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

APPROPRIATION/BUDGET ACTIVITY
3600: Research, Development, Test & Evaluation, Air Force

R-1 ITEM NOMENCLATURE
PE 0207434F: Link 16 Support and Sustainment

DATE: February 2010

BA 5: Development & Demonstration (SDD)

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	278.961	65.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
655050: TDL System Integration	50.973	65.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
655262: Family of Gateways	227.988	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note

In FY 2010, Projects 655050, TDL System Integration, and 655262, Family of Gateways, efforts transferred to PE 0604281F, Tactical Data Networks Enterprise, in order to create a new PE.

A. Mission Description and Budget Item Justification

Tactical Data Links (TDLs) 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), Intra-Flight Data Link (IFDL), Multifunction Advanced Data Link (MADL), Tactical Targeting Network Technology (TTNT), Flexible Access Secure Transfer (FAST), Advanced Tactical Data Link (ATDL), and Radar Common Data Link (R-CDL).

This effort provides critical capability and enhancements to the Airborne Network by creating common development, integration and interoperability among ground and air platforms. Utilization of TDLs in a joint environment requires the integration of terminals [e.g., Joint Tactical Information Distribution System (JTIDS) or Multifunctional Information Distribution System (MIDS)] into host platforms, and designing interoperability of data link networks across all deployed joint and allied platforms. The 653rd Electronic Systems Group (653rd ELSG) performs several cross-platform activities to ensure proper integration of TDL capabilities and interoperability of TDL networks. TDL efforts include incorporating changes and additions to the Link 16 message standard (MIL-STD-6016C), incorporating Link 16 enhancements and interoperable Systems Management and Requirements Transformation (iSMART), a process which enables network centric interoperability assessments to be made more quickly and effectively. The Joint Interoperability of Tactical Command and Control Systems (JINTACCS) program ensures platform/system interoperability through the development and management of the joint/combined architecture, tactical information exchange requirements (IERs), interface definitions and protocols, platform/system implementations, employment concepts, and operating procedures. This program participates in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

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 0207434F: Link 16 Support and Sustainment

BA 5: Development & Demonstration (SDD)

Gateway systems enable combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, and/or space-based C4ISR networks to produce operational effects not possible within individual networks. The AF continues to enhance the interoperability and capabilities of fielded gateways such as the Joint Air Defense System Integrator (JADSI), Joint Range Extension (JRE) functionality, Pocket J, and Roll-On Beyond-line-of-sight Enhancement (ROBE).

The Air Force is leading the effort to develop a materiel solution to satisfy a CENTCOM Joint Urgent Operational Need (JUON) within the time parameters specified by the DEPSECDEF. The Battlefield Airborne Communications Node (BACN) JUON calls for 24/7 operation of the BACN payload to support current operations. BACN provides interoperability between disparate Tactical Data Links (TDLs) by receiving the various signals, bridging and forwarding them via an array of waveforms. This functionality permits single network operations and translation between Link 16 and Situational Awareness Data Link (SADL), as well as beyond line-of-sight (BLOS) connectivity. BACN enhances this capability by connecting to the airborne IP network allowing information exchange. The BACN payload is an airborne data processing and communications system that integrates a suite of commercial off-the-shelf (COTS) processor, storage and information technology (IT) equipment and existing military airborne communications systems. The BACN payload also integrates existing and newly developed applications and services to provide range extension and connectivity for dissimilar communications systems that process, translate, transmit and store critical data for end users (e.g., Combined Air Operations Center, Tactical Air Control Parties, Special Operations forces, and airborne command and control and tactical platforms. A prototype BACN equipped BD-700 has been operating in theater since December 2008 per Deployment Order issued 29 August 2008. The BACN JUON is comprised of the BACN payload integrated onto two BD-700s and two Global Hawk Block 20 air vehicles operating as a system.

Common Link Integration Processing (CLIP) is an Air Force program to develop a common, reusable, configurable, and extensible tactical data link message processing solution for airborne maritime, and fixed-site systems.

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

This program is in budget activity 5 (System Development and Demonstration (SDD)) because it supports mature system development, integration and demonstrations, initial fielding support activities, operational support activities, and support of special projects.

