MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

FINAL REMOVAL REPORT

November 15, 1995

U.S. Army Engineering Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

TABLE OF CONTENTS

INTERIM REMEDIAL ACTION
CULEBRA ISLAND, PUERTO RICO
Contract DACA87-92-D-0147
Delivery Order 0002

EXECUTIVE SUMMARY

I. PREPARATION

The U.S. Army Engineer Division, Huntsville issued Contract DACA87-92-D-0147, Delivery Order 0002 to MTA, Inc. on 28 December 1992 to perform an Interim Remedial Action of unexploded ordnance (UXO) at the Flamenco Bay Camp Ground, Culebra Island, Puerto Rico. The original scope of work included the requirement to install UXO warning signs on a number of small islands (*cayos*) surrounding Culebra. However, the Contracting Officer deleted the warning sign requirement in a modification to the delivery order in August 1994.

The portion of the Flamenco Bay Camp Ground cleared under this delivery order consists of 3.66 acres and was part of the U.S. Navy target area on the Northwest Peninsula of Culebra Island from 1940 to 1975. In 1992 the Commonwealth of Puerto Rico Department of Natural Resources (DNR) started construction of a camp ground adjacent to Culebra's popular Flamenco Bay Beach. No UXO avoidance services were used in the clearance operations for the camp ground. Because of the danger to the public from possible UXO contamination at the new camp ground, the Huntsville Division issued a delivery order to MTA, Inc. for an Interim Remedial Action to dispose of unexploded ordnance within two feet of the ground surface at the camp ground.

MTA submitted the draft Site Specific Work Plan (SSWP) on 9 April 1993. After the Contracting Officer approved MTA's UXO disposal plan on 28 April 1993, MTA prepared the SSWP. The approval process for the SSWP was delayed pending decisions by the government to proceed with the Interim Remedial Action. The review process moved slowly until a conference call on 7 July 1994 which focused the government's comments and allowed MTA to complete the preparation of the Final SSWP. This government review process continued up through 20 April 1995 when the Headquarters, Department of the Army Safety Office approved the Final SSWP. The Contracting Officer issued a verbal Notice to Proceed on 25 April 1995 and followed up with the written Notice to Proceed on 1 May 1995.

MTA supported the Public Meeting held at the Municipal Services Center, Culebra on 4 May 1995. The Public Meeting was sponsored by the Antilles Area, Jacksonville District, Corps of Engineers. The Public Meeting explained the purpose of the Interim Remedial Action to the citizens of Culebra and elicited their cooperation. The Corps of Engineers representative also cautioned the citizens about the dangers of UXO.

MTA received excellent cooperation during all phases of the on-site remediation from the Commonwealth of Puerto Rico Department of Natural Resources (DNR)and both the Puerto Rico and Municipal Police agencies. The DNR provided its Flamenco Bay Camp Ground office and telephone line to MTA. At the request of the Corps of Engineers, the DNR closed the camp ground and the adjacent beach area during remedial operations. The DNR also provided a dump truck for transporting the UXO scrap found during the clearance operations to the Defense Reutilization and Marketing Office (DRMO) at Roosevelt Road Naval Station, Puerto Rico.

II. EXECUTION

A. MOBILIZATION

MTA representative reported to Culebra on 2 May 1995 to prepare for mobilization of the UXO teams and to support the Public Meeting. The MTA representative arranged for lodging, transportation, office and storage space, telephone service to support the operation on Culebra. He also coordinated support to the remedial operations with the U.S. Navy Explosive Ordnance Disposal Unit, the U.S. Navy Hospital, the Defense Reutilization and Marketing Office (DRMO), and the Transportation Officer at the Roosevelt Roads Naval Station, Puerto Rico.

The MTA and Wyle Laboratories (MTA's subcontractor) personnel arrived on Culebra 9-11 May 1995. The government furnished equipment and MTA's supplies and equipment arrived on time. However, the shipment required intensive tracking of individual shipments which had been delayed by the taxation authorities of the Commonwealth of Puerto Rico and the difficulty of shipping items to Culebra by commercial carriers.

B. EXECUTION

MTA started work on the camp ground on 12 May 1995 and continued through 26 May 1995. The Contracting Officer, on advice from the Huntsville Division Project Manager, directed MTA to increase the number of UXO Specialists on 16 May 1995. Two additional UXO Specialists arrived on Culebra on 18 May 1995 to meet this requirement. Also the Contracting Officer authorized MTA to engage the services of a local surveyor to map and document the limits of the cleared area and the disposal site. The Contracting Officer also changed the scope of work to require detection and disposal of UXO 75mm diameter projectiles versus the original 20mm diameter projectile criteria. The Contracting Officer also permitted a change to the SSWP to record in the log books only the UXO or UXO related scrap. Previously, the SSWP required MTA to record every anomaly. This change in the scope of work was necessary due to the numerous small shell fragments and other metallic debris on the site.

The UXO clearance operations proceeded quickly. MTA found 11 items of UXO and UXO related scrap. The Corps of Engineers representative accepted the last work grid per the revised

scope of work on 24 May 1995. MTA conducted demolition operations on the morning of 25 May 1995 to dispose of the UXO and UXO related items found. The DNR senior manager on Culebra, Mr. Abraham Pena, accepted the cleared camp ground site from MTA on 25 May 1995. Mr. Pena requested MTA to leave the warning signs and warning tape in place to help him safely control the reopening of the beach and camp ground on 27 May 1995.

The survey subcontractor, R. Lopez De Azua and Associates, started work on 25 May 1995 and finished initial data readings on 26 May 1995. A UXO Supervisor escorted the survey crew while in the work area. The surveyors returned to Culebra on 1 June 1995 to obtain additional data outside of the work area.

MTA demobilized on schedule on 26 May 1995 to permit public use of the camp ground and beach area for the Memorial Day Weekend. All MTA personnel departed Culebra by 27 May 1995.

INTERIM REMEDIAL ACTION
FORMER FORT SEGARRA, U.S.V.I.
FINAL REMOVAL REPORT

1.0 INTRODUCTION

1.1 Objective.

The U.S. Army Engineer Division, Huntsville (CEHND) issued Delivery Order 0002 under Contract DACA87-92-D-0147 to MTA, Inc. on 28 December 1992 to perform an Interim Remedial Action to remove unexploded ordnance waste (OEW) contamination from the public camp ground at Flamenco Bay, Culebra Island, Puerto Rico. This Interim Remedial Action was necessary to respond to immediate threat to the public because of the use of this former target impact area as a public camp ground under the administration of the Puerto Rico Department of Natural Resources (DNR). Because of the probability of UXO contamination, CEHND issued this delivery order to destroy by detonation, on site, all UXO encountered in the 3.66 acre camp ground. This Interim Remedial Action was performed under the Defense Restoration Program (DERP) for Formerly Used Defense Sites (FUDS) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 104. An additional objective was to minimize the closure of the Flamenco Bay Camp Ground and adjacent beaches. These areas attract many tourists and the closure of the camp ground and beach causes financial hardship for the community.

1.2 History.

Culebra Island is located approximately 17 miles from the east coast of Puerto Rico. It has a population of over 2000 people. Its total area, including the small islands, called cayos, surrounding Culebra, is about 7,000 acres. The terrain is characterized by irregular topography with hills up to 650 feet in elevation. Culebra has a long shoreline with many small bays. The principal bay is Ensenada Honda and is considered one of the most secure hurricane harbors in the Caribbean. Flamenco Bay is on the north shore of the Island and is considered a prime tourist attraction on Culebra.

Culebra Island was used by the U.S. Navy since the early 1900's as a protected anchorage, a training area for amphibious landings, and as an impact area for naval gun and air delivered munitions. The Navy used Culebra's Northwest Peninsula for the impact area from the early 1940's to 1975 when the citizens of Culebra and their political allies were successful in terminating all bombardment activities on the island. The Navy transferred ownership of all but 77 acres of their land holdings to the U.S. Department of the Interior Fish and Wildlife Service.

The Flamenco Bay Camp Ground was established in 1992. The camp ground was cleared of heavy vegetation . The Puerto Rico Department of Natural Resources (DNR) placed sand fill for the existing access road and the new parking lots was without UXO support to ensure a

contamination free area.

The citizens of Culebra have lived with UXO contamination for many years and have become used to living with UXO contamination. The Jacksonville District, Antilles Area Public Affairs Office published a Fact Sheet (See Annex H) which showed numerous examples of the Culebra citizen's acceptance of UXO contamination as part of their environment.

2.0 REPORT FORMAT.

2.1 Narrative. The Final Removal Report starts with a synopsis of the Interim Remedial Action to remove UXO contamination from 3.66 acres of the Flamenco Bay Camp Ground.

2.2 Surveying and Mapping Data. The CEHND Project Manager directed MTA to survey the Flamenco Bay Camp Ground work site for future integration with the Engineering Evaluation/Cost Analysis to be performed by ESE, Inc. in August 1995. MTA contacted the two Registered Land Surveyors listed in the English language portion of the San Juan Telephone Directory. The proposal of R. Lopez De Azua & Associates was the lower cost of the two proposals received. The Contracting Officer authorized MTA to subcontract the surveying services to R. Lopez De Azua & Associates. R. Lopez De Azua & Associates took initial data on 25 and 26 May 1995 and returned for verification on 1 June 1995. The required list of all control points, the report of establishment of survey marks, and one original and two blue line drawings at a scale of 1 inch = 100 feet are provided to CEHND only. All copies of the Final Removal Report have half size copies of the survey maps in ANNEX A.

2.3 Accounting of UXO Items. A full accounting of all UXO items are listed in ANNEX B. A total of 11 UXO items were found and disposed of by detonation on 25 May 1995.

2.4 Daily Journals. This Final Removal Report contains the daily journals of the Senior UXO Supervisor, the Quality Control/Site Safety Officer, and both of the UXO Supervisors. These daily journals are in ANNEX C.

2.5 Exposure Data. Exposure data require by the Scope of Work is in ANNEX D.

2.6 Quality Control Documentation. Quality Control (QC) documentation of this project is found in ANNEX E.

2.7 Defense Reutilization and Marketing Office (DRMO) Turn - In Documentation. The DRMO turn - in documentation is in ANNEX F. MTA personnel turned in a total of nine 55 gallon steel drums of inert UXO scrap and other metallic scrap to the Roosevelt Roads Naval Station, Puerto Rico on 25 May 1995. The DRMO personnel were unable to properly store the scrap or weigh the contents of the nine steel drums which were the property of the Puerto Rico Department of Natural Resources. Consequently, MTA personnel had to leave the nine drums at the DRMO. The DRMO personnel assured MTA that they would return the nine steel drums to the DNR on Culebra.

2.8 Photographs and Video Tapes. Color photographs depicting major action items and UXO discoveries are in ANNEX G. In addition, before and after color photographs and video tapes of the work site and the demolition disposal area (required by the Environmental Protection Plan of the Site Specific Work Plan) and a video tape of the UXO clearance operations are in this annex. However, only CEHND will receive the video tapes.

2.9 Public Meeting Written Record. The written record of the Public Meeting which was held on 4 May 1995 on Culebra is in ANNEX H.

2.10 Financial Data. Only CEHND will receive the financial data required by the Scope of Work paragraph 3.8.9.

3.0 NARRATIVE OF OPERATIONS.

3.1 Mobilization. MTA started mobilization activities in mid April 1995. These early activities included staffing of the positions of Unexploded Ordnance (UXO) specialist, supervisor, senior supervisor, site safety officer/quality control specialist, and assistant UXO specialist. Wyle Laboratories, Inc. was MTA's subcontractor and provided approximately one half of the field work force.

The mobilized force on Culebra consisted of the following personnel:

MTA	Project Manager	Thomas Epperson (Arrived 9 May)
	UXO Assistant	Rob Robley (Arrived 9 May)
	Site Safety Officer/ Quality Control Specialist	Richard Winters (Arrived 11 May)
	UXO Supervisor	David Becker "
	UXO Specialists	Oscar Broadway "
		Thomas Brennan "
		Chuck Crawford (Joined 18 May)
Wyle Labs	Senior UXO Supervisor	David Lindsey (Arrived 10 May)
	UXO Supervisor	Don Ebersole (Arrived 11 May)
	UXO Specialists	Terry Davis "
		Steven Burchett "
		David Johnson (Joined 18 May)

MTA's Mike Moran reported to Culebra on 2 May to assist with the public meeting and to make operational and logistical coordination for the work. The beddown of the work force was an initial problem. The initial motel accommodations were selected based on advertised rental rates which met the Joint Travel Regulations' per diem lodging allowance. These accommodations were unacceptable because of the lack of security of the downtown area, lack of air conditioning,

and lack of maintenance. Mike Moran was able to negotiate an acceptable per diem rate at an appropriate motel and arranged for beddown there.

The Puerto Rico Department of Natural Resources (DNR) was very supportive of the Interim Removal Action. The DNR Culebra Manager, Mr. Abraham Pena, provided job site office space and telephone service at the Flamenco Bay Camp Ground. This saved considerable expense to the government because MTA did not have to provide office and storage trailers for the work.

The remote location of Culebra was a logistic challenge. For example, national rental car agencies do not permit their vehicles to be transported to Culebra. In addition, the uncertain ferry service from Puerto Rico limits vehicle transfers to Culebra on a timely basis. Consequently, MTA had to rent vehicles from Culebra firms. These vehicles (Suzuki Samurai 4 x 4's) were substandard in many respects and would not have been used for a Corps of Engineers project elsewhere.

The shipping of Government Furnished Equipment (GFE) and MTA owned equipment to Culebra was also difficult. The Commonwealth of Puerto Rico Department of Revenue attempted to impose an import tax on all shipments to the job site which were not shipped through the U.S. Postal Service. This required the Corps of Engineers Representative, Mr. Alphonso O'Neill, to make repeated calls to the Department of Revenue to explain that the shipments should be tax free. Also, most overnight delivery services, FEDEX, RPS, etc., do not deliver to Culebra. Only United Parcel Service has an agent for Culebra delivery services. The GFE was shipped by RPS and experienced significant delays. MTA personnel had to travel to San Juan, Puerto Rico to pick up the RPS shipment. The only reliable delivery service is the U.S. Postal Service which has limitations on the size, weight, and content of shipments. However, there is no guaranteed overnight service from the United States mainland through the U.S. Postal Service. MTA shipped all retrograde equipment by U.S. Postal Service from Culebra or by United Parcel Service from Puerto Rico.

As part of the mobilization effort, Mike Moran coordinated with the Culebra medical emergency staff to alert the medical staff to the possibility of injury. He also coordinated with the Puerto Rico State Police (Lieutenant Robinson) and the Culebra Municipal Police (Captain Rodriguez) to explain the concept of operations and coordinate security requirements for the work site and blasting operations. On 8 May, he accompanied the Project Manager, Mr. Roland Belew, to the Roosevelt Roads Naval Station, Puerto Rico to coordinate with the Naval Hospital, the Defense Reutilization and Marketing Office (DRMO), and the Navy Explosive Ordnance Disposal Detachment.

MTA's Project Manager, Thomas Epperson, and the UXO Assistant, Rob Robley, arrived on Culebra on 9 May; Wyle Labs' Senior UXO Supervisor, David Lindsey, arrived on 10 May. The remaining field force arrived on 11 May. Based on a recommendation by the Huntsville Division's Project Manager, Roland Belew, two additional UXO Specialists arrived on 18 May.

Mike Moran briefed the work crew on 11 May on the unique aspects of working on Culebra as well as on the safety aspects of driving on the narrow roads.

3.2 Execution.

MTA's Project Manager and the Senior UXO Supervisor divided the 3.66 acre Flamenco Bay Camp Ground work site into five areas (1,2,3,4,4A) for control purposes. The two UXO teams subdivided each area into five foot wide lanes which ran east-west across the width of the camp ground. These areas are shown in the Quality Control Documentation ANNEX E.

MTA started UXO removal work on 15 May 95. Three conditions contributed to slow progress on the first day of operations. First, the television media visited the site in the morning. The media visits required MTA to suspend all clearance operations while the television crews were in the exclusion zone. Also, the Site Specific Work Plan (SSWP) required the flagging and recording in the log books of all anomalies. Since there were numerous metallic objects in the camp ground (tent pins, bottle caps, metal shell fragments, etc.), the recording, excavation, and clearance progress of the first day was not up to par. Finally, the criteria for detection of subsurface UXO was very rigorous. The Scope of Work required detection of a 20 millimeter projectile at a depth of 2 feet. This criteria produced a large number of anomalies until the Contracting Officer permitted a change to this criteria on 16 May by the Contracting Officer. The new criteria for detection was a 75 millimeter projectile at 2 foot depth. The Contracting Officer also permitted a change to the SSWP which deleted the requirement to record every anomaly. The new requirement was to record only UXO and UXO related scrap in the log books.

Once the modifications to the detection criteria and the recording of anomalies was modified to require only a record of UXO and UXO related scrap, the clearance work progressed in a satisfactory manner. Clearance work continued through Wednesday, 24 May. On that date, the Corps of Engineers representative accepted the last sub area. MTA found 11 UXO items during this Interim Remedial Action. These UXO items are listed in ANNEX B. MTA disposed of these 11 UXO by detonation on the morning of 25 May at the disposal site on the north end of the camp ground.

MTA turned in inert UXO related scrap and other metallic scrap to the Defense Reutilization and Marketing Office (DRMO) at Roosevelt Roads Naval Station, Puerto Rico on 25 May. The Puerto Rico Department of Natural Resources (DNR) supported this turn-in of scrap by providing a DNR dump truck and driver. MTA delivered nine 55 gallon drums of inert UXO related scrap and other scrap to the DRMO. Unfortunately, the DRMO personnel kept the nine steel drums which belonged to DNR because they could not weigh the drums or store the scrap on the ground. The DRMO personnel assured MTA that DRMO would return or replace the nine steel drums.

The surveyor, R. Lopez De Azua & Associates of San Juan, Puerto Rico, arrived on Culebra on 25 May. A UXO Supervisor accompanied the survey crew whenever they entered the work area exclusion zone. The survey crew started work after the detonation of the UXO on the afternoon of 25 May. The surveyors continued their work through the afternoon of 26 May. They had to return to Culebra on 1 June to verify data collected earlier. The surveyors prepared a planimetric survey of the five areas (1,2,3,4,4A) based on Global Positioning System (GPS) techniques. The original and two blue line copies of the surveyor's report are in ANNEX A.

3.3 Demobilization.

Demobilization proceeded smoothly. The six UXO Specialists, the two UXO Supervisors, and the Site Safety Officer/Quality Control Specialist departed Culebra on Friday, 26 May 1995. Rob Robley, the UXO Assistant and logistics coordinator for the project, shipped the government furnished equipment and MTA owned equipment to Huntsville by U.S. Postal Service and by United Parcel Service from Roosevelt Roads Naval Station, Puerto Rico. The remaining field personnel, the Project Manager, the Senior UXO Supervisor, and the UXO Assistant departed on 27 May 1995.

4.0 SUPPLIES AND EQUIPMENT

MTA followed the Property Equipment Plan (PEP)/Property Management Plan (PMP) of the Site Specific Work Plan as much as possible. MTA had to deviate from the PEP/PMP when the remote location of Culebra or other operational factors dictated other solutions. For example, MTA received only 4 of the 6 magnetometers requested. Since a back up magnetometers are always required and since two additional UXO Specialists joined the field work force on 18 June, MTA procured 5 additional magnetometers. This ensured an adequate number of these instruments for the project. Also, MTA did not have to rent an office trailer or storage trailer because the DNR made their camp ground office available.

Rental of vehicles and equipment was a challenge. The national car rental companies are not represented on Culebra and do not permit their vehicle to be ferried to Culebra. MTA had to rent a substandard Suzuki Samurai 4 x 4 and two overage Chevrolet S-10 pick up trucks from local vendors. There was need for a backhoe only for a few hours to prepare the demolition pit. MTA personnel operated the backhoe to preclude the local non-UXO qualified operator in the work site exclusion zone.

MTA retrieved the two gasoline powered weed eaters and other hand tools from St. Thomas on 6 May. These items were in storage pending start up of work in St. Thomas under Delivery Order 0005 of this contract. However, these weedeaters were not needed during the work.

