



Title: QSU2 FY2018	Author: Thisdell/ADs	Date: 05/10/2018
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National Radio Astronomy Observatory

Quarterly Status Update 2 FY2018

January – March 2018

PREPARED BY	ORGANIZATION	DATE
Thisdell/ADs	Director's Office	05/10/2018

APPROVALS (Name and Signature)	ORGANIZATION
Nicole Thisdell	NRAO
Tony Beasley	NRAO
Dave Curren	AUI



QSU2 FY2018 Report

January – March 2018



POP MILESTONE # 2.5.28

Maintenance, Renewal, and Warranty Claims

Antenna Surface Accuracy Improvement CDR



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$0	\$0
Material Actuals	Expected
\$0	\$0
Travel Actuals	Expected
\$0	\$0

SCOPE:

Conduct a CDR for the proposed Receiver Cabin Wall Heater System to confirm satisfactory performance for resolving the Antenna surface thermal dependence issue. The CDR should also address impacts on existing antenna systems, any heater system design/hardware changes prior to installation on all N.A. Antennas, and proposed schedule for installation on the remaining antennas.

SCHEDULE:

Milestone	Schedule	Target
I Conduct Wall Heater System CDR	12/31/2017	5/23/2018

RISK & MITIGATION:

Risk	Mitigation
I Cannot complete this milestone in Q1	I Correct heater system design deficiencies and test corrective actions prior to proceeding to CDR

POP MILESTONE # 2.5.29

Maintenance, Renewal, and Warranty Claims

Antenna Surface Accuracy Installation (25 antennas)



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$0	\$0
Material Actuals	Expected
\$0	\$0
Travel Actuals	Expected
\$0	\$0

SCOPE:

Following the successful completion of the Antenna Surface Accuracy Improvement CDR (POP Milestone #28), Vertex to schedule and conduct Wall Heater System installation on all 25 North American which will resolve the thermally induced surface accuracy issue on each antenna.

SCHEDULE:

Milestone	Schedule	Target
I Complete Wall Heater System Upgrade Installation (25 Antennas)	3/31/2018	10/17/2018

RISK & MITIGATION:

Risk	Mitigation
I Cannot complete this milestone in Q1-FY2019	I Work with Vertex to resolve Antenna installation scheduling issues.

POP MILESTONE # 2.5.3 I

NA ALMA – Construction Warranty

Reword Cost/Benefit Analysis - Nutators



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Root cause analysis and path forward on non-conformance of mirror reflecting surface.

Status:

- Analysis completed;
- Verbal report given
- Written report in progress, to be completed Q3 FY2018
- Action at JAO to determine scientific options

SCHEDULE:

Milestone	Schedule	Target
I Reword report	12/31/2017	6/30/2018

RISK & MITIGATION:

Risk	Mitigation
I No risk on report	

POP MILESTONE # 2.5.32

Maintenance, Renewal, and Warranty Claims

Deliver FEHVs 1 & 2 to JAO



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$0	\$0
Material Actuals	Expected
\$0	\$0
Travel Actuals	Expected
\$0	\$0

SCOPE:

As a result of noncompliant welding issues, the FEHV chassis assemblies were re-fabricated by the Green Bank Machine Shop. Completed chassis assemblies have been returned to Chile and the reassembly of Unit #1 has been concluded; unfortunately, the assembled mass exceeds the Technical Specification limit.

SCHEDULE:

Milestone	Schedule	Target
I Deliver FEHVs 1 & 2 to JAO	3/31/2018	6/23/2018

RISK & MITIGATION:

Risk	Mitigation
I Mass of the FEV cannot be reduced to acceptable value	I Review all component part masses and identify possible reductions; request waiver from JAO if unsuccessful

POP MILESTONE # 3.4.20

VLA Development

Deliver Quick Look images for VLASS I.I



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

The scope of the milestone is to deliver Quick Look Images for the first half of the first epoch of the VLA Sky Survey.

SCHEDULE:

Milestone	Schedule	Target
I Deliver QLI	3/31/18	5/31/18

RISK & MITIGATION:

Risk	Mitigation
I Backlog in delivery of all VLASS products	I Increase automation of QA

POP MILESTONE # 3.4.37

VLA Array Operations

Develop Array Operations Succession Plan



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$0	\$0
Material Actuals	Expected
\$0	\$0
Travel Actuals	Expected
\$0	\$0

SCOPE:

Outline strategic plan for Array Operation Division succession. Redefine roles of staff.

SCHEDULE:

Milestone	Schedule	Target
I Develop Plan	3/31/18	5/15/18

RISK & MITIGATION:

Risk	Mitigation
I Single point of failure for some positions	I Reassign duties, cross-training

POP MILESTONE # 4.3.6

Central Development Laboratory (CDL)

Demonstrate Reflectionless filter with active synthetic elements



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

An alternate approach has obviated the need for the active circuitry that was causing instability during earlier attempts. Simulations with the remaining grounded synthetic negative element now appear to be stable, and an inexpensive prototype test is underway.

Further exploration has also shown that even the grounded negative element can be avoided. Both solutions (the synthetic negative elements and the equivalent circuits which avoid them) are believed to have merit in different applications, so both will be explored. **Meanwhile, a provisional patent application will be filed for these new concepts recently discovered.**

SCHEDULE:

Milestone	Schedule	Target
I Demonstrate Reflectionless filter with active synthetic elements.	3/31/2018	9/30/2018

RISK & MITIGATION:

Risk	Mitigation
I Further study may or may not resolve the described problem, or uncover additional issues.	<p>1 Allocation of additional time to pursue the investigation will allow time to try to confirm resolution of the problem, using the new approach.</p> <p>2 This is an R&D milestone, scope could be redefined later if/as necessary. Does not impact any other POP milestone.</p>

POP MILESTONE # 5.6.15

Science Support & Research

SRDP Project Office (Identify Project Scientist)



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact

SCHEDULE:

Milestone	Schedule	Target
IID Project Scientist	12/31/2017	4/15/2018

RISK & MITIGATION:

Risk	Mitigation
1 Resourcing understaffed	1 Proj. Dir. Serve as interim
2 Proj. Dir. Oversubscribed	2 None / Accept

POP MILESTONE # 5.6.16

Science Support & Research

SRDP End Of Project Initiation Phase



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact

SCHEDULE:

Milestone	Schedule	Target
I CoDR	3/30/2018	5/11/2018

RISK & MITIGATION:

Risk	Mitigation
I Resourcing understaffed	I Proj. Dir. Serve as interim

POP MILESTONE # 5.6.18

Science Support & Research SRDP Project Scope Established



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact to scope.

Capture of high level scope to Operations
Concept Draft is complete, pending
completion of external committee review.

SCHEDULE:

Milestone	Schedule	Target
I Establish Proj. Scope, review stakeholder requirements	12/31/2017	5/31/2017

RISK & MITIGATION:

Risk	Mitigation
I Requirements review is overlapping conceptual design review	I Manage communications, expectations, and accept

POP MILESTONE # 5.6.19

Science Support & Research

SRDP Implementation Cycle I Defined



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact to scope.

Cycle I implementation is paced by CoDR.

SCHEDULE:

Milestone	Schedule	Target
I Define Cycle I	3/30/2018	6/30/2018

RISK & MITIGATION:

Risk	Mitigation
1 CoDR Readiness	1 Compress Req. Comm. Schedule
2 Req. Comm. Oversubscribed	2 None / Accept

POP MILESTONE # 6.5.4

Data Management & Software, SIS

NAASC Lustre (Storage) Replacement



Cost



Schedule



Scope

COST:As planned

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact

SCHEDULE:

Milestone	Schedule	Target
I Install, test, and go-live for 1PetaByte of storage	3/30/2018	5/12/2018

RISK & MITIGATION:

Risk	Mitigation
I Insufficient storage for NAASC operations and SW commissioning	I Manage current storage solution to reduced quotas

POP MILESTONE # 6.5.23

Data Management & Software

CASA Pipeline update (CASA 5.2)



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
<i>DMS funds this activity at a higher WBS level.</i>	
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Provide parallelized imaging in the pipeline to further increase throughput.

SCHEDULE:

Milestone	Schedule	Target
1 Software delivered and verified	Q2 FY18	Complete
2 Software validated and delivered to ALMA Operations	Q2 FY18	September 30

RISK & MITIGATION:

Risk	Mitigation
None	

POP MILESTONE # 7.5.19

Program Management Department

ALMA-D Cycle 4 Close Out Reports Published



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No change to scope. All ongoing Cycle 4 Studies are operating under approved change requests.

SCHEDULE:

Milestone	Schedule	Target
I Reports Published	3/31/2018	9/30/2018

RISK & MITIGATION:

Risk	Mitigation
None	

POP MILESTONE # 7.5.2I

Program Management Department

SRDP: Approved Doc. Pkg. for CoDR



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact

SCHEDULE:

Milestone	Schedule	Target
I Approved Document Package for CoDR	3/30/2018	4/30/2018

RISK & MITIGATION:

Risk	Mitigation
I CoDR Readiness, timely distribution of package to review committee	None / accept

POP MILESTONE # 7.5.27

Program Management Department

Sport Facility at ALMA OSF JAO Design Review



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Conduct the design review for the Sport Facility.

