

REPORT TO CONGRESS
ON TV MARTI TEST BROADCASTS TO CUBA

EXECUTIVE SUMMARY:

TV Marti television broadcasts to Cuba, which began on March 27 and have continued generally between 0345 to 0645 (local time), have demonstrated that:

- o A clear and an excellent quality TV Marti signal reaches Havana, Cuba, from its broadcast site at Cudjoe Key, Florida.
- o Foreign and domestic stations are not being subjected to any adjacent and co-channel interference from TV Marti.
- o The Government of Cuba has consistently and effectively jammed the TV Marti signal since broadcasts began.
- o There is widespread interest among Cubans in seeing TV Marti, notwithstanding its early morning broadcast hours and GOC jamming.
- o Although there is no effective way to overcome Cuban jamming, there are areas where jamming does not interfere with the TV Marti signal.
- o Because of the difficulty in obtaining reliable information about the reception of TV Marti, the actual size of the audience is unknown.
- o The Cubans have effectively prevented reception of the Radio Marti medium wave am signal by counterbroadcasting on that frequency.
- o International and bilateral reaction to TV Marti has been restrained but generally unfavorable.
- o The International Frequency Registration Board has objected to the across border broadcasts, asking that the USG change the manner in which it operates TV Marti.
- o International telecommunications commitments of the USG have been observed throughout the TV Marti test period by transmitting TV Marti when no regular Cuban service is using the same channel.

TECHNICAL FEASIBILITY:

Extensive testing, monitoring and observation has shown that the TV Marti antenna and transmission system has met all

technical specifications and requirements put forth by the TV Marti Task Force, including National Telecommunication and Information Administration (NTIA) and the Federal Communication Commission (FCC). Essentially, these requirements include sending a grade A television signal into the city of Havana, while simultaneously protecting both foreign and domestic stations from adjacent and co-channel interference. Measurements taken during exhaustive testing over a three week period to construct antenna patterns demonstrate that the antenna does meet these stringent requirements. Measurements and observations made in Havana prove that the signal transmitted from Cudjoe Key is of high quality and has been described as "clear and bright," prior to Cuban jamming. It can also be concluded that weather conditions will occasionally (approximately 20% of broadcast time during the test period) cause TV Marti to be unavailable. Weather effects will vary according to season and time-of-day. Otherwise the TV Marti transmission system performs with high reliability.

NTIA AND FCC PERFORMANCE CRITERIA:

In accordance with NTIA/FCC rules and regulations, the TV Marti Task Force developed an antenna specification to meet strict domestic protection requirements. The Channel 13 station in Tampa and Channel 12 station in West Palm Beach were specific areas of concern within the United States. In Cuba, protection was required for the Channel 13 station in Matanzas.

Despite widely held concerns that the desired protection might be unattainable, the prime contractor, the General Electric Company, and its antenna subcontractor, the Multitenna Corporation, delivered a system with the critical antenna component that provided for protection for both domestic and foreign stations.

To allay concerns about interference, extensive tests of the TV Marti antenna system were conducted in two phases. First, low power and low altitude tests at Cape Canaveral defined the antenna pattern and produced over 140 patterns. Analyses showed that the antenna performed in accordance with specifications and provides protection to domestic stations. The second phase of tests conducted at low altitude at the Cudjoe Key Air Force Station demonstrated full compliance with domestic and foreign protection requirements.

In addition to stringent performance criteria for the antenna, the system included several safeguards to ensure that domestic broadcasting would be protected if the antenna were to become misdirected. First, the servo/pointing mechanism is

accurate to within +/- 0.5 degrees. An automatic shutdown circuit is activated if the main beam is off line by more than 0.5 degrees. Second, power output is set so as not to exceed the specified power limits. The entire system is controlled from the ground and the aerostat-mounted transmitter will not transmit without a signal provided by the ground station.

RESULTS OF MONITORING IN THE U.S:

On March 27, 1990, TV Marti began its operational test. Several FCC and NTIA monitors were placed in southern Florida to cover the market areas of channels 12 and 13 to ensure that the conditions of the experimental license were met and that objectionable interference did not occur to other authorized TV stations. The NTIA report stated:

During the period of March 27 through 29, 1990, the NTIA measurement team while monitoring in the Tampa WTVT coverage area did not detect any signals from TV Marti on either the spectrum analyzer or on the TV set tuned to channel 13 that were used for monitoring during the initial turn-on period. Subsequent discussions with FCC personnel in the Tampa field office revealed that FCC's measurement team also did not detect any signals that were attributable to the test transmissions of TV Marti. Based on the results of monitoring during the trial operational period, NTIA concludes that TV Marti is operating in accordance with the design specifications and there is no indication that domestic TV viewers will be subjected to objectionable interference because of TV Marti's transmissions.