At the direction of the CEHND representative, MTA donated the remaining office supplies to the local public school. MTA gave the four gasoline containers to the Puerto Rico Department of Natural Resources since the cans could not be purged for shipment. In addition, MTA was directed to turn over the long handled shovels and pitch forks to the U.S. Fish and Wildlife Service. The reason for these transfers was to preclude paying high shipping fees for low cost items.

MTA used the following major equipment during this project:

9 Schonstedt Magnetometers Model 52

1	Backhoe
1	Suzuki 4 x 4
2	Chevrolet S-10 pick up trucks
9	Motorola Radios HT1000 (Not GFE)
1	Camera Recorder, VCR
3	Camera 35mm, disposable
	Common hand tools
	Various expendable supplies (paper, pencils, tape, plastic bags, etc).

5.0 WEATHER AND TERRAIN

5.1 Weather. The weather was not a significant factor in the execution of the work under this delivery order. However, the temperature in the afternoon at the work site did curtail some work between 1200 and 1600 hours daily. The heat stress monitoring plan required 15 minutes of rest per hour whenever the ambient air temperature reached 91 degree F. UXO Supervisors were especially vigilant in observing their work crews and prevented many heat related injuries by insisting on frequent rest and water breaks. There were no heat related injuries during the operation.

5.2 Terrain. The terrain of the work site consisted of a flat plain between the beach dunes and the mangrove swamp. The DNR had removed the heavy vegetation earlier and the work site was covered with a grass cover. Mangrove trees along the access road provided shade for the camp ground.

6.0 SITE SAFETY

MTA implemented the site safety plan and rigorously enforced the requirements of that plan. Every worker read and understood the safety plan and supported it throughout the work on Culebra. As a result of everyone's positive attitude toward safety, there were no injuries during the project.

6.1 Safety Briefing (Tailgate). MTA conducted a daily tailgate safety briefing to emphasize specific safety challenges for the day and to gather feedback from the crews about current safety procedures. These daily safety meetings are documented in the appropriate log books.

6.2 Safety Training. MTA conducted safety training on the dangers of the backhoe and the demolition operations on 25 May. MTA supervisors made a special point of emphasizing the need for care while working in the proximity of heavy equipment and of following approved demolition procedures.

6.3 Safety Monitoring. The Site Safety Officer (SSO) monitored the ambient temperature to enforce the heat injury prevention program. This required limiting work to 45 minutes per hour when the temperature reached 91 degrees F. The SSO also monitored the workers' pulse for signs of heat stress. All supervisors ensured the workers took the specified rest periods and drank water to prevent heat stress.

6.4 Personal Protective Equipment (PPE). MTA ensured all workers wore the proper Personal Protective Equipment (PPE) during the project. MTA provided steel toe boots, long trousers, and long sleeve shirts for the local laborers.

7.0 IMPACT OF OPERATIONS.

7.1 Ecological. No significant ecological impacts resulted from operations conducted for this project.

7.2 Environmental. There was no adverse environmental impact on the camp ground due to operations under this delivery order. MTA and the CEHND Project Manager conducted a joint pre-investigation environmental survey of the Flamenco Bay Camp Ground on 3 May 1995. This joint inspection is documented in ANNEX I. The Project Manager defined the exact boundaries in the camp ground to be cleared of UXO during this inspection.

The work area required no cutting of vegetation to perform the UXO clearance operation. MTA's work force restored all excavations to original levels. Mr. Abraham Pena, the DNR manager on Culebra, accepted the camp ground on 25 May with no reservations. The DNR opened the camp ground to the public on 27 May.

8.0 SUMMARY & RECOMMENDATIONS.

8.1 Summary.

MTA successfully conducted an Interim Remedial Action to remove near surface UXO at the Flamenco Bay Camp Ground, Culebra Island Puerto Rico. A total of 11 UXO items were found and disposed of by demolition operations. MTA completed the clearance within the short time parameters allowed by the situation.

8.2 Recommendations.

Recommend the follow on contractor ESE, Inc. sweep the access road which was not part of the Scope of Work under this delivery order. The Senior UXO Supervisor reported detecting

large anomalies in the road bed even when the instruments he was using was on low sensitivity settings.

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

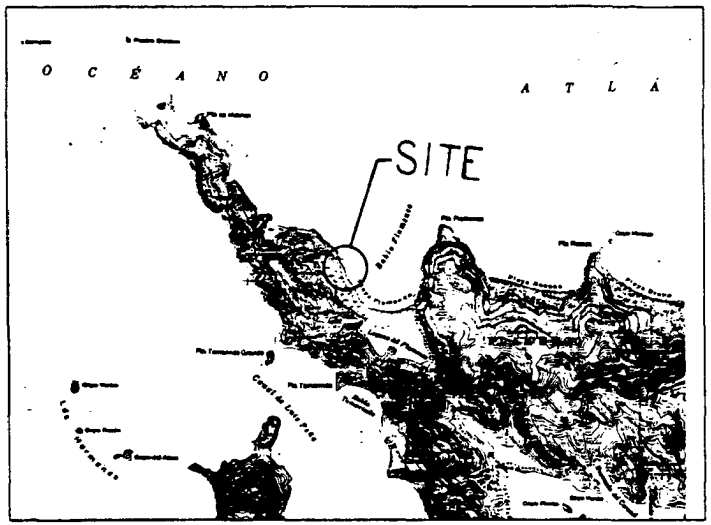
ANNEX A

SURVEY AND MAPPING DATA

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

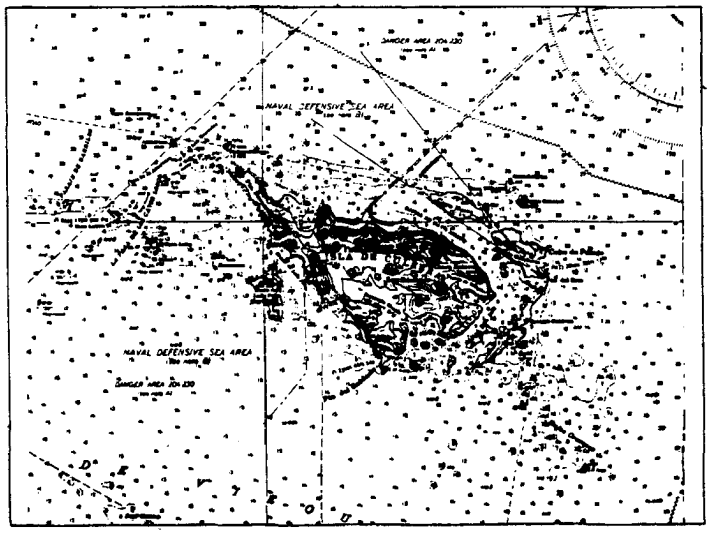
ANNEX A

MTA has provided one set of original and two blue line survey maps in a separate container to CEHND-PM-OT.

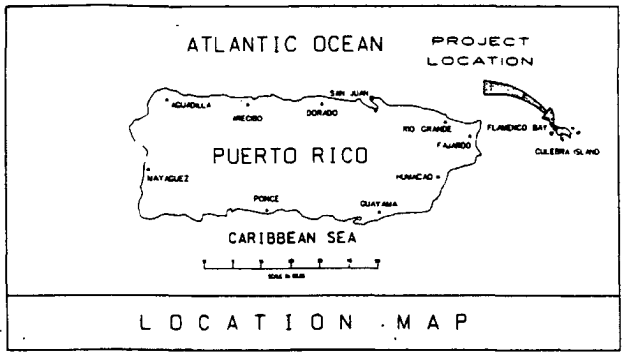


LOCATION PLAN

SCALE = 1:20,000



VICINITY PLAN



LOCATION MAP

HORIZONTAL CONTROL

STATION	NORTHING	EASTING
DNR CONTROL	184105.451	884700.439
L ∓ 284	183500.480	885010.761
STA - 1006	183257.731	885274.898
STA - 1028	182333.884	885597.073

INDEX :

SURVEYOR'S CERTIFICATE

THE UNDERSIGNED, REGISTERED SURVEYOR LICENCE NO. 7537 AUTHORIZED TO EXERCISE HIS PROFESSION IN PUERTO RICO DOES HEREBY CERTIFY THAT THE ABOVE DISTANCES AND THAT THE PLAT HEREON DRAWN IS A TRUE REPRESENTATION OF THE EXISTING CONDITION.

RAMON LOPEZ DE AZUA

LEGEND

NOTES:

1. PLANE COORDINATES ARE BASED ON THE LAMBERT CONIC PROJECTION FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS. NORTH ZONE (NAD 83).
2. ALL AZIMUTHS ARE GRID; RECKONED CLOCKWISE FROM NORTH.
3. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF THE SURVEY MADE ON THE DATE INDICATED AND CAN ONLY BE CONSIDERED AS AN INDICATION OF THE GENERAL CONDITIONS EXISTING AT THAT TIME.
4. THE SURVEY DATA DEPICTED ON THIS MAP WAS OBTAIN DURING THE PERIOD OF MAY 1995.
5. STANDARD FIELD CALIBRATIONS FOR EQUIPMENT WERE PERFORMED ON THIS SURVEY AND RESULTS ARE WITHIN MANUFACTURER'S SPECIFICATIONS.
6. HORIZONTAL AND VERTICAL CONTROL STATIONS WERE ESTABLISHED BY G.P.S. SYSTEM.

R. LOPEZ DE AZUA & ASSOCIATES
SAN JUAN, PUERTO RICO

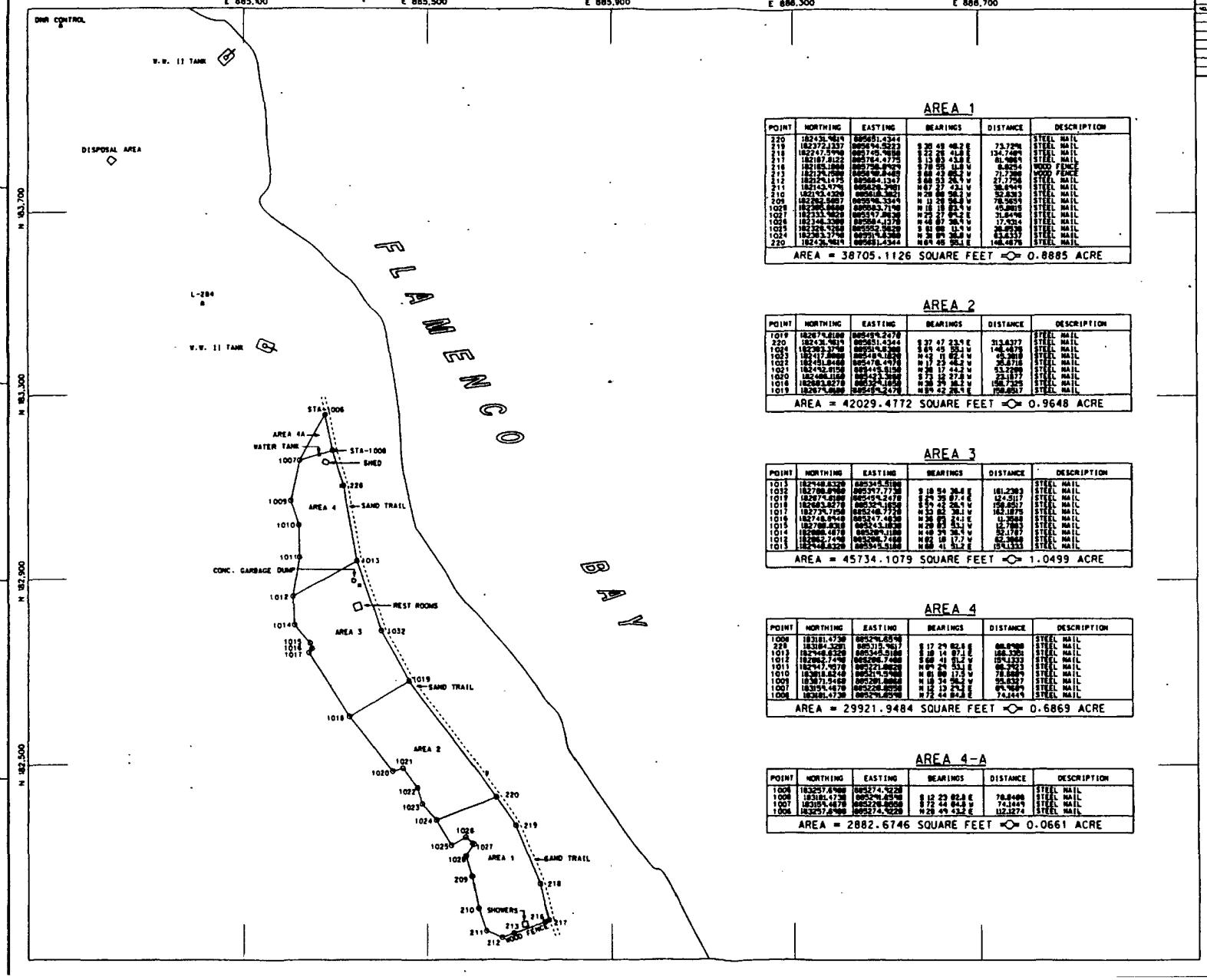
MTA INC.
688 DISCOVERY DRIVE
HUNTSVILLE, ALABAMA

CULEBRA, PUERTO RICO

FLAMENCO BAY CAMP GROUND

PLANIMETRIC SURVEY OF THE FOUR ADJACENT SUBAREAS (1, 2, 3, 4, 4A)

F



AREA 1

POINT	NORTHING	EASTING	BEARINGS	DISTANCE	DESCRIPTION
220	182438.4819	885651.4344			STEEL NAIL
219	182372.1337	885694.5223	S 35° 48' 48.2" E	79.3726	STEEL NAIL
218	182247.5999	885749.9898	S 23° 28' 41.8" E	136.7489	STEEL NAIL
217	182187.9122	885764.4775	S 13° 53' 43.8" E	61.4081	STEEL NAIL
216	182185.8898	885788.8929	S 78° 55' 11.8" W	6.8254	WOOD FENCE
213	182178.7588	885780.8488	S 68° 43' 05.2" W	71.7388	WOOD FENCE
212	182174.1475	885884.1347	S 88° 53' 26.1" W	27.1758	STEEL NAIL
211	182143.9749	885826.2981	N 87° 27' 42.1" W	30.5949	STEEL NAIL
210	182153.1329	885818.3821	N 28° 08' 56.1" W	52.8353	STEEL NAIL
209	182262.5857	885798.3349	N 11° 26' 56.8" W	78.5659	STEEL NAIL
1028	182355.4859	885843.7198	N 16° 18' 23.1" W	45.8815	STEEL NAIL
1027	182333.3623	885817.8436	N 23° 27' 44.2" W	31.8496	STEEL NAIL
1026	182316.2388	885804.4378	N 46° 07' 38.1" W	17.9316	STEEL NAIL
1025	182289.9268	885852.3620	S 81° 28' 11.1" W	54.4818	STEEL NAIL
1024	182283.1748	885914.8388	S 81° 28' 11.1" W	63.4437	STEEL NAIL
220	182438.4819	885651.4344	N 69° 46' 20.1" E	148.4875	STEEL NAIL

AREA = 38705.1126 SQUARE FEET = 0.8885 ACRE

AREA 2

POINT	NORTHING	EASTING	BEARINGS	DISTANCE	DESCRIPTION
1019	182679.8188	885499.2478			STEEL NAIL
220	182438.4819	885651.4344	S 37° 47' 23.9" E	313.8377	STEEL NAIL
1024	182383.3748	885914.8388	S 81° 45' 35.1" W	148.4875	STEEL NAIL
1023	182417.2888	885948.1828	N 42° 11' 52.4" W	45.3818	STEEL NAIL
1022	182481.8488	885878.4978	N 17° 23' 48.2" W	72.8718	STEEL NAIL
1021	182432.8158	885818.5158	N 36° 17' 44.2" W	53.2298	STEEL NAIL
1020	182488.1188	885812.2888	S 73° 18' 27.8" W	23.1817	STEEL NAIL
1016	182683.8278	885734.1858	N 36° 35' 38.3" W	156.7329	STEEL NAIL
1019	182679.8188	885499.2478	N 89° 42' 28.1" E	234.8957	STEEL NAIL

AREA = 42029.4772 SQUARE FEET = 0.9648 ACRE

AREA 3

POINT	NORTHING	EASTING	BEARINGS	DISTANCE	DESCRIPTION
1013	182948.8328	885345.5188			STEEL NAIL
1032	182788.8988	885397.7738	S 18° 54' 36.6" E	181.2383	STEEL NAIL
1019	182679.8188	885499.2478	S 43° 39' 07.4" E	124.5017	STEEL NAIL
1018	182683.8278	885734.1858	S 89° 42' 28.1" W	234.8957	STEEL NAIL
1017	182734.7188	885748.7728	N 36° 35' 38.3" W	143.1878	STEEL NAIL
1016	182748.2948	885717.4858	N 36° 00' 21.1" W	12.7883	STEEL NAIL
1015	182788.8328	885343.1828	N 20° 03' 53.1" W	12.7883	STEEL NAIL
1014	182888.1878	885339.1188	N 46° 54' 36.4" W	32.1787	STEEL NAIL
1013	182852.7498	885288.7468	N 82° 18' 17.7" W	62.3868	STEEL NAIL
1015	182948.8328	885345.5188	N 89° 41' 51.2" E	154.1333	STEEL NAIL

AREA = 45734.1079 SQUARE FEET = 1.0499 ACRE

AREA 4

POINT	NORTHING	EASTING	BEARINGS	DISTANCE	DESCRIPTION
1008	183181.4738	885274.8548			STEEL NAIL
226	183184.3281	885315.9817	S 17° 29' 02.6" E	88.8988	STEEL NAIL
1013	182948.8328	885345.5188	S 18° 14' 07.1" E	168.3301	STEEL NAIL
1012	182852.7498	885288.7468	S 68° 41' 51.2" W	154.1333	STEEL NAIL
1011	182747.9218	885221.8828	N 89° 24' 53.1" W	86.7923	STEEL NAIL
1010	182818.8248	885314.9488	N 81° 58' 17.5" W	78.8889	STEEL NAIL
1009	182871.9458	885391.8888	N 18° 54' 36.6" W	93.8327	STEEL NAIL
1007	183154.4878	885328.8758	N 82° 18' 17.7" W	274.9849	STEEL NAIL
1008	183181.4738	885274.8548	N 72° 44' 04.3" W	74.1449	STEEL NAIL

AREA = 29921.9484 SQUARE FEET = 0.6869 ACRE

AREA 4-A

POINT	NORTHING	EASTING	BEARINGS	DISTANCE	DESCRIPTION
1008	183257.8988	885274.9228			STEEL NAIL
1006	183181.4738	885274.8548	S 12° 23' 02.6" E	78.8488	STEEL NAIL
1007	183154.4878	885328.8958	S 72° 44' 04.3" W	74.1449	STEEL NAIL
1006	183257.8988	885274.9228	N 29° 49' 43.2" E	112.3274	STEEL NAIL

AREA = 2882.6746 SQUARE FEET = 0.0661 ACRE

REVISIONS

NO.	SYM.	ZONE	DESCRIPTION	DATE	APPROVED

LEGEND

NOTE :

1 . SEE SHEET NO. 1 FOR NOTES.

