(U) COMMUNICATIONS SYSTEMS ACQUISITIONS AND OPERATIONS

(U) Introduction

National Reconnaissance Program
Communication/Dissemination Systems
Funds by Expenditure Center and Base/Ongoing/New
FY 1996-2003

[redacted]

	FY 96	FY 97	FY 98	FY 97-98 Change	FY 99	FY 98-03
[redacted]						

(U) The NRO Communications Directorate's (COMM) mission statement is to provide assured innovative, cost effective, and integrated terrestrial and space-based communications, information systems and, dissemination services to enable US government and military global information superiority. In carrying out this mission, COMM focuses on realizing a particular subset of the NRO's statement of goals and objectives. COMM supports four of the five major areas of concentration (business areas), addressing more than one-third of the individual objectives. In the Acquisition area, we are budgeting to institute acquisition reforms and leverage off commercial and other government technologies in the National Space Communications Program. In the Operations arena, we are lowering operating costs through the development of a work-station based, distributed command and control system [redacted] and also via continuous quality improvement in our terrestrial and space-based communications systems. We are also improving interconnectivity to NRO customers with the new initiatives mentioned above, providing continuity under the umbrella of the Integrated Broadcast System (IBS) in the context of the current proliferation of tactical data dissemination systems, and by applying consistent communications engineering to requests from customers for new or improved services. In the Research & Development arena, our approach is to utilize both Advanced Technology Program[redacted] both terrestrial and space-based. Finally, in the Infrastructure arena, we are budgeting to provide software engineering support for the improved financial management reformation being undertaken by NRO's Resource Oversight and Management (ROM) organization, a Management Information System (MIS) migration towards greater interoperability within the NRO and with our mission partners and customers, and the communications system engineering aspects of a more open NRO architecture.

(U) COMM plays a pivotal role in consolidated and integrated space-based collection architectures by managing the assured flow of intelligence and data through space and ground-based assets. To accomplish this, COMM works with the IMINT and SIGINT Directorates; as well as the Plans & Analysis, Office of Systems Applications, Advanced Technology Program, Office of Space Launch (OSL), and Operations Support Offices to ensure responsive and cost-effective communications for mission operations and backbone NRO infrastructure. An excellent example of end-to-end system engineering and the role played by COMM contributing to the effectiveness of the NRO, is the integrated terrestrial and space communications supporting SIGINT, IMINT, and OSL mission operations. Meeting all of the above challenges with cost-effective, system engineered solutions is the focus of the COMM Directorate.

To this end, the Directorate incorporates staff support for the NRO's new Chief Information Officer (CIO)[redacted], the NRO telecommunications and information systems infrastructure and operations services (Information Technology Group)[redacted] and the Tactical Related Applications (TRAP) Data Dissemination System (TDDS) Program Office (Tactical Dissemination Group). The space relay and ground communications services are essential to specific NRO satellite collection payloads, data processing and dissemination functionality.

(S) Communications constitutes a central design feature in the NRO system-interrelated architectures of the future. While participating in these emerging architectures, COMM is budgeting for and must ensure continued operations success in the present. In this capacity, we provided for the successful

At the end of the calendar year, we In the emerging architectures we will have to meet the multi-user, multi-function expanded requirements of NRO intelligence collection systems , as well as provide a dissemination capability to support military ELINT users in the field. Our space communications capabilities are being expanded to accommodate We are currently preparing for this improved capability through the For the long range future needs,

(S) support function is located in the MASINT Collection and Processing tab. The largest portion of the COMM budget, , is contained in this Multidisciplinary Collection and Processing tab. In the following tab, Infrastructure, is yet another aspect of COMM, the support provided to the NRO's day-to-day operations. These are the voice and data grade communications circuits, telephonic and facsimile systems, and information technology capabilities provided to NRO facilities (government and contractor) worldwide.

(S)

(S) Also in this tab is the TRAP Data Dissemination System (TDDS) Program and its associated studies.

(U) COMMUNICATIONS SYSTEM GROUP

(U) *Scope*

(U) The Communications Directorate headquarters staff functions as the focal point for communications and computer issues within the NRO. Thus, the D/COMM serves as the Chief Information Officer (CIO) for the NRO, representing the DNRO on all appropriate inter-agency governmental committees in this capacity. Staff work done for the CIO is budgeted for within the Communication System Group (CSG). CSG provides liaison and interaction with the intelligence and communications communities on plans and

policy matters of Defense agencies; is the COMM interface to the IC's Intelligence Systems Secretariat (ISS); and supports the D/COMM as a member of the Intelligence Systems Board (ISB).

(U) CSG prepares and manages the COMM Master Schedule, integrated communications-computer architectures and standards profiles. Focusing on long-range visions, this staff provides multi-discipline systems engineering and analysis for the Directorate. Thus, this group functions as the principal point of contact for long-range communications-computer requirements planning to support the NRO Strategic Plan and the NRO Integrated Roadmap.

(S) [redacted] incorporated within CSG, is responsible for day-to-day issues and long-term planning regarding [redacted] Finally, within CSG is the COMM Systems Analysis Staff (COSAS), which supports multi-disciplinary requirements analysis, trade studies, independent technical reviews and analysis for other COMM elements, and is the lead for [redacted] architecture definition and analysis.

(U) ***Baseline Changes***

(S) [redacted]

(S) This budget is for continuation of NRO information management architecture and standards development. In addition, we are introducing a new service in FY 97. The AD/NRO established an NRO Chief Information Officer (CIO) to execute responsibilities defined in the Information Technology Management Reform Act of 1996 (ITMRA). Thus, this budget provides for NRO interface to a number of external organizations and forums for information systems and technology such as the ISB, NSA, NIMA, DIA, ICCIOC, and DARO. The focus is to promote information systems interoperability within the NRO as well as across the IC. As examples, CSG is leading an effort to establish an NRO Information Systems Standards Profile, and is addressing the "Year 2000" end-of-century date/time-related computations issue. (The millennium date change may cause severe operational impact if software does not account for this century date roll-over.)

(S) Directorate-wide systems analysis services for multi-disciplinary requirements and trade studies are included in this budget. Independent technical reviews and analysis for other COMM elements, emphasizing standardization and interoperability of space assets are continually needed. Two typical initiatives are [redacted] approaches between NRO programs. A major focus in this budget is integration of COMM, SIGINT and IMINT architectural efforts to ensure compliance with the DNRO strategic plan and Integrated Roadmap (IRM). Parallel attention is paid to ensure that communications engineering aspects of NRO roadmap/architecture development are appropriately maintained; long-range planning for evolution of communications-computer systems is done consistently; systems analysis services for communications-computer efforts are included; and systems standards profiles and transition plans are embedded. A Federal Information Processing Standards (FIPS) Library is also being maintained. This provides reference for hardware and software standards and guidelines, data standards and guidelines, and automated data processing operations standards and guidelines. New standards, updates, changes, and special bulletins are provided on an ad-hoc basis. The requirement is to ensure that communications-dependent roadmaps and architectures are consistent with federal standards and coordinated across the NRO.

[redacted]

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(U) New

(U) ***National Space Communications Program (NSCP)***

(S) In FY 96, as a result of several previous study efforts between the National Aeronautics and Space Administration (NASA) and the NRO to integrate major space relay communications services, congressional inquiries, as well as the above mentioned technological forces of change, the National Space Communications Program (NSCP) emerged. This effort between the NRO, NASA, and the DoD could provide the basis for decisions on a potential integrated communications system which will meet future national needs and capitalize on all available opportunities.

(U) The formation of an Integrated Product Team (IPT) to undertake this Program reflects our awareness of the importance of achieving global information superiority and supporting our partners and customers as their missions change and expand. We are searching for the revolutionary breakthroughs necessary to create an innovative, cost-effective, national, global, space-ground communications infrastructure.

(S) The NSCP will utilize both space and terrestrial communication elements to provide services which are integrated to leverage synergy, commonality and interoperability. The system will support satellite data return, tracking, telemetry and command (TT&C) and routing of critical NRO mission data. The program goal is to provide cost-effective and flexible communication services while reducing physical and operational burden on users.

(U) Our mission is to explore an integrated civil, military, and intelligence space communications system to transport data and information between space systems, processing centers and/or civil, military, and intelligence end users. The ability to achieve this depends on innovation, corporate partnership, customer relationships, and the best business practices.

(U) *Program Description*

(S) NSCP will integrate where possible NRO, NASA, and DoD requirements for the 21st century. Cost benefits will result from integrating parallel and complementary developments and operations, maximizing synergy between current and projected government and commercial capabilities, and leveraging off revolutionary technologies and recent advances in commercial satellite communications. As the initiative develops, further details of concepts and acquisition strategies will be identified. The supporting NRO technology investment is budgeted in the Communications Research and Development section of this tab, where it is described in some detail.

National Reconnaissance Program

FY 1998-2003

Appropriation	FY 98	FY 99	FY 98-03 Total

(U) Any future acquisition will be under the auspices of the DNRO, and in accordance with NRO Directive 7. This directive documents the structured acquisition process used by the NRO to acquire systems and material in support of assigned projects that satisfy the needs of the US Intelligence Community and support military operational activities. The NSCP joint IPT consists of members from the NRO, NASA, and the DoD and would be responsible for acquisition and operations throughout the entire program life cycle (cradle-to-grave management).

(U) Directive 7 identifies Key Decision Points (KDPs) A through D which are equivalent to DoD's milestones O through IV. NSCP's schedule is tied to KDP milestones which allow a formal review of program status and decisions on whether to proceed to the next acquisition phase. The DNRO is the acquisition decision authority for each KDP and seeks counsel from his mission partners in making these acquisition decisions.

(U) FY 96 was dedicated to planning for the start of concept definition (Phase A). This included formation of the IPT comprised of NRO, NASA, and DoD participants, program planning, and coordination with users. The IPT was able to clearly identify system needs, technical, business and acquisition opportunities, and goals of the program. In order to reduce risk, clearly define concepts and requirements and reduce total system cost, it was critical to focus attention and resources up-front.

(U) On 16 Oct 1996, NSCP completed KDP A and gained approval from the A/DNRO at the NRO Acquisition Board (NAB) to begin Phase A (Concept Definition). The NAB members consisted of NRO staff personnel, National Imagery and Mapping Agency (NIMA), Central MASINT Office (CMO), National Security Agency (NSA), NASA, DoD, and other NSCP mission partners.

