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United States Department of State
and the Broadcasting Board of Governors
Office of Inspector General

Report of Inspection

Review of the Voice of America's Digital Upgrade Program

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SUMMARY

For more than a decade, beginning under the former U.S. Information Agency (USIA), U.S. international broadcasting has been involved in a comprehensive effort to modernize its broadcast operations through the use of audio, video, and computer technologies. In large part, the conversion of the Voice of America (VOA) operations from analog to digital technology has been the focus of this undertaking. Essentially, VOA radio is now a digital organization; however, work continues on full digitalization of television operations. The Office of Inspector General (OIG) completed a review of the VOA digital upgrade effort. The objectives of the review were to assess the effectiveness of project implementation to date and to identify what work remained to be done.

Generally, the digital upgrade program was not one single project but a multiyear, multiproject undertaking to upgrade international broadcasting operations from analog to digital technology. The latest IBB budget estimate placed the overall cost of the program at about \$62 million. Although the upgrade was not fully completed, OIG found that much had been accomplished since the start of the program. As the primary focus of the program, VOA's transformation to a digital organization goes a long way towards supporting a key Broadcasting Board of Governors (BBG) strategic objective: to accelerate multimedia development through the convergence of traditional broadcasting and telecommunications technologies. At the start of the OIG review, most of the major digital projects under the overall program were completed. As a result, OIG primarily focused its work on the last remaining major initiative, the Integrated Digital Audio Production System (IDAPS), described by the International Broadcasting Bureau (IBB) as the capstone of the digital broadcast program.

Building on the foundation set by earlier digital upgrade projects, the deployment of IDAPS brought commercial radio broadcasting technology standards to VOA. Given the unprecedented scale of the VOA project, some problems were to be expected. OIG found that project planning and execution issues slowed the completion of IDAPS, including such things as (1) the identification of system requirements and changes in project management, (2) delays in delivery of Government Furnished Equipment (GFE), (3) IDAPS software "bugs," (4) indecision on the issue of IDAPS technical support, and (5) additional contract work. Notwith-

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standing, OIG found that IDAPS was in place and the VOA language services were using the new digital audio system in program production and broadcasting.

IDAPS has exceeded the original five-year term of the contract and, as of October 2004, project expenditures of about \$18 million were about \$1million more than the budgeted amount. IBB expects to complete the remaining IDAPS work, involving VOA's central recording facility, and to closeout the contract before the end of FY 2005. Although originally part of the overall digital upgrade program, the digitalization of VOA Television was proceeding as a separate initiative to install a news management system based on digital video.

The report includes one recommendation to IBB to ensure that the newly created IDAPS support office develops a comprehensive system to track more effectively IDAPS operations and to manage better the overall network.

OIG provided a draft of this report to BBG and IBB for review and comment. The BBG response concurs with the recommendation and provides details on current systems, and planned improvements in these systems, to monitor the performance of the digital network and to manage IDAPS-related user problems.

OBJECTIVES, SCOPE, AND METHODOLOGY

The purpose of the review was to evaluate IBB's ongoing VOA digital upgrade program, with particular emphasis on how the project was being implemented and what more needed to be done. Work on the review was carried out in Washington, DC, at BBG headquarters. OIG conducted interviews with management and staff of BBG, IBB, and VOA. IBB offices involved in OIG interviews included the Office of the Director, Office of Engineering, Office of Computing Services, and Office of Contracts. VOA offices included the Office of the Director, Office of Broadcasting Operations, and offices of the directors of selected language services. Also, OIG collected and reviewed pertinent documents related to project management, procurement, funding, technical operations, and support of the overall digital program.

As noted, OIG focused its work on the IDAPS installation. To assess the implementation of this initiative, OIG interviewed IBB and contractor officials involved in the management, execution, and oversight of the digital upgrade program; compiled and analyzed pertinent project documents; and collected and analyzed information from the various audio system logs maintained by the Computing Services Office and VOA's Broadcast Operations Office. OIG also conducted a survey of the VOA language services to assess the IDAPS training received by service personnel and the use of the digital system in producing and broadcasting programs. To avoid disrupting the broadcasters' work, OIG asked the directors of the VOA language services to respond to the survey and left it to them to decide whether to seek input from their service personnel before completing the survey. Of the 52 VOA language services surveyed, 54 percent responded. Completed surveys covered about 500 VOA broadcasters and producers.

The OIG Office of International Broadcasting Oversight conducted survey work on this project between July and September 2003. Subsequent audit work was carried out between December 2003 and March 2004. In September and October 2004, IBB updated some information at OIG's request. All work was conducted in accordance with quality standards for inspections prescribed by the President's Council on Integrity and Efficiency. The former Office of International Broadcasting Oversight carried out this review. Contributors to this effort were Louis A. McCall, John M. Trembler, Darlene Allison, Peter Larson, and Sean Bailey.

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BACKGROUND

In the early 1990s, USIA international broadcasting faced the prospect of replacing its aging computer system and the broadcast production equipment, which relied heavily on analog technology. The existing agency-wide computing infrastructure and the broadcasting analog audio and video production systems were becoming obsolete or inadequate to meet requirements. By a memorandum dated February 4, 1994, the USIA Acting Associate Director for Broadcasting formally launched the Digital Technology Project to convert Bureau of Broadcasting (IBB's predecessor) operations from analog to digital technology to maintain an efficient broadcasting capability within the bureau. With enactment of the International Broadcasting Act of 1994¹ and the establishment of BBG, responsibility for the digital upgrade program passed from USIA's Bureau of Broadcasting to IBB. The Office of Engineering, which became a part of the newly established IBB organization, remained the primary project management office throughout the digital program.