SCALE: 1" = 100'

R. LOPEZ DE AZUA & ASSOCIATES
SAN JUAN, PUERTO RICO

MTA, INC.
888 DISCOVERY DRIVE
HUNTSVILLE, ALABAMA

CULEBRA, PUERTO RICO

FLAMENCO BAY CAMP GROUND
PLANIMETRIC SURVEY OF THE FOUR
ADJACENT SUBAREAS (1, 2, 3, 4, & A)

DESIGN CHK
DRWN BY | CHK'D BY | DATE
DATED
SCALE: AS SHOWN | DATED: MAY 1998
SIZE: F | DRAWING NO
SHEET 3 OF

R. López de Azúa & Associates
June 6, 1996
MTA-SC-95-002

Report of Used Survey Mark:

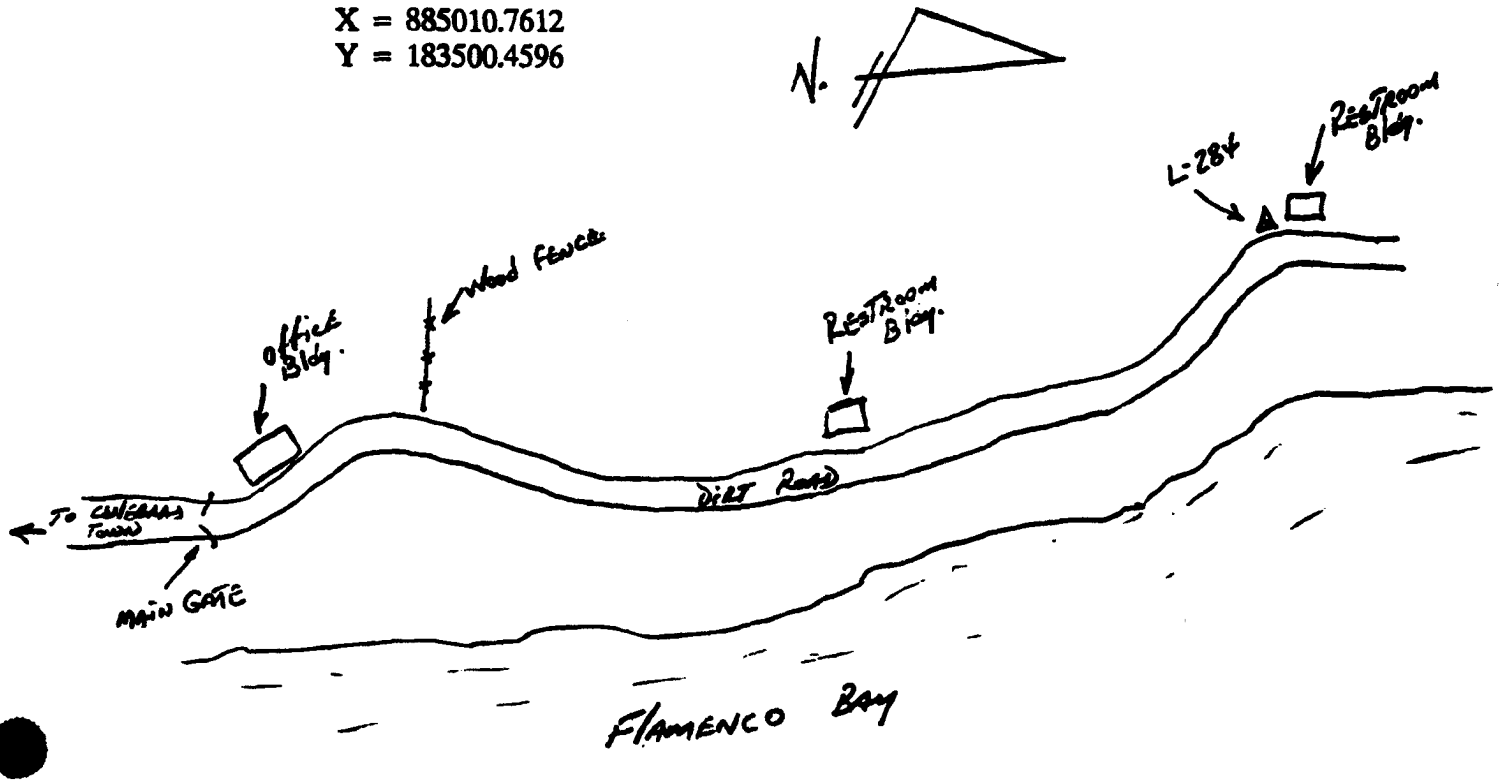
1. Station Name: **L-284**

Station located in the island of Culebra, Puerto Rico.

Starting from the bridge crossing over the canal which joins Ensenada Honda and Sardinas Bay, travel northwest on the main road for approximately 4.35 Kilometers from this bridge to Flamenco Beach entrance gate. After leaving downtown keep left on the main road where it forks at Culebra Airport. Continue northwest towards Flamenco Beach. Go past the gate at the entrance of the beach campground area and continue on a sandy trail which borders the beach for approximately .95 kilometers reaching a restroom building on the left hand side of the trail. The station is located approximately 4 meters from the south wall of the building. The station is an iron rod embedded in concrete and stamped **L-284.**

Coordinates: NAD-27

X = 885010.7612
Y = 183500.4596



R. López de Azúa & Associates
June 6, 1996
MTA-SC-95-002

Report of Used Survey Mark:

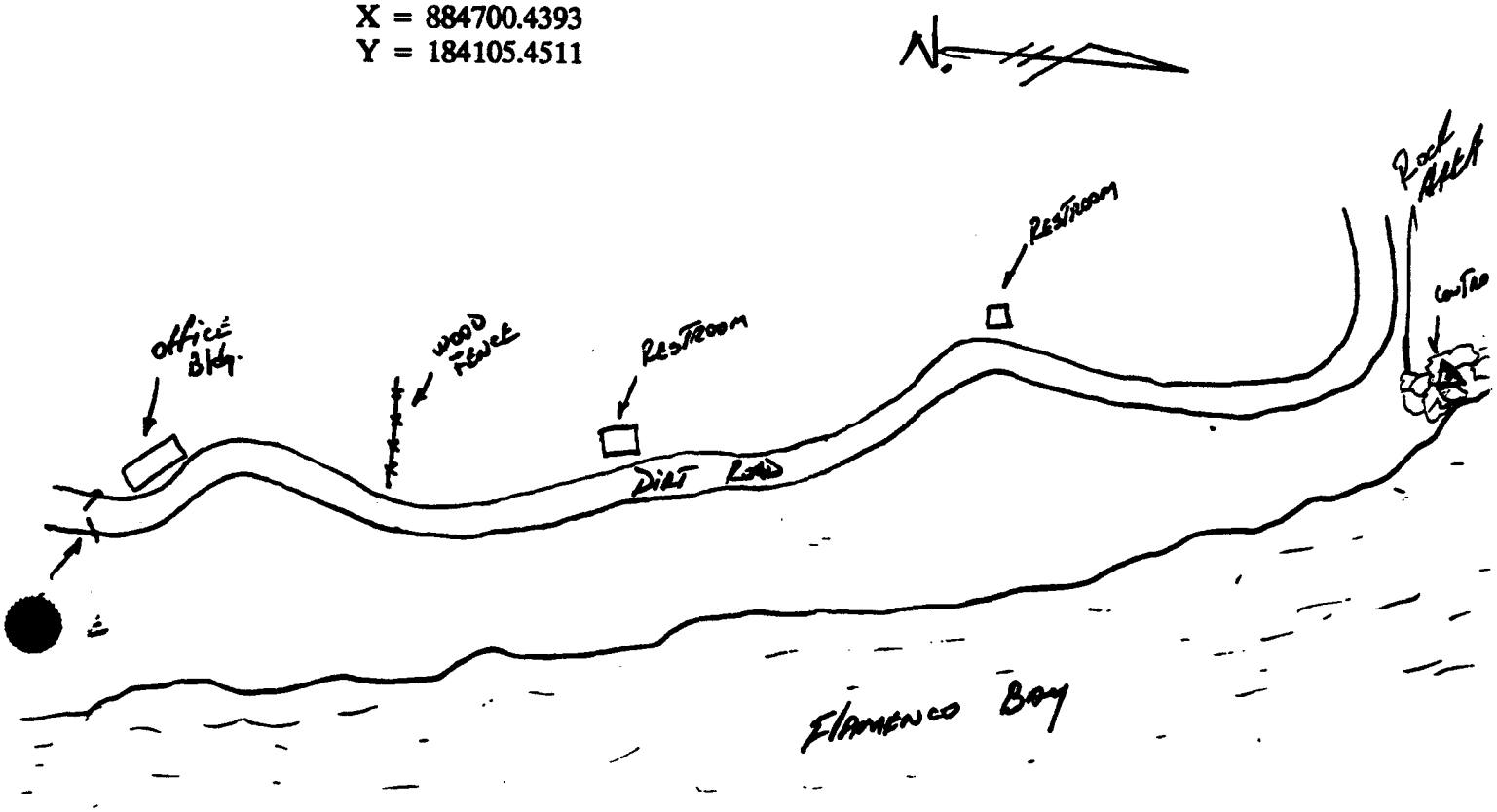
2. Station Name: **CONTROL**

Station located in the island of Culebra, Puerto Rico.

Starting from the bridge crossing over the canal which joins Ensenada Honda and Sardinas Bay, travel northwest on the main road for approximately 5.25 Kilometers from this bridge to Flamenco Beach entrance gate. After leaving downtown keep left on the main road where it forks at Culebra Airport. Continue northwest towards Flamenco Beach. Go past the gate at the entrance of the beach campground area, continue on a sandy trail which borders the beach for approximately 1.2 kilometers reaching an abrupt turn to the west (left). Turn towards the seashore (east) and walk north for approximately 25 meters on the beach towards a rocky hill adjacent to the beach. Walk on the rocks for 10 meters to where the station is located. The station is located approximately 6 meters from the shoreline. The station is a standard Department of Natural Resources bronze disk set flush on a rock and stamped **CONTROL.**

Coordinates: NAD-27

X = 884700.4393
Y = 184105.4511



o') : SAM
ame : MTA
cription :
eference : SC95-002
rojection : Two Parallel Lambert Scale factor 1.00000000
False northing 0.000 False easting 500000.000
ate printed: 06/05/95 10:07am

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point		Calculated point		Control point	
oint:	1			Point:	1043
rth	184105.451	Nrth	183366.987	Nrth	183376.195
ast	884700.439	East	884792.242	East	884796.497
gt	-297.980	Hgt	-161.053	Hgt	-161.103
D error :		10.143	3D error :		10.143
oint:	4			Point:	1005
rth	183500.460	Nrth	182761.967	Nrth	182771.186
ast	885010.761	East	885102.558	East	885106.949
gt	-299.130	Hgt	-162.181	Hgt	-162.392
D error :		10.211	3D error :		10.213
.:	6			Point:	1028
th	182333.884	Nrth	181595.337	Nrth	181576.910
ast	885597.073	East	885688.858	East	885680.212
gt	-300.450	Hgt	-163.457	Hgt	-163.194
D error :		20.354	3D error :		20.356

atum parameters
ranslation along x axis: 351.449
ranslation along y axis: -555.774
ranslation along z axis: -1052.334

esidual differences between GPS and known coordinates :
n two dimensions:
aximum error, (database point 6): 20.354
oot mean square error: 14.393
n three dimensions:
aximum error, (database point 6): 20.356
oot mean square error: 14.394

Datum parameter evaluation(Seven parameter)

Starting point		Calculated point		Control point	
oint:	1			Point:	1043
	184105.451	Nrth	183379.516	Nrth	183376.195
	884700.439	East	884797.111	East	884796.497
gt	-297.980	Hgt	-161.721	Hgt	-161.103

:	4			Point:	1005
[illegible]	183500.460	Nrth	182764.896	Nrth	182771.186
East	885010.761	East	885103.746	East	885106.949
Hgt	-299.130	Hgt	-162.065	Hgt	-162.392
2D error :		7.058	3D error :		7.066

Point:	6			Point:	1028
Nrth	182333.884	Nrth	181579.879	Nrth	181576.910
East	885597.073	East	885682.801	East	885680.212
Hgt	-300.450	Hgt	-162.903	Hgt	-163.194
2D error :		3.939	3D error :		3.950

Datum parameters

Rotation about x axis:	357°20'47.3120"
Rotation about y axis:	359°45'20.5446"
Rotation about z axis:	5°02'56.5922"
Translation along x axis:	1554595.673
Translation along y axis:	1136864.939
Translation along z axis:	819767.211
Scale factor (ppm):	10153.6460200000

Residual differences between GPS and known coordinates :

In two dimensions:

Maximum error, (database point 4):	7.058
Root mean square error:	5.058

In three dimensions:

[illegible]um error, (database point 4):	7.066
[illegible] mean square error:	5.076

Plane parameter evaluation

Starting point		Calculated point		Control point	
Point:	1			Point:	1043
Nrth	183379.516	Nrth	183380.228	Nrth	183376.195
East	884797.111	East	884798.392	East	884796.497
Hgt	-161.721	Hgt	-161.721	Hgt	-161.103
2D error :		4.457	3D error :		4.500

Point:	4			Point:	1005
Nrth	182764.896	Nrth	182765.059	Nrth	182771.186
East	885103.746	East	885104.049	East	885106.949
Hgt	-162.065	Hgt	-162.065	Hgt	-162.392
2D error :		6.778	3D error :		6.786

Point:	6			Point:	1028
Nrth	181579.879	Nrth	181579.003	Nrth	181576.910
East	885682.801	East	885681.217	East	885680.212
Hgt	-162.903	Hgt	-162.903	Hgt	-163.194
2D error :		2.321	3D error :		2.339

[illegible] parameters

[illegible]ning coordinate of rotation center:	182574.764
[illegible]sting coordinate of rotation center:	885194.553

slation north: -0.000
slation east: 0.000
le factor : 1.0000815765

Residual differences between GPS and known coordinates :
In two dimensions:
Maximum error, (database point 4): 6.778
Root mean square error: 4.871
In three dimensions:
Maximum error, (database point 4): 6.786
Root mean square error: 4.891

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point		Calculated point		Control point	
Point: 1				Point: 1043	
Nrth	184105.451	Nrth	183366.987	Nrth	183376.195
East	884700.439	East	884792.242	East	884796.497
Hgt	-297.980	Hgt	-161.053	Hgt	-161.103
2D error :		10.143	3D error :	10.143	
Point: 4				Point: 1005	
N	183500.460	Nrth	182761.967	Nrth	182771.186
E	885010.761	East	885102.558	East	885106.949
H	-299.130	Hgt	-162.181	Hgt	-162.392
2D error :		10.211	3D error :	10.213	
Point: 6				Point: 1028	
Nrth	182333.884	Nrth	181595.337	Nrth	181576.910
East	885597.073	East	885688.858	East	885680.212
Hgt	-300.450	Hgt	-163.457	Hgt	-163.194
2D error :		20.354	3D error :	20.356	

Datum parameters
Translation along x axis: 351.449
Translation along y axis: -555.774
Translation along z axis: -1052.334

Residual differences between GPS and known coordinates :
In two dimensions:
Maximum error, (database point 6): 20.354
Root mean square error: 14.393
In three dimensions:
Maximum error, (database point 6): 20.356
Root mean square error: 14.394

Datum parameter evaluation(Seven parameter)

Starting point	Calculated point	Control point

[illegible]	184105.451	Nrth	183379.516	Nrth	183376.195
	884700.439	East	884797.111	East	884796.497
[illegible]gt	-297.980	Hgt	-161.721	Hgt	-161.103
3D error :		3.377	3D error :		3.433

Point:	4			Point:	1005
Nrth	183500.460	Nrth	182764.896	Nrth	182771.186
East	885010.761	East	885103.746	East	885106.949
Hgt	-299.130	Hgt	-162.065	Hgt	-162.392
3D error :		7.058	3D error :		7.066

Point:	6			Point:	1028
Nrth	182333.884	Nrth	181579.879	Nrth	181576.910
East	885597.073	East	885682.801	East	885680.212
Hgt	-300.450	Hgt	-162.903	Hgt	-163.194
3D error :		3.939	3D error :		3.950

Datum parameters

Rotation about x axis:	357°20'47.3120"
Rotation about y axis:	359°45'20.5446"
Rotation about z axis:	5°02'56.5922"
Translation along x axis:	1554595.673
Translation along y axis:	1136864.939
Translation along z axis:	819767.211
Scale factor (ppm):	10153.6460200000

Residual differences between GPS and known coordinates :

In two dimensions:

[illegible]mum error, (database point 4):	7.058
Root mean square error:	5.058

In three dimensions:

Maximum error, (database point 4):	7.066
Root mean square error:	5.076

Plane parameter evaluation

Starting point		Calculated point		Control point	
Point:	1			Point:	1043
Nrth	183379.516	Nrth	183380.163	Nrth	183376.195
East	884797.111	East	884798.424	East	884796.497
Hgt	-161.721	Hgt	-161.721	Hgt	-161.103
3D error :		4.412	3D error :		4.455

Point:	4			Point:	1005
Nrth	182764.896	Nrth	182765.044	Nrth	182771.186
East	885103.746	East	885104.057	East	885106.949
Hgt	-162.065	Hgt	-162.065	Hgt	-162.392
3D error :		6.789	3D error :		6.797

Point:	6			Point:	1028
Nrth	181579.879	Nrth	181579.084	Nrth	181576.910
East	885682.801	East	885681.177	East	885680.212
Hgt	-162.903	Hgt	-162.903	Hgt	-163.194
[illegible]rror :		2.378	3D error :		2.396

9 parameters

ing coordinate of rotation center:	182574.764
ting coordinate of rotation center:	885194.553
Rotation about the center point:	0°05'36.4914"
Translation north:	-0.000
Translation east:	0.000
Scale factor :	1.0000000000

Residual differences between GPS and known coordinates :

In two dimensions:

Maximum error, (database point 4):	6.789
Root mean square error:	4.872

In three dimensions:

Maximum error, (database point 4):	6.797
Root mean square error:	4.892

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point		Control point	
Point:	1	Point:	1043
Nrth	184105.451	Nrth	183376.195
East	884700.439	East	884796.497
	-297.980	Hgt	-161.103
Point:	6	Point:	1028
Nrth	182333.884	Nrth	181576.910
East	885597.073	East	885680.212
Hgt	-300.450	Hgt	-163.194

Unable to calculate three parameter datum transformation parameters.

