

BALLISTIC MISSILE DEFENSE ORGANIZATION

Briefings Presented at the
Advance Planning Briefing for Industry

March 1994

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Briefings not included in this package were distributed at the APBI meeting. A copy of all briefings are available at the BMD Technical Information Center;

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**BALLISTIC MISSILE DEFENSE ORGANIZATION (BMDO)
ADVANCE PLANNING BRIEFING FOR INDUSTRY (APBI)
AGENDA**

(Revised as of 2/22/94)

Monday, 28 February 1994

1800-2000 **Late Registration & Welcome Reception**--Ritz-Carlton, Tyson's
Corner, VA , Outside Meeting Salon (5th Floor)

Tuesday, 01 March 1994

0730-0830 **Late Registration, Refreshments and Coffee**

0830-0835 **Administrative Remarks**--Mr. Stephen Moss,
Assistant Director for Contract Policy and Special Projects,
BMDO

0835-0840 **Welcome and Introduction of Keynote Speaker**--
MG William E. Eicher, US Army (Ret), Vice President, American
Defense Preparedness Association (ADPA)

0840-0930 **Keynote Address**--BMDO Vision, Reorganization, Major Issues and
Challenges--LTG Malcolm O'Neill, USA, Director, BMDO

0930-1015 **The Worldwide Ballistic Missile Threat**--Dr. Thomas Ward,
Director, Security, Intelligence & Countermeasures Directorate,
BMDO

- Operational Threat Environment
- Theater Ballistic Missiles
- Strategic Ballistic Missiles

1015-1045 **Break and Refreshments**

1045-1110 **International Participation**--Dr. J. David Martin, Deputy for
Strategic Relations, BMDO

- Administration/Congressional Views on Participation
- Opportunities for Participation
- Other Nation Views on BMD

1110-1135 **ABM Treaty Issues**--LTC Vincent Faggioli, USA, Assistant General
Counsel for Treaty Compliance

1135-1200 **Congressional Overview**--Mr. Thomas Johnson, Chief, Legislative
Support Division, BMDO

- Fiscal Year 1994 Congressional Direction
 - Outlook for Fiscal Year 1995
- 1200-1330 **Luncheon**--Luncheon Speaker: Dr. Anita Jones, Director of Defense Research and Engineering (DDR&E)
- 1330-1500 **Theater Missile Defense (TMD)**
- COL Gordon Hagewood, Director, Program Management and Corporate Strategy, BMDO
- TMD Program
- LTC John Upton, USMC, Director, Theater Defense Sensors, BMDO
- Near-Term Program
- LTC/P Perry Casto, USA, Program Integrator for CORPS SAM, BMDO
- TMD Acquisition Programs
- Col Richard A. Ritter, USAF, System Integration Directorate
- BM/C³ Program
- 1500-1530 **National Missile Defense (NMD)**--Mr. Francis O'Meara, Assistant Deputy for Readiness, BMDO
- The past, present and future of NMD
 - Issues affecting NMD

- 1530-1600 **Break and Refreshments**
- 1600-1630 **BMDO Technology Programs**--Col Gary Payton, Deputy for Technology, BMDO
- Current and future technology programs
- 1630-1745 **Service PEO Perspectives**
- COL Gordon Hagewood, Director, Program Management and Corporate Strategy, BMDO
- Air Force**--Major General Garry A. Schnelzer, USAF, Air Force Program Executive Officer for Space
- Issues Affecting Air Force BMD Support
- Navy**--Mr. David M. Altwegg, Deputy Program Executive Officer for Theater Air Defense
- Issues Affecting Navy BMD Support
- Army**--BG Richard Black, USA, Program Executive Officer for Missile Defense
- Issues Affecting Army BMD Support
- 1745-1750 **Summary and wrap-up of day's events**--Mr. Stephen Moss
- 1750 **Adjourn**
- 1800-2000 **Buffet Reception**--Adjacent to Meeting Salon (5th Floor)

Wednesday, 02 March 1994

0730-0830 **Refreshments and Coffee**--Outside Meeting Salon (5th Floor)

0830-0835 **Administrative Remarks**--Mr. Stephen Moss

0835-1000 **OSD Round Table**

Dr. James Carlson, Moderator, Acting Deputy Director, BMDO

Mr. Larry Lynn, Deputy Under Secretary of Defense for
Advanced Technology

Dr. George Schneider, Director, Strategic and Space Systems, Office of
the Under Secretary of Defense for Acquisition and Technology

Dr. John A. Wiles, Deputy Director, Test and Evaluation, Office of the
Under Secretary of Defense for Acquisition and Technology

- OSD's role in missile defense
- OSD/BMDO relationships
- Where BMD fits in the big picture

1000-1030 **Break and Refreshments**

1030-1050 **BMD BM/C³**, Col George W. Criss, Director BMC³, BMDO

- BM/C³ Vision
- Information Architecture
- Rapid Prototyping

1050-1200 **FY94-FY95 Projected Contracting Opportunities**--Mr. Barry
Richardson, Director, Contracts Directorate and Competition
Advocate, BMDO and representatives from BMD Executing Agents

- Significant future competitive requirements
 - BMDO
 - Army
 - Air Force
 - Navy

1200-1205 **Summary and Closing Remarks**--Dr. James Carlson, Acting
Deputy Director, BMDO

LTG Malcolm O'Neill's briefing was not cleared for dissemination, a copy is available for viewing at the BMD TIC.

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BALLISTIC MISSILE DEFENSE

**Advance Planning Briefing For Industry
Antiballistic Missile Treaty Compliance**

BALLISTIC *MISSILE* *DEFENSE* ORGANIZATION

1 MAR 94

**COL Vincent J. Faggioli, USA
Assistant General Counsel
Treaty Compliance And International Law
Ballistic Missile Defense Organization**

LOTS OF TREATIES

- **Outer Space Treaty**
- **Antiballistic Missile Treaty (ABMT)**
- **START Treaties**
- **INF Treaty**

*What Do Treaties Do ?
Give Up Rights !*

Primary Treaty For BMDO - ABMT

ABM TREATY

- **History**
- **Policy**
- **Specific Provisions**
- **TMD Dilemma**
- **Compliance**
- **Issues**

BASIS FOR ABM TREATY

A Stable World

- It's A MAD, MAD World
- Mutual Deterrence
- Stability
- Offense / Defense Linkage
- To End Upward Spiral In Offense - Did It ?
- World Held Hostage

To Preserve This State Of Affairs - ABM Treaty

Q: Do We Interpret It As Of Then - Or Now ?

PREVIOUS VIEW OF ABMT

- "The ABM Treaty Has Forestalled An Explosion Of Offensive Development On Both Sides. Back In The 1960s When The Soviet Union First Started To Deploy Defenses Around Moscow, The United States Government Was Examining Expanding Offensive Forces Up To 40-50,000 Reentry Bodies, Or Warheads, In Order To Penetrate Those Defenses. The ABM Treaty Has Been The Cornerstone Of Restraint For The Last 13 Years"

*James Schlesinger, 1985
Former Secretary Of Defense*

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PREVIOUS VIEW OF ABMT (Cont'd)

- "The Antiballistic Missile Treaty Is The Most Substantive And Important Arms Control Agreement Ever Reached By The Two Superpowers."

**Harold Brown, 1989
Former Secretary Of Defense**

PRESENT VIEW

- "President Clinton Has Affirmed Our Country's Commitment To The ABM Treaty. Its Presentation Remains Crucial To Stability, To The START I And START II Reductions, And To Longer Term Strategic Arms Control Opportunities"

*Mr. Holum,
Director ACDA*

CONTRARY ?

• "...What Went Nearly Unremarked Was The Extraordinary Doctrine That Based A Nation's Security On The Vulnerability Of Its Population And Of Its Missile Fields. In Retrospect It Is Less Clear To Me Than It Seemed Then, As I Went Along With The Consensus, *Why Protection Of The Missile Fields Would Not Have Added To Strategic Stability Especially After The MIRV Threat Emerged. Leaving Fixed ICBM Silos Totally undefended Reduces An Attack On Them Into A Mere Engineering Problem; As Accuracy Improves And The Number Of Attacking Warheads Expands, It Is Not Irrational To Consider ABM Defense Of Missile Fields As A Possible Protection If The Requisite Technology Is Available.*"

Henry A. Kissinger
Years Of Upheaval
1974

ANTIBALLISTIC MISSILE TREATY (ABMT)

Major Provisions

Article I

- Limit ABM Systems - No Defense Of Territory From Missile Attack
 - Not Provide A "Base"
 - Not Deploy For Defense Of Region

Article II

- Defines An ABM System: "Currently Consisting Of" (1972)
 - ABM Interceptors, Deployed Or Tested In ABM Mode
 - ABM Launchers
 - ABM Radars

Article III

- ABM System Deployment Area - 100 Interceptors / Launchers

Article IV

- ABM Testing, Ranges, 15 Launchers Each

ANTIBALLISTIC MISSILE TREATY (ABMT) (Cont'd)

Major Provisions (Cont'd)

Article V

- No Developing, Testing, Deployment Of ABM System Or Components Which Are Air, Sea, Or Space Based, Or Mobile Land Based
- No Multiple Launch Capability Or Rapid Reload

Article VI

- May Not Give Non-ABM Components Or Systems Capabilities To Counter Strategic Ballistic Missiles
- May Not Test Non-ABM Systems In ABM Mode
- May Only Deploy Future Radars For SBM Attack Warning On Periphery-oriented Outward

OTHER PROVISIONS

- **Bilateral (Was)**
- **Unlimited Duration**
- **Withdrawal - Supreme Interest**
- **It Is The Law Of Our Land**

ABM TREATY PROHIBITIONS

Four Main Prohibitions

- **No ABM Systems - Except 1, And It Can't Defend "Territory"**
- **No Mobile ABM Systems / Components (Space, Sea, Air, Mobile Land Based)**
- **No Testing Non-ABM Systems In ABM Mode**
- **No Giving Non-ABM Systems, ABM Capabilities (Substituting) Against SBMs**

Problem: Few Definitions

COMPLIANT ACTIVITIES

- **Category 1 - Research**
 - **Concept Design**
 - **Lab Testing**
- **Category 2 - Field Tests Of Non-ABM Devices**
 - **Neither ABM Components Or Prototypes Of ABM Components**
- **Category 3 - Field Tests Of Fixed ABM Components, Develop, Deploy**
 - **Supports 1 Site; Test In ABM Mode Of Capable Device**

BALLISTIC
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ABM TREATY ON ANTITACTICAL BALLISTIC MISSILE SYSTEMS (ATBMS)

Good News! - Treaty Does Not Apply To ATBMS (?)

- ATBM Systems And Components Are Not Specifically Covered By The ABM Treaty; However, They Are Constrained By It

LIMITS ON ATBM - TESTING

- No Testing In ABM Mode
- Difficult Given Lack Of Definition
- Testing In ABM Mode If
 - Missile, While Guided By Radar, Intercepts SBM Or
 - Missile Is Launched From ABM Launcher And Guided By ABM Radar
 - Launcher Has Been Used In ABM Missile Test
 - Radar Has Tracked SBM And Guided ABM Interceptor Toward SBM
 - Radar Has Tracked And Guided ABM Interceptor Missile
 - Radar Has Tracked SBM In Flight In Conjunction With ABM Radar Which Is Tracking SBM Or Elements And Guiding ABM Interceptor Toward Them (Radar Guiding Of Interceptor Is Essential) (1978 Agreed Statement)

LIMITS ON ATBM (Cont'd)

- **May Not Give Non-ABM Components Capability To Counter SBM**
- **ABM "Capability"**
- **No Capability To Counter SBM Or SLBM**
- **What Is SBM ?**
- **What Is Capability ?**
- **Foster Box Et Seq (Historical Interest Only!)**

TMD DILEMMA

- **Need: Most Capable Tactical Threats Of Today
More Capable Than Least Capable Strategic
Threat Of 1972 - And Proliferated**
- **Dilemma: How Do You Get Capable ATBM
Without Violating ABM Treaty ?**
- **Is There Really A Threat ?**

THIRD WORLD THREAT

- "Our Missiles Cannot Reach Washington. If They Could Reach Washington, We Would Strike It If The Need Arose."

Saddam Hussein

- "Did Not The Americans [In The Air Strikes On Tripoli And Benghazi] Almost Hit You... If They Know That You Have A Deterrent Force Capable Of Hitting The United States, They Would Not Be Able To Hit You. If We Had Possessed A Deterrent -- Missiles That Could Reach New York--We Would Have Hit It At The Same Moment. Consequently, We Should Build This Force So That They And Others Will No Longer Think About An Attack."

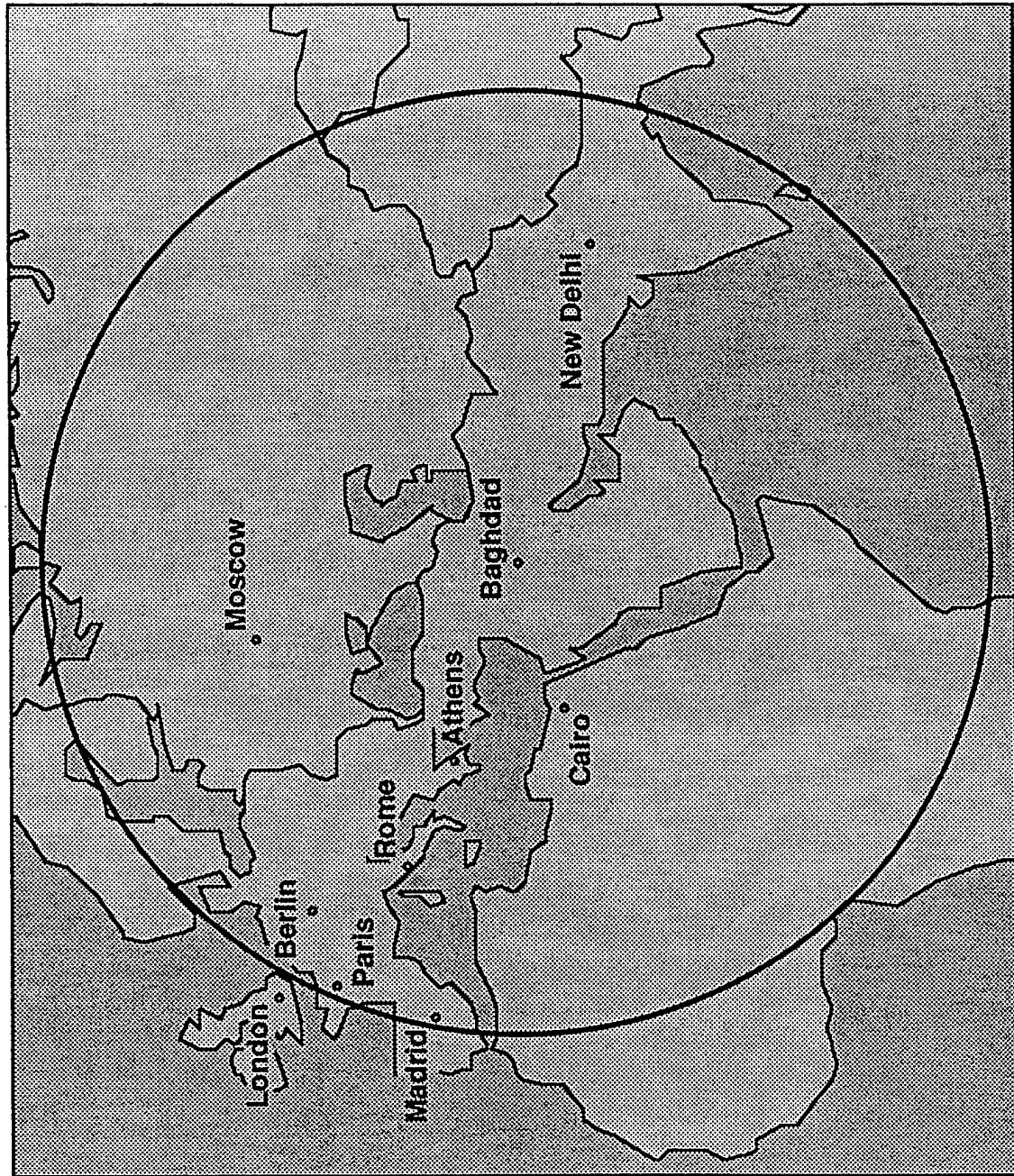
Col Muammar Qadhafi

THREAT ?

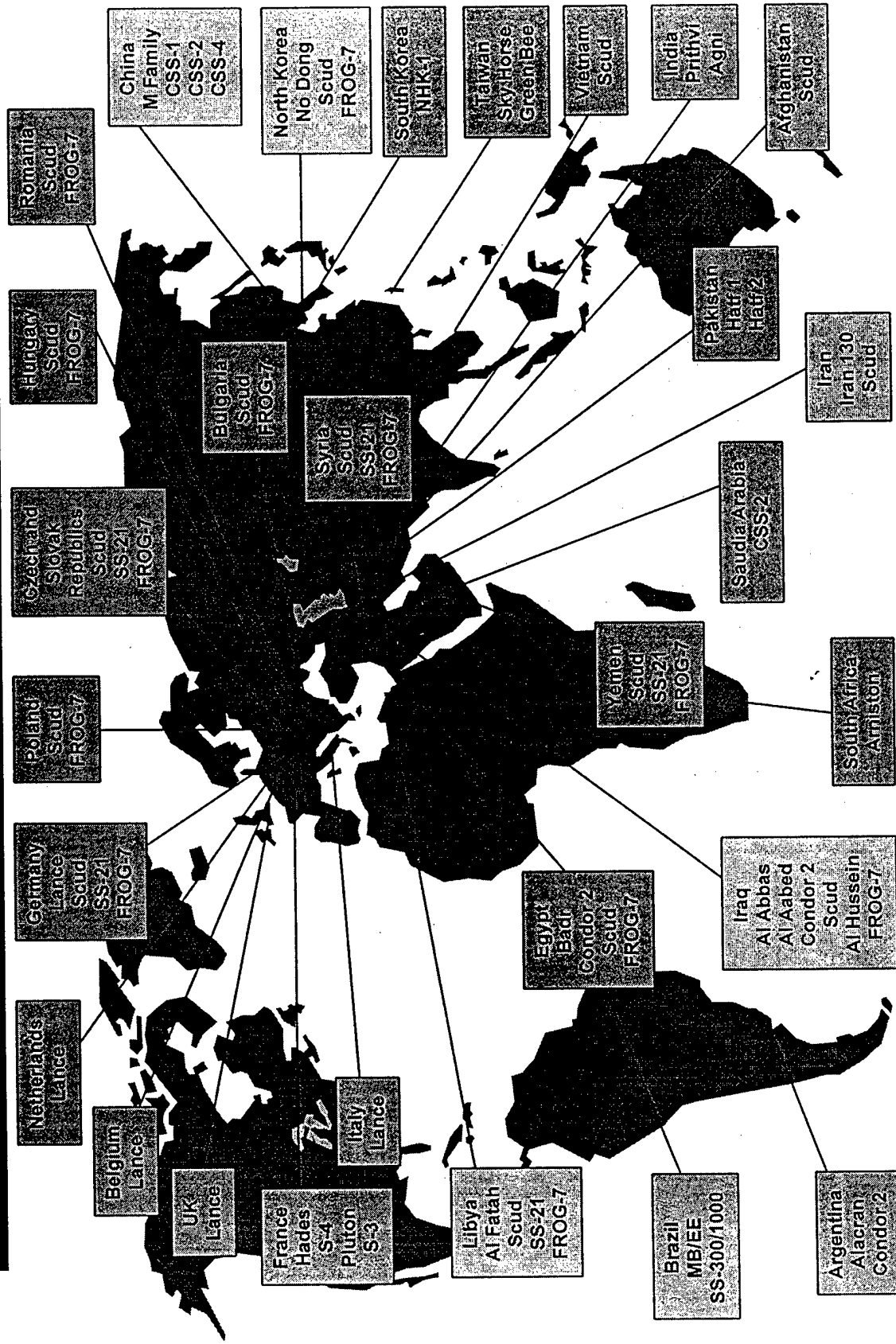
- "Saddam Hussein's People, Eager To Buy A Warhead For \$2 Billion," Had Approached Officials At The Russian Arzamas-16 Nuclear Weapons Facility. Director Vladimir Belugin Said The Offer Was Refused, But He Was Concerned Future Offers Might Not Be Because Of The Poor Working Conditions In The Russian Nuclear Weapon Complex. {Alexander Kacharov Of UPI 13.7.93}

**BALLISTIC
MISSILE
DEFENSE
ORGANIZATION**

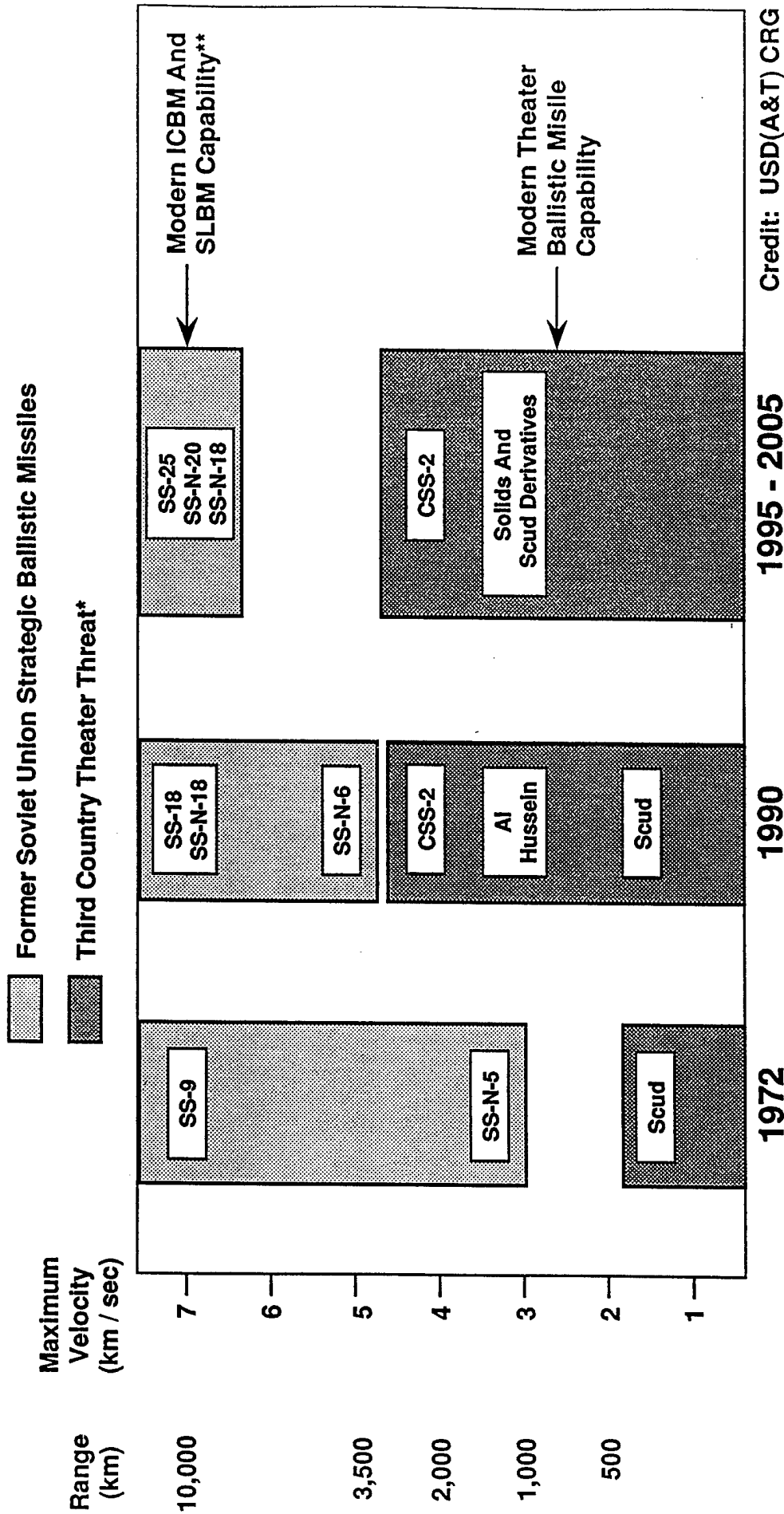
WHAT IF IRAQ HAD A LONGER RANGE MISSILE?



EVOLVING BALLISTIC MISSILE CAPABILITY (U)



EVOLUTION OF BALLISTIC MISSILE CAPABILITY



* INF Treaty Bans U.S. And USSR GLBMs In 500 - 5,500 km Range

** Assumes SS-N-6 Retirement Completed

LESS EVOLUTION

- "... If The Proposal Had Been Made In Geneva, That The Dividing Line Ought To Be A Three Kilometer Per Second Test.... This Would Be Clearly Consistent With The Past"

*A Famous Speaker At A Recent
Arms Control Association Breakfast*

Concern: A Buffer

TWO EXTREMES

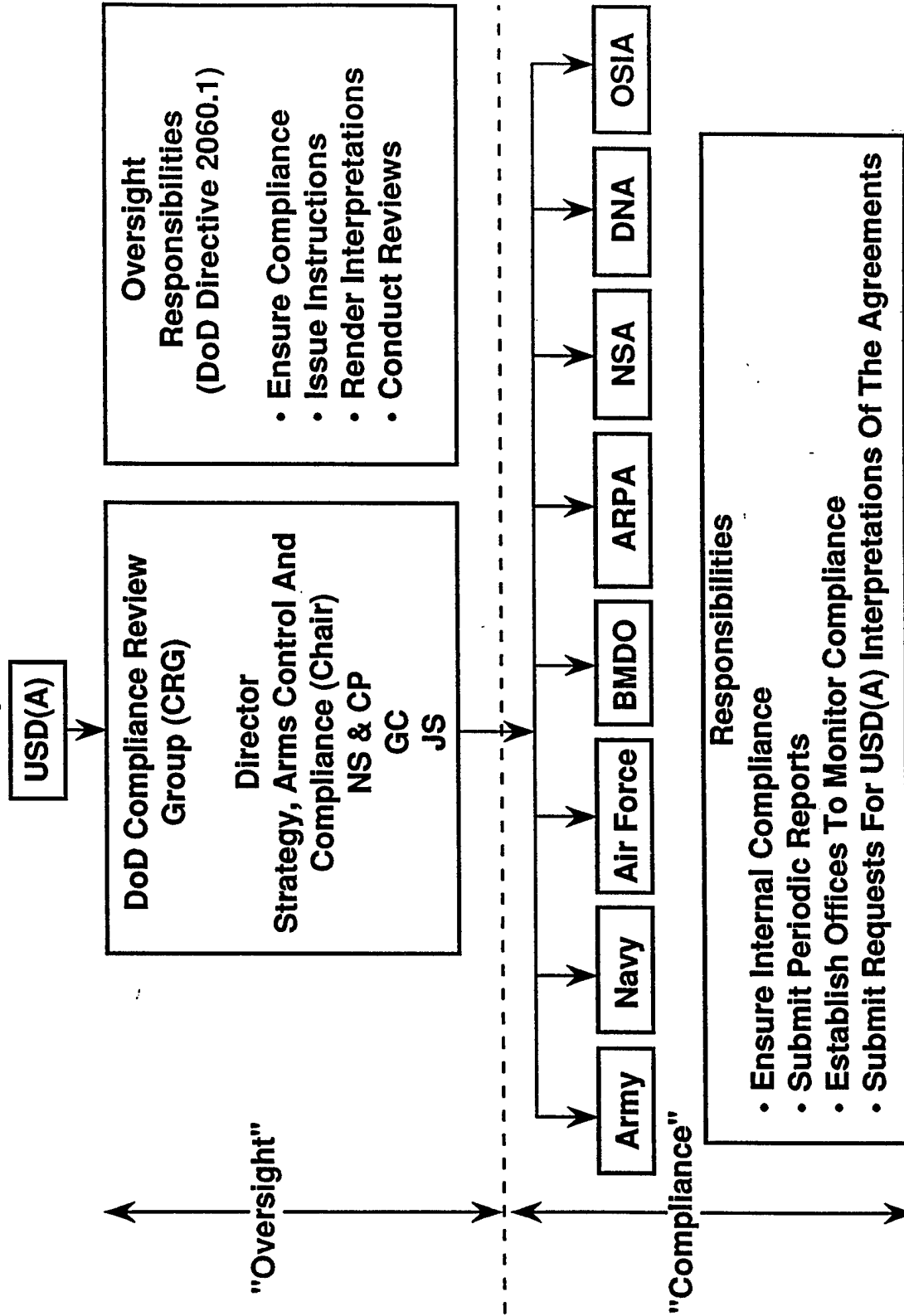
- Clarify The ^{Treaty}~~Threat~~ And Allow Some Erosion Of The ABMT To Meet Theater Threat
- Risk Theater Vulnerability To Preserve ABMT In Present Form Under Same Rules As Applied In The Past

TREATY COMPLIANCE - GOING WHERE IT HAS NOT GONE BEFORE

- **Compliance: Increased Statutory Requirements And Growing Congressional Interest - Objective Systems**
 - THAAD
 - BE
 - PATRIOT Multimode
 - ERINT
 - TMD-GBR
 - AEGIS / SPY
 - SM-2
- **TMD Road Map**
- **Also, Compliance Reviews Required For Other Systems Which *Reasonably* Raise An Issue Of The ABM Treaty - ?**
- **Process**

COMPLIANCE WITH STRATEGIC ARMS LIMITATIONS AGREEMENTS

DoD Compliance Process



POLITICAL / LEGAL ISSUES

- **PRD / BUR**
- **Narrow Interpretation Reaffirmed**
- **Congressional Reviews - Compliance - Funding Limits**
- **Congressional Mandate To Build Robust Theater Systems**
- **SCC Discussions**
 - **Successorship To USSR**
 - **Demarcation**
- **Amend Or Clarify ? Congressional Role ?**
- **Sensors ?**

JURASSIC TREATY OR MODERN TREATY

*In Final Analysis This All Comes Down To Whether
The Treaty Will Keep Up With Technology*

"An ABM Treaty Of Unlimited Duration Had To Cope With What Has Always Been A Dilemma Of Arms Control; Technology Moves Forward, Leaving Arms Control Behind; Scientists Are Forever Coming Up With Weapons, More Sophisticated And Capable Than Those That Diplomats Have In Mind As They Haggle Over Treaty Language. Scientific Breakthroughs - The Development Of New Devices - Translate Into Military Breakthroughs - The Development Of New Weapons That Upset The Strategic Stability"

Strobe Talbott

BALLISTIC MISSILE DEFENSE

Advance Planning Briefing For Industry Congressional Overview

BALLISTIC *MISSILE* *DEFENSE* ORGANIZATION

1 MAR 94

**Mr. Thomas Johnson
Ballistic Missile Defense Organization**

CONGRESSIONAL OVERVIEW

- FY 94 Congressional Outcomes
- FY 95 Congressional Issues

FISCAL YEAR 1994 RECAP

- **Critical Transition Year**
 - **New Administration**
 - **New Priorities**
- **A Year Of Waiting / Anticipation**
 - **Congress Uncertain Of Program Details Throughout Hearing Cycle**
 - **Congress Keenly Interested In Timely Results From Bottom-Up Review**
 - **Bottom-Up Review Result Not Briefed Until 1 SEP 93**
 - **General Skepticism Regarding Program's Support**
- **Congress Sought Real Funding Savings In FY 94 Defense Budget**

FY 94 OUTCOME

- Roughly \$1 Billion Cut From Request (Excluding Brilliant Eyes Program)
 - Most Significant Funding Reduction To NMD Program (Over \$500 Million)
- Other Follow-on Transferred To ARPA / Services
 - Unless Deployed During FYDP
- Less Significant Reduction To TMD
 - *But*, 50% Fenced Until Compliance Reports Completed (Brilliant Eyes Plus Six TMD Systems)
 - *But*, Programs Were Earmarked (ERINT, PAC-3, Arrow, ACES)
 - *But*, Congress Called For A Demonstration Of Allied Commitment. (Until A Plan Is Submitted, We Can Spend Only 80% Of TMD Funds)
 - *But*, Directed DoD To Prepare In-depth Master Plan And Road Map Reports

PROGRAMMATIC ISSUES

- For Many, The Program Is Too Complex. Beset With Cost, Treaty, And Technical Feasibility Concerns
- **ABM TREATY:** Congress Wants The Administration To Sort Out Treaty Issues *Before* Programs Proceed Into Acquisition
- **ABM TREATY:** Critical Issue Even For TMD Systems, As Some In Congress Are Concerned That THAAD May Have ABM Capability. Others Want To Assure TMD Systems Are Not Constrained By The ABM Treaty
- **ALLIED BURDEN SHARING:** The Last Two Sessions Have Witnessed Increased Attention Specifically To Allied Burden Sharing And TMD Systems. Anticipate Sustained Interest In This Issue

PROGRAMMATIC ISSUES (Cont'd)

- **THEATER BALLISTIC MISSILE THREAT: Remains A "Fuzzy" Issue For Many Members. Most Recognize Existence Of Short-range Ballistic Missile Threat. Some Question Proliferation Of The CSS-2 Class Threat**
- **STRATEGIC BALLISTIC MISSILE THREAT: Similarly, Dissent Over How Dangerous The Existing ICBM Threat Is And How Soon A Third World Nation Will Acquire Such A Capability**
- **PROGRAM COST: Congress Does Not Perceive Any "Hurt" When It Cuts The Annual Budget Request. Program Is Seen By Many As A "Cash Cow"**
- **SPACE BASED SENSORS: Brilliant Eyes Program (BE) Will Be Embroiled In The Overall Sensor Debate. Key Question Congress Will Consider Is Where Should The BE Program Be Managed**

PROGRAMMATIC ISSUES (Cont'd)

- **DUPLICATION OF TMD INTERCEPTOR SYSTEMS:** Congress Remains Highly Skeptical That The Department Has Made The "Hard Decisions" With Regard To Narrowing Down The Number Of TMD Systems Proceeding Into Acquisition. However, Anticipate Continued Congressional Interest In Specific TMD Systems (ERINT, PATRIOT Multimode, Navy Upper Tier)
- **COHERENCE OF NMD PROGRAM:** No Broad Consensus On NMD Program. Some Want To Pursue NMD, Some Want To Cease Work On NMD. Others Want To Focus Our Efforts On Key NMD Technologies (GBI) To Assure Technology Can Be Available If Needed
- **FAR TERM FOLLOW-ON TECHNOLOGIES:** Congress Is Skeptical These Programs Are Relevant To The Refocused Program. Within Tight Budget Environment Congress Wants Resources Devoted To Key Acquisition Programs

CONGRESSIONAL OUTLOOK

- **FY 95 Will Be Another Critical And Difficult Year**
 - **Congress Sees It As A Year Of Decision**
 - **They Want To See Strong Progress Toward Developing And Deploying TMD Systems**
 - **They Want To See Decisive Action -- Necking Down TMD Interceptor Alternatives, A Focusing Of NMD Technology; Transfers Of Far Term Follow-on Technology, And Elimination Of Unnecessary Overhead**
 - **They Want To See Strong, Effective Program Management On BMDO's Part**
- **Legislative Distractions**
 - **Thirty Four Senators And 435 Representatives Up For Reelection**
 - **Health Care Reform, Welfare Reform, Crime And Budget Issues Top The Legislative Agenda**

CONGRESSIONAL PERSPECTIVE ON FY 95 BUDGET

"[Senator] Sasser Also Said He Was Concerned About The Increase To The Ballistic Missile Defense Organization's Budget For FY 95. Money Cut From BMDO Could Be Used To Restore Helicopter Programs Cancelled In The Army's Budget Or Other Under-funded Programs, Sasser Said."

