SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

SAE AS9016

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Aerospace Series – Notice of Change (NOC) Requirements

RATIONALE

This standard was created to define the process requirements and data expectations for the submission of proposed changes in design information that requires concurrent approval of the design authority when the design authority is different from the design activity. This standard provides for the organizational requirements, definitions, and data submission, including suggested data descriptions and format (paper or electronic submission).

This standard was created to provide for the uniform submittal of change notifications and/or approval when contractually invoked at any level or as guidance within the aviation, space, and defense industries. This standard can be invoked as a stand-alone requirement or used in conjunction with AS/EN/JISQ series standards (i.e., 9100, 9110, and 9120).

FOREWORD

To assure customer satisfaction, aerospace industry organizations must produce and continually improve safe, reliable products that meet or exceed customer and regulatory authority requirements. The globalization of the aerospace industry and the resulting diversity of regional/national requirements and expectations has complicated this objective. End-product organizations face the challenge of assuring the quality and integration of product purchased from suppliers throughout the world and at all levels within the supply chain. Aerospace suppliers and processors face the challenge of delivering product to multiple customers having varying quality expectations and requirements.

The aerospace industry established the International Aerospace Quality Group (IAQG) for the purpose of achieving significant improvements in quality and safety, and reductions in cost throughout the value stream. This organization includes representation from aerospace companies in the Americas, Asia/Pacific, and Europe.

This document standardizes requirements for Notice of Change (NOC) data definition and documentation for the aviation, space, and defense industries. The establishment of common requirements for use at all levels of the supply-chain is intended to improve quality, safety, and decrease costs by the elimination or reduction of organization-unique requirements and the resultant variation inherent in these multiple expectations.

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SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AS9016

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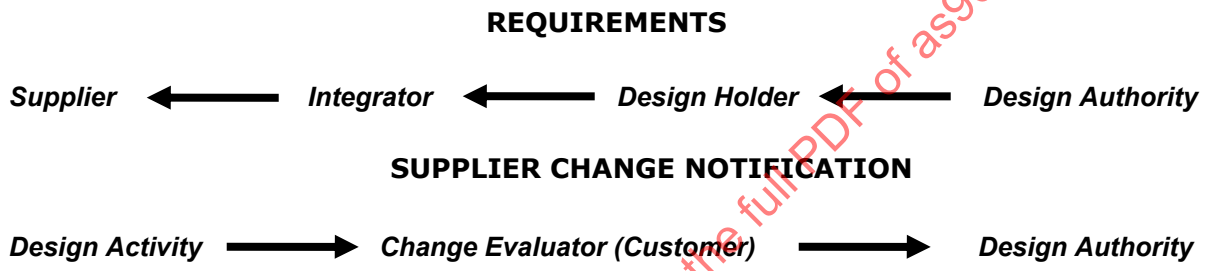
1. SCOPE

1.1 General

The aviation, space, and defense industries rely on the development and manufacture of complex products comprised of multiple systems, subsystems, and components each designed by individual designers (design activities) at various levels within the supply chain. Each design activity controls various aspects of the configuration and specifications related to the product. When a change to design information is requested or required, the change has to be evaluated against the impacts to the higher-level system.

Proposed changes to design information that the design activity identifies to be minor and have no effect on their product requirements or specifications have the potential to be concurrently implemented and approved, where authorized to do so. Changes that affect customer mandated requirements or specifications must be approved prior to implementation. In many cases, the design activity is not the design approver or authority; ultimate approval may be several layers above the design activity.



Submitting NOC data either electronically or conventionally on paper is subject to the terms and conditions of the customer's contract. This also includes, where applicable, data access under the regulations of export control.

The process of exchanging, coordinating, and approving NOC data varies with the multiple relationships and agreements among all parties concerned. The information provided by this standard forms the architecture for submitting and managing data that allows for concise and accurate communication using various methods. One objective of this standard is to provide the definition of a data set that can be integrated into any form of communication (e.g., electronic data interchange, submission of conventional paper forms).

If this standard is invoked in the contract, design activities and Technical Standard Order Approval (TSOA) holders that have responsibility for change management of products used on other higher-level designs shall use the information and processes defined in this standard for submitting change notifications to customers.

1.2 Application

This standard defines the common NOC requirements for aviation, space, and defense organizations. Included are the requirements that an internal/external supplier or subcontractor shall use when submitting a NOC to the customer for either change authorization or notification. A NOC informs the customer of physical or functional (including software) changes to an established baseline configuration. Retention of the NOC establishes a means of configuration control and captures the evolution of the part. This concept is of utmost importance in commercial/civil aviation products where changes to type certificated products is mandated by regulations. However, these same concepts are also required to some degree in defense and space applications per contractual requirements.

This standard is not applicable to products that are manufactured by a supplier to their customer's designs and processing requirements (also known as build-to-print). Change requests to this type of product shall be formally submitted to the customer and approved via the customer's change request process. Additionally, this standard is not applicable to commercial parts (off-the-shelf items not specifically designed for aviation, space, or defense products) for which changes in product definition is not affected or known, but change to commercial parts that are known (i.e., change in definition from one commercial part number to a different commercial part number) shall be processed in accordance with this standard.

When this standard is applied to an organization that distributes product, then this standard shall be a requirement from the distribution organization to the organization from which the product is procured. The distribution organization can act as a conduit for the NOC or the design activity (supplier) can work directly with the design authority (customer). The distribution organization should be compliant with AS9120 as per customer requirements.

Application or implementation of this standard in any form, either expressed or implied, is not allowed for product which has escaped the supplier's quality system.