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 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and Sustainment

B. Program Change Summary (\$ in Millions)

	FY 2009	FY 2010	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	192.460	0.000	0.000	0.000	0.000
Current President's Budget	278.961	65.619	0.000	0.000	0.000
Total Adjustments	86.501	65.619	0.000	0.000	0.000
 Congressional General Reductions 		0.000			
 Congressional Directed Reductions 		0.000			
 Congressional Rescissions 	0.000	0.000			
 Congressional Adds 		65.619			
 Congressional Directed Transfers 		0.000			
 Reprogrammings 	0.000	0.000			
 SBIR/STTR Transfer 	0.000	0.000			
 Other Adjustments 	86.501	0.000	0.000	0.000	0.000

Change Summary Explanation

FY09 OCO reprogrammed \$61.0M for BACN JUON Received FY09 OMNIBUS Adjustment \$31.5M for BACN JUON Received FY 10 \$79.3M Congressional Increase for BACN

Exhibit R-2A, RDT&E Project Just	ification: Pl	3 2011 Air F	orce						DATE: Feb	ruary 2010	
APPROPRIATION/BUDGET ACTIV 3600: Research, Development, Test BA 5: Development & Demonstration	& Evaluatio	n, Air Force	Sustainment								
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
655050: TDL System Integration	50.973	65.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In FY 2010, Project 655050, TDL System Integration transferred to PE 0604281F (Tactical Data Networks Enterprise).

A. Mission Description and Budget Item Justification

TDLs are used in a combat environment to exchange information such as messages, data, radar tracks, target information, platform status, imagery, and mission assignments. TDLs provide interoperable data exchange, local and global connectivity, and situational awareness to the tactical user when operating under rapidly changing operational conditions. TDLs are used by the Air Force, Army, Navy, and Marine Corps Theater Command and Control (C2) elements, weapons and sensor platforms. TDLs include, but are not limited to: Link 16, Link 11, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Integrated Broadcast Service (IBS), Intra-Flight Data Link (IFDL), Multifunction Advanced Data Link (MADL), Tactical Targeting Network Technology (TTNT), Flexible Access Secure Transfer (FAST-FY09 Congressional Add), Advanced Tactical Data Link (ATDL), and Radar Common Data Link (R-CDL).

The number of Air Force platforms hosting TDLs is expanding from C2 aircraft (E-3, E-8, etc.) to the fighter, bomber, ISR, tanker, airlift and other tactical fleets (F-15, F-16, F-22A, Rivet Joint, B-1, B-2, B-52, etc.). Utilization of TDLs in a joint environment requires the integration of terminals into host platforms and interoperability of TDL networks across all deployed joint and allied platforms. Network Centric Transformation activities performed by the 653rd Electronic Systems Group (653rd ELSG) include, but are not limited to: enabling and supporting the transformation to network-centric operations, Network Enabled Weapons (previously Weapons Data Link), analysis and integration efforts encompassing hardware, software, operational Link 16 enhancements, and training and logistics development, certification of individual TDL implementations to joint and allied standards, establishment of service-wide network management procedures and operations, system wide enhancements and test.

In addition, this project funds the development and integration of the Joint Interface Control Officer (JICO) - Support System (JSS). JSS is an AF-led joint program to develop a TDL management toolkit to enable JICOs to plan multi-TDL architectures, manage data exchange requirements, execute and monitor a multi-TDL network, and respond to correct network deficiencies.

Joint Interoperability of Tactical Command and Control Systems (JINTACCS) is a Joint Staff-directed program providing Air Force activities responsible for ensuring the interoperability of AF TDLs [including, but not limited to Tactical Digital Information Links (TADILs) and Variable Message Formats (VMF)] and United States Message

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
3600: Research, Development, Test & Evaluation, Air Force	PE 0207434F: Link 16 Support and	655050: <i>TL</i>	DL System Integration
BA 5: Development & Demonstration (SDD)	Sustainment		

Text Format (USMTF) systems with the associated Joint and allied/coalition systems. This includes the coordination of all TDL and USMTF message standards configuration management, platform/system interoperability assessments and interoperability certification testing. The Air Force JINTACCS program supports the Assistant Secretary of Defense (ASD) directive on harmonization of US and NATO messages (e.g., Air Tasking Order and Air Control Order). This budget activity also includes TDL roadmap configuration management, Interoperable System Management and Requirements Transformation (iSMART) implementation. This program will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