"Aside From Recommendations For Shaving BMDO's Budget, Sasser Said Defense Has Been Cut As Far As It Can At This Point And Predicted No Major Changes To The Administration's Request."

Defense Daily, February 9, 1994

PERSPECTIVES ON NMD PROGRAM

"Unless They Can Make A Case For This Technology Whatever-the-hell-they-call-it Doing Something To Reduce Lead Times To Deployment, It (The NMD Funding Request) Will Be Dead On Arrival."

***Congressional Staff Member,
Aerospace Daily, 8 FEB 94***

PROSPECTS FOR FY 95 DEFENSE BILLS

The Critical Questions

- Will The Overall BMD Budget Request Of \$3.2 Billion Survive ?
- Will Congress Agree On The Approach, Cost, And Schedule For The Core TMD Effort ?
- Will Other Advanced TMD Concepts Receive Adequate Funding ?
- Is The NMD Program DOA ? Or Will It Remain Funded And Focused ?
- Will Congress Accept The Department's Rationale To Keep Brilliant Eyes Fully Funded And Managed By BMDO ?
- Will Congress Agree That The Remaining Follow-on Technology Programs Belong Under BMDO Management ?

APPROACH

- Work Diligently With Members And Staff To Resolve These Critical Questions
- As We Explain The Revised Program, We Need To Speak With One Voice, Clearly Articulating The Administration's Approach To BMD

**The Bottom Line: Work Hard
To Earn Congress' Support**

BACKUP

FY 94 FUNDING TRACK

TY \$ In Millions

Authorization	FY 93 Auth	FY 94 Bush Budget Request	FY 94 Clinton Budget Request 4/8/93	HASC Sub Committee 7/27/93	HASC Full Committee 7/27/93	House Floor 9/8/93	SASC Sub Committee 7/22/93	SASC Full Committee 7/23/93	Senate Floor 9/9/93	Conference 11/17/93
Space Based Interceptors	300.0	371.6	0.0	0.0	0.0	0.0	0.0	0.0	00.0	00.0
Limited Defense System	2039.8	2645.7	1195.5				1055.3	1055.3	859.0	650.0
Other Follow-on Tech	300.0	395.3	354.2*						241.6	
Research And Support	400.0	471.6	358.2	2336.0	2591.0	2591.0	755.0	755.0	268.5	538.0
SBIR / STTR(1)	(51.5)	(53.6)	42.6						26.8	
Theater Missile Defense (Dem / Val)	935.0	2033.3	1636.3				1523.8	1523.8	1288.6	
Theater Missile Defense (EMD)	0.0	223.4	50.4	26.4	26.4	26.4	50.4	50.4	Not Specified	1451.0
Total RDT&E	3974.8	6140.9	3637.2	2362.4**	2617.4**	2617.4**	3084.5***	3084.5***	2684.5***	2639****
MILCON	24.5	10.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PATRIOT (Procurement)	75.2	184.2	120.7	120.7	120.7	120.7	120.7	120.7	120.7	120.7
Total	4074.5	6335.9	3760.6	2485.8	2740.8	2740.8	3207.9	3207.9	2807.9	2782.4
Total w/Brilliant Eyes	4074.5	6335.9	3760.6	2738.4	2993.4	2993.4	3460.5	3460.5	3060.5	3015.0

(1) SBIR / STTR Funding Was Included In The Research And Support Line In FY 93 And FY 94 Bush Budget Request

* Includes \$73M Funding For Brilliant Pebbles

** Reflects Transfer Of \$252.6M Of Brilliant Eyes Funding To A New Air Force Account

*** Reflects \$300M Undistributed Reduction And Transfer Of \$252.6M Of Brilliant Eyes Funding To A New OSD Account "Missile Warning & Surveillance"

**** \$252.6M For Brilliant Eyes Transferred To "Space Based Surveillance" Account Along With DSP, FEWS And Cobra Ball Upgrade; Total Authorization For Account Is \$801.9M

FY 94 FUNDING TRACK

TY \$ In Millions

Appropriation	FY 93 Approp	FY 94 Bush Budget Request	FY 94 Clinton Budget Request 4/8/93	HAC Sub Committee 9/7/93	HAC Full Committee 9/22/93	House Floor 9/30/93	SASC Sub Committee 9/30/93	SASC Full Committee 10/4/93	Senate Floor 10/21/93	Conference 11/10/93
Space Based Interceptors	211.9	371.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Limited Defense System	1671.0	2645.7	1195.5				683.9	683.9	683.9	650.0
Other	298.9	395.3	354.2				265.7	265.7	265.7	242.6
Follow-on Tech										
Research And Support	421.7	482.4	358.2	2870.0	2870.0	2720.0	291.0	291.0	291.0	295.4
SBIR / STTR	0.0	0.0	42.6				29.5	29.5	29.5	0.0
Theater Missile Defense (Dem / Val)	1026.3	2256.7	1636.3				1364.0	1364.0	1364.0	1400.6
Theater Missile Defense (EMD)	0.0	0.0	50.4				50.4	50.4	50.4	50.4
Total RDT&E	3629.8	6151.7	3637.2	2870.0	2870.0*	2720.0**	2684.5***	2684.5***	2684.5***	2638.9****
MILCON	5.4	10.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PATRIOT (Procurement)	75.2	184.2	120.7	120.7	120.7	120.7	120.7	120.7	120.7	120.7
Total	3710.4	6346.7	3760.6	2993.4	2993.4	2843.4	2807.9	2807.9	2807.9	2762.3
Total w/Brilliant Eyes	3710.4	6346.7	3760.6	2993.4	2993.4	2843.4	2807.9	2807.9	2807.9	2902.3

* Includes \$252.6M For Brilliant Eyes

** Reflects \$150M Reduction Based On Furse Amendment (Passed Voice Vote) To Reduce Agencies RDT&E

*** No Funds Were Made Available For Brilliant Eyes

**** Provided \$140M For Brilliant Eyes And Transferred "Program Management And Funding Responsibilities" To The Air Force

FY 95 AUTHORIZATION FUNDING TRACK

As Of: 7 FEB 94

TY \$ In Millions

Authorization	FY 94 Auth	FY 95 Budget Request 2/7/94	HASC Sub Committee	HASC Full Committee	House Floor	SASC Sub Committee	SASC Full Committee	Senate Floor	Authorization Conference
RDTE									
• TMD									
- Adv Tech Dev	393.457	479.131							
- Dem / Val	1,080.490	1,071.283							
- EMD	42.097	217.755							
• BMD									
- Exploratory Dev	73.053	106.460							
- Adv Tech Dev	829.301	769.993							
- Dem / Val	0.000	120.000							
- Management Support	198.802	215.233							
Total RDTE	2,517.200*	2,979.855							
Procurement									
TMD	120.719	273.390							
MILCON									
BMD	2.727	.530							
Total	2,740.646	3,253.775							

* Reflects Undistributed Reduction Of 21.7M

CONGRESSIONAL PERSPECTIVES ON ABM TREATY

"Of Very Great Importance Was Our Direction To The Department Of Defense To Begin A Comprehensive Review Of A Number Of Missile Defense Systems And Their Compliance With The ABM Treaty ... It Is Time For The Administration To Get Serious About Compliance Reviews, And Presenting A Program On The Overall ABM Treaty To The Congress And The Russians That Would Reflect Our Honest View As To What Needs To Be Amended In The ABM Treaty. I Think Most People Who Are Serious About Ballistic Missile Defense Believe That There Have To Be At Least Modest Amendments To The ABM Treaty, So I Think It Is Time We All Understand That And What Is Required."

*Democratic Senator, SASC,
July 1993*

"The United States Has Within Its Grasp The Capability To Rapidly Develop And Deploy A Limited Defense System ... Yet The ABM Treaty Is Hamstringing Our Ability To Operationally Test, Refine, Or Deploy Promising Systems And Components. Excessive Preoccupation With Compliance Causes Unnecessary Program Delays And Cost Increases; Both Of Which Undermine National Security."

*Republican Senator, SASC,
June 1993*

"We Must Decide Whether We Are Serious About Fielding National Defense In The Next Decade. In My Opinion, Uncertainties About The Threat, Marked By The Proliferation Of Weapons Of Mass Destruction, And Missiles Of Increasing Range And Accuracy, Warrant The Modest Investment Required To Pursue Such A Capability. We Need To Consider The Relevance Of The 20 Year Old ABM Treaty To Today's International Security Environment ..."

*Republican House Member, HASC,
September 1993*

pl-41442 / 021594

CONGRESSIONAL PERSPECTIVES ON TMD

"I Believe In Developing And Deploying, On An Urgent Basis, The Most Effective TMD Program We Can Have Against Tactical Ballistic Missiles. I Do Think That Is A Priority For Our Nation And For Our Allies. ... We Have The Kind Of Priorities That Now Are Beginning To Make Sense In This Program; We Have A Number Of Technological Options That Are Going To Be Narrowed Down."

*Democratic Senator, SASC,
September 1993*

"It Is Clear That It Is Not Our Intent To Proceed With All Seven Of These [TMD] Options Under Current Threats, Under Current Plans, It Is Not Our Intent To Develop And Deploy All These Seven Systems ..."

*Democratic Senator, SASC,
June 1993*

"The Country Can No Longer Afford Large Numbers Of Systems With Overlapping Capabilities. Tough Choices Must Be Made ..."

*Democratic House Member, HASC,
September 1993*

CONGRESSIONAL PERSPECTIVES ON TMD

"There Is No Architecture For The Theater Missile Defense. We Are Not Told What Kind Of Missiles, Or Where They Are Going To Be. We Are Not Told How Many, Whether They Are Ground Based, Whether They Are Ship Based, What They Cost, What The Delta For The Program Is, What the Spending Delta Is ... Certainly, Until We Are Given A Plan, With Justification For That Plan, We Should Not Be Spending \$3 Billion, \$4 Billion, Whatever It Is This Year ..."

*Democratic Senator, SAC,
September 1993*

"The Clinton Administration Ballistic Missile Defense Program Makes Sense. It Responds To The Principle Threats We Face Today. Given The Current Budget Situation, We Simply Cannot Afford A BMD Program Of A Larger Scope Than The Clinton Plan. In My View, By Far The Most Important Missile Threats, For Now And In The Next Decade, Are Posed By Theater-range Weapons. The First And Most Important Thing Our Missile Defense Programs Should Do Is Provide A Theater Defense For Deployed U.S. Military Forces."

*Democratic House Member, HASC,
July 1993*

CONGRESSIONAL PERSPECTIVES ON NMD

"While The Threat Of Ballistic Missile Attack From The Former Soviet Union Is Remote, There Is Still Tremendous Turmoil In The Former Soviet Union. We Must Have A Limited Homeland Defense To Guard Against A Renewed Threat From A Hardline Russian Regime Should One Return To Power."

*Republican Senator, SASC,
September 1993*

"What We Are Challenging Is The Emphasis On National Ballistic Missile Defense That In Our Humble Opinion Does Not Address The Threat And At This Point Makes Very Little Sense."

*Democratic House Member, HASC,
September 1993*

"I Am Shocked And Dismayed Over the Manner In Which Congress Has Abandoned Its Commitment To Defending The American Homeland And Our Forward Deployed Troops ... The Expeditious Development And Deployment Of Missile Defenses Is And Must Remain A Paramount National Security Priority."

*Republican Senator, SASC,
September 1993*

CONGRESSIONAL PERSPECTIVES ON NMD

"This Body Has Decided In The Past That Ballistic Missile Defense Has A Place In Our National Defense, But That It Must Be Tailored More Closely To Fiscal And Strategic Reality ... I Would Say That The Threat Of An International Attack By A Long-range Ballistic Missile Against The U.S. Has Become Almost Nonexistent ... I Would Be Trying To Cut More Out Of This SDI Today, If I Thought We Could."

*Democratic Senator, SAC,
September 1993*

"I Think We Should Be At This Point Desperately Pursuing The Strategic Defense Initiative, The Ability To Defend Ourselves Against Incoming Ballistic Missiles ... Let Us Not Penny Pinch This Program."

*Republican House Member, HASC,
September 1993*

CONGRESSIONAL PERSPECTIVES ON NMD

"If One Single Missile Hits This Country, People Will Be Marching On This Place [The Capitol] Like Victor Frankenstein's Castle To Burn It Down Because We Let Other American's Die"

***Republican House Member, HASC,
September 1993***

BALLISTIC MISSILE DEFENSE

Advance Planning Briefing For Industry

TMD PROGRAM OVERVIEW

BALLISTIC *MISSILE* *DEFENSE* ORGANIZATION

1 MAR 94

**COL G. Hagedorn, USA
Director Of Program Management And
Corporate Strategy
Theater Missile Defense Deputate
Ballistic Missile Defense Organization**

AGENDA

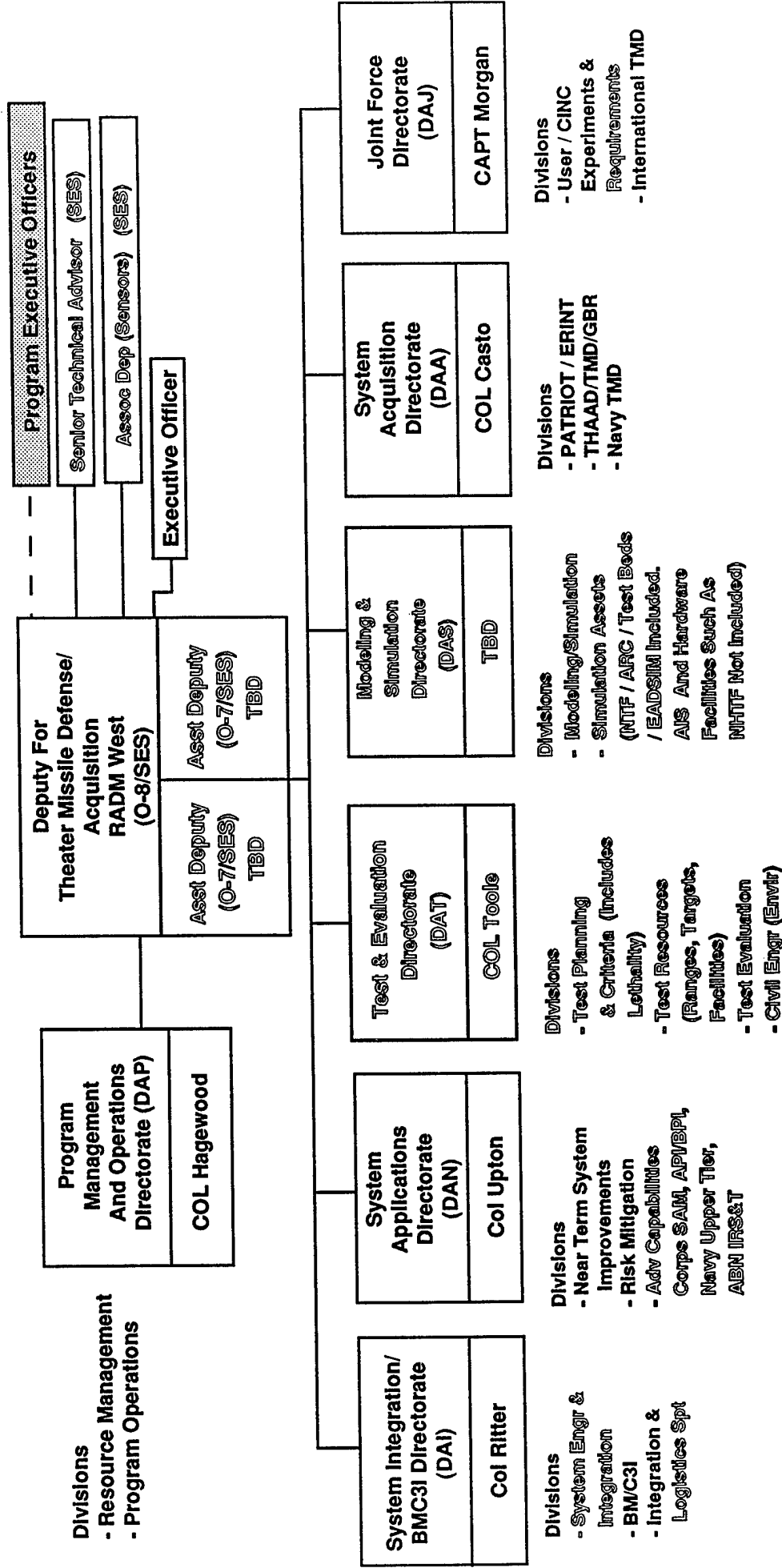
Time	Subject	Briefer
1330 - 1415	TMD Program Overview	COL G. Hagedwood
1415 - 1430	TMD Near Term Programs	LTC(P) J. Upton
1430- 1500	TMD Acquisition Programs	COL P. Casto
1500 - 1530	TMD C³ Program	Col R. Ritter

TMD IN BOTTOM UP REVIEW

- **Top Priority In BMDO**
- **Robust Program**
 - **Current Acquisition**
 - **TPS-59 Radar And BM/C³**
 - **PAC-3**
 - **THAAD**
 - **TMD-GBR**
 - **AEGIS SM-2 Block IVA**
 - **BM/C³I**
 - **Deferred Acquisition**
 - **Corps SAM**
 - **Navy Upper Tier**
 - **Boost And Ascent Phase Interceptor**
- **≈ \$11B For FY 95-99**



DEPUTY FOR THEATER MISSILE DEFENSE / ACQUISITION (DA)



New, Moved, Or Absorbed Functions Shown In Outline

ROLES OF DEPUTY FOR TMD / ACQUISITION (BMDO)

- TMD Focal Point In DoD
 - Principal Spokesperson
 - Interface With DoD / Services
- TMD Management
 - Acquisition Strategy And Priority
 - Planning And Budgeting
 - Resource Allocation And Review
- System Architecture
 - Balance Among Capabilities
 - Integration Across Services
- System Engineering
 - Technical Overview
 - Test And Evaluation
 - Interoperability Among U.S. Forces And With Friends And Allies
- Common Support
 - Consistent Threat And Scenarios
 - Broad Base Of Technical Support

ROLES OF SERVICES

- **Element Requirements**
- **Element Engineering**
- **Element Acquisition**
- **Intra-service Element Integration**
- **Contracting**
- **Technology Development**

KEY ARCHITECTURAL FEATURES

- **Multiple Protection Missions: Fixed And Military Target, Wide-area Assets, Mobile Military Units**
- **Land, Sea And Air Basing**
- **Multiple Tiers**
- **Long-range, High Altitude Capability**
- **Hit-To-Kill Intercepts**
- **Processing And Distribution Of Space And Airborne Launch Detection**
- **Netting And Interoperability**
 - **U.S. Forces**
 - **Friends And Allies**

TMDI ACQUISITION APPROACH

- **Build On Existing Capability**
- **Focus On Active Defense BM / C³**
- **Plan Flexible System To Handle Wide Range Of Scenarios And Deployments**
- **Proceed With Low-to-Moderate Risk**
- **Provide Early UOES Capabilities**
- **Introduce TMD Upgrades To Theaters Through CINC Experiments Program**
- **Encourage International Participation**

TMDI PROGRAM AREAS

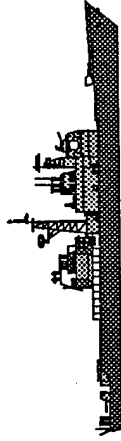
- **Near Term Capabilities And Demonstrations**
- **Core / Midterm Capabilities**
- **Advanced Capabilities**
- **International Programs**

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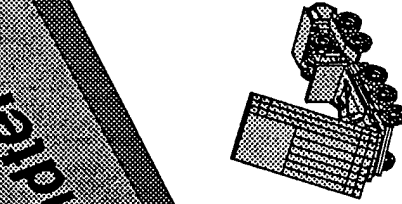
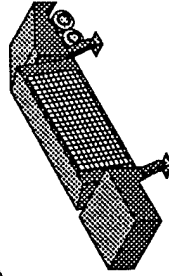
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Advanced



AEGIS

Core



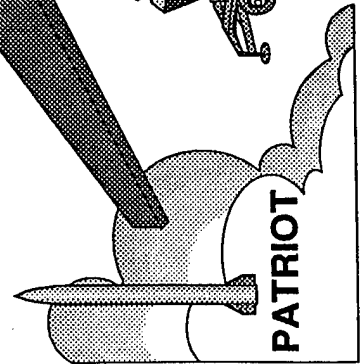
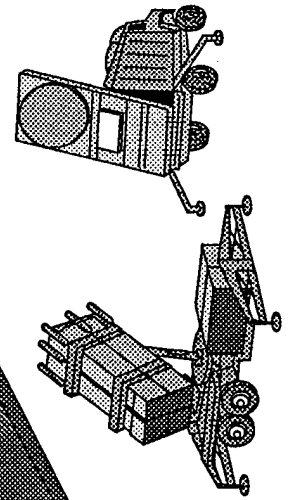
ERINT



Multimode



Near Term



PATRIOT

TMD Capabilities

NEAR TERM DEMONSTRATIONS AND CAPABILITY

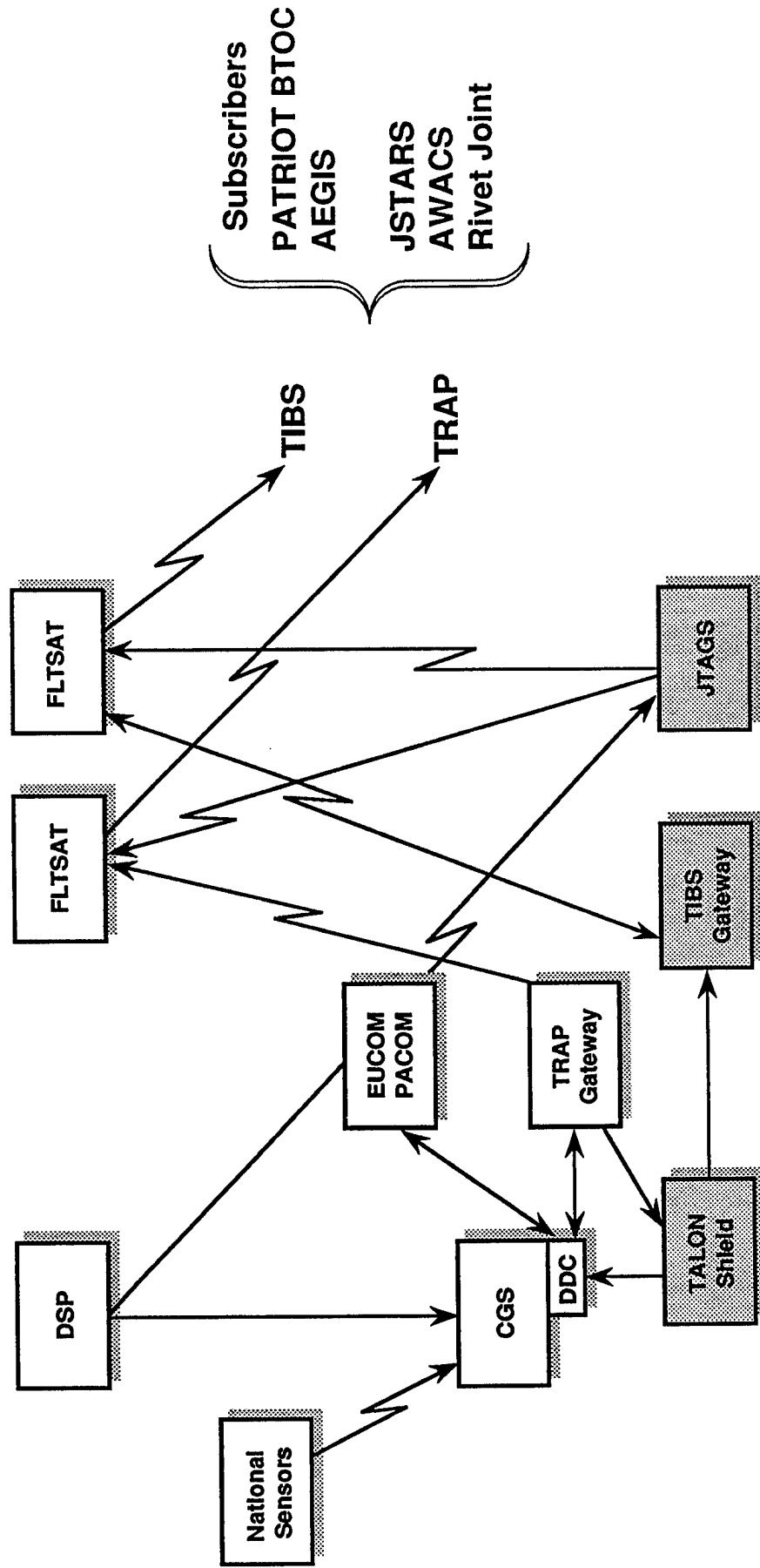
- **Launch Detect And Dissemination**
- **Surveillance And Warning**
- **Cueing / Netting**
- **BM / C3**
- **Interoperability**
- **CINC Experiments**

ITERS HYBRID ARCHITECTURE

Hybrid Architecture (Central And Mobile Processors) Satisfies Near Term Requirements

- **Processes Data From DSP Satellites**
- **Disseminates Warning Worldwide Via TIBS / TRAP**
- **Provides Access To Theater Sensor Data And Direct Injection Into Theater Comm Networks**
- **Prevents Loss Of Coverage During Airlift / Setup**
- **Provides Hedge Against Theater Site Vulnerability**
- **Eliminates Dependence On CONUS Communication Link**
- **Satisfies Concerns Of Theater CINCs Regarding Equipment Availability And Operations Flexibility**
- **Eliminates Single Point Of Failure**
- **Enables Common Training And Software Maintenance**

SPACE BASED DETECTION / TRACKING NEAR TERM



 **New Capability**

TMDI ACHIEVEMENTS OF CY 93

Near Term Programs

- **Launch Cueing**
 - Talon Shield And TSD Exercise Support
 - Initiated Talon Shield Integration With Other Data Sources
 - Supplying Fused DSP Track Files To Theater Users
- **Sensor To Sensor Cueing Results**
 - JTAGS / MPQ-53, TPS-59 / MPQ-53 Demo Conducted At WSMR During ERINT Intercept Test In December 1993
 - TPS-59 Successfully Cued MPQ-53 To Single Beam Accuracy
 - JTAGS Successfully Cued MPQ-53 Over 20 times During The Target Flight Test
- **USMC TMD Initiative**
 - System Design Review Conducted June 1993

CINC TMD EXPERIMENTS PROGRAM

- BMDO Funded TMD Overlays On Existing CINC Exercises
- Program Goals
 - Make TMD Part Of Everyday Operations
 - Improve Existing TMD Capabilities
 - Explore New Concepts / Ideas
 - Collect Operational Data
- Exercises To Date

1989	QUIET SUNSET	USEUCOM
1990	TORPID SHADOW	USEUCOM
1991	TORPID SHADOW II	USEUCOM
1992	QUESTOR GRAIL	USEUCOM
1993	OPTIC NEEDLE I	USEUCOM
1993	ORNATE IMPACT I	USPACOM
1994	OPTIC NEEDLE II	USEUCOM
1994	ORNATE IMPACT II	USPACOM
1994	OPTIC COBRA	USCENTCOM
- Expect USACOM Participation In 1995

TMDI ACHIEVEMENTS OF CY 93

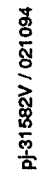
CINC TMD Experiments Program

- **Success In Three Theaters: EUCOM, PACOM, CENTCOM**
 - **Established Voice Early Warning Nets**
 - **Integrated Joint Tactical Ground Station**
 - **Integrated Talon Shield**
 - **Demonstrated AEGIS To PATRIOT Cueing**
 - **Accomplished Sensor Integration To Form Common Air Picture At JFAAC**
 - **Integrated Terrain Analysis Software With Existing Tools To Enhance Intelligence Preparation Of The Battlefield**
 - **Refined Communications Architectures**
 - **Demonstrated Value Of A Dedicated TMD Cell To CINC Operations**

CORE PROGRAMS

- **PAC-3**
- **THAAD And TMD-GBR**
- **AEGIS And SM-2 Block IVA**
- **C³I**

TMD SCHEDULE



TMDI ACHIEVEMENTS OF CY 93

Core Programs

- **PATRIOT**
 - Completed Multimode Seeker Flight Demonstration To Verify Integration Of Active RF Seeker With Missile Guidance And Fuzing
 - Completed Two ERINT Flight Tests, One Against A Lance (Missed), And One Against A Storm Target With Submunitions, (Destroying All Submunitions)
 - Completed PATRIOT / ERINT Integration Study And Demo
 - Demonstrated Cued Range To 290 km On Ballistic Targets
- **THAAD**
 - Completed Subcontractor Final Design Of Missile Components
 - Successful Aerothermal And Shroud Separation Wind Tunnel And Flare Deployment Tests
 - Integrated Hardware Into System Integration Laboratory
 - Conducted Final Design Review To Support Initial Flight Tests

TMDI ACHIEVEMENTS OF CY 93 (Cont'd)

Core Programs (Cont'd)

- **TMD-GBR**
 - Completed Critical Design Review On Hardware And Software For TMD-GBR Dem / Val Unit
 - Dem / Val Fabrication Begun For TMD-GBR
 - Completed Critical Design Review On Hardware And Software For TMD-GBR UOES
 - Successfully Completed / Validated All Internal Exit Criteria For TMD-GBR UOES
 - UOES Fabrication Begun For TMD-GBR
- **AEGIS / SM-2 Block IVA**
 - ORD Approved
 - Completed Successful At Sea Missile Tracking Experiment (Red Tigress) With AEGIS / SPY Radar
 - Completed Successful Block IV Interceptor Flight Tests

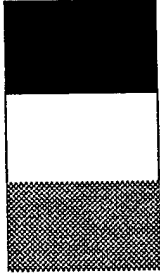
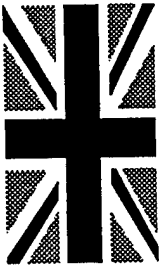
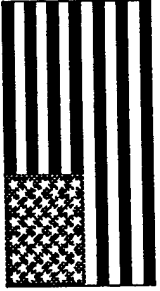
ADVANCED CAPABILITIES