2. APPLICABLE DOCUMENTS

The following publications for a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of the other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AS9100 Quality Management Systems – Requirements for Aviation, Space and Defense Organizations

AS9110 Quality Management Systems – Aerospace - Requirements for Maintenance Organizations

AS9120 Quality Management Systems – Aerospace - Requirements for Stocklist Distributors

ARP9034 A Process Standard for the Storage, Retrieval and Use of Three-Dimensional Type Design Data

2.2 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI/ASME Y14.24 Types and Applications of Engineering Drawings

2.3 EIA Publications

Available from Electronic Industries Alliance, 2500 Wilson Boulevard, Arlington, VA 22201-3834, Tel: 703-907-7500, www.eia.org.

EIA – 649 National Consensus Standard for Configuration Management

2.4 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 9000:2005 Quality management systems – Fundamentals and vocabulary

3. TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions stated in ISO 9000 and the following shall apply:

3.1 Baseline Configuration

The design definition for the physical product and its performance requirements from which design change control can then take place. This is determined jointly by the customer and the design activity.

3.2 Change Evaluator

The person authorized on behalf of the design authority to assess the potential impact of the change(s), evaluates changes for the potential impact on the fit, form, or functionality of the part, system, or assembly and failure to meet the customer requirements. The change evaluator could also be the customer or the producer of the end item and/or the design authority.

3.3 Deliverable

Any design data provided to the customer which represents the product provided.

3.4 Design Activities

The supplier design activity or subcontractor that owns the design and provides a deliverable to the customer.

3.5 Design Authority

An organization with formal authority for the design, validation, and service support of a product.

NOTE: In civil aviation, this is the organization responsible for the design of articles or for changes thereto that is the holder of a design approval granted by a regulatory authority [i.e., Type Certificate (TC), Supplemental Type Certificate (STC), Parts Manufacturer Approval (PMA), Technical Standard Order (TSO)/Joint TSO/European TSO, European Part Approval (EPA) or equivalent].

3.6 End Item

The item that is ultimately delivered to the end user (e.g., vehicle, propulsion system).

3.7 Key Characteristics

An attribute or feature whose variation has a significant effect on product fit, form, function, performance, service life, or producibility that requires specific actions for the purpose of controlling variation.

3.8 Mandatory

A requirement that must be fulfilled or common transferable data that must be provided and systematically recorded.

3.9 Optional

Any data field that is not defined as mandatory by this standard, including any special data fields requested by the customer or the originator.

3.10 Product

In this document product means any aerospace vehicle, engine, propeller, airframe part or equipment (within that vehicle) to be used in operating or controlling an aerospace vehicle in flight. he result of a process, which in the context of this standard includes finished detailed parts and assemblies. It also includes forgings and castings.

NOTE: Product can include software that is embedded or field loadable in the end item.

3.11 Source Control Drawing (SOCD)

Source Control drawing as defined by ANSI/ASME Y14.24.

3.12 Special Process

A process where the resulting output cannot be verified by subsequent monitoring or measurement and as a consequence, deficiencies become apparent only after the product is in use or has been delivered.

4. CONFIGURATION CHANGE DEFINITIONS

4.1 Changes to Baseline Configurations

A baseline configuration is an agreed configuration definition against which compliance was shown (e.g., certification baseline). Baseline configuration is captured by design data and is typically retained by the design activity. The baseline configuration must clearly define the design characteristics and performance requirements of the product to the lowest level of detail necessary to produce the product and ensure compliance with all applicable requirements of the customer.

All changes to previously customer accepted baseline configurations must be evaluated and approved. Until the requirements of section 5 are satisfied, each change (from the lowest level in the supply chain) shall be submitted to the customer and ultimately to the design authority for concurrence to implement. Figure 1 depicts the process when customer delegated change evaluation is not obtained and Figure 2 is for organization's with customer delegated change evaluation approval.

The product baseline configuration from which changes will be evaluated may include:

a. Source Control Drawing (SOCD).

b. Product specifications and drawings, including electronic data sets and supersession.

c. Bill of Materials (BOM), including definition of line replaceable items.

d. Process specifications in accordance with contractual requirements.

e. Manufacturing methods, as shown on engineering drawings.

f. Product usage/function/systems application, which may include:

    1. Affect of product failure on system application.

    2. Identification of key components, processes, and/or characteristics, as applicable.

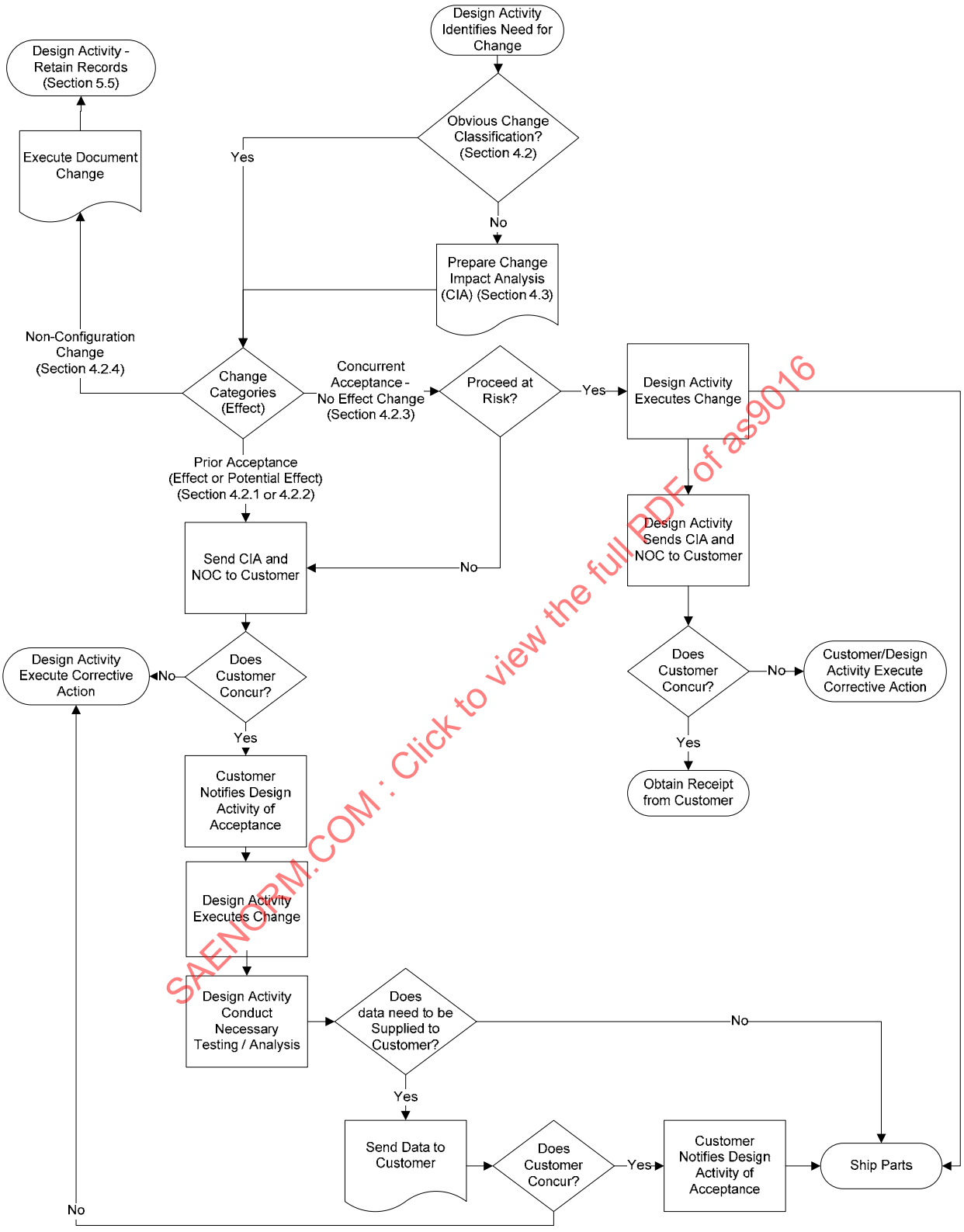


FIGURE 1 – FLOW CHART FOR NOTICE OF CHANGE (NOC) SUBMITTAL
(Design Activity is NOT Authorized to Analyze Changes on Behalf of Customer)

NOTE: Design Activity Does NOT Meet Criteria of Section 5.

