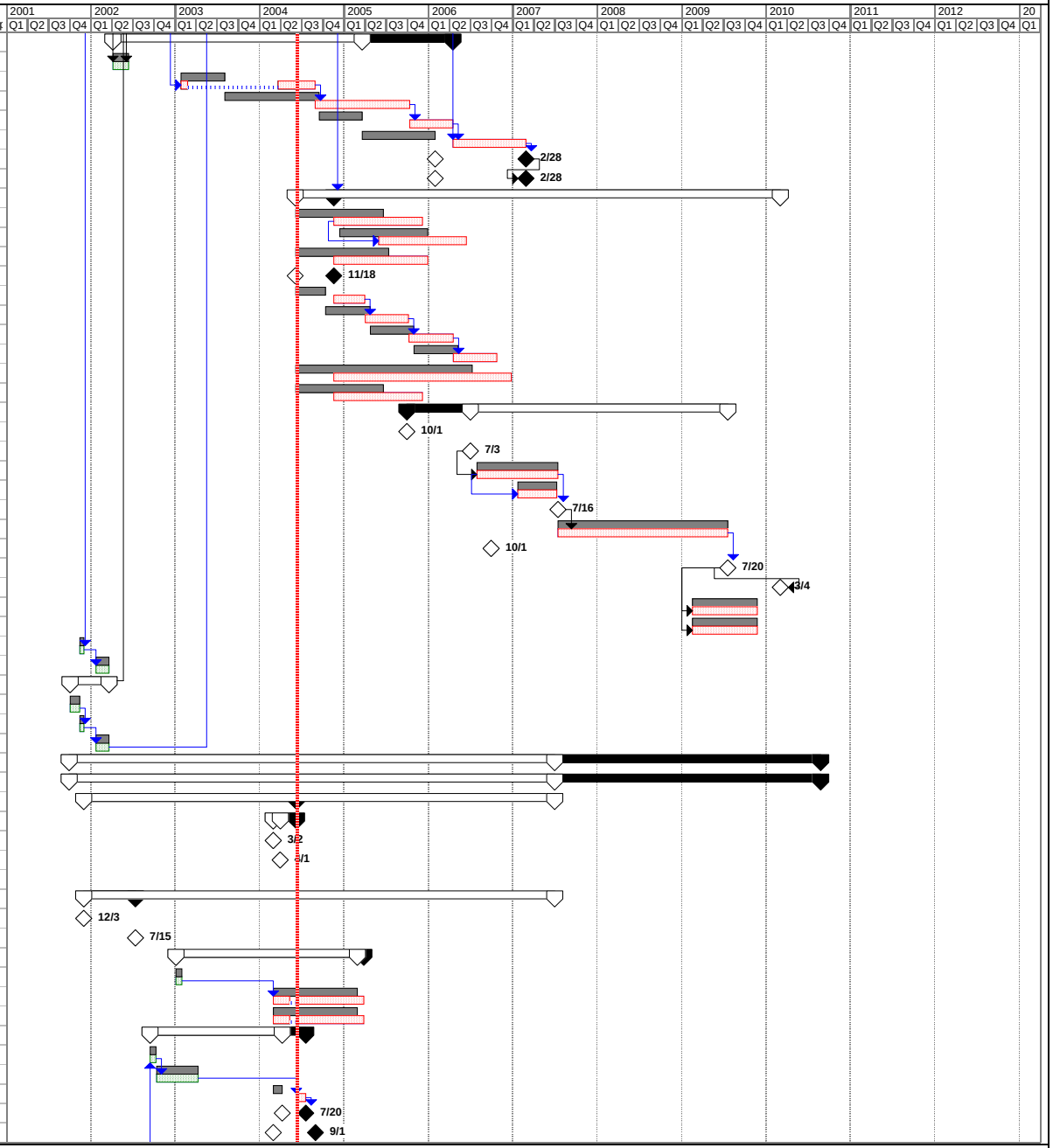
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
192	**10.20.30.10**	**Correl Data Products - FFTs, Fits File I**	**4/8/02**	**4/18/06**	**21%**
193	10.20.30.10.3	Training, Correl Arch (Penticton)	4/8/02	6/14/02	100%
194	10.20.30.10.6	System Specification	1/28/03	8/30/04	57%
195	10.20.30.10.9	Coding & Testing	8/30/04	10/13/05	0%
196	10.20.30.10.1	FITS/AIPS++ Extensions	10/13/05	4/18/06	0%
197	10.20.30.15	System Integration & Testing, Penticton	4/18/06	2/28/07	0%
198	10.20.32	M&C System Rdy For WIDAR Correl Tst & De	2/28/07	2/28/07	0%
199	10.20.33	M&C System, Ready For Archive	2/28/07	2/28/07	0%
200	**10.20.35**	**Detailed Design & Coding**	**11/18/04**	**3/4/10**	**0%**
201	10.20.35.3	Observing Layer	11/19/04	12/7/05	0%
202	10.20.35.6	Scan Setup & Supervision	6/1/05	6/15/06	0%
203	10.20.35.9	Antenna Control	11/19/04	12/30/05	0%
204	10.20.35.12	Full Support, Enhanced Antennas	11/18/04	11/18/04	0%
205	10.20.35.15	Monitor Data	11/19/04	4/1/05	0%
206	10.20.35.18	Warnings & Alarms	4/4/05	10/7/05	0%
207	10.20.35.21	Data Flagging	10/10/05	4/19/06	0%
208	10.20.35.24	Logging	4/20/06	10/25/06	0%
209	10.20.35.27	User Interfaces	11/19/04	12/26/06	0%
210	10.20.35.30	Hybrid Array support	11/19/04	12/7/05	0%
211	**10.20.35.35**	**Correlator, at VLA Site**	**10/1/05**	**7/20/09**	**0%**
212	10.20.35.35.1	Test prototype correlator on 3 or 4 a	10/1/05	10/1/05	0%
213	10.20.35.35.3	Begin Installation of Correlator at VL	7/3/06	7/3/06	0%
214	10.20.35.35.6	System Integration & Testing, VLA	7/31/06	7/16/07	0%
215	10.20.35.35.9	Preparation for Correlator Observati	1/24/07	7/12/07	0%
216	10.20.35.35.1	Begin Correlator Test Observations	7/16/07	7/16/07	0%
217	10.20.35.35.1	Coding of Operational Sftwre, Corre	7/17/07	7/20/09	0%