[redacted]

(U) In accordance with Directive 7, an Integrated Program Summary (IPS) and Independent Program Analysis (IPA) will be completed prior to our next key decision point (KDP B - pre-acquisition). The IPS and IPA include: 1) assessment of alternatives, 2) identification of most promising alternatives and rationale, 3) cost drivers and major tradeoffs, 4) risk assessment and risk reduction plans, 5) assessment of requirements and current shortfalls, and 6) other programmatic areas of concern. The NRO IPS and IPA are directly comparable to DoD analysis of alternatives (formerly known as Cost-and-Operational Effectiveness Analysis, COEA). Using information generated in Phase A, the NRO Cost Group will conduct an independent cost estimate (ICE) prior to KDP B (start of pre-acquisition). The NRO ICE is the equivalent of DoD's Cost Analysis Improvement Group (CAIG) ICE.

(U) This FY 98 continuation will provide for the completion of concept definition, and start of pre-acquisition. Pre-acquisition will be focused on analysis and development required to validate system feasibility and reduce risk during acquisition relative to the concepts that we have carried forward. The top level planning schedule for NSCP is given as Figure 55, in which the time phasing relationship between KDPs and major tasks is shown. Beginning in FY 00 is a rough planning wedge that will be refined for future years' submission.

(U) *Mission Partnerships*

(U) NSCP will strive to keep its customer first and ensure their satisfaction. Alliances with our customers and mission partners bring about a mutual understanding of how the NSCP communications system can satisfy customer requirements. We will give customers greater insight into the concepts we are developing at the beginning of the acquisition process to increase communication and encourage end-to-end systems engineering. By ensuring greater understanding of how we can satisfy user needs, we can enhance productivity and system effectiveness.

[redacted]

(U) NASA continues to pursue aggressive programs to explore and research our space environment. Through major initiatives like human spaceflight and earth, space and planetary science missions, NASA is striving to reduce cost and resources devoted to support routine communications and operations functions, and take advantage of the most cost effective ways to access data

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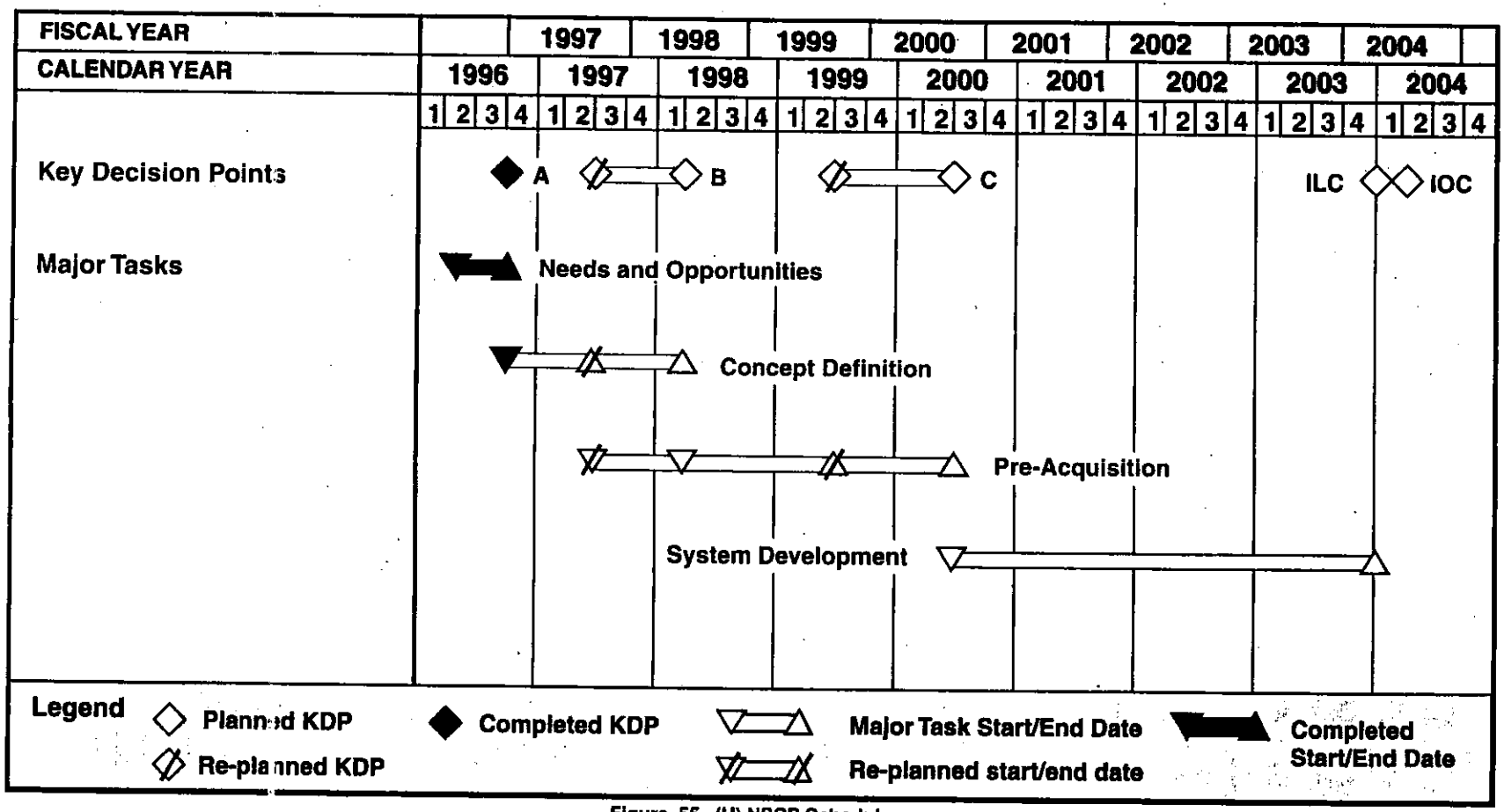

Figure 55. (U) NSCP Schedule

from remote space platforms. This includes their involvement in NSCP as well as their investigations on commercializing their space relay system.

(U) The DoD, through the Space Architect, is in the process of defining and developing replacement architectures for many of their space services (Military Satellite Communications (MILSATCOM), Air Force Satellite Control Network (AFSCN)) in the 2005+ time frame. These new architectures could benefit from the NSCP.

(U) Early NSCP involvement during user concept development ensures responsiveness to needs; conversely, early involvement of our users in NSCP acquisition decisions ensures that their follow-on collection architectures take advantage of new services and features NSCP can offer. We will continue to actively solicit requirements from the NRO, NASA, and the DoD. NRO mission partners (CMO, NIMA, and NSA) are involved in our acquisition process, approving the program to proceed at each key decision point. An overview of community involvement is provided in Figure 56.

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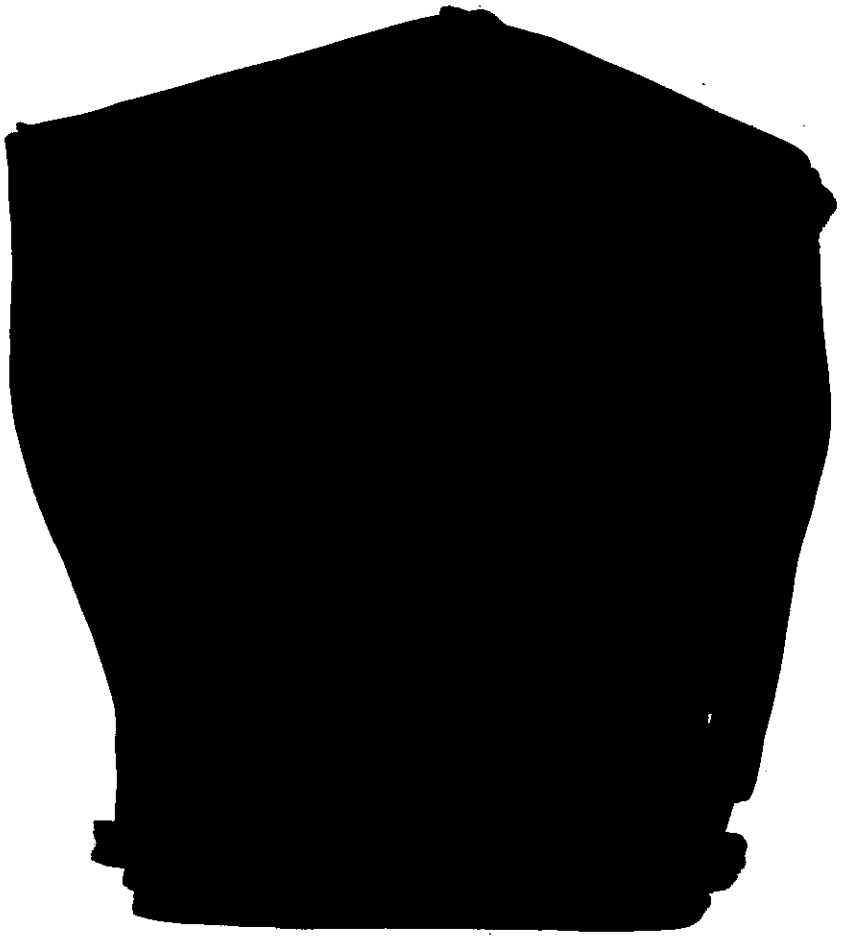


(U) *Industry Partnerships*

(U) NSCP is proactively seeking out industry partners. We anticipate these relationships will allow us to maximize synergy with corporate capabilities and allow us to make radical changes to our acquisitions. (i.e. shorten our development cycles and costs and allow insertion of the latest technology into our systems).

(U) NSCP will implement and refine these concepts by conducting any future acquisition program with reinforced streamlined management practices. NRO acquisition authority, though Directive 7 will allow us to execute acquisition effectively and efficiently in light of new acquisition reform laws, regulations, and initiatives; as well as recommendations made by the recent Jeremiah Panel review. NSCP will be managed using only essential administrative, contracting, and oversight processes. The major changes we are undertaking will:

— Maximize technological, business and acquisition opportunities

— Reduce development cycle time and costs

— Encourage timely insertion of technology into the development process

— Increase system capabilities and performance

— Result in faster responsiveness to user requirements

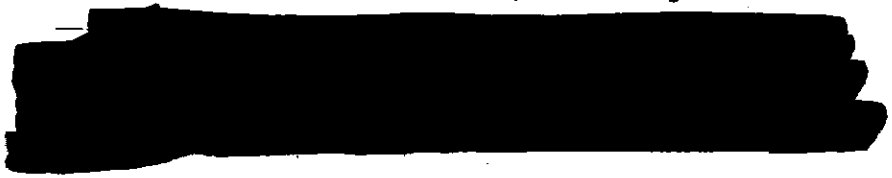
— Optimize the cost-effectiveness of the system.

