| XHIBIT R-2, RDT&E Budget Item Justification | | | | | | | DATE: FEBRUA | ARY 2005 |
|--|----------|---------|---------|------------------------------------|---------|-------------------|--------------|----------|
| .PPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAV | Y / BA-5 | | | R-1 ITEM NOMEN 0604507N / Enhar | | l Processor (EMSF | | |
| COST (\$ in Millions) | FY 2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
| otal PE Cost | 0.991 | 1.063 | 1.079 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 440 Enhanced Modular Signal Processor | 0.991 | 1.063 | 1.079 | | | | | |
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A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The objective of this Program Element (PE) is to improve Navy Signal Processing Hardware and Software Capabilities. Efforts include the development of a Portable Digital Signal Processing Operating System (PDOS), an associated tool set that supports development of reusable signal processing application software, and replacement of obsolete, unreliable and unsupportable AN/UYS-1/2/2A legacy host computer resources.

| EXHIBIT R-2a, RDT&E Project Justification | | | | | | | DATE: | |
|---|------------------|-------------------|-------------------|---------|-------------------|---------------------|---------|---------|
| | | | | | | | FEBRUA | RY 2005 |
| APPROPRIATION/BUDGET ACTIVITY | PROGRAM ELEM | ENT NUMBER ANI | O NAME | | PROJECT NUMBE | R AND NAME | • | |
| RDT&E, N / BA-05 | 0604507N / Enhan | ced Modular Signa | l Processor (EMSP |) | 1440 / Enhanced N | Modular Signal Prod | cessor | |
| COST (\$ in Millions) | FY 2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
| Project Cost | 0.991 | 1.063 | 1.079 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| RDT&E Articles Qty | | | | | | | | · |

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The objective of this Program Element (PE) is to improve Navy Signal Processing Hardware and Software Capabilities. Efforts include the development of a Portable Digital Signal Processing Operating System (PDOS), an associated tool set that supports development of reusable signal processing application software, and replacement of obsolete, unreliable and unsupportable AN/UYS-1/2/2A legacy host computer resources.

| EMENT NUMBER AND NAME hanced Modular Signal Processor (EM | PROJECT NUMBER AND N SP) 1440 / Enhanced Modular Sig | | 2003 |
|--|---|---|--|
| hanced Modular Signal Processor (EM | SP 1440 / Enhanced Modular Si | gnal Processor | |
| | | | |
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| 04 FY 05 | FY 06 | FY 07 | |
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| 04 FY 05 | FY 06 | FY 07 | |
| 61 0.813 | 0.829 | | |
| | | | |
| ost computer resources which are obsol | ete, unreliable and unsupportable | FY 07 | |
| | | | |
| | em, an associated tool set that supports 04 FY 05 61 0.813 st computer resources which are obsol | em, an associated tool set that supports development of reusable signal 04 FY 05 FY 06 61 0.813 0.829 st computer resources which are obsolete, unreliable and unsupportable | em, an associated tool set that supports development of reusable signal processing application software. D4 FY 05 FY 06 FY 07 D51 0.813 0.829 St computer resources which are obsolete, unreliable and unsupportable. |

| EXHIBIT R-2a, RDT&E Project Justification | | | | | D/ | ATE: | |
|---|----------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------------|--------------|---------------|
| ADDRODDIATION (DUDOFT ACTIVITY | DDOOD AND ELEMENT NUMBER | SED AND MAKE | | DDO IEOT NI IM | DED AND MAR | . - | FEBRUARY 2005 |
| APPROPRIATION/BUDGET ACTIVITY | PROGRAM ELEMENT NUMB | | | PROJECT NUM | | | |
| RDT&E, N / BA-05 | 0604507N / Enhanced Modula | ar Signal Processor | (EMSP) | 1440 / Enhanced | d Modular Signa | al Processor | |
| C. PROGRAM CHANGE SUMMARY: | | | | | | | |
| Funding: Previous FY 2005 President's Budget: (FY05 Presi Current FY 2006/2007 President's Budget: (FY06/0 Total Adjustments | | FY 2004 0.994 0.991 -0.003 | FY 2005 1.075 1.063 -0.012 | FY 2006 1.088 1.079 -0.009 | FY 2007 0.000 0.000 0.000 | | |
| Summary of Adjustments Congressional program reductions Congressional undistributed reductions Congressional rescissions SBIR/STTR Transfer Economic Assumptions | : | | -0.011 | | | | |
| Reprogrammings Other Navy/OSD Adjustments Congressional increases Subtotal | | -0.003 | -0.001 | -0.009 -0.009 | 0.000 | | |
| Schedule: None | | | | | | | |
| Technical: None | | | | | | | |
| | | DDING LIST 1 | | 110 | | | |

