



DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
WASHINGTON, D.C. 20362

IN REPLY REFER TO
NAVSEAINST 4855.10A
06CB/SCR
Ser 839
17 December 1982

NAVSEA INSTRUCTION 4855.10A

From: Commander, Naval Sea Systems Command
To: Deputy Commander for Combat Systems
Distribution List

Subj: Special Interface Gage Program of the Naval Sea Systems Command

Ref: (a) NAVMATINST 4855.5A of 23 Apr 1975, Navy Special Interface Gage Program;
requirement for

Encl: (1) Administrative Guidelines for a Gage Committee Charter
(2) Interface Control Plan Requirements

1. Purpose. To implement the Special Interface Gage Program policy prescribed in reference (a) and contribute to the interface control of Navy combat systems for the Naval Sea Systems Command (NAVSEA).

2. Cancellation. NAVSEAINST 4855.10 of 15 Oct 1975 is cancelled.

3. Background

a. Problems have been experienced by NAVSEA shore activities and the Fleet because sub-assemblies/components were not interchangeable, therefore causing assembly difficulties. In order to alleviate this condition, it is essential to establish a Special Interface Gage Program during the development phase of a program; i.e., weapons, weapon systems, expendable ordnance, and associated items. Navy combat systems require interface definition and control to achieve required performance, operational reliability, readiness, logistic support, and optimum life cycle cost. Navy combat systems have varied configurations which necessitate planning and control.

b. The design disclosure data package for each configuration must be maintained current and accurate throughout the life cycle. Inherent in the accomplishment of these objectives is the development and maintenance of an Interface Control Plan through the NAVSEA Special Interface Gage Program. The Interface Control Plan includes the identification of combat system interfaces, the employment of interface control/correlation drawings and the system for verification.

c. Preparation of the Interface Control Plan takes into consideration the combat system program plans and baseline documentation. Once the interface design definition is established, an engineering analysis is performed on each of the interfaces to assure adequate definition for manufacturing, acceptance and assembly or interchangeability. Any interface anomalies are resolved at this time.

d. Upon completion and resolution of the interface requirements, the levels and methods of inspection for attributes at these interfaces are established. Attributes that affect form, fit and function or safety are of prime importance to government acceptance. Verification of these attributes is normally accomplished by Navy-controlled gages or tooling. Gages and tooling for this purpose are usually unique and require a specific design which makes each gage or tool special for its requirement.

e. Gage designs require many considerations relative to proper tolerance structures, ease of use, and reliability to assure that accepted combat system hardware is within specified design requirements. A requirement for combat system hardware acceptance is assurance that all the Special Interface Gages are certified to an approved design with traceability of measurement accuracies to the National Bureau of Standards. Gage proofing of each gage design is accomplished prior to being utilized for combat system hardware acceptance. Maintenance of gage designs and hardware in concert with combat system engineering documentation is mandatory for the life cycle Navy combat system procurement and maintenance requirements.

4. Definition

a. Interface. The surfaces or space where two sub-systems (Weapon/ Launcher), major sections (TARGET SEEKER/WARHEAD), repairable or replacement items mate, connect, or are installed.

b. Interface Control Plan. A systemized plan to insure proper dimensions for assembly/interchangeability at the established interfaces throughout the combat system life cycle. The plan derives criteria from the program plans and baseline documentation requirements established by the Program Manager for the specific combat system and is developed and implemented through a gage committee chaired by the Program Manager or a designated representative.

c. Special Interface Gage. Specialized inspection equipment to verify the specified composite dimensional, geometrical and form combat system interchangeability characteristics of complex components, assemblies and sub-systems. Included are:

(1) Gages designed or controlled by the NAVSEA Gage and Standards Center located at the Pomona Annex Naval Weapons Station, Seal Beach Detachment for verification of established interface requirements.

(2) Contractor gages, tooling, or both, that are Navy approved and used in lieu of Navy supplied gages for verification of established interface requirements.