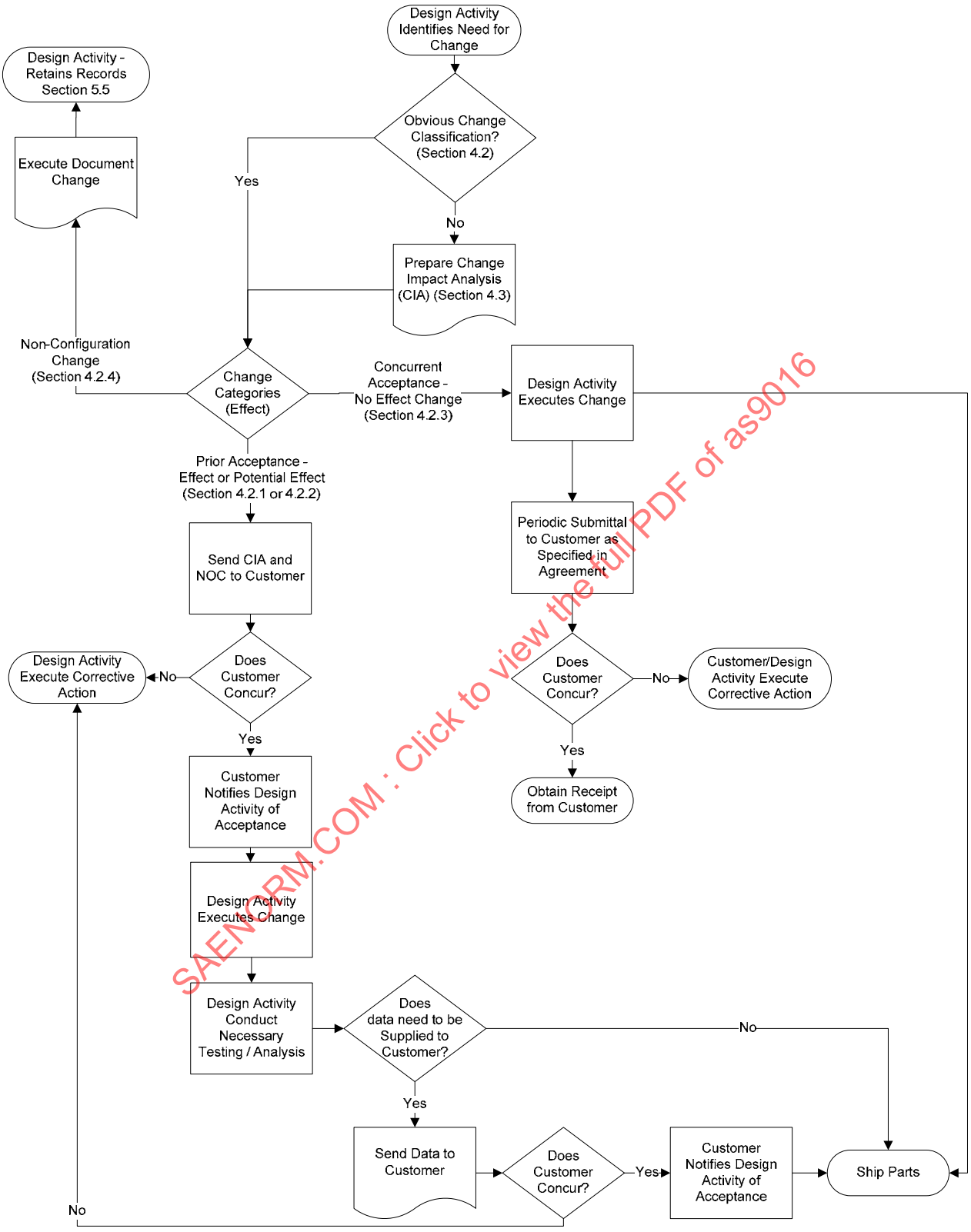


FIGURE 2 – FLOW CHART FOR NOTICE OF CHANGE (NOC) SUBMITTAL
(Design Activity is Authorized to Analyze Changes on Behalf of Customer)

NOTE: Design Activity Meets Criteria of Section 5.

4.2 Change Types

Change types are controlled by the customer and/or design authority. The following are default categories that shall apply unless modified or changed by the customer/design authority.

4.2.1 Changes that Require Customer Acceptance Prior to Implementation

These are changes in design or design information that will always require prior acceptance from the customer, unless otherwise stated in the contract:

a. Any change that affects product safety.

b. Any change to product function.

c. Any change affecting a SOCD or top-level drawing.

d. Any change to product performance tolerances specified by customer or product definition.

e. Weight, balance, or moment of inertia change outside of specification requirements.

f. Change affecting interchangeability, compatibility, maintainability, or repairability at customer serviceable level.

g. Electromagnetic characteristics or signature change.

h. Change in product technical data, including Qualification Test Plan (QTP) or Acceptance Test Plan (ATP).

i. Change in installed software/firmware that changes the software identity.

j. Change affecting environmental interactions (e.g., use of hazardous/prohibited materials).

k. Change affecting traceability of a required traceable item.

l. Any change to a ‘frozen’ design or process.

m. Change to customer identified ‘key characteristics’.

n. Change that negatively impacts contractual prices, schedules, or deliveries to the customer.

o. Change that positively or negatively impact Failure, Modes, and Effects Analysis (FMEA) or Failure Review and Corrective Action System (FRACAS) information originally approved.

4.2.2 Changes that May Require Acceptance Prior to Implementation

Depending on product definition or customer requirements, these types of changes to design information may also require prior acceptance from the customer: The customer agreement should determine prior acceptance requirements.

a. Change to the BOM.

b. Any change of a special process (type or process).

c. Change of special process sources.

d. Change in sources of supply of sub-components, may include obsolescence.

e. Change in manufacturing methods.

f. Change in location of manufacture for the end item.

4.2.3 Changes Implemented Concurrent with Notification for Customer Acceptance

Changes other than those described in sections 4.2.1 and potentially 4.2.2 can be implemented and delivered prior to customer acceptance, if the authority to proceed is granted in accordance with section 5 requirements. Any change to design information that does not require prior customer acceptance is considered eligible for implementation and requires a NOC record to be created. Submittal of the NOC record to the customer concurrently for any change is necessary when required by the customer/design authority.

If authority for change implementation is not granted from the customer, then changes other than those defined in sections 4.2.1 and potentially 4.2.2 may be implemented at the risk of the design activity, but shall not be delivered to the customer pending acceptance.

4.2.4 Changes – Non-configuration

Changes to design information that are clerical in nature or are to correct errors in design information, and do not effect items listed in sections 4.2.1, 4.2.2, and 4.2.3 do not have to be reported or documented via the NOC process defined in this standard. However, these types of changes do have to be recorded and documented within the design activities' configuration management system and records retained per section 5.5.

Examples of non-configuration changes are:

a. Drawing corrections; bringing records in line with manufacturing practices.

b. Drawing corrections; elimination of clerical/typing/drafting drawing errors.

c. Addition of instructional information and/or inspection requirements to a drawing, but may not remove or modify without prior approval.

d. Alteration of non-functional features providing no formal qualification testing is required; including relaxation of tolerances, providing that any change does not increase the envelope of the unit or affect unit performance.

e. Addition of dash number to catalog component drawings; does not affect existing configurations.

f. Supplier order office name and address changes/additions for industry standard catalog components and detail parts.

g. Revision of notes to incorporate latest revision of industry standards and supplier company specifications where there is no impact on configuration or product characteristics or change to contractual requirements.

h. Addition, selection, or amendment of data/information on drawings not delivered to the customer where there is no impact on configuration or product characteristics or change to contractual requirements.

i. Changes to the format of drawings not delivered to the customer [e.g., transfer from paper to Computer-aided Design (CAD) format].

j. Corrections to component part markings that do not affect traceability.

k. Update of the method of component part marking, but not the contents.

l. Changes that do not require update to design technical data delivered to the customer.

4.3 Change Impact Analysis Tool

In order to assist in proper evaluation of changes, there is an industry-developed tool for the evaluation of change and configuration change effects. This tool is available at http://www.sae.org/aaqg/publications/as9016.htm and is intended to assist the design activity in the evaluation of the category of change per section 4.2 with respect to the impact on:

a. Airworthiness (Safety).

b. Form.

c. Fit.

d. Mass properties.

e. Function.

f. Environment.

g. Reliability.

h. Drawing changes.

i. Traceability.

j. In-service effects.

k. Manufacturability.

l. Test.

m. Contractual price.