- **Sea Based Theater Wide Area**
- **Corps SAM**
- **Boost Phase Intercept**

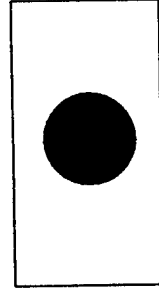
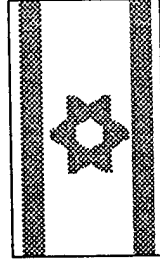
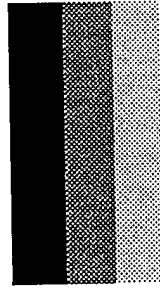
TMDI ACHIEVEMENTS OF CY 93

Advanced Programs

- **Sea Based Theater Wide TMD**
 - **Approved Sea Based MNS**
 - **Initiated COEA Planning**
- **Boost Phase Intercept**
 - **BMDO BPI Study Completed**
 - **OSD API / BPI Study Completed**
 - **USAF ORD Approved**
- **Corps SAM**
 - **Completed Concept Definition Contracts**
 - **Established Notional Design**
 - **Completed A Requirements Study Comparing U.S. And German Medium Range Surface To Air Missile Systems**



International Cooperative Aspects



BENEFITS OF INTERNATIONAL COOPERATION

- **More Robust Defenses**
 - **Combined Capability: Shared Defense For Contested Areas**
 - **Improved Interoperability**
- **Defensive Hedge While U.S. Deploying**
- **Exchange Of Technology, Concepts, Designs**
- **Cost Sharing**

CY 93 INTERNATIONAL PROGRAMS

- **6th Multinational TMD Conference**
 - **Classified And Unclassified Sessions**
 - **Exhibits**
 - **17 Nations, NATO, SHAPE, 600 Attendees**
- **United Kingdom**
 - **UKAS Phase 9: Completed Working Nth Country Threats To UK And Out Of Area**
 - **UKAS Phase 10: Evaluate Capabilities Of Architectures For 2010 For UK Mainland And Out Of Area**
 - **UK Mainland Analysis Completed**
 - **Uses Strawman Architecture From Phase 9**

CY 93 INTERNATIONAL PROGRAMS (Cont'd)

• Pacific

- Completed WESTPAC Architecture Study: Two U.S. - Japanese Teams
 - Supported TMD Simulation Demonstrations
 - Briefed Results In Japan
- BMDO Participation In First Government-to-Government TMD Discussions With Japan
- TMD Workshop With Japanese, South Koreans, And Australians, To Discuss Sea Based Defense Potential And Allied Collaboration
- Sponsorship Of USPACOM's Draft TMD CONOPS

CY 93 INTERNATIONAL PROGRAMS (Cont'd)

- **Israel**
 - **Two Arrow-1 Flight Tests Conducted**
 - **Arrow-2 Sensor System Design Reviews Completed**
 - **BPI Study Initiated**

- **NATO / SHAPE**
 - **SHAPE Technical Center**
 - **MOA For EATDB Hardware And Software At STC**
 - **Hardware Delivered Late 1993**
 - **AGARD Study AAS-38 On Theater Missile Defense Of Western Europe Completed With Agreement On**
 - **The Threat**
 - **Need To Upgrade Current Air Defense Systems**
 - **Need For AWACS**

**BALLISTIC
MISSILE
DEFENSE
ORGANIZATION**

TMD BUDGET

(TY \$ In Millions)

	FY 93	FY 94
• Near Term	59.254	65.495
- TPS-59 And HAWK	15.878	29.629
- Surv And Warning (Talon Shield)	20.500	16.988
- CINC Experiments	8.131	8.800
- Other (Near Term Sensor Demo, ATS, Airborne Sensor)	14.745	10.078
• Core (Midterm) Capability	779.365	1,251.625
- Target	40.490	75.900
- PATRIOT / ERINT	285.880	340.500
- AEGIS / SM-2 BIK IVA	59.100	154.000
- THAAD	273.000	434.658
- TMD-GBR	112.095	234.000
- C ⁴ I	8.800	12.567

**BALLISTIC
MISSILE
DEFENSE
ORGANIZATION**

TMD BUDGET (Cont'd)

TY \$ In Millions

	<u>FY 93</u>	<u>FY 94</u>
• Far Term Capability	81.552	115.000
- Corps SAM	22.000	20.000
- Sea Based Theater (Upper Tier)	31.500	80.000
- BPI / Exo	1.882	15.000
- Raptor Talon	26.170	0.000
• Technical Support	103.765	128.537
- Test Beds And EADSIM	33.900	25.735
- Lethality	22.371	24.000
- POET And SETA (POET In 94 Only)	9.271	23.648
- Infrastructure	2.060	28.430
- Other	36.163	26.724
• International Programs	75.622	73.506
• SBIR	0.000	11.900
Total TMD	1,099.558	1,646.063

SUMMARY

- **Aggressive Program Reflects Strong Support Of Congress And Administration; Primary Focus On Active Defense With Multiservice Participation**
- **An Active CINC Experiments And Near Term Upgrades Program Underway**
- **Primary Acquisition Focus Is On A Core / Midterm Capability Of PATRIOT PAC-3, THAAD / TMD-GBR, And AEGIS Based SM-2 Block IVA. Goal Is Early Availability Of UOES Capability**
- **Definition And Studies Of Advanced (Far Term) Capabilities Continue; Acquisition Deferred To Late 1990s**

BACKUP

TMD 1993 TARGETS PROGRAM ACCOMPLISHMENTS

- **HERA Target Development**
 - CDR M-56, September 1993
 - PDR SR-19, May 1994
 - First Launch HERA, October 1994
- **STORM Target Flights**
 - Four Successful Targets For PATRIOT And ERINT
 - Fully Validated And Accredited Target

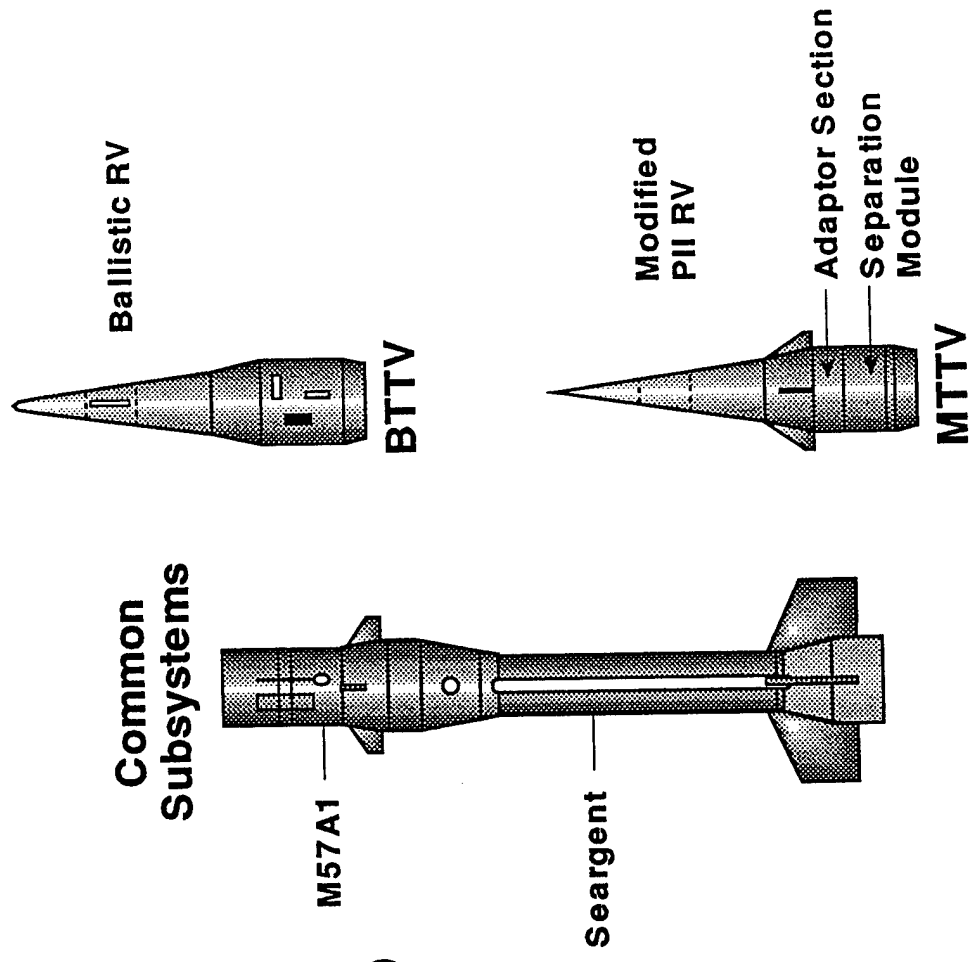
STORM

Vehicle Characteristics And Capabilities

Propellant Solid
Length 13.3 m
Launch Weight 6,787 kg
Stages 2
Stage 1 Motor BOMARC (M51)
Stage 2 Motor M57A1 (MM1 / Stage 3)
Guidance System Inertial
Payload Diameter 1.00 m
Range @ WSMR 130 km
Altitude @ WSMR 170 km
Velocity @ WSMR ≈ 1.5 km/s
Maximum Range 380 km

Typical Mission

Mission Type Bulk / Submunition
 Payload Experiment

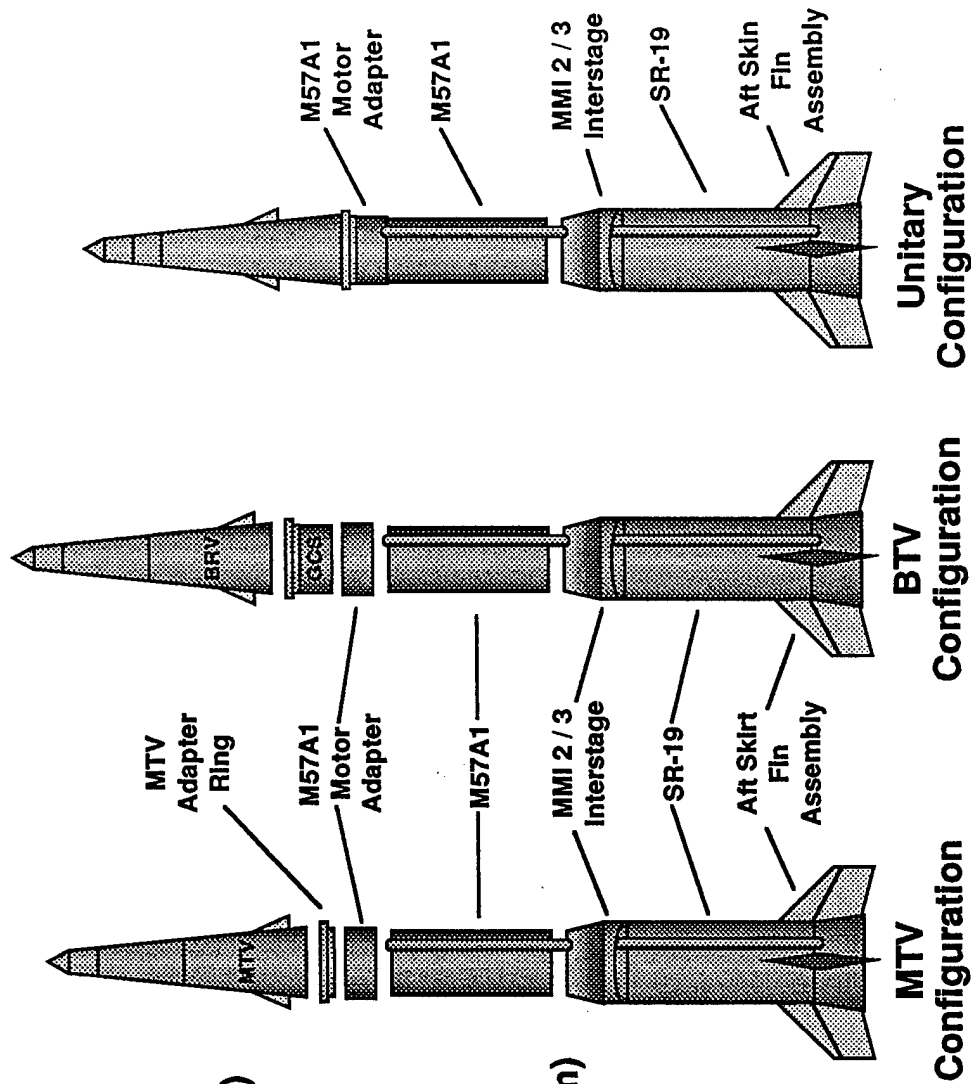


BALLISTIC MISSILE DEFENSE ORGANIZATION

HERA

• Vehicle Characteristics And Capabilities

- Propellant Solid
- # Stages 2
- Stage 1 Motor SR-19 (MM2 / Stage 2)
- Stage 2 Motor M57A1 (MM1 / Stage 3)
- Payload 2,000 lbm
- Angle @ Burnout 40 deg
- Vel @ Burnout 2.86 km / sec
- Reentry Vel @ 80 km < 3.00 km / sec
- Apogee 330 km
- Range 1,173 km
- Exo-time 479 sec (Above 100 km)
- Inventory 0
- Launch Modes Rail, Ship
- Launch Sites WSMR



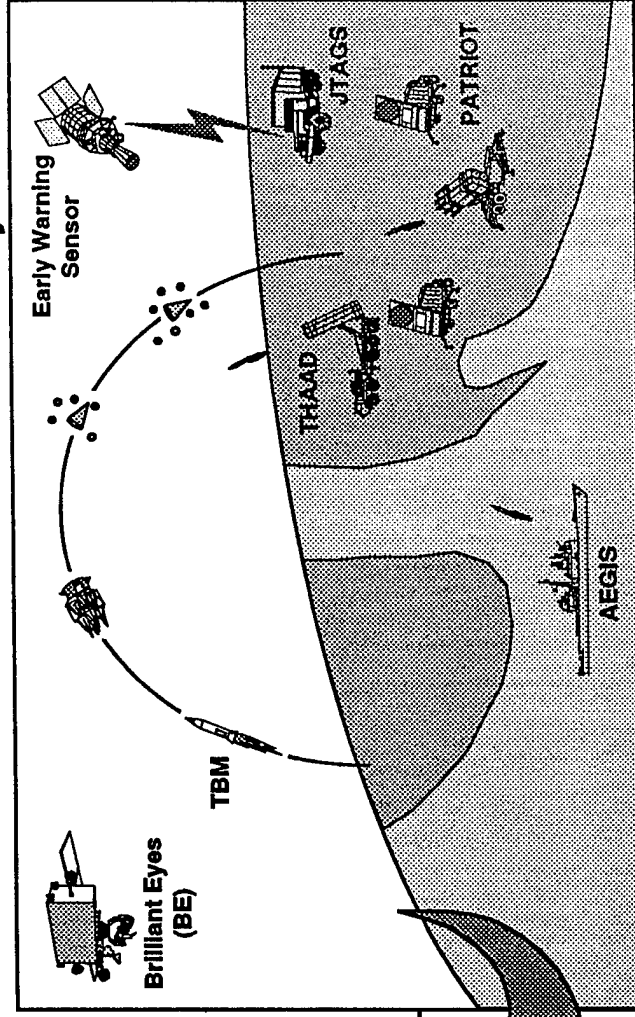
TARGETS MASTER SCHEDULE

	FY 93	FY 94	FY 95	FY 96	FY 97	
DEMO						Air Breather
ERINT						HERA
PATRIOT						HERA
ERINT / PATRIOT						HERA
THAAD						HERA
TMD-GBR						HERA
CORPS SAM						HERA
STARS I						HERA
STARS II- (ODF)						HERA
STARS II - (MSX)						HERA
MMII MSLs - (GBI)						HERA

TMD SYSTEM EXERCISER

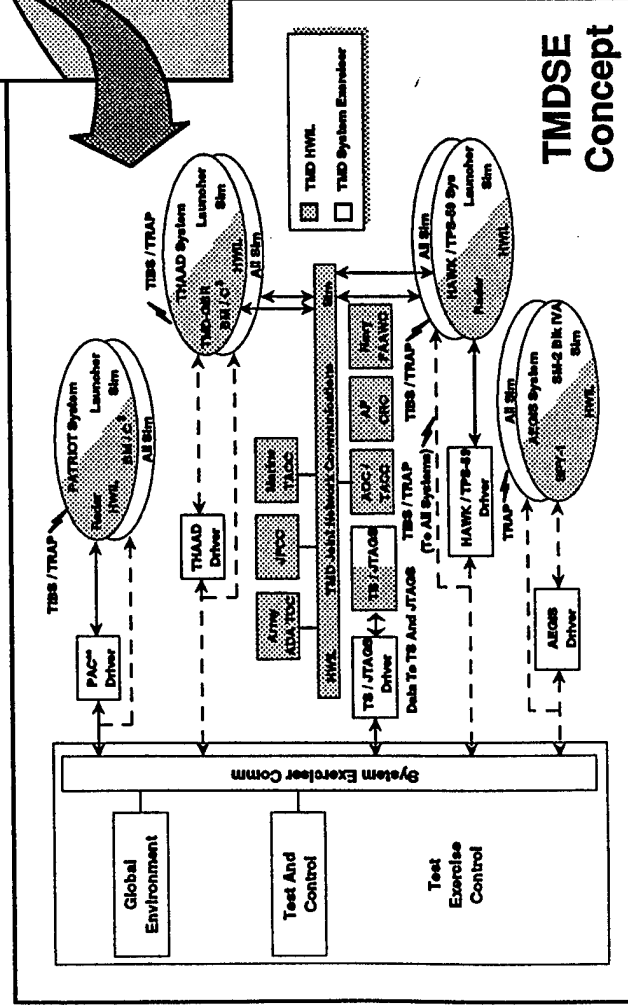
- The TMDSE Will Operate In Several Modes During BMD Development And Operation
 - Integration Testing
 - System-level Performance Evaluation
 - Interoperability Testing
 - OT Augmentation

Notional System Test



"The ISTC (TMDSE) Cannot Be Used In Lieu Of Operational Field Testing, But Will Serve An Essential Role In Augmenting And / Or Complementing OT&E By Expanding The Evaluation Into Untestable Areas"

George G. Wauer, OSD DOT&E



* TMD System Sim Sources May Include EADTB, STB, C² Sim, etc.
 ** Weapon System / Associate Driver And Program Responsibility

TMD SIMULATION MANAGEMENT

Category	Characteristics			Examples
	Fidelity	Real Time	PIL / HWIL	
Functional	Hi	?	No	LDS, STB, KDEC
System Studies	Low To High	No	No	EADSM, EADTB
System Performance	Low To High	Yes	Yes	ARGUS, System Exerciser

EXTENDED AIR DEFENSE TESTBED (EADTB)

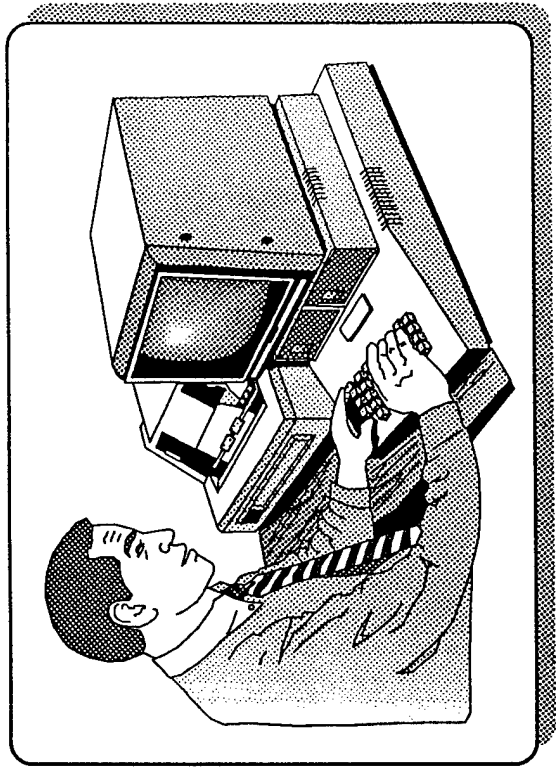
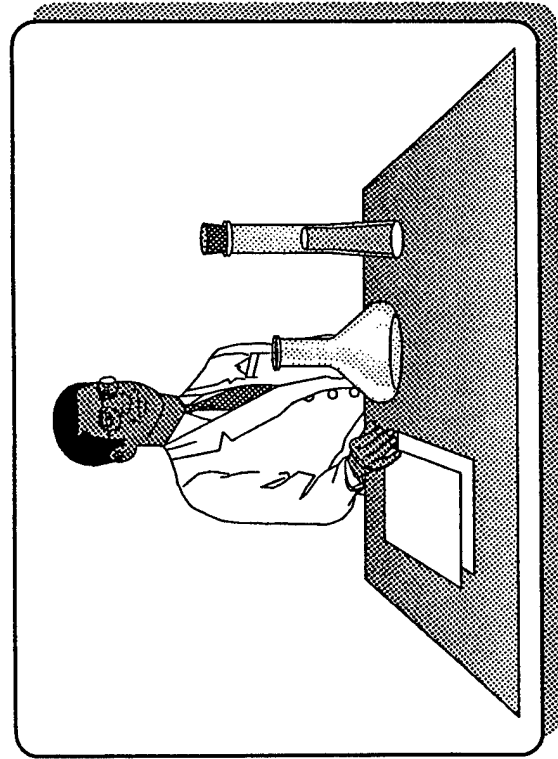
- **Simulator To Analyze Large Scale Theater Scenarios**
 - **Present And Evolving Air Threat**
 - **Present Air Defense Effectiveness**
 - **Contingency Theater Operations**
 - **Future Conceptual Defenses**
 - **Technology Applications**
 - **BM / C³ Procedures**
- **For Use By**
 - **Material Developers**
 - **Combat Developers**
 - **Operational Commanders**

EADTB STATUS

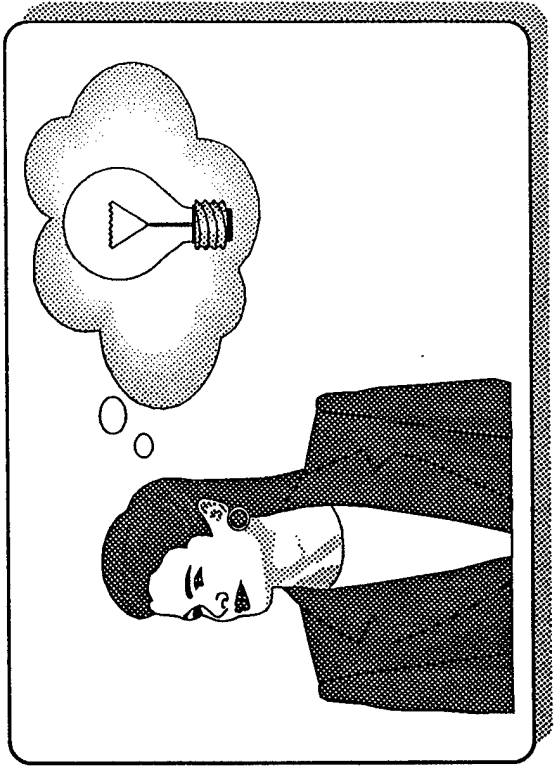
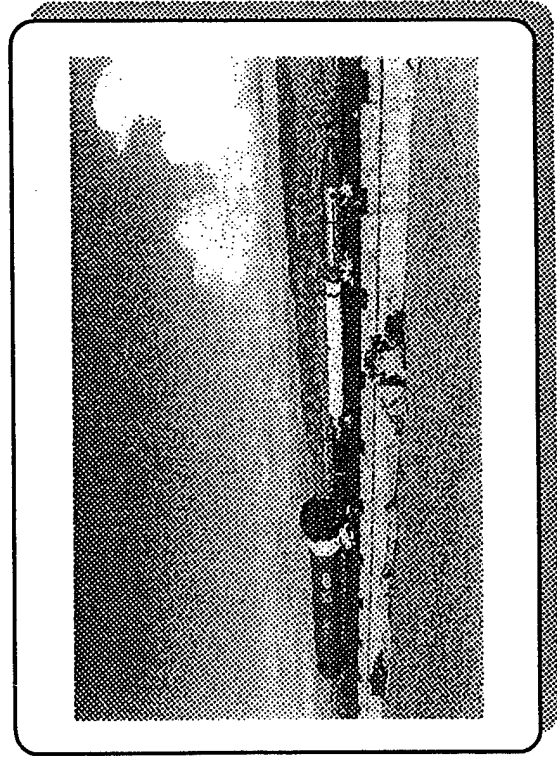
- Hardware
 - Convex Mainframe
 - Silicon Graphics Workstations
 - Local Area Network
- Software
 - Algorithms And Framework
 - Models (THAAD, F-15, AEGIS, etc.)
 - Over 400 K Lines Of Ada Code

Schedule

CY	1993	1994	1995
• Hardware Delivery And Installation - Huntsville ARC - Fort Bliss - SHAPE Technical Center - TACCSF • Software Delivery - Capability 1 - Capability 2 - Capability 3	▲ ▲	▲ △	△ △



TECHNICAL SUPPORT



DIVERSE AND STRESSING ASPECTS OF TBM THREAT

- Ranges Of 80 - 3,000 km
- Velocities Of 1 - 5 km / second
- Unitary And Separating Missiles
- Solid And Liquid Fuels
- Warheads
 - Type
 - Packaging
- Countermeasures
 - Inadvertent
 - Inherent
 - Deliberate

TARGET CONCERNS

- Liquid Fuel Spills
- Solid Fuel Debris
- Deployment Hardware
- Booster Fragments
- RF / IR Wakes
- Spiralling
- Maneuvering
- Intercept Debris
- ?
- ?

TECHNICAL CHALLENGES

- **Tracking And Discrimination**
- **Target Typing And Aim Point Selection**
- **Target Object Map**
- **Endgame**
- **Lethality**
- **Kill Assessment**

SOURCES OF TARGET DATA

Source	Assessment
• Overseas Collection (Cobra Judy, Cobra Eyes) • Targets Of Opportunity At WSMR • U.S. Firing Of Procured Third World Theater Ballistic Missiles • Observations Of Threat-representative Targets Flown For This Purpose	• Difficult, Not Under U.S. Control, Uncertain Funding • Short Range Targets Only • Limited Availability, Compatible Test Ranges • Required

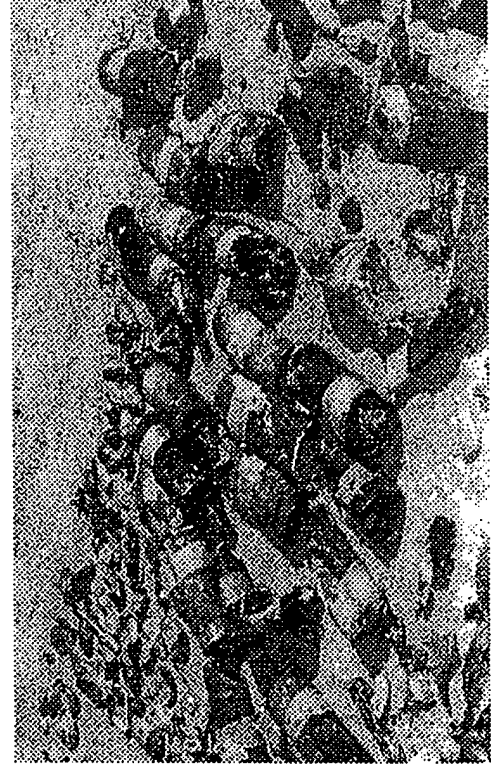
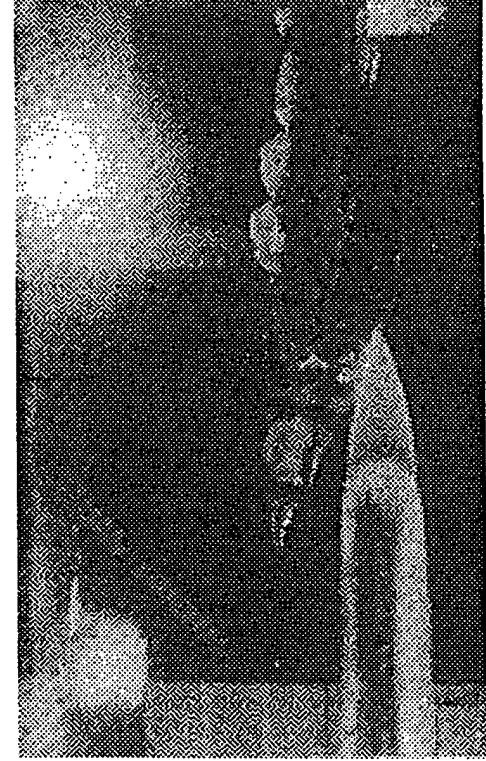
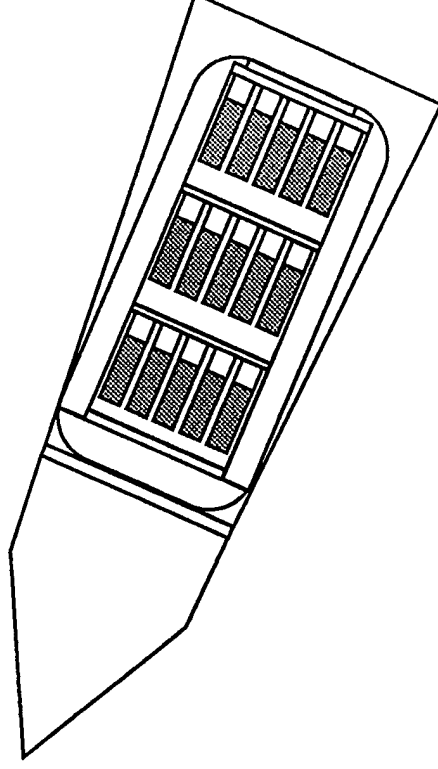
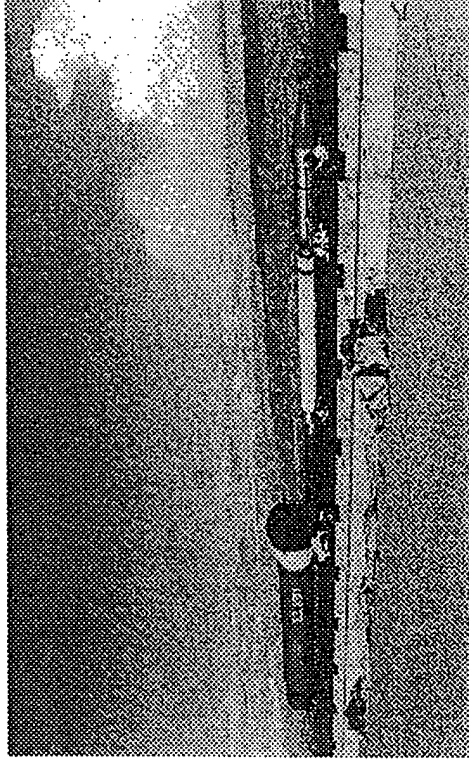
TMDI ACHIEVEMENTS OF CY 93

Technical Support

- **TCMP - 1/2**
 - Live Fair Test Conducted At USAKA Range
 - Data Analysis Final Review Completed
 - Planning Underway For TCMP-2
- **Kill Assessment**
 - Workshop Conducted
 - Data Collected On ERINT Intercept At WSMR, Sled Tests At Holloman AFB, NM
- **Lethality**
 - Conclusively Demonstrated HTK Can Achieve Required "Hard" Kill Levels
 - Demonstrated Quantitative Dependence Of "Hard" Kill On Hit Distributions
 - Helped THAAD Meet Lethality Milestone Exit Criteria In A Sled Test
- **WALEX**
 - Utilized Two WALEX Exercises To Gain Insights Into TMD And Developed A Program To Approximately Use The WALEX Vehicle In CY 94 To Enhance Understanding Of TMD
 - Five WALEXs Scheduled In CY 94

