BS EN 16602-10-09:2014

BSI Standards Publication

Space product assurance — Nonconformance control system

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National foreword

This British Standard is the UK implementation of EN 16602-10-09:2014. It supersedes BS EN 14097:2001 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ACE/68, Space systems and operations.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Space product assurance - Nonconformance control system

Assurance produit des projets spatiaux - Système de contrôle des non-conformités

Raumfahrtproduktsicherung - Nichtkonformitäts-/Abweichungs-Kontrollsystem

This European Standard was approved by CEN on 1 March 2014.

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Foreword

This document (EN 16602-10-09:2014) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-10-09:2014) originates from ECSS-Q-ST-10-09C.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2015, and conflicting national standards shall be withdrawn at the latest by March 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14097:2001.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any EN covering the same scope but with a wider domain of applicability (e.g. : aerospace).

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1
Scope

This Standard defines the requirements for the control of nonconformances.

This Standard applies to all deliverable products and supplies, at all levels, which fail to conform to project requirements.

This Standard is applicable throughout the whole project lifecycle as defined in ECSS-M-ST-10.

This standard may be tailored for the specific characteristics and constrains of a space project in conformance with ECSS-S-ST-00.

2
Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this ECSS Standard. For dated references, subsequent amendments to, or revision of any of these publications do not apply, However, parties to agreements based on this ECSS Standard are encouraged to investigate the possibility of applying the more recent editions of the normative documents indicated below. For undated references, the latest edition of the publication referred to applies.

EN reference	Reference in text	Title
EN 16601-00-01	ECSS-S-ST-00-01	ECSS system – Glossary of terms
EN 16602-20	ECSS-Q-ST-20	Space product assurance – Quality assurance
	ESCC 22800	EEE Nonconformance control system

3
Terms, definitions and abbreviated terms

3.1 Terms from other standards

For the purpose of this Standard, the terms and definitions from ECSS-ST-00-01 and ECSS-Q-ST-20 apply, in particular for the following terms:

alert

corrective action

critical item

customer

deviation

EEE component

inspection

item

nonconformance

preventive action

repair

requirement

rework

supplier

technical expert

verification

waiver

3.2 Terms specific to the present standard

3.2.1 major nonconformances

nonconformances which can have an impact on the customer's requirements in the following areas and cases:

- safety of people or equipment,

- operational, functional or any technical requirements imposed by the business agreement,
- reliability, maintainability, availability,
- lifetime,
- functional or dimensional interchangeability,
- interfaces with hardware or software regulated by different business agreements,
- changes to or deviations from approved qualification or acceptance test procedures,
- project specific items which are proposed to be scrapped.

3.2.2 minor nonconformances

nonconformances which by definition cannot be classified as major

NOTE For example, the following EEE discrepancies after delivery from the manufacturer can be classified as minor:

- random failures, where no risk for a lot-related reliability or quality problem exists;
- if the form, fit or function are not affected;
- minor inconsistencies in the accompanying documentation.

3.3 Abbreviated terms

For the purpose of this Standard, the abbreviated terms from ECSS-S-ST-00-01 and the following apply:

Abbreviation	Meaning
CIDL	configuration item data list
CIL	critical-item list
COTS	commercial off-the-shelf
DJF	design justification file
ECSS	European Cooperation for Space Standardization
EEE	electrical, electronic, electromechanical
FMECA	failure mode effect and criticality analysis
NCR	nonconformance report
NRB	nonconformance review board NOTE: Formerly known as MRB (material review board).
PA	product assurance
QA	quality assurance

RAMS	reliability, availability, maintainability, safety
RFD	request for deviation
RFW	request for waiver
SCC	space component coordination

4
Nonconformance control system principles

4.1 Process and objectives

The Figure 4-1 describes the approach to the identification and processing of nonconforming items, which can be performed at each customer/supplier level

This includes:

- corrective actions against root causes, to avoid recurrence for other products;
- prompt and effective communication between suppliers and customers;
- the prevention of nonconformance occurrence, from the analysis of nonconformance records and derived lessons learned.

4.2 Detection and immediate actions

When a nonconformance is detected, the project PA representative analyses it to identify its extent and cause. In addition he takes immediate actions to prevent unauthorized use of the nonconforming item. The nonconformance is documented on the NCR form and submitted to the internal NRB.