(NTIA and FCC reports are attached as addenda to this report.)

TV MARTI'S AUDIENCE IN CUBA:

To evaluate the actual TV signal that was received in the target area, US Interests Section personnel monitored the TV Marti broadcasts at the Interests Section building in downtown Havana. Direct feedback was available immediately. Prior to Government of Cuba (GOC) jamming, the TV Marti signal reception was reported to be very good. This was confirmed upon analysis of video tape of TV Marti VHF transmissions made by the Interests Section. Spectrum analyzer measurements showed the TV Marti signal and power level to be as good as or better than locally broadcast Havana television signals. It was reported that a good quality picture was received in Havana even when

the transmitter was operated at reduced power for operational reasons. These observations were made during the first week of TV Marti when the GOC did not jam the programming until 15 to 20 minutes after transmissions had begun.

Interests Section personnel have also monitored TV Marti from their homes in greater Havana, and by visiting outlying areas in and around a 100 mile radius of Havana with a portable television set in their cars. Less concentrated monitoring has been carried out throughout Cuba.

As predicted prior to the initiation of TV Marti, Cuban jamming is incomplete in some areas. Mobile and stationary monitors have been unable to receive the TV Marti signal in urban Havana because of effective Cuban jamming. However, mobile monitoring teams from the Interests Section were able to receive good audio and visual reception, despite Cuban jamming, at specific locations within a geographic area which runs from the northeast to the southwest of Havana. This area is 15 to 50 miles outside Havana and is approximately 10 miles wide by 60 miles long. The picture in these areas is clear and remained viewable during the period in which the monitors were present in the specific location. In some areas, however, when monitors moved a few blocks the picture was lost to jamming.

Based on the population in the reception area, the Interests Section concludes that there are a possible 50,000 to 70,000 individuals who could occasionally view TV Marti. Given that monitoring is carried out in a vehicle and on an occasional basis, the length of time during which viewers receive a reliable and good quality signal is unknown.

The Interests Section in Havana provided Cuban visa applicants with simple questionnaires designed to determine if they had seen TV Marti or knew of someone that had seen it. Of a sample population of 1,899 respondents, seven respondents claim to have received TV Marti clearly despite jamming, and seven other reported viewing a distorted but not totally jammed image. As an approximate 70% of the sample population lives in the TV Marti viewing area, this would indicate that about 0.5% of the population in the viewing area could receive a good picture.

The United States Information Agency (USIA) commissioned an independent survey research firm, Belden and Russonello, to survey Cuban immigrants and non-immigrants to the U.S. regarding reception of TV Marti. The survey period ran from March 27 (when TV Marti broadcasts began) to May 6, 1990. Interviews principally were conducted in the Miami

International Airport and the INS Krome Center from April 18 to May 6. The research firm of Schulman, Ronca, and Bucuvalas, Inc. analyzed and interpreted the survey data in a report entitled TV Marti Signal Strength Study: Final Report on Survey Findings.

The major findings of the study are:

- o 28% or approximately 273,000 households in the primary target area for TV Marti should be able to receive the broadcasts, at least occasionally.
- o There is considerable interference, which makes reception of TV Marti difficult and sometimes erratic.
- o External directional antennas have a significant impact on both the ability to receive TV Marti and the consistency of reception.
- o The interest in TV Marti, at least among this sample of Cuban tourists, emigres, and political refugees, is high. 81% of those surveyed who resided in the target area reported having tried to tune in TV Marti, many on several occasions.

The widely varying findings reported by the Interest Section and the USIA survey cannot be fully understood until we are able to conduct unimpeded research in Havana. This not an early prospect, since the GOC has refused visas to VOA technicians who were to be sent to Havana to assist in carrying out monitoring.

CUBAN REACTION:

TV Marti broadcast began on March 27 on channel 13. The GOC jammed the signal about twenty minutes into the initial broadcast. By the end of the first week, the GOC was able to jam the program within a few minutes after the broadcast began at 0345 and until it ended at 0645. While TV Marti is on-the-air, the GOC jams both the visual and audio program.

