

NRAO Quarterly Status Update (QSU#1 FY2014)

October - December 2013

dark gray (completed), blue (early), green (on track), yellow (behind), red (critically behind)

Q1 Performance Assessment

POP Section Number	POP Milestone	Task Name	Completion Date	Cost	Schedule	Technical
		<b>Observatory Science Operations</b>				
3.1		<b>Science Support and Research</b>				
		<i>Telescope Time Allocation (TTA)</i>				
	1	SSR review of TTA	12/31/2013	Green	Yellow	Green
	6	TAC meeting for semester 2014A	12/31/2013	Green	Green	Green
	8	Update SW tools requirements for TAC support 2014A	12/31/2013	Green	Green	Green
		<i>Science User Services (SUS)</i>				
	14	HD 4.5 documentation	12/31/2013	Green	Yellow	Green
	15	Update ALMA Cycle 2 proposal preparation documentation	12/31/2013	Green	Green	Green
	16	Update CASAGUIDES	12/31/2013	Green	Green	Green
	18	IAU Symposium 303 – The Galactic Center	12/31/2013	Green	Green	Green
	21	AAT/ASA science requirements	12/31/2013	Green	Green	Green
	22	Manual reduction of ALMA science data and QA2	12/31/2013	Green	Green	Green
		<i>Science &amp; Academic Affairs</i>				
	29	Jansky Fellow selection	12/31/2013	Green	Yellow	Green
		<b>Observatory TELESCOPE Operations</b>				
4.1		<b>Atacama Large Millimeter/submillimeter Array (ALMA)</b>				
		<i>Construction</i>				
	1	ALMA Construction Completion and Operations Readiness Review	3/31/2014	Green	Yellow	Green
	2	Acceptance of Optical Pointing Telescopes	12/31/2013	Green	Yellow	Green
	3	Complete installation of 400V cables and fuse disconnects at AOS	12/31/2013	Red	Red	Green
	4	Complete delivery of FE Thermal Interlock Modules	3/31/2014	Red	Green	Green
	5	Complete delivery of NAOJ Band 4, 8, and 10 multipliers	3/31/2014	Green	Green	Green
	6	Delivery of first Front End Handling Vehicle (FEHV)	3/31/2014	Green	Green	Yellow
	7	Delivery of three remaining FEHVs	9/30/2014	Green	Yellow	Yellow
4.2		<b>Very Large Array (VLA)</b>				
		<i>Scientific Support for Operations</i>				
	3	Support reconfiguration to B-config	12/31/2013	Green	Green	Green
		<i>Array Operations</i>				
	8	Re-configurations to B config	12/31/2013	Green	Green	Green
		<i>VLA Prototype ACU</i>				
	13	Critical Design Review of ACU prior to 2 <sup>nd</sup> installation	12/31/2013	Yellow	Yellow	Yellow
		<i>VLA API Upgrade</i>				
	22	Install final 2 API dishes	12/31/2013	Green	Yellow	Yellow
		<i>Capability Enhancements</i>				
	24	Define and demonstrate new SR and general capabilities for 2014B	12/31/2013	Green	Green	Green
		<i>Infrastructure Maintenance and Renewal</i>				
	30	Overhaul total of 6 antennas	12/31/2013	Green	Green	Green
4.3		<b>Very Long Baseline Array (VLBA)</b>				
		<i>Retirement of VLBA VMEs</i>				
	6	Design, build, and install VLBA Control Computer Interface Box in laboratory	12/31/2013	Green	Green	Green
		<i>Retirement of Legacy Recording System</i>				
	8	Complete transition of projects using legacy system to DDC	6/30/2014	Green	Blue	Green
		<i>Capability Enhancements</i>				
	12	Define and demonstrate new SR and general capabilities for 2014B	12/31/2013	Green	Green	Green
4.4		<b>Green Bank Telescope (GBT)</b>				
		<i>Antenna Performance</i>				
	4	A new pointing model for the GBT will be developed	12/31/2013	Green	Green	Green
		<b>Observatory Development Programs</b>				
5.1		<b>CDL Development</b>				
		<i>Phased Array Feeds</i>				
	10	Implement version control and document existing PAF software	12/31/2013	Green	Green	Green
		<i>Advanced Receiver Technologies</i>				
	12	Test triangular Digital OMT (DOMT) on the sky	12/31/2013	Green	Yellow	Green
	15	Demonstrate printed circuit flexible thermal transition with low loss up to 40 GHz	6/30/2014	Dark Gray	Dark Gray	Dark Gray

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POP Section Number	POP Milestone	Task Name	Completion Date	Cost	Schedule	Technical
5.2		<b>ALMA Development</b>				
		<b>Band 5 Local Oscillator</b>				
	1	Unit production; WCA No. 04 - 05	12/31/2013			
5.3		<b>GBT Developments</b>				
	6	MUSTANG 1.5 Science commissioning begins	12/31/2013			
6.2		<b>Data Management &amp; Software</b>				
		<b>Software Development</b>				
		<i>CASA Pipeline</i>				
	3	Develop CASA pipeline for ALMA Cycle I Early Science	12/31/2013			
	4	Integrate VLA Scripted Pipeline	12/31/2013			
		<i>CASA</i>				
	6	Release CASA version 4.2	12/31/2013			
			12/31/2013			
	8	Develop CASA version 4.4	3/31/2014			
			6/30/2014			
			9/30/2014			
		<i>Proposal Handling Tool</i>				
	12	Implement PHT updates for Semester 2014A TAC meeting	12/31/2013			
		<i>Proposal Submission Tool</i>				
	14	Implement PST updates for Semester 2014B Call for Proposals	12/31/2013			
		<b>ALMA Systems Software</b>				
		<i>System Software Updates, Bundle 1</i>				
	18	Deploy Quick-look improvements software	12/31/2013			
		<b>VLA/VLBA System</b>				
	22	Deploy software to support Semester 2013B observing	12/31/2013			
	23	Deploy software to support Semester 2014A commissioning	12/31/2013			
		<b>GBT System</b>				
		<i>WV Sys - M&amp;C</i>				
	31	Core infrastructure changes complete	12/31/2013			
		<i>GBTTP - Pipeline</i>				
	34	Deliver GBT imaging capability in CASA	12/31/2013			
		<b>Scientific Information Services</b>				
		<i>Archive &amp; Cluster</i>				
	37	Draft computer access policy for external users	12/31/2013			
		<i>Co-location at UVa</i>				
	44	Install 10 Gigabit/s link to UVa Data Center	12/31/2013			
		<i>Green Bank data</i>				
	46	Install 10 Gigabit network hardware	12/31/2013			
		<b>DMSD Administration</b>				
	49	Complete Data Management & Services Department formation	12/31/2013			
6.3		<b>Program Management Department</b>				
	2	Audit complete – proposal development	12/31/2013			
	6	PMD F2F complete	12/31/2013			
6.4		<b>Education and Public Outreach</b>				
		<b>News &amp; Public Information</b>				
	1	Specify, Develop, and Review Design NRAO Homepage	12/31/2013			
	4	NRAO lobby display: Define and specify project. Design digital signage display	12/31/2013			
	5	NRAO lobby display: Programming and graphical implementation	12/31/2013			
	6	NRAO lobby display: Procure digital signage software system, program digital signage display, publish to network	12/31/2013			
		<b>STEM Education</b>				
	9	Conduct online course for first cohort of Skynet Jr. Scholars educators	12/31/2013			
6.5		<b>Administration</b>				
		<b>Business Services</b>				
	1	Succession planning documentation for OAS divisions	12/31/2013			
		<b>ES&amp;S</b>				
	6	Develop a comprehensive safety training plan	12/31/2013			
		<b>MIS</b>				
	9	Implementation of new cost allocation system	12/31/2013			