SCHEDULE:

Milestone	Schedule	Target
I Conduct Design Review	Q2 FY2018	6/26/2018

RISK & MITIGATION:

Risk	Mitigation
I None	I None

POP MILESTONE # 7.5.29

Program Management Department

VLBA Mark 6 Development – Deliver first two items



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact

SCHEDULE:

Milestone	Schedule	Target
I Delivery of Mark 6 – first two.	Q3	Q2 complete

RISK & MITIGATION:

Risk	Mitigation
None	

POP MILESTONE # 13.7.11

ERP Upgrade from Oracle J.D.Edwards 9.0 to 9.2

Installation & preparation of new hardware and software upgrade loaded



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	

SCOPE:

Update Oracle J.D.Edwards ERP to new release (from 9.0 to 9.2). Partial Hardware updates are within scope of this project.

SCHEDULE:

Milestone	Schedule	Target
1 Install/prepare hardware	Q2	Completed
2 Software upgrade loaded	Q2	May 7, 2018

RISK & MITIGATION:

Risk	Mitigation
I Testing delayed	I Testing schedule had conservative time estimates. Go-live can be in August.

POP MILESTONE # 13.7.12

ERP Upgrade from Oracle J.D.Edwards 9.0 to 9.2

Testing plan prepared and used for testing and validation by users.



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	

SCOPE:

Update Oracle J.D.Edwards ERP to new release (from 9.0 to 9.2). Partial Hardware updates are within scope of this project.

SCHEDULE:

Milestone	Schedule	Target
1 Testing plan prepared	Q2	Completed
2 Testing plan used for testing	Q2	May 11, 2018

RISK & MITIGATION:

Risk	Mitigation
1 Testing delayed	Testing schedule had conservative time estimates. Go-live can be in August.

POP MILESTONE # 15.2.9

Director's Office

All-Hands Presentations



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact

SCHEDULE:

Milestone	Schedule	Target
I All-Hands Presentations	3/31/2018	4/21/2018

RISK & MITIGATION:

Risk	Mitigation
I None	I None

POP MILESTONE # 3.3

ngVLA Education & Public Outreach

Discuss ngVLA concept with local community



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Discuss ngVLA concept with local community, primarily with ranchers in the VLA area.

SCHEDULE:

Milestone	Schedule	Target
I Schedule discussion with local community	3/31/18	9/30/18

RISK & MITIGATION:

Risk	Mitigation
I ngVLA concept is not presented to local community, leading to surprises and lack of understanding of stakeholder needs	I Discuss concept with local stakeholders individually and as groups

POP MILESTONE # 4.2

ngVLA Conceptual Design & Development Release Operations & Maintenance Concept



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Further develop and document an operations and maintenance concept for the ngVLA.

SCHEDULE:

Milestone	Schedule	Target
I Release Document	12/31/17	6/30/18

RISK & MITIGATION:

Risk	Mitigation
I Risk to Schedule	I Add resources to the Operations Working Group to complete the development of the concept document.

POP MILESTONE # 4.9

ngVLA Conceptual Design & Development

Receiver & Cryo Thermal Model released



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Develop a thermal model for the ngVLA receiver and cryogenic system.

SCHEDULE:

Milestone	Schedule	Target
I Receiver & Cryo Thermal Model Released	3/31/18	6/30/18

RISK & MITIGATION:

Risk	Mitigation
I Delay in RfP to develop the thermal model leads to delays in convergence on overall ngVLA concept	I Expedite RfP

POP MILESTONE # 5.1.1

ngVLA Project Office

Complete recruitment and hiring process



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Recruit and hire staff for the ngVLA project.

SCHEDULE:

Milestone	Schedule	Target
I Hire/On-board Project Staff	12/31/17	6/30/18

RISK & MITIGATION:

Risk	Mitigation
I Delay in project schedule	I Recruitment/hiring processes are underway for key positions. Interim support provided by internal and external resources

POP MILESTONE # 5.1.2

ngVLA Project Office

Hand over responsibilities from interims to new hires



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Hand over interim project roles to new hires once position vacancies are filled.

SCHEDULE:

Milestone	Schedule	Target
I Transition from Interims to New hires	3/31/18	9/30/18

RISK & MITIGATION:

Risk	Mitigation
I Project under-resourced to complete development of ngVLA concept on schedule	I Expedite recruitments

POP MILESTONE # 5.6.2

ngVLA Requirements Management

Conduct Stakeholder Requirements Review (StRR)



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Conduct the ngVLA stakeholders requirements review.

SCHEDULE:

Milestone	Schedule	Target
I Conduct StRR	3/31/18	6/30/18

RISK & MITIGATION:

Risk	Mitigation
I Incomplete identification of ngVLA stakeholders and their requirements	I Expedite review

POP MILESTONE # 5.6.3

ngVLA Requirements Management

Develop initial lifecycle and concept description



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

Develop the initial lifecycle and concept description for the ngVLA

SCHEDULE:

Milestone	Schedule	Target
1 Develop initial description	3/31/18	6/30/18

RISK & MITIGATION:

Risk	Mitigation
1 Lifecycle and concept not adequately captured in a timely way	1 Expedite completion of these descriptions. Resource the systems engineering group
2 Schedule risk	



Carryover Milestones

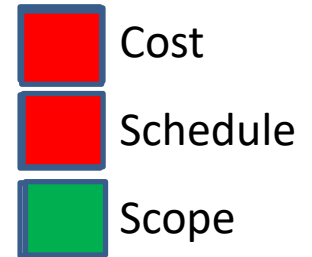
Scorecard – FY2017 POP Milestone Carryovers

Milestone Carryovers					
POP Section Number	POP Milestone	Milestone	FY17 Due Date	New Completion Date	Status
3.5		Very Large Array			
		<i>VLA Track Maintenance</i>			
	30	Identify and replace 5000 aging or damaged cross-ties during the course of the year	9/30/2017	12/31/2017	Completed
6.4		Data Management & Software			
		<i>VLA System Software</i>			
	18	Implement currently used solar modes	6/30/2017	12/22/2017	Completed
7.4		Program Management Department			
		<i>New Mexico Operations</i>			
	2	NM PM/SE Learning Opportunities	9/30/2017	10/10/2017	Completed
		<i>Headquarters</i>			
	30	Incorporate Changes and Feedback into SOPs	9/30/2017	10/30/2017	Completed
8.5		Education & Public Outreach			
		<i>Visitor Center Operations</i>			
	17	VLA Visitor Center Education and Interpretive Plan completed	6/30/2017	12/31/2017	Completed
	18	VLA Visitor/Education Center architectural schematic designs completed	6/30/2017	6/15/2018	Incomplete
11.7		Human Resources			
		<i>Employment</i>			
	14	Workforce Management Plan	3/31/2017	6/30/2018	Incomplete
12.1		Communications			
	4	Publish 2016 NRAO Annual Report	9/30/2017	2/9/2018	Completed

POP MILESTONE #8.5.18

Education and Public Outreach

VLA Visitor/Education Center architectural schematic designs completed



COST:

Labor Actuals	Expected
\$	\$ 113,000
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact

SCHEDULE:

Milestone	Schedule	Target
I Architectural sketches	Q3 FY2017	Q3 FY2018

RISK & MITIGATION:

Risk	Mitigation
I Designing a plan for the wrong building	I A structural engineer will inspect both the existing VC and the former cafeteria before an RFP goes out for bid on a concept design

POP MILESTONE # 11.7.14

Human Resources

Workforce Management Plan



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
\$	\$
Material Actuals	Expected
\$	\$
Travel Actuals	Expected
\$	\$

SCOPE:

No impact.

SCHEDULE:

Milestone	Schedule	Target
I Develop/Distribute WFM Plan	3/31/2017	6/30/2018

RISK & MITIGATION:

Risk	Mitigation
I No risk	

POP MILESTONE FY2015 # 3.4.62

Admin (from NM Ops)

Renew VLBA lease for Owens Valley



Cost



Schedule



Scope

COST:

Labor Actuals	Expected
No changes	
Material Actuals	Expected
No Changes	
Travel Actuals	Expected
No changes	

SCOPE:

Owens Valley, CA site sublease with Owens Valley Radio Observatory (OSRO) is not renewed. LBO is awaiting the lease renewal negotiation outcome between Caltech and the LA Water and Power on the OVRO. A draft sublease was received and reviewed by WBriskin, MMcKinnon, S Lagoyda, S Geiger, and RSakshaug and returned to CalTech with comments.

