

 Independent Verification & Validation Facility	MOA Template	T2101 Revision: Basic Effective Date: September 18, 2007
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APPROVAL SIGNATURES		DATE
Gregory Blaney (original signature on file)	IMS Representative	09/18/2007

REVISION HISTORY			
Rev. No.	Description of Change	Author	Effective Date
Basic	Initial Release	Paige Eckard	09/18/2007

REFERENCE DOCUMENTS	
Document Number	Document Title
IVV QM	IV&V Quality Manual
IVV 09-1	Independent Verification and Validation
IVV 09-4	Project Management
IVV 09-8	Project Startup

CHECK THE MASTER LIST at <http://ims.ivv.nasa.gov/>
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Memorandum of Agreement (MOA) Document Structure

MOAs are divided into two major parts: the body of the document itself, and the appendixes. The body of the document includes the contents that must be officially approved via signature by both the NASA IV&V Program Manager (NASA IV&V Facility Director) and the Customer Project. The body includes roles and responsibilities, lines of communication, reports (deliverables), financial arrangements, and other topics where formal, mutual agreement is necessary or beneficial. The information in the body of the document will seldom change over the life of the IV&V effort.

The appendixes include information that falls into several categories. They include information that is both likely to change during the life of the IV&V effort and does not require formal approval for the change (e.g., task schedules). They also include information that the NASA IV&V Facility Project Manager (PM) has unilateral authority to change (e.g., contact information, task schedules, and technical methods). They also include information that is formally approved or changed in other documents or processes (e.g., tasking in the contract task orders, personnel allocation by supervisor, contractor staffing by contractor).

Purpose of the MOA Template

The MOA Template is designed to provide the following:

1. A standard outline and format for MOAs such that reviewers, approvers, and users of the plan know where to find information
2. Standard text that is used in all or most MOAs
3. Differentiation of standardized text and formatting from tailored text and formatting. This speeds the NASA IV&V Facility review and approval process because only differences from standard text need to be scrutinized.
4. Guidance and best practices that provide those who generate or update MOAs with tailoring guidance and section content guidance

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MOA Template Conventions

Three different “styles” of text are used in this template:

1. [Text included in square brackets]

This text represents Project-specific information to be provided. Examples are [project name] for the name of the Project, and [purpose] for the purpose of the Project.

2. {*Italic text in braces*}

This text is guiding or explanatory in nature. It will include tailoring guidance and descriptions of the kinds of information to be included in each section. Therefore, it should not be included in the MOA.

3. Normal Text

This is standard text that should be copied verbatim into the MOA. It is all text that does not fit into categories (1) and (2). Therefore, it may be different fonts or styles (sizes, bold, etc.)

These conventions are implemented on the following template.

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Template begins on the following page.}

IVV-[file number]
Revision: 0
[issue date]

Independent Verification and Validation (IV&V)
[project name]
Memorandum of Agreement

NASA Independent Verification and Validation Facility
NASA Goddard Space Flight Center

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REVISION HISTORY

{The revision history is only updated/applicable to the body of the document.}

REV	DESCRIPTION	DATE
0	Initial Release	[issue date]

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FOREWORD

{This section provides a high-level description of the Customer Project and the MOA. An example of a high-level project description is:

“The YYY Mission was selected by the NASA xxx small-satellite program. The YYY Mission’s primary objective is to make precise, time-dependent, global measurements of xxx from an Earth orbiting satellite. This will be accomplished by sending a spacecraft, to be launched in MONTH, YEAR, to orbit the Earth, in particular flying over the Earth’s poles, and performing science investigations using a single instrument consisting of three high resolution grating spectrometers.”

The standard text should be sufficient to provide a high-level description of the MOA.}

This is the Memorandum of Agreement (MOA) for the IV&V of software on the [project name] ([project acronym]) Project.

[project description]

From this point forward, the “[project name] project” will often be referred to as the “Project”.

From this point forward, the NASA IV&V Facility personnel working and managing the IV&V effort for the Project will be referred to as the IV&V Team.

The MOA has two major components.