(U) Due to changes in the government acquisition environment, there is the potential to procure systems using a more streamlined approach similar to a commercial venture. Acquisition alternatives that should be considered include an end-to-end system acquisition and the purchase of communication services. A joint venture could also be considered since the government possesses assets which the commercial world values highly (e.g., spectrum, orbital slots, ground sites, and investment dollars). There are several approaches to explore; however, flexibility will be a cornerstone as we define to the contractors what we want to procure, but not necessarily how to do it.

(S) With the advent of commercial wideband services, synergy may exist between future commercial communication systems and NSCP needs. This synergy may take the form of a shared system or a modified configuration of a commercial system. The NSCP will allow contractors the opportunity of leveraging government and commercial technologies, communication needs, and business interests to enable US industry leadership in a worldwide wideband communication infrastructure.

(U) *Summary*

(S) In order to satisfy our users needs and enable their future missions, we must utilize the opportunities available today to be the most cost-effective space communications provider into the 21st century. We have identified several potential opportunities which we can leverage to meet our goals:



— Existing and developing commercial technologies such as advanced spacecraft subsystems (bus technology, common payload technology) and terrestrial communications technologies (laser and fiber technology);

— Business opportunities; and,

— Acquisition opportunities.

(S) The objectives of NSCP are to design a system which meets the data transport needs of the next generation of collection missions while enabling new collection opportunities. To accomplish this we need to focus on the following goals:

— Eliminate communications as a restriction to the user. Provide expanded collection opportunities without the constraints imposed by the current communication systems. Allow the users to develop new collection architectures without being forced to work within restrictive communications constraints. Provide the NRO infrastructure which enables dominant battlefield awareness and knowledge as well as continuing to provide National data to the intelligence community analyst.

— Provide a cost effective, flexible system. Allow for timely insertion of new technologies, reduce acquisition timelines, identify synergies within the government and commercial worlds.

— Reduce communications burden. Physically reduce demands on the user communications payload (size, weight, power). Operationally provide user flexibility through a large array of services (wide range of data rates, on-demand access, etc.) and simplified operation interfaces to include the operational burden of overseas ground stations used for TT&C.

(U) Our focus in FY 98 will be to complete concept definition and narrow choices down to the few, most promising concepts to continue. During concept definition, multiple contracts will be awarded to develop concepts which satisfy our identified customers needs. This will be an iterative process in which we continue to interact with users as they are developing their own operational concepts for their space platforms. During each step, we will generate alternatives and maximize the cost/benefits of the system. Upon completion of this phase we anticipate that we will have completed requirement definition by maturing user needs and have developed several recommended concepts which satisfy the requirements. Each concept will include transition plans, an acquisition approach, a classification guide, and a program plan, complete with funding requirement allocations for each participating government entity. In addition, we will be able to take this costing data and refine our FY 00+ budget estimates.

(U) After NAB approval to proceed with phase B (pre-acquisition), the remainder of FY 98 will be dedicated to refining the downselected concepts and starting the required risk reduction activities identified in concept development.

(U) ***Communications Research and Development (COMM R&D)***

(S)

(S)

(U) *Advanced Communication Technology Demonstration System (ACTDS)*

(S)

(S)

(U) *High Capacity RF Down-Link*

(S)

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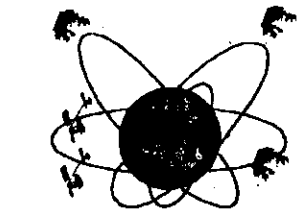
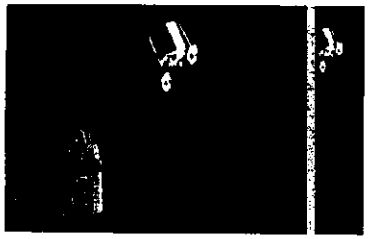
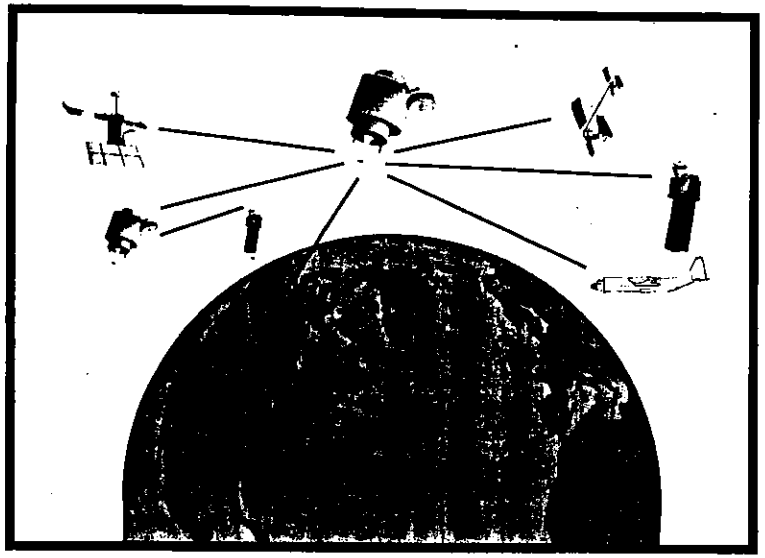


Define and Model Requirements



Space and Ground Receive Segments

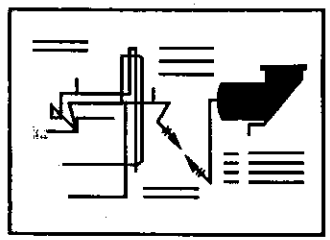
Terrestrial Wideband Network



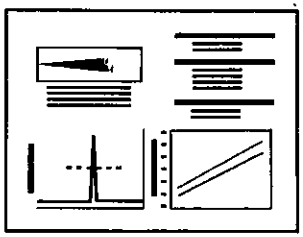
System Architecture

Laser Development

Atmospheric Effects



Optical Test Bed



Laser Reliability

Figure 57. (U) Lasercom Development

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National Reconnaissance Program

FY 1996-2003

[redacted]

	FY 96	FY 97	FY 98	FY 97-98 Change	FY 99	FY 99-03
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(U) ***Program Prospective***

The Tactical Related Applications (TRAP) Data Dissemination System (TDDS) provides near-real-time "sensor-to-shooter" dissemination of threat warning and targeting data to US and allied operational forces worldwide (Figure 58). TDDS is a key part of the dissemination architecture defined in the NRO Integrated Roadmap for all NRP programs. This architecture, integrated with the military's Command and Control (C2) infrastructure, is a significant step toward achieving the NRO's goal of providing information superiority to its strategic and tactical customers.

(U) TDDS is also an essential component of the evolving Integrated Broadcast Service (IBS). IBS will provide improved intelligence broadcast interoperability and integration through the implementation of a common broadcast format and the development of a Joint Tactical Terminal (JTT). The TDDS Program Office is actively assisting the IBS Executive Agent (Navy), intelligence broadcast managers, operational authorities, and the tactical terminal program lead (Army) to implement the ASD/C3I endorsed IBS Plan. The TDDS Program Office brings its years of tactical dissemination expertise to bear on the integration process through participation in IBS Integrated Product Teams that coordinate across interfaces with the broadcast and tactical terminal communities (Figure 59).

(U) ***TDDS Program Background***

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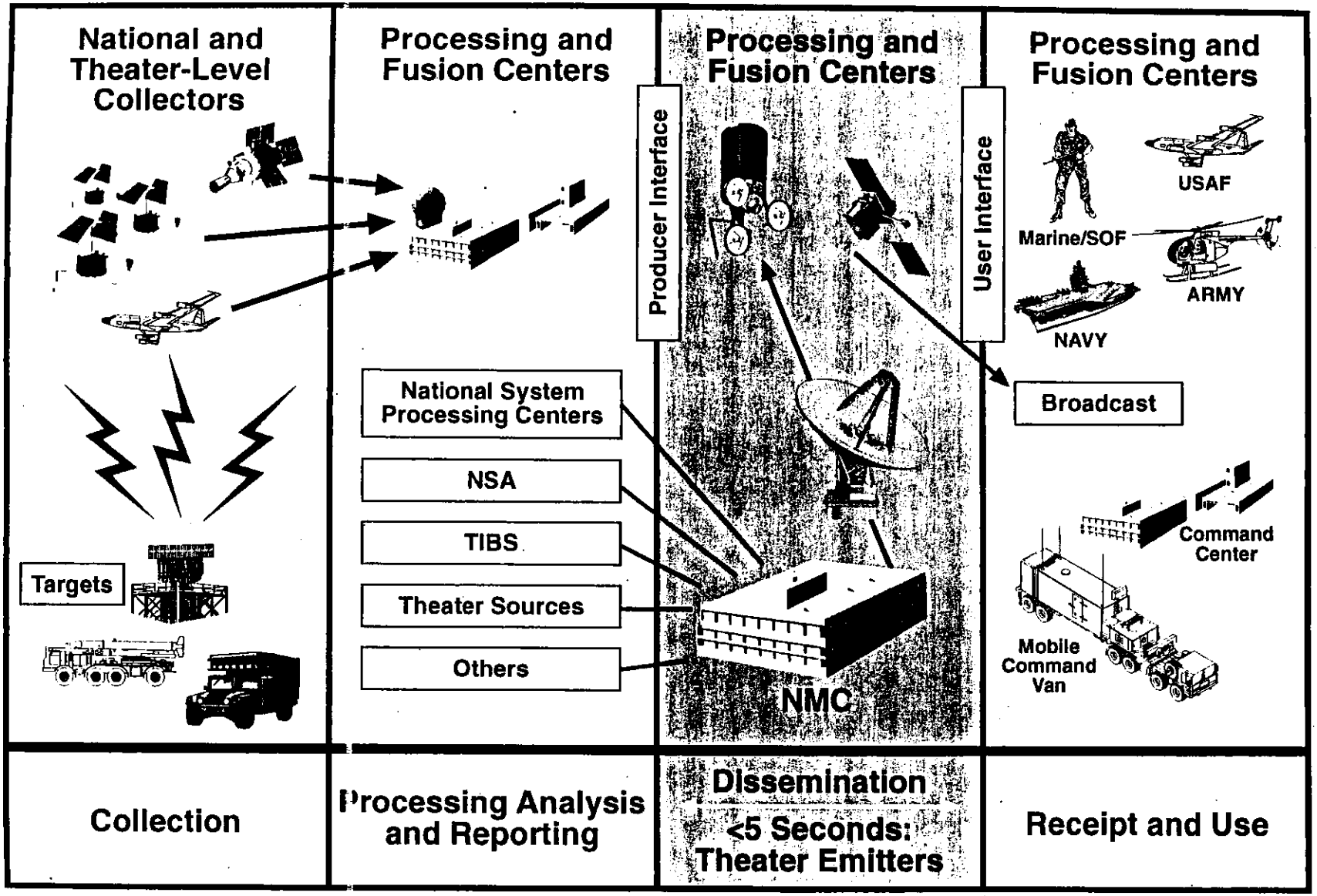