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

This program is in Budget Activity 5 (System Development and Demonstration (SDD)) because it supports mature system development, integration and demonstrations, initial fielding support activities, and development of special projects.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Major Thrust: TDN MANAGEMENT AND INITIAL FIELDING	23.424	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Joint Interface Control Officer Support System (JSS) completed production representative development and system testing (DT&E, OT&E) required for FY09 Milestone C decision. TDL Integration, Fielding and Support: provided initial fielding support for units/platforms fielding a data link capability. This support consisted of organic and contractor teams that provided Tactics, Techniques & Procedures (TTP) training, equipment and operations expertise needed to set-up initial TDL operations and field installations. Developed TDL architectures for implementation at AF and Joint locations worldwide resulting in a 20%-100% increase in TDL mission capability. Supported AF and Joint TDL experiments. FY 2010 Plans:					
In FY 2010: N/A Efforts moved to PE 0604281F FY 2011 Base Plans:					
In FY 2011: N/A Efforts moved to PE 0604281F					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force				DATE: Feb	uary 2010	
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0207434F: Link 16 Support and Sustainment		PROJECT 655050: <i>TE</i>	L System In	tegration	
B. Accomplishments/Planned Program (\$ in Millions)	,					
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable.						
Major Thrust: NETWORK CENTRIC TRANSFORMATION		12.703	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Network Centric Transformation activities included transformation to network centric operations, Network Enabled Link), Network Centric Capability Assessment, Link 16 networ Targeting Network Technology (TTNT) and Flexible Access Se congressional plus-up in FY09. Maintained developmental equecurring training; network support; crypto support; spectrum s support; and supported operational working groups.	Weapons (previously Weapons Data k centric enhancements, Tactical ecure Transfer (FAST). FAST was a uipment; test support; fielding/non-					
FY 2010 Plans: In FY 2010: N/A Efforts moved to PE 0604281F						
FY 2011 Base Plans: In FY 2011: N/A Efforts moved to PE 0604281F						
FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable.						
Major Thrust: TDN INTEROPERABILITY TEST AND CONFIGURA	TION MANAGEMENT	7.940	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Conducted Joint Interoperability of Tactical Commactical Data Link management, architecture development and implementation and interoperability scheduling with the A-10, Ferormed software updates and interopera	d certification testing. Conducted F-15, F-16, B-52, B-1, B-2, and other					

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R-1 Line Item #90 Page 6 of 24

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 0207434F: Link 16 Support and 655050: TDL System Integration BA 5: Development & Demonstration (SDD) Sustainment B. Accomplishments/Planned Program (\$ in Millions) FY 2011 FY 2011 FY 2011 **FY 2009 FY 2010** Base OCO Total Control and Reporting Center/Control and Reporting Element (CRC/CRE), interoperable Systems Management and Requirements Transformation (iSMART), and other weapon systems. Performed tactical data link roadmap requirements, configuration management, and Air Force Participating Test Unit activities (AFPTU). FY 2010 Plans: In FY 2010: N/A Efforts moved to PE 0604281F FY 2011 Base Plans: In FY 2011: N/A Efforts moved to PE 0604281F FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable. Major Thrust: TACTICAL DATA LINK ACQUISITION MANAGEMENT 6.906 0.000 0.000 0.000 0.000

FY 2010 Plans:

In FY 2010: N/A Efforts moved to PE 0604281F

FY 2011 Base Plans:

FY 2009 Accomplishments:

In FY 2011: N/A Efforts moved to PE 0604281F

FY 2011 OCO Plans:

In FY 2011 OCO: Not Applicable.

Major Thrust: Battlefield Airborne Communication Node (BACN) Joint Urgent Operational Need (JUON)

In FY 2009: Includes the 640th Electronic Systems Squadron (640th ELSS) program management

support, coalition interoperability management, A&AS and MITRE support.