218	10.20.35.35.1	Start tests of 1st correlator subset al	10/1/06	10/1/06	0%
219	10.20.35.40	EVLA Correlator Operational	7/20/09	7/20/09	0%
220	10.20.35.45	VLA Correlator Shutdown	3/4/10	3/4/10	0%
221	10.20.35.50	Data Archive Interface	2/18/09	11/25/09	0%
222	10.20.35.55	Image Pipeline Interface	2/18/09	11/25/09	0%
223	10.20.10.5.6	comments	11/16/01	12/3/01	100%
224	10.20.10.5.9	2nd draft	1/24/02	3/22/02	100%
225	**10.20.10.10**	**Operations**	**10/5/01**	**3/22/02**	**100%**
226	10.20.10.10.3	1st draft	10/5/01	11/15/01	100%
227	10.20.10.10.6	comments	11/16/01	12/3/01	100%
228	10.20.10.10.9	2nd draft	1/24/02	3/22/02	100%
10	**6.11**	**DATA MGMT/e2e**	**10/1/01**	**8/27/10**	**47%**
1	**11.1**	**e2e Project**	**10/1/01**	**8/27/10**	**47%**
2	**11.1.1**	**Management and Project Book**	**12/3/01**	**6/10/04**	**75%**
3	**11.1.1.1**	**Requirements**	**3/2/04**	**6/10/04**	**67%**
4	11.1.1.1.3	EVLA science requirements	3/2/04	3/2/04	100%
5	11.1.1.1.4	EVLA operational requirements	4/1/04	4/1/04	100%
6	11.1.1.1.7	Data Mgt reorganization	6/10/04	6/10/04	0%
7	**11.1.1.3**	**EVLA milestones**	**12/3/01**	**7/15/02**	**100%**
8	11.1.1.3.1	EVLA System PDR	12/3/01	12/3/01	100%
9	11.1.1.3.2	EVLA Postprocessing PDR	7/15/02	7/15/02	100%
10	**11.1.2**	**Infrastructure**	**1/6/03**	**3/28/05**	**23%**
11	11.1.2.1	AIPS++ Technical Group report	1/6/03	1/31/03	100%
12	11.1.2.2	AIPS++/ACS prototype	3/2/04	3/28/05	20%
13	11.1.2.3	Common Framework design	3/2/04	3/28/05	20%
14	**11.1.3**	**Proposal submission toolkit**	**9/16/02**	**7/20/04**	**84%**
15	11.1.3.1	Design prototype tool	9/16/02	10/11/02	100%
16	11.1.3.2	Prototype proposal tool	10/14/02	4/11/03	100%
17	11.1.3.3	Test prototype proposal tool	6/10/04	7/20/04	0%
18	11.1.4	Observation scripting toolkit	7/20/04	7/20/04	0%
19	11.1.5	Observation evaluation toolkit	9/1/04	9/1/04	0%



