Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

3600: Research, Development, Test & Evaluation, Air Force

PE 0401839F: Airlift/Other Tactical Data Link

BA 7: Operational Systems Development

COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	7.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
675040: Airlift/Other Tactical Data Link	7.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.008

#### A. Mission Description and Budget Item Justification

Tactical Data Links (TDL), as a subset of the broader Airborne Network, are used in a combat environment to exchange information such as messages, data, radar tracks, target information, platform status, imagery, and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when operating under rapidly changing operational conditions. TDLs are used by all service theater Command and Control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link-16, Link-11, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Integrated Broadcast Service (IBS), Tactical Targeting Network Technology (TTNT) and Multifunction Advanced Data Link (MADL).

This effort provides critical capability and enhancements to the Airborne Network by creating common development, integration and interoperability across the Air Mobility and Special Operations Forces (SOF) Fleets. This development effort incorporates Line of Sight (LOS) and Beyond Line of Sight (BLOS) TDL capability into the Air Mobility and SOF Fleets to include, but not be limited to: C-17, KC-135, C-130, KC-10, C-5 and other Air Mobility, Refueling, and SOF aircraft. TDLs provide a secure, jam-resistant, digital-data-transfer-network capability with new and standardized waveform and data format allowing intra- and inter-flight communications. TDLs increase mission effectiveness, provide situational awareness, provide positive identification of aircraft in the network, correlate on- and off-board sensor data, target, and threat information. TDL efforts include, but are not limited to: changes and additions to the TDL message standard (MIL-STD-6016D) and other data link interoperability standards including necessary Interface Change Proposals (ICPs); interoperability certification testing with the Joint Interoperability Test Center (JITC); future development, integration, and verification of TDL Operational Flight Program (OFP) upgrades and federated networking components and applications; data gathering processes for future network-centric assessments for all Air Mobility Command (AMC) and Air Force Special Operations Command (AFSOC) platforms; and Joint Tactical Radio System (JTRS) migration activities.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

Airlift/Other Tactical Data Link program is in Budget Activity 7, Operational System Development, since it supports integration of tactical data links into operational systems.

**UNCLASSIFIED** 

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

3600: Research, Development, Test & Evaluation, Air Force

BA 7: Operational Systems Development

R-1 ITEM NOMENCLATURE

PE 0401839F: Airlift/Other Tactical Data Link

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

	FY 2009	FY 2010	<b>FY 2011 Base</b>	FY 2011 OCO	<u>FY 2011 Total</u>
Previous President's Budget	7.923	0.000	0.000	0.000	0.000
Current President's Budget	7.700	0.000	0.000	0.000	0.000
Total Adjustments	-0.223	0.000	0.000	0.000	0.000
<ul> <li>Congressional General Reductions</li> </ul>		0.000			
<ul> <li>Congressional Directed Reductions</li> </ul>		0.000			
<ul> <li>Congressional Rescissions</li> </ul>	0.000	0.000			
<ul> <li>Congressional Adds</li> </ul>		0.000			
<ul> <li>Congressional Directed Transfers</li> </ul>		0.000			
Reprogrammings	0.000	0.000			
SBIR/STTR Transfer	-0.223	0.000			
<ul> <li>Other Adjustments</li> </ul>	0.000	0.000	0.000	0.000	0.000

# **Change Summary Explanation**

In FY09, Congress provided USAF requested transfer of \$12.612M APAF funding to \$8.0M RDT&E funds.

**DATE:** February 2010

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APPROPRIATION/BUDGET ACTIV 3600: Research, Development, Test BA 7: Operational Systems Develop			<b>IOMENCLA</b> 9F: <i>Airlift/Otl</i>	<b>TURE</b> her Tactical L	Data Link	PROJECT 675040: Airlift/Other Tactical Data Link					
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
675040: Airlift/Other Tactical Data Link	7.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.008

#### A. Mission Description and Budget Item Justification

Quantity of RDT&E Articles

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force

Tactical Data Links (TDL), as a subset of the broader Airborne Network, are used in a combat environment to exchange information such as messages, data, radar tracks, target information, platform status, imagery, and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when operating under rapidly changing operational conditions. TDLs are used by all service theater Command and Control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link-16, Link-11, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Integrated Broadcast Service (IBS), Tactical Targeting Network Technology (TTNT) and Multifunction Advanced Data Link (MADL).