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0.000

65.619

0.000

0.000

0.000

R-1 Line Item #90 Page 7 of 24

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

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

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

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and

Sustainment

PROJECT

655050: TDL System Integration

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: N/A						
FY 2010 Plans:						
In FY 2010: BACN (JUON) extends BACN DEPORD and JUON development, test, and integration efforts began on BD-700 and Global Hawk aircraft.						
FY 2011 Base Plans:						
In FY 2011: N/A Any efforts related to the JUON will move to PE 0604281F						
FY 2011 OCO Plans:						
In FY 2011 OCO: Not Applicable.						
Accomplishments/Planned Programs Subtotals	50.973	65.619	0.000	0.000	0.000	

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

			FY 2011	FY 2011	FY 2011					Cost To	
<u>Line Item</u>	FY 2009	FY 2010	<u>Base</u>	<u>000</u>	<u>Total</u>	FY 2012	FY 2013	FY 2014	FY 2015	Complete	Total Cost
• PE 0207445F: Fighter TDL,	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: Bomber TDL,	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 0401839F: Airlift TDL,	7.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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)											
	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

Sustainment

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE 3600: Research, Development, Test & Evaluation, Air Force

PE 0207434F: Link 16 Support and 655050: TDL System Integration

BA 5: Development & Demonstration (SDD)

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

o. Other i regram i anamg camma	ι y (Ψ ιιι ινιιιι	<u> </u>										
			FY 2011	FY 2011	FY 2011					Cost To		
<u>Line Item</u>	FY 2009	FY 2010	Base	000	<u>Total</u>	FY 2012	FY 2013	FY 2014	FY 2015	Complete	Total Cost	
• PE 0207434F: Link 16 Sup &										•		
Sus, (APAF)												
• PE 0207445F (1): 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)												
• PE 0207446F (2): Bomber TDL,	0.000	0.000	0.000	0.000	0.000	0.339	0.337	0.368	0.972	0.000	0.000	
(APAF)												
• PE 0207448F (3): C2ISR TDL,	0.000	0.000	0.000	0.000	0.000	0.959	0.912	0.927	1.729	0.000	0.000	
(APAF)												
• PE 0207434F (4): Link 16 Sup &	131.597	0.309	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Sus, (O&M)												
 PE 0207445F (5): 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)												
• PE 0401839F (6): Airlift TDL,	1.574	8.175	7.857	0.000	7.857	3.629	1.634	1.666	2.944	0.000	0.000	
(O&M)												
• PE 0604281F (7): <i>TDN</i>	0.000	33.727	31.382	0.000	31.382	19.165	17.303	20.026	21.534	0.000	0.000	
Enterprise, (O&M)												
• PE 0207434F (8): Link 16 Sup &	16.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Sus, (OPAF)												
• PE 0604281F (9): <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)												

D. Acquisition Strategy

The 653rd Electronic Systems Group (ELSG) provides for common development, integration and interoperability across the entire Airborne Network and ensures that data links are procured and maintained as a joint, end-to-end, command and control system. 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.

R-1 ITEM NOMENCLATURE

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

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

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

PE 0207434F: Link 16 Support and

PROJECT

655050: TDL System Integration

BA 5: Development & Demonstration (SDD)

Sustainment

Product Development (\$ 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
JICO Support System	C/CPFF	Northrop Grumman San Diego, CA	14.607	0.000		0.000		0.000		0.000	0.000	14.607	0.000
Initial Fielding Support	Various/ Various	Various Various	4.346	0.000		0.000		0.000		0.000	0.000	4.346	0.000
- Network Centric Transformation (TTNT, NEW, Link 16 enhancements, FAST, Link 16 network centric enhancements)	Various/ Various	Various Various	12.378	0.000		0.000		0.000		0.000	0.000	12.378	0.000
- TDN Interoperability Test and Configuration Management (AFPTU, JINTACCS, iSMART)	Various/ Various	Various Various	7.150	0.000		0.000		0.000		0.000	0.000	7.150	0.000
-TDL Acquisition Management (Coalition Interoperability)	Various/ Various	Various Various	0.599	0.000		0.000		0.000		0.000	0.000	0.599	0.000
- BACN JUON A/B Kit Development, Aircraft modifications, flight testing, supplemental type certifications, ground test equipment checkout.	SS/CPFF	Various Various	0.000	65.619	Feb 2010	0.000		0.000		0.000	0.000	65.619	0.000
		Subtotal	39.080	65.619		0.000		0.000		0.000	0.000	104.699	0.000

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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

PE 0207434F: Link 16 Support and

655050: TDL System Integration

BA 5: Development & Demonstration (SDD)

Sustainment

Product Development (\$ in Millions)

