

# UNCLASSIFIED

EXHIBIT R-2, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604218N

PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & Title	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
X2345 Fleet METOC Equipment	4,000	4,117	4,461	4,594	4,733	4,879	4,991	5,107	CONT.	CONT.
X2346 METOC Sensor Engineering	1,738	1,849	1,634	1,562	1,540	1,563	1,597	1,633	CONT.	CONT.
TOTAL	5,738	5,966	6,095	6,156	6,273	6,442	6,588	6,740	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Air/Ocean Equipment Engineering (AOEE) Program Element provides for the engineering and manufacturing development of onboard and remote sensors, communication interfaces, and processing and display devices. This equipment is specifically designed to measure, ingest, store, process, distribute and display meteorological and oceanographic (METOC) parameters essential to the optimum employment of Naval warfare systems. AOEE also develops increased capabilities for shipboard and shore based tactical systems. In addition, AOEE provides for the engineering development of specialized equipment and measurement techniques to obtain METOC data in denied and remote areas.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

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Exhibit R-2, RDT&E Budget Item Justification  
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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2345  
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet METOC Equipment

(U) COST (Dollars in thousands)

PROJECT NUMBER & Title	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
X2345 Fleet METOC Equipment (This is the consolidation of projects X0532 and X1752).	4,000	4,117	4,461	4,594	4,733	4,879	4,991	5,107	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for the engineering and manufacturing development of sensors, communication interfaces, and processing and display equipment. This equipment is designed to measure, ingest, store, process, distribute and display meteorological and oceanographic (METOC) parameters and derived products. Major emphasis areas include the Tactical Environmental Support System (TESS) and the associated Navy Integrated Tactical Environmental Subsystem (NITES), the Marine Corps Meteorological Mobile Facility (METMF), the AN/SMQ-11 satellite receiver/recorder, weather radars, and the development of new sensors such as active and passive atmospheric profilers for incorporation into the replacement system (MORIAH) for the Shipboard Meteorological and Oceanographic Observing System (SMOOS). This project also exploits new GOTS/COTS technologies for the Navy's computer-based tactical shipboard and shore capability used to predict and assess the impact of the operating environment on the performance of platforms, weapons and sensor systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$226) Continued test, evaluation and adaptation of GOTS/COTS technology in support of data connectivity, interfaces and C2 systems.
- (U) (\$265) Completed engineering development of the TAC-4 TESS/NITES workstation.
- (U) (\$232) Began engineering development of electro-optical profiler.
- (U) (\$221) Began engineering development of MORIAH.

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Exhibit R-2a, RDT&E Budget Item Justification (X2345)  
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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2345  
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet METOC Equipment

- (U) (\$479) Continued systems engineering of AN/SMQ-11.
  - (U) (\$480) Continued systems engineering of METMF (R).
  - (U) (\$623) Continued Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
  - (U) (\$250) Completed integration of TAC-4 TESS/NITES software build.
  - (U) (\$500) Began integration of next generation TESS/NITES software build.
  - (U) (\$496) Continued convergence of TESS and NITES software.
  - (U) (\$150) Began integration of advanced data base and visualization tools.
  - (U) (\$78) Developed and updated Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Developed and updated Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conducted associated C4ISR analyses and studies.
2. (U) FY 1999 PLAN:
- (U) (\$1,184) Continue test, evaluation and adaptation of GOTS/COTS technology in support of data connectivity, interfaces and C2 systems. Begin engineering development of a data exchange interface.
  - (U) (\$1,250) Continue engineering development of fleet systems (electro-optical profiler, MORIAH, AN/SMQ-11, METMF Replacement).
  - (U) (\$719) Continue Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.

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Exhibit R-2a, RDT&E Budget Item Justification (X2345)  
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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2345  
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet METOC Equipment

- (U) (\$314) Complete integration of next generation TESS/NITES software build.
- (U) (\$400) Complete convergence and begin integration of TESS and NITES software.
- (U) (\$250) Continue integration of advanced data base and visualization tools.