Initially, the Digital Technology Project included only the digital conversion of broadcast operations. However, in August 1994, the Acting Associate Director for Broadcasting approved the merging of the Digital Technology Project with the project to replace the agency's aging System for News and Programming (SNAP), which from the mid-1980s was used for text processing in program production, electronic mail, and other computing systems throughout the broadcasting bureau. Merging the two initiatives, or what IBB has described as the "one-box" approach, was viewed as a way to reduce equipment and operational costs and operational complexity. Over the next several years, digital planning proceeded under the "one-box" approach with various in-house technical teams and outside consultants preparing various project plans, cost analyses, proposals, and decision memoranda to arrive at a comprehensive, integrated approach to digitize the agency's administrative and broadcasting operations.

In FY 1996, at the start of major procurement, IBB planners estimated the total digital program budget at about \$52 million. The digital conversion was planned as a multiyear program comprised of a number of major projects, including a new

¹ PL 103-236, Title III

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VOA Master Control facility; replacement of the SNAP system; and a new, digital audio-production system. The former two projects laid the foundation for the change over in the VOA audio production system from analog to digital technology. The table below provides a breakdown of overall digital project funding as of October 2004. Additional details on each of the projects listed are included in Appendix A.

**Digital Broadcasting Program
(000 Omitted)**

Project	Total Budget	Expenditures (As of 10/12/04)	Status
SNAP Replacement	\$16,174	\$16,174	Completed in FY 1999; last expenditure FY 2000
VOA Master Control Management	\$10,407	\$11,223	In service 1999; ongoing system integration with IDAPS
IDAPS	\$17,000	\$18,045	Deployment to VOA completed 12/2001; Task 7 (Central Recording) ongoing
Radio Studio Equipment	\$6,538	\$2,378	Mix/Dub studios installed; digital equipment installed in most core/production studios; FY2006 funds requested for studio renovations
Television Video Equipment	\$10,215	\$9,284	Purchase of digital video file server system postponed to FY 2005
Miscellaneous Project Expenses	\$1,270	\$1,214	Last expenditure FY 2004
Total	\$61,604	\$58,318	

Source: IBB, October 2004

FINDINGS

DIGITAL PROGRAM IMPLEMENTATION

Implementation of the digital broadcasting program has been phased in over many years. Prior OIG work identified some contractual problems concerning projects under the overall upgrade program. When OIG initiated its current review, IDAPS was the only major digital project still ongoing. Therefore, OIG mainly focused on how well it was being implemented and possible obstacles that might delay completion. Generally, OIG found that IDAPS was successful in bringing commercial radio broadcasting technology standards to VOA. However, project planning and execution issues contributed to delays in IDAPS implementation. Although IDAPS was in place and being used for VOA program production, at the start of the review, many of the broadcasters were not fully trained to use the new technology for on-air programming. A longstanding, unresolved issue concerning organizational support of IDAPS also seemed to limit wider use of the new, digital audio system. OIG also found that IBB was not systematically compiling IDAPS performance data to evaluate how well the system was operating. Nevertheless, an OIG survey of the VOA language services resulted in mostly favorable responses regarding the training received on IDAPS and its use in daily radio programming. At the end of FY 2004, IBB reported that all the VOA services had completed the IDAPS on-air training, and the bureau had a plan in place to resolve the question of IDAPS support.

Prior Office of Inspector General Reviews of the Digital Upgrade Program

In the past, OIG reported contracting deficiencies involving two projects under the digital broadcasting program. In a 2003 review, OIG evaluated BBG systems and procedures in place to monitor contractor performance in selected contracts,² including the IDAPS contract. In general, OIG found that BBG personnel were adhering to applicable policies and procedures in monitoring these contracts.

² OIG report, *Review of Monitoring of Contractor Performance at the BBG* (AUD/PPA-03-21, March 2003).

However, concerning the IDAPS contract, OIG found that project staff approved payment for a few invoices without the required formal contract modifications or funds certification, which in one case resulted in an unauthorized commitment. OIG recommended that IBB issue new guidance to personnel with contract monitoring responsibilities to avoid similar problems in future contracts.

In a September 1998 report, OIG reviewed allegations of restricted competition at USIA in procuring the VOA Master Control facility, a subelement of the overall digital broadcasting project.³ OIG found that USIA conducted the master control facility's procurement in a manner that hindered competition by including functional requirements in the Request For Proposal (RFP) that excluded most manufacturers. USIA's Office of Contracts also improperly used an existing architecture and engineering contract with one vendor to procure another vendor's assistance in the conversion to digital broadcasting operations. As a consequence, the report concludes, government costs were unduly increased. Although OIG found no basis to recommend termination of the contract for upgrading the VOA master control facility, OIG recommended a number of actions to strengthen contracting policies, procedures, and practices concerning future contacts.

Assessment of Ongoing Integrated Digital Audio Production System Implementation

Digital audio was becoming the industry standard when IDAPS planning began in the mid-1990s. IBB was faced with the task of installing a state-of-the-art digital audio system for VOA on a scale never accomplished before by other broadcasters. Despite the magnitude of the task, OIG found that IDAPS was operational and being used by VOA language services in daily production and broadcasting. Over the life of the project, OIG found that both technical and nontechnical issues slowed the completion of the project. To assess IDAPS implementation, OIG focused on aspects of project planning and execution, the technical performance of the newly installed system, and the system performance from the VOA user services perspective.

