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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army | | | | | | | | | | Date: May 2017 | | | |
|--|-------------|---------|---------|--------------|---|---------------|---------|---------|---------|----------------|------------------|------------|--|
| Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 5: System Development & Demonstration (SDD) | | | | | R-1 Program Element (Number/Name) PE 0604805A I Command, Control, Communications Systems - Eng Dev | | | | | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost | |
| Total Program Element | - | 2.780 | 4.245 | 9.910 | - | 9.910 | 5.618 | 5.375 | 2.210 | 2.190 | Continuing | Continuing | |
| 593: Joint Battle Command - Platform (JBC-P) | - | 2.780 | 4.245 | 9.910 | - | 9.910 | 5.618 | 5.375 | 2.210 | 2.190 | Continuing | Continuing | |

Note

PM Mission Command (MC), under PEO C3T, manages Joint Battle Command-Platform (JBC-P) as well as the Command Post Computing Environment (CP CE) and Mounted Computing Environment (MCE) efforts associated to the Army's Common Operating Environment (COE) initiative. In an attempt to streamline work on the COE, at the end of 1QFY2017, PM MC assigned the CP CE team to lead the COE effort and reassigned the MCE's management of engineering efforts from JBC-P to CP CE. This has allowed JBC-P to shift its focus to developing next generation core capabilities, in order to ensure JBC-P stays technologically relevant and most importantly, cyber resilient.

Effective FY2016, the Army segregated the costs of MCE Proj/PE 604818.EJ5, from JBC-P, Proj/PE 0604805A/593, in support of MCE efforts associated to the COE. Effective 1QFY2017, MCE funds have been managed by the PM MC's CP CE team.

A. Mission Description and Budget Item Justification

The Joint Battle Command - Platform (JBC-P) program is the cornerstone of Joint Forces Command and Control (C2) Situational Awareness (SA) and communications. JBC-P provides secure Blue Force Tracking (BFT) capability in Platforms and Command Posts, providing soldiers and commanders a map-based Common Operating Picture of the battlefield, as a result, reducing fratricide.

PdM JBC-P, under PM Mission Command (MC) has partnered with the Communications-Electronics Research, Development and Engineering Center's (CERDEC) Space and Terrestrial Communications Directorate (S&TCD) on the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT). This IPT has conducted a requirements analysis. Systems engineering studies/planning activities are underway to develop the evolution path of the BFT Network, focusing on 2025 and beyond.

Funding was increased in both FY16 and FY18 to assist PdM JBC-P in its endeavor to fully replicate the operational BFT network; S&TCD is working on developing a model of the current BFT-2 waveform to test in the BFT portion of their Network Test Lab. This Test Lab provides the Government the ability to test proposed fixes, conduct regression testing of future Software and Firmware releases, and replicate any problems the system may experience without impacting the operational network.

A potential Science and Technology (S&T) effort has been identified; research and development of an expeditionary JBC-P Network Services Gateway (NSG) capability which will fill the capability gap of connecting the Lower Tactical Internet (LTI) to the Beyond Line of Site (BLOS) BFT network in an expeditionary environment, when separated from any existing vehicular or Command Post (CP) NSG capability. This effort is currently being led by PdM JBC-P and could potentially develop into an S&T project in the next FY.

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| Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD) | | R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Communications Systems - Eng Dev | | | |
| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | 2.683 | 4.245 | 9.814 | - | 9.814 |
| Current President's Budget | 2.780 | 4.245 | 9.910 | - | 9.910 |
| Total Adjustments | 0.097 | 0.000 | 0.096 | - | 0.096 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | 0.184 | - | | | |
| • SBIR/STTR Transfer | -0.087 | - | | | |
| • Adjustments to Budget Years | 0.000 | 0.000 | 0.096 | - | 0.096 |
| Change Summary Explanation | | | | | |
| FY 2016 reprogramming provided additional development and testing of Blue Force Tracking 2 within the Joint Battle Command - Platform product. | | | | | |
| FY 2018 Funding was increased to assist PdM JBC-P in its endeavor to fully replicate the operational Blue Force Tracking network; development and test. | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | | | | | | | | | Date: May 2017 | | |
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| Appropriation/Budget Activity 2040 / 5 | | | | | R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Communications Systems - Eng Dev | | | | Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P) | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 593: Joint Battle Command - Platform (JBC-P) | - | 2.780 | 4.245 | 9.910 | - | 9.910 | 5.618 | 5.375 | 2.210 | 2.190 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

