CCSDS

The Consultative Committee for Space Data Systems

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CCSDS

The Consultative Committee for Space Data Systems

Recommendation for Space Data System Standards

CCSDS GLOBAL

SPACECRAFT IDENTIFIER FIELD:

CODE ASSIGNMENT CONTROL PROCEDURES

RECOMMENDED STANDARD

CCSDS 320.0-B-6

Note:
This current
issue includes
all updates through
Technical Corrigendum 1,
dated December 2013.

BLUE BOOK
October 2013

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October 2013

AUTHORITY

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Date:	October 2013
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This document has been approved for publication by the Management Council of the Consultative Committee for Space Data Systems (CCSDS) and represents the consensus technical agreement of the participating CCSDS Member Agencies. The procedure for review and authorization of CCSDS documents is detailed in *Organization and Processes for the Consultative Committee for Space Data Systems* (CCSDS A02.1-Y-3), and the record of Agency participation in the authorization of this document can be obtained from the CCSDS Secretariat at the address below.

This document is published and maintained by:

> CCSDS Secretariat
> Space Communications and Navigation Office, 7L70
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> NASA Headquarters
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STATEMENT OF INTENT

The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of its members. The Committee meets periodically to address data systems problems that are common to all participants, and to formulate sound technical solutions to these problems. Inasmuch as participation in the CCSDS is completely voluntary, the results of Committee actions are termed **Recommended Standards** and are not considered binding on any Agency.

This **Recommended Standard** is issued by, and represents the consensus of, the CCSDS members. Endorsement of this **Recommendation** is entirely voluntary. Endorsement, however, indicates the following understandings:

o   Whenever a member establishes a CCSDS-related **standard**, this **standard** will be in accord with the relevant **Recommended Standard**. Establishing such a **standard** does not preclude other provisions which a member may develop.

o   Whenever a member establishes a CCSDS-related **standard**, that member will provide other CCSDS members with the following information:

  --   The **standard** itself.

  --   The anticipated date of initial operational capability.

  --   The anticipated duration of operational service.

o   Specific service arrangements shall be made via memoranda of agreement. Neither this **Recommended Standard** nor any ensuing **standard** is a substitute for a memorandum of agreement.

No later than three years from its date of issuance, this **Recommended Standard** will be reviewed by the CCSDS to determine whether it should: (1) remain in effect without change; (2) be changed to reflect the impact of new technologies, new requirements, or new directions; or (3) be retired or canceled.

In those instances when a new version of a **Recommended Standard** is issued, existing CCSDS-related member standards and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each member to determine when such standards or implementations are to be modified. Each member is, however, strongly encouraged to direct planning for its new standards and implementations towards the later version of the Recommended Standard.

FOREWORD

This document is a Recommended Standard that establishes control procedures for Spacecraft Identifier (SCID) codes. As such, it defines the procedure governing assignment, relinquishment, and management of SCIDs.

To make the most efficient use of the available identification space in the several CCSDS-recommended data structures that contain a SCID field, all CCSDS-compatible missions are assigned SCIDs by the Space Assigned Numbers Authority (SANA).

As specified in this Recommended Standard, SANA accepts only requests from designated Agency Representatives and only when received on approved Request Forms.

This Recommended Standard also provides a form for requesting and relinquishing SCIDs.

Through the process of normal evolution, it is expected that expansion, deletion, or modification of this document may occur. This Recommended Standard is therefore subject to CCSDS document management and change control procedures, which are defined in the *Organization and Processes for the Consultative Committee for Space Data Systems* (CCSDS A02.1-Y-3). Current versions of CCSDS documents are maintained at the CCSDS Web site:

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Questions relating to the contents or status of this document should be addressed to the CCSDS Secretariat at the address indicated on page i.

At time of publication, the active Member and Observer Agencies of the CCSDS were:

Member Agencies

- Agenzia Spaziale Italiana (ASI)/Italy.
- Canadian Space Agency (CSA)/Canada.
- Centre National d'Etudes Spatiales (CNES)/France.
- China National Space Administration (CNSA)/People's Republic of China.
- Deutsches Zentrum für Luft- und Raumfahrt (DLR)/Germany.
- European Space Agency (ESA)/Europe.
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- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- Japan Aerospace Exploration Agency (JAXA)/Japan.
- National Aeronautics and Space Administration (NASA)/USA.
- UK Space Agency/United Kingdom.