This effort provides critical capability and enhancements to the Airborne Network by creating common development, integration and interoperability across the Air Mobility and Special Operations Forces (SOF) Fleets. This development effort incorporates Line of Sight (LOS) and Beyond Line of Sight (BLOS) TDL capability into the Air Mobility and SOF Fleets to include, but not be limited to: C-17, KC-135, C-130, KC-10, C-5 and other Air Mobility, Refueling, and SOF aircraft. TDLs provide a secure, jam-resistant, digital-data-transfer-network capability with new and standardized waveform and data format allowing intra- and inter-flight communications. TDLs increase mission effectiveness, provide situational awareness, provide positive identification of aircraft in the network, correlate on- and off-board sensor data, target, and threat information. TDL efforts include, but are not limited to: changes and additions to the TDL message standard (MIL-STD-6016D) and other data link interoperability standards including necessary Interface Change Proposals (ICPs); interoperability certification testing with the Joint Interoperability Test Center (JITC); future development, integration, and verification of TDL Operational Flight Program (OFP) upgrades and federated networking components and applications; data gathering processes for future network-centric assessments for all Air Mobility Command (AMC) and Air Force Special Operations Command (AFSOC) platforms; and Joint Tactical Radio System (JTRS) migration activities.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

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Airlift/Other Tactical Data Link program is in Budget Activity 7, Operational System Development, since it supports integration of tactical data links into operational systems.

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

**UNCLASSIFIED** 

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force **DATE:** February 2010 **PROJECT** APPROPRIATION/BUDGET ACTIVITY **R-1 ITEM NOMENCLATURE** 3600: Research, Development, Test & Evaluation, Air Force PE 0401839F: Airlift/Other Tactical Data Link 675040: Airlift/Other Tactical Data Link BA 7: Operational Systems Development B. Accomplishments/Planned Program (\$ in Millions) FY 2011 FY 2011 FY 2011 **FY 2009 FY 2010** Base OCO Total MAJOR THRUST: Mobility Air Forces (MAF) Airborne Networking Integration (MANI) 2.822 0.000 0.000 0.000 0.000 FY 2009 Accomplishments: In FY 2009: Continued Group A Joint Tactical Radio System (JTRS) Installation and Integration (I&I) Risk Reduction on 4 MAF Platforms: C-5, C-17, KC-10 & C-130J. Completed Aircraft Information Broker(AIB) Output Interface Document (OID), System/Subsystem Specification (SSS), cockpit and cargo display installation designs. Completed AMF JTRS I&I Design and Verification, Radio Frequency (RF) Interoperability Test Plan (ITP) and provide preliminary I&I cost data. FY 2010 Plans: In FY 2010: N/A

FY 2011 Base Plans: In FY 2011: N/A

FY 2011 OCO Plans:

In FY 2011 OCO: Not Applicable.

MAJOR THRUST: MAF Airborne-network Multi-Layered Sensing (MAMLS)

# FY 2009 Accomplishments:

In FY 2009: Continued MAF DLI Internet Protocol (IP) Beyond Line of Sight (BLOS) Network Architecture Risk Reduction including development of Command & Control (C2) message schema for compatible information exchange between MAF aircraft and ground C2 nodes. Completed Air Force Research Lab (AFRL) in-house simulation of C2 message exchange and Real-Time Information in the Cockpit (RTIC). Demonstrated Common Situational Awareness (CSA) software, secure C2 message transfer and RTIC display between emulated MAF aircraft and Tanker Airlift Control Center (TACC) via Secure Internet Protocol Router Network (SIPRNet) connectivity.

