Configuration Management Plan

ESSP 3

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1 INTRODUCTION

1.1 Purpose

This Configuration Management Plan (CMP) establishes the overall configuration management activities for the ESSP 3 Project. It is written at the Mission level to establish policies, standards, procedures, and uniform practices for configuration management of all PICASSO hardware, software, and associated documentation and drawings.

The formal Configuration Management (CM) process is intended to assure:

- Definition of all documentation required for product design, fabrication, test, and performance.

- Correct and complete descriptions of the approved configuration. Descriptions include plans, specifications, drawings, parts lists, test procedures, and operating manuals.

- Traceability of the resultant product and its parts to their descriptions.

- Accurate and complete identification of each material, part, subassembly, and assembly that goes into the product.

- Systematic evaluation of proposed changes to an approved configuration and control of implementation of these changes.

- Accurate and complete accounting of all changes to product descriptions and to the product itself.

1.2 Scope

This plan applies to all hardware, software, drawings, documentation, and processes used in the production of all systems for the PICASSO Project. This plan includes all phases of the development life cycle.

This plan is developed in accordance with the Memorandum of Understanding between NASA and CNES and the ESSP 3 Project Plan. NASA and CNES ESSP 3 CM Managers, for items under the responsibility of their respective agency are responsible for:

1. Developing Configuration Management Plans.
2. Identifying and monitoring the baseline configuration.
3. Delivering the applicable documents.
4. Implementing the change process, receiving Change Proposals, organizing CCBs, validating changes and archiving change files.
5. Recording and producing the configuration statuses.
6. Freezing the configuration baselines during reviews and at milestones.

The CM Plan is applicable to all elements of the ESSP 3 Project under NASA responsibility, The CM Plan provides guidance to insure adequate CM processes are implemented at all levels. It is intended to supplement not to replace already existing CM process used by ESSP 3 Project organizations. CNES will develop a configuration management organization and process which is applicable to all elements of the ESSP3 project under CNES responsibility.

The CMP is a living document and will be updated as the project matures, as additional configuration management activities are defined and the need arises.

1.3 Referenced Documents

The following specifications, standards, manuals and handbooks form a part of this document to the extent specified herein.
NHB 7120.5 - Management of Major Systems Programs and Projects
LHB 1740.4 - Facility System Safety Analysis and Configuration Management
ISO 9001 - Quality Systems Model for Quality Assurance Design, Development, Production, Installation, and Servicing
ISO 10007 – Guidelines for Configuration Management
PC-PRJ-501 - PICASSO - CENA Project Plan
PC-SYS-801 - Deliverables Matrix
PC-SYS-804 - Documents List

1.4 Definitions

- Configuration Management (CM) -- CM is the systematic control and evaluation of all changes to baseline documentation and subsequent changes to that documentation which defines the original scope of the effort to be accomplished. It includes the systematic control, identification, status accounting, and verification of all Configuration Items (CIs).

- Configuration -- Configuration is the functional and physical characteristics of parts, assemblies, equipment or systems, or any combination of these which are capable of fulfilling the fit, form, and functional requirements defined by applicable performance specifications and engineering drawings.

- Configuration Control -- Configuration control involves the systematic evaluation, coordination, and formal approval/disapproval of proposed changes to a configuration. It includes the implementation of all approved changes to the design and production of a CI whose configuration has been formally approved.

- Configuration Identification -- Configuration identification includes the selection of CIs, the determination of the types of configuration documentation required for each CI, the issuance of numbers and other identifiers affixed to the CIs and to the technical documentation that defines the CIs configuration. This includes internal and external interfaces and the establishment of configuration baselines for the CIs.

- Configuration Accounting - Configuration accounting is the activity that produces records and reports of CI descriptions and all changes to the CI.

- Configuration Verification – The purpose of verification is to prove that the actual configuration of the hardware or software CIs conform to the intended configuration (the as-built matches the as designed plus changes).

- Configuration Item -- A Configuration Item (CI) is an aggregation of hardware, software and/or documentation or any of its discrete portions, which satisfies an end-use function.

2 ESSP 3 PROJECT CM ORGANIZATION

2.1 Organizational Responsibilities

The ESSP 3 Project Manager is responsible for implementing a CM process that provides for establishment of Configuration Items (CIs) and the controlled evaluation and disposition of changes, deviations and waivers to those CIs. The CM process shall ensure that changes having interfaces with other organizations that participate in the ESSP 3 program have been coordinated and concurrence obtained, before implementation of the changes are authorized.

2.2 Configuration Control Levels

The ESSP 3 CM organization has seven levels of Configuration Control Boards (CCB) as depicted in the ESSP 3 CM levels chart shown in Figure 2-2. The CCB organization is in accordance with the approved ESSP 3 Project Plan. Each CM level shall develop and maintain, within the requirements of this plan, a system to accomplish four major CM functions which include Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Verification (Audits).

Each CCB level has the authority to disposition changes to requirements for which it has responsibility. Changes affecting higher level requirements will be submitted with recommendations to the next higher level CCB for disposition.

Document types and the CCB levels whose control they come under have been defined in the project plan and described below. The type and scope of the document will usually determine CCB approval levels. In determining CCB level control, it can generally be said, that a document developed at one level, will be approved by the next higher level, and concurred in by the next lower. Special consideration is given to documents whose scope contain requirements of multiple levels of management, those documents can only be changed with the approval of the highest level represented on the signature approvals page, with concurrence by the additional signatories. As a general rule the signature page will provide a guide as to what level CCB will be required to approve a change.

2.2.1 Level Zero - NASA Headquarters CCB Responsibilities

NASA Headquarters Code AE is responsible for decisions affecting the requirements of the Program Commitment Agreement (PCA). Recommended changes affecting the PCA will first be processed through the level III CCB before being submitted to a higher level for approval.