(3) Navy coordinated master tooling or gages jointly designed and supplied by the NAVSEA Gage and Standards Center and the contractor for verification of established interface requirements.

(4) Fleet support gages furnished by NAVSEA Gage and Standards Center which are identified for support of Navy combat systems at shore maintenance activities and/or Fleet units.

d. In-Process Gages. These gages are utilized to determine dimensional acceptability in order to control random deviation during manufacturing sequence prior to acceptance and are not to be considered as Special Interface Gages.

5. Scope. This instruction applies to all NAVSEA elements responsible for designing, developing, procuring, maintaining and deploying combat systems.

6. Policy

a. A Special Interface Gage Program shall be established during the advanced development phase of all NAVSEA combat systems. This program shall provide assistance in the development and implementation of a life-cycle interface control plan for the combat system prior to the production or deployment phase.

b. The Program shall be coordinated through a Gage Committee, chaired by the Program Manager, or a designated representative, and including the Navy Gage and Standards Center, and appropriate representatives from design/in-service engineering, quality assurance, systems integration, and design and manufacturing as specified by the Program Manager.

c. The Program Manager shall individually assign responsibility for the design, procurement, certification, maintenance, inventory management control and issue of Special Interface Gages. Enclosure (1) is an administrative guideline for a Gage Committee Charter delineating the tasks and relationships of gage committee members for accomplishment of the Gage Committee functions. Interface control plan requirements are outlined in enclosure (2).

7. Responsibilities. The Gage Committee will be responsible for the following functions:

- a. Assist the Program manager in implementation of a Combat System Life-Cycle Interface Control Plan.
- b. Establish combat system interface gage requirements in concert with interface control/correlation drawings, quality assurance requirements, evaluation of logistics and acquisition plan, and life cycle considerations.
- c. Perform engineering studies to resolve any dimensional discrepancies to assure adequate definition of the configuration baseline which reduces misinterpretations among engineering, manufacturing, and quality assurance.
- d. Provide recommendations for interface attributes on classifications of characteristics, criteria of coordination, life, interchangeability, function and safety.
- e. Recommend levels and methods of inspection for configuration requirements.
- f. Develop tooling and gaging plan for verification of configuration requirements with recertification intervals and quantities required.
- g. Perform Special Interface Gage proofing to verify suitability for use.

8. Action

- a. The Combat Systems Directorate (SEA 06) Program or Project Managers will:
 - (1) Establish and implement Combat System Life Cycle Interface Control Plans.
 - (2) Initiate and approve a Gage Committee Charter during the advanced development phase of the combat system.
 - (3) Plan, program, budget, and fund for NAVSEA Special Interface Gage Program participation.
 - (4) Assure interface control requirements are included in purchase requests for subsequent inclusion in contracts.

b. The Combat Systems Directorate Programs Support Office (SEA-06C) will:

(1) Formulate operational plans, establish general operating policies, provide overall management and direction for the NAVSEA Special Interface Gage Program.

(2) Plan, program, budget, and fund for personnel and equipment for the maintenance of the NAVSEA Gage and Standards Center for inventory management control and issue of Special Interface Gages.

(3) Provide funding for the engineering support, configuration management, certification, and maintenance of Special Interface Gages for in-service NAVSEA combat systems.

(4) Monitor all NAVSEA combat systems from advanced development throughout the life cycle to assure planning for interface control and Special Interface Gage Program requirements.

(5) Provide policy for adequate Special Interface Gage coverage for NAVSEA combat systems.

(6) Provide long range planning for Navy Special Interface Gage Program requirements to support NAVSEA, Naval Air Systems Command (NAVAIRSYSCOM) and Strategic Systems Project Office (SSPO) Navy combat systems and strategic weapons.

(7) Assure compliance with the requirements of this instruction during shore activity or contractor evaluations.

c. The Pomona Annex, Naval Weapons Station, Seal Beach Detachment, Pomona, California, will:

(1) Maintain and operate the NAVSEA Gage and Standards Center and act as the technical authority for the combat systems Special Interface Gage requirements.