3. (U) FY 2000 PLAN:

- (U) (\$1,440) Continue test, evaluation and adaptation of GOTS/COTS technology in support of data connectivity, interfaces and C2 systems. Continue engineering development of a data exchange interface.
- (U) (\$1,250) Continue engineering development of fleet systems.
- (U) (\$725) Continue Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) (\$325) Complete integration of advanced data base and visualization tools.
- (U) (\$721) Begin exploitation of prototype hardware and other emerging technologies.

B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	5,738	6,162	6,124
(U) Appropriated Value:			
(U) Adjustments from FY 1999 PRESBUDG:		- 196	- 29
(U) FY 2000 President's Budget Submit:	5,738	5,966	6,095

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Exhibit R-2a, RDT&E Budget Item Justification (X2345)  
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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2345  
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet METOC Equipment

B. Continued:

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 adjustments include Revised Economic Assumptions (-\$14K), Civilian Personnel Underexecution (-\$5K), and a Contract Advisory and Assistance Services adjustment (-\$177K). FY 2000 adjustments include Navy Working Capitol Fund (NWCF) rate changes adjustment (+\$45K), Civilian Pay Rates (+\$14K), and a Non pay inflation adjustment (-\$88K).

(U) Schedule: Not applicable  
(V) Technical: Not applicable

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	To Complete	Total Program
(U) OPN line 4226	17,150	22,709	28,553	29,576	29,141	29,358	30,576	31,844	CONT.	CONT.

(U) RELATED RDT&E: PE 0603207N, Air/Ocean Tactical Applications.

D. (U) ACQUISITION STRATEGY: Not applicable.

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Exhibit R-2a, RDT&E Budget Item Justification (X2345)  
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Exhibit R-3 Cost Analysis (page 1)							Date: February 99					
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N/BA5			PROGRAM ELEMENT: 0604218N				PROJECT NAME AND NUMBER: X2345 FLEET METOC EQUIP					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 +PY Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Development												
	WX	NRL	0	1,700	N/A	1,750	N/A	N/A	N/A	CONT	CONT	CONT
	WX	SSC SD	0	600	N/A	600	N/A	N/A	N/A	CONT	CONT	CONT
	CP	RAYTHEON	0	200	N/A	200	N/A	N/A	N/A	CONT	CONT	CONT
	N/A	MISC	0	1,182	N/A	1,451	N/A	N/A	N/A	CONT	CONT	CONT
Subtotal Product Development												
			0	3,682	N/A	4,001	N/A	N/A	N/A	CONT	CONT	CONT
Remarks:												
Support												
	CP	SSA	0	375	N/A	400	N/A	N/A	N/A	CONT	CONT	CONT
Subtotal Support												
			0	375	N/A	400	N/A	N/A	N/A	CONT	CONT	CONT
Remarks:												

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Exhibit R-3, Project Cost Analysis  
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Exhibit R-3 Cost Analysis (page 2)										Date: February 99		
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N/BA5				PROGRAM ELEMENT: 0604218N			PROJECT NAME AND NUMBER: X2345 FLEET METOC EQUIP					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 +PY Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
T&E	PD	OPTEVFOR	0	60	N/A	60	N/A	N/A	N/A			
Subtotal T&E			0	60	N/A	60	N/A	N/A	N/A			
Remarks												
Subtotal Management												
Remarks												
Total Cost			0	4,117	N/A	4,461	N/A	N/A	N/A	CONT	CONT	CONT
Remarks												

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Exhibit R-3, Project Cost Analysis  
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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346  
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

(U) COST (Dollars in Thousands)

PROJECT NUMBER & Title	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
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X2346 METOC Sensor Engineering (Formerly project X1740).

