Safety in Systems Engineering Technical Review (SETR) Tutorial

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Agenda

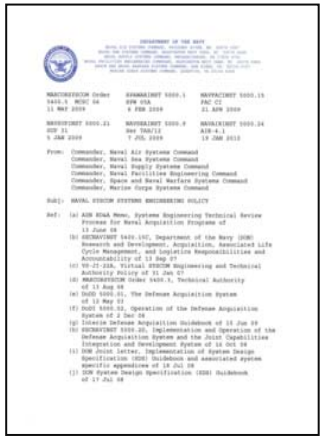
- Introduction
- SETR Policy Requirements
- What is SETR
- Recommended SETRs
- Tailoring
- Safety in SETR Process
- Acquisition Framework Deep Dive
  - Material Solution Analysis
  - Technology Development
  - Engineering and Manufacturing Development
  - Production and Deployment
  - Operations and Support
- Summary/Conclusion

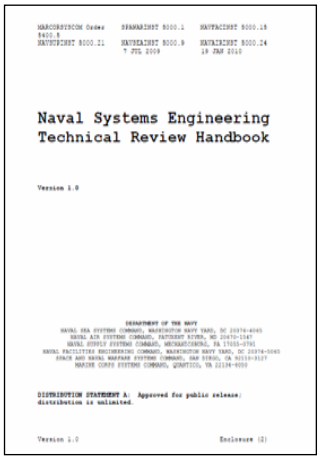
Phase Overview
Present SETRs
Artifacts
Safety Criteria Statements
Safety Driving Factors

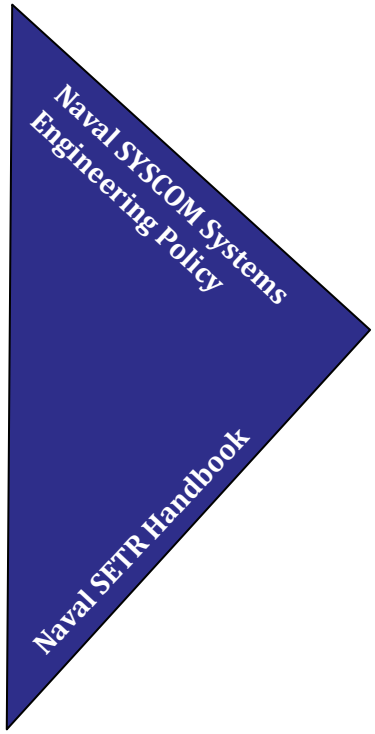
Introduction

- Assistant Secretary of the Navy for Research Development and Acquisition ASN(RDA) Memo dtd 13 June 2008:
  - "I want to institutionalize the Systems Engineering Technical Review process within the Department of the Navy (DON) and ensure appropriate system engineering aspects are included in the Gate review."
- ASN (RDA) Chief Systems Engineer (CHSENG) was to update the Naval Systems Engineering Technical Review (SETR) Handbook, revision 1
  - Appendices developed for Common Functional Areas (CFA) – one of which is Safety
  - Safety Appendix contains Enterprise-level Safety Criteria Checklists (i.e. common to all SYSCOMS)
- The safety in SETR goal is to develop a set **of Naval Enterprise level safety criteria** statements for each of the SETR events (e.g. PDR, CDR, TRR, etc.).
- These criteria statements, or questions, form **the basis of safety in SETR for all Navy and Marine Corps acquisition programs**.
- Each Systems Command (SYSCOM) may develop additional SYSCOM-specific criteria for the SETRs.
- The safety in SETR effort also focused on **better integrating safety engineering into the overall systems engineering process** by developing safety criteria for non-safety focused documents such as the Systems Engineering Plan and Test and Evaluation Master Plan.

Naval Systems Engineering Policy and Guidance







- Establishes systems engineering policy for all Naval SYSCOMs and affiliated PEOs and Direct Reporting Program Managers
- Establishes a common Systems Engineering Technical Review (SETR) process within DON as promulgated by the Naval SETR Handbook
- Handbook provides guidance to implement Naval SYSCOM Systems Engineering Policy
- Identifies planning, execution, and follow-on activities for the SETR process.

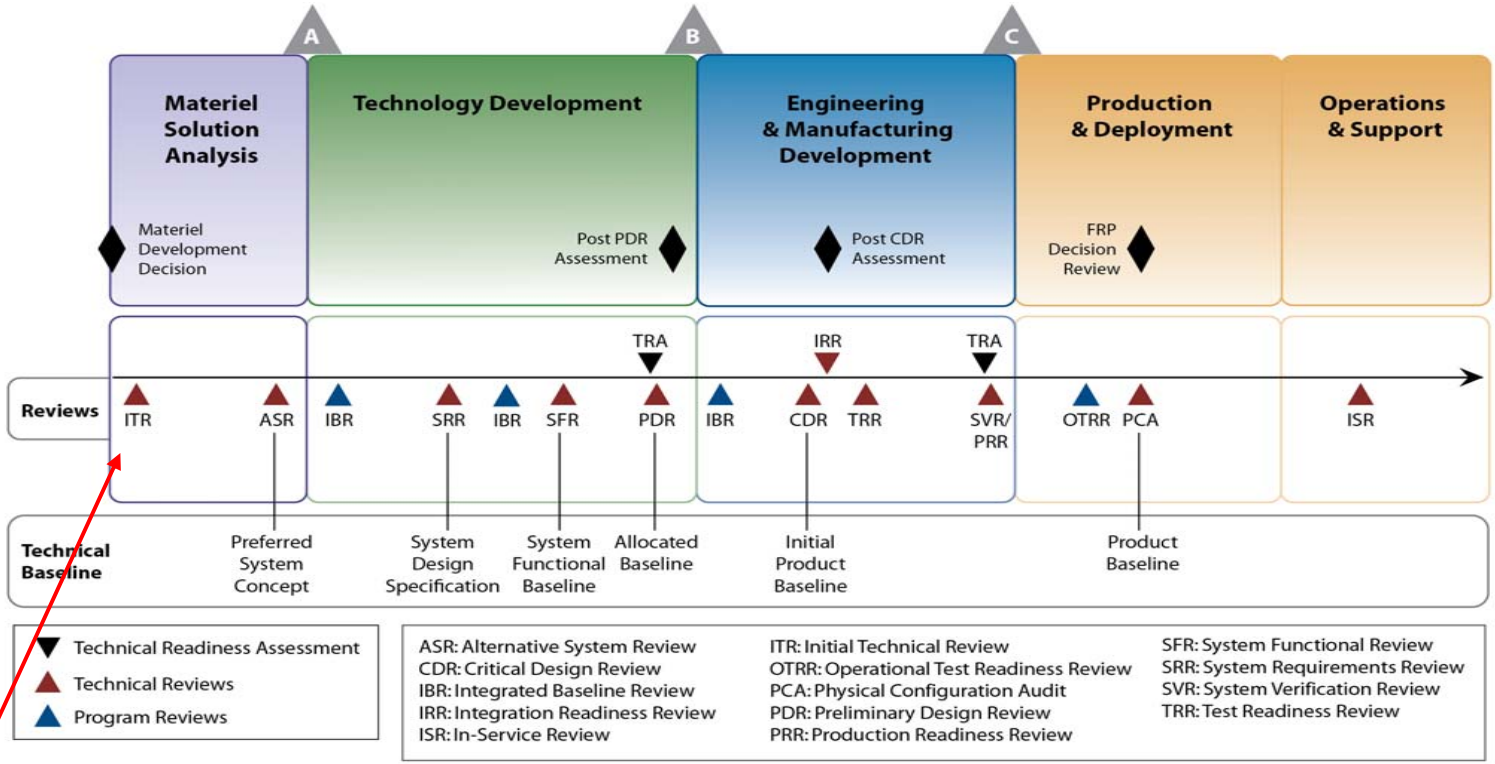
What is SETR?

- System Engineering Technical Review (e.g. PDR, CDR, TRR, etc)
  - Technical reviews are integral to Naval and System Engineering processes
  - Technical assessment of key health and progress of Program
  - Provides Program Manager's (PMs) with independent assessments of program readiness to enter the next technical phase
  - Assists program office management teams in documenting technical requirements, synthesizing certifiable designs, assessing performance and system safety risk, and producing and deploying systems to achieve required capability
  - When requested by the PM, chaired by a senior government employee appointed by the SYSCOM Chief Engineer (CHENG), conducts the SETR assessments in collaboration with program management
  - SETR Lead is an independent Technical Authority from outside the PMO but usually from inside the SYSCOM

Recommended SETRs

- **Initial Technical Review -** Supports a program's initial Program Objective Memorandum submission.
- **Alternative Systems Review** – Demonstrates the preferred concept is cost effective, affordable, operationally effective and suitable, and provides a timely solution to a need at an acceptable level of risk.
- **System Requirements Review** – A system-level review to ensure that the system requirements have been completely and properly identified and that a mutual understanding between the government and contractor exists.
- **System Functional Review** – A formal review of the conceptual design of the system to establish its capability to satisfy requirements. It establishes a functional baseline.
- **Preliminary Design Review** – A formal review that confirms the preliminary design logically follows the SFR findings and meets the requirements. It normally results in approval to begin detailed design.
- **Critical Design Review** – A formal review conducted to evaluate the completeness of the design and its interfaces.
- **Test Readiness Review** – A formal review of contractors' readiness to begin testing on both hardware and software configuration items.
- **System Verification Review** –Verifies that the actual item (which represents the production configuration) complies with the performance specification.
- **Production Readiness Review** - Determines if the design is ready for production, production engineering problems have been resolved, and the producer has accomplished adequate planning for the production phase.
- **In-service Review** – A formal technical review that is to characterize in-Service technical and operational health of the deployed system by providing an assessment of risk, readiness, technical status, and trends in a measurable form that will substantiate in-Service support and budget priorities.

Acquisition Framework with SETRs



First SETR

Tailoring SETRs

- SETRs should be tailored to reflect technical breadth and depth of the Program being reviewed
- Tailoring needs to be agreed upon by ALL stakeholders
- Tailored SETR schedule should be documented in the Systems Engineering Plan

Tailoring SETRs – Driving Factors

- Systems Engineering driving factors to consider when tailoring
  - Acquisition Strategy (How quickly does the client need it? Is the system using existing COTS and facilities?, etc.).
  - Number of systems being built, where delivered, number of incremental developments and overlaps.
  - Size of the development team, their locations (virtual).
  - Overall complexity of the system and software/hardware/technology.
  - External Interfaces (How many, complexity, amount/size of data transmitted, how often. This includes interfaces to organizations and users in addition to all systems and databases).
    - All requirements that are related to throughput capacity, processing speed, database accesses/retrieval, size of files/data being processed, etc.
  - Key Risks, must be well defined with Risk Mitigation that is realistic.
  - Understanding who are the stakeholders, and what high-level considerations do they care about (System performance, schedule, cost, and, safety…and possibly other matters).