				FY 2	2010		2011 ase		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

Remarks

Above listed activities for TDN Management and Initial Fielding

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
-Various Test Centers	Various/ Various	Various Various	5.586	0.000		0.000		0.000		0.000	0.000	5.586	0.000
		Subtotal	5.586	0.000		0.000		0.000		0.000	0.000	5.586	0.000

Remarks

Management Services (\$ 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
-Program Office and Contractor Support	Various/ Various	Various Various	6.307	0.000		0.000		0.000		0.000	0.000	6.307	0.000
		Subtotal	6.307	0.000		0.000		0.000		0.000	0.000	6.307	0.000

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

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

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

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and

Sustainment

PROJECT

655050: TDL System Integration

Management Services (\$ 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

Remarks

	Total Prior Years Cost		2010		2011 ise	FY 2 OC	-	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	50.973	65.619		0.000		0.000		0.000	0.000	116.592	0.000

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

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

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and

Sustainment

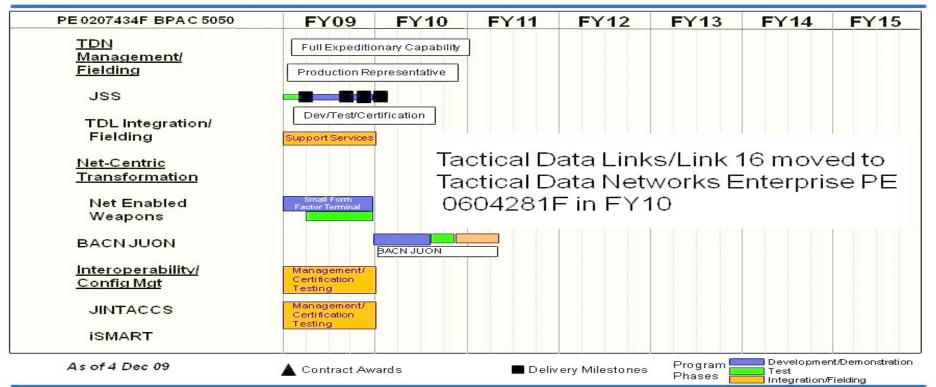
PROJECT

655050: TDL System Integration



Tactical Data Links / Link 16 Schedules

4 December 2009



Integrity - Service - Excellence

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Air Force **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE PROJECT 3600: Research, Development, Test & Evaluation, Air Force PE 0207434F: Link 16 Support and 655050: TDL System Integration

BA 5: Development & Demonstration (SDD) Sustainment

Schedule Details

	St	art	End		
Event	Quarter	Year	Quarter	Year	
JSS Development, Test & Certification	1	2009	1	2010	
BACN Development	3	2009	1	2011	
BACN Test	2	2010	2	2011	
BACN Integration Fielding	3	2010	4	2011	
TDL Integration & Fielding Support	1	2009	4	2009	
Network Enabled Weapons Development	1	2009	4	2009	
Network Enabled Weapons Test & Certification	2	2009	4	2009	
JINTACCS Management/Certification Testing	1	2009	4	2009	
iSMART Management/Certification Testing	1	2009	4	2009	

Exhibit R-2A, RDT&E Project Ju	stification: P	B 2011 Air F	orce				DATE: February 2010					
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: Development & Demonstration (SDD)					NOMENCLA 4F: Link 16 s nt	TURE Support and		PROJECT 655262: Family of Gateways				
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	
655262: Family of Gateways	227.988	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0			

Note

In FY 2010, Project 655262, Family of Gateways, efforts transferred to PE 0604281F (Tactical Data Networks Enterprise).

A. Mission Description and Budget Item Justification

Gateway systems enable combat forces to exchange information guickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks to produce operational effects not possible within individual networks. Gateway functions include: 1) enabling interoperability among otherwise incompatible systems by translating between data formats, protocols, and communication mediums, 2) extending the range of Line-of-Sight constrained systems through relay functions or by routing through Beyond-Line-of-Sight links, 3) consolidating data from multiple networks into high capacity links for transmission to key C2ISR nodes, 4) routing information to and from communications disadvantaged users, 5) correlating data from multiple sources to increase utility and improve accuracy, and 6) providing application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring/management. A primary benefit is that gateways provide cost-effective modernization and achieve network-centric warfighting effects without modification of individual platforms.