2.2.2 Level One – Code Y/ESSP Project Office Responsibilities

Code Y and the ESSP Project Office are responsible for decisions affecting Level One requirements. The ESSP project office will make recommendations to the Code Y CCB for proposed changes to these requirements. The Code Y CCB will review and be the final approval authority on these proposed changes. The Level One requirements are found in, but not limited to those specified by the Science and Mission Requirements Document (SMRD) and the MDRA. Additional documents that may be developed to define level one requirements or responsibilities, such as the MOU between NASA and CNES, will also be the responsibility of the Level One CCB.

2.2.3 Level Two - Mission Level CCB Responsibilities

Chaired by the Principal Investigator at LaRC or designee. The Mission Lead is responsible for decisions affecting all Level Two requirements. These requirements are found in, but not limited to those specified by the Level Two requirements of the SMRD. Other documents that are developed to define mission level functions affecting cost, schedule and performance will also be the responsibility of the Level Two CCB.

2.2.4 Level Three - Project Office CCB Responsibilities

Chaired by the ESSP 3 Project Manager or designee. The project manager is responsible for all Project Level requirements. These requirements are found in but not limited to the following documents:

- System Requirements Document (SRD)
- Interface control documents that define the interface between segments and external hardware/software
- Project Level Plans
- Project Level documents describing cost, schedule and performance requirements
- Contracts
- Changes to segment documentation impacting other segments

Project CM Organizational Authority

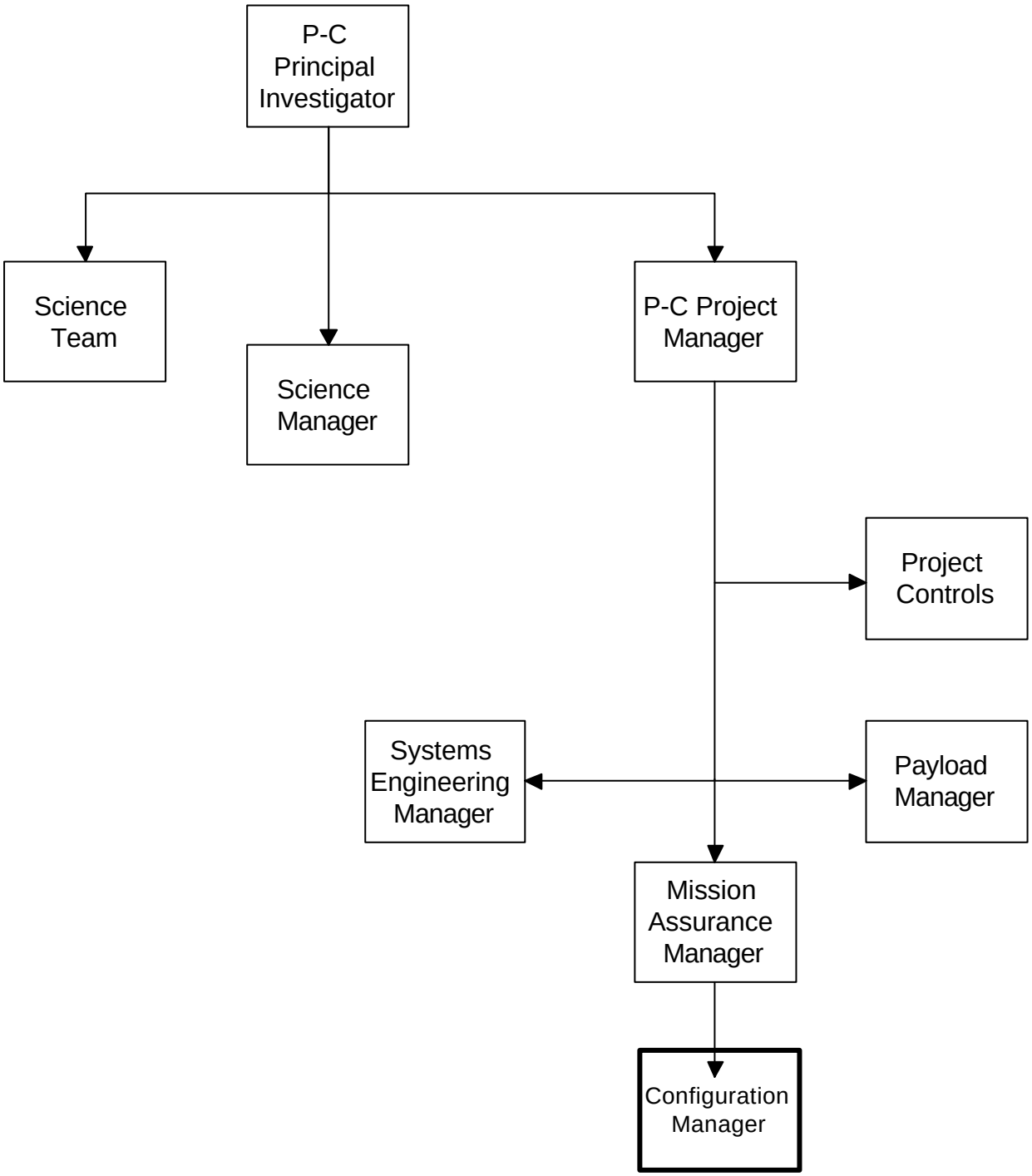
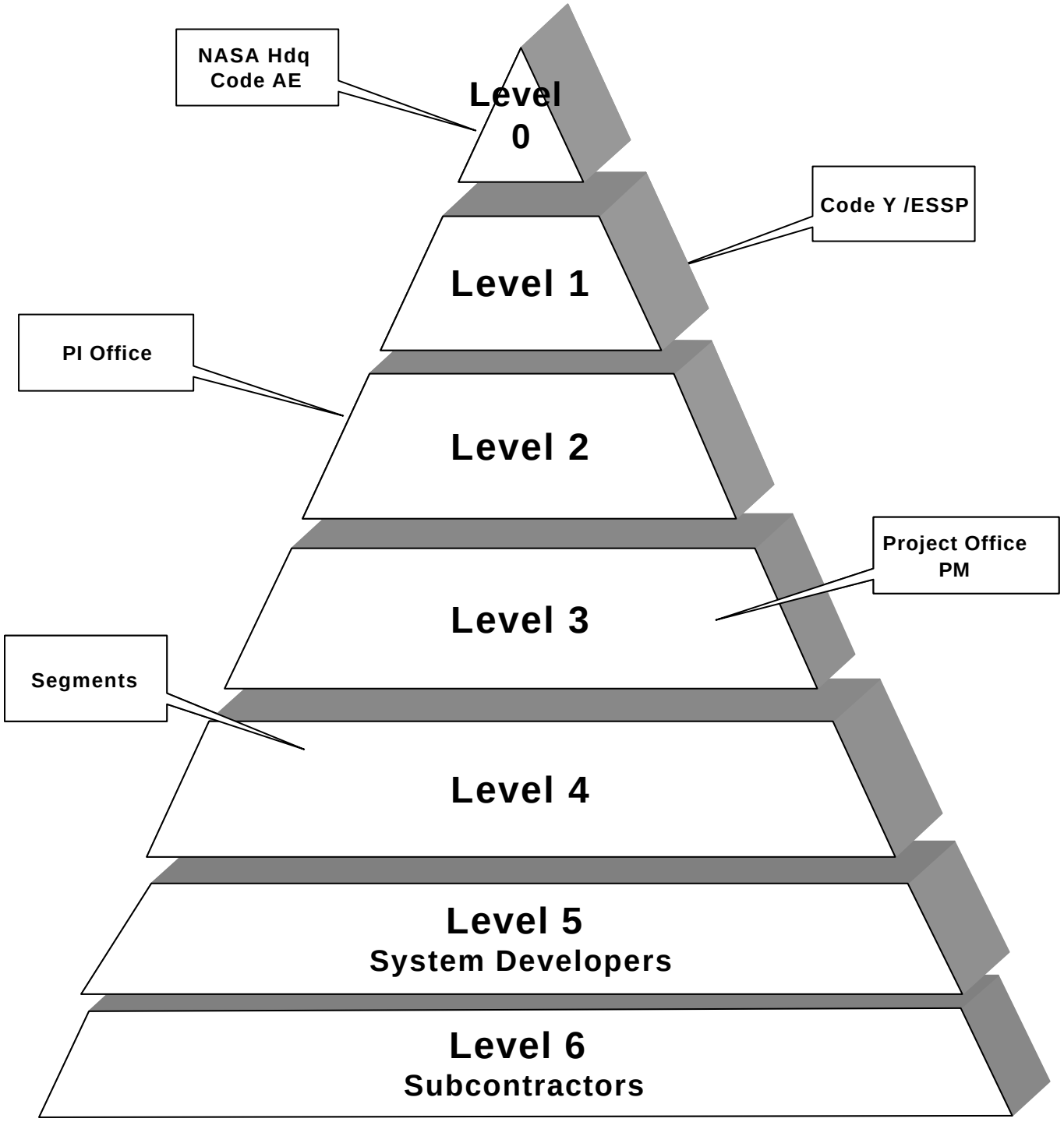