**BALLISTIC
MISSILE
DEFENSE
ORGANIZATION**

HIT-TO-KILL VERSUS CHEMICAL SUBMUNITION THREAT



ACQUISITION CHALLENGES

- Software
- Flight Test Program
 - Targets
 - Ranges
- Integration And Test

**BALLISTIC
MISSILE
DEFENSE
ORGANIZATION**

ADVANCED PLANNING BRIEFING TO INDUSTRY

**Col John Upton
Director
Theater Missile Defense
Sensors Directorate**

OUTLINE

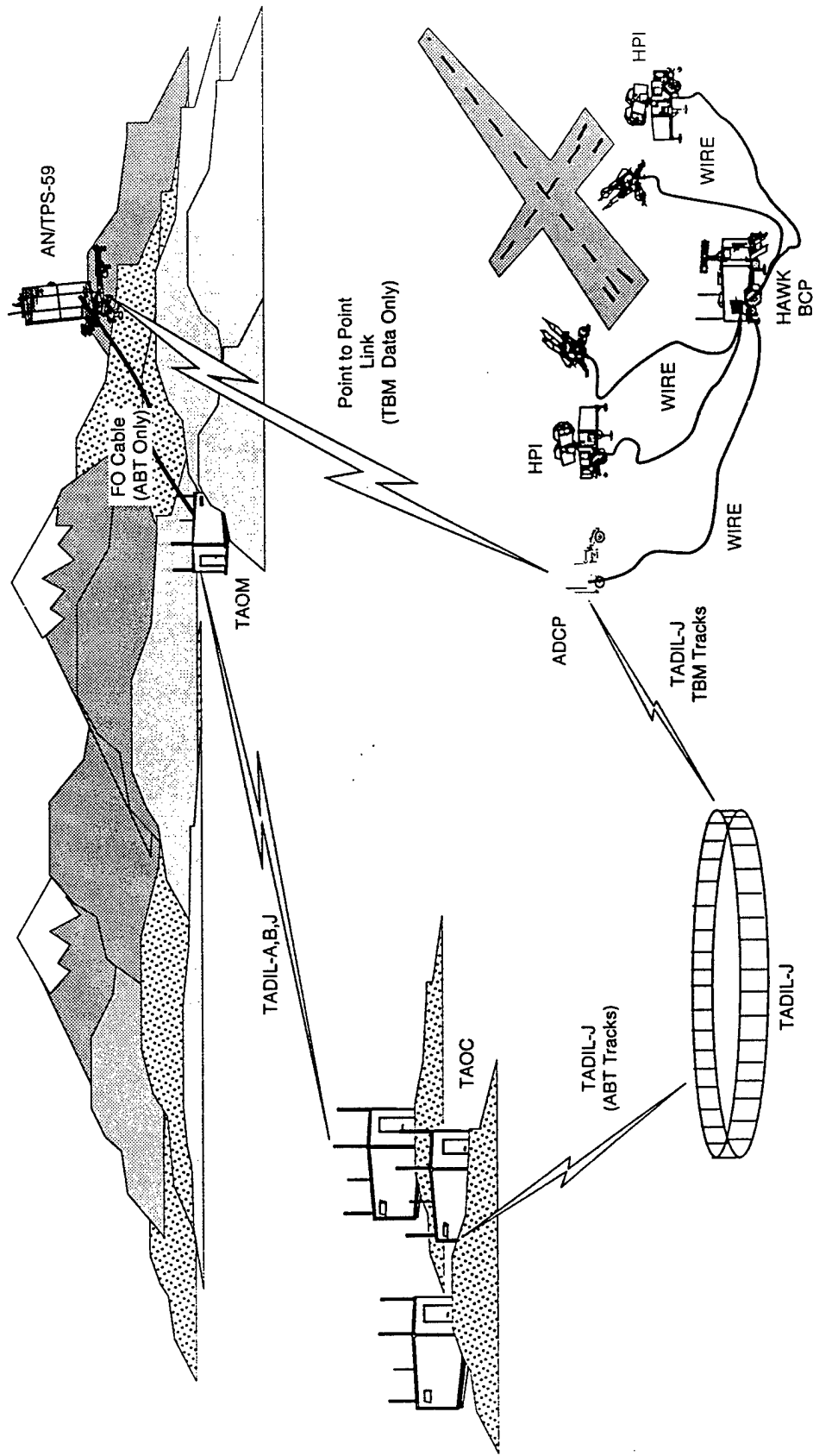
- **CURRENT EFFORTS**
 - USMC TMD INITIATIVE
 - LAUNCH DETECTION
 - SENSOR CUEING
 - CINC EXPERIMENTS
- **NEAR TERM IMPROVEMENTS PROGRAM**

Ballistic
Missile
Defense
Organization

MARINE CORPS TMD INITIATIVE

2/10/94 3

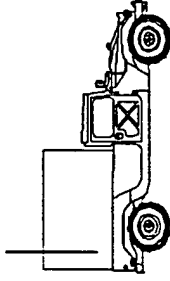
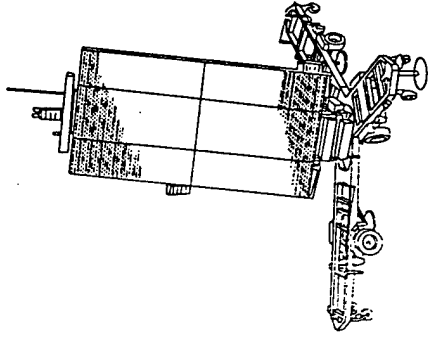
CONCEPT OF OPERATIONS



2/10/94 4

Ballistic
Missile
Defense
Organization

TPS-59 AND HAWK SYSTEM

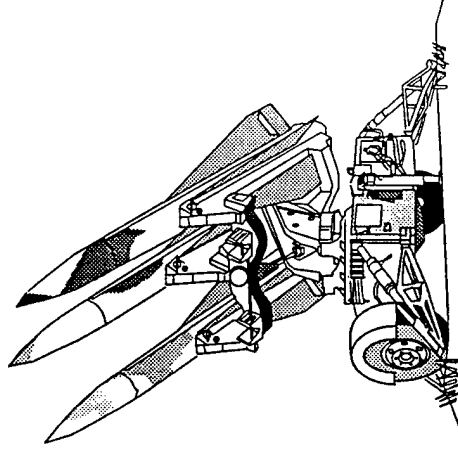


USMC Funded

- Upgrade of HAWK Launcher to interface with digital missiles
- Upgrade of HAWK Launcher to increase mobility

BMDO Funded

- Upgrade TPS-59 to provide enhanced TBM surveillance and tracking capability
- Air Defense Communications Platform - Node for tactical nets
 - Make TPS-59 data available on a JTIDS net
- Modify Battery Command Post to accept TPS-59 data
 - Cues HAWK High Power Illuminator Radar
- Upgrade HAWK missile fuse and warhead for TBM engagements



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**Ballistic
Missile
Defense
Organization**

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Major Milestones					Δ □ Sys Test UOES IOC		
TPS-59							
Development		Δ PDR					
Production					Δ Training LLI		
ADCP							
Development							
Production							
HAWK							
Development			□ Int/Test				
Production		Δ ILM Issue					
					BCP Mod	ILM Missile Producer/Install	

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Ballistic
Missile
Defense
Organization

LAUNCH DETECTION

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LAUNCH DETECTION

- Launch detection - supports TMD by providing early warning through impact region estimates, active defense weapons system cueing data using threat state vector estimates, and counterforce strike direction against TBM launchers through launch point estimates.
- System improvements include the Air Force's Talon Shield program, the Navy's Radiant Ivory program, and the Army's and Navy's Joint Tactical Ground Station (JTaGS) program.

LAUNCH DETECTION

- Talon Shield - BMDO sponsored data fusion program for processing multi-sensor DSP and classified sensor data at Falcon, AFB, CO.
- Radiant Ivory - processes classified data from a unique sensor and provides data to Talon Shield for fusion with other products.
- JTaGS - Joint program for mobile stereo DSP ground stations for the theater. Ruggedizes hardware and software designed under the BMDO sponsored Tactical Surveillance Demonstration (TSD) and Talon Shield programs.

STATUS

- **TALON Shield currently installed and operating at NTB**
 - Provides central, initial capability with military crews; BMDO demo completed in February, 1994
 - Follow-on upgrade for supportability, training, and 24-hour manning - IOC 1 OCT 94
- **Joint Tactical Ground Station (JTaGS) provides mobile capability**
 - Test bed provides initial capability now (deployed to EUCOM, fixed site)
 - Begins EMD in FY94 and prototype production in FY95

**Ballistic
Missile
Defense
Organization**

SENSOR CUEING

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Missile
Defense
Organization**

TACTICAL ADVANTAGES OF CUEING

- Extending Target Acquisition Range through Cueing Precludes Radar from Limiting Defended Area Footprints
- Reduces PATRIOT Radar Loading for TBM Detection and Track by Decreasing Search Volume
- Improves Beam Scheduling to Handle TBM Saturation Raids
- Emission Control (EMCON) Easier to Implement to Counter ARM's
- Provides Target Acquisition in Non-benign RF Environments (i.e., ECM, Weather)

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Ballistic
Missile
Defense
Organization

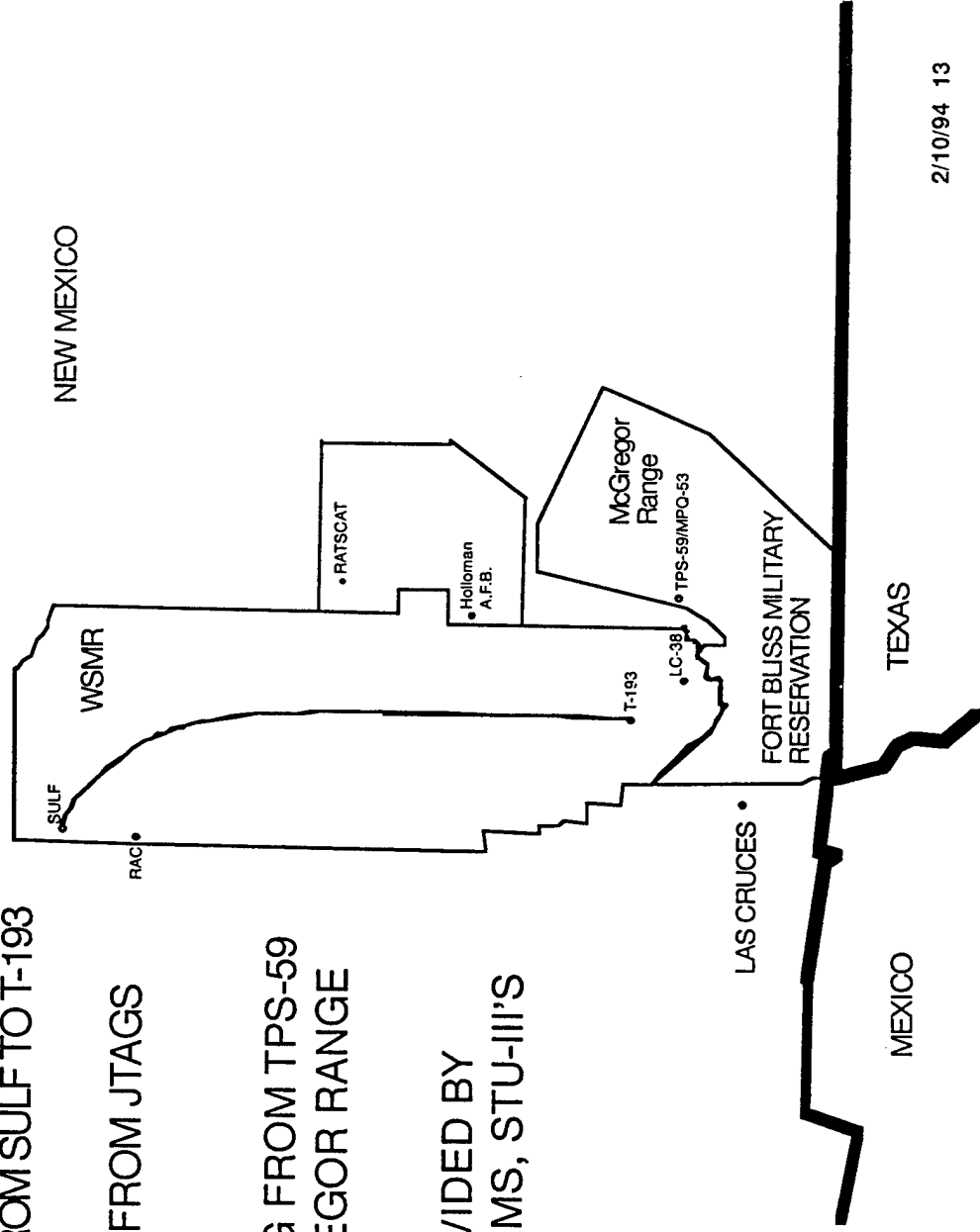
WSMR CUEING DEMO

STORM TRAJECTORY FROM SULF TO T-193

MPQ-53 WITH CUEING FROM JTAGS
LOCATED AT LC-38

MPQ-53 WITH CUEING FROM TPS-59
LOCATED ON MCGREGOR RANGE

CONNECTIVITY PROVIDED BY
PHONE LINES, MODEMS, STU-III'S



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WSMR CUEING DEMO RESULTS

- Cueing Demonstration Conducted at WSMR on 30 November 1993.
- TPS-59 and JTaGS Systems Detected STORM Target as Expected.
- TPS-59 Transmitted Cueing Messages Throughout Mission.
- PATRIOT PS-50 Cued by TPS-59 on First Attempt with Single Beam Acquisition. Additional Cueing Messages not Received due to Communication Anomaly.
- JTaGS Prototype System Transmitted 21 Cueing Message to PATRIOT.
- PATRIOT FU-5 Cued by JTaGS Successfully all 21 Times. PATRIOT Target Tracks were Acquired, Manually Dropped, and Reacquired utilizing Single Beam and Multiple Beam Groups for Acquisition.

THEATER TACTICAL APPROACH

- Define Near-Term Implementation for All Theater Sensors
 - SPY-1, TPS-59, MPQ-53, DSP
- Desire to Use JTIDS/TIBS
- First Planning Meeting was 16 December, 1993

**Ballistic
Missile
Defense
Organization**

CINC EXPERIMENTS

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120

PROGRAM GOALS

- **Provide funding for TMD overlays for planned CINC exercises in order to**
 - **Support Theater CINCs' efforts to assess operational TMD capabilities**
 - **Identify procedural and architectural shortcomings**
 - **Identify current technology developments that could enhance near and mid-term TMD capabilities**
 - **Provide forum for CINCs to interface with BMDO in requirements definition analysis**

FY93 EFFORTS

- Planned two experiment overlays (EUCCOM, USFK)
- Conducted portions of first experiment and all of second experiment
- Supported extensive TMD planning by CENTCOM

Ballistic
Missile
Defense
Organization

NEAR TERM IMPROVEMENTS PROGRAM

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NEAR-TERM IMPROVEMENT HISTORY

- TMD capabilities since Desert Storm have improved significantly in regards to threat warning and PATRIOT Advanced Capability - 2 but incremental improvement of existing systems, particularly theater sensors and C3I systems have been lacking
- Past BMDO TMD efforts have fallen into two groups
 - Technology Demonstrations
 - Major Defense Acquisition Programs
- Only Service acquisition organizations can implement real capability

NEAR-TERM IMPROVEMENTS PURPOSE

- Maximize the capabilities of existing systems for Theater Missile Defense
- Provide a *supportable* contingency capability in the near-term
- Identify early on potential shortfalls within the TMDI architecture
- Provide a rational basis for incremental improvements to major TMD acquisition programs
- Fill the gap and provide synergy between BMDO capabilities in technological research and major systems acquisitions

NEAR TERM IMPROVEMENTS

PROGRAM APPROACH

- Establish Near-Term Demonstration Steering Committee
 - Deputy Director for Acquisition and Theater Missile Defense
 - Service PEOs
- BMDO/Service acquisition organizations nominate candidate efforts *IAW identified TMD mission drivers and performance characteristics*
- Require Documentation
 - Plan of Action with Cost and Funding Summary
 - Demonstration Test Plan
 - Demonstration Test Report
- Periodic Reviews/Progress Reports
 - Working Group Quarterly
 - Steering Committee Semiannually

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BALLISTIC MISSILE DEFENSE

Advance Planning Briefing For Industry TMD Acquisition Programs

BALLISTIC MISSILE DEFENSE ORGANIZATION

1 MAR 94

**COL Perry C. Casto Jr., USA
Director, Theater Defense Weapons
Ballistic Missile Defense Organization**

TMD CORE PROGRAM

PATRIOT

What It Does

- Defends Small Areas And Critical Assets Against Short-range Ballistic Missiles

Why Important

- Only System Immediately Available To Apply Lessons Of Desert Storm

How We Get There

- Upgrade Existing Systems With PAC-3

AEGIS

SM-2 Block IVA

- Defends Forced Entry And Port Areas Against Short-range Ballistic Missiles

- Only BMD System That Is Worldwide Deployable By Sea

- Upgrade SM-2 Missile And Modify AEGIS Weapons System

THAAD

- Defends Wide Areas Against Medium And Long-range Theater Ballistic Missiles

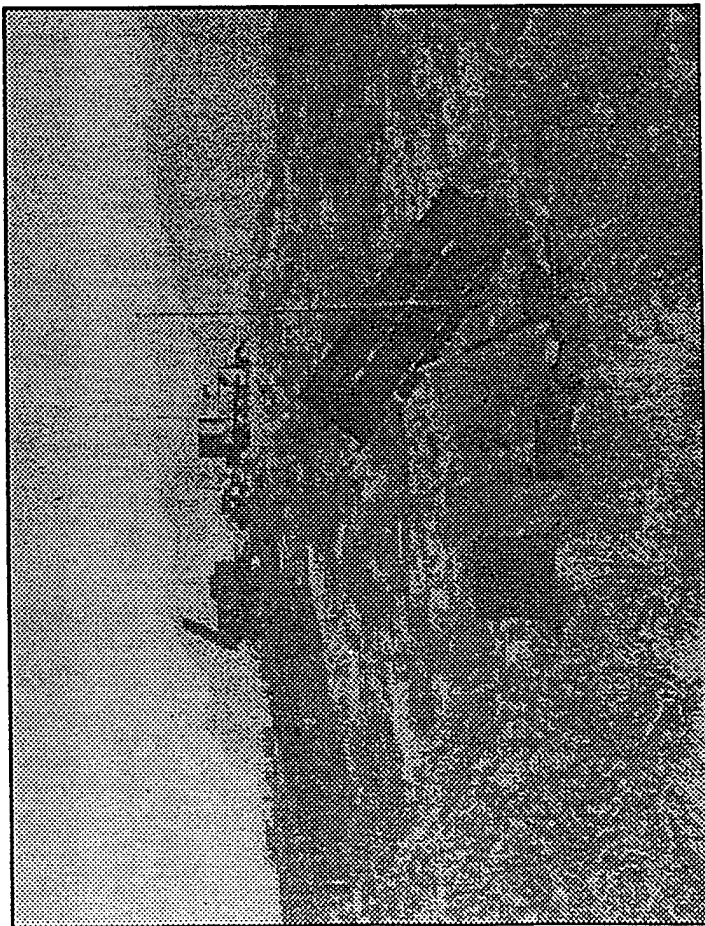
- First BMD Capability Against Advanced And Long-range Threats

- Pursue Acquisition Program

Each Of The Core TMD Programs Fills A Unique Role - No Overlap Or Duplication Exists

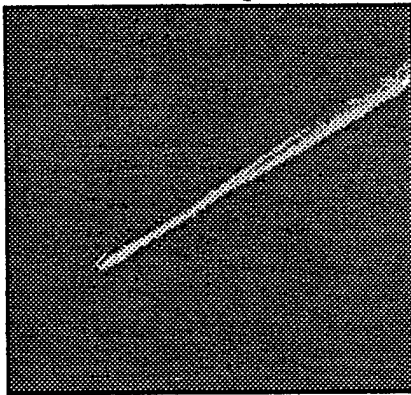
PATRIOT

PAC-2



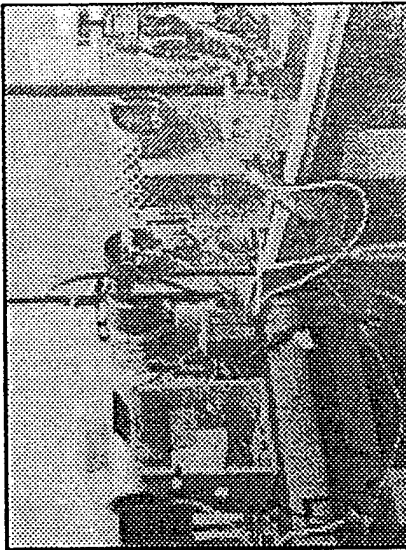
PAC-3

PATRIOT



Flight Test

ERINT



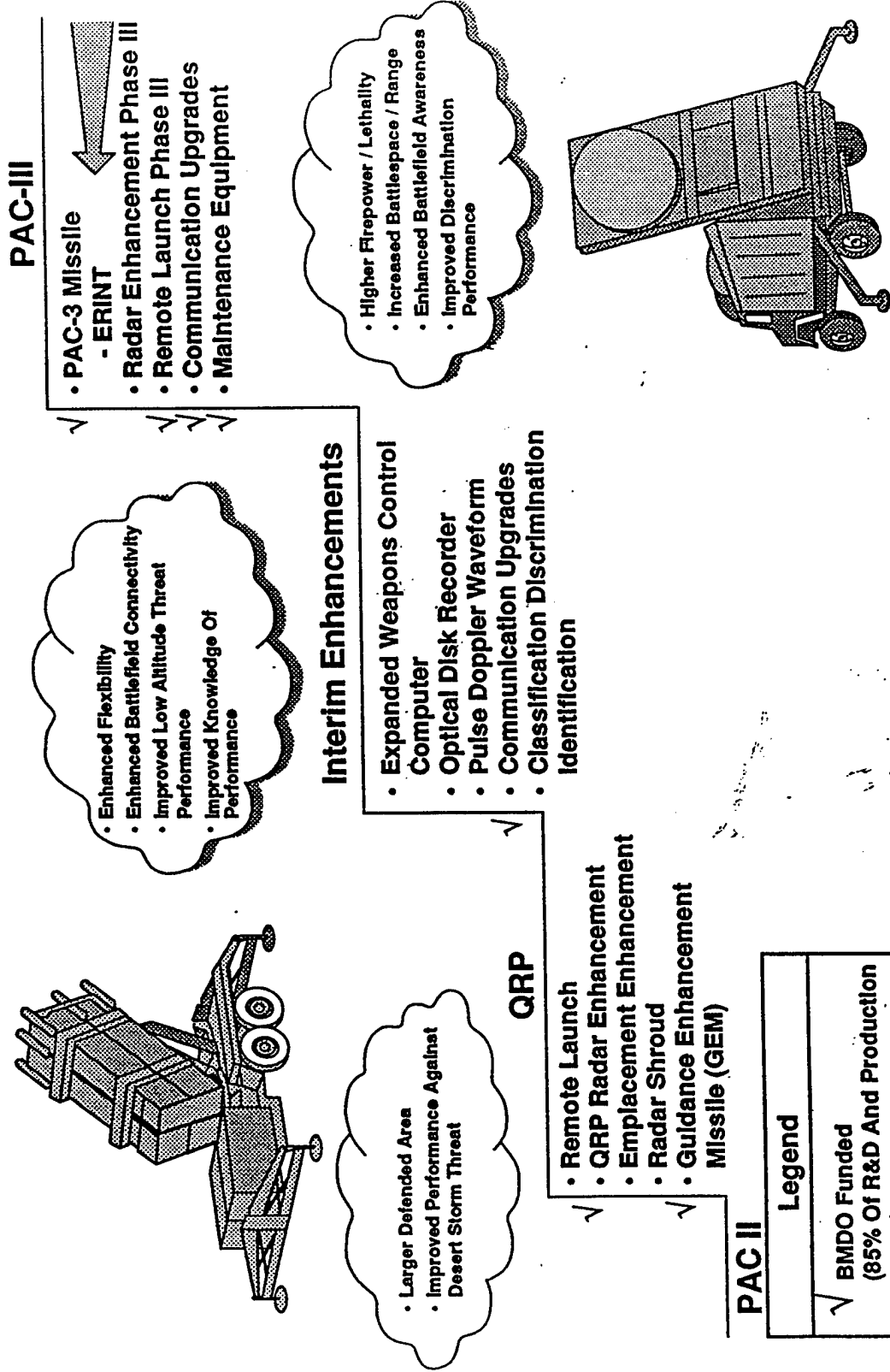
HWIL Test

BACKGROUND

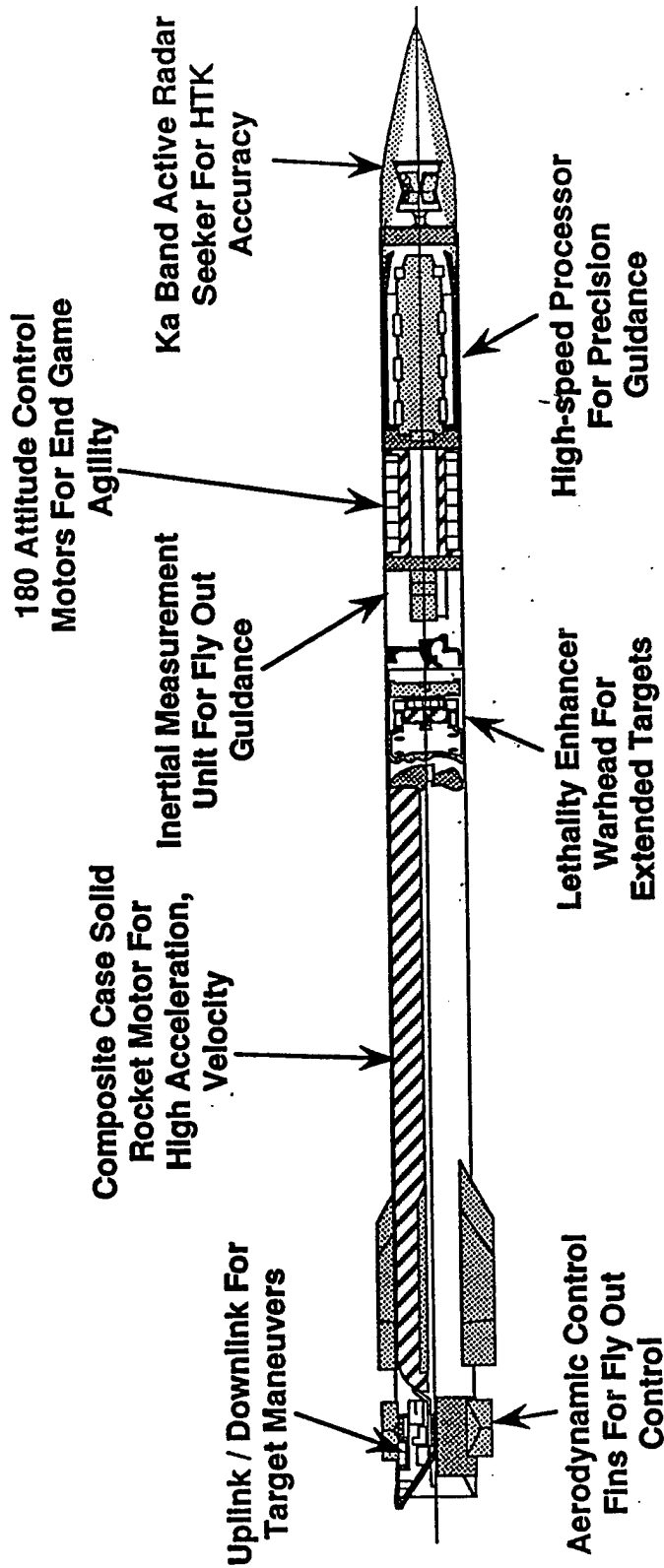
- **PATRIOT ATM Capability - 1 (PAC-1)**
 - Implemented In 1988
 - System Software Changes
 - Provided PATRIOT with Self-defense And Limited Asset Defense Capabilities Against TBMs
- **PAC-2**
 - Implemented In 1990
 - Software And Hardware Changes To The Missile
 - Improved PATRIOT Capability Against TBMs
- **PATRIOT Advanced Capability - 3 (PAC-3)**
 - Series Of Materiel Change Package Upgrades Divided Into Three Configurations
 - Provides PATRIOT With The Capabilities To Meet PAC-3 ORD

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MISSILE
DEFENSE
ORGANIZATION**

INCREMENTAL ENHANCEMENT



THE ERINT MISSILE



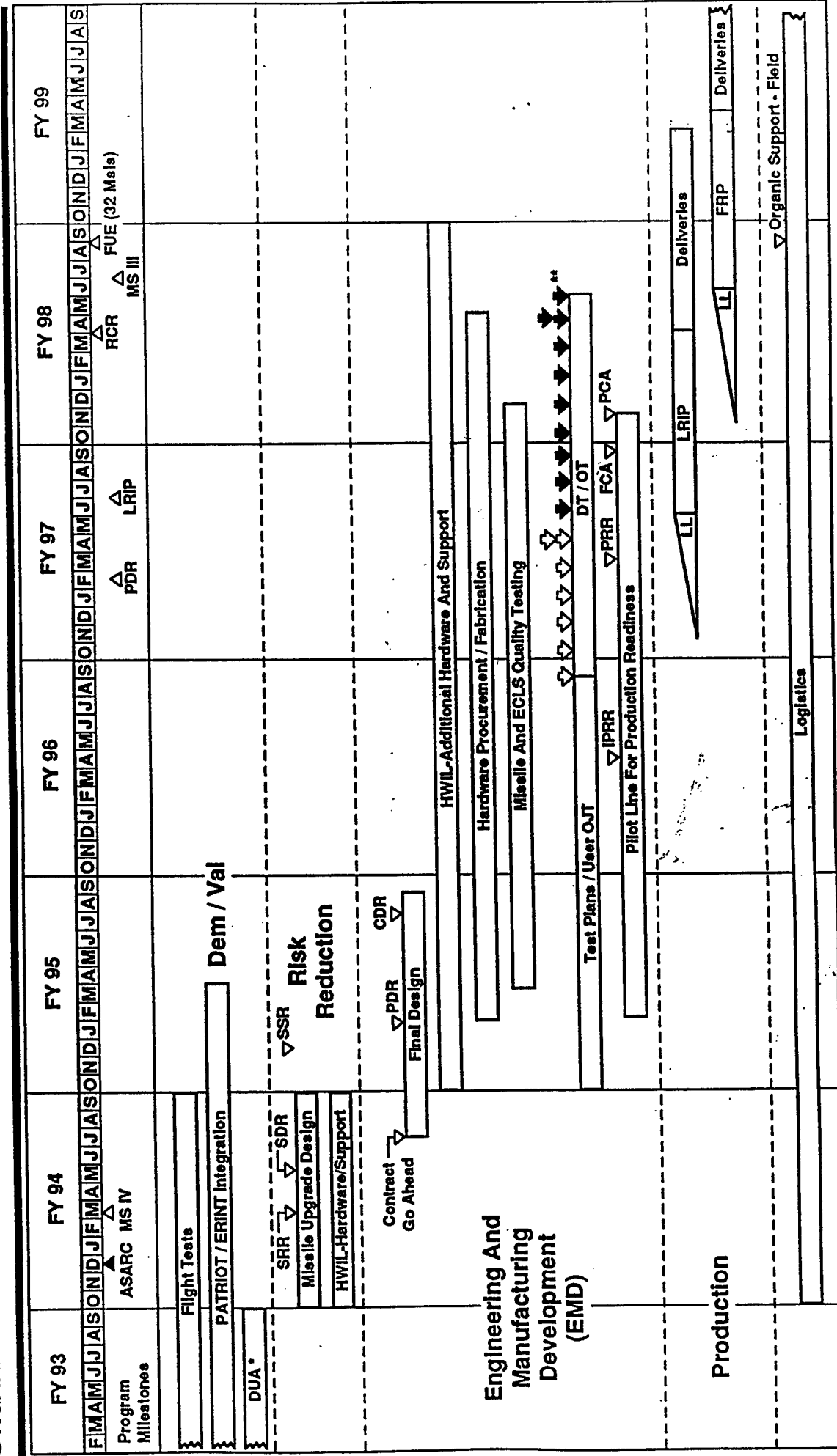
The Missile, And All Subsystems, Have Been Developed And Flown In Dem / Val

- EMD / Production Changes
 - Seeker Component Change To Handle Low Cruise Missiles
 - Downlink For Engagement Monitoring