- The first component is the document itself, which includes items that are formally agreed between the IV&V Team and the Project (e.g., agreements on issue resolution, responsibilities of each group, reporting requirements, resources, etc.).
- The second component includes the appendixes (e.g., organization of the IV&V Team, points of contact (POCs), and items that periodically change, such as contact information, or provide insight and information to the Project). Modification of the appendixes does not require re-signing of this MOA.

From this point forward, this MOA will be referred to as the “Formal Agreement”.

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1.0 PURPOSE AND SCOPE

The purpose of this Formal Agreement is to document the agreement between the [project name] Project and the NASA IV&V Program to perform independent software verification and validation of the [project name] Project software. The goal of this IV&V effort is to provide Agency-level assurance that the Project software will meet the mission requirements. As part of this process, IV&V will identify issues, errors, and risks early in the life cycle process, thereby reducing software risks prior to launch. IV&V is a part of the overall software assurance approach for the Agency as described in NASA Standard (STD) 8739.8, *Software Assurance Standard*.

The objective of the IV&V effort is validation and verification of the Project software through the development life cycle. Validation is the process of evaluating artifacts to ensure that the right behaviors have been defined in the artifacts. The right behaviors are those that adequately describe what the system is supposed to do, what the system is not supposed to do, and what the system is supposed to do under adverse conditions. Validation ensures that the software system performs to the user's needs under operational conditions.

Verification is the process of determining if the products of each development activity fulfill the requirements or conditions imposed by a previous development activity. This goal is achieved by showing that each functional and non-functional requirement has been implemented within the system. Verification flows from a set of validated requirements and formally or informally shows, based on risk, that the implementation of those requirements (e.g., desired system behavior/non-behavior) is correct and complete. Verification does not strictly focus on functional requirements; it also includes non-functional requirements.

The IV&V Team will acquire or create a system behavior model describing the goals, what the system must do to achieve these goals, and the operational environment. This model will serve as a reference for validating the requirements. To verify each phase of the life cycle, the IV&V Team will review Project artifacts for correctness, as well as compliance and coverage with the previous phase. All issues found will be provided to the Project, and their resolution tracked according to Section 3.0, *IV&V Team and Project Interfaces*. The IV&V Team will report at Project milestone reviews on the overall goodness of the software.

The IV&V effort covers Project software (e.g., flight software, ground software, instrument software) where software is defined in NASA Procedural Directive (NPD) 2820.1C, *NASA Software Policy*, as: "Software - as used in this NPD means computer programs, procedures, rules, and associated documentation and data pertaining to the development and operation of a computer system. Software also includes COTS, GOTS, MOTS, embedded software, reuse,

heritage, legacy, auto generated code, firmware (instructions, logic, or associated data loaded into programmable devices), and open source software components.”

This Formal Agreement documents the working relationship, roles and responsibilities, and POCs necessary to ensure mutual benefits to the parties involved. It also provides a comprehensive plan that supports the IV&V effort on the Project. This Formal Agreement shall be in effect from the signing of this agreement until completion of the IV&V activities for the Project.

2.0 ACRONYMS

{Ensure that this list includes all the terms used in the body of the document. Remove any of the acronyms from the table below that are not used, and add other acronyms to the table below that are used in this document.}

The following acronyms and terms are used in this document:

<u>Acronym/Term</u>	<u>Description</u>
CDR	Critical Design Review
CFR	Code of Federal Regulations
COTS	Commercial Off the Shelf
CSCI	Computer Software Configuration Item
EAR	Export Administration Regulation
FSW	Flight Software
FY	Fiscal Year
GFY	Government Fiscal Year
GOTS	Government Off the Shelf
IMS	NASA IV&V Facility Management System
ITAR	International Traffic in Arms Regulation
IV&V	Independent Verification and Validation
JPL	Jet Propulsion Laboratory
MMR	Monthly Management Review
MOA	Memorandum of Agreement
MOTS	Modified Off the Shelf
MSSR	Monthly Software Status Report
NDA	Non-disclosure Agreement
NPD	NASA Procedural Directive
NPR	NASA Procedural Requirements
PITS	Project Issue and Tracking System
PM	Project Manager
PMC	Project Management Council
POC	Point of Contact
QM	Quality Manual
QMR	Quarterly Management Review

