Exhibit R-2, RDT&E Budget Item Justification								DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07					**R-1 ITEM NOMENCLATURE** Support of the National Communications System/P.E. 0303127K					
COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Total Program Element		4.222	4.912	15.046	5.118	5.253	5.380	5.502	Contg	Contg
Interoperability/N088		1.918	.989	.966	.992	1.014	1.013	1.012	Contg	Contg
NS/EP Programs/N709		2.304	3.923	14.080	4.126	4.239	4.367	4.490	Contg	Contg

A. Mission Description and Budget Item Justification:
This program element supports Executive Order 12472 of 3 April 1984 which assigns the National Communications System (NCS) the mission of assisting the President, the National Security Council, the Office of Science and Technology Policy, and the Office of Management and Budget in exercising their wartime and non-wartime telecommunications functions and responsibilities, and coordinating the planning for, and provisioning of, National Security and Emergency Preparedness (NS/EP) telecommunications for the federal government under all circumstances. To attain this objective, there are several National Security Decision Directives which require that initiatives be developed to improve the survivability and interoperability of the commercial telecommunications systems that support national security and emergency preparedness, to enhance the potential NS/EP functionality of U.S. commercial satellites, and to provide communications support for Government agencies which have responsibilities to carry out essential functions in any emergency. Interoperability supports the Federal Telecommunications Standards Program, and ensures interoperability among emerging government communications systems. Effective FY 2001, NS/EP Programs develops and implements evolutionary NS/EP capabilities for an enduring and effective telecommunications infrastructure. It consolidates Wireless Priority Service, Advanced Intelligent Network and includes an evolutionary initiative called the Information Sharing and Analysis System (ISAS). The NCS will conduct research and development for the expansion of a Cyber Warning Information Network (CWIN) which links the watch desks of seven government sites: the White House, the National Security Incident Response Center (NSIRC), the Intelligence Community Incident Response Center (ICIRC), the Federal Computer Incident Response Center (FedCIRC), the Joint Task Force Computer Network Operations (JTF-CNO), the National Communications System (NCS) and the National Infrastructure Protection Center (NIPC). This linkage will provide a Federal coordination capability in response to cyber events.

Exhibit R-2, RDT&E Budget Item Justification	**DATE:** February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System/P.E. 0303127K

Wireless Priority Service explores evolving telecommunications technologies and applications and produces proof-of-concept solutions to satisfy current and future NS/EP needs, with emphasis on the investigation of potential wireless solutions for specialized NS/EP needs. Advanced Intelligent Network employs newly developed processing capabilities that tailor the extensive telecommunications resources of the Public Switched Network to enhance connectivity and survivability of services for essential government users during periods of emergency. The Information Sharing and Analysis System (ISAS) involves an industry-government sharing of information to help ensure reliable, restorable, and secure communications supporting National Security and Emergency Preparedness. This initiative is evolving from a manual process of collection and sharing of network outage information in the National Coordinating Center (NCC) to an automated process which includes a telecommunications ISAS. The NCC, which is a government/industry partnership, has been designated by the National Security Council as an Information Sharing and Analysis Center (ISAC) in accordance with the criteria of Presidential Decision Directive 63 and the National Plan for Information Systems Protection. CWIN will be further developed using various analytical processes to provide a Federal coordination capability and infrastructure vulnerability and interdependency analyses in response to cyber events. This program element is under Budget Activity 07 because it involves efforts supporting operational systems development.

Exhibit R-2, RDT&E Budget Item Justification	**DATE:** February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System/P.E. 0303127K

B. Program Change Summary:

	FY2001	FY2002	FY2003
Previous President's Budget (FY 2002)	4.235	4.968	5.086
Appropriated Value	5.019	4.968	
Adjustments to Appropriated Value	-.797	-.056	
Adjustments to Budget Year Since FY 2002 President's Budget			+9.960
Current Budget Submit/President's Budget (FY 2003)	4.222	4.912	15.046

Change Summary Explanation:

Funding: FY 2001 change is due to below threshold reprogramming
FY 2002 change due to undistributed congressional adjustments to Defense-wide RDT&E appropriation
FY 2003 change is due to increase for support of Cyber Warning Information Network (CWIN) developmental initiatives.