Figure 58. (U) TDDS Sensor-to-Shooter

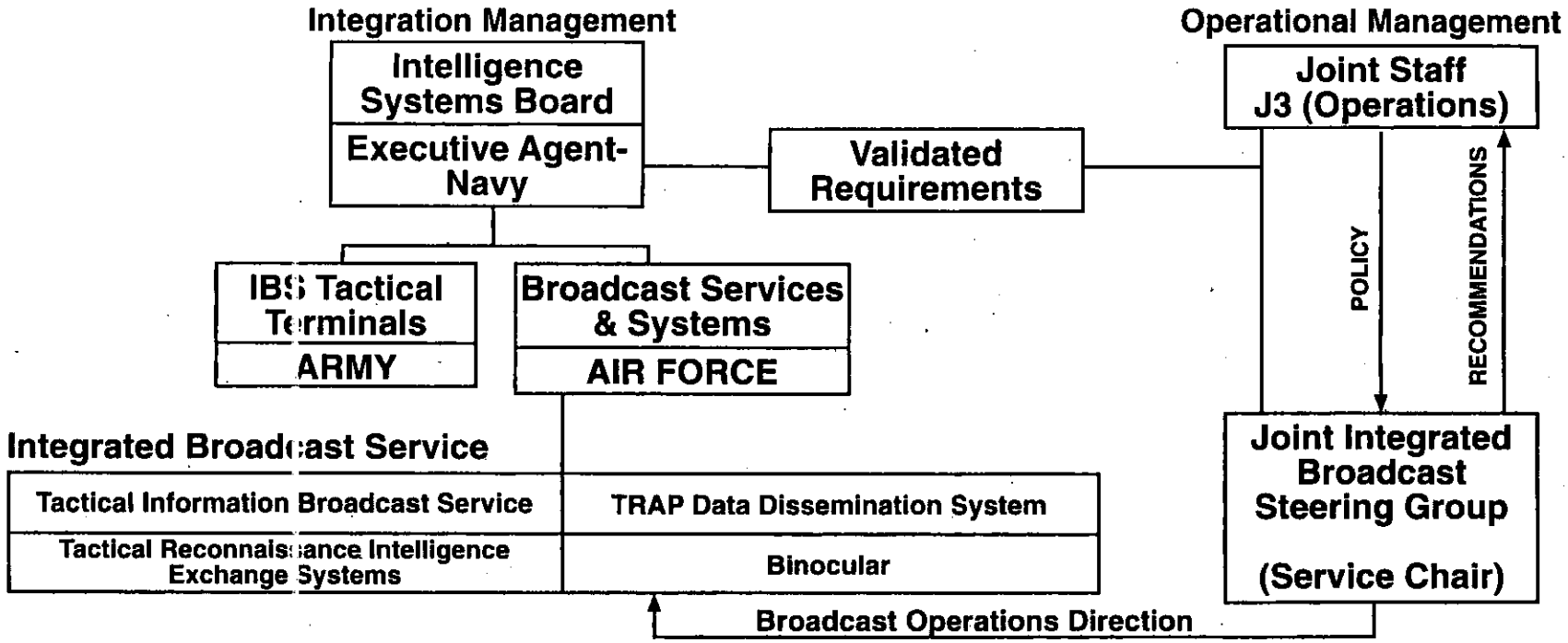

Figure 59. (U) IBS Integration and Operations Management

[redacted]

(U) *System Description and Current Operations*

(U) TDDS currently disseminates intelligence data through a shared channel on UHF satellites. UHF MILSATCOM satisfies the requirement to broadcast to forces located worldwide from 60°N to 60°S latitudes. The use of UHF as a broadcast media permits data delivery to a wide variety of user platforms, from fixed facilities to highly mobile aircraft and ships. Use of UHF also allows the operation of low cost, technically mature terminals in extremely diverse geographical environments.

[redacted]

(U) The TDDS Program Office has initiated the acquisition of the required upgrades to the TDDS NMC. This acquisition will procure system processor hardware and software and develop the additional functionality required to support a centralized, multi-channel broadcast communications management system.

(U) ***Information Superiority***

(U) Information superiority is a new initiative within the NRO to explore and/or develop methods to enhance the utility of NRO products and improve user access to those products. The NRO initiated this effort based on the findings of the Jeremiah Panel that "Information superiority is a national security imperative," and the Panel's recommendation that the mission of the NRO be that of "Revolutionizing information systems to provide global incorporation of all NRO data for any user."

(U) In the current dissemination environment for NRO products, users requesting information on targets must submit multiple requests to multiple data producers (Figure 63). This process leads to inefficiencies in the timeliness of product delivery and for the potential that a user may not access all relevant data available. The goal of the information superiority effort is to develop the software tools and communications infrastructure to allow a user to submit a single request for information on a target and receive all pertinent data in a timely fashion. As shown in Figure 63, with a single target request (depicted by a blackened grid square), a user would receive all relevant information via interconnected, distributed exploitation centers and producer repository databases (as represented by the cylinders).

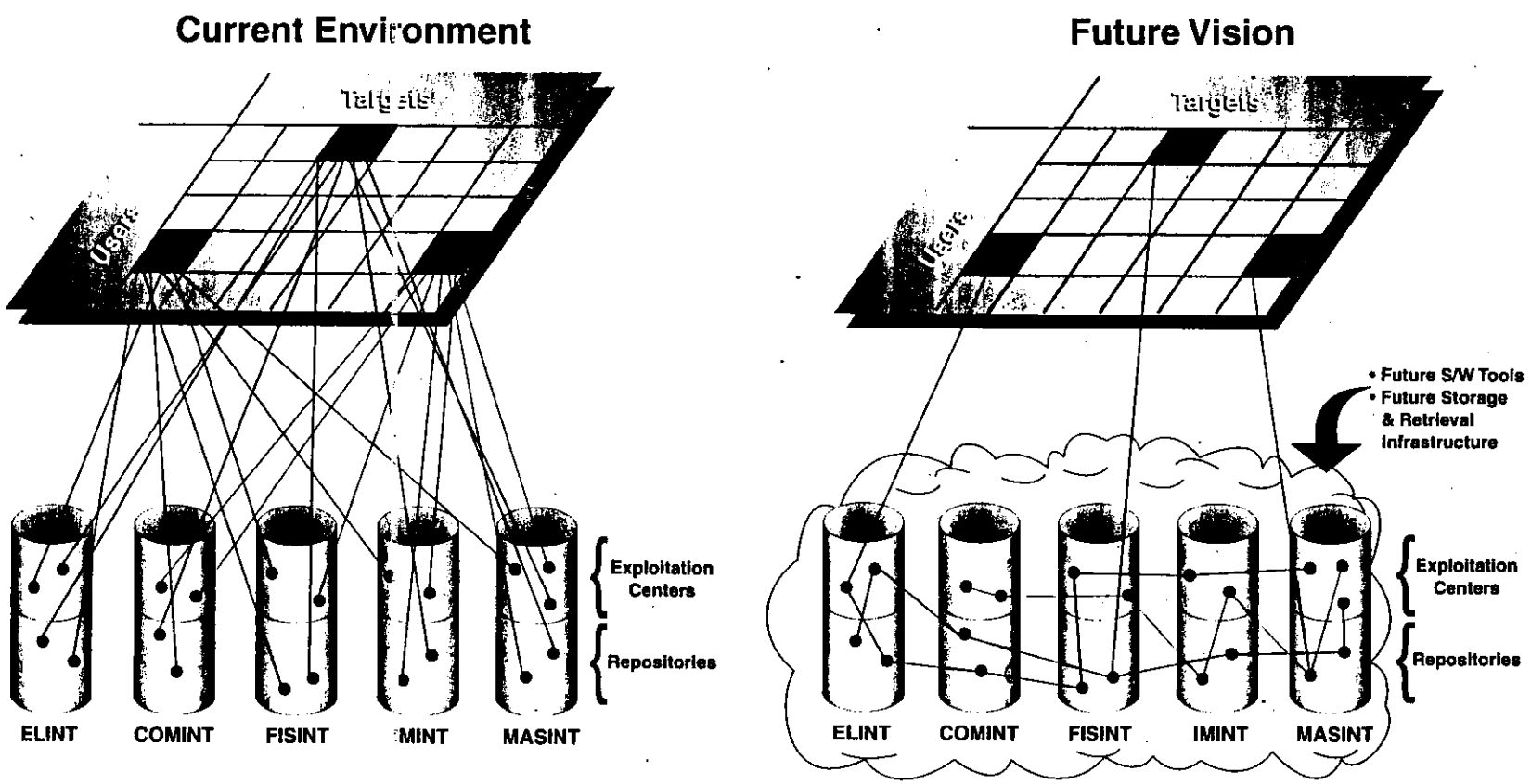

Figure 63. (U) Information Superiority

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(U) SYSTEMS APPLICATIONS

(U) Introduction

National Reconnaissance Program
OSA by Project and Base/Ongoing/New
FY 1996-2003

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	FY 96	FY 97	FY 98	FY 97-98 Change	FY 99	FY 98-03
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(U) Over the last few years the commercialization of space, the development of small, highly capable satellites, and the ongoing revolution in technology have had a significant impact on the overall direction of the space industry. The NRO created the Office of Systems Applications (OSA) to take advantage of emerging opportunities.

(U) Technology to produce lighter, more capable satellites and the development of smaller, lower cost boosters has heightened interest in making access to space more affordable to a diverse set of users. These new satellite systems are called "smallsats." The NRO has a rich heritage in small satellites, building specialized missions to take advantage of any existing "extra" launch volume during the early days of space exploration. As booster technology has improved, and the lift capability to put payloads in orbit became practical on smaller boosters, the NRO has leveraged some of its investment and spacecraft development in this smaller satellite arena.

(U) Although large satellites provided the best solution for long-term critical missions with a complete set of comprehensive requirements, if the requirements are divided in two or more missions, small satellites can meet many requirements. Additionally, smallsats could reduce NRO dependence on the expensive Titan-IV launch vehicle and ensure the NRO continues to stimulate new satellite technology development in the US aerospace community.

(U) Commercial space is entering a new era. OSA was designed to exploit potential synergism between advanced technologies, smallsats, foreign sales and the recent rapid emergence of commercial communications systems from space like GlobalStar, Iridium, ORBCOMM, and Teledesic. The sheer numbers of spacecraft being built or proposed could fundamentally change the methods for designing, testing, launching and operating spacecraft. OSA will provide the NRO with an avenue to capitalize on commercial experience for its new smallsat initiatives.