Acronym/Term	Description
RMS	Risk Management System
S&MA	Safety and Mission Assurance
SMSR	Safety and Mission Success Review
STD	Standard
TIM	Technical Issue Memorandum
USC	United States Code

3.0 IV&V TEAM AND PROJECT INTERFACES

{This section describes how the IV&V Team is organized and how it interfaces to the Project. The generalized diagram in Figure 3.A, IV&V Team and Project Interfaces, should be replaced with one or more diagrams that represent the actual Project and the IV&V Team. The diagram should show the desired formal and informal communication paths. The more specific the diagram, the better it is. By being specific and showing all the desired communications interfaces, issues can be fully negotiated prior to the start of analysis tasks. In addition to the standard text, additional text may be used to describe the interfaces if the diagram(s) are insufficient. Additionally, the Software Assurance Manager for the Center should be specifically included here.}

The IV&V Team functions as an independent group conducting verification and validation of the Project products (and processes when appropriate). The IV&V Team consists of representatives from the following organizations: NASA IV&V Facility civil service employees (NASA IV&V Facility Project Management), IV&V contractors (including management and technical analysis), and other IV&V subcontractors at the discretion of the IV&V contractor.

Communications between the IV&V Team and the Project typically consist of requests from the IV&V Team for development artifacts, delivery of Technical Issue Memoranda (TIMs) to the Project, discussions that help the IV&V Team understand the mission and its goals, discussion and resolution of TIMs, and delivery of formal IV&V reports.

Project organizations and the IV&V Team will interface formally through the NASA IV&V Facility Project Manager (PM). Formal paths will be used for communications related to IV&V scope, IV&V priorities, IV&V schedules, budgets, access to Project resources, and formal IV&V products. Project organizations and the IV&V Team will interface informally through participation in Project working groups (or their equivalent), tag-up meetings, or other effective means. The working group leaders will ensure that the IV&V Team has an opportunity to participate in the working group activities via locally resident IV&V Team members and/or via teleconferences.

Figure 3.A, *IV&V Team and Project Interfaces*, illustrates the relationship between the IV&V Team and the Project.

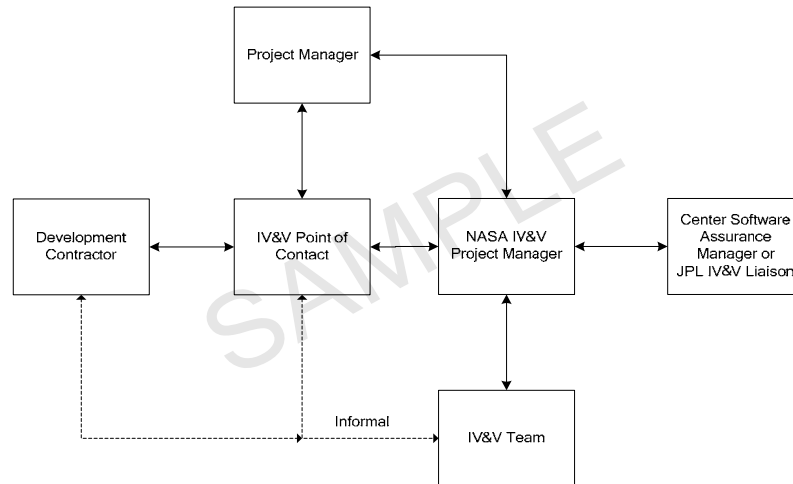


Figure 3.A – IV&V Team and Project Interfaces

{The following paragraph is intended to be general purpose, but tailoring may be required as a result of negotiations with the Project, or Center-specific needs.}

Issues between the NASA IV&V Facility PM and the [project name] IV&V POC that cannot be resolved within an appropriate period will be elevated to the [project name] PM. The [project name] PM and the NASA IV&V Facility PM will raise issues, which cannot be resolved at their level, to the Center IV&V Liaison and the appropriate NASA IV&V Facility representatives. If the issues still cannot be resolved, they are elevated to the NASA IV&V Program Manager and the appropriate level of management above the Project. The final level of resolution will be the Program Management Council (PMC) responsible for the Project. The [project name] PM is encouraged to contact the NASA IV&V Program Manager or IV&V Services Lead directly at any time should issues need to be discussed that cannot be resolved with the NASA IV&V Facility PM.