The description of the questions is listed in Appendix A; for the most current information, consult the website identified above. The requirements as to what constitutes a change are subject to customer purchase and contract agreements in effect at the time of the product change request.

NOTE: The design authority reserves the right to use an alternative tool or not to use the tool according to the needs of its products.

5. REQUIREMENTS FOR ORGANIZATIONS TO OBTAIN CUSTOMER AUTHORIZATION

Design activities must meet the requirements of sections 5.1 and 5.2 before implementation of changes described in sections 4.2.3 and 4.2.4. Design activities shall create a NOC and implement the change. The design activity shall either submit the NOC to the customer or make all NOC records available for review, depending on customer requirements.

5.1 Quality System Requirements

The design activity shall have a quality management system that contains the following, at a minimum:

a. A design control system that complies with the applicable requirements detailed in AS/EN/JISQ 9100, clause 7.3.

b. A configuration management system that complies with the requirements of EIA – 649.

c. Control of sub-tier supplier changes in accordance with AS/EN/JISQ 9100, clause 7.4.2.

d. Control of nonconforming product in accordance with AS/EN/JISQ 9100, clause 8.3.

e. A corrective action process in accordance with AS/EN/JISQ 9100, clause 8.5.2.

f. Record retention in accordance with AS/EN/JISQ 9100, clause 4.2.4.

5.2 Customer Agreements

In order to be eligible for submitting design information changes or change requests concurrently, the supplier/design activity shall have the following agreements with the customer/design authority, at a minimum:

a. Baseline definition of each product in compliance with section 4.1.

b. A process for authorization of personnel with the necessary product knowledge to verify design analysis determinations in terms of change effects.

c. Customer review/acceptance cycle and frequency of submittal of NOCs.

d. A formal approval, including any limitations, from the customer allowing use of the authorization provisions of this standard (see section 5.3).

Additionally, the supplier/design activity shall be subject to approval and reviews by the customer or design authority for assurance that the requirements of section 5.1 are satisfied and for verification of change classifications. This includes access to and review of design data, procedures, and records at the supplier/design activity by the customer/design authority. The method of review and approval is at the discretion of the customer/design authority.

5.3 Approval of Design Activity to Perform Change Impact Assessments

The approval to perform design change impact assessments, on behalf of the customer/design authority, is intended for suppliers that design the product. The customer/design authority has the responsibility to ensure design changes to its products comply with applicable customer and regulatory requirements. This requires that the customer/design authority maintain the appropriate level of definition, approval, and oversight of the design change impact assessments performed by supplier/design activities. The customer/design authority reserves the right for the definition and interpretation of all requirements associated with these design change impact assessments.

5.3.1 Prerequisites for Design Activities to Perform Change Impact Assessments

Supplier/design activities shall meet the following prerequisites before requesting any level of design change impact assessments approvals:

a. The supplier/design activity must have a quality system that complies with the requirements delineated within section 5.1.

b. The supplier/design activity must have sufficient design capability recognized by the customer/design authority for the products for which they are requesting design change impact assessment approval. Design capability is typically recognized by the customer/design authority through a contract requirement for design to a specification, SOCD, or other engineering definition.

c. The supplier/design activity must have Engineering organizations in place, and of sufficient breadth and capability, as recognized by the customer/design authority, to implement and support the design change impact assessment system.

d. The supplier/design activity must have written procedures to implement and support the design change impact assessment system per section 5.3.3.

5.3.2 Requesting and Maintaining Design Change Impact Assessment Approval

a. Supplier/design activities that meet the prerequisites of section 5.1 and 5.2, shall request design change impact assessment approval by submitting a letter to the customer/design authority to define the scope of the proposed design change impact assessment. The letter must identify the type of product being supplied on which the supplier/design activity has design capability and requests design change impact assessment approval. The letter must also identify the applicable supplier/design activity design change impact assessment procedure(s) that meet the requirements of this standard.

b. The customer/design authority will review the supplier/design activity request to determine if it is within the scope for design change impact assessment approval. If the scope is acceptable, the customer/design authority will notify the supplier/design activity in writing authorizing the supplier/design activities' design change impact assessment approval, at which point the supplier/design activity may begin performing design change impact assessments within requirements of this standard. A record of the supplier/design activities' design change impact assessment approval request and customer/design authority's authorization letters shall be retained by the supplier/design activity.

c. The supplier/design activity shall submit a new design change impact assessment approval request letter for changes in scope (e.g., providing a new type of product, additional approval for existing product).

d. Deviations from the requirements of this standard may be requested by the supplier/design activity through correspondence with the customer/design authority, but shall be approved by the customer/design authority prior to implementation. Records of any approved deviations shall be documented and retained by the supplier/design activity.

5.3.3 Design Change Impact Assessment Processes and Procedures

The supplier/design activity shall maintain processes and procedures that clearly define the requirements of their overall design change impact assessment system including the following:

a. Design change impact assessment system description.

b. Design change impact assessment system scope of approval identified in section 5.3.2.a.

c. Design change impact assessment system organizational responsibilities and reporting relationships.

d. Design change impact assessment system forms.

e. Design change impact assessment system personnel listing and any limits on their authority to conduct design change impact assessment on behalf of the customer/design authority.

f. Design change impact assessment system personnel qualifications including education, experience, product and process knowledge, training, and training maintenance requirements.

g. Design change impact assessment system records and retention requirements.

The supplier/design activities design change impact assessment processes and procedures shall clearly define how design change impact assessment authority is given to sub-tier supplier/design activities and how the requirements of this document are flowed down. The supplier/design activities' records shall include a listing of any sub-tier supplier/design activities that have been given design change impact assessment authority and their applicable design change impact assessment processes, if applicable.