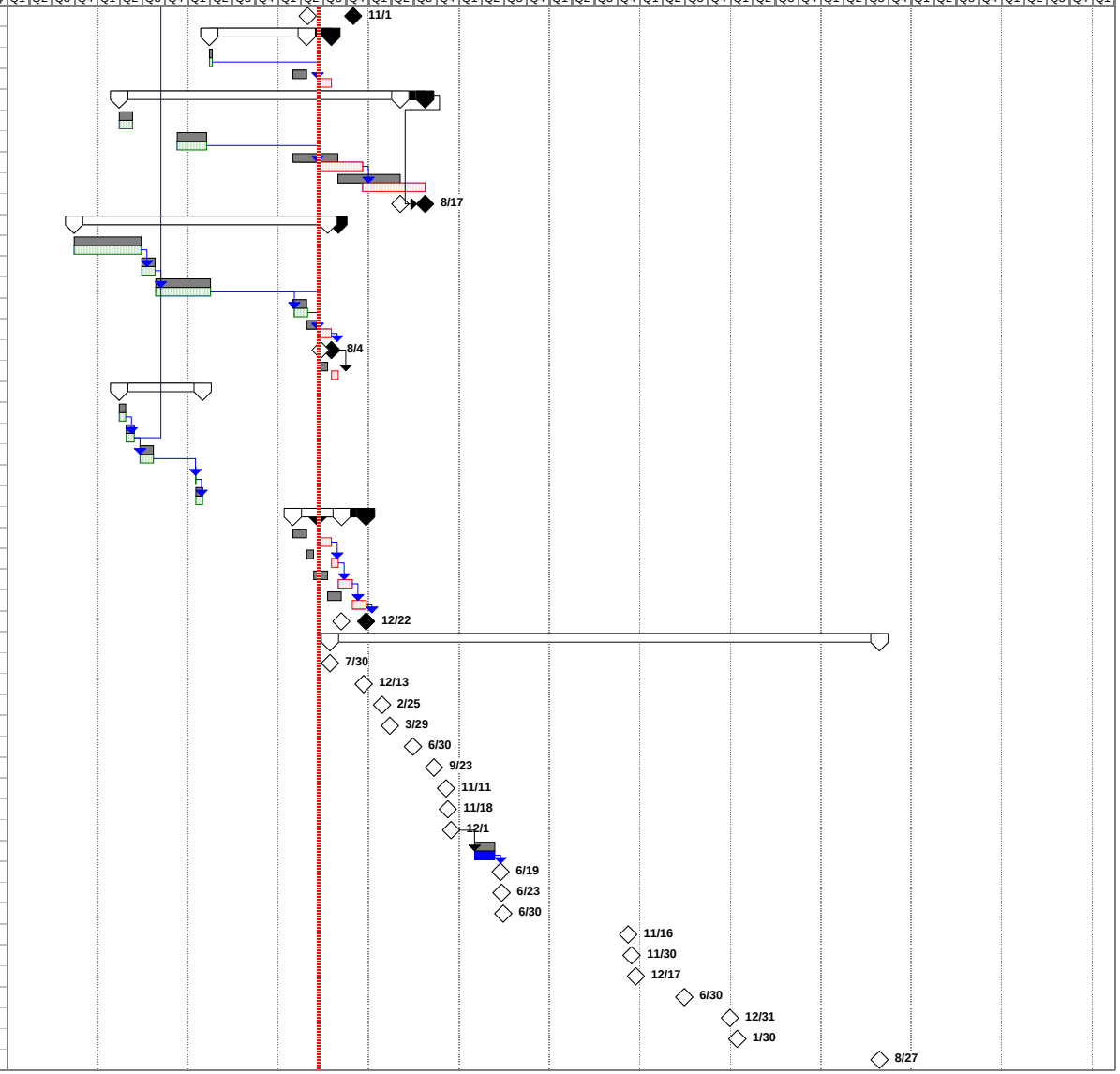
Project: evlamaster_v4
Date: 8/6/04

Task
Progress
Baseline
Critical
Milestone
Baseline Milestone
Summary
Baseline Summary
Split