| | E Project Justification | | | | | | | | | FEBRU <i>A</i> | ARY 2005 | |
|-------------------|---|----------------|----------------|----------------|-----------------|----------------|-----------------|----------------|----------------|-----------------|-----------------------------|--|
| PROPRIATION/BUDG | ET ACTIVITY | | PROGRAM E | LEMENT NUM | BER AND NAI | ИE | PROJECT NU | JMBER AND N | AME | | | |
| DT&E, N / | BA-05 | | 0604507N / E | nhanced Modu | lar Signal Prod | essor (EMSP) | 1440 / Enhand | ced Modular Si | gnal Processo | r | | |
| D. OTHER PROG | RAM FUNDING SUMMARY: | | | | | | | | | | | |
| Line Item No. & I | Name 0 / Items Less Than \$5M | FY 2004 0.3 | FY 2005 0.4 | FY 2006 0.6 | FY 2007 0.0 | FY 2008 0.0 | FY 2009 0.0 | FY 2010 0.0 | FY 2011 0.0 | Complete 0.0 | Total <u>Cost</u> 1.3 | |
| (N61 NSP por | | 0.3 | 0.4 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | |
| | | | | | | | | | | | | |
| E. ACQUISITION ST | RATEGY: | | | | | | | | | | | |
| N/A | | | | | | | | | | | | |
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| F. MAJOR PERFOR | MERS: | | | | | | | | | | | |
| | arfare Center/Patuxent River (Nystems Command (NAVSEA/C | | | | | Activity (CPSA |), Technical De | esign Agent | | | | |
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|------------------------------------|--------|--------------------------|------------------------|-----------------|----------------|--------------|----------------|-----------------|----------------|-------|----------------|------------|------------|--------------|
| Exhibit R-3 Cost Analysis (pag | | | T | | | | | | | | | FEBRUARY 2 | 005 | |
| APPROPRIATION/BUDGET ACTIV | TY | | PROGRAM ELEMENT | | | | UMBER AND | | | | | | | |
| RDT&E, N / BA-05 | Io | In . | 0604507N / Enhanced Me | odular Signal F | | 1440 / Enhar | | Signal Processo | | | ID/ 07 | | | 1 |
| Cost Categories | Method | Performing Activity & | Total PY s | FY 04 | FY 04 Award | FY 05 | FY 05 Award | FY 06 | FY 06 Award | FY 07 | FY 07 Award | Cost to | Total | Target Value |
| | & Type | Location | Cost | Cost | Date | Cost | Date | Cost | Date | Cost | Date | Complete | Cost | of Contract |
| Signal Processor COTS Technology | | Var. | | 215 | Date | COST | Date | COSt | Date | COST | Date | 0.000 | | |
| Signal 1 rocessor CO10 reciliology | vai. | vai. | 5 | .10 | | | | | | | | 0.000 | 3.210 | |
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| Subtotal Product Development | | | 3. | 215 0 | .000 | 0.00 | 0 | 0.00 | 00 | 0.00 | O | 0.000 | 3.215 | i |
| | | | | | | | | | | | | | | |
| Software Development | WX | NAWC/Pax Riv | ver, MD 4. | 049 0 | .681 12/03 | 0.65 | 2 10/04 | 0.64 | 13 10/05 | | | 0.000 | 6.025 | i |
| Hardware Development | WX | NAVSEA/Cran | e, IN 0. | 439 0 | 260 10/03 | 0.32 | 9 10/04 | 0.38 | 10/05 | | | 0.000 | 1.417 | |
| S/W, H/W Dev./Common Processing | Var. | Var. | 0. | 050 0 | .020 01/04 | 0.05 | 4 01/05 | 0.02 | 10/05 | | | 0.000 | 0.146 | i |
| Common Processing | IP | ARI, CT | 0. | 225 | | | | | | | | 0.000 | 0.225 | |
| | | | | | | | | | | | | | | |
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| Subtotal Support | | | 4 | 763 0 | .961 | 1.03 | - | 1.05 | -4 | 0.00 | | Continuing | Continuino | |
| Subtotal Support | | I. | 4. | 763 0 | .901 | 1.03 | ə <u> </u> | 1.05 | 04 | 0.00 | 7 | Continuing | Continuing | |
| Remarks: | | | | | | | | | | | | | | |

