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

Report of Inspection

The International Broadcasting Bureau's Delano, California, Transmitting Station

Report Number IBO-I-05-05, March 2005

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KEY JUDGMENTS

- The Delano Transmitting Station has two missions. The first is to provide shortwave transmissions to Cuba, the Caribbean, Latin America, and the Pacific Ocean. The second is to serve as a gateway for the Satellite Interconnect System (SIS).
- The Delano Transmitting Station serves a crucial role as an SIS gateway to the Far East, the Caribbean, Central and Latin America, Cuba, Thailand, Micronesia, the Pacific Ocean, Oceania, and the Indian Ocean region.
- Radio Marti programming accounts for approximately 50 percent of the Delano Transmitting Station's shortwave transmissions.
- Morale at the Delano Transmitting Station is generally high. Most employees told the Office of Inspector General (OIG) that the current management team is one of the best they have ever seen.
- The Delano Transmitting Station has a diverse staff, including its first female, electronics technician. The station is undergoing a transition to newer, less-experienced staff. In 2003, Delano lost seven individuals to retirement or attrition, losing 127 years of combined experience. Over the next three years three additional staff, with over 105 years of combined experience, will be eligible to retire. Given this transition in its human capital, the station needs to take more deliberate steps to ensure succession and readiness.
- The Delano Transmitting Station is using appropriate management controls for purchase card use, procurement, and motor pool operations. However, there is room for improvement in the area of property management.

This inspection assessed the operations of the International Broadcasting Bureau's (IBB) transmitting station in Delano, California, including its program management, program performance, and management controls. The inspection took place in Washington, D.C., from November 8 to November 12, 2004, and in California from November 15 to November 19, 2004. Assistant Inspector General Louis A. McCall, Auditor-In-Charge Michele Anderson, and Management Analyst Maria I. Hart conducted the inspection for the Office of International Broadcasting Oversight in accordance with quality standards prescribed by the President's Council on Integrity and Efficiency. A previous OIG report that discussed the Delano Transmitting Station was *Review of the Broadcasting Board of Governors' Transmission Delivery System* (Report No. 00-IBO-033, September 2000).

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CONTEXT

HISTORY

The Delano Transmitting Station arose from a wartime initiative, in June 1942. The Office of War Information, established in response to the need for accurate information during World War II, determined that shortwave radio stations on the U.S. West Coast were necessary to support the war effort in the Pacific theater. These radio stations countered propaganda broadcast from Japan and provided much-needed entertainment to Allied troops throughout the Pacific.

After extensive research and testing, Delano and Dixon, California, were chosen as the two best sites on the West Coast because of their strategic locations and the ability of signals from those points to reach the Caribbean and Asia. Construction began at Delano in February 1944, and Dixon was established in 1947. A transmitting station with a similar wartime mission, the Bethany Transmitting Station, began broadcasting in 1944 from West Chester, Ohio. By November 1944, the Delano station was on the air under contract with the Columbia Broadcasting System (CBS Radio). It had two 50 kilowatt (kW) shortwave transmitters broadcasting to the Pacific. A 200 kW shortwave transmitter began broadcasting in 1945.

At the end of World War II, Voice of America (VOA) was given the mission of broadcasting news and information to overseas audiences. The Delano station aimed its broadcasts to the Far East and relayed programs via shortwave to VOA facilities in Hawaii, Okinawa, and the Philippines, where they were retransmitted.

The beginning of the Korean War prompted additional funding and the modernization of VOA. At the close of the conflict in 1953, VOA was placed under the newly formed United States Information Agency. CBS Radio maintained and operated the Delano facility until November 1, 1963, when the U.S. government assumed operational control of the station. Another U.S.-based transmitting station began broadcasting from Greenville, North Carolina, in January 1962.

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In 1965, in reaction to the Cuban Missile Crisis, the Delano station underwent an extensive modernization. The work included a structural addition to the main transmitter building and the installation of three new, Collins, 250 kW, automated, shortwave broadcast transmitters and two Continental, 50 kW, independent, sideband transmitters. These sideband transmitters were needed to feed program material with greater reliability to the Philippines station, Europe, and Africa. This work, completed in 1968, more than doubled the station's power output.

During the Vietnam War, additional modifications were made to improve reception. The next phase of modernization occurred in 1985, when four 250 kW Brown Boveri transmitters replaced the three original transmitters, which had been in service for more than 40 years.

