

# T9070-AE-DPC-010/001-1

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NAVSEA TECHNICAL PUBLICATION

## GENERAL – DESIGN PRACTICES AND CRITERIA MANUAL, PUBLICATIONS INDEX AND USER GUIDE



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CHENG's Intent

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TMDER



## CHENG'S INTENT

NAVSEA Technical Publication T9070-AE-DPC-010/001-1, General – Design Practices and Criteria Manual, Publications Index and User Guide, was developed to provide a more structured method for managing, indexing, publishing, and distributing NAVSEA ship design requirements. Many of those requirements were contained in Design Data Sheets (DDSs) which have existed at least since the 1930s, but the repository for DDSs was never well organized or readily accessible to the NAVSEA technical community. In order to remedy these issues, all existing DDSs will be referred to as “Design Practices and Criteria (DPC) Manuals”, will be numbered as DPC manuals listed within T9070-AE-DPC-010/001-1, and will be uploaded to the Technical Data Management Information System (TDMIS). Additional DPC Manuals will be issued as needed. TDMIS will enable greater visibility, easier retrieval, and a more efficient feedback system.

T9070-AE-DPC-010/001-1 will serve as the base document and index for Design Practices and Criteria (DPC) Manuals. There are numerous other technical publications, technical manuals, military standards, and instructions/directives that also contain ship design requirements; therefore, T9070-AE-DPC-010/001-1 will be used to index these types of technical documents related to ship design as well. Use of the DPC Index and DPC Manuals will improve the quality of ship designs, which in turn will result in better ships delivered to the Fleet or better ships modernized for the Fleet.

The NAVSEA Chief Engineer's (CHENG's) intent for the DPC Index and DPC Manuals is to enhance knowledge management for ship design and to enhance commonality across all ship platforms. NAVSEA technical authorities should ensure that their technical requirements and guidance for cross-platform ship design will be contained in or referenced from the DPC Manuals. Similarly, technical authorities should ensure the DPC Manuals are considered as source document references in ship and overhaul specifications, as opposed to repeating detailed requirements in each individual specification. For information pertaining to design practices and criteria, please contact the DPC Manual Project Manager, Bob Alperstein (SEA 05S1) at (202) 781-3660.



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Rear Admiral, USN  
NAVSEA CHENG



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## FOREWORD

Under the authority of NAVSEAINST 5400.111, NAVSEA Engineering and Technical Authority Policy, this manual identifies NAVSEA technical publications applicable to the design practices and criteria for ship design throughout the ship's life cycle including new construction and conversions/modernizations. These technical publications are issued by the NAVSEA enterprise and associated technical authorities for use by the Navy and the Navy's industry partners in ship design.

This manual does not apply to systems under the cognizance of the Deputy Commander, Nuclear Propulsion Directorate (NAVSEA 08).

Comments, suggestions, or questions on these procedures should be addressed to: Commander, Naval Sea Systems Command, ATTN: NAVSEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard, DC 20376-5160 or emailed to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil), with the subject line "DPC Comment".

### TMDER INSTRUCTIONS

Ships, training activities, supply points, depots, Naval Shipyards and Supervisors of Shipbuilding are requested to arrange for the maximum practical use and evaluation of NAVSEA and SPAWAR technical manuals (TMs). All errors, omissions, discrepancies, and suggestions for improvement to NAVSEA and SPAWAR TMs shall be submitted as a Technical Manual Deficiency/Evaluation Report (TMDER). All feedback comments shall be thoroughly investigated and originators will be advised of action resulting there from.

The NAVSEA/SPAWAR Technical Manual Deficiency/Evaluation Report form, NAVSEA 4160/1 is included at the back of the TM.

Copies of form NAVSEA 4160/1 may also be downloaded from:  
[https://nsdsa.nmci.navy.mil/nsdsarepository/TMDER\\_BLANK\\_REV\\_9-2010-1.pdf](https://nsdsa.nmci.navy.mil/nsdsarepository/TMDER_BLANK_REV_9-2010-1.pdf).

The following methods are available for generation and submission of TMDERs against unclassified TMs:

- For those with a Technical Data Management Information System (TDMIS) account, the most expedient and preferred method of TMDER generation and submission is via the TDMIS website at:  
<https://mercury.tdmis.navy.mil>.
- For those without a TDMIS account, generate and submit TMDER via the Naval Systems Data Support Activity (NSDSA) website at: [https://mercury.tdmis.navy.mil/def\\_external/pubsearch.cfm](https://mercury.tdmis.navy.mil/def_external/pubsearch.cfm). (TDMIS accounts may be requested at <https://nsdsa.nmci.navy.mil>.)
- When internet access is not available, submit TMDER via hardcopy to:  
  
COMMANDER  
CODE 310 TMDERs  
NAVSURFWARCENDIV NSDSA  
4363 MISSILE WAY, BLDG 1389  
PORT HUENEME, CA 93043-4307
- TMDERs against classified/restricted (includes all NOFORN) TMs must be submitted using the hardcopy method cited above.
- Urgent priority TM deficiencies shall be reported by naval message with transmission to Port Hueneme Division, Naval Surface Warfare Center (Code 310), Port Hueneme, CA. Local message handling procedures shall be used. The message shall identify each TM deficiency by TM identification number and title. This method shall be used in those instances where a TM deficiency constitutes an urgent problem, (i.e., involves a condition, which if not corrected, could result in injury to personnel, damage to the equipment, or jeopardy to the safety or success of the mission).