IV&V Team requests for additional activities or resources that present potential impacts to Project cost or schedule, as determined by the [project name] PM, will be coordinated through the [project name] PM and the NASA IV&V Facility PM.

4.0 TECHNICAL ISSUE REPORTING AND RESOLUTION

4.1 Methods and Criteria for Reporting

As a result of IV&V tasks, technical issues (e.g., anomalies, errors, discrepancies, ambiguities) are generated. These issues are recorded in the NASA IV&V Facility's Project Issue Tracking System (PITS) as TIMS. TIMS will be reported to the [project name] IV&V POC as they occur and/or as per an agreed-to schedule. The Project will also be provided direct access to PITS if desired. The IV&V Team will evaluate Project responses to TIMS and update the status of the issues in PITS. The IV&V

Team will track the TIMs from initiation through closure. TIMs will also be summarized in the Monthly Software Status Report (MSSR). All TIMs will be formally documented in an associated analysis report.

4.1.1 Issue Severity

To aid the prioritization of issue resolution, issues are classified by severity level:

Severity	Description
1	Prevent the accomplishment of an essential capability. Jeopardize safety, security, or other requirement designated critical.
2	Adversely affect the accomplishment of an essential capability and no other work-around solution is known. Adversely affect technical, cost or schedule risks to the project or life cycle support of the system, and no work-around solution is known.
3	Adversely affect the accomplishment of an essential capability, but a work-around or solution is known. Adversely affect technical, cost or schedule risks to the project or life cycle support of the system, but a work-around solution is known.
4	Result in user/operator inconvenience but does not affect a required operational or mission essential capability. Result in inconvenience for development or maintenance personnel, but does not affect the accomplishment of these responsibilities.
5	Any other effect

Table 4.1.1.A Issue Severity

4.1.2 Issue Resolution

The Project reviews the issues and provides a proposed solution. If the proposed solution is satisfactory, the issue is put in a “To Be Verified” state. When verification of the solution is completed by the IV&V Team, the issue is closed. If verification cannot be completed, additional feedback will be requested from the Project. If there is a dispute, the issue can be placed in an “In Dispute” state, where the Project and the IV&V Team can continue dialog on the issue. Subsequent to these discussions, the issue can be placed in the “Project Accepts Risk” state, or it can revert to the “To Be Verified” state. For issue severity 4 and 5 issues where the Project agrees to fix the issue, the issue may be placed in a “not to be verified” state (i.e., the issue is considered closed by the IV&V Team). Figure 4.1.2.A, *Issue Resolution Process*, shows the issue resolution process in detail.