Exhibit R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**PROGRAM ELEMENT** Support of the NCS/PE 0303127K	**PROJECT NAME AND NUMBER** Interoperability/N088	

COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		1.918	.989	.966	.992	1.014	1.013	1.012	Contg	Contg

A. Mission Description & Budget Item Justification:
This project analyzes new communications technologies and their effects on interoperability, reliability, and security of government communications; conducts related technical evaluations of standards development and implementation agreements; supports the Federal Telecommunications Standards Program; ensures interoperability among emerging government communication systems, including related information systems, by providing the required analyses to the NCS member organizations and other government agencies for specific types of communication and related information systems; and performs analyses to support priority treatment of NS/EP communications in commercial networks, including the Internet and wireless systems.

FY2001 Accomplishments:

- o Continued to develop technology, methods, and strategies to support development of industry standards and implementation agreements incorporating specific features to help ensure reliability of NS/EP communications through congested networks ($350K) (1st Qtr – 4th Qtr)
- o Continued to develop procedures for analyzing interoperability of NS/EP communications and related information systems in various stress scenarios. ($666K) (1st Qtr – 4th Qtr)
- o Assessed advanced emerging technology for its use by or impact on security and reliability of NS/EP communications. (e.g., photonic switching). ($571K) (1st Qtr – 4th Qtr)
- o Continued to assess, evaluate, and extend advanced wireless communications technology and services for NS/EP communications ($331K) (1st Qtr – 4th Qtr)
- o Total $1.918M

Exhibit R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**PROGRAM ELEMENT** Support of the NCS/PE 0303127K		**PROJECT NAME AND NUMBER** Interoperability/N088

COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		1.918	.989	.966	.992	1.014	1.013	1.012	Contg	Contg

FY2002 Plans:

- Continue analyzing technology underlying emerging communications (e.g., Internet) to develop methods of inserting features into networks to support priority service for NS/EP communications. ($589K) (1st Qtr – 4th Qtr)
- Continue analyzing emerging wireless and other significantly capacity-limited technologies to develop ways of obtaining NS/EP priority treatment in public networks. ($400K) (1st Qtr – 4th Qtr)
- Total $.989M

FY2003 Plans:

- Develop schemes for preserving end-to-end priority treatment of NS/EP communications in public IP networks. ($200K) (1st Qtr – 4th Qtr)
- Develop interface applications and alternate techniques for network access. ($266K) (1st Qtr – 4th Qtr)
- Identify protocols for the convergence of voice and data systems. ($200K) (1st Qtr – 4th Qtr)
- Evaluate architectures in fiber optic networks using dense wavelength division multiplexing and photonic switching and buffering ($100K) (1st Qtr – 4th Qtr)
- Evaluate evolving photonic protocols and recommend NS/EP code points. ($100K) (1st Qtr – 4th Qtr)
- Evaluate photonic switching systems and label tagging concepts in light of priority service constraints. ($100K) (1st Qtr – 4th Qtr)
- Total $.966M

B. Other Program Funding Summary:

	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	To Complete	Total Cost
O&M,DW	2.053	2.033	2.418	4.273	4.571	4.571	4.571	Contg	Contg

Exhibit R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**PROGRAM ELEMENT** Support of the NCS/PE 0303127K		**PROJECT NAME AND NUMBER** Interoperability/N088

COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		1.918	.989	.966	.992	1.014	1.013	1.012	Contg	Contg

C. Acquisition Strategy:

Work will continue under existing contract vehicles and new reimbursable orders.

D. Schedule Profile

FY01 – 4th quarter: Receive reports that begin to define the expected technology of Next Generation Networks.
FY02 – 4th quarter: Receive reports on strategies for mitigating impact of congestion on NS/EP communications in high-speed networks (e.g., priority services, intelligent network rerouting in emerging integrated, packet-based, commercial networks).
FY03 – 4th quarter: Receive reports on end-to-end priority treatment of NS/EP communications in public networks.
FY04 – 4th quarter: Receive reports on impact on NS/EP communications of infrastructure transition to changing Internet protocol features.
FY05 - 4th quarter: Receive reports on advanced, emerging technologies affecting NS/EP communications, expected to include radically different backbone and edge architectures.
FY06 – FY07
4th quarter: Receive reports on advanced, emerging technologies affecting NS/EP communications.