EVLA PROJECT
DETAIL SCHEDULE

As of June 9, 2004

ID	WBS	Task Name	Start	Finish	% Comp
20	11.1.6	Real-time observing toolkit	11/1/04	11/1/04	0%
21	**11.1.7**	**Observation scheduling toolkit**	**3/31/03**	**8/4/04**	**20%**
22	11.1.7.1	Requirements for prototype VLA sched	3/31/03	4/11/03	100%
23	11.1.7.2	Prototype VLA sched	6/10/04	8/4/04	0%
24	**11.1.8**	**Pipeline toolkit**	**4/1/02**	**8/17/05**	**29%**
25	11.1.8.1	First prototype	4/1/02	5/24/02	100%
26	11.1.8.2	Design for ALMA	11/21/02	3/19/03	100%
27	11.1.8.3	Second prototype pipeline	6/10/04	12/8/04	0%
28	11.1.8.4	ACS-based pipeline prototype	12/9/04	8/17/05	0%
29	11.1.9	Pipeline heuristics	8/17/05	8/17/05	0%
30	**11.1.10**	**Archive toolkit**	**10/1/01**	**9/1/04**	**88%**
31	11.1.10.1	First prototype	10/1/01	6/28/02	100%
32	11.1.10.2	Testing of first prototype archive	7/1/02	8/23/02	100%
33	11.1.10.3	VLA archive	8/26/02	4/4/03	100%
34	11.1.10.4	EVLA test antenna archive	3/8/04	4/30/04	100%
35	11.1.10.5	Testing of VLA archive	6/10/04	8/4/04	0%
36	11.1.10.6	Acceptance of VLA archive	8/4/04	8/4/04	0%
37	11.1.10.7	Deployment of VLA archive	8/5/04	9/1/04	0%
38	**11.1.11**	**Calibration toolkit**	**4/1/02**	**3/3/03**	**100%**
39	11.1.11.1	Design prototype calibrator source toolkit	4/1/02	4/26/02	100%
40	11.1.11.2	Implement prototype calibrator source toolkit	4/29/02	5/31/02	100%
41	11.1.11.3	Test prototype calibrator source tool	6/24/02	8/16/02	100%
42	11.1.11.4	Acceptance proto calibrator source toolkit	2/3/03	2/3/03	100%
43	11.1.11.5	Deploy prototype calibrator source tool	2/4/03	3/3/03	100%
44	**11.1.12**	**Master Address List**	**6/10/04**	**12/22/04**	**0%**
45	11.1.12.1	MAL requirements	6/10/04	8/4/04	0%
46	11.1.12.2	MAL design	8/5/04	9/1/04	0%
47	11.1.12.3	MAL implementation	9/2/04	10/27/04	0%
48	11.1.12.4	MAL testing	10/28/04	12/22/04	0%
49	11.1.12.5	MAL acceptance	12/22/04	12/22/04	0%
50	**11.1.13**	**Transition Plan**	**7/30/04**	**8/27/10**	**0%**
51	11.1.13.1	Routine test observing	7/30/04	7/30/04	0%
52	11.1.13.2	Routine observing - EVLA antennas with VLA	12/13/04	12/13/04	0%
53	11.1.13.3	Routine control of VLA using EVLA software	2/25/05	2/25/05	0%
54	11.1.13.4	WIDAR correlator PDR	3/29/05	3/29/05	0%
55	11.1.13.5	Control new correlator controller by Modcomp softv	6/30/05	6/30/05	0%
56	11.1.13.6	Control new correlator controller by EVLA software	9/23/05	9/23/05	0%
57	11.1.13.7	Spec EVLA science data archive format	11/11/05	11/11/05	0%
58	11.1.13.8	Science data archiving-EVLA sftwr, VLA format	11/18/05	11/18/05	0%
59	11.1.13.9	Modcomps retired	12/1/05	12/1/05	0%
60	11.1.13.10	On-sky test of EVLA correlator prototype	3/6/06	5/26/06	0%
61	11.1.13.11	WIDAR Correlator CDR	6/19/06	6/19/06	0%
62	11.1.13.12	DCAF software ready for testing	6/23/06	6/23/06	0%
63	11.1.13.13	TelCal software ready for testing	6/30/06	6/30/06	0%
64	11.1.13.14	Acceptance of WIDAR correlator subset	11/16/07	11/16/07	0%
65	11.1.13.15	Science data archiving via EVLA software	11/30/07	11/30/07	0%
66	11.1.13.16	Start shared-risk observing w/ correlator subset	12/17/07	12/17/07	0%
67	11.1.13.17	Acceptance of full WIDAR correlator	6/30/08	6/30/08	0%
68	11.1.13.18	Commissioning & turnover WIDAR correlator	12/31/08	12/31/08	0%
69	11.1.13.19	Earliest retirement of VLA correlator	1/30/09	1/30/09	0%
70	11.1.13.20	End of hybrid array operations	8/27/10	8/27/10	0%



Project: evlamaster_v4
Date: 8/6/04

Task | Progress | Baseline | Critical | Milestone | Baseline Milestone | Summary | Baseline Summary | Split