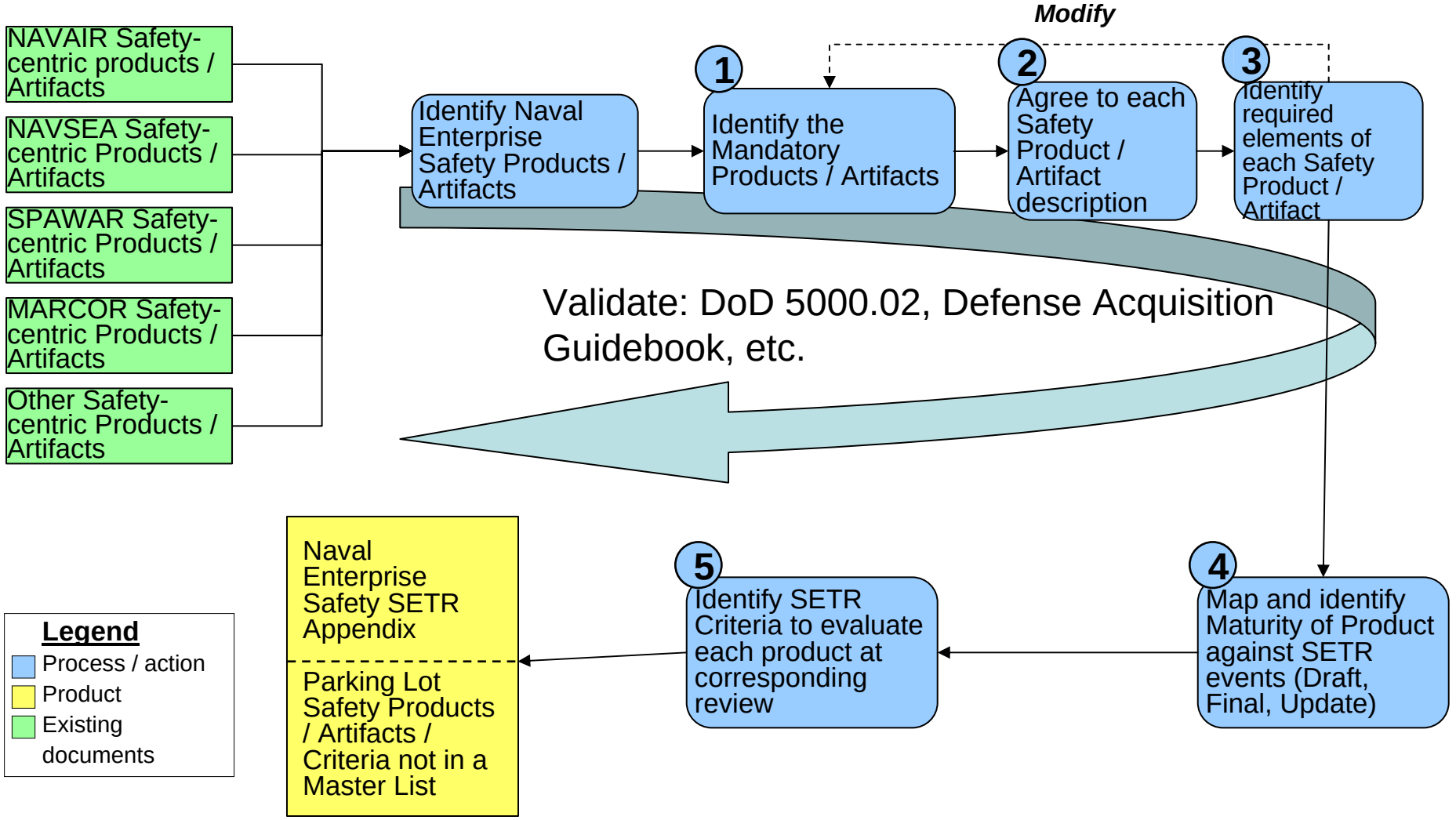
Tailoring SETRs - Merging or Separating

- May be appropriate based on system complexity and/or incremental builds/system development, and will be documented in the tailored SETR schedule in the Systems Engineering Plan (SEP)
- When tailoring the occurrence of SETR events, the level of the reviews should be addressed and characterized.
  - There may be multiple incremental reviews for multiple builds, but these reviews may be at a lower level of detail, not requiring top-level attention.
  - When SETR events are tailored, engineering judgment should be used to eliminate criteria reflecting lesser artifact maturity or to reword criteria to reflect correct artifact maturity for the given SETR.

Process to Develop Safety Criteria Statements

- The ASN(RDA)/CHSENG lead organized a Safety Horizontal Integration Team (HIT) to coordinate the development of the Safety SETR Appendix to the Naval SETR Handbook.
- The HIT formed a Safety Working Group (SWG) that included subject matter experts from different safety disciplines across the Navy SYSCOMS, Office of the Chief of Naval Operations, and the Navy and Marine Corps Public Health Center.
- The SWG followed a HIT developed process to systematically identify acquisition-related products and elements and link them to safety-related policy requirements.
- The Safety in SETR workflow was a five step process ending with completion on Safety SETR Criteria Statements for the Handbook.

Safety in SETR - Process Workflow



Criteria Statements You'll See Today

- DoD and Navy centric references
- References are tied to the criteria statement elements vice the related artifact
- FOR EXAMPLE:

DoDI 5000.02 requires use of MIL-STD-882D for all developmental and sustaining engineering activities.

MIL-STD-882D requires that hazards be identified through a systematic hazard analysis process and use of historical hazard and mishap data, including from other systems.

- The typical system safety document for this is the PHL.

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NAVSEA
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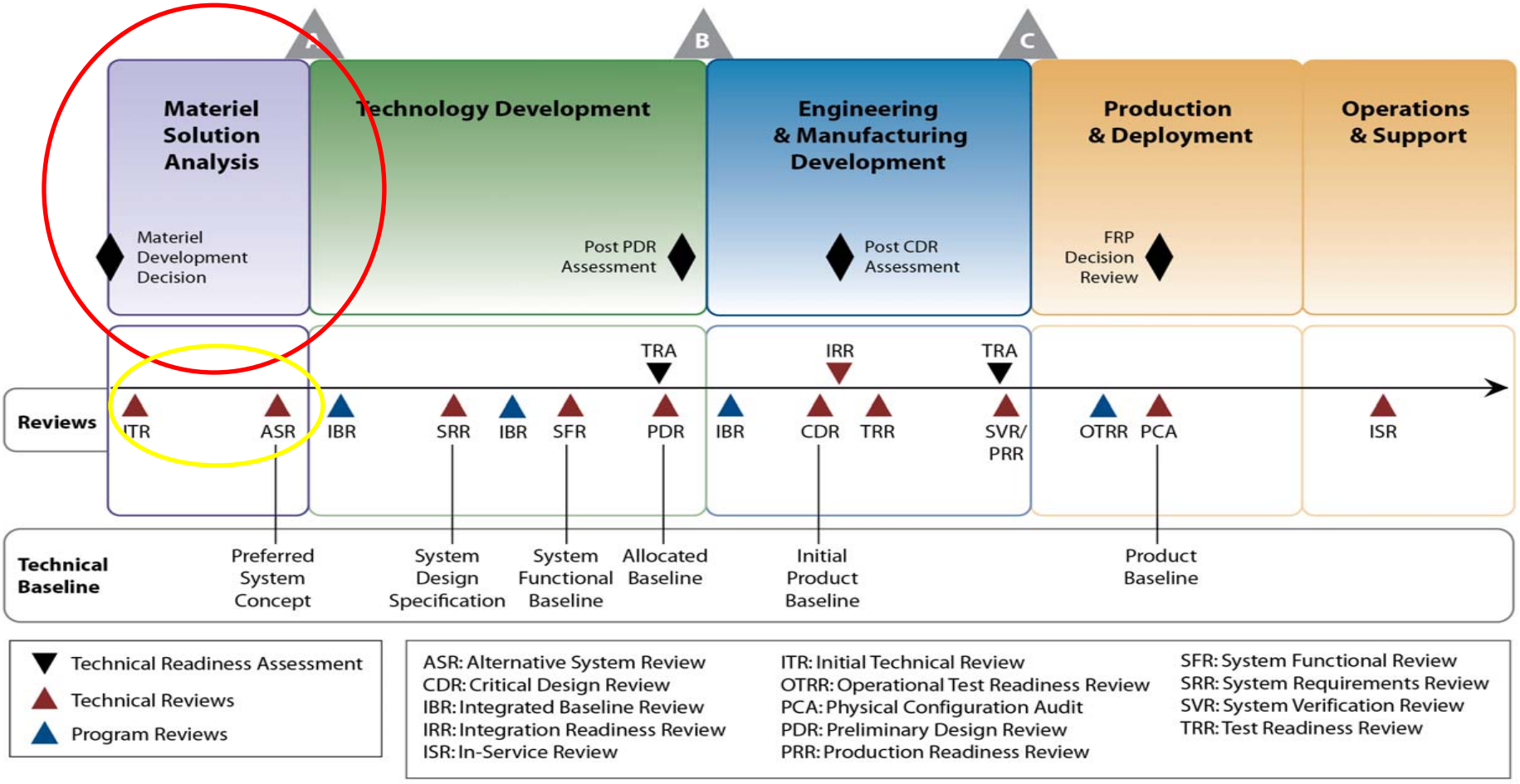
Ordnance Safety & Security Activity

Material Solution Analysis



Material Solution Analysis - Activities

- Purpose: Complete the AoA to assess potential materiel solutions to capability need, identify key technologies, and estimate life cycle costs.
- Enter: Approved ICD and study guidance for conducting an Analysis of Alternatives (AoA).
- Activities: Conduct AoA, develop Technology Development Strategy (TDS) & draft CDD
- Guided by: ICD and AoA Plan
- Exit: AoA completed, materiel solution options for the capability need identified in ICD have been recommended by lead Component conducting AoA, and phase-specific entrance criteria for the initial review milestone have been satisfied
- SETR Events: Initial Technical Review and Alternative Systems Review

Artifacts for Initial Technical Review (ITR)

- Initial Technical Review (ITR) - Supports a program's initial Program Objective Memorandum submission.

  - **Programmatic ESOH Evaluation (PESHE)**
  - **Preliminary Hazard List (PHL)**
  - Initial Capabilities Document (ICD)
  - AoA Guidance
  - Concept of Operations (CONOPS)
  - Cost Estimates
  - Request for Proposal (RFP)
  - Test and Evaluation Strategy (TES)
  - Technology Development Strategy (TDS)

ITR – Criteria Statements

	Criteria Statement	Related Artifact
1	Has the program identified Environment, Safety, and Occupational Health (ESOH) roles and responsibilities and how the program will integrate system safety-ESOH considerations into the systems engineering process, the ESOH risk management process, and a method for hazard tracking? (Ships only) (DoDI 5000.02, NAVSEAINST 5000.8)	Programmatic ESOH Evaluation (PESHE)
2	Have appropriate potential hazards been derived from historical data lessons learned from -Similar legacy systems -Fielded versions of the same system -Science and technology programs, -Independent Research and Development Programs -Research and Development? (MIL-STD-882, NAVSEAINST 5000.8)	Preliminary Hazard List (PHL)
3	Does the Analysis of Alternatives (AoA) Plan include safety/ESOH considerations?	AoA Guidance
4	Has the Concept of Operations (CONOPS) been reviewed for potential operational safety/ESOH constraints?	CONOPS
5	Do the cost estimates contain appropriate ESOH/safety-related cost data? (NAVSEAINST 5000.8)	Cost estimates
6	Has safety/ESOH reviewed the Initial Capabilities Document (ICD) for high level ESOH-related capability statements?	ICD
7	Does the Request for Proposal (RFP) for alternative solution studies contain ESOH requirements that the government wants the contractor to address? (NAVSEAINST 5000.8)	RFP
8	Does the Test and Evaluation Strategy (TES) include safety/ESOH planning?	TES
9	Does the Technology Development Strategy (TDS) include safety/ESOH hazard analysis planning as part of technology development?	TDS

Highlighted text will be talked about in detail

ITR – Criteria Statements

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Artifacts for Alternative System Review (ASR)

- Alternative System Review (ASR) - Demonstrates the preferred concept is cost effective, affordable, operationally effective and suitable, and can be developed to provide a timely solution to a need at an acceptable level of risk.

  - **Programmatic ESOH Evaluation (PESHE)**
  - **Preliminary Hazard List (PHL)**
  - **Critical Safety Items/Applications**
  - Acquisition Strategy
  - Capabilities Development Document
  - Interface Requirement Specification
  - Lifecycle Sustainment Plan
  - Service Cost Position
  - System Performance Specification
  - Systems Engineering Management Plan
  - Systems Engineering Plan
  - Statement of Work
  - Request for Proposal
  - Test and Evaluation Strategy
  - Test and Evaluation Management Plan
  - Total Ownership Cost
  - Trade Studies
  - Cost Analysis Requirements Document

ASR – Criteria Statements

1	Have all preliminary hazards been identified for each alternative solution? (NAVSEAINST 5000.8)	PHL
2	Does the program have an approved draft Programmatic ESOH Evaluation document that identifies ESOH responsibilities and how the program will integrate system safety-ESOH considerations into the systems engineering process, the ESOH risk management process, the hazard tracking system, and preliminary ESOH hazards and their associated risks? (Ships only) (DoDI 5000.02)	PESHE
3	Has the program identified all Critical Safety Items and safety related Critical Application Items? (DFARS 209.270)	Critical Safety Items/Critical Application Items
4	Does the Acquisition Strategy include a summary of the Programmatic ESOH Evaluation? (Ships only)	Acquisition Strategy
5	Has safety/ESOH provided ESOH capability statements for the Capabilities Development Document (CDD)?	CDD
6	Does the Draft Cost Analysis Requirements Document (CARD) contain appropriate ESOH-related cost data?	CARD
7	Has safety reviewed the Interface Requirement Specification (IRS) to determine if any safety/ESOH risk exists or needs to be mitigated through the requirements process? (NAVSEAINST 5000.8)	IRS
8	Has safety/ESOH provided safety and environmental requirements input to the Life Cycle Sustainment Plan (LCSP)?	LCSP
9	Does the RFP, to include prototypes, specify ESOH-related requirements and Contract Data Requirements List (CDRL)? (NAVSEAINST 5000.8)	RFP
10	Are the costs of government and contractor system safety/ESOH efforts included in Personnel and Organization and acquisition costs?	Service Cost Position
11	Does the System Performance Specification (SPS) contain safety and ESOH requirements?	SPS

ASR – Criteria Statement (cont'd)

12	Does the System Engineering Management Plan (SEMP) explain how safety/ESOH is integrated into the systems engineering process?	SEMP
13	Does the Systems Engineering Plan (SEP) contain an overview of how safety/ESOH is addressed and integrated into systems engineering to include specifically Critical Safety Items?	SEP
14	Does the Statement of Work (SOW) contain safety/ESOH-related requirements and CDRLs? (NAVSEAINST 5000.8)	SOW
15	Does the TES address government and contractor safety testing?	TES
16	Does the TES address environmental planning for test events?	TES
17	Does the draft Test and Evaluation Master Plan (TEMP) address environmental planning for test events?	TEMP
18	Does the Total Ownership Cost (TOC) include safety/ESOH related costs?	TOC
19	Do the Trade Studies include recommended mitigation measures/design changes? (NAVSEAINST 5000.8)	Trade Studies

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ASR – Criteria Statements

1	Have all preliminary hazards been identified for each alternative solution? (NAVSEAINST 5000.8)	PHL
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3	Has the program identified all Critical Safety Items and safety related Critical Application Items? (DFARS 209.270)	Critical Safety Items/Critical Application Items
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11	Does the System Performance Specification (SPS) contain safety and ESOH requirements?	SPS

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Ordnance Safety & Security Activity

Questions

- What are some of the obstacles you face when participating in pre-MS A technical reviews?
- Who is the Safety POC if a Principal for Safety has not been designated?