SCHEDULE:

Milestone	Schedule	Target
Owens Valley Lease renewed	03/31/2015	EOY 2018

RISK & MITIGATION:

Risk	Mitigation
1 Impact on VLBA operating budget (increase in lease cost – but early indications are for a modest increase)	1 Adjust VLBA Operating budget, if necessary.
2 Impact on VLBA operation	2 Avoid by periodic follow up of Caltech negotiation progress

VLA Reconfiguration

- Reconfigurations of the VLA were inadvertently left out of the Array Operations section of the FY2018 POP
 - We propose to document the reconfigurations as exception reports in future QSU reports.
- Two VLA reconfigurations were completed in Q2 FY2018
 - From B to BnA: began January 29; completed January 31
 - From BnA to A: began February 20; completed March 1



QSU2 FY2018 Report

Budget, Laura Lockledge



Overall Comments

- ICC/IDC rates recorded at FY2017 provisional levels. FY2018 rates pending approval with NSF.
- Benefits @ 34.5 vs. budget of 36%

CSA-V Q2 Results

	FY18 POP Budget	FY18 Rev. Budget	FY18 YTD Expense s	YTD % Rev Budget
NSF	32,860	38,860	18,565	47.8%
Carryforward/Other	405	1,308	1,306	0.0%
Total CSA-V Revenues	33,265	40,168	19,871	49.5%
Telescope Ops	11,476	11,637	4,675	40.2%
Development	3,506	2,569	1,117	43.5%
Science Ops	5,905	6,316	2,585	40.9%
Admin Services	9,464	9,973	3,655	36.6%
Director's Office	2,161	2,163	806	37.3%
Education & Public Outreach	753	820	350	42.7%
ngVLA		6,685	1,485	22.2%
FY18, Total	33,265	40,163	14,673	36.5%
FY18 CSA-V Net	0	5	5,198	

CSA-A Q2 Results

	FY18 POP Budget	FY18 Rev. Budget	FY18 YTD Expenses	YTD % Rev Budget
NSF	43,480	37,480	20,235	54.0%
Carryforward	13,700	16,291	16,291	100.0%
Canadian Contribution	1,500	1,634	0	0.0%
Other	400	377	235	62.3%
Total CSA-A Revenues	59,080	55,782	36,761	65.9%
Telescope Ops	22,521	24,740	11,328	45.8%
Development	5,585	9,894	830	8.4%
Science Ops	6,869	7,215	2,696	37.4%
Admin Services	7,759	9,653	4,310	44.6%
Director's Office	2,894	3,620	1,428	39.5%
Education & Public Outreach	679	662	281	42.4%
FY18, Total	46,307	55,784	20,873	37.4%
FY18 CSA-A Net	12,773	-2	15,888	

ICC Q2 Results

	FY18 POP Budget	FY18 Rev. Budget	FY18 YTD Expense s	FY18 YTD % Rev Budget
NRAO Recoveries	12,828	12,865	5,379	41.8%
External Recoveries	3,381	3,381	1,742	51.5%
Total ICC Revenues	16,209	16,246	7,121	43.8%
Telescope Ops	105	106	59	55.7%
Development	429	444	203	45.7%
Science Ops	2,379	2,463	1,076	43.7%
Admin Services	11,244	11,162	4,909	44.0%
Director's Office	2,052	2,071	858	41.4%
FY18, Total	16,209	16,246	7,105	43.7%
FY18 ICC Net	0	0	17	



QSU2 FY2018 Exceptions Report



Education and Public Outreach

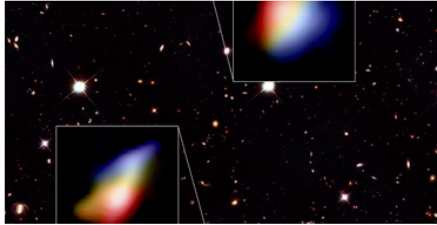
STEAM Outreach Events, VA/NM

- 1/10/2018: AAS 231st Meeting with local student event (Approx 200 students)
- 3/9/2018: Ruckersville Elementary School Science Expo (~500 of the 600 participants visited the NRAO booth)
- 3/13-14/2018: PVCC 7th Grade Explore Careers Day (~ 200 students)
- 1/13/18 TAAS Perihelion Dinner
NRAO's Bryan Butler Keynote speaker (Bryan, Judy, and Faith)
- 2/6/18 Cottonwood school science day outreach demos (78 students - Faith)



Education and Public Outreach

News



Astronomers Detect Whirlpool Movement in Early Galaxies

January 10, 2018 at 2:15 pm / Announcement

Astronomers have looked back to a time soon after the Big Bang, and have discovered swirling gas in some of the earliest galaxies to have formed in the Universe. These 'newborns' – observed as they appeared nearly 13 billion years ago – spun like a whirlpool, similar to our own Milky Way.



ALMA Board Approves Development of New Spectrometer for Morita Array

January 19, 2018 at 10:05 am / Announcement

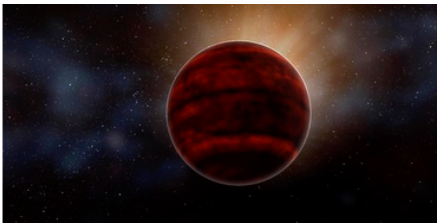
The ALMA Board approved the development of a new spectrometer for the Morita Array designed and developed by Japan for the ALMA telescope.



Stellar Embryos in Nearby Dwarf Galaxy Contain Surprisingly Complex Organic Molecules

January 30, 2018 at 2:00 pm / News Release

Astronomers using ALMA have conclusively detected the largest, most complex molecules ever observed outside the Milky Way.



Powerful Flare from Star Proxima Centauri Detected with ALMA

February 26, 2018 at 8:50 am / News Release

ALMA data reveal that a powerful stellar flare erupted from Proxima Centauri last March. This space weather may make that system rather inhospitable to life after all.

Education and Public Outreach

News: ALMA Image Release



Image Release: ALMA Reveals Inner Web of Stellar Nursery

March 7, 2018 at 6:00 am | News Feature

New data from ALMA and other telescopes reveal stunning web of filaments in the Orion Nebula.

Education and Public Outreach

News: NRAO



2018 Jansky Fellowships Awarded

March 8, 2018 at 10:00 am | Announcement

NRAO is pleased to announce the recipients of the 2018 Jansky Fellowships.



NRAO Contracts for Specialized Integrated Circuit for New Radio Telescope

February 15, 2018 at 4:26 pm | Announcement

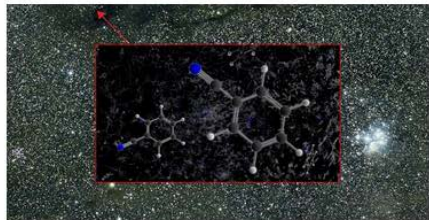
Using new funding from the National Science Foundation, NRAO has contracted with a firm to design and build an integrated circuit that implements an NRAO-developed technique to greatly improve the efficiency of data transmission for a next-generation radio telescope.



International Collaboration Expands NRAO's NINE Program with New Hub

February 15, 2018 at 4:40 pm | Announcement

NRAO's National and International Non-Traditional Exchange (NINE) Program has collaborated with the South African Radio Astronomy Observatory (SARAO) to launch a pilot initiative titled Multi-wavelength Astronomy Public Participation Program (MAPPP).



GBT Detection Unlocks Exploration of 'Aromatic' Interstellar Chemistry

January 11, 2018 at 2:00 pm | News Release

Astronomers using the GBT have made the first definitive interstellar detection of benzonitrile, an intriguing organic molecule.

Education and Public Outreach

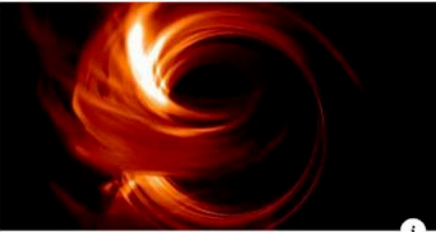
Social Media: Facebook

Followers up from 61,775 in Q1
to 63,061 in Q2

A gain of 1286

National Radio Astronomy Observatory (NRAO)
January 6 · 🌐

A long awaited shipment of radio data from the South Pole arrived at MIT Haystack on 12/13, as part of a planet-wide effort to observe Sgr. A*. The data set is complete for the Event Horizon Telescope project, of which ALMA Observatory & 8 other telescopes around the globe participated in April 2017.



We're about to see a black hole for the first time

WE'RE about to see — for the very first time — the event horizon of a black hole, proving beyond any last vestige of doubt that Einstein's interstellar monsters are real. And here's what it will look like.