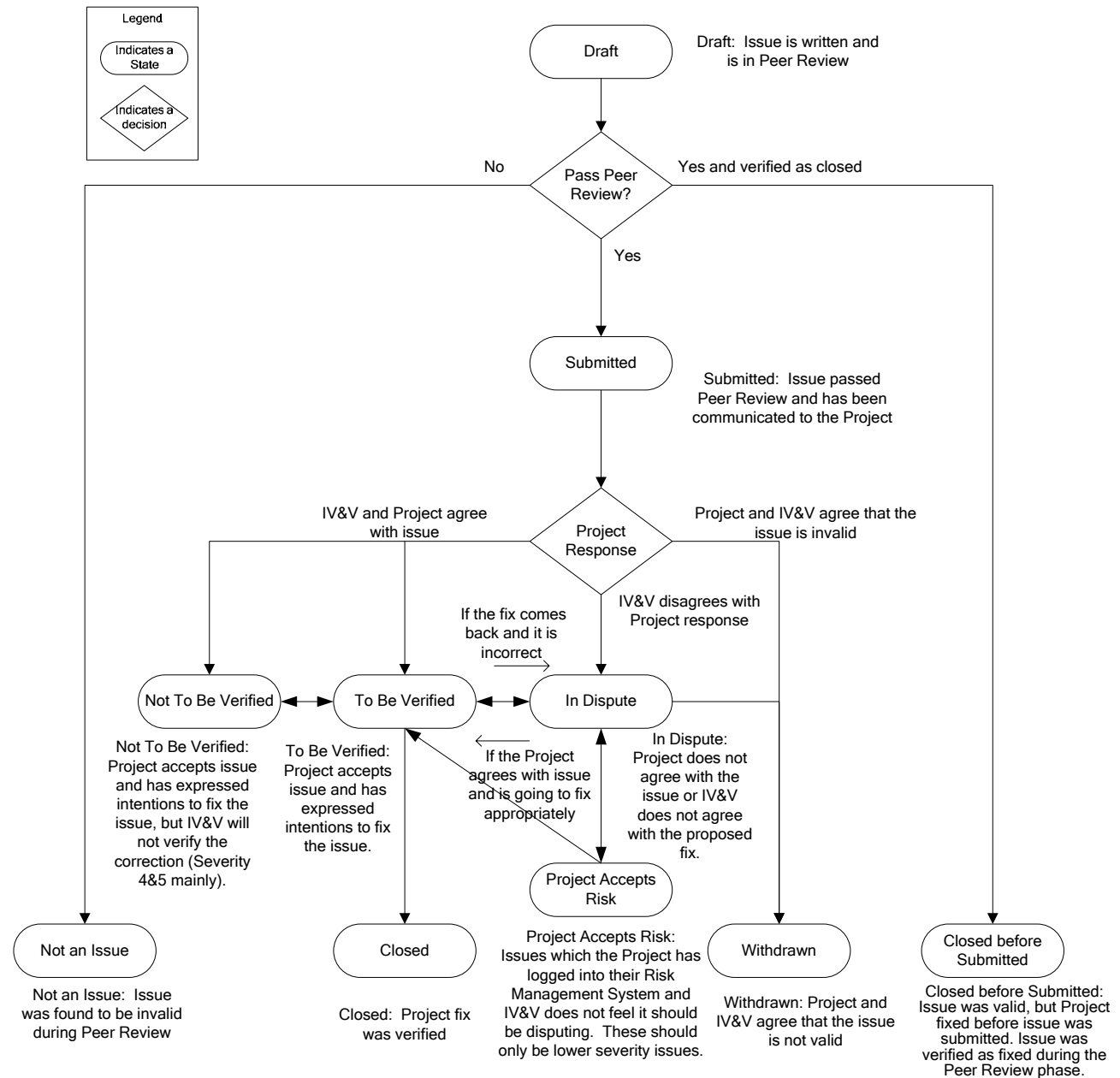


Figure 4.1.2.A – Issue Resolution Process (Revision A)

At a minimum, each critical issue (issue severity 1 and 2) must be closed to the IV&V Team’s satisfaction for the NASA IV&V Program Manager to have no concerns at the Project’s Safety and Mission Success Review (SMSR). In certain cases, specific, unresolved severity 3 issues, or a large number of unresolved severity 3, 4, and 5 issues may result in the NASA IV&V Facility PM having concerns that are reported at the SMSR.

5.0 RISK REPORTING AND RESOLUTION

The IV&V Team will identify technical and development Project risks. These risks represent a potential undesirable event that may hinder the development organization from meeting its goal or mission. Technical and development Project risks are recorded in the PITS Risk Management System (RMS) and are presented to the Project. The IV&V Team will provide recommendations to eliminate, reduce, or mitigate the risks. Risks are assigned a ranking based on the likelihood and consequence of the undesired event. The Project's likelihood and consequence ranking criteria (below) will be used by the IV&V Team consistent with the Project's Risk Management Plan.