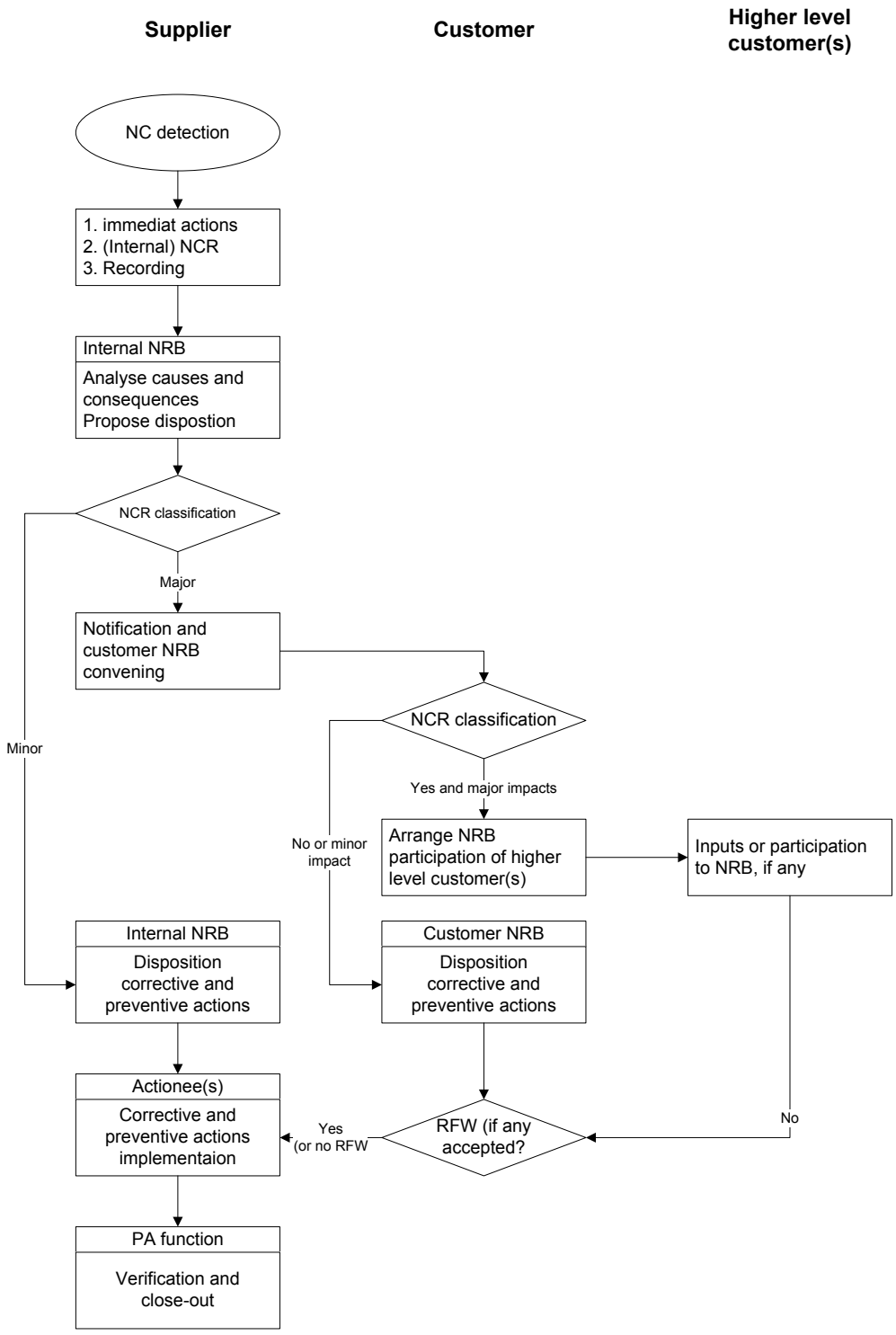

Figure 4-1: Nonconformance processing flow chart

4.3 Nonconformance review board (NRB)

4.3.1 Internal NRB

The internal NRB investigates the causes and consequences of the nonconformance and classifies the nonconformance either as minor or major.

Furthermore, minor nonconformances are then disposed as follows:

- Return to supplier: This disposition only applies to nonconforming procured items.
- Use "as-is": The item is found to be usable without eliminating the nonconformance.
- Rework: The item is recoverable to conform completely to all specified requirements. Additional work is performed to prepare the item for the rework (e.g. removal of faulty work and cleaning). In no case should the result of earlier applied processes or the precondition for other processes to be applied later on, be affected.
- Scrap: The item is not recoverable by rework or repair, for technical or economic reasons.
- Repair: The item is recoverable such that it fulfils the intended usage requirements although it does not conform to the originally specified requirements.

The repair procedure is one of the following:

a. Qualified or standard repair procedure: Those repair procedures which have been approved by the customer in advance for defined applications.

b. Specific repair procedure: Those repair procedures which are prepared for the specific nonconformance and are approved by the NRB.

Any repair procedure includes the verifications needed to check the repair result.

Major nonconformances are submitted to the customer NRB.

4.3.2 Customer NRB

In principle the customer NRB follows the same process as the internal NRB. In addition, an assessment whether requirements of higher level customers are impacted is performed. If so, these higher level customers are involved in ensuing NRBs. The need for a waiver is also identified and recommended by this NRB.

NOTE Multiple internal or customer NRBs can be held before the NCR is closed out.