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POP Section Number	POP Milestone	Task Name	Completion Date	Cost	Schedule	Technical
	11	Investigation and implementation of automated Personnel Evaluation Process	12/31/2013			
<b>6.6</b>		<b>Human Resources</b>				
		<i>Policy</i>				
	3	Complete update and consolidation of NRAO HR policies	12/31/2013			
<b>6.7</b>		<b>Diversity</b>				
		<i>Communication</i>				
	1	Clarify and communicate the Diversity Mission	12/31/2013			
		<i>Employment</i>				
	6	Implement recruitment guide and provide training that focuses on diversity focus	12/31/2013			
<b>6.8</b>		<b>Computing &amp; Information Services</b>				
	5	Retirement of leagacy LDAP	12/31/2013			
	6	Evaluation of interactive Web collaboration tool	12/31/2013			
	10	Specification and installation of ER generator	12/31/2013			
	11	Installation of archive servers in UVa Data Center	12/31/2013			
<b>6.9</b>		<b>Director's Office</b>				
		<i>Communication</i>				
	2	Complete NRAO exhibit re-design for January 2014 American Astronomical Society meeting	12/31/2013			

**POP MILESTONE #: 3.1.1**  
**Science Support & Research**

TITLE: SSR review of Telescope Time Allocation

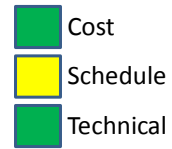
-  Cost
-  Schedule
-  Technical

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Milestone	Schedule	Actual											
1. SSR review of Telescope Time Allocation process	12/31/2014	03/28/2014											
Risk	Mitigation												
1. The review slipped to FY14Q2	The review will occur Feb 20-21												

**SCHEDULE:** The review was originally scheduled for FY14Q1 (December). However, the government shutdown and furlough meant that we had to reschedule the TAC meeting which, in turn, extended the semester 2014A TTA process into December. We ran out of time to conduct the review. Hence, it was rescheduled for Q2.



**POP MILESTONE #: 3.1.29**  
**Science Support & Research**  
**TITLE: Jansky Fellow selection**

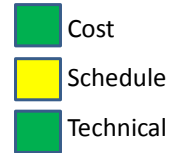


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Milestone	Schedule	Actual											
1. Complete the Jansky Fellows section process.	12/31/2014	03/28/2014											
Risk	Mitigation												
1. Selection not complete before AAS, hindering recruiting efforts.	None.												

**SCHEDULE:** The application deadline was extended from Nov 1 to Nov 15 in the aftermath of the gov't shutdown and furlough. The two week delay propagated through the selection process, the result being that it spilled over into January. While it is unfortunate that we were unable to extend offers prior to the AAS and, therefore, to meet with candidates to discuss the positions in concrete terms face to face, we nevertheless extended offers to three excellent applicants on Jan 15.

**POP MILESTONE: # 4.1.1****ALMA Construction**

TITLE: Conduct End of Construction Review



<b>COST:</b>			<b>TECHNICAL:</b>	
Actuals (\$K)	Budget (\$K)		<ul style="list-style-type: none"> <li>No technical issues associated with the Review itself.</li> </ul>	
N/A	N/A			
<b>SCHEDULE:</b>			<b>RISK &amp; MITIGATION:</b>	
Milestone	Schedule	Actual/Plan	Risk	Mitigation
Complete Review	1/31/14	TBD; tentatively rescheduled for October 2014	No opportunity to fund potential cost impacts with Construction budget (Project concludes 30 September 2014).	Encouraging JAO to expedite Review.

**SCHEDULE:** The JAO has postponed the “ALMA Construction Completion and Operations Readiness Review (ACCOR)” until no sooner than October 2014.

**RISK & MITIGATION:** No expenses can be charged to the NA ALMA Construction budget after 30 September 2014. If any cost impacts (shared or otherwise) arise from the ACCOR, the expense will have to be paid with NA ALMA Operations budget. The NA ALMA Project Office recommends that the ACCOR be conducted prior to the close of FY14, preferably sometime in early Q4 FY14.

**POP MILESTONE: # 4.1.2**  
**ALMA Construction**  
**TITLE: Acceptance of OPT**

- Cost
- Schedule
- Technical

<b>COST:</b>			<b>TECHNICAL:</b>	
Actuals (\$K)	Budget (\$K)		<ul style="list-style-type: none"> <li>• None; all OPTs perform to specification.</li> <li>• Final Acceptance pending delivery of drawing package from supplier.</li> </ul>	
\$769	\$812			
<b>SCHEDULE:</b>			<b>RISK &amp; MITIGATION:</b>	
Milestone	Schedule	Actual/Plan	Risk	Mitigation
JAO acceptance of OPTs # 2 - # 6	31 Dec 13	TBD	Further delay.	Withholding final payment (≈ \$50K) until receipt of final drawing package.

**COST:** Cost for OPT acceptances is on track.

**SCHEDULE:** All OPTs have been delivered to Chile and acceptance testing of all units is complete. ACRVs for the units are delayed pending delivery of final drawing package from the vendor (updated operations manual and software manual received). The OPTs are unnecessary within the Project and, consequently, unit acceptance is a low priority for JAO in comparison to other deliverables.

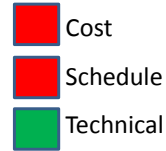
**RISK & MITIGATION:** NA AIPT continues to monitor drawing package delivery and is withholding the final payment to the supplier (≈ \$50K) until receipt of the same. NA AIPT is encouraging the JAO to expedite Final Acceptance once the drawing package is received. Supplier delivered Final Documentation Package in early December 2013 but the data package was determined to be incomplete by NA AIPT; the supplier must derive the final drawings from the CAD solid model (delivered).



## POP MILESTONE: # 4.1.3

### ALMA Construction

TITLE: Complete installation of 400V cables and fuse disconnects at AOS



COST:			TECHNICAL:	
Actuals (\$K)	Budget (\$K)		<ul style="list-style-type: none"><li>The rework of the Low Voltage cable bundle on 51 stations (addition of a Protective Earth cable) is complete.</li><li>The fuse disconnect trenching (extended array) encountered subsurface rock and requires an alternate trench configuration.</li></ul>	
\$51,675 <i>Estimated Cost At Complete</i>	\$50,317			
SCHEDULE:			RISK & MITIGATION:	
Milestone	Schedule	Actual/Plan	Risk	Mitigation
1. Complete AOS Utilities contract	30 Apr 13	15 Feb 14	Altiplanic "winter" slow may impede work.	Press contractor to expedite schedule while weather permits.
2. Complete AOS fuse disconnects	30 Oct 13	15 Feb 14		

**COST:** Estimated Cost at Complete is \$51,675K. Performance penalties will be levied on contractor for work performed after the contracted finish date (31 December 2013).