BREAK – 10 minutes

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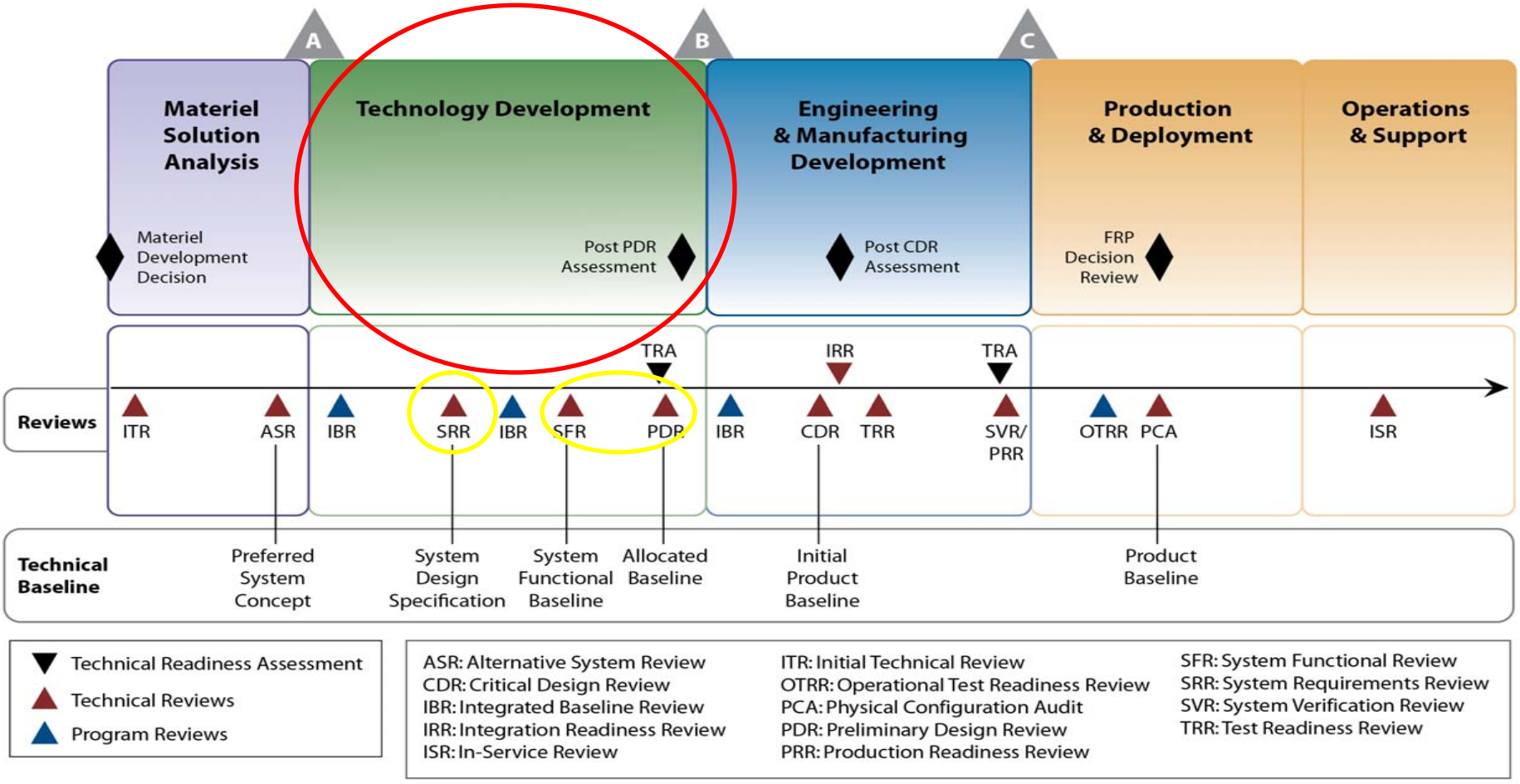
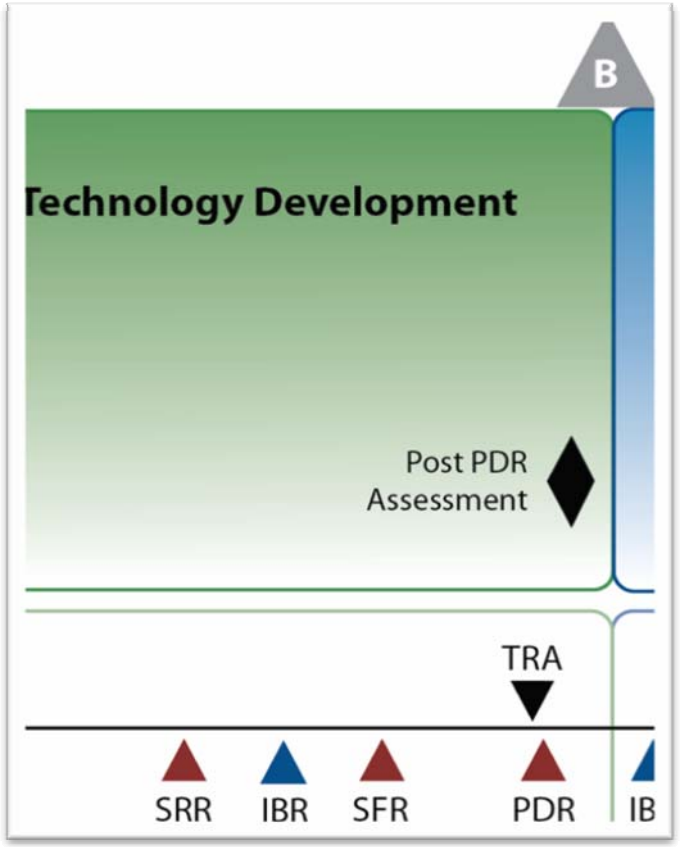
Technology Development



Technology Development Activities

- Purpose: Reduce Technology Risk, determine and mature appropriate set of technologies to be integrated into a full system, demonstrate Critical Technology Elements on Prototypes, and complete the preliminary design.
- Enter: MDA approved materiel solution and Technology Development Strategy (TDS); funding for Technology Development phase activities
- Activities: Competitive prototyping; Develop Reliability & Maintainability strategy; conduct Preliminary Design Review (PDR)
- Guided by: Initial Capability Document (ICD) & TDS and supported by SE planning
- Exit: Affordable increment of military-useful capability identified; technology demonstrated in relevant environment; manufacturing risks identified; system or increment ready for production within short time frame
- SETR Events: Systems Requirements Review, System Functional Review, Preliminary Design Review



Artifacts for System Requirements Review (SRR)

- System Requirements Review (SRR) - A system-level review to ensure that the system requirements have been completely and properly identified and that a mutual understanding between the government and potential contractor(s) exists.

  - **System Safety Management Plan**
  - **System Safety Program Plan**
  - **Software Safety Program Plan**
  - **Hazard Tracking System/Risk Acceptance**
  - **ESOH Risk Assessment Matrix**
  - **Preliminary Hazard Analysis**
  - **Threat Hazard Assessment**
  - **PESHE**
  - **Safety Requirements/Criteria Assessment**
  - Cost estimates
  - Risk Management Plan

SRR – Criteria Statements

1	Has the government's system safety engineering approach been clearly and fully documented? (MIL-STD-882, NAVSEAINST 5000.8)	System Safety Management Plan (SSMP)
2	Has the developer's system safety engineering approach been clearly and fully documented? (MIL-STD-882, NAVSEAINST 5000.8)	System Safety Program Plan (SSPP)
3	Has the program developed a plan to manage software safety? (MIL-STD-882)	Software Safety Program Plan (SwSPP)
4	Has a hazard tracking system been developed in accordance with MIL-STD-882? (MIL-STD-882, NAVSEAINST 5000.8)	Hazard Tracking System
5	Is the ESOH risk assessment matrix used by the program derived from MIL-STD-882? (MIL-STD-882, NAVSEAINST 5000.8)	ESOH Risk Assessment Matrix
6	Have appropriate potential hazards been derived from the historical data, lessons learned from similar legacy systems or earlier fielded versions of the same system and have alternative candidate mitigations been identified and documented? (NAVSEAINST 5000.8)	Preliminary Hazard Analysis (PHA)
7	Has the program identified potential accident and combat threat scenario hazards for the system and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	Threat Hazard Assessment (THA)
8	Has the program identified ESOH responsibilities and how the program will integrate system safety-ESOH considerations into the systems engineering process? (DoDI 5000.02)	PESHE
9	Has the program identified initial safety requirements (prescribed or derived) from applicable standards, specifications, regulations, design handbooks, safety design checklists, and other sources? (MIL-STD-882)	Safety Requirements/Criteria Assessment (SR/CA)

SRR – Criteria Statements (cont'd)

10	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02,MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
11	Have the cost estimates been updated to reflect any ESOH system requirements related cost data?	Cost Estimates
12	Has the safety/ESOH Program provided input to the Risk Management Plan to ensure that the ESOH risks are identified and mitigated? (NAVSEAINST 5000.8)	Risk Management Plan
13	Has an initial assessment of the severity and probability of mishap risk been documented for each identified hazard in the system safety hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	Hazard Tracking System
14	Have safety critical functions been identified and entered into the hazard tracking system? (NAVSEAINST 5000.8)	PHA

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Artifacts for System Functional Review (SFR)

- System Requirements Review (SFR) – A formal review of the conceptual design of the system to establish its capability to satisfy requirements. It establishes a functional baseline.

  - **System Safety Management Plan**
  - **System Safety Program Plan**
  - **Software Safety Program Plan**
  - **System Safety Lead Designation Letter**
  - **ESOH Risk Assessment Matrix**
  - **HAZMAT Management Plan**
  - **Hazard Tracking System/Risk Acceptance**
  - **Functional Hazard Analysis**
  - **Threat Hazard Assessment**
  - **Integrated Hazard Analysis/System Hazard Analysis**
  - **Safety Requirements/Criteria Assessment**
  - **Health Hazard Assessment**
  - Capability Development Document
  - Concept of Operations
  - Cost Analysis Requirements Document
  - Program Risk (Input)
  - Integrated Master Schedule
  - Service Cost Position
  - Interface Requirement Specification
  - Software Requirement Specification
  - System Design Specification
  - Test Plan and Procedures
  - Configuration Management Plan

SFR – Criteria Statements

1	Has the government's system safety engineering approach been clearly and fully documented and approved? (MIL-STD-882, NAVSEAINST 5000.8)	SSMP
2	Has the developer's system safety engineering approach been clearly and fully documented and approved? (MIL-STD-882, NAVSEAINST 5000.8)	SSPP
3	Has the program developed and approved a plan to manage software safety? (MIL-STD-882)	SwSPP
4	Has the PM designated a System Safety Lead/Manager or Principal for Safety (PFS)? (OPNAVINST 5100.24B)	System Safety Lead Designation Letter
5	Is the risk assessment matrix approved by the appropriate authority? (MIL-STD-882) (NAVSEAINST 5000.8)	ESOH Risk Assessment Matrix
6	Does the program have a plan for managing Hazardous Materials (HAZMAT) in the system? (DoDI 5000.02)	HAZMAT Management Plan (HMMP)
7	Have identified hazards been reviewed, assessed, and mitigations identified in accordance with MIL-STD-882 and have they been updated in the hazard tracking system? (NAVSEAINST 5000.8)	PHA/Hazard Tracking System
8	Have safety critical functions been identified and has a means of mapping to the physical design been established? (MIL-STD-882)	Functional Hazard Analysis (FHA)
9	Have all prescribed and derived safety requirements been documented in the system functional baseline? (MIL-STD-882)	SR/CA
10	Has the program identified the characteristics of each potential accident and combat threat scenario hazards for the system and documented in the hazard tracking system?	THA
11	Have safety related interoperability considerations for the system of systems been identified?	Integrated Hazard Analysis(IHA)/System Hazard Analysis (SHA)
12	Have health hazards associated with the system been identified?	Health Hazard Assessment (HHA)

SFR – Criteria Statements (cont'd)