Observer Agencies

- Austrian Space Agency (ASA)/Austria.
- Belgian Federal Science Policy Office (BFSPO)/Belgium.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- China Satellite Launch and Tracking Control General, Beijing Institute of Tracking and Telecommunications Technology (CLTC/BITTT)/China.
- Chinese Academy of Sciences (CAS)/China.
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- Departamento de Ciência e Tecnologia Aeroespacial (DCTA)/Brazil.
- European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)/Europe.
- European Telecommunications Satellite Organization (EUTELSAT)/Europe.
- Geo-Informatics and Space Technology Development Agency (GISTDA)/Thailand.
- Hellenic National Space Committee (HNSC)/Greece.
- Indian Space Research Organization (ISRO)/India.
- Institute of Space Research (IKI)/Russian Federation.
- KFKI Research Institute for Particle & Nuclear Physics (KFKI)/Hungary.
- Korea Aerospace Research Institute (KARI)/Korea.
- Ministry of Communications (MOC)/Israel.
- National Institute of Information and Communications Technology (NICT)/Japan.
- National Oceanic and Atmospheric Administration (NOAA)/USA.
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- National Space Organization (NSPO)/Chinese Taipei.
- Naval Center for Space Technology (NCST)/USA.
- Scientific and Technological Research Council of Turkey (TUBITAK)/Turkey.
- South African National Space Agency (SANSA)/Republic of South Africa.
- Space and Upper Atmosphere Research Commission (SUPARCO)/Pakistan.
- Swedish Space Corporation (SSC)/Sweden.
- Swiss Space Office (SSO)/Switzerland.
- United States Geological Survey (USGS)/USA.

DOCUMENT CONTROL

Document	Title	Date	Status
CCSDS 320.0-B-1	CCSDS Global Spacecraft Identification Field: Code Assignment Control Procedures, Issue 1	October 1993	Original Issue (superseded)
CCSDS 320.0-B-2	CCSDS Global Spacecraft Identification Field: Code Assignment Control Procedures, Issue 2	November 1998	Superseded
CCSDS 320.0-B-3	CCSDS Global Spacecraft Identification Field: Code Assignment Control Procedures, Issue 3	April 2003	Superseded
CCSDS 320.0-B-4	CCSDS Global Spacecraft Identification Field: Code Assignment Control Procedures, Issue 4	January 2006	Superseded
CCSDS 320.0-B-5	CCSDS Global Spacecraft Identification Field: Code Assignment Control Procedures, Issue 5	September 2007	Superseded
CCSDS 320.0-B-6	CCSDS Global Spacecraft Identification Field: Code Assignment Control Procedures, Issue 6	October 2013	Current issue (note): – designates SANA as official registrar for SCIDs and ARs; – reorganizes document for conformance with modern CCSDS publication requirements, rephrases some statements for clarity, and eliminates obsolete material.
Cor. 1	Technical Corrigendum 1	December 2013	Clarifies procedure on page 3-3.

NOTE   –   Changes from the previous issue are too extensive to permit markup.

CONTENTS

1   INTRODUCTION

1.1   PURPOSE

This Recommended Standard establishes the procedures governing requesting, assigning, and relinquishing CCSDS Spacecraft Identifier (SCID) field codes, which are contained in the data unit formats specified in references [1], [2], [3], and [4].   It specifies the organizations and personnel authorized to participate in the performance of those procedures, the requirements for configuration management, and the acceptable use of SCIDs.

1.2   APPLICABILITY

This Recommended Standard applies to users of the CCSDS protocols defined references [1], [2], [3], and [4].

1.3   NOMENCLATURE

1.3.1   NORMATIVE TEXT

The following conventions apply for the normative specifications in this Recommended Standard:

   a)   the words 'shall' and 'must' imply a binding and verifiable specification;

   b)   the word 'should' implies an optional, but desirable, specification;

   c)   the word 'may' implies an optional specification;

   d)   the words 'is', 'are', and 'will' imply statements of fact.

NOTE   –   These conventions do not imply constraints on diction in text that is clearly informative in nature.

1.3.2   INFORMATIVE TEXT

In the normative sections of this document, informative text is set off from the normative specifications either in notes or under one of the following subsection headings:

   –   Overview;

   –   Background;

   –   Rationale;

   –   Discussion.