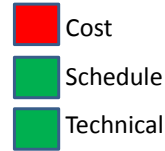
**SCHEDULE:** The Contractors are behind schedule in finishing the work and the past harsh winter conditions delayed even further the completion of the work to Q1 FY2014 (December 2013). The work on the Extended Array power disconnectors is ongoing with some delays due to the harsh winter weather and the ALMA employee's strike; this work will proceed in until Q2 2014.

**TECHNICAL:** The low voltage (400 V) cables between transformers and antenna stations for a number of locations within the inner array were not installed in accordance with the technical specifications and a protective earth (PE) was missing. The corrective measure of installing the PE cable is finished. Fuse disconnect trenching encountered subsurface rock. Blasting and excavation to specified depth is prohibitively expensive. The trench will be dug as deep as possible and additional overburden (fill) will be piled on top in order to cover the cable according to specification.

**RISK & MITIGATION:** Press contractor to work as much as possible while the weather is favorable.

**POP MILESTONE: # 4.1.4****ALMA Construction**

**TITLE: Complete Delivery of FE Thermal Interlock Modules**



<b>COST:</b>			<b>TECHNICAL:</b>	
Actuals (\$K)	Budget (\$K)		<ul style="list-style-type: none"> <li>Incomplete firmware programming – JAO needs to specify temperature control setpoints.</li> </ul>	
\$260	\$150			
<b>SCHEDULE:</b>			<b>RISK &amp; MITIGATION:</b>	
Milestone	Schedule	Actual	Risk	Mitigation
1. Complete firmware programming	21 Feb 14	TBD	Further delay in receipt of temperature control setpoints from the JAO.	The FETIMs will be shipped no later than 28 Feb 14; if necessary, final programming will occur at the OSF.
2. Deliver FETIMs to JAO	28 Feb 14	TBD		

**COST:** The cost of the FETIM design, development and fabrication was originally estimated to be modest (\$150K) and was, therefore, absorbed into the Front End Subsystems Engineering account. The designer struggled with this assignment and was finally relieved of this task and it was re-assigned to another, more senior, designer. Much of the original work had to be discarded and re-designed. The estimated cost to complete this initiative is \$14K. Consequently, the Cost At Complete will be approximately \$274K.

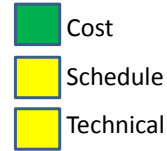
**TECHNICAL:** The JAO needs to provide the FE IPT with temperature control setpoints in order to complete firmware programming.

**SCHEDULE:** A FE Thermal Interlock Module (FETIM) was added late in the project. The module is of low priority, but its design is complete and the first unit has been sent to the OSF for a fit test in an ALMA FE. The production and delivery of the remaining The delivery of the FETIMs is scheduled for completion in Q2 FY 2014.

**RISK & MITIGATION:** If the JAO is unable to provide the temperature control setpoints by the end of February, the FE IPT will ship the modules and complete the firmware programming at the OSF.

**POP MILESTONE: # 4.1.6 & 4.1.7****ALMA Construction**

TITLE: Deliver Front End Handling Vehicle Units 1 – 4



<b>COST:</b>			<b>TECHNICAL:</b>	
Actuals (\$K)	Budget (\$K)		<ul style="list-style-type: none"> <li>Final design release pending completion of Unit No. 1 field trial and any associated Engineering Changes.</li> </ul>	
\$408.6	\$611			
<b>SCHEDULE:</b>			<b>RISK &amp; MITIGATION:</b>	
Milestone	Schedule	Actual	Risk	Mitigation
1. Field test Unit #1	31 Mar 14		Safety concern: suspended load (FE) in confined space (antenna cabin).	Proceed with caution while handling FEs with present equipment.
2. Final design release	30 Apr 14			
3. Deliver Unit #2	30 Jun 14			
4. Deliver Unit #3	31 Jul 14			
5. Deliver Unit #4	30 Aug 14			

**COST:** Actuals include Non-Recurring Engineering and procurement of first unit.

**SCHEDULE:** The FEHV subproject (originally scheduled to complete in Q2 FY13) was running late and then was suspended in Q3 FY13 when the Project *Cost To Complete* forecast a significant cost overrun. The subproject was re-activated late in Q4 FY 13. The supplier's fabrication activities are on-schedule.

**TECHNICAL:** First unit will be a field-tested and any design changes will be incorporated into it and subsequent units.

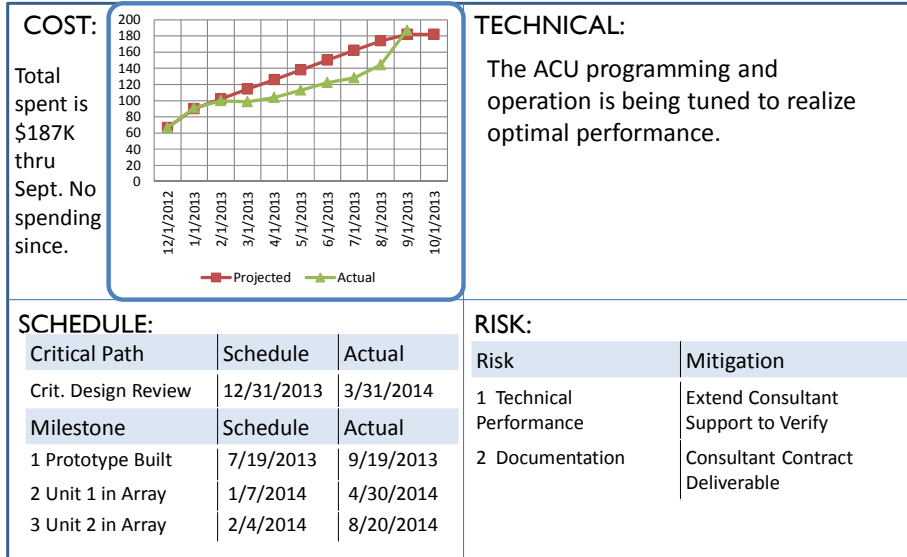
**RISK & MITIGATION:** JAO continues to use the same FE handling equipment that it has used from the beginning of the Project. The new FEHVs will increase efficiency and safety margin. Continued vigilance is required.

## POP MILESTONE #: 4.2.13

### Very Large Array

TITLE: CDR of ACU prior to 2nd installation

- Cost
- Schedule
- Technical



**COST:** The prototype ACU is installed, a consultant was hired to develop the ACU software system, and the parts for the two additional antennas have been procured using the project budget. The initial funding for the project has been fully expended, and the remaining work will be funded from operations. Once incurred, additional costs will be tracked separately to record total project costs. The current cost to complete is \$56,415, which is mostly the consultant contract for additional commissioning and tuning trips, and has not been committed yet. The amount left represents 23% of the overall project cost.