4.4 Corrective and preventive actions

During internal as well as customer NRB, corrective actions are determined to eliminate the causes of the nonconformances. Preventive actions are identified to avoid the occurrence of the nonconformance on similar items.

4.5 Implementation of actions and nonconformance close-out

The supplier implements the corrective and/or preventive actions as defined by the NRB.

As soon as all actions are performed and verified, the supplier PA representative closes-out the nonconformance and informs the customer.

4.6 Documentation

The supplier documents his implementation of the nonconformance control system.

The supplier's internal reporting and processing of nonconformances is open and visible to customer reviews and do not delay the processing of the nonconformance in accordance with this Standard.

The supplier may maintain a database of minor and major nonconformances to

a. follow-up the NCR,

b. generate a nonconformance status list (see Annex B),

c. electronically process the nonconformance.

The amount of information stored should be sufficient to allow statistical and trend analysis.

5
Nonconformance processing requirements

5.1 Detection and immediate actions

a. The supplier's project PA representative shall perform an immediate preliminary assessment of the nonconformance to establish its extent and cause when it is detected.

b. Based on the preliminary assessment the supplier's project PA representative shall take the following actions without delay:

   1. Provisions for the safety of the personnel and of the equipment.
   2. Prevention of unauthorized use of the nonconforming items, by marking and, unless otherwise determined by the PA representative, segregation until their disposition.
   3. Prevention of the recurrence of the nonconformances on similar or identical items under processing or testing at that time.

      NOTE This can lead to the suspension of manufacturing or testing.

c. The supplier shall apply the following actions to the segregation of nonconforming articles:

   1. Establish a clearly marked holding area for nonconforming items pending NRB disposition.
   2. Limit the access to this area to NRB members or personnel authorized by the NRB.
   3. Make provisions to prevent unauthorized removal of any item.

d. For items whose segregation in the holding area is not practicable the supplier shall perform the following actions:

   1. Mark the item as "not to be used".
   2. Make sure that the item can not be used by unauthorized personnel.

e. The supplier shall complete the nonconformance report in conformance with Annex A, and submit it to the internal NRB.

f. The supplier shall describe the nonconformance clear, unambiguous and sufficiently detailed that it can be understood by personnel not involved in its detection.

g. The supplier shall ensure traceability between the NCR and the quality and manufacturing records related to the nonconforming item.

5.2 Nonconformance Review Board

5.2.1 General

a. The NRB shall be the sole technical authority for the treatment of nonconformances occurring in the frame of a business agreement.

b. All NRB members shall make dispositions and decisions by consensus.

c. The NRB chairman shall involve higher management levels in case of conflict.

5.2.2 Processing by internal NRB

5.2.2.1 NRB meeting

a. The supplier shall nominate and authorize the internal NRBs core members for the business agreement.

b. The responsibilities and authorities of each member shall be assigned.

c. The internal NRB shall include, at least, core members from the following areas:

   1. Project PA (chairman),

   2. Engineering.

      NOTE Additional members, or experts, depending on the NCR subject can be nominated by the chairman.

d. Immediately after the reporting of a nonconformance, the chairman shall convene an internal NRB.

5.2.2.2 Classification

a. The internal NRB shall classify nonconformances as major or minor, based on the severity of their consequences.

   NOTE Classification of nonconformances is not based on their consequences on cost and schedule.

b. In case of several different minor nonconformances on the same item, the internal NRB shall evaluate whether the nonconformances remain minor or reclassified as “major”.

c. In case of doubt, the internal NRB shall classify nonconformances as major.

5.2.2.3 Analysis of causes and consequences

a. The internal NRB shall investigate the cause(s) of the nonconformance.

   NOTE If necessary, a separate group of experts can be assigned for the investigation.

b. The supplier shall carry out physical operation of an irreversible nature on the nonconforming item only with prior approval by the customer.

NOTE Non-destructive testing can be used, if the techniques involved have previously been approved by the customer.

c. The internal NRB shall analyse whether human error or poor workmanship are the primary or secondary cause for the nonconformance.

d. In case that human error or poor workmanship are the primary or secondary cause for the nonconformance, the supplier shall review all related documents and the competence level of personnel in order to prevent recurrence.

e. The internal NRB shall investigate the consequences of the nonconformance.

NOTE This can be supported, where appropriate, by dependability experts or by documentation such as FMECA, CIL, or DJF.

f. The internal NRB shall document the results of the investigation in the nonconformance report.

5.2.2.4 Disposition of minor nonconformances

a. The internal NRB shall dispose minor nonconformances according to the following criteria:

1. Return to supplier
2. Use “as-is”
3. Rework
4. Repair
5. Scrap

b. The supplier shall include minor nonconformances in the nonconformance status list.