#### **UNCLASSIFIED**

2.198

0.000

0.000

0.000

0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force				DATE: Feb	ruary 2010	
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0401839F: Airlift/Other Tactical	Data Link	<b>PROJECT</b> 675040: <i>Air</i>	lift/Other Tac	ctical Data L	ink
B. Accomplishments/Planned Program (\$ in Millions)	,		-			
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: In FY 2010: N/A						
FY 2011 Base Plans: In FY 2011: N/A						
FY 2011 OCO Plans: In FY 2011 OCO: N/A						
MAJOR THRUST: C-130 Avionics Modernization Program (AMP) Risk Reduction	Airborne/Maritime/Fixed (AMF) JTRS	1.350	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Completed of Group A Risk Reduction study for to include networking architecture design, cost/schedule risk, cost data.						
FY 2010 Plans: In FY 2010: N/A						
FY 2011 Base Plans: In FY 2011: N/A						
FY 2011 OCO Plans:						

0.604

0.000

0.000

0.000

0.000

In FY 2011 OCO: N/A

MAJOR THRUST: Air Mobility Command (AMC) C2 Ground Interface Development

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

PROJECT

3600: Research, Development, Test & Evaluation, Air Force PE 0401839F: Airlift/Other Tactical Data Link 675040: Airlift/Other Tactical Data Link

BA 7: Operational Systems Development

DA 1. Operational Systems Development

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: In FY 2009: Developed C2 message schema interface and integration into AMC terrestrial C2 ground systems.					
FY 2010 Plans: In FY2010: N/A					
FY 2011 Base Plans: In FY 2011: N/A					
FY 2011 OCO Plans: In FY 2011 OCO: N/A					
MAJOR THRUST: Operational/Program Office Support	0.726	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Operational/Program Office Support					
FY 2010 Plans: In FY 2010: N/A					
FY 2011 Base Plans: In FY 2011: N/A					
FY 2011 OCO Plans: In FY 2011 OCO: N/A					
Accomplishments/Planned Programs Subtotals	7.700	0.000	0.000	0.000	0.000

# **UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

**PROJECT R-1 ITEM NOMENCLATURE** 

3600: Research, Development, Test & Evaluation, Air Force PE 0401839F: Airlift/Other Tactical Data Link 675040: Airlift/Other Tactical Data Link

BA 7: Operational Systems Development

C. Other Program Funding Summa	ry (\$ in Mill	ions)									
			FY 2011	FY 2011	FY 2011					Cost To	
<u>Line Item</u>	FY 2009	FY 2010	<u>Base</u>	000	<u>Total</u>	FY 2012	FY 2013	FY 2014	FY 2015		<b>Total Cost</b>
• PE 0207434F: Link 16 Sup &	278.961	65.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sus, (RDT&E)											
• PE 0207445F: <i>Fighter TDL,</i>	55.069	66.872	85.492	0.000	85.492	169.748	118.655	0.000	0.000	0.000	0.000
(RDT&E)											
• PE 0207446F: <i>Bomber TDL</i> ,	21.603	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(RDT&E)											
• PE 0207448F: <i>C2ISR TDL</i> ,	1.671	1.659	1.584	0.000	1.584	1.608	1.633	1.658	1.682	0.000	0.000
(RDT&E)											
• PE 0604281F: TDN Enterprise,	0.000	87.444	102.941	0.000	102.941	67.790	40.507	43.037	34.930	0.000	0.000
(RDT&E)											
• PE 0207434F (1): Link 16 Sup &	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sus, (APAF)	F 700	0.505	0.000	0.000	0.000	7.005	0.005	7.040	40.705	0.000	0.000
• PE 0207445F (2): Fighter TDL,	5.788	9.585	0.929	0.000	0.929	7.695	6.925	7.043	12.785	0.000	0.000
(APAF)	0.000	0.000	0.000	0.000	0.000	0.220	0.227	0.260	0.070	0.000	0.000
• PE 0207446F (3): Bomber TDL, (APAF)	0.000	0.000	0.000	0.000	0.000	0.339	0.337	0.368	0.972	0.000	0.000
• PE Not Provided (5074):	16.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PE0207434F, Link 16 Sup & Sus,	10.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(OPAF)											
• PE 0604281F (4): <i>TDN</i>	0.000	32.343	21.742	0.000	21.742	9.270	0.337	0.311	0.240	0.000	0.000
Enterprise, (OPAF)	0.000	02.040	21.772	0.000	21.772	5.270	0.007	0.511	0.240	0.000	0.000
• PE 0207434F (5): Link 16 Sup &	131.597	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sus, (O&M)	101.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0207445F (6): Fighter TDL,	0.208	0.198	0.219	0.000	0.219	0.221	0.257	0.258	0.268	0.000	0.000
(O&M)	0.200	330	3.2.0	0.000	3.2.0	0.221	0.201	0.200	0.200	0.000	0.000
• PE 0401839F: Airlift TDL, (O&M)	1.574	8.175	7.857	0.000	7.857	3.629	1.634	1.666	2.944	0.000	0.000
	0.000	33.727	31.382	0.000	31.382	19.165	17.303	20.026	21.534	0.000	0.000