{Copy below the Project consequence criteria, likelihood criteria, and the "5x5" matrix. Add any introductory text that is necessary.}

Risks will be reported to the [project name] IV&V POC as they occur and/or as per an agreed-to schedule. The status of risks will also be reported in the MSSR. The Project reviews the risks and provides continuous feedback. From that point, the risk is monitored until it is closed.

6.0 RESPONSIBILITIES

The following responsibilities are defined to ensure that the IV&V Team has adequate access to necessary Project development artifacts and resources, and that IV&V results are available to the Project.

6.1 NASA IV&V Facility Responsibilities

6.1.1 General

The IV&V Team functions technically, managerially, and financially independent of the Project. NASA IV&V Facility civil service employees will provide technical direction and financial management for the IV&V Team located at the NASA IV&V Facility, as well as IV&V Team members located remotely. The NASA IV&V Facility PM will perform technical and financial management of NASA IV&V Facility civil service employees and IV&V contractors, including the use of NASA IV&V Facility tools. The NASA IV&V Facility PM is responsible for ensuring transmission of the IV&V deliverables defined in this Formal Agreement. The NASA IV&V Facility PM is responsible for ensuring that the analysis being performed is at the appropriate level to support the current Project development phase, software integrity level, and software maturity. All IV&V Team findings are captured in PITS. To assist in supporting the Project in a timely manner, the IV&V Team will provide the Project with access to PITS and RMS.

6.1.2 Data/Configuration Management and Protection

All Project development artifacts, or permission to access such artifacts directly, are received from the [project name] IV&V POC. The IV&V Team will maintain a separate configuration-managed repository for storing artifacts under evaluation. The objective is to control the artifacts that are analyzed by the IV&V Team to ensure that the artifact does not get corrupted or compromised. Transfer and handling of the artifacts will be performed without compromising the Bilateral Non-Disclosure Agreement (NDA) for IV&V contractors. The Project artifacts will be stored on a local server that is firewall-protected and access-controlled via a list of users and IP addresses. Access to the Project folder on the local server is limited to only the IV&V Team that supports the tasks as defined in this Formal Agreement.

The IV&V Team will ensure that all IV&V contracts used to support this IV&V effort have the appropriate clauses in place to protect proprietary and sensitive information.

{This next paragraph should be tailored to reflect the actual custodial arrangement.}

The IV&V contractor will serve as the Artifacts Custodian for the IV&V Team. The Artifacts Custodian will configure and maintain a structure that will enable the analysts to quickly identify the most current version of a specific artifact under evaluation. Only the Artifacts Custodian will have write access to the folder(s) containing the artifacts under evaluation.

TIMs will be stored and protected using PITS. PITS is hosted on a database server behind a firewall, and has access control via usernames and passwords.

An electronic copy of every IV&V deliverable will be stored and maintained on the local server. The NASA IV&V Facility complies with NASA Procedural Requirement (NPR) 1441.1D, *NASA Records Retention Schedules*, for all artifacts received. Additional information regarding NPR 1441.1D can be found at <http://nodis3.gsfc.nasa.gov>.

6.1.3 Research Responsibilities

In addition to the work described by this Formal Agreement, the NASA IV&V Facility conducts research in the areas of software

reliability measurement, requirements analysis, IV&V return on investment, and other areas that directly contribute to the effectiveness of IV&V. NASA IV&V Facility researchers require actual Project data to accomplish realistic research. All Project data will be closely protected and not released outside the NASA IV&V Facility and its research contractors. No proprietary or export-controlled Project data will be used to support NASA IV&V Facility research unless there is a non-disclosure agreement in place between the NASA IV&V Facility researchers and the owner of the proprietary data. *{Include the next sentence ONLY if this is a Jet Propulsion Laboratory (JPL) project.}* Any such authorized use of Project data will be in compliance with all U.S. export control laws and regulations as required by Section 6.1.6, *Export Provision*, of this Formal Agreement. The Project agrees that non-proprietary, non-export-controlled Project data may be used to support software IV&V-related research. However, the NASA IV&V Facility agrees that any related research will not affect Project or subcontractor personnel or resources. The NASA IV&V Facility agrees not to publish or allow publication of any research document that can be referenced back to the Project without specific, prior written approval of the [project name] PM.