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point		Calculated point		Control point	
Point:	1			Point:	1043
Nrth	184105.451	Nrth	183362.377	Nrth	183376.195
East	884700.439	East	884790.047	East	884796.497
Hgt	-297.980	Hgt	-160.948	Hgt	-161.103
2D error :	15.248	3D error :	15.249		
Point:	6			Point:	1028
Nrth	182333.884	Nrth	181590.728	Nrth	181576.910
East	885597.073	East	885686.662	East	885680.212
Hgt	-300.450	Hgt	-163.351	Hgt	-163.194
2D error :	15.249	3D error :	15.249		

'r slation along x axis: 350.074
slation along y axis: -558.107
...slation along z axis: -1056.663

esidual differences between GPS and known coordinates :
n two dimensions:
laximum error, (database point 6): 15.249
oot mean square error: 15.249
n three dimensions:
laximum error, (database point 6): 15.249
oot mean square error: 15.249

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point		Calculated point		Control point	
oint: 1				Point:	1043
rth	184105.451	Nrth	183369.333	Nrth	183376.195
ast	884700.439	East	884793.368	East	884796.497
gt	-297.980	Hgt	-161.060	Hgt	-161.103
D error :		7.541	3D error :		7.541
oint: 4				Point:	1005
	183500.460	Nrth	182764.313	Nrth	182771.186
	885010.761	East	885103.684	East	885106.949
	-299.130	Hgt	-162.187	Hgt	-162.392
D error :		7.609	3D error :		7.611
oint: 5				Point:	1006
rth	183257.731	Nrth	182521.573	Nrth	182528.612
ast	885274.898	East	885367.815	East	885371.193
gt	-299.230	Hgt	-162.277	Hgt	-162.296
D error :		7.807	3D error :		7.807
oint: 6				Point:	1028
rth	182333.884	Nrth	181597.683	Nrth	181576.910
ast	885597.073	East	885689.983	East	885680.212
gt	-300.450	Hgt	-163.463	Hgt	-163.194
D error :		22.956	3D error :		22.958

atum parameters
ranslation along x axis: 352.175
ranslation along y axis: -554.624
ranslation along z axis: -1050.115

esidual differences between GPS and known coordinates :
n two dimensions:
laximum error, (database point 6): 22.956
oot mean square error: 13.254
n three dimensions:
um error, (database point 6): 22.958
mean square error: 13.255

Datum parameter evaluation(Seven parameter)

Starting point		Calculated point		Control point	
oint: 1				Point:	1043
rth	184105.451	Nrth	183382.871	Nrth	183376.195
ast	884700.439	East	884798.731	East	884796.497
gt	-297.980	Hgt	-161.188	Hgt	-161.103
D error :		7.041	3D error :		7.041
oint: 4				Point:	1005
rth	183500.460	Nrth	182767.982	Nrth	182771.186
ast	885010.761	East	885104.781	East	885106.949
gt	-299.130	Hgt	-162.213	Hgt	-162.392
D error :		3.868	3D error :		3.872
oint: 5				Point:	1006
rth	183257.731	Nrth	182519.579	Nrth	182528.612
ast	885274.898	East	885368.604	East	885371.193
gt	-299.230	Hgt	-162.308	Hgt	-162.296
D error :		9.396	3D error :		9.396
oint: 6				Point:	1028
rth	182333.884	Nrth	181582.470	Nrth	181576.910
ast	885597.073	East	885682.735	East	885680.212
gt	-300.450	Hgt	-163.277	Hgt	-163.194
D error :		6.105	3D error :		6.106

um parameters

otation about x axis:	0°17'49.1222"
otation about y axis:	359°24'22.4610"
otation about z axis:	0°11'59.8189"
ranslation along x axis:	-89061.322
ranslation along y axis:	177139.977
ranslation along z axis:	-74519.614
cale factor (ppm):	10125.2468890000

esidual differences between GPS and known coordinates :

n two dimensions:	
aximum error, (database point 5):	9.396
oot mean square error:	6.894
n three dimensions:	
aximum error, (database point 5):	9.396
oot mean square error:	6.895

Plane parameter evaluation

Starting point		Calculated point		Control point	
oint: 1				Point:	1043
rth	183382.871	Nrth	183382.880	Nrth	183376.195
ast	884798.731	East	884798.606	East	884796.497
gt	-161.188	Hgt	-161.188	Hgt	-161.103
rror :		7.010	3D error :		7.011

[illegible]	182767.982	Nrth	182767.982	Nrth	182771.186
[illegible]	885104.781	East	885104.748	East	885106.949
[illegible]	-162.213	Hgt	-162.213	Hgt	-162.392
2D error :		3.887	3D error :		3.891

Point:	5			Point:	1006
Nrth	182519.579	Nrth	182519.590	Nrth	182528.612
East	885368.604	East	885368.619	East	885371.193
Hgt	-162.308	Hgt	-162.308	Hgt	-162.296
2D error :		9.381	3D error :		9.381

Point:	6			Point:	1028
Nrth	181582.470	Nrth	181582.450	Nrth	181576.910
East	885682.735	East	885682.878	East	885680.212
Hgt	-163.277	Hgt	-163.277	Hgt	-163.194
2D error :		6.148	3D error :		6.149

Plane parameters

Northing coordinate of rotation center:	182563.226
Easting coordinate of rotation center:	885238.713
Rotation about the center point:	359°59'36.5039"
Translation north:	-0.000
Translation east:	0.000
Scale factor :	1.0000716874

Residual differences between GPS and known coordinates :

In two dimensions:

[illegible]mum error, (database point 5):	9.381
[illegible] mean square error:	6.893

In three dimensions:

Maximum error, (database point 5):	9.381
Root mean square error:	6.894

Height parameter evaluation

Starting point			Calculated point		Control point	
Point:	1			Point:	1043	
Nrth	183382.880	Nrth	183382.880	Nrth	183376.195	
East	884798.606	East	884798.606	East	884796.497	
Hgt	-161.188	Hgt	-161.213	Hgt	-161.103	
2D error :		7.010	3D error :		7.011	

Point:	4			Point:	1005
Nrth	182767.982	Nrth	182767.982	Nrth	182771.186
East	885104.748	East	885104.748	East	885106.949
Hgt	-162.213	Hgt	-162.220	Hgt	-162.392
2D error :		3.887	3D error :		3.891

Point:	5			Point:	1006
Nrth	182519.590	Nrth	182519.590	Nrth	182528.612
East	885368.619	East	885368.619	East	885371.193
Hgt	-162.308	Hgt	-162.301	Hgt	-162.296
[illegible]rror :		9.381	3D error :		9.381

[illegible]oint:	6			Point:	1028

	885682.878	East	885682.878	East	885680.212
	-163.277	Hgt	-163.251	Hgt	-163.194
error :	6.148	3D error :	6.148		

eight parameters
orthing coordinate of origin point: 183382.880
asting coordinate of origin point: 884798.606
eight above origin point: -0.025
lope north: -0.000
lope east: 0.000

esidual differences between GPS and known coordinates :
n two dimensions:
aximum error, (database point 5): 9.381
oot mean square error: 6.893
n three dimensions:
aximum error, (database point 5): 9.381
oot mean square error: 6.894

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point		Calculated point		Control point
c: 1005				Point: 4
rth 182771.186	Nrth	183507.354		Nrth 183500.460
ast 885106.949	East	885014.030		East 885010.761
gt -162.392	Hgt	-299.335		Hgt -299.130
D error : 7.630		3D error : 7.633		
oint: 1006				Point: 5
rth 182528.612	Nrth	183264.765		Nrth 183257.731
ast 885371.193	East	885278.272		East 885274.898
gt -162.298	Hgt	-299.249		Hgt -299.230
D error : 7.802		3D error : 7.802		
oint: 1043				Point: 1
rth 183376.195	Nrth	184112.399		Nrth 184105.451
ast 884796.497	East	884703.580		East 884700.439
gt -161.103	Hgt	-298.025		Hgt -297.980
D error : 7.625		3D error : 7.625		
oint: 1028				Point: 6
rth 181576.910	Nrth	182313.007		Nrth 182308.864
ast 885680.212	East	885587.289		East 885597.073
gt -163.194	Hgt	-300.182		Hgt -300.450
D error : 23.055		3D error : 23.057		

atum parameters
ranslation along x axis: -110.630
slation along y axis: 28.921
slation along z axis: 262.376

n two dimensions:
aximum error, (database point 1028): 23.055
oot mean square error: 13.311
n three dimensions:
laximum error, (database point 1028): 23.057
oot mean square error: 13.312

Datum parameter evaluation(Seven parameter)

Starting point		Calculated point		Control point	
oint:	1005			Point:	4
rth	182771.186	Nrth	183503.638	Nrth	183500.460
ast	885106.949	East	885012.950	East	885010.761
gt	-162.392	Hgt	-299.291	Hgt	-299.130
D error :		3.859	3D error :		3.863
oint:	1006			Point:	5
rth	182528.612	Nrth	183266.686	Nrth	183257.731
ast	885371.193	East	885277.302	East	885274.898
gt	-162.296	Hgt	-299.230	Hgt	-299.230
D error :		9.273	3D error :		9.273
oint:	1043			Point:	1
rth	183376.195	Nrth	184098.730	Nrth	184105.451
ast	884796.497	East	884698.601	East	884700.439
	-161.103	Hgt	-297.850	Hgt	-297.980
ror :		6.968	3D error :		6.969
oint:	1028			Point:	6
rth	181576.910	Nrth	182328.472	Nrth	182333.884
ast	885680.212	East	885594.318	East	885597.073
gt	-163.194	Hgt	-300.419	Hgt	-300.450
D error :		6.073	3D error :		6.073

atum parameters
otation about x axis: 359°42'37.2049"
otation about y axis: 0°35'03.0426"
otation about z axis: 359°47'58.4166"
ranslation along x axis: 88534.594
ranslation along y axis: -182652.126
ranslation along z axis: 74885.061
cale factor (ppm): -10333.3776650000

esidual differences between GPS and known coordinates :
n two dimensions:
laximum error, (database point 1006): 9.273
oot mean square error: 6.825
n three dimensions:
laximum error, (database point 1006): 9.273
oot mean square error: 6.826

Plane parameter evaluation

.:	1005			Point:	4
.n	183503.638	Nrth	183503.637	Nrth	183500.460
ast	885012.950	East	885012.917	East	885010.761
gt	-299.291	Hgt	-299.291	Hgt	-299.130
D error :		3.840	3D error :		3.843
oint:	1006			Point:	5
rth	183266.686	Nrth	183266.699	Nrth	183257.731
ast	885277.302	East	885277.315	East	885274.898
gt	-299.230	Hgt	-299.230	Hgt	-299.230
D error :		9.288	3D error :		9.288
oint:	1043			Point:	1
rth	184098.730	Nrth	184098.736	Nrth	184105.451
ast	884698.601	East	884698.475	East	884700.439
gt	-297.850	Hgt	-297.850	Hgt	-297.980
D error :		6.997	3D error :		6.998
oint:	1028			Point:	6
rth	182328.472	Nrth	182328.453	Nrth	182333.884
ast	885594.318	East	885594.464	East	885597.073
gt	-300.419	Hgt	-300.419	Hgt	-300.450
D error :		6.025	3D error :		6.025

lane parameters

orthing coordinate of rotation center:	183299.381
ng coordinate of rotation center:	885145.793
tion about the center point:	359°59'36.0483"
anslation north:	-0.000
ranslation east:	0.000
cale factor :	1.0000724425

esidual differences between GPS and known coordinates :

n two dimensions:	
laximum error, (database point 1006):	9.288
oot mean square error:	6.824
n three dimensions:	
laximum error, (database point 1006):	9.288
oot mean square error:	6.825

Height parameter evaluation

Starting point			Calculated point		Control point
oint:	1005			Point:	4
rth	183503.637	Nrth	183503.637	Nrth	183500.460
ast	885012.917	East	885012.917	East	885010.761
gt	-299.291	Hgt	-299.299	Hgt	-299.130
D error :		3.840	3D error :		3.844
oint:	1006			Point:	5
rth	183266.699	Nrth	183266.699	Nrth	183257.731
	885277.315	East	885277.315	East	885274.898
	-299.230	Hgt	-299.216	Hgt	-299.230
error :		9.288	3D error :		9.288

[illegible]:	1043			Point:	1
[illegible]	184098.736	Nrth	184098.736	Nrth	184105.451
[illegible]st	884698.475	East	884698.475	East	884700.439
Hgt	-297.850	Hgt	-297.875	Hgt	-297.980
3D error :		6.997	3D error :		6.997

Point:	1028			Point:	6
Nrth	182328.453	Nrth	182328.453	Nrth	182333.884
East	885594.464	East	885594.464	East	885597.073
Hgt	-300.419	Hgt	-300.400	Hgt	-300.450
3D error :		6.025	3D error :		6.025

Weight parameters
Northing coordinate of origin point: 183503.637
Easting coordinate of origin point: 885012.917
Weight above origin point: -0.008
Slope north: 0.000
Slope east: 0.000

Residual differences between GPS and known coordinates :
In two dimensions:
Maximum error, (database point 1006): 9.288
Root mean square error: 6.824
In three dimensions:
Maximum error, (database point 1006): 9.288
Root mean square error: 6.825

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point			Calculated point		Control point
Point:	1005			Point:	4
Nrth	182771.186	Nrth	183509.699	Nrth	183500.460
East	885106.949	East	885015.155	East	885010.761
Hgt	-162.392	Hgt	-299.341	Hgt	-299.130
3D error :		10.231	3D error :		10.233

Point:	1043			Point:	1
Nrth	183376.195	Nrth	184114.744	Nrth	184105.451
East	884796.497	East	884704.705	East	884700.439
Hgt	-161.103	Hgt	-298.029	Hgt	-297.980
3D error :		10.225	3D error :		10.225

Point:	1028			Point:	6
Nrth	181576.910	Nrth	182315.352	Nrth	182333.884
East	885680.212	East	885588.414	East	885597.073
Hgt	-163.194	Hgt	-300.189	Hgt	-300.450
3D error :		20.455	3D error :		20.456

[illegible] parameters
[illegible]slation along x axis: -109.905
Translation along y axis: 30.070

[redacted]ual differences between GPS and known coordinates :
[redacted]two dimensions:
aximum error, (database point 1028): 20.455
oot mean square error: 14.464
n three dimensions:
aximum error, (database point 1028): 20.456
oot mean square error: 14.465

Datum parameter evaluation(Seven parameter)

Starting point		Calculated point		Control point	
oint: 1005				Point: 4	
rth 182771.186	Nrth	183506.549		Nrth	183500.460
ast 885106.949	East	885013.587		East	885010.761
gt -162.392	Hgt	-299.345		Hgt	-299.130
D error : 6.713		3D error :	6.717		
oint: 1043				Point: 1	
rth 183376.195	Nrth	184101.386		Nrth	184105.451
ast 884796.497	East	884698.748		East	884700.439
gt -161.103	Hgt	-297.732		Hgt	-297.980
D error : 4.402		3D error :	4.409		
oint: 1028				Point: 6	
181576.910	Nrth	182331.859		Nrth	182333.884
885680.212	East	885595.937		East	885597.073
gt -163.194	Hgt	-300.483		Hgt	-300.450
D error : 2.321		3D error :	2.321		

atum parameters
otation about x axis: 359°58'07.0358"
otation about y axis: 0°35'01.7751"
otation about z axis: 359°19'22.2874"
ranslation along x axis: -58808.908
ranslation along y axis: -280380.374
ranslation along z axis: -5731.984
cale factor (ppm): -10327.1003330000

esidual differences between GPS and known coordinates :
n two dimensions:
aximum error, (database point 1005): 6.713
oot mean square error: 4.825
n three dimensions:
aximum error, (database point 1005): 6.717
oot mean square error: 4.829

Plane parameter evaluation

Starting point		Calculated point		Control point	
[redacted] c: 1005				Point: 4	
rth 183506.549	Nrth	183506.555		Nrth	183500.460

[illegible]	-299.345	Hgt	-299.345	Hgt	-299.130
[illegible]ror :		6.707	3D error :		6.710

Point:	1043			Point:	1
Nrth	184101.386	Nrth	184101.407	Nrth	184105.451
East	884698.748	East	884698.627	East	884700.439
Hgt	-297.732	Hgt	-297.732	Hgt	-297.980
3D error :		4.432	3D error :		4.439

Point:	1028			Point:	6
Nrth	182331.859	Nrth	182331.833	Nrth	182333.884
East	885595.937	East	885596.088	East	885597.073
Hgt	-300.483	Hgt	-300.483	Hgt	-300.450
3D error :		2.275	3D error :		2.275

Plane parameters

Northing coordinate of rotation center:	183313.265
Easting coordinate of rotation center:	885102.758
Rotation about the center point:	359°59'37.0261"
Translation north:	-0.000
Translation east:	0.000
Scale factor :	1.0000827328

Residual differences between GPS and known coordinates :

In two dimensions:

Maximum error, (database point 1005):	6.707
Root mean square error:	4.823

Three dimensions:

[illegible]mum error, (database point 1005):	6.710
Root mean square error:	4.827

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point			Calculated point		Control point
Point:	1005			Point:	4
Nrth	182771.186	Nrth	183500.352	Nrth	183500.460
East	885106.949	East	885010.708	East	885010.761
Hgt	-162.392	Hgt	-299.142	Hgt	-299.130
3D error :		0.119	3D error :		0.120

Point:	1043			Point:	1
Nrth	183376.195	Nrth	184105.397	Nrth	184105.451
East	884796.497	East	884700.259	East	884700.439
Hgt	-161.103	Hgt	-297.830	Hgt	-297.980
3D error :		0.189	3D error :		0.241

Point:	1027			Point:	6

Point:	1043			Point:	1
[illegible]	183376.195	Nrth	184105.389	Nrth	184105.451
[illegible]c	884796.497	East	884700.245	East	884700.439
[illegible]gt	-161.103	Hgt	-297.873	Hgt	-297.980

Point:	1027			Point:	6
Nrth	181604.948	Nrth	182334.037	Nrth	182333.884
East	885693.550	East	885597.293	East	885597.073
Hgt	-163.796	Hgt	-300.632	Hgt	-300.450
2D error :		0.268	3D error :		0.324

Point:	1006			Point:	5
Nrth	182528.612	Nrth	183257.755	Nrth	183257.781
East	885371.193	East	885274.938	East	885274.898
Hgt	-162.296	Hgt	-299.099	Hgt	-299.230
2D error :		0.047	3D error :		0.139

Datum parameters
Translation along x axis: -112.721
Translation along y axis: 25.384
Translation along z axis: 255.789

Residual differences between GPS and known coordinates :
In two dimensions:
Maximum error, (database point 1027): 0.268
Root mean square error: 0.183
In three dimensions:
Maximum error, (database point 1027): 0.324
Root mean square error: 0.223

Datum parameter evaluation(Seven parameter)

Starting point		Calculated point		Control point	
Point:	1005			Point:	4
Nrth	182771.186	Nrth	183500.379	Nrth	183500.460
East	885106.949	East	885010.742	East	885010.761
Hgt	-162.392	Hgt	-299.175	Hgt	-299.130
2D error :		0.083	3D error :		0.094

Point:	1043			Point:	1
Nrth	183376.195	Nrth	184105.505	Nrth	184105.451
East	884796.497	East	884700.435	East	884700.439
Hgt	-161.103	Hgt	-297.952	Hgt	-297.980
2D error :		0.054	3D error :		0.061

Point:	1027			Point:	6
Nrth	181604.948	Nrth	182333.917	Nrth	182333.884
East	885693.550	East	885597.064	East	885597.073

:D error :	0.035	3D error :	0.038		
'oint:	1006			Point:	5
irth	182528.612	Nrth	183257.724	Nrth	183257.731
:ast	885371.193	East	885274.929	East	885274.898
igt	-162.296	Hgt	-299.229	Hgt	-299.230
D 'ror :	0.032	3D error :	0.032		

'atum parameters

:otation about x axis:	0°03'21.2889"
:otation about y axis:	359°59'10.3312"
:otation about z axis:	359°56'07.7456"
'ranslation along x axis:	-22097.024
'ranslation along y axis:	-15529.663
'ranslation along z axis:	-15432.047
:cale factor (ppm):	10.5409877380

.esidual differences between GPS and known coordinates :

n two dimensions:	
laximum error, (database point 1005):	0.083
:oot mean square error:	0.055
n three dimensions:	
laximum error, (database point 1005):	0.094
.oot mean square error:	0.061

Plane parameter evaluation

Starting point		Calculated point		Control point	
'oint:	1005			Point:	4
irth	183500.379	Nrth	183500.379	Nrth	183500.460
	885010.742	East	885010.742	East	885010.761
	-299.175	Hgt	-299.175	Hgt	-299.130
D error :	0.083	3D error :	0.094		
'oint:	1043			Point:	1
irth	184105.505	Nrth	184105.506	Nrth	184105.451
.ast	884700.435	East	884700.436	East	884700.439
igt	-297.952	Hgt	-297.952	Hgt	-297.980
D error :	0.055	3D error :	0.061		
'oint:	1027			Point:	6
irth	182333.917	Nrth	182333.917	Nrth	182333.884
:ast	885597.064	East	885597.064	East	885597.073
igt	-300.435	Hgt	-300.435	Hgt	-300.450
:D error :	0.034	3D error :	0.038		
'oint:	1006			Point:	5
irth	183257.724	Nrth	183257.724	Nrth	183257.731
:ast	885274.929	East	885274.929	East	885274.898
igt	-299.229	Hgt	-299.229	Hgt	-299.230
:D error :	0.032	3D error :	0.032		

.e parameters

orthing coordinate of rotation center:	183299.381

Rotation about the center point: 0°00'00.1153"
Translation north: -0.000
Translation east: 0.000
Scale factor : 1.0000000803

Residual differences between GPS and known coordinates :
In two dimensions:
Maximum error, (database point 1005): 0.083
Root mean square error: 0.055
In three dimensions:
Maximum error, (database point 1005): 0.094
Root mean square error: 0.061

Height parameter evaluation

Starting point		Calculated point		Control point	
Point: 1005				Point: 4	
Nrth	183500.379	Nrth	183500.379	Nrth	183500.460
East	885010.742	East	885010.742	East	885010.781
Hgt	-299.175	Hgt	-299.175	Hgt	-299.130
3D error :	0.083	3D error :		0.094	
Point: 1043				Point: 1	
Nrth	184105.506	Nrth	184105.506	Nrth	184105.451
East	884700.436	East	884700.436	East	884700.439
Hgt	-297.952	Hgt	-297.951	Hgt	-297.980
3D error :	0.055	3D error :		0.062	
Point: 1027				Point: 6	
Nrth	182333.917	Nrth	182333.917	Nrth	182333.884
East	885597.064	East	885597.064	East	885597.073
Hgt	-300.435	Hgt	-300.435	Hgt	-300.450
3D error :	0.034	3D error :		0.037	
Point: 1006				Point: 5	
Nrth	183257.724	Nrth	183257.724	Nrth	183257.731
East	885274.929	East	885274.929	East	885274.898
Hgt	-299.229	Hgt	-299.229	Hgt	-299.230
3D error :	0.032	3D error :		0.032	

