



## DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND  
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WASHINGTON NAVY YARD DC 20376-0001

IN REPLY REFER TO

NAVSEAINST 5400.105  
Ser 05D/262  
2 NOV 2005

From: Commander, Naval Sea Systems Command

Subj: SHIP DESIGN MANAGER CAREER DEVELOPMENT MODEL

Ref: (a) NAVSEA Human Capital Strategy (HCS) Implementation Plan of May 05  
(b) Virtual SYSCOM Joint Instruction VS-JI-22, Virtual SYSCOM Engineering and Technical Authority Policy, of 3 Jan 05  
(c) NAVSEANOTE 5400, NAVSEA Technical Authorities

Encl: (1) Ship Design Manager Career Development Model

### 1. Purpose.

a. Reference (a) states that NAVSEA Workforce Development continuums, once established, will be regularly reviewed and the training investment will be made to steward the workforce and create the opportunity for education and promotion. The purpose of this instruction is to implement use of the Ship Design Manager (SDM) Career Development Model (CDM), enclosure (1), for all current and prospective SDMs to ensure that they achieve levels of technical and program management competence that qualify them to hold a technical warrant for ship design management as defined in reference (b).

b. The SDM CDM identifies specific training, experience and education desired for potential ship design managers from entry-level to expert-level.

2. Scope and Applicability. This instruction applies to all personnel seeking designation as Ship Design Manager under reference (b).

### 3. Definitions.

a. Ship Design Manager (SDM). Reference (b) states that SDMs manage the systems engineering efforts for assigned platforms, including compliance with DoD/SECNAV 5000 series guidance, and are warranted to make integration decisions for those platforms, and to ensure interoperability. In NAVSEA, SDMs are SEA 05 employees associated with specific Program Offices. As such, SDMs lead the technical efforts of Program Offices.

SDMs act as objective, independent, unbiased agents when evaluating the merits of individual technical issues considering impacts at the higher total-system level.

b. Ship Concept Manager (SCM). SCMs perform early-stage ship concept design efforts prior to Acquisition Milestone A and the designation of an SDM. The SCM is directly responsible for establishing the foundation upon which a successful ship design project and final design package will be built. During the brief period in the formative stages of an acquisition program, there may be both an SCM and SDM with complementary responsibilities.

c. Deputy Ship Design Manager (DSDM). In the case of a major ship acquisition program, the SDM may be assigned a deputy. DSDMs are individuals whose training and experience have been similar to those of an SDM. They serve as representatives of the SDM and SEA 05 in all matters. The DSDM is empowered to act in the absence of the SDM in all matters and is held accountable for decisions made.

4. Discussion. Ship Design Managers are critical Technical Warrant Holders and must possess broad technical and management skills so they may effectively perform their duties. Engineers throughout the NAVSEA enterprise are potential candidates to perform this challenging total ship system engineering function. It is critical, therefore, that the criteria for development, selection, and training of these personnel be documented and promulgated throughout NAVSEA.

Enclosure (1) defines education, training, and experience recommended for attaining desired SDM competencies at various career levels. Desired competencies include organizational and process knowledge, individual and team performance, communication skills, and technical and analytical skills. This Career Development Model provides a clearly defined career path for aspiring SDMs that supports the long-term health of the SDM Technical Warrant Area. It also identifies education and training needs, which will focus investment in development of technical capability critical to providing best value engineering and technical products to the Fleet.

5. Policy.

a. Current SDMs, listed in reference (c), are expected to pursue education, training and development in accordance with enclosure (1) to maintain technical competency, expertise, and infrastructure and to further their professional development.

b. Selection of personnel to fill positions in the SDM Career Path will depend largely-but not exclusively-on the fulfillment of the development criteria listed in enclosure (1).

c. Funding priority for non-statutory training within SEA 05D, SEA 05U, SEA 05N, and supporting warfare center segments will be given for attainment of the competencies listed in enclosure (1).

6. Action.

a. SEA 05 shall ensure that copies of enclosure (1) are available to the NAVSEA community on a web page or equivalent, with links to available courses.

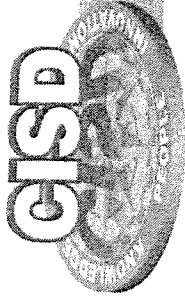
7. Point of Contact. The SEA 05 point of contact is Ron E. Nix, (SEA 05D1) at (202) 781-1683, DSN 326-1683, ronald.nix@navy.mil.