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14	Does the CDD include safety/ESOH-related capability statements in Sections 14, 15, and other sections, as applicable?	CDD
15	Has the CONOPS been reviewed by safety/ESOH staff to gain insight into the refined mission and operation of the system?	CONOPS
16	Has the CARD been updated to contain appropriate safety/ESOH-related cost data?	CARD
17	Have ESOH risks been included in the overall program risk management process? (NAVSEAINST 5000.8)	Program Risk (Input)
18	Has the Safety Program provided input to the Integrated Master Schedule to include safety/ESOH activities?	Integrated Master Schedule
19	Does the Service Cost Position include costs associated with resourcing the safety/ESOH effort and recommended hazard mitigations? (NAVSEAINST 5000.8)	Service Cost Position
20	Has the Safety Program reviewed the IRS to determine if any safety risk exists or needs to be mitigated through the requirements process?	IRS
21	Does the Software Requirements Specification (SRS) contain safety-critical software requirements?	SRS
22	Has safety/ESOH reviewed the System Design Specification (SDS) and provided specific system safety/ESOH design requirements?	SDS

SFR – Criteria Statements (cont'd)

23	Does the SDS contain system safety interlocks and assumptions?	SDS
24	Does the Test Plan and Procedures contain specific ESOH and system safety requirements to conduct testing and specific tests to verify recommended mitigation?	Test Plan and Procedures
25	Do configuration management (CM) plans define the role and involvement of safety/ESOH?	Configuration Management Plan
26	Have the Safety/ESOH analysis tools and processes been evaluated against the CM tools and process for compatibility?	Configuration Management Plan

Highlighted text will be talked about in detail

SFR – Criteria Statements

1	Has the government's system safety engineering approach been clearly and fully documented and approved? (MIL-STD-882, NAVSEAINST 5000.8)	SSMP
2	Has the developer's system safety engineering approach been clearly and fully documented and approved? (MIL-STD-882, NAVSEAINST 5000.8)	SSPP
3	Has the program developed and approved a plan to manage software safety? (MIL-STD-882)	SwSPP
4	Has the PM designated a System Safety Lead/Manager or Principal for Safety (PFS)? (OPNAVINST 5100.24B)	System Safety Lead Designation Letter
5	Is the risk assessment matrix approved by the appropriate authority? (MIL-STD-882) (NAVSEAINST 5000.8)	ESOH Risk Assessment Matrix
6	Does the program have a plan for managing Hazardous Materials (HAZMAT) in the system? (DoDI 5000.02)	HAZMAT Management Plan (HMMP)
7	Have identified hazards been reviewed, assessed, and mitigations identified in accordance with MIL-STD-882 and have they been updated in the hazard tracking system? (NAVSEAINST 5000.8)	PHA/Hazard Tracking System
8	Have safety critical functions been identified and has a means of mapping to the physical design been established? (MIL-STD-882)	Functional Hazard Analysis (FHA)
9	Have all prescribed and derived safety requirements been documented in the system functional baseline? (MIL-STD-882)	SR/CA
10	Has the program identified the characteristics of each potential accident and combat threat scenario hazards for the system and documented in the hazard tracking system?	THA
11	Have safety related interoperability considerations for the system of systems been identified?	Integrated Hazard Analysis(IHA)/System Hazard Analysis (SHA)
12	Have health hazards associated with the system been identified?	Health Hazard Assessment (HHA)

Highlighted text will be talked about in detail

SFR – Criteria Statements (cont'd)

13	Has the following been updated: -Hazard Tracking System - Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
14	Does the CDD include safety/ESOH-related capability statements in Sections 14, 15, and other sections, as applicable?	CDD
15	Has the CONOPS been reviewed by safety/ESOH staff to gain insight into the refined mission and operation of the system?	CONOPS
16	Has the CARD been updated to contain appropriate safety/ESOH-related cost data?	CARD
17	Have ESOH risks been included in the overall program risk management process? (NAVSEAINST 5000.8)	Program Risk (Input)
18	Has the Safety Program provided input to the Integrated Master Schedule to include safety/ESOH activities?	Integrated Master Schedule
19	Does the Service Cost Position include costs associated with resourcing the safety/ESOH effort and recommended hazard mitigations? (NAVSEAINST 5000.8)	Service Cost Position
20	Has the Safety Program reviewed the IRS to determine if any safety risk exists or needs to be mitigated through the requirements process?	IRS
21	Does the Software Requirements Specification (SRS) contain safety-critical software requirements?	SRS
22	Has safety/ESOH reviewed the System Design Specification (SDS) and provided specific system safety/ESOH design requirements?	SDS

Highlighted text will be talked about in detail

SFR – Criteria Statements (cont'd)

23	Does the SDS contain system safety interlocks and assumptions?	SDS
24	Does the Test Plan and Procedures contain specific ESOH and system safety requirements to conduct testing and specific tests to verify recommended mitigation?	Test Plan and Procedures
25	Do configuration management (CM) plans define the role and involvement of safety/ESOH?	Configuration Management Plan
26	Have the Safety/ESOH analysis tools and processes been evaluated against the CM tools and process for compatibility?	Configuration Management Plan

Safety Artifacts for Preliminary Design Review (PDR)

- Preliminary Design Review (PDR) - A formal review that confirms the preliminary design logically follows the SFR findings and meets the requirements. It normally results in approval to begin detailed design.

  - **System Safety Lead Designation Letter**
  - **ESOH Risk Matrix**
  - **Preliminary Hazard Assessment**
  - **Hazard Tracking System**
  - **Programmatic ESOH Evaluation (PESHE)**
  - **Hazardous Materials Management Plan**
  - **Functional Hazard Analysis**
  - **System Requirements/Criteria Assessment**
  - **Code Level Hazard Analysis**
  - **Integrated Hazard Analysis**
  - **System Hazard Analysis**
  - **Subsystem Hazard Analysis**
  - **Operating & Support Hazard Analysis**
  - **WSESRB Technical Data Package**
  - **ESOH Risk Acceptance**
  - **Laser Safety Review Board**
  - Acquisition Strategy
  - Configuration Steering Board
  - Failure Modes, Effects and Criticality Analysis
  - HSI Plan
  - PDR Results
  - Request for Proposal
  - Demilitarization and Disposal Plan
  - Requirements Tracking System
  - Test and Evaluation Master Plan
  - Trade Studies
  - Interface Requirements Specification
  - Corrosion Prevention and Control Plan
  - Configuration Management Plan

PDR – Criteria Statements

1	Is the System Safety Lead/Manager or PFS chairing System Safety Working Groups on a regular basis with documented results? (OPNAVINST 5100.24B)	System Safety Lead Designation Letter
2	Are all ESOH hazards assessed using the program's approved ESOH risk matrix? (MIL-STD-882, NAVSEAINST 5000.8)	ESOH Risk Assessment Matrix
3	Have identified hazards been assessed in accordance with MIL-STD-882 and have they been documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	PHA/ Hazard Tracking System
4	Have design alternatives for eliminating hazards or reducing their impact been considered for each potential hazard? (MIL-STD-882, NAVSEAINST 5000.8)	PHA
5	Has the expected effectiveness of each alternative risk mitigation been documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	PHA
6	Does the program maintain a National Environmental Policy Act (NEPA)/Executive Order (EO) 12114 Compliance Schedule for all system-related NEPA/EO 12114 analyses? (DoDI 5000.02)	PESHE
7	Does the program maintain a Programmatic ESOH Evaluation document that identifies ESOH responsibilities, and how the program will integrate system safety-ESOH considerations into the systems engineering process, the ESOH risk management process, the hazard tracking system, and ESOH hazards and their associated risks? (DoDI 5000.02, NAVSEAINST 5000.8)	PESHE
8	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board (RMB), GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
9	Has the plan for managing HAZMAT been approved? (MIL-STD-882)	HMMP
10	Have hazards associated with HAZMAT been identified, analyzed and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	HMMP
11	Has the program identified safety critical functions and have they been allocated to the subsystem? (MIL-STD-882)	FHA

PDR – Criteria Statements (cont'd)

12	Have safety aspects of design features and safety critical functions been identified and analyzed, and have mitigations been identified? (MIL-STD-882, NAVSEAINST 5000.8)	FHA
13	Have all safety requirements been assigned a method of verification? (MIL-STD-882)	SR/CA
14	Has the program identified the level of analytical rigor required for each software subsystem? (MIL-STD-882)	Code Level Hazard Analysis
15	Have hazards associated with the integrated system/subsystems been assessed, mitigated, and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	IHA/SHA
16	Has the program identified and analyzed hazards associated with subsystems and are they documented in the hazard tracking system? (NAVSEAINST 5000.8)	Sub-System Hazard Analysis (SSHA)
17	Has safety/ESOH reviewed and assessed all environmental critical processes and components? (NAVSEAINST 5000.8)	SSHA; SHA; Operating and Support Hazard Analysis (O&SHA)
18	Have hazards associated with combat threat scenarios been identified, analyzed, and documented in the hazard tracking system? (MIL-STD-882)	THA
19	Have hazards associated with operation and support of the system been identified and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	O&SHA
20	Has the program been reviewed by the Weapon System and Explosives Safety Review Board (WSESRB)? (as applicable) (NAVSEAINST 8020.6)	WSESRB Technical Data Package (TDP)
21	Has the program presented to the Laser Safety Review Board (LSRB) (as required)?	LSRB

PDR – Criteria Statements (cont'd)

22	Has the process for ESOH risk acceptance and user representative concurrence (for high and serious risk) been established and implemented? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
23	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
24	Does the Acquisition Strategy include a summary of the Programmatic ESOH Evaluation?	Acquisition Strategy
25	Is safety/ESOH a voting member of the Configuration Steering Board?	Configuration Steering Board
26	Has a Failure Modes and Effect Criticality Analysis (FMECA) been performed to review the potential failure modes and determine if they create or contribute to a safety risk?	FMECA
27	Has safety/ESOH been included in the Human Systems Integration (HSI) Plan?	HSI Plan
28	Has Safety/ESOH been included in the PDR?	PDR Results
29	Does the RFP specify safety/ESOH-related requirements and CDRLs?	RFP
30	Does the Demilitarization and Disposal Plan include safety and environmental hazard data (e.g. hazardous materials)?	Demilitarization and Disposal Plan
31	Does the Requirement Tracking System include system safety/ESOH requirements?	Requirements Tracking System

PDR – Criteria Statements (cont'd)

32	Has the TEMP been updated to address government and contractor safety/ESOH testing?	TEMP
33	Does the TEMP been updated to address environmental planning for test events?	TEMP
34	Has Commercial Off the Shelf (COTS)/Non-developmental Items (NDI) been assessed for safety/ESOH impact?	Trade Studies, PHA
35	Has safety/ESOH identified all safety critical and safety related interfaces in the IRS?	IRS; SSHA; SHA
36	Does the Corrosion Prevention and Control (CPC) Plan include hazard analyses of alternative corrosion prevention materials and processes?	CPC Plan
37	Are safety/ESOH roles and responsibilities defined for each change control process or change control board?	Configuration Management (CM) Plan
38	Have all CM processes, products and tools captured necessary safety/ESOH fields and flags?	CM Plan
39	Are Safety/ESOH analysis tools and processes compatible with CM tools and processes?	CM Plan

Highlighted text will be talked about in detail

PDR – Criteria Statements

1	Is the System Safety Lead/Manager or PFS chairing System Safety Working Groups on a regular basis with documented results? (OPNAVINST 5100.24B)	System Safety Lead Designation Letter
2	Are all ESOH hazards assessed using the program's approved ESOH risk matrix? (MIL-STD-882, NAVSEAINST 5000.8)	ESOH Risk Assessment Matrix
3	Have identified hazards been assessed in accordance with MIL-STD-882 and have they been documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	PHA/ Hazard Tracking System
4	Have design alternatives for eliminating hazards or reducing their impact been considered for each potential hazard? (MIL-STD-882, NAVSEAINST 5000.8)	PHA
5	Has the expected effectiveness of each alternative risk mitigation been documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	PHA
6	Does the program maintain a National Environmental Policy Act (NEPA)/Executive Order (EO) 12114 Compliance Schedule for all system-related NEPA/EO 12114 analyses? (DoDI 5000.02)	PESHE
7	Does the program maintain a Programmatic ESOH Evaluation document that identifies ESOH responsibilities, and how the program will integrate system safety-ESOH considerations into the systems engineering process, the ESOH risk management process, the hazard tracking system, and ESOH hazards and their associated risks? (DoDI 5000.02, NAVSEAINST 5000.8)	PESHE
8	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board (RMB), GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
9	Has the plan for managing HAZMAT been approved? (MIL-STD-882)	HMMP
10	Have hazards associated with HAZMAT been identified, analyzed and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	HMMP
11	Has the program identified safety critical functions and have they been allocated to the subsystem? (MIL-STD-882)	FHA

Highlighted text will be talked about in detail

PDR – Criteria Statements (cont'd)