The channel 13 station in Alamar generally runs repeats of other local Havana television stations during the hours of 0700 to 0130. On July 2, Cuba began broadcasting programs on channel 13 at 6 a.m., and in turn, TV Marti shortened its broadcast hours to avoid harmful interference. Moreover, after the initiation of TV Marti, the GOC established another channel 13 station in downtown Havana. This station is scheduled to begin regular service on July 28. There is no television service on either of the channel 13 stations in the Havana area during the hours TV Marti broadcasts to Cuba on this channel.

The GOC has sent harmful interference complaints to the Federal Communications Commission and complained to the International Frequency Registration Board (IFRB) of the International Telecommunications Union about USG use of channel 13. The GOC considers TV Marti a violation of its sovereignty because TV Marti transmissions are directed at Cuba from US territory.

In April, the GOC began interfering with Radio Marti medium wave am broadcasts. The interference is effectively blocking medium wave reception in Havana. In mid-June the GOC announced that it was extending its interference to stations throughout Cuba. The high-powered Cuban counterbroadcasts on Radio Marti's frequency also cause harmful interference to radio stations in the am-band within the US. Fortunately, about seventy percent of Cuban listeners have access to Radio Marti on short-wave frequencies.

INTERNATIONAL AND BILATERAL REACTION:

International and bilateral reaction to TV Marti has not resulted in any demonstrable harm to US foreign policy. Although there has been a generally negative reaction, especially in Latin America, public statements by officials and commentators have been mild with few exceptions. Our European allies stated prior to the broadcasts that they noted that it was our intention to abide by our international obligations. The Soviet Union and Cuba have strongly stated their objections to TV Marti. Cuba considers TV Marti a violation of its sovereignty. There has been little if any commentary from Eastern Europe and Africa.

The Government of Cuba, as a member of the United Nations Security Council, attempted to obtain support from the members of the United Nations for a statement that would condemn TV Marti. It was unsuccessful.

In response to Cuban complaints of harmful interference and charges that the United States was violating Cuban sovereignty, the International Frequency Registration Board informed the USG that TV Marti operations do not conform to a regulation which in principle admonishes members to avoid across border broadcasts. The United States disputes the IFRB's interpretation of this regulation because many countries broadcast across borders. We believe that the IFRB argument is flawed and that the Board is acting beyond its scope of authority.

LEGAL CONSIDERATIONS

There is no legal basis for objection per se to radio and television broadcasts from one country to another. Article 19 of the Universal Declaration of Human Rights, a widely-cited but non-binding resolution adopted by the United Nations Assembly in 1948, provides that:

"Everyone has the right of freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers."

This concept is expressed in other international instruments including the International Covenant on Civil and Political Rights and the Helsinki Final Acts. While such provisions do not affirmatively grant governments the right to send radio or television programs into another country, the precedent is well established. Stations which operate across borders include the BBC External Service, Vatican Radio, Radio Berlin International (GDR), and until recently, Radio Moscow from Cuba in the English language. Initiatives undertaken by the United States in international broadcasting have further fostered the free flow of information. Radio Free Europe, Radio Liberty, and RIAS-TV (Radio-TV in the American Sector, Berlin) have provided information to those otherwise unable to obtain it; they have continued despite protestations from affected governments relating to program content and national sovereignty.

Radio Marti and TV Marti continue this tradition of VOA programming. The Government of Cuba, entities such as the Vatican, the Soviet Union, the United Kingdom, as well as other governments, have long engaged in the cross-frontier international broadcasting of information and ideas.

At the same time, however, there is an obligation not to cause harmful interference to another country's broadcasts. As the largest user of the electromagnetic spectrum, the United States actively supports the international legal regime which allocates the radio frequency spectrum and allows for the registration of radio frequency assignments in order to ensure orderly international use of the frequency spectrum and to avoid harmful interference between radio stations of different countries. Cuba and the United States are both party to the International Telecommunication Convention (Nairobi, 1982) and to the Radio Regulations (Geneva, 1979) which complement it. (The term "radio" encompasses all forms of broadcasting including "television".) The obligations described in these agreements relate to frequency use and are neutral with regard to program content of the signal.

The fundamental obligation regarding the use of radio (TV) frequencies as expressed in Article 35 of the International Telecommunication Convention is for radio transmissions to avoid harmful interference to frequencies used by other members:

"All stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to the radio services or communications of other Members...."

