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| Title: NA ALMA Development Study Plan - Template | Author: W. Randolph | Date: 01 May 2013 |
| NA ALMA Development Doc. No. T - 002.00 | | Revision: 0.0 |



North American
ALMA Science
Center



Development Upgrades of the Atacama Large Millimeter/submillimeter Array (ALMA)

Study Plan - Template

| Prepared by | Organization | Date |
|-------------|----------------------|---------------|
| W. Randolph | NA ALMA Dev. Program | 05 April 2013 |

| Approvals (Name and Signature) | Organization | Date |
|--------------------------------|--------------------|------|
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| Released by (Name and Signature) | Organization | Date |
|----------------------------------|--------------|------|
| W. Randolph | | |

Change Record

| Version | Date | Reason |
|---------|-------------|-----------------|
| 0.0 | 01 May 2013 | Initial Release |
| | | |
| | | |

Delete this entire page from your submitted Study Proposal.



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Development Upgrades of the Atacama Large Millimeter/submillimeter Array (ALMA)

STUDY PLAN

*Insert **TITLE** here*

PRINCIPAL INVESTIGATOR:

INSTITUTION:

ADDRESS:

PI CONTACT INFORMATION:

Telephone Number

Email address

ABSTRACT

Present a one page (or less) description of the work scope and objectives of the proposed Study.

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1.0 SCIENCE CASE

Present the scientific rationale for the proposed Study and the significance for ALMA.

2.0 STUDY DELIVERABLES

Describe the products that will be delivered at the conclusion of the proposed Study.

2.1 Hardware:

2.2 Software:

2.3 Services:

2.4 Documents:

- Monthly “4-square” Progress Reports
- Final Report
- Outcomes Report

3.0 INTERFACES TO ALMA

Note the ALMA hardware and/or software control interfaces that may be affected if the proposed design or control scheme is implemented.

4.0 SITE LOCATION IMPACT STATEMENT (if applicable)

Describe any new facilities, significant modifications to existing facilities, or use of NRAO facilities that are required. Also indicate when these facilities and/or modification are required.

5.0 PERIOD OF PERFORMANCE

*Define the anticipated period of performance (**twelve months maximum**).*

6.0 STAFFING

Estimate the level of effort (unit of measure = Full Time Equivalent) to be deployed by the Offerer until completion of the proposed Study. Identify essential (key) personnel required to ensure success. If two, or more, persons of equivalent labor grade are capable of performing any given task, leave the corresponding Key Personnel cell blank and note the FTE level of effort only.

6.1 Offerer’s Staffing:

Complete Table 1.0, below.

Table 1.0; Offerer’s Labor Estimate.

| Title | Key Personnel (leave blank if inapplicable) | FTE | Duration (Months) |
|------------------------|--|-------------|----------------------|
| Principal Investigator | | | |
| Scientific Lead | | | |
| Engineering Lead | | | |
| Science | | | |
| Engineering | | | |
| Management | | | |
| Other | | | |
| TOTAL FTEs | | 0.00 | |

6.2 External Staffing:

Complete Table 2.0, below.

Table 2.0; External Staffing and Contact Information.

| Title | Name | Institution | Email | Telephone |
|---------------------------------|------|-------------|-------|-----------|
| Co-Investigator | | | | |
| Vendor point of contact | | | | |
| Customer tech. point of contact | | | | |

7.0 COST BREAKDOWN

The total Award Pool for the FY2014 Call for Development Study Proposals is \$1.0M. The total Award Pool amount (\$1.0M) will fund all NA ALMA Partnership Study Proposals. **The maximum cost allowance for an individual Study Proposal is \$200K.**

7.1 Offerer’s Cost:

Complete Table 3.0, below. Work Breakdown Structure (WBS) Number should correspond to Level 1 tasks/activities in the Study schedule. Insert additional rows as required.

Table 3.0; **Offerer’s Cost Breakdown.**

| WBS No. | Task Description | Labor (\$) | Materials & Services (\$) | Travel (\$) |
|-----------------------|------------------|------------------------|---------------------------|-------------|
| 1.0 | | | | |
| 2.0 | | | | |
| 3.0 | | | | |
| 4.0 | | | | |
| 5.0 | | | | |
| 6.0 | | | | |
| 7.0 | | | | |
| 8.0 | | | | |
| 9.0 | | | | |
| 10.0 | | | | |
| n.0 | | | | |
| SubTotals (\$) | | 0.00 | 0.00 | 0.00 |
| | | TOTAL COST (\$) | | 0.00 |

7.2 Collaborating Institution / Subcontractor Cost:

Complete Table 4.0, below. Insert additional rows as required. Note the value of any In-Kind Contributions.