1.4 DEFINITIONS

Agency Representative, AR: An individual designated by a CCSDS Agency Head of Delegation as the person authorized to request and relinquish SCIDs on behalf of the respective agency.

CCSDS Agency: A CCSDS Member or Observer Agency.

CCSDS Agency Head of Delegation: The individual who serves as principal representative of a CCSDS Agency in dealings with the CCSDS.

Global Spacecraft Identifier, GSCID: The concatenation of the 2-bit Version Number (VN) and the SCID. Thus,

$$GSCID = VN \cdot SCID$$

Where '$\cdot$' refers to the concatenation operator.

Spacecraft Identifier, SCID: A value used in specified fields of CCSDS-defined data structures.

NOTE –   Other non-CCSDS-compatible data structures may also use this term; however, this document does not apply to the assignment and use of identification codes for non-CCSDS-compatible data structures. In such cases the potential for misinterpretation is negligible because of differences in the overall data structures.

Version Number, VN: A field value used to differentiate CCSDS-defined transfer frames. The valid range of the currently defined VN field is shown in table 1-1.

Table 1-1: Bit Structure of Currently Defined VN Fields

Version	Binary Encoded VN	Range of SCID	No. of Bits in SCID Encoded	Relevant CCSDS Documents
1	00	0–1,023	10	Ref. [1] & [2]
2	01	0–255	8	Ref. [3]
3	10	0–1,023	10	Ref. [4]
NOTE – The binary encoded VN value of '11' is reserved for possible future use and should not be used for project-unique purposes prior to formal agreement within CCSDS for such use.				

1.5   REFERENCES

The following publications contain provisions which, through reference in this text, constitute provisions of this document. At the time of publication, the editions indicated were valid. All publications are subject to revision, and users of this document are encouraged to investigate the possibility of applying the most recent editions of the publications indicated below. The CCSDS Secretariat maintains a register of currently valid CCSDS publications.

[1]   *TC Space Data Link Protocol*. Issue 2. Recommendation for Space Data System Standards (Blue Book), CCSDS 232.0-B-2. Washington, D.C.: CCSDS, September 2010.

[2]   *TM Space Data Link Protocol*. Issue 1. Recommendation for Space Data System Standards (Blue Book), CCSDS 132.0-B-1. Washington, D.C.: CCSDS, September 2003

[3]   *AOS Space Data Link Protocol*. Issue 2. Recommendation for Space Data System Standards (Blue Book), CCSDS 732.0-B-2. Washington, D.C.: CCSDS, July 2006.

[4]   *Proximity-1 Space Link Protocol—Data Link Layer*. Issue 4. Recommendation for Space Data System Standards (Blue Book), CCSDS 211.0-B-4. Washington, D.C.: CCSDS, July 2006.

[5]   "Agency Representatives." Space Assigned Number Authority. http://sanaregistry.org/r/agency_representatives.

[6]   "Spacecraft Identifiers." Space Assigned Number Authority. http://sanaregistry.org/r/spacecraftid.

2 OVERVIEW

2.1 PURPOSE OF THE CCSDS SCID

The CCSDS SCID serves as a mechanism for the identification of:

– a simple spacecraft having only one logical space-ground link; or

– an association between space-based and ground-based application processes with complex spacecraft having more than one logical space-ground link. Therefore, a single spacecraft may be assigned more that one SCID.

The procedures contained in this document are intended to eliminate the possibility that

– data from any given CCSDS-compatible vehicle will be falsely interpreted as being from another CCSDS-compatible vehicle during the periods of simulation, testing, or mission operations; or

– commands sent to a CCSDS-compatible vehicle will be received and acted upon by application processes for which they were not intended.

Since the data structure (synchronization code and virtual channel data unit/transfer frame/telecommand frame) are common to many missions, misinterpretation of the identity of space vehicle or ground-based simulator assemblies is possible unless procedures are developed and followed to identify uniquely each vehicle or assembly during its active phases. Because the SCID field is only eight or ten bits long, the SCID is not intended to provide unique identification for all times. It is inevitable that the SCIDs will have to be reused; however, at any one time, the number of vehicles under simulation, test, or active operational control is not anticipated to exceed the available numbering domains.