Figure 2-2

Configuration Control Board Levels



2.2.5 Level Four - Segment Level CCB and CM Responsibilities

Chaired by the Segment Lead or designee. The segment CCB is responsible for all requirements defined in the Segment Specifications, and associated Interface Control documents that define interfaces between systems within the segment. Additional documentation developed at the segment level to further define these requirements will also be under the control of the Segment CCB.

2.2.6 Level Five - System Developers CCB Responsibilities

Chaired by the System Developer. These CCBs are responsible for all changes including but not limited to those affecting the internal interfaces and performance of their respective activities. Contractors shall assign responsibilities within their organization for the implementation of a formal CM system that satisfies the requirements detailed in their respective statements of work and memoranda of agreement.

2.2.7 Level Six – Subcontractor CCB Responsibilities

Contractor CM requirements shall be allocated to the associated subcontractors and shall be subject to approval by the respective prime contractor.

3 CONFIGURATION IDENTIFICATION

Configuration identification ensures that all project management disciplines have a common reference point through standard numbering and nomenclature. It refers to the document or set of documents that define the approved configuration, or partial configuration of a CI, and the establishment of configuration baselines for the CIs.

The configuration identification process is composed of numbering, baseline management and CI selection.

3.1 Document Identification

The configuration manager is responsible for assigning numbers to any un-numbered documents, and maintains a master list of all PICASSO documents. External documents that already have a document number will not be assigned a new one. Documents without numbers will receive an eight-digit identifier in accordance with the following format (PC-aaa-yxx):

PC = the first and second letters designate the ESSP 3 mission

aaa = the third, fourth and fifth letters represent the functional area to which the document belongs according to the following list:

SYS - System-Level Document (e.g. SMRD)
SAT - Satellite Document

PLD - Payload Document
PFM - Platform Document
LVH - Launch Vehicle Document
GND - Ground Document
SCI - Science Document
OPS - Operations Document
AGR - Partner Agreement
PRJ - Project Management Document

Y = the sixth number shall designate a document type according to the following list:

1. Specification
2. Description Document
3. Test Document
4. Operations Document
5. Programmatic
6. Reserved
7. Reserved
8. Miscellaneous
9. ICD

xx = Sequential Number of the document

The document number for this document would be PC-PRJ-509, PC for PICASSO- CENA, PRJ for document type project management, and 509 for the ninth document of the programmatic type. The revision or version number is not included in the document number since it is included in the header of each page.

3.2 Drawings

All parts, assemblies, and installations required to make up a CI are to be completely defined by engineering drawings. A standard drawing numbering system will be used. At LaRC engineering Drawing Files (EDF), and drawing and documentation control systems are included in LAPG 7320.1, Engineering Drawing System. All completed approved drawing created at LaRC or delivered to LaRC by ESSP 3 organizations; including a hard copy of electronically generated drawings, are to be submitted to and maintained by the LaRC Engineering Drawing Files.

Commercial off-the-shelf items are exempt from this requirement.