NEWS.COM.AU

👤 10,536 people reached

👍👎👏 216

9 Comments 66 Shares

Performance for Your Post

10,536 People Reached

373 Reactions, Comments & Shares 🌐

232 Like	187 On Post	45 On Shares
23 Love	21 On Post	2 On Shares
1 Haha	1 On Post	0 On Shares
20 Wow	12 On Post	8 On Shares
31 Comments	16 On Post	15 On Shares
68 Shares	66 On Post	2 On Shares

532 Post Clicks

0 Photo Views	252 Link Clicks	280 Other Clicks 🌐
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NEGATIVE FEEDBACK


6 Hide Post	2 Hide All Posts
0 Report as Spam	0 Unlike Page

Reported stats may be delayed from what appears on posts

National Radio Astronomy Observatory (NRAO)
Published by Nicholas Janney · 🌐 · March 6 · 🌐

The resolution of the #VLA is set by the size of the array -- up to 36 km (22 miles) across. At our highest frequency (43 GHz) this gives a resolution of 0.04 arcseconds: sufficient to see a golf ball held by a friend 150 km (100 miles) away. Watch NRAO scientist Rick Perly as he narrates the way we navigate our antennas through a configuration change.

[https://public.nrao.edu/special-features/via-explorer/...](https://public.nrao.edu/special-features/via-explorer/)



VLA Transporters
08:23

👍👎👏 127

3 Comments 74 Shares

Get More Likes, Comments and Shares
Boost this post for \$20 to reach up to 2,900 people.

👤 Your video is popular with men between the ages 25-34

Performance for Your Post

5,805 People Reached

2,853 Video Views

372 Reactions, Comments & Shares 🌐

262 Like	113 On Post	149 On Shares
17 Love	9 On Post	8 On Shares
9 Wow	6 On Post	3 On Shares
11 Comments	3 On Post	8 On Shares
74 Shares	74 On Post	0 On Shares

864 Post Clicks


146 Clicks to Play 🌐	6 Link Clicks	712 Other Clicks 🌐
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NEGATIVE FEEDBACK

3 Hide Post	0 Hide All Posts
0 Report as Spam	0 Unlike Page

Reported stats may be delayed from what appears on posts

National Radio Astronomy Observatory (NRAO)
February 22 · 🌐



**True or False:
The only way for an object to
emit light is by reaching a
certain temperature**

👤 6,286 people reached

👍👎👏 65

31 Comments 8 Shares

Performance for Your Post

6,286 People Reached

144 Reactions, Comments & Shares 🌐

70 Like	61 On Post	9 On Shares
4 Love	4 On Post	0 On Shares
2 Haha	2 On Post	0 On Shares
60 Comments	45 On Post	15 On Shares
8 Shares	8 On Post	0 On Shares

1,060 Post Clicks

80 Photo Views	0 Link Clicks	980 Other Clicks 🌐
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NEGATIVE FEEDBACK

Education and Public Outreach

Social Media: Twitter

Followers are up
from 13,528 in Q1
to 14,449 in Q2
Up 921

Tweet activity



Reach a bigger audience
Get more engagements by promoting this Tweet!

Get started

Impressions	20,096
Total engagements	287
Likes	82
Media engagements	68
Detail expands	43
Retweets	37
Link clicks	28
Profile clicks	22
Hashtag clicks	6
Replies	1

Tweet activity



NRAO @TheNRAO
Starry night on the Plains of San Agustin at the Karl Jansky Very Large Array

Image credit: Drew Medlin #VLA
#NSFFunded pic.twitter.com/tBnfVTPe5d



Reach a bigger audience
Get more engagements by promoting this Tweet!

Get started

Impressions	25,703
Total engagements	395
Likes	131
Media engagements	120
Retweets	46
Detail expands	41
Profile clicks	23
Link clicks	21
Hashtag clicks	10
Replies	3

Education and Public Outreach

Social Media: Instagram

Followers are up 208
from **324 in Q1** to 532
in Q2

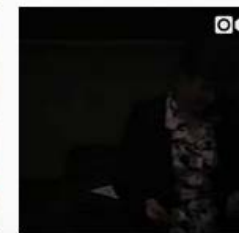
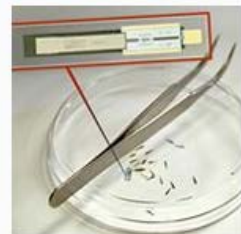
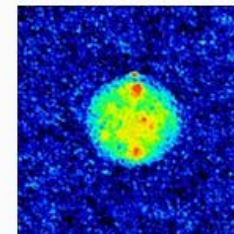
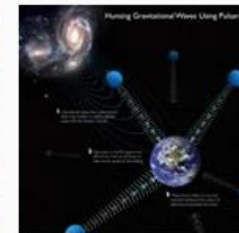
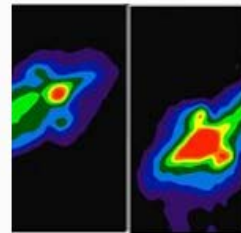
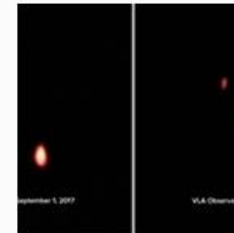


national.radio.astronomy

Following

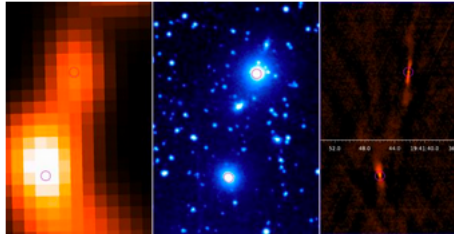
133 posts 531 followers 46 following

NRAO The National Radio Astronomy Observatory is a facility of the National Science Foundation. Social Media Policy: bit.ly/2qNhpB3
public.nrao.edu



Education and Public Outreach

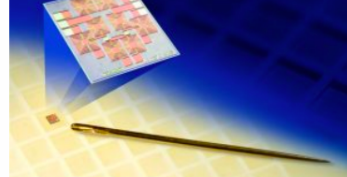
Social Media: Blogs



Making a Map of the Radio Universe

As Project Director, Dr. Chandler heads up the VLA Sky Survey (VLASS), a massive effort that will map the entire sky visible from New Mexico (about 80 percent of the whole sky) over a period of seven years. VLASS will produce the sharpest radio view ever made of such a large portion of the sky,...

[READ MORE](#)



A Better Way to Filter – Part I

Electronic filters are among the most common building blocks used in all kinds of electronic systems – from the phone in your pocket to the satellites in space. What they do is easy to understand: they block some frequency channels while allowing others to pass. This could be used to isolate a particular station on...

29 MAR 2018 - By Matthew A. Morgan



Army Aviators Drop in for Tour of VLA

As part of a training event, the U.S. Army's C Company, 3rd Battalion, 501st Aviation Regiment, Combat Aviation Brigade, First Armored Division, based at Fort Bliss, Texas, made a stop at the Karl Jansky Very Large Array on February 20. Arriving in five UH-60 Blackhawk helicopters, they landed and met NRAO staffers for a guided tour...

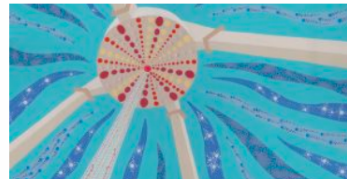
2 MAR 2018 - By Dave Finley



Happy Birthday Dr. Seuss

One star Two star Red star Blue star. Near star Far star Old star New star. This one has a little friend. This one has a lot of spin. Say! What a lot Of stars there are. Yes. Some are red. And some are blue. Some are old. And some are new. Some are globular,...

2 MAR 2018 - By Aaron Lawson



The Intersection of Science and Art

In June 2017, we invited scientists and astronomers from around the world to discuss development plans and design ideas for the next phase of the Very Large Array in New Mexico. This collaboratively inspired design will take the best engineering concepts in radio telescopes and build an interferometric array with a much greater collecting area and spatial resolution...



15 FEB 2018 - By Jon Ramer



What do radio waves tell us about the Universe?

Did you ever wonder what types of celestial sources could be observed with radio wavelengths or how a radio telescope processes 'invisible' light into an image? Radio wavelengths are a distinct part of the electromagnetic spectrum giving us a fairly spectacular view of celestial phenomena. In an effort to connect you to what our scientists...



15 FEB 2018 - By Nan Janney



The Very Large Array's Radio Sundial

In 1955, Australian radio astronomer Ron Bracewell joined the faculty of Stanford University and established a radio astronomy observatory on the campus. Constructing an array of 32 10-foot-diameter antennas – each of which was mounted on a concrete pillar, and dubbed the Stanford "Cross." The radio array was used to make daily maps of the...

