CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	R-1 ITEM NOMENCLATURE **0603542N/RADIOLOGICAL CONTROL**						
COST (In Millions)	FY 2008	FY 2009	FY 2010				
Total PE Cost	2.666	1.090	1.372				
1830 / RADIAC DEVELOPMENT	2.666	1.090	1.372				

A. MISSION DESCRIPTION:

Mission: The Radiation Detection, Indication and Computation (RADIAC) Program is responsible for providing radiation monitoring instruments that detect and measure radiation in accordance with the provisions of Title 10 of the Code of Federal Regulations (10CFR). These instruments are used on all vessels afloat and at every shore installation in order to ensure the safety of personnel and the environment. RADIACs are also required after an act of terrorism or war involving radiological or nuclear materials in order to enable continuity of warfighting ability.

Justification: Many RADIAC instruments and dosimetry systems are decades old and approaching the end of their useful lives. In some cases the equipment and replacement parts are no longer manufactured, making the equipment logistically unsupportable. In other cases increasing failure rates due to age make replacements an economic efficiency improvement. In all cases a technology refresh will make both economic sense and provide increased operational capabilities. Naval Nuclear Propulsion Program (NNPP): Instruments are developed to support the safe operation and maintenance of nuclear powered vessels and at nuclear maintenance facilities. Non-NNPP: Instruments are developed to support other than NNPP end users, such as Explosive Ordnance Disposal, Weapons, Medical, Industrial Radiography and Training. Expanded Maritime Intercept Operations (EMIO): The Navy has been tasked to intercept and board vessels at sea to search for nuclear or radiological materials that could be used for terrorist attacks. These instruments would have different characteristics than those used for NNPP and non-NNPP purposes and prototypes must be developed and/or tested and evaluated. The AN/PDR-65 Ship Board Monitoring System is obsolescent and will be replaced. The IM-239/WDQ Air Particle Detector (APD) and the HD-732, HD-1150 and HD-1151 Air Particle Samplers (APS) are obsolescent and will be replaced.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION (CONTINUATION)		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	R-1 ITEM NOMENCLATURE **0603542N/RADIOLOGICAL CONTROL**	

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2008	FY 2009	FY 2010
FY09 President's Budget	1.522	1.094	0.891
FY10 President's Budget	2.666	1.090	1.372
Total Adjustments	1.144	-0.004	0.481
(U) Summary of Adjustments			
Secure Data Sharing for Digital Radiographic	1.192	0.000	0.000
Rate/Misc Adjustments	-0.048	-0.004	-0.019
Program Adjustments	0.000	0.000	0.500
Total	1.144	-0.004	0.481

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. and Name	FY 2008	FY 2009	FY 2010					To Complete	Total Cost
OPN BLI 292000 RADIAC	10.121	9.811	5.990					CONT	CONT

D. ACQUISITION STRATEGY:

Development efforts are being focused on evaluation, modification (as required to meet operational requirements) and adaptation of commercial-off-the-shelf (COTS) technology in order to minimize total ownership costs. To the maximum extent possible new contracts are targeted for fixed price efforts to control development cost.

E. MAJOR PERFORMERS:

NSWC Carderock. Science & Technology Agent, Technical Direction Agent and Primary Contracting Officer.

Orbis, Inc. In Service Engineering Agent (ISEA) services.

DoE Remote Sensing Laboratory. Development of Next Generation Air Particle Detector (IM-239/WDQ).

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603542N/RADIOLOGICAL CONTROL**				PROJECT NUMBER AND NAME **1830/RADIAC DEVELOPMENT**		
COST (In Millions)	FY 2008	FY 2009	FY 2010				
Project Cost	2.666	1.090	1.372				
RDT&E Articles Qty	51	12	13				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Mission: The Radiation Detection, Indication and Computation (RADIAC) Program is responsible for providing radiation monitoring instruments that detect and measure radiation in accordance with the provisions of Title 10 of the Code of Federal Regulations (10CFR). These instruments are used on all vessels afloat and at every shore installation in order to ensure the safety of personnel and the environment. RADIACs are also required after an act of terrorism or war that involves nuclear material in order to enable continuing warfighting ability.