³ *Review of Allegations of Restricted Competition on the United States Information Agency's Master Control Facility Contract (USIA-98-PP-021, September 1998).*

Integrated Digital Audio Production System Planning and Execution

OIG found that, from the outset, IDAPS implementation was delayed by a combination of factors involving early requirements planning and management, contract execution, system operational support, and contract modifications. Planning for IDAPS was carried out with other projects under the umbrella of the Digital Technology Project.

Early estimates called for award of an IDAPS contract by mid-1996. However, early in the project uncertainties about system requirements and changes in project management contributed to delays in the procurement process. IBB released its first RFP for IDAPS in February 1997. However, IBB project documents report that industry comments on the RFP raised concerns about the proposed IDAPS computer operating system, necessitating a change in project requirements. Difficulties encountered in redefining IDAPS requirements held up award of the contract. Contributing to the delay in IDAPS procurement was the fact that IBB and VOA staff were unavailable to work on the project because of commitments to other ongoing digital projects. In addition, according to project documents and IBB officials, in May 1997 the IBB director transferred management of the digital program from the IBB Office of Engineering to the IBB director's office and named a new digital project manager. IBB project management officials estimated that this delayed the digital upgrade project by as much as two years. With the change, there also was a reassessment of the project's scope. Project data indicate that all these factors together kept IBB from meeting its FY 1998 target award date for the IDAPS contract. In April 1999, IBB released the second RFP and awarded the IDAPS contract to Dalet Digital Media Systems (Dalet) in September 1999.

In general, the Dalet contract called for the installation of a digital system that met commercial radio broadcasting standards and could be adapted as necessary to the particular needs of VOA. Under the contract, Dalet was to provide IDAPS software, professional audio interface cards, computing hardware specifications, system integration, installation, training, and user support services. The initial award of \$3.2 million covered the base contract and the first three tasks. The contract includes other optional fixed-price tasks whose prices were to be determined at a later date, if approved. Over the life of the contract, which was not to exceed five years, a total of eight tasks were awarded, with one (Task 7) projected to be completed in August 2005.

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Integrated Digital Audio Production System Contract Execution

Although, the IDAPS project was unique in terms of its size, IBB information shows that project execution was carried out with only a few major delays. Project officials and IDAPS status reports place responsibility for these delays on both contractual parties: the contractor and the government. In large part, OIG's assessment of project execution was based on information gleaned from IBB Office of Engineering progress reports detailing the status of the ongoing IDAPS project. These weekly reports, covering calendar years 1999-2003, document the history of the project, including both technical and non-technical problems encountered and the actions taken to resolve these problems. Key contract delays involved deliveries of Government Furnished Equipment (GFE), IDAPS software problems, and system technical support.

Soon after work began on the Dalet contract in October 1999, IBB project information shows that IDAPS met with problems concerning GFE requirements. Project officials found that a significant portion of GFE was not on the GSA Schedule, particularly a number of file servers for the early contract tasks. Although orders were placed with the anticipation of quick delivery, the first set of GFE file servers did not begin to arrive at the contractor's test facility until the end of November 1999. However, problems continued and it was not until the beginning of February 2000 that all of the file servers arrived at the contractor's facility. According to project status reports, the delays, which were caused by the file server vendor, stretched over about 3.5 months and impacted Task 1 and possibly Tasks 2 and 3 of the contract. Although the vendor pledged to do better on future deliveries, it had problems making timely delivery of additional file servers for Task 3 of the contract, which resulted in a delay of about 2.5 months, from the end of June until mid-September 2000.

With resolution of the GFE problem, IDAPS project reports show that work moved forward on deployment of the new Dalet system. By the end of October 2000, two of the more than 50 VOA language services began using the new system in a limited capacity and were expected to go on-air with the new technology by the end of the year. However, in early January 2001, the project reports document technical problems with the version of the Dalet software (5.1.c) initially installed. Because of "bugs" in the software, it was decided not to go on-air using the Dalet system until the problems were resolved. At the same time, quality control testing was underway on the next version of the Dalet software (5.1.d), which was expected to correct some earlier problems. Although early testing of the 5.1.d version showed improvement over the initial version, some bugs were identified and testing

continued. To facilitate a solution, IBB project managers withheld payment of contractor invoices for three months. By the end of May 2001, all testing on 5.1.d was completed, IBB project management approved the new version, and the software was distributed to users. Also, during July 2001, in support of the IDAPS migration, IBB began deployment of new, upgraded personal computers, the platform for running the Dalet software.

As installation of the Dalet system moved ahead, staffing and training issues began to impede progress of the project, particularly with regard to the use of the Dalet system for on-air programming. The need for developing an in-house technical support structure for IDAPS was identified early; however, actions to resolve the support issue fell short. By December 2000, the first VOA divisions (VOA News and English) were ready to go on the air using IDAPS but the move was postponed largely because of the unresolved issue of operational support of the system. By the end of August 2001, several weeks of completed air shows were cancelled because of VOA training and technical support staff shortages. The hold on air shows continued into 2002 as VOA took steps to address staff shortages. In mid-November 2002, more than 22 months after reported readiness, the first VOA program (News Now) became a fully digital. Beginning in January 2003, as the training continued, other VOA services were able to go on the air using the Dalet system. VOA continued the on-air training through early August 2004, training two or three services per month, until all VOA users were trained. Similarly, the issue of IDAPS technical support was addressed in connection with the March 2004 IBB reorganization of Information Technology (IT) functions. Additional details on this longstanding support issue are provided in the next section.