Complete instructions for TMDER generation and submission are detailed on the NSDSA website at:  
<https://nsdsa.nmci.navy.mil/tmder/tmder.asp?lvl=1>.



# CHAPTER 1

## INTRODUCTION

### 1.1 PURPOSE.

The purpose of Design Practices and Criteria (DPC) Manuals is to provide ship design practices and criteria to personnel involved with the design, conversion, or modernization of U.S. Navy ships. The purpose of this DPC Index is not only to list these DPC Manuals in a single location, but also to identify other documents associated with ship design. In doing so, this DPC Index gives this body of technical standards the proper visibility to the NAVSEA technical community, associated industry partners, affiliated Program Executive Offices (PEOs), and Naval Shipyards.

### 1.2 SCOPE.

The technical authority for Navy ships is assigned to the NAVSEA Chief Engineer (NAVSEA 05) in accordance with NAVSEAINST 5400.97. This technical authority is further delegated to cognizant Technical Warrant Holders (TWHs) in accordance with NAVSEAINST 5400.111 and NAVSEA Notice 5400. Each document identified in the DPC Index is under the control of a cognizant NAVSEA technical authority. The DPC Index and the DPC Manuals do not apply to naval reactor plant systems, equipment, and facilities under the cognizance of the Deputy Commander, Nuclear Propulsion Directorate (NAVSEA 08).

As discussed in S9800-AB-MAN-010/ETAM, technical standards are the foundation upon which engineering efforts and designs are built. The technical standards identified in this DPC Index form the foundation for ship design. These technical standards are intended to be invoked as requirements in: new construction ship specifications, S9000-AD-SPN-010/NCDS, S9AA0-AB-GOS-010, 0902-LP-018-2010, and availability/overhaul work packages utilized for conversions and modernizations.

### 1.3 BACKGROUND.

Design Data Sheets (DDSs) contain textbook-type information, guidance, and requirements for use in the design and construction of ships, systems, equipment, and components. They illustrate typical design and calculation methods and procedures that are acceptable to the Government. DDSs have existed since the 1930's. Legacy DDSs used a unique format and numbering system unlike any other technical standard. There have been various but incomplete efforts over the decades to convert DDSs into more standardized documents such as technical manual publications or defense specifications and standards (i.e., MIL-SPECs/STDs). During the acquisition reform period of the 1990's, some of these defense specifications/standards (i.e., military specifications/standards) were converted to defense handbooks (i.e., guidance documents) or cancelled altogether.

Beginning with the issuance of this DPC Index, there is now a renewed effort to organize the existing DDSs and make them more readily available to the user. This effort consists of: (1) assigning a Technical Manual Identification Number (TMIN) to each DDS, (2) posting each DDS to the Technical Document Management Information System (TDMIS), and (3) reformatting each DDS to be consistent with the format for technical manual publications. This effort required the development of a consistent TMIN format to make DPC Manuals readily recognizable.

Additionally and apart from the development of DDSs, it was recognized that there are many miscellaneous technical manual publications identified in some manner on their covers as "design practices and criteria" and intended to be used for ship design much like the DDSs. These publications have been inconsistent in their TMIN, using various identifying acronyms such as "DDT", "DSP", "HBK", "MAN", "PRO", etc. At the option of the authors of these miscellaneous manuals, the TMIN scheme developed for DPC Manuals (hereafter referred to as the "DPC TMIN") is available for these miscellaneous publications and not just for the DDSs.

Finally, whether or not other technical publications take advantage of the DPC TMIN, the DPC Index can list any type of technical publication as long as the document is directly related to ship design. There are numerous defense specifications/standards that are needed for ship design, such as the DDSs that were converted to defense specifications/standards. These documents can be listed in the DPC Index, thereby creating a library of technical standards that are all related to ship design.

New design practice and criteria standards for ships will normally be issued as DPC Manuals, organized using the standard SWBS numbering system. Similarly, when legacy documents listed in this index are revised, they will often be converted to the DPC Manual format.

#### 1.4 APPLICABLE DOCUMENTS.

1.4.1 General. The documents listed in this section are specified in chapters 1-3 of this publication. This section does not include documents cited in other sections of this publication or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in chapters 1-3 of this publication, whether or not they are listed.

#### 1.4.2 Government Documents, Drawings, and Publications.

##### DEPARTMENT OF DEFENSE (DOD) INSTRUCTIONS

DoD Instruction 5230.24 - Distribution Statements on Technical Documents

(Copies of this document are available online at [http://www.dtic.mil/whs/directives/.](http://www.dtic.mil/whs/directives/))

##### NAVAL SEA SYSTEMS COMMAND (NAVSEA) INSTRUCTIONS

NAVSEAINST 5400.97 - Virtual SYSCOM Engineering and Technical Authority Policy

NAVSEAINST 5400.111 - NAVSEA Engineering and Technical Authority Policy

(Copies of these documents are available online at [www.navsea.navy.mil](http://www.navsea.navy.mil).)