Height parameters
Northing coordinate of origin point: 183500.379
Easting coordinate of origin point: 885010.742
Height above origin point: 0.000
Slope north: -0.000
Slope east: -0.000

Residual differences between GPS and known coordinates :
In two dimensions:
Maximum error, (database point 1005): 0.083
Root mean square error: 0.055
In three dimensions:

Maximum error, (database point 1005): 0.094
Root mean square error: 0.061

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

arting point		Calculated point		Control point	
int:	1043			Point:	1
lrth	183376.195	Nrth	184105.351	Nrth	184105.451
:ast	884796.497	East	884700.223	East	884700.439
lgt	-161.103	Hgt	-297.892	Hgt	-297.980
:D error :		0.238	3D error :		0.254
oint:	1027			Point:	6
lrth	181604.948	Nrth	182333.998	Nrth	182333.884
:ast	885693.550	East	885597.271	East	885597.073
lgt	-163.796	Hgt	-300.651	Hgt	-300.450
:D error :		0.229	3D error :		0.305
oint:	1006			Point:	5
lrth	182528.612	Nrth	183257.717	Nrth	183257.731
:ast	885371.193	East	885274.915	East	885274.898
lgt	-162.296	Hgt	-299.117	Hgt	-299.230
:D error :		0.022	3D error :		0.115

atum parameters
ranslation along x axis: -112.744
ranslation along y axis: 25.379
ranslation along z axis: 255.746

esidual differences between GPS and known coordinates :
n two dimensions:
um error, (database point 1043): 0.238
mean square error: 0.191
n three dimensions:
laximum error, (database point 1027): 0.305
oot mean square error: 0.238

Datum parameter evaluation(Seven parameter)

Starting point		Calculated point		Control point	
oint:	1043			Point:	1
lrth	183376.195	Nrth	184105.466	Nrth	184105.451
:ast	884796.497	East	884700.425	East	884700.439
lgt	-161.103	Hgt	-297.980	Hgt	-297.980
:D error :		0.020	3D error :		0.020
oint:	1027			Point:	6
lrth	181604.948	Nrth	182333.903	Nrth	182333.884
:ast	885693.550	East	885597.063	East	885597.073
lgt	-163.796	Hgt	-300.450	Hgt	-300.450

ror :		0.021	3D error :		0.021
oint:	1006			Point:	5

East	885371.193	East	885274.922	East	885274.898
Hgt	-162.296	Hgt	-299.230	Hgt	-299.230
2D error :	0.041	3D error :	0.041		

Datum parameters

Rotation about x axis:	0°03'04.9660"
Rotation about y axis:	359°59'15.0016"
Rotation about z axis:	359°56'34.7430"
Translation along x axis:	-19511.124
Translation along y axis:	-14087.907
Translation along z axis:	-14131.361
Scale factor (ppm):	1.3489412716

Residual differences between GPS and known coordinates :

In two dimensions:	
Maximum error, (database point 1006):	0.041
Root mean square error:	0.029
In three dimensions:	
Maximum error, (database point 1006):	0.041
Root mean square error:	0.029

Plane parameter evaluation

Starting point		Calculated point		Control point	
Point:	1043			Point:	1
Nrth	184105.466	Nrth	184105.466	Nrth	184105.451
East	884700.425	East	884700.425	East	884700.439
Hgt	-297.980	Hgt	-297.980	Hgt	-297.980
2D error :	0.020	3D error :	0.020		
Point:	1027			Point:	6
Nrth	182333.903	Nrth	182333.902	Nrth	182333.884
East	885597.063	East	885597.063	East	885597.073
Hgt	-300.450	Hgt	-300.450	Hgt	-300.450
2D error :	0.021	3D error :	0.021		
Point:	1006			Point:	5
Nrth	183257.698	Nrth	183257.698	Nrth	183257.731
East	885274.922	East	885274.922	East	885274.898
Hgt	-299.230	Hgt	-299.230	Hgt	-299.230
2D error :	0.041	3D error :	0.041		

Plane parameters

Northing coordinate of rotation center:	183232.355
Easting coordinate of rotation center:	885190.803
Rotation about the center point:	0°00'00.1073"
Translation north:	-0.000
Translation east:	0.000
Scale factor :	1.0000000751

Residual differences between GPS and known coordinates :

Two dimensions:	
Maximum error, (database point 1006):	0.041
Root mean square error:	0.029

laximum error, (database point 1006): 0.041
oot mean square error: 0.029

GPS adjustment calibration

Datum parameter evaluation(Three parameter)

Starting point		Calculated point		Control point	
oint: 1043				Point: 1	
rth	183376.195	Nrth	184105.351	Nrth	184105.451
ast	884796.497	East	884700.223	East	884700.439
gt	-161.103	Hgt	-297.892	Hgt	-297.980
D error :	0.238	3D error :	0.254		
oint: 1027				Point: 6	
rth	181604.948	Nrth	182333.998	Nrth	182333.884
ast	885693.550	East	885597.271	East	885597.073
gt	-163.796	Hgt	-300.651	Hgt	-300.450
D error :	0.229	3D error :	0.305		
oint: 1006				Point: 5	
rth	182528.612	Nrth	183257.717	Nrth	183257.731
ast	885371.193	East	885274.915	East	885274.898
gt	-162.296	Hgt	-299.117	Hgt	-299.230
D error :	0.022	3D error :	0.115		

atum parameters
ranslation along x axis: -112.744
ranslation along y axis: 25.379
slation along z axis: 255.746

sidual differences between GPS and known coordinates :
n two dimensions:
laximum error, (database point 1043): 0.238
oot mean square error: 0.191
n three dimensions:
laximum error, (database point 1027): 0.305
oot mean square error: 0.238

Datum parameter evaluation(Seven parameter)

Starting point		Calculated point		Control point	
oint: 1043				Point: 1	
rth	183376.195	Nrth	184105.466	Nrth	184105.451
ast	884796.497	East	884700.425	East	884700.439
gt	-161.103	Hgt	-297.980	Hgt	-297.980
D error :	0.020	3D error :	0.020		

t: 1027				Point: 6	
	181604.948	Nrth	182333.903	Nrth	182333.884
st	885693.550	East	885597.063	East	885597.073

:D error :	0.021	3D error :	0.021		
'oint:	1006			Point:	5
Irth	182528.612	Nrth	183257.698	Nrth	183257.731
:ast	885371.193	East	885274.922	East	885274.898
lgt	-162.296	Hgt	-299.230	Hgt	-299.230
:D 'ror :	0.041	3D error :	0.041		

'atum parameters

:otation about x axis:	0°03'04.9660"
:otation about y axis:	359°59'15.0016"
:otation about z axis:	359°56'34.7430"
'ranslation along x axis:	-19511.124
'ranslation along y axis:	-14087.907
'ranslation along z axis:	-14131.361
:cale factor (ppm):	1.3489412716

:esidual differences between GPS and known coordinates :

n two dimensions:	
laximum error, (database point 1006):	0.041
:oot mean square error:	0.029
n three dimensions:	
laximum error, (database point 1006):	0.041
:oot mean square error:	0.029

Plane parameter evaluation

Starting point		Calculated point		Control point	
'oint:	1043			Point:	1
Irth	184105.466	Nrth	184105.466	Nrth	184105.451
:r	884700.425	East	884700.426	East	884700.439
	-297.980	Hgt	-297.980	Hgt	-297.980
error :	0.020	3D error :	0.020		
'oint:	1027			Point:	6
Irth	182333.903	Nrth	182333.902	Nrth	182333.884
:ast	885597.063	East	885597.063	East	885597.073
lgt	-300.450	Hgt	-300.450	Hgt	-300.450
D error :	0.021	3D error :	0.021		
'oint:	1006			Point:	5
Irth	183257.698	Nrth	183257.698	Nrth	183257.731
:ast	885274.922	East	885274.922	East	885274.898
lgt	-299.230	Hgt	-299.230	Hgt	-299.230
:D error :	0.041	3D error :	0.041		

'lane parameters

lorthing coordinate of rotation center:	183232.355
:asting coordinate of rotation center:	885190.803
:otation about the center point:	0°00'00.1073"
'ranslation north:	-0.000

ITA

'r ılation east:	0.000
› factor :	1.0000000000

n two dimensions:
laximum error, (database point 1006): 0.041
oot mean square error: 0.029
n three dimensions:
laximum error, (database point 1006): 0.041
oot mean square error: 0.029

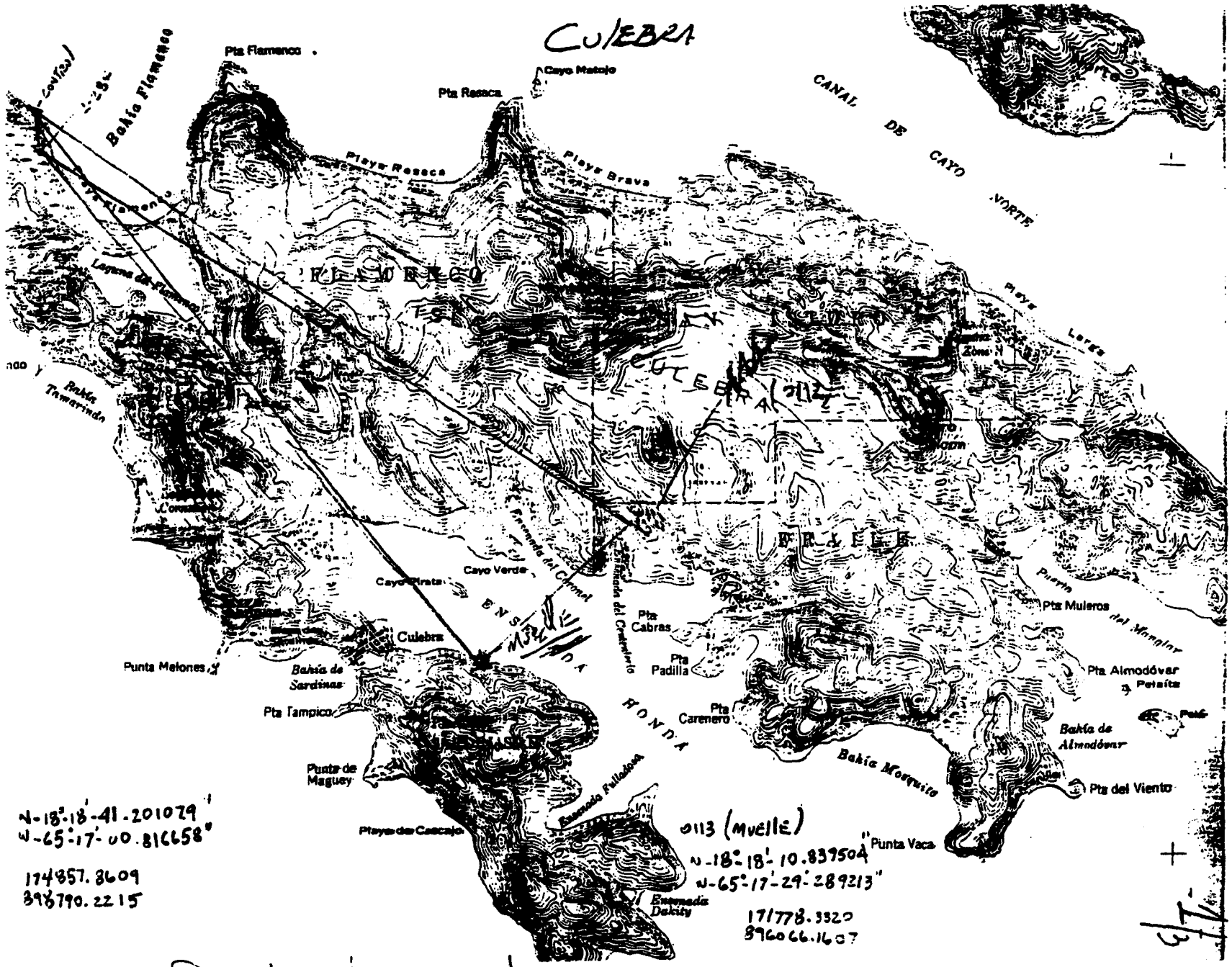
Height parameter evaluation

Starting point		Calculated point		Control point	
oint:	1043			Point:	1
rth	184105.466	Nrth	184105.466	Nrth	184105.451
ast	884700.426	East	884700.426	East	884700.439
gt	-297.980	Hgt	-297.980	Hgt	-297.980
D error :		0.020	3D error :		0.020
oint:	1027			Point:	6
rth	182333.902	Nrth	182333.902	Nrth	182333.884
ast	885597.063	East	885597.063	East	885597.073
gt	-300.450	Hgt	-300.450	Hgt	-300.450
D error :		0.021	3D error :		0.021
oint:	1006			Point:	5
rth	183257.698	Nrth	183257.698	Nrth	183257.731
ast	885274.922	East	885274.922	East	885274.898
gt	-299.230	Hgt	-299.230	Hgt	-299.230
D error :		0.041	3D error :		0.041

eight parameters
orthing coordinate of origin point: 184105.466
ng coordinate of origin point: 884700.426
t above origin point: 0.000
ope north: 0.000
lope east: -0.000

esidual differences between GPS and known coordinates :
ot Applicable

	X	Y	Z	
.000	884700.419	184105.305	0.000	HVC
3(	884700.419	184105.305	0.000	HVC
	884806.406	183821.714	0.000	PK
.002	884799.165	183811.975	0.000	PK
.003	884808.409	183802.225	0.000	PK
.004	884820.109	183812.687	0.000	PK
.005	885010.735	183500.348	0.000	HVC L284
3001	885010.735	183500.348	0.000	PK
3002	885010.735	183500.348	0.000	PK
.006	885274.922	183257.698	0.000	PK
.007	885220.855	183159.467	0.000	PK
.008	885291.659	183181.473	0.000	PK
.009	885201.806	183071.546	0.000	PK
.010	885219.598	183018.624	0.000	PK
.011	885221.002	182947.957	0.000	PK
.012	885206.746	182862.749	0.000	PK
.013	885345.518	182940.632	0.000	PK
.014	885209.110	182800.407	0.000	PK
.015	885243.103	182760.831	0.000	PK
.016	885247.463	182748.894	0.000	PK
.017	885240.772	182739.715	0.000	PK
.018	885329.165	182603.827	0.000	PK
.019	885459.247	182679.818	0.000	PK
.020	885423.316	182486.116	0.000	PK
.021	885445.515	182492.815	0.000	PK
.022	885478.497	182451.046	0.000	PK
.023	885489.162	182417.006	0.000	PK
.024	885519.636	182383.379	0.000	PK
.025	885552.562	182328.926	0.000	PK
	885584.137	182346.330	0.000	PK
	885597.063	182333.902	0.000	PK
.028	885583.719	182305.866	0.000	PK
.029	885341.507	182830.338	0.000	PK
.030	885356.647	182835.350	0.000	PK
.031	885351.373	182850.601	0.000	PK
.032	885397.773	182788.096	0.000	PK
.033	885357.416	182886.172	0.000	PK
.034	885351.741	182886.502	0.000	PK
.035	885343.896	182897.220	0.000	PK
.036	885342.565	182900.509	0.000	PK
.037	885339.239	182901.797	0.000	PK
.038	885335.806	182900.466	0.000	PK
.039	885334.622	182897.314	0.000	PK
.040	885335.760	182893.694	0.000	PK
.041	885339.118	182892.428	0.000	PK
.042	885342.577	182893.846	0.000	PK
.043	884700.426	184105.466	0.000	PK
1	884700.439	184105.451	0.000	STA-1
2	898790.221	174857.861	0.000	STA-112
3	896066.161	171778.332	0.000	STA-113
4	885010.761	183500.460	0.000	STA-284
5	885274.898	183257.731	0.000	STA-1006
6	885597.073	182333.884	0.000	STA-1028



GPS Points Layout
session 146-1

-------- C:\TNL\DATA\PROJ\CULEDRAS\00101461.MES

Station ID: 0010 Session #: 146-1 May 26, 1995 14:46
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 1.3746 [meters] (entered in the field in meters)
Long station name:

Receiver serial # = 3194
Antenna serial # = 0 (entered in the office)
NP Software = 6.01 SP Software = 1.21 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 14:46
Data-logging stop time = 15:48

Tracking	SV 16	SV 13	SV 10	SV 22	SV 27	SV 28	SV 29	SV 31
total El	248	248	248	105	154	160	248	248
cont El	248	248	248	105	154	160	248	248

SV Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [2.0]	Mean Position [3722]
Latitude:	18:20'06.80357" N	18:20'06.77990" N
Longitude:	65:19'25.08062" W	65:19'25.07202" W
Height [m]:	-26.4	-30.4

2D Position Position not available

-------- C:\TNL\DATA\PROJ\CULEBRAS 01121541.MES

Station ID: 0112 Session #: 154-1 Jun 3, 1995 14:45
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 1.2070 [meters] (entered in the field in meters)
Long station name:

Receiver serial # = 4307
Antenna serial # = 0 (entered in the office)
NP Software = 5.68 SP Software = 1.26 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 14:46
Data-logging stop time = 18:13

Tracking	SV 2	SV 4	SV 7	SV 14	SV 15	SV 18	SV 19	SV 27	SV 28	SV 29
total L1	545	218	557	573	830	275	830	830	32	150
cont L1	545	218	557	573	830	275	830	830	32	150

Tracking	SV 31
total L1	554
cont L1	554

Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [1.7]	Mean Position [12459]
Latitude:	18:18'33.58678" N	18:18'34.11495" N
Longitude:	65:16'58.54208" W	65:16'59.21682" W
Height [m]:	-51.2	-29.8

2D Position	Best PDOP Position [2.9]	Mean Position [18]
Latitude:	18:18'33.95553" N	18:18'33.88870" N
Longitude:	65:16'59.55694" W	65:16'59.32213" W

-------- C:\TNL\DATA\PROJ\JULEDRAS\01131541.MES

Station ID: 0113 Session #: 154-1 Jun 3, 1995 15:12
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 1.3838 [meters] (entered in the field in meters)
Long station name:

Receiver serial # = 3198
Antenna serial # = 0 (entered in the office)
NP Software = 6.01 SP Software = 1.21 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 15:13
Data-logging stop time = 18:27

Tracking	SV 2	SV 4	SV 7	SV 14	SV 15	SV 18	SV 19	SV 27	SV 31
total L1	606	234	611	621	726	88	740	777	444
cont L1	606	234	611	614	726	88	740	777	444

SV Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [1.7]	Mean Position [10596]
Latitude:	18:18'03.21008" N	18:18'03.75913" N
Longitude:	65:17'27.01678" W	65:17'27.80233" W
Height [m]:	-73.5	-49.2

2D Position	Best PDOP Position [2.0]	Mean Position [1125]
Latitude:	18:18'04.02595" N	18:18'04.99787" N
Longitude:	65:17'27.66620" W	65:17'27.34497" W

-------- C:\TNL\DATA\PROJ\CULEDRAS\02841461.MES

Station ID: 0284 Session #: 146-1 May 28, 1995 14:33
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 1.4508 [meters] (entered in the field in meters)
Long station name:

Receiver serial # = 3198
Antenna serial # = 0 (entered in the office)
NP Software = 6.01 SP Software = 1.21 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 14:33
Data-logging stop time = 15:50

Tracking	SV 15	SV 18	SV 19	SV 22	SV 27	SV 28	SV 29	SV 31
total L1	305	305	305	157	158	212	305	305
cont L1	305	305	305	157	158	212	305	305

SV Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [2.0]	Mean Position [4565]
Latitude:	18:20'00.59421" N	18:20'00.84215" N
Longitude:	65:19'21.49505" W	65:19'21.81762" W
Height [m]:	-38.2	-33.8

2D Position	Best PDOP Position [1.0]	Mean Position [2]
Latitude:	18:20'00.48826" N	18:19'59.60878" N
Longitude:	65:19'21.20979" W	65:19'21.16389" W