Justification: Many RADIAC instruments and dosimetry systems are decades old and approaching the end of their useful lives. In some cases the equipment and replacement parts are no longer manufactured, making the equipment logistically unsupportable. In other cases increasing failure rates due to age make replacements an economic efficiency improvement. In all cases a technology refresh will make both economic sense and provide increased operational capabilities. Naval Nuclear Propulsion Program (NNPP): Instruments are developed to support the safe operation and maintenance of nuclear powered vessels and at nuclear maintenance facilities. Non-NNPP: Instruments are developed to support other than NNPP end users, such as Explosive Ordnance Disposal, Weapons, Medical, Industrial Radiography and Training. Expanded Maritime Intercept Operations (EMIO): The Navy has been tasked to intercept and board vessels at sea to search for nuclear or radiological materials that could be used for terrorist attacks. These instruments would have different characteristics than those used for NNPP and non-NNPP purposes and prototypes must be developed and/or tested and evaluated. The AN/PDR-65 Ship Board Monitoring System is obsolescent and will be replaced. The IM-239/WDQ Air Particle Detector (APD) and the HD-732, HD-1150 and HD-1151 Air Particle Samplers (APS) are obsolescent and will be replaced.

CLASSIFICATION:	UNCLASSIFIED		
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION			DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603542N/RADIOLOGICAL CONTROL**	PROJECT NUMBER AND NAME **1830/RADIAC DEVELOPMENT**	
B. ACCOMPLISHMENTS/PLANNED PROGRAM:			
	FY 2008	FY 2009	FY 2010
Digital Radiographic Imaging	1.157	0.000	0.000
RDT&E Articles Quantity	0	0	0
Congressional Add for Digital Radiographic Imaging project at University of Washington.			
	FY 2008	FY 2009	FY 2010
VBSS	0.206	0.000	0.000
RDT&E Articles Quantity	35	0	0
Complete testing of equipment for Vessel Boarding Search and Seizure (VBSS) mission. Articles are prototypes for evaluation.			
	FY 2008	FY 2009	FY 2010
Training RADIAC	0.241	0.000	0.000
RDT&E Articles Quantity	6	0	0
Complete in FY08 Multi-Function RADIAC (MFR) Training Simulators for NNPP.			
	FY 2008	FY 2009	FY 2010
NNPP Survey Meter	0.212	0.340	0.000
RDT&E Articles Quantity	10	10	0
Develop and test calibration software, survey instruments, dosimeters and associated probes for non-Naval Nuclear Propulsion Program (NNPP) end uses, to include Explosive Ordnance Disposal (EOD) and Radiological and Nuclear Defense (RND). Develop Next Generation non-NNPP Survey Meter. Articles are prototypes for evaluation.			
	FY 2008	FY 2009	FY 2010
IM-239/WDQ	0.850	0.750	0.750
RDT&E Articles Quantity	0	2	2
Air Particle Detector (APD) development. Articles are prototypes for test and evaluation.			
	FY 2008	FY 2009	FY 2010
Pressurized Ion Chamber	0.000	0.000	0.090
RDT&E Articles Quantity	0	0	6
The Radiological Affairs Support Office (RASO) has asked for a feasibility study into the performance of a pressurized ion chamber in a pulsed X-ray field. To answer RASO, NSWCCD must research the various pressurized ion chambers and evaluate each based on requirements. Articles are prototypes for evaluation.			
	FY 2008	FY 2009	FY 2010
USNA Intern	0.000	0.000	0.015
RDT&E Articles Quantity	0	0	0
Support US Naval Academy Midshipman summer internship in study of Naval Dosimetry System.			