##### NAVAL SEA SYSTEMS COMMAND (NAVSEA) NOTICES

Notice 5400 - NAVSEA Technical Authorities

(Copies of this document are available online at [www.navsea.navy.mil](http://www.navsea.navy.mil).)

##### NAVAL SEA SYSTEMS COMMAND (NAVSEA) PUBLICATIONS

0902-LP-018-2010 - General Overhaul Specifications for Deep Diving Submarines (DDGOS)

(Copies of this document are available online at [https://eagle.submepp.navy.mil/eBusiness/.](https://eagle.submepp.navy.mil/eBusiness/))

S9AA0-AB-GOS-010 - General Specifications for Overhaul of Surface Ships (GSO)

(Copies of this document are available online at [https://navsea.portal.navy.mil/hq/21-surfmepp/gso/default.aspx.](https://navsea.portal.navy.mil/hq/21-surfmepp/gso/default.aspx))

S9000-AD-SPN-010/NCDS - Naval Combatant Design Specification

S9040-AA-IDX-010/SWBS 5D - Expanded Ship Work Breakdown Structure (ESWBS) for all Ship and Ship/Combat Systems

S9800-AB-MAN-010/ETAM - Engineering and Technical Authority Manual (ETAM)

(Copies of these documents are available online at <https://nll.ahf.nmci.navy.mil>. These publications can be located by searching the Navy Publications Index for the TMIN without the suffix.)

OFFICE OF THE CHIEF OF NAVAL OPERATIONS (OPNAV) PUBLICATIONS

N00000-00-IDX-000/TMINS - Navy Standard Technical Manual Identification Numbering System  
(TMINS)

(Copies of this document are available online at <https://mercury.tdmis.navy.mil/>.)



## CHAPTER 2 RESPONSIBILITIES, MAINTENANCE, AND UTILIZATION

### 2.1 AVAILABILITY.

The DPC Index and designated DPC Manuals are available from the secure internet site TDMIS (see <https://mercury.tdmis.navy.mil>) and print-on-demand from Naval Logistics Library (NLL) (see <https://nll1.ahf.nmci.navy.mil>). A “designated” DPC Manual is a manual that has been assigned a DPC TMIN. A complete list of designated DPC Manuals is in table 3-1.

The DPC Index may also list non-designated DPC Manuals. These are manuals that have not been assigned a DPC TMIN, but are still considered related to ship design and, therefore, worthy of listing in the DPC Index. Non-designated DPC Manuals are generally also available from TDMIS and NLL.

The DPC Index may also list defense specifications/standards. Although defense specifications/standards are not numbered using Shipboard Work Breakdown System (SWBS) numbers, these documents will be listed in the DPC Index in the appropriate SWBS group. Defense specifications/standards are available from the ASSIST online database (see secure internet site <https://assist.dla.mil> or non-secure internet site <http://www.assistdocs.com>).

For any documents not available from the above internet sites, send request to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil). Requests for classified documents must be submitted directly to the Technical Warrant Holder (TWH) responsible for the document; send request to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil) and the request will be forwarded to the TWH who will be responsible for determining the requestor’s clearance and need-to-know.

### 2.2 DISTRIBUTION.

There is no routine distribution of the DPC Index or the DPC Manuals. Users are responsible for ensuring that they have the latest available version of a document or the version required by their contract. If a user cannot obtain a document from TDMIS, NLL, or ASSIST, then documents will only be provided to a user in accordance with each document’s assigned distribution statement (see DoD Instruction 5230.24) or assigned classification.

### 2.3 FORMAL REVISIONS.

A formal revision of a designated DPC Manual is a superseding issue of the entire document. All changes are incorporated into the revised document; change pages are not utilized. Where changes are of a limited nature, change bars are included to identify information that has changed and these items are listed in the Revision Record following the title page. Note that the initial conversion of DDSs to DPC Manuals was done simply by assigning the appropriate TMIN and applying a cover sheet to the original copy of the DDS; the body of such a DPC Manual is the original unchanged DDS (change bars and revision records may not apply to the original DDSs).

A formal revision of any other document listed in the DPC Index is handled in accordance with the practices applicable to that document.

### 2.4 FEEDBACK.

To facilitate feedback commentary, a copy of NAVSEA Form 4160/1, Technical Manual Deficiency/Evaluation Report (TMDER), is included at the end of this DPC Index and each designated DPC Manual. The completed form may be printed and mailed or may be scanned and emailed. The TMDER is also available online at <https://nsdsa.nmci.navy.mil> and can be completed online. All feedback comments will be thoroughly investigated and originators will be advised of any action resulting therefrom.

## 2.5 LIFE CYCLE MANAGER.

A NAVSEA TWH is assigned for each document listed in the DPC Index and is responsible for the technical content of the document. The TWH will periodically issue revisions to keep technical information current. However, TWH's are not normally available as an information "hot line". Users performing work under contract should refer issues to their Contracting Officer or the appropriate Program Office. Others may submit technical questions to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil). Each document listed in TDMIS (<https://mercury.tdmis.navy.mil>) should have a point of contact (POC) listed under the Publication Number for that document. Each document listed in ASSIST (secure internet site only <https://assist.dla.mil>) has a POC or POCs listed for the preparing activity for that document.