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Effective FY2016, the Army segregated the costs of MCE Project/PE 604818.EJ5, from JBC-P, Project/PE 0604805A/593, in support of MCE efforts associated to the COE. Effective 1QFY2017, MCE funds have been managed by the PM MC's CP CE team.

A. Mission Description and Budget Item Justification

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PdM JBC-P, under PM Mission Command (MC) has partnered with the Communications-Electronics Research, Development and Engineering Center's (CERDEC) Space and Terrestrial Communications Directorate (S&TCD) on the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT). This IPT has conducted a requirements analysis. Systems engineering studies/planning activities are underway to develop the evolution path of the BFT Network, focusing on 2025 and beyond.

Funding was increased in both FY16 and FY18 to assist PdM JBC-P in its endeavor to fully replicate the operational BFT network; S&TCD is working on developing a model of the current BFT-2 waveform to test in the BFT portion of their Network Test Lab. This Test Lab provides the Government the ability to test proposed fixes, conduct regression testing of future Software and Firmware releases, and replicate any problems the system may experience without impacting the operational network.

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| Appropriation/Budget Activity 2040 / 5 | | R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i> | Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | | FY 2016 | FY 2017 | FY 2018 |
| Title: Software Development Description: Develop capabilities, product applications, platform interoperability, and system services across the JBC-P family of systems, to include the development of capabilities to meet Key Performance Parameters (KPPs), and other system attributes. Develop Multi-Level Security Domains for Network, Users, and Information. Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line. FY 2016 Accomplishments: Developed capabilities, product applications, platform interoperability, and system services across the JBC-P family of systems, to include the development of capabilities to meet Key System Attributes (KSAs) in the CDD (in lieu of CPD). Initial hybrid operating system development to port Android in to JBC-P and began systems engineering to improve the BFT-2 Network. Also developed unique software and integration capabilities in support of the Mounted Computing Environment (MCE), part of the Common Operating Environment (COE). FY 2017 Plans: Full fielding of JBC-P hardware with 1.6.0.6 software commenced in FY16. There is no further significant software development required beyond potential software patching to mitigate issues that may occur in the field. FY 2018 Plans: Full fielding of JBC-P hardware with 1.6.0.6 software will continue. There is no further significant software development required beyond potential software patching to mitigate issues that may occur in the field. JBC-P will move into Post Deployment Software Support (PDSS) in FY19. | | | 0.770 | 0.200 | 0.200 |
| Title: Software/Systems Engineering Description: Perform Software/Systems Engineering in support of the development of JBC-P capabilities, applications, and services, to include, but not limited to, conducting engineering studies, architecture development (both software and network), system analyses, technical readiness assessments, technical interchange meetings/events, and development of related reports and other deliverables. Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line. FY 2016 Accomplishments: Continued system engineering efforts for JBC-P balance of CDD threshold requirements and support of the Battle Command product and improvements to the BFT-2 Network. FY 2017 Plans: | | | 1.334 | 2.669 | 7.810 |