In 1988, a multi-band, curtain-array antenna was installed; the antenna can be electronically aimed to better serve the station's broadcasting needs. Also in 1988, in a major augmentation of its mission, the Delano Transmitting Station became part of the global SIS. The Delano Transmitting Station now functions as a satellite earth station, providing radio program feeds to two transmitting sites in the Philippines and one in Thailand, while completing the global loop of circuits.

The Dixon Transmitting Station, which was located 250 miles north of Delano, was closed in the late 1980s because of budgetary constraints. In 1994, the

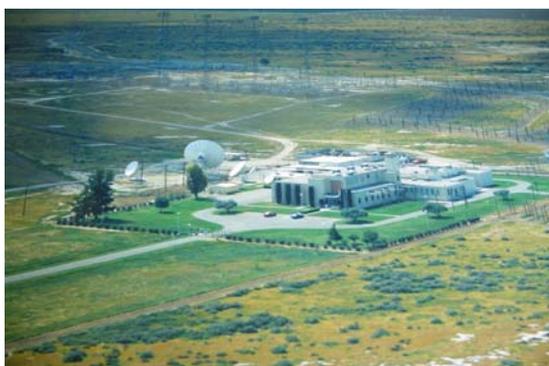


Photo 1: Aerial view of Delano Transmitting Station
Source: Delano Transmitting Station

Bethany Transmitting Station closed, leaving Delano and Greenville as the only IBB transmitting stations on the U.S. mainland. As of today, Delano is the last broadcasting facility in the United States to use Collins transmitters. These transmitters, which are noted for their highly durable design, formerly operated 20 hours a day. Now, due to their relatively inefficient power consumption, Delano only uses them minimally,

primarily to provide back-up substitution, as required, for some programs normally broadcast by the Greenville Transmitting Station. Nestled on 800 square acres of open field, the Delano transmitter site is also a home to three endangered species: the Tipton kangaroo rat, the blunt-nosed leopard lizard, and the San Joaquin kit fox.

MISSION

The Delano Transmitting Station's missions are providing shortwave transmissions to specified target areas and serving as a gateway for the SIS.

Figure 1: Languages Used In Delano Station's Broadcasts

Delano's Shortwave Broadcasts*	
Broadcast Entity and Target Audience	Language
Office of Cuba Broadcasting Cuba	Spanish
Voice of America Caribbean, Latin America, and Pacific Ocean	Creole, Spanish, Special English
Elliniki Radiofonia Tileorasi - Greek Government Broadcasting Eastern North America, Pacific Ocean, and Oceania.	Various, including Greek
British Broadcasting Corporation Caribbean, Central America Latin America.	English, Spanish
The Royal Thai Government - Ministry of Foreign Affairs, Thailand	Thai

Source: Delano Transmitting Station

* The station provides transmission for the British Broadcasting Corporation, as part of a contract with Merlin Communications International Ltd. in the United Kingdom. The station also provides transmission for Elliniki Radiofonia Tileorasi, as stipulated in the 1997 country-to-country agreement with the Government of the Hellenic Republic. The agreement allows the U.S. government to operate radio facilities in Kavala and Rhodes, Greece. IBB transmits programming through Delano for the Royal Thai government as part of the Broadcasting Board of Governors' obligations under the amended bilateral agreement for the operations of IBB's Thailand Transmitting Station.

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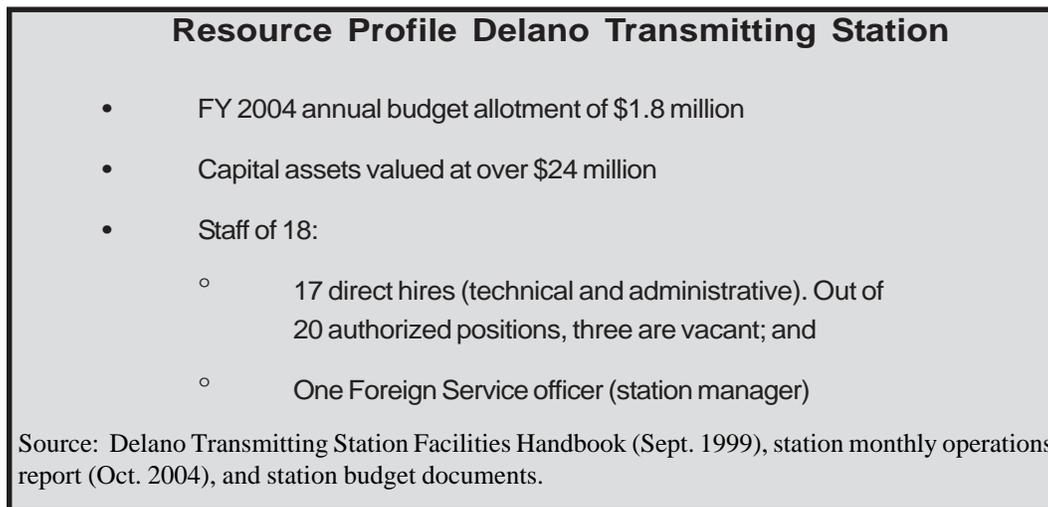
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PROGRAM MANAGEMENT