2.2 BACKGROUND

SCID codes appear in many of the CCSDS-recommended data structures used for the space-ground links and other purposes. Typical of the space-ground data structures that incorporate the SCID are:

– the conventional mission telemetry frame (reference [2]);

– the conventional mission telecommand transfer frame (reference [1]);

– the Advanced Orbiting Systems Virtual Channel Data Unit (reference [3]);

– the Proximity-1 transfer frame (reference [4]).

The CCSDS Recommended Standards on Data Link Layer protocols (references [1], [2], [3] and [4]) provide a mechanism for establishing an association (either temporary or permanent)

between space-based application process(es) and corresponding ground-based application process(es).

The data streams transmitted between space and ground processes contain identifiers that specify the relevant association. These identifiers are managed parameters (i.e., the specific association implied by a given identifier must have been previously established). The utilization of the SCID field on a global scale necessitates its concatenation with the VN of the data structure in which it is used; the concatenation of VN and SCID is the Global SCID or GSCID.

3 SCID CODE ASSIGNMENT CONTROL PROCEDURES

3.1 CCSDS SCID MANAGEMENT SYSTEM DUTIES AND RESPONSIBILITIES

3.1.1 OVERVIEW

CCSDS SCID assignment and management, on an international basis, must be viewed as a cooperative effort among the CCSDS Agencies, with each constituent acting as agent for the users under its cognizance. The management system comprises four elements:

– the CCSDS Secretariat;

– the CCSDS Agency Heads of Delegation;

– the Agency Representatives;

– the Space Assigned Numbers Authority (SANA).

3.1.2 CCSDS SECRETARIAT RESPONSIBILITIES

The CCSDS Secretariat shall

– serve as the focal point for the resolution of any issues not adequately covered by these procedures;

– act as intermediary for SCID requests from organizations not affiliated with a CCSDS Agency by assigning an existing AR to handle the request.

3.1.3 CCSDS AGENCY HEAD OF DELEGATION RESPONSIBILITIES

3.1.3.1 Each CCSDS Agency Head of Delegation shall appoint an official Agency Representative to handle all SCID requests from his or her Agency.

3.1.3.2 As needed, CCSDS Agency Heads of Delegation shall provide current AR name and contact information via e-mail to info@sanaregistry.org with CC to secretariat@mailman.ccsds.org.

NOTE – The official list of ARs is maintained at reference [5].

3.1.4 AGENCY REPRESENTATIVE RESPONSIBILITIES

The Agency Representative shall

– submit SCID requests in accordance with the provisions of this Recommended Standard;

– interact directly with SANA with regard to any issues relating to a specific SCID assignment request;

–   monitor the life of those CCSDS missions within his or her agency and relinquish all SCIDs at the earliest practical time, which shall not in any event be later than two months after the last communication with the spacecraft;

–   inform the applicable agency personnel of any relevant actions (i.e., SCID assignment, relinquishment) taken by SANA relating to that agency.

3.1.5   SANA RESPONSIBILITIES

SANA shall

–   maintain the official list of ARs;

–   serve as the SCID assignment manager;

–   accept, from authorized ARs, requests for SCID assignments;

–   review and log SCID assignment requests;

–   assign one or more SCIDs in response to the request and notify the appropriate AR of the assignment(s);

–   interact directly with the appropriate AR in matters dealing with a particular SCID assignment request;

–   maintain complete and independent catalogs of SCID assignments for each version number as registries on the SANA site;

NOTE   –   The official list of SCIDs is maintained at reference [6].

–   work with the respective ARs to recover all SCIDs, corresponding to those spacecraft whose operational phases have been completed, for subsequent reassignment.

3.2   SCID CODE LIFETIME

3.2.1   An assigned SCID may be used throughout a spacecraft's active phases, e.g., simulations, prelaunch testing, and in-orbit operations.

3.2.2   As quickly as practical after reception of telemetry data, the SCID should be replaced with a globally unique, unambiguous, permanent, and SCID-independent label for the spacecraft and/or payload data set(s).

3.2.3   Thereafter, access to and identification of these data sets should be by means of this label rather than the SCID field described in this document.

NOTE   –   Because CCSDS SCIDs are reused, identification of archived data by SCID is problematic.