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| B. Accomplishments/Planned Programs (\$ in Millions) | | | FY 2016 | FY 2017 | FY 2018 |
| Continue system engineering efforts for JBC-P balance of CDD threshold requirements and support of the Battle Command product line. Conduct software systems engineering for the integration of the BFT 2.0 Transceiver Waveform Model, Virtual SNCC, Virtual Network Services Gateway (NSG), and continued Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM). | | | | | |
| FY 2018 Plans: Continued system engineering efforts for JBC-P balance of CDD threshold requirements and support of the Battle Command product line. Conduct software systems engineering for the integration of the BFT 2.0 Transceiver Waveform Model, Virtual Satellite Network Control Center (SNCC), Virtual Network Services Gateway (NSG), and continue Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM). | | | | | |
| Title: Test, Evaluation and Integration | | | 0.152 | 0.365 | 0.600 |
| Description: Plan and conduct system software acceptance testing from CDD for baseline products, Integration Events (i.e., tests and assessments) in support of the JBC-P Family of Systems, to include Risk Reduction Events, vulnerability testing, and Army Interoperability Certification (AIC) testing. MCE test efforts are exclusively funded through the MCE funding line. Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line. | | | | | |
| FY 2016 Accomplishments: Tested software capability, Developmental Testing (DTs), and Risk Reduction Events (RREs) for continued support of JBC-P. | | | | | |
| FY 2017 Plans: Conducting testing on enhancements to the JBC-P system resulting from integration of the BFT 2.0 Transceiver Waveform Model, Virtual Satellite Network Control Center (SNCC), Virtual Network Services Gateway (NSG), and Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM). | | | | | |
| FY 2018 Plans: Will continue to conduct testing on enhancements to the JBC-P system resulting from integration of the BFT 2.0 Transceiver Waveform Model, Virtual Satellite Network Control Center (SNCC), Virtual Network Services Gateway (NSG), and Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM). | | | | | |
| Title: Program Management | | | 0.524 | 1.011 | 1.300 |
| Description: JBC-P Program Management, including technical, logistics, and business staff oversight. | | | | | |

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| B. Accomplishments/Planned Programs (\$ in Millions) | | | | | | | | FY 2016 | FY 2017 | FY 2018 | |
| <p>Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line.</p> <p><i>FY 2016 Accomplishments:</i> Provided technical, logistics and business oversight for JBC-P FoS software development and system engineering activities. Program Management includes funds execution, contract management, and logistical support to program's RDT&E activities.</p> <p><i>FY 2017 Plans:</i> Will provide technical, logistics and business oversight for JBC-P family of systems (FoS) system engineering activities. Program Management includes funds execution, contract management, and logistical support to program's RDT&E activities and oversight of the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT).</p> <p><i>FY 2018 Plans:</i> Will continue to provide technical, logistics and business oversight for JBC-P FoS software development and system engineering activities. Program Management includes funds execution, contract management, and logistical support the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT).</p> | | | | | | | | | | | |
| Accomplishments/Planned Programs Subtotals | | | | | | | | 2.780 | 4.245 | 9.910 | |
| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • Joint Battle Command | 137.457 | 227.573 | 282.549 | - | 282.549 | 176.358 | 321.963 | 304.399 | 220.095 | 0 | 1,670.394 |
| - Platform: OPA W61990 | | | | | | | | | | | |
| Remarks | | | | | | | | | | | |
| Procurement funding in Fiscal Year 2016 through 2022 (Base funding) is designated for the procurement, fielding, and program management of JBC-P Family of Systems including JBC-P and JBC-P Log. | | | | | | | | | | | |
| D. Acquisition Strategy | | | | | | | | | | | |
| The JBC-P Capabilities Development Document in lieu of Capabilities Production Document (CDD ILO CPD) was Joint Requirements Oversight Council (JROC) approved March 2013. Completed Initial Operational Test & Evaluation (IOT&E) as part of Network Integration Evaluation (NIE) 13.2 in 3QFY13. The IOT&E tested the JBC-P system software on existing FBCB2 hardware (non-dismountable vehicle systems) and future production-representative hardware. On completion of Army Interoperability Certification (AIC) and Joint Interoperability Test Certification (JITC), MDA authorized Full Rate Production (FRP) in 1QFY2014. First unit equipped (FUE) was successfully conducted 3QFY15. | | | | | | | | | | | |

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| As encouraged by DoD policy, developmental efforts are being performed through intra-government collaboration. System engineering efforts are being performed by CERDEC's Space and Terrestrial Communications Directorate (S&TCD); Command, Power and Integration (CP&I) & the Intelligence and Information Warfare Directorate (I2WD). Hardware along with fielding, training and field support efforts are obtained through existing competitively awarded contracts. | | |
| E. Performance Metrics N/A | | |