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Distribution:

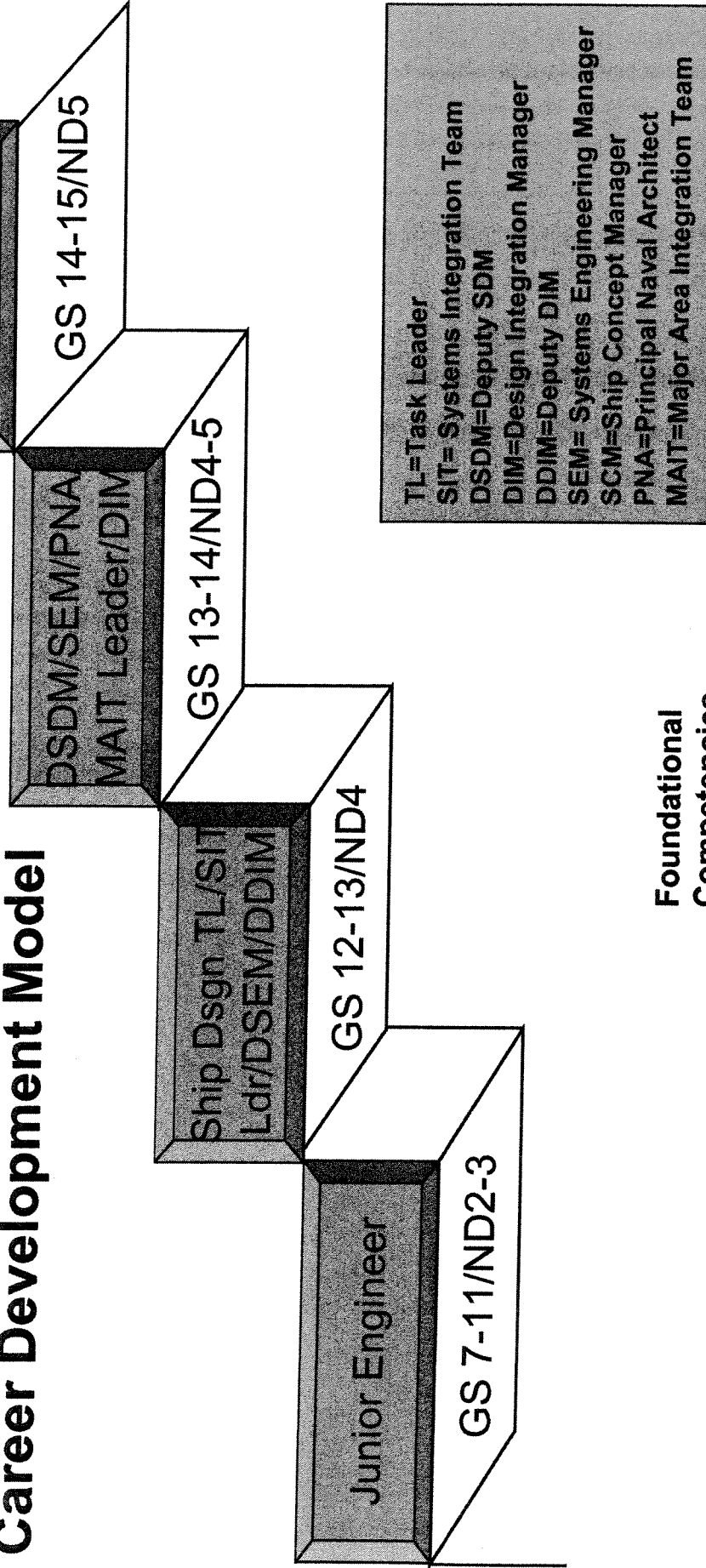
NAVSEA SPECIAL LIST Y3	
SNDL FKP	COMNAVSEASYS COM Shore Activities
C84	COMNAVSEASYS COM Shore Based Detachments
A1J1L	PEO IWS
A1J1M	PEO LMW
A1J1N	PEO SUBS
A1J1P	PEO SHIPS
A1J1Q	PEO CARRIERS
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# Ship Design Manager (SDM) Career Development Model



## Foundational Competencies

1. Organizational/Process Knowledge
2. Individual and Team Performance Skills
3. Communication Skills
4. Technical/Analytical Skills



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# Desired Foundational Competencies

## Foundational Competencies

### Org/Process Knowledge

- Knowledge of NAVY Mission, Values, Structure, Customers, Guiding Principles and Processes

### Indiv/Team Performance

- Individual and Team Performance Skills (self-direction, interpersonal relations, technical competence and integrity, positive attitude, continuous learner, foundation leadership skills, etc.)