5.4 Requirements for Data Submission of Notice of Change

Data related to the NOC (e.g., content, format, size) should be in accordance with the complete data set as defined in Appendix B, "List of Notice Of Change (NOC) Data". Data can be in either in electronic or paper form. Mandatory data (in bold and marked with an *) shall be systematically recorded and transferred to every customer. Optional data (without marking) shall appear when requested by the customer but may also appear at originator's own needs.

NOTE 1: For any data field recorded and transferred, whether mandatory or optional, not applicable (N/A) shall be entered as a minimum requirement prior to final approval/signature, if there is no data to be entered.

NOTE 2: Different customers may require different optional data fields tailored to meet contractual requirements. It is therefore recommended that the Information Technology (IT) System (electronic data storage) is capable of processing all sets of data (i.e., mandatory, optional). The system should recognize data fields not effectively used as being inactive, and should be capable of adding new requirements or changing existing requirements.

The entities responsible for entering and/or approving/acknowledging NOC data shall process the activities in accordance with the terms and conditions of the contract.

Attached files shall preferably be in a protected format (e.g., pdf, tif, jpg). Formats that can be easily changed (e.g., doc, xls, ppt) should be avoided, as much as possible, but may be used if necessary. In such cases, appropriate precautions should be taken to prevent inadvertent changes to the document. Some data systems actually impose file-size constraints (e.g., maximum 500 kbyte). Due to the fact that pictures occupy large amounts of electronic memory space, a 'file optimization tool' (e.g., zip, number of dpi, appropriate compressed format) shall be used, when feasible, to minimize the size of attached files.

When the NOC is not required in electronic format and/or when it is required as a printout, it shall be in a linear format similar to the example shown in Appendix C, "Sample Notice of Change (NOC) Form". However, the size and order of the fields may be changed to suit the individual application provided that:

a. The box numbers and contents allocation specified in this standard are maintained.

b. All mandatory data fields are printed out on the paper form.

c. The form is not changed to the extent that would make it unrecognizable.

d. It is in line with contractual/regulatory requirements.

Forms may be pre-printed, computer generated, or accessed via a net-based system (intranet/internet); providing in all cases, the printing of lines and characters are clear and legible. The information entered on the forms shall preferably be machine/computer printed, but may be handwritten as long as block letters are used and the document remains legible. The use of abbreviations should be kept at a minimum.

When required, continuation/additional sheets and attachments shall include the same NOC reference number as the original document.

The information in the data fields shall be in English (at a minimum), but other languages may be acceptable (e.g., bilingual: English and native language) when in line with contractual requirements.

5.5 Record Retention

Change records including NOC data and approvals or acknowledgements shall be retained in accordance with design data requirements of the customer.

NOTE: Typically, design information is required to be retained for 25 years or the service life of the product plus 7 years, whichever is longer. Data shall be maintained in either paper or electronic format; the requirements of SAE ARP 9034 should be considered in the storage of data in electronic formats.

6. NOTES

6.1 A change bar (|) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

APPENDIX A - SUPPLIER NOTIFICATION OF CHANGE – CHANGE IMPACT ANALYSIS LOGIC TREE

Question Number	Impact of Change	Question	Yes	No	Don't Know
1	Airworthiness	Is the change in response to a safety or airworthiness concern?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
2	Airworthiness	Will the change impact positively or negatively Failure, Modes, and Effects Analysis (FMEA) or Failure Review and Corrective Action System (FRACAS) information originally approved?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
3	Form	Does the change affect the external configuration of the assembly (including visual impact when it is a requirement) or any external interface between the assembly and surrounding systems?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
4	Form	Does the change include changes to materials that could impact interface characteristics between the assembly and surrounding systems?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
5	Fit	Will the change impact interchangeability, compatibility, maintainability, or repairability of the assembly within the surrounding system?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
6	Fit	Will the change impact interchangeability, compatibility, maintainability, or repairability of the components within an assembly, but not of the assembly within the surrounding system?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
7	Fit	Does the change introduce a new replaceable component part number within the assembly, including alterations, as an alternative or deletion of an alternative in the bill of materials for the assembly (e.g., to address obsolescence)?	May be Prior Acceptance	Non-Configuration Change	May be Prior Acceptance
8	Fit	Will the change only affect interchangeability, compatibility, maintainability, or repairability of parts within a component?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
9	Mass Properties	Will the change have an impact on weight, balance, or moment of inertia of the assembly?	Open Question 10	Non-Configuration Change; Go to Question 12	Open Question 10
10	Mass Properties	Will the change be within the stated tolerance levels?	Concurrent Notification	Prior Acceptance	Prior Acceptance
11	Function	Does the change affect the functionality of the assembly?	Open Question 12	Non-Configuration Change; Go to Question 13	Open Question 12
12	Function	Does the change affect the functionality, but is within tolerances specified by the customer or previously declared by the supplier?	Concurrent Notification	Prior Acceptance	Prior Acceptance

