Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force											Date: February 2015	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0305236F / *Common Data Link Executive Agent (CDL EA)*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	-	33.896	32.015	43.986	-	43.986	42.760	41.790	42.586	48.396	Continuing	Continuing
674819: *Common Data Link (CDL)*	-	33.896	32.015	43.986	-	43.986	42.760	41.790	42.586	48.396	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Common Data Link Executive Agent (CDL EA) provides the DoD standard for interoperable, multi-service, multi-agency, Intelligence, Surveillance, and Reconnaissance (ISR) datalinks for 10,000+ DoD manned/unmanned airborne and ground platforms. As the DoD CDL EA, the Air Force is responsible for cross-service application of CDL RDT&E Military Intelligence Program (MIP) funds facilitating compliance to Congressional and DoD mandates. The EA develops, modifies, distributes, and maintains specifications for the CDL waveform family; ensuring design configuration control, commonality, and interoperability among ISR platforms. Additionally, funds support managing resources allocated for development, maturation, and migration of CDL technologies.

CDL EA enables compliance with OSD and Congressional mandates to effectively utilize spectrum, use approved cryptographic equipment, and provide direct support to current operations. CDL is a vital link in DoD's existing and emerging communication architectures, providing flexibility to accommodate Command and Control (C2) data and myriad types of Signals Intelligence (SIGINT), Geospatial Intelligence (GEOINT), and Full-Motion Video (FMV) data. The CDL specifications permit current and future ISR asset operations worldwide by providing sensor data directly via point-to-point broadcast to ground sites, airborne platforms and dismounted users. Also, CDL provides the capability to relay data via air-to-air or compatible satellite links when the asset and ground site are not in line-of-sight.

CDL EA's research and development activities support a broad swath of tactical, operational, and strategic ISR users and include achieving higher data rates, multi-access and multi-node network management, crypto modernization, advancements needed to operate in contested environments, terminal and antenna design enhancements, operations in other spectral bands, and improving spectrum efficiency. Further, CDL development improves large area surveillance missions while supporting continuous improvements and implementation of line-of-sight platform and CDL terminal Command and Control (C2), plus increased ISR (C2ISR) capabilities. Activities also include studies and analysis to support current and future requirements documentation, program planning and execution. CDL prototype terminal designs provide for future technology insertion and reduce non-recurring engineering and life-cycle costs to the user.

In addition, the Gigabit Encryption thrust enables CDL to develop a miniaturized gigabit rate Communication Security (COMSEC) device capable of managing CDL data. The miniaturized COMSEC device will allow faster throughput while reducing Size, Weight, and Power (SWaP) requirements.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305236F / *Common Data Link Executive Agent (CDL EA)*

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	33.899	36.137	58.279	-	58.279
Current President's Budget	33.896	32.015	43.986	-	43.986
Total Adjustments	-0.003	-4.122	-14.293	-	-14.293
• Congressional General Reductions	-	-0.122			
• Congressional Directed Reductions	-	-4.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.003	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-14.293	-	-14.293

Change Summary Explanation

FY 2015: Congressional Directed Reductions (-$4M) due to improving funds management: forward financing.

FY 2016: Other Adjustment Row (-$14.293M) due to higher AF priorities.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Common Data Link (CDL) Technology Advancement	24.860	18.229	31.986	-	31.986
Description: CDL evolutionary terminal development, advanced technology insertion, demonstrations and studies per CDL Integrated Product Team (IPT) direction to the CDL Executive Agent (CDL EA). ***FY 2014 Accomplishments:*** Continued development and testing of Higher Data Rates to existing and emerging terminals, while also prototyping terminal development that combines Size, Weight and Power (SWaP) improvements with higher data rate capability. Continued development of technology that allows for adapting and testing of networking, as well as more effective ground and lightweight airborne terminal components. Moved forward with development of multispectral operations flexibility, increased spectrum efficiency and integration of improved transmission components. Continued development of enhanced, CDL-based ISR communications capabilities across multiple platforms and rapid prototyping efforts. Continued support of emerging communication backbone architecture development across air, space and terrestrial layers, to include: agile high capacity data transport, assured communications and multi-mode access networks. ***FY 2015 Plans:***					