**BALLISTIC
MISSILE
DEFENSE**

PAC-3 MISSILE MASTER SCHEDULE

ORGANIZATION



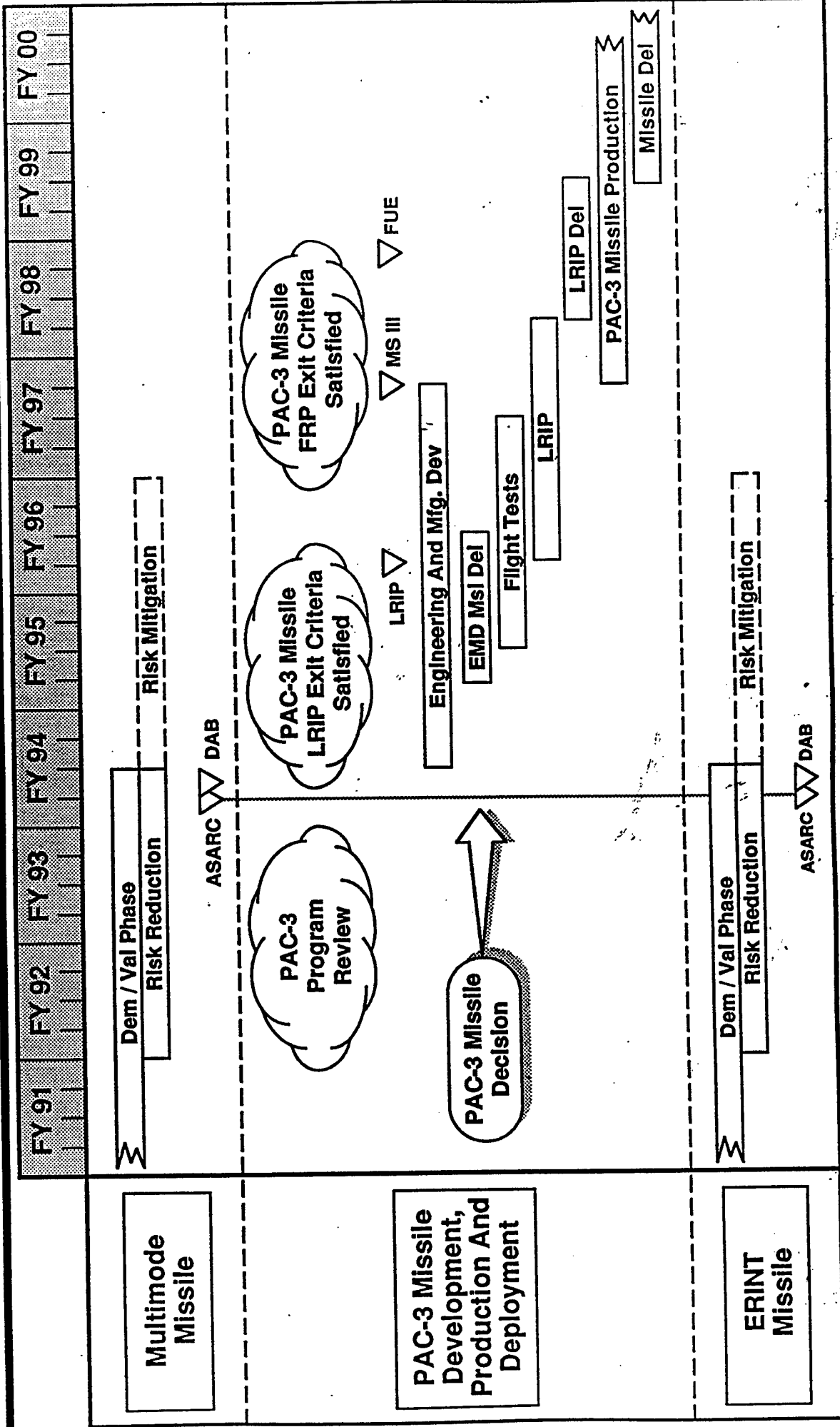
* Design Upgrade Assessment

RCR - Rate Capability Review

** PAC-2 And ERINT Simultaneous Engagement

Production Representative Missile

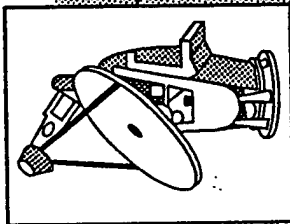
PAC-3 MISSILE ACQUISITION STRATEGY (EMD INFORMED DECISION)



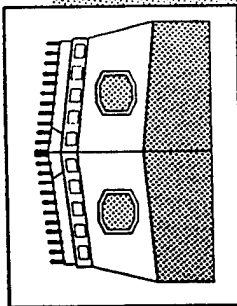
**BALLISTIC
MISSILE
DEFENSE
ORGANIZATION**

AEGIS WEAPON SYSTEM / SM-2 BLOCK IVA MODS

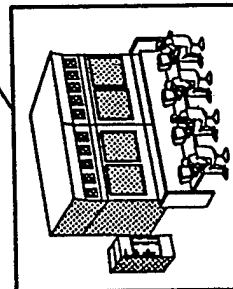
**Terminal Illuminator
MK 99 MOD 2 (No Change)**



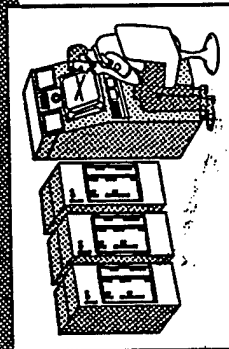
**Radar System
AN / SPY - 1B (Software)**



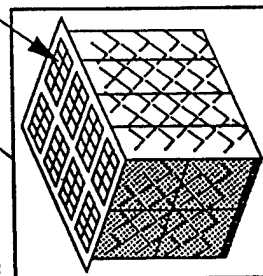
**Standard Missile-2
Block IV
Modifications**



**AEGIS Display
System (Software
Enhancement)**



**Command And Decision
System (Software Plus
Additional Data Storage)**



**Vertical Launch System
Mk 41 MOD 0
(No Change)**

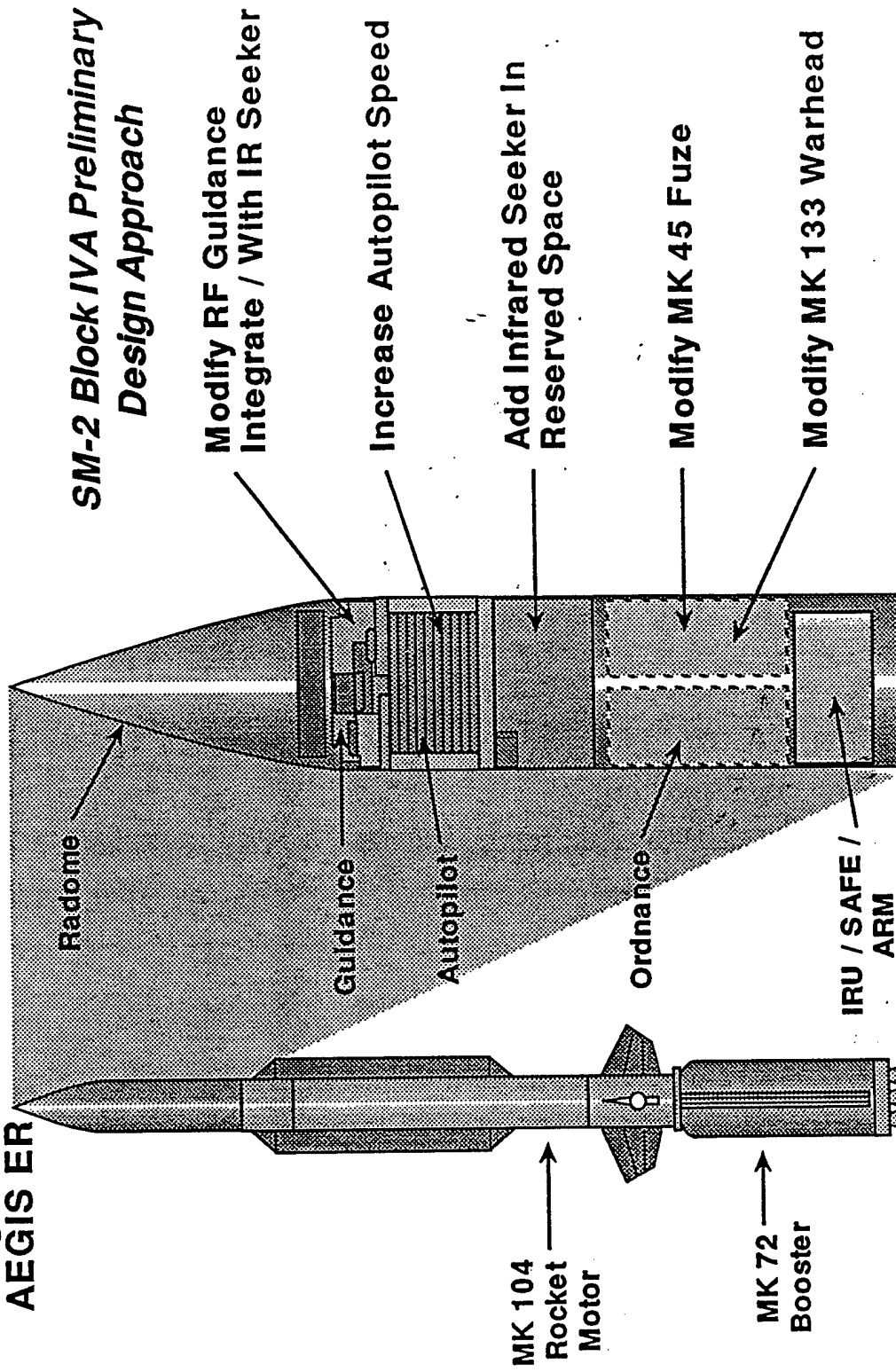
SEA BASED TBMD

- **Area Defense (AEGIS SPY Mods / SM-2 Block IVA)**
 - **Close In Area Defense Of Fleet Concentrations, Debarkation Ports, Coastal Airfields, Amphibious Objective Areas (AOAs) And Expeditionary Forces**
 - **Shorter Range, Less Sophisticated Threat**
 - **Consists Of**
 - **AEGIS / SPY Radar Modifications (Primarily Software)**
 - **Improvements To Seeker / Fuze / Warhead Of SM-2 Block IV Missile**

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DEFENSE
ORGANIZATION

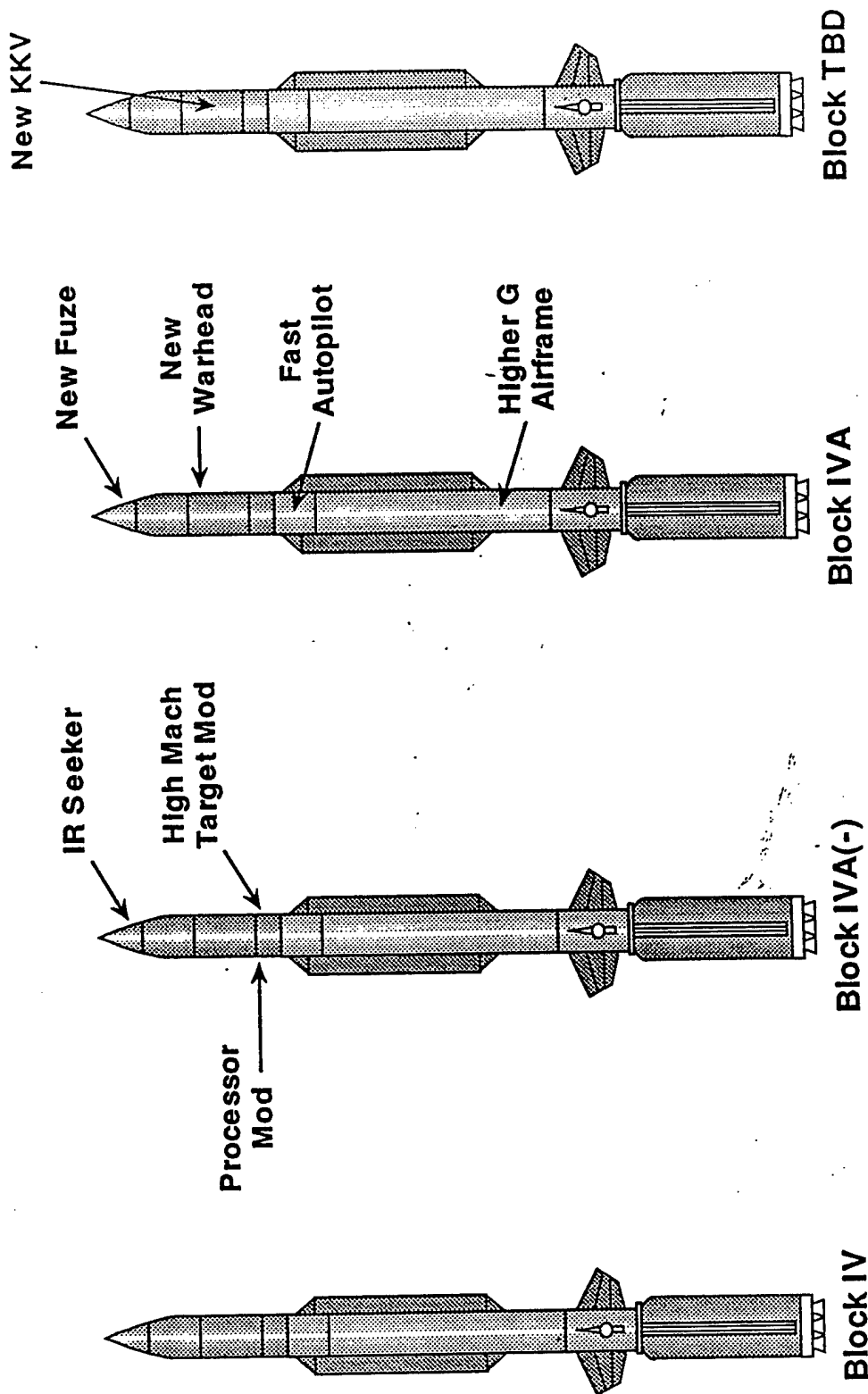
SM-2 BLOCK IVA FOR TBMD

Existing Block IV
AEGIS ER



Common Missile For ATBM / ASCM Defense

STANDARD MISSILE EVOLUTION

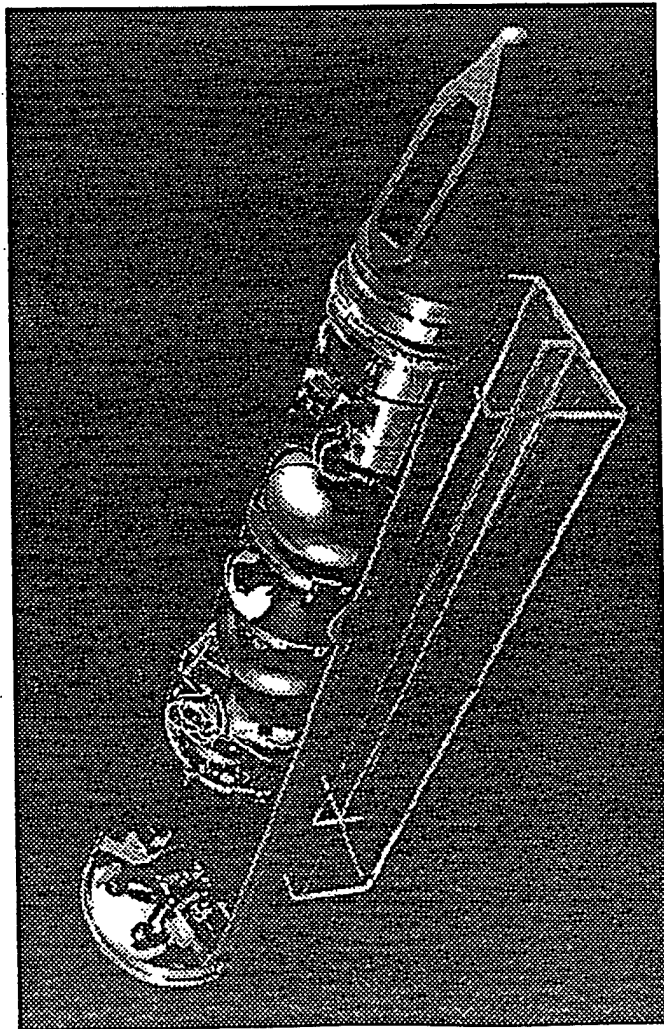


SM-2 Block IVA Common Missile

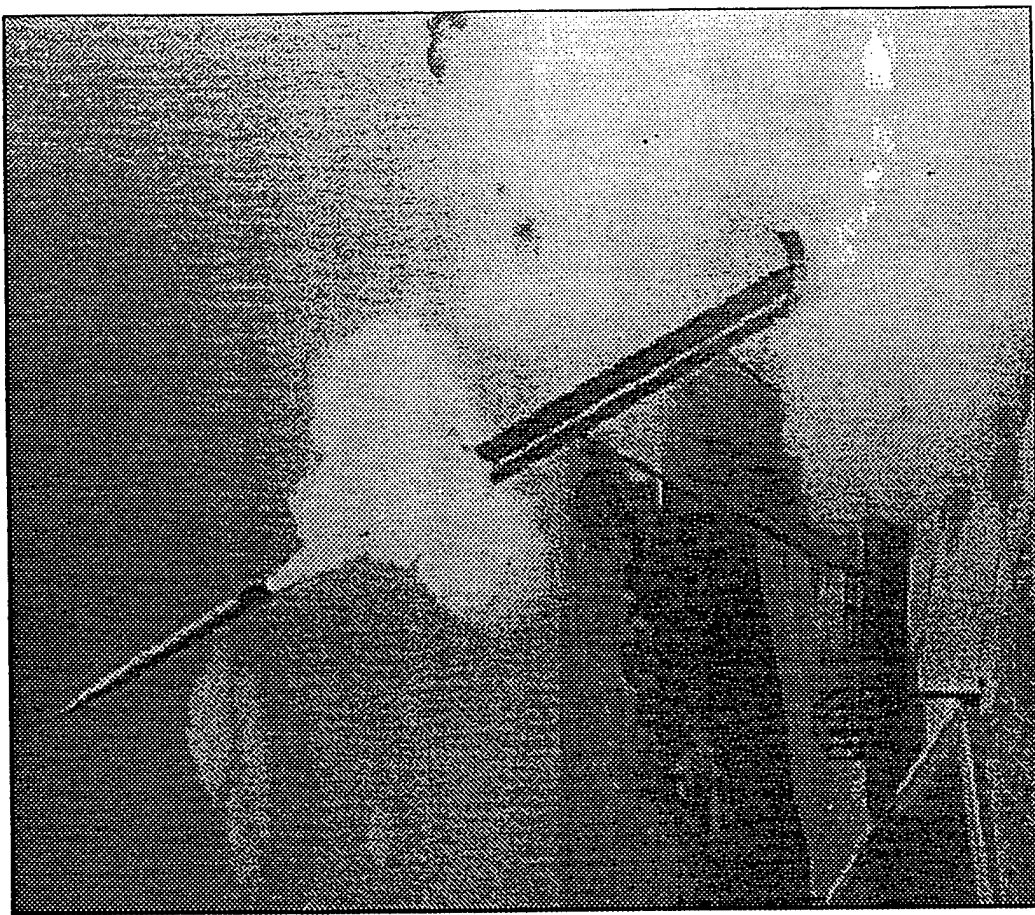
INCREMENTAL BUILD UP OF SEA BASED AREA TBMD CAPABILITY

	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
Program Reviews / DABs	Δ PR		Δ DAB			DAB Δ
First Unit Equipped (FUE)						Δ
Block IVA						
Block IVA (-) At Sea Flights				Δ Δ WSMR	Δ Δ WSMR	Δ Δ At Sea
Block IVA (-) WSMR Flights				Δ Δ		
AEGIS TBMD Computer Program Development	Δ	Δ Extended TRACKEX	Δ Δ 6 Flights WSMR	Tactical At Sea Program Development		

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM

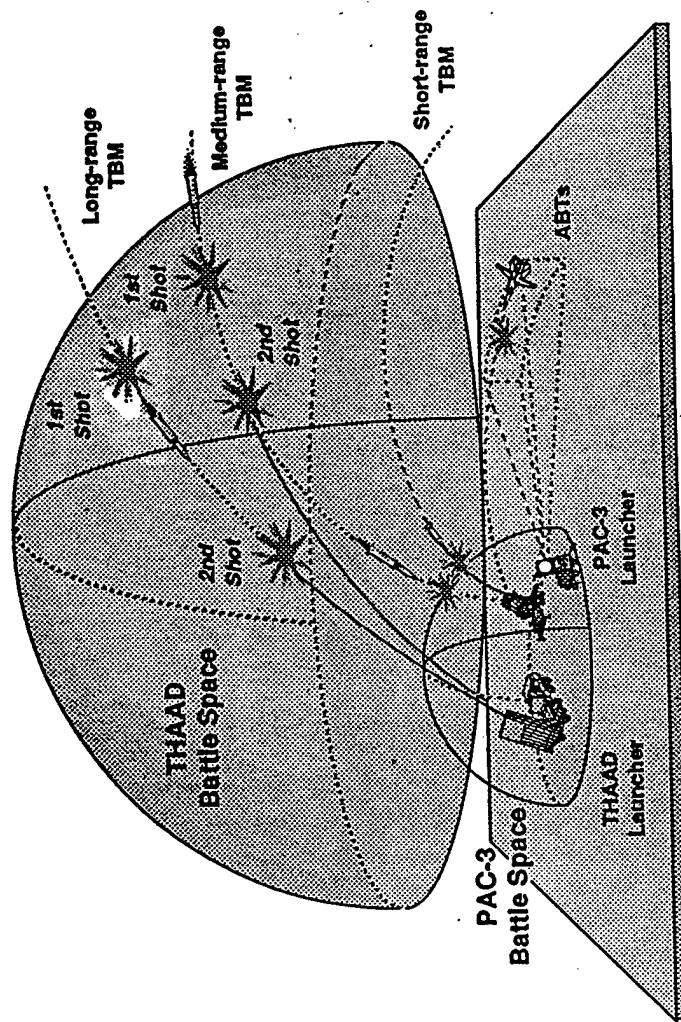


Kill Vehicle Mock-up



Cannister Ejection Test

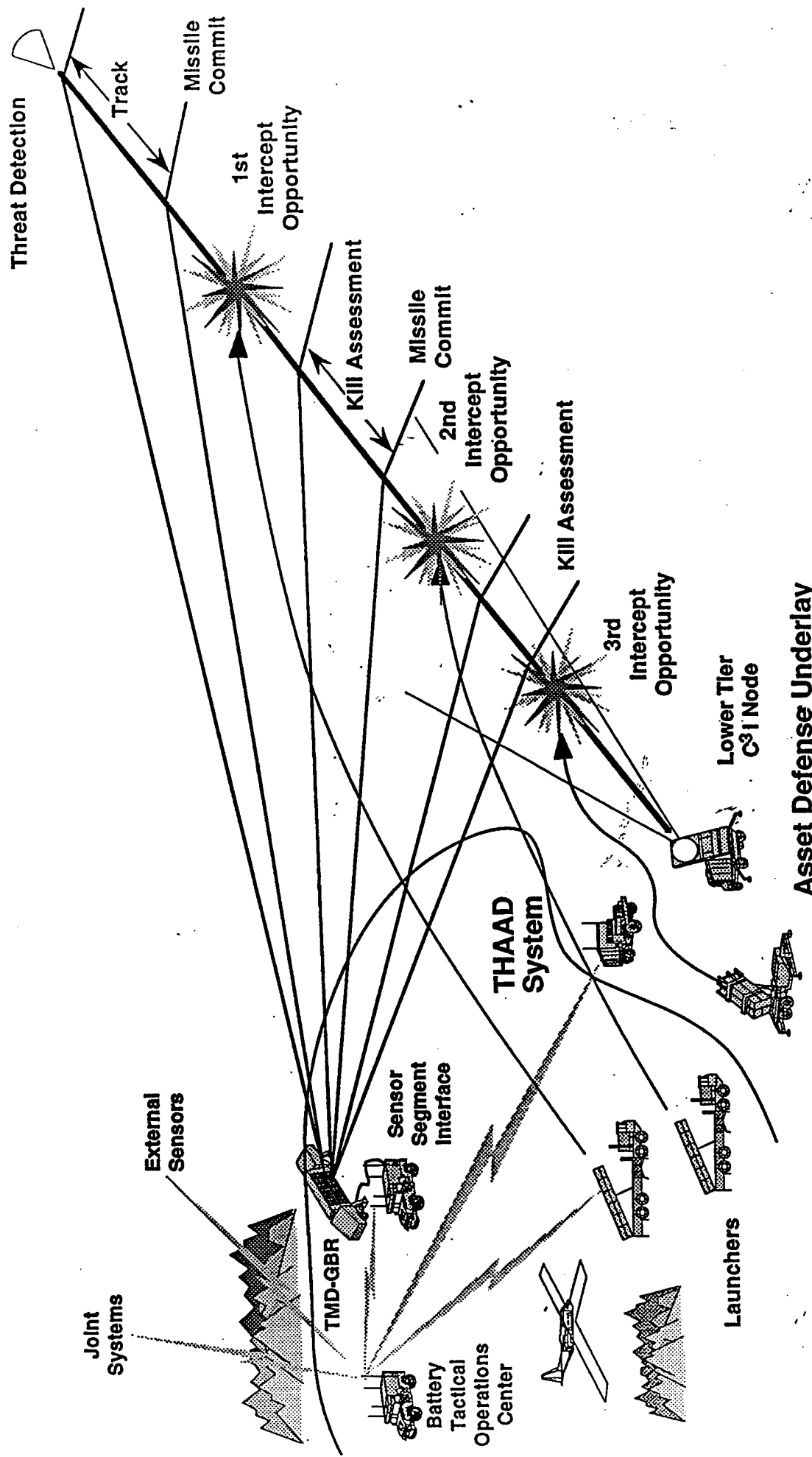
THAAD MISSION



- Upper Tier Of Two-tiered TBM Defense
- Exo And Endo Intercepts Using Hit-To-Kill
- Utilizes TMD-GBR X-band Radar
- Interoperable With Other Army And Joint Systems
- Air Transportable

THAAD Provides Effective Defense Against TBM Threats

THAAD ENGAGEMENT CONCEPT



BALLISTIC MISSILE DEFENSE ORGANIZATION

THAAD SYSTEM DESCRIPTION

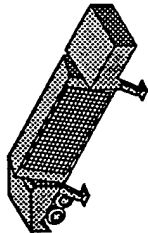
**Endgame Imaging
Identifies Aim Point**

**Divert Capability
Corrects For Radar
Error Basket**

**Trajectory Shaping
During Boost Phase
Flight**

Accurate, Lethal
Hit-To-Kill Intercept

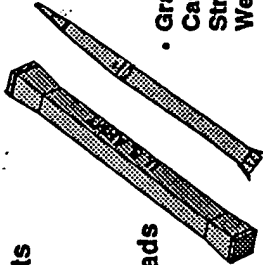
Sensor Versatility



- Surveillance And Target Tracking
- Communication Link With In-flight Missile

Missile Round

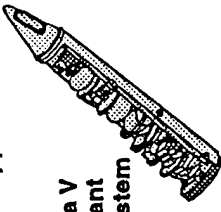
- Canister Protects Missile From Storage, Transportation And Launch Loads



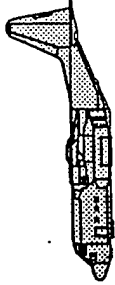
- Single Stage Booster With TVC
- Graphite Epoxy Case Combines Strength With Light Weight

Kill Vehicle

- Uncooled Sapphire Window
- High Delta V Bipropellant Divert System
- Gimbal Mounted Seeker Provides Stability During Thrusting



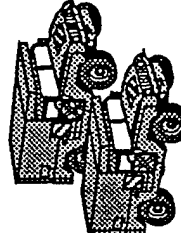
Flexible Transportability



- Launcher Transportable On C-141
- BM/C³I And TMD-GBR Elements Transportable On C-130

BM/C³I

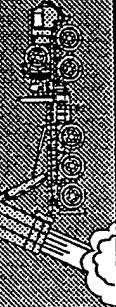
- Force Operators / Engagement Operations Managed From Dual Tactical Operation Shelters
- Two Hardened SICPS Shelters Enhanced Survivability / Availability
- Single Shelter Provides Sensor System Interface (SSI)



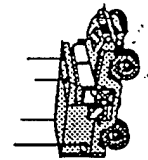
Tactical Operation Shelters (TOS)

Launcher

- Dormant Missile Launched Within Seconds Of Command From BM/C³I
- Launcher Design Based On Palletized Loading System (PLS) Truck
- Full Reload In Less Than 15 Minutes



- Robust Communication Capabilities
- Multiuse Single Shelter Configuration
- Communication Link For Tactical Operator Shelter
- Comm Relay Supporting Remote Launchers



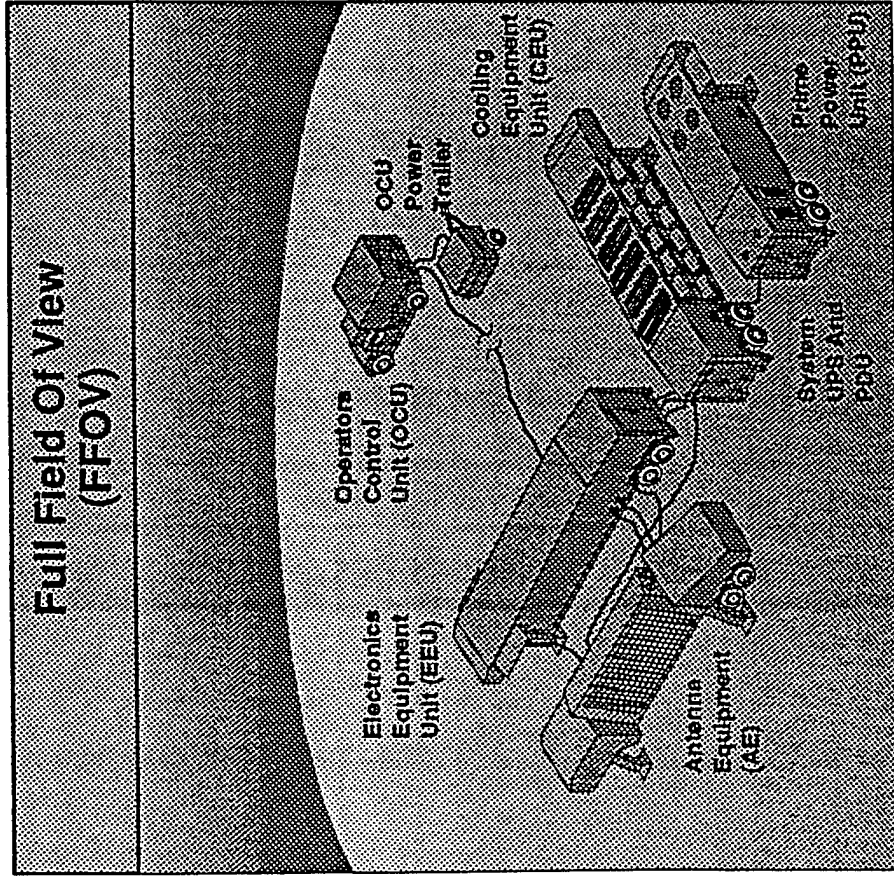
Launcher Control Station

TMD-GBR REQUIREMENTS

Meet Urgent Need For Wide Area TBM Defense

- **Wide Area Surveillance**
 - Volume Search To Beyond 500 km
 - Target Acquisition, Classification / Discrimination, Track
- **UTTMD Fire Control**
 - THAAD Interceptor Commit, IFTU, TOM
 - Kill Assessment For Shoot-Look-Shoot Targeting
- **Enhancement To Lower Tier TBM Defense**
 - PATRIOT Cueing To Extend Defended Area
 - Performance In Jamming Environment
 - Improved Target Classification And Kill Assessment
- **Field Deployable UOE Radars Available For Contingency Operations**