(U) The NRO Advanced Technology Program (ATP) is the agent for change within the NRO. Senior management support has enabled dramatic changes in the ATP in 1996 that will re-establish the leading-edge technology focus of the NRO. These changes include merging the Technology Office into OSA, becoming the Advanced Technology Group (ATG), to provide centralized leadership and management of the ATP. Additionally, a Chief Scientist now provides direct technical support to the NRO. Finally, we created the NRO Technology Enterprise, integrating all the advanced technology efforts in the NRO, to reach across the ATP and ensure coordination and eliminate duplication.

(U) The Technology Enterprise is led by a Tech Team which includes the ATG Director, the heads of the Directorate and OSA technology organizations and the NRO Chief Scientist. This Tech Team corporately plans, integrates and coordinates the ATP investments across the IMINT, SIGINT, and COMM Directorates and OSA. This Tech Team approach, coupled with the strong senior NRO management push for an aggressive, forward leaning technology program, has resulted in a dramatic shift in the focus and scope of the ATP toward the innovative and revolutionary.

(U) OSA Organization

(S) OSA is intentionally small to maintain responsiveness and to adapt to changes in the user environment. OSA consists of four organizations: International and Commercial Affairs (OSA/ICA), SMALLSAT Development (OSA/SD), Advanced Systems Technology (OSA/AST), and Advanced Technology Group (OSA/ATG). Through these offices, OSA interacts with the SIGINT, IMINT and COMM Directorates.

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(U) BASE

National Reconnaissance Program
OSA Base by Project
FY 1996-2003

Project	FY 96	FY 97	FY 98	FY 97-98 Change	FY 99	FY 98-03
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(U) International and Commercial Affairs

(U) The availability of one meter quality commercial imagery will have an impact on the US imagery customer co nmunity. While the US should never rely solely on commercial systems to neet its national security needs, it is likely that military and national consun ers will find commercial imagery products useful. The NRO, working with NIMA and the services, tasked US commercial imagery vendors to determine the required hardware and software interfaces between each vendor's tasking and distribution architecture to facilitate incorporation of commercial satellite imagery into the US Imagery System.

[redacted]

[redacted]

(U) SMALLSAT DEVELOPMENT

[redacted]

(U) Small Satellite Studies and Technologies

(U) The Small Satellite Studies and Technologies Program conducts studies and develops technologies which will enable the NRO to work within the new paradigm that is reshaping the global space industry. The new space paradigm is characterized by increased commercialization of space, dramatic advances in technology and acquisition reform initiatives. The Small Satellite Studies and Technologies Program will create the conditions necessary for the NRO to take advantage of this paradigm shift and create a new generation of satellite systems with higher performance and lower cost.

(U) The FY 98 and future budgets for small satellite studies and technology will expand previous results, reduce risk, demonstrate the performance, and identify opportunities for conducting NRO missions with smaller, advanced technology satellites. Architecture studies will consider system end-to-end issues, including associated ground connectivity and processing. OSA/SD works closely with the NRO operational directorates, and our mission partners and customers to obtain and refine architecture study requirements. Results from future study efforts will support NRO constellations and program planning.

(S) *SIGINT Technology Experiment*

[redacted]

— (U) Demonstration of advanced, lightweight, low power spacecraft technology.

[redacted]

— (U) Evaluation of tether dynamics, control, and survivability concepts using an Advanced Tether Experiment payload.

(S)

(U) Geosynchronous Lightweight Integrated Technology Experiment (GeoLITE)

National Reconnaissance Program
GeoLITE Lasercomm Demo
FY 1996-2003

	FY 96	FY 97	FY 98	FY 97-98 Change	FY 99	FY 98-03

(S)

(S)

(U) The innovative GeoLITE project will focus on three top level goals:

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— (U) Demonstrate advanced electric propulsion technology for spacecraft orbit transfer and station keeping.

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(U) The ATG fulfills a number of broad roles within the NRO including oversight of the NRO Advanced Technology Program, maintaining leadership in cooperative research and development efforts through an active outreach program and technical forums, and conducting far-reaching R&D efforts.

(U) The Advanced Technology Program

(U) The ATP is centered on five senior management thrusts: developing new sources and methods, working intractable intelligence problems, enabling quantum improvements in effectiveness and efficiency, expanding the frontiers of exploitation and processing, and providing new space services.

(S) The ATP is centrally planned around these thrusts and coordinated across the ATP by the Tech Team. The ATP funds are allocated based on relative technical and programmatic merit, alignment with NRO strategic directions, and competition within the Technology Enterprise. The ATP is then decentrally executed by the members of the NRO Technology Enterprise.

[redacted]

(S) With the significant help and support of senior management, the NRO Tech Team refocused the FY 97 ATP. It is now aggressively forward leaning in terms of innovation and revolution and centers on the five R&D thrusts.

[redacted]

(U) The OSA/ATG Director, the heads of the Directorate, the OSA/ATG technology organizations, and the NRO Chief Scientist in their roles as members of the NRO Tech Team centrally plan and coordinate the ATP and determine the allocation of ATP funds. The Tech Team allocates ATP funds based on relative technical and programmatic merit, alignment with NRO strategic directions, and competition among programs across the Technology Enterprise.

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(U) Recently, NRO management initiated a unique program adjunct to the ATP aimed at creating an "agent for change" for the ATP. This is the Director's Innovation Initiative (DII). The DII is an element within the ATP designed to identify and incentivize highly innovative ideas across the entire community and to drive the extreme edges of the ongoing revolution in technology.

(U) Looking Outside the NRO

(U) The ATG has an Outreach program aimed at improving communication between the NRO and Industry, better coordinating NRO research and development programs with those in other government laboratories, and taking advantage of the talent and capabilities in the academic community. Although these efforts are not new to the NRO, they have taken on increased importance in the ATG plan to promote innovation and minimize overlap and duplication. In this light, ATG has maintained ongoing efforts to host technical forums, promote frequent Independent Research and Development (IR&D) seminars and to make the results of these efforts available to the NRO at large through the NRO world wide web (WWW).

(U) Besides working with the traditional NRO industrial contractors, the declassification of the NRO has opened up the possibility of reaching out to a larger pool of contractors who were previously excluded, because they were not NRO briefed. This will open up the possibility of working with a larger group of R&D centers, and giving the NRO the benefit of a greater pool of innovative talent. The outreach program will also work to bring this new group into the competitive process for the acquisition of technology.

(U) US government laboratories developing technologies that can benefit NRO programs constitute an equally important group targeted by our outreach program. While cooperation with some of these laboratories has existed for some time, such cooperation has been tactical, without high-level attention given to establishing an overall focus for cooperation or actively seeking out other opportunities for cooperation. ATG is in the process of working with these laboratories to identify and establish a top-down strategy for cooperation and to determine what unique capabilities exist that could benefit NRO programs.

(U) Outreach to academia will be a new area of effort for the NRO. Possible initiatives could be to identify areas of I&D excellence that correspond to NRO future needs and contract with universities to develop the basic science. Centers of excellence could also be encouraged at universities, with strong programs in areas of interest to the NRO, by funding researchers and providing grants to graduate students to support appropriate research.

(S) The Outreach Program is exploiting the multiple repositories of technical data maintained by non-NRO groups. Until recently the NRO has not had such a repository, due to the need to protect compartmented intelligence data. The NRO is replacing special procedures necessary for protecting intelligence sources and methods with standard procedures in wide use in the DoD and elsewhere in the government. In DoD, for example, proposed projects and all completed projects are reported using an ANSI standard form to the Defense Technical Information Center (DTIC). DTIC archives this technical data, making it available online to authorized users in government and in US industry over a secure network. The NRO is establishing a similar, comprehensive archive to document NRO R&D. It will be connected to the NRO and to the rest of the SCI community in government and industry, using the same technology that ties the Internet WWW together around the world. By making this archive available to the NRO and to other authorized users, we will enhance the efficiency of NRO and other federally supported R&D.

(U) The NRO's industrial base has been the key to the success of the organization. They have built the NRO systems and have been the research and development centers where most of the technology for NRO systems has been developed. In spite of these successes, however, we believe that improvements can be made in our relations with industry. ATG has taken the lead in conducting two major annual conferences which have been the principal vehicle for communicating to industry the needs of the NRO. These conferences, the NRO-Industry Technology Forum and Communications Technology Exchange Conference, serve both to expand the communication between the NRO and industry and to inform industry of NRO technology needs for the future.

(S) The ATG is working to organize frequent technical seminars in specialized areas extending an invitation to more than 100 NRO contractors to participate. We are also in the process of discussing with industry their assisting us in collecting information on their IR&D. This information will enable the NRO to have a better picture of the research and development being conducted in industry and will also provide a better vehicle for industry to advertise their IR&D within the NRO. With this information, and in conjunction with our colleagues in other government laboratories, we will be able to better plan government reviews of research which may be of use to NRO programs.

(S) We will also encourage the NRO contractors with access to the CWAN (the WWW established at the [redacted] level linking the NRO with the industrial sites) to make better use of the network to advertise their IR&D programs in the NRO. The program is delivering technology data to the desktop of R&D managers before the acquisition process begins. With better knowledge of current R&D underway outside the NRO, our managers will be able to more effectively optimize the use of R&D funds appropriated to the NRO.

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(U) The NRO WWW is also part of our outreach to other government agencies. While Internet terminals are in short supply in the NRO, technical data posted by DARPA, NASA, DoE and other federal R&D agencies are being downloaded from the Internet WWW and uploaded to the NRO WWW. The longer-term effort to connect the NRO to the Internet involves installation of more unclassified Internet terminals in areas used by NRO R&D groups. The NRO is providing training, and encouraging use of the Internet, particularly during the initial survey phase of NRO R&D projects.

(U) The OSA/ATG manages the Technology Fellowship Program. The Technology Fellowship Program creates a jointly funded partnership between business and government that has the following objectives:

— Facilitating the development, application, and/or understanding of technology that significantly enhances the value or utility of intelligence community products and/or services.

— Improving the long-term sense of community across business and government.

— Developing a cadre of future leaders who have a better understanding of government customers.

(U) We meet these objectives by creating a partnership between business and government that employs highly qualified technologists from industry to conduct research and development related to specific projects in various government organizations. These projects are specific, pre-negotiated technology development or application efforts conducted in facilities and using resources provided by the government. The normal duration of a Technology Fellowship Project is one year. The cost of the Fellowship Project is shared between the government and industry. The Fellow remains a company employee throughout the program year. The company or corporation sponsor absorbs a negotiated share of the overhead and related expenses.

(U) Advanced Concept Division (ACD)

(U) ACD exists to identify, assess, and develop revolutionary new concepts supporting the global superiority mission. The division actively seeks opportunities at the leading edge of modern technology and approaches for NRO business opportunities.