3.3 Hardware

All parts and assemblies are to be identified by an identification number consisting of a part number and a serial number. Methods used to identify hardware such as engraving, ink markings, or tags are to be compatible with the hardware being labeled.

3.4 Software

Computer Software Configuration Items (CSCIs) requiring identification are computer programs and files which include, but are not limited to, diagnostics and actual programs, support, data, control files, etc. All CSCIs will have a documented methodology for identifying, controlling and tracking the version number, file number, description, etc. of the software items under development. This includes the version of the software products, the build status of the software products, coordinating of modification of a given product by more than one person, coordinating the modification of multiple software products from more than one location, and tracking of change requests from initiation through release.

3.5 Firmware

Firmware items requiring identification include Read Only Memory (ROM), Programmable (P) ROM, Erasable (E) PROM and Electrically (E) EPROM.

3.6 Baseline Management

A baseline is designated when the CI's configuration identification (document or set of documents) is deemed to be complete and correct. Against these baselines, changes, deviations and waivers may be proposed, evaluated and dispositioned. Baselines and approved changes from those baselines comprise the current configuration identification.

Documents outlined in the ESSP 3 document tree (PC-PRJ-511), when released, will form the foundation of the ESSP 3 baselines. The tree defines the system, which is decomposed into segments, and further into hardware and software configuration items and their interfaces.

3.6.1 ESSP 3 Approved Baselines

The ESSP 3 project will have three baselines:

1. Allocation/Requirements Configuration - frozen at end of pre-phase B (SRR). This configuration is baselined by the release of the Science and Mission Requirements Document.

2. Development Configuration - frozen at end of phase B (PDR). The documents identifying this configuration are the Partnering agreements, the Phase C/D/E Project

Implementation Plan, the, Segment/System Specifications, and Interface Control Documents (preliminary).

3. Production Configuration - frozen at end of phase C (CDR). The documents identifying this configuration are the Mission Operations Concept Document, approved engineering designs with final documentation, Integration & test plans/procedures and final Interface Control Documents. At end of phase C, a document will identify the documentation of this configuration.

3.6.2 Baseline Management

Once established, each baseline shall be maintained throughout the project lifecycle. The content of the baselines will grow as the project matures. Changes to approved baselines will be formally controlled through the Configuration Control Board (CCB) process.

3.7 Document Control Process

To maintain document control and to support baseline development, a formal electronic project document management system is used. The ESSP 3 project office will store all project documentation electronically using document management software. Once a document is stored, access is controlled according to its status (baselined or non-baselined). Baselined documents are version controlled and can be viewed and copied but cannot be changed without going through the CCB process.

After the document has been approved by all necessary team members it is considered "baselined" and under configuration control. The document will be submitted to the Configuration Management Office (CMO) for official release. Once baselined the CMO will maintain the controlled copy on Livelink as described above.

Other documents will be stored on with varying levels of access to create a comprehensive project document library. The CMO is responsible for the management of the library.

3.8 Configuration Item identification for the ESSP 3 Project

Configuration Items and their configuration control levels are identified in the following documents:

1. PC-SYS-804 Documents List
2. PC-SYS-801 Deliverables Matrix

As documents are released they will be put under configuration control at the appropriate control levels. The requirements contained in those documents will be managed at those levels.

4 CONFIGURATION CHANGE CONTROL

Configuration change control is the systematic coordination, evaluation, decision and release of proposed and approved changes to an established baseline. The object of configuration control is to ensure that changes are properly and completely defined and presented for management to consider the cost, schedule and performance impacts of a proposed change and how to control its implementation.

Changes can take the form of changes to existing or planned configurations, and deviations and waivers to those configurations.

Changes are managed through the configuration control board process.

4.1 Configuration Control Board

The CCB is a group of technical and administrative project personnel who are responsible for reviewing and assessing changes to ESSP 3 baselines. Recommendations are presented to the CCB chairperson for approval or disapproval. The CCB will meet at the direction of the chairperson. The CCB Chairperson and board members will sign all CCB actions. All board proceedings, decisions, recommendations and action items will be recorded and maintained by the CCB Secretary.

4.1.1 Level 0 and I CCBs

The appropriate Managers or Chairpersons will determine the CCB membership and process for these levels.

4.1.2 Level II CCB

The Principal Investigator will appoint CCB members as necessary. The Mission Lead or designated alternate will serve as the CCB Chairperson. The mission CCB is composed of the following members:

Chairperson – Principal Investigator
Alternate Chairperson
CCB Secretary
Project Manager
Co-Principal Investigators
Deputy Project Managers
Ad Hoc members as required

If NASA or CNES do not agree on a proposed change request, NASA or CNES will submit the request to the Mission Advisory Panel (MAP) for help with a timely resolution.

4.1.3 Level III CCB

The Project Manager will appoint CCB members as necessary. The Project Manager or designated alternate will serve as the CCB Chairperson. The satellite segment project manager at CNES will be a participating member on actions sent to the Level III board. The project CCB is composed of the following members:

Chairman – Project Manager
Alternate Chairman
Principal Investigator
CCB Secretary
Deputy Project Managers
Ball Project Manager
System Engineering
Mission Assurance
Segment Leads
Software Systems Manager
Ad Hoc members as required

If NASA or CNES do not agree on a proposed change request, NASA or CNES will submit to the Mission Advisory Panel (MAP) for help with a timely resolution.

4.1.4 Level IV CCBs

Level IV organizations will appoint CCB members in accordance with their configuration management plans and contractual agreements. The satellite segment project manager at CNES will be responsible for the disposition of changes to documents controlled by that segment. The satellite segment CCB has responsibility for the SOGS/Satellite Segment Interface Documents; the ground segment CCB has responsibility for the MOGS/Payload Interface Control Documents and the MOGS/SOGS Interface Documents. The Level IV organizations CCB will generally be composed of the following members:

Chairman - Segment Lead
Alternate Chairman
CCB Secretary
System Leads
System Engineer
Mission Assurance
Interface Managers
Ad Hoc members as required

Unresolved change requests at this level will be submitted to the ESSP3 Project management for direction. If the ESSP3 Project Management is unable to resolve the differences it will be submitted to the MAP for direction.
The CMO of the Level IV CCBs will be responsible for sending copies (for information purposes only) of the completed Level IV CCRs to the Project Office CMO.