Existing gateways include the Joint Air Defense System Integrator (JADSI), Joint Range Extension (JRE) functionality [which includes the JRE Transparent Multi-Platform Gateway (TMPG) Equipment Package (JTEP)], Pocket J, and Roll-On Beyond-line-of-sight Enhancement (ROBE). These legacy gateways, which are fielded in multiple Joint and Service C2 centers and platforms, primarily provide tactical data link range extension and interoperability. The AF continues to enhance the interoperability and capabilities of fielded gateways through processing capability upgrades, operating system updates, display/graphical user interface upgrades, incorporation of additional messaging standards and protocols, and completion of gateway architecture fielding.

The Air Force is leading the effort to develop a material solution to satisfy the CENTCOM Joint Urgent Operational Need (JUON) within the time parameters specified by the DEPSECDEF. The Battlefield Airborne Communications Node (BACN) JUON calls for 24/7 operation of the BACN payload to support current operations. The BACN payload provides interoperability between disparate Tactical Data Links (TDLs) by receiving the various signals, bridging and forwarding them via an array of waveforms. This functionality permits single network operations and translation between Link 16 and Situational Awareness Data Link (SADL), as well as beyond line-of-sight (BLOS) connectivity. BACN enhances this capability by connecting to the airborne IP network allowing information exchange. The BACN payload is an airborne data processing and communications system that integrates a suite of commercial off-the-shelf (COTS) processor, storage and information technology (IT) equipment and existing military airborne communications systems. The BACN payload also integrates existing and newly developed applications and services to

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
3600: Research, Development, Test & Evaluation, Air Force	PE 0207434F: Link 16 Support and	655262: Fa	amily of Gateways
BA 5: Development & Demonstration (SDD)	Sustainment		

provide range extension and connectivity for dissimilar communications systems that process, translate, transmit and store critical data for end users (e.g., Combined Air Operations Center, Tactical Air Control Parties, Special Operations forces, and airborne command and control and tactical platforms). A prototype BACN equipped BD-700 has been operating in theater since December 2008 per Deployment Order issued 29 August 2008. The BACN JUON is comprised of the BACN payload integrated onto two BD-700s and two Global Hawk Block 20 air vehicles operating as a system.

Common Link Integration Processing (CLIP) is a program to develop a common, reusable, configurable, and extensible tactical data link message processing solution for airborne, maritime, and fixed-site systems, with initial fielding on B-1 & B-52. CLIP is a software-only, weapon system-independent middleware application that provides gateway services among diverse message sets and waveforms. CLIP effectively isolates the host platform system software from changes in data link message format and processing. Because message processing is no longer embedded in mission software, message standard updates can be incorporated without costly mission software changes. The result is enhanced interoperability and significantly reduced integration and life-cycle sustainment costs.

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

This program is in Budget Activity 5 (System Development and Demonstration (SDD)) because it supports mature system development, integration and demonstrations, initial fielding support activities, operational support activities, and support of special projects

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Major Thrust: Common Link Integration Processing (CLIP)	26.519	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: In FY 2009: Continued CLIP development and integration of extensible tactical data link message processing on the B-1 and B-52.					
FY 2010 Plans: In FY 2010: N/A This effort will move to PE 0604281F					
FY 2011 Base Plans: In FY 2011: N/A This effort will move to PE 0604281F					

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

APPROPRIATION/BUDGET ACTIVITY

3600: Research, Development, Test & Evaluation, Air Force
BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE
PE 0207434F: Link 16 Support and
Sustainment

PROJECT
655262: Family of Gateways

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable.					
Major Thrust: Fielded Gateways System Development	60.145	0.000	0.000	0.000	0.00
FY 2009 Accomplishments: In FY 2009: Other Gateways continued development, integration, and testing efforts associated with JRE/JTEP, JADSI, Pocket J, LAK, and SADL. Supported BACN DEPORD development, test, and integration efforts began on BD-700 and Global Hawk aircraft.					
FY 2010 Plans: In FY 2010: N/A This effort will move to PE 0604281F					
FY 2011 Base Plans: In FY 2011: N/A This effort will move to PE 0604281F					
FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable.					
Major Thrust: Battlefield Airborne Communications Node (BACN) Joint Urgent Operational Need (JUON)	125.408	0.000	0.000	0.000	0.0
FY 2009 Accomplishments: In FY 2009: BACN DEPORD extended and JUON development, test, and integration efforts began on BD-700 and Global Hawk aircraft.					
FY 2010 Plans: In FY 2010: N/A					
FY 2011 Base Plans: In FY 2011: N/A					