MANAGEMENT CHALLENGES

The Delano Transmitting Station operates in a benign environment in a rural farmland setting. The challenges facing station management are fulfilling the station mission with a reduced staff, managing the transition of the staff composition from older experienced employees to newer less experienced employees, maintaining dated equipment for shortwave broadcasting, working within a budget that can be battered by the vagaries of California's electrical power supply and pricing situation, and working under the regulatory restrictions of having endangered species on site and conforming to California's strict environmental rules for the use of pesticides and hazardous materials. The station manager and transmitter plant supervisor form a cohesive team and have risen to these challenges.

Figure 2: Resource Profile, Delano Station



STATION MORALE

Morale at the Delano Transmitting Station is generally high. Some employees are in their initial work experience with a transmitting station, although others have worked previously with other IBB stations or in the private sector with suppliers of transmitters used by IBB. Most employees told OIG that the current management team is one of the best they have seen. However, a few employees related experiences and disappointments regarding micro-management, a perceived lack of recognition, and a desire for safety enhancements. Nevertheless, although these employees had personal issues, they all agreed that overall morale at the Delano Transmitting Station was high. Some also noted that, in their opinion, management has learned, made adjustments, and improved. OIG found no instance where procedures established by management violated safety standards. OIG found safety to be important to station management, and the station's excellent safety record bears testimony to this.

PROGRAM PERFORMANCE

OVERSIGHT FOR DELANO TRANSMITTING STATION

The Delano Transmitting Station delivers over 18,000 hours of programming annually. Programs are received from Washington, D.C., via digital satellite and a high-speed landline circuit and are decoded at Delano and routed to the proper transmitters and antennas. A computer-controlled audio-switching console in the control room routes the correct program to the schedule transmitter.

Delano is only partially automated and requires highly skilled technicians on site around the clock. As technology evolves and improves, several computer-controlled and/or monitoring projects are currently underway. The largest is to automate control of the radio-frequency switchbay, which will allow audio programs to be switched automatically to various transmitters. This new system will also remotely start reel-to-reel tape machines, cartridge-tape machines, and compact disc players, to provide sign-on and sign-off announcements and local emergency programming as required.

TRANSMITTER AND ANTENNA MAINTENANCE AND AVAILABILITY

The Delano Transmitting Station carries out its shortwave transmissions using three 250 kW Collins Radio Company transmitters and four 250 kW Brown Boveri transmitters. The solid-state modulators of the Boveri transmitters make them more efficient than the vacuum-tube operated Collins transmitters. Additionally, there are two 50 kW, Continental Electronics, independent, sideband shortwave transmitters that are maintained as back up systems for the satellite circuits feeding the Philippines. In the station's antenna field, there are 16 curtain antennas and six rhombic antennas. These antennas cover the primary reception areas in Southeast Asia and Central America. All of the transmitters can be connected to any antenna through a radio-frequency switchbay.

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Delano maintains an availability rate of more than 99 percent. As the station ages and the equipment matures, the on-going high maintenance and needs of the equipment place great demands upon the technical staff. Though the station now faces the challenges of equipment burnout, the cost of ordering parts has decreased tremendously over the past few years because of the expertise of the engineers. Many of the parts and equipment that keep Delano on the air are no longer available because of age and the cost to manufacture them. When the Bethany and Dixon transmitting stations closed, Delano salvaged parts that cannot be purchased any longer, to save money. Much of the equipment from these stations were prototypes and Delano stores them until needed. The closing of these two stations allowed Delano to function more economically, reusing parts that would have otherwise been discarded or destroyed.