## CHAPTER 3 DPC MANUAL STRUCTURE

### 3.1 INTRODUCTION.

The DPC Index is organized by SWBS number including those documents that do not use SWBS numbers as part of their identifying number, such as defense specifications/standards. In these cases, a SWBS number was determined based on the content of the document.

As of the initial issue of this DPC Index, the library of DDSs consisted of 76 active documents. Each of these DDSs have been assigned a DPC TMIN and, if unclassified, posted to TDMIS. Various technical manuals that did not originate as a DDS, but have been identified as being considered to be a DPC Manual, have been assigned or reassigned a DPC TMIN. Documents that have a DPC TMIN are considered “designated” DPC Manuals.

“Non-designated” DPC Manuals are technical manuals that have been listed in the DPC Index, but were not assigned or reassigned a DPC TMIN. Non-designated DPC Manuals are considered worthy of listing in the DPC Index due to their content that are directly relevant to ship design; however, whether a DPC TMIN is assigned to a manual is at the discretion of the TWH.

Documents other than technical manuals, such as defense specifications/standards, have been listed in the DPC Index due to their content being directly relevant to ship design, but are not assigned a TMIN and retain their original identifying number. Generally, these are Defense Standardization Program (DSP) documents that require access to a wider audience via ASSIST and, hence, cannot be converted to a technical manual which would result in the user audience being more limited to the NAVSEA technical community.

### 3.2 TMINS.

DPC TMINs comply with the TMINS specified in OPNAV N00000-00-IDX-000/TMINS. The Technical Manual Maintenance Authority (TMMA) for the DPC Index is solely responsible for assigning DPC TMINs. Requests for a DPC TMIN for a newly authored manual (or for a non-designated DPC Manual that is being converted to a designated DPC Manual) are to be submitted to this TMMA.

### 3.3 DPC MANUAL NUMBERING.

DDS numbers consisted of a three-digit number followed by a dash followed by a number (e.g., DDS 130-1). The three-digit number was the SWBS number in accordance with S9040-AA-IDX-010/SWBS 5D. Where more than one DDS existed for the same generic subject matter (i.e., the same SWBS number), the DDS was designated by subsequent numbers (e.g., DDS 130-2, 130-3, and so on). As the majority of DPC Manuals started as DDSs, the DDS number will be utilized as part of the suffix to the DPC TMIN. This suffix also provides a convenient way to refer to designated DPC Manuals, rather than using the TMIN. For example, the complete TMIN for this DPC Index is T9070-AE-DPC-010/001-1. “T9070-AE-DPC-010” is sufficient to uniquely identify this DPC Index in TDMIS and this DPC Index can be referred to as “DPC Manual 001-1”.

### 3.4 DPC DOCUMENTS TABLE.

[Table 3-1](#) is a compilation of currently available DPC Manuals and related documents. The status of documentation previously issued, but retired from the current [table 3-1](#), is noted in [table 3-1](#). Cancelled or inactive documents may still be available upon request to users where the document is a valid primary reference within their contract. Users may obtain current status information on any DPC Manual from TDMIS (<https://mercury.tdmis.navy.mil>) or any defense specification/standard from ASSIST (<https://assist.dla.mil> or <http://www.assistdocs.com>).

Table 3-1. DPC Documents.

DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
001-1	General – Design Practices and Criteria Manual, Publications Index and User Guide	T9070-AE-DPC-010/001-1	29 Jul 2015	A / U	
051-1	Prediction of Smooth-Water Powering Performance for Surface-Displacement Ships	T9070-AG-DPC-010/051-1	15 May 1984	D / U	
070	NAVSEA Design Practices and Criteria Manual for Submarine General Arrangements Design	T05U3-085	19 Aug 2012	D / U	
070-1	Determination of List and Trim Limits for U.S. Navy Surface Ships	T9070-AH-DPC-010/070-1	28 Oct 1987	D / U	
072-1	Shock Design Values	T9070-AJ-DPC-010/(C) 072-1	15 Sep 1972	D / C	
072-2	Nuclear Blast Protection Environments	T9070-AJ-DPC-020/(C) 072-2	01 Apr 1973	C / C	<sup>24/</sup>
072-3	Conventional Weapons Protection (Fragments)	T9070-AJ-DPC-030/(C) 072-3	24 Feb 1988	D / C	
072-4	Hull, Mechanical, and Electrical Systems Survivability	T9070-AJ-DPC-040/072-4	01 Mar 1986	D / U	<sup>24/</sup>
072-5	Equipment Sway Brace Design	T9070-AJ-DPC-050/072-5	15 Jun 1988	D / U	
072-6	Shaped Charge Warhead Weapon Effects Data	T9070-AJ-DPC-060/(C) 072-6	30 Oct 1987	D / C	<sup>24/</sup>
072-7	Conventional Airblast (Proximity)	T9070-AJ-DPC-070/(C) 072-7	20 Jan 1988	D / C	<sup>24/</sup>
072-8	Conventional Airblast (Contact and Internal) Design and Analysis Methodology	T9070-AJ-DPC-080/(C) 072-8	11 Jun 1986	D / C	<sup>24/</sup>
072-9	Nuclear Thermal Radiation Protection Data	T9070-AJ-DPC-090/072-9	26 Apr 1989	D / U	
072-10	NAVSEA/JAG Fire Incidents Database	T9070-AJ-DPC-100/072-10	22 Sep 2004	D / U	<sup>3/</sup>
072-11	Fire Risk Ranking for Naval Ship Design	T9070-AJ-DPC-110/072-11	07 Jun 2007	A / U	
074	Riveting Steel or Aluminum	DDS 074-1		unk / U	<sup>4/</sup>
077	Submarine Safety (SUBSAFE) Design Review Procedure	0941-LP-041-3010	15 Jul 1973	D / U NOFORN	
077-1	Safety Design Criteria for Storage Areas Containing Hazardous Materials on Surface Ships	T9070-AL-DPC-010/077-1	01 Oct 2002	A / U	<sup>5/</sup>