12	Have safety aspects of design features and safety critical functions been identified and analyzed, and have mitigations been identified? (MIL-STD-882, NAVSEAINST 5000.8)	FHA
13	Have all safety requirements been assigned a method of verification? (MIL-STD-882)	SR/CA
14	Has the program identified the level of analytical rigor required for each software subsystem? (MIL-STD-882)	Code Level Hazard Analysis
15	Have hazards associated with the integrated system/subsystems been assessed, mitigated, and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	IHA/SHA
16	Has the program identified and analyzed hazards associated with subsystems and are they documented in the hazard tracking system? (NAVSEAINST 5000.8)	Sub-System Hazard Analysis (SSHA)
17	Has safety/ESOH reviewed and assessed all environmental critical processes and components? (NAVSEAINST 5000.8)	SSHA; SHA; Operating and Support Hazard Analysis (O&SHA)
18	Have hazards associated with combat threat scenarios been identified, analyzed, and documented in the hazard tracking system? (MIL-STD-882)	THA
19	Have hazards associated with operation and support of the system been identified and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	O&SHA
20	Has the program been reviewed by the Weapon System and Explosives Safety Review Board (WSESRB)? (as applicable) (NAVSEAINST 8020.6)	WSESRB Technical Data Package (TDP)
21	Has the program presented to the Laser Safety Review Board (LSRB) (as required)?	LSRB

Highlighted text will be talked about in detail

PDR – Criteria Statements (cont'd)

22	Has the process for ESOH risk acceptance and user representative concurrence (for high and serious risk) been established and implemented? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
23	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
24	Does the Acquisition Strategy include a summary of the Programmatic ESOH Evaluation?	Acquisition Strategy
25	Is safety/ESOH a voting member of the Configuration Steering Board?	Configuration Steering Board
26	Has a Failure Modes and Effect Criticality Analysis (FMECA) been performed to review the potential failure modes and determine if they create or contribute to a safety risk?	FMECA
27	Has safety/ESOH been included in the Human Systems Integration (HSI) Plan?	HSI Plan
28	Has Safety/ESOH been included in the PDR?	PDR Results
29	Does the RFP specify safety/ESOH-related requirements and CDRLs?	RFP
30	Does the Demilitarization and Disposal Plan include safety and environmental hazard data (e.g. hazardous materials)?	Demilitarization and Disposal Plan
31	Does the Requirement Tracking System include system safety/ESOH requirements?	Requirements Tracking System

Highlighted text will be talked about in detail

PDR – Criteria Statements (cont'd)

32	Has the TEMP been updated to address government and contractor safety/ESOH testing?	TEMP
33	Does the TEMP been updated to address environmental planning for test events?	TEMP
34	Has Commercial Off the Shelf (COTS)/Non-developmental Items (NDI) been assessed for safety/ESOH impact?	Trade Studies, PHA
35	Has safety/ESOH identified all safety critical and safety related interfaces in the IRS?	IRS; SSHA; SHA
36	Does the Corrosion Prevention and Control (CPC) Plan include hazard analyses of alternative corrosion prevention materials and processes?	CPC Plan
37	Are safety/ESOH roles and responsibilities defined for each change control process or change control board?	Configuration Management (CM) Plan
38	Have all CM processes, products and tools captured necessary safety/ESOH fields and flags?	CM Plan
39	Are Safety/ESOH analysis tools and processes compatible with CM tools and processes?	CM Plan

Questions

- Who is doing the safety engineering work for the program prior to MS B?
- Was safety able to conduct hazard analysis on prototypes, engineering models, models & simulations, engineering development models?

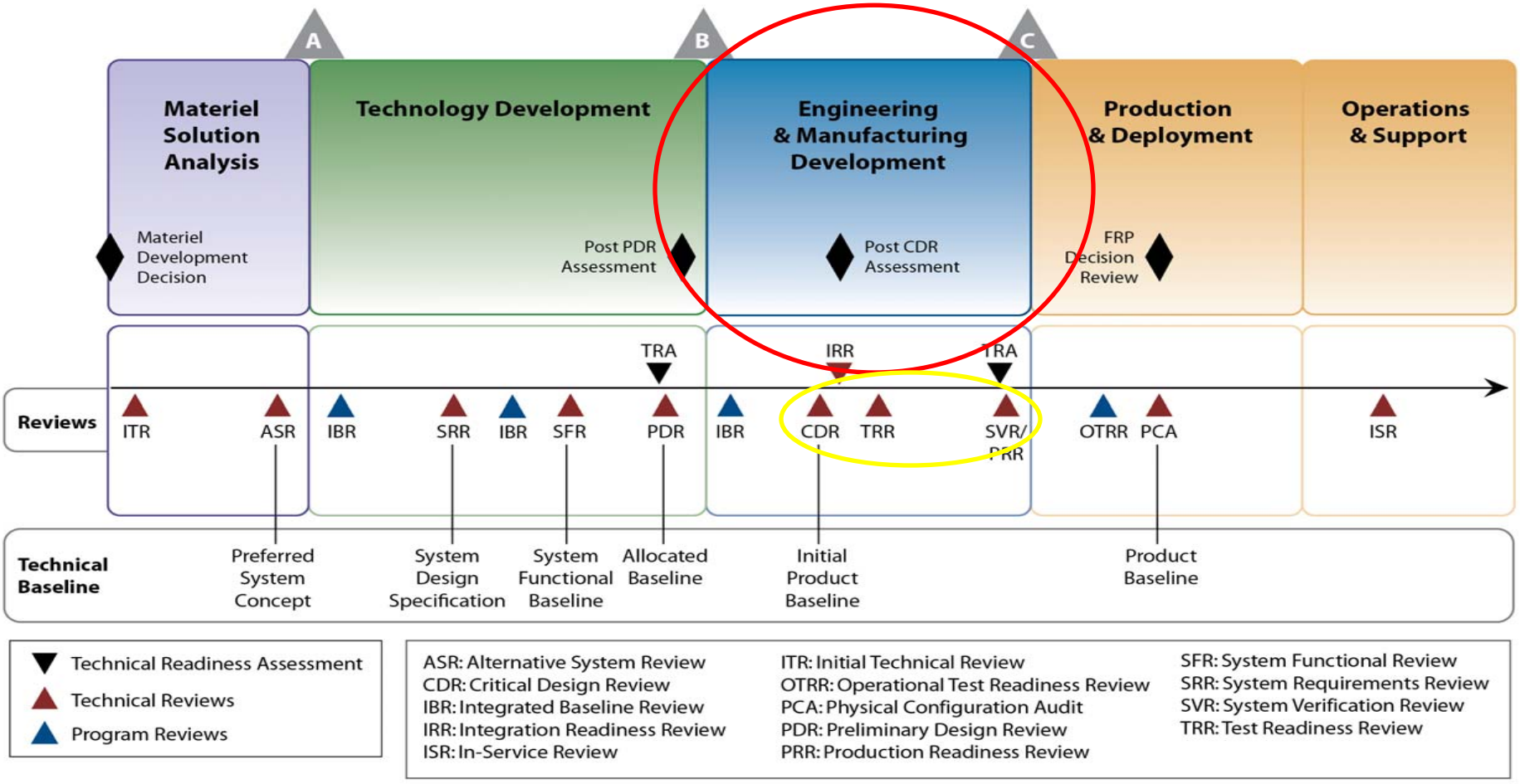
BREAK – 10 minutes

Agenda

- Introduction
- SETR Policy Requirements
- What is SETR
- Recommended SETRs
- Tailoring
- Safety in SETR Process
- Acquisition Framework Deep Dive
  - Material Solution Analysis
  - Technology Development
  - Engineering and Manufacturing Development
  - Production and Deployment
  - Operations and Support
- Summary/Conclusion

Phase Overview
Present SETRs
Artifacts
Safety Criteria Statements
Safety Driving Factors

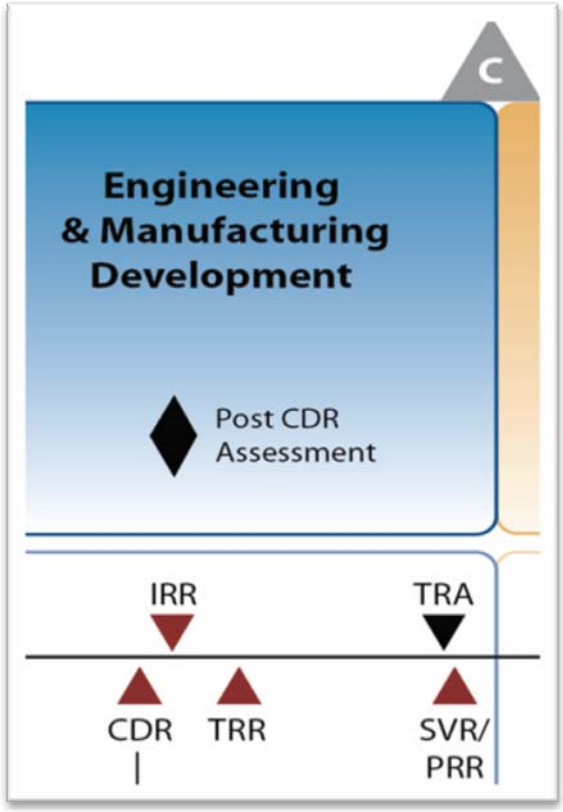
Engineering and Manufacturing Development



Engineering and Manufacturing Development Activities (Pre-CDR)

- Purpose: Develop a system or increment of capability, complete full system integration; develop an affordable manufacturing process, minimize logistics footprint; demonstrate system integration
- Enter: Mature Technology; Approved Requirements; Full Funding in Fiscal Year Defense Plan (FYDP)
- Activities: Define System of System Functionality & Interfaces, Complete Detailed Design, CDR, Establish Product Baseline,
- Guided by: CDD, Acquisition Strategy, SEP & TEMP
- Exit: Complete System-Level CDR and Post-CDR Assessment
- SETR Events: Critical Design Review

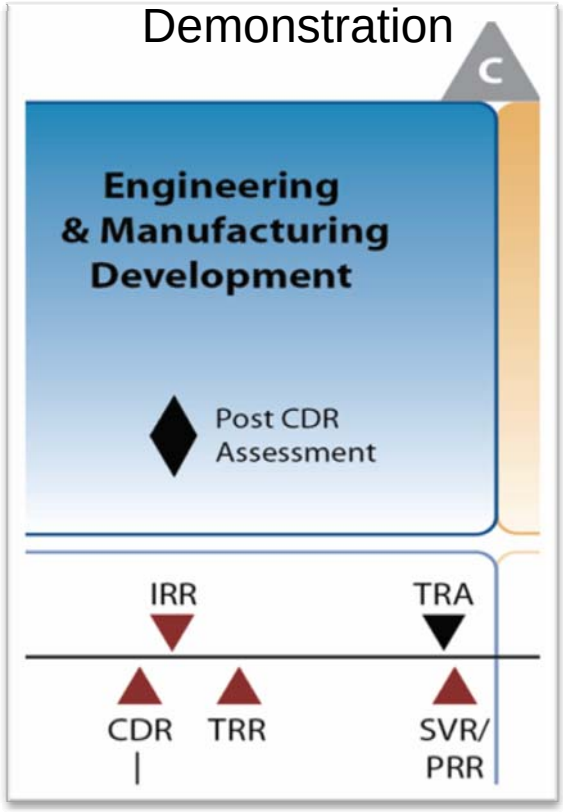
Integrated System Design



Engineering and Manufacturing Development Activities (Post-CDR)

- Purpose: Finalize a system or increment of capability, develop an affordable manufacturing process, minimize logistics footprint
- Enter: Mature Post-CDR Assessment and Establishment of initial Product Baseline
- Activities: Developmental Testing (DT) Assesses Progress Against Technical Parameters, and Operational Assessments (OA) Against CDD
- Guided by: CDD, Acquisition Strategy, SEP & TEMP
- Exit: System Demonstrated in Intended Environment using production-representative articles; Manufacturing Processes Demonstrated; Meets Exit Criteria and MS C Entrance Requirements
- SETR Events: Integration Readiness Review (IRR), Test Readiness Review (TRR), System Verification Review (SVR)

System Capability & Manufacturing Process Demonstration



Artifacts for Critical Design Review (CDR)

- Critical Design Review (CDR) – A formal review conducted to evaluate the completeness of the design and its interfaces.

