Theater Air And Missile Defense Family Of Systems

7th AIAA / BMDO Technology Readiness Conference

August 3, 1998

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Deputy For Theater Air And Missile Defense
Ballistic Missile Defense Organization

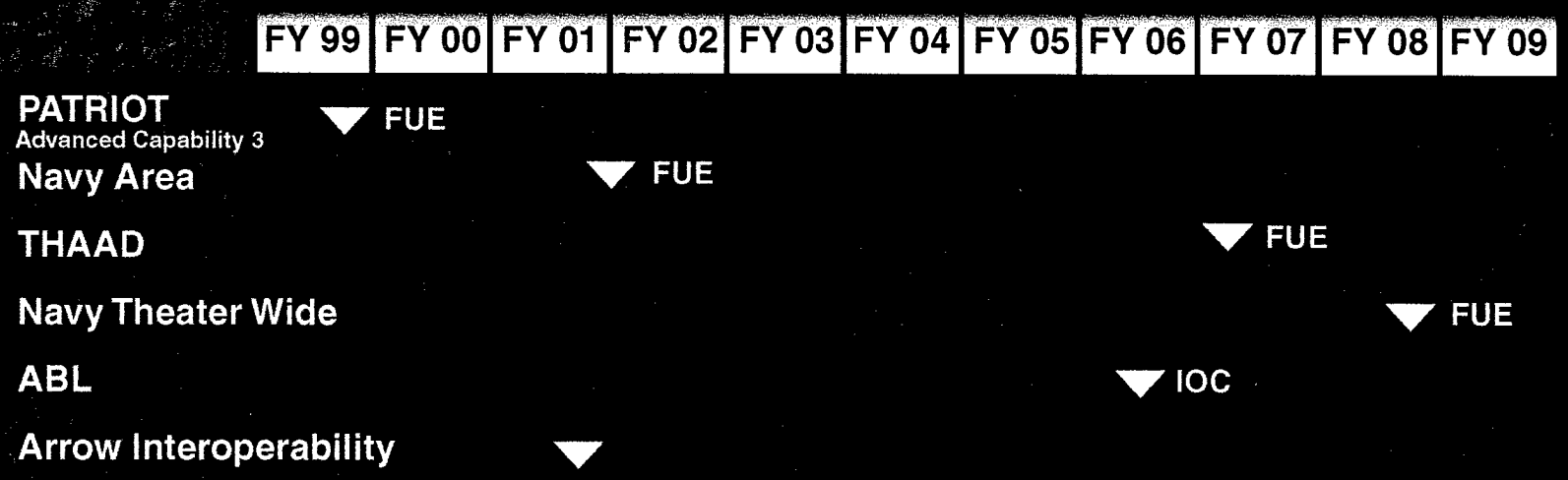
Cleared For Open Publication, Directorate
For Freedom Of Information And Security
Review, Department Of Defense

DTIC QUALITY INSPECTED 4

19981110 077

BMDO's CHALLENGE...

- Develop An FoS Interoperability Testing Approach That
  - Ensures The TMD Building Blocks "Plug And Fight"
  - Accommodates Time Phased Development Of Systems
  - Verifies FoS Interoperability Throughout Its Life



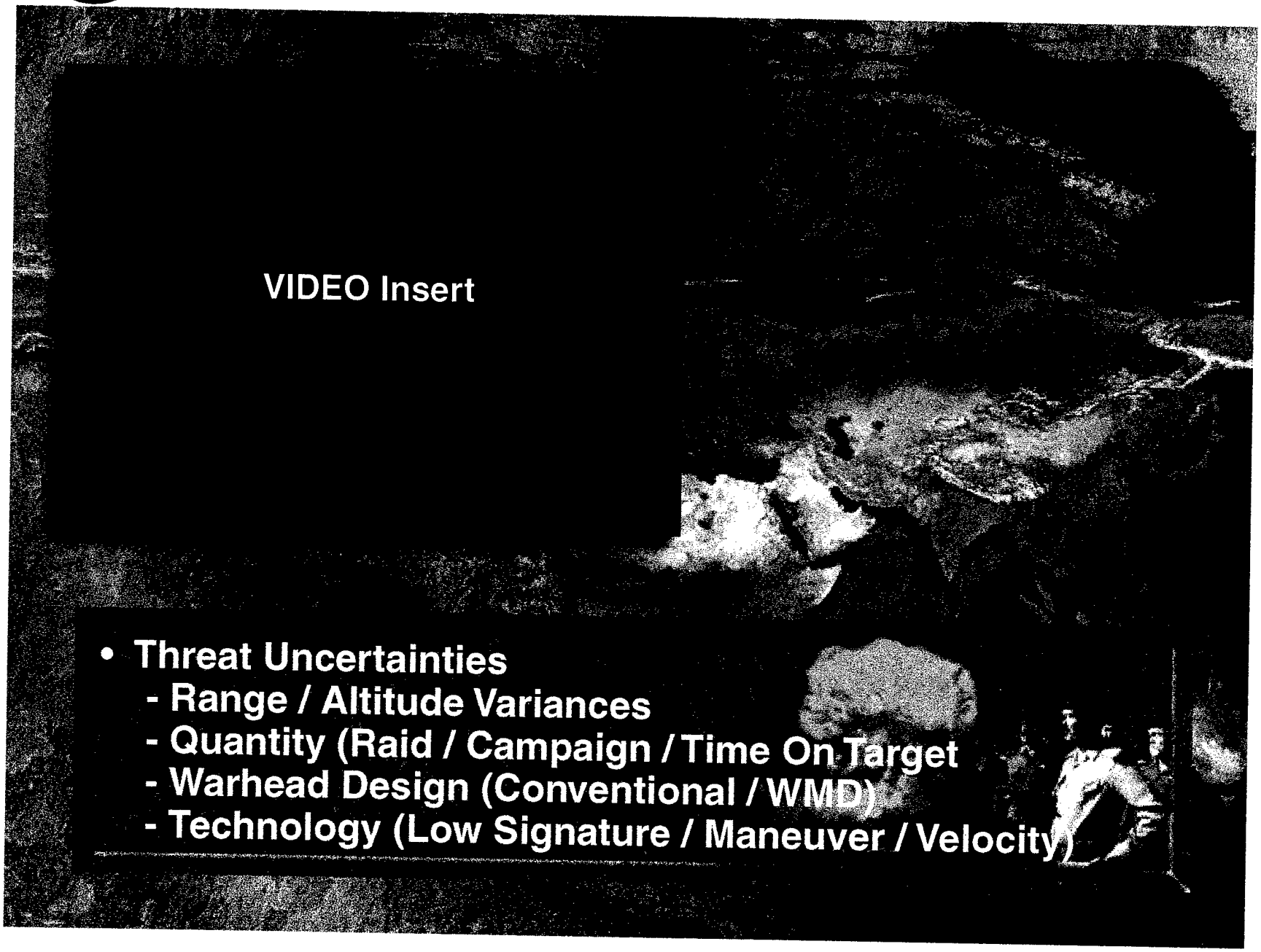
U.S. FoS RATIONALE

- Threat Uncertainties
  - Range / Altitude Variances
  - Quantity (Raid / Campaign / Time On Target)
  - Warhead Design (Conventional / WMD)
  - Technology (Low Signature / Maneuver / Velocity)

- Defense Dynamics
  - Point Vs Area Defense
  - Military And / Or Civil Defense
  - Joint Forces Synergies
  - No Notice / Short Notice / Build Up

- Budget Constraints
  - Force Reductions
  - Acquisition Goals

U.S. FoS RATIONALE



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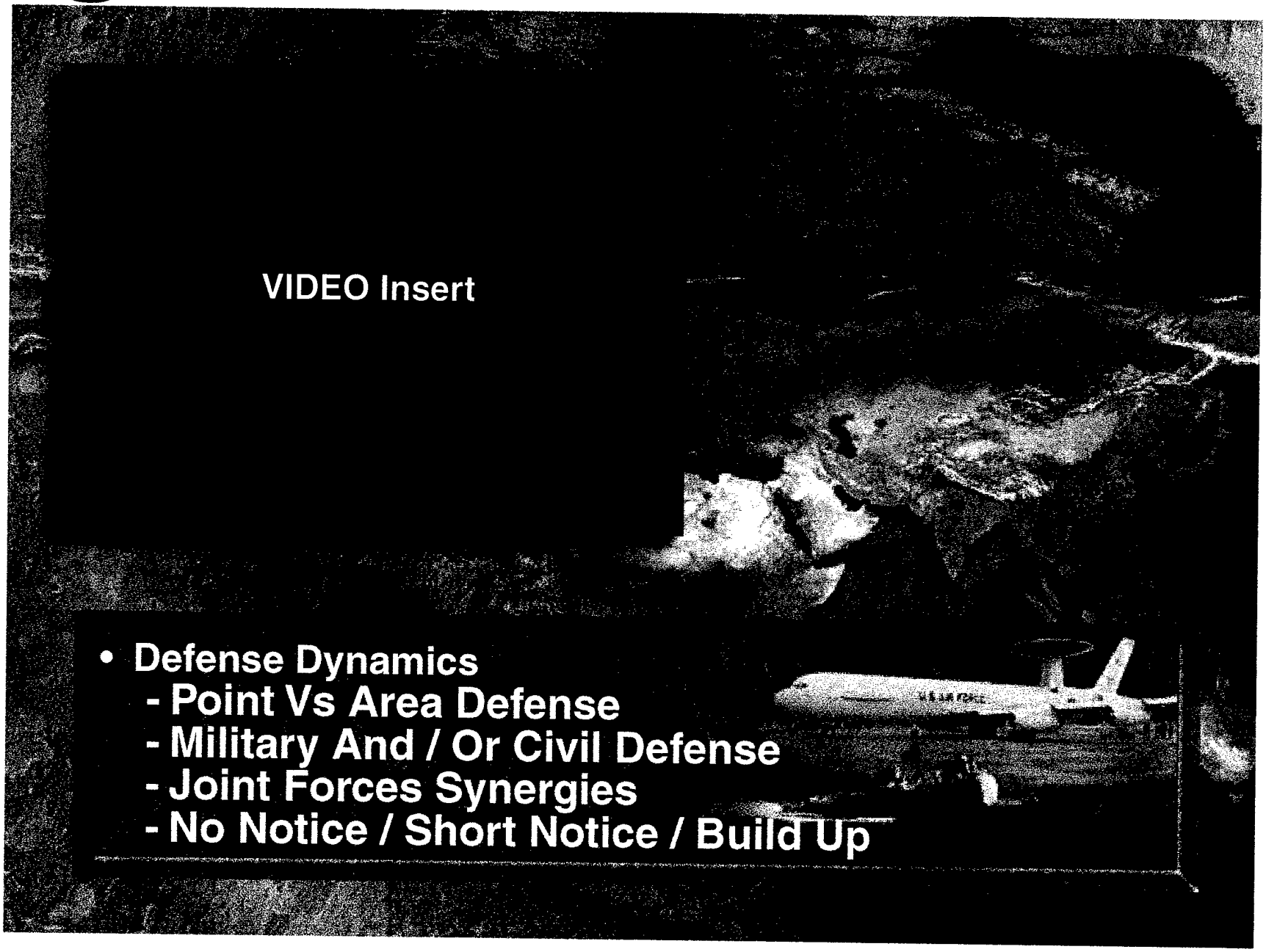
U.S. FoS RATIONALE



- Defense Dynamics
  - Point Vs Area Defense
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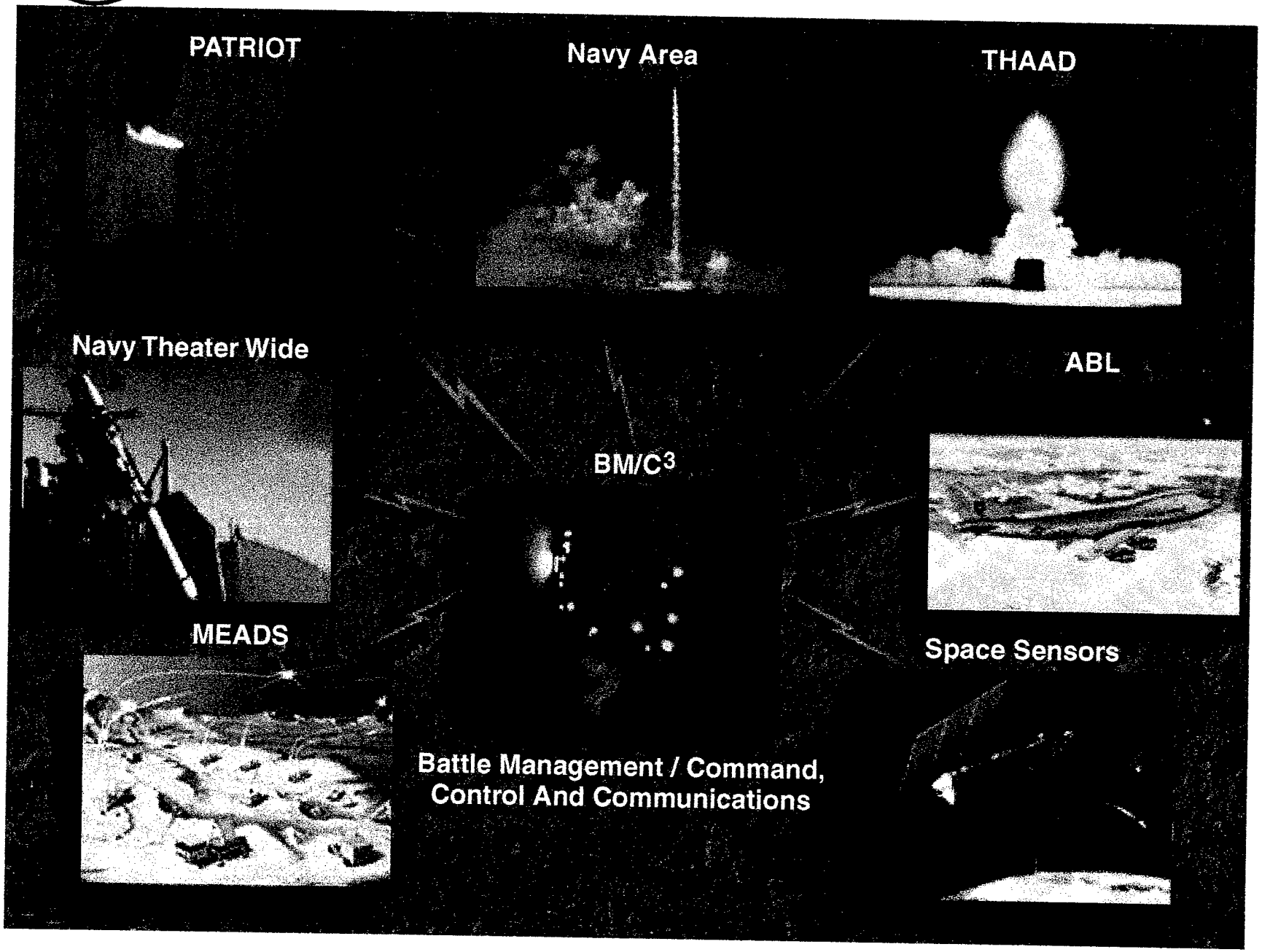
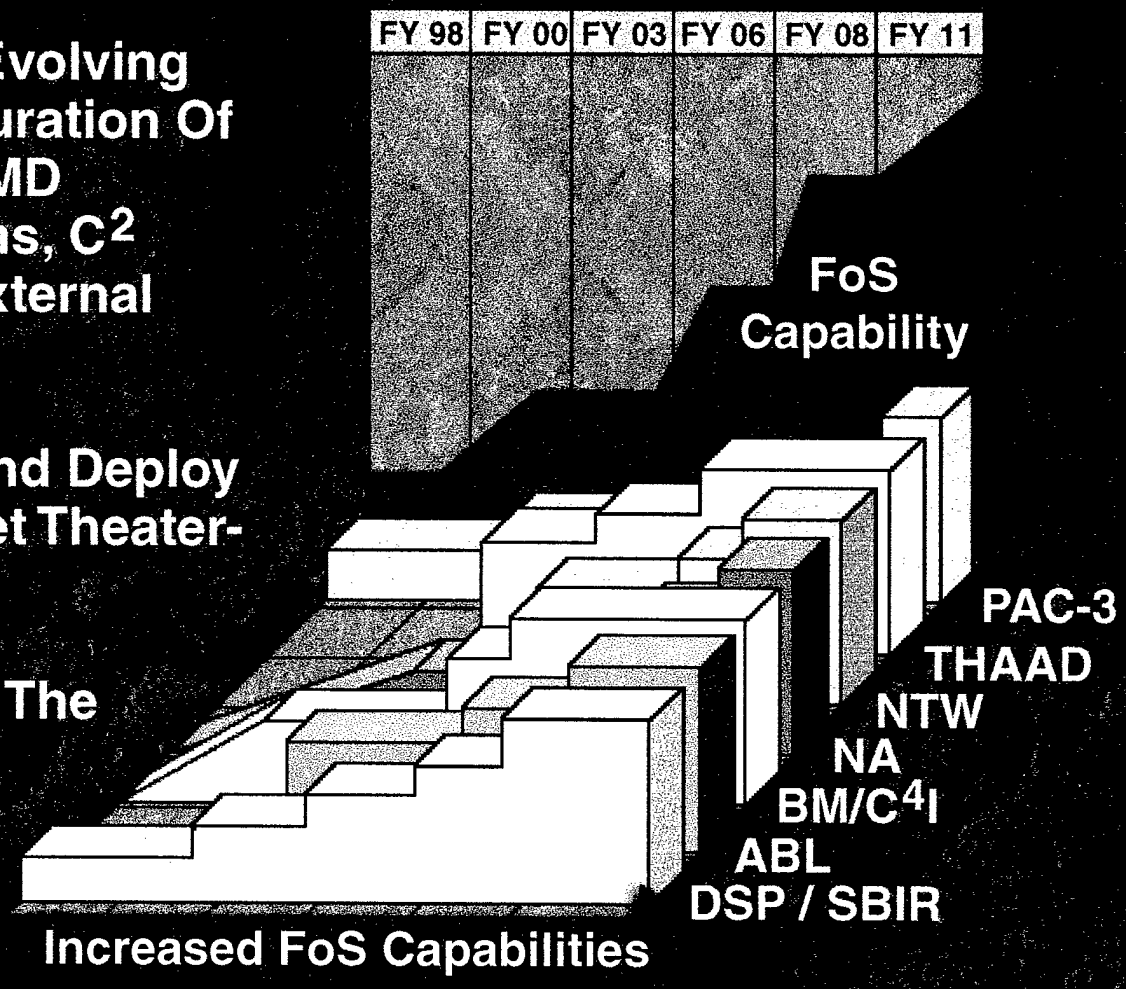
THE TMD FAMILY OF SYSTEMS



FoS CONCEPT

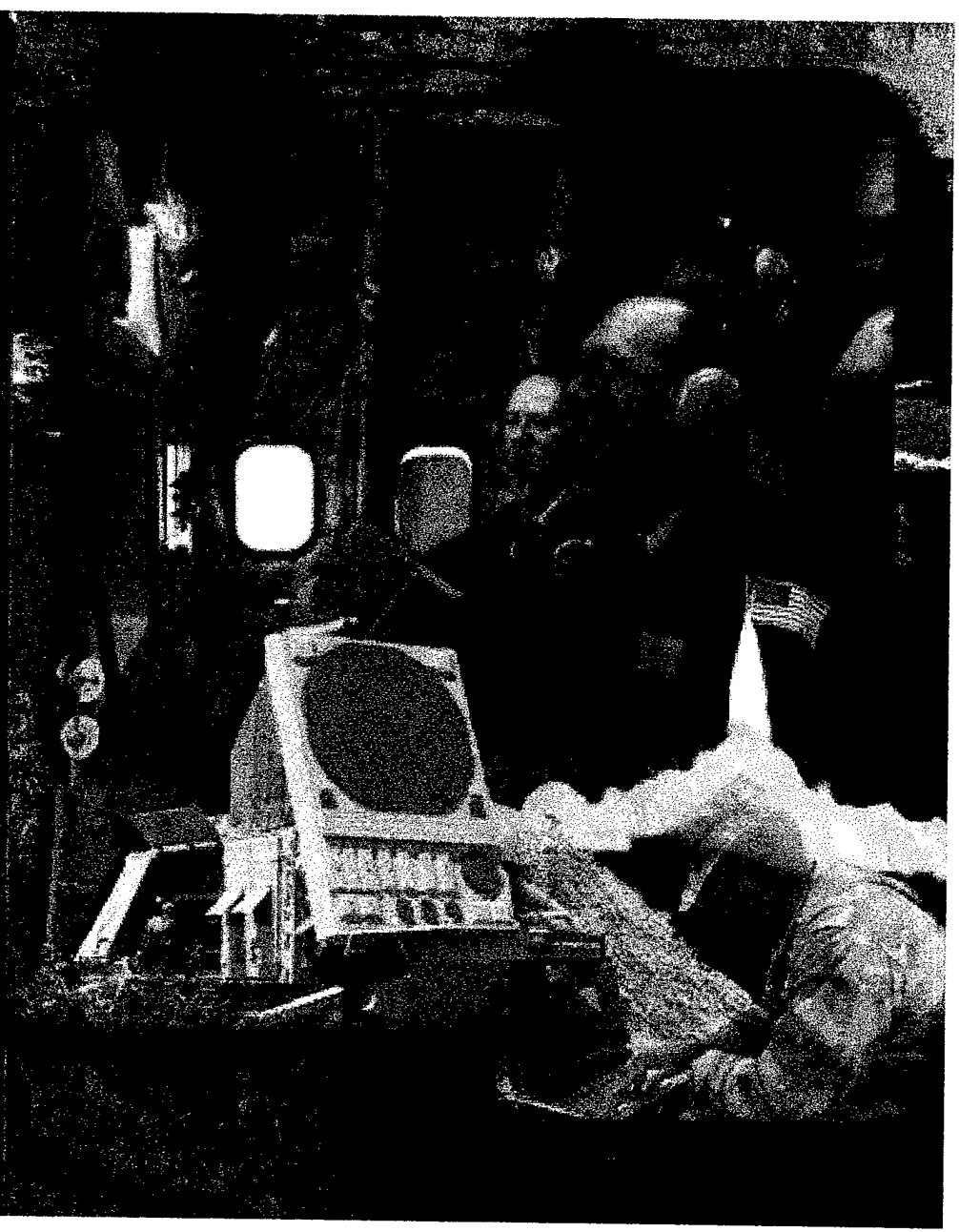
- The FoS Is An Evolving Flexible Configuration Of Interoperable TMD Weapon Systems, C^2 Centers, And External Sensors
- CINCs Select And Deploy Systems To Meet Theater-Unique Needs
- Keep Pace With The Threat



Interoperability Is Critical To FoS "Plug And Fight" Strategy

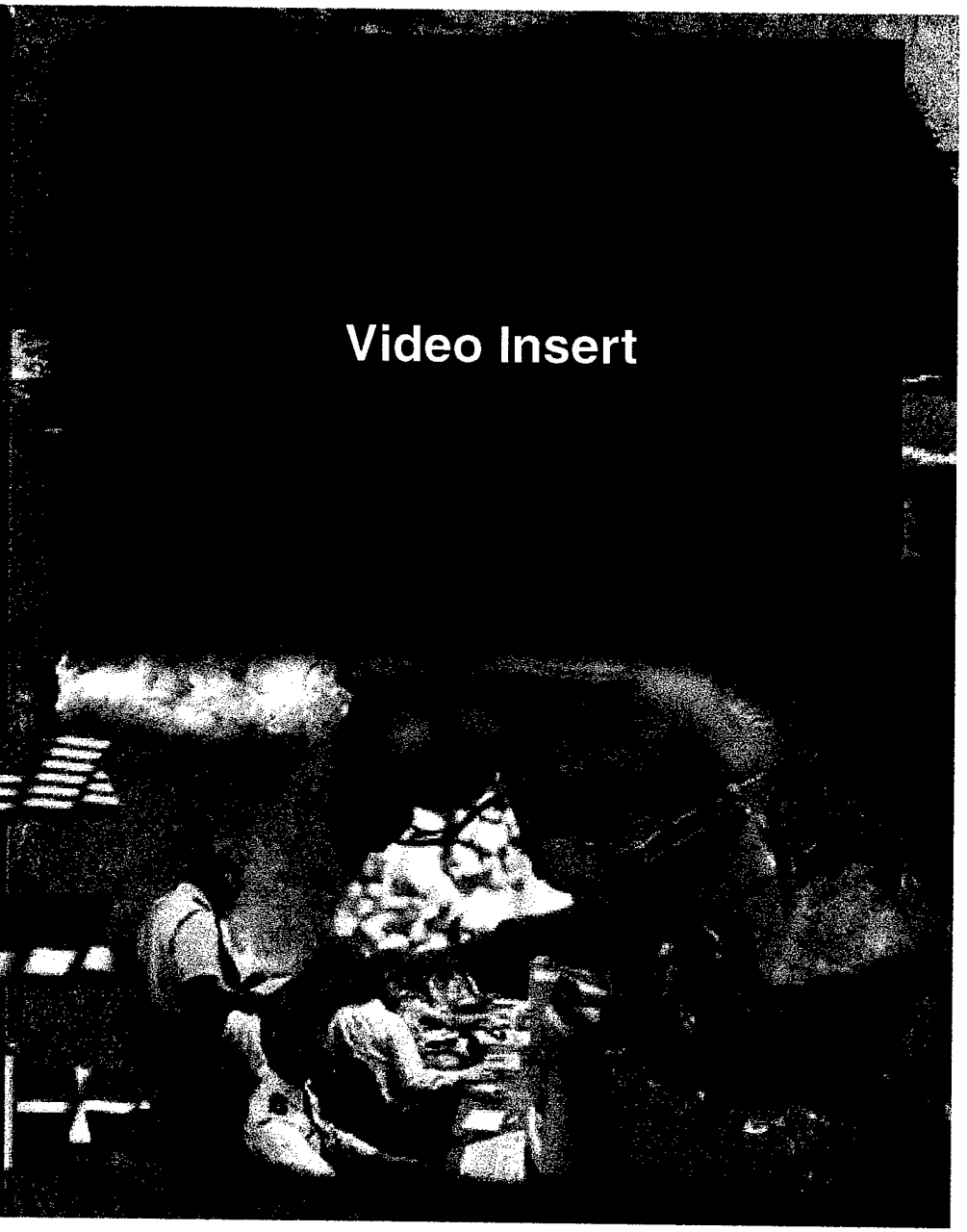
TMD FoS ELEMENTS
A MORE COMPREHENSIVE LOOK

- Radios
- Computers
- Radars
- Missiles

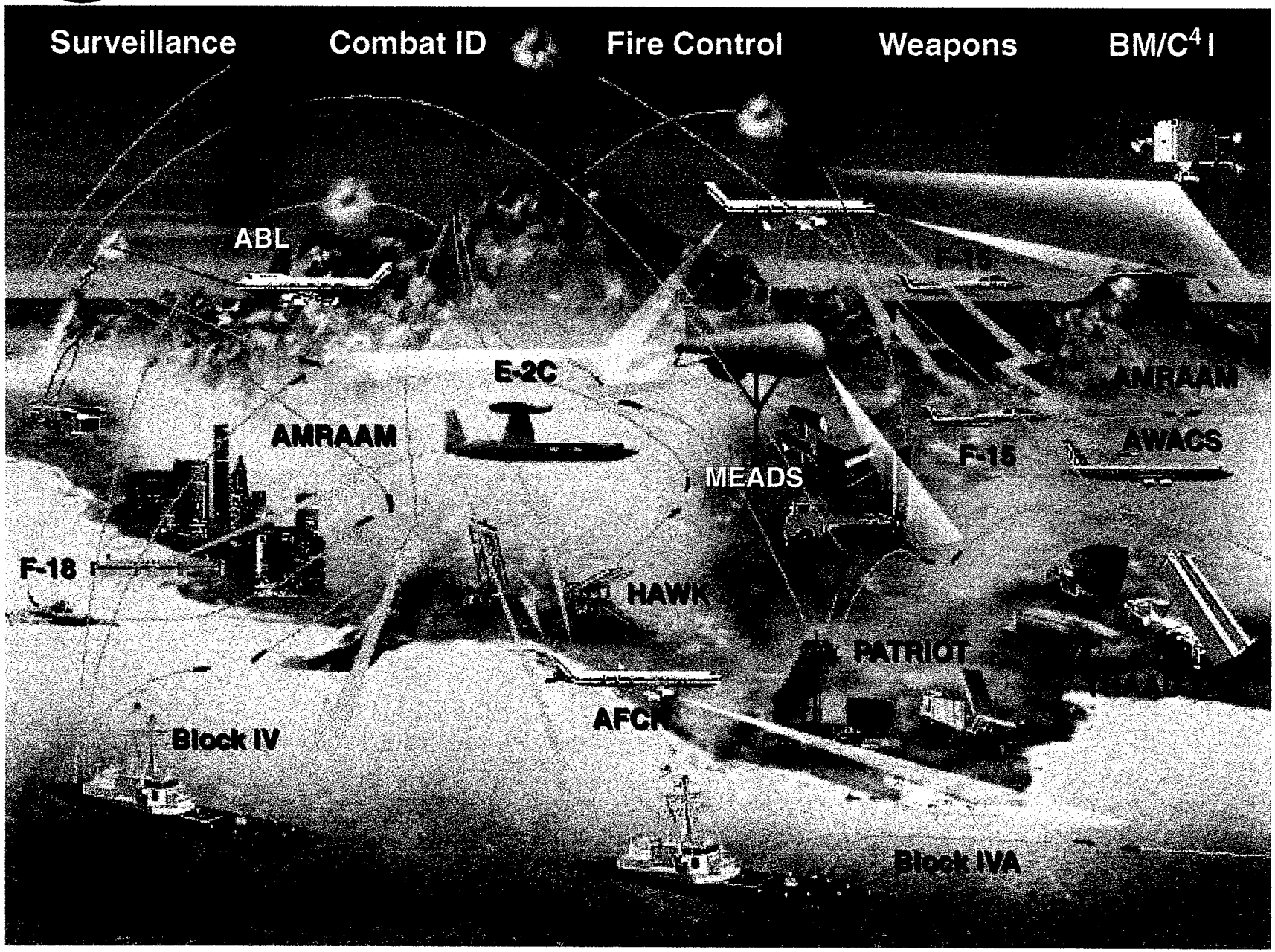


TMD FoS ELEMENTS
A MORE COMPREHENSIVE LOOK

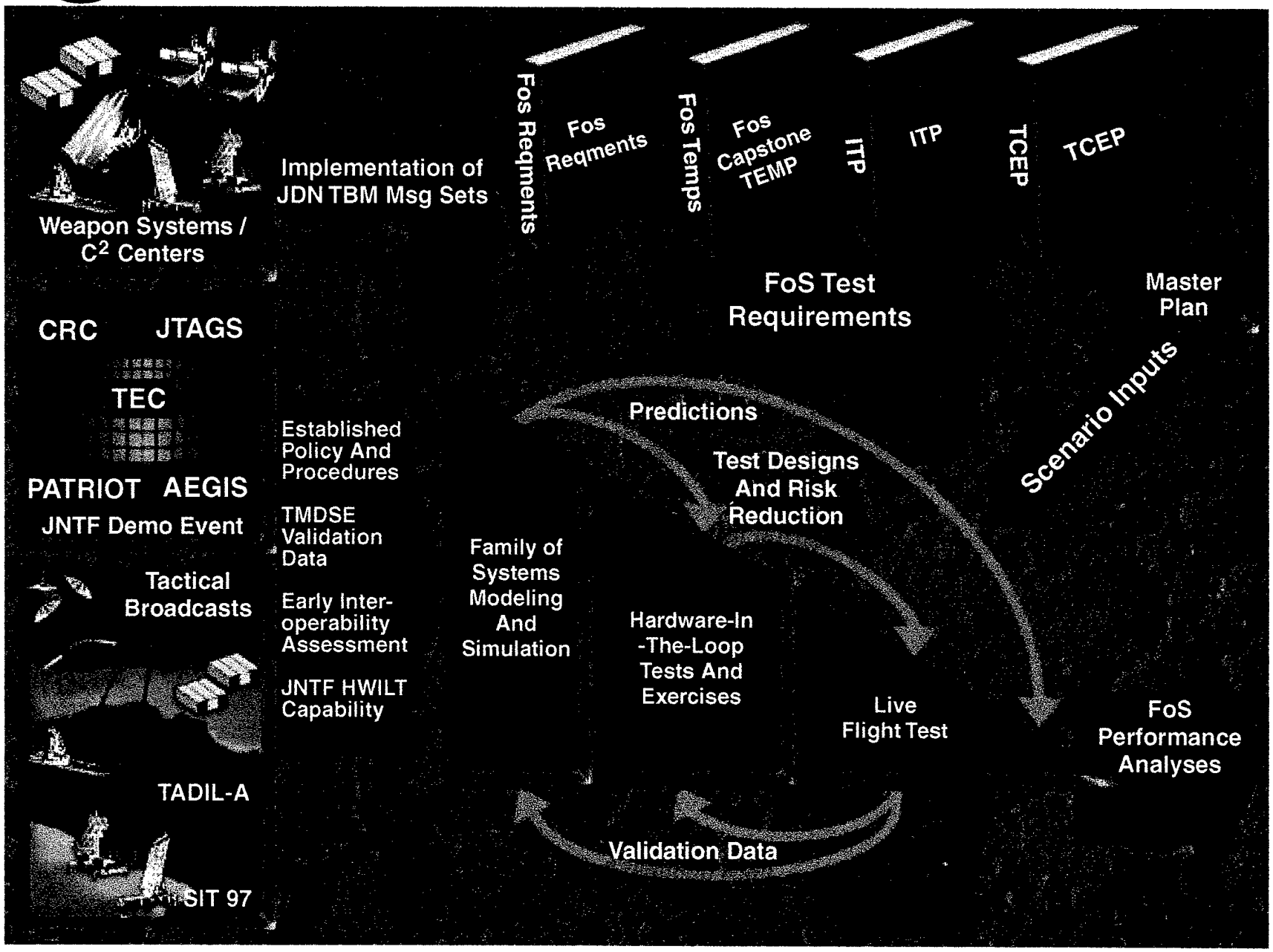
- People
  - Tactics
  - Techniques
  - Procedures
- Theater Operations
- U.S. And Non-U.S. Forces In Strategic Alliance



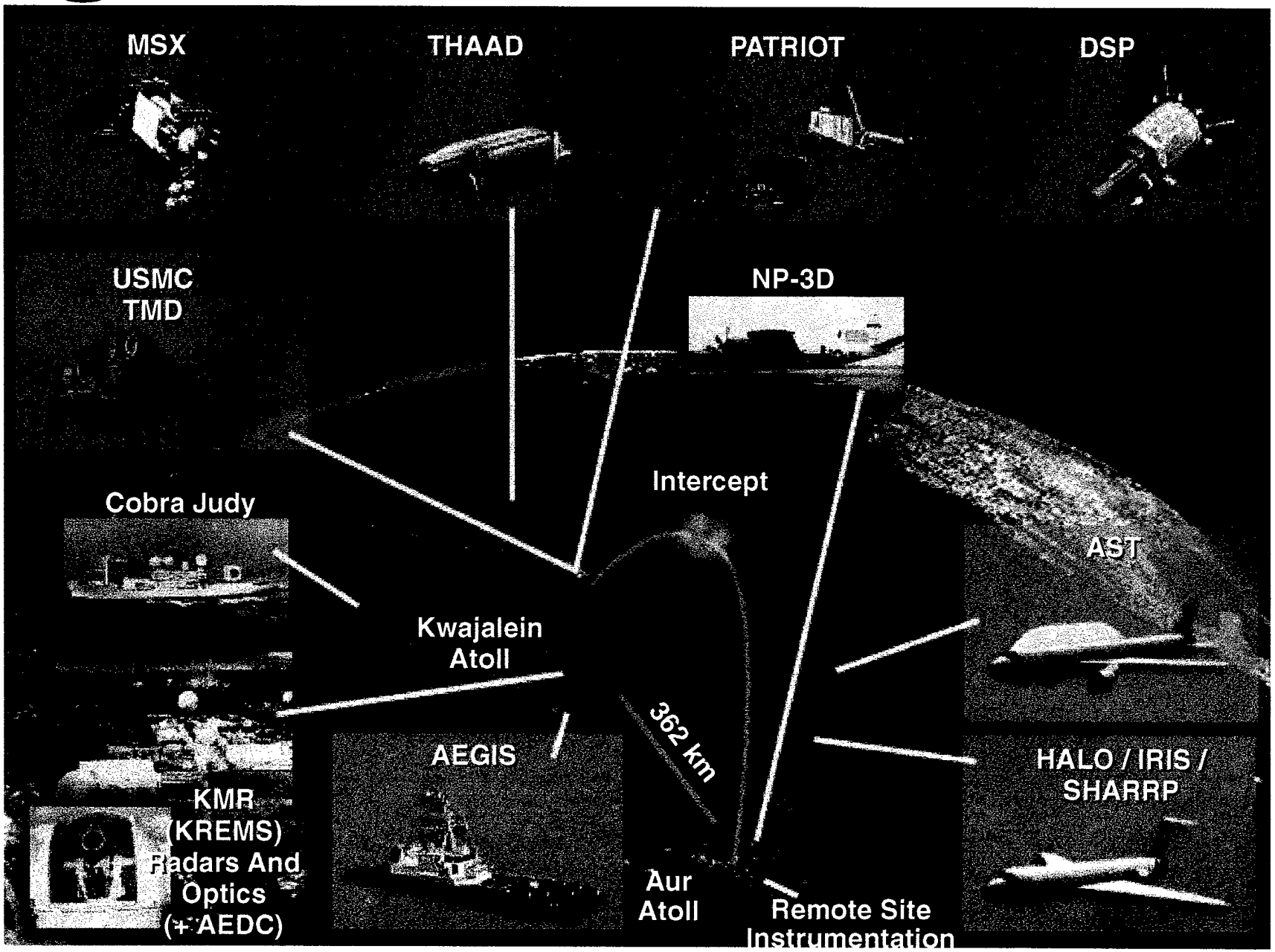
JTAMD ARCHITECTURE: THE BIG PICTURE



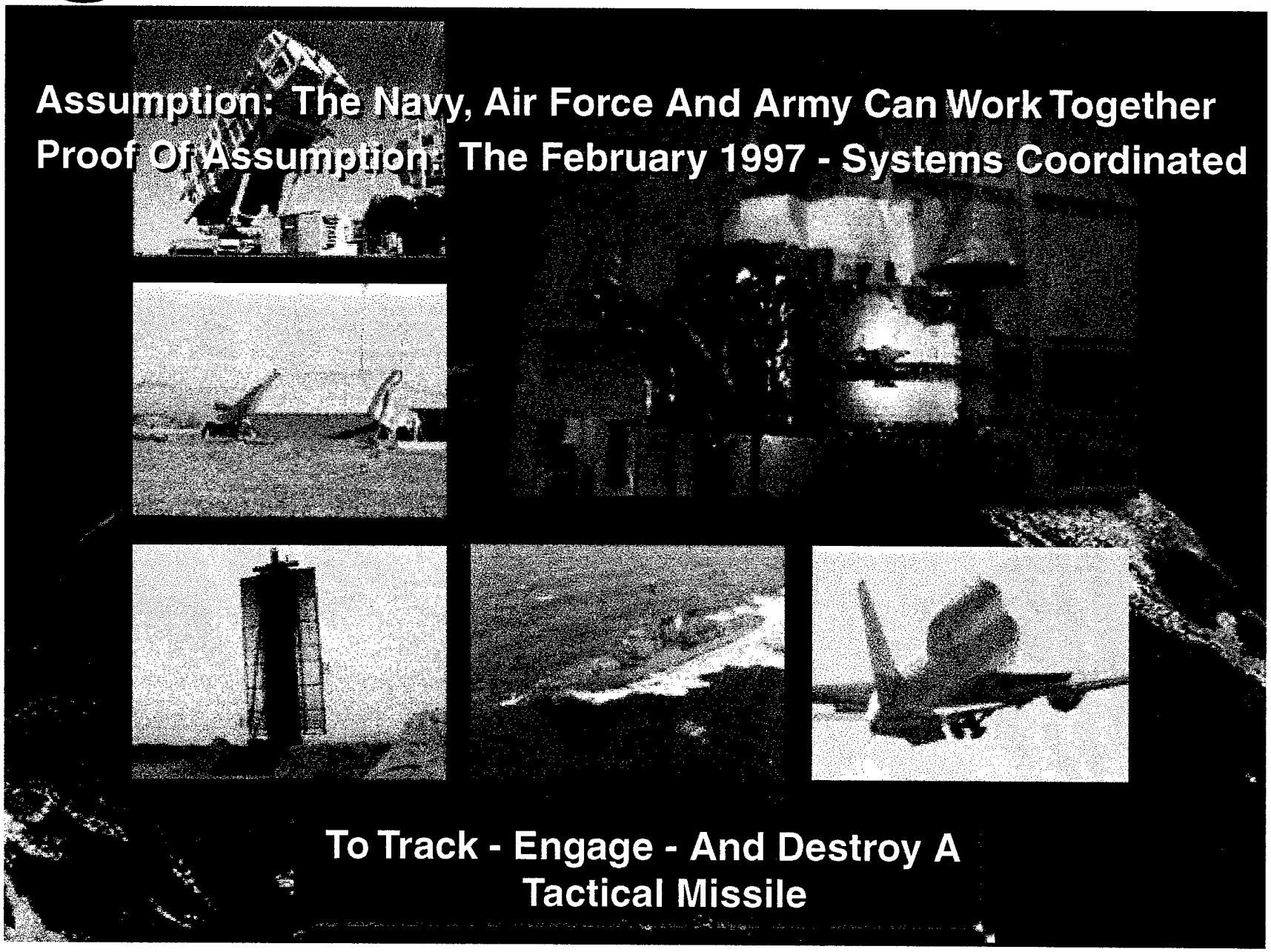
NEAR TERM FoS TESTING CONCEPT



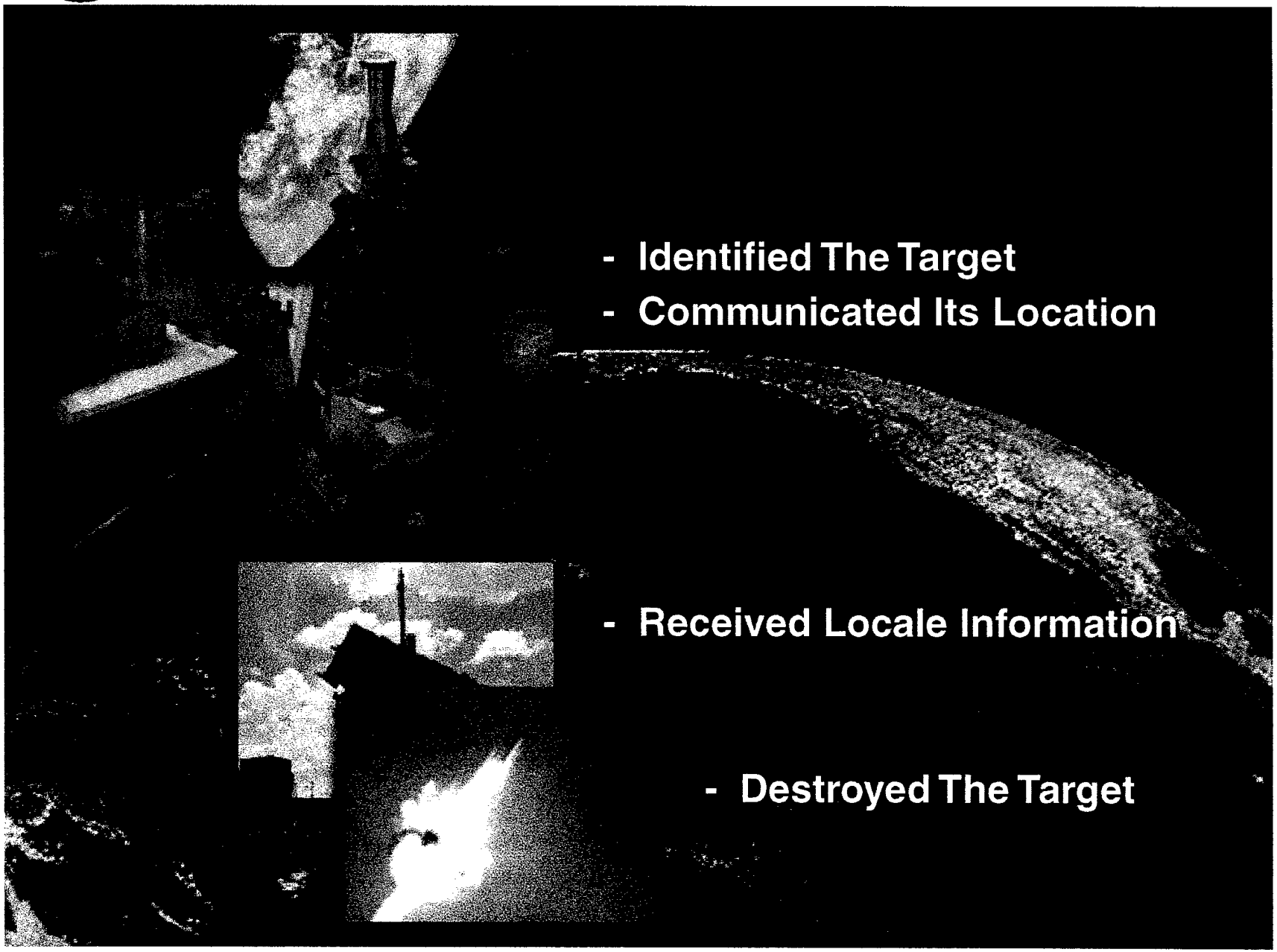
SYSTEM INTEGRATION TESTING



THE TEST


Assumption: The Navy, Air Force And Army Can Work Together
Proof Of Assumption: The February 1997 - Systems Coordinated
To Track - Engage - And Destroy A
Tactical Missile

THE RESULTS
- SHARED INFORMATION -



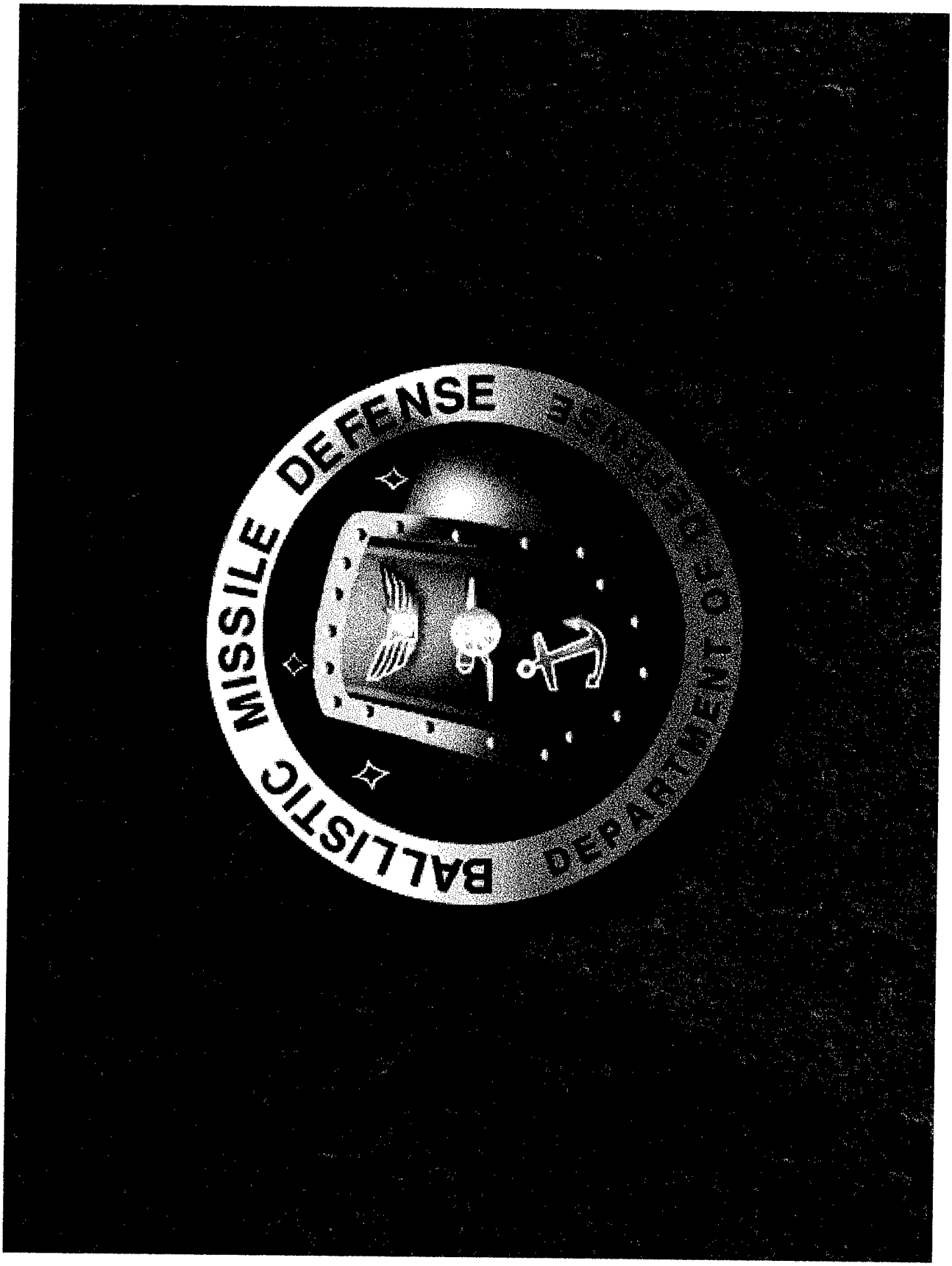
- Identified The Target
- Communicated Its Location
- Received Locale Information
- Destroyed The Target

TAMD STRATEGIC PLAN - AN INTEROPERABILITY FAMILY OF SYSTEMS

Goal: An Interoperable TMD Family Of Systems Designed To Meet The Needs Of The Warfighter

Tasks:

- Define Baseline Architecture
- Gain Community Support For FoS Concept
- Gain Support For FoS Acquisition Plan
- Develop Modeling And Simulation Tools
- Identify Non-U.S. Programs That Relate To U.S. FoS
- Verify FoS Performance
- Prioritize FoS Acquisition Plans
- Integrate U.S. And Non-U.S. FoS Program Elements


BALLISTIC MISSILE DEFENSE
DEPARTMENT OF DEFENSE

Theater Air And Missile Defense Family of Systems Briefing For 7th Annual AIAA / BMDO Technology Readiness Conference

3 AUG 98

Brig Gen Richard W. Davis, USAF
Deputy For Theater Air And Missile Defense
Ballistic Missile Defense Organization

mj-84414 / 073098

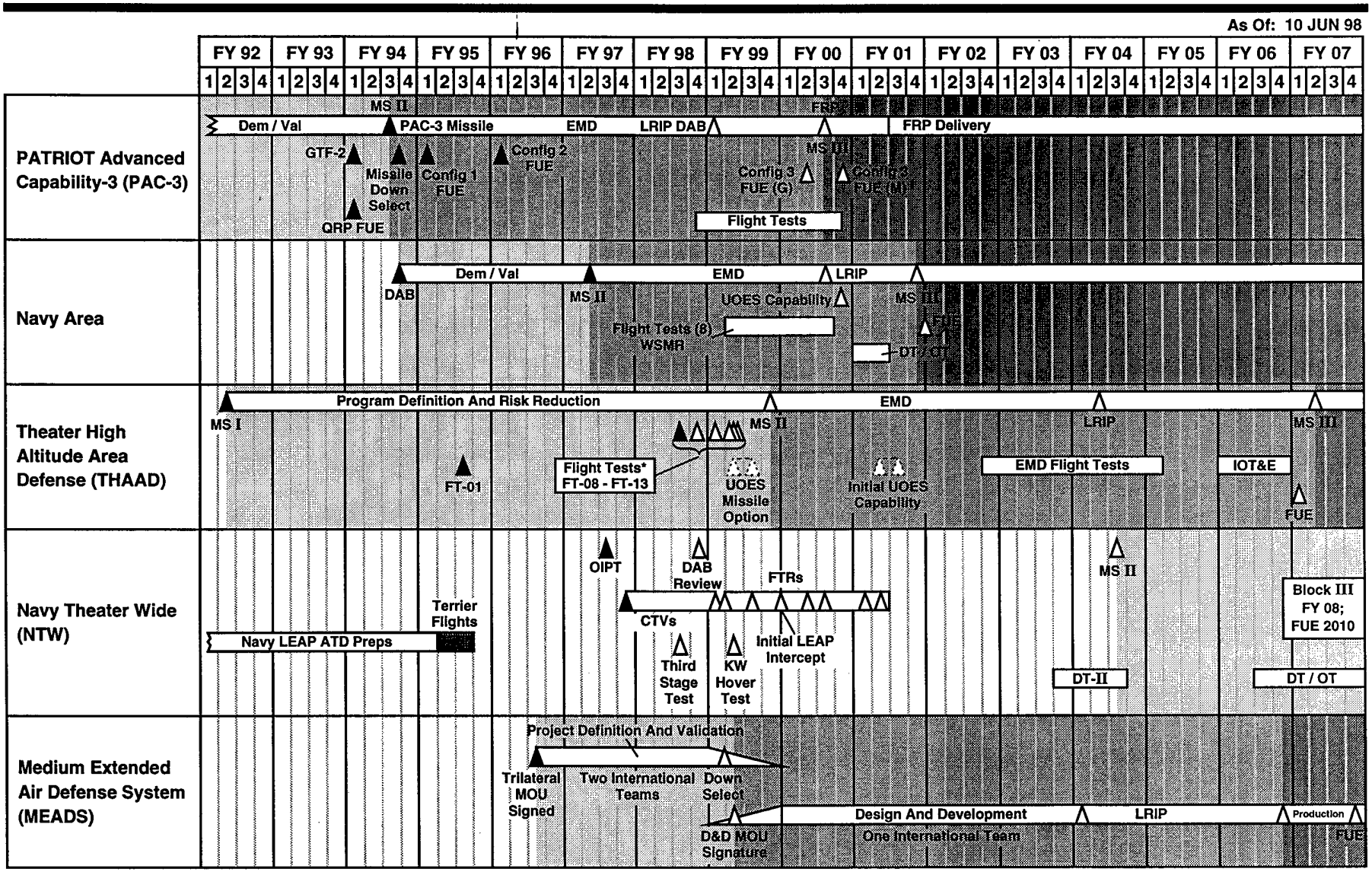
BMD PROGRAM ISSUES

Theater Missile Defense

- Proliferating Threat
- Family Of Systems – Do We Need The Whole Family ?
- THAAD Program Testing – Will It Work ?
- THAAD UOES Decision
- PAC-3 Delay And Cost Overrun
- PAC-3 LRIP Decision
- MEADS Funding Beyond FY 99 ? (DoD Commitment ?)
- Joint Theater Air And Missile Defense – BMDO's Role / Vision
- NTW Funding – Can Additional Funds Accelerate The Program ?
- Welch Report On Testing

mj-79513A / 052998

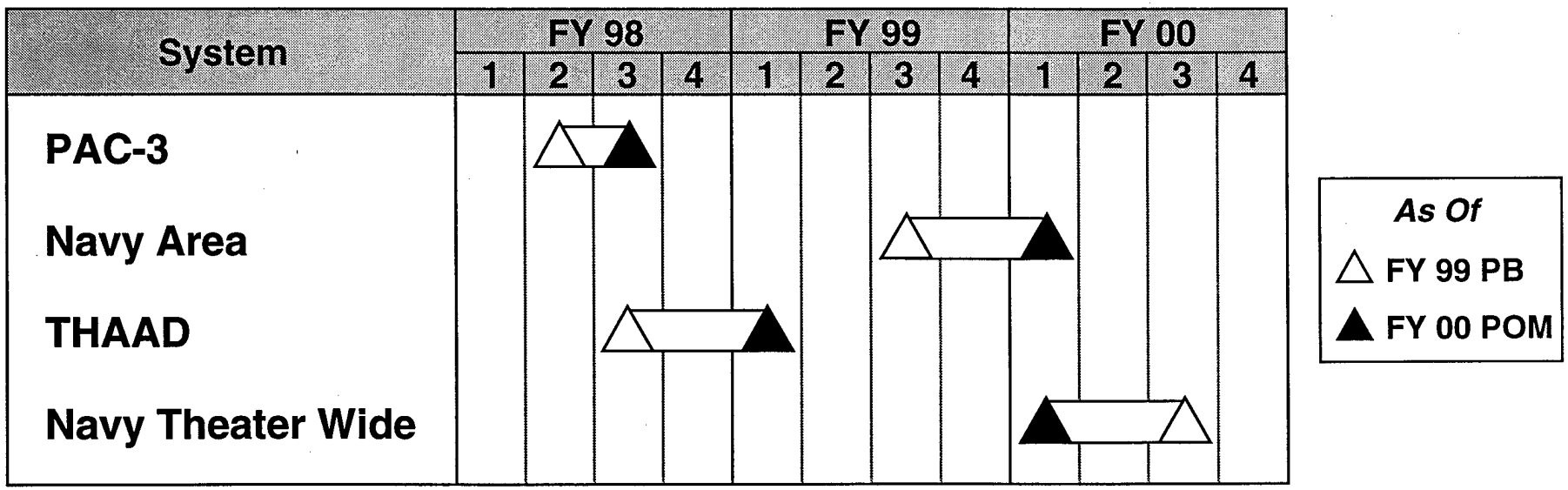
MDAP MASTER SCHEDULE



*Note: Revisions To THAAD Program And Flight Test Program Are Currently Under Review

mj-66047D / 070298

TBMD PROGRESS – FIRST INTERCEPTS



- Slips Result From
  - Technical Difficulties
  - Addition Of Welch Report Items
  - Incorporating Schedule Realism
- Navy Theater Wide Move Results From
  - Better Program Definition
  - Addition Of Funding

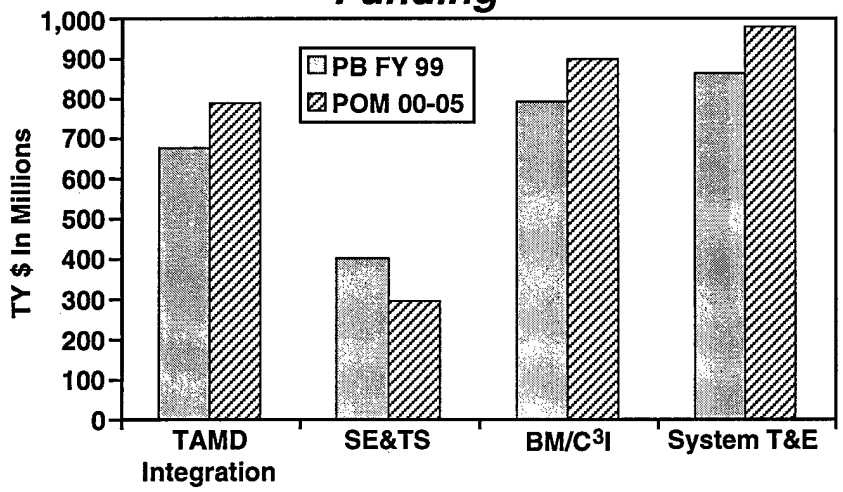
mj-83755 / 072798

FAMILY OF SYSTEMS (FoS) METRICS

Schedule

		FY 97	FY 98	FY 99	FY 00	FY 01	FY 02
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
• APB	BM/C4I	None					
	FoS	JTIDS Terminals					
• PB (FY 99-03)	BM/C4I	▲ MS II DAB	△ TPS-59 Cueing	△ CRC / CIC		△ MIDS Terminal Production Decision	
	FoS	JTIDS Terminals	△ Mini SIT	△ HWILT	△ SIT	△ HWILT △ HWILT	△ SIT
• POM 00-05	BM/C4I	▲ MS II DAB	△ TPS-59 Cueing	△ Cueing	△ MIDS Terminal Production Decision		
	FoS		△ Mini SIT				△ SIT

Funding



Key Performance Parameters

	Design	FY 97	FY 98	Remarks
• Interoperability	■	□	□	
• Combat ID	■	□	□	
• Target Engagement And Negation	■	□	□	
• Minimum Negation Altitude Against TBM	■	□	□	
• Early Warning	■	□	□	

Legend ■ ≥ (0) ▒ < (0) And ≥ (T) □ < (T) □ No Data

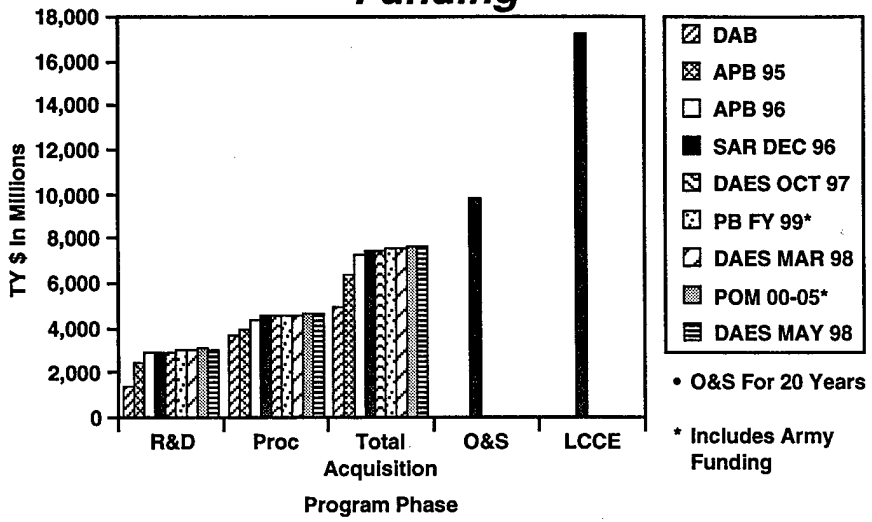
mj-84413 / 073198

PAC-3 PROGRAM METRICS

Schedule

(Missile Quantities)	FY 96				FY 97				FY 98				FY 99				FY 00			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
• APB 20 AUG 96 (1,200)	▲ Config-1 FUE				▲ Config-2 FUE			△ SEP		△ MAR	△ LRIP Decision					△ JUL △ JUL		△ JAN △ DEC	△ Config-3 FUE △ MS III	
• PB FY 99 (1,200)	▲ Config-1 FUE				▲ Config-2 FUE					△ LRIP Decision						△ Config-3 FUE △ MS III				
• POM 00-05 (880)	▲ Config-1 FUE				▲ Config-2 FUE							△ LRIP Decision							△ Config-3 FUE △ MS III	

Funding



Key Performance Parameters

	Design	FY 97	FY 98	Remarks
• Defended Area				
- Sector / Range				Intercept 3Q FY 98
- TBM Range				Intercept 3Q FY 98
- Keep Out				Intercept 3Q FY 98
• SSEKP				Intercept 3Q FY 98
• Mass Attack				Test 4Q FY 98
• Effectiveness				Sled Test Results And Proj. Intercept
• Radar Cross Section				Based On CDT&E And SIT 97
• Reload				LOG Demo 2Q FY 98
• Classification, Discrimination And Identification				Based On CDT&E And SIT 97

Legend: ≥ (0) | < (0) And ≥ (T) | < (T) | No Data

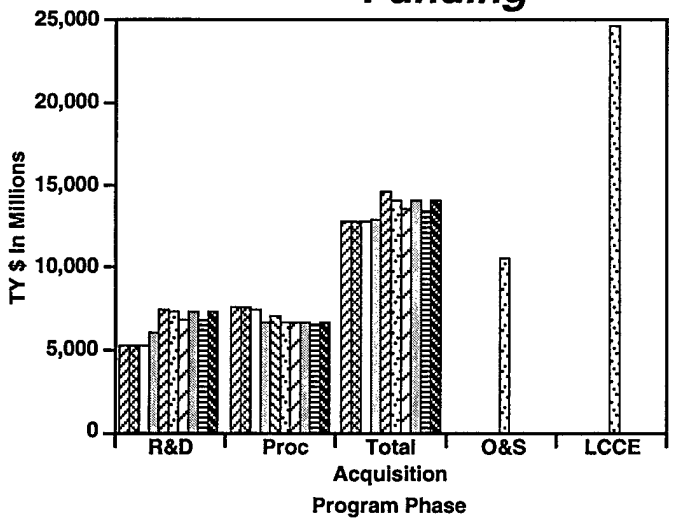
mj-79898 / 073098

THAAD PROGRAM METRICS

Schedule

(Missile Quantities)	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
• APB March 1998 (1,233)			△ MS II					△ LRIP Review		AUG △ FUE	△ MS III
• PB FY 99 (1,233)			△ MS II	△ UOES				△ LRIP Review		△ FUE	
• POM 00-05 (1,233)			△ MS II					△ LRIP Review		△ FUE	△ MS III

Funding



- APB FEB 95
- DAES DEC 94
- DAES DEC 95
- DAES DEC 96
- DAES DEC 97
- APB MAR 98
- PB FY 99
- DAES MAR 98
- POM 00-05
- DAES JUN 98

SAR Data Not Used, Doesn't Contain Procurement Until MS II

Key Performance Parameters

	Design	FY 97	FY 98	Remarks
• Defended Area				Currently In PDRR
• Degree Of Protection				Currently In PDRR
• SSEKP				Currently In PDRR
• Threat / Target Set				Currently In PDRR
• Lethality				Currently In PDRR
• Interoperability				Currently In PDRR

Legend: ≥ (0) | < (0) And ≥ (T) | < (T) | No Data

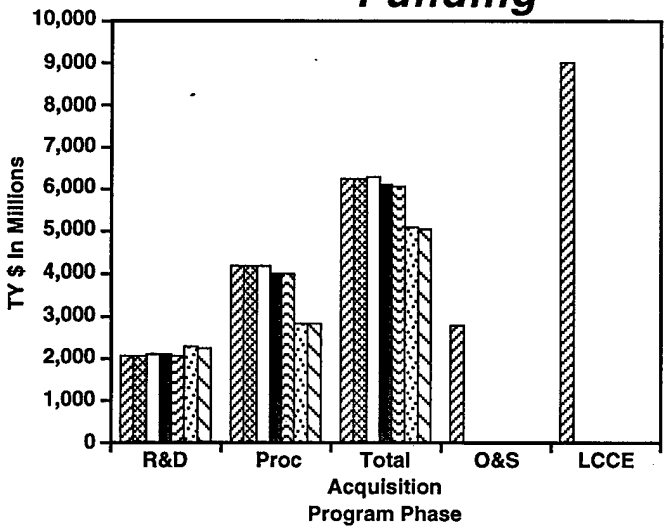
mj-80694 / 073198

NAVY AREA PROGRAM METRICS

Schedule

(Missile Quantities)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
• APB February 1998 (1,500)		MS II		Start WSMR Testing FEB AUG	TECHEVAL Start NOV	MAY AUG FUE JUN	MS III FEB DEC
• PB FY 99 (1,500)		MS II		Start WSMR Testing	TECHEVAL Start NOV	MS III	FUE
• POM 00-05 (750)					TECHEVAL Start NOV	MS III	FUE

Funding



- SAMP FEB 97
- APB FEB 97
- DAES JAN 98
- FY 99 PB*
- DAES APR 98
- 00-05 POM**
- DAES MAY 98

* Includes Navy Funding

** Includes Navy Funding And Missile Quantity Reduction

Key Performance Parameters

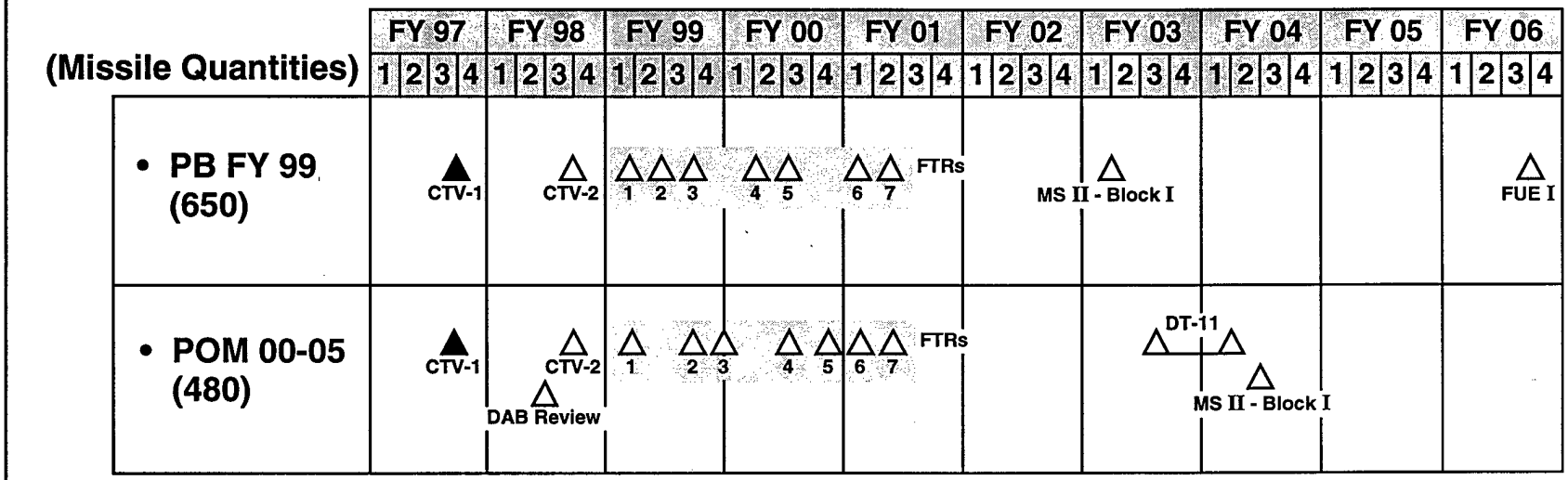
	Design	FY 97	FY 98	Remarks
• Threat Warhead				Awaiting Intercept
• Threat Range				Awaiting Intercept
• RCS				Awaiting Intercept
• ECM				Awaiting Intercept
• Debris				Awaiting Test In 4Q FY 98
• Vehicle Type				Sled Test Results And Proj. Intercept
• Penaids				Based On CDT&E And SIT 97
• Maneuvers				Awaiting Test

Legend: ≥ (0) | < (0) And ≥ (T) | < (T) | No Data

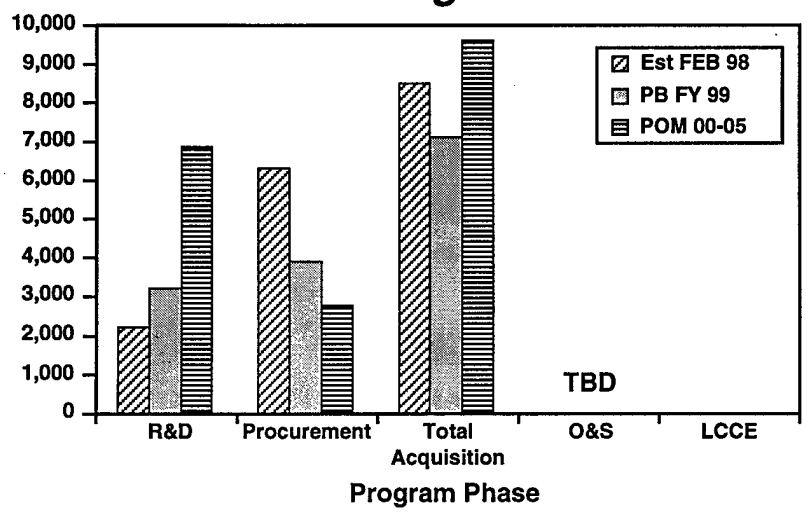
mj-80695 / 073198

NAVY THEATER WIDE PROGRAM METRICS

Schedule



Funding



Key Performance Parameters (Per Draft ORD Dated JAN 98)

	Design	FY 97	FY 98	Remarks
• Threat Range				Awaiting Intercept
• Minimum Intercept Attitude				Awaiting Intercept
• Crossrange				Awaiting Intercept
• P_{SSEKP}				Awaiting Intercept
• Interoperability				Awaiting Test In 4Q FY 98

Legend: ≥ (0) | < (0) And ≥ (T) | < (T) | No Data

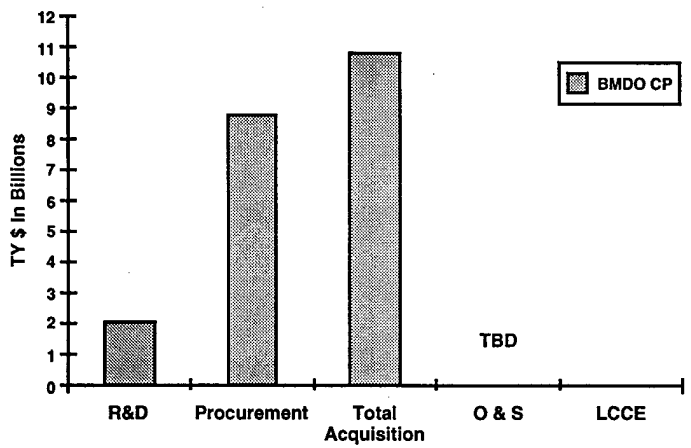
mj-80696 / 073198

MEADS PROGRAM METRICS

Schedule

	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
• PD/V MOU	PD/V		D&D DAB	D&D Start				LRIP			Production	
• PB	PD/V		D&D DAB	(Funding Ends In FY 99)								
• POM 00-05	PD/V	System Design Reviews	D&D DAB	D&D Start				LRIP			Production; OISD	FUE

Funding



Key Performance Parameters

	Design	FY 97	FY 98	Remarks
• Deployability				Currently In PD/V
• Maneuver Force Protection				Currently In PD/V
• Counter The CM / ABT				Currently In PD/V
• Counter The SRBM				Currently In PD/V
• Degree Of Protection				Currently In PD/V

Legend: ≥ (0) | < (0) And ≥ (T) | < (T) | No Data

mj-80697 / 073198