Table 3-1. DPC Documents.

DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
078-1	Composite Materials, Surface Ships, Topside Structural and Other Topside Applications – Fire Performance Requirements	T9070-AK-DPC-010/078-1	11 Aug 2004	A / U	
079-1	USN Surface Ship Stability and Reserve Buoyancy Design, Analysis, and Criteria Standard	T9070-AF-DPC-010/079-1	Draft	A / U	<sup>5/</sup>
079-2	Minimum Required Freeboard for U.S. Naval Surface Ships	T9070-AF-DPC-020/079-2	01 Mar 1982	unk / U	
085-1	Submarine Area/Volume Calculations and Reporting Procedures	T9070-AM-DPC-010/085-1	07 Aug 2012	D / U	
100-1	Reinforcement of Openings in Structure of Surface Ships, Other than in Protective Plating	T9070-AN-DPC-010/100-1	15 May 1984	A / U	
100-2	Openings in Decks and Bulkheads for Stuffing Tubes and Pipes	T9070-AN-DPC-020/100-2	26 Oct 1987	D / U	
100-4	Strength of Structural Members	T9070-AN-DPC-040/100-4	15 Nov 1982	D / U	
100-5	Strength of Glass Reinforced Plastic Structural Members	T9070-AN-DPC-050/100-5	01 Aug 1969	D / U	
100-6	Longitudinal Strength Calculation	T9070-AN-DPC-060/100-6	29 May 1987	D / U	
100-7	Structure to Resist Weapons Firing Effects	T9070-AN-DPC-070/100-7	15 May 1984	D / U	
100-9	Nuclear Airblast Design for Surface Ship Structures	T9070-AN-DPC-090/100-9	27 Feb 1991	D / U	
110-1	Criterion for Submarine Structure	T9070-BP-DPC-010/(unk) 110-1	01 Aug 1957	unk / unk	<sup>7/</sup>
110-2	Submarine Structural Design	T9070-BP-DPC-020/(C) 110-2	30 Apr 2012 (Rev 1)	unk / C	
112-1	Submarine Main Ballast Tank Structural Design	T9070-AP-DPC-010/112-1	18 Nov 1987	D / U	
116-1	Stem Shape Design	T9070-AQ-DPC-010/116-1	15 May 1984	D / U	
130	Structural Design of Aircraft Handling Decks	DDS 130-1	01 Nov 1957	U	<sup>8/</sup>
130-2	Structural Design and Analysis of Helicopter Handling Decks	T9070-AR-DPC-020/130-2	11 Feb 2014 (Rev 1)	D / U	
130-3	Structural Design and Analysis of Wheeled and Tracked Vehicle Decks	T9070-AR-DPC-030/130-3	03 Sep 1987	D / U	

Table 3-1. DPC Documents.

DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
130-4	Deck Camber and Sheer for USN Surface Ships	T9070-AR-DPC-040/130-4	02 Sep 1987	D / U	
150-1	Design of Foundations and Other Structures to Resist Shock Loadings	T9070-AS-DPC-010/150-1	01 Mar 1964	D / U	
161-1	Shaft Struts	T9070-AT-DPC-010/161-1	15 Nov 1982	D / U	
161-2	Propulsion Shaft Fairings	T9070-AT-DPC-020/161-2	26 Aug 1987	D / U	
170-0	Mast Design	T9070-AU-DPC-000/170-0	01 Jul 1980	D / U	<sup>9/</sup>
185-1	Designs of Foundations for Arresting Gear Sheaves	T9070-AV-DPC-010/185-1	01 Aug 1975	A / U	
200-1	Calculation of Surface Ship Endurance Fuel Requirements	T9070-AW-DPC-010/200-1	04 Oct 2011 (Rev 1)	A / U	
200-2	Calculation of Surface Ship Annual Energy Usage, Annual Energy Cost, and Fully Burdened Cost of Energy	T9070-AW-DPC-020/200-2	07 Aug 2012	A / U	
200-2 S1	Calculation of Surface Ship Annual Energy Usage, Annual Energy Cost, and Fully Burdened Cost of Energy; Supplement 1: DDG 51 Class Profile	T9070-AW-DPC-510/200-2 S1	02 Jul 2013	D / U	
200-2 S2	Calculation of Surface Ship Annual Energy Usage, Annual Energy Cost, and Fully Burdened Cost of Energy; Supplement 2: LSD 41 and LSD 49 Class Profiles and Associated Data	T9070-AW-DPC-520/200-2 S2	11 Dec 2013	D / U	
221-1	Data for Estimating Pressure Losses in Engine and Boiler Inlet and Exhaust Systems	T9070-AX-DPC-010/221-1	01 Oct 1972	D / U	
243	Propulsion Shafting	DDS 243-1	01 Jan 1960	unk / U	<sup>10/</sup>
243	Design Methods for Naval Shipboard Systems, Propulsion Shafting	MIL-HDBK-2189 Section 243-1	30 Aug 1994	A / U	
245-1	Controllable Pitch Propellers with Bolted on Blades	T9070-AY-DPC-010/245-1	01 Mar 1986	D / U	
245-2	Surface Ship Propeller Acoustic Prediction Process	T9070-AY-DPC-020(S) 245-2	18 Oct 2011	D / S	
251	Forced Draft Blowers, Duct Work for	DDS 251-1	01 Jun 1935	unk / U	<sup>11/</sup>
254-1	Steam Condensers	T9070-AZ-DPC-010/254-1	15 Oct 1953	C / U	

Table 3-1. DPC Documents.

DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
262	Lubricating Oil Systems, Chapter 262	T9200-AA-PRO-010	01 Feb 1982	D / U	
300-1	Fault Current Calculations for Direct Current Systems	T9070-A1-DPC-010/300-1	01 Dec 1970	C / U	<sup>12/</sup>
300-2	Fault Current Calculations and Protective Device Coordinations for 60 and 400 Hz Power Systems Supplied By Rotating Machinery	T9070-A1-DPC-020/300-2	28 Jun 1995	D / U	
302-1	AC Motor and Controller Application Requirements	T9070-A2-DPC-010/302-1	04 Feb 1987	C / U	
304	Electric Cable Voltage Drop Calculations	DDS 304-1	15 Oct 1985	C / U	<sup>13/</sup>
304	Electrical Cables Ratings and Characteristics	DDS 304-2	15 May 1984	C / U	<sup>13/</sup>
305	Designation and Marking of Electric System	DDS 305-1	01 May 1970	C / U	<sup>14/</sup>
310-1	Electrical Power Load Analysis (EPLA) for Surface Ships	T9070-A3-DPC-010/310-1	17 Sep 2012 (Rev 1)	A / U	
311-1	Frequency Regulation of A.C. Ship Service Electric Power Systems	T9070-A4-DPC-010/311-1	01 Dec 1970	C / U	
311-2	Voltage Regulation of A.C. Ship Service Electric Power Systems	T9070-A4-DPC-020/311-2	01 Oct 1972	C / U	
311	Ship Service Electric Power System, Application and Coordination of Protective Devices	DDS 311-3	01 Sep 1962	C / U	<sup>15/</sup>
313-1	Submarine Battery Endurance Calculations	T9070-A5-DPC-010/313-1	01 Mar 1986	D / U	
314-1	Calculation of Fault Currents and Coordination of Protective Devices for 400 Hz Power Systems Supplied by Solid State Frequency Changers	T9070-A6-DPC-010/314-1	21 Jun 1991	D / U	
314-4	400-Hertz Power System Test Procedure	T9070-A6-DPC-040/314-4	01 Jul 1980	C / U	
320-2	Electrical System Interface - Voltage and Current Harmonic Calculations	T9070-A7-DPC-020/320-2	24 Sep 2013 (Rev 1)	D / U	
402	NAVSEA Description Document for Shipboard Navy Control Systems	NAVSEA Letter Serial 05Z/027	14 Jan 2015	D / U	<sup>26/</sup>

Table 3-1. DPC Documents.

DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
407	Design Principles and Practices for Controlling Hazards of Electromagnetic Radiation to Ordnance (HERO Design Guide)	OD 30393	01 Apr 2001 (Rev 2)	A / U	
430-1	General Requirements for Interior Communication Systems	T9070-A8-DPC-010/430-1	22 Feb 1995	D / U	
430-2	Procedure for Determining Synchro System Loading Capacity	T9070-A8-DPC-020/430-2	02 Dec 1968	unk / U	
430-3	Shipboard Fire Detection System	T9070-A8-DPC-030/430-3	01 Mar 1986	A / U	<sup>16/</sup>
475	NAVSEA Design Practices and Criteria Manual for Degaussing Systems	T9300-AF-PRO-010	23 May 1985	D / U	
505-1	Friction Pressure Drop in Piping	T9070-A9-DPC-010/505-1	01 Jan 1960	A / U	<sup>17/</sup>
505	NAVSEA Design Practices and Criteria Manual for Titanium Piping Systems	S9505-A1-DDT-010	15 Oct 2007 (Rev 1)	B / U	
505	NAVSEA Design Criteria Manual for Erosion/Corrosion Prevention in Surface Ship 90-10 Copper-Nickel Seawater Systems	T9500-AA-PRO-140	12 Jan 1993	E / U	
510	NAVSEA Design Practices and Criteria Manual for Air Conditioning, Ventilation, and Heating of Surface Ships	T9500-AA-PRO-130	05 May 1988	E / U	<sup>18/</sup>
511-1	Methods of Heating - Description and Selection of Heating Equipment	T9070-BA-DPC-010/511-1	UNDATED	D / U	
511-2	Heat Transfer Coefficients	T9070-BA-DPC-020/511-2	01 Dec 1948	D / U	
512-1	Pressure Losses of Ventilation Fittings	T9070-BB-DPC-010/512-1	18 Dec 1991	D / U	
512-2	A Method for Determining the Size of Ventilation Ducts	T9070-BB-DPC-020/512-2	18 Dec 1991	D / U	
512-3	Design of Slotted Duct Terminals	T9070-BB-DPC-030/512-3	UNDATED	A / U	
514	Methods of Cooling and Dehumidifying Air Conditioned Spaces, Selection of Equipment, and Control of Temperature and Humidity	DDS 514-1	15 May 1984	unk / U	<sup>19/</sup>
516-1	Refrigerating Equipment for Storage Compartments - Heat Load Calculation and Selection	T9070-BC-DPC-010/516-1	01 Feb 1967	A / U	

Table 3-1. DPC Documents.

DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
521	NAVSEA Design Practices and Criteria Manual for Surface Ship Firemain System	T9500-AA-PRO-030	Jun 1988	E / U	
522-1	Shipboard Sprinkler Systems	T9070-BD-DPC-010/522-1	18 Nov 1987	D / U	
522-2	Miscellaneous Wet-Type Sprinkling Systems	T9070-BD-DPC-020/522-2	27 Apr 1995	D / U	
526	NAVSEA Design Practices and Criteria Manual for Helo Deck Containment and Drainage	S9070-AC-DDT-010	11 Dec 1989	C / U	
531-1	Surface Ship Distilling Plant Sizing Details	T9070-BE-DPC-010/531-1	23 Jul 1986	D / U	
532	Submarine Electronic Cooling Water Systems, Chapter 532	T9500-AA-PRO-070	06 Nov 1984	E / U	
532	Surface Ship Freshwater Systems, Chapter 532	T9500-AA-PRO-120	04 Jan 1988	E / U	
541	Ship Fuel Systems, Chapter 541	T9500-AA-PRO-020	03 Jun 1980	D / U	
542	Gasoline and JP-5 Systems, Chapter 542	T9500-AA-PRO-010	04 Jun 1980		
551	NAVSEA Design Practices and Criteria Manual for Compressed Air Systems	T9500-AA-PRO-040	14 Nov 1980	E / U	
551	NAVSEA Design Practices and Criteria Manual for Submarine Compressed Air Systems	T9500-AA-PRO-080	Jan 1986	E / U	
562-1	Control Surface Hydrodynamic Design Process	T9070-BF-DPC-010/562-1	05 Feb 2013 (Rev 1)	D / U	
562-2	Control Surface Structure Design	DDS 562-2	04 Nov 1987	D / U	<sup>20/</sup>
562	Design Methods for Naval Shipboard Systems, Control Surface Structure Design	MIL-HDBK-2189 Section 562-2	02 Jun 1992	D / U	
563	Submarine Hovering and Depth Control Fluid Systems, Chapter 563	T9500-AA-PRO-060	27 Dec 1984	E / U	
563	Submarine Trim and Drain Systems	T9500-AA-PRO-090	06 Jul 1987	E / U	
565-1	Passive Anti-Roll Tanks	T9070-BG-DPC-010/565-1	01 Sep 1962	unk / U	<sup>21/</sup>
568-1	Thruster Maneuvering Systems	T9070-BH-DPC-010/568-1	25 Nov 1987	D / U	
581-1	Calculation and Use of Anchoring Nomographs	T9070-BJ-DPC-010/581-1	01 Jul 1984	A / U	