(U) Advanced Communications Technologies Support Efforts in Bosnia

(U) OSA/ATG investments in advanced communications technology have been instrumental in efforts to extend command, control, and intelligence capabilities into Bosnia in support of Joint Endeavor. These technologies have enabled much more efficient and timely delivery of NRO intelligence products to support deployed users. In fact, NRO products which were being delivered into Bosnia by courier were transmitted in minutes over the Asynchronous Transfer Mode (ATM) portion of the Bosnia Command and Control Augmentation Initiative Joint Broadcast Service.

(U) ACD sponsored technologies which were mobilized to meet the demands in Bosnia, included ATM switch technology, ATM encryption capabilities, and high data rate ATM Global Broadcast Service technologies.

(U) The advanced communications technology program is leveraging the commercial investment in computing and communications to ensure availability of capabilities to meet NRO users' needs. Particular areas of focus include multi-gigabit communications interfaces and high performance network extensions to reach NRO users in theater. These technologies will support new processing and exploitation architectures to further enhance the availability and utility of NRO data.

(U) Information Warfare

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(U) Timing, Frequency and Navigation

(U) The Timing, Frequency and Navigation (TFAN) program goal is to develop the technology necessary to provide a coherent reference frame for time and position. This common four-dimensional reference frame (x,y,z, and time) is a necessary step on the path to more effective fusion of data collected from space, air, and ground resources into integrated product(s). TFAN is a key technology which will enable the delivery of real-time geolocation and data fusion products directly to users. This will be achieved through a coordinated development program across the NRO and DARO that will include GPS utilization, time-based communication devices, reference emitters and cross link ranging/timing devices.

(U) Advanced Collection Sensors

[redacted]

(U) Synthetic Material Technology

[redacted]

[redacted]

(U) Ultra-Wideband Spacecraft Data Handling

[redacted]

(U) Underground facilities pose difficult problems to national-level decision makers, the intelligence community, and military forces. These problems have been highlighted recently by our experience in the Persian Gulf War and by subsequent attempts to verify sanctions and treaties.

[redacted]

(U) Detection of Weapons of Mass Destruction

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(U) OPERATIONS SUPPORT

(U) NRO CORPORATE APPROACH TO CUSTOMER SUPPORT

(U) The NRO remains committed to strengthening and expanding support provided to the full spectrum of NRO customers. The Jeremiah Panel provided strategic recommendations for customer relationships which called for a strategy of centralized customer support policy with decentralized execution. The NRO leadership has embraced this corporate view of customer support and continues to strengthen the cooperative and collaborative partnership with NRO customers and external agencies. The increase in the FY 97-98 change column in the table below reflects the accommodation of the creation of the NRO Deputy Director for [redacted]

National Reconnaissance Program
OSO
FY 1996-2003

Appropriation	FY 96	FY 97	FY 98	FY 97-98 Change	FY 99	FY 98-03
[redacted]						

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(U) NRO CUSTOMER SUPPORT STRATEGY AND PROCESS

(U) In concert with our National Community Partners and Department of Defense Combat Support Agencies, the NRO customer support strategy is dedicated to providing space based information superiority through a coherent end-to-end customer support process. To strengthen and to ensure this process is serving all customers, the A/ADNRO established in October, 1996, the Deputy Director for National Support as a complementary partner to the Deputy Director for Military Support (DDMS). Accordingly, the NRO customer support strategy is focused on identifying and developing the customer support process (FIGURE). This, in turn, provides the basis for the NRO customer support team and the resultant outreach program. The FY 98 NRO customer support program is structured to build on previous outreach successes and to meet the challenges of an expanding customer base, customer understanding of National Systems, improvements in data collection and dissemination, and the need to integrate national systems data into customers C3I architectures and weapons systems.

(U) THE NRO CUSTOMER SUPPORT TEAM

(U) The NRO customer strategy requires a team effort. The principal components of the NRO customer support team are the DDMS, the DDNS, and the individual NRO Directorates and Offices, Figure 67.

(U) DEPUTY DIRECTOR FOR MILITARY SUPPORT

(U) The DDMS leads the NRO's efforts for supporting military customers. To accomplish this, the DDMS heads up the Military Support Staff (MSS) and the Defense Support Project Office (DSPO). The DSPO is a defense activity, located in the Pentagon, charged with managing the Defense Space Reconnaissance Program (DSRP) to improve satellite reconnaissance support to the operational commander. A more complete discussion of the DSPO and DSRP can be found in the Joint Military Intelligence Program Congressional Justification Book. The MSS provides support to the DDMS on NRO issues which involve the Joint Staff, Military Service staffs, and the Office of the Secretary of Defense.

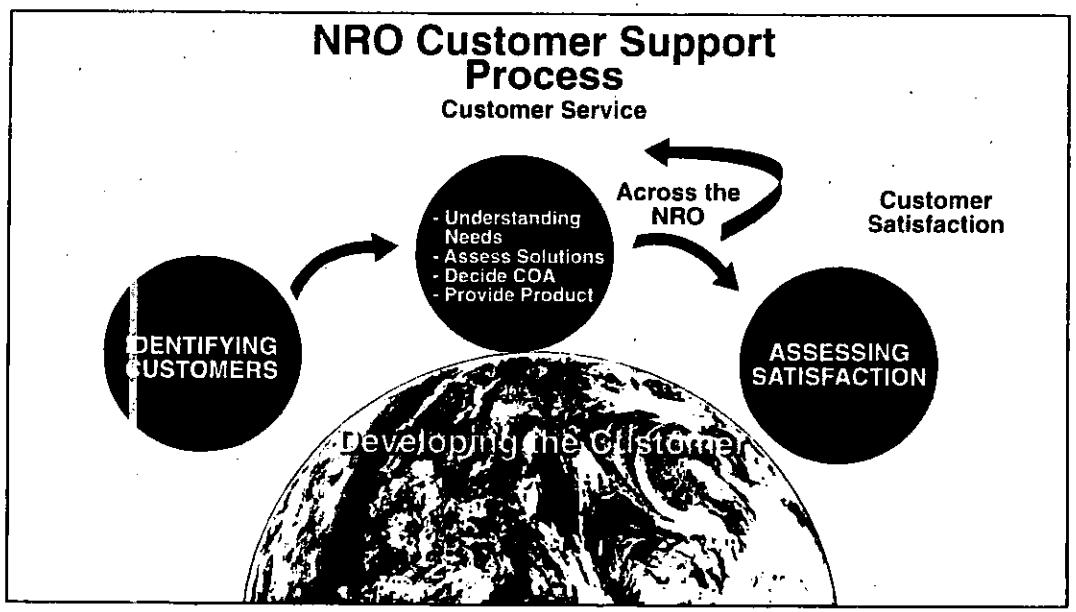
(U) DEPUTY DIRECTOR FOR NATIONAL SUPPORT

(U) The DDNS supports National customer outreach, advocacy, service, and satisfaction. The strategic thrust of the DDNS is to increase awareness and understanding of the long-term implications of NRO strategic-level operational and program decisions in context with all national security intelligence needs. To accomplish this, the DDNS liaises and coordinates with senior officials in all national-level departments and agencies.

(U) OPERATIONAL SUPPORT

(U) NRO Training and Exercise Customer Support

(U) All NRO Directorates and Offices need to provide NRO training, education, and exercise support to national, military, and civil customers. For the military, efforts revolve around implementing Congressional direction to increase warfighters' knowledge of NRO systems capabilities and limitations in order to maximize their war fighting abilities. The program includes detailed training, professional military education, and exercise support



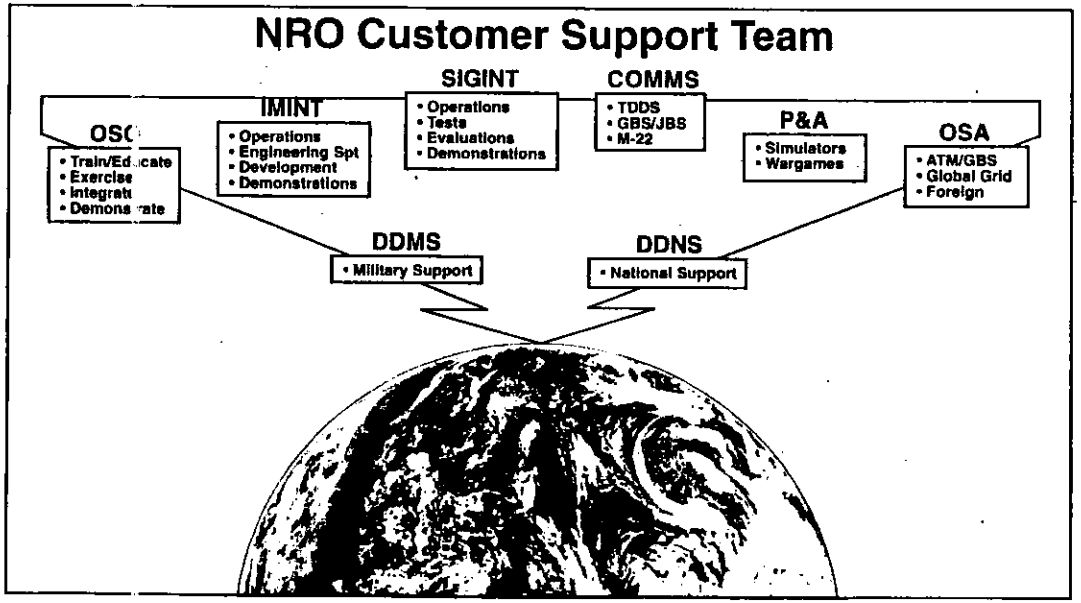


Figure 67. (U) OSO Customer Support

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conducted by the Operational Support Office (OSO), SIGINT, and IMINT. Overall coordination among the NRO Directorates and Offices for this training and exercise support rests with OSO. The Training and Exercise Support program is jointly funded by the NRP and the DSRP.

(U) Operational Support Office Customer Support

(U) Several OSO offices work together to provide end-to-end coherence for NRO customers. The OSO Operations and Exercises division works directly with the customer to improve their capabilities and utilization of NRO systems. The Training, Education & Simulation division educates the customer to improve their knowledge of NRO systems. The Applications and Integration division works customer product improvements related to the use of NRO systems, while the Architecture and Demonstration division demonstrates these improvements to the customer through standing approved architectures. The Data Applications branch specializes in maximizing the use of NRO data on customer systems, and the Resource Management staff applies the necessary resources to support these efforts and customer requirements.

