OPNAV
HIGH SPEED STRIKE SYSTEM (HiSSS)
ROADMAP

N880C/D Capt. Nash; N872 Capt Donahue; N864F Capt Army; N85 F. Shoop

16 July 1997
HiSSS Vision

“Reducing current INFRASTRUCTURE & INVENTORIES of weapon systems to provide an AFFORDABLE, COMMON FAMILY of STRIKE WEAPONS which allow an EFFECTIVE, SUPPORTABLE solution to the THREATS of the future (2010)”
For OPNAV by NAWCWPNS
S. Lyda 473240D 760-939-7395
12/11/97

MISSION NEED STATEMENT

• Mission: Attack, Destroy, & Hold at Risk Short Dwell and/or Time-Critical Targets at Long Standoff Ranges

• Performance: Range up to 600 nmi
  Average speed M3.5-M7
  High weapon survivability
  Penetration of 18-36 feet of concrete
  Reactive SEAD

• Constraints: START Treaty

• Goal: Family of Hypersonic Cruise Missiles
  Neckdown to 1 type of Weapon vice 6 currently
  Minimize cost of ownership
  2010 IOC

• Compatibility: Day, night, adverse weather operation
  Navy/Shipboard compatible
  F/A-18 E/F, JSF, F-22, F-16, F-15E, B52, B-2,B-1, MLRS,
  Surface ships, & submarines

Source: MNS draft, received 5/22/97

Prepared for OPNAV by NAWCWPNS
S. Lyda 473240D 760-939-7395
12/11/97
HiSSS FORCE PROJECTION

[Map showing regions and distances]

Prepared for OPNAV by NAWCWPNS-
S. Lyda 473240D 760-939-7395 12/11/97
PROVIDE THEATER CINCS NEAR REAL-TIME CAPABILITY

● TARGETING
  - “FIRST DAY, FIRST STRIKE” / INTERDICTION MISSIONS
    » PLANNED TARGETING PACKAGES
    » STATIC HIGH VALUE, HARDENED FIXED TARGETS
  - THEATER RESPONSE
    » UNPLANNED TARGETING PACKAGES
    » RAPID RESPONSE TO EVOLVING TARGETS, THREATS, OPERATIONAL REQUIREMENTS
    » NEAR REAL-TIME TARGETING DATA ASSIGNMENT, MISSION PLANNING

● EMPLOYMENT
  - COMPATIBILITY WITH PORTIONS OF EVOLVING INFRASTRUCTURE
    » SURFACE / SUBMARINE VERTICAL LAUNCH
  - REAL-TIME COMMUNICATIONS
    » INTEGRATED THEATER LEVEL TARGET ASSIGNMENT / BDI NETWORK
CONOPS IMPLEMENTED WITHIN FUTURE COMMAND STRUCTURE

Provide for:
- Targets of opportunity
- Inflight target selection
- Real-time BDA

Preplanned Missions:
Generate & update as required

Onboard mission planning

Near real-time targeting data

Time Critical & Alert Missions:
Near real-time CINC target assignment

Regional CINC

Shore based mission support facility

Targeting data
MEMORANDUM OF AGREEMENT
FOR
HIGH SPEED STRIKE CAPABILITY

• PARTIES:
  N880C/D  CAPT NASH
  N872  CAPT DONAHUE
  N864F  CAPT ARMY
  N85  MR. F. SHOOP

• OBJECTIVE:
  • LEVERAGE LIMITED RESEARCH AND DEVELOPMENT DOLLARS
  • ESTABLISH A JOINT EFFORT BETWEEN THE OPERATIONAL CODES TO SUPPORT
    COMMON REQUIREMENTS, TECHNOLOGY, AND ACQUISITION EFFORTS RELATING
    TO THE MNS.

• LEAD NAVY EFFORTS:

  Mission Area                              Activity
  Requirements                             OPNAV N86, N87, and N88
  Science and Technology                   Office of Naval Research
  Weapon System                            Weapon Department Code 470000D
  Acquisition                              NAVSEA & NAVAIR IPT
HiSSS NECKDOWN STRATEGY

Strategies

1. Reduce Infrastructure and Inventories by building a Common Family of STRIKE Weapons

2. Build upon Existing Technology Programs from DARPA, ONR, Air Force, and NASA

3. Position Program to allow Weapon System IOC at timeframe where existing programs are experiencing drawdown.
NECKDOWN STRATEGY
EXAMPLE

SOAD

HARPOON

Block IV

SLAM / SLAM-ER+ / JASSM

Block V

Block VI

CMD K. GINADER

Multirole

HiSSS

TLAM

TLAM Block III

Missile Devel.