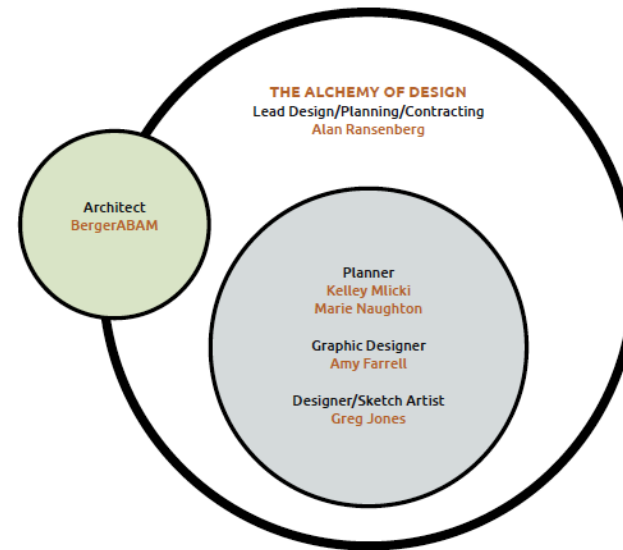


15 FEB 2018 - By Nan Janney

[VIEW MORE](#) [BLOG POSTS](#)

Education and Public Outreach

VLA Visitor Center Concept Design



“design is the process
of making
dreams come true”



Education and Public Outreach

VLA Visitor Center – Tours 877 served

- 1/6/18 First Saturday tours total visitors 166
 - Three tours 11:00=49, 1:00=54, 3:00=34 Star party 38
- 1/20/18 Third Saturday Tours! (Soft Launch) Carmen Torres & Tyler Cohen part time tour guide(s) first day!
 - 11:00=18, 1:00=23, 3:00=22
- 2/3/18 First Saturday tours
 - 11:00-65 total 1:00-96 total 3:00 -41 total Star Party -28
- 2/17/18 Third Saturday tours
 - 11:00-82, 1:00-53, 3:00-21 (Faith, Judy, Carmen, Tyler)
- 3/2/18 First Saturday tours
 - 11:00 – 44, 1:00 – 59, 3:00 – 40, Star party 14
- 3/17/18 Third Saturday tours
 - 11:00-87, 1:00-42, 3:00-47 ((Faith, Carmen, Tyler)

Karl G. Jansky Very Large Array

1st & 3rd Saturday Tours

First Saturday Tours

The VLA hosts three guided tours on the first Saturday of each month at 11:00 a.m., 1:00 p.m., and 3:00 p.m. No reservations are required, simply show up at the VLA Visitor Center 30 minutes before the desired tour time. These guided tours last about 50 minutes and take visitors to areas behind-the-scenes at the VLA. Staff and VLA Volunteers are on hand to answer questions. **No reservations are required.**

The First Saturday Tour event culminates in an evening of free Guided Night Sky Telescope Viewing at the Etscom Observatory on the Campus of NM Tech located in Socorro (see back). The night time event begins at dark and lasts two hours, despite weather conditions, no reservations required.

Third Saturday Tours*

Beginning in 2018, the VLA will now host three guided tours on the third Saturday of each month at 11:00 a.m., 1:00 p.m., and 3:00 p.m. No reservations are required, simply show up at the VLA Visitor Center 30 minutes before the desired tour time. These guided tours last about 50 minutes and take visitors to areas behind-the-scenes at the VLA. Staff and VLA Volunteers are on hand to answer questions. **No reservations are required.**

* No night sky viewing at Etscom Observatory for Third Saturday events at this time.

public.nrao.edu/visit-us

NRAO National Radio Astronomy Observatory
www.nrao.edu

NSF National Science Foundation

AUI Arizona University

Education and Public Outreach

VLA Visitor Center – Tours 534 served

- 1/11/18 Austin College Tour – 15 total – Faith
- 1/20/18 Third Saturday Tours! (Soft Launch) Carmen Torres & Tyler Cohen part time tour guide(s) first day!
 - 11:00 – 18, 1:00 – 23, 3:00 – 22 (No star party for Third Saturday tours)
- 1/27/18 Sun Tours (bus tours stopped at VLA for self-guided tour after hours – 48 people)
- 2/2/18 Onate High School VLA tour – 31 (Faith)
- 2/3/18 First Saturday tours 11:00-65 total 1:00-96 total 3:00 -41 total Star Party – 28 (Faith, Tyler, Carmen) Plus a Boy Scout group added to the 11:00 tour
- 2/17/18 Third Saturday tours 11:00-82, 1:00-53, 3:00-21 (no star party) (Faith, Judy, Carmen, Tyler)
- 2/6/18 Cottonwood school science day outreach demos – 78 students (Faith)
- 2/15/18 Rick Perley tour for colleagues – 12
- 2/20/18 Five Black Hawk Helicopter(s) Tour! – 31 (Dave, Judy, Faith, Carmen)
- 3/9/18 NMT Grad Student Tour total – 9 (Tyler)
- 3/12/18 Vivek's grad student tour/antenna climb total – 17
- 3/16/18 Sacarrino 6th grade field trip to VLA – 136
- 3/16/18 Road Scholar Tour – 23
- 3/17/18 Third Saturday tours 11:00 – 87, 1:00 – 42, 3:00 – 47 (no star party) (Faith, Carmen, Tyler)
- 3/19/18 Two tours St. Joseph 66 total and Polk MS total – 61 (Faith and Carmen)
- 3/21/18 Gear-Up NM group came for a self-guided tour total – 35

Education and Public Outreach

VLA Visitor Center



Education and Public Outreach

VLA Visitor Center



Help us protect *your* science.

Please follow these guidelines while visiting the VLA:

Please have all electronic devices (cell phones, tablets, or anything else with an "On/Off" switch) in airplane mode and powered off. If you plan to use your electronic device to take photographs, you may briefly turn them on (while in airplane mode) to take your pictures, and then power your device off again once you've done so. Please turn off all WiFi and Bluetooth devices including GPS, back-up cameras, wireless headphones, fitbits, etc.

On your person and in your car/vehicle!

Education and Public Outreach Multimedia Group



2018 Jansky Fellowships Awarded

by Charles Blue

1 month ago

NRAO is pleased to announce the recipients of the 2018 Jansky Fellowships.



The National Radio Astronomy Observatory (NRAO) is pleased to announce the recipients of the 2018 Jansky Fellowships.

The Jansky Fellowship Program provides numerous opportunities for early career scientists to acquire a deep knowledge and understanding of the state-of-the-art in radio astronomy and to establish themselves as innovative, independent research scientists. Jansky Fellows are encouraged to develop research collaborations with NRAO scientific staff, scientists at U.S. universities, and their colleagues in the international astronomical community. An annual, multi-day NRAO Postdoctoral Symposium fosters collaboration between Jansky Fellows and the observatory's scientific staff.

- **Ryan Loomis**, currently a Ph.D. candidate at Harvard University working with Karin Öberg. Ryan's thesis work on the physical and chemical processes which govern the star formation process in our Galaxy has been complemented by his extensive work on algorithmic improvements to radio astronomical imaging and information extraction. Ryan will be hosted at NRAO in Charlottesville.
- **Brian Svoboda**, currently a Ph.D. candidate at the University of Arizona – Steward Observatory. Brian's thesis work with Yancy Shirley has expanded our understanding of the earliest phases of the star formation process through physical and chemical studies of its large-scale structure. Brian will continue his extensive use of NRAO facilities to further our understanding of the star formation process as a Jansky Fellow at NRAO Socorro.

Additional information on the Jansky Fellowship program can be found [here](#).

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[Non-AMP version of this page](#)

[Back to top](#)



2018 Jansky Fellowships Awarded



Charles Blue

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Ryan Loomis, 2018 NRAO Jansky Fellow



Brian Svoboda, 2018 NRAO Jansky Fellow



Charles Blue, 2018 NRAO Jansky Fellow



Ryan Loomis, 2018 NRAO Jansky Fellow




Brian Svoboda, 2018 NRAO Jansky Fellow




Education and Public Outreach


Multimedia Group: Website upgrades




M1 Crab Nebula




M81 "Bode's Galaxy"



NGC 5128 Centaurus A




Milky Way Galactic Center



M51 Whirlpool Galaxy

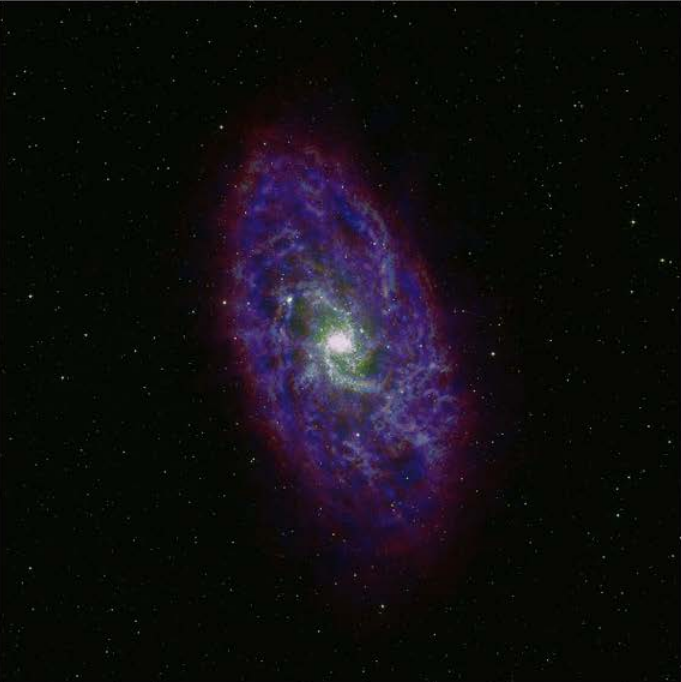
Select Image

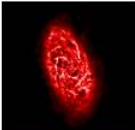


M33 Triangulum Galaxy

Select Image

M33 Triangulum Galaxy







Radio

OFF ON

Select


Brightness: 