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force **DATE:** February 2010 **PROJECT** APPROPRIATION/BUDGET ACTIVITY **R-1 ITEM NOMENCLATURE** 655262: Family of Gateways 3600: Research, Development, Test & Evaluation, Air Force PE 0207434F: Link 16 Support and BA 5: Development & Demonstration (SDD) Sustainment B. Accomplishments/Planned Program (\$ in Millions) FY 2011 FY 2011 FY 2011 **FY 2009 FY 2010** Base OCO Total FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable. Major Thrust: TACTICAL DATA LINK ACQUISITION MANAGEMENT 15.916 0.000 0.000 0.000 0.000 FY 2009 Accomplishments: In FY 2009: Includes the 653rd Electronic Systems Group (653rs ELSG) program management support, coalition interoperability management, A&AS and MITRE support. FY 2010 Plans: In FY 2010: N/A This effort will move to PE 0604281F FY 2011 Base Plans: In FY 2011: N/A This effort will move to PE 0604281F FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable. Accomplishments/Planned Programs Subtotals 227.988 0.000 0.000 0.000 0.000 C. Other Program Funding Summary (\$ in Millions) FY 2011 FY 2011 FY 2011 **Cost To** FY 2009 oco FY 2012 FY 2013 FY 2014 FY 2015 Complete Total Cost Line Item FY 2010 Base Total

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0.000

0.000

0.000

85.492

0.000

1.584

169.748

0.000

1.608

118.655

0.000

1.633

0.000

0.000

1.658

0.000

0.000

1.682

0.000

0.000

0.000

0.000

0.000

0.000

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(RDT&E)

(RDT&E)

(RDT&E)

• PE 0207445F: Fighter TDL.

• PE 0207446F: Bomber TDL.

• PE 0207448F: C2ISR TDL.

55.069

21.603

1.671

66.872

0.000

1.659

85.492

0.000

1.584

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 0207434F: Link 16 Support and Sustainment

655262: Family of Gateways

BA 5: Development & Demonstration (SDD)

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

Linaltam	EV 2000	EV 2040	FY 2011	FY 2011	FY 2011	EV 2042	EV 2042	EV 2044	EV 2045	Cost To	Total Coat
<u>Line Item</u> • PE 0401839F: <i>Airlift TDL</i> ,	FY 2009 7.700	FY 2010 0.000	<u>Base</u> 0.000	<u>OCO</u> 0.000	<u>Total</u> 0.000	FY 2012 0.000	FY 2013 0.000	FY 2014 0.000	FY 2015 0.000	Complete 0.000	Total Cost 0.000
(RDT&E)	7.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0604281F: <i>TDN Enterprise</i> ,	0.000	87.444	102.941	0.000	102.941	67.790	40.507	43.037	34.930	0.000	0.000
(RDT&E)	0.000	07.444	102.941	0.000	102.941	07.790	40.507	43.037	34.930	0.000	0.000
• PE 0207434F: 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)											
• PE 0207445F (1): 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)											
• PE 0207446F (2): Bomber TDL,	0.000	0.000	0.000	0.000	0.000	0.339	0.337	0.368	0.972	0.000	0.000
(APAF)											
• PE 0207448F (3): C2ISR TDL,	0.000	0.000	0.000	0.000	0.000	0.959	0.912	0.927	1.729	0.000	0.000
(APAF)											
• PE 0207434F (4): Link 16 Sup &	16.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sus, (OPAF)											
• PE 0604281F (5): <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)											
• PE 0207434F (6): Link 16 Sup &	131.597	0.309	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sus, (O&M)											
• PE 0207445F (7): 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)											
• PE 0401839F (8): Airlift TDL,	1.574	8.175	7.857	0.000	7.857	3.629	1.634	1.666	2.944	0.000	0.000
(O&M)											
• PE 0604281F (9): <i>TDN</i>	0.000	33.727	31.382	0.000	31.382	19.165	17.303	20.026	21.534	0.000	0.000
Enterprise, (O&M)											