4.1.5 Level V CCB

System developers CM requirements are established by the customer contract and will be implemented according to individual company processes and contractual requirements and agreements.

4.1.6 Change Classification

A change to baselined documentation shall be classified as either Class I or Class II. These classifications are used to determine the required review and approval process.

4.1.6.1 Class I Changes:

1. Changes to project approved baseline documents affecting:
2. Cost, schedule or technical content.
3. Changes affecting Safety and Reliability.
4. Changes affecting interfaces between segments.
5. Changes affecting Deliverables

4.1.6.2 Class II Changes:

A change to project approved baselined documentation will be classified as Class II when it does not fall within the definition of Class I - i.e., administrative changes, correction of errors or additions/deletions for clarification purposes only.

4.2 Processing Changes

4.2.1 Change Submission

Submitted changes will follow the process in Figures 4.1 and 4.2. Anyone in the project may submit a proposed change to baselined documents. The originator of a change shall prepare a technical description of the proposed change. Mission and project personnel shall use the ESSP 3 Configuration Change Request Form 1 Part A (Appendix A). This form will also be used to submit requests for deviations and waivers. Contractors and CNES may submit requests on forms as directed by their configuration management plans and directives.

All Class I changes submitted by the contractor will be submitted to the contracting officer with action copies to the contract technical officer and the CMO. All other Class I change requests will be submitted to the CMO.

All proposed changes shall be documented as completely as possible in Part A of the form. In completing Part A, the following sections of the form must be completed by the Originator:

1. Originators Name
2. Organization
3. Phone #
4. Title
5. Origination Date
6. Type of Change Request (change, deviation, waiver)
7. Description of Change
8. Reason for Change

If the Originator knows the impact of the change it should be included in the reason for change section of the form. If the originator has a priority they wish initially assigned to the change it should be indicated in the priority section of the form.

The change request number will be assigned by the CMO at the time of receipt. At the project level the number will take the form of (XXXX-YYY-AAA) where:

- XXXX = LaRC, point of CCB review
- YYY = CCR, DEV, or WAV, for the type of change request
- AAA = 001+, Sequential numbering beginning with 001
- First Langley CCR would be – LaRC-CCR-001

Other sections of Part A that the originator is unable to complete will also be entered by the CMO as the change request is processed.

4.2.2 Processing Changes for CCB Review

The CMO is responsible for recording receipt of the change proposal and preparing the CCR package. The package is processed according to the Change Request Process in figures 4.1 and 4.2.

The priority of the change request will establish the initial method of processing the change. If the requester has not established a priority the CMO in conjunction with the Change Package Reviewer (CPR) shall recommend a priority to the CCB chairperson. Three priority levels shall be used:

1. Emergency – This priority shall be assigned when failure to immediately implement a change in operational characteristics may seriously compromise the effectiveness of the equipment or when a hazardous condition exists that may result in fatal or serious

injury or extensive damage or destruction of the equipment. Emergency changes shall be dispositioned within 24 hours of receipt.

2. Urgent – This priority shall be used to affect a change that, if delayed would cause schedule slippage or cost increases. Urgent changes shall be dispositioned within 15 days of receipt.

3. Routine – This priority shall be used when the conditions specified in 1 and 2 above do not exist. Routine changes shall be dispositioned within 30 days of receipt.

The CMO sends the package to the CPR, a technical engineer responsible for the primary functional area being affected by the change. The CPR is responsible for determining whether the change affects software, hardware or both by reviewing related drawings and documentation, and coordinating the detailed assessment and impact of the change. If the change affects software the software systems manager may convene a software CCB for evaluation prior to the main CCB meeting. After completion of the review, the CPR will return the package with any additional documentation and a completed Part B of Form 1 (Appendix A) to the CMO. The CMO will distribute the package to the CCB members in preparation for the meeting.

For members that are not co-located with the CCB processing the request, members should resolve questions with the CPR prior to the board meeting. As mentioned above, unresolved change issues between NASA and CNES will go to the MAP for resolution.

4.2.3 CCB Review

Proposed changes shall be reviewed at the CCB meeting of the appropriate level CCB with discussion from all CCB members. The CPR will also be responsible for presenting the change to the CCB for review. The final approval shall be the responsibility of the CCB Chairperson. Part C of Form 1 (Appendix A) will be signed at the end of the meeting. Voice, E-mail or other electronic methods of concurrence/non concurrence by non co-located board members is accepted in lieu of a signature.

4.2.4 Processing Emergency Requests

Emergency requests will be routed by the most expeditious means available. Initially telephone approval by the CCB chairmen will be sufficient to approve the change. Once the change has been approved, it will be processed through the normal process to ensure complete documentation and understanding of the change.