3.3   SCID ASSIGNMENT REQUEST PROCEDURES

3.3.1   All SCID Assignment Requests by an Agency shall be submitted by the designated AR (see reference [5]).

3.3.2   Organizations that are not affiliated with a CCSDS Agency shall contact the CCSDS Secretariat for SCID assignments.

3.3.3   All SCID Assignment Requests shall be submitted on the approved request form contained in annex A.

3.3.4   A separate form shall be used for each SCID requested.

3.3.5   All   SCID   Assignment   Requests   shall   be   submitted   via   e-mail   to info@sanaregistry.org with CC to secretariat@mailman.ccsds.org.

3.4   SCID CODE ASSIGNMENT PROCEDURES

3.4.1   All CCSDS SCID Assignments shall be made by SANA.

Cor. 1

3.4.2   SANA   shall   assign   the   specific   SCID   codes   based   on   availability.   Only   in exceptional circumstances will user requests for specific numerical code assignments be honored.

3.4.3   Each SCID Code Assignment shall be globally unique during its assignment period.

3.4.4   SCID Code Assignments shall be made on a spacecraft-by-spacecraft basis.

3.4.5   User requests for reservation of a sequence of ID numbers for unspecified spacecraft shall not be accepted; however, multiple SCIDs may be assigned for those missions which have multiple spacecraft or which require separate designations for protoflight spacecraft or simulations.

3.4.6   User requests for assignment of specific numerical codes may be accepted in exceptional circumstances and only if those numerical codes are available.

Cor. 1

3.4.6.1   The user should refer to the catalog of existing SCID assignments (reference [6]) to avoid requesting assignments that could result in duplication, and, therefore, denial of a request.

3.4.6.2   If a request for a specific numerical code cannot be honored the SANA shall assign a SCID based on availability.

3.5   SCID RELINQUISHING PROCEDURES

3.5.1   The AR shall determine, in conjunction with the mission manager, exactly when the operational phase of a mission is complete and when the related SCIDs can be relinquished.

3.5.2   The AR shall submit to SANA a copy of the original Assignment Request/ Relinquishment form with signature and date opposite 'RELINQUISH current GSCID' in the **AUTHORIZATION** section.   If the original Assignment Request/Relinquishment form cannot be located, a simple letter relinquishing the SCID shall provided.

3.5.3   SANA shall place the relinquished SCID code number at the bottom of the stack of SCIDs available for assignment.

NOTE   –   The relinquished SCID code number is placed at the bottom of the stack of unassigned SCIDs in order to maximize the period of time before the relinquished number is reassigned

ANNEX A

SCID REQUEST FORM

(NORMATIVE)

This annex provides the official form to be used by Agency Representatives for requesting and relinquishing SCIDs.

GSCID ASSIGNMENT REQUEST FORM

TO: Space Assigned Numbers Authority (info@sanaregistry.org)

FROM: (Name & Address of Agency Representative)

_____
_____
_____
_____
_____
E-MAIL

_____   _____   _____
Telephone   Facsimile   TELEX
(Include Country & City/Area Codes

SPACECRAFT INFORMATION:

Pre-Launch Name of Spacecraft: _____

Transmitting Frequencies: _____

Expected Launch Date (or Year):   _____

Version ID (see table 1-1):   Version-1 ☐   Version-2 ☐   Version-3 ☐

Intended Use: TLM only ☐   TC only ☐   Both TLM & TC   ☐

(TLM = telemetry; TC = telecommand)

SPECIAL INSTRUCTIONS/REQUEST:

AUTHORIZATION: (to assign or to relinquish GSCID assignment)

ASSIGN new GSCID: _____   _____
                                              Signature of Agency Representative   Date

RELINQUISH current GSCID: _____   _____
                                                 Signature of Agency Representative   Date

To be completed only by SANA

GSCID (Binary)		GSCID (Hex)	Requesting Agency	Common Name of S/C	Date of Assignment	Date of Release
VID 2 bits	SCID ….bits	….bits				

ANNEX B

ACRONYMS AND ABBREVIATIONS

(INFORMATIVE)

Term	Meaning
AR	Agency Representative
GSCID	Global Spacecraft Identifier
Hex	Hexadecimal
S/C	Spacecraft
SANA	Space Assigned Numbers Authority
SCID	Spacecraft Identifier
TC	Telecommand
TLM	Telemetry
VN	Version Number