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305236F / *Common Data Link Executive Agent (CDL EA)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continue development and testing of Higher Data Rates to existing and emerging terminals, while also prototyping terminal development that combines Size, Weight and Power (SWaP) improvements with higher data rate capability. Continue development of technology that allows for adapting and testing of networking, as well as more effective ground and lightweight airborne terminal components. Move forward with development of multispectral operations flexibility, increased spectrum efficiency and integration of improved transmission components. Continue development of enhanced, CDL-based ISR communications capabilities across multiple platforms and rapid prototyping efforts. Continue support of emerging communication backbone architecture development across air, space and terrestrial layers, to include: agile high capacity data transport, assured communications and multi-mode access networks. ***FY 2016 Base Plans:*** Will continue development and testing of Higher Data Rates to existing and emerging terminals, while also prototyping terminal development that combines Size, Weight and Power (SWaP) improvements with higher data rate capability. Will continue development of technology that allows for adapting and testing of networking, as well as more effective ground and lightweight airborne terminal components. Will move forward with development of multispectral operations flexibility, increased spectrum efficiency and integration of improved transmission components. Will continue development of enhanced, CDL-based ISR communications capabilities across multiple platforms and rapid prototyping efforts. Will continue support of emerging communication backbone architecture development across air, space and terrestrial layers, to include: agile high capacity data transport, assured communications and multi-mode access networks. ***FY 2016 OCO Plans:*** N/A					
Title: Common Data Link (CDL) Specification Maintenance and Development	7.036	11.586	5.000	-	5.000
Description: CDL specification testing, maintenance, development, validation, configuration control, and distribution per CDL Integrated Product Team (IPT) direction to CDL Executive Agent (EA). ***FY 2014 Accomplishments:*** Continued research and development upgrades of current and future specification employment profiles to include the adding of capabilities required to support the Joint Aerial Layer Network (JALN) High Capacity Backbone (HCB) and other emerging operational capabilities. Refined spectrally efficient CDL waveform specification, while gathering requirements and planning for future A2AD enhancements. Continued to work with CDL industry partners and DoD Services to document, validate and implement common terminal control					

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305236F / *Common Data Link Executive Agent (CDL EA)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
interfaces through the use of commercially recognized standards. Maintained configuration control of the CDL architecture, standards, specifications and modules. Made software enhancements to CDL test equipment to ensure compliance testing is done with the latest, validated version of CDL specifications. ***FY 2015 Plans:*** Continue research and development upgrades of current and future specification employment profiles to include the adding of capabilities required to support the Joint Aerial Layer Network (JALN) High Capacity Backbone (HCB) and other emerging operational capabilities. Continue development of spectrally efficient CDL waveform specification, while planning for future A2AD enhancements. Continue to work with CDL industry partners and DoD Services to document, validate and implement common terminal control interfaces through the use of commercially recognized standards. Maintain configuration control of the CDL architecture, standards, specifications and modules. Continue development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications. ***FY 2016 Base Plans:*** Will continue to research and development upgrades of current and future specification employment profiles that include the adding of capabilities required to support the Joint Aerial Layer Network (JALN) High Capacity Backbone (HCB), A2AD requirements, and other emerging operational capabilities. Will continue the development of spectrally efficient CDL waveform specification, while gathering requirements and planning for future mesh networking enhancements. Will continue to work with CDL industry partners and DoD Services to document, validate and implement common terminal control interfaces through the use of commercially recognized standards. Will maintain configuration control of the CDL architecture, standards, specifications and modules. Will continue the development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications. ***FY 2016 OCO Plans:*** N/A					
Title: Gigabit Encryption ***Description:*** Develop a miniaturized gigabit rate COMSEC device capable of handling CDL data rates. Miniaturizing COMSEC components will enable faster data throughput (greater than 12 GBPS) and reduce size, weight, and power. Once developed, CDL users will have to procure COMSEC components and fund installation/integration. ***FY 2014 Accomplishments:***	2.000	2.200	7.000	-	7.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Initiated the development effort to build the gigabit encryption device to be fielded on numerous platforms. This device allowed faster data throughput and reduced size, weight and power constraints. ***FY 2015 Plans:*** Continue the development effort to build the gigabit encryption device to be fielded on numerous platforms. This device allows faster data throughput and reduced size, weight and power constraints. ***FY 2016 Base Plans:*** Will continue the development effort for small form factor modular COMSEC devices capable of gigabit rates. Will conduct prototyping and testing of the second generation crypto core and design/development of the third generation crypto core. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	33.896	32.015	43.986	-	43.986

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

The Air Force, designated as the Common Data Link (CDL) Executive Agent, supported by each of the Services' CDL program's Service laboratories, the Airborne Network Division (AFLCMC/HNA), and the Defense Information Systems Agency (DISA), provide for development of interoperable ISR data links as mandated by the Assistant Secretary of Defense (Networks and Information Integration) (ASD(NII)) policy. Once CDL technology development matures, platforms are responsible for program CDL procurement, National Security Agency (NSA), Joint Interoperability Test Command (JITC), and DISA certifications, integration, and installation. Acquisition strategy varies by contract. When possible, contracts are awarded under full and open competition.