NOTE Unless otherwise stated in the business agreement, minor nonconformances need not be notified to the customer.

c. The supplier shall provide the nonconformance status list to the customer, upon request, for the review of the correct application of classification criteria and appropriate processing.

5.2.2.5 Processing of major nonconformances

a. The supplier shall notify the customer each time a nonconformance is classified as “major” within five working days of their detection.

b. The internal NRB shall submit major nonconformances reports to the customer NRB.

c. The supplier shall provide a nonconformance report in conformance to Annex A, including a proposed disposition.

5.2.3 Processing by customer NRB

5.2.3.1 NRB meeting

a. For major nonconformances the supplier shall include, at least:

   1. customer's PA representative (chairman), and

   2. customer's engineering representative.

b. The chairman shall nominate additional members, or experts, depending on the NCR subject.

   NOTE The customer's representatives may invite observers or consultants from higher customer level, depending on the impacts of the nonconformance.

5.2.3.2 Assessment of higher level impacts

a. The customer shall assess whether the requirements of the higher level customer are impacted.

b. In case of actual or suspected impacts, the customer shall notify his customer and involve him in the ensuing NRB.

5.2.3.3 Confirmation of causes and consequences

a. Based on the results of the internal NRB's investigations, the customer NRB shall decide on the need to perform complementary investigations of causes and consequences.

b. The customer NRB shall decide if additional analyses are needed from the supplier to assess the cause and consequences of a nonconformance and to support its disposition.

c. On request of the customer's NRB, the supplier shall submit the additional analyses to the customer NRB for approval.

d. The customer NRB shall addresses the following points during the meeting:

   1. the detailed circumstances of the nonconformance;

   2. the different analyses, tests or simulations performed to understand the cause of the nonconformance;

   3. the consequences of the nonconformance.

e. The customer NRB shall determine the consequences of the nonconformance.

5.2.3.4 Disposition of major nonconformances

a. The customer NRB shall dispose major nonconformances according to the following criteria:

   1. Return to supplier

   2. Use "as-is"

3. Rework
4. Repair
5. Scrap

b. When determining a disposition, the NRB shall perform the following tasks:

1. Analyse NCRs and provided analyses
2. Review records of any previous similar or identical nonconformances.
3. Assess the feasibility of the intended dispositions.
4. Assess the applicability of dispositions and corrective actions to existing and in-process items

NOTE This also includes re-inspection and retest.

5. Assess the effect of the nonconformance on the requirements of the business agreement
6. Assess the effect of the nonconformance on the intended use of the item
7. Assess whether the item is identified as critical
8. Assess the need for raising an alert to other users of similar nonconforming items, and activate the related procedures established in the business agreement.

5.2.3.5 Request for waiver or deviation

a. The responsible NRB shall identify and recommend the need for a waiver or deviation.

b. Upon request of the NRB, the supplier shall submit a “request for waiver” for major nonconformances with the “use as-is” or “repair” disposition for customer approval.

c. Upon request of the NRB, the supplier shall submit a “request for deviation” or a “contract change notice, for follow-on production of the unit.

5.3 Corrective and preventive actions

a. The NRBs shall determine corrective actions to eliminate the cause(s) of the nonconformance and prevent any recurrence.

NOTE Typical corrective actions consist of, for instance, changes to tools, equipment, facilities, processes, materials, drawings, specifications, and procedures.

b. The NRB shall determine also preventive actions to avoid the occurrence of the nonconformance on similar items.

c. A NRB dispositioned “use as-is” need not any physical action on the nonconforming item to make it usable, however corrective and preventive actions shall be performed.

5.4 Implementation of actions and nonconformance close-out

5.4.1 Implementation of actions

a. The supplier shall implement disposition by performing actions defined by the NRB and approved RFWs and RFDs.

b. The supplier shall re-submit reworked and repaired items to all planned inspections and tests.

NOTE Repair can invoke additional inspection and tests, as defined in the applicable repair procedure.

c. The supplier shall identify and segregate items with “scrap” disposition from all other material within a bonded area under QA supervision.

d. The supplier shall maintain a list of scrapped items which are finally disposed.

e. The supplier shall establish the traceability to and from the associated NCR of the performance and results of all actions related to a nonconformance.

5.4.2 Nonconformance close-out

a. The supplier shall close-out an NCR only after the following action have been performed:

1. All related actions have been performed and their results successfully verified.
2. All defined inspections and tests have been performed, and their results verified and reported on or traceable from the NCR.
3. Related RFWs are approved.

b. The supplier PA representative shall close-out the NCR

c. For major NCRs, the supplier PA representative shall close-out the NCR only after customer PA endorsement.

d. After close-out, the supplier shall send a copy of the NCR to the customers involved in its processing.

5.5 Documentation

5.5.1 Formats for nonconformance reporting

a. The customer and the supplier shall agree upon a NCR format to process major nonconformances and nonconformances for customer-furnished equipment.