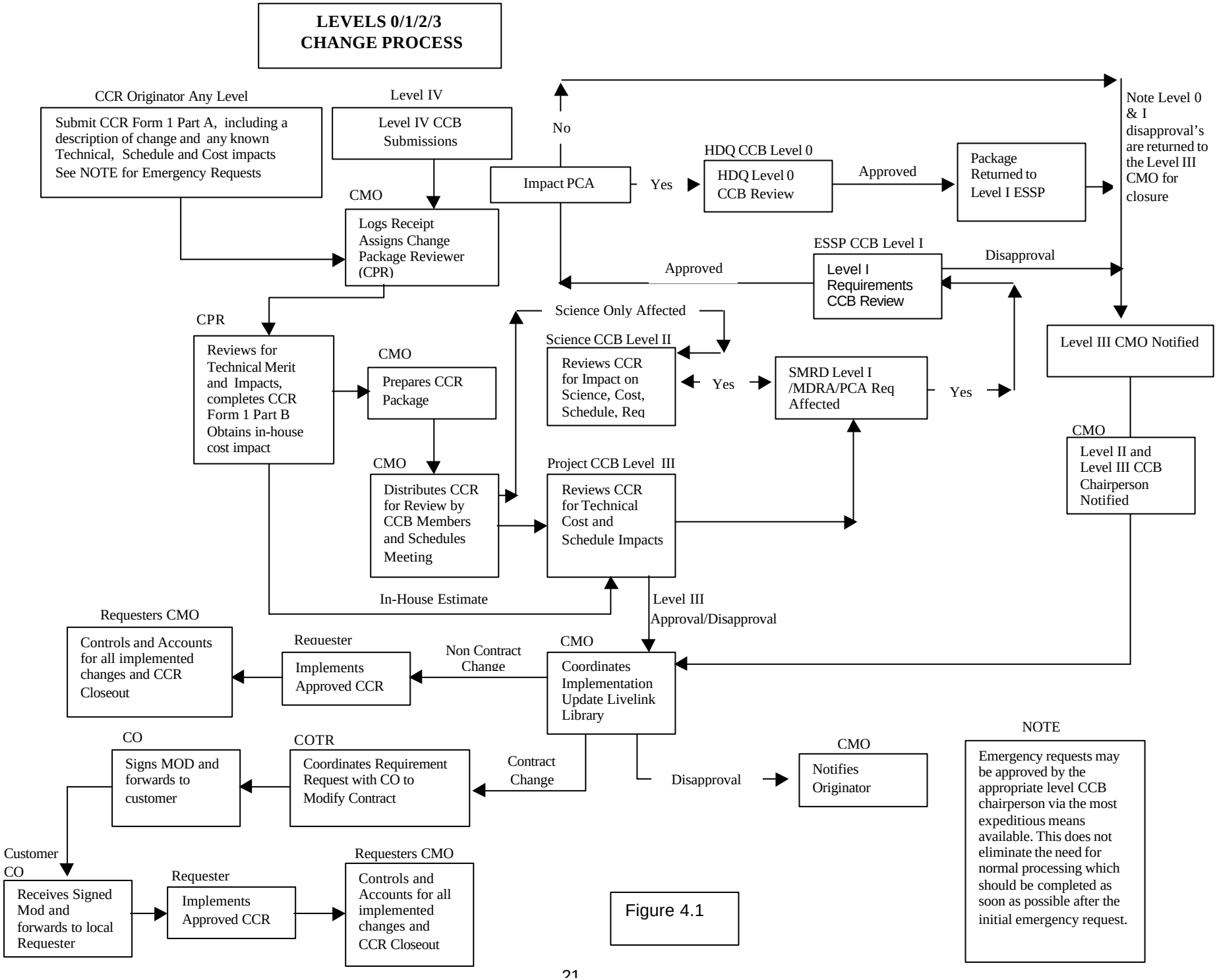

LEVELS 0/1/2/3
CHANGE PROCESS
CCR Originator Any Level
Submit CCR Form 1 Part A, including a description of change and any known Technical, Schedule and Cost impacts
See NOTE for Emergency Requests
Level IV
Level IV CCB Submissions
CMO
Logs Receipt
Assigns Change Package Reviewer (CPR)
CPR
Reviews for Technical Merit and Impacts, completes CCR Form 1 Part B
Obtains in-house cost impact
CMO
Prepares CCR Package
CMO
Distributes CCR for Review by CCB Members and Schedules Meeting
Science Only Affected
Science CCB Level II
Reviews CCR for Impact on Science, Cost, Schedule, Req
Yes
SMRD Level I /MDRA/PCA Req Affected
Yes
Project CCB Level III
Reviews CCR for Technical Cost and Schedule Impacts
In-House Estimate
Level III Approval/Disapproval
No
Impact PCA
Yes
HDQ CCB Level 0
HDQ Level 0 CCB Review
Approved
Package Returned to Level I ESSP
Note Level 0 & I disapproval's are returned to the Level III CMO for closure
ESSP CCB Level I
Level I Requirements CCB Review
Approved
Disapproval
Level III CMO Notified
CMO
Level II and Level III CCB Chairperson Notified
Requesters CMO
Controls and Accounts for all implemented changes and CCR Closeout
Requester
Implements Approved CCR
Non Contract Change
CMO
Coordinates Implementation Update Livelink Library
CO
Signs MOD and forwards to customer
COTR
Coordinates Requirement Request with CO to Modify Contract
Contract Change
Disapproval
CMO
Notifies Originator
Customer
CO
Receives Signed Mod and forwards to local Requester
Requester
Implements Approved CCR
Requesters CMO
Controls and Accounts for all implemented changes and CCR Closeout
NOTE
Emergency requests may be approved by the appropriate level CCB chairperson via the most expeditious means available. This does not eliminate the need for normal processing which should be completed as soon as possible after the initial emergency request.