Question Number	Impact of Change	Question	Yes	No	Don't Know
13	Function	Will the change alter the specified electromagnetic characteristics of the assembly?	Prior Acceptance; Open Questions 14 thru 19	Non-Configuration Change; Go to Question 20	Prior Acceptance; Open Questions 14 thru 19
14	Function	Did the change affect the reset or restart of the assembly?	Prior Acceptance; Open Outcome A	Prior Acceptance	Prior Acceptance
15	Function	Did data bus speeds/label update rates, analog sampling rates, or Central Processing Unit (CPU) operating frequencies change?	Prior Acceptance	Prior Acceptance	Prior Acceptance
16	Function	Did the change affect the Radio Frequency (RF) response of the component? This includes changes in chassis openings, input circuitry filtering or lightning protection, circuit card trace changes, component tolerances, or internal component bonding?	Prior Acceptance; Open Outcome B	Prior Acceptance	Prior Acceptance
17	Function	Did any of the input or output tolerances (e.g., voltage, current, ripple, signal, thermal) change at any phase of operation?	Prior Acceptance; Open Outcome C	Prior Acceptance	Prior Acceptance
18	Function	Was any complex electronic hardware added or changed (see RTCA DO-254 for the definition of complex electronic hardware)?	Prior Acceptance; Open Outcome D	Prior Acceptance	Prior Acceptance
19	Function	Did the change affect the bonding aspects (e.g., instances, materials, coatings, installation, shield terminations, chassis changes) of the component?	Prior Acceptance; Open Outcome C	Prior Acceptance	Prior Acceptance
20	Function	Does the change include revision to any embedded software in the assembly?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
21	Environment	Does the change impact environmental interactions (e.g., do material changes affect susceptibility to environmental damage or introduce hazardous materials into the environment)?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
22	Reliability	Is the change aimed at correction of a reliability, durability, maintainability, or serviceability problem exposed during qualification/certification testing or in-service?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
23	Reliability	Does the change introduce new up-rated electronic component part(s)?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
24	Drawing	Does the change result in allocation of a new assembly part number, which would result in a change to the associated customer Source Control Drawing (SOCD) number?	Prior Acceptance	Non-Configuration Change	Prior Acceptance

Question Number	Impact of Change	Question	Yes	No	Don't Know
25	Drawing	Does the change add, delete, or amend reference data/information on assembly or component drawings delivered to the customer?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
26	Drawing	Does the change alter the format of assembly or component drawings (e.g., reproducing a paper drawing on CAD) delivered to the customer?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
27	Drawing	Does the change correct typographical errors on assembly or component drawings delivered to the customer?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
28	Drawing	Does the change correct text referenced on the drawing border of assembly or component drawings delivered to the customer?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
29	Drawing	Does the change update call-outs on drawings delivered to the customer, where obsolete processes or specifications have been superseded?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
30	Traceability	Does the change include any corrections to part marking on assemblies or components that will impact product traceability?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
31	Traceability	Does the change update the method of assembly or component part marking, but not the content?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
32	Traceability	Does the change update the assembly or component part marking to show supplementary information (e.g., addition of 2D matrix markings)?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
33	Traceability	Will the change require tracking of the change by the customer?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
34	In-Service Effects	Will the change require retrospective in-service action to embody the change into equipment already delivered?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
35	In-Service Effects	Will the change require customer discontinuation of use of existing stock (e.g., scrapping or reworking of pre-alteration components)?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
36	In-Service Effects	Does the change impact or invalidate delivered, operation, maintenance, overhaul, or other technical publications?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
37	Manufacturability	Does the change impact a key characteristic (i.e., source, process, feature) associated with the design of the assembly or component?	May be Prior Acceptance	Non-Configuration Change	May be Prior Acceptance
38	Manufacturability	Does the change impact a non-key characteristic associated with the design of the assembly or component (e.g., source, process, or feature that is not declared sensitive)?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
39	Manufacturability	Will the change adversely affect manufacturability (e.g., tightening of a tolerance range, removal of a manufacturing method or process)?	May be Prior Acceptance	Non-Configuration Change	May be Prior Acceptance

Question Number	Impact of Change	Question	Yes	No	Don't Know
40	Manufacturability	Does the change relax a tolerance range to improve manufacturability?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
41	Manufacturability	Does the change add an alternative manufacturing method?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
42	Manufacturability	Does the change affect the manufacturing routing declared in the design definition without changing the control process?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
43	Manufacturability	Does the change include changes to supplier or sub-tier manufacturing facilities that imply the need for re-qualification of the manufacturing process for an assembly or component?	May be Prior Acceptance	Non-Configuration Change	May be Prior Acceptance
44	Test	Does the change affect the acceptance test content (e.g., the specification of the various tests)?	Prior Acceptance	Non-Configuration Change	Prior Acceptance
45	Test	Does the change affect the acceptance test schedule (e.g., the sequence in which tests are performed)?	Concurrent Notification	Non-Configuration Change	Concurrent Notification
46	Cost	Will the change affect unit price, fee costs, incentives, schedules, or deliveries of assemblies or components to the customer?	Open Question 47	Non-Configuration Change	Open Question 47
47	Cost	Will the change be beneficial overall to the customer?	Concurrent Notification	Prior Acceptance	Prior Acceptance

CHANGE IMPACT ANALYSIS LOGIC TREE RESULTS OUTCOME TABLE - ELECTROMAGNETIC EFFECTS

Outcome A	Provide an explanation of the safety aspects; whether the box returns to normal operation as it would have prior to the change.
Outcome B	Test or analyze to verify that susceptibility or emissions have not changed.
Outcome C	Test or analyze to verify that lightning protection, susceptibility, or emissions have not changed.
Outcome D	Provide an analysis in accordance with RTCA DO-254.

APPENDIX B - LIST OF NOTICE OF CHANGE (NOC) DATA

Fields shown in bold with an asterisk (*) are mandatory; all other fields are optional.