NOTE 1 The supplier can use his own NCR formats for internal processing as long as they include all data elements designated as mandatory in Annex A.

NOTE 2 The supplier's working language is acceptable for internal NCRs, unless otherwise required by the business agreement.

b. The supplier shall maintain a list covering minor and major NCRs, providing a complete representation of the status of all nonconformances occurring in the frame of a business agreement, for each product, at any time.

c. For each nonconformances, the supplier shall provide a report in conformance with Annex A.

d. The supplier shall provide the NCR status list as part of the periodic PA status report to the customer, in conformance with Annex B.

NOTE The nonconformance status list should be generated from the nonconformance database.

5.5.2 Nonconformance database

a. The supplier should maintain a database of nonconformances.

b. The nonconformance database should be used for the following:

1. For NCR follow-up.
2. For the generation of a NCR status list.

NOTE Details on the nonconformance status list are provided in Annex B.

3. As an electronic tool for complete NCR processing.

c. The database should contain information related to both minor and major NCRs.

NOTE The amount of information stored should be sufficient to allow statistical and trend analysis.

5.5.3 Analysis of records

a. The supplier shall periodically review the nonconformance records, in order to evaluate the progress of the actions for the correction and prevention of nonconformances and to ensure their close-out.

b. The nonconformance records shall be analysed to assess the existence of trends in the occurrence of nonconformances.

NOTE 1 This analysis should be aimed at detecting conditions which can lead to new nonconformances and verify the effectiveness of the implementation of the corrective actions performed for previous nonconformances.

NOTE 2 The analysis of records should also be aimed at extracting lessons learned, useful for preventing the repetition of mistakes or reinforcing successful practices.

c. The supplier shall define a frequency of the reviews which is appropriate to the volume of nonconformances, but not less than quarterly.

d. As result of the analysis of the nonconformance records, the supplier shall provide as a minimum:

1. total number per flight configuration, subsystem and equipment as appropriate,
2. trend of open and closed status, both in terms of disposition and corrective action(s) implementation, and
3. number by cause of the nonconformance, to identify the areas for improvement and verify the effectiveness of corrective actions.

e. The supplier should show the trends separately for hardware, EEE parts and software.

f. For EEE parts, the supplier should provide the trend per generic type.

NOTE Generic types like capacitors, power transistors, microprocessors, carbon resistors, and diodes.

6
Special nonconformance control requirements

6.1 EEE components nonconformances

6.1.1 Applicability

a. The supplier shall apply this clause 6.1 to all EEE components.

b. The supplier shall process SCC qualified components or components under SCC qualification in accordance with ESCC 22800, prior to delivery to the purchaser.

6.1.2 Basic requirements

a. The supplier shall apply the basic requirements defined in clause 5.2 to EEE components nonconformances, with the following modifications related to the NRB classification of nonconformances as major in case of :

   1. lot or batch rejection during manufacturing, screening or testing at the manufacturer's facilities, if the purchaser proposes:

      (a) to use as-is the rejected lot or batch, or

      (b) to continue processing, rework or testing, although the lot or batch does not conform to the specified requirements.

   2. nonconformances detected after delivery from the manufacturer.

b. The supplier shall invite the final customer to the NRB meeting related to major nonconformances on EEE components.

6.1.3 Processing requirements

a. If it is suspected that nonconforming items of the same batch or production have been released to other users, the supplier shall submit an alert to the final customer, in accordance with the procedures established by the business agreement

6.2 Software nonconformances

6.2.1 Applicability

a. The supplier shall apply this clause 6.2 to software nonconformances.

NOTE Software problems are treated according to ECSS-Q-ST-80, clause 5.3.5.

b. The supplier shall apply the requirements in this clause 6.2 to the following software products:

1. on-board software,
2. verification software (e.g. simulators, and test beds),
3. mission control software (ground based), and
4. support software for development of the 6.2.1b.1 to 3 above.

c. The supplier shall apply this clause 6.2 during software development, starting from successful software unit testing.

6.2.2 Basic requirements

a. The supplier shall apply the same basic requirements defined in clause 5.2.2.4 to software nonconformances, with the following NRB dispositions' modifications:

1. use "as-is", when the software is found to be usable without eliminating the nonconformance;
2. fix, when the software product can be made fully in conformance with all specified requirements, by:
   (a) correction of the software,
   (b) addition of software patches, or
   (c) re-design.
3. return to supplier, for procured software products.

NOTE For example, COTS.

6.3 Operational nonconformances and anomalies

6.3.1 Applicability

a. The supplier shall apply this clause 6.3 to nonconformances to stated requirements, deviations from approved procedures, deviations from expected behaviour and human errors detected during operations, starting from the first acquisition of the spacecraft signal.

b. The supplier shall apply the requirements in this clause 6.3 to the following items:

1. the flight segment,
2. the ground segment, including hardware, software, documentation and data, and
3. the mission products.