	1,738	1,849	1,634	1,562	1,540	1,563	1,597	1,633	CONT.	CONT.
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A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for the engineering and manufacturing development of specialized, high resolution instrumentation systems and measurement techniques for obtaining near real-time in-situ meteorological and oceanographic (METOC) data in denied or remote areas. The objectives are to ruggedize and package systems, sensors and instruments to survive the harsh littoral environment and also to meet demanding requirements for timeliness and accuracy. Engineering is performed within this project to ensure that air and safety certification for deployment from fleet aircraft or ships is met and that the proper data formats are employed for integration into existing or planned communications and displays. The end products are sensors and systems that will provide the tactical commander with near real-time, in-situ METOC data for operational use. In addition, this difficult to obtain data will provide important inputs for predictive models in areas of potential interest.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$923) Continued development/transition of wind/wave variants of AN/WSQ-6 (series) buoys for NAVOCEANO. Added Global Positioning System (GPS)/self mooring capability to wave variants.
- (U) (\$815) Continued tactical air vehicle METOC Sensor development. Instituted transition of tactical dropsonde capability to NAVAIR PMA 222/299 (Program Offices for Air Expendable and SH-60 community) and coordinated joint requirements with U.S. Air Force/U.S. Marine Corp/U.S. Army.

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Exhibit R-2a, RDT&E Budget Item Justification (X2346)  
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DATE: February 1999

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346  
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

## 2. (U) FY 1999 PLAN:

- (U) (\$373) Complete AN/WSQ-6 buoy development/transition to NAVOCEANO.
- (U) (\$756) Continue development transition of tactical dropsonde capability to NAVAIR PMA-264 for P-3/S-3 community, PMA-299 for SH-60R transition and acquisition sponsorship by PMA-222.
- (U) (\$294) Initiate development of microsensor based miniature weather stations/buoys based on Defense Advanced Research Projects Agency/Office of Naval Research developed Micro Electro Mechanical (MEMS) technology.
- (U) (\$426) Begin engineering development of METOC Air, Surface, Undersea Reconnaissance Equipment (MEASURE).

## 3. (U) FY 2000 PLAN:

- (U) (\$739) Complete development transition of tactical dropsonde capability to NAVAIR PMA-264 for P-3/S-3 community, PMA-299 for SH-60R transition and acquisition sponsorship by PMA-222.
- (U) (\$418) Continue development of microsensor based miniature weather stations/buoys based on Defense Advanced Research Projects Agency/Office of Naval Research developed Micro Electro Mechanical (MEMS).
- (U) (\$477) Continue development of MEASURE.

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Exhibit R-2a, RDT&E Budget Item Justification (X2346)  
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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346  
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

B. (U) PROGRAM CHANGE SUMMARY:

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Not applicable.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not Applicable.

(U) OTHER RDT&E: PE 0602435N (Ocean and Atmospheric Technology)  
PE 0603207N (Air/Ocean Tactical Applications)

D. (U) ACQUISITION STRATEGY: Not Applicable.

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Exhibit R-2a, RDT&E Budget Item Justification (X2346)  
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Exhibit R-3 Cost Analysis (page 1)								Date: February 99				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5				PROGRAM ELEMENT: 0604218N				PROJECT NAME AND NUMBER: X2346 METOC SENSOR ENGINEERING				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 +PY Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Development	WX	NRL	0	550	N/A	600	N/A	N/A	N/A	CONT	CONT	
	N/A	MISC	0	1,299	N/A	1,034	N/A	N/A	N/A	CONT	CONT	
Subtotal Product Development			0	1,849	N/A	1,634	N/A	N/A	N/A	CONT	CONT	
Remarks:												
Subtotal Support												
Remarks												

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Exhibit R-3, Project Cost Analysis  
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Exhibit R-3 Cost Analysis (page 2)								Date: February 99				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5				PROGRAM ELEMENT: 0604218N				PROJECT NAME AND NUMBER: X2346 METOC SENSOR ENGINEERING				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY98 +PY Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks												
Subtotal Management												
Remarks												
Total Cost			0	1,849	N/A	1,634	N/A	N/A	N/A	CONT	CONT	
Remarks												

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Exhibit R-3, Project Cost Analysis  
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