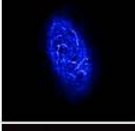


Visible

OFF ON

Select


Brightness: 




Radio 2

OFF ON

Select


Brightness: 



Visible 2


OFF ON


Select


Brightness: 

55

QSU2 FY2018







Education and Public Outreach

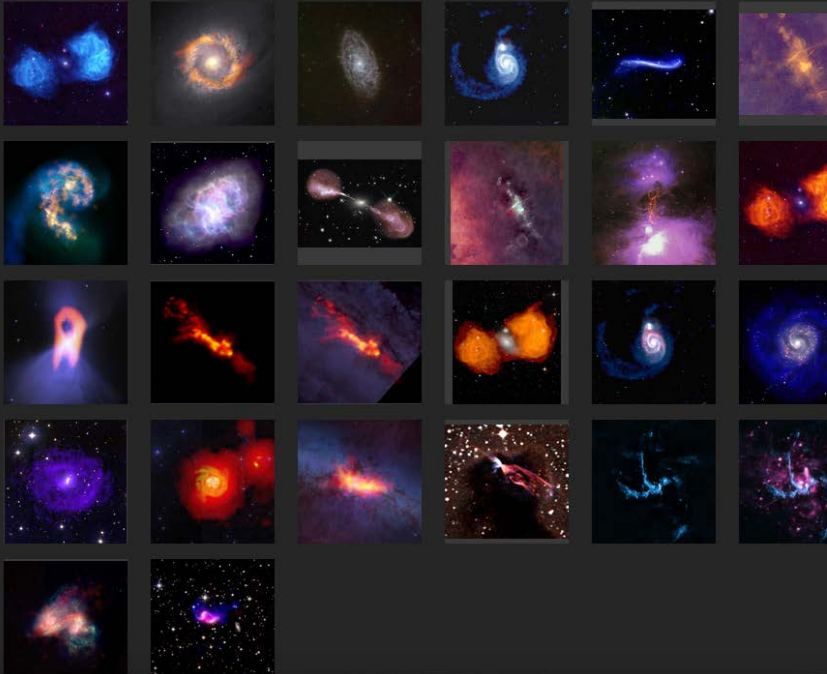
Multimedia Group: Increasing media accessibility

AstroPix Beta 2 About Browse Advanced Search
Share the Universe

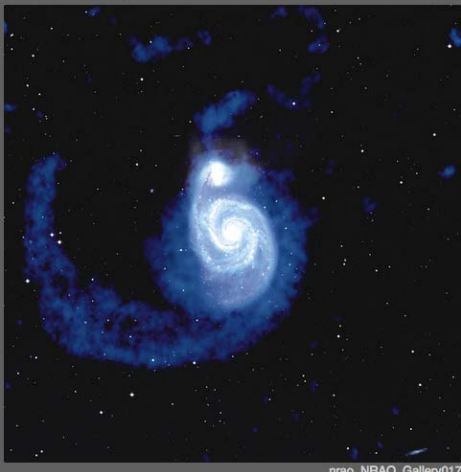
All - Publisher ID - contains - nrao - + <>

Run Query Q

Displaying all 26 Avn image XML JSON



Arms Wide Open



nrao_NRAO_Gallery017

Credit: B. Saxton (NRAO/AUI/NSF) with data provided by J. Hibbard

In this composite image of the Whirlpool Galaxy, the Very Large Array has captured the vastness of this colliding pair like no other telescope can. In white is how the galaxies appear to optical telescopes: one giant spiral galaxy with a smaller one hanging off an arm. The VLA sees a much bigger picture. Colored blue are the cast-off gases that were once the outer spiral arms of these galaxies. They've been yanked apart and left when the smaller galaxy passed by.

Image Source: /image/nrao/NRAO_Gallery017
Curator: NRAO/AUI/NSF, Charlottesville, Virginia, USA
Image Use Policy: Creative Commons Attribution 3.0 Unported license (<http://creativecommons.org/licenses/by/3.0/>)

View Options
Fullscreen View in WorldWide Telescope

Download Options

320 x 320 (36.3 KB)	1280 x 1280 (195 KB)
500 x 500 (57.7 KB)	1600 x 1600 (271 KB)
1024 x 1024 (143 KB)	2401 x 2401 (319 KB)

Image Details

Image Type: Observation

Object Name: M51 · Whirlpool Galaxy · Messier 51a · M51a · NGC 5194 · Messier 51b · M51b · NGC 5195

Subject - Local Universe
Galaxy · Type · Interacting

Distance

23,160,000 light years

1 kly 10 kly 100 kly 1 My 10 My 100 My

Milky Way Local Group

Position Details

Position (ICRS)
RA = 13h 29m 52.7s
DEC = 47° 11' 42.9"

Orientation
North is 0.2° CW

Field of View
33.6 x 33.6 arcminutes

Constellation
Canes Venatici

Color Mapping

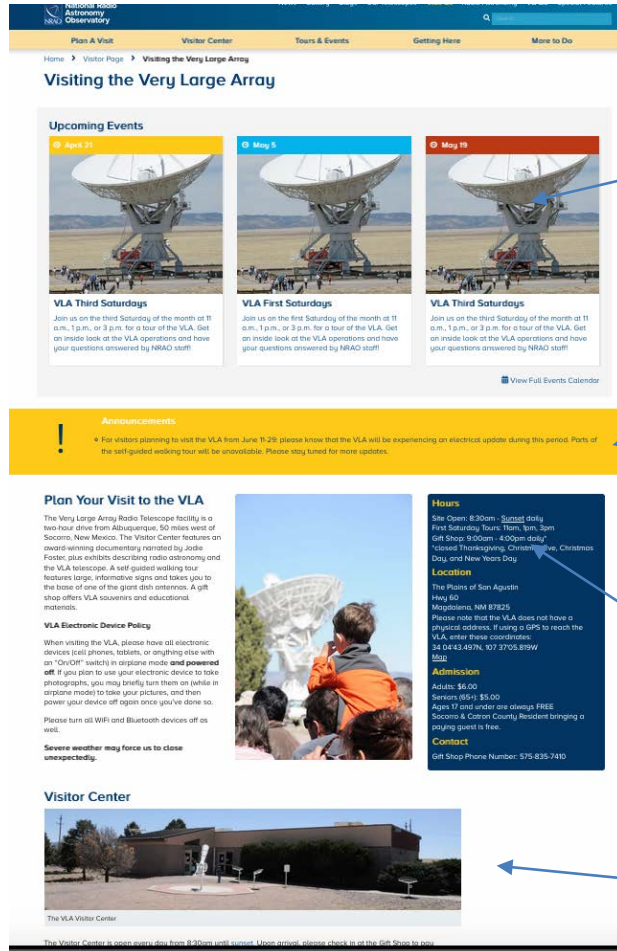
Telescope	Spectral Band	Wavelength
VLA	Radio (C)	61.7 mm
VLA	Radio (L)	204.8 mm
HST	Optical (B)	431.74038 nm

UV Visible Infrared Microwave Radio

Full Distance Scale

Education and Public Outreach

Multimedia Group: Website upgrades



Moved the Upcoming Events to the top of the page and they expire automatically, so you're never greeted by past events

We added an "Alert!" bar for special announcements like the potential for limited access during the Electrical Upgrade

Added a link to sunset tables for better planning

Added more pictures and maps



www.nrao.edu
science.nrao.edu

public.nrao.edu

*The National Radio Astronomy Observatory is a facility of the National Science Foundation
operated under cooperative agreement by Associated Universities, Inc.*

NRAO Quarterly Status Update
QSU2 FY2018

POP Section	POP Milestone	Milestone	Completion Date	Q1 Performance Assessment			Q2 Performance Assessment		
				Cost	Schedule	Scope	Cost	Schedule	Scope
2.5		Atacama Large Millimeter/submillimeter Array (ALMA)							
		Operations							
	1	AODs in support of telescope operations in Chile	12/31/2017						
			3/31/2018						
	2	Diagnostic support for troubleshooting issues and problems found during array operations	12/31/2017						
			3/31/2018						
	5	Review all the Phase 2 Scheduling Blocks submitted by PIs for ALMA Cycle 5	12/31/2017						
			3/31/2018						
	6	Participate in CPM7	3/31/2018						
	9	SWST supporting calibration and imaging heuristic development	12/31/2017						
			3/31/2018						
	10	Assemble the Cycle 6 Release 1 (C6R1) requirements providing support for running the Cycle 5 Pipeline on PI data	12/31/2017						
			3/31/2018						
	11	Provide Support for Running Cycle 5 Pipeline	12/31/2017						
			3/31/2018						
	13	Lead role in testing the Cycle 6 ALMA Archive access	12/31/2017						
			3/31/2018						
	14	Data services team will deliver on average between 20–25 datasets per week	12/31/2017						
			3/31/2018						
	15	Phase 3 testing of the AAT/PPI	3/31/2018						
	16	Preparation of the Cycle 6 Call for Proposals and user documentation including all updates and edits to the ALMA science portal	12/31/2017						
			3/31/2018						
	17	Act as CSs and liaisons to the NA ALMA PI observing programs	12/31/2017						
			3/31/2018						
	18	Initiate the ALMA Ambassadors program and train the scientific community to run outreach events	12/31/2017						
			3/31/2018						
	19	Host data reduction visitors over the FY with the goal of hosting a minimum of 12 visits	12/31/2017						
			3/31/2018						
	20	Hold the 11th NAASC workshop, in coordination with Taiwanese colleagues	3/31/2018						
	21	Sponsor a topical meeting on star and planet formation with a focus on disks to be held at the Biosphere 2 Center, Oracle, AZ.	3/31/2018						
		Development							
	25	FY2018 (Cycle 5) Study Proposal Awards	12/31/2017						
	26	FY2018 (Cycle 5) Project Proposal Awards	3/31/2018						
		Maintenance, Renewal, and Warranty Claims							
	28	NA Antenna Surface Accuracy Improvement Critical Design Review	12/31/2017						
	29	NA Antenna Surface Accuracy Installation (25 antennas)	3/31/2018						
	30	Completion of Antenna Nutators Root Cause Analysis Definition of Mirror Cracking	12/31/2017						
	31	Antenna Nutators – Reword Cost/Benefit Analysis	12/31/2017						
	32	Deliver FEHVs 1 & 2 to JAO	3/31/2018						

NRAO Quarterly Status Update
QSU2 FY2018

POP Section	POP Milestone	Milestone	Completion Date	Q1 Performance Assessment			Q2 Performance Assessment		
				Cost	Schedule	Scope	Cost	Schedule	Scope
		NRAO –Chile Office							
	34	Collective Bargaining Preparation and Negotiation	12/31/2017						
			3/31/2018						
	36	Multicancha Project	12/31/2017						
			3/31/2018						
	37	Key Performance Indicators	12/31/2017						
	38	OCA Office Move to SCO or Other Location	12/31/2017						
	40	Environmental Work Plan	12/31/2017						
			3/31/2018						
	41	Broadening participation of URM in STEM	12/31/2017						
			3/31/2018						
3.4		Very Large Array							
		VLA Science Operations							
	1	Define VLA general and shared risk capabilities to be offered for semester 2018B	12/31/2017						
	3	Update VLA documentation to support 2018B Call for Proposals, perform proposal technical reviews	3/31/2018						
	5	Determine baselines and pointing for antennas moving into their BnA and A configuration locations	3/31/2018						
		VLA Antenna Maintenance							
	10	Perform preventive maintenance on each of two transporters prior to array reconfiguration to A	3/31/2018						
		VLA Site Infrastructure Maintenance							
	15	Perform preventive maintenance on the next configuration VLA antenna transformers prior to array reconfiguration to A	3/31/2018						
		VLA Development							
	20	Deliver Quick Look images for VLASS I.I	3/31/2018						
	22	ngVLA special session at AAS	3/31/2018						
	25	Issue RfP for ngVLA antenna design study	3/31/2018						
	26	Deliver ngVLA design and development proposal	12/31/2017						
		VLA Technical Upgrades and Enhancements							
	28	L-band solar upgrade, install 11 additional receivers (#15–#25) with full RF upgrade	3/31/2018						
	30	Ku-band solar upgrade, install five additional receivers (#14–#18) with 20 dB switched attenuators on outputs only, no solar Tcals. Two in Q2	3/31/2018						
		VLA Array Operations							
	37	Develop Array Operations Succession Plan	3/31/2018						
		VLA Observing Capability Enhancements							
	38	Solar observing promoted from RSRO to SRO	12/31/2017						
	40	Frequency averaging promoted from RSRO to SRO	3/31/2018						
	42	YI software requirements written	3/31/2018						
	43	P-band spectroscopy from RSRO to SRO	3/31/2018						
4.3		Central Development Laboratory							
		Repair, Maintenance, Production, Support							
	1	Build and test Band I amplifiers	12/31/2017						
			3/31/2018						
	2	Delivery of Band I Local Oscillators	3/31/2018						

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POP Section	POP Milestone	Milestone	Completion Date	Q1 Performance Assessment			Q2 Performance Assessment		
				Cost	Schedule	Scope	Cost	Schedule	Scope
		Research and Development							
	3	Band 2+ Project Closeout	12/31/2017						
	4	Band 2 components	12/31/2017						
	5	Build W-Band IRD front-end and test set	3/31/2018						
	6	Demonstrate reflectionless filter with active synthetic elements	3/31/2018						
5.6		Science Support and Research							
		Telescope Time Allocation							
	1	CfP for Semester 2018B	3/31/2018						
	2	SRP & Tech Review Process, Semester 2018B	3/31/2018						
	5	TAC Meeting, Semester 2018A	12/31/2017						
	7	Update SW Tools Requirements for TAC Support 2018B	12/31/2017						
	8	Update SW Tools Requirements for PST 2019A	3/31/2018						
	11	Update Documentation for CfP and Tools 2018B	3/31/2018						
	13	SRP/TAC Process Change Decision	12/31/2017						
	14	TTA SW Tool Suite Requirements	3/31/2018						
		Science Ready Data Products							
	15	SRDP Project Scientist Identified	12/31/2017						
	16	End of Project Initiation Phase	3/31/2018						
	18	SRDP Project Scope Established	12/31/2017						
	19	SRDP Implementation Cycle 1 Defined	3/31/2018						
		Scientific User Support & Student Programs							
	20	New DAs for VLASS Started	12/31/2017						
	22	NM Symposium	12/31/2017						
	23	VLA Data Reduction Workshop	12/31/2017						
	25	CASA Validation	12/31/2017						
	26	CASA Guides	12/31/2017						
	29	Summer Student Selection and Offers	3/31/2018						
	31	Student Observing Support Selection (VLA)	12/31/2017						
	34	Reber Predoc Selection	3/31/2018						
		Reference Services							
	36	BiblioMetrix Implementation Decision	12/31/2017						
	37	Metrics Analyst Handover Complete	12/31/2017						
	38	PEMP and Performance Report Reviewed and Revised	3/31/2018						
		Scientific Staff & Jansky Fellows							
	39	SciStaff Performance Reviews Completed	12/31/2017						
	40	SciStaff Promotions Reviews Completed	3/31/2018						
	41	Post Tenure Reviews Completed	3/31/2018						
	43	Jansky Fellows Selection Completed	12/31/2017						
	44	Jansky Fellows Appointments Completed	3/31/2018						
6.5		Data Management & Software							
		Scientific Information Services							
	1	Red Hat Enterprise Linux Migration testing on workstations	12/31/2017						
	3	Installation of a CASA Parallel Test Cluster	12/31/2017						
	4	NAASC Luster replacement	3/31/2018						
	5	NGAS storage migration testing	3/31/2018						

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Q1 Performance Assessment

Q2 Performance Assessment

POP Section	POP Milestone	Milestone	Completion Date	Cost	Schedule	Scope	Cost	Schedule	Scope
	9	VCLASS and SRDP support	12/31/2017						
	10	External Computing Capacity Engagement	3/31/2018						
	11	Lustre Backup	3/31/2018						
	12	Moab Cluster Scheduler	3/31/2018						
		ALMA System Software							
	14	Cycle 6 Software Release	3/31/2018						
		VLA System Software							
	16	Support 2017B Observing	3/31/2018						
	18	Support 2018A Commissioning	3/31/2018						
		CASA							
	20	CASA v5.1 public release	12/31/2017						
		CASA Pipeline							
	22	CASA ALMA Cycle 5 pipeline release	12/31/2017						
	23	CASA ALMA Cycle 5 pipeline update	3/31/2018						
		SSA							
	24	Archive Access Tool release 3.0	12/31/2017						
	26	2018B PST and 2018A OPT release	12/31/2017						
	27	2018B PHT release	3/31/2018						
		ARDG							
	32	Algorithm R&D group implementation plan	12/31/2017						
7.5		Program Management Department							
		New Mexico Operations							
	1	NM Documentation Support	12/31/2017						
			3/31/2018						
	2	NM PM/SE Learning Opportunities	12/31/2017						
			3/31/2018						
	3	NM Proposal Development Leadership	12/31/2017						
			3/31/2018						
	4	NM PM/SE Project Leadership	12/31/2017						
			3/31/2018						
	5	ngVLA PM/SE Support for Design Proposal	12/31/2017						
		LBO							
	8	LBO Documentation Support	12/31/2017						
			3/31/2018						
	10	LBO PM/SE Project Leadership	12/31/2017						
			3/31/2018						
		CDL							
	11	CDL Documentation Support	12/31/2017						
			3/31/2018						
	12	CDL PM/SE Learning Opportunities	12/31/2017						
			3/31/2018						
	13	CDL Proposal Development Leadership	12/31/2017						
			3/31/2018						
	14	CDL PM/SE Project Leadership	12/31/2017						
			3/31/2018						