Notwithstanding the problems encountered during the installation of IDAPS, project management and contractor officials seemed to be able to work cooperatively to resolve issues without serious consequences. The IBB contracting officer for IDAPS told OIG that the contractor effectively provided all technical deliverables under the contract, IBB made no penalty claims against the Dalet contractor, and the contractor filed no claims against IBB. An IBB project official with technical oversight of the contract said that, throughout the project, the contractor was very agreeable to making changes to accommodate IBB and VOA. Likewise, another IBB project management official said that although both the contractor and the government made mistakes, the contractor filed no formal claims.

Integrated Digital Audio Production System Support

From the start of the OIG review, the unresolved issue of IDAPS operational support was a particular concern to BBG broadcasting officials. As noted, the issue adversely affected deployment of the Dalet system. In general, the issue of IDAPS support grew out of IBB's migration to digital technology. With IDAPS and the "one-box" approach adopted for the IBB digital program, digital audio and computer data were required to share the same network path, file servers, databases, and overall computing infrastructure. The merging of these two technologies made it necessary for Broadcast Operations and Computing Services to work together in supporting the system.

A shared approach to IDAPS support between Broadcast Operations and Computing Services could not be worked out. In July 2003, the two offices prepared a transition plan concerning administration and support of IDAPS; however, IBB and VOA management did not approve the collaborative effort. Some IBB and VOA officials attributed some of the indecision on the support issue to the organizational configuration of IBB. In particular, the two support offices, Broadcast Operations and Computing Services, reported to different management heads: the former to the VOA Director and the latter to the Associate Director for Management. Although the acting IBB Director could have resolved the IDAPS support issue, he told OIG he was not in a position to make a unilateral decision on the support issue. Instead, he preferred that the two offices involved, including the office directors, come to mutual agreement on the matter. The two offices were not able to come to agreement.

Without a resolution of the support issue, IDAPS deployment was adversely effected, particularly in areas such as user training, discussed earlier, and Dalet system improvements. Regarding system improvements, OIG was informed that the support issue was delaying a necessary Dalet upgrade. According to the contractor's on-site representative, the Dalet version being used by VOA (5.1.d) was older technology and that the next version (5.1e), when installed, would correct some of the small system problems of the current version. VOA and Computing Services officials agreed that the Dalet system should be upgraded; however, there seemed to be confusion as to which of the two offices had the responsibility for this. Although the upgraded version had been successfully tested, VOA systems administrator officials said that the issue with moving forward on upgrading IDAPS was not a funding issue but arose from the lack of staff and from indecision on whether VOA or Computing Services should provide Dalet system support.

In September 2003, IBB management initiated action to address the unresolved issue of IDAPS support as part of a comprehensive review of its IT functions. IBB contracted for a consultant study to in part “perform a critical examination of IT organizational and management arrangements within IBB.” In January 2004, with the results of the consultant study in hand, the IBB Director sought BBG approval to create a central technology organization within IBB to address issues raised in the study as well as in a recent OIG report.⁴ The Director also sought approval to align the organization with industry standards noting the IT management structure was fragmented and key functions were not being addressed. For example, the IBB director cited the “delayed implementation of digitization for as much as two years.” With BBG and congressional approval, the IT reorganization was effective May 30, 2004.

The IT reorganization specifically addressed the issue of IDAPS support. Under the approved IBB plan, Computing Services and some Broadcast Operations technical staff were to be merged into a newly created organizational entity, under the authority of BBG’s Chief Technology Officer, which would be responsible for IDAPS support. With the centralization of IDAPS support, OIG believes that the longstanding issue of establishing an effective IDAPS support system should be resolved; however, it was too early to assess fully the outcome of IBB’s action at the conclusion of OIG’s review. Nevertheless, in September 2004, according to the IDAPS project manager, the newly formed IDAPS support team of Computing Services and VOA Broadcast Operations staff under the Office of Engineering was making good progress in addressing some of the system work that had been on hold for the past few years. For example, in January 2005, IBB announced implementation of the upgrade of the Dalet system to the 5.1.e version. Given the actions by IBB, OIG is not making a recommendation regarding the support issue.

Integrated Digital Audio Production System contract modifications

The magnitude of additional work performed under the IDAPS contract, some unplanned, appeared to be a factor in extending the contract completion date. As noted, the original September 1999 \$3.2 million award to Dalet covers the costs associated with the base contract and three tasks. The contract also includes 11 optional firm-fixed price items, subject to the approval of the contracting officer. As of October 1, 2004, IBB had awarded 44 modifications to the original contract

⁴ *Review of the Information Security Program at Broadcasting Board of Governors (IT-A-03-14, September 2003).*

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for eight separate tasks, increasing the total contract cost to slightly over \$14 million. One task (Task 7) was ongoing, with estimated completion in August 2005. The term of the contract, including Tasks 1, 2, and 3 and options, was not to exceed five years, which made the end-date September 19, 2004. IBB closeout of the IDAPS contract is dependent on the completion of Task 7; however, it is expected to be before the end of FY 2005. This would put contract completion about a year beyond the term of the original contract.