F. 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 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305236F / *Common Data Link Executive Agent (CDL EA)*	**Project (Number/Name)** 674819 / *Common Data Link (CDL)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AF Gigabit Plus, AF IA Modernization, Army Spec, Army Through the Rotors, Network Management	C/CPFF	L-3 Communications : Salt Lake City, UT	-	4.850	Feb 2014	5.401	Feb 2015	8.957	Feb 2016	-		8.957	Continuing	Continuing	-
Advanced Waveform Validation, Digital Beam Effort	C/CPFF	Cubic : San Diego, CA	-	2.060	Jan 2014	1.300	Feb 2015	-		-		-	Continuing	Continuing	-
Multi-Access and Assured Communications Development	C/Various	Various : Various,	-	-		3.761	Dec 2014	-		-		-	Continuing	Continuing	-
Marine CDL for Tactical UAS	C/Various	Various : Various,	-	7.609	Feb 2014	6.200	Feb 2015	8.000	Feb 2016	-		8.000	Continuing	Continuing	-
Anti-Jam	C/CPFF	Boeing : Huntington Beach, CA	-	-		1.500	Feb 2015	-		-		-	Continuing	Continuing	-
Terminals Database & Enterprise Roadmap	C/CPFF	Booz Allen : McClean, VA	-	-		1.850	Nov 2014	0.400	Jan 2016	-		0.400	Continuing	Continuing	-
Compliance Test Tool	C/Various	Various : Various,	-	-		1.378	Dec 2014	3.000	Dec 2015	-		3.000	Continuing	Continuing	-
Under Threshold Combined	Various	Various : Various,	-	3.686	Dec 2013	-		8.190	Dec 2015	-		8.190	Continuing	Continuing	-
		Subtotal	-	18.205		21.390		28.547		-		28.547	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Special studies, analysis, and engineering services	SS/CPFF	Johns Hopkins University/Applied Physics Lab : Laurel, MD	-	1.900	Feb 2014	0.500	Jan 2015	0.539	Jan 2016	-		0.539	Continuing	Continuing	-
Service Tech Support & Spec Development	MIPR	Various : Various,	-	4.388	Jan 2014	2.486	Jan 2015	6.397	Jan 2016	-		6.397	Continuing	Continuing	-
		Subtotal	-	6.288		2.986		6.936		-		6.936	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305236F / *Common Data Link Executive Agent (CDL EA)*	**Project (Number/Name)** 674819 / *Common Data Link (CDL)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Interoperability Test Center (JITC)	MIPR	JITC : Fort Huachuca, AZ	-	1.145	Feb 2014	1.000	Jan 2015	1.078	Jan 2016	-		1.078	Continuing	Continuing	-
46 Test Squadron	PO	46 TS/OGEX : Eglin AFB, FL	-	0.298	Feb 2014	0.286	Feb 2015	0.308	Feb 2016	-		0.308	Continuing	Continuing	-
		Subtotal	-	1.443		1.286		1.386		-		1.386	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA- MITRE Engineering Support (FFRDC)	SS/T&M	MITRE Corp. : Bedford, MA	-	0.675	Oct 2013	0.237	Oct 2014	0.255	Oct 2015	-		0.255	Continuing	Continuing	-
PMO/Service- MITRE Engineering Direct Mission Support (FFRDC)	SS/T&M	MITRE Corp. : Bedford, MA	-	4.840	Oct 2013	3.390	Oct 2014	3.924	Oct 2015	-		3.924	Continuing	Continuing	-
PMA - PASS Financial and PM Support (A&AS)	C/CPFF	PE Systems : Littleton, MA	-	1.067	Feb 2014	0.851	Feb 2015	0.917	Feb 2016	-		0.917	Continuing	Continuing	-
PMA - Under Threshold Program Mgmt/Tech Support	Various	Various : Various,	-	1.378	Apr 2014	1.875	Dec 2014	2.021	Dec 2015	-		2.021	Continuing	Continuing	-
		Subtotal	-	7.960		6.353		7.117		-		7.117	-	-	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	33.896		32.015		43.986		-		43.986	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305236F / *Common Data Link Executive Agent (CDL EA)*	**Project (Number/Name)** 674819 / *Common Data Link (CDL)*