IOC

90 92 94 96 98 00 05 10 15 20
# EXISTING HIGH SPEED PROGRAMS

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<th>Program</th>
<th>Goal</th>
<th>Sponsor</th>
<th>Product</th>
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<td>Low Cost Missile</td>
<td>M4 Axi RJ Demo</td>
<td>Navy ATD</td>
<td>Flight Demo 99</td>
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<td>Hypersonic Weapons Tech.</td>
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<td>ONR</td>
<td>DCR Freejet 01-02, Low-Drag Airframe Subsystems Dev’t</td>
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<td>USAF</td>
<td>SCRJ Freejet 01-02</td>
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<td>Techn’y Roadmap</td>
<td>USAF WL (Eglin)</td>
<td>Study/Demo Follow</td>
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<td>Hard &amp; Deeply Buried Target Study</td>
<td>MS 1 AOA (COEA)</td>
<td>USAF ACC</td>
<td>Study</td>
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DoD High Speed Weapon Programs

- **HyTEC WL/POP 6.2 $120M**
  - M = 4-8 scramjet engine technology
- **USAF TCT 6.2 $3,3M / 6.3 $16.2M WL/MN**
- **LCMS ATD Navy 6.3 $15M**
  - LOW COST M = 4+
  - 700 NMI RANGE
- **NAVY - NEW ATDS/ ACTD/CRADAS**
  - Navy HISSS STUDIES/ ANALYSIS TECHNOLOGIES
- **NAVY - ONR TECHNOLOGY**
- **ARRMD - DABPA**
  - Phase 1
  - Phase 2
- **Hyper X Technology NASA**
  - $167M M = 10+ Hydrogen Fueled
  - Low Cost < $180K
  - M = 6-8
  - 600 NMI range
  - Hyper X Phase 2

**OPNAV HIGH SPEED STRIKE MISSILE**

- **LOW COST AIR LAUNCHED**
  - M = 6-8
  - 900 - 1000 NMI RANGE

**Prepared for OPNAV by NAWCWPNS-S. Lyda 473240D 760-939-7395 12/11/97**
DEEPLY BURIED
BRIDGES
BUILDINGS
AMMUNITION & POL LOGISTICS
HARDENED C4 FACILITIES
SHIPS

REVETTED AIRCRAFT & MOBILE RADARS
RELOCATABLE SURFACE-TO-SURFACE MISSILES
AIRCRAFT ON GROUND
MOBILE SAMs

HARDNESS

MOBILITY

$800K/copy
$1M/copy
$500K/copy

$800K/copy

AIRCRAFT ON GROUND

MOBILE SAMs

AFFORDABILITY VS. TARGET COVERAGE

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S. Lyda 473240D 760-939-7395

12/11/97
FAMILY OF WEAPONS VS. TARGET SET

AIR LAUNCHED VERSION

Time Critical Targets
Mobile/Relocatable SAMS
Relocatable SS Missiles
Aircraft on the Ground
Relocatable Radars
Ships

SURFACE LAUNCHED VERSION

Ammunition/POL Logistics
C4 Facilities
Airfield Facilities
Port Facilities
Air Defense Command and Control Nodes
Industrial Buildings
Bridges
Deeply Buried Targets
Weapons of Mass Destruction (Production, Assembly & Storage Facilities)
HiSSS Approach

● Model HiSSS Program after JSF Program
  - Form Industry/Government IPT’s in the Areas of Requirements, Systems, Technologies, & Programs
  - Utilize Top-Down Strategy-to-Task (STT) Requirements Analysis Process
  - Foster A Joint-Service Analysis for Common Requirements
  - Refine MNS Requirements Through Implementation Of STT Process

● Focus on System Level Concepts
  - Battle Space Integration, Platforms, Weapons
  - Develop A Validated Modeling And Simulation Environment For High Speed Strike Analyses

● Support Program with Technology Maturation Efforts
  - Align Existing Technology Efforts With Requirements as validated
  - Conduct Technology & System Unique Demonstrations

● Implement Streamlined Acquisition Processes

● World Wide Web Information Page -
STRATEGY-TASK-TECHNOLOGY

- **Military Strategy**
  - Operational Concepts
    - Best Practices
    - Operational Objectives
  - CONOPS
  - Tasks

- **National Security Policy**

- **Force Elements**
  - Threat
  - Target Set

- **Non-material Solutions**
  - Doctrine
  - Tactics

- **Campaign**
  - Mission
  - Engagement
  - Engineering
  - Deficiencies
  - Required Features and Characteristics

- **Modeling & Simulation**
  - Affordable, Effective Technologies
  - Technology & Operational Concept Demonstrations
  - Investment Plan

- **Affordable Cost Trades**

- **Packard Commission**
  - Get Warfighter and Technologist Together to Enable Leveraging Cost-Performance
  - Apply Technology to Lower Cost of the System Not Just Increase Its Performance
  - Adequately Mature Technology Prior to Entering E&MD
Acquisition Initiatives

● Near Term Approach
  – CRADA’s for IPT efforts in Requirements, Technologies, Systems
  – Cooperative Government/ Industry ATD/ACTD’s maturing technologies for HiSSS
  – Cost-Performance Trades