  - **Hazard Tracking System**
  - **PESHE**
  - **Hazardous Material Management Plan**
  - **ESOH Risk Acceptance**
  - **Code Level Hazard Analysis**
  - **Functional Hazard Analysis**
  - **Health Hazard Assessment**
  - **Sub-System Hazard Analysis**
  - **Integrated Hazard Analysis/System Hazard Analysis**
  - **Critical Safety Items**
  - **Operating and Support Hazard Analysis**
  - **Safety Assessment Report**
  - **Weapon Systems Explosives Safety Review Board Technical Data Packages**
  - Acquisition Strategy
  - Capability Production Document
  - CDR Results
  - Cost estimates
  - Demilitarization and Disposal Plan
  - Lifecycle Sustainment Plan
  - Operational Risk Management
  - Program Risk (Input to other processes)
  - Integrated Master Schedule
  - Interface Requirement Specification
  - Software Requirement Specification
  - Systems Engineering Management Plan
  - Systems Engineering Plan
  - Test and Evaluation Management Plan
  - Test Plan and Procedures
  - Total Ownership Cost
  - Configuration Management

CDR – Criteria Statements

1	Has the hazard tracking system been updated and maintained with current ESOH hazard and risk assessment data? (MIL-STD-882, NAVSEAINST 5000.8)	Hazard Tracking System
2	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board, GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
3	Have hazardous materials, wastes, and pollutants (discharges/emissions/noise) associated with the system been documented in the system safety hazard tracking system? (DoDI 5000.02)	PESHE
4	Have hazards associated with HAZMAT been identified, analyzed and mitigation controls implemented? (MIL-STD-882)	HMMP
5	Is the process for ESOH risk acceptance and user representative concurrence (for high and serious risk) being executed? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
6	Has a safety analysis of the software been completed to the identified level of rigor and documented? (Joint Software Systems Safety Engineering Handbook)	Code Level Hazard Analysis
7	Have safety aspects of design and safety critical functions been allocated and have the mitigations been incorporated into the design? (MIL-STD-882)	FHA
8	Have mitigations associated with the integrated or interoperable system and subsystems been verified in the design? (System of Systems Guidebook and MIL-STD-882)	IHA/SHA
9	Has the program completed hazard analyses associated with all subsystems? (MIL-STD-882)	SSHA
10	Have risks associated with health hazards been finalized and mitigations incorporated into the design? (MIL-STD-882)	HHA

CDR – Criteria Statements

11	Have risks associated with operation and support of the system been finalized and mitigations incorporated into the design? (MIL-STD-882)	O&SHA
12	Has the program updated all Critical Safety Items and safety related Critical Application Items? (DFARS 209.270)	Critical Safety Items/Critical Application Items
13	Has the program compiled and documented an overall assessment of safety of the system that covers system operations, hazard and associated risk data, mitigations, and states that the system is ready to test, operate, or proceed to the next acquisition phase? (MIL-STD-882, NAVSEAINST 5000.8)	Safety Assessment Report (SAR)/ Hazard Tracking System
14	Has the program been reviewed by the WSESRB? (as applicable) (NAVSEAINST 8020.6)	WSESRB Technical Data Package
15	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
16	Does the Acquisition Strategy contain an updated summary of the Programmatic ESOH Evaluation as required?	Acquisition Strategy
17	Does the Capabilities Production Document (CPD) include safety/ESOH-related capability statements in sections 14, 15, and other sections, as applicable?	CPD
18	Has safety/ESOH been included in the Critical Design Review (CDR)?	CDR results
19	Have the cost estimates been updated to reflect any safety/ESOH related cost data?	Cost Estimates
20	Has the Demilitarization and Disposal Plan been updated to include safety and environmental hazard data (e.g. hazardous materials)	Demilitarization and Disposal Plan

CDR – Criteria Statements

21	Does the LCSP include safety and environmental requirements?	LCSP
22	Is Safety/ESOH included in the management of operational risks?	Operational Risk Management
23	Is Safety/ESOH included in the Risk Management Plan? (NAVSEAINST 5000.8)	Program Risk (Input to other processes)
24	Are safety/ESOH milestones included in the Integrated Master Schedule?	Integrated Master Schedule
25	Has the Safety Program reviewed the Interface IRS to determine if any safety risk exists or needs to be mitigated through the requirements process?	IRS
26	Has the SRS been updated to include any additional safety-critical software requirements?	SRS
27	Has the SEMP been updated to explain how safety/ESOH is integrated into the systems engineering process?	SEMP
28	Has the SEP been updated to explain how safety/ESOH is addressed and integrated into systems engineering?	SEP
29	Does the TEMP include safety/ESOH compliance requirements (such as NEPA) and specific safety testing requirements?	TEMP
30	Has the Test Plan and Procedures been drafted to include specific ESOH and system safety requirements to conduct testing and include specific tests to verify recommended mitigation measures?	Test Plan and Procedures
31	Is safety/ESOH included in the updated TOC?	TOC
32	Is there evidence that the Safety/ESOH team is actively involved in the CM processes and using the CM tools as described in the CM plans?	CM

Highlighted text will be talked about in detail

CDR – Criteria Statements

1	Has the hazard tracking system been updated and maintained with current ESOH hazard and risk assessment data? (MIL-STD-882, NAVSEAINST 5000.8)	Hazard Tracking System
2	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board, GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
3	Have hazardous materials, wastes, and pollutants (discharges/emissions/noise) associated with the system been documented in the system safety hazard tracking system? (DoDI 5000.02)	PESHE
4	Have hazards associated with HAZMAT been identified, analyzed and mitigation controls implemented? (MIL-STD-882)	HMMP
5	Is the process for ESOH risk acceptance and user representative concurrence (for high and serious risk) being executed? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
6	Has a safety analysis of the software been completed to the identified level of rigor and documented? (Joint Software Systems Safety Engineering Handbook)	Code Level Hazard Analysis
7	Have safety aspects of design and safety critical functions been allocated and have the mitigations been incorporated into the design? (MIL-STD-882)	FHA
8	Have mitigations associated with the integrated or interoperable system and subsystems been verified in the design? (System of Systems Guidebook and MIL-STD-882)	IHA/SHA
9	Has the program completed hazard analyses associated with all subsystems? (MIL-STD-882)	SSHA
10	Have risks associated with health hazards been finalized and mitigations incorporated into the design? (MIL-STD-882)	HHA

Highlighted text will be talked about in detail

CDR – Criteria Statements

11	Have risks associated with operation and support of the system been finalized and mitigations incorporated into the design? (MIL-STD-882)	O&SHA
12	Has the program updated all Critical Safety Items and safety related Critical Application Items? (DFARS 209.270)	Critical Safety Items/Critical Application Items
13	Has the program compiled and documented an overall assessment of safety of the system that covers system operations, hazard and associated risk data, mitigations, and states that the system is ready to test, operate, or proceed to the next acquisition phase? (MIL-STD-882, NAVSEAINST 5000.8)	Safety Assessment Report (SAR)/ Hazard Tracking System
14	Has the program been reviewed by the WSESRB? (as applicable) (NAVSEAINST 8020.6)	WSESRB Technical Data Package
15	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
16	Does the Acquisition Strategy contain an updated summary of the Programmatic ESOH Evaluation as required?	Acquisition Strategy
17	Does the Capabilities Production Document (CPD) include safety/ESOH-related capability statements in sections 14, 15, and other sections, as applicable?	CPD
18	Has safety/ESOH been included in the Critical Design Review (CDR)?	CDR results
19	Have the cost estimates been updated to reflect any safety/ESOH related cost data?	Cost Estimates
20	Has the Demilitarization and Disposal Plan been updated to include safety and environmental hazard data (e.g. hazardous materials)	Demilitarization and Disposal Plan

Highlighted text will be talked about in detail

CDR – Criteria Statements

21	Does the LCSP include safety and environmental requirements?	LCSP
22	Is Safety/ESOH included in the management of operational risks?	Operational Risk Management
23	Is Safety/ESOH included in the Risk Management Plan? (NAVSEAINST 5000.8)	Program Risk (Input to other processes)
24	Are safety/ESOH milestones included in the Integrated Master Schedule?	Integrated Master Schedule
25	Has the Safety Program reviewed the Interface IRS to determine if any safety risk exists or needs to be mitigated through the requirements process?	IRS
26	Has the SRS been updated to include any additional safety-critical software requirements?	SRS
27	Has the SEMP been updated to explain how safety/ESOH is integrated into the systems engineering process?	SEMP
28	Has the SEP been updated to explain how safety/ESOH is addressed and integrated into systems engineering?	SEP
29	Does the TEMP include safety/ESOH compliance requirements (such as NEPA) and specific safety testing requirements?	TEMP
30	Has the Test Plan and Procedures been drafted to include specific ESOH and system safety requirements to conduct testing and include specific tests to verify recommended mitigation measures?	Test Plan and Procedures
31	Is safety/ESOH included in the updated TOC?	TOC
32	Is there evidence that the Safety/ESOH team is actively involved in the CM processes and using the CM tools as described in the CM plans?	CM

Artifacts for Integration Readiness Review (IRR)

- Integration Readiness Review (IRR) - A formal review that assesses readiness of software systems for integrated configuration item testing

  - **Programmatic ESOH Evaluation (PESHE)**
  - **Integrated Hazard Analysis/System Hazard Analysis**
  - **Hazard Tracking System**
  - **ESOH Risk Acceptance**

IRR – Criteria Statements

1	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board, GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
2	Have hazard mitigations associated with the integrated system/subsystems been assessed, mitigated, and documented in the hazard tracking system? (MIL-STD-882, NAVSEAINST 5000.8)	IHA/SHA
3	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance

Artifacts for Test Readiness Review (TRR)

- Test Readiness Review (TRR) – A formal review of contractors' readiness to begin testing on both hardware and software configuration items.
  - **PESHE**
  - **Safety Release**
  - **ESOH Risk Acceptance**
  - **Health Hazard Assessment**
  - **Sub-System Hazard Analysis**
  - **Integrated Hazard Analysis/System Hazard Analysis**
  - **Safety Requirements/Criteria Assessment**
  - **Operating and Support Hazard Analysis**
  - **Safety Assessment Report**
  - **Weapon Systems Explosives Safety Review Board Technical Data Packages**
  - **Laser Safety Review Board**
  - **Hazard Tracking System/Risk Acceptance**
  - Operational Risk Management
  - Safety Review – ECP/SCN/SPR/PTR/STR
  - Test Plan and Procedures
  - Requirements Tracking System

TRR – Criteria Statements

1	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board, GATES and MS Reviews) (NAVSEAINST 5000.8)	PESHE
2	Has the PM ensured that a safety release(s) that covers the system/subsystem as configured for test events has been provided to testers prior to testing; does the safety release identify hazards, associated risks, provide warnings and cautions, and restrictions placed on testing? (DoDI 5000.02)	Safety Release
3	Have the test plan and environment been considered when assessing the hazards applicable for test events? (DoDI 5000.02)	Safety Release
4	Have all of the ESOH risk associated with the test been accepted at the appropriate level? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
5	Have risks associated with health hazards been assessed and mitigations been implemented prior to testing? (MIL-STD-882, NAVSEAINST 5000.8)	HHA
6	Are the identified hazard mitigations associated with system and subsystems traceable to test procedures? (MIL-STD-882)	SSHA
7	Does the test plan and criteria address interoperability hazards? (MIL-STD-882)	IHA/SHA
8	Are the identified safety requirements associated with system and subsystems tests traceable to procedures? (MIL-STD-882)	SR/CA
9	Are hazards associated with test, operation, maintenance and support of the system and components included in the procedures, warnings, cautions, and manuals? (MIL-STD-882)	O&SHA
10	Has the program compiled and documented an overall assessment of safety for testing? (MIL-STD-882)	SAR
11	Has the program been reviewed by the WSESRB? (As applicable) (NAVSEAINST 8020.6)	WSESRB Technical Data Package

TRR – Criteria Statements

12	Has the program presented to the LSRB? (As required)	LSRB
13	Has the following been updated: -Hazard Tracking System - Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
14	Is the updated safety/ESOH data been included in the management of operational risks?	Operational Risk Management
15	Is safety/ESOH included in the formal Engineering Change Proposal (ECP)/Safety Change Notice (SCN)/Software Problem Report (SPR)/Program Trouble Report (PTR)/Software Trouble Reports (STR) change review process?	Safety Review - ECP/SCN/SPR/PTR/STR
16	Has the Test Plan and Procedures been updated to include specific ESOH and system safety requirements to conduct testing and include specific tests to verify recommended mitigation measures?	Test Plan and Procedures
17	Does the requirement tracking system include results of the safety/ESOH analyses and previously conducted testing?	Requirements Tracking System

Highlighted text will be talked about in detail

TRR – Criteria Statements

1	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board, GATES and MS Reviews) (NAVSEAINST 5000.8)	PESHE
2	Has the PM ensured that a safety release(s) that covers the system/subsystem as configured for test events has been provided to testers prior to testing; does the safety release identify hazards, associated risks, provide warnings and cautions, and restrictions placed on testing? (DoDI 5000.02)	Safety Release
3	Have the test plan and environment been considered when assessing the hazards applicable for test events? (DoDI 5000.02)	Safety Release
4	Have all of the ESOH risk associated with the test been accepted at the appropriate level? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
5	Have risks associated with health hazards been assessed and mitigations been implemented prior to testing? (MIL-STD-882, NAVSEAINST 5000.8)	HHA
6	Are the identified hazard mitigations associated with system and subsystems traceable to test procedures? (MIL-STD-882)	SSHA
7	Does the test plan and criteria address interoperability hazards? (MIL-STD-882)	IHA/SHA
8	Are the identified safety requirements associated with system and subsystems tests traceable to procedures? (MIL-STD-882)	SR/CA
9	Are hazards associated with test, operation, maintenance and support of the system and components included in the procedures, warnings, cautions, and manuals? (MIL-STD-882)	O&SHA
10	Has the program compiled and documented an overall assessment of safety for testing? (MIL-STD-882)	SAR
11	Has the program been reviewed by the WSESRB? (As applicable) (NAVSEAINST 8020.6)	WSESRB Technical Data Package

Questions

- What happens if you have not completed your hazard analyses and gotten your risk accepted at the appropriate level?
- What IPTs do you find most effective in helping to integrate safety into the design?