**SCHEDULE:** Commissioning progress has been delayed by the lack of a consultant support contract and extensive performance tuning. NRAO staff was very cautious when investigating adjustments to Azimuth and Elevation movement, stopping, and tracking control for fear of causing damage to the antenna. This caution added over 4 weeks of time to the schedule and other hardware modifications (i.e. SCR card changes) added additional time to the commissioning effort but on a smaller scale. Due to the combination of project delays and the impact of the Federal Government shutdown, the 2014 consultant contract was not placed until late November 2013. The follow-on effects of these items resulted in the CDR being delayed until late FY14-Q2. Fortunately, the delays are non-critical as there is no effect to the array.

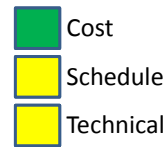
**TECHNICAL:** Prototype commissioning test results show good performance in most areas, but improvement is required before proceeding with the CDR and production of the ACUs for the two additional antennas. Documentation of the software control system must also be expanded and updated before the CDR.

**RISK & MITIGATION:** There is a risk that the new ACU will not meet the design specification. The consultant contract has been extended through 2014 to provide additional commissioning support. Performance is currently much better than the original design on many metrics, and deficiencies in performance are being actively addressed.

## POP MILESTONE #: 4.2.22

### Very Large Array

TITLE: Install final 2 API dishes



COST:		TECHNICAL:		
Labor Actuals	Expected	The LO fiber link caused unexpected jitter. The link is being upgraded to mitigate this problem.		
<i>Ops funds this activity at a higher WBS level.</i>				
Material Actuals	Expected			
\$0	\$0	Temperature stability issues during daytime observations have been identified and are being addressed.		
Travel Actuals	Expected			
\$0	\$0			
SCHEDULE:			RISK:	
Critical Path	Schedule	Actual	Risk	Mitigation
Improve LO	N/A	2/28/14	1 Daytime Stability	Improve Shielding
Milestone	Schedule	Actual	2 Jitter on LO	Upgrade Fiber Optics
1 Build Ant. 3 & 4	9/25/13	5/30/14	3 Manpower Not Available	Mitigated
2 Activate & Test 4 Antenna System	10/25/13	6/27/14		

**COST:** Costs are tracked at a higher WBS level. The project is funded as part of the VLA LO/IF group, within NM Operations. The majority of the hardware costs for this project were incurred in 2013.

**SCHEDULE:** Technical issues have delayed the system installation. The new four channel API shall be operational on the final two antennas by the end of Q3; meanwhile the original API will remain in use.

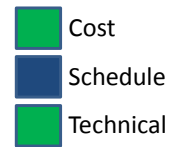
**TECHNICAL:** The project is to develop a flexible and scalable four antenna Atmospheric Phase Interferometer (API), replacing the existing VLA API. Current technical issues with the new API (LO reference delivery and poor daytime temperature stability) are affecting the final installation and delivery of the system. Two of the four low-jitter fiber optic receivers have been installed, but later than expected due to impacts from the fiscal year-end and the Federal government shutdown. The fiber optic receivers are currently being evaluated and proven in the field. Once the outstanding technical issues are resolved, the components for the remaining two systems will be ordered.

**RISK & MITIGATION:** The legacy API is still functional and is providing adequate atmospheric phase data. VLA observing capabilities will be maintained while this replacement system is developed and installed. Solutions have been found to the outstanding technical issues and mitigation is in progress.

## POP MILESTONE #: 4.3.8

### Very Long Baseline Array

TITLE: Complete transition of projects using legacy system to DDC



COST:		TECHNICAL:		
Labor Actuals	Expected	The de-commissioning of the Mark 5A recording system is complete. All projects that were using the legacy recording system have been transitioned to Mark 5C.		
<i>Ops funds this activity at a higher WBS level.</i>				
Material Actuals	Expected			
\$0	\$0			
Travel Actuals	Expected			
\$0	\$0			
SCHEDULE:			RISK:	
Milestone	Schedule	Actual	Risk	Mitigation
1 PI Coordination	3/30/13	12/01/13	There is a risk that the new observing modes for transitioned projects are insufficiently tested.	NRAO is prepared to re-observe projects that exhibit problems due to the transition.
2 Complete Transition	6/30/13	12/15/13		

**COST:** NM Ops funds this activity at a higher WBS level. Detailed personnel costs are not available for this milestone.

**SCHEDULE:** The retirement of the Mark 5A recorders was accelerated and completed in 2014-Q1. The transition was initially planned for Q3 in an effort to give PIs with long-running projects time to perform “piggyback” observations with both the new Mark 5C and legacy Mark 5A recorders. However, the need to mitigate the impact of the departure of a critical staff member at the end of Q1 required the acceleration of this milestone. All projects using the legacy system were transitioned by December 15<sup>th</sup>, 2013.

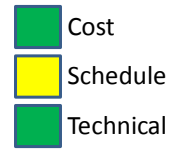
**TECHNICAL:** The retirement of the legacy recording system is complete. All projects that were using the legacy system have been transitioned to the new digital backend hardware and the Mark 5C recorders, and the Mark 5A recorders have been removed from the field.

**RISK & MITIGATION:** Planned testing of the observing modes to be used by transitioned projects continues into Q2. There is a risk that some may not be sufficiently well characterized before being used in astronomical observations. NRAO is prepared to re-observe projects that exhibit problems due the accelerated transition, if needed.

## POP MILESTONE #: 5.1.12

### CDL Development

TITLE: Test Triangular DOMT on sky



COST:		TECHNICAL:	
Labor Actuals	Expected	No technical issues.	
Material Actuals	Expected		
Travel Actuals	Expected		
SCHEDULE:		RISK:	
The schedule of this item has been delayed due to personnel pressures and the decision to switch FPGA platforms.		Risk	Mitigation
		1. NTC Elevator down for repairs. 2. NI FPGA not fast enough.	1. Wait, or rent motorized hand truck. 2. Revert to post-processing software.

**SCHEDULE:** The schedule has been delayed for two reasons. First, because of personnel pressures resulting from departure of key personnel in other areas (Eric Bryerton) and because we chose in the last fiscal year to transition our post-processing platform from the ROACH to a National Instruments solution. Some amount of delay was therefore expected this year.

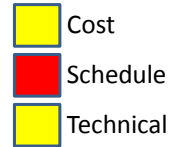
**RISK & MITIGATION:** Risks going forward include:

1. The construction of the NTC elevator is not complete when we are ready to begin testing outdoors. In this event, we could rent a motorized hand truck to transport the dewar downstairs or up to the roof. This is not considered the safest plan, however, so simply waiting for the elevator to be completed is preferred. Another option would be to transport the dewar to the bottom floor before the elevator is taken offline, and leaving it there until testing is ready to begin, however this is not considered safest for the equipment and would impact other ongoing efforts that share some of the equipment.
2. It is also possible that the National Instruments FPGA will not have enough capacity for the needed post-processing. We have been given a grace-period by the supplier in which time we can return it for a refund if it does not meet our needs. If that is the case, we may simply need to revert to our prior software post-processing model to complete these measurements.