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603542N/RADIOLOGICAL CONTROL**	PROJECT NUMBER AND NAME **1830/RADIAC DEVELOPMENT**

	FY 2008	FY 2009	FY 2010
EPD Mesh Network	0.000	0.000	0.467
RDT&E Articles Quantity	0	0	5

Naval Reactors has requested the study of adding capabilities to the newly fielded Electronic Pocket Dosimeter (EPD). Besides its basic functionality for recording dose exposure, this instrument also has the ability to remotely monitor and report the radiation exposure of on-scene emergency responders. This feature has not been implemented in Navy, but the USAF already makes extensive use of the same EPD, along with the extra hardware and software required for the purpose of keeping track of responders in emergencies in terms both of their accumulated exposure and precise location.

A second application of the EPD telemetry capability is for radiological work. This could include both workers wearing EPDs during high radiation level work, and EPDs being posted at locations where radiation level measurements are required in high radiation background areas. Posting of EPDs in such a situation would preclude having a technician enter the area with a RADIAC meter to measure the radiation level. An example would be monitoring the radiation level of the pipe through which primary plant resin is being discharged from the ship.

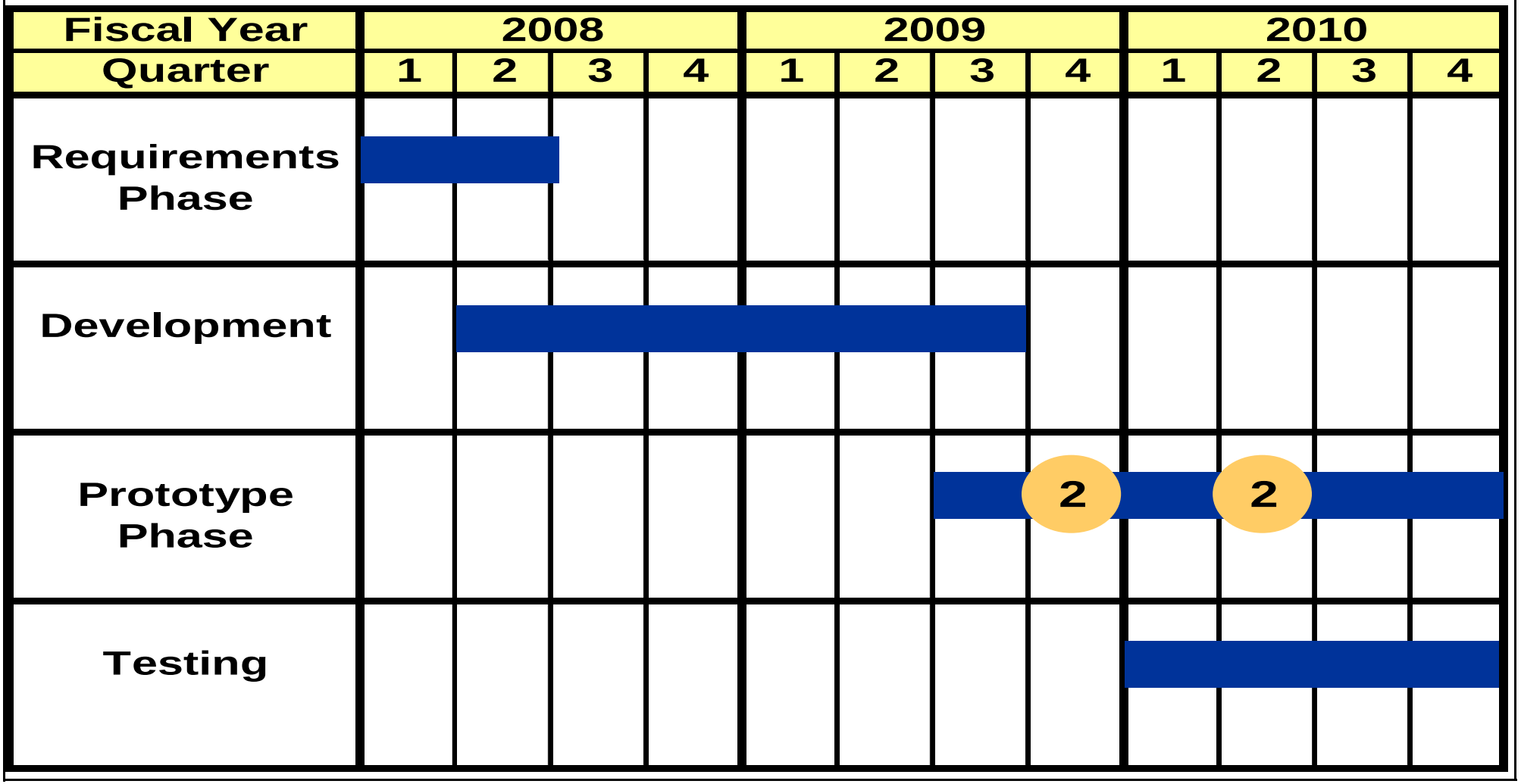
Articles are the COTS hardware and software for evaluation and testing at shipyards and nuclear maintenance facilities.