| | | | | | | | | | | | DATE: | | | | |
|--------------------------------|------------------|------------------------|---------------|-------|---------------|---------------|------------|---------------|-----------------|---------------|---------------|---------------|---------------------|---------------|-----------------------------|
| Exhibit R-3 Cost Analysis (pag | | | | | | | | | | | | | FEBRUARY 20 | 005 | |
| APPROPRIATION/BUDGET ACTIV | TY | | PROGRAM EL | | | | PROJECT NU | | | | | | | | |
| RDT&E, N / BA-05 | | | 0604507N / En | | | | | | ignal Processor | | | | | | |
| Cost Categories | Contract | Performing | | Total | | FY 04 | | FY 05 | | FY 06 | | FY 07 | | | |
| | Method & Type | Activity & Location | | | FY 04 Cost | Award Date | | Award Date | | Award Date | FY 07 Cost | Award Date | Cost to Complete | Total Cost | Target Value of Contract |
| | & Type | Location | | Cost | Cost | Date | Cost | Date | Cost | Date | Cost | Date | Complete | Cost | or Contract |
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| Subtotal T&E | | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.00 | <u> </u> | 0.000 | 0.000 | 1 |
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| Program Management Support | IP/CPFF | TWD & Associa | ates, VA | 0.353 | 0.030 | 01/04 | | | | | | | 0.000 | 0.383 | |
| Program Management Support | CPAF | BAE Systems, | MD | | | | 0.028 | 12/04 | 0.025 | 11/05 | | | 0.000 | 0.053 | |
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| Subtotal Management | | | | 0.353 | 0.030 | | 0.028 | | 0.025 | | 0.000 |) | Continuing | Continuing | |
| Remarks: | | | | | | | | | | | | | | | |
| Total Cost | | | | 8.331 | 0.991 | | 1.063 | | 1.079 | | 0.00 |) | 0.000 | 11.464 | |
| Remarks: | | | | | | | | | | | | | | | |

| EXHIBIT R4, Schedule | | | | | | | | | | | | | | | | | | | | | | | | | DATE | | FE | BRU | ARY 2 | 2005 | | |
|--|---------------|----|----|---|---|----|----|---|-------|----|----|---------|--------|------|--------|---------|--------|-----|-----|---|------|-------|----|---------|--------|---------------|-------|-----|----------|------|----|---|
| APPROPRIATION/BUDGET RDT&E, N / | ACTIV BA-(| | | | | | | | PRO0 | | | | | | | | =MQD) | | | | | ECT N | | | | ИЕ al Proc | occor | | | | | |
| RDIGE, N / | | | | | | | | | 00040 | | | ceu ivi | ouulai | | | 5501 (1 | IVISF) | | | | 1440 | | | /iouuia | i Sign | | | | <u> </u> | | | |
| Fiscal Year | | 20 | 04 | | | 20 | 05 | | | 20 | 06 | | | 20 | 07 | | | 20 | 800 | 1 | | 20 | 09 | ı | | 20 | 10 | 1 | | 20 | 11 | |
| PDOS and Tools | 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 | 1 | 2 | 3 | 4 |
| Acquisition Milestones | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PDOS & Tools Development, Research, Investigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop PDOS Specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop Prototype OS, Tools | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop PDOS test suites | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop Signal Processing Benchmark | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test & Evaluation Milestones | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demonstrate PDOS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Production Milestones | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Work with Industry to Productize PDOS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deliveries | | | | | | | | | | | | NAWC | | | | | | | | | | | | | | | | | | | | |
| | - | | | | | | | | | | | R-1 | SHO | PPIN | IG LIS | ST - I | tem N | No. | 110 | | | | | | | | | | | | | |