(U) OSO Operations and Exercise Support

(U) The purpose of the OSO Operations and Exercise Support Division is to improve the quality of support provided to customers using NRO products and services. The expanding successful programs of NRO Liaison Officers (LNOs), Theater Support Representatives (TSRs), exercise support, and other outreach initiatives have resulted in the increased use of NRO systems by Unified Commands, Service Component Commands, Joint Task Forces, and other National customers.

(U) Operational Support to Unified Commanders

(U) NRO customer support remains focused on customer requirements by providing a forward presence with operational warfighters. The NRO *modus operandi* in this effort is to have an "away team" comprised of LNOs and TSRs supported by a "home team" of dedicated customer support representatives located at OSO. The NRO placed LNOs at USACOM and USPACOM and TSRs in support of West Coast activities/Commander, Third Fleet and USSPACECOM during FY 96. These representatives are experienced in the technical complexities of the NRO and possess significant operational experience. The impact these personnel have had on their respective commands and the insights they have provided the NRO have proven invaluable.

([redacted]

[redacted]

(U) Contingency Support to Unified Commanders

(U) The NRO's Bosnia Working Group (BWG) remains the focal point for NRO support to Operation Joint Endeavor in Bosnia. Results and activities of the NRO BWG are coordinated with USEUCOM through the NRO LNO and TSRs stationed in Europe. Unique NRO contributions to Joint Endeavor are

— (U) The application of Global Broadcast System (GBS) technologies to solve theater communications shortfalls.

— (U) The rapid deployment of custom imagery product systems by IMINT in support of implementing forces (IFOR).

— ([redacted]

— (U) Support to the operations and utility of Unmanned Aerial Vehicles (UAV).

— [redacted]

(U) Operational Support to National Agencies

(U) The NRO User Support Series provides a forum at the NRO Headquarters for customers to tell us their specific needs and how NRO systems are used in the field. The Civil Applications Committee (CAC) was the subject of the fifth installment of the NRO User Support Series. This organization is composed of non-military government agencies whose primary

responsibilities involve environmental monitoring and disaster relief. The CAC is the focal point for all civil uses of NRO systems.

(S) In a follow-on series, the NRO will host counternarcotics day to improve NRO understanding of the special needs of the counternarcotics community. Members of the intelligence and law enforcement community are scheduled to attend.

(U) Operational Support to Allies

(S/NF)

(S/NF)

(U) OSO Exercise Support

(U) Building on the framework established by education, training, and lessons learned from previous exercises, NRO systems and data are being used and understood by more military customers than ever before. The NRO supported 88 exercises in FY 96, an increase of 19 percent over FY 95 (Figure 68). The expected level of support for FY 97 is 80-90 exercises with 85 exercises becoming the norm by FY 98. The NRO exercise program identifies and evaluates customer exercise requirements versus unique NRO capabilities; coordinates support between NRO and National partners; trains and provides requisite personnel and exercise equipment through NRO Exercise Agents; improves employment of NRO systems through "live play" and simulation; and exercises NRO systems vulnerabilities, launches, de-orbits, and outages for selected exercises.

(U) OSO Training

(U) OSO Training supports customers by a variety of methods including initial training to military units acquiring new tactical processors, response to requests for just-in-time training prior to deployments, contingency support, and support to joint and service specific command post exercises. OSO trainers deployed 590 mandays in FY 96 supporting 90 different command elements with training on various tactical processors. This level of demand and effort will continue into FY 97 and FY 98. Some specific accomplishments include: OSO trainers conducted comprehensive Tactical Receive Equipment training at CINC theater locations. An average of 15-20 personnel from local area commands attended each course. During FY 96, OSO personnel trained both USEUCOM and USPACOM area commands to include

(S) OSO trainers revised and updated the users guide for TDDS and Tactical Data Information Exchange System B (TADIXS-B) broadcasts. This manual, written from an operator's perspective, has become the standard reference for receipt of TRAP & TADIXS-B data. Demand for the guide continually exceeds expectations with more than 2100 copies distributed to more than 875 units.

(U) OSO Education

(U) OSO educators provide direct support to the Joint and Service Doctrine Centers, Joint Professional Military Education (JPME) and Service schoolhouses. Curricula ranges from entry level specialty training to Senior Service Colleges and is designed to reach military customers at various stages of their careers. During FY 96, OSO educators' briefings reached more than 6400 individuals. OSO educators currently support 65 curricula, a 5% increase from FY 95. This level of effort will continue into FY 97 and FY 98.

(S) A primary effort by OSO educators is developing a capability to train JPME instructors on National Systems through the OSO National Systems Instructor Course. The first iteration of this effort included instructor candidates from the Navy and Marine Corps Intelligence Training Center, the Air Force Intelligence School, the Army Intelligence School, and the Fleet Intelligence Training Center Pacific. This effort will eventually allow these school houses to become self sufficient in some aspects of national systems training.

(U) OSO Instructional Technology

(U) OSO Instructional Technology capitalizes on emerging training technology, as well as current educational philosophy, to assemble a range of tools from very robust Computer Based Trainers (CBTs) to simple information tools. In addition to the National Systems Support Instructors CBT, OSO also completed the development of the NRO Systems Overview CBT which focuses on providing warfighters with a top level overview on NRO systems and space-related topics such as Support to Military Operations, orbitology, and each of the intelligence disciplines.

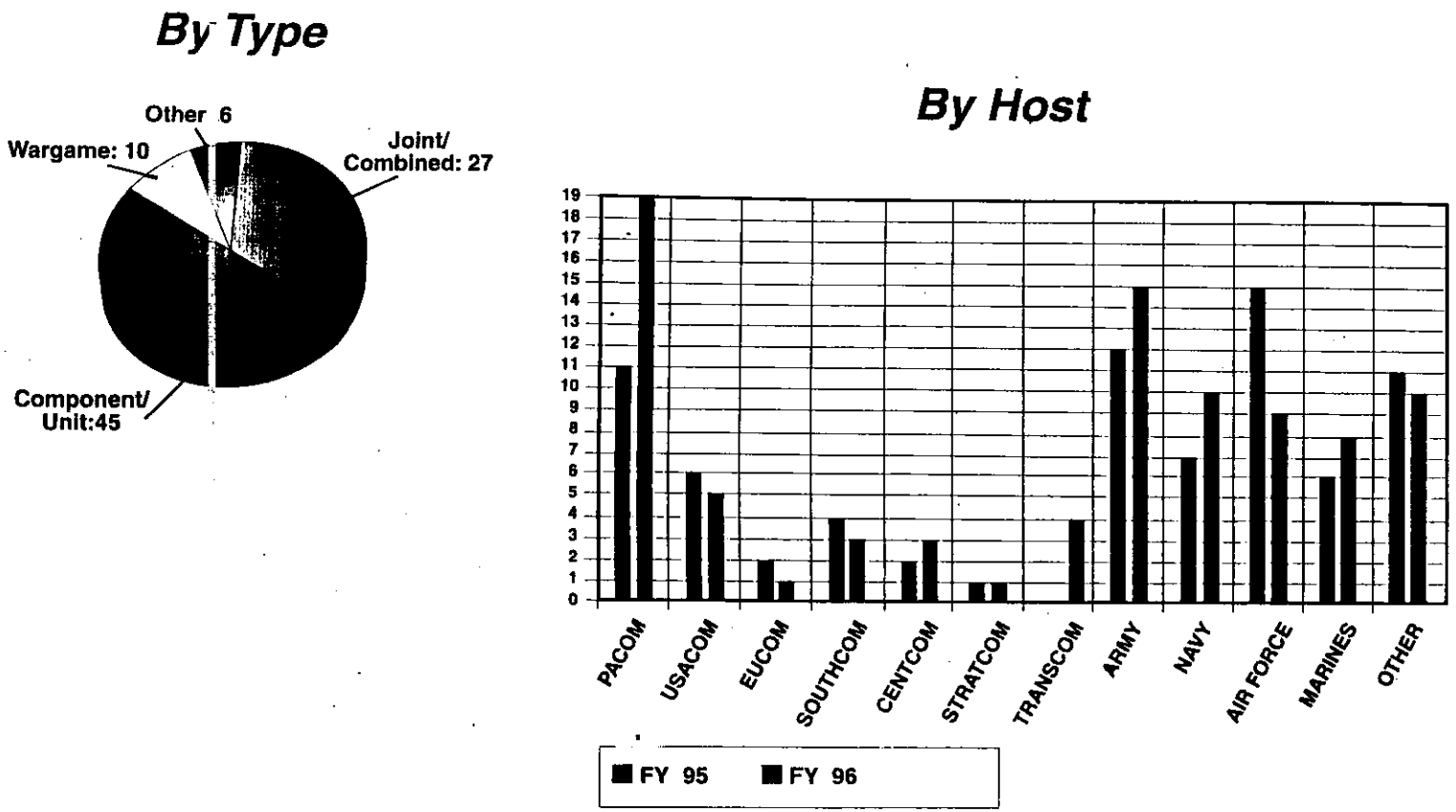

Figure 68. (S) OSO Exercise Support

(S) Additionally, OSO is working on a proof of concept initiative in conjunction with the National Information Display Lab. The project is designed to be a fully interactive and updatable on-line education program which will provide the NRO and the customer with an enhanced ability to remotely educate and train students.

(U) OSO Simulation

(S) [redacted]

[redacted]

(U) OSO Architecture and Demonstration

(U) OSO Architecture and Demonstration (A&D) division stimulates customer support by developing and demonstrating the application of off-the-shelf and commercial technologies to achieve revolutionary architecture concepts for customer needs. The emphasis is on enhancing and augmenting existing dissemination mechanisms to expand their capabilities, and ensuring information superiority is achieved at all strategic, operational, and tactical levels. These demonstrations have resulted in the increased use of NRO data by Unified Commands, Service Component Commands, and Joint Task Forces.

(U) The NRO GBS test bed effort supporting the JCS and USSPACECOM continued throughout FY 96. Using the test bed, OSO A&D supported 16 major demonstrations and exercises in CONUS and Hawaii. The GBS was a principal infrastructure demonstration in JWID 96 and subsequently named a "Golden Nugget" by Joint Staff, JSCENTCOM and component commanders. The test bed served as the prototype platform for numerous initiatives including Asynchronous Transfer Mode (ATM) development; transmission of NSA's BINOCULAR broadcast, smart-push of RADIANT JADE Electronic Order of Battle data, and development of Bosnia support. The test bed facility was transitioned to DISA in October 1996.