(2) Exercise technical and administrative responsibilities in the areas of design, configuration management, procurement, certification, maintenance, modification, inventory management control and issue of Special Interface Gages in support of NAVSEA Combat Systems Program Managers throughout their life cycle.

(3) Participate in and perform approved Gage Committee Charter functions.

(4) Participate in developing logistics support planning documents for NAVSEA combat systems.

(5) Assist, when requested, in preparation of purchase requests that incorporate requirements for the Navy Special Interface Gage Program. Issue Special Interface Gages in accordance with contract requirements.

(6) Provide Special Interface Gage Program resource requirements, results, and schedules to the cognizant NAVSEA Program Manager as required.

(7) Provide correspondence to SEA 06C regarding status of Special Interface Gage Program support of Navy combat systems.

(8) Provide similar functions in support of SSPO and the NAVAIRSYSCOM Special Interface Gage Programs.

9. Exclusion. As delineated in the NAVSEA Organization Manual, the Deputy Commander for Nuclear Propulsion, SEA 08, is responsible for all technical matters pertaining to nuclear propulsion of U. S. Naval Ships and Craft, including all aspects of integration of the nuclear plant into the ship systems. Nothing in this instruction detracts in any way from these responsibilities. Accordingly, SEA 08 will be consulted in all matters relating to, or affecting, the nuclear propulsion plant and associated nuclear support facilities.



D.M. JACKSON
Deputy Commander for
Combat Systems

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ADMINISTRATIVE GUIDELINES
FOR A
GAGE COMMITTEE CHARTER

1. Purpose

This charter establishes the (Combat System) Gage Committee and designates the requirements, membership, and responsibilities.

The (Combat System) Gage Committee is responsible to develop, update and implement the requirements of the (Combat System) Life Cycle Interface Control Plan.

2. Requirements

a. The Charter documents the initial Combat System interface requirements and responsibilities.

The initial requirements are established through program plans and baseline documentation, as shown on enclosure (2), and include the following:

- (1) Acquisition Plan
- (2) Integrated Logistics Support Plan
- (3) Configuration Management Plan
- (4) Interface Control Drawings and/or Correlation Drawings
- (5) Combat System Engineering Drawings
- (6) Classification of Characteristics
- (7) Quality Assurance Plans

b. The Gage Committee is responsible for reviewing the program plans and baseline documentation to determine the interface requirements for fit, form and function attributes in the following areas:

- (1) System and Sub-Systems Interfaces
- (2) Major Section Interfaces
- (3) Government Furnished Equipment Interfaces
- (4) Repairable/Replacement Item Interfaces
- (5) Fleet Support Requirements

c. Certain functional areas of responsibility are normally assigned to Navy Gage and Standards Center by the (Combat System) Program Manager. These assignments of responsibility are for:

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(1) A system to Identify Special Interface Gage Requirements for each Combat System Configuration.

(2) Engineering Interface Analysis

(3) Concept and Design of Special Interface Gages

(4) Procurement of Special Interface Gages

(5) Certification of Special Interface Gages

(6) Special Interface Gage Inventory Management Control Functions

3. Gage Committee Membership

a. Responsibilities for each member of the (Combat System) Gage Committee are as follows:

(1) The Chairperson, as a collateral duty, shall establish meeting schedules and agenda items, conduct meetings and assign responsibilities for action items.

(2) The Co-Chairperson, as a collateral duty, shall prepare minutes of each meeting to document representatives in attendance, reports, action items status and findings.

(3) Each member of the Gage Committee shall:

(a) Have full authority for the organization assigned functional responsibilities.