-------- C:\TNL\DATA\PROJ\CULEDRAS\02841541.MES

Station ID: 0284 Session #: 154-1 Jun 3, 1995 15:32
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 2.5000 [meters] (entered in the field in meters)
Long station name:

Receiver serial # = 3194
Antenna serial # = 0 (entered in the office)
NP Software = 6.01 SP Software = 1.21 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 15:32
Data-logging stop time = 17:51

Tracking	SV 2	SV 4	SV 7	SV 14	SV 15	SV 18	SV 19	SV 27	SV 31
total L1	464	134	470	300	553	35	553	553	364
cont L1	464	134	470	289	553	35	553	553	364

SV Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [2.0]	Mean Position [8275]
Latitude:	18:20'00.68912" N	18:20'00.64468" N
Longitude:	65:19'21.84580" W	65:19'21.88025" W
Height [m]:	28.8	-45.7

2D Position	Best PDOP Position [2.1]	Mean Position [60]
Latitude:	18:19'59.58187" N	18:20'00.02315" N
Longitude:	65:19'21.14728" W	65:19'22.87208" W

-------- C:\TNL\DATA\PROJ\CULEDRAS\10061461.MES

Station ID: 1006 Session #: 146-1 May 26, 1995 14:22
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 1.4554 [meters] (entered in the field in meters)
Long station name:

Receiver serial # = 3667
Antenna serial # = 0 (entered in the office)
NP Software = 6.01 SP Software = 2.07 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 14:22
Data-logging stop time = 15:46

Tracking	SV 15	SV 18	SV 19	SV 22	SV 27	SV 28	SV 29	SV 31
total L1	337	337	337	103	145	257	337	337
cont L1	337	337	337	83	145	230	337	337

SV Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [2.0]	Mean Position [5062]
Latitude:	18:19'58.18087" N	18:19'58.26764" N
Longitude:	65:19'19.15930" W	65:19'19.00027" W
Height [m]:	-24.9	-38.3

2D Position Position not available

-------- C:\TNL\DATA\PROJ\CULEBRAS\10281461.MES

Station ID: 1028 Session #: 146-1 May 26, 1995 14:13
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 2.4000 [meters] (entered in the field in meters)
Long station name:

Receiver serial # = 4307
Antenna serial # = 0 (entered in the office)
NP Software = 5.68 SP Software = 1.26 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 14:14
Data-logging stop time = 15:43

Tracking	SV 15	SV 18	SV 19	SV 22	SV 27	SV 28	SV 29	SV 31
total L1	357	357	357	113	131	189	357	357
cont L1	357	357	357	51	131	189	357	357

SV Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [2.5]	Mean Position [5099]
Latitude:	18:19'49.38340" N	18:19'49.05052" N
Longitude:	65:19'15.87453" W	65:19'15.88033" W
Height [m]:	-128.6	-33.4

2D Position	Best PDOP Position [1.5]	Mean Position [268]
Latitude:	18:19'49.41371" N	18:19'49.18521" N
Longitude:	65:19'15.84131" W	65:19'16.20823" W

-------- C:\TNL\DATA\PROJ\CULEDRAS\00011541.MES

Station ID: 0001 Session #: 154-1 Jun 3, 1995 15:42
Reference Position - NOT SPECIFIED:
Lat. = 0:00'00.000" N Long. = 0:00'00.000" W Height = 0.0 [meters]
Antenna height = 1.2573 [meters] (entered in the field in feet)
Long station name:

Receiver serial # = 3667
Antenna serial # = 0 (entered in the office)
NP Software = 6.01 SP Software = 2.07 Download Software = 3.11.00

Survey schedule: UNSPECIFIED
Data-logging start time = 15:43
Data-logging stop time = 17:56

Tracking	SV 2	SV 4	SV 7	SV 14	SV 15	SV 18	SV 19	SV 27	SV 31
total L1	480	143	486	601	532	49	532	532	327
cont L1	480	143	445	601	532	38	532	532	327

SV Selection mode = AUTOMATIC
Elevation mask = 15 [degrees] Minimum # of SVs = 3

3D Position	Best PDOP Position [1.7]	Mean Position [7984]
Latitude:	18:20'06.10329" N	18:20'06.60071" N
Longitude:	65:19'24.25915" W	65:19'24.98535" W
Height [m]:	-71.2	-53.1

2D Position	Best PDOP Position [2.7]	Mean Position [30]
Latitude:	18:20'03.04671" N	18:20'02.86378" N
Longitude:	65:19'23.37287" W	65:19'22.92579" W

Summary of directory: c:\culebras\results

Session	From	To	rms	rdop	ratio	distance(m)	ah1(m)	ah2(m)
-1	0113	0284	0.153	0.053	1.020	4910.785	1.454	2.570
-1	0001	0112	0.100	0.048	1.250	5136.882	1.327	1.277
154-1	0112	0284	0.093	0.048	1.380	4957.683	1.277	2.570
154-1	0001	0113	0.101	0.051	2.100	5110.510	1.327	1.454
146-1	0010	1006	0.018	0.092	2.200	312.119	1.445	1.525
154-1	0112	0113	0.039	0.042	8.710	1253.372	1.277	1.454
154-1	0001	0284	0.025	0.052	10.710	207.240	1.327	2.570
146-1	0284	1006	0.015	0.081	11.050	109.338	1.521	1.525
146-1	0010	1028	0.021	0.102	16.440	605.188	1.445	2.470
146-1	0284	1028	0.021	0.089	16.960	397.945	1.521	2.470
146-1	1006	1028	0.018	0.080	20.580	298.213	1.525	2.470
146-1	0010	0284	0.016	0.085	41.870	207.245	1.445	1.521

1	A01	18°20'07.227385"	65°19'25.017576"	-90.82	---	YXZ
2	0010	18°20'07.207915"	65°19'25.016856"	-90.82	---	YXZ
3	0112	18°18'34.714309"	65°16'59.331550"	-68.37	---	YXZ
4	0113	18°18'04.346447"	65°17'27.794117"	-92.18	---	YXZ
5	0284	18°20'01.192199"	65°19'21.832403"	-91.18	---	YXZ
6	1006	18°19'58.770873"	65°19'19.105062"	-91.21	---	YXZ
7	1028	18°19'49.594054"	65°19'15.816028"	-91.58	---	YXZ

SYSTEM PARAMETERS

Network status = reduced computed adjusted
Datum = WGS-84
Coordinate System = Geographic
Zone = Global
Linear unit = meter

[illegible]	1	1	gpsaz/F	ajstd	0001	0112	123°36'27.2241"	0.0376	-0.0832
[illegible]	1	1	gpsht/F	ajstd	0001	0112	+22.4602	0.0031	-0.0085
[illegible]	1	1	gpsds/F	ajstd	0001	0112	5136.8976	0.0011	-0.0005
4	2	1	gpsaz/F	ajstd	0001	0113	137°39'10.7221"	0.0393	+0.1021
5	2	1	gpsht/F	ajstd	0001	0113	-1.3472	0.0033	-0.0112
[illegible]	2	1	gpsds/F	ajstd	0001	0113	5110.5836	0.0010	-0.0032
[illegible]	3	1	gpsaz/F	ajstd	0001	0284	153°10'27.9953"	0.2389	-0.0779
[illegible]	3	1	gpsht/F	ajstd	0001	0284	-0.3535	0.0008	+0.0011
[illegible]	3	1	gpsds/F	ajstd	0001	0284	207.2428	0.0003	+0.0002
10	4	1	gpsaz/F	ajstd	1006	1028	161°06'15.7724"	0.2371	+0.7348
11	4	1	gpsht/F	ajstd	1006	1028	-0.3759	0.0009	+0.0030
12	4	1	gpsds/F	ajstd	1006	1028	298.2170	0.0002	+0.0002
13	5	1	gpsaz/F	ajstd	0010	1006	146°12'37.6231"	0.2724	+0.7787
14	5	1	gpsht/F	ajstd	0010	1006	-0.3900	0.0011	+0.0023
15	5	1	gpsds/F	ajstd	0010	1006	312.1228	0.0002	-0.0003
16	6	1	gpsaz/F	ajstd	0010	1028	153°29'12.8163"	0.1810	-0.5209
17	6	1	gpsht/F	ajstd	0010	1028	-0.7553	0.0014	-0.0053
18	6	1	gpsds/F	ajstd	0010	1028	605.1958	0.0003	-0.0010
19	7	1	gpsaz/F	ajstd	0010	0284	153°10'54.2655"	0.3386	-0.2662
20	7	1	gpsht/F	ajstd	0010	0284	-0.3568	0.0009	+0.0004
21	7	1	gpsds/F	ajstd	0010	0284	207.2474	0.0002	+0.0006
[illegible]	8	1	gpsaz/F	ajstd	0112	0113	221°50'14.2558"	0.0560	-0.0528
23	8	1	gpsht/F	ajstd	0112	0113	-23.8102	0.0010	-0.0000
24	8	1	gpsds/F	ajstd	0112	0113	1253.1612	0.0003	-0.0002
25	9	1	gpsaz/F	ajstd	0112	0284	302°26'17.9959"	0.0367	+0.0416
26	9	1	gpsht/F	ajstd	0112	0284	-22.7993	0.0028	-0.0048
[illegible]	9	1	gpsds/F	ajstd	0112	0284	4957.6928	0.0011	+0.0032
28	10	1	gpsaz/F	udsbl	0113	0284	317°01'08.3171"	0.0624	-9.8650
29	10	1	gpsht/F	ajstd	0113	0284	+1.0338	0.0052	-0.0277
30	10	1	gpsds/F	udsbl	0113	0284	4910.8555	0.0017	+0.3531
31	11	1	gpsaz/F	ajstd	0284	1006	132°54'38.6811"	0.5257	+0.4550
32	11	1	gpsht/F	ajstd	0284	1006	-0.0322	0.0008	+0.0010
33	11	1	gpsds/F	ajstd	0284	1006	109.3391	0.0002	+0.0000
34	12	1	gpsaz/F	ajstd	0284	1028	153°38'45.7174"	0.2300	-0.4434
35	12	1	gpsht/F	ajstd	0284	1028	-0.4029	0.0012	-0.0012
36	12	1	gpsds/F	ajstd	0284	1028	397.3504	0.0003	+0.0008

SUMMARY OF COVARIANCES
NETWORK = CULEBRAS
TIME = Mon Jun 05 08:50:54 1995

FROM	TO	AZIMUTH	1.00σ	DISTANCE	1.00σ	DELTA H	1.00σ	HOR PREC
0001	0010	52°21'04"	8148.78	0.03	0.0011	+0.00	0.0034	1: 24
0001	0112	123°36'27"	0.07	5136.90	0.0020	+22.45	0.0055	1: 2582016
0001	0113	137°39'11"	0.08	5110.58	0.0021	-1.36	0.0058	1: 2483058
0001	0284	153°10'28"	0.75	207.24	0.0009	-0.35	0.0026	1: 228556
0001	1006	146°12'21"	0.70	312.12	0.0010	-0.38	0.0033	1: 304231
0001	1028	153°29'03"	0.40	605.19	0.0010	-0.76	0.0036	1: 580118
0010	0112	123°36'28"	0.08	5136.89	0.0022	+22.45	0.0060	1: 2382475
0010	0113	137°39'12"	0.08	5110.58	0.0022	-1.36	0.0063	1: 2313654
0010	0284	153°10'54"	0.83	207.25	0.0005	-0.36	0.0022	1: 437030
0010	1006	146°12'38"	0.57	312.12	0.0005	-0.39	0.0023	1: 596526
0010	1028	153°29'12"	0.34	605.19	0.0005	-0.76	0.0027	1: 1112082
0112	0113	221°50'14"	0.17	1253.16	0.0010	-23.81	0.0032	1: 1249641
0112	0284	302°26'18"	0.07	4957.70	0.0021	-22.80	0.0056	1: 2411452
0112	1006	302°12'12"	0.08	4850.22	0.0021	-22.84	0.0060	1: 2263107
0112	1028	299°52'50"	0.09	4621.98	0.0022	-23.21	0.0061	1: 2121387
0113	0284	317°00'58"	0.08	4911.21	0.0021	-1.01	0.0059	1: 2295684
0113	1006	317°06'34"	0.09	4802.18	0.0022	+0.97	0.0062	1: 2182211
0113	1028	315°34'31"	0.10	4531.88	0.0022	+0.60	0.0064	1: 2034192
0284	1006	132°54'40"	1.01	109.04	0.0005	-0.03	0.0020	1: 202174
0284	1028	153°28'45"	0.47	397.95	0.0005	-0.40	0.0024	1: 771278
1006	1028	161°06'17"	0.59	298.22	0.0005	-0.37	0.0023	1: 620046

COORDINATE ADJUSTMENT SUMMARY
NETWORK = CULEBRAS
TIME = Mon Jun 05 08:50:46 1995

Datum = WGS-84
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
  Inner constraints in y
  Inner constraints in x
  Inner constraints in h

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.00σ
1	LAT=	18° 20' 07.207502"	-0.000118"	18° 20' 07.207385"	0.000777m
0001	LON=	65° 19' 25.017414"	-0.000162"	65° 19' 25.017576"	0.000816m
	HEIGHT=	-90.8257m	+0.0019m	-90.8239m	0.002488m
2	LAT=	18° 20' 07.208101"	-0.000186"	18° 20' 07.207915"	0.000695m
0113	LON=	65° 19' 25.016609"	-0.000247"	65° 19' 25.016858"	0.000884m
	HEIGHT=	-90.3225m	+0.0027m	-90.3198m	0.002430m
3	LAT=	18° 18' 34.713951"	+0.000357"	18° 18' 34.714309"	0.001350m
0112	LON=	65° 18' 59.332047"	+0.000497"	65° 18' 59.331550"	0.001449m
	HEIGHT=	-68.3664m	-0.0057m	-68.3721m	0.004110m
4	LAT=	18° 18' 04.345944"	+0.000503"	18° 18' 04.346447"	0.001455m
0118	LON=	65° 17' 27.794772"	-0.000654"	65° 17' 27.794117"	0.001542m
	HEIGHT=	-92.1755m	-0.0069m	-92.1824m	0.004365m
5	LAT=	18° 20' 01.192384"	-0.000186"	18° 20' 01.192199"	0.000604m
0004	LON=	65° 19' 21.832155"	-0.000247"	65° 19' 21.832403"	0.000664m
	HEIGHT=	-91.1789m	-0.0027m	-91.1762m	0.001871m
6	LAT=	18° 19' 58.771058"	-0.000186"	18° 19' 58.770873"	0.000674m
1106	LON=	65° 19' 19.104815"	-0.000247"	65° 19' 19.105062"	0.000825m
	HEIGHT=	-91.2102m	+0.0027m	-91.2075m	0.002289m
7	LAT=	18° 19' 49.594240"	-0.000186"	18° 19' 49.594054"	0.000718m
1028	LON=	65° 19' 15.815780"	-0.000247"	65° 19' 15.816028"	0.000911m
	HEIGHT=	-91.5581m	+0.0027m	-91.5804m	0.002558m

ADJUSTMENT STATISTICS SUMMARY
NETWORK = CULEDRAS
TIME = Mon Jun 05 08:50:46 1995

ADJUSTMENT SUMMARY

Reference Factor = 3.19
Chi-Square Test (α = 95%) = FAIL
Degrees of Freedom = 16

Reference Factor for GPS Solution #	1 =	2.68	r =	1.98
Reference Factor for GPS Solution #	2 =	3.44	r =	1.95
Reference Factor for GPS Solution #	3 =	4.26	r =	0.15
Reference Factor for GPS Solution #	4 =	3.36	r =	1.26
Reference Factor for GPS Solution #	5 =	2.29	r =	1.66
Reference Factor for GPS Solution #	6 =	4.06	r =	1.91
Reference Factor for GPS Solution #	7 =	2.81	r =	1.25
Reference Factor for GPS Solution #	8 =	2.32	r =	0.22
Reference Factor for GPS Solution #	9 =	2.97	r =	1.83
Reference Factor for GPS Solution #	10 =	5.65	r =	0.88
Reference Factor for GPS Solution #	11 =	1.27	r =	1.12
Reference Factor for GPS Solution #	12 =	2.57	r =	1.76
				16.00

WEIGHTING STRATEGIES:

Scalar weighting strategy was used

No summation weighting strategy was used

STATION ERROR STRATEGY

H.I. error = 0.0000
Tribrach error = 0.0000

CLOSURES LOG
NETWORK = CULEDRAS
TIME = Mon Jun 05 08:50:46 1995

OBS#	TYPE	FROM	TO	CLOSURE	TRANSFORM
1	gpsaz	0001	0112	-0.083249"	0.000000"
2	gpsht	0001	0112	-0.008485m	0.000000m
3	gpsds	0001	0112	-0.000545m	0.000000m
4	gpsaz	0001	0113	0.102114"	0.000000"
5	gpsht	0001	0113	-0.011247m	0.000000m
6	gpsds	0001	0113	-0.003174m	0.000000m
7	gpsaz	0001	0284	-0.077950"	0.000000"
8	gpsht	0001	0284	0.001093m	0.000000m
9	gpsds	0001	0284	0.000178m	0.000000m
10	gpsaz	1006	1028	0.734763"	0.000000"
11	gpsht	1006	1028	0.003037m	0.000000m
12	gpsds	1006	1028	0.000243m	0.000000m
13	gpsaz	0010	1006	0.778671"	0.000000"
14	gpsht	0010	1006	0.002324m	0.000000m
15	gpsds	0010	1006	-0.000280m	0.000000m
16	gpsaz	0010	1028	-0.520876"	0.000000"
17	gpsht	0010	1028	-0.005332m	0.000000m
18	gpsds	0010	1028	-0.001027m	0.000000m
19	gpsaz	0010	0284	-0.266236"	0.000000"
20	gpsht	0010	0284	0.000360m	0.000000m
21	gpsds	0010	0284	0.000608m	0.000000m
22	gpsaz	0112	0113	-0.052824"	0.000000"
23	gpsht	0112	0113	-0.000035m	0.000000m
24	gpsds	0112	0113	-0.000163m	0.000000m
25	gpsaz	0112	0284	0.041644"	0.000000"
26	gpsht	0112	0284	-0.004801m	0.000000m
27	gpsds	0112	0284	0.003238m	0.000000m
28	gpsaz	0113	0284	-9.865036"	0.000000"
29	gpsht	0113	0284	-0.027713m	0.000000m
30	gpsds	0113	0284	0.353083m	0.000000m
31	gpsaz	0284	1006	0.454954"	0.000000"
32	gpsht	0284	1006	0.000981m	0.000000m
33	gpsds	0284	1006	0.000023m	0.000000m
34	gpsaz	0284	1028	-0.443435"	0.000000"
35	gpsht	0284	1028	-0.001228m	0.000000m
36	gpsds	0284	1028	0.000770m	0.000000m

MAP PROJECTION TRANSFORMATION

Projection: 1927 State Plane Lambert
Zone = Puerto Rico and V.I.
Central Meridian = W 66°26'00.000000"
Latitude of Origin = N 17°50'00.000000"
Origin Northing = 0.0000 Easting = 500000.0000
North Standard Parallel = N 18°26'00.000000"
South Standard Parallel = N 18°02'00.000000"
Scale along Standard Parallels = 1.000000000000

Linear units = US Survey Foot

POINT	NAME	GEODETIC	MAP	SCALE & CONVERGENCE
1	0001	N 18°20'07.209262"	183447.2271	0.999995518994
		W 65°19'25.025599"	884843.9908	+ 0°20'49.9803"
2	0010	N 18°20'07.206525"	183446.9596	0.999995518970
		W 65°19'25.010847"	884845.4136	+ 0°20'49.9849"
3	0112	N 18°18'34.716119"	174204.6610	0.999994825610
		W 65°16'59.339597"	898936.6357	+ 0°21'35.5637"
4	0113	N 18°18'04.348261"	171124.4988	0.999994641555
		W 65°17'27.802176"	896213.5187	+ 0°21'26.6581"
5	0284	N 18°20'01.190822"	182842.0539	0.999995467794
		W 65°19'21.826411"	885155.3531	+ 0°20'50.9813"
6	1006	N 18°19'58.769496"	182599.4243	0.999995447434
		W 65°19'19.099014"	885420.0703	+ 0°20'51.8347"
7	1028	N 18°19'49.592696"	181675.7432	0.999995371514
		W 65°19'15.809948"	885742.5353	+ 0°20'52.8638"