(U) In January 1996, the Secretary of Defense approved the DARPA/DISA plan for insertion of new C4I technologies into USEUCOM and Bosnia-Herzegovina. These new technologies included a GBS-like capability, subsequently named the Joint Broadcast Service (JBS) by USEUCOM. Acting as the lead under NRO Communications Directorate auspices, OSO A&D designed, engineered, fabricated, trained, fielded, and operated the JBS. This system demonstrated a unique communications path for the first time with sufficient capacity to handle transmission of primary imagery while simultaneously sending other NRO products, operational UAV video, Armed Forces Radio & Television Service, BINOCULAR, TRAP, data files, and full video/audio (including live CNN) to tactical units. Twenty-seven terrestrial fly away kits were built and fielded, including six shipboard systems equipped with motion stabilized antennas. OSO A&D operated JBS 24 hours/day, seven days/week until transition to DISA in October 1996.

(S) [redacted]

(U) A&D engineered the use of a portable Joint Deployable Intelligence Support System (JDISS) which utilizes a UHF SATCOM feed from the Office of the Secretary of Defense to meet a SECDEF request to the NRO to develop a capability to provide secondary imagery support to the SECDEF on the National Airborne Operations Center aircraft. Both ground and in-flight testing is currently underway.

(U) OSO Applications and Integration

(U) The Applications and Integration (A&I) Division assists warfighters with the integration of NRO data into their weapon systems. A&I leads the NRO Combat Systems Integration (CSI) effort to integrate NRO data into numerous weapons platforms and their supporting C3I systems, such as weapons control systems for AEGIS, Tomahawk, EA-6B, B-2, F-117, F-15E, P-3, submarine combat control system, Joint Strike Fighter.

(U) These initiatives have directly resulted in the increased use of NRO data by the military services and operational forces. Some current examples of this A&I activity include:

— (S) [redacted]

[redacted]

— (U) NRO is working with the Joint Strike Fighter (JSF) Program to identify requirements and technical means to integrate NRO data into JSF avionics. The JSF, a prime consumer of NRO data, is planned to become the primary fighter aircraft for the services by year 2005.

— (U) Support to the Cruise Missile Program Office to interface national ELINT and Imagery data to the Navy's Afloat Planning System for Tomahawk retargeting and mission rerouting.

— (U) Support to integrate national systems data into the AEGIS Weapons Control System to provide early detection and cuing of Tactical Ballistic Missile launches.

— (U) Assistance in integrating NRO data into the F-15E Strike Eagle and the F-117 Shadow Hawk as part of the USAF Space Warfare Centers's Project Strike II. This demonstrates the operational utility of real-time information in the cockpit (RTIC)

(U) OSO Data Applications

[redacted]

(U) The National Technical Alliance

(U) The National Technical Alliance, consisting of the National Information Display Lab and the National Media Lab, has been transferred to NIMA. This effort previously accounted for 25% of the total funding for this resource exhibit.

(U) Operational Support Facility (OSF)

[redacted]

(U) Data Fusion Facility

[redacted]

(U) IMINT DIRECTORATE CUSTOMER SUPPORT

(U) The IMINT customer support strategy is to maximize the operational utility of IMINT systems for users at all operational echelons. To accomplish this, the IMINT Directorate operates in coordination with OSO, other NRO Directorates, and multiple organizations in the IC to ensure that proactive and creative approaches to customer needs are achieved. These IMINT programs have directly resulted in the increased use and understanding of NRO imagery data by Unified Commands, Service Component Commands, Joint Task Forces, and other National customers.

(U) IMINT USER INTERFACE AND SUPPORT

(U) The IMINT User Interface and Support Division (UISD) accomplishes the customer support mission through: operational support and

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(U) An aggressive program designed to provide deployed warfighters greater access to custom imagery products is the Flyaway Contingency Package with an upgraded version known as the Quick Response System (QRS). The QRS contains three fundamental integrated elements: a deployable archive (40-90 Gb); robust processing platform (SPARC-1000); and a communications package. The entire system uses all COTS/GOTS components in a commercially transportable configuration for deployment at short notice. The QRS is designed to provide the deployed warfighter custom imagery products in the field such as mosaics, grids, and map overlays.

[redacted]

(U) SIGINT DIRECTORATE CUSTOMER SUPPORT

(S//TK) Through the SIGINT Applications Office (SAO), the SIGINT Directorate's operations support effort is focused in several key programs for customer support. These programs include the Plans and Operations Support Program, Test and Evaluation Program, Demonstrations and Analysis Program, Tactical Communications Program, and the TENCAP Program.

(U) Plans and Operations Support

[redacted]

(U) LAUNCH

(S) The main objectives of the Office of Space Launch (OSL) include successfully launching and deploying spacecraft into the proper orbit, lowering launch operating costs, improving responsiveness, and assuring flexibility for satellite development. In addition, OSL is responsible for numerous related activities—systems engineering, launch systems horizontal integration, support for mission-unique vertical integration, mission assurance, systems safety, and facilities engineering. With personnel stationed across the country—NRO Headquarters at Westfields, Los Angeles AFB (LAAFB), Onizuka AS (OAS), Vandenberg AFB, (VAFB), and Cape Canaveral AS (CCAS)—the OSL provides a center of excellence within the NRO. The OSL is dedicated to assured access to space and mission success.

(U) The NRO currently launches its heavy payloads on Titan IV, its medium weight payloads on Atlas II, and its small payloads on Pegasus or Taurus. The Titan IV and Atlas II launch systems will continue to support NRO programs until the Air Force completes development and testing of the new Evolved Expendable Launch Vehicle (EELV). Small launch systems will be chosen from the commercial Small Launch Vehicle (SLV) market based upon NRO mission needs.

(S) The OSL uses two planning tools to forecast all NRO launch activity—the manifest and the mission model. The manifest is our short-term tactical planning tool.We use it to forecast and baseline all NRO launch activity over an upcoming three-year period. Prior to approval by the Director, OSL, the manifest is coordinated with the NRO satellite program offices, the Air Force, and the commercial sector to deconflict launch infrastructure resources, such as launch pads and transporters, to the fullest extent possible. The manifest is a dynamic planning tool responsive to both programmatic changes and launch base resource availability.

(U) The mission model is our long-term strategic planning tool. A compilation of the NRO satellite program offices' launch requirements, OSL publishes it and distributes it to the Air Force. Both the manifest and the mission model form the basis for the NRO Space Launch Requirements Document, illustrated in Figure 72.

(S)

for manifesting secondary payloads. The NRO sponsoring organization performs this task.

(S)

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(U) Look To The Future

(S)

[redacted]

(U) Launch Management

(U) The NRO works routinely with outside agencies to coordinate requirements and manage activities associated with launch vehicle procurement, satellite/launch vehicle integration, launch operations, and launch-related systems safety. These organizations include Air Force Space Command (AFSPC), Air Force Materiel Command (AFMC), NASA, the Office of Science and Technology Policy (OSTP), the Office of the Deputy Under Secretary of Defense for Space (DUSD(Space)), the Office of the Secretary of Air Force (SAF), and many others. AFMC's Space and Missile Systems Center (SMC) manages the contracts that procure NRO launch vehicles and Titan IV Launch Vehicle Integration (LVI). Together with AFSPC, OSL conducts launch readiness and operations tasks in support of all NRO launches. The OSL has overall responsibility for the launch of all NRO missions and works closely with the NRO satellite program offices, SMC, and AFSPC to ensure mission success. The Director, OSL, an Air Force General Officer assigned to the NRO, is the NRO Mission Director for all NRO launches.

(U) The OSL is working closely with the NRO satellite program offices to develop standard NRO launch management policies and procedures. To the maximum extent possible, we will use standard services provided by the launch system and will follow their operations guidelines with the goal of minimizing NRO-unique impacts to space launch systems.

(S)

[redacted]

(S) The NRO, in conjunction with SMC, established a Mission Assurance Team (MAT) process to provide the Mission Director an enhanced, independent assessment of launch system hardware, software, and operational readiness. The MAT performs a thorough examination of the space launch system to further reduce the risk of mission failure. The MAT consists of experienced and knowledgeable professionals from the launch vehicle program offices, Aerospace Corporation, launch bases, contractors, and the customer communities. The process begins early in the launch system acquisition cycle to reduce the probability of discovering significant problems late in the launch flow.

(U) Challenges

(S)

[redacted]

[redacted]

(U) Launch Budget Justification

National Reconnaissance Program [redacted]

FY 1996-2003

	FY 96	FY 97	FY 98	FY 97-98 Change	FY 99	FY 98-03
[redacted]						

42298

(U) Space Launch Systems Expenditure Center

(U) The Launch budget request includes the acquisition, common support, program support, launch vehicle integration, facilities acquisition, ground support equipment, operations and maintenance, and launch services for all Titan IV, Atlas II and EELV launch systems required by the NRO. The request is based on data obtained from the Air Force and integrated with NRO satellite launch requirements. Funds requested in this budget are essential to maintaining assured access to space with our current launch systems and to accommodate the planned transition to EELV.

[redacted]

(S) Titan IV Launch Operations

(S) [redacted]

(U) Titan IV Launch Vehicle Integration

(S) [redacted]

(U) Titan IV Program Support

(S) [redacted]

(U) Atlas II Production

[redacted]

[redacted]

(U) Atlas II Launch Operations

(U) Atlas II launch processing and technical support includes the receiving and transporting of launch system hardware and ground equipment; stacking and assembly of the launch system as well as mating of the satellite; launch system test, checkout, and launch support; and post-launch ascent monitoring and performance measurement. This line also provides for Pathfinder activities at SLC-3E. The slight increase between FY 97 and FY 98 is due to the increase in activities to prepare for the launch of the first Atlas booster.

(U) Atlas II Launch Vehicle Integration

(U) Atlas II Launch Vehicle Integration (LVI) includes the support necessary to verify the launch system is capable of placing the payload in the

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[redacted]

(U) Atlas II Program Support

(S) [redacted]

(U) Common Launch Base Activity

[redacted]

(S) Range Support activities include support during transportation of satellites, range instrumentation, and communication equipment used during processing activities, launch rehearsals, and actual launch events. These launch base services and support are funded by the NRO but provided by AFSPC and AFMC. Both commands also provide personnel for range safety and quality, maintenance of space launch system processing support facilities, custodial services, power, telephone services, and supplies. The above efforts are primarily daily level of effort; however, some of the work at the launch sites depends on the number of planned launches, which changes annually.

(S) [redacted]

(U) Common Engineering Services

(U) The Common Engineering and Services Project includes systems engineering and facilities acquisition, operations, and maintenance support to include acquisition and maintenance of ground support systems and equipment.

(S) Major activities include systems engineering and analyses provided by the launch vehicle contractors to support generic integration of Titan IV and Atlas II launch system requirements. This activity also supports (1) facilities and ground support equipment; (2) technical and mission rehearsal support of the launch team in preparation for all NRO launches; and (3) NRO launch base facilities architectural, engineering, and construction services including

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