● Future Streamlining Initiatives
  – Contractor Proposed Sow /CDRL’S in Response to Jointly Developed RFP
  – Succinct RFP
    » Shared Evaluation Standards
    » Multi-Year Procurement
    » Paperless / Electronic RFP
  – Commercial Standards, Best Commercial/Industry Practices
HiSSS IPT Tasks

IPT LEADER
S. LYDA
760-939-7395

**REQUIREMENTS**
- STT Process
- Warfare Analysis
- System Requirements
- CONOPS
- Warfare M&S
- Liaison To Other Orgs

**SYSTEMS**
- Concept Devel/Eval
- Platform Integration
- Performance Analysis
- Battlespace Integration
- Subsystem Trade Studies
- Affordability/System Cost
  - Logistics
  - System/Subsystem M&S

**PROGRAMMATIC**
- Program Planning
  - Schedules
- Program Costs
- Acquisition Strategy
- Liaison To Other Orgs
- Management Of BAAs

**TECHNOLOGY**
- Liaison to Tech Programs
- Liaison To Other Services and Agencies
- Focus ONR Tech Prog
- Support Tech Steering Grps
- Coordinate Tech Work Among Services/Agencies
POINTS OF CONTACT

- Stephen F. Lyda - HiSSS POC Lead 760-939-7395
- Bill McBride - Systems POC 760-939-3998
  - Dr. Dave Netzer  NPS Propulsion - 408-654-2098
  - Dr. Mike White JHU/APL Propulsion - 301-953-5187
  - Dr. Conrad Newburry  NPS Structures - 408-654-2892
- Dr. Jim De Santi- Requirements POC 760-939-1281
  - CDR J. Gattuso NSAWC
  - D. Cowles JHU/APL
  - R. Ackerman NAWC-AD
  - D. Larsen CNA
  - W. Harman NSWC-DD
HiSSS REQUIREMENTS, VALIDATION & TECHNOLOGY ROADMAP

TECHNOLOGY EVALUATION & MATURATIONS

MISSION & ENGAGEMENT LEVEL ANALYSIS & SIMULATION
- SCENARIOS
- DEFICIENCY EVALUATION
- FIGURE OF MERIT DEVELOPMENT
- EFFECTIVENESS / AFFORDABILITY / COMMONALITY/ MAINTAINABILITY

DEVELOPED BY IPT OF WARFIGHTERS, TECHNOLOGISTS & DEVELOPERS

2010 IOC

(98) "DRAFT" MNS
(99) "SMOOTH" MNS
(00) CON-OPS

"PRELIM" ORD
AOA COMPLETE

PROJECT START
PDRR

TECHNOLOGY DEMONSTRATIONS
- ADVERSE WEATHER/NIGHT
- WEAPON/SENSOR INTEGRATION
- MULTI-ROLE CAPABILITY
- WEAPONS CARRIAGE VERSATILITY
- MAINTAINABILITY
- MISSION PLANNING & FLEXIBILITY
- WEAPON EFFECTIVENESS
- COUNTERMEASURES
- COMMONALITY
- INTEROPERABILITY

ANALYSIS OF ALTERNATIVES

DEMONSTRATIONS
MNS

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ANALYSIS OF ALTERNATIVES

Prepared for OPNAV by NAWCWPSN-S. Lyda 473240D 760-939-7395 12/11/97

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SUMMARY

- The HiSSS Initiative is Responsive to the ‘HIGH SPEED STRIKE’ MNS
- The HiSSS Initiative is Jointly Supported by CINC’s, & OPNAV N85/86/87/88
- HiSSS Program is looking to provide a substantial Cost Saving to Navy weapons systems through a neckdown strategy from multiple weapons to a common weapon family
- The HiSSS Initiative is open to Innovative Concepts, Cooperative Efforts, Technology proposals in FY98 - 02
### HiSSS DEVELOPMENT CYCLE
(NOTIONAL Air Launched)

**DRAFT 17 JULY 97**

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<th>ACQUISITION MILESTONES</th>
<th>TECHNOLOGY MATURATION</th>
<th>PDRR</th>
<th>ENGINEERING &amp; MANUFACTURING DEVELOPMENT</th>
<th>PRODUCTION</th>
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<td><strong>Production</strong></td>
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<td><strong>Test &amp; Evaluation</strong></td>
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**FLIGHT TEST**

**Prepared for OPNAV by NAWCWPNS-S. Lyda 473240D 760-939-7395**

12/11/97

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## FY 98 R-IPT Task Plan

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### Study Plan/Process Review
- Draft CONOPS 1
- Draft CONOPS 2
- Study Synthesis Report
- Smooth MNS
- Study Plan/Process Doc
- M&S Environment Description Doc
- Draft CONOPS 1
- Draft CONOPS 2