OBSERVATION ADJUSTMENT SUMMARY
NETWORK = CULEDRAS
TIME = Mon Jun 05 09:12:37 1995

OBSERVATION ADJUSTMENT (Tau = 2.77)

Azimuth rotation = -63.8233 seconds 1.00σ = 0.6813 seconds
Scale = 0.999984202853 1.00σ = 0.000002942307

OBS#	TYPE	OBSERVED	1.00σ	CORR	ADJUSTED	1.00σ	TAU
1	gpsaz	123°15'37.8121"	0.1204	-0.0607	123°15'37.7514"	0.0837	0.25
2	gpsht	+73.6883	0.0323	-0.0297	+73.6586	0.0183	0.40
3	gpsds	16853.2242	0.0111	-0.0075	16853.2167	0.0079	0.35
4	gpsaz	137°18'21.2849"	0.1260	+0.0255	137°18'21.3104"	0.1242	0.44
5	gpsht	-4.4201	0.0348	-0.0354	-4.4555	0.0191	0.44
6	gpsds	16766.3907	0.0110	-0.0005	16766.3902	0.0110	0.43
7	gpsaz	152°49'38.4709"	0.7651	-0.0032	152°49'38.4677"	0.7532	0.01
8	gpsht	-1.1596	0.0089	+0.0038	-1.1558	0.0086	0.64
9	gpsds	879.9260	0.0031	+0.0003	879.9263	0.0030	0.15
10	gpsaz	160°45'24.3990"	0.7594	+0.7377	160°45'25.1367"	0.5910	0.56
11	gpsht	-1.2334	0.0099	+0.0079	-1.2254	0.0076	0.46
12	gpsds	978.3956	0.0021	+0.0008	978.3964	0.0016	0.19
13	gpsaz	145°51'48.1309"	0.8724	+0.7889	145°51'48.8898"	0.5736	0.43
14	gpsht	-1.2796	0.0115	+0.0084	-1.2712	0.0077	0.35
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	gpsaz	153°08'23.2968"	0.5797	-0.5154	153°08'22.7814"	0.3383	0.40
17	gpsht	-2.4779	0.0151	-0.0140	-2.4919	0.0088	0.41
18	gpsds	1985.5375	0.0029	-0.0034	1985.5341	0.0018	0.55
19	gpsaz	152°50'04.7410"	1.0845	-0.2480	152°50'04.4930"	0.8376	0.13
20	gpsht	-1.1706	0.0093	-0.0008	-1.1714	0.0072	0.05
21	gpsds	879.9411	0.0021	+0.0020	879.9431	0.0016	0.52
22	gpsht	-78.1179	0.0105	-0.0002	-78.1177	0.0104	0.04
23	gpsaz	302°04'42.7913"	0.1175	+0.0584	302°04'42.8513"	0.0865	0.26
24	gpsht	-74.8008	0.0239	-0.0174	-74.8181	0.0185	0.27
27	gpsds	16265.2354	0.0111	+0.0053	16265.2906	0.0079	0.24
29	gpsht	+3.3919	0.0551	-0.0971	+3.2948	0.0194	0.68
31	gpsaz	132°33'49.1604"	1.6837	+0.4609	132°33'49.6213"	1.3187	0.16
32	gpsht	-0.1058	0.0085	+0.0013	-0.1045	0.0067	0.09
33	gpsds	358.7218	0.0023	+0.0000	358.7219	0.0018	0.00
34	gpsaz	153°17'55.1994"	0.7367	-0.4451	153°17'54.7543"	0.4700	0.28
35	gpsht	-1.3220	0.0127	-0.0033	-1.3252	0.0080	0.12
36	gpsds	1305.6032	0.0026	+0.0026	1305.6057	0.0017	0.46

The following observations were excluded from the adjustment:
22 type= gps azimuth
24 type= gps distance
28 type= gps azimuth
30 type= gps distance

SUMMARY OF COVARIANCES
NETWORK = CULEDRAS
TIME = Mon Jun 05 09:12:40 1995

FROM	TO	AZIMUTH	1.00σ	DISTANCE	1.00σ	DELTA H	1.00σ	HOR PREC
0001	0010	51°48'06"	8227.64	0.09	0.0036	+0.02	0.0113	1: 24
0001	0112	123°16'42"	0.68	16853.48	0.0494	+73.66	0.0183	1: 341278
0001	0113	137°19'25"	0.68	16767.16	0.0502	-4.45	0.0191	1: 334306
0001	0284	152°50'42"	1.04	679.94	0.0037	-1.15	0.0087	1: 185654
0001	1006	145°52'35"	0.99	1024.03	0.0046	-1.25	0.0110	1: 223429
0001	1028	153°09'13"	0.80	1985.55	0.0069	-2.47	0.0119	1: 289033
0010	0112	123°16'43"	0.68	16853.46	0.0495	+73.65	0.0199	1: 340753
0010	0113	137°19'26"	0.68	16767.15	0.0502	-4.47	0.0207	1: 333697
0010	0284	152°51'08"	1.08	679.95	0.0025	-1.17	0.0073	1: 267780
0010	1006	145°52'53"	0.89	1024.03	0.0035	-1.27	0.0077	1: 295062
0010	1028	153°09'27"	0.76	1985.57	0.0061	-2.49	0.0089	1: 324905
0112	0113	221°29'42"	0.00	4111.45	0.0000	-78.11	0.0104	1: 0
0112	0284	302°05'47"	0.68	16265.55	0.0476	-74.81	0.0185	1: 341450
0112	1006	301°51'40"	0.68	15912.94	0.0466	-74.91	0.0197	1: 341158
0112	1028	299°32'18"	0.68	15164.11	0.0444	-76.13	0.0202	1: 341889
0113	0284	316°40'36"	0.68	16113.04	0.0484	+3.30	0.0194	1: 332657
0113	1006	316°46'11"	0.68	15755.25	0.0474	+3.20	0.0205	1: 332159
0113	1028	315°14'08"	0.68	14866.79	0.0451	+1.98	0.0210	1: 329343
0284	1006	132°34'53"	1.48	358.73	0.0021	-0.10	0.0067	1: 173376
0284	1028	153°18'59"	0.83	1305.63	0.0042	-1.32	0.0081	1: 310932
1006	1028	160°46'29"	0.90	978.41	0.0033	-1.22	0.0076	1: 297860

COORDINATE ADJUSTMENT SUMMARY
NETWORK = CULEDRAS
TIME = Mon Jun 05 09:12:32 1995

Datum = NAD-27
Coordinate System = 1927 State Plane Lambert
Zone = Puerto Rico and V.I.

Network Adjustment Constraints:
2 fixed coordinates in y
2 fixed coordinates in x
Inner constraints in h

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.00σ
1	Y=	183447.2314	+658.2197	184105.4511	0.054522f
0001	X=	884844.8200	-144.3808	884700.4393	0.050622f
	HEIGHT=	-297.9780	-0.0048	-297.9828	0.008242f
2	Y=	183447.2252	+658.2199	184105.5051	0.054642f
0010	X=	884844.8891	-144.3811	884700.5080	0.050680f
	HEIGHT=	-297.9846	-0.0026	-297.9872	0.008021f
3	Y=	174857.8609	+0.0000	174857.8609	0.000000f
0112	X=	898790.2215	+0.0000	898790.2215	0.000000f
	HEIGHT=	-224.3175	-0.0030	-224.3205	0.013556f
4	Y=	171778.3320	+0.0000	171778.3320	0.000000f
0113	X=	896066.1607	+0.0000	896066.1607	0.000000f
	HEIGHT=	-302.4349	+0.0015	-302.4334	0.014386f
5	Y=	182842.3460	+658.1136	183500.4596	0.052720f
0284	X=	885155.3259	-144.5647	885010.7612	0.048702f
	HEIGHT=	-299.1340	+0.0002	-299.1338	0.006160f
6	Y=	182599.7084	+658.0274	183257.7308	0.051599f
1006	X=	885419.5340	-144.6362	885274.8978	0.047699f
	HEIGHT=	-299.2366	+0.0030	-299.2336	0.007552f
7	Y=	181675.9715	+657.9123	182333.8838	0.049184f
1028	X=	885741.9916	-144.9189	885597.0726	0.045202f
	HEIGHT=	-300.4600	+0.0057	-300.4543	0.008482f

ADJUSTMENT STATISTICS SUMMARY
NETWORK = CULEDRAS
TIME = Mon Jun 05 09:12:32 1995

ADJUSTMENT SUMMARY

Reference Factor = 3.20
Chi-Square Test (α = 95%) = FAIL
Degrees of Freedom = 14

Reference Factor for GPS Solution #	1 =	3.10	r =	1.67
Reference Factor for GPS Solution #	2 =	3.87	r =	0.71
Reference Factor for GPS Solution #	3 =	4.41	r =	0.13
Reference Factor for GPS Solution #	4 =	3.12	r =	1.25
Reference Factor for GPS Solution #	5 =	2.37	r =	1.66
Reference Factor for GPS Solution #	6 =	3.88	r =	1.90
Reference Factor for GPS Solution #	7 =	2.72	r =	1.25
Reference Factor for GPS Solution #	8 =	0.36	r =	0.08
Reference Factor for GPS Solution #	9 =	2.59	r =	1.55
Reference Factor for GPS Solution #	10 =	6.03	r =	0.88
Reference Factor for GPS Solution #	11 =	0.93	r =	1.17
Reference Factor for GPS Solution #	12 =	2.58	r =	1.76
				14.00

WEIGHTING STRATEGIES:

Scalar weighting strategy was used

No summation weighting strategy was used

STATION ERROR STRATEGY

H.I. error = 0.0000
Tribrach error = 0.0000

1	1	1	gpsaz/F	ajstd	0001	0112	123°15'37.8121"	0.0376	-0.0607
2	1	1	gpsht/F	ajstd	0001	0112	+73.6883	0.0101	-0.0297
3	1	1	gpsds/F	ajstd	0001	0112	16853.2242	0.0035	-0.0075
4	2	1	gpsaz/F	ajstd	0001	0113	137°18'21.2849"	0.0393	+0.0255
5	2	1	gpsht/F	ajstd	0001	0113	-4.4201	0.0109	-0.0354
6	2	1	gpsds/F	ajstd	0001	0113	16766.8907	0.0034	-0.0005
7	3	1	gpsaz/F	ajstd	0001	0284	152°49'38.4709"	0.2389	-0.0032
8	3	1	gpsht/F	ajstd	0001	0284	-1.1596	0.0028	+0.0039
9	3	1	gpsds/F	ajstd	0001	0284	679.9260	0.0010	+0.0003
10	4	1	gpsaz/F	ajstd	1006	1028	160°45'24.3990"	0.2371	+0.7377
11	4	1	gpsht/F	ajstd	1006	1028	-1.2334	0.0031	+0.0079
12	4	1	gpsds/F	ajstd	1006	1028	978.3956	0.0007	+0.0008
13	5	1	gpsaz/F	ajstd	0010	1006	145°51'48.1009"	0.2724	+0.7889
14	5	1	gpsht/F	ajstd	0010	1006	-1.2796	0.0036	+0.0084
15	5	1	gpsds/F	ajstd	0010	1006	1024.0184	0.0008	-0.0009
16	6	1	gpsaz/F	ajstd	0010	1028	153°08'23.2968"	0.1810	-0.5154
17	6	1	gpsht/F	ajstd	0010	1028	-2.4779	0.0047	-0.0140
18	6	1	gpsds/F	ajstd	0010	1028	1985.5375	0.0009	-0.0034
19	7	1	gpsaz/F	ajstd	0010	0284	152°50'04.7410"	0.3386	-0.2480
20	7	1	gpsht/F	ajstd	0010	0284	-1.1706	0.0029	-0.0008
21	7	1	gpsds/F	ajstd	0010	0284	679.9411	0.0006	+0.0020
22	8	1	gpsaz/F	cdsbl	0112	0113	221°28'39.1364"	0.0560	-0.8532
23	8	1	gpsht/F	ajstd	0112	0113	-78.1173	0.0034	-0.0003
24	8	1	gpsds/F	cdsbl	0112	0113	4111.3915	0.0011	-0.0084
25	9	1	gpsaz/F	ajstd	0112	0284	302°04'42.7928"	0.0367	+0.0584
26	9	1	gpsht/F	ajstd	0112	0284	-74.8008	0.0093	-0.0174
27	9	1	gpsds/F	ajstd	0112	0284	16265.2854	0.0035	+0.0053
28	10	1	gpsaz/F	udsbl	0113	0284	316°39'42.0483"	0.0624	-9.9537
29	10	1	gpsht/F	ajstd	0113	0284	+3.3919	0.0172	-0.0971
0	10	1	gpsds/F	udsbl	0113	0284	16111.6191	0.0056	+1.1687
31	11	1	gpsaz/F	ajstd	0284	1006	132°33'49.1604"	0.5257	+0.4609
32	11	1	gpsht/F	ajstd	0284	1006	-0.1058	0.0026	+0.0013
33	11	1	gpsds/F	ajstd	0284	1006	358.7218	0.0007	+0.0000
34	12	1	gpsaz/F	ajstd	0284	1028	153°17'55.1994"	0.2300	-0.4451
35	12	1	gpsht/F	ajstd	0284	1028	-1.3220	0.0040	-0.0033
36	12	1	gpsds/F	ajstd	0284	1028	1305.6032	0.0008	+0.0026

OBSERVATION ADJUSTMENT SUMMARY
NETWORK = CULEDRAS
TIME = Mon Jun 05 09:12:37 1995

OBSERVATION ADJUSTMENT (Tau = 2.77)

Azimuth rotation = -63.8233 seconds 1.00σ = 0.6813 seconds
Scale = 0.999984202853 1.00σ = 0.000002942307

OBS#	TYPE	OBSERVED	1.00σ	CORR	ADJUSTED	1.00σ	TAU
1	gpsaz	123°15'37.8121"	0.1204	-0.0607	123°15'37.7514"	0.0837	0.25
2	gpsht	+73.6883	0.0323	-0.0297	+73.6586	0.0183	0.40
3	gpsds	16853.2242	0.0111	-0.0075	16853.2167	0.0079	0.35
4	gpsaz	137°18'21.2849"	0.1260	+0.0255	137°18'21.3104"	0.1242	0.44
5	gpsht	-4.4201	0.0348	-0.0354	-4.4555	0.0191	0.44
6	gpsds	16766.8907	0.0110	-0.0005	16766.8902	0.0110	0.43
7	gpsaz	152°49'38.4709"	0.7651	-0.0032	152°49'38.4677"	0.7532	0.01
8	gpsht	-1.1596	0.0089	+0.0039	-1.1558	0.0086	0.64
9	gpsds	679.9260	0.0031	+0.0003	679.9263	0.0030	0.15
10	gpsaz	160°45'24.3990"	0.7594	+0.7377	160°45'25.1367"	0.5910	0.56
11	gpsht	-1.2334	0.0099	+0.0079	-1.2254	0.0076	0.46
12	gpsds	978.3956	0.0021	+0.0008	978.3964	0.0016	0.19
13	gpsaz	145°51'48.1009"	0.8724	+0.7889	145°51'48.8898"	0.5736	0.43
14	gpsht	-1.2796	0.0115	+0.0084	-1.2712	0.0077	0.35
15	gpsds	1024.0184	0.0025	-0.0009	1024.0175	0.0017	0.16
16	gpsaz	153°08'23.2968"	0.5797	-0.5154	153°08'22.7814"	0.3383	0.40
17	gpsht	-2.4779	0.0151	-0.0140	-2.4919	0.0088	0.41
18	gpsds	1985.5375	0.0028	-0.0034	1985.5341	0.0018	0.55
19	gpsaz	152°50'04.7410"	1.0845	-0.2480	152°50'04.4930"	0.8376	0.13
20	gpsht	-1.1706	0.0093	-0.0008	-1.1714	0.0072	0.05
21	gpsds	679.9411	0.0021	+0.0020	679.9431	0.0016	0.52
23	gpsht	-78.1173	0.0108	-0.0003	-78.1177	0.0104	0.04
25	gpsaz	302°04'42.7928"	0.1175	+0.0584	302°04'42.8512"	0.0865	0.26
26	gpsht	-74.8008	0.0299	-0.0174	-74.8181	0.0185	0.27
27	gpsds	16265.2854	0.0111	+0.0053	16265.2906	0.0079	0.24
29	gpsht	+3.3919	0.0551	-0.0971	+3.2948	0.0194	0.68
31	gpsaz	132°33'49.1604"	1.6837	+0.4609	132°33'49.6213"	1.3187	0.16
32	gpsht	-0.1058	0.0085	+0.0013	-0.1045	0.0067	0.09
33	gpsds	358.7218	0.0023	+0.0000	358.7219	0.0018	0.00
34	gpsaz	153°17'55.1994"	0.7367	-0.4451	153°17'54.7543"	0.4700	0.28
35	gpsht	-1.3220	0.0127	-0.0033	-1.3252	0.0080	0.12
36	gpsds	1305.6032	0.0026	+0.0026	1305.6057	0.0017	0.46

The following observations were excluded from the adjustment:
22 type= gps azimuth
24 type= gps distance
28 type= gps azimuth
30 type= gps distance

1	0001	184105.4511	384700.4393	-297.98	---	YXZ
2	0010	184105.5051	384700.5080	-297.97	---	YXZ
3	0112	174857.8609	898790.2215	-224.32	YX-	YXZ
4	0113	171778.3320	896066.1607	-302.43	YX-	YXZ
5	0284	183500.4596	885010.7612	-299.13	---	YXZ
6	1006	183257.7308	885274.8978	-299.23	---	YXZ
7	1028	182333.8838	885597.0726	-300.45	---	YXZ

SYSTEM PARAMETERS

Network status = reduced computed adjusted
Datum = NAD-27
Coordinate System = 1927 State Plane Lambert
Zone = Puerto Rico and V.I.
Linear unit = US Survey Foot

1000	884700.419	184105.305	0.000	1000
)	884700.419	184105.305	0.000	1000
.1	884806.406	183821.714	0.000	1001
1002	884799.165	183811.975	0.000	1002
1003	884808.409	183802.225	0.000	1003
1004	884820.109	183812.687	0.000	1004
1005	885010.735	183500.348	0.000	1005
3001	885010.735	183500.348	0.000	1005
3002	885010.735	183500.348	0.000	1005
1006	885274.922	183257.698	0.000	1006
1007	885220.855	183159.467	0.000	1007
1008	885291.659	183181.473	0.000	1008
1009	885201.806	183071.546	0.000	1009
1010	885219.598	183018.624	0.000	1010
1011	885221.002	182947.957	0.000	1011
1012	885206.746	182862.749	0.000	1012
1013	885345.518	182940.632	0.000	1013
1014	885209.110	182800.407	0.000	1014
1015	885243.103	182760.831	0.000	1015
1016	885247.463	182748.894	0.000	1016
1017	885240.772	182739.715	0.000	1017
1018	885329.165	182603.827	0.000	1018
1019	885459.247	182679.818	0.000	1019
1020	885423.316	182486.116	0.000	1020
1021	885445.515	182492.815	0.000	1021
1022	885478.497	182451.046	0.000	1022
1023	885489.162	182417.006	0.000	1023
1024	885519.636	182383.379	0.000	1024
1025	885552.562	182328.926	0.000	1025
6	885584.137	182346.330	0.000	1026
.7	885597.063	182333.902	0.000	1027
1028	885583.719	182305.866	0.000	1028
1029	885341.507	182830.338	0.000	1029
1030	885356.647	182835.350	0.000	1030
1031	885351.373	182850.601	0.000	1031
1032	885397.773	182788.096	0.000	1032
1033	885357.416	182886.172	0.000	1033
1034	885351.741	182886.502	0.000	1034
1035	885343.896	182897.220	0.000	1035
1036	885342.565	182900.509	0.000	1036
1037	885339.239	182901.797	0.000	1037
1038	885335.806	182900.466	0.000	1038
1039	885334.622	182897.314	0.000	1039
1040	885335.760	182893.694	0.000	1040
1041	885339.118	182892.428	0.000	1041
1042	885342.577	182893.846	0.000	1042
1043	884700.426	184105.466	0.000	1043
1	884700.439	184105.451	0.000	CONTROL
2	898790.221	174857.861	0.000	STA-112
3	896066.161	171778.332	0.000	STA-113
4	885010.761	183500.460	0.000	STA-284
5	885274.898	183257.731	0.000	STA-1006
6	885597.073	182333.884	0.000	STA-1028