Figure 4.1

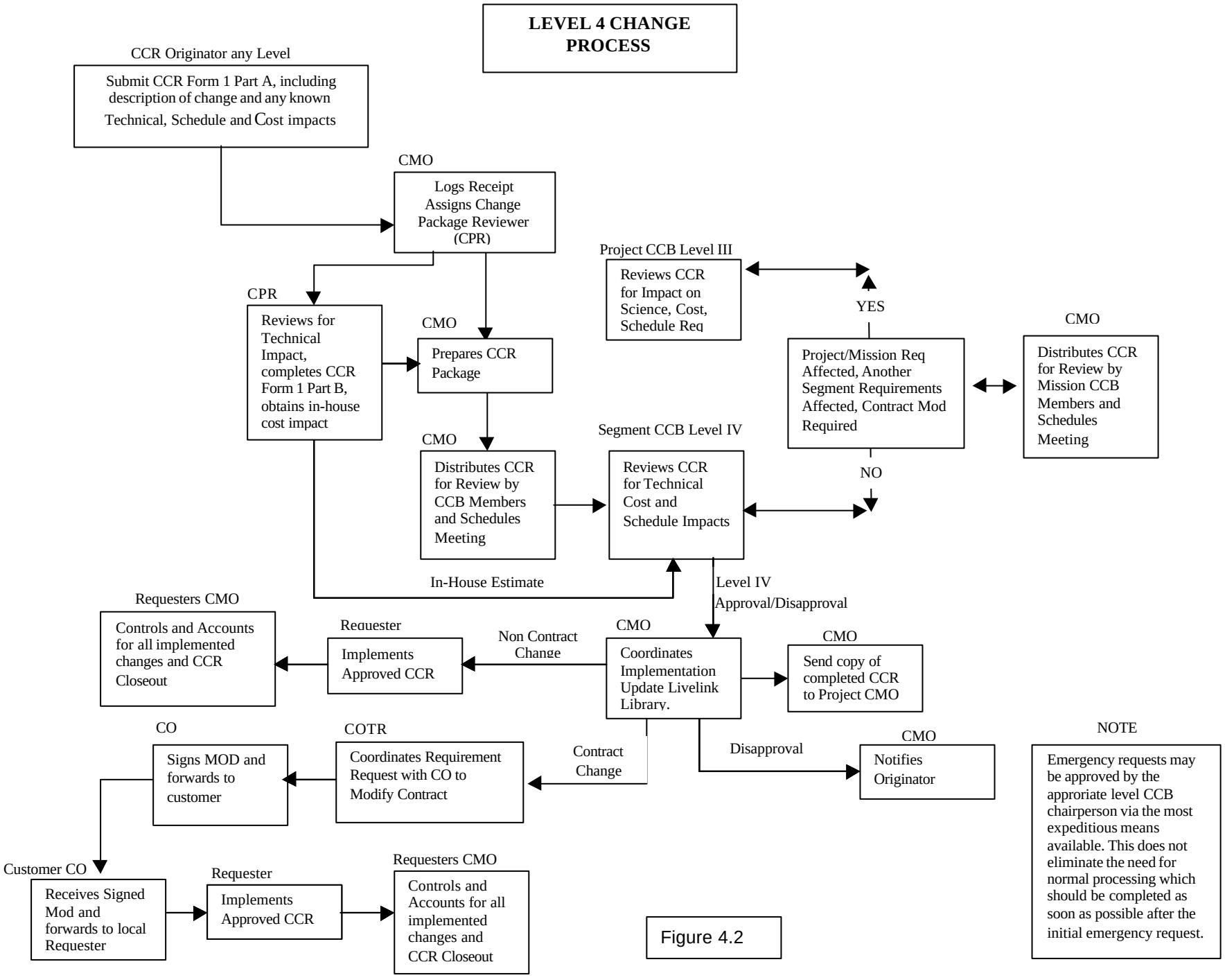

LEVEL 4 CHANGE PROCESS
CCR Originator any Level
Submit CCR Form 1 Part A, including description of change and any known Technical, Schedule and Cost impacts
CMO
Logs Receipt Assigns Change Package Reviewer (CPR)
CPR
Reviews for Technical Impact, completes CCR Form 1 Part B, obtains in-house cost impact
CMO
Prepares CCR Package
CMO
Distributes CCR for Review by CCB Members and Schedules Meeting
Segment CCB Level IV
Reviews CCR for Technical Cost and Schedule Impacts
Project CCB Level III
Reviews CCR for Impact on Science, Cost, Schedule Req
YES
Project/Mission Req Affected, Another Segment Requirements Affected, Contract Mod Required
CMO
Distributes CCR for Review by Mission CCB Members and Schedules Meeting
NO
In-House Estimate
Level IV Approval/Disapproval
CMO
Coordinates Implementation Update Livelink Library.
Non Contract Change
Requester
Implements Approved CCR
Requesters CMO
Controls and Accounts for all implemented changes and CCR Closeout
CMO
Send copy of completed CCR to Project CMO
Contract Change
COTR
Coordinates Requirement Request with CO to Modify Contract
CO
Signs MOD and forwards to customer
Customer CO
Receives Signed Mod and forwards to local Requester
Requester
Implements Approved CCR
Requesters CMO
Controls and Accounts for all implemented changes and CCR Closeout
Disapproval
CMO
Notifies Originator
NOTE
Emergency requests may be approved by the approriate level CCB chairperson via the most expeditious means available. This does not eliminate the need for normal processing which should be completed as soon as possible after the initial emergency request.

Figure 4.2

4.3 Deviations and Waivers

Deviations and waivers are requests to deviate from baseline requirements either before or after their manufacture.

4.3.1 Definition of Deviations and Waivers

Deviation - A specific written authorization, granted prior to the manufacture of an item. It is a request to depart from a particular requirement of an item's current approved configuration documentation for a specific number of units or a specified period of time.

Waiver - A written authorization to accept an item, which during manufacture, or having been submitted for acceptance, is found to depart from specified requirements. It nevertheless is considered suitable for use "as is" or suitable after repair by an approved method.

4.3.2 Submission of Deviations or Waivers

Deviations and Waivers shall be submitted using the same process as for configuration change requests. All dispositioned changes shall be documented in either a contract modification or an approval letter from the appropriate level CCB.

4.4 CCR Status Accounting

Configuration Status Accounting is the systematic release; recording, correlation and reporting of the information needed to effectively manage a configuration item. The CMO will use Livelink and supporting databases to provide the necessary reports. These reports will include a list of ESSP 3 baselined documents, a list of proposed configuration changes, and the status of the proposed changes and any associated action items.

4.4.1 STATUS ACCOUNTING REPORTS

The CMO will generate and maintain:

1. CCR Status Reports
2. CCR Action Items Reports
3. Document Release Report

4.4.2 CCR Status Report and Logs

The CCR status report identifies each CCR that has been submitted to the CMO for processing through the CCB. It is used by the Configuration Management Office to track the status and final disposition of all CCRs and report that status to the Explorer Program Office. Status reports will contain information as follows:

1. CCR Number and Title
2. Date CCR Initiated
3. CCR Originator
4. Documents Affected
5. CCB Date
6. CCB Status
7. Actions Assigned
8. Close out Date of CCR
9. Incorporation and Verification of CCR

4.5 Configuration Audits

The purpose of audits is to provide confidence that the fabrication, integration and test of each CI comply with the documentation that defines it. Audits will be done per the ESSP 3 Mission Assurance Plan. The CMO will assist the mission assurance manager as required.