	FY 2008	FY 2009	FY 2010
Optically Stimulated Luminescence (OSL)	0.000	0.000	0.050
RDT&E Articles Quantity	0	0	0

The need for dosimetry is inherent to ionizing radiation. The infrastructure established by the Navy for its dosimetry is extensive. New dosimetry technologies must be researched well in advance to determine significance of performance, cost to field and cost to maintain. OSL is a relatively new technology and its benefits have not yet been fully determined. If OSL is not researched and the benefits not determined, the Navy may not be able to keep the precise records and safety standards that are required for personnel dosimetry. The Navy has the potential to utilize a better means of monitoring personnel exposure.

CLASSIFICATION:	UNCLASSIFIED									
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS							DATE May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**		PROGRAM ELEMENT NUMBER AND NAME **0603542N/RADIOLOGICAL CONTROL**			PROJECT NUMBER AND NAME **1830/RADIAC DEVELOPMENT**					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)	FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date	Cost to Complete ($000)	Total Cost ($000)	Target Value of Contract
Primary Hardware Development	C/FP	Various	11.218	0.000		0.000				
Subtotal Product Development			**11.218**	**0.000**		**0.000**				
Remarks:										
Development Support	WX	NSWC Carderock	3.054	0.130	JAN-09	0.270	NOV-09			
Development Support	Contract	Univ. of Washington	0.000	0.000		0.000				
Subtotal Support Costs			**3.054**	**0.130**		**0.270**				
Remarks:										
Operational Test & Evaluation	WX	Various	0.638	0.100	MAR-09	0.132	FEB-10			
Subtotal Test and Evaluation			**0.638**	**0.100**		**0.132**				
Remarks:										
Contractor Engineering Support	C/FP	Orbis, Inc., Charleston, SC	1.769	0.100	MAY-09	0.210	NOV-09			
Labor (Research Personnel)	IPR	DoE, RSL, Nellis AFB, NV	1.313	0.750	JAN-09	0.750	NOV-09			
Travel	PD	NAVSEA	0.375	0.010	APR-09	0.010	NOV-09			
Subtotal Management Services			**3.457**	**0.860**		**0.970**				
Remarks:										
Total Cost			**18.367**	**1.090**		**1.372**				

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-4, SCHEDULE PROFILE		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603542N/RADIOLOGICAL CONTROL**	PROJECT NUMBER AND NAME **1830/RADIAC DEVELOPMENT**



CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-4a, SCHEDULE DETAIL					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603542N/RADIOLOGICAL CONTROL**			PROJECT NUMBER AND NAME **1830/RADIAC DEVELOPMENT**			
Schedule Profile	FY 2008	FY 2009	FY 2010				
Prototypes		Q4	Q2				