# **UNCLASSIFIED**

R-1 Line Item #229 Page 7 of 13

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force

APPROPRIATION/BUDGET ACTIVITY R-1 ITEM NOMENCLATURE PROJECT

3600: Research, Development, Test & Evaluation, Air Force PE 0401839F: Airlift/Other Tactical Data Link 675040: Airlift/Other Tactical Data Link

BA 7: Operational Systems Development

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

FY 2011 FY 2011 FY 2011 Cost To

Line Item FY 2009 FY 2010 Base OCO Total FY 2012 FY 2013 FY 2014 FY 2015 Complete Total Cost

• PE 0604281F (7): *TDN Enterprise*, (O&M)

#### **D. Acquisition Strategy**

The 653rd Electronics Systems Group (ELSG) provides for common development of integration and interoperability across the entire Airborne Network and ensures that TDLs are procured and maintained as joint, end-to-end, command-and-control systems. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor.

#### **E. Performance Metrics**

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

BA 7: Operational Systems Development

R-1 ITEM NOMENCLATURE

**PROJECT** 

3600: Research, Development, Test & Evaluation, Air Force

PE 0401839F: Airlift/Other Tactical Data Link

675040: Airlift/Other Tactical Data Link

**Product Development (\$ in Millions)** 

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Group A Risk Reduction/ Design - MANI	Various/ Various	Various Various	10.021	0.000		0.000		0.000		0.000	0.000	10.021	Continuing
C-130 AMP AMF JTRS Risk Reduction	Various/ Various	Various Various	1.350	0.000		0.000		0.000		0.000	0.000	1.350	0.000
AFRL Lab Development	Various/ Various	AFRL Dayton, Ohio	2.198	0.000		0.000		0.000		0.000	0.000	2.198	0.000
		Subtotal	13.569	0.000		0.000		0.000		0.000	0.000	13.569	

#### Remarks

# **Support (\$ in Millions)**

				FY 2	010	FY 2 Ba	-	FY 2		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AMC C2 Interface Development	Various/ Various	Various Various	0.604	0.000		0.000		0.000		0.000	0.000	0.604	0.000
		Subtotal	0.604	0.000		0.000		0.000		0.000	0.000	0.604	0.000

#### Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

**PROJECT** 

3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development

PE 0401839F: Airlift/Other Tactical Data Link

675040: Airlift/Other Tactical Data Link

**Test and Evaluation (\$ in Millions)** 

				FY 2	010	FY 2 Ba	-	FY 2	2011 CO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test	Various/ Various	Various Various	0.567	0.000		0.000		0.000		0.000	0.000	0.567	Continuing
		Subtotal	0.567	0.000		0.000		0.000		0.000	0.000	0.567	