## POP MILESTONE #: 5.3.6

### GBT Development

TITLE: MUSTANG 1.5 Science commissioning begins



COST:		TECHNICAL:		
Labor Actuals	Expected*	Delays in receipt of detectors from NIST are the critical technical issue of the project		
\$76k	\$66k			
Material Actuals	Expected			
\$1.7k	\$1.3k			
Travel Actuals	Expected			
\$0	\$0			
SCHEDULE:			RISK:	
Critical Path	Schedule	Actual	Risk	Mitigation
Detector delivery	3/2013	[TBD by NIST]	1. Delayed HF Obs.	Use MUSTANG 1.0
Milestone	Schedule	Actual	2. Delayed release of team	Partial release in place
1 Science Commissioning	12/2013	6/2014 est.*		
2 Pjct. Complete	6/2014	8/2014 est.*		

**COST:** The Q1 costs are elevated by a planned surge in firmware work for the system software to release staff in late Q2 and by continuing requests for GB machine shop products by the UPenn project team. **SCHEDULE:** \*The NRAO schedule assumes the project will be complete by summer 2014, a best estimate completely driven by the delivery of the detectors from NIST and subsequently the instrument from UPenn. No firm delivery date has been provided by NIST.

**TECHNICAL:** There are currently no technical issues out of tolerance for the NRAO portions of the project.

**RISK & MITIGATION:** The improved observation capabilities of MUSTANG 1.5 are being delayed by detector delivery and the current MUSTANG 1.0 on the GBT will be required to support the upcoming high-frequency (HF) season. NRAO will implement a hiatus plan starting in Q2 for our project staff based on well defined stopping points until which time the detectors arrive at UPenn



**POP MILESTONE #: 6.2.6**  
**Data Management & Software**  
**TITLE: Release CASA version 4.2**

- Cost
- Schedule
- Technical

<p><b>COST:</b> No Issues</p>	<p><b>TECHNICAL:</b></p> <p>CASA 4.2 OSX version is delayed due to difficulties with the OSX build and packaging.</p>													
<p><b>SCHEDULE:</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr style="background-color: #e1eef6;"> <th style="text-align: left;">Milestone</th> <th style="text-align: left;">Schedule</th> <th style="text-align: left;">Actual</th> </tr> </thead> <tbody> <tr> <td>1 Release CASA 4.2 Linux</td> <td>Nov 01</td> <td>Feb 10</td> </tr> <tr> <td>2 Release CASA 4.2 OSX</td> <td>Nov 01</td> <td>Mar 14</td> </tr> </tbody> </table>	Milestone	Schedule	Actual	1 Release CASA 4.2 Linux	Nov 01	Feb 10	2 Release CASA 4.2 OSX	Nov 01	Mar 14	<p><b>RISK:</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr style="background-color: #e1eef6;"> <th style="text-align: left;">Risk</th> <th style="text-align: left;">Mitigation</th> </tr> </thead> <tbody> <tr> <td> <p>Top risks</p> <ol style="list-style-type: none"> <li>1 Reasons for OSX build/packaging difficulties not entirely understood.</li> <li>2 Delayed delivery of new functionality to user community</li> </ol> </td> <td> <ol style="list-style-type: none"> <li>1 a) Prioritize as top task b) continue structured error resolution.</li> <li>2 Release Linux version ahead of OSX version.</li> </ol> </td> </tr> </tbody> </table>	Risk	Mitigation	<p>Top risks</p> <ol style="list-style-type: none"> <li>1 Reasons for OSX build/packaging difficulties not entirely understood.</li> <li>2 Delayed delivery of new functionality to user community</li> </ol>	<ol style="list-style-type: none"> <li>1 a) Prioritize as top task b) continue structured error resolution.</li> <li>2 Release Linux version ahead of OSX version.</li> </ol>
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**SCHEDULE:** OSX version delayed due to difficulties in the OSX build.

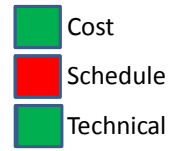
**RISK & MITIGATION:** Currently the errors in the OSX build seem to indicate a library conflict. We are working through them (errors from about 70 of 400 tests) one-by-one to identify the issue. If the conflicts can be identified and resolved, the OSX release could be earlier. If additional issues arise it could be later. March 15<sup>th</sup> is an educated guess. One possible mitigation would be to contract with Wes to figure it out.

**Background –** It was decided that 3<sup>rd</sup> party packages should be updated as part of the build. This was a good decision for robustness of the build and for removing some annoying bugs from the software, but the time involved in building and packaging was underestimated. Additionally, there has been a steeper-than-anticipated learning curve on the OSX build due to retirement of the person who was previously in the build role.

**POP MILESTONE #: 6.2.3 I**

**Data Management & Software**

TITLE: WV Sys – M&C – Core infrastructure  
changes complete



COST: No Issues			TECHNICAL:	
<b>SCHEDULE:</b>			<b>RISK:</b>	
Milestone	Schedule	Actual	Risk	Mitigation
1 Complete VEGAS/DIBAS work	March 31	March 31	Top risks	
2 Complete streaming Phase 1 (POP #31)	Dec 31	June 30	1 Additional delays to VEGAS	1 VEGAS now managed by GB staff, improving our control of schedule.
			2 Resource constraints	2 Manage priorities across projects.

**SCHEDULE:** Delayed due to resource constraints and dependency on VEGAS delivery schedule, which was delayed.

**RISK & MITIGATION:** Note that resources are severely constrained across projects and service delivery. Service outages and additional high-priority projects could impact resource availability and create additional delays.

**Background:** Ray is the primary resource for this and due to his involvement with VEGAS/DIBAS the work for phase I and II have not been completed. If work progresses as planned, his involvement in VEGAS/DIBAS will ramp down in Q2, allowing him to re-focus on streaming in Q3.

**POP MILESTONE #: 6.2.34**  
**Data Management & Software**  
**TITLE: Deliver GBT imaging capability in CASA**

- Cost
- Schedule
- Technical

COST: No Issues			TECHNICAL: Needs better multi-beam support, improvements in memory usage and speed.	
SCHEDULE:			RISK:	
Milestone	Schedule	Actual	Risk	Mitigation
1 Calibrated data into CASA	Dec 31	Feb 28	Top risks	
2 Imaging version available	Dec 31	Feb 28	1 Single-dish depends on NAOJ code. 2 Multi-beam support in CASA	1 Working closely with NAOJ, new lead scientist assigned. 2 Prioritize on CASA development list

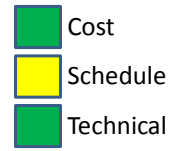
SCHEDULE: Delayed due technical issues with single-dish CASA code developed by JAO.

Note: at delivery, some issues may still remain: 1) memory/speed – Bob is forwarding an example of poor performance to Jeff, fix should be simple. This will be needed for the Q3 deliverable of supporting VEGAS. 2) delivered multi-beam implementation is cumbersome and a bit tricky, needs to be cleaned up. CASA was not written with multi-beam in mind. This could be put on the CASA development list, Bob is potentially a resource for doing the work. Also needed for VEGAS.