TMD-GBR DESCRIPTION



Wideband Phased Array

Aperture = 9.2 m²

Transmitter = Solid-state

Field Of View = Electronic - FFOV

Detection Range = 1,000 km

Special Features

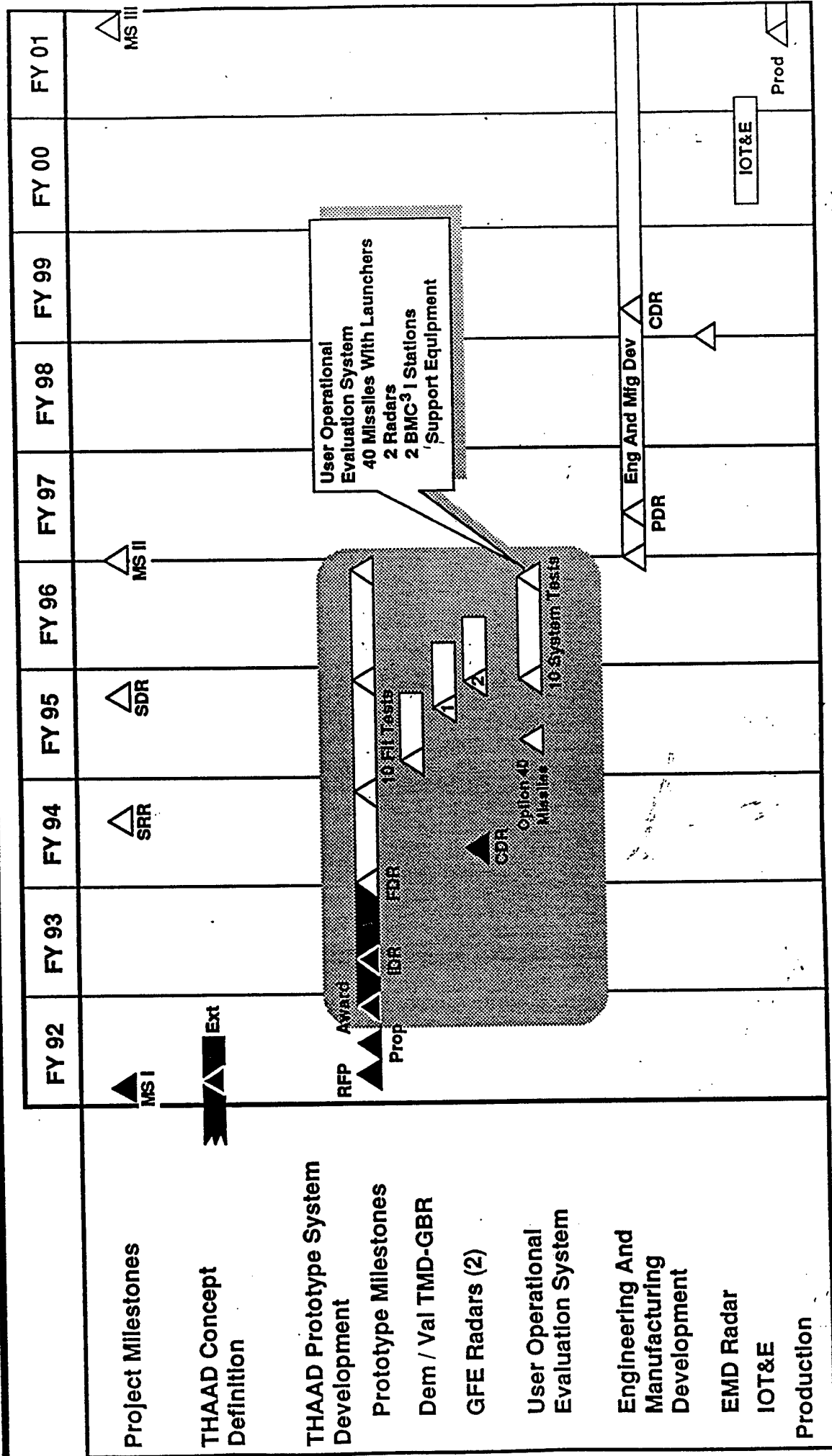
- Acquisition Plus Fire Control
- Transportable - C-130
- Flexible / Expandable Software

***Mobility Is A Major Asset For The
TMD-GBR System***

SOLID-STATE TMD RADARS

System	1992				1993				1994				1995				1996				1997			
	92	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
TMD Dem / Val																								
TMD UOE 1																								
TMD UOE 2																								

BASELINE SCHEDULE PROGRAM



SUMMARY

- Acquisition Programs Ongoing To Deliver Significant Near / Midterm Capabilities Prior To End Of Decade
 - PATRIOT PAC-3
 - Sea Based Area TMD
 - THAAD And TMD-GBR
- Leveraging Existing Capabilities To Field Cost-effective Improvements
- Adding New Defensive Capabilities
 - Wide Area
 - Intercept At Long Range
 - Provides High Level Of Protection
 - Centerpiece Of TMD Program

BALLISTIC MISSILE DEFENSE

Advance Planning Briefing To Industry

TMD C³ Program

BALLISTIC

MISSILE

DEFENSE

ORGANIZATION

February 1994

**Col Richard A. Ritter, USAF
System Integration Directorate
Theater Missile Defense Deputate
Ballistic Missile Defense Organization**

OUTLINE

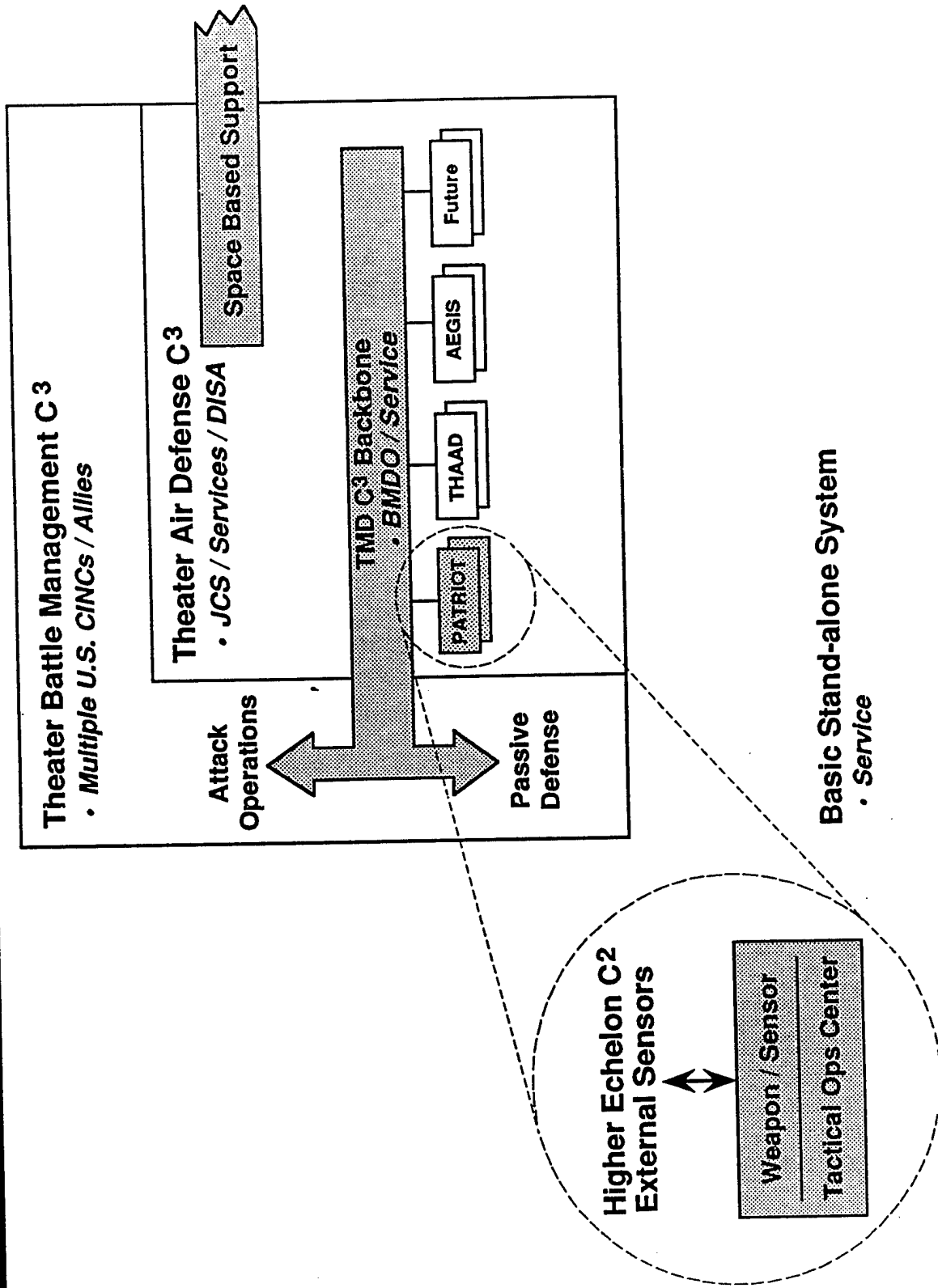


- **Architecture Guidelines**
- **Desert Storm Lessons Learned**
- **Three Phased Program**
 - **Launch Warning And Dissemination**
 - **Communications Interoperability**
 - **Command And Control Center Upgrades**
- **Allied Interoperability Initiatives**
- **Summary**

TMD C3 I ARCHITECTURE GUIDELINES

- **Theater Missile Defense (TMD) Is An Extension Of Tactical Air Defense**
- **TMD C3 Must Integrate With And Capitalize On Existing Heavy Service Investment In Air Defense C3**
- **Assets For Timely Warning And Cueing Include Space, Air, Ground, And Sea Based Surveillance**
- **The BMD Information Architecture Provides An Overarching BMD Systems Framework**
- **TMD Evolution Supports Open Architecture**
- **Service / Joint / Allied Interoperability Is Critical**

FUNCTIONAL RELATIONSHIP



OUTLINE

- Architecture Guidelines
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DESERT STORM C³I LESSONS LEARNED

C³I Issues	Shortfalls
Space Based Warning And Dissemination	→ Timely Delivery Of EWS Data
Satellite Communication Channel Availability And Capacity	→ Limited SATCOM Assets
Communication Systems Compatibility And Capacity	→ Interoperability
Communications Security	→ Interoperability
C³I Infrastructure	→ C² Planning And Operations
Training / Exercises	→ C² Planning And Operations

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THREE PHASED TMD C³ PROGRAM

- **Launch Warning And Dissemination**
 - Improved Accuracy And Time Lines
 - Near Term Focus
- **Communications Interoperability**
 - Interface Standards
 - Joint Surveillance Net
 - UOES Focus
- **Command Control Center Upgrades**
 - Develop Information Architecture
 - Objective System Focus

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SPACE BASED DATA INTEGRATION STRATEGY

Near Term

- **Provide The War Fighter A Near Real Time Space Based Data Capability**
 - **TALON Shield**
 - **JTAGS**
- **Integrate Space Based Data Into Existing Satellite Networks**
 - **TIBS / TRAP**

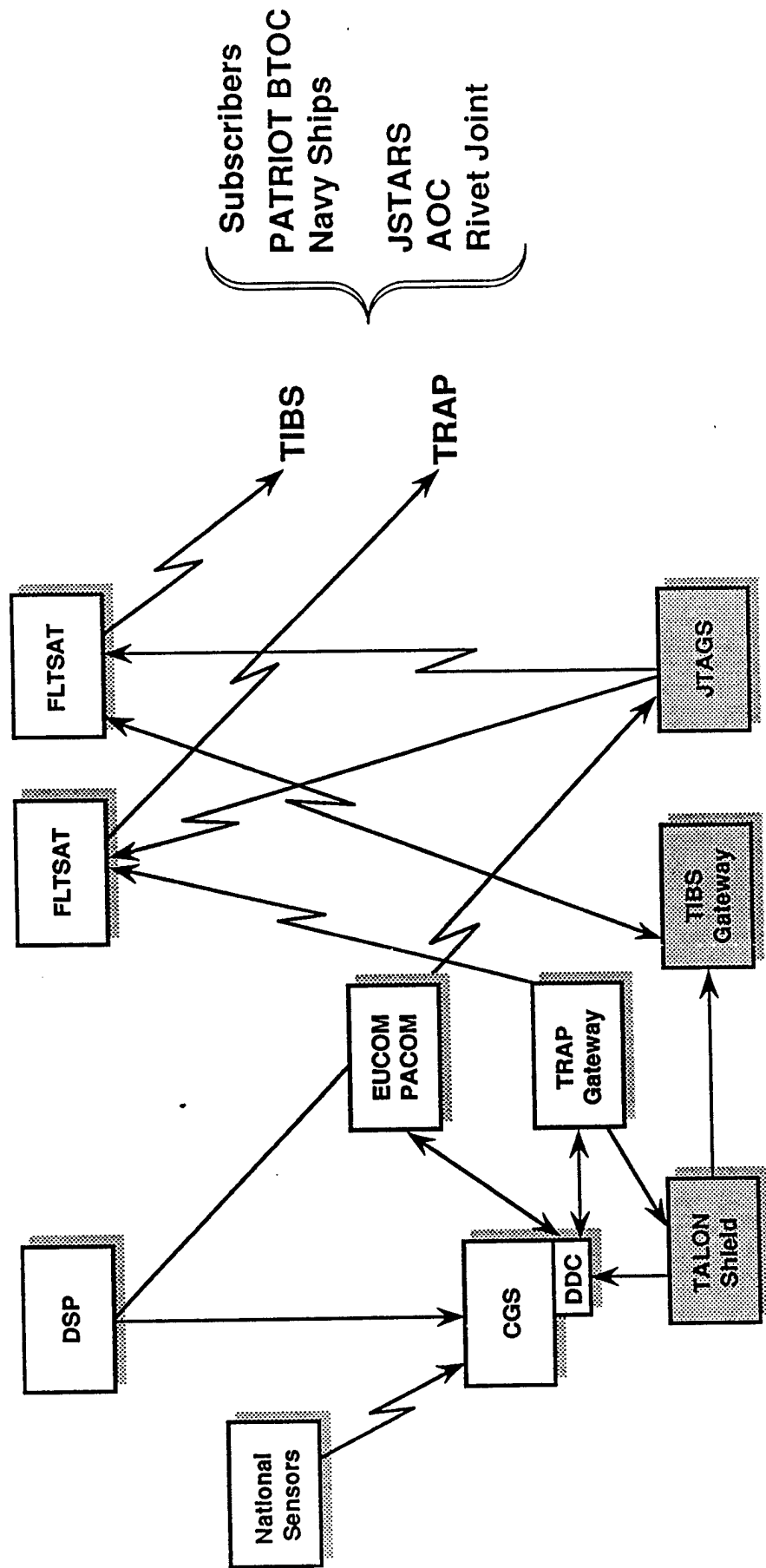
Far Term

- **Plan For Evolution To Brilliant Eyes**
- **Enhanced Communications Capability**

TALON SHIELD / JTAGS PROCESSING ENHANCEMENTS FOR TMD

- **Increased Revisit Rates**
 - **Faster Track Formation And Reporting**
 - **Reduced Burnout Ambiguity Error**
 - **Improved Impact Point Prediction**
- **Multiple Viewing Angles**
 - **Enables "Triangulation" For 3-D Track Formation**
 - **Improved Trajectory Estimates**
 - **Improved Impact Point And Launch Point Estimates**
- **Reduced Thresholds**
 - **Process More Data Within Limited Areas**
 - **Focus On Adjacent Returns On Multiple Satellites**
 - **Faster Track Formation On Dimmer Targets**

SPACE BASED DETECTION / TRACKING NEAR TERM



 New Capability

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**LAUNCH WARNING AND
DISSEMINATION**

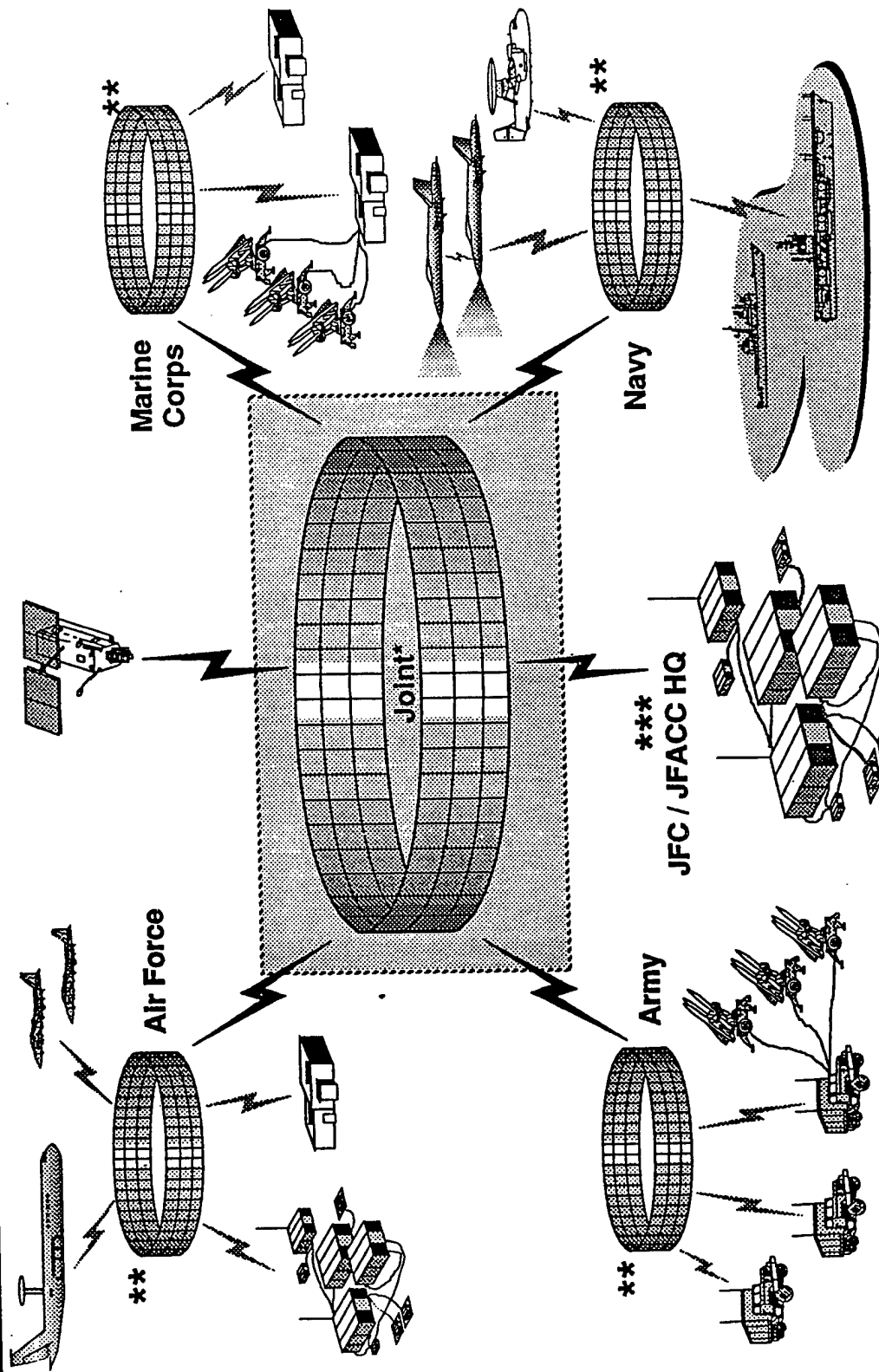
Section	FY 93				FY 94				FY 95				FY 96				FY 97				FY 98			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Processing	▲ JTACS Prototype (2) ▲ JTACS EMD (2) ▲ TALON Shield Demo ▲ TALON Shield ▲ IOC ▲ JTACS (5) ▲																							
Dissemination	TIBS Gateway ▲ ▲ Initial TRAP / TIBS TBM Message ▲ TADIL J ICP Approval ▲ TIBS Message Set Complete ▲ TRAP Message Set Complete																							
Experiments / Exercises	JTAGS TPS-59 / PATRIOT Cue Ormate Impact ▲ Optic Cobra ▲ CINC Experiments JTAGS TPS-59 / MPQ-53 Cue Demo ▲ ▲ AEGIS Extended Track / Control Exp CENTCOM EUR PACOM																							

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**NOTIONAL JOINT TMD
NETWORK STRUCTURE**



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TMD NETWORK REQUIREMENTS

Guidelines	Data Requirements
• Integrate With Air Defense • Minimum Impact On Air Defense Capabilities • Interoperable With Services / Allies • Permit Future Growth • Should Support Weapons Precommit • Space And Surface Based Cues Are Interchangeable	• Cueing - State Vectors • Launch Point • Impact Point • Kill Assessment • Engagement Status • C² Coordination Functions

JTIDS / Link 16 Potential Candidate

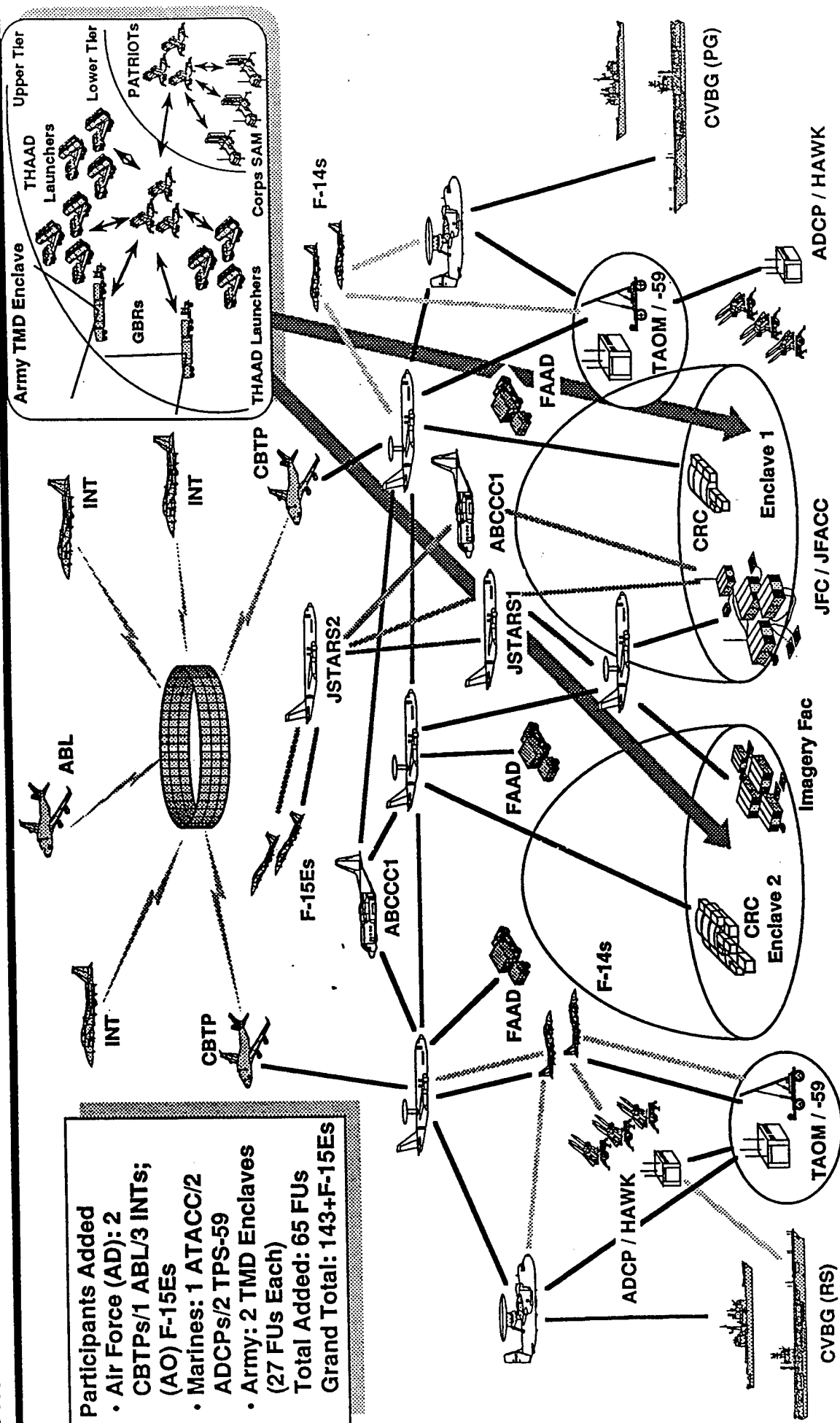
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SWA NETWORK TMD PARTICIPANTS ADDED

Participants Added

- Air Force (AD): 2
CBTPs/1 ABL/3 INTs;
(AO) F-15Es
- Marines: 1 ATACC/2
ADCPs/2 TPS-59
- Army: 2 TMD Enclaves
(27 FUs Each)

Total Added: 65 FUs
Grand Total: 143+F-15Es



JTIDS / TADIL-J STUDY CONCLUSIONS

- **Survivability**
 - No Critical Nodes
 - Robust Antijam
- **Interoperability**
 - DoD Joint Service Standard
 - NATO Standard
 - Interfaces With Counterforce
- **Capacity**
 - Supports TBMD High Data Rate Requirement With Minimal Impact On Air Defense
 - Throughput Far Surpasses Other Tactical Data Links

JTIDS / Link 16, The TMD C³ Medium

BMD MESSAGE SET DEVELOPMENT STATUS

- NOV 92 - Joint BMDO / DoD / Service Working Group Chartered
- JUN 93 - Initial Data Requirements Completed
- JUN 93 - Concept Briefed NATO Allied Data Systems Interoperability Agency
- NOV 93 - Draft Message Standard Completed For Service Coordination
- FEB 94 - U.S. TADIL Standard Approved
- FEB 94 - Formal Submission For NATO Approval
- NOV 94 - NATO Review Board

APPROVED TADIL-J INTERFACE CHANGE PROPOSAL

Established

- Standard DoD Ballistic Missile Messages
 - Launch And Impact Point
 - Missile State Vector And Covariance Matrix
- Transmit / Receive Rules
- Reporting Responsibility Rules
- Track Quality Scheme
- Use Of Cartesian Coordinates For Missile Tracks
- WGS-84 Earth Center Fixed Geodetic Reference

TMD IN-THEATER CONNECTIVITY

The diagram illustrates the JTIDS Joint Network architecture, showing the integration of various military components across four main branches: Air Force, Navy, Army, and Marine.

- Air Force:** The central hub is the **CRC/MCE Fusion Center**. It is connected to **AOC** (Air Operations Center), **BPI** (Battle Positioning Information), **ADTOC** (Air Defense Tasking Operations Center), **TAOM** (Target Area Operations Module), **AWACS ABCCC JSTARS** (Air Warning and Control System, Air Battle Command and Control, Joint Surveillance Targeting Radar), **CTOC** (Command and Tasking Operations Center), **TPS-75** (Targeting and Positioning System-75), **Other Sensors**, and **TRAP/TIBS** (Targeting and Positioning System-75).
- Navy:** The central hub is the **FAAWC CIC** (Fleet Area Air Warfare Center Command and Control). It is connected to **JFC / JFACC (Afloat)** (Joint Force Command / Joint Fleet Air Command), **Sea Based TBM** (Sea Based Targeting and Battle Management), **Other Sensor**, **ACDS** (Air Command and Decision Support System), **AEGIS** (Advanced Gun Battle Management System), **E2** (Electronic Intelligence), **TRAP/TIBS**, and **FAAWC CIC**.
- Army:** The central hub is the **ADA Brigade (TOC)** (Air Defense Artillery Brigade Tasking Operations Center). It is connected to **CRC** (Command and Control), **TRAP/TIBS**, **Theater Sensor**, **Battalion Task Force TOC** (Battalion Task Force Tasking Operations Center), **CTT-H** (Command and Tasking Operations Center - High), **THAAD Battery (TOC)** (Terminal High Altitude Area Defense Battery Tasking Operations Center), **CTT-H**, and **GBR** (Ground Battle Radar).
- Marine:** The central hub is the **TAOM** (Target Area Operations Module). It is connected to **CRC**, **TRAP/TIBS**, **TPS-59** (Targeting and Positioning System-59), **ADCPC** (Air Defense Command and Control), and **Hawk** (Air Defense Artillery).

The **JTIDS Joint Network** is represented by a central globe icon, which connects all the components across the different branches, enabling joint operations and information sharing.

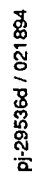
COMMUNICATIONS INTEROPERABILITY

Section	FY 93				FY 94				FY 95				FY 96				FY 97				FY 98			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Program Milestones	THAAD Bid 3 THAAD Bid 4 TPS-59 UOES PATRIOT Bid 4 PATRIOT Bid 4.5 AEGIS CDS Blk 1 / Mod 5 TMD / GBR UOES																							
	Marine ADCP																							
	Data Link Study TADS / J ICP NATO Briefing Concept U.S. Approval Formal NATO Submit NATO Approval Multi-TADIL Standards TIBS / TRAP Updates																							
	Integration Test																							

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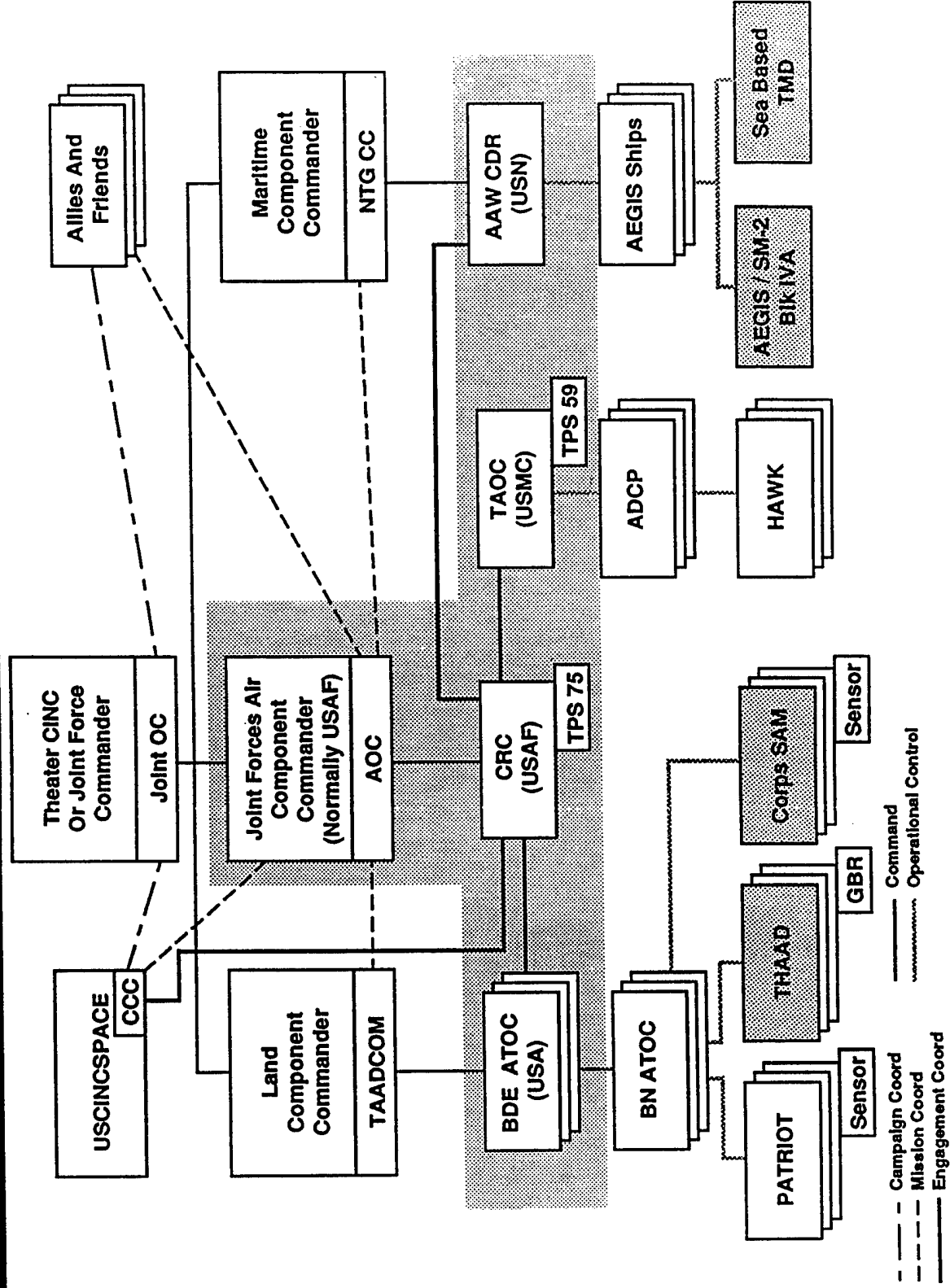
TBMD COMMAND AND CONTROL STRUCTURE



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ORGANIZATION**

**TBMD COMMAND AND CONTROL
STRUCTURE**



TMD INFORMATION ARCHITECTURE

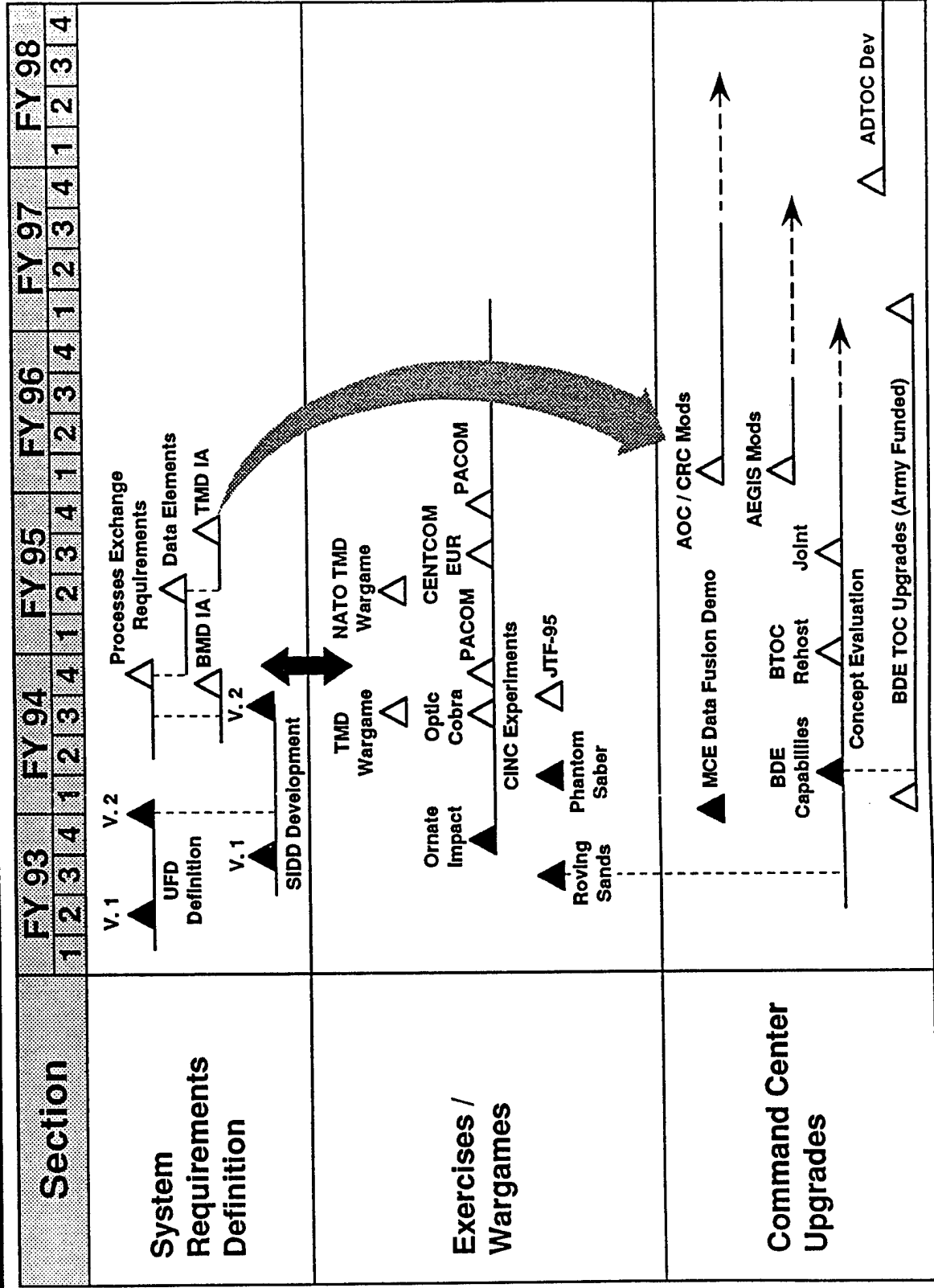
- Identifies The Essential Elements Of Information Needed To Accomplish The TMD Mission
 - Who
 - What
 - When
- Identifies Rules For Handling Information
- Captures The Dynamic Behavior Of The System
- Identifies Required External Interfaces

**The TMD Information Architecture Is
The Common Framework For
Operator - Developer Coordination**

TMD WARGAME PURPOSE

- **Begin To Exercise TMD C³ I Within Existing Doctrine**
- **For May 1994 Wargame**
 - **Exercise TMD Portion Of The Joint TMD C² Structure**
 - **Emphasize The Preplanning Aspect Of The Joint Responsibility**
 - **Use Existing**
 - **Service Concepts / Doctrine**
 - **Service Tools**
 - **Service Participants**

COMMAND CONTROL CENTER UPGRADES



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ALLIED INTEROPERABILITY INITIATIVES

- **NATO**
 - **Actively Engaged**
 - **Allied Data Standards Interoperability Agency**
 - **NATO RSG - 16**
 - **Extended Air Defense MOA (Germany)**
- **Israel**
 - **THAAD / Arrow Interoperability Initiatives**
- **Other Nations**
 - **National Disclosure Policy Issues**
 - **Secure Communications Policies**
 - **Working With JCS / NSA And Others To Resolve**

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TMD C³ SUMMARY

- Integration Strategy Provides The Forum To Implement Change
- Architecture Capitalizes On Existing And Planned Air Defense C³ Structure
- Integrates Space Based Warning And Cueing
- Provides Warfighting CINC A C³ Capability With The Flexibility For A Wide Range Of TBM Scenarios And Deployments

BALLISTIC MISSILE DEFENSE

Advance Planning Briefing For Industry

FY 95 Technology Program

BALLISTIC *MISSILE* *DEFENSE* ORGANIZATION

1-2 MAR 94

**Col Gary Payton, USAF
Deputy For Technology
Ballistic Missile Defense Organization**

BMD ADVANCED TECHNOLOGY PROGRAM

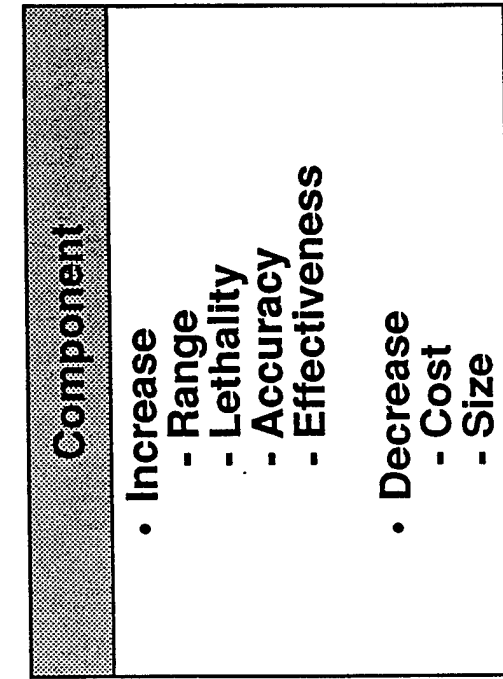
Why ?

- **Direct Applicability To Future TMD And NMD Options**
- **Focuses On Critical Technologies For Improvements In Capability And Affordability**
- **Needed To Prepare Future Responses To Straightforward Countermeasures**

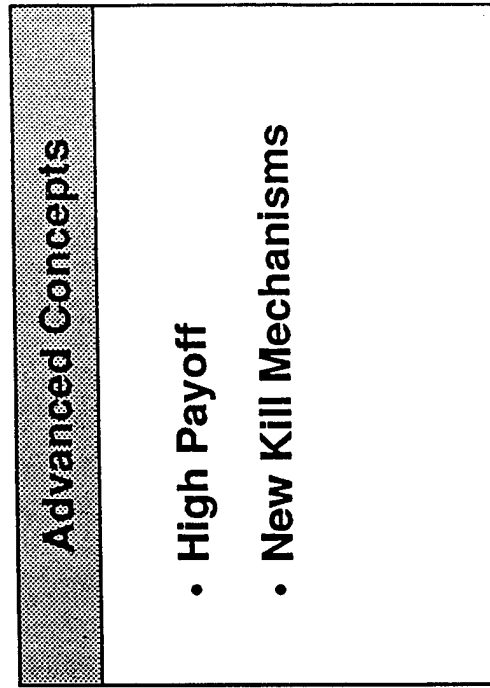
**Essential To Maintain Viable Architecture
For Future Mission Needs**

TECHNOLOGY PROGRAM

Two Categories



TMD And NMD



Future
BMD Requirements

TECHNOLOGY PRODUCTS

- **Component Technologies**
 - **NMD Readiness**
 - **Next Generation TMD**
- **KE Boost Phase Intercept**
 - **Interceptor KV And Kick Stage**
 - **Off Board Sensor**
 - **Integrated Demo**
- **DE Ballistic Missile Defense**
 - **High Energy Laser**
 - **Integration Of Laser And Optics**
 - **Demonstration Of ATP**
 - **System Level Demo On Ground**

RESEARCH / EXPLORATORY DEVELOPMENT

- **Innovative Science And Technology**
 - **Research And Exploratory Development Targeting Breakthrough Technologies For Ballistic Missile Defense**
 - **Core R&D Program In Sensing, Directed / Kinetic Energy, Materials, Propulsion, Power, And Information Processing**
 - **\$60M / Year FY 95-99; Approximately 300 Small Contracts**
- **Small Business Innovative Research (SBIR)**
 - **Mandated Percentage Of Extramural R&D**
 - **Approximately \$50M / Year FY 95-99**
 - **Results: 30% Commercialized By Phase II Completion, 75% Useful BMD Products**
- **Technical Applications: Robust Tech Transfer / Commercialization Program**

COMPONENT TECHNOLOGY

- **Sensors**
 - Focal Plane Arrays - Sensitivity; Low Noise
 - Cryocoolers - Low Vibration; 10 Year Life
 - Optics - Rad Tolerant; Contamination Control
 - Signal Processing - A / D Converters; Neural Net
 - Laser Radar - Accuracy; Discrimination
 - RF Radars - Lightweight; Adaptive Array

- **Interceptors**
 - Seeker - LWIR For Cold Targets
 - Laser Radar - Lightweight; Discrimination
 - Gel Propellants - Munitions Insensitive

COMPONENT TECHNOLOGY (Cont'd)

- **Phenomenology And Discrimination**
 - **MSX - 0.1 - 26 μ**
 - **Cold Body Signatures**
 - **Warm Body Tracking BTH**
 - **Space, Atmosphere And Earth Backgrounds**
 - **X-band Signatures**
 - **HALO And SLBD - MWIR Signatures**
 - **Algorithms And Codes**
- **Survivability**
 - **ARM Countermeasures Testing**
 - **SAPs**
 - **Laser Experiments**

BOOST PHASE INTERCEPT

- **KE Boost Phase Intercept**
 - **1998 Demonstration - Residual Operational Capability**
 - **Interceptor - Compatible With Both USN And USAF Aircraft**
 - **Off Board Sensor - Optical / Radar**
 - **Operations Analysis - USAF And USN**
 - **RAPTOR - Transferring To DARO Potential Tier II + Synergy**

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ORGANIZATION**

DIRECTED ENERGY

- **Chemical Laser**
 - **Alpha LAMP Integration**
 - **Advanced Technology**
- **Acquisition, Tracking, And Pointing**
 - **Plume / Hard Body Hand Over**
 - **High Altitude Balloon Experiment - Synergy With
TMD And KE BPI**



BMDO

Advanced Briefing For Industry

"Issues Affecting Army BMD Support"

**BG Richard A. Black
PEO Missile Defense**

1 March 1994

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DEFENSE GUIDANCE

- Congressional
 - Highest Priority On Theater Missile Defense
 - Second Priority On ABM Treaty Compliant Limited Defense System (LDS)
 - Reduce Cost And Lead-time To Field
 - Streamline Acquisition Process
- Department Of Defense (Bottom-up Review)
 - Develop A Robust Theater Missile Defense Program
 - Develop A Limited National Missile Defense Technology Readiness Program With System Focus

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PEO MISSILE DEFENSE GOALS

TMD – To Develop, Acquire, And Field Cost Effective And Operationally Effective Theater Missile Defense Systems At The Earliest Date Consistent With Availability Of Technology At An Acceptable Risk

NMD – To Conduct A Series Of Three Year Technology Readiness Demonstrations, To Preserve And Mature The Technology Base, And To Increase The Capability To Deploy A System If A Decision Is Made

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ARMY MISSILE DEFENSE PROGRAM STRATEGY

- Focus On Robust TMD System
 - PAC-3
 - THAAD
 - CORPS SAM
- Maintain A System Focused NMD Technology Readiness Program
 - With The Option To Deploy

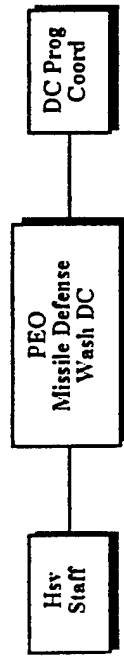
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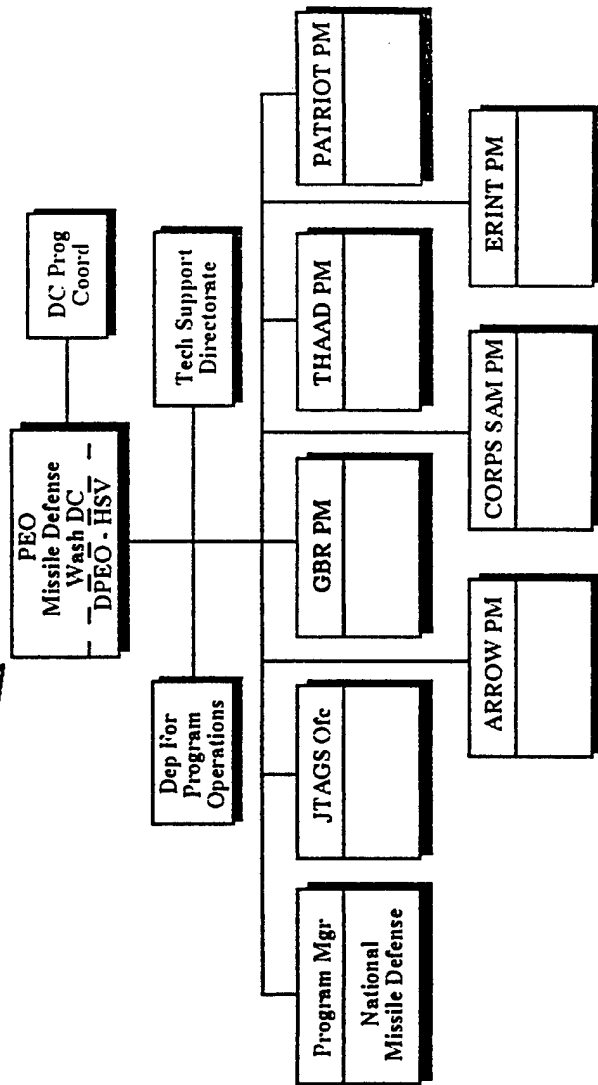


PEO MISSILE DEFENSE STRUCTURE

Current Structure



Proposed Restructure





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CHALLENGES

- *"Integration, Integration, And Integration"*
 - PAC-3 Missile • NMD TRP
 - THAAD/GBR • NMD/TMD
 - PATRIOT/THAAD • BM/C³I
 - National, Joint, And Allied Assets
- Provide THAAD/GBR UOES By FY97
- Maintain CORPS SAM As A Viable Advanced Capability
- Resolve NMD Technology Long Poles
- Develop International Cooperative Opportunities

**Provide The Soldier In The Field With The Means To Defeat
A Technologically Advanced And Diverse Missile Threat**

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ACCOMPLISHMENTS

- THAAD/Final Design Review; Wind Tunnel/Sled Tests
- GBR Critical Design Reviews For DEM/VAL And UOES Units
- ARROW Flight Tests/Design Reviews
- PATRIOT Multimode Seeker Demos
- ERINT Flight Tests
- PAC-3 Missile Downselect
- CORPS SAM Requirements Definition
- TSD Operations/TSDE Testing (JTAGS)

**Reprioritized/Restructured Programs In Response
To Bottom Up Review/Congressional Actions**

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MY MESSAGE

The Army And The PEO Missile Defense

- Are Responding To The Threat
- Are Responding To Congressional Direction
- Have A Sound Working Program Strategy
- That Program Strategy Requires Four Elements
 - PATRIOT PAC-3
 - THAAD
 - CORPS SAM
 - NMD Technology Readiness Program

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BALLISTIC MISSILE DEFENSE

Advanced Planning Brief For Industry BMD BM/C3

BALLISTIC *MISSILE* *DEFENSE* ORGANIZATION

2 MAR 94

**Col George W. Criss, USAF
Acting Director, BM / C3 Directorate
Ballistic Missile Defense Organization**

BMD BM/C³ CHALLENGES

- BMD Is An Evolving Capability Which Must Interoperate With Other Existing Systems
 - JFACC Structure Exists - - But Is Not Adequate
 - The Mountain Exists - - But NMD C²E Does Not
 - Must Treat TMD And NMD Holistically
- Many DoD Software Intensive Programs Are Late, Over Budget And Short Of Performance Objectives
- Commercial Software Development Times Are Shorter And Success Is More Prevalent - - Plan For COTS And Commercial Techniques Migration

**BM/C³ Development Strategy Must Be Built
On Lessons Learned From Previous DoD
And Commercial Programs**

BMDO SHOULD HEED RECOMMENDATIONS OF RECENT DISTINGUISHED PANELS

- "Exploit Commercially Available And Emerging Information Systems Technology To Sustain Dominance Of The Battle Field In A Joint Environment
 - Develop An AF Enterprise Information Architecture"

*Air Force 1993 SAB Summer Study,
"Information Architecture"*
- "DoD Lacks A Comprehensive Tactical Warfare System Information Architecture"
- "Tactical Warfare Systems Information Architecture
 - Establish Standard For Information Architecture Now
 - Develop End-to-end Plan To Implement Architecture
 - Exploit Commercial Standards, Products, And Practices"

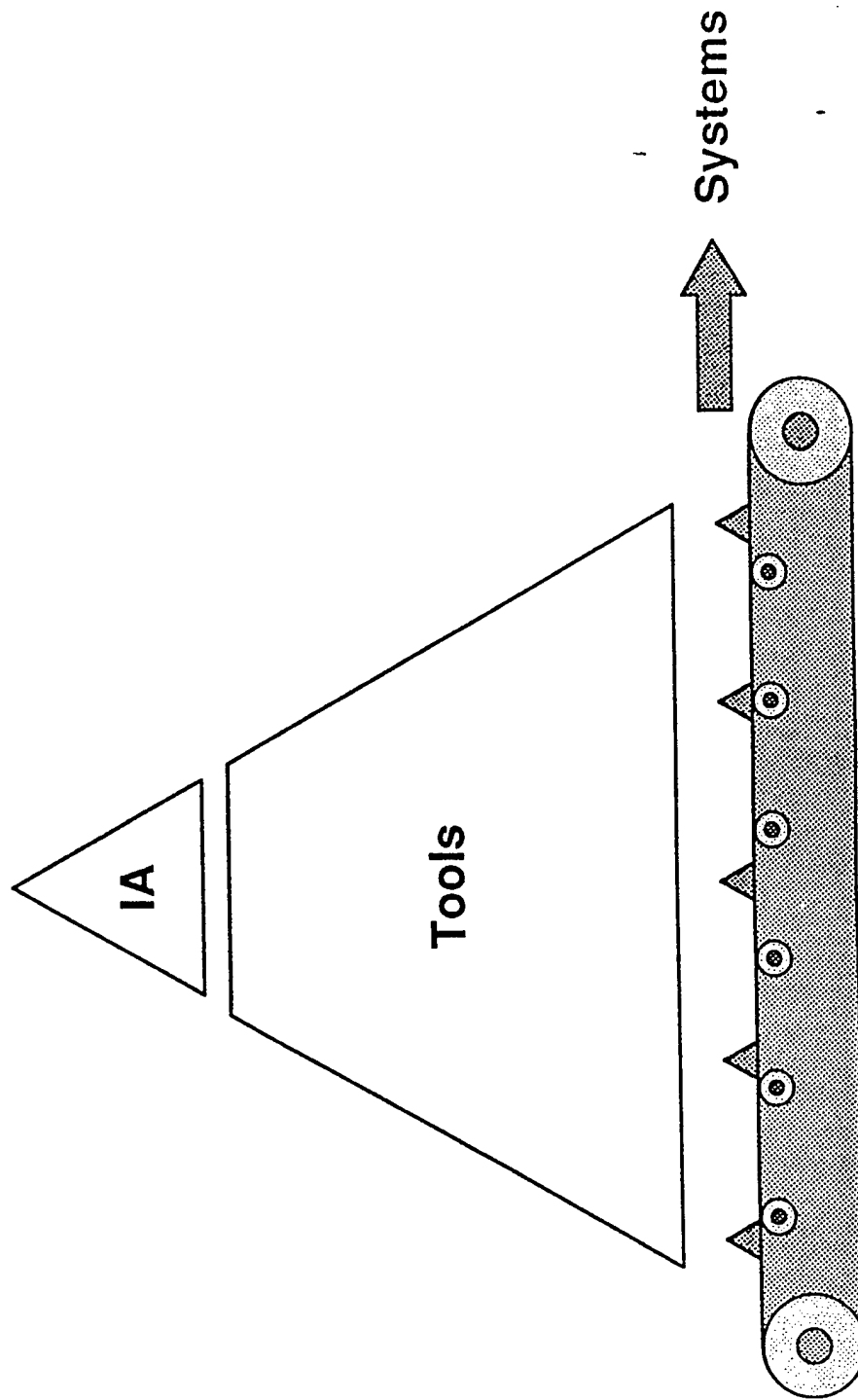
*Defense Science Board Task Force
On Tactical Air Warfare, 1993*

BMD BM/C³ PROCESS TENETS

- Build On Lessons Learned From Previous DoD And Commercial Programs
Must Have
- Robust Information Architecture
That Embraces
- Build A Little . . . Test A Lot Philosophy
And
- Support Legacy And COTS Reuse

INFORMATION ARCHITECTURE

What Do We Mean Today ?

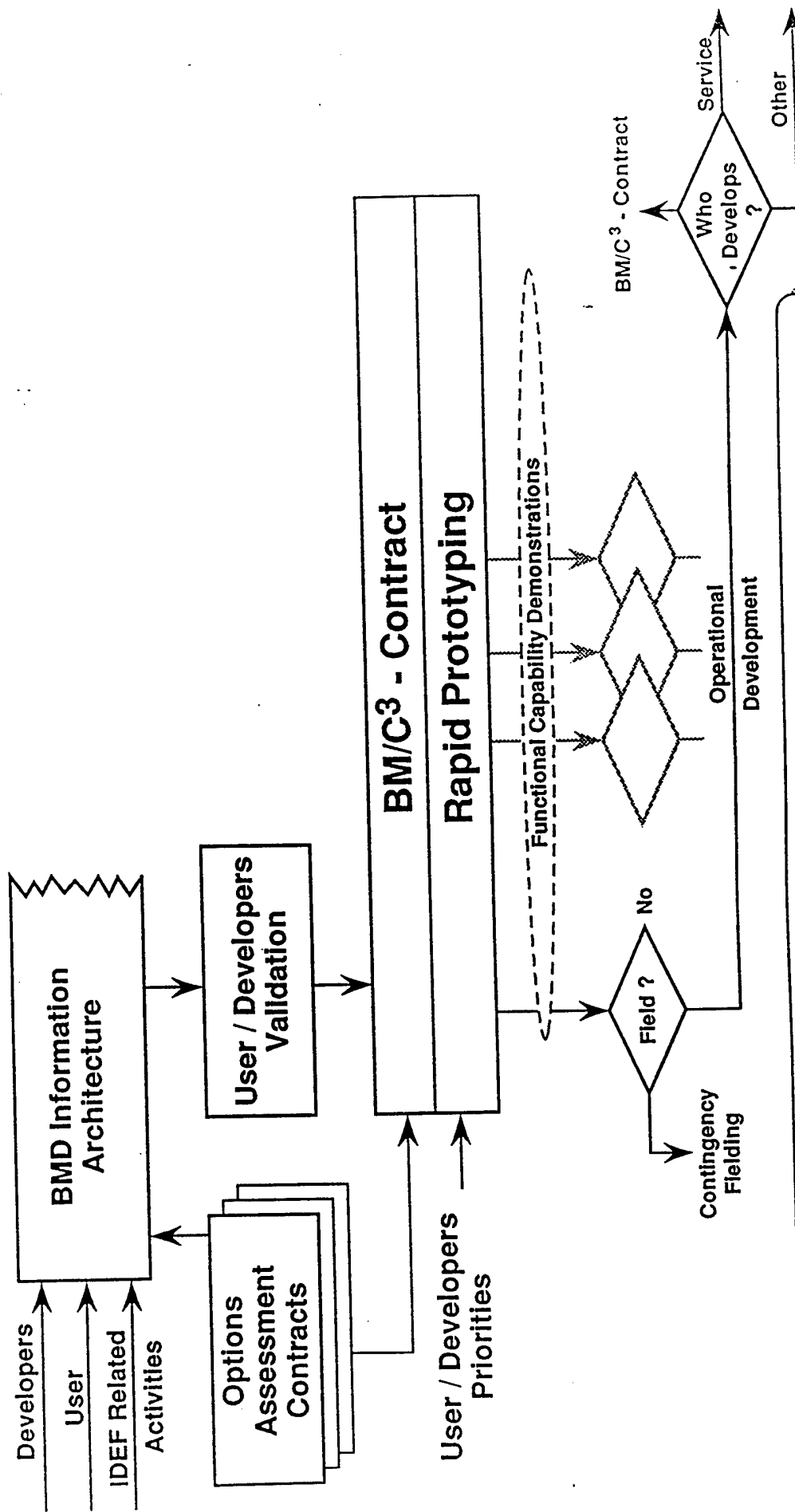


INFORMATION ARCHITECTURE SYNTHESIZED METHODOLOGY

- IDEF Process
 - Relies Heavily On Functional Representation
 - Excellent Related Work By AFACC / DRI; Growing DoD / NATO Use
 - User Familiarity
- Object Modeling Technique
 - Object Oriented
 - Leading Edge Of Commercial Activities
 - Options Assessment Contractors And Services Have Refined And Enhanced Methodology To Address BMD Needs
 - Captures Dynamic Behavior

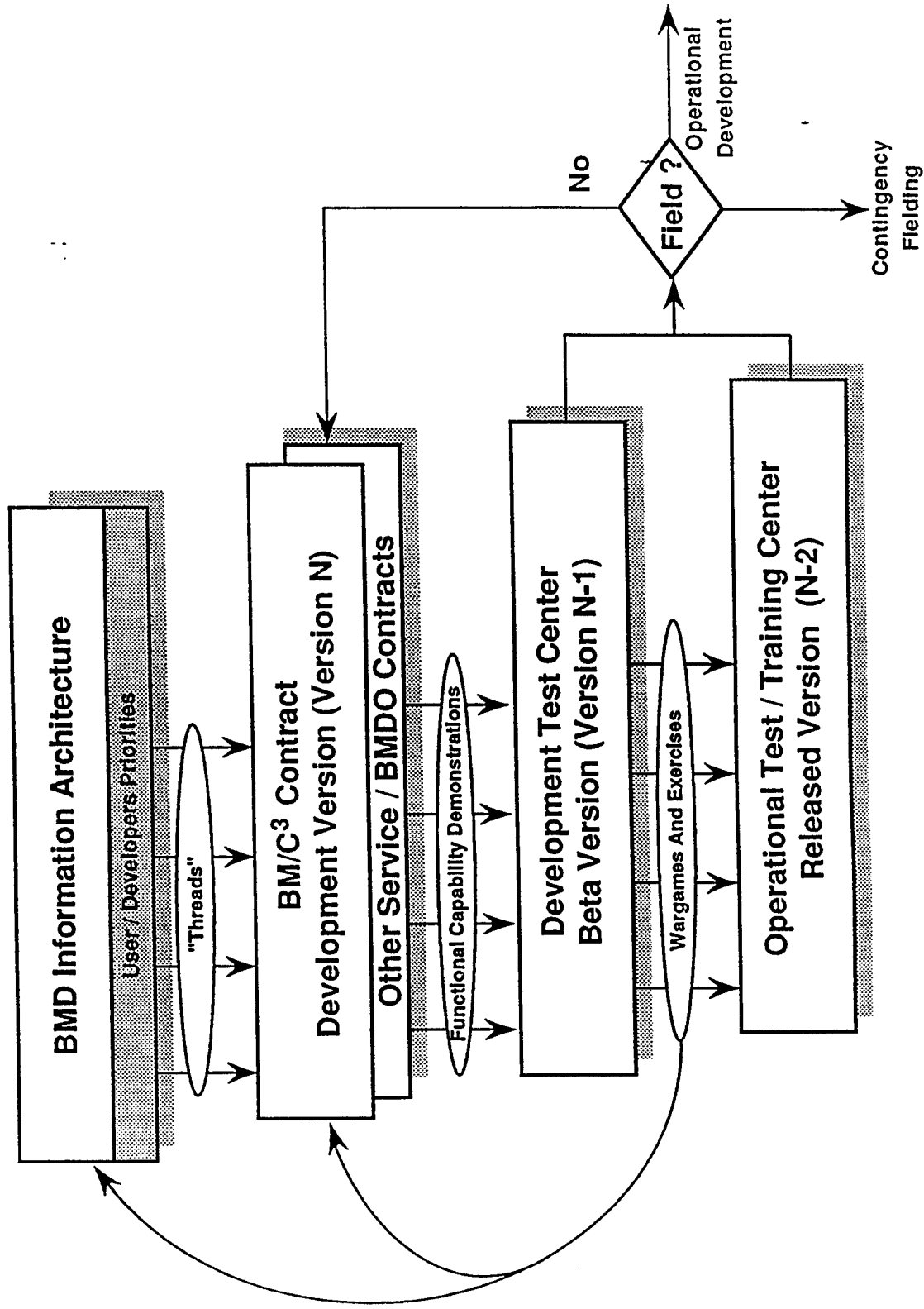
**BMD Information Architecture
Employs Strengths Of Each Methodology**

BMD BM/C³ VISION



Key To Success - Information Architecture Based Rapid Prototyping

INFORMATION ARCHITECTURE BASED RAPID PROTOTYPING



BM/C³ DEVELOPMENT APPROACH

Information Architecture - Prototyping - Incremental Development Commercial Products / Standards

- Accommodates Changing And Evolving Requirements
- Permits System To Be Built And Deployed Incrementally
- Provides Valuable Insight For Reuse Of Legacy Articles
- Provides Focus To Insert New Technologies
- Encourages Innovation, Stimulates And Motivates Developers

The Validity Of The BM/C³
Development Approach Has Been Confirmed

SUMMARY

- BMD IA Team And Schedule In Coordination
- IA Methodology Agreed Upon
- New BM / C3 Contract In Work
- IA Process Supports The Warfighters And Developers

NTF RECOMPETE STATUS BRIEFING



Colonel William Criss
BMDO/GSS

Vision of Future NTF Services

- Integrated Gaming and Exercise Hub
- DoD/AF Simulation Center
- DoD State-of-the-Art Computer Applications Center
- DoD Industrial and Academic Computation Resource Center
- Space Applications Test and Support
- System Level Integration and Test of Mission and Support Software
- BM/C3 System Interoperability Testing
- Support to Theater CINCs

Operations and Maintenance Contract

- O&M of facility, all Common Support System (CSS), H/W, S/W, and communications
- Transition R&D products into infrastructure
- Integration and installation
- Security
- New customer support
- Work closely with R&D contractor
- Contract: Cost Plus Award Fee
 - Phase-in 1 Dec 94 - 31 Jan 95
 - Basic period 1 Feb 95 - 31 Jan 96
 - 4 one year priced options 1 Feb 96 - 31 Jan 00
 - ~ \$20-60M annually

Research and Development Contract

- Continued BMD Prime Mission Product (PMP) development and maintenance
- Model and simulation development
- Transition R&D products into CSS
- Experimental/Analysis efforts
- New customer work
- Work closely with O&M contractor

- R&D - Indefinite quantity , Cost Plus Award Fee
 - Phase-In 1 Dec 94 - 31 Jan 95
 - Basic 1 Feb 95 - 31 Jan 00
 - 1 two year priced option 1 Feb 00 - 31 Jan 02
 - ~ \$7.5-75M annually

Source Selection Process

- Bidders Library opened 20 Sept 93 and will continue to evolve
- Two RFPs released simultaneously on 28 Feb 94
- Proposals due on 29 April 94
- Proposals evaluated thru mid Oct 94
 - CRs/DRs could be requested
- Contract Award: on/about 1 Nov 94
- Phase-in preparation time: 15 Nov - 1 Dec 94
- Phase-in Period 1 Dec 94 - 31 Jan 95
- Contract Performance begins 1 Feb 95

BALLISTIC MISSILE DEFENSE

Advance Planning Briefing For Industry

Contract Opportunities

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2 MAR 94

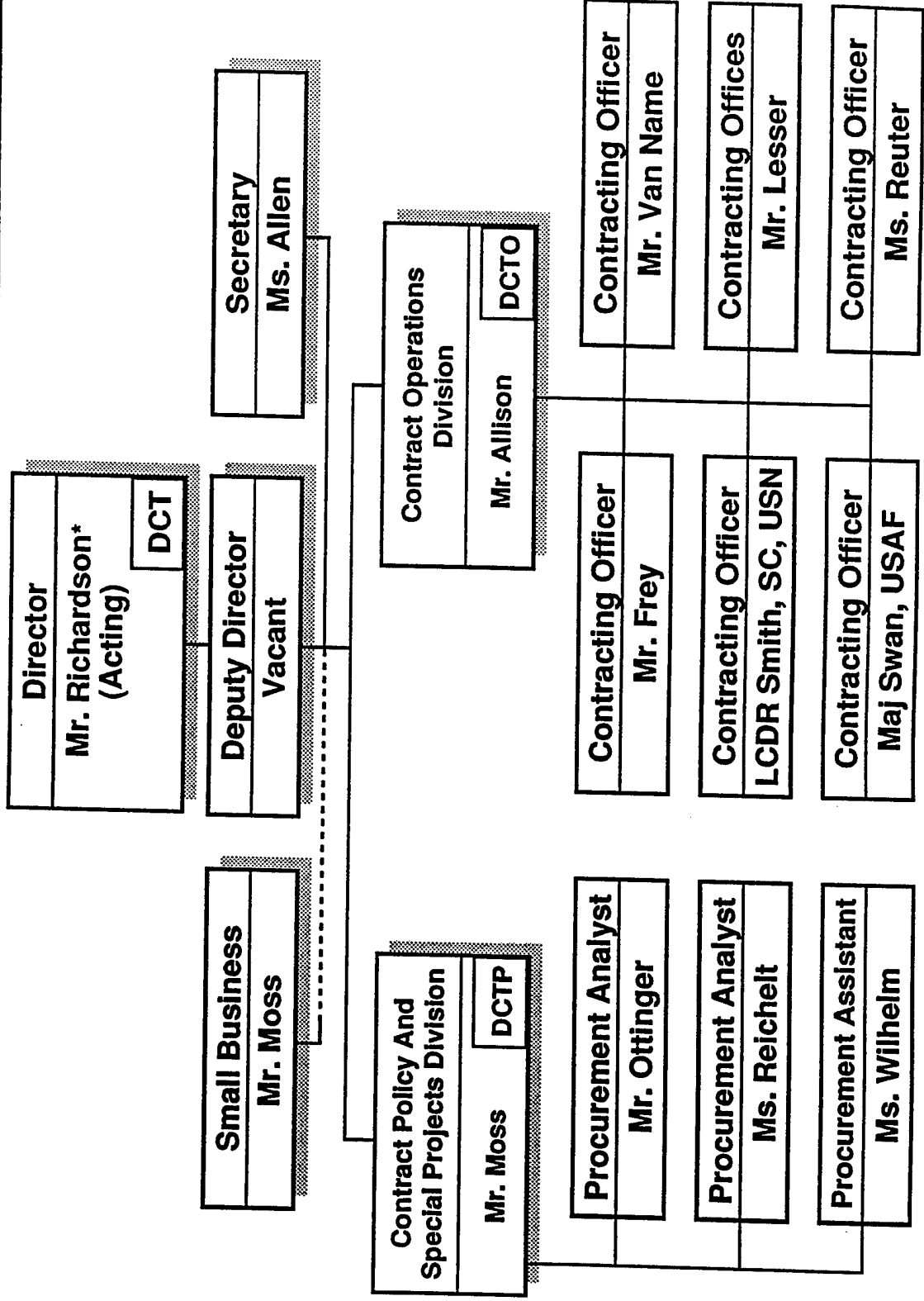
Mr. Barry Richardson
Director Of Contracts (Acting)
Ballistic Missile Defense Organization

PURPOSE

- **To Provide Background And Information On BMDO Contracting**
 - **Organization**
 - **Historical Perspective**
 - **Where Do Our Contracting Dollars Go ?**
 - **How Long Does It Take To Get Under Contract ?**
 - **New Business Opportunities**

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BMDO CONTRACTS DIRECTORATE



* BMDO Competition Advocate

COMPETITION FY 93

<u>Extent Of Competition</u>	<u># Actions</u>	<u>\$ Value</u>
Not Available For Competition	80	23.3M
Not Completed	169	110.5M
Follow-on To Competitive	8	35.1M
Competitive	383	484.5M

Percentage Competitive FY 93 - 82.5%

SMALL BUSINESS GOALS FY 93

	Goal	Achieved
Small Business Prime Contract Awards	\$83.4M (13.7%)	\$99.5M (16.3%)
Small Business Set-Asides	\$9.1M (1.5%)	\$11.9M (2.0%)
Small Disadvantaged Business And 8(a) Awards	\$30.4M (5%)	\$36.5M (6.0%)
Woman Owned Business	\$5.5M (0.9%)	\$7.7M (1.3%)

TYPE OF BUSINESS

FY 93 OBLIGATIONS

[\$ Million]

LARGE BUSINESS	\$509.3	(77.9%)
SMALL BUSINESS	63.0	(9.6%)
SMALL DISADVANTAGED BUSINESS ..	36.5	(5.6%)
EDUCATION	18.3	(2.8%)
NON-PROFIT	14.8	(2.3%)
FOREIGN	11.5	(1.8%)
	\$653.4	

FOREIGN CONTRACTS

Number of Contracts		\$ Obligated FY 93	Contract Value
United Kingdom	10	\$6.31M	\$50.20
Israel	3	\$4.35M	\$ 6.26
Germany	1	.92M	\$64.40 *
Japan	1	0M	3.41 *
Totals	15 Contracts	\$11.58M	\$124.27

* Contract is now complete

BMDO MAJOR CONTRACTORS

FY 93 OBLIGATIONS

(\$ In Millions)

1. Martin Marietta *	203	6. Orbital Sciences **	32
2. TRW	77	7. Utah State	18
3. McDonnell Douglas	58	8. W.J. Schaeffer	16
4. TASC	51	9. Fairchild	16
5. BDM	44	10. Nichols Research	13

*Includes GE Aerospace

**Includes Space Data Corp

**BALLISTIC
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**BMDO PROCUREMENT LEAD TIME
(COMPETITIVE NEW AWARDS)**

From CBD Announcement To Award

Fiscal Year	Actions	Days
1989	20	215
1990	21	175
1991	16	174
1992	7	185
1993	14	191

BMDO CONTRACTING OPPORTUNITIES

Acquisition Title: Test And Evaluation Support

Contracting Office: BMDO

Type Of Action: New Contract, Small Business Set-aside

Planned Award Date: May 1994

Approx Est Value: \$20 - 30M

Description: Systems Engineering And Technical Services Support To The BMDO Test And Evaluation Directorate (BMDO/GST) For The Overall Headquarter Level Planning, Programming, Program Development, And Implementation And Monitoring Of Test Planning, Test Resources, And Test Evaluation Activities

RFP: HQ0006-94-R-0004

Points Of Contact: PCO - LCDR Dan Smith
(703) 693-1548

Program Manager - Lt Col Randall Clendening

BMDO CONTRACTING OPPORTUNITIES

ACQUISITION TITLE: CIVIL ENGINEERING TEST & EVAL SUPPORT

CONTRACTING OFFICE: BMDO

TYPE OF ACTION: NEW CONTRACT, SMALL BUSINESS SET-ASIDE

PLANNED AWARD DATE: JULY 95

APPROX EST VALUE: \$TBD

DESCRIPTION: PROVIDE TECHNICAL SUPPORT SERVICES TO BMDO CIVIL ENGINEERING DIVISION OF THE TEST AND EVALUATION DIRECTORATE IN MANAGEMENT OF FACILITIES ACQUISITION AND INTEGRATION. PERFORM TECHNICAL ANALYSIS AND REVIEW OF DOCUMENTS WHICH AFFECT FACILITIES MANAGEMENT AND ENVIRONMENTAL ENGINEERING. PERFORM RESEARCH AND ANALYSIS ON SPECIAL TOPICS. PROVIDE LOGISTICS SUPPORTS FOR CONFERENCES. PROVIDE FACILITIES BASING/SITING SUPPORT.

POINTS OF CONTACT: **PCO:** LCDR DAN SMITH
(703) 693-1561

PROGRAM MANAGER: MAJOR TRACY BAILEY

BMDO CONTRACTING OPPORTUNITIES

Acquisition Title: SETA Services

Contracting Office: BMDO

Type Of Action: Full And Open Competition

Planned Award Date: September 1994

Approx Est Value: \$TBD

Description: Technical Assessment And Acquisition Management Services For Deputy For Technology Readiness And BMDO General Support. Follow-on To Super SETA

RFP: HQ0006-94-R-0007

Points Of Contact: PCO - Mr. Peter Van Name
(703) 693-1547

Program Managers - Mr. Al Hemphill
Lt Col Efrem Strain

**BALLISTIC
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BMDO CONTRACTING OPPORTUNITIES

Acquisition Title: Architecture Integration Studies / Systems Analysis

Contracting Office: BMDO

Type Of Action: Full And Open Competition

Planned Award Date: August 1994

Approx Est Value: \$TBD

Description: Systems Analysis To Determine Performance And Cost Of Missile Defense Architecture Alternatives; Analysis Of Architecture And Design Development. Follow-on To Super SETA AIS Effort

RFP: HQ0006-94-R-0006 - SOW Being Revised

Points Of Contact: PCO - Ms. Karen Reuter
(703) 693-1561

Program Manager - Dr. Charles Infosino

BMDO CONTRACTING OPPORTUNITIES

Acquisition Title: Kinetic Energy Boost Phase Intercept Support

Contracting Office: BMDO

Type Of Action: Full And Open Competition

Planned Award Date: September 1994

Approx Est Value: \$TBD

Description: Technical Support Services To The BMDO Kinetic Energy Boost Phase Intercept Office

RFP: HQ0006-94-R-0005

Points Of Contact: PCO - Mr. Bob Frey
(703) 693-1560

Program Managers - Maj Michael Fisher
Lt Col Dale Tietz

BMDO CONTRACTING OPPORTUNITIES

ACQUISITION TITLE: BATTLE MANAGEMENT SYSTEMS ENGINEERING

CONTRACTING OFFICE: BMDO

TYPE OF ACTION: FULL AND OPEN COMPETITION

PLANNED AWARD DATE: 2ND QTR FY 95

APPROX EST VALUE: \$200-230M

DESCRIPTION: BMC³/SEI FOLLOW-ON

RFP: HQ0006-94-R-0009

POINTS OF CONTACT: PCO: PETER VAN NAME
(703) 693-1547

PROGRAM MANAGER: MAJOR JOHN MAHONEY

BMDO CONTRACTING OPPORTUNITIES

ACQUISITION TITLE: SETA SUPPORT FOR BMDO/DP

CONTRACTING OFFICE: BMDO

TYPE OF ACTION: 8(A) COMPETITIVE

PLANNED AWARD DATE: SEP 94

APPROX EST VALUE: \$40-\$50M

DESCRIPTION: CONSOLIDATE THE SUPPORT CURRENTLY PROVIDED UNDER THREE CONTRACTS. SUPPORT INCLUDES PROGRAM & CONTRACT ASSESSMENTS, FACILITIES MANAGEMENT, FINANCIAL & ACCOUNT MANAGEMENT AND OPERATIONS OF THE VPIC FOR THE BMDO DEPUTY FOR PROGRAM OPERATIONS.

RFP: HQ0006-94-R-0001

POINTS OF CONTACT: **PCO:** MAJOR JOHN SWAN
(703) 693-1561

PROGRAM MANAGER: MR. BILLY LOVE

BMDO CONTRACTING OPPORTUNITIES

ACQUISITION TITLE: DPI INFORMATION SYSTEMS SUPPORT

CONTRACTING OFFICE: BMDO

TYPE OF ACTION: COMPETITIVE

PLANNED AWARD DATE: SEP 94

APPROX EST VALUE: \$6.5M

DESCRIPTION:

TECHNICAL, MANAGEMENT, AND ADMINISTRATIVE SERVICES
FOR INFORMATION RESOURCES MANAGEMENT PROGRAM,
INFORMATION SYSTEMS SECURITY PROGRAM, AND
INFORMATION SYSTEMS ARCHITECTURE PROGRAM.

RFP: HQ0006-94-R-0008

POINTS OF CONTACT: PCO: KAREN REUTER
(703) 693-1561

PROGRAM MANAGERS: MAJ STEVEN MORRESE

BMDO CONTRACTING OPPORTUNITIES

ACQUISITION TITLE: SYSTEMS ENGINEERING SUPPORT TO BMDO/GSI

CONTRACTING OFFICE: BMDO

TYPE OF ACTION: NEW CONTRACT, FULL & OPEN COMPETITION

PLANNED AWARD DATE: MAR 95

APPROX EST VALUE: \$TBD

DESCRIPTION: SUPPORT BMDO SYSTEMS ENGINEERING DIRECTORATE (GSI) WITH INTEGRATION ENGINEERING AND ANALYSIS, TEST PLANNING, CONTINGENCY DEPLOYMENT PLANNING FOR TECHNOLOGY READINESS PLANNING.

POINTS OF CONTACT: PCO: LCDR DAN SMITH
(703) 693-1561

PROGRAM MANAGER: CDR ROBERT UPCHURCH

BMDO CONTRACTING OPPORTUNITIES

ACQUISITION TITLE: SCIENTIFIC AND ENGINEERING SUPPORT (IN AREAS OF
PRIMARY SUPPORT FOR MSX, VIP, POET AND OTHER
RELATED STUDIES AND SUPPORT)

CONTRACTING OFFICE: BMDO

TYPE OF ACTION: SOLE SOURCE (JOHNS HOPKINS UNIVERSITY/APPLIED PHYSICS
LABORATORY)

PLANNED AWARD DATE: FEB 95

APPROX EST VALUE: \$TBD

DESCRIPTION: SCIENTIFIC AND TECHNICAL SUPPORT SERVICES TO THE
BMDO/DTS OFFICE.

RFP: TBD

POINTS OF CONTACT: PCO: LCDR DAN SMITH
(703) 693-1560

PROGRAM MANAGER: MAJOR RALPH MCCLAIN/DTS

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BMD CONTRACTING OPPORTUNITIES

Acquisition Title: Lethality Criteria And Trade Studies

Contracting Office: DNA

Type Of Action: New Contract, Full And Open Competition

Planned Award Date: Early CY 95

Approx Est Value: \$800K

Description: Evaluate Existing Lethality Criteria For Defeating Theater Ballistic Missiles Carrying A Variety Of Warheads Including Conventional, Nuclear, Chemical And Biological Warheads. Evaluate Lethality Models And Simulations Used To Obtain Endgame Results For Adequacy In System Trade Studies. Develop New Models And Simulations Where Appropriate

Period Of Performance: 2-3 Years

RFP Release Date: October 1994

Points Of Contact: PCO - Mr. Thomas McCabe
(703) 325-1200

Program Manager - CDR Kenneth Hunter
(703) 325-0358

**BALLISTIC
MISSILE
DEFENSE
ORGANIZATION**

BMD CONTRACTING OPPORTUNITIES

Acquisition Title: Lethality Data Base

Contracting Office: DNA

Type Of Action: New Contract, Full And Open Competition

Planned Award Date: Early CY 95

Approx Est Value: \$200 - 600K

Description: Continue Development Of A European And NATO Theater Missile Defense Lethality Data Base To Avoid Duplication Of Research Efforts Between U.S. And Allies. Contractor Will Collect Data, Enter Data Into The Data Base, And Assist DNA In Responding To Requests For Data

Expected RFP Release Date: October 1994

Points Of Contact: PCO - Mr. Thomas McCabe
(703) 325-1200
Program Manager - Maj Brian Hanson
(703) 325-1275



MICOM ACQUISITION CENTER



BMDO APBI

TITLE OF PROCUREMENT: PAC-3 MISSILE INTEGRATION

BRIEF DESCRIPTION: INTEGRATION OF THE SELECTED PAC-3 MISSILE INTO PATRIOT WEAPONS SYSTEM.

CONTRACT TYPE: CPIF TYPE COMPETITION: SOLE SOURCE

RFP RELEASE DATE: N/A

ESTIMATED CONTRACT AWARD DATE: 4Q FY 94

PERIOD OF PERFORMANCE: APPROX. 42 MONTHS

ESTIMATED CONTRACT VALUE: \$90 - \$110 M

POINTS OF CONTACT: TECHNICAL: MR. MIKE MARDIS

**CONTRACTUAL: MS. VALETA CRANDALL, AMSMI-AC-CAC
PHONE: (205) 876-2518**



MICOM ACQUISITION CENTER



BMDO APBI

TITLE OF PROCUREMENT: CORPS SAM CONCEPT DEVELOPMENT

BRIEF DESCRIPTION: DEFINITION OF A TOTAL SYSTEM (OPERATIONAL, TECHNICAL, SUPPORT, AND TRAINING CONCEPTS), CONDUCT OF REQUIREMENTS ANALYSIS AND FLOWDOWN, PERFORMANCE OF CONCURRENT ENGINEERING DESIGN TRADES, SIMULATION AND MODELING, ESTABLISHMENT OF PROGRAM PLANS FOR NEXT PHASE OF DEVELOPMENT, AND DEVELOPMENT OF DRAFT SYSTEM SPECIFICATION AND DRAFT PRIME ITEM DEVELOPMENT SPECIFICATIONS.

CONTRACT TYPE: CPIF

TYPE COMPETITION: LIMITED

RFP RELEASE DATE: DRAFT 2Q FY 94; FINAL 4Q FY 94

ESTIMATED CONTRACT AWARD: 3RD FY 95 PERIOD OF PERF: APPROX. 3 YEARS

ESTIMATED CONTRACT VALUE: TBD

POINTS OF CONTACT:

TECHNICAL: MR. BYRON LAWING

CONTRACTUAL:

MR. CAROL COOPER, AMSMI-AC-CAA
PHONE: (205) 876-3823



MICOM ACQUISITION CENTER



BMDO APBI

TITLE OF PROCUREMENT: CORPS SAM SYSTEMS DEVELOPMENT

BRIEF DESCRIPTION: SYSTEM DEVELOPMENT EFFORT FROM DRAFT SPECIFICATION SUBMITTAL THROUGH COMPLETION OF DEVELOPMENT TO PROVIDE A "SEAMLESS" (CONTINUOUS DEVELOPMENT) CONTRACT DURING THE MILESTONE II TRANSITION. INCLUDED IN THIS EFFORT WILL BE SYSTEM ENGINEERING ANALYSIS, ENGINEERING DESIGN, SYSTEM FABRICATION, TEST, LOGISTICAL ANALYSIS, PRODUCT ASSURANCE, CONFIGURATION MANAGEMENT, ETC.

CONTRACT TYPE: CPIF TYPE COMPETITION: LIMITED COMPETITION

RFP RELEASE DATE: DRAFT 1Q FY 98; FINAL 3Q FY 98

ESTIMATED CONTRACT AWARD DATE: 1Q FY 99 PERIOD OF PERF: APPROX. 7 YEARS

ESTIMATED CONTRACT VALUE: TBD

POINTS OF CONTACT: TECHNICAL: MR. BYRON LAWING

**CONTRACTUAL: MR. STEVE PRUZINSKY , AMSMI-AC-CAA
PHONE: (205) 876-3939**



MICOM ACQUISITION CENTER



BMDO APBI

TITLE OF PROCUREMENT: PAC-3 MISSILE ENGINEERING AND MANUFACTURING
DEVELOPMENT

BRIEF DESCRIPTION: MISSILES TO BE UTILIZED IN THE UPGRADED PATRIOT ADVANCED
CAPABILITY 3

CONTRACT TYPE: CPIF/AF **TYPE COMPETITION:** SOLE SOURCE

RFP RELEASE DATE: N/A

ESTIMATED CONTRACT AWARD DATE: 4Q FY 94

PERIOD OF PERFORMANCE: APPROX. 42 MONTHS

ESTIMATED CONTRACT VALUE: APPROX. \$400 - 600 M

POINTS OF CONTACT: **TECHNICAL:** **MR. MIKE MARDIS**

CONTRACTUAL: **MS. VALETA CRANDALL, AMSMI-AC-CAC**
PHONE: (205) 876-2518

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P-022894-M02

BALLISTIC MISSILE DEFENSE ORGANIZATION

Advanced Planning Briefing For Industry

**Mr. Fred M. Segrest
Space and Strategic Defense Command**

2 March 1994

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<u>TITLE OF PROCUREMENT</u>	<u>RFP REL DATE</u>	<u>EST CONT VALUE</u>	<u>POINT OF CONTACT</u>	<u>TELEPHONE NO.</u>
1. Display Services	Mar 94	\$1.5M	Ms. Mona Neal	(205) 955-4997
2. Interceptor Development Test and Integration Analysis	May 94	\$24M	Ms. Denise Bennett	(205) 955-3388
3. Advanced Active Aperture Technology	May 94	\$15-20M	Ms. Beverly Fowler	(205) 955-3693
4. Advanced Radar Component Technology (ARCT)	Jun 94	\$15-22M	Ms. Lynn Washburn	(205) 955-3696
5. Advanced Rapid Optical Beam Steering (ROBS) Systems	Jun 94	\$13-20M	Ms. Melissa Webb	(205) 955-3438
6. PEO-MD, Theater Missile Defense Programs, SETAC	Jun 94	\$40-45M	Ms. Deborah Teague	(205) 955-3441
7. Security and Law Enforcement Services for USAKA	Jun 94	\$60M	Mr. Dennis Greenawalt	(205) 955-3003
8. Radar Development Analysis	3Q FY94	\$3-4M	Ms. Joanne Lewonczyk	(205) 955-3407
9. Discrimination Analysis	1Q FY95	\$6-7.5M	Ms. Joanne Lewonczyk	(205) 955-3407
10. Flight Test Support	1Q FY95	\$9-11M	Ms. Carol Wright	(205) 955-3409
11. Advanced Rapid Optical Beam Steering System	Jan 95	\$15-30M	Ms. Melissa Webb	(205) 955-3438
12. TMD Engineering, Manufacturing, and Development	1Q FY96	Over \$2B	Ms. Melissa Webb	(205) 955-3438
13. Engineering, Manufacturing, and Development (EMD)	2Q FY96	TBD	Mr. W.L. Schick	(205) 955-3044
14. Systems Engineering and Technical Assistance (SETA)	2Q FY97	TBD	Mr. W.L. Schick	(205) 955-3044
15. Testability	2Q FY97	\$3-4M	Ms. Joanne Lewonczyk	(205) 955-3407
16. Summary of Projected Actions				
17. Active SBIRS (As of 1 Mar 94)				
18. BMDO SBIR Topics				

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P-022894-M03

Title of Procurement: Display Services

Brief Description:

Provide displays that depict various aspects of Strategic Defense Command mission, function, tasks, technical efforts, historical commentary, and command status. Messages shall be communicated in the form of displays utilizing various media techniques. These displays will be shown in locations including government facilities or other public locations.

Contract Type: Cost Plus Fixed Fee

Type Competition: Small Business Set Aside

RFP Release Date: Mar 94

Estimated Contract Award Date: Sep 94

Period of Performance: Basic (1year) 4 one-year Options

Estimated Contract Value: \$1.5M

Point of Contact:

**Contractual: Ms. Mona Neal
CSSD-CM-TS
Phone: (205) 955-4997**

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P-022894-M21

Title of Procurement: Interceptor Development Test and Integration Analysis

Brief Description:

The objective of this acquisition is to acquire engineering and technical support necessary to accomplish the many activities of development, test and integration analysis associated with the Exoatmospheric Kill Vehicle Project Office, Army Theater Missile Defense Program Office, and the Target Test and Evaluation Directorate of U.S. Army Space and Strategic Defense Command projects. the contractor will develop and conduct technical studies, provide independent technical analysis; assess full scale configurations, interface requirements, software code, operational and support software and simulations.

Contract Type: Cost Plus Fixed Fee

Type Competition: TBD

RFP Release Date: May 94

Estimated Contract Award Date: Sep 94

Period of Performance: 5 years

Estimated Contract Value: \$24M

Point of Contact:

Contractual: Ms. Denise Bennett
CSSD-CM-MN
Phone: (205) 955-3388

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P-022894-M04

Title of Procurement: Advanced Active Aperture Technology

Brief Description:

This action will provide enhanced Ground Based Radar operational performance capabilities through design and development of advanced microwave millimeter wave devices, circuit structures, innovative packaging concepts, and array control interfaces.

Contract Type: Cost Plus Fixed Fee

Type Competition: Unrestricted

RFP Release Date: May 94

Estimated Contract Award Date: Nov 94

Period of Performance: Basic (4 years) Option (2 years) Surges within basic and option.

Estimated Contract Value: \$15-20M within Basic and Option. Potential of up to \$25M with Surge Options

Point of Contact:

Contractual: Ms. Beverly Fowler
CSSD-CM-JS
Phone: (205) 955-3693

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P-022894-M05

Title of Procurement: Advanced Radar Component Technology (ARCT)

Brief Description:

The purpose of this action will be to develop and demonstrate advanced subsystems and support hardware for next generation Ground Based Radar systems. Developments will offer highly enhanced operational and physical features. It will include RF (transmitters, receivers, antennas) processing (hardware, algorithms, software) architectures, and power conditioning.

Contract Type: Cost Plus Fixed Fee

Type Competition: Small Business Set Aside

RFP Release Date: Jun 94

Estimated Contract Award Date: 30 Sep 94

Period of Performance: Basic (4 years) Option (1 year) Surge Option

Estimated Contract Value: \$15-22M

Point of Contact:

**Contractual: Ms. Lynn Washburn
CSSD-CM-TS
Phone: (205) 955-3696**

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**Title of Procurement: Advanced Rapid Optical Beam Steering (ROBS) Systems****Brief Description:**

The objective of the Advanced Rapid Optical Beam Steering Systems Program is to design, develop, fabricate, test, evaluate, operate, and maintain precision sensor systems.

Contract Type: TBD

Type Competition: Competitive

RFP Release Date: Jun 94

Estimated Contract Award Date: Dec 94

Period of Performance: 60 Months

Estimated Contract Value: \$13-20M

Point of Contact:

Contractual: Ms. Melissa Webb
CSSD-CM-TS
Phone: (205) 955-3438

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P-022894-M07

**Title of Procurement: Program Executive Office-Missile Defense, Theater
Missile Defense Programs, Systems Engineering Technical Assistance Contract**

Brief Description:

The contract requirement is for systems integration, systems engineering and technical assistance support for Theater Missile Defense programs.

Contract Type: TBD

Type Competition: Small Business Set Aside

RFP Release Date: Jun 94

Estimated Contract Award Date: Dec 94

Period of Performance: Basic (2 years) 3 one-year options

Estimated Contract Value: \$40-45M

Point of Contact:

**Contractual: Ms. Deborah Teague
CSSD-CM-MT
Phone: (205) 955-3441**

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**Title of Procurement: Security and Law Enforcement Services for U.S. Army
Kwajalein Atoll**

Brief Description:

This action is for the continuation of security and law enforcement services for United States Army Kwajalein Atoll, Republic of the Marshall Islands. The current effort which will expire 30 Sep 95, is being performed by AMPRO Protective Agency.

Contract Type: TBD

Type Competition: TBD

RFP Release Date: DRAFT - Jun 94

Estimated Contract Award Date: JUN 95

Period of Performance: Basic (2 years) 4 two-year Options

Estimated Contract Value: \$60M including options

Point of Contact:

**Contractual: Mr. Dennis Greenawalt
CSSD-CM-TK
Phone: (205) 955-3003**

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P-022894-M09

Title of Procurement: Radar Development Analysis

Brief Description:

Perform independent technological assessments and analyze component, subsystem, and system level testing.

Contract Type: TBD

Type Competition: Restricted

RFP Release Date: 3rd Quarter FY94

Estimated Contract Award Date: TBD

Period of Performance: TBD

Estimated Contract Value: 3-4M

Point of Contact:

Contractual: Ms. Joanne Lewonczyk
CSSD-CM-MT
Phone: (205) 955-3407

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P-022894-M10

Title of Procurement: Discrimination Analysis**Brief Description:**

Support discrimination algorithm development and testing.

Contract Type: TBD**Type Competition: Competitive****RFP Release Date: 1st Quarter FY95****Estimated Contract Award Date: TBD****Period of Performance: TBD****Estimated Contract Value: 6-7.5M****Point of Contact:**

Contractual: Ms. Joanne Lewonczyk
GSSD-CM-MT
Phone: (205) 955-3407

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P-022894-M11

Title of Procurement: Flight Test Support

Brief Description:

Missile preparation and integration, technical support, launch site modification/operations, and transportation/fuel handling.

Contract Type: TBD

Type Competition: Competitive

RFP Release Date: 1st Quarter FY95

Estimated Contract Award Date: TBD

Period of Performance: 2 Years

Estimated Contract Value: \$9-11M

Point of Contact:

Contractual: Ms. Carol Wright
CSSD-CM-MT
Phone: (205) 955-3409

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**Title of Procurement: Advanced Rapid Optical Beam Steering System****Brief Description:**

The objective of this acquisition is to provide electro-optic precision tracking instrumentation for strategic and tactical interception lethality assessments. The Ballistic Missile Defense Organization developed advanced technologies, to be included are laser radar technologies and passive aperture agile beam technologies. Multiple devices, as well as further development is planned. Device concept and design is to apply to ground, airborne, and space utilization.

Contract Type: Cost Plus Fixed Fee**Type Competition: Competitive****RFP Release Date: Jan 95****Estimated Contract Award Date: Sep 95****Period of Performance: Up to 5 years****Estimated Contract Value: \$15.30M****Point of Contact:**

Contractual: Ms. Melissa Webb
CSSD-CM-MT
Phone: (205) 955-3438

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P-022894-M13

Title of Procurement: Theater Missile Defense Engineering, Manufacturing and Development

Brief Description:

Perform preliminary and detailed design, fabrication, assembly, coding, and integration and test of the Theater High Altitude Air Defense Ground Based Radar prototype.

Contract Type: TBD

Type Competition: Competitive

RFP Release Date: 1st Quarter FY96

Estimated Contract Award Date: TBD

Period of Performance: TBD

Estimated Contract Value: Over \$2B

Point of Contact:

Contractual: Ms. Melissa Webb

CSDD-GM-MT

Phone: (205) 955-3438

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P-022894-M14

Title of Procurement: Engineering, Manufacturing, and Development (EMD)

Brief Description:

Transition of the demonstrated system into Engineering, Manufacturing, and Development to include low rate initial production as required for the Theater High Altitude Air Defense system.

Contract Type: TBD

Type Competition: Sole Source (Lockheed Missiles and Space Company, Sunnyvale, CA)

RFP Release Date: 2nd Quarter FY96

Estimated Contract Award Date: 4th Quarter FY96

Period of Performance: TBD

Estimated Contract Value: TBD

Point of Contact:

**Contractual: Mr. W.L. Schick
CSSD-CM-MT
Phone: (205) 955-3044**

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P-022894-M15

Title of Procurement: Systems Engineering and Technical Assistance (SETA)

Brief Description:

Performance of trade studies to include system level analysis, technical reviews, milestone reviews, growth planning, battle management and command, control, communications intelligence, software development, radar, missile design assessment, test documentation reviews, facilities, targets, integrated logistics support and program reviews.

Contract Type: Cost Plus Award Fee

Type Competition: Small Business Set Aside

RFP Release Date: 2nd Quarter FY97

Estimated Contract Award Date: 4th Quarter FY97

Period of Performance: 5 years

Estimated Contract Value: TBD

Point of Contact:

Contractual: Mr. W. L. Schlick
CSSD-CM-MT
Phone: (205) 955-3044

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P-022894-M16

Title of Procurement: Testability

Brief Description:

Evaluate the testability of Ground Based Radar hardware and software, and monitor the implementation of testability programs by the developers.

Contract Type: TBD

Type Competition: Competitive

RFP Release Date: 2nd Quarter FY97

Estimated Contract Award Date: TBD

Period of Performance: TBD

Estimated Contract Value: \$3-4M

Point of Contact:

Contractual: Ms. Joanne Lewonczyk
CSSD-GMMT
Phone: (205) 955-3407

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P-022894-M02

SUMMARY OF PROJECTED ACTIONS

	<u>\$0 - 10M</u>	<u>\$11 - 50M</u>	<u>\$50M +</u>
GBR	1	2	
ENGINEERING SERVICES	1	4	1
SENSORS	1	2	
OTHER SUPPORT	1		1
ENGINEERING, MANUFACTURING, AND DEVELOPMENT			2

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ACTIVE SBIRS (AS OF 1 MAR 94)

ACTIVE SBIR CONTRACTS:

<u>SBIR PHASE</u>	<u>NUMBER OF CONTRACTS</u>	<u>CONTRACT VALUE</u>
PHASE I	39	\$ 2,309,264
PHASE II	70	\$40,030,811
TOTAL	109	\$42,340,075

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SBIR

BALLISTIC MISSILE DEFENSE ORGANIZATION TOPICS

Selections
Made

BMDO 94-001	Directed Energy Concepts	0
BMDO 94-002	Kinetic Energy Weapons	1
BMDO 94-003	Sensors	*
BMDO 94-004	Nuclear Space Power	0
BMDO 94-005	Non-Nuclear Space Power and Power Conditioning	0
BMDO 94-006	Propulsion and Logistics	*
BMDO 94-007	Thermal Management	0
BMDO 94-008	Survivability	*
BMDO 94-009	Lethality	*
BMDO 94-010	Computer Architecture, Algorithms, and Language	*
BMDO 94-011	Optical Computing and Optical Signal Processing	*
BMDO 94-012	Structural Concepts	*
BMDO 94-013	Structural Materials	1
BMDO 94-014	Electronic Materials	6
BMDO 94-015	Superconductive Materials	1
BMDO 94-016	Surprises and Opportunities	*

* It is estimated that 30 will be awarded in FY94.

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