The optional provisions in the IDAPS contract support IBB's anticipated need for additional work beyond the level of effort required under the initial awarded contract. However, the contract does not specifically mention work concerning a digital production and broadcast system for the Middle East Radio Network (MERN), which became IDAPS Task 8. Work required for MERN was not identified for more than a year after award of the IDAPS contract. The contract calls for the modernization of existing facilities at VOA Headquarters and three VOA news centers in New York, London, and Hong Kong. The MERN project involved new facilities in Dubai, United Arab Emirates, rather than existing facilities.

IBB contracting information shows that the IDAPS Task 8 modifications were awarded over a 32-month period. In August 2001, the IDAPS contractor prepared an initial proposal for the MERN task. At the direction of IBB, the contractor amended the proposal to provide a Prototype Overseas News Center System (PONS). On September 27, 2001, IBB approved IDAPS Modification 11 for PONS, which became the formal approval of Task 8. Subsequent Task 8 modifications, described as being for MERN, called for the design, procurement, and construction of studio and broadcast hardware and on-site overseas installation. The project was deployed overseas as the MERN Middle East Program Center (MEPC), which became operational in July 2003. IBB awarded the final Task 8 modification on June 4, 2004. As of October 1, 2004, IBB had awarded 19 Task 8 modifications at a cost of about \$3 million, which represents about 20 percent of total contract costs.

Initially, OIG questioned the IBB approach of carrying out the MERN project as a modification to the IDAPS contract rather than as a new procurement. On the surface, Task 8 appeared to be outside the original IDAPS contract's scope of work. First, the IDAPS contract was for the modernization of existing VOA facilities. Initially, BBG told OIG that MERN was not part of VOA. MERN also was not an existing but a new facility. Second, in general, the original IDAPS contract calls for the contractor to provide software and hardware specifically

designed and intended for a digital audio-production system. However, under Task 8, the contract was modified to provide for the design-build of a digital news center. This required some construction to accommodate the new digital system for the MEPC, which eventually was installed in an IBB-leased facility in Dubai.

In January 2005, responding to OIG concerns, BBG's Acting General Counsel pointed out that when Task 8 was approved MERN was still a pilot project under VOA. On the question of IDAPS applying only to existing VOA facilities, counsel noted that the original contract clearly notified all interested offerors that some directly related equipment and services not set forth in the contract may be included in future task descriptions as optional work. The contract also calls for all systems delivered under the contract, regardless of delivery date, to function as integrated whole. Furthermore, the work performed under the Task 8 modifications did not involve construction, but rather the design and production of a digital audio broadcast system for a prototype overseas news center system and the installation of that system at the MEPC.

OIG's review of the BBG January 2005 legal opinion concluded that the agency's position concerning its actions related to the MERN Task 8 modifications performed under the IDAPS contract complied with government procurement laws and regulations. Nevertheless, OIG believes that BBG contracting officials, in the future, need to avoid broadly written scopes of work that may have the effect of limiting competition.

Integrated Digital Audio Production System Technical Performance

OIG attempted to evaluate IDAPS implementation based on how well the newly installed Dalet system was performing. Both VOA Broadcast Operations and Computing Services were maintaining system logs on IDAPS problems reported by the users. Generally, OIG found that the logs lacked sufficient data to identify specific causes of user problems. As a result, OIG was unable to use the logs as a measure of how well Dalet had been operating. OIG believes a single logging system that captures detailed information on the root causes of user problems would provide key information to assess performance of the Dalet system and over time provide trend data to manage better the operation and maintenance of IDAPS.

OIG found that three separate offices were compiling IDAPS operation/incident logs; however, none had been designated as the one "official" operating log for IDAPS. Within the Office of Broadcast Operations, the Digital Support

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Division logs primarily recorded information on off-air IDAPS problems experienced by the VOA broadcasters during program production. Another office within Broadcast Operations, the Operations Support Division, was compiling information on audio system problems that occurred in the studios during VOA broadcasts. A third set of IDAPS operational logs that covered only off-air incidents, was being maintained by IBB's Office of Computing Services. According to a Computing Services' official responsible for user services, none of the logs was considered to be the "official" IDAPS record documenting the history of Dalet problems because, in his opinion, there was no central authority designated to manage IDAPS.

The information contained in the various logs was not adequate to assess Dalet performance. A selective review of the logs and discussions with Broadcasting Operations and Computing Services officials indicated that the log information was insufficiently detailed to isolate problems related to the Dalet application. Although the technicians may have recorded an incident as a "Dalet system freeze," VOA and IBB officials pointed out that the actual cause of the problem might not be the Dalet software but some other aspect of the network, given that other non-Dalet applications operate on the same network. In this regard, in early 2003, the Dalet contractor pointed out that "freezing machines" is a type of symptom whose cause is always difficult to find and could be related to, among other things, network loss of connectivity, defective equipment, or the use of screen-savers, power management features, and anti-virus scans. The contractor suggested that all incidents be reported in detail to identify patterns that could provide clues to their cause and solution. However, OIG found that the logs were still showing incidents as "Dalet freezes."

Besides the lack of detailed incident reporting in the logs, a Computing Services official involved with user services said there could be duplication between his office's logs and those of the VOA Digital Support Division because they both deal with off-air problems. For example, one of his technicians may respond to a call for assistance and then find it is not a Computing Services problem but a VOA support problem. If a VOA technician is then called, the incident could be erroneously reported on the logs of both offices. He added that there was unevenness in how some technicians responding to IDAPS problems were documenting the problems and he was trying to improve in this area.