**POP MILESTONE #: 6.4.6**  
**Education & Public Outreach**

**TITLE: NRAO HQ Lobby Display HW/SW**  
**Procurement**



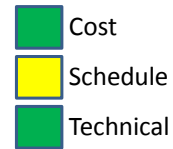
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**SCHEDULE:** Director requested on 12/17 that the procurement and installation of physical lobby display hardware (screen(s), computer(s), cabling) be put on hold. Software (Scala Infochannel) was procured, as it is needed for other EPO projects; we are awaiting installation of the server component of this software.

**RISK & MITIGATION:** There are no risks to the NRAO EPO program associated with this delay.

**POP MILESTONE #: 6.4.9**  
**Education & Public Outreach**

**TITLE: Skynet Jr. Scholars Online Course for Educators**



<b>COST:</b> <table border="1"> <tr> <td>Labor Actuals</td> <td>Expected</td> </tr> <tr> <td>Material Actuals</td> <td>Expected</td> </tr> <tr> <td>Travel Actuals</td> <td>Expected</td> </tr> </table>		Labor Actuals	Expected	Material Actuals	Expected	Travel Actuals	Expected	<b>TECHNICAL:</b> Only notable or current items If Technical stoplight is yellow or red, add issue description here												
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**SCHEDULE:** U Chicago (PI for project) educational web site team is charged with developing the portal that will host Skynet Jr. Scholars online trainings. Portal was not ready to go as scheduled, but is now ready, so program can proceed under revised schedule.

**RISK & MITIGATION:** U Chicago web team did not seem to grasp the portal requirements. The development of a formal written specification seems to have resolved the issue.

**POP MILESTONE #: 6.5.1**

**Administration**

**TITLE:** Succession planning for OAS Divisions

-  Cost
-  Schedule
-  Technical

<b>COST:</b>		<b>TECHNICAL:</b>		
Labor Actuals	Expected	Only notable or current items If Technical stoplight is yellow or red, add issue description here		
Material Actuals	Expected			
Travel Actuals	Expected			
<b>SCHEDULE:</b>		<b>RISK:</b>		
Critical Path	Schedule	Actual	Risk	Mitigation
Milestone	Schedule	Actual	Top three risks	
1. Meet with Dept managers	Nov 2013	Feb 2014		

**SCHEDULE:** Meetings are incomplete with the Managers supporting the Associate Director of Administration. They will be complete in February 2014.

**POP MILESTONE #: 6.5.6**

**Administration**

**TITLE: Develop a Comprehensive Safety Training Plan**

Cost  
 Schedule  
 Technical

<b>COST:</b>		<b>TECHNICAL:</b>	
Labor Actuals	Expected	Only notable or current items If Technical stoplight is yellow or red, add issue description here  N/A	
Material Actuals	Expected		
Travel Actuals	Expected		
<b>SCHEDULE:</b>		<b>RISK:</b>	
Critical Path	Schedule	Actual	Risk
DRAFT Plan	FY14, Q1	FY14, Q2	Mitigation
Milestone	Schedule	Actual	Top three risks
1 ID training requirements	Oct. '13	Oct. '13	
2 Develop training catalogue	Nov. '13	Dec. '13	
3 DRAFT Plan	Dec. '13	Mar.'13	

**COST:** On track. Costs incurred are staff time only

**SCHEDULE:** Slightly behind. Additional time needed to address remote sites training needs (VLBA)

**TECHNICAL:** On track. No technical or regulatory issues noted.




**RISK & MITIGATION:** Risk – Required training missed. Mitigation - Address training needs as they arise. Compliance recordkeeping is currently maintained in accordance with OSHA rules.



**POP MILESTONE #: 6.5.11**

**Administration**

**TITLE:** Investigation and implementation of automated Personnel Evaluation Process

-  Cost
-  Schedule
-  Technical

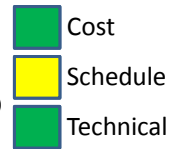
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1 Receipt of Halogen Access Code	Dec 2013	Feb 2014																
2 HR Review	Dec 2013	Feb 2014																
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Top three risks																		

**SCHEDULE:** Access code from vendor (Halogen) not received in a timely manner. Once the code was received MIS is creating a logon system for NRAO system users to use standard logon to access the Halogen system yet screen the logon from Halogen. Solution identified and being programmed.

**POP MILESTONE #: 6.6.3**

**Human Resources**

**TITLE: Complete update and consolidation of NRAO HR policies**



<b>COST:</b> <table border="1"> <tr> <td>Labor Actuals</td> <td>Expected</td> </tr> <tr> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Material Actuals</td> <td>Expected</td> </tr> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>Travel Actuals</td> <td>Expected</td> </tr> <tr> <td>0</td> <td>0</td> </tr> </table>		Labor Actuals	Expected	n/a	n/a	Material Actuals	Expected	0	0	Travel Actuals	Expected	0	0	<b>TECHNICAL:</b> n/a															
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**COST:** Part of labor cost associated with on-going administration of NRAO policies.

**SCHEDULE:** Certain NRAO polices were being reviewed as part of an AUI Payroll Conversion review conducted in Q4 FY13 and Q1 FY14. The review resulted in the following policy changes that were effective in January 2014:

- Eliminated adding Holiday time to Vacation time when an employee works on an observed Holiday or was not scheduled to work on an observed Holiday (telescope operators). Non-exempt employees are now paid for this time and exempt employees can float their Holiday up through the end of the next full pay period.
- The 9/80 work schedule was also eliminated for all staff.

These changes were included in the HR Policy Manual, which is under final review by HR and scheduled to be sent to NRAO management on or before February 14.

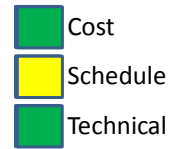
**TECHNICAL:** No technical components involved in this project.

**RISK & MITIGATION:** Given the depth and breath of the project, it may take longer than expected to obtain approval. Not having current policies available to supervisor and employees is problematic and creates confusion over which policies are current.

## POP MILESTONE #: 6.7.1

### Diversity

TITLE: Clarify & Communicate the Diversity Mission



COST:		TECHNICAL:		
Labor Actuals	Expected	n/a		
n/a	n/a			
Material Actuals	Expected			
0	0			
Travel Actuals	Expected			
0	0			
SCHEDULE:			RISK:	
Critical Path	Schedule	Actual	Risk	Mitigation
	12/31/2013		1. Impact on implementing recommendation of 2013 Diversity Review Panel before the April 2014 Visitors Committee Meeting in NM	1. NRAO Director
Milestone	Schedule	Actual		
1. Create Plan	11/30/2013	11/25/2013		
2. Director Review	12/13/2013	02/28/2014		
3. Sr. Mgt. Review	12/30/2013	03/14/2014		
4. Implement	12/31/2013	04/01/2014		

**COST:** No additional labor cost that has not been previously allocated.

**SCHEDULE:** Delay – plan is still under review by NRAO Director.




**TECHNICAL:** No technical components involved in this project.

**RISK & MITIGATION:** No significant risk. The Diversity Strategic Plan is being reviewed by the Director and will be sent to senior management for comments. The goals established in the POP will not be adversely impacted by a delayed implementation of the plan. Implementing and communicating the diversity strategic plan will assist with clarifying the mission as recommended by the Diversity Review Panelist. The plan serves a roadmap that can be used across the Observatory.