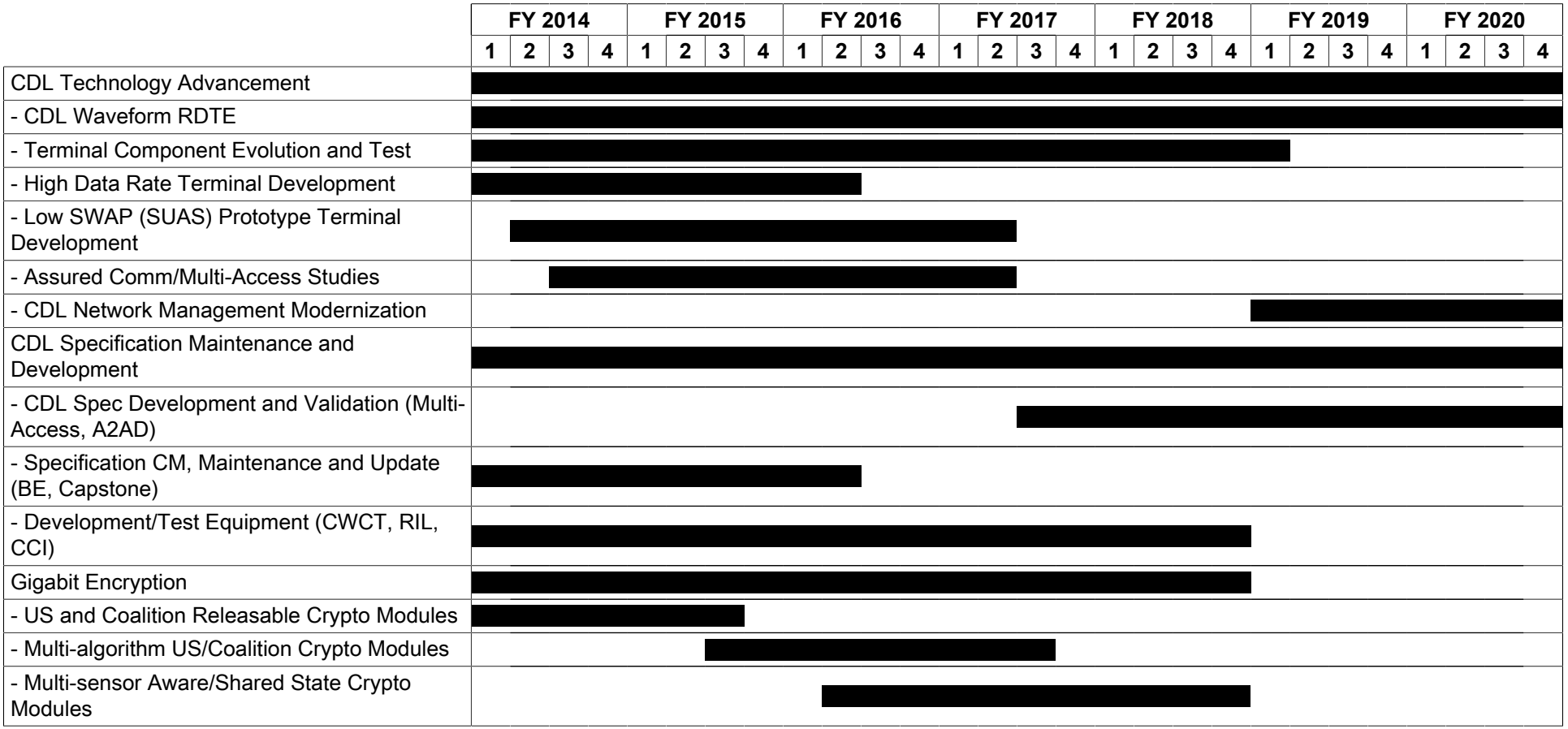

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305236F / *Common Data Link Executive Agent (CDL EA)*	**Project (Number/Name)** 674819 / *Common Data Link (CDL)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CDL Technology Advancement	1	2014	4	2020
- CDL Waveform RDTE	1	2014	4	2020
- Terminal Component Evolution and Test	1	2014	1	2019
- High Data Rate Terminal Development	1	2014	2	2016
- Low SWAP (SUAS) Prototype Terminal Development	2	2014	2	2017
- Assured Comm/Multi-Access Studies	3	2014	2	2017
- CDL Network Management Modernization	1	2019	4	2020
CDL Specification Maintenance and Development	1	2014	4	2020
- CDL Spec Development and Validation (Multi-Access, A2AD)	3	2017	4	2020
- Specification CM, Maintenance and Update (BE, Capstone)	1	2014	2	2016
- Development/Test Equipment (CWCT, RIL, CCI)	1	2014	4	2018
Gigabit Encryption	1	2014	4	2018
- US and Coalition Releasable Crypto Modules	1	2014	3	2015
- Multi-algorithm US/Coalition Crypto Modules	3	2015	3	2017
- Multi-sensor Aware/Shared State Crypto Modules	2	2016	4	2018