Both VOA and Computing Services officials commented that the established logging systems for IDAPS were not being used systemically as a diagnostic tool or to track system operating trends. In general, they added that the logs provided information if senior management had a question about a problem in a studio or as a tool to track the progression of new employees. Although such uses of this

information may have some merit, OIG believes that the IBB is missing an opportunity to develop a logging system that can be used to manage and evaluate the performance of IDAPS. When properly designed and maintained, such a system could provide essential information for managing the operation and maintenance of the system. Furthermore, maintaining three separate logging systems results in duplication of effort and a waste of scarce resources. As noted earlier, IBB has centralized support of IDAPS under a single office. As a result, OIG believes that IBB should task this new office with developing a single, comprehensive system to track more effectively IDAPS operations and to manage better the overall system.

Recommendation 1: The International Broadcasting Bureau should ensure that the newly created Integrated Digital Audio Production System support office develops and maintains a single logging system capable of collecting and documenting detailed performance data that would provide valuable information for the efficient operation of the digital system and making decisions on future upgrades of the system. (Action: IBB)

BBG concurs with the recommendation and advises OIG that IBB's Office of Engineering and Technical Services now has multiple systems in place both to monitor the performance of the digital network, as well as, to manage and track IDAPS-related user problems, complaints, and bug reporting. Over the next six months, IBB plans to consolidate the systems in each category so that there would be a single monitoring system for each area, i.e., network performance and IDAPS user support.

Survey of Integrated Digital Audio Production System Users

Finally, to assess IDAPS implementation, OIG sought the views of the customers the digital system was created to benefit: the VOA language services. In January 2004, OIG asked the language services to provide information about their experiences with IDAPS, including the training received and the use of the new digital Dalet system. With an overall response rate of more than 50 percent, the respondents gave a very positive rating to the contractor's training program and to their experiences in using the system. Responses also were very favorable concerning the on-air Dalet training being conducted by VOA. However, more than 40 percent of the respondents reported that their services had not yet completed the on-air training program. As noted earlier, VOA's on-air training program was not completed until August 2004.

The OIG survey was conducted between January and February 2004. It included 16 questions, grouped into three categories: the training provided by the Dalet contractor, VOA's on-air Dalet training, and the experiences of the language services with the new Dalet system. The survey was sent to 52 VOA language services. To minimize any possible burden in responding to the request, OIG asked the heads of the services to complete the survey on behalf of their broadcasters and producers. Service heads were given the option to poll their employees before responding to the survey. The overall response rate to the survey was about 54 percent (28 responses). Total responses covered almost 500 VOA broadcasters and producers; however, there was not always a clear distinction between the two groups. A few services reported that some employees did both broadcasting and producing. Appendix B lists the VOA services that responded to the OIG survey.

User Training by Contractor

The IDAPS Dalet contract required the contractor to provide a comprehensive, on-site training program for various groups within IBB and VOA, including broadcasting personnel. The training for the VOA broadcasters, a mix of lecture and hands-on use, was to enable them to use IDAPS successfully in their routine, daily production of broadcast program and program elements in their work areas. The contractor training was designated as "platform" training. Part one of OIG's survey requested the VOA services to provide information on their experiences with the Dalet platform training.

Overall, VOA respondents gave the contractor's platform training largely positive ratings. With few exceptions, all reported that between 76 and 100 percent of their users completed the contractor's training program. Results of the survey show that only about 20 percent of the users had had prior digital training or experience. More than 90 percent of the responding services reported the quality of the contractor training as "adequate" or "very adequate." Also, they added that about 85 percent of the broadcasters and producers were confident in their ability to use IDAPS. However, the survey shows that about 30 percent of the two groups are likely to need additional digital platform training or coaching.

On-air Digital Training by Voice of America

Part two of the OIG survey aimed at identifying the extent of the language services on-air Dalet training and the quality and degree of difficulty of this training. In contrast to the contractor-provided IDAPS platform training, training for the on-air use of the Dalet system was the responsibility of VOA's Office of

Broadcast Operations. The training, which helped the languages services transition to on-air use of the Dalet system, was carried out over a period of about 21 months, beginning in November 2002. VOA's training office also conducted remedial training for all services, new employees, and contractors and interns, as well as specialized training programs.

For those VOA services responding to OIG's survey, 16 of 28 reported that they had completed the on-air Dalet training program conducted by VOA. All those that completed the training rated the quality for both broadcasters and producers as "adequate" to "very adequate." Similarly, the respondents reported that almost 95 percent of the two groups found the on-air training to be "easy" or "very easy" to learn.

User Experience with Dalet System

The final section of the OIG survey dealt with the experiences of the VOA language services in using the new Dalet technology in the production and on-air broadcasting of programs. Generally, the respondents gave uniformly positive ratings concerning their service's experience with the Dalet digital technology. The services reported that the trained broadcasters and producers were using the new digital technology about equally for program production (79 percent) and on-air broadcasting (83 percent). In terms of ease of use, respondents said the new Dalet technology made it easier to produce programs (89 percent), rather than broadcast programs on-air (61 percent). However, the survey indicates that more than 80 percent of the two user groups believe that the new digital technology speeds program production and improves the overall quality of programs. Notwithstanding the positive survey results, some language services reported that they were still using the older analog technology in their work. Respondents reported that about 27 percent of broadcasters and producers were relying on analog technology for some programming activities. This seemed to support what some IBB officials said during the review; that is, services would have a continuing need for analog technology because of the large collection of VOA archival material that is analog and still being used in current VOA programming.