{The next three paragraphs are only used in Formal Agreements for JPL projects.}

6.1.4 Caltech/Jet Propulsion Laboratory (JPL) Intellectual Property Rights

Under past and current NASA/Caltech prime contracts, Caltech retains all right, title, and interest in inventions, software, and other intellectual property developed by JPL employees under said prime contracts, subject to the government's right, royalty-free, to use such inventions, software, or other intellectual property for government purposes.

6.1.5 Caltech/Third Party Intellectual Property Rights & Export Concerns

The NASA IV&V Facility understands that Project data may contain intellectual property, proprietary, confidential, or export-controlled material belonging to Caltech or its Project subcontractors and collaborators. Caltech will only deliver such material to NASA IV&V Facility civil service employees or their designees subject to 18 USC 1905, who are US persons as defined by 22 CFR 120.15. The NASA IV&V Facility shall protect Caltech's and any Project subcontractors' or collaborators' intellectual property, proprietary,

confidential, and/or export-controlled information in accordance with all applicable US laws and regulations, and shall not disclose any such information without the written permission of the Project, Caltech, and applicable Project subcontractors and collaborators for the life of the records per NPR 1441.1D, *NASA Records Retention Schedules*. The NASA IV&V Facility shall oblige such restrictions on disclosure of intellectual property, proprietary, confidential, or export-controlled information to its contractor employees.

6.1.6 Export Provision

In the performance of this Formal Agreement, the parties involved shall exchange or develop Project data, information, software, or other technology that may be subject to the export control laws and regulations of the United States, including the International Traffic in Arms Regulations (ITAR), 22 C.F.R. 120-130, and the Export Administration Act Regulations (EAR), 15 C.F.R. 730-774). The parties agree to fully comply with all such laws and regulations in the performance of this Formal Agreement, and each party will be responsible for obtaining export licenses or other export authority as may be required before exporting controlled data, information, software, or other technology to foreign countries, or providing access to foreign persons (as defined in 22 C.F.R.120.16).

6.2 Project Responsibilities

6.2.1 General

The Project will facilitate the IV&V tasks to be performed through coordination between Project personnel and the NASA IV&V Facility PM. The Project will provide an IV&V POC for formal interactions between the IV&V Team and the Project.

The Project will provide (preferably electronic) access for the IV&V Team to necessary resources, mission development and supporting documentation, and deliverables to perform IV&V tasks. This includes draft and finalized deliverables, and non-deliverable Project documentation (including source code when applicable) relating to the work being performed:

- Draft and finalized deliverable and non-deliverable documentation will be made available to the IV&V Team. Non-deliverable or informal documentation (e.g., Software Development Folders, Software Interface Requirements Documents, etc.) will be made available. When available,

electronic access to Project software development documentation and information will be provided, as the information is made available to the Project teams.

- Examples of the types of requested documentation, if available, are:
 - Software management and development plans
 - Software architecture diagrams
 - Spacecraft flight software (FSW) specifications
 - Spacecraft FSW traceability matrices
 - Spacecraft FSW designs (via spacecraft, FSW and Critical Design Review [CDR] presentation materials, and/or other Project/contractor specifications design notes)
 - Spacecraft FSW interface specifications
 - FSW source code where applicable
 - FSW Computer Software Configuration Item (CSCI) test plans, end-to-end test plans
 - FSW CSCI test procedures, end-to-end test procedures
 - FSW Computer Software Component (CSC)-level test plans, procedures, and results
 - Test results, pass/fail criteria, requirements to test coverage matrixes
 - Discrepancy reports from all test activities
 - Milestone review packages

6.2.2 IV&V Effectiveness Metrics Program Support

The NASA IV&V Facility has implemented an IV&V Effectiveness Metrics Initiative to measure and improve the effectiveness of the software IV&V applied to NASA projects. Some of these metrics require the comparison of software issues (discrepancies) identified by IV&V, and software issues identified by the developers.