Exhibit R-3 Cost Analysis		**DATE:** February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**PROGRAM ELEMENT** Support of the NCS/PE 0303127K	**PROJECT NAME AND NUMBER** Interoperability/N088

Cost Category	Contract Method & Type	Performing Activity & Location	Total PY's Cost	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Technical Support	FFRDC/ Mipr	Mitre McLean, Va	.210	TBD		TBD		Contg	Contg	.210
Technical Support	RO	NTIA Boulder, CO	.808	.405	10/01	.410	10/02	Contg	Contg	1.623
Technical Support	CPFF/ C	SW Research Kelly AFB, Tex	.206	.119	12/01	.120	12/02	Contg	Contg	.445
Technical Support	RO	NIST Gaithersburg, MD	.190	.129	02/02	.130	02/03	Contg	Contg	.449
Technical Support	FFP/ C	SAIC San Diego, CA	.100	.188	12/01	.156	12/02	Contg	Contg	.444
Technical Support	FFP	Gartner Group Stanford, CT	.304	TBD		TBD		Contg	TBD	TBD
Subtotal Support Costs			1.818	.841		.816				
Report Development	CPAF/ 8(a)	Comtec Herndon, VA	.100	.148	08/02	.150	08/03	Contg	Cont	.398
Subtotal Product Development			.100	.148		.150				
Total Cost			1.918	.989		.966				

Exhibit R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**PROGRAM ELEMENT** Support of the NCS/PE 0303127K	**PROJECT NAME AND NUMBER** NS/EP Programs/N709	

COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		2.304	3.923	14.080	4.126	4.239	4.367	4.490	Contg	Contg

A. Mission Description & Budget Item Justification:
This project is required to employ newly developed processing capabilities to tailor the extensive telecommunications resources of the existing Public Switched Network (PSN), which includes the Local Exchange Carrier (LEC) and Inter Exchange Carrier (IEC) networks, thus enhancing connectivity and survivability of services for essential government users during periods of emergency. Advanced Intelligent Network (AIN) is an evolving PSN capability consisting of signaling systems, switches, computer processing, databases, and transmission media. This research will result in the utilization of these components, in a customized set of network services that can be flexibly, rapidly, and cost effectively configured by customers upon request. Wireless Priority Service explores evolving telecommunications technologies and applications and produces proof-of-concept solutions to satisfy current and future NS/EP needs, with emphasis on the investigation of potential wireless solutions for specialized NS/EP needs. Information Sharing and Analysis System initiatives will develop and evolve a telecommunications Information Sharing and Analysis System (ISAS) for the National Coordinating Center (NCC), providing a means for industry and government to share information relating to the security of the nation's critical telecommunications infrastructure. In addition, ISAS tasking will develop modeling and analysis tools used in the Network Design and Analysis Center (NDAC) System. The Cyber Warning and Information Network (CWIN) will develop a communications architecture designed to facilitate the immediate sharing of critical cyber information within Government, and ultimately, with industry.

FY2001 Accomplishments:
- Evaluated AIN capabilities and implementation for NS/EP. ($300K) (1st Qtr – 4th Qtr)
- Assessed Wireless Priority Services across cellular and satellite systems. ($224K) (1st Qtr – 4th Qtr)
- Defined, developed, demonstrated and tested NS/EP techniques and features for NS/EP enhancements. ($450K) (1st Qtr – 4th Qtr)
- Developed future service plans for Government Emergency Telecommunications Service (GETS) full operational capability. ($486K) (1st Qtr – 4th Qtr)

Exhibit R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**PROGRAM ELEMENT** Support of the NCS/PE 0303127K	**PROJECT NAME AND NUMBER** NS/EP Programs/N709	

COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		2.304	3.923	14.080	4.126	4.239	4.367	4.490	Contg	Contg

- o Integrated enhancements, including NS/EP priorities and security, into current NCS Programs. ($844K) (1st Qtr – 4th Qtr)
- o Total $2.304M

FY2002 Plans:

- o Develop proof-of-concept hardware and software to demonstrate potential solutions for specialized NS/EP needs. ($135K) (1st Qtr – 4th Qtr)
- o Explore emerging telecommunications technologies for applications that will enhance National Security and Emergency Preparedness (NS/EP). Also define, develop, demonstrate and test such enhancements. ($800K) (1st Qtr - 4th Qtr)
- o Evaluate potential enhancements to the Information Sharing and Analysis System (ISAS) that is used to share industry government information in support of NS/EP using the development of modeling and analysis tools. ($200K) (1st Qtr - 4th Qtr)
- o Evaluate the security needs and vulnerabilities on national telecommunication networks that are needed for NS/EP applications for networks' protection. ($200K) (1st Qtr – 4th Qtr)
- o Evaluate the potential for Government Emergency Telecommunications Service (GETS) enhancements in light of Advanced Intelligent Network (AIN) developments to improve GETS performance. ($148K) (1st Qtr –4th Qtr)
- o Develop analyses of technology and techniques to evolve the Critical Infrastructure Protection (CIP) tools from emphasis on switched circuits to include multiple technologies, such as data, wireless, new transmission media and methods, network access, and Internet services. ($480K) (1st Qtr – 4th Qtr)
- o Develop techniques and methods of analyzing, demonstrating, and testing security systems for the CIP efforts. ($1,280K) (1st Qtr – 4th Qtr)
- o Develop techniques and tools for correlating and analyzing data, including testing and evaluating commercial off-the-shelf tools in the CIP environment to improve correlation of events to identify network attacks, to more rapidly analyze events and predict effects on networks. ($680K) (1st Qtr – 4th Qtr)
- o Total $3.923M

Exhibit R-2a, RDT&E Project Justification								DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07		**PROGRAM ELEMENT** Support of the NCS/PE 0303127K				**PROJECT NAME AND NUMBER** NS/EP Programs/N709				
COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		2.304	3.923	14.080	4.126	4.239	4.367	4.490	Contg	Contg

FY2003 Plans:

- Explore emerging telecommunications technologies for applications that enhance NS/EP. ($240K) (1st Qtr – 4th Qtr)
- Explore geo location concepts for 3rd generation wireless sytems. ($100K) (2nd – 4th Qtr)
- Develop proof-of-concept hardware and software to demonstrate potential solutions. ($100K) (lst Qtr – 4th Qtr)
- Evaluate new and proposed AIN capabilities for NS/EP potential. ($294K) (1st Qtr-4th Qtr)
- Define, develop, and demonstrate intelligent Network NS/EP enhancements. ($300K) (1st Qtr-4th Qtr)
- Research enhancements to ISAS program. ($200K) (1st Qtr-4th Qtr)
- Evaluate the security needs and vulnerabilities of Public Switched Telephone Network Next Generation Network (PSTN NGN) from a NS/EP perspective. ($200K) (1st –4th Qtr)
- Evaluate the vulnerabilities of potential Government Emergency Telecommunications Service (GETS) converged network enhancements. ($191K) (1st Qtr-4th Qtr)
- Continue to develop analyses of technology and techniques to evolve the Critical Infrastructure Protection (CIP) tools from emphasis on switched circuits to include multiple technologies such as data, wireless, new transmission media and methods, network access, and internet service provider service. ($520K) (1st Qtr-4th Qtr)
- Continue to develop techniques and methods of analyzing, demonstrating, and testing security tools for CIP efforts. ($1,255K) (1st Qtr-4th Qtr)
- Continue to develop techniques and tools for correlating and analyzing data, including testing and evaluating commercial off-the-shelf tools in the CIP environment. ($680K) (1st Qtr-4th Qtr)
- For the prototype Internet Anomaly Reporting System (IARS) and the Attack Early Warning System (AEWS), develop visualization tools that display anomalies and attack indications on a geographic global map; develop data ware-housing, data mining and trending tools to provide automated capabilities for traffic analyses of the data collected from the prototype system. ($7,000K) (1st Qtr-4th Qtr)
- Develop proof-of-concept to share detailed information on IT and network security, intrusion detection and analysis tools, and IT security methods and procedures; establish two-way data feeds between intrusion detection operations centers and laboratories to provide near real-time IDS data and output for correlation and analysis; independently and collaboratively perform analysis of the aggregated data and share results. ($2,000K)(1st Qtr-4th Qtr)