(b) Provide the specialized expertise to assure a coordinated effort to develop and implement the (Combat System) Interface Control Plan.

b. The Gage Committee representation assignments are as follows:

Program Manager

Chairperson

Code

Quality Assurance Representative

Co-Chairperson

Code

Navy Gage and Standards Center

Code

Appropriate Engineering Agents such as:

Design/In-Service Engineering Agent

Activity/Code

Systems Integration and Design and Manufacturing

Activity/Code

Other Designated Representatives (as specified by the Program
Manager)
Activity/Code

4. Responsibilities. The (Combat System) Gage Committee is responsible for the following functions:

- a. Develop, periodically update and implement the (Combat System) Life Cycle Interface Control Plan
- b. Review baseline documentation to establish interface requirements
- c. Determine level and methods of inspection
- d. Establish tooling and gaging plan with recertification intervals and quantities required
- e. Assure identification of Special Interface Gage requirements for applicable Combat System configuration
- f. Perform engineering interface analysis of established interfaces
- g. Provide for the resolution of fit, form and functional anomalies and recommendations from engineering interface analysis
- h. Perform concept and design of Special Interface Gages
- i. Review and approval of Special Interface Gage concepts and designs
- j. Perform procurement of Special Interface Gages
- k. Perform certification of Special Interface Gages
- l. Proof Special Interface Gages
- m. Perform Special Interface Gage inventory management control functions

5. Signature Page

- a. Concurrence and agreement of the Gage Committee Charter is acknowledged by the cognizant Management Official of each member's organization.
- b. The Combat System Program Manager approves the Gage Committee Charter.

Enclosure (1)

INTERFACE CONTROL PLAN
REQUIREMENTS

The Combat System Interface Control Plan is divided into two phases, initiation and implementation. The Program Manager establishes the initiation requirements through program plans and baseline documentation. This is normally accomplished concurrent with establishing the Gage Committee. The implementation requirements are developed through Gage Committee actions. Recommendations are provided to the Program Manager for assignment of Special Interface Gage responsibilities for Combat System life cycle interface control.

The requirements are documented with pertinent information on the responsible organization, contact, and availability or completion date and remarks regarding the planned actions. The plan is updated periodically as the Combat System Interface Control Plan is developed.

INITIATION REQUIREMENTS

1. Acquisition Plan

Responsible Organization:
Contact:
Date:
Remarks:

2. Integrated Logistics Support Plan

Responsible Organization:
Contact:
Date:
Remarks:

3. Configuration Management Plan

Responsible Organization:
Contact:
Date:
Remarks:

4. Interface Coordination Drawings and/or Correlation Drawings

Responsible Organization:
Contact:
Date:
Remarks:

5. Combat System Engineering Drawings

Responsible Organization:
Contact:
Date:
Remarks:

6. Classification or Characteristics

Responsible Organization:
Contact:
Date:
Remarks:

7. Quality Assurance Plan

Responsible Organization:
Contact:
Date:
Remarks:

8. Gage Committee Charter

Responsible Organization:
Contact:
Date:
Remarks:

IMPLEMENTATION REQUIREMENTS

1. Baseline Documentation to Establish Interface Requirements

Responsible Organization:
Contact:
Date:
Remarks: -

2. Level and Methods of Inspection

Responsible Organization:
Contact:
Date:
Remarks:

3. Tooling and Gaging Plan

Responsible Organization:
Contact:
Date:
Remarks:

4. System to Identify Special Interface Gage Requirements for each Combat System Configuration

Responsible Organization:
Contact:
Date:
Remarks:

5. Engineering Interface Analysis of Established Interfaces

Responsible Organization:
Contact:
Date:
Remarks:

6. Resolution of Fit, Form and Functional Anomalies and Recommendations from Engineering Interface Analysis

Responsible Organization:
Contact:
Date:
Remarks:

7. Concept and Design of Special Interface Gages

Responsible Organization:
Contact:
Date:
Remarks:

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8. Review and Approval of Special Interface Gage Concepts and Designs

Responsible Organization:
Contact:
Date:
Remarks:

9. Procurement of Special Interface Gages

Responsible Organization:
Contact:
Date:
Remarks:

10. Certification of Special Interface Gages

Responsible Organization:
Contact:
Date:
Remarks:

11. Special Interface Gage Inventory Management Control

Responsible Organization:
Contact:
Date:
Remarks: