

UNCLASSIFIED

PE NUMBER: 0207423F

PE TITLE: Advanced Communications Systems

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2007
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207423F Advanced Communications Systems
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Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	23.018	41.928	33.584	27.497	58.431	65.850	67.198	68.638	Continuing	TBD
4934 Tactical Air Control Party (TACP)	6.071	8.505	13.522	10.605	10.974	11.151	11.441	11.748	Continuing	TBD
5189 C2ISR JTRS Integration	16.947	33.423	20.062	16.892	47.457	54.699	55.757	56.890	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

TACPs deploy with Army maneuver units and provide a Command and Control (C2) link for Close Air Support (CAS), airlift and AF surveillance/reconnaissance missions. TACPs are equipped with various targeting and communications equipment needed to interface with ground maneuver forces, aircraft conducting CAS operations, aerospace C2 aircraft/agencies, and Intelligence, Surveillance and Reconnaissance (ISR) platforms/agencies. The TACP-Modernization (TACP-M) program provides TACP and Air Support Operations Centers (ASOCs) personnel with the capability to precisely locate and target enemy ground forces by integrating various Laser Targeting Devices (LTD) and ultra high frequency satellite communications (UHF SATCOM) for beyond-line-of-sight (BLOS) Air Force Air Request Net operations. The purpose of the TACP-M program is intended to reduce reliance on voice transmission and replace analog equipment with the latest digital, data link and streaming video (i.e. Remote Operations Video Enhanced Receivers (ROVER)) technology. This capability increase supports joint and multinational interoperability, improves battlefield Situational Awareness (SA), increases targeting accuracy, reduces kill chain decision time, improves data flows/information exchange, and reduces potential fratricide. The TACP-M program supports the GWOT and significantly increased the mission effectiveness of the TACPs and ASOCs during Operations Enduring and Iraqi Freedom. The TACP-M program continues to be instrumental in providing ground communications for TACPs during federal emergency relief operations and Homeland Defense initiatives.

TACP-M is divided into two segments: Dismounted and Vehicular. The dismounted TACP provides a modernized/modular capability via a streamlined acquisition using non-developmental, commercial off-the-shelf (COTS) Manpack Radios (MPR) or Handheld Radios (HHR), LTD such as; Laser Range Finder (LRF), Military Ruggedized Tablet (MRT) combined with TACP Close Air Support System (CASS) software. The TACP Vehicular Communications System (VCS) is an upgrade of the existing TACP vehicular communications system with new technology radios and ancillary components which provides reliable data communications for close air support operations. VCS will be Internet Protocol-capable, Software Compliant Architecture (SCA) compliant radios for voice & data UHF SATCOM and LOS UHF / VHF communications. These funds will continue to develop system integration software (dismounted and vehicular) and will provide limited ASOC gateway (G/W), SADL, Link-16 and other transformational capability as required.

This program funds integration of JTRS and legacy communication systems into Air Force platforms and system engineering of networking architectures specific to the JTRS suite of radios. The integration of capability provided by Joint Tactical Radio System (JTRS) products will provide a common family of software programmable radios for reliable multi-channel voice, data, imagery, and video communications as well as, necessary gateways, routers or other associated components to achieve an IP-based networking capability. JTRS radios will be modular, scalable, and network ready. Legacy and other available upgraded communication products will be utilized until JTRS products, developed by the JTRS JPEO and other vendors who have JTRS and Software Communication

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Architecture (SCA) certifications, are available. The funding provides capabilities on various platforms including but not limited to Global Hawk, Predator, Rivet Joint, and JSTARS. The capability provided by JTRS requires system engineering efforts to standardize critical network parameters to permit the easy transmission and receipt of time-sensitive data that will give the tactical warrior transformational capabilities. The airborne network will provide unprecedented capabilities allowing the platforms to exchange voice and data in an IP-based, heterogeneous environment, including service-only, joint, coalition, and allied operations. The integration of an airborne network capability through JTRS products, legacy and other available upgraded systems is required to meet mission and joint interoperability requirements. Information assurance system engineering will ensure the data exchange capabilities will meet operational commander, theater, and national requirements.

This program is in budget activity 7, Operational System Development, since it examines appropriate emerging technologies for the continuing spiral development of commercial (COTS) equipment, provides software development, and determines and resolves integration issues pertaining to COTS.

(U) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	28.501	52.112	61.670	60.182
(U) Current PBR/President's Budget	23.018	41.928	33.584	27.497
(U) Total Adjustments	-5.483	-10.184		
(U) Congressional Program Reductions		-10.025		
Congressional Rescissions	-1.383	-0.159		
Congressional Increases				
Reprogrammings	-3.203			
SBIR/STTR Transfer	-0.897			
(U) <u>Significant Program Changes:</u>				
- FY06-FY07 increase due to planned JTRS C2ISR development and TACP Laser Targeting Device integration				
- FY07-FY09 funding decreases were to fund higher Air Force priorities				

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Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total	
4934 Tactical Air Control Party (TACP)	6.071	8.505	13.522	10.605	10.974	11.151	11.441	11.748	Continuing	TBD	
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0			

(U) **A. Mission Description and Budget Item Justification**

TACPs deploy with Army maneuver units and provide a Command and Control (C2) link for Close Air Support (CAS), airlift and AF surveillance/reconnaissance missions. TACPs are equipped with various targeting and communications equipment needed to interface with ground maneuver forces, aircraft conducting CAS operations, aerospace C2 aircraft/agencies, and Intelligence, Surveillance and Reconnaissance (ISR) platforms/agencies. The TACP-Modernization (TACP-M) program provides TACP and Air Support Operations Centers (ASOCs) personnel with the capability to precisely locate and target enemy ground forces by integrating various Laser Targeting Devices (LTD) and ultra high frequency satellite communications (UHF SATCOM) for beyond-line-of-sight (BLOS) Air Force Air Request Net operations. The purpose of the TACP-M program is intended to reduce reliance on voice transmission and replace analog equipment with the latest digital, data link and streaming video (i.e. Remote Operations Video Enhanced Receivers (ROVER)) technology. This capability increase supports joint and multinational interoperability, improves battlefield Situational Awareness (SA), increases targeting accuracy, reduces kill chain decision time, improves data flows/information exchange, and reduces potential fratricide. The TACP-M program supports the GWOT and significantly increased the mission effectiveness of the TACPs and ASOCs during Operations Enduring and Iraqi Freedom. The TACP-M program continues to be instrumental in providing ground communications for TACPs during federal emergency relief operations and Homeland Defense initiatives.

TACP-M is divided into two segments: Dismounted and Vehicular. The dismounted TACP provides a modernized/modular capability via a streamlined acquisition using non-developmental, commercial off-the-shelf (COTS) Manpack Radios (MPR) or Handheld Radios (HHR), LTD such as; Laser Range Finder (LRF) and Military Ruggedized Tablet (MRT) combined with TACP Close Air Support System (CASS) software. The TACP Vehicular Communications System (VCS) is an upgrade of the existing TACP vehicular communications system with new technology radios and ancillary components which provides reliable data communications for close air support operations. VCS will be Internet Protocol-capable, Software Compliant Architecture (SCA) compliant radios for voice & data UHF SATCOM and LOS UHF / VHF communications. These funds will continue to develop system integration software (dismounted and vehicular) and will provide limited ASOC gateway (G/W), SADL, Link-16 and other transformational capability as required.

This program is in budget activity 7, Operational System Development, since it examines appropriate emerging technologies for the continuing spiral development of COTS equipment, provides software development, and determines and resolves integration issues pertaining to COTS.

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(U) B. Accomplishments/Planned Program (\$ in Millions)	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Continue TACP Vehicular Communication System (VCS) integration of hardware (GFE & GOTS) development	2.500	0.506	1.124	4.568
(U) Software development and System integration	2.395	5.553	6.785	2.755
(U) Operational and interoperability test planning	0.341	0.825	1.680	1.386
(U) Contractor support and Systems Engineering	0.835	1.621	3.933	1.896
(U) Total Cost	6.071	8.505	13.522	10.605

(U) C. Other Program Funding Summary (\$ in Millions)	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>Cost to Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>						
(U) Advanced Communications System Other Procurement, AF PE 0207423F	16.085	59.517	92.113	142.366	100.354	95.207	74.622	76.102	Continuing TBD

(U) **D. Acquisition Strategy**
 The TACP-M is executing a spiral development for the dismounted segment. System engineering, design, integration, and fielding support is being provided under a full and open competition award (Time and Materials (T&M)). The Vehicular Communication System (VCS) is a current effort with Naval Surface Warfare Center-Crane, IN. This also is a T&M effort which will assist with the generation of key acquisition/contractual documentation (CONOPS, TTPs, ICDs, and TRD) for the FY08 full and open competition award. This contract will deliver an integrated system (both segments: mounted/dismounted) with an emphasis on Reduced Total Ownership Cost (RTOC) over the life cycle of the program.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT NUMBER AND TITLE					
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(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2006 Cost</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>	
(U) <u>Product Development</u>															
ESC Sys Int Software Dev't	T&M	MultiMax, Inc. Largo, Maryland		1.249	Apr-06	0.006	Apr-07	0.562	Oct-07	2.255	Oct-08	Continuing	TBD	TBD	
VCS (ASOC Gateway)		TBD		1.251	Apr-06							Continuing	TBD	TBD	
VCS (MRC-144 Upgrade)		TBD				0.500	Oct-06	0.562	Oct-07	2.313	Oct-08	Continuing	TBD	TBD	
Subtotal Product Development			0.000	2.500		0.506		1.124		4.568		Continuing	TBD	TBD	
Remarks:		Vehicular Communication System (VCS) GFE & COTS hardware integration													
(U) <u>Support</u>															
System Engineering/Software Development	C/FFP	Various		2.395	Oct-05	5.553	Oct-06	6.785	Oct-07	2.755	Oct-08	Continuing	TBD	TBD	
Subtotal Support			0.000	2.395		5.553		6.785		2.755		Continuing	TBD	TBD	
Remarks:															
(U) <u>Test & Evaluation</u>															
Test Agency Support	MIPR	Various		0.341	Nov-05	0.825	Nov-06	1.680	Nov-07	1.386	Nov-08	Continuing	TBD	TBD	
Subtotal Test & Evaluation			0.000	0.341		0.825		1.680		1.386		Continuing	TBD	TBD	
Remarks:															
(U) <u>Management</u>															
Support	Various	Various	0.000	0.835	Dec-05	1.621	Dec-06	3.933	Jan-07	1.896	Mar-08	Continuing	TBD	TBD	
Subtotal Management			0.000	0.835		1.621		3.933		1.896		Continuing	TBD	TBD	
Remarks:															
(U) Total Cost			0.000	6.071		8.505		13.522		10.605		Continuing	TBD	TBD	

Exhibit R-4, RDT&E Schedule Profile

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4934 Tactical Air Control Party
(TACP)

TACP Program Schedule

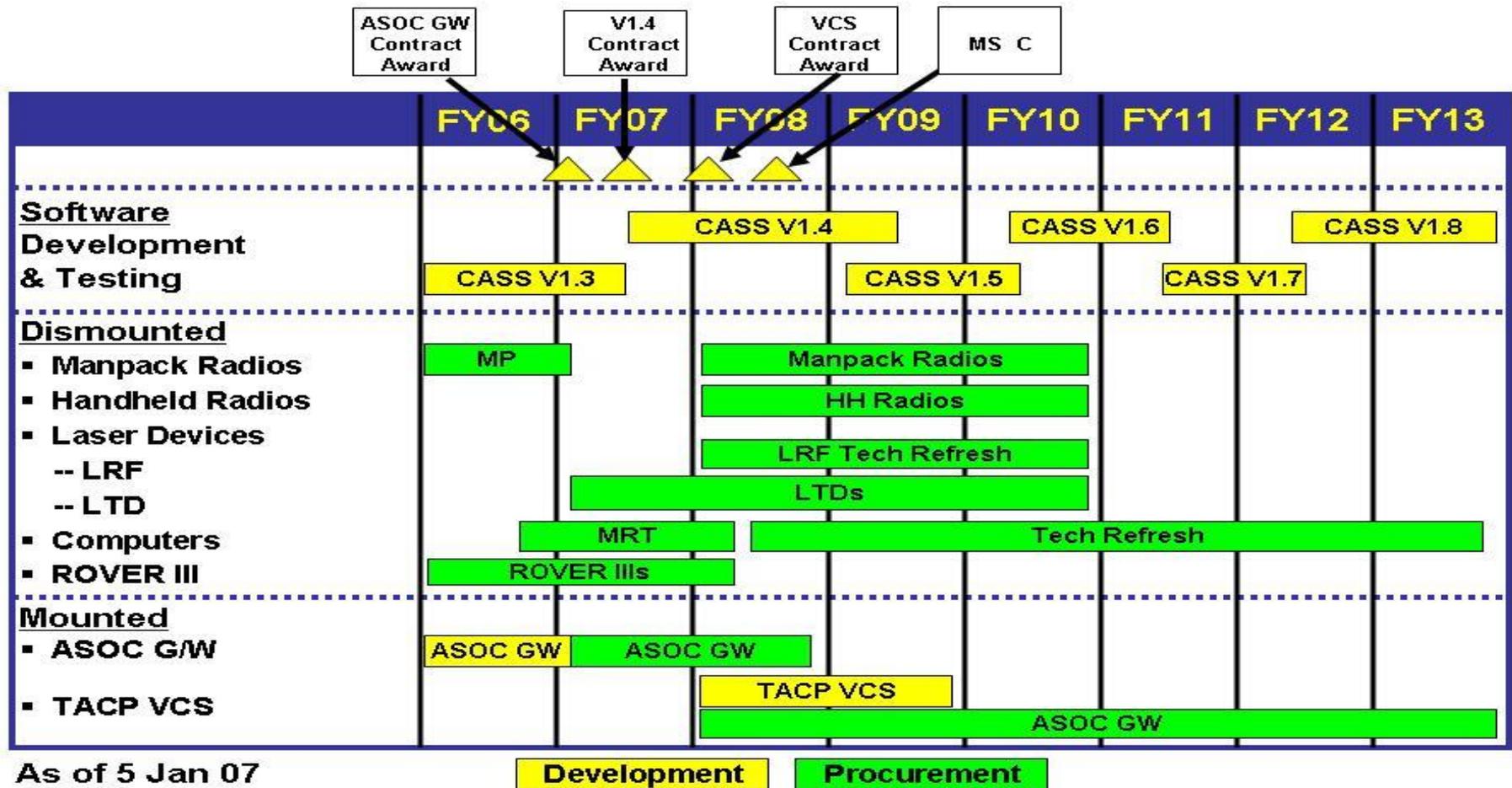


Exhibit R-4a, RDT&E Schedule Detail

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(U) <u>Schedule Profile</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Milestone (MS) C			2Q	
(U) VCS Contract Award (ASOC Gateway)	4Q	1-4Q	1-3Q	
(U) Software Development - TACP-CASS v1.3	3-4Q	1-2Q		
(U) Software Development - Future TACP-CASS v1.4		3-4Q	1-4Q	1-4Q
(U) Software Development - Future TACP-CASS v1.5				1-4Q
(U) TACP-M Vehicular Development			1-4Q	1-4Q

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BUDGET ACTIVITY 07 Operational System Development							PE NUMBER AND TITLE 0207423F Advanced Communications Systems		PROJECT NUMBER AND TITLE 5189 C2ISR JTRS Integration	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
5189 C2ISR JTRS Integration	16.947	33.423	20.062	16.892	47.457	54.699	55.757	56.890	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This program funds integration of JTRS and legacy communication systems into Air Force platforms and system engineering of networking architectures specific to the JTRS suite of radios. The integration of capability provided by Joint Tactical Radio System (JTRS) products will provide a common family of software programmable radios for reliable multi-channel voice, data, imagery, and video communications as well as, necessary gateways, routers or other associated components to achieve an IP-based networking capability. JTRS radios will be modular, scalable, and network ready. Legacy and other available upgraded communication products will be utilized until JTRS products, developed by the JTRS JPEO and other vendors who have JTRS and Software Communication Architecture (SCA) certifications, are available. The funding provides capabilities on various platforms including but not limited to Global Hawk, Predator, Rivet Joint, and JSTARS. The capability provided by JTRS requires system engineering efforts to standardize critical network parameters to permit the easy transmission and receipt of time-sensitive data that will give the tactical warrior transformational capabilities. The airborne network will provide unprecedented capabilities allowing the platforms to exchange voice and data in an IP-based, heterogeneous environment, including service-only, joint, coalition, and allied operations. The integration of an airborne network capability through JTRS products, legacy and other available upgraded systems is required to meet mission and joint interoperability requirements. Information assurance system engineering will ensure the data exchange capabilities will meet operational commander, theater, and national requirements.

C2ISR JTRS program is in Budget Activity 7, Operational System Development, since it supports integration of JTRS products and legacy radios into operational systems.

(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) System Engineering, Planning, and Integration	8.345	17.423	12.532	7.342
(U) Platform Planning and Integration	5.790	16.000	7.530	6.470
(U) Develop Operational and Interoperability Test Plans	2.812	0.000	0.000	3.080
(U) Total Cost	16.947	33.423	20.062	16.892

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) Advanced Communication										
System-Aircraft Procurement, AF PE 0207423F	2.915	0.000	25.288	68.319	159.214	200.171	191.000	197.784	Continuing	TBD
(U) Advanced Communication	11.180	39.264	44.578	123.427	128.800	187.582	254.480	259.527	Continuing	TBD

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5189 C2ISR JTRS Integration**(U) C. Other Program Funding Summary (\$ in Millions)**

System-Other Procurement,
AF PE 0207423F

(U) D. Acquisition Strategy

The JTRS Integration will perform system engineering, system integration, network development, and fielding support to deliver an interoperable, fully synchronized, deployable JTRS system under a Time and Materials (T&M) contract award. This effort will assist various AF platforms to acquire and integrate the next generation communications system, to include all key documentation (CONOPS, TTPs, ICDs, TRDs, etc.) This contract will deliver an integrated system with emphasis on Reduced Total Ownership Cost (RTOC) over the life cycle of the program.

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<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2006 Cost</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
<u>(U) Product Development</u>														
System Engineering, Planning, and Integration	C/FFP	Northrop Grumman, Melbourne, FL	0.000	2.300	Jun-06	4.875	Feb-07	3.059	Feb-08	1.244	Feb-09	Continuing	TBD	TBD
System Engineering, Planning, and Integration	MIPR	Aeronautical Systems Center, Wright-Patterson AFB, OH	0.000	0.850	May-06	3.002	Apr-07	2.266	Feb-08	1.269	Feb-09	Continuing	TBD	TBD
System Engineering, Planning, and Integration	C/FFP	General Atomics, San Diego, CA	0.000	3.700	Mar-06	2.500	Mar-07	1.042	Feb-08	1.766	Feb-09	Continuing	TBD	TBD
System Engineering, Planning, and Integration	C/FFP	L3COM IS, Greenville, TX	0.000	1.200	Aug-06	2.076	Mar-07	1.497	Feb-08	0.000	Mar-09	Continuing	TBD	11.528
System Engineering, Planning, and Integration	MIPR/TBD	Air Force Research Laboratory, Rome, NY	0.000	0.295	Aug-06								0.295	0.295
System Engineering, Planning, and Integration	TBD	Electronic Systems Center, Hanscom AFB, MA	0.000			5.000	Feb-07	4.668	Dec-07	2.463	Dec-08	Continuing	TBD	TBD
Subtotal Product Development			0.000	8.345		17.453		12.532		6.742		Continuing	TBD	TBD
Remarks:														
<u>(U) Planning and Integration</u>														
	MIPR/TBD	ASC/AA (Various), Wright-Patterson AFB, OH		5.790	Sep-06	15.970	Apr-07	5.990	Mar-08	5.222	Mar-09	Continuing	TBD	TBD
Subtotal Planning and Integration			0.000	5.790		15.970		5.990		5.222		Continuing	TBD	TBD
Remarks:														
<u>Development operational and interoperability</u>														
<u>(U) test plans</u>	MIPR/TBD	Test Agency		2.812	Sep-06	0.000		1.540	Mar-09	4.928		Continuing	TBD	TBD

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<p>Subtotal Development operational and interoperability test plans Remarks: (U) Total Cost</p>	<p>D Support Varies</p>	<p>0.000 2.812</p>	<p>0.000</p>	<p>1.540</p>	<p>4.928</p>	<p>Continuing</p>	<p>TBD</p>	<p>TBD</p>	<p>TBD</p>	<p>TBD</p>
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Air Force JTRS Procurement and Integration Schedule

U.S. AIR FORCE Note: includes legacy and other radio procurement until JTRS are avail

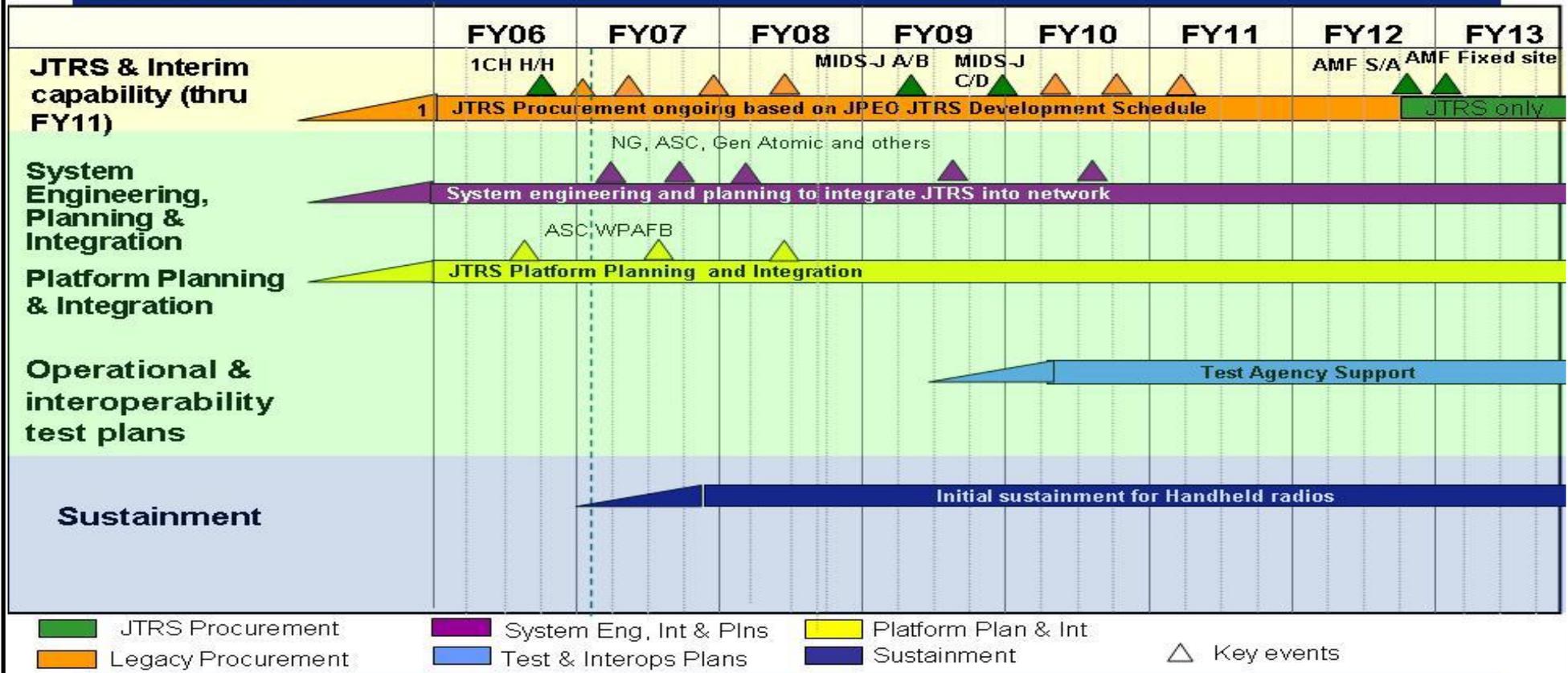


Exhibit R-4a, RDT&E Schedule Detail

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(U) Schedule Profile

(U) System Engineering,

(U) Planning, and Integration

(U) Operational & Interoperability Test Planning

FY 2006

2-4Q

2-4Q

1-4Q

FY 2007

1-4Q

1-4Q

1-4Q

FY 2008

1-4Q

1-4Q

1-4Q

FY 2009

1-4Q

1-4Q

1-4Q