Because of some equipment shortages, station management said the station had to hire a crane to repair the main antenna, at a cost of from \$2,000 to \$3,000 per repair call. The high cost forced the station to put off some repairs until a major



Photo 2: Rigger at 200 feet doing antenna maintenance
Source: Delano Transmitting Station

matter required the crane, which permitted the minor matters to be taken care of. Within the next few months, Delano will acquire an urgently needed piece of equipment called a swing stage, which was constructed especially for the U.S. government. The lift was excessed by the Tinian Transmitting Station and can hold up to two men, thus enabling Delano to save an average of \$2,000 to \$6,000 per fiscal year in repair costs.

SATELLITE INTERCONNECT SYSTEM

The Delano Transmitting Station serves a crucial role as an SIS gateway to the Far East, the Caribbean, Central and Latin America, Cuba, Thailand, Micronesia,



Photo 3: Satellite dishes at Delano Station
Source: Delano Transmitting Station

the Pacific Ocean, Oceania, and Indian Ocean regions. In 1988, Delano took on a new major role. A direct, two-way, satellite link was installed between the station and the Washington, D.C., headquarters, delivering up to 32 audio circuits to the site. Since then, the number of circuits has increased to 48. Assorted data links, radio and video programming, and telephone circuits also connect through this system.

ASSISTING THE GREENVILLE STATION

IBB's Network Control Center (NCC) in Washington, D.C., has occasionally called on Delano to substitute broadcasting various programs for the Greenville Transmitting Station. If a technical problem keeps the Greenville station from transmitting a program, the NCC notifies Delano as late as five minutes before the Greenville broadcast is scheduled to air. The Delano station has always met the deadline and substitutes for Greenville from 10 to 100 hours a month. The Greenville station's broadcast schedule is double that of Delano's, and Greenville has little reserve capability. However, Delano has its Collins transmitters in reserve.

JAMMING AND THE OFFICE OF CUBA BROADCASTING (OCB)

IBB has a remote monitoring system that enables Delano to follow broadcast transmissions to Cuba and actually hear programming from the day before. Besides assessing the extent of the jamming of Radio Marti broadcasts by the Castro

regime, the Delano station broadcasts Radio Marti on shortwave over several frequencies to circumvent as much of the jamming as possible. Because Radio Marti programming accounts for approximately 50 percent of Delano's shortwave transmission and electricity consumption, the OCB pays its share of the station's electricity bills.

FACILITIES

In the 1960's the Delano station underwent a major renovation, adding a new brick portion to the front of the original structure, built in 1944-1945. The station complex consists of the main transmitter and administrative building and several smaller structures that serve as shelter and storage for equipment, the mechanical/rigger shop, and well pumps. The radio frequency transmission lines and the antenna systems require most of the remaining 800 square acres of space. The capital cost for the Delano station exceeds \$24 million; however, the replacement costs exceed this by several times.

Figure 3: Delano Transmitting Station Capital Investment Costs

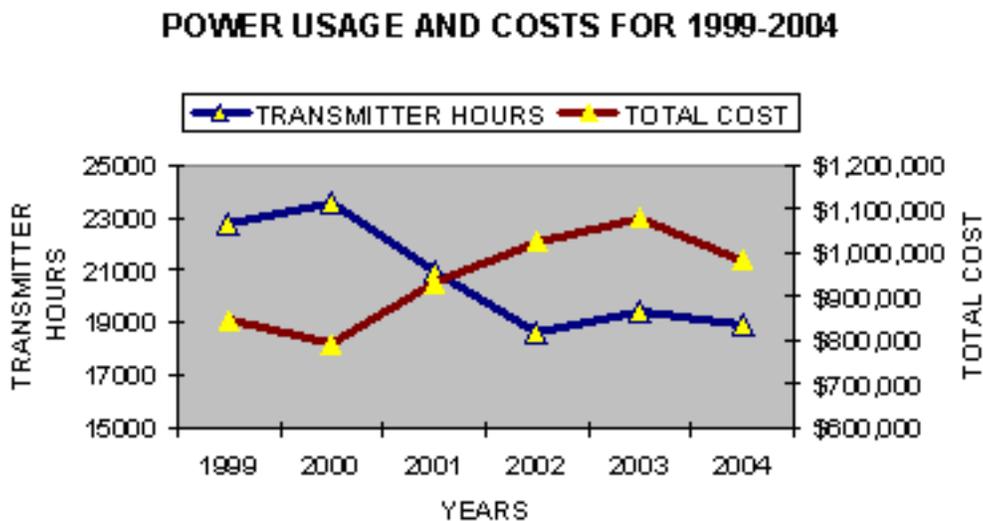
Category of Cost	Current Value
Land	\$ 197,448.00
Buildings	1,846,790.00
Other Structures	44,557.00
Satellite interconnect System	1,341,632.00
Antennas/Receivers/Communications Equipment	15,512,763.00
Power Equipment Generators Switch Gear	162,587.00
Transmitters	5,164,225.00
Total	24,270,002.00