No.	Data Field Title	Description	Data	Data Type	Data Size (in digits)	Comments
DOCUMENT IDENTIFICATION (Header)						
--	Corporate Logo	Corporate logo of the originator	Logo	Alpha-numeric; jpg; gif	N/A	Logo should appear in upper left corner of form.
--	**Form Title***	NOTICE OF CHANGE (NOC) (see AS9016 for instructions)	Form title	Alpha-numeric	50 maximum	Title to appear at top of form.
1	**Originator NOC Ref. No.***	Unique NOC reference number assigned by the originator in accordance with customer instructions	Numerals/letters	Alpha-numeric	4 minimum 20 maximum	
1a	**Revision/Issue***	Document issue or level of document revision	Numerals/letters	Alpha-numeric	1 minimum 10 maximum	Assigned by the originator. Initial issue to be “-”.
2	Customer NOC Ref. No.	Unique NOC cross reference number assigned by the customer	Numerals/letters	Alpha-numeric	4 minimum 20 maximum	Identify, if different from item no. 1.
2a	Revision/Issue	Document issue or revision level	Numerals/letters	Alpha-numeric	1 minimum 10 maximum	Assigned by the customer, if needed. Initial issue to be “-”.
3	**Page of Pages***	Sheet number and total number of sheets (paper form only)	No. of line items	Numeric	4 minimum 6 maximum	Pagination for printouts.
TYPE OF CHANGE						
4	**Type of Change***	Requires customer acceptance (prior to implementation of this change)	Numerals/letters	Alpha-numeric	1 minimum 3 maximum	Check box; requires customer acceptance (see sections 4.2.1 and 4.2.2).
		Requires customer acceptance (changes have been implemented; need customer acceptance prior to delivery)	Numerals/letters	Alpha-numeric	1 minimum 3 maximum	Check box; requires customer acceptance (see sections 4.2.2 and 4.2.3).
		Notification only (changes have been implemented concurrent with this notification - acknowledgement of receipt is requested)	Numerals/letters	Alpha-numeric	1 minimum 3 maximum	Check box; notification only (see section 4.2.3).

No.	Data Field Title	Description	Data	Data Type	Data Size (in digits)	Comments
5	Priority – Customer Response	▪ Emergency ▪ Urgent ▪ Routine	Numerals/letters	Alpha-numeric	1 minimum 3 maximum	Check box.
6	Part Status	▪ Pre-Qualified (Development) ▪ Post-Qualified (Production) ▪ Other (please specify)	Numerals/letters	Alpha-numeric	1 minimum 3 maximum	Check box.
ORIGINATORS INFORMATION						
7	**Date of Submittal***	Enter the date the NOC was submitted to the customer	Numerals/letters	Date	8 minimum 10 maximum	YYYY/MM/DD format.
8	**Requested Response Date***	Identify the date that a response is requested from the customer to avoid delay in delivery	Numerals/letters	Date	8 minimum 10 maximum	YYYY/MM/DD format.
9	**Originator's Company***	Identification of the NOC originator	Prime supplier name	Alpha-numeric	50 maximum	
10	**Originator's CAGE Code***	CAGE code or vendor code assigned by the customer	Prime supplier CAGE code	Alpha-numeric	50 maximum	CAGE code number or vendor code assigned by the customer.
11	**Originator's Address***	Address that should be used for correspondence, if electronic means is not viable	Mailing address	Alpha-numeric	50 maximum	Electronic correspondence is preferred.
12	**Originator/Contact***	Name of point of contact	Name	Alpha-numeric	100 maximum	Can be combined with 12a, 12b, and 12c (paper form only).
12a	**Function or Department***	Contacts title	Numerals/letters	Alpha-numeric	50 maximum	
12b	**Direct Telephone No.***	Phone number of the point of contact	Numerals	Alpha-numeric	25 maximum	
12c	**E-mail***	E-mail address of the point of contact	E-mail address	Alpha-numeric	30 maximum	
13	Originator's Procurement Agent	Name of originator's Procurement Agent	Name	Alpha-numeric	100 maximum	Can be combined with 13a, 13b, and 13c (paper form only).

No.	Data Field Title	Description	Data	Data Type	Data Size (in digits)	Comments
13a	Function or Department	Procurement Agent	Numerals/letters	Alpha-numeric	50 maximum	
13b	Direct Telephone No.	Phone number of the originator's Procurement Agent	Numerals	Alpha-numeric	25 maximum	
13c	E-mail	E-mail address of the originator's Procurement Agent	E-mail address	Alpha-numeric	30 maximum	
CUSTOMER'S INFORMATION						
14	**Customer's Company***	Identification of recipient of NOC	Prime customer's name	Alpha-numeric	50 maximum	
15	**Customer's Address***	Address that should be used for correspondence, if electronic means is not viable	Mailing address	Alpha-numeric	50 maximum	Electronic correspondence is preferred.
16	**Customer/Contact***	Name of customer point of contact	Name	Alpha-numeric	100 maximum	Can be combined with 16a, 16b, and 16c (paper form only).
16a	**Function or Department***	Customer contact's title	Numerals/letters	Alpha-numeric	50 maximum	
16b	**Direct Telephone No.***	Phone number of the customer's point of contact	Numerals	Alpha-numeric	25 maximum	
16c	**E-mail***	E-mail address of the customer's point of contact	E-mail address	Alpha-numeric	30 maximum	
17	Customer/Procurement Agent	Customer's Procurement Agent contact information	Name	Alpha-numeric	100 maximum	Can be combined with 17a, 17b, and 17c (paper form only).
17a	Function or Department	Procurement Agent	Numerals/letters	Alpha-numeric	50 maximum	
17b	Direct Telephone No.	Phone number of the customer's Procurement Agent	Numerals	Alpha-numeric	25 maximum	
17c	E-mail	E-mail address of the customer's Procurement Agent	E-mail address	Alpha-numeric	30 maximum	