**POP MILESTONE #: 6.7.6**

**Diversity**

**TITLE:** Implement recruitment guide and provide training that focuses on diversity

-  Cost
-  Schedule
-  Technical

<b>COST:</b>		<b>TECHNICAL:</b>		
Labor Actuals	Expected	n/a		
n/a	n/a			
Material Actuals	Expected			
0	0			
Travel Actuals	Expected			
0	0			
<b>SCHEDULE:</b>			<b>RISK:</b>	
Critical Path	Schedule	Actual	Risk	Mitigation
	12/31/2013		1. Compliance with new OFCCP regulations – goal of 7% workforce qualified individuals with disabilities 2. Delay in implementing needed improvements in NRAO's hiring practice	1. & 2. Ensure that HR systems and processes are in place for immediate action once approval is obtained.
Milestone	Schedule	Actual		
1. Create Guide	11/25/2013	11/23/2013		
2. Director review	12/13/2013	02/28/2014		
3. Sr. Mgt. review	12/30/2013	03/14/2014		
4. Implement	12/31/2013	04/01/2014		

**COST:** No additional labor cost that has not been previously allocated




**SCHEDULE:** Delay – guide is still under review by NRAO Director.

**TECHNICAL:** No technical components involved in this project.

**RISK & MITIGATION:** All government contractors are subject to the new OFCCP regulations that include an aspirational utilization goal of 7 percent for qualified individuals with disabilities. If guide is not implemented in a timely manner, may affect ability to reach % target required. Additional mitigation - due to the limited number of vacancies and the temporary hiring freeze currently in place, the number of vacancies being filled will be less.

**POP MILESTONE 6.8.10**  
**Computing & Information Services**

TITLE: Specification and installation of ER generator

 Cost  
 Schedule  
 Technical

COST: No Issues			TECHNICAL: No Issues	
<b>SCHEDULE:</b>			<b>RISK:</b>	
Milestone	Schedule	Actual	Risk	Mitigation
1 Specification	Oct 2013	October 2014	Top risks	
2 Bid	Oct 2013	Pending	1 Downtime for ER/NAASC computing and archive	1 Rapid shutdown of non-essential services after power outage to extend battery backup.
3 Go-live	Dec 2013	Pending Bid	2 Reduced availability for key resources	2 Aligned with current (sub-optimal) availability

**SCHEDULE:** Fixed price contract bidder declined to proceed after award. NRAO is in the process of re-competing with alternates vendors

**RISK & MITIGATION:** Run with current process for rapid prioritized shutdown of services upon a power outage to extend the duration of battery backup systems to ~1 hour.

## QSU #1 FY2014 Exceptions



October – December 2013



Atacama Large Millimeter/submillimeter Array  
Karl G. Jansky Very Large Array  
Robert C. Byrd Green Bank Telescope  
Very Long Baseline Array



### Exception Title: **GB - Completion of the VEGAS backend for the GBT**

- This project was schedule to be completed in FY2013 and as such was not included in the 2014 POP. planning The final stages of the project
  - Testing,
  - Commissioning, and
  - Project closeoutwere continued into FY2014 and are being funded out of Green Bank Operations, using all Green Bank staff.
- The project was re-baselined in Q1-FY2014 and is currently on schedule to complete in Q2-FY2014.



## Exception Title: HR - Benefits Open Enrollment

- Major Change in Benefits – Open Enrollment Challenges
  - Elimination of the traditional, Co-Pay Health Care Plan and the additional +/- 60% increase in 2014 premiums for the High Deductible Health Care Plan presented significant communication and morale challenges during the 2014 open enrollment process
    - Employees already received enrollment material that offered the co-pay plan as an option for 2014 and modest increases in premiums
    - All employees were being asked to incur significant increases to their medical costs in 2014, some amounting to thousands of dollars due to medical conditions or prescription drugs
    - Employee meetings were already scheduled for the week following the decision requiring a rapid response communication effort for HR and management
  - Everyone rallied together to support both the change in benefits and help employees cope with the news



## Exception Title: CDL - Flexible Thermal Transition

- Several experimental designs were tested, and much was learned about the thermal and loss properties associated with this concept, however,
- A cost-effective solution has not been found with acceptable performance, and
- Several new issues have become apparent, specifically regarding isolation between parallel channels and the possibility of ground loops coupling into the dewar cavity from these open-air structures. Therefore,
- We have concluded that this is not a good approach and are no longer pursuing it at this time.



## Exception Title: EPO – STEM Education

- Multiple groups visited VLA for educational tours; some events cancelled due to government shutdown
- Multiple groups visited GB for overnight educational research using 40 Foot Telescope
- Educational Events held at GB Science Center
- Multiple WV Outreach events (not at NRAO GB facility)
- “Hour of Code” event held at NRAO HQ in Charlottesville, involving students from the CV Boys & Girls Club + local homeschool families, all interacting with NRAO scientists and programmers
- CV EPO staff and NRAO scientist presented at STEM Career Day hosted by Dominion Virginia Electric’s North Anna Nuclear Power Station; 9 presentations given to high school students from Charlottesville and Albemarle County.



**VLA Group Visits:** Good Times Tour (17 seniors), JPL (18), NM Tech (12), Festival of the Cranes (54), Planetarium group (8), VLA Hamfest attendees

**Shutdown-cancelled NM Events:** VLA October Open House; Enchanted Skies Star Party keynote address at the AOC; NM Governor’s Reading Program winners VIP tours.

**VLA First Saturday (of the month) Tours:** October: CANCELLED; November: 163 (2012 count was 97); December: 29 (2012 count was 43)

**Other VLA Education/Outreach Activities:** Sundial construction assistance and pier painting; Parkview ES Career Fair; MRO Perseid Meteor shower event; Sundial Grand Opening

**GB Overnight Groups/40 Foot Telescope Research:** NSF/NASA Einstein Fellows (Teachers) (DC); Robinson High School (VA); WVU Honors (WV); Carnegie Mellon University (PA); George Mason University (VA); University of Maryland (MD), George C. Marshall High School (VA); Glenville State College (WV); Villanova University (PA), Granby High School (WV); Broadway High School (VA); BS Troop 77 (WV); Penn State University (PA); Randolph College (two groups) (VA); Boy Scout Troop 40 (WV)

**GB Science Center Educational Events:** “Hour of Code” activities and tours for entire Pocahontas County 9<sup>th</sup> grade class: ~80 9<sup>th</sup> graders; Family Science Lab (a 2-hour activity for families themed around the topic of ‘color’)

**WV Outreach Events (not at NRAO GB facility):** Elderhostel Workshop near Blacksburg VA for 30 participants; WV Space Public Outreach Team (SPOT) training for 18 undergraduate students from 4 WV colleges and universities, held 1-2 Nov at WV Science Teachers Association conference and funded by the WV Space Grant Consortium.