Source: Delano Transmitting Station

COMMERCIAL POWER

The Delano Transmitting Station uses commercial power supplied by Southern California Edison. There are two voltage feeders into the substation with automatic switch-over. A small backup generator maintains the SIS. A large uninterrupted power supply is connected to the gateway earth station, and a smaller one is connected to the shortwave control room.

Figure 4: Power Usage and Costs



Source: OIG chart derived from Delano Transmitting Station records.

Delano's operating costs fluctuate monthly, mostly due to California's on-going issues with acquiring and disseminating electrical power. With an average use of 700 kW per month, the station's electrical power usage can run as high as \$2,200 a day. However, good management has been able to stem much of the expense through various transmission techniques and in-house energy conservation. In FY 2004, the Delano station spent a little over \$981,000 for power, approximately \$200,000 less than in FY 2003.

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HUMAN RESOURCES

The President's Management Agenda addresses the strategic management of human capital and the importance of human resource planning. The Delano Transmitting Station has a diverse staff, including its first female electronics technician, and is undergoing a transition to newer, less-experienced staff.

WORKFORCE CONCERNS

Delano's authorized staffing level includes a station manager and 20 technical and administrative positions. Because three technical positions are vacant and the station has aging, high-maintenance equipment, balancing the workload is a challenge. The station has three eight-hour shifts. On at least two to three days out of a 10-day period, there are at least three individuals on the evening and overnight shifts, but these shifts generally operate with only two people, the minimal number for safe operations. With reduced staff, scheduled maintenance during the evening and overnight shift is not always done in a timely manner; however, maintenance is completed as soon as possible. The station manager told OIG that essential maintenance always gets done.

In 2003, Delano lost seven individuals to retirement or attrition, representing a combined loss of 127 years of experience. Though skilled and performing well, the newly hired staff has yet to match the amount of knowledge lost. Over the next three years, three additional staff members, having a combined 105 years of experience, will be eligible to retire. Station management noted that the pending retirement of one of the three would result in a tremendous loss of institutional knowledge and expertise. Shortly after arriving, the management had to quickly hire five individuals. Otherwise, the station has been stymied by a hiring freeze. The vacancies have required everyone to put in some overtime, but the staff's willingness to take on extra work during normal shift schedules has reduced the need for excessive overtime. Station management said effective manipulation of scheduling has helped in keeping abreast of scheduled maintenance, repairs, and emergency matters.

TRAINING

The President's Management Agenda supports staff development through training. The Delano station has taken the initiative to maintain staff training via in-house and external opportunities. Because all of the station's work is highly specialized, two or three of the senior shift supervisors take time to train newcomers and to offer constant on-the-job training, as the need arises. Training opportunities are supported and encouraged for all positions. Some of the seasoned employees who have exceptional skill levels train on their own and update their knowledge from outside sources.

Management has developed an intense, 18-page, in-house certification program, which assesses the skill levels of newly hired employees. Each new employee is required to complete the program's requirements. Management said the program did not have any specific completion dates, because management did not want to impose more stress on an already duty-stretched staff. However, the transmitter plant supervisor, who is the training officer, stated that he has told the staff that it should only take six months to achieve each skill level and the entire certification program should take approximately 18 months to complete. Given the transition in human capital that is underway, the station needs to set specific deadlines for completing the certification program and incorporate the guidelines into a Station Management Instruction, to ensure better succession and readiness.

Recommendation 1: The International Broadcasting Bureau should review the staffing needs of the Delano Transmitting Station to determine whether one or more vacancies should be filled at this time. (Action: IBB)

The BBG agrees with this recommendation and indicates that staffing issues at many stations, including Delano, will be addressed when the budget situation improves.

Recommendation 2: The International Broadcasting Bureau should ensure that the Delano Transmitting Station establishes timelines for employees to progress through its certification program. (Action: IBB)

The BBG agrees with this recommendation and advised OIG that, as of February 2005, all current employees required to participate in the certification plan have completed all skill requirements. BBG also noted that Station Management Instruction Number 16 has been issued to address the establishment of a timeline for all future participants in the certification program.