Table 4.0; **Collaborating Institution / Subcontractor Cost.**

| Collaborating Institution / Subcontractor | USD (\$) | In-Kind Contribution Value in USD (\$) |
|--|-------------|--|
| | | |
| | | |
| TOTAL COST (\$) | 0.00 | |
| TOTAL VALUE of IN-KIND CONTRIBUTIONS (\$) | | 0.00 |

7.3 Total Cost:

Complete Table 5.0, below.

Table 5.0; Total Study Cost.

| <i>Study Participants</i> | <i>USD (\$)</i> |
|---|-----------------|
| Offerer’s Total Cost (Table 3.0) | |
| Collaborating Institution / Contractor Total Cost (Table 4.0) | |
| Expected contribution from the NA ALMA Development Program | |
| Total Cost of Study (\$) | 0.00 |

7.4 Total Value:

Complete Table 6.0, below.

Table 6.0; Total Study Value.

| <i>Category</i> | <i>USD (\$)</i> |
|--|-----------------|
| Total Cost of Study (Table 5.0) | |
| Total Value of In-Kind Contributions (Table 4.0) | |
| Total Value of Study (\$) | 0.00 |

8.0 SCHEDULE



Figure 1.0; Study Schedule.

9.0 STUDY MANAGEMENT

9.1 Systems/Configuration Control

9.1.1 Systems Requirement and Specification Control

Development engineering and design activities will be conducted in accord with established ALMA Systems Engineering policies, practices and procedures.

9.1.2 Documentation Control

All shared documents will be dated and bear a revision level number.

9.1.3 Product & Quality Assurance Control

Development engineering and design activities will be conducted in accord with established ALMA PA/QA policies, practices and procedures. A unique Product Assurance Plan is unnecessary.

9.2 Performance to Schedule

The Principal Investigator has primary responsibility for schedule development and performance to schedule. The NA ALMA Development Program office will provide support to the PI in establishment of a revision-controlled Study schedule and monthly preparation of performance to schedule status. In the event of a schedule variance, the PI and the NA ALMA Development Program Manager will assess the impact and develop the appropriate recovery action(s).

9.3 Performance to Budget

The Principal Investigator has primary responsibility for intra-study budget allocation and cost performance. The NA ALMA Development Program office will provide support to the PI in establishment of cost accounts, budget load, and the preparation of a revision-controlled, monthly Budget Status Report. In the event of a cost variance, the PI and the NA ALMA Development Program Manager will assess the impact and develop the appropriate recovery action(s).

9.4 Measures of Success

Describe the measures of success (performance metrics and outcomes) for this Study. Describe the process that will be used to address experiment prioritization, evaluate experimental results, and to modify the approach/redirect experiments.

9.5 Risk Management

Identify the primary areas of uncertainty (risk) foreseen at the outset of the Study. Estimate the probability of occurrence and associated cost impact of each identified risk. Also, briefly note the means by which each primary risk may be mitigated or retired altogether.

Table 7.0; Study Risk Assessment.

| No. | Primary Risk(s) | Prob. (%) | Impact (\$) | Mitigation |
|-------------------------------|-----------------|-----------|-------------|------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| Total Cost Impact (\$) | | | 0.00 | |

9.5 Communication Plan and Progress Reporting

A monthly, “four-square” progress report will be prepared by the Principal Investigator in accord with Observatory Program Management practices and procedures. Informal reviews will be conducted by the NA ALMA Development Program Manager upon the completion of Level I milestones.

10.0 STUDY CLOSEOUT

Upon conclusion of this Study, the NA ALMA Development Program Office will coordinate the orderly closeout of activities; or, the transition of activities to a continuing Study or Project. At a minimum, this will include the following:

- verification of compliance with established procurement policies and procedures;
- verification of Purchase Order final payments;
- cost and schedule variance analysis;
- preparation of a Final Report;
- preparation of an Outcome Report; and
- archiving of Study records.

APPENDIX A - REFERENCE DOCUMENTS

APPENDIX B – CURRICULUM VITAE OF KEY PERSONNEL