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DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
582-1	Calculations for Mooring Systems	T9070-BK-DPC-010/582-1	16 Jan 1987	D / U	
593-1	Vacuum Collection Systems - Vacuum Collection Piping	T9070-BL-DPC-010/593-1	27 Apr 2005 (Rev 1)	C / U	
593	Shipboard Solid Waste Processing Equipment, Basic Ship Installation; Integration Package	S9593-C6-IIN-010	30 Apr 2005 (Rev 2)	C / U	
593	Oil Pollution Abatement (OPA) Design and Installation Requirements (DIR)	S9593-FM-IIN-010	30 Jun 2014	C / U	
595	NAVSEA Design Practices and Criteria Manual for Three-Inch Launcher Systems	T9500-AB-PRO-010	12 Apr 1985	D / U	
613-1	Wire Rope Systems Design	T9070-BM-DPC-010/613-1	22 May 1991	D / U	
624	NAVSEA Design Practices and Criteria Manual for Access Closures for Surface Ships	T9500-AB-PRO-040	15 Nov 1985	D / U	
633	Technical Publication Ships Cathodic Protection, Design Calculations, Design Requirements Manual	T9633-AT-DSP-010	30 Jul 2010 (Rev 2)	C / U	
636-1	Damping and Special Acoustic Materials	DDS 636-1	15 Jun 1985	unk / unk	<sup>25/</sup>
640	Shipboard Habitability Design Practices Manual	T9640-AA-PRO-010/HAB	01 Apr 1994	E / U	<sup>22/</sup>
640	Shipboard Habitability Design Criteria and Practices Manual (Surface Ships) for New Ship Designs and Modernization	T9640-AC-DSP-010/HAB	02 Jul 2013	A / U	
671-1	Stowage for Chemical, Biological, and Radiological Defense Outfitting Equipment and Material	T9070-BN-DPC-010/671-1	11 Apr 2005 (Rev 1)	D / U	
672	Calculation of Storeroom Capacities	DDS 672-1	15 May 1984	unk / U	<sup>23/</sup>
672	Design Methods for Naval Shipboard Systems, Calculation of Storeroom Capacities	MIL-HDBK-2189 Section 672-1	24 Dec 1987	A / U	

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DPC Manual No. or SWBS No.	Title	Publication Number	Date of Latest Revision (Revision Number)	Distribution Statement <sup>1/</sup> / Classification <sup>2/</sup>	Notes
NOTES:					
<sup>1/</sup> Distribution Statement: A, B, C, D, E, F, or X in accordance with DoD Instruction 5230.24 (if unknown, shall be treated the same as D).					
<sup>2/</sup> Classification: U - Unclassified; C - Confidential; S - Secret; unk – classified, but unknown classification level.					
<sup>3/</sup> Distribution Statement A upon removal of Appendix B.					
<sup>4/</sup> Cancelled without replacement (cancellation date unknown). Copy not available.					
<sup>5/</sup> Status on IHS indicates that DDS 077-1 (dated 01 March 1982, with replacement pages 4, 5, 6, and 19) was superseded by SDS 077-1. Officially, DDS 077-1 was never superseded; however, the TWH recommends the use of SDS 077-1 in lieu of DDS 077-1. Note that copies of SDS 077-1 are only available from IHS. As of December 2014, the TWH was working on a revision to SDS 077-1. A TMIN will be assigned to the revision of SDS 077-1 when the document is ready for publication.					
<sup>6/</sup> Draft. DDS 079-1 dated 01 Aug 1975 is still in effect until this draft is approved for publication.					
<sup>7/</sup> Amended 01 Jul 1961.					
<sup>8/</sup> Cancelled 11 Feb 2014 (superseded by DDS 130-2, Rev 1).					
<sup>9/</sup> With replacement pages 1, 2, 3, and 4 dated 01 Mar 1982. Supersedes DDS 170-1 dated 01 Sep 1957, DDS 170-2 dated 01 Oct 1958, and DDS 170-3 dated 01 May 1960.					
<sup>10/</sup> With replacement pages 2, 5, 7, 11, 20, and 21 dated 01 Oct 1966; replacement pages 17 and 19 dated 01 Dec 1966; replacement page 12 dated 01 Dec 1970; replacement page 18 dated 01 Oct 1972. Cancelled and replaced with MIL-HDBK-2189 Section 243-1.					
<sup>11/</sup> Cancelled without replacement on 16 Oct 2012.					
<sup>12/</sup> Inactive for new design on 02 Jul 2013.					
<sup>13/</sup> Cancelled and replaced by MIL-HDBK-299.					
<sup>14/</sup> With replacement page 1 dated 01 Oct 1972 and with replacement pages 2 and 7 dated 02 Oct 1977. Cancelled and replaced with MIL-STD-2189 Section 305-1 dated 07 April 1988; MIL-STD-2189 Section 305-1 cancelled without replacement on 05 Dec 1995.					
<sup>15/</sup> Cancelled 03 Apr 2012 and superseded by DDS 300-2.					
<sup>16/</sup> Missing page 3.					
<sup>17/</sup> With replacement pages 5, 6, and 7 dated 01 March 1964; replacement page 29 dated 01 Feb 1967. Contains references to figures that are not in the document.					
<sup>18/</sup> This tech manual is comprised of two sections.					
<sup>19/</sup> Amended by MOD 1 dated 01 Oct 1958. Cancelled (cancellation date unknown).					
<sup>20/</sup> Cancelled and replaced by MIL-HDBK-2189 Section 562-2.					
<sup>21/</sup> With replacement page 1 dated 01 Nov 1963.					
<sup>22/</sup> Cancelled and replaced by T9640-AC-DSP-010/HAB.					
<sup>23/</sup> Cancelled and replaced by MIL-HDBK-2189 Section 672-1.					
<sup>24/</sup> Inactive for new ship design (24 November 2014).					
<sup>25/</sup> The TWH has no record of this document and does not use this document for any of his requirements; therefore, this document is at least considered inactive for new ship design (as of January 2015) and in general should be considered cancelled.					
<sup>26/</sup> In accordance with the NAVSEA letter, Enclosure (1) of the letter will be converted into a technical manual. When published, this technical manual will be assigned a DPC TMIN.					





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