#### Remarks

# **Management Services (\$ in Millions)**

				FY 2010			FY 2011 Base		FY 2011 OCO				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office and Contractor	TBD/TBD	TBD TBD	0.000	0.000		0.000		0.000		0.000	0.000	0.000	Continuing
Support	C/FFP	Various Various	3.541	0.000		0.000		0.000		0.000	0.000	3.541	Continuing
		Subtotal	3.541	0.000		0.000		0.000		0.000	0.000	3.541	

#### Remarks

	Total Prior Years Cost	FY 2010	FY 2	-	FY 2	-	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	18.281	0.000	0.000		0.000		0.000	0.000	18.281	

			UNCL	ASSIFIED						
Exhibit R-3, RDT&E Project Cost Analysis: Pl	B 2011 Air Forc	e					DATE: Febru	ary 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluatio BA 7: Operational Systems Development	on, Air Force			NOMENCLATURE 339F: Airlift/Other Ta		<b>PROJECT</b> 675040: <i>Aii</i>	rirlift/Other Tactical Data Link			
	Total Prior Years Cost	FY 20	010	FY 2011 Base	FY 2011 OCO	FY 20 <sup>-</sup> Total		Total Cost	Target Value of Contract	
Remarks  Total Prior Years Cost may include only FY 2009 data.										

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Air Force

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

BA 7: Operational Systems Development

R-1 ITEM NOMENCLATURE

**PROJECT** 

3600: Research, Development, Test & Evaluation, Air Force

PE 0401839F: Airlift/Other Tactical Data Link

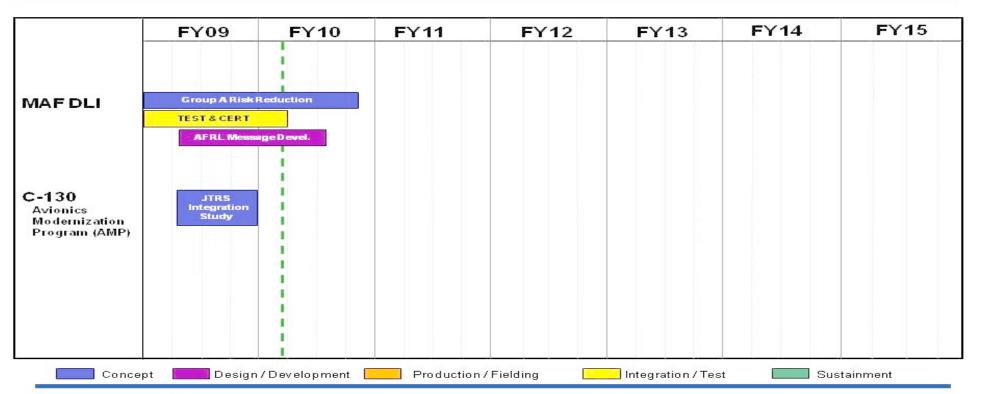
675040: Airlift/Other Tactical Data Link



# Mobility Air Forces Data Link Integration (MAF DLI) Schedule

(as of 10 Dec 09)





Integrity - Service - Excellence

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Air Force

APPROPRIATION/BUDGET ACTIVITY
3600: Research, Development, Test & Evaluation, Air Force
BA 7: Operational Systems Development

BA 7: Operational Systems Development

DATE: February 2010

R-1 ITEM NOMENCLATURE
PE 0401839F: Airlift/Other Tactical Data Link

675040: Airlift/Other Tactical Data Link

# Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
Group A Risk Reduction	1	2009	4	2010
MAF/DLI Test & Certification	1	2009	1	2010
AFRL Message Development	2	2009	3	2010
AMF JTRS Risk Reduction/Integration Study	2	2009	4	2009