BREAK – 10 minutes

Artifacts for System Verification Review (SVR)

- System Verification Review (SVR) - Verifies that the actual item (which represents the production configuration) complies with the performance specification.

  - **Programmatic ESOH Evaluation (PESHE)**
  - **Integrated Hazard Analysis**
  - **System Hazard Analysis**
  - **System Requirements/Criteria Assessment**
  - **Operating & Support Hazard Analysis**
  - **Hazard Tracking System**
  - **ESOH Risk Acceptance**
  - Cost Analysis Requirements Document
  - Request for Proposal
  - Requirements Tracking System
  - Statement of Work

SVR – Criteria Statements

1	Has the PESHE been updated to reflect test results to date? (DoDI 5000.02)	PESHE
2	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board (RMB), GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
3	Have the interface and interoperability hazards and mitigations been updated to reflect test results to date? (MIL-STD-882)	IHA/SHA
4	Have safety requirements been updated to reflect the test failures and design changes affected the safety requirements? (MIL-STD-882)	SR/CA
5	Have the operating and support hazards and mitigations been updated to reflect test results to date? (MIL-STD-882)	O&SHA
6	Has safety analysis and regression testing been conducted on all changes?	SR/CA
7	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882,and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
8	Has the cost associated with safety/ESOH changes been included in the final CARD?	CARD
9	Has the Low Rate Initial Production (LRIP) RFP been updated to include ESOH/system safety requirements? (NAVSEAINST 5000.8)	RFP
10	Has the Requirement Tracking System been updated to include changes to the system safety/ESOH requirements?	Requirement Tracking System
11	Has the LRIP SOW been updated to include system safety/ESOH requirements and CDRLs? (NAVSEAINST 5000.8)	SOW

Highlighted text will be talked about in detail

SVR – Criteria Statements

1	Has the PESHE been updated to reflect test results to date? (DoDI 5000.02)	PESHE
2	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board (RMB), GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
3	Have the interface and interoperability hazards and mitigations been updated to reflect test results to date? (MIL-STD-882)	IHA/SHA
4	Have safety requirements been updated to reflect the test failures and design changes affected the safety requirements? (MIL-STD-882)	SR/CA
5	Have the operating and support hazards and mitigations been updated to reflect test results to date? (MIL-STD-882)	O&SHA
6	Has safety analysis and regression testing been conducted on all changes?	SR/CA
7	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on high and serious ESOH Risk -Reports on ESOH risk acceptance (DoDI 5000.02, MIL-STD-882,and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
8	Has the cost associated with safety/ESOH changes been included in the final CARD?	CARD
9	Has the Low Rate Initial Production (LRIP) RFP been updated to include ESOH/system safety requirements? (NAVSEAINST 5000.8)	RFP
10	Has the Requirement Tracking System been updated to include changes to the system safety/ESOH requirements?	Requirement Tracking System
11	Has the LRIP SOW been updated to include system safety/ESOH requirements and CDRLs? (NAVSEAINST 5000.8)	SOW

Artifacts for Production Readiness Review (PRR)

- Production Readiness Review (PRR) - Determines if the design is ready for production, production engineering problems have been resolved, and the producer has accomplished adequate planning for the production phase

  - **Programmatic ESOH Evaluation (PESHE)**
  - **Safety Assessment Report**
  - **Threat Hazard Assessment**
  - **Hazard Tracking System**
  - **ESOH Risk Acceptance**
  - **Cost Analysis Requirements Document**
  - **Laser Safety Review Board**
  - Acquisition Strategy
  - Capability Production Document
  - Capability Production Document Plan
  - Safety Review – ECP/SCN/SPR/PTR/STR

PRR – Criteria Statements

1	Has the PESHE been updated to reflect the final production configuration? (DoDI 5000.02)	PESHE
2	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board (RMB), GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
3	Have hazardous materials, wastes, and pollutants (discharges/emissions/ noise) associated with the system been documented in the system safety hazard tracking system? (DoDI 5000.02, NAVSEAINST 5000.8)	PESHE
4	Has the mishap risk of all hazards been accepted by the appropriate authorities and been communicated to parties responsible for production release, operational test and deployment? (MIL-STD-882, NAVSEAINST 5000.8)	ESOH Risk Acceptance
5	Has the user representative provided formal concurrence with all serious and high safety residual risk acceptance and informal concurrence with all medium safety residual risks? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
6	Have warnings, cautions, workarounds, and administrative controls applicable to safety been included in training material and technical manuals?	SAR
7	Has the program compiled and documented an overall assessment of safety for production and release? (MIL-STD-882)	SAR
8	Have the system threat hazards and mitigation results been communicated to the appropriate organizations? (MIL-STD-882)	THA
9	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on High and Serious ESOH Risk -Reports on ESOH Risk Acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance

PRR – Criteria Statements

10	Has the program presented to the LSRB? (as required)	LSRB
11	Does the Acquisition Strategy contain an updated summary of the Programmatic ESOH Evaluation as required?	Acquisition Strategy
12	Does the final CPD contain safety/ESOH capability statements?	CPD
13	Has the CPC Plan been updated to address hazards during production and sustainment?	CPC Plan
14	Has Safety reviewed ECP/SCN/SPR/PTR/STRs changes to the configuration that may create or worsen a safety/ESOH issue?	Safety Review - ECP/SCN/SPR/PTR/STR

Highlighted text will be talked about in detail

PRR – Criteria Statements

1	Has the PESHE been updated to reflect the final production configuration? (DoDI 5000.02)	PESHE
2	Has the program reported the current status of all high and serious ESOH risks and applicable ESOH technology requirements at program reviews? (Include in Risk Management Board (RMB), GATES and Milestone Reviews) (NAVSEAINST 5000.8)	PESHE
3	Have hazardous materials, wastes, and pollutants (discharges/emissions/ noise) associated with the system been documented in the system safety hazard tracking system? (DoDI 5000.02, NAVSEAINST 5000.8)	PESHE
4	Has the mishap risk of all hazards been accepted by the appropriate authorities and been communicated to parties responsible for production release, operational test and deployment? (MIL-STD-882, NAVSEAINST 5000.8)	ESOH Risk Acceptance
5	Has the user representative provided formal concurrence with all serious and high safety residual risk acceptance and informal concurrence with all medium safety residual risks? (DoDI 5000.02, NAVSEAINST 5000.8)	ESOH Risk Acceptance
6	Have warnings, cautions, workarounds, and administrative controls applicable to safety been included in training material and technical manuals?	SAR
7	Has the program compiled and documented an overall assessment of safety for production and release? (MIL-STD-882)	SAR
8	Have the system threat hazards and mitigation results been communicated to the appropriate organizations? (MIL-STD-882)	THA
9	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on High and Serious ESOH Risk -Reports on ESOH Risk Acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance

Highlighted text will be talked about in detail

PRR – Criteria Statements

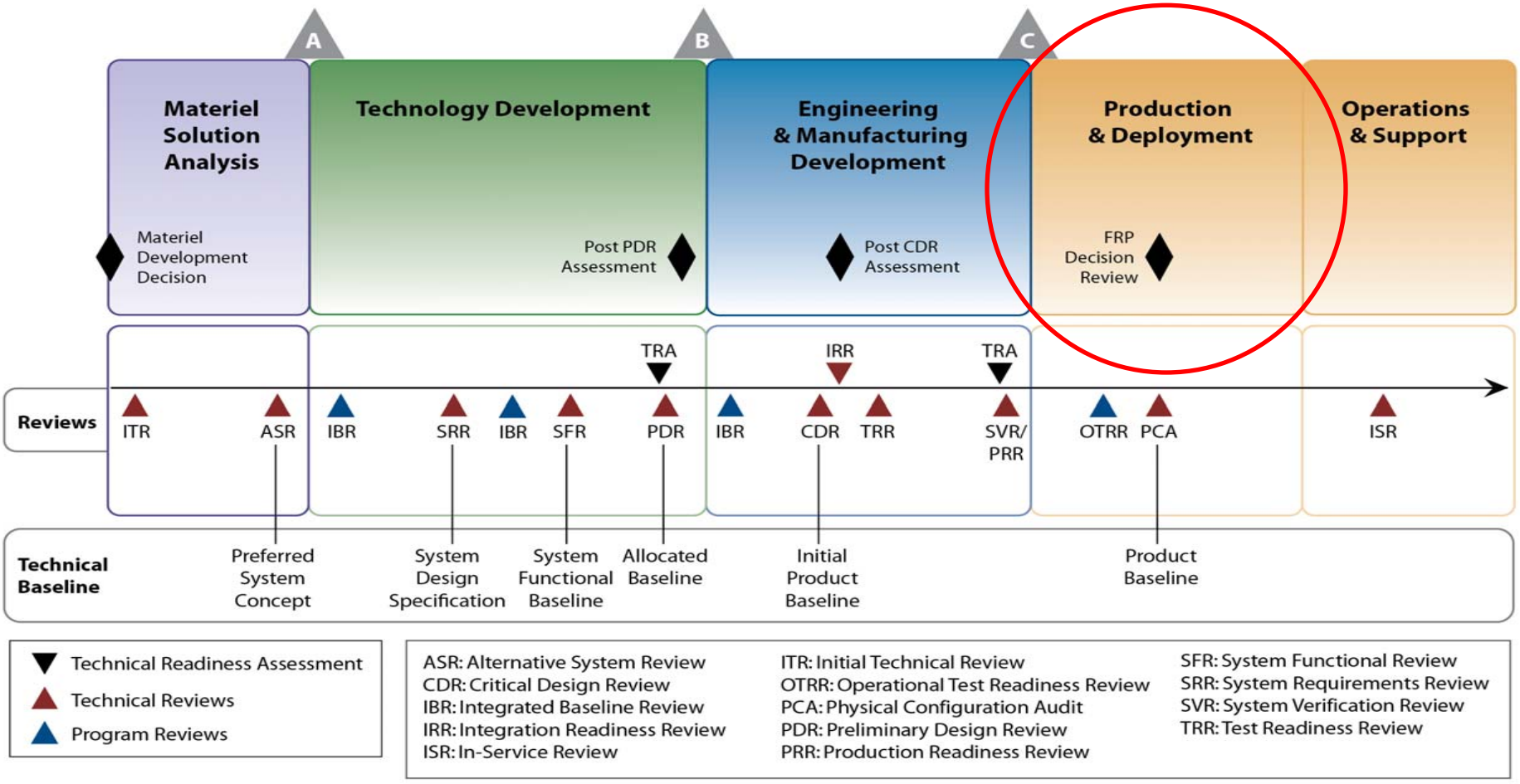
10	Has the program presented to the LSRB? (as required)	LSRB
11	Does the Acquisition Strategy contain an updated summary of the Programmatic ESOH Evaluation as required?	Acquisition Strategy
12	Does the final CPD contain safety/ESOH capability statements?	CPD
13	Has the CPC Plan been updated to address hazards during production and sustainment?	CPC Plan
14	Has Safety reviewed ECP/SCN/SPR/PTR/STRs changes to the configuration that may create or worsen a safety/ESOH issue?	Safety Review - ECP/SCN/SPR/PTR/STR

Agenda

- Introduction
- SETR Policy Requirements
- What is SETR
- Recommended SETRs
- Tailoring
- Safety in SETR Process
- Acquisition Framework Deep Dive
  - Material Solution Analysis
  - Technology Development
  - Engineering and Manufacturing Development
  - Production and Deployment
  - Operations and Support
- Summary/Conclusion

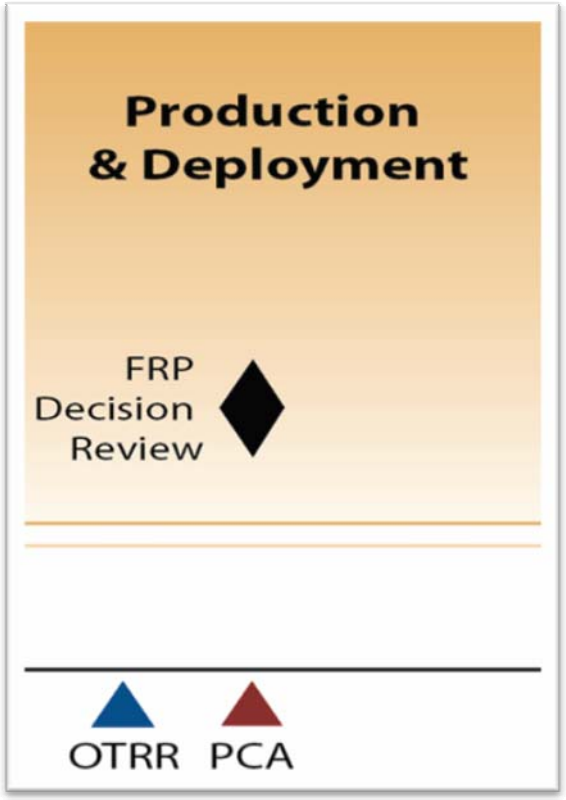
Phase Overview
Present SETRs
Artifacts
Safety Criteria Statements
Safety Driving Factors