SAFETY AND EMERGENCY EVACUATION PROCEDURES

The Delano Transmitting Station has thorough emergency evacuation and safety plans, but it is not clear whether all the employees are fully aware of what to do if there is a need to act on either plan. Station management said they have concentrated on training employees in using fire-suppression equipment and providing cardio pulmonary resuscitation, rather than focus on drills. The Delano Transmitting Station is not faced with the extent or types of emergency situations common to overseas locations. Delano's emergency plan lists both natural and man-made hazards, with fires being at the top of the list of natural hazards. The station manager is authorized to establish and implement the station safety plan by the Manual of Operations and Administration Part IV, Sections 460-470. Section 7.10 of the station safety plan states that fire drills are to be held quarterly. The first few minutes are vital in fire fighting, when lives and/or property are threatened. Fire drills ensure that the staff knows the proper exits and procedures, to preserve life and facilitate an evacuation.

Most of the staff said they felt relatively safe at the station; however, some were concerned regarding proper manpower coverage, when conducting maintenance and repairs. OIG discussed this with station management and was satisfied by management's sensitivity to the issue and the steps immediately taken to discuss staff concerns at the next scheduled meeting.

Recommendation 3: The International Broadcasting Bureau should ensure that the Delano Transmitting Station establishes and implements procedures for quarterly fire drills. (Action: IBB)

The BBG concurs with the requirement to conduct drills, noting that demonstrations and drills are an integral part of any fire prevention program.

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MANAGEMENT CONTROLS

OIG found that the station was using appropriate management controls for purchase card use, procurement, and motor pool operations. However, OIG found room for improvement in the area of property management. In addition, the station manager has all guidance available online, including station management instructions, standard operating procedures, and maintenance procedures.

PURCHASE CARD USE

The Delano Transmitting Station has neither an imprest fund nor a cashier. The Delano station has three individuals with purchase cards. OIG did a cursory review of the credit card statements and found the records are maintained in accordance with the guidelines.

CONTRACTS AND PROCUREMENTS

The station is responsible for adhering to proper U.S. government procurement rules (Federal Acquisition Regulation, Section 13). In addition, it uses Transmitting Station Instruction 104. OIG reviewed selected contracts and purchases and found no irregularities.

The station manager and the administrative officer have contracting warrants for up to \$100,000, for simple acquisitions. The plant supervisor has a warrant for up to \$50,000. All had their warrant certificates available for inspection, and their training was current.

PROPERTY MANAGEMENT

Transmitting Station Instruction 108 prescribes the policies and procedures for property accountability. OIG found some areas where the Delano Transmitting Station could improve on the controls over accountable property.

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The station has eight property custodians for its real and non-expendable property, but the expendable property stocked by the station is not subject to an annual physical-inventory check. According to the station's supply technician, the last physical inventory on expendable property was conducted in 1991. Station management said this was because station staff assumed an inventory was not required, that other measures sufficed, and because the station has over 3,000 online listings in its inventory. However, when spot inventory checks were done, discrepancies were found in the recorded count and the on-hand balances.

At the Delano Transmitting Station, persons receiving parts must complete an in-house-developed form that is submitted to the supply technician. However, forms are not consistently completed when supplies and parts are removed from inventory. According to the station manager, an employee in the heat of the moment while making a repair may forget to complete the form. The station manager did assert that some discrepancies are resolved by reconciling balances with maintenance logs. When records are not maintained accurately, it could hamper the station's transmission, should critical parts and supplies be absent when needed.

Another concern is that there is no restriction on access to parts and supplies, and one person does not control access to parts and supplies. Parts and supplies are accessible to anyone at the Delano Transmitting Station, in part because everyone has master keys. Parts and supplies are housed in various locations. The station manager prefers having parts immediately accessible, in the interest of performing timely maintenance and repairs during Delano's three shifts.

OIG found the parts warehouse open and unattended. Parts for the Collins transmitters are stored in the same room with the transmitters, and parts for the Brown Boveri transmitters are stored in the same manner. The riggers have their own open parts area. There is a bulk-storage area outside, three metal containers hold parts from the closure of the Bethany transmitting station, and a small wooden building also provides additional storage. Although it is convenient to house parts and supplies near where they will be used, parts should be secured in a controlled-access area behind a locked grille or cabinet. If there is no control over the access to parts and supplies, there is more likelihood of errors in inventories and record-keeping. Potentially, replacement parts may not be on hand when needed.