The Radio Regulations permit member countries wide latitude in their use of frequencies, notwithstanding other detailed provisions, so long as stations do not cause harmful interference.

"Administrations of the Members shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations given in this Chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and of these Regulations."

FUTURE OPERATIONS OF TV MARTI

TV Marti was designed and is operated so as to avoid harmful interference to Cuban, United States and third-country television services. The antenna which directs the signal carrying TV Marti programming was constructed to minimize side lobe radiation which could interfere with stations outside the Havana area. The antenna design is suitable for the frequency associated with channel 13, the channel unused by Cuba in the Havana area during broadcasting. Additionally, as the notification to the International Frequency Registration Board makes clear, the operating hours of TV Marti are selected so as to avoid harmful interference to a low power Cuban station, even though it seems to have been established by the Cuban regime principally to frustrate the prime time operation of TV Marti.

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FEDERAL COMMUNICATIONS COMMISSION'S
OBSERVATION OF TV MARTI

May 11, 1990

Federal Communications Commission
Field Operations Bureau
1919 M Street, N.W., Room 744
Washington, D.C. 20554

Executive Summary

Public Law 101-246, the Foreign Relations Authorization Act for FY 1990 and 1991, requires the Federal Communications Commission (FCC) to periodically report to the appropriate committees of Congress on interference to domestic broadcast licensees from the operations of TV Marti itself, and Cuban radio and television stations.

This is the FCC's first report and covers the period from TV Marti's first broadcast, March 27, 1990, through May 11, 1990, halfway through TV Marti's 90-day experimental period. Part I of this report concerns operation of TV Marti. Part II concerns interference from Cuban radio and television stations.

The FCC has found that:

- . TV Marti has not interfered with U.S. broadcast stations.
- . Cuban FM and TV stations have not interfered with U.S. broadcast stations.
- . A new occurrence of AM radio interference has begun. A Cuban AM station is now interfering with U.S. stations KGOL in Humble, Texas and WJNT in Pearl, Mississippi, and with Voice of America's Radio Marti station in Marathon, Florida. All stations operate on the radio frequency 1180 kilohertz. This interference is in addition to that which existed over the past few years.

PART I

Operation of TV Marti

TV MARTI

The TV Marti transmitter is located on an aerostat (blimp) at an altitude of 10,000 feet above Cudjoe Key, Florida. TV Marti broadcasts on television channel 13. Its antenna is designed to aim the signal at Cuba, and minimize the radiation into the United States. TV Marti has operated on 40 days during this 45 day period. Its operation has been limited to the early morning hours, usually 3:45 a.m. to 6:45 a.m.

METHODOLOGY

To determine whether TV Marti was interfering with U.S. broadcasters, the FCC relied on the following five methods.

FCC OBSERVATIONS

The FCC believed that if TV Marti interfered with U.S. broadcasters, the most likely stations to receive interference would be WTVT-Channel 13 in Tampa, and WPEC-Channel 12 in West Palm Beach. TV Marti and the Tampa station both operate on channel 13, so there is a possibility of co-channel interference; and the nearness, both in geography and frequency, of TV Marti and the West Palm Beach station raises the possibility of adjacent channel interference.

To spot interference FCC engineers selected eight geographically dispersed observation points 60 to 100 miles south and east of Tampa; eight points 50 to 100 miles north of Tampa, and three points west and south of West Palm Beach. The FCC selected these observation points because the Tampa or West Palm Beach television stations were viewable in these areas, but the signals were weak. We felt that these areas had the greatest potential to experience interference from TV Marti.

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FCC engineers conducted their tests on 20 of the 40 days that TV Marti was operational. The engineers visited the observation points looking for interference from TV Marti.

The observation points south of Tampa coincide with the observation points recommended by Jules Cohen and Associates, Consulting Electronics Engineers. The Association of Maximum Service Telecasters asked the engineering firm to conduct a study on where interference from TV Marti would be most likely to occur.

DOMESTIC BROADCASTERS

The FCC established lines of communication between the Tampa channel 13 station, the West Palm Beach channel 12 station, and even the Panama City channel 13 station, though its distance from TV Marti makes interference highly unlikely. The television stations were to promptly report any interference complaints concerning TV Marti to the FCC, and the FCC called each station weekly to verify that there had been no complaints.