D. Acquisition Strategy

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

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0207434F: Link 16 Support and Sustainment	PROJECT 655262: Family of Gateways
E. Performance Metrics		
Please refer to the Performance Base Budget Overview Book for Force performance goals and most importantly, how they contri		lied and how those resources are contributing to Air

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

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

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

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and

Sustainment

PROJECT

655262: Family of Gateways

Product Development (\$ in Millions)

				FY 2010		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
CLIP	Various/ Various	SPAWAR San Diego, CA	26.508	0.000		0.000		0.000		0.000	0.000	26.508	0.000
Other Gateways development, integration, and testing efforts associated with JRE/JTEP, JADSI, Pocket J, LAK, and SADL. BACN DEPORD development, test, and integration efforts began on BD-700 and G	Various/ Various	Various Various	57.103	0.000		0.000		0.000		0.000	0.000	57.103	0.000
BACN JUON	SS/CPFF	Northop Grumman San Diego, CA	125.333	0.000		0.000		0.000		0.000	0.000	125.333	0.000
		Subtotal	208.944	0.000		0.000		0.000		0.000	0.000	208.944	0.000

Remarks

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

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

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

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and

Sustainment

PROJECT

655262: Family of Gateways

Test and Evaluation (\$ 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
-Various Test Centers	Various/ Various	Various Various	3.128	0.000		0.000		0.000		0.000	0.000	3.128	0.000
		Subtotal	3.128	0.000		0.000		0.000		0.000	0.000	3.128	0.000

Remarks

Management Services (\$ 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
Program Office and Contractor Support	Various/ Various	Various Various	15.916	0.000		0.000		0.000		0.000	0.000	15.916	0.000
		Subtotal	15.916	0.000		0.000		0.000		0.000	0.000	15.916	0.000

Remarks

	Total Prior Years Cost		2010		2011 ise	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	227.988	0.000		0.000		0.000	0.000	0.000	227.988	0.000

Remarks

Total Prior Years Cost may include only FY 2009 data.

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

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

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

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and

Sustainment

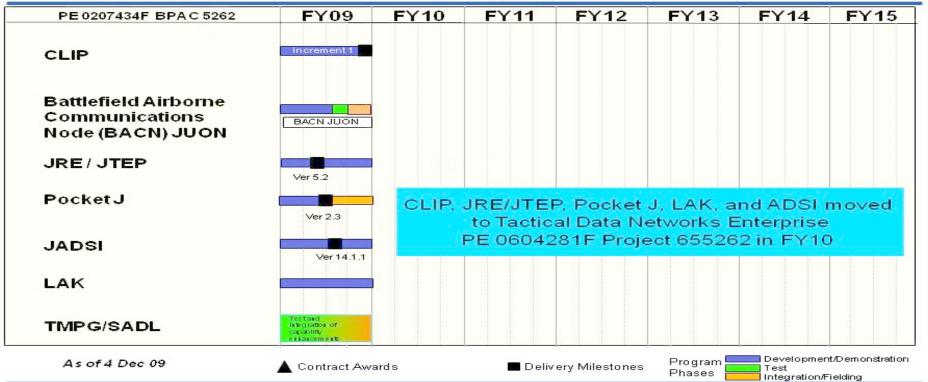
PROJECT

655262: Family of Gateways



Tactical Data Links / Link 16 Family of Gateways Schedules

4 December 2009



Integrity - Service - Excellence

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

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

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

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0207434F: Link 16 Support and

Sustainment

PROJECT

655262: Family of Gateways

Schedule Details

	Start			End		
Event	Quarter	Year	Quarter	Year		
CLIP Development	1	2009	4	2009		
CLIP Product Delivery	4	2009	4	2009		
BACN Development	3	2009	4	2009		
JRE/JTEP Development & Integration	1	2009	4	2009		
JRE/JTEP Product Delivery	2	2009	2	2009		
Pocket J Development	1	2009	2	2009		
Pocket J Product Delivery	2	2009	2	2009		
Pocket J Integration/Fielding	2	2009	4	2009		
JADSI Development	1	2009	4	2009		
JADSI Product Delivery	3	2009	3	2009		
LAK	1	2009	4	2009		
TMPG/SADL capability enhancements	1	2009	4	2009		