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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2020 Air Force **Date:** February 2019

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203176F / <i>Combat Survivor Evader Locator</i>
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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	24.099	0.939	2.000	0.000	2.000	0.974	0.000	0.000	0.000	Continuing	Continuing
654522: <i>CSAR EMD</i>	-	24.099	0.939	2.000	0.000	2.000	0.974	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

This program, BA 5, PE 1203176F, project 654522, CSEL Next Generation Survival Radio Recapitalization (NGSR), is a new start.

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

The Combat Survivor Evader Locator (CSEL) System provides aircrews with end-to-end global satellite secure emergency communication capability during combat and peace-time flying operations. CSEL provides a hand held radio as part of the mandatory aircrew survival gear. CSEL is a joint program (AF, Army, and Navy) and is the DoD program of record for personnel recovery survival radios. CSEL supports four of five Personnel Mission Phases: Report, Locate, Support, and Recover.

A National Security Agency (NSA) Cryptographic Modernization mandate and the Ultra High Frequency Follow-On satellite constellation are at the end of life and are driving upgrades to 60,000+ hand held radios and base stations. This effort includes development to modernize the system to integrate common waveforms, integrate broadcast reception for non-CSEL devices, provide for cryptographic modernization, leverage software defined capabilities based on the FY16 cryptographic study, and to procure intellectual property. This funding will also be used to perform various studies and analysis in support of the CSEL Enterprise.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver CSEL capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	24.967	0.939	0.000	0.000	0.000
Current President's Budget	24.099	0.939	2.000	0.000	2.000
Total Adjustments	-0.868	0.000	2.000	0.000	2.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.868	0.000			
• Other Adjustments	0.000	0.000	2.000	0.000	2.000

**Change Summary Explanation**

FY 2020: +\$2.000M to fund completion of NGCA and begin development of Next Generation Survival Radio Recapitalization

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
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<p><b>Title:</b> CSEL Next Generation Cryptographic Architecture (NGCA)</p> <p><b>Description:</b> A NSA cryptographic modernization mandate and the Ultra High Frequency Follow-On satellite constellation at end of life are both driving upgrades to CSEL Base Stations and Interrogation Module.</p> <p><b>FY 2019 Plans:</b> Complete development and begin formal testing of NGCA.</p> <p><b>FY 2020 Plans:</b> Complete NGCA Test &amp; Evaluation (T&amp;E).</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> FY2020 increased compared to FY2019 by \$0.061M. Justification for this increase is described in plans above.</p>	24.099	0.939	1.000
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<p><b>Title:</b> CSEL Next Generation Survival Radio Recapitalization (NGSR)</p> <p><b>Description:</b> A NSA cryptographic modernization mandate and the Ultra High Frequency Follow-On satellite constellation at end of life are both driving upgrades to 60,000 handheld CSEL rescue radios.</p> <p><b>FY 2019 Plans:</b></p>	-	0.000	1.000
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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Air Force	<b>Date:</b> February 2019
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203176F / <i>Combat Survivor Evader Locator</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2018	FY 2019	FY 2020
N/A			
<b><i>FY 2020 Plans:</i></b> Begin development of NGSR			
<b><i>FY 2019 to FY 2020 Increase/Decrease Statement:</i></b> FY2020 increased compared to FY2019 by \$1.000M. Justification for this increase is described in plans above.			
<b>Accomplishments/Planned Programs Subtotals</b>	24.099	0.939	2.000

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u> <u>Base</u>	<u>FY 2020</u> <u>OCO</u>	<u>FY 2020</u> <u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 P-54: <i>OPAF: BA03:</i> <i>Line Item # 837170: Combat Survivor Evader Locator</i>	3.004	0.000	0.000	-	0.000	-	-	-	-	0.000	3.004

**Remarks**  
Funding will be used to purchase hardware to upgrade the Ultra High Frequency (UHF) Base Stations.

**E. Acquisition Strategy**  
The CSEL overall strategy is competition focused. The Technical Data Package is being acquired under the NGCA contract to allow future competition of the CSEL Enterprise.

**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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force												Date: February 2019			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 1203176F / Combat Survivor Evader Locator				654522 / CSAR EMD							
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CSEL NGCA - HW/SW Development	SS/CIPIF	The Boeing Company : Huntington Beach, CA	-	14.503	Aug 2018	-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	14.503		-		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AIRWorks Next Generation Cryptographic Architecture (NGCA) Support	MIPR	NAVAIR : Saint Inigoes, MD	-	5.601	Mar 2018	0.539	Jun 2019	1.000	Dec 2019	-		1.000	Continuing	Continuing	-
Other Agency Support	MIPR	Various : TBD	-	3.995	Mar 2019	0.120	Jul 2019	-		-		-	Continuing	Continuing	-
NSA Certification Support	MIPR	CERDEC : TBD	-	-		-		1.000	May 2020	-		1.000	Continuing	Continuing	-
<b>Subtotal</b>			-	9.596		0.659		2.000		-		2.000	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Combined Test	MIPR	Electronic Proving Grnds : Fort Huachuca, AZ	-	-		0.140	Mar 2019	-		-		-	Continuing	Continuing	-
JITC Testing	MIPR	JITC : Fort Huachuca, AZ	-	-		0.140	Aug 2019	-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	-		0.280		-		-		-	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			-	24.099		0.939		2.000		-		2.000	Continuing	Continuing	N/A

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<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 1203176F / <i>Combat Survivor Evader Locator</i>	<b>Project (Number/Name)</b> 654522 / <i>CSAR EMD</i>
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	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
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**Remarks**  
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.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2020 Air Force</b>		<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 1203176F / <i>Combat Survivor Evader Locator</i>	<b>Project (Number/Name)</b> 654522 / <i>CSAR EMD</i>

FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>CSEL Next Generation Cryptographic Architecture (NGCA)</b>	
CSEL NGCA Development	
CSEL NGCA Test & Evaluation (T&E)	
CSEL NGCA Fielding	
<b>CSEL Next Generation Survival Radio (NGSR)</b>	
CSEL NGSR Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force		<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 1203176F / <i>Combat Survivor Evader Locator</i>	<b>Project (Number/Name)</b> 654522 / <i>CSAR EMD</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>CSEL Next Generation Cryptographic Architecture (NGCA)</i></b>				
CSEL NGCA Development	2	2018	3	2019
CSEL NGCA Test & Evaluation (T&E)	4	2019	4	2020
CSEL NGCA Fielding	1	2021	2	2021
<b><i>CSEL Next Generation Survival Radio (NGSR)</i></b>				
CSEL NGSR Development	3	2020	4	2021