### Communication Skills

- Basic oral, written, and PC-based communication skills

### Technical/Analytical Skills

- Analytical skills (identify problems, root causes, recommended solutions, etc.)
- Knowledge of Systems Engineering (e.g. Requirements analysis, Functional allocation, etc.)
- Knowledge of Science & Mathematics

## Competency Enablers

### Education

- Bachelor's Degree in Engineering from Accredited University (Passing FE Exam desired)

### Training

- NAVSEA New Employee Orientation
- NAVSEA Acquisition Process Overview
- NAVSEA Engineering of Systems Overview
- NAVSEA All Hands Bulletin Board/Intranet/NAVSEA News Wire
- Seven Habits of Highly Effective People
- Integrated Product and Process Development (IPPD) for Integrated Product Teams (IPTs)
- Microsoft Office Skills Training

### Developmental Assignments

- Assignment to an intra- or inter-organizational work group or an IPT
- Job rotation to another NAVSEA/HQ or customer organization
- Ship Design Readings/Indiv. Development



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## Junior Engineer



### Competencies

#### **Org/Process Knowledge**

- Knowledge of design, procurement, ops., and support of surface ship/submarine systems and components
- Knowledge of commercial shipbuilding stds., design practices, and ABS Naval Vessel Rules

#### **Indiv/Team Performance**

- DA WIA Systems Planning, Research, Development, and Engineering (SPRDE) Level I/II Career Field Certification
- Project Mgmt (project planning and tracking, resource expenditures, cust. orientation, etc.)

#### **Communication Skills**

- Improved oral, written and PC-based comm. skills (teaming, building consensus, etc.)

#### **Technical/Analytical Skills**

- Knowledge of Naval Arch. & Marine Engr.
- Knowledge of Warfare Systems Engr Principles and Processes (System and subsystem Interface definition/control, etc.)

### Competency Enablers

#### **Education**

- Graduate level course work in Sys. Engr.
- Basic Course in Nav. Arch. & Marine Engr (non-NA&ME grads)

#### **Training**

- DAU Fundamentals of Sys. Acq. Mgmt (ACQ 101)
- DAU Intermediate Sys. Acq. (ACQ 201)
- DAU Intermediate Sys. Planning, Research, Development and Engr. (SYS 201)
- Submarine Design or Sys. Design & Acq. Course
- Human Systems Integration (HSI) Seminar
- Modern Ship Production and Repair
- Advanced Surface Ship Evaluation Tool (ASSET) Course
- Effective Briefing Techniques
- Technical Writing
- ABS Classification & Commercial Shipbuilding
- Combat Systems Design Course
- Project Management Courses

#### **Developmental Assignments**

- 4-6 week assignment to an ACAT Program IPT involved in an IPPD
- 4-6 week assignment to operational environment
- 1-2 4-week assignments at Naval Warfare Centers
- 8 week assignment at NAVSEAHQ PM office or other SYSCOM Sys. Eng. Office
- Establish relationship(s) with mentor(s)
- Ship Design Readings/Indiv. Development



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### Ship Design Task Leader (TL)/Systems Integration Team (SIT) Leader/Deputy Systems Engineering Manager (DSEM)/Deputy Design Integration Manager (DDIM)

#### Competencies

##### **Org/Process Knowledge**

- Knowledge of Warfighting Sys. Engr. Hierarchy and Tech. Authority Policy, including use/development of tech. rqmts., standards, and tools
- Knowledge of Performance-based Specs
- Knowledge of Navy Working Capital Fund (NWCFF) and private sector design consortia business practices
- Knowledge of RDT&E and Acq. Policy and Processes (risk management, PPBES, program milestones, etc.)

##### **Indiv/Team Performance**

- Ability to meet DAWIA APC membership and SPRDE Level III career field certification

##### **Communication Skills**

- Good oral, written and IT comm. and leadership skills (presentations, influencing, teambuilding, coaching/teaching, customer understanding, Info. Tech., etc.)

##### **Technical/Analytical Skills**

- Knowledge of System of Systems Integration
- Knowledge of Customer Oriented Product Development (Business Planning, IPPD, Logistics, etc.)

#### Competency Enablers

##### **Education**

- Graduate level course work in Sys. Engr. (PE License desired)

##### **Training**

- DAU Adv. Systems Planning, Research, Development and Engineering (SYS 301)
- Planning, Programming, Budgeting and Execution System (PPBES) Course
- Design for Producibility
- Topside Design Integration Course
- Intro. To Human Systems Engineering
- Other SYSCOM Familiarity training
- Performance-based spec writing
- Participation in Professional conferences
- Logistics Course
- Reliability and Maintainability Course
- Leadership Training

##### **Developmental Assignments**

- Assignment as an ACAT Program Sys. Engr./IPT member
- 4-6 week assignment at maintenance or late stage R&D activity
- 4-6 week assignment at construction (incl. visits to world class mfg. facilities) or early stage R&D activity
- 4-6 week assignment in Logistics
- 4-6 week assignment at Industry site
- Ship Design Readings/Indiv. Development

Enclosure (1)