The CMO is responsible for conducting periodic audits of the configuration management system. This audit process ensures that the CM procedures are being adhered to, are properly implemented and that the CCB process is being followed. The audit also ensures that the contractors CM practices are sufficient and compatible with the requirements of the CM Plan.

4.5.1 Functional Audits

Functional configuration audits (FCA) are used to verify that the CI's actual performance complies with the performance requirements as specified in performance requirements documents. Performance tests are performed under QA supervision prior to acceptance of the product. For example, QA signoffs during functional testing are functional audits.

4.5.2 Physical Configuration Audits

Physical configuration audits (PCA) are used to verify that the CI's actual configuration complies with the product specification. PCA's are normally performed incrementally on each subsystem as they are prepared for integration into the next higher assembly. For example, QA signoffs during assembly are one type of physical audit.

5 APPENDIX A Change Request Form 1

CCR Number Alt CCR #	Originator	Organization	Phone #
Title			Origination Date

Type of Change Request

☐ CCR ☐ Deviation ☐ Waiver

Segment Affected

☐ Gnd Systems ☐ Launch ☐ Satellite ☐ Science

Documents Affected

Change Classification

☐ Type I ☐ Type II

Priority

☐ Routine ☐ Urgent ☐ Emergency

CCB Approval Level Required

☐ Level 0 ☐ Level I ☐ Level II ☐ Level III ☐ Level IV ☐ Level V

Description of Proposed Change

Rationale for Proposed Change

CCR Number Alt CCR #	**TITLE**

Check all items that may be significantly impacted by this change

IMPACT	YES/NO	IMPACT	YES/NO
Alignment	• Yes • No	**Parts &Ma**terial	• Yes • No
Command	• Yes • No	**Performance**	• Yes • No
Cost	• Yes • No	**Power**	• Yes • No
Electrical Design	• Yes • No	**Qualification**	• Yes • No
Flight-Mission Ops	• Yes • No	**Spacecraft**	• Yes • No
GSE	• Yes • No	**Safety**	• Yes • No
Harness	• Yes • No	**Schedule**	• Yes • No
Interface	• Yes • No	**Science**	• Yes • No
I&T	• Yes • No	**Software**	• Yes • No
Launch Vech	• Yes • No	**Telemetry**	• Yes • No
Mass	• Yes • No	**Thermal**	• Yes • No
		Other	• Yes • No

IMPACT COMMENT

CCR Number Alt CCR #	TITLE		
BOARD MEMBER	**SIGNATURE**	**APPROVE/CONCUR**	**DATE**
Principal Investigator		• Yes • No	
Project Manager		• Yes • No	
Satellite PM		• Yes • No	
CoPI CNES		• Yes • No	
CoPI Hampton Univ.		• Yes • No	
Deputy PM LaRC		• Yes • No	
Deputy PM LaRC		• Yes • No	
DPM for Res LaRC		• Yes • No	
PM Ball		• Yes • No	
System Engineer		• Yes • No	
Mission Assurance		• Yes • No	
Satellite Segment		• Yes • No	
Launch Segment		• Yes • No	
Ground Segment		• Yes • No	
Science Segment		• Yes • No	
Software Manager		• Yes • No	
Schedule Manager		• Yes • No	
Comment			

CCB ACTION

CCB Chair Sign

DATE

☐ Approve ☐ Disapprove ☐ Defer ☐ Withdrawn

CLOSEOUT ACTION	CMO Sign
	CMO Date

6 APPENDIX B Form Field Definitions

CCR Number: Tracking number assigned by CM Manager

Originator: Individual starting request

Organization: Organization of Originator

Phone #: Phone number of Originator

Title: Short title for the request

Origination Date: Date that the request was initiated

Type of Change Request:

CCR- Configuration Change Request – A request to change a baselined document

Deviation - A specific written authorization, granted prior to the manufacture of an item

Waiver - A written authorization to accept an item, which during manufacture, or having bee submitted for acceptance, is found to depart from specified requirements.

Segment Affected: Which mission segment is likely to affected by this request

Documents Affected: Which documents are affected by this request

Change Classification:

Class I Changes:

Changes to project approved baseline documents affecting:
Cost, schedule or technical content.
Changes affecting Safety and Reliability.
Changes affecting interfaces between segments.
Changes affecting Deliverables

Class II Changes:

A change to project approved baselined documentation will be classified as Class II when it doe not fall within the definition of Class I - i.e., administrative changes, correction of errors o additions/deletions for clarification purposes only.

Priority:

Emergency – Shall be dispositioned within 24 hours of receipt.

Urgent - Shall be dispositioned within 15 days of receipt.

Routine – Shall be dispositioned within 30 days of receipt.

CCB Approval Level Required: What level Configuration Control Board is required to approve change

Description of proposed Change: Describe what is to be changed

Rationale for proposed change: Describe why the change is required

mpact: Check areas that will be significantly impacted, normally checked by individuals evaluating reques

mpact Comment: Detailed explanation of impacts

CCB Closeout and Signature Page: self-explanatory

7 APPENDIX C Acronyms List

CCB	Configuration Control Board
CCR	Configuration Change Request
CI	Configuration Item
CM	Configuration Management
CMO	Configuration Management Office
CMP	Configuration Management Plan
CPR	Change Package Reviewer
CSCI	Computer Software Configuration Item
FCA	Functional Configuration Audit
HWCI	Hardware Configuration Item (HWCI)
ICD	Interface Control Documents
LaRC	Langley Research Center
PA	Product Assurance
PAP	Product Assurance Plan
PCA	Physical Configuration Audit
QA	Quality Assurance
SCCB	Software Configuration Control Board
SCI	Software Configuration Item
SOW	Statement of Work