CABLE TV COMPANIES

The FCC set up a liaison with six cable companies who carried the Channel 13 Tampa station or the channel 13 Panama City station. We checked with them weekly to determine if they experienced any interference from TV Marti.

INDIVIDUAL VIEWING

We enlisted the aid of 12 private citizens located in weak signal areas who might experience interference from TV Marti. These individuals would either view their television sets during the early morning hours when TV Marti was operational, or they would tape the program. Once a week we would call each person to see if they experienced interference.

FCC'S COMPLAINT PROCESS

We took special care to flag any TV Marti interference complaints that might be filed with the FCC in Washington, or its Florida field offices at Tampa, Miami, and Vero Beach.

FCC FINDINGS AND CONCLUSIONS ABOUT TV MARTI INTERFERENCE

During the 45-day experimental period covered by this report, the FCC did not find any interference to U.S. broadcasters from the operation of TV Marti. We base this finding on the observations conducted by FCC engineers, the "all clear" reports received from the domestic broadcasters, cable TV companies, and individual viewers, and the absence of complaints filed with the FCC.

We even telephoned all of the channel 13 television stations in the states of Alabama, Georgia, and South Carolina when an unidentified person during the April, 1990 National Association of Broadcasters convention reported interference to his television station from TV Marti. None of the channel 13 stations in these states received interference from TV Marti.

Although we have not observed interference from TV Marti thus far, we cannot conclude that TV Marti is not likely to cause interference in the future. The current hours of the TV Marti operation (3:45 a.m. to 6:45 a.m.) occur when the U.S. television viewing audience is at a minimum.

JAMMING OF TV MARTI SIGNAL

We are aware of reports that Cuba is jamming the reception of TV Marti. However, the FCC was not tasked with verifying this, nor have we done so.

P A R T I I

Interference from Cuban Radio and Television Stations

FCC MONITORING

Public Law 101-246 also requires the FCC to report on interference to U.S. broadcasters caused by the operation of Cuban radio and television stations. The FCC has begun monitoring for Cuban FM and television signals which might be received in this country and possibly interfere with U.S. stations. The FCC has already been regularly monitoring Cuban AM stations since the inception of Radio Marti in 1985. We have accumulated a data base of Cuban AM stations and can determine with confidence if a new station comes on the air, or if an existing station changes frequency or raises its power so as to interfere with U.S. broadcasters.

RESULTS OF MONITORING

The FCC has not observed any interference to U.S. broadcasters caused by Cuban FM and TV stations. However, we have observed interference to U.S. broadcasters from Cuban AM stations.

Interference from Cuban AM stations has been going on for years. During nighttime hours radio waves propagate further than during the daytime, and Cuban stations - which share the same frequencies with U.S. stations - interfere with the U.S. stations. Sometimes Cuban stations vary their routine and either stay on the air longer than scheduled, simultaneously broadcast the same program on all stations, or temporarily operate on a different frequency. These variations bring complaints of "interference". At times the Cuban stations will "flex their muscles" and operate some AM stations at a much higher power level than U.S. stations. So far these high power excursions have been short lived.

If there were any "new" interference that occurred since the start up of TV Marti, it is what the Cubans have done on the 1180 kHz AM frequency. Voice of America's Radio Marti uses the 1180 kHz AM frequency to broadcast their programs to Cuba from the Radio Marti facility at Marathon, Florida. On April 17, 1990 Cuba began operating a new station called Radio Taino (Tour Radio) on this same frequency. At first the station operated between 1:45 a.m. and 6:45 a.m. On April 24, it changed its broadcasts to the 6:00 a.m. to 12:00 noon time period. On May 7, it began operating 24 hours per day.

By operating on the same frequency, the Cuban station certainly would make it more difficult for the Cuban people to receive Radio Marti. Not only that, but the 1180 kHz Cuban station interferes with two other U.S. stations: KGOL in Humble, Texas and WJNT in Pearl, Mississippi. Both of these operate on 1180 kHz. The KGOL chief engineer reported that the Cuban station is so overpowering that unless a listener were within four miles of the KGOL transmitter, the listener would experience interference. The FCC estimates that the power of the Cuban station is 100,000 watts. By comparison U.S. broadcast stations licensed by the FCC are allowed only 50,000 watts maximum. Other occurrences of AM interference have existed over the past few years.

FUTURE PLANS

FCC will continue making observations of any interference to U.S. broadcasters, and will submit a subsequent report at the conclusion of the 90-day test period this summer.

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