Transmitting Station Instruction 108 states that "the transmitting station manager ... is the accountable officer for the site." The Accountable Officer is responsible for managing and accounting for all property under the control of the

site. Section 108.6 specifically states that a physical inventory to verify the on-hand balance, shown on the expendable record, will be conducted once each year.

Recommendation 4: The International Broadcasting Bureau should ensure that the Delano Transmitting Station's station manager establishes and implements procedures for a physical inventory to be conducted annually on expendable property. (Action: IBB)

The BBG concurs with the recommendation.

Recommendation 5: The International Broadcasting Bureau should ensure that the Delano Transmitting Station's station manager establishes procedures and controls to ensure accurate accounting of parts and supplies. (Action: IBB)

The BBG concurs with the recommendation.

Recommendation 6: The International Broadcasting Bureau should ensure that the Delano Transmitting Station's station manager establishes procedures that restrict access to parts and supplies to a few individuals. (Action: IBB)

The BBG does not agree with this recommendation, as it believes restricting access to parts and supplies is not a viable policy.

MOTOR POOL OPERATIONS

The station has a motor pool consisting of two rigging trucks, two medium-duty trucks, one pickup truck, and one mid-size sedan. There are appropriate maintenance and fuel files and records for each vehicle. Mileage logs are kept in each vehicle. No official vehicles are used for home-to-office transportation.

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RECOMMENDATIONS

Recommendation 1: The International Broadcasting Bureau should review the staffing needs of the Delano Transmitting Station to determine whether one or more vacancies should be filled at this time. (Action: IBB)

Recommendation 2: The International Broadcasting Bureau should ensure that the Delano Transmitting Station establishes timelines for employees to progress through its certification program. (Action: IBB)

Recommendation 3: The International Broadcasting Bureau should ensure that the Delano Transmitting Station establishes and implements procedures for quarterly fire drills. (Action: IBB)

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PRINCIPAL OFFICERS

	<u>Name</u>	<u>Arrival Date</u>
Station Manager	Michael Hardegen	Jan. 18, 2003
Transmitter Plant Supervisor	Clifford J. Smith	Sept. 24, 1989

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ABBREVIATIONS

CBS	Columbia Broadcasting System
IBB	International Broadcasting Bureau
kW	kilowatt
NCC	Network Control Center
OCB	Office of Cuba Broadcasting
OIG	Office of Inspector General
SIS	Satellite Interconnect System
VOA	Voice of America

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Appendix A: Transmitters, Broadcasters, Languages, and Targets

Transmitter Number & Power¹	Broadcaster and Program Language	Target Area
DL – 01 250 kW	Voice of America Spanish	Central America South America
	Office of Cuba Broadcasting/Radio Marti Cuban Spanish	Cuba
	British Broadcasting Corporation English	Central America South America
	British Broadcasting Corporation Spanish	Central America South America
	Elliniki Radiofonia Tileorasi English and Greek	Eastern North America
DL – 02 250 kW	Voice of America Spanish	Central America South America
	The Royal Thai Government English and Thai	Pacific West Coast North America
	Elliniki Radiofonia Tileorasi English and Greek	Western Pacific Area
DL – 03 250 kW	Office of Cuba Broadcasting/Radio Marti Cuban Spanish	Cuba
	Elliniki Radiofonia Tileorasi English and Greek	Eastern North America
DL – 04 250 kW	VOA Worldwide English	Central America South America
	Office of Cuba Broadcasting/Radio Marti Cuban Spanish	Cuba
	British Broadcasting Corporation English	Central America South America
DL – 06 250 kW	British Broadcasting Corporation Spanish	Central America South America
DL – 07 250 kW	Voice of America Spanish	Central America South America
DL – 08 250 kW	Voice of America Creole	Haiti
	Voice of America Creole and Spanish	Central America South America Haiti
DL – 09 50 kW	Standby	To Be Determined
DL – 10 50 kW	Standby	To Be Determined