The final survey question was intended to measure the level of IDAPS technical support the language services were receiving from VOA's Broadcast Operations Office and IBB's Computing Services Office. At the time of the survey, both offices were providing technical support to IDAPS users because the issue of technical support responsibility, noted earlier, had not been resolved. Notwithstanding the uncertainty surrounding this issue, survey respondents rated the services of both offices very favorably. Specifically, results show that about 96

percent of respondents considered Broadcast Operations support to be “adequate” or “very adequate.” Similarly, Computing Services received an overall rating of about 92 percent for these same two rating categories.

In sum, survey respondents in large part gave the new Dalet technology high marks. Overall, almost all rated the platform and on-air training in the “adequate” to “very adequate” range. Except for the 12 services that had not received the on-air training, all reported their services were using the Dalet technology at some level in their daily work activities. Furthermore, not only were the VOA language services using it routinely, over 80 percent of respondents reported that use of the new Dalet system had improved the speed and quality of program production.

REMAINING WORK UNDER DIGITAL UPGRADE PROGRAM

With most of the individual projects now completed, the formal IBB digitalization program is nearing an end. Major initiatives remaining include the completion of Task 7 under the IDAPS contract and continuing work on the digitalization of VOA Television. IBB projects the end of the contract before the close of FY 2005. Under the television initiative, which is now proceeding on its own separate track, IBB awarded a contract for a video file server as part of a new digital video news management system. IBB expects the contract to be completed in August 2005.

Integrated Digital Audio Production System Completion

Finishing the work of Task 7 under IDAPS largely would signal the end of the transformation of VOA’s audio broadcasting infrastructure from analog to digital. Although it has taken longer than originally planned, IBB expects to complete this task in August 2005. Specifically, the task is designed to replace VOA’s automated recording systems and integrate IDAPS, the new VOA traffic scheduling system, and VOA’s Master Control facility.

From its inception, Task 7 went through a number of starts and stops. Determining the requirements of Task 7 took up much of 2002. In November of that year, the contract was awarded to Dalet as a formal modification to the original IDAPS contract at a cost of about \$984,000. By April 2003, project documents show that it was halted because several critical elements had been overlooked in developing the design requirements. In May 2003, it was projected that Task 7

would end about February 2004. Over the next several months, additional requirements were finalized and funding trade-offs were explored. In late August 2003, IBB awarded initial change orders to address the required system enhancements at a cost of about \$100,000. However, additional Task 7 changes were put on hold until VOA could review them in the context of other competing funding priorities, such as equipment replacement for the its core studios. Subsequent to the August changes, information from the IBB Contracts Office shows that the contract was formally modified six times at an added cost of about \$241,000. As of the end of FY 2004, total Task 7 costs were \$1.5 million.

As of October 2004, the Office of Contracts reported that work was proceeding on Task 7, and the first segments of Automation, Playback, and Record services had been installed into the VOA Central Recording area. In June 2005, the Office of Contracts reported that according to the project manager unexpected software interface problems were holding up the completion of Task 7 but these problems were expected to be resolved and IBB would accept the finished task in August 2005. The Contracts Office told OIG that closeout of the contract would follow after Task 7 but would be before the end of FY 2005. As of June 2005, expenditures on this contract had reached about \$14.2 million.

Television

Since the start of the digital upgrade program in 1994, about \$10 million has been expended for digital video broadcast infrastructure and production equipment. For a period of about four years beginning in 2000, BBG television was undergoing major change with the merger of WORLDNET and VOA. During this period, in late FY 2000, IBB project information shows that the final television project was identified: the procurement of a prototype video file server to replace video tape systems. After a funding shortfall in FY 2001, the project was ready for award at the end of FY 2002. However, television officials stopped the process because of concerns that the formal system requirements were not adequate. After the development of new specifications, a RFP was issued in July 2004.

In October 2004, information provided to OIG by IBB's Office of Engineering indicated that the project had been expanded from the original prototype video file server to a new Digital Video News Management System because of the sharp rise in television production demand. The new baseline system, similar in function to IDAPS, would allow VOA to manage, process, and broadcast high-quality television programs worldwide. The system also would be scalable to allow for the future expansion of television production. In October 2004, IBB was reviewing

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vendor proposals for the new video management system. In July 2005, the Office of Engineering informed OIG that the contract for the new digital video system had been awarded and that contract completion is estimated to be August 15, 2005. As of July 2005, the contract value was about \$2.2 million and IBB expected this to be the final value.

ABBREVIATIONS

BBG	Broadcasting Board of Governors
GFE	Government Furnished Equipment
IBB	International Broadcasting Bureau
IDAPS	Integrated Digital Audio Production System
OIG	Office of Inspector General
RFP	Request For Proposal
SNAP	System for News and Programming
USIA	U.S. Information Agency
VOA	Voice of America

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APPENDIX A

VOA Digital Upgrade Program: Project Information

Starting under USIA, the transformation of international broadcasting operations from analog to digital technology formally began with the launch of the Digital Technology Project in February 1994. Later in the same year, the project was merged with plans to digitize other parts of the broadcasting bureau. Implementation of the digital changeover involved a number of projects that followed a coordinated and integrated approach. Each included a number of key sub-elements to support the digital transformation.