Exhibit R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	**PROGRAM ELEMENT** Support of the NCS/PE 0303127K	**PROJECT NAME AND NUMBER** NS/EP Programs/N709	

COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		2.304	3.923	14.080	4.126	4.239	4.367	4.490	Contg	Contg

o Develop procedures to address interdependency issues between critical infrastructures; develop proof-of-concept tools to perform interdependence analyses.($1,000K) (1st Qtr-4th Qtr)

o Total $14.080M

B. Other Program Funding Summary:

	FY2001	FY2002	FY2003	FY2004	FY 2005	FY2006	FY2007	To Complete	Total Cost
O&M	25.709	21.454	19.434	18.419	18.443	18.611	18.937	Contg	Contg

Exhibit R-2a, RDT&E Project Justification								DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07		PROGRAM ELEMENT Support of the NCS/PE 0303127K				PROJECT NAME AND NUMBER NS/EP Programs/N709				
COST (in millions)		FY01	FY02	FY03	FY04	FY05	FY06	FY07	Cost to Complete	Total Cost
Project Cost		2.304	3.923	14.080	4.126	4.239	4.367	4.490	Contg	Contg

C. Acquisition Strategy: Work will continue under current and re-competed contract vehicles, to include systems engineering and technical support (SETA), Federally Funded Research and Development Centers (FFRDCs), industrial firms, and small businesses.

D. Schedule Profile:

FY01 4th quarter: GETS (with NS/EP functionality) reaches full operational capability.
FY02-03 4th quarter: NS/EP integration/implementation into wireless systems.
FY04-07 4th quarter: NS/EP integration/implementation into alternate access technologies.
FY02-07 4th quarter: Receive reports on current, state-of-the art techniques to include collection, storage, analysis
FY02-07 4th quarter: and dissemination of information involving anomalous events in the Internet and other networks.
Receive reports on the inclusion of new network transmission systems in ISAS data collection and analysis.
Receive reports on including mobile wireless and other network access technologies in ISAS data collection and analysis.
Receive reports on advanced methods of data analysis, including statistical analysis and "data mining." (Includes evaluation of tests of commercial off-the-shelf software and hardware).
Receive reports on analyses of security vulnerabilities and their fixes for data acquisition, storage, and dissemination.
FY03 4th quarter: Tool delivery for prototype IARS & AEWS
FY03 4th quarter: Report on proof-of-concept of sharing IDS information
FY03 4th quarter Report on proof-of-concept for interdependency analyses; signed interdependency sharing agreements

Exhibit R-3 Cost Analysis | **DATE:** February 2002

APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT**	**PROJECT NAME AND NUMBER**
RDT&E, Defense-Wide/07	Support of the NCS/PE 0303127K	NS/EP Programs/N709

Cost Category	Contract Method & Type	Performing Activity & Location	Total PY's Cost	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Technical Assistance	CPAF/ C	BAH McLean, VA	.300	1.197	Various	1.841	Various	Contg	Contg	3.338
Technical Assistance	FFRDC/ Mipr	Mitre McLean, Va	.844	.844	04/02	.844	04/03	Contg	Contg	2.532
Technical Assistance	8a	TBD	0	.600	12/01	.600	12/02	Contg	Contg	1.200
Technical Assistance	CPAF	Dyncorp Chantilly, Va	.224	.296	04/02	.301	04/03	Contg	Contg	.821
Technical Assistance	CPFF/	Akamai Cambridge, Mass	0	0	0	7.000	12/02	Contg	Contg	Contg
Technical Assistance	CPFF/ C	AT&T	0	0	0	2.000	12/02	Contg	Contg	Contg
Technical Assistance	RO	DOE	0	0	0	.500	12/02	Contg	Contg	Contg
Subtotal Support Costs			1.368	2.937		13.086				
Technical Reports	CPFF/ SS	Telcordia Morristown, NJ	.936	.686	03/02	.694	03/03	Contg	Contg	2.316
Technical Reports	RO	JPL Pasadena, CA	0	.300	03/02	.300	03/03	Contg	Contg	.600
Subtotal Product Development			.936	.986		.994				
Total Cost			2.304	3.923		14.080				