The Project agrees to provide access to the data necessary to support the IV&V Effectiveness Metrics Initiative. The specific data to be provided are descriptions of the software issues identified by the developers, including issue type, phase introduced, phase found, CSCI where the issue was found, severity of issue, and efforts to fix if available.

Access to the data can be in the form of access to developer problem reporting systems or via periodic reports delivered to the NASA IV&V Facility PM. Any access to existing systems would be on a read-only, non-interfering basis to minimize impact to the Project.

7.0 IV&V REPORTING

The IV&V Team will provide the formal results of the IV&V analyses it performs to the recipients defined in Table 7.A, *IV&V Deliverables*. As described in Section 4.0, *Technical Issue Reporting and Resolution*, of this Formal Agreement, issues and problems are immediately communicated to the Project, as the IV&V Team does not wait for the formal Technical Analysis Reports to be completed prior to beginning an issue resolution process. To support this process, tag-up teleconference meetings between members of the IV&V Team and the [project name] IV&V POC are held regularly, normally on a bi-weekly schedule.

The NASA IV&V Facility PM will report status as requested at Project Monthly Management Reviews (MMRs) or the equivalent, Project IV&V Quarterly Management Reviews (QMRs) or the equivalent, Center management reviews, and major Project milestone reviews.

In addition to participating in the above-mentioned Project and program reviews, the IV&V Team will make a presentation of results and conclusions at the SMSR.

The products scheduled for delivery are listed in Table 7.A, *IV&V Deliverables*.

{The table below includes standard deliverables that will be delivered to the Project. For JPL projects, include the JPL IV&V Liaison in the recipient list.}

Product	Project Recipient	Delivery Date
MSSR	Project Manager IV&V Point of Contact Project S&MA Lead	10th working day of the month
IV&V Technical Analysis Reports	Project Manager IV&V Point of Contact	Mutually agreeable dates
IV&V Final Report	Project Manager IV&V Point of Contact Project S&MA Lead	Conclusion of IV&V effort

Table 7.A IV&V Deliverables

{Include the following section only if the Project is providing funding to perform some or all of the IV&V tasks.}

8.0 PROJECT-PROVIDED BUDGET

The Project will fund the IV&V effort a total of \$[project dollars] for the period including the first year of effort and all out-years to support the activities described within this Formal Agreement. This budget includes all IV&V costs, including travel resources.

	FY 1	FY 2	FY 3
IV&V Funding			

Table 8.A – Project Funding by Government Fiscal Year (GFY)

APPENDIX A – PROJECT/NASA IV&V FACILITY CONTACT INFORMATION

{Ensure that everyone mentioned by title or name in this Formal Agreement is included in this table.}

Project		
Position	Name	Contact Information
Project Manager	[project pm]	[project pm phone] [project pm email]
Deputy Project Manager	[deputy project pm] or N/A	[deputy project pm phone] [deputy project pm email]
IV&V Point of Contact	[poc name]	[poc phone] [poc email]
Center IV&V Liaison	[liaison]	[liaison phone] [liaison email]

Table A.1 – Project Contact Information

NASA IV&V Facility		
Position	Name	Contact Information
NASA IV&V Program Manager	Dr. Dale Scott Caffall	304-367-8201 Dale.S.Caffall@nasa.gov
IV&V Services Lead	Leigh Gatto	304-367-8308 Leigh.J.Gatto@nasa.gov
IV&V Deputy Services Lead	Marcus Fisher	304-367-8337 Marcus.S.Fisher@nasa.gov
NASA IV&V Facility Project Manager	[nasa iv&v facility pm name]	[nasa iv&v facility pm phone] [nasa iv&v facility pm email]

Table A.2 – IV&V Team Contact Information

APPENDIX B – IV&V TEAM ORGANIZATION

{Insert a chart that illustrates the composition of the IV&V Team and the reporting relationships among IV&V Team members.}