SNAP/MASTER CONTROL REPLACEMENT

The earliest projects in the overall digital upgrade program included the SNAP Replacement and the VOA Master Control Facility; contracting and procurement on both began in 1996. One of the primary sub-elements of the SNAP project was installation of the fiber optic Asynchronous Transfer Mode, which facilitated the “one box” approach by eliminating the need to build two parallel networks to accommodate IBB’s standard local area network data and the high-speed distribution of audio information. Another major SNAP sub-element included the preparation and deployment of about 1700 personal computers and laptop computers. Replacement of the VOA Master Control Facility was designed to digitize and expand audio signal intake, routing, and distribution in support of the production and delivery of VOA radio programs. Sub-elements of this project included replacement of House Audio Distribution system (Monitron) and implementation of a new Traffic Scheduling System. IBB project management information shows that the Master Control facility went into service in January 1999; SNAP Replacement had a July 1999 completion date.

DIGITAL AUDIO PRODUCTION SYSTEM

Building on the foundation set by the SNAP and Master Control replacements, IBB moved forward on the final major initiative of the digital broadcasting program, a digital audio editing system to replace the existing 1970s-era analog audio-

tape production technology used by the VOA broadcasters. The analog system was a slow, labor-intensive process requiring the physical transporting and editing (i.e., razor blade tape editing) of spooled magnetic tape. At a time when analog equipment was becoming obsolete and the industry was migrating to digital technology, digital audio production was expected to be faster, cheaper, and to offer substantial benefits to audio quality with no essential loss of signal degradation during production. However, a significant challenge facing IBB planners was the scalability of the project. At the time, most off-the-shelf digital production systems being used commercially and by international broadcasters were designed for far fewer users. IBB information shows that the German broadcaster, Deutsche Welle, had the largest audio production system at the time, supporting about 100 broadcaster workstations. IBB plans, however, identified a need for a system that possibly could support about 400-600 workstations. Because of the unique nature of the project, IBB adopted a flexible procurement strategy for the digital audio production system. In September 1999, following federal procurement regulations for full and open competition, IBB awarded a \$3.2 million firm-fixed price contract to Dalet Digital Media Systems.

RADIO STUDIO EQUIPMENT

From the outset of the Digital Technology Project, there was an expectation that the VOA studios would need to be upgraded coincident with the digitization of the audio equipment within the broadcasting bureau. At the time, many of the existing audio studio systems (VOA core studios, Language Area Production studios, and Mix/Dub Studios) relied on analog technology that was becoming obsolete or inadequate. IBB project management information, as of October 2004, shows that under the digital effort 24 Mix/Dub studios⁵ were installed. Also, for the core and production studios, project data indicate that most of the basic analog components were replaced with digital components as part of the IDAPS project. Furthermore, digital consoles for the production studios had been purchased and were being installed by VOA technicians. VOA has requested FY 2006 funds to undertake a comprehensive studio renovation effort.

⁵ Small studio-type centers located throughout the BBG building providing the VOA broadcasters with the production assets to prepare their programs.

DIGITAL TECHNOLOGY FOR TELEVISION

The Digital Technology Project initiated in 1994 included the planned digitalization of WORLDNET.⁶ At the time, WORLDNET was located outside the main BBG headquarters. Digital plans called for refurbishing and upgrading television studios and the network switching center and the migration of audio and video production facilities to digital technology. In FY 1996, initial funds of \$1.6 million were used to procure digital audio and video equipment for WORLDNET. In February 1997, with the move of WORLDNET operations into BBG headquarters, the digital upgrade plans for television were reassessed and new requirements for television were developed, as appropriate. Funding was restarted again in September and October 1998 for such things as small digital newsgathering equipment, conversion of digital video-tape facilities, additional video editing equipment, and expansion of the digital television infrastructure. However, more changes for WORLDNET were to follow. In early 2000, BBG notified Congress of its plan to merge VOA and WORLDNET, which took place in May 2004. As of October 2004, IBB project management data show that expenditures for digital television equipment totaled about \$9.3 million.

⁶WORLDNET went out of existence following its merger with VOA, effective May 16, 2004. Television capabilities were to be integrated throughout VOA.

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APPENDIX B

**Listing of VOA Language Services
Polled/Responding to OIG
IDAPS Survey
(As of February 2004)**

Africa Division

- Response: Central Africa, English to Africa*, French to Africa*, Horn of Africa*
- No Response: Hausa, Portuguese to Africa, Swahili

European Division

- Response: Albanian*, Croatian*
- No Response: Bosnian, Estonian, Greek, Macedonian, Serbian, Bulgarian, Czech, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovak, Slovenian

East Asia Division

- Response: Burmese, Cantonese*, Indonesian*, Khmer, Korean*, Lao, Thai, Tibetan, Vietnamese
- No Response: Chinese, Mandarin

Latin America Division

- Response: Creole*, Latin Production (Note: 1)
- No Response: Spanish

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Near East and North Africa Division

Response: Azerbaijani*, Kurdish*, Turkish*

No Response: None

English Programs Division

Response: Special English, Special English (Music), Broadcast/English Production (Note: 1)

No Response: None

South and Central Asia Division

Response: Bangla, Dari*, Hindi*, Pashto*

No Response: Urdu, Farsi, Uzbek (Note: 2)

Eurasian Division

Response: Armenian, Georgian*, Russian

No Response: Ukrainian

* Language Service reported that it had completed Dalet on-air training.

Notes:

1/Unit was not classified as a separate service for compiling overall VOA response rate to survey. However, unit responses to survey questions were included in compilation of responses from all respondents.

2/The service returned the survey questionnaire but did not answer any of the questions; therefore, it was treated as a nonresponse in compiling survey results.

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