# Center for Innovation in Ship Design



Deputy Ship Design Manager (DSDM)/Systems Engineering Manager (SEM)/Principal Naval Architect (PNA)/Major Area Integration Team (MAIT) Leader/Design Integration Manager (DIM)

## Competencies

### Org/Process Knowledge

- Knowledge of Program Mgmt (Cost, Sched., Performance management, Contracting Methods, etc.)
- Knowledge of the Total Ship Sys. Engr. process (HSI, safety, reliability, etc.), particularly the principles of IPPD applied to Design for Warfighting, Design for Producibility, and Design for Ownership
- Knowledge of Ship or Submarine Total Ownership Costs and Estimating Methods
- Ability to support contract admin. (tasking, money flow, etc.)

### Indiv/Team Performance

- Knowledge of org. cultures and principle-centered leadership, and experience in organizing and leading large, multi-disciplinary teams
- Ability to meet DAWIA Program Mgmt Level II career field cert. (includes Software Acq. Mgmt., Financial Mgmt, Acq. Policy and Contracting)

### Communication Skills

- Adv. oral, written and IT comm. and leadership skills (stewardship, negotiating, teambuilding, human resource mgmt, etc.)

### Technical/Analytical Skills

- Knowledge of Product Design Technologies (Computer Modeling & Simulation, Optimization, Product Modeling, CAD, CAM, Decision-Making Theory, etc.)
- Ability to translate complex system concepts into tech. details
- Ability to develop innovative ship and force arch. concepts, early stage designs and to direct comparative design analyses (cost vs. capability)

## Competency Enablers

### Education

- Graduate level course work in Sys. Engr. (e.g. Navy PD-21 Program, NPS MSSE, etc.)

### Training

- DAU Program Management Tools (PMT 250)
- Contracts Management
- HSI/Automation Course
- Ship & Submarine Signatures or Weapons Effects and Ship/Submarine Survivability
- World Class Shipbuilding/Manufacturing
- Cost Estimating Course
- Decision-making Tools Course
- Participation in Professional conferences
- Continuous learning (Leading Org. Change, negotiation, Sys. Arch. Dsgn., modeling & simulation, Ops. Analysis/OR, etc.)
- Leadership/Executive Development training (e.g. OPM Exec. Dev. Seminar, CDP, DLAMP, etc.)

### Developmental Assignments

- Competitive assignments to DoD or other Navy component commands (NWDC, ASN RDA, SSG, CNO staff, etc.)
- 4-6 week proposal evaluation
- Ship Design Readings/Indiv. Development

Enclosure (1)





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## Ship Design Manager (SDM)/Ship Concept Manager (SCM)



### Competencies

#### Org/Process Knowledge

- Knowledge of warfare doctrine and joint battle force interoperability concepts
- Knowledge of shipbuilding business processes and principles
- Knowledge of Allied ship and sub. design, acq., and systems
- Ability to incorporate emerging technology developments into tech. product improvement plans, designs and specs

#### Indiv/Team Performance

- Ability to meet DAWIA Program Management Level III career field certification
- Ability to think globally, make well-supported decisions, accept responsibility, and discern the true voice of the customer

#### Communication Skills

- Strong leadership skills (business ethics, resource mgmt, conflict mgmt, stress mgmt, mentoring, marketing, etc.), including ability to define solutions that meet essential tech. reqmts and willingness to elevate tech. issues for mgmt resolution

#### Technical/Analytical Skills

- Knowledge of adv. sys. engr integration, multi-disciplinary inter-service design optimization and decision-making, and ship design concepts, principles, practices, and techniques
- Experience in developing new, complex systems with long life, extremely high parts count, and very low production quantities within a complex budget environment
- Ability to plan, coordinate and manage complex sys. development (concept studies, reqmts definition, spec. development, interface definition, design cert., etc.) and support programs involving interaction with a variety of organizations

### Competency Enablers

#### Education

- Naval War College Coursework
- Master's or PhD in technical or management discipline

#### Training

- DAU Program Management Office Courses (PMT 352A&B)
- Continuous Learning (e.g. Engr. of Systems for Interoperability, Network Centric Warfare, COTS-Based Systems for Program Managers, Strategic Issues in Major Sys. Acq., Compound Risk Mgmt, etc.)
- Participation in Professional conferences

#### Developmental Assignments

- Assignment to ACAT Ship Design/Shipbuilding program
- Federal Executive Institute
- Emerging Rotational Assignment TBD by Management (JCS staff, shipbuilder, ICAF, Allied Navy staff, etc.)
- Case Studies/Lessons Learned Readings/Indiv. Development
- Present program innovative practices, lessons learned, etc. to other SDMs to enhance practice of ship design

Enclosure (1)