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POP Section	POP Milestone	Milestone	Completion Date	Q1 Performance Assessment			Q2 Performance Assessment		
				Cost	Schedule	Scope	Cost	Schedule	Scope
	15	CDL Band I CLNA Quarterly Reports	12/31/2017						
			3/31/2018						
		ALMA Development							
	17	ALMA-D Cycle 5 Studies Commence	12/31/2017						
	18	ALMA-D Cycle 5 Awarded Project Notifications	3/31/2018						
	19	ALMA-D Cycle 4 Close Out Reports Published	3/31/2018						
		SRDP							
	20	SRDP Complete Project Planning Documents	12/31/2017						
	21	SRDP Complete Document Package for Conceptual Design Review	3/31/2018						
		Headquarters							
	22	PMHQ Observatory-wide Documentation Support	12/31/2017						
			3/31/2018						
	24	PM/SE Training/Workshop	12/31/2017						
			3/31/2018						
	25	PMHQ PM/SE Project Leadership	12/31/2017						
			3/31/2018						
		Sport Facility at ALMA OSF							
	26	Sport Facility at ALMA OSF Construction Contract Awarded	12/31/2017						
	27	Sport Facility at ALMA OSF JAO Design Review	3/31/2018						
		VLA Mark 6 Development							
	29	VLBA Mark 6 Development Deliver First Two Units	6/30/2018						
		VLA Electrical Infrastructure Upgrade							
	30	VLA Electrical Infrastructure Upgrade Project Planning	12/31/2017						
	31	VLA Electrical Infrastructure Upgrade Execution and M&C	3/31/2018						
8.5		Education and Public Outreach							
		STEAM							
	1	Assessment of opportunities to grow the program beyond cultural exchange	12/31/2017						
	5	Review evaluation of 2017 RAP/NM workshop	3/31/2018						
	7	Develop and administer survey about current outreach	12/31/2017						
	8	Survey community (CV and SO) for outreach opportunities	3/31/2018						
	9	Survey stakeholders to set community outreach themes	3/31/2018						
	10	Collect published activities based on survey	3/31/2018						
		News and Media Relations							
	12	Review of other science news websites to define types of content	12/31/2017						
	13	Develop new look and feel for home page	3/31/2018						
	16	Establish social media calendar	12/31/2017						
	18	Create blog template for NRAO blogs	12/31/2017						
	19	Establish pool of contributors to NRAO blog	3/31/2018						
		Multimedia Engagement							
	20	Define framework for new webpage	3/31/2018						
	22	Define framework for CDL virtual tour	12/31/2017						
	23	Curate archived CDL content	3/31/2018						
	26	Define the framework of “the Basics”	12/31/2017						
	29	Establishing priorities for cataloging process	12/31/2017						

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POP Section	POP Milestone	Milestone	Completion Date	Q1 Performance Assessment			Q2 Performance Assessment		
				Cost	Schedule	Scope	Cost	Schedule	Scope
		Visitor Center Operations							
	30	Audit current brochures and handouts	12/31/2017						
9.4		Computing and Information Services							
	1	Migration to Microsoft Windows 10	12/31/2017						
	3	Service availability reports	3/31/2018						
	6	Bi-annual network perimeter scan	12/31/2017						
	10	Tape backup replaced in NM	3/31/2018						
	12	Implement "Enhanced Computing Support"	12/31/2017						
10.3		Office of Diversity & Inclusion							
		Diversity Council							
	1	Diversity Council Meeting	12/31/2017						
			3/31/2018						
		Local and National Programs							
	2	SEDLE, LSAMP, NAC	3/31/2018						
	3	RAMP-UP	12/31/2017						
		International Programs							
	6	ODI Chile Undergraduate Recruiting	12/31/2017						
	7	ODI Chile Undergrad Research Experience Initiated	3/31/2018						
	9	Diversity and Cultural Awareness Program Plan Developed and Implemented	12/31/2017						
			3/31/2018						
11.7		Human Resources							
		Workforce Management							
	1	Staff Renewal/Transition	3/31/2018						
		Benefits							
	5	Voluntary Benefits Offering	3/31/2018						
		Recruitment/Employment							
	7	Review, evaluate, and report recruitment/employment metrics	3/31/2018						
	8	Development of on-line diversity resource matrix for Hiring Managers	3/31/2018						
	9	Hiring Manager Training	3/31/2018						
		Human Resources							
	10	JAO Collective Bargaining	12/31/2017						
12.2		Science Communications							
	1	Update NRAO Research Facilities brochure	12/31/2017						
13.7		Administration							
		Budget							
	1	Define scope of project and desired outcomes of budget planning tool project	3/31/2018						
	3	Develop cost estimator position requirements, job description and advertise position. Form a search committee.	12/31/2017						
	4	Cost estimator Interviews, finalist identified, offer made.	3/31/2018						
		Environmental, Safety and Security							
	5	Training workers on fall and equipment hazards	12/31/2017						
	6	Inspection and certification of permanent building anchorages	3/31/2018						
	8	Modification of policies to prohibit discouraging workers from reporting an injury or illness. Supervising training on new policies	12/31/2017						
	9	Procurement of new OSHA Posters	3/31/2018						

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POP Section	POP Milestone	Milestone	Completion Date	Q1 Performance Assessment			Q2 Performance Assessment		
				Cost	Schedule	Scope	Cost	Schedule	Scope
		Management Information Services							
	10	Prepare Project Plan and Schedule for upgrade to 9.2 and order Upgrade Equipment	12/31/2017						
	11	Installation and preparation of new hardware and software upgrade loaded	3/31/2018						
	12	Testing plan prepared and used for testing and validation by users	3/31/2018						
		Technology Transfer Office							
	14	Submit policies to Intellectual Property attorney for review and if required, updates	3/31/2018						
14.3		Spectrum Management							
	1	WP 7D meeting	12/31/2017						
15.2		Director's Office							
		ALMA							
	1	ALMA Board Meeting	12/31/2017						
	2	ALMA Director's Council	12/31/2017						
			3/31/2018						
		Corporate Meetings							
	3	AUI Board of Trustees Meetings	12/31/2017						
			3/31/2018						
	4	AUI Executive Committee Meetings	12/31/2017						
		Science Community							
	6	Appoint new Users Committee members	12/31/2017						
		Management Reviews							
	8	NSF Annual Program Review	12/31/2017						
	9	All-Hands Presentations	3/31/2017						

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POP Section	POP Milestone	Milestone	Completion Date	Q1 Performance Assessment			Q2 Performance Assessment		
				Cost	Schedule	Scope	Cost	Schedule	Scope
		ngVLA							
2		Antenna Reference Design							
	1	Initiate contract for the ngVLA Costed Antenna Reference Design	12/31/2017						
3		Education and Public Outreach							
	1	Launch second round of ngVLA community studies	12/31/2017						
	3	Discuss ngVLA concept with local community stakeholders	3/31/2018						
4		Conceptual Design & Development							
	1	Release Science Requirements document	12/31/2017						
	2	Release Operations & Maintenance Concept document	12/31/2017						
	7	Preliminary Antenna Optical Design released	3/31/2018						
	9	Receiver & Cryo Thermal Model released	3/31/2018						
5		Administration and Management							
5.1		Project Office							
	1	Complete recruitment and hiring process for open ngVLA positions	12/31/2017						
	2	Hand-over responsibilities from interim personnel to new hires	3/31/2018						
5.3		Project Processes and Software Tools							
	1	Conduct a review of software solution options and determine best-fit solutions	3/31/2018						
5.4		Cost Estimation							
	1	Recruit Cost Estimator	12/31/2017						
	2	Develop initial version of cost estimation plan and processes	3/31/2018						
5.5		Systems Engineering							
	1	Provide initial versions of systems engineering process planning and documentation	12/31/2017						
5.6		Requirements Management							
	1	Provide initial versions of Requirements Management process planning and documenation	12/31/2017						
	2	Conduct Stakeholder Requirements Review (StRR)	3/31/2018						
	3	Develop initial lifecycle and concept description	3/31/2018						

Color code: Cost/Schedule/Scope Cells

Blue - early

Green - on track

Yellow - expected to miss an upcoming milestone and/or not meet scope, and or be underspent or overspent on budget

Red - behind/not completed by due date and/or overspent on budget, and/or unable to perform to the scope

Grey - completed