6.3.2 Basic requirements

6.3.2.1 General

a. It shall be considered that operational nonconformances and anomalies can have impacts on several parties: the organization responsible for the operations (called the "operator" in the following text), the owner of the space system, the procurement agency of the space system, the suppliers of its elements and the customers of the mission products.

NOTE The same organization can cover more than one of the above roles at the same time.

b. All parties involved shall define clear responsibilities, authorities and procedures for the processing of operational nonconformances and anomalies.

c. The requirements for the mission products and the associated acceptance criteria shall be documented and agreed among the parties concerned, in order to allow the unambiguous identification of nonconformances.

d. Although administrative work shall not hinder the immediate implementation of critical actions, all activities shall be recorded and controlled in accordance with the established procedures.

6.3.2.2 Classification

a. The supplier shall classify operational nonconformances in accordance with clause 5.2.2.2.

b. The supplier shall classify operational anomalies in accordance with the severity of their consequences on the space system and the mission products, and the importance of the affected function for the global performance of the system.

c. The criteria for classification of operational anomalies shall be agreed with the parties involved.

6.3.2.3 Nonconformance review board (NRB)

a. Based on the classification of operational nonconformances and anomalies, as defined in clause 6.3.2.2, the parties concerned shall agree:

1. the classes of operational nonconformances and anomalies that can be decided by the operator's internal NRB;
2. the composition of higher level NRBs, as appropriate.

b. As a minimum, the operator's internal NRB shall include the following members:

1. PA representative, and
2. technical representative responsible for the operations of the space system.

NOTE Additional experts can be called as necessary.

c. Timely provisions shall be considered to secure the necessary support by relevant parties involved in the development and procurement of the space system for the duration of the space mission.

6.3.3 Processing requirements

a. The operator shall adapt the basic requirements defined in clause 5 to the reporting and processing of operational nonconformances and anomalies, by establishing and maintaining documented procedures to be agreed with the relevant parties.

b. In particular, the following aspects specific to operational anomalies shall be addressed:

1. the established procedures take into account that operational anomalies can call for immediate response, in order to avoid the loss of the spacecraft or major mission degradation;
2. the operator grant the authority to carry out urgent actions for the analysis of the causes and consequences, without systematic prior approval by the other parties concerned.

NOTE For example, the spacecraft owner.

Annex A (normative) Nonconformance Report – DRD

A.1 DRD identification

A.1.1 Requirement identification and source document

This DRD is called by the ECSS-Q-ST-10-09 requirements 5.1e, 5.2.2.5c and 5.5.1c.

A.1.2 Purpose and objective

The purpose of the nonconformance report (NCR) is to provide all relevant information about nonconformances to the NRBs.

A.2 Expected response

A.2.1 Scope and content

<1> Company

a. The NCR shall identify the supplier of the nonconforming item.

<2> Project name

a. The NCR shall contain the name of the project under which the item is procured.

<3> NCR-no.

a. The NCR shall provide the unique identification and registration number of the NCR.

<4> Revision

a. The NCR shall contain alpha or numerical identification of updated issues.

<5> Critical item

a. The NCR shall identify the criticality of the item by "Yes" or "No" as identified in the project CIL.

<6> Page

a. The NCR shall contain the individual page number and total number of pages of the report.

<7> Attachments

a. The NCR shall contain the number of attachments.

b. Only first page of each item shall be attached to the NCR.

<8> NC item

a. The NCR shall identify the nonconforming item by name and number according to the CIDL and its serial number (if any).

<9> Drawing no./Part no.

a. The NCR shall list the document that defines the affected product.

<10> Procedure no.

a. The NCR shall refer to the procedure in execution when the nonconformance occurs.

<11> Supplier

a. The NCR shall provide the name of the supplier of the nonconforming item.

<12> Purchase order

a. The NCR shall provide the number of purchase order if the nonconformance is observed on a supplied product.

<13> NC observation

a. The NCR shall contain the date and location of the nonconformance observation.

<14> Activity

a. The NCR shall contain the activity being performed when the nonconformance was detected.

b. The NCR shall include the name and organization group of the NC observer.

<15> Description

a. The NCR shall contain a description of the nonconformance, location on the product, means of detection, condition for observation, to be supported by sketches and attachments as appropriate and environmental conditions pertaining to the product at that time.

<16> Initiator

a. The NCR shall contain the name, date and signature of the person raising the nonconformance.

<17> Internal NRB

a. The NCR shall list the dispositions and actions agreed by the NRB.

<18> References. to Minutes of Meetings

a. The NCR shall identify minutes of meeting drafted during the NRB meeting.

<19> Classification

a. The NCR shall contain the "Minor" or "Major" classification as per internal NRB decision.

<20> Customer notification

a. The NCR shall contain the date and reference to written notification.

<21> Verification

a. The NCR shall contain the individual close-out statement by PA personnel for all actions determined by the NRB.