Production and Deployment



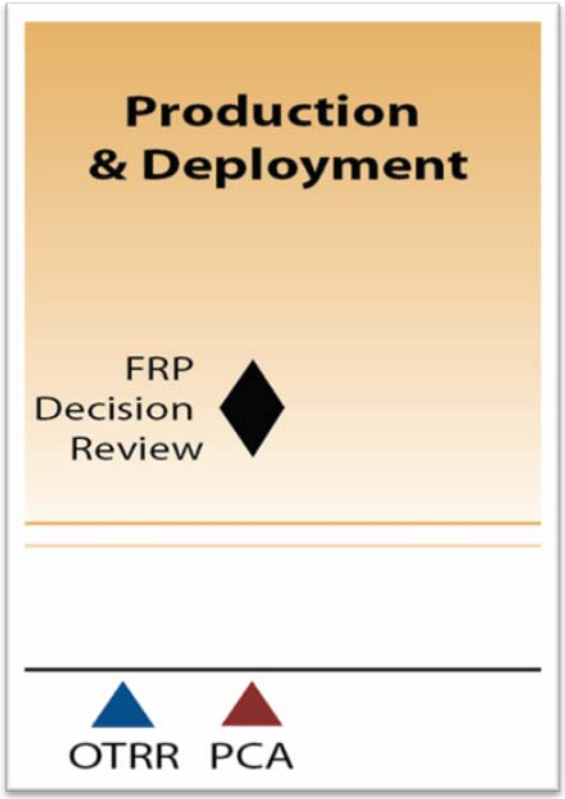
Production and Deployment Activities (Pre-FRP)

- Purpose: Achieve an Operational Capability that satisfies mission needs
- Enter: Acceptable performance in DT & OA; mature software; no significant manufacturing risks; approved CPD; refined integrated architecture; acceptable interoperability and operational supportability; demonstration of affordability; fully funded; phased for rapid deployment.
- Activities: IOT&E, LFT&E and Interoperability Testing of Production or Production-Representative Articles; IOC possible
- Guided by: CPD and TEMP
- Exit: System Operationally Effective, Suitable and Ready for Full-Rate Production



Production and Deployment Activities (Post-FRP)

- Purpose: Achieve an operational Capability that satisfies mission needs
- Enter: Beyond LRIP & LFT&E Reports (OSD T&E/LFT&E programs) Submitted to Congress.
- Activities: Full-Rate Production; Fielding and Support of Fielded Systems; IOC/FOC
- Guided by: Acquisition Strategy & Life Cycle Sustainment Plan
- Exit: Full Operational Capability; Deployment Complete



Agenda

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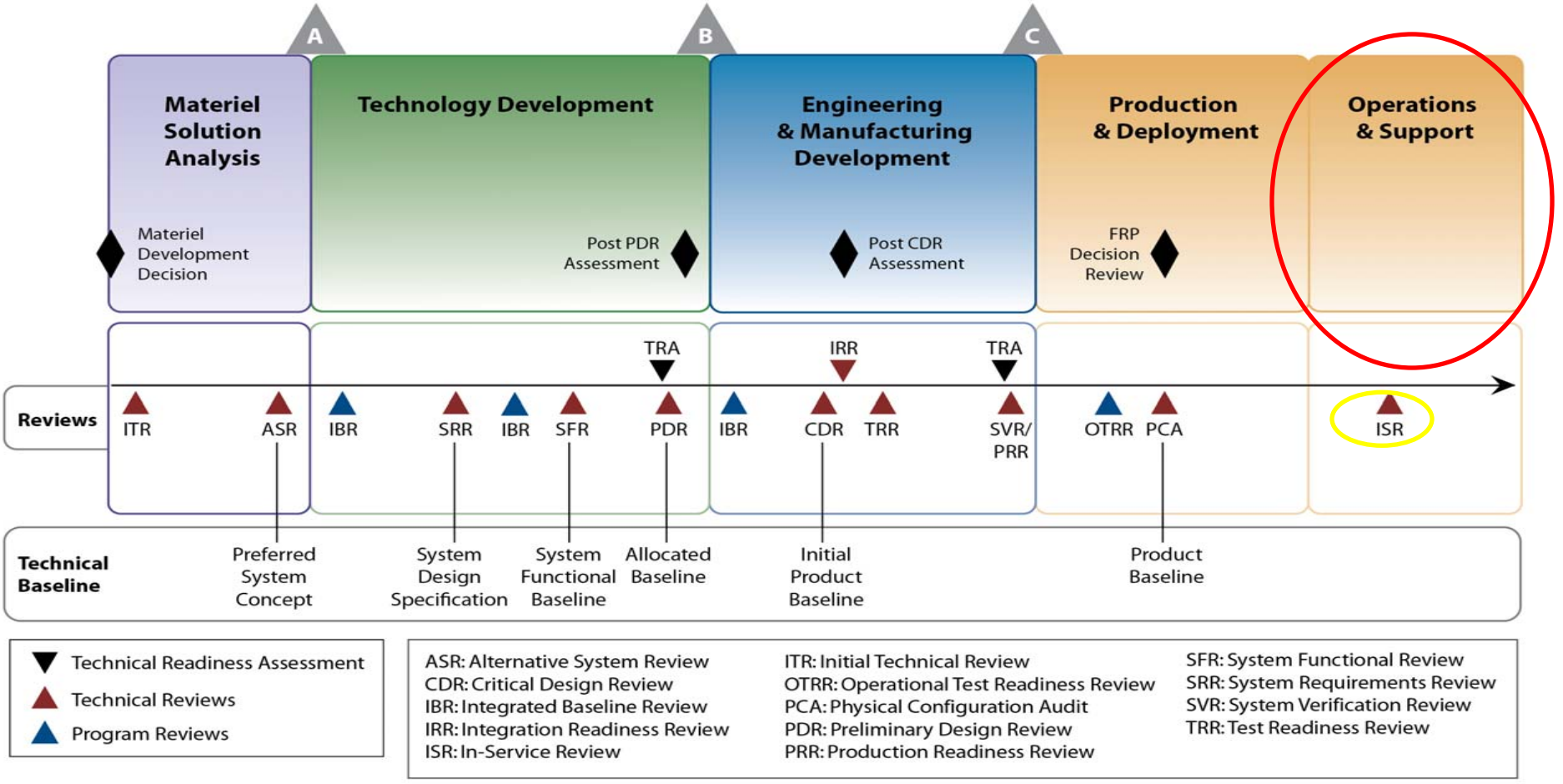
Operations and Support



Operations and Support Activities

- Purpose: Execute a support program that meets materiel readiness and operational support performance requirements, and sustains the system in the most cost-effective manner over its total life cycle.
- Enter: Approved CPD; approved LCSP; successful FRP Decision
- Activities (Sustainment): Performance-Based Life-Cycle Product Support (PBL) planning, development, implementation, and management; initiate system modifications as necessary; continuing reviews of sustainment strategies
- Guided by (Sustainment): Acquisition Strategy/LCSP
- Activities (Disposal): Demilitarize and Dispose of Systems IAW Legal and Regulatory Requirements, Particularly Environmental Considerations and Explosives Safety
- Guided by: Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE)

Artifacts for In-Service Review (ISR)

- In-Service Review (ISR) – A formal technical review that is to characterize in-Service technical and operational health of the deployed system by providing an assessment of risk, readiness, technical status, and trends in a measurable form that will substantiate in-Service support and budget priorities.

  - **Hazard Tracking System**
  - **ESOH Risk Acceptance**
  - **Operating and Support Hazard Analysis**
  - **Safety Assessment Report**
  - **WSESRB Technical Data Package**
  - Lifecycle Sustainment Plan
  - Program Risk (input to other processes)
  - Safety Review (ECPSCN/SPR/PTR/STR)

Highlighted text will be talked about in detail

ISR – Criteria Statements

1	Has a safety evaluation been performed on new hazards or recommended mitigations from in service evaluations, industrial hygiene survey, routine safety evaluations and mishap reports and have the results been documented in the hazard tracking system? (DoDI 5000.02, NAVSEAINST 5000.8)	Hazard Tracking System
2	Has the program notified the user community of the changes in safety residual risk? (MIL-STD-882, NAVSEAINST 5000.8)	ESOH Risk Acceptance
3	Has a hazard analysis been completed for all Class A and B mishap investigations associated with the system? (DoDI 5000.02, NAVSEAINST 5000.8)	Hazard Tracking System
4	Have hazards and mitigations associated with operation and support of the system been re-evaluated based on user, maintainer, test and training community feedback? (MIL-STD-882, NAVSEAINST 5000.8)	O&SHA
5	Has the program compiled and documented an overall assessment of the changes in safety since the last review? (MIL-STD-882)	SAR
6	Has the program been reviewed by the WSESRB? (as applicable) (NAVSEAINST 8020.6)	WSESRB Technical Data Package
7	Has the following been updated: -Hazard Tracking System -Hazards -ESOH Risk -Reports on High and Serious ESOH Risk -Reports on ESOH Risk Acceptance (DoDI 5000.02, MIL-STD-882, and NAVSEAINST 5000.8)	Hazard Tracking System/Risk Acceptance
8	Does the LCSP include safety and environmental requirements and processes? (NAVSEAINST 5000.8)	LCSP
9	Are operational safety/ESOH issues documented and communicated back to safety/ESOH? (NAVSEAINST 5000.8)	Program Risk (Input to other processes)
10	Is safety/ESOH included in the formal ECP/SCN/SPR/PTR/STRs change review process?	Safety Review - ECP/SCN/SPR/PTR/STR

Questions

- Do you maintain the hazard tracking system once the system is fielded and track new or changed hazards? What about technology insertion?
- What is the method used for receiving feedback from the field to incorporate mishaps, ECPs and lessons learned?

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Summary/Conclusion

- Participation in engineering and program document development helps safety engage in the plan, design, test, and sustainment processes.
- Safety's participation in the technical review process is critical to an effective system safety program.
- Early participation in technical reviews is important now that PDR is set prior to MS B (MDAPs only) and competitive prototyping is required by law. This tutorial provides you with extensive material to accomplish this.
- Safety SETR criteria helps to ensure a robust safety program and provides standardization across the Naval Enterprise.

Questions??

- Contact Information
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  - Mr. Stuart Whitford, Naval Ordnance Safety and Security Activity, stuart.whitford@navy.mil
  - Ms. Karen Gill, Booz Allen Hamilton, gill_karen@bah.com
  - Ms. Kristin Thompson, Booz Allen Hamilton, thompson_kristin@bah.com

References

- MIL-STD-882D, Department of Defense Standard Practice for System Safety.
- Chief of Naval Operations, *Navy System Safety Program Policy*, OPNAVINST 5100.24B, 6 February 2007.
- Chief of Naval Operations/Commandant of the Marine Corps, *Navy Laser Hazards Control Program*, OPNAVINST 5100.27B/MCO 5104.1C, 2 May 2008.
- Commanders, Naval Air Systems Command, Naval Sea Systems Command, Naval Supply Systems Command, Naval Facilities Systems Command, Space and Naval Warfare Systems Command and Marine Corps Systems Command (2010). MARCORSYSCOM Order 5400.5, SPAWARINST 5000.1, NAVFACINST 5000.15, NAVSUPINST 5000.21, NAVSEAINST 5000.9, and NAVAIRINST 5000.24, *Naval SYSCOM Systems Engineering Policy*, 19 January 2010.
- Commanders, Naval Air Systems Command, Naval Sea Systems Command, Naval Supply Systems Command, Naval Facilities Systems Command, Space and Naval Warfare Systems Command and Marine Corps Systems Command (2010). MARCORSYSCOM Order 5400.5, SPAWARINST 5000.1, NAVFACINST 5000.15, NAVSUPINST 5000.21, NAVSEAINST 5000.9, and NAVAIRINST 5000.24, *Naval Systems Engineering Technical Review Handbook Version 1.0*, 19 January 2010.
- Commanders, Naval Air Systems Command, Naval Sea Systems Command, Naval Supply Systems Command, Naval Facilities Systems Command, Space and Naval Warfare Systems Command and Marine Corps Systems Command (2010). MARCORSYSCOM Order 5000.3, SPAWARINST 3058.1, NAVFACINST 5000.15, NAVSUPINST 5000.20, NAVSEAINST 5000.8, and NAVAIRINST 5000.24, *Naval SYSCOM Risk Management Policy,* 20 July 2008.
- Naval Sea Systems Command, *Department of the Navy Weapon Systems Explosive Safety Review Board*, 11 March 2008.
- Department of Defense Instruction (DoDI) 5000.02, *Operation of the Defense Acquisition System*. United States of America: Department of Defense, 8 December 2008.
- Department of Defense Directive (DoDD) 5000.01, *Operation of the Defense Acquisition System*. United States of America: Department of Defense, 20 November 2007.