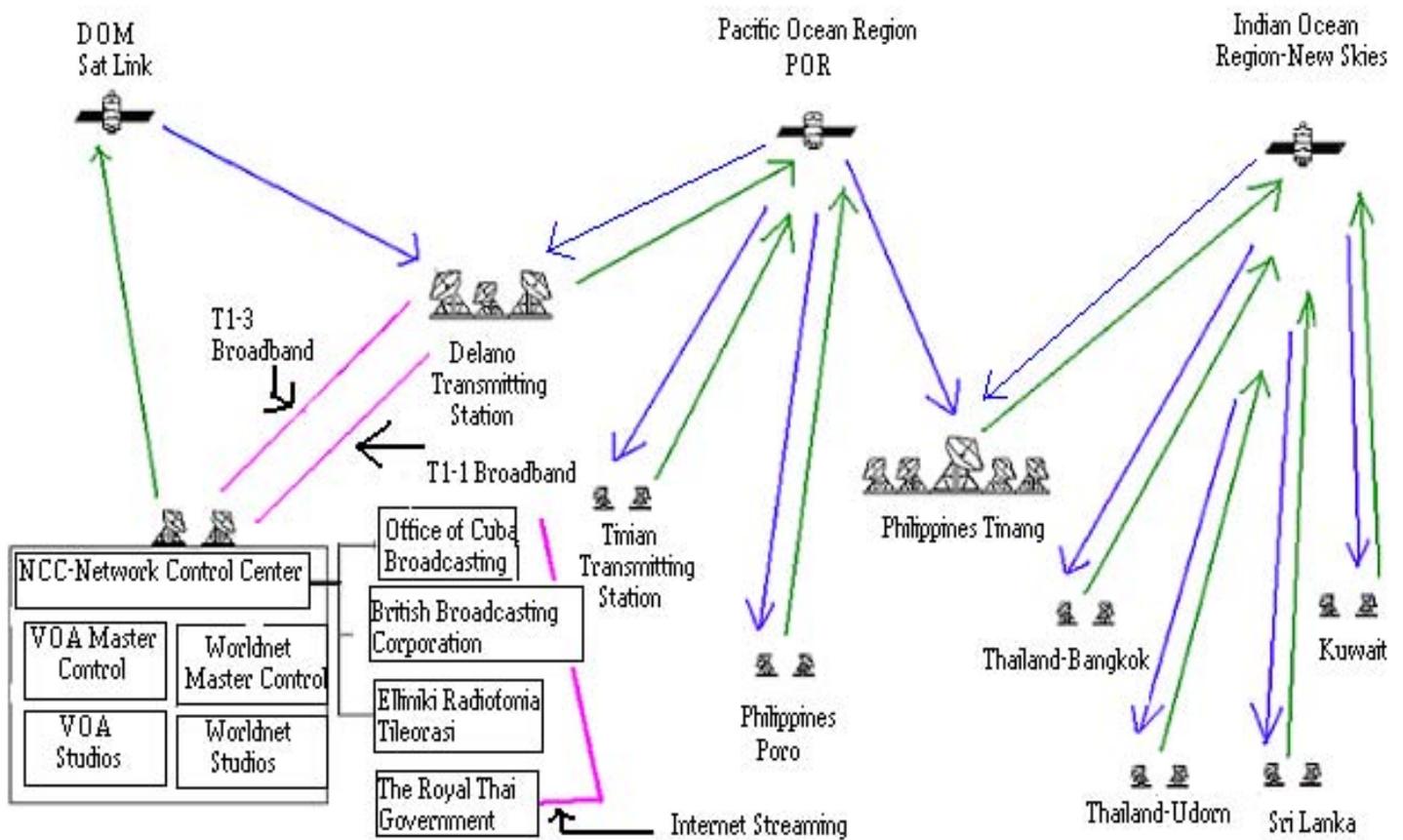
Source: Delano Transmitting Station, November 2004

¹ Delano does not have a DL-05 transmitter or make use of that transmitter number.

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Appendix B: Delano Satellite Interconnect System Role



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Appendix C: Cost per Broadcast Hour FY 2004

Transmitter*	Carrier Hours	Power Cost Per Broadcast Hour (U.S. dollars)**	Total Cost Per Broadcast Hour (U.S. dollars)**
DL-01	5,750	39.18	51.88
DL-02	2,872	39.18	82.04
DL-03	4,743	39.18	55.17
DL-04	4,614	39.18	56.12
DL-06	287	72.05	241.93
DL-07	770	72.05	80.78
DL-08	1,220	72.05	77.92
TOTALS		372.87	\$645.84

*Transmitters DL-01, -02, -03, -04 are Brown Boveri transmitters. Transmitters DL-06, -07, and -08 are Collins transmitters.

** Total Cost per Broadcast Hour includes Parts Cost per Broadcast Hour.