<22> Cause of NC

a. The NCR shall describe the basic fact or circumstance which causes the nonconformance.

<23> Reference to failure report

a. The NCR shall provide the document identification number of the failure analysis report.

<24> Corrective or preventive actions

a. The NCR shall document corrective or preventive actions agreed by internal NRB for minor NCRs.

<25> PA signature

a. The NCR shall have the date, name and signature of PA representative in the internal NRB.

<26> Engineering signature

a. The NCR shall have the date, name and signature of the engineering representative in the internal NRB.

<27> Customer NRB dispositions

a. The NCR shall list the dispositions and actions agreed by the customer NRB.

<28> Finally determined cause of NC

a. The NCR shall contain the basic fact or circumstances which causes the nonconformance as confirmed by customer NRB.

<29> Reference to Failure Report

a. The NCR shall contain the document identification number of the failure analysis report on customer NRB level.

<30> Corrective or preventive actions

a. The NCR shall summarize corrective actions agreed by customer NRB for major NCRs.

<31> Request for waiver

a. The NCR shall contain “Yes” or “No” based on customer NRB disposition and the identification number of the RFW in case of “Yes”.

<32> Other documents

a. The NCR shall identify other related documents according to NRB decision.

<33> Chairman

a. The NCR shall contain the name of company and person chairing the customer NRB.

<34> Members

a. The NCR shall contain the names of the members of the customer NRB and respective companies.

<35> Chairman signature

a. The NCR shall have the date and signature of the customer NRB chairman.

<36> Members signature

a. The NCR shall have the date and signatures of the customer NRB members.

<37> NCR close-out

a. The NCR shall have the date, signature and stamp of the supplier PA or QA responsible for final closure.

<38> Additional information and continuation sheet

a. The NCR shall contain any additional information and actions with clear link to the NCR, if additional information is required to describe the nonconformance or its analysis results.

<39> Non mandatory information

a. The NCR should additionally contain the following information:

1. Related internal NCR
2. NCR title
3. Next higher assembly
4. Subsystem / Model reference
5. Identification of violated requirements
6. Customer notification (date and reference)
7. Alert identification

A.2.2 Special remarks

a. The supplier may use the template given in ECSS-Q-ST-10-09 Annex C.

Annex B (normative)
NCR Status List - DRD

B.1 DRD identification

B.1.1 Requirement identification and source document

This DRD is called by the ECSS-Q-ST-10-09 requirement 5.5.1d.

B.1.2 Purpose and objective

The purpose of the NCR status list is to provide a complete representation of the status of all nonconformances occurring in the frame of a business agreement, for each product, at any time.

B.2 Expected response

B.2.1 Scope and content

<1> Company

a. The NCR status shall identify the supplier of the nonconforming item

<2> NCR identifier

a. The NCR status shall uniquely identify the NCR.

<3> Item identifier

a. The NCR status shall identify the nonconforming item.

<4> Description

a. The NCR status shall provide short description of the nonconformance.

<5> Date

a. The NCR status shall contain the date of last NRB meeting.

<6> Disposition,

a. The NCR status shall describe the disposition.

<7> Implementation status

a. The NCR status shall describe the implementation status of the disposition.

<8> RFW

a. The NCR status shall refer to a RFW, if a related RFW exists.

<9> Status.

a. The NCR status shall provide the status as “open” or “closed”.

B.2.2 Special remarks

None.

Annex C (informative) Nonconformance report template

1 **Company**	2 **Project Name**	NCR-N°: 3 Revision 4 Related internal NCR-No.: 5 Critical Item: Yes ❑ No ❑ 6 Page 1 of ___ Attachments: 7

Nonconformance Report

NCR **Title** 8					
NC Item **Identification** 9		Sr-N	Drawing No. 12		
Next higher Assembly 10			Procedure No. 13		
Subsystem	Model No. 11		Supplier 14	Purchase Order	
NC Observation Date: Location: 15			NC detected during .... (Prod.-/Inspec. Step, Test, etc 16		
Description of Nonconformance 17			Requirements violated 18 Initiator: Date, Name and Signature 19		
Internal NRB Dispositions 20 Ref. to MoMs 21					**Classification:** 22 **Minor** ❑ **Major** ❑ Customer Notification per 23 Verification 24
Cause of NC 25 Ref to Failure Report 26			Corrective/Preventive Actions 27		
Date: Name: Signature:	**PA** 28	**Engineering** 29	30	31	
Customer NRB Dispositions (Class major, only) 32			Ref. to MoMs 21		Verification 24
Finally determined Cause of NC 33 Ref to Failure Report 34			Corrective/Preventive Actions 35		
Request for Waiver No ❑ Yes ❑ Reference: 36		Alert No ❑ Yes ❑ Reference 37		Other related Documents 38	
NRB Approval Organization/Name	Chairman 39	40	41	42	43
Date, Signature	44	45	46	47	48