| Exhibit R-4a, Schedule Detail | | | | | | | EBRUARY 2 | 005 |
|---|--------------|--------------|-----------------|--------------|---------------|----------------|----------------|---------|
| APPROPRIATION/BUDGET ACTIVITY | PROGRAM E | LEMENT | | | PROJECT NU | JMBER AND N | AME | |
| RDT&E, N / BA-05 | 0604507N / E | nhanced Modu | lar Signal Proc | essor (EMSP) | 1440 / Enhand | ced Modular Si | gnal Processor | |
| Schedule Profile | FY 2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
| PDOS and Tools Development, Research, Investigation | 2Q-4Q | | | | | | | |
| Develop PDOS Specification | 4Q | 1Q-2Q | | | | | | |
| Develop Prototype OS and tools | | 2Q-4Q | | | | | | |
| Develop PDOS test suites | | 3Q-4Q | 1Q | | | | | |
| Develop Signal Processing benchmark | | 4Q | 1Q-2Q | | | | | |
| Demonstrate PDOS | | | 2Q | | | | | |
| Work with industry to productize PDOS | | | 2Q-4Q | | | | | |
| Delivery to CPSA (NAWC/ Pax River) | | | 4Q | | | | | |
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R-1 SHOPPING LIST - Item No. 110

| EXHIBIT R4, Schedule P | | | | | | | | | | | | | | | | | | | | | | | | | | DATE | | ı | FEBR | UAR | Y 200 |)5 | |
|---|------|----------|-----|---|---|---|----|-------|-------------|-------|--------|--------|--------|---------|------------|-------|---------|-------|----|-----|---|------|--------|--------|--------|---------|---------|-------|------|-----|-------|----|---|
| APPROPRIATION/BUDGET A | | | | | | | | | | | | | | | | D NAM | | | | | | | | | | ID NAI | | | | | | | |
| RDT&E, N / | BA-(|)5 | | | | | | | | 06045 | 607N / | Enhar | iced M | lodular | Signa | Proce | ssor (E | EMSP) |) | | | 1440 | / Enha | nced N | Modula | ar Sign | al Proc | essor | | l | | | |
| Fiscal Year | | 2 | 004 | | | | 20 | 05 | | | 200 | 06 | | | 20 | 07 | | | 20 | 800 | | | 20 | 09 | | | 20 |)10 | | | 20 | 11 | |
| Legacy Host Computer Replacement | 1 | 2 | 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 | 1 | 2 | 3 | 4 |
| Acquisition Milestones | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN/UYS-1 Investigated Legacy Computer Replacement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN/UYS-2/2A Investigate Legacy Computer Replacement | | <u> </u> | | | _ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN/UYS-1 COTS Software Development AN/UYS-2/2A COTS Software Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test & Evaluation Milestones | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN/UYS-1 Validation Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN/UYS-2/2A Validation Test | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Production Milestones | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN/UYS-1 Contract for Delivery of Replacement host | | ı | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AN/UYS-2/2A Contract for Delivery of Replacement host | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deliveries | | | | | | | | AN/UY | ′S-1 (N | AWC) | Å | AN/UYS | S-2/2A | (NAWC |) | | | | | | | | | | | | | | | | | | |
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R-1 SHOPPING LIST - Item No. 110

| Exhibit R-4a, Schedule Detail | | | | | | DATE: | BRUARY 2 | 005 |
|---|--------------|---------------|-----------------|--------------|---------------|----------------|----------------|---------|
| APPROPRIATION/BUDGET ACTIVITY | PROGRAM E | LEMENT | | | PROJECT NU | MBER AND NA | AME | |
| RDT&E, N / BA-05 | 0604507N / E | nhanced Modul | ar Signal Proce | essor (EMSP) | 1440 / Enhand | ed Modular Sig | gnal Processor | |
| Schedule Profile | FY 2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
| Investigated Legacy Computer Replacement - AN/UYS-1 | 1Q-2Q | | | | | | | |
| Contract for delivery of replacement host computer | 2Q-4Q | 40.00 | | | | | | |
| Develop software for COTS components | 3Q-4Q | 1Q-2Q | | | | | | |
| Validation/Regression testing | | 2Q-3Q | | | | | | |
| Delivery to CPSA (NAWC/Pax River) | | 4Q | | | | | | |
| Investigate Legacy Computer Replacement - AN/UYS-2/2A | | 3Q-4Q | | | | | | |
| Contract for delivery of replacement host computer | | 4Q | 1Q-2Q | | | | | |
| Develop software for COTS components | | | 2Q-3Q | | | | | |
| Validation/Regression testing | | | 3Q-4Q | | | | | |
| Delivery to CPSA (NAWC/Pax River) | | | 4Q | | | | | |
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R-1 SHOPPING LIST - Item No. 110