## Exception Title: EPO – Press/Media Activity

- Issued 9 (national) press releases, 2 media announcements, and 1 tip-sheet. CY2013 set new record for number of press releases (34 vs. 15 in CY2012)
- Press releases on shutdown, new VLA film, and new sundial distributed to NM media
- Provided Albuquerque TV station with VLA images for a story
- Hour-long talk radio segment on KKOZ-AM, NM's only broadcast radio station with statewide coverage
- VLA tour for reporter from Gallup Independent. Got front-page story headlined "VLA: One of the best nerd road trips in U.S."



**Press Releases:** ALMA Observes Two Supermassive Black Holes; ALMA Reveals Ghostly Shape of Coldest Place in the Universe; Magnetic Force Field Shields Giant Gas Cloud; Surprising Image Provides New Tool for Studying a Galaxy; Infant Galaxies Merging Near 'Cosmic Dawn'; Hidden Details Revealed in Nearby Starburst Galaxy; New System Makes the VLA Two Telescopes in One; Starless Cloud Cores Reveal Why Some Stars Are Bigger Than Others; New Studies Give Boost to Binary Star Formation Theory.

**Media Announcements:** Final Antenna Delivered to ALMA; Jodie Foster Narrates Our New VLA Visitor Center Film.

**Tip-Sheet:** Long-distance 'Fringes' Achieved between West Virginia and Shanghai; Modern and Historic Technology Merge at Newly Unveiled VLA Sundial; NRAO Astronomer Elected Fellow of AAAS

## Exception Title: EPO – Social Media & Web

- Facebook followers grew from 18,860 to 25,443 during Q4
- Twitter followers grew from 4,397 to 4,503 during Q4
- New VLA Visitor Center film narrated by Jodie Foster posted online before furlough/shutdown; has drawn ~20K views online (<https://vimeo.com/70554007> & [https://www.youtube.com/watch?v=RqX9vLj3\\_7w](https://www.youtube.com/watch?v=RqX9vLj3_7w)) in addition to views at Visitor Center
- New video posted of VLBA observing the Mars Odyssey spacecraft (<https://vimeo.com/80099626>)
- New public article template created for public website
- Emergency-use [www.nrao.edu](http://www.nrao.edu) homepage created (for use in case of failure of the CMS for that domain while it is being modernized)
- “NRAO Live” beta templates developed (web displays showing where NRAO telescopes are pointed)



## Exception Title: EPO – Visitor/Science Centers

- VLA public visitation counted: 2,872 during period; estimate 1,250 visitors lost due to government shutdown
- GB public visitation counted: 4,180 during period; estimate 3,200 visitors lost due to government shutdown
- New and very helpful highway signs for VLA Visitor Center installed on U.S. 60 installed by NM DOT.
- Held brainstorming mini-workshop/meetings toward developing a vision for a new VLA Visitor Center. Consultant's report received.
- Several community group events hosted in GB
  - EMT classes
  - Green Bank Turkey Trot 5K/10K, hosted by NRAO. Proceeds benefit county high school track team and athletic scholarships. ~50 participants.



## QSU# I 2014 - Financials



Atacama Large Millimeter/submillimeter Array  
Karl G. Jansky Very Large Array  
Robert C. Byrd Green Bank Telescope  
Very Long Baseline Array



## QI FY14 Summary

- Overall Issues
  - Benefits – Running slightly ahead of budget for current fiscal year, should recover as HDHP kicks in
  - 2% across the board raises effective in January.
  - Cost allocation pool established. Recoveries lagging due to non-linear CSA spend.
- NRAO Ops
  - Static WFO & research activity providing CCR revenue assistance and salary support.
  - NRAO still working to close FY14 budget – expect to do so with position freezes & travel reductions



## FY14 YTD by Major WBS Category ALMA Ops – Q1

	FY14 POP Budget	FY14 Rev. Budget	FY14 YTD Expenses	YTD % Rev Budget
Telescope Ops	20,631	26,254	4,789	18.2
Development	5,525	7,128	2,992	42.0
Science Ops	5,864	6,372	1,560	24.5
Admin Services	4,556	4,556	919	20.2
Director's Office	2,424	3,043	735	24.2
<b>FY14 , Total</b>	<b>39,000</b>	<b>47,353</b>	<b>10,995</b>	<b>23.2</b>
Open Commits	5,370			
C/F For FY14	3,759			
C/F for Future Years	2,024	2,801		
<b>All ALMA Resources</b>	<b>50,153</b>	<b>50,154</b>		

- Shows all ALMA resources.
- Telescope Ops includes \$2.8M in reimbursements received in Dec.
- Development reflects open commitments for external awards.



ALMA Development is working as a cumulative pool, including funds as they are awarded and reporting on them as they are expensed – a process which may span multiple fiscal years.

One aspect of this line is the delayed purchase of the Band 5 LO equipment – totaling \$1.5M. The FY13 budget noted only the FY13 development pool. Future POPs will reflect expected in-year expenditures.

Telescope Ops open commits includes the catering/cleaning contract which ends up being split amongst the partners.

## FY14 YTD by Major WBS Category NRAO Ops – Q1

	FY14 POP Budget	FY14 Rev. Budget	FY14 YTD Expenses	YTD % Rev Budget
Telescope Ops	17,150	17,494	4,015	23.0
Development	2,220	2,268	600	26.5
Science Ops	5,338	5,546	1,219	22.0
Admin Services	15,892	15,928	3,749	23.5
Director's Office	2,717	3,312	219	6.6
<b>FY14 , Total</b>	<b>43,317</b>	<b>44,548</b>	<b>9,802</b>	<b>22.0</b>
OCS/NRAO Adjustments	602			
Budget Reductions	(383)			
Carryforward	1,012			
<b>FY14 Revised Total</b>	<b>44,548</b>	<b>44,548</b>	<b>9,802</b>	<b>22.0</b>

- Director's Office reflects increase in AUI IDC.
- Reclass of some POP items from Common Costs to Program.
- Budget reductions related to open position capture.



## FY14 YTD by Major WBS Category Observatory Central Services – Q1

	FY14 POP Budget	FY14 Rev. Budget	FY14 YTD Expenses	YTD % Rev Budget
Telescope Ops	519	519	79	15.2
Development	855	1,001	171	17.1
Science Ops	1,706	1,944	447	23.0
Admin Services	(2,027)	(2,940)	(800)	27.2
Director's Office	1,733	1,660	367	22.1
<b>FY14 , Total</b>	<b>2,786</b>	<b>2,184</b>	<b>264</b>	<b>12.1</b>
OCS/NRAO Adjustments	-602			
<b>FY14, Total</b>	<b>2,184</b>			

- First year for new Observatory Central Services Pool.
- 30% rate on all allowable expenses.
- Reclass of some POP items from Common Costs to Program.