NCR Close out 49
Date, Signature, Stamp

1 **Company**	2 **Project Name**	NCR-No.: 3 Revision 4 Page __ of ___ 7

Nonconformance Report

- Continuation Sheet -

NCR Treatment Sequence / Findings / Statements / Actions	Verification
50	24

Table C-1: Description of the NCR data requirements

(Part 1 of 3)

Box	Field	Description	Mandatory entry
1	Company	Identification of the supplier of the nonconforming item	Yes
2	Project name	Project under which the item is procured	Yes
3	NCR-no.	Unique identification and registration number	Yes
4	Revision	Alpha or numerical identification of updated issues	Yes
5	Related internal NCR	Reference to internal report which might have been issued previously	No
6	Critical item	"Yes" or "No" as identified in the project CIL	Yes
7	Page Attachments	Individual page number and total number of pages of the report Attached pages (only first page of each item)	Yes Yes
8	NCR title	Short description (it should be the same as used in the nonconformance status list)	Yes
9	NC item	Identification of the nonconforming item by name and number according to the CIDL and its serial number (if any)	Yes
10	Next higher assembly	Identification of the assembly group of which the nonconforming product forms part	No
11	Subsystem Model	as per 10 as per 10	No No
12	Drawing no./Part no.	Document that defines the affected product	Yes, if applicable
13	Procedure no.	Procedure in execution when the nonconformance occurs	Yes, if applicable
14	Supplier Purchase order	Name of the supplier of the nonconforming item Number of purchase order if the nonconformance is observed on a supplied product	Yes, if applicable
15	NC observation	Date and location of the nonconformance observation	Yes
16	NC detected during ...	Activity being performed when the nonconformance was detected Name and organization group of the NC observer	Yes, where relevant
17	Description	Description of the nonconformance, location on the product, means of detection, condition for observation, to be supported by sketches and attachments as appropriate, environmental conditions pertaining to the product at that time	Yes
18	Requirements violated	Identification of the detailed requirement to which the product does not conform	No

Table C-1: Description of the NCR data requirements

(Part 2 of 3)

19	Initiator	Name, date and signature of the person raising the nonconformance	Yes
20	Internal NRB	Dispositions as per clause 5.2.2.4 and actions agreed by the NRB	Yes
21	Ref. to MoMs	Identification of minutes of meeting drafted during the NRB meeting	Yes, if any
22	Classification	"Minor" or "Major" as per internal NRB decision	Yes
23	Customer notification	Date and reference to written notification	No
24	Verification	Individual close-out statement by PA personnel for all actions determined by the NRB	Yes
25	Cause of NC	Basic fact or circumstance which causes the nonconformance	Yes
26	Ref. to failure report	Document identification number of the failure analysis report	Yes, if existing
27	Corrective or preventive actions	Corrective or preventive actions agreed by internal NRB for minor NCRs	Yes
28	PA	Date, name and signature of PA representative in the internal NRB	Yes
29	Engineering	Date, name and signature of the engineering representative in the internal NRB	Yes
30 31	blank	Date, names and signatures of additional NRB members of the internal NRB	No
32	Customer NRB dispositions	Dispositions as per clause 5.2.3.4 and actions agreed by the customer NRB	Yes, if class major
33	Finally determined cause of NC	Basic fact or circumstances which causes the nonconformance as confirmed by customer NRB	Yes, if class major
34	Ref to Failure Report	Document identification number of the failure analysis report on customer NRB level	Yes, if existing
35	Corrective or preventive actions	Corrective actions agreed by customer NRB for major NCRs	Yes
36	Request for waiver	"Yes" or "No" based on customer NRB disposition and the identification number of the RFW in case of "Yes"	Yes, if applicable
37	Alert	"Yes" or "No" as per customer NRB decision and the identification number of the Alert in case of "Yes"	No
38	Other documents	Identification of other related documents according to NRB decision	Yes, if applicable
39	Chairman	Name of company and person chairing the customer NRB	Yes

Table C-1: Description of the NCR data requirements

(Part 3 of 3)

40 to 43	blank	Names of the members of the customer NRB and respective companies	Yes
44	blank	Date and signature of the customer NRB chairman	Yes
45 to 48	blank	Date and signatures of the customer NRB members	Yes
49	NCR close-out	Date, signature and stamp of the supplier PA or QA responsible for final closure	Yes
50	Additional info. /continuation sheet	Any additional information and actions with clear link to the NCR	Yes, if needed

Bibliography

EN reference	Reference in text	Title
EN 16601-00	ECSS-S-ST-00	ECSS system – Description, implementation and general requirements
EM 16601-10	ECSS-M-ST-10	Space project management – Project planning and implementation
EN 16602-80	ECSS-Q-ST-80	Space product assurance – Software product assurance

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