-------- A:\SC95-002.ASC

209	182262.585716	885596.334943	0.000	PK
210	182193.432033	885610.382100	0.000	PK
211	182143.979127	885628.395129	0.000	PK
212	182129.147523	885664.134721	0.000	PK
213	182139.150825	885690.046524	0.000	CLF
214	182166.862175	885717.849320	0.000	CS
215	182164.069406	885706.244043	0.000	CS
216	182165.188825	885756.892987	0.000	CLF
217	182167.812253	885764.477535	0.000	TE
218	182247.599851	885745.965888	0.000	TE
219	182372.133719	885694.522385	0.000	TE
220	182431.961973	885651.434475	0.000	PK
221	182483.304554	885629.976328	0.000	LP
222	183169.081525	885265.727572	0.000	TANK
223	183172.955411	885264.524441	0.000	TANK
224	183171.755378	885260.58818	0.000	TANK
225	183163.518162	885272.992618	0.000	BC
226	183158.971368	885284.123122	0.000	BC
227	183149.561817	885280.322571	0.000	BC
228	183104.320095	885315.961703	0.000	TE
229	183103.640196	885311.411078	0.000	LP

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX B

ACCOUNTING OF UNEXPLODED ORDNANCE ITEMS

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

UXO and UXO Components

Flamenco Bay Camp Ground, Culebra, Puerto Rico

*UXO ITEM	I.D.	CONDITION	DISPOSITION	LOCATION
1	Illumination Candle from 5"38 Naval Projectile	Filled with 50% of Illumination Composition	Detonated on 25 May 1995	Grid #1 Lane #31 119' West
2	Mk76/BDU-33 25 lbs Practice Bomb	Appeared spotting cartridge had functioned but too corroded to certify 100% safe	Detonated on 25 May 1995	Grid #2 Lane #40 66' West
3	M81A1, 40mm, TP-T	Rusted, Tracer Present	Detonated on 25 May 1995	Grid #2 Lane #44 143' West
4	M81A1, 40mm, TP-T	Badly corroded, tracer partially burnt	Detonated on 25 May 1995	Grid #2 Lane #46 117' West
5	3"50 BLP with Tracer	Unable to certify due to extensive corrosion	Detonated on 25 May 1995	Grid #2 Lane #47 93' West
6	3"50 High Explosive Projectile	Armed, PD, Fuze	Detonated on 25 May 1995	Grid #2 Lane #50 14' West
7	M81A1, 40mm, TP-T	Rusted, Tracer Present	Detonated on 25 May 1995	Grid #2 Lane #51 108' West
8	BD Fuze Component from 5"38 Proj	Tracer Residue Present	Detonated on 25 May 1995	Grid #3 Lane #17 22' West
9	BD Fuze Component from 5"38 Proj	Too corroded for 100% certification	Detonated on 25 May 1995	Grid #4 Lane #9 5' West

UXO ITEM	I.D.	CONDITION	DISPOSITION	LOCATION
10	40 mm Bofors AA Projectile with tracer	Bottom half of projectile, tracer present	Detonated on 25 May 1995	Grid #4 Lane #28 7 ' West
11	Illumination Candle from 5"38 Naval Projectile	Filled with 75% of Illumination Composition	Detonated on 25 May 1995	Grid #4 Lane #36 12' West

*** UXO listed in order recovered.**

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX C

DAILY JOURNALS

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

ANNEX C

DAILY JOURNALS

Appendix 1

to

ANNEX C

Senior Unexploded Ordnance Supervisor's Log

CULEBRA, P.R.

This Logbook opened
10 ~~APR~~ 1995
D.C. LINDSEY, JR
SENIOR UXO SUPERVISOR
DC Lindsey Jr.

This Logbook Closed
27 MAY 1995

10 MAY 1995

1330 ARRIVED CULEBRA AIRPORT BY WAY OF CARIBAIR FLT #211. MET AT AIRPORT BY PM, MIKE MORAN. HE'S BEEN PRESENT SINCE 2 MAY 1995

1345 DEPARTED FOR CLUB SEABOURNE.

1400 ARRIVED. CHECK-IN.

1430 DEPARTED FOR WORK SITE AND LOCAL AREA FAMILIARIZATION WITH PM

1515 ARRIVED WORK SITE. MR ROBLEY AND EPPERSON PRESENT. THEIR ARRIVAL WAS 9 MAY 95. COMMENCED SITE INSPECTION AT THIS TIME.

1700 SITE REVIEW COMPLETE. APPEARS TO HAVE CLEARLY DEFINED BOUNDRIES. PROPOSED BLAST SITE NEED'S LITTLE WORK.

1715 MADE LAISON WITH LT ROBINSON, STATE POLICE. BRIEFED HIM ON PROJECT SCHEDULE AND PM ADVISED HIM, AND PROVIDED HIM A MAP IDENTIFYING THE LOCATION OF A 11.75" TINY TIM ROCKET WARHEAD SUGGESTED HE NOTIFY NAVY EOD FOR ASSISTANCE. SUBJECT ROCKET OUTSIDE OUR AREA OF RESPONSIBILITY

1900 RETURN TO CLUB SEA BOURNE. FINISH DISCUSSING PROJECT STATUS.

WORK SITE HOURS PRIOR TO MY ARRIVAL (6).

WORK SITE HOURS 35 10 MAY 1995

TO DATE TOTAL 41

11 MAY 95

0700 MET WITH PM AND SET TASK'S FOR THE DAY. MAIN TASK LOCATE AND RECEIPT FOR GOVERNMENT FURNISHED EQUIPMENT MR EPPERSON AND FLOR DEPARTED AT 0630. ON FERRY TO LOCATE GEAR. ALL REMAINING PERSONNEL TO ARRIVE THIS AFTERNOON. 0700

0830 ARRIVE WORK SITE. PM AND ROBLEY TO FINISH VIDEO OF PRE-SIGHT CONDITIONS TO INCLUDE STILL PHOTOGRAPHS.

1300 DAVE BECKER, DAN EBERSOLE, TERRY DAVIS AND STEVE BURCHETT ARRIVE AIRPORT. TRANSPORT TO CLUB SEABOURN AND WORK SITE FOR ORIENTATION.

1640 OSCAR BROADWAY, RICH WINTERS, THOMAS BRENNAN ARRIVED AIRPORT. TRANSPORTED TO CLUB SEABOURNE.

1715 RETURN TO WORK SITE TO RETRIEVE P.M. SECOND PICK-UP VEHICLE DELIVERED).

1905 RETURN TO CLUB SEABOURNE. SECURED C.P.

1900 ALL HANDS ORIENTATION BRIEFING GIVEN BY PM. 1120

2030 SECURE DEC 1135

WORK SITE HOURS 32
TODATE TOTAL 73

1140

1200

1330

12 MAY 1995

0700 ALL PERSONNEL ACCOUNTED FOR.
FOLLOWING IS LIST OF ALL CONTRACTOR
PERSONNEL ON-BOARD AT THIS TIME
PROJECT MANAGER MIKE MORAN
PROJECT MANAGER THOM EPPERSON
SENIOR UXO SUPER DAVE LINDSEY
550/QB RICH WINTERS
UXO SUPERVISOR DAVE BECKER
UXO SUPERVISOR DON EBERSOLE
UXO SPECIALIST THOMAS GRENHAM
" " OSCAR BROADWAY
" " MARVIN RUBLEY
" " TERRY DAVIS
" " STEVE BURCHETT
LABON FLOR
" FERNANDO
ALL PERSONNEL TO CP TASKING FOR THE
DAY AS FOLLOWS: INSTALL MONUMENTS.
SIGN-OFF ON WORK PLAN BEING READ BY
ALL PERSONNEL, PURCHASE WOOD FOR
SIGNS & VEHICLES, GET COMMUNICATIONS
ESTABLISHED.

1120 LT ROBINSON, STATE POLICE, NOTIFIED US
THAT HE REQUESTED NAVY EOD TO TAKE
CARE OF "TINY TIM" ROCKET ON BEACH

1135 CHIEF KITACCO OF NAVY EOD, ROOSEVELT
STATION, CALLED AND REQUESTED FURTHER
INFORMATION ON "TINY TIM" ROCKET. THEY
WILL COORDINATE WITH US WHEN THEY
COME OVER.

1140 PM ADVISED US THAT A HELICOPTOR
WAS IN THE AREA, POSSIBLE MEDIA

1200 HELICOPTOR BELONGED TO POLICE.

1330 SUXO SUPERVISOR HELD ALL HANDS

12 MAY 95

MEETING. TASKED SUPERVISORS WITH DIVIDING WORK SITE INTO GRID'S, IDENTIFYING BOUNDRIES AND HAVING ALL GEAR READY FOR WORK ON MONDAY.

1800 SECURE WORK SITE. DEPART FOR CLUB SEBOURNE. WEEKEND ROUTINE.

WORK SITE HOURS 106

TOURTE TOTAL 179

14 MAY 1995

WITH

S,

WING

SUNDAY

CLUB

E

1900: COE-AM, ROLAND BELEW MEETING AT CLUB SEABOURNE. MEETING COVER'S LOCAL CUSTOM'S, COMMON COURTESY, LOCAL LAW AND WHAT'S EXPECTED OF CONTRACTOR PERSONNEL ON THIS JOB.

15 MAY 1995

0700 PERSONNEL LOADING VEHICLES AND CHECKING EQUIPMENT. FIRST UXO UNEXPECTLY FOUND IN MIDDLE OF ROAD, IN FRONT OF DNR/CP OFFICE. ITEM FOUND WHEN TERRY DAVIS INSTALLED BATTERIES IN SCHONSTED AND TURNED IT ON. ID FOR UXO WAS MK 44 AUXILARY DETONATING FUZE (AOF), TETROL FILLED AND 1/2" BELOW ROAD SURFACE. ITEM REMOVED FROM ROAD PENDING FURTHER DISPOSITION. ROAD NOT INCLUDED IN OUR SOW. ADVISED BY LOCAL LABOR: THAT ROAD DIRT WAS BROUGHT IN TO PARK FROM OTHER AREA'S. EXPRESSED MY CONCERN IN REGARDS TO ROAD BEING SEARCHED TO COE-DM/REP's. NO ACTION TAKEN.

0705 DAILY SAFETY BRIEFING AND TASKING: TEAM #1 TO START GRID #1 AND TEAM #2 TO START GRID #3. SHOULD BE MIDDLE BUFFER BETWEEN THE TWO TO WORK

0735 TEAM'S TO WORK

0835 SUXOS AND COE REPS O'NEILL AND ANTILLES (PAO) DOWN TO WORK SITE, GRID #1.

0850 RETURN TO CP. CAPT RODRIGUES FROM LOCAL MUNICIPAL POLICE ON SITE WILL ASSIST IN PROVIDING SECURITY FOR PARK

0905 CAPT RODRIGUES DEPARTS.

0910 MEDIA DAY. NEWS PERSONNEL START ARRIVING. BRIEFED BY COE-DM ROLAND BELEW, ALFONSO O'NEILL AND PAO-COE REPANTILLES

0958 ~~HOLE~~ DCL SUXOS AND SSO/QA DOWN RANGE FOR SITE VISIT.

15 MAY 1995

1022 RETURN TO CP FROM WORK SITE. AREA HEAVILY CONTAMINATED WITH BOTTLE CAPS, TENT PEGS, WIRE, BURIED TRASH. FREQUENT INTERUPTION'S IN WORK DUE TO VISITOR'S; i.e. PRESS AND PRESS HELICOPTORS HOVERING NEAR SITE. WORK PROGRESSING VERY SLOWLY, MAINLY DUE TO 24" 20mm. SENSITIVITY AND REQUIREMENT TO PLOT ALL TRASH AND RECORD. RE-ASSIGNED TEAM 2 TO GRID #2. WILL NOT FINISH WORK SITE AT THIS PACE AND FELT IT BETTER NOT TO LEAVE UNCLEAR GRID IN CENTER.

1127 MORE PRESS ARRIVE ON SITE. SAME BRIEFING PROCEDURE AS EARLIER. ALL PERSONNEL RECORDED IN VISITOR LOG.

1140 TEAMS TAKE LUNCH. THREE PERSONNEL FROM U.S. FISH WILDLIFE SERVICE ON SITE TO CHECK BIRD & MUD TURTLES.

1155 TWO PERSONNEL FROM A.A.E POWER COMPANY ARRIVE TO CHECK POWER POLES. REQUEST THEY DO IT VIA BINOCULARS.

1210 TEAMS READY TO RETURN TO WORK. CANNOT START DUE TO U.S.F.W. PERSONNEL STILL IN PARK. PUT ON HOLD.

1215 SSC SPOTS TWO SUNBATHER'S ON BEACH. MR COOLEY DISPATCHED TO INTERCEPT.

1220 SUN BATHERS WERE GERMAN TOURIST. THEY READ WARNING SIGN ON BEACH BUT FAILED TO YIELD. ESCORTED OUT.

1225 SSC REPORTS TWO SNORKLER'S OFF OF BEACH AREA, 25 yards. POST

15 MAY 1995

ROBLEY TO WATCH THEM. 16

1250 MR ROBLEY REPORTS SNORKLERS ON BEACH. SEND HIM DOWN TO ESCORT THEM OFF BEACH. 17

1255 SNORKLERS DISGRUNTLED, BUT LEAVE AREA. NOT HAPPY. USEW PERSONNEL OUT 17

1302 ALL PRESS CLEAR OF AREA.

1320 NOTIFIED BY LT ROBINSON THAT NAVY EOD WAS ENROUTE TO HANDLE "TINY TIM" 11.75 INCH ROCKET ON BEACH. SUXOS ON SITE VISIT. —

1330 RETURN FROM SITE VISIT. WORK STILL VERY SLOW. DISCUSSED PROBLEM WITH COE SAFETY HUCKINS. WILL DISCUSS FURTHER WITH PM AND RECOMMEND 75mm AT 24" and NOT PLOTTING TRASH. GRID GRID GRID

1410 DOWN TO WORK SITE.

1515 LT ROBINSON ARRIVES WITH NAVY EOD, LT SANTIN AND TEAM. RETURN TO CP TO ESCORT THEM DOWN TO BEACH AREA LOCATION OF "TINY TIM".

1600 NAVY EOD DETERMINS TO DISPOSE OF "TINY TIM" IN PLACE. LT ROBINSON CONCURS.

1605 ADVISED CP OF INTENTIONS. REQUEST THEY NOTIFY ALL PARTIES NECESSARY

1620 NAVY EOD REQUEST PERMISSION TO CAP IN AND START LAYING FIRING WIRE GRANTED. DIRECTED SSO TO OP FOR LOOK-OUT. HAD MR. DAVIS DELIVER MK 44 AOF TO BE DISPOSED OF WITH "TINY TIM"

1635 ALL CLEAR. FIRE IN THE HOLE RELAYED TO ALL STATIONS.

15 MAY 1985

1640 ALL CLEAR, BACK TO WORK. SUXOS CHECK'S BLAST SITE. ALL CLEAR.

1720 LT ROBINSON AND NAVY EOD DEPART WORK SITE. TEAM'S TO C&P, UNLOAD GEAR.

1730 SECURE. MOST OF DAY VERY UNPRODUCTIVE DUE TO THE FREQUENT INTERUPTIONS RECORDED EARLIER. TOMORROW SHOULD BE BETTER PENDING THE APPROVAL OF WORK PLAN CHANGES IN REGARDS TO SENSITIVITY AND PLOTTING. FOLLOWING PERTAINS TO TODAYS ACCOMPLISHMENTS INVOLVING SEARCHES:

GRID 1	TEAM #1	5 LANES	.067 ACRES
GRID 3	TEAM #2	2 LANES	.034 ACRES
GRID 2	TEAM #2	4 LANES	.065 ACRES
		TOTAL	.166 ACRES

WORK SITE ROCKS 120
TO DATE TOTAL 299

16 MAY 1995

0640 PM, SSO, UXO ROBLEY OPEN CP.

0650 ALL PERSONNEL ON SITE. GR

0700 SAFETY BRIEFING/TASKING FOR THE DAY GR1
TEAM #1 TO CONTINUE SEARCH GRID #1,
TEAM #2, GRID #2.

1105 RECEIVED APPROVAL FROM COE CONTRACT
OFFICER - DAN BIGGS, TO CHANGE
SENSITIVITY TO 75mm AND NOT PLOT
TRASH

1215 COE-PM ROLAND BELEW ASKED ABOUT
AVAILABILITY OF TWO MORE UXO
SPECIALISTS. ADVISED TWO WERE AVAILABLE
BY PM. DIRECTED TO MOBILIZE THESE
PERSONNEL AS SOON AS POSSIBLE TO
ASSIST IN THE TIMELY COMPLETION OF
WORK. MTA TO PROVIDE 1 AND WYLE 1.

1240 SUXOS AND UXO SPECIALIST ROBLEY
TO TEAM 2 LOCATION. MR ROBLEY WILL
AUGMENT TEAM 2

1255 RETURN FROM WORK SITE. WORK FULLY
PROGRESSING NICELY.

1330 WYLE LABS ADVISES THAT DALE
JOHNSON WILL BE ENROUTE TOMORROW.

1600 ADVISED MTA WILL BE SENDING CHUCK
CRAWFORD.

1700 LT ROBINSON STOPS BY FOR VISIT

1705 LT ROBINSON DEPARTS.

1710 STOP WORK. U.S.F.W. PERSONNEL
DOWN RANGE TO RECOVER VEHICLE
TEAMS RETURN TO C.P. DOWNLOAD,
DEBRIEF.

1730 SEND TEAMS HOME TO CLUB SEABOURNE

1745 U.S.F.W DEPART AREA.

1800 SITE SECURE. FOLLOWING ARE TOTALS

16 MAY 1995

FOR THE DAY:

GRID 1	TEAM # 1	17 LANES	.265 ACRES
GRID 2	TEAM # 2	24 LANES	.352 ACRES
		TOTAL	.617 ACRES
	PROJECT TOTAL		.783 ACRES
	WORK SITE HOURS	120	
	TO DATE TOTAL	419	

THE DAY
210TH,
"OUTSIDE
E
- PLOT
OUT
AVAILABLE
THESE
E TO
OF
YLE 2.
LEY
EY WILL
KEENLY
IE
"OCCASION.
UG TRUCK
VISIT
UEL
EHICLE
OAD,
UE
TOTALS

17 MAY 1995

0630 PM, SSO, ROGLEN ARRIVE SITE. BEGIN SET-UP.

0650 ALL PERSONNEL ON SITE WITH EXCEPTION OF LOCAL HIRE FERNANDO; ILLNESS IN FAMILY

0700 SAFETY BRIEF/TASKING: SAME AS YESTERDAY

0717 TEAMS DOWN ON SITE

0850 SUXOS DOWN TO WORK SITE.

1005 PRESS ARRIVE, TODAY IT'S NEWSPAPER'S. BRIEFED BY COE REPS O'NEILL, ANTILLES AND HUCKINS. SUXOS PRESENT AND ASSISTING. ALL PERSONNEL SIGNED-IN VISITOR LOG

1050 TEAMS STOP WORK. PRESS ESCORTED TO WORK SITE BY SUXOS.

1115 PRESS OUT OF WORK AREA. TEAMS BACK TO WORK.

1135 TEAM 1 REQUEST SUXOS TO GRID 1 TO CHECK OUT SUSPECT UXO. DEPART WITH COE SAFETY HUCKINS.

1150 RETURN TO CP. SUSPECT UXO PARTIALLY EXPENDED CANDLE FROM 5" ILLUMINATION ROUND. DIRECT TEAM LEADER TO "GAG" STRIKER PLATE UNTIL FURTHER CHARACTERIZATION COULD BE MADE. GRID

1210 TEAM #2 REQUEST SUXOS TO GRID #2 FOR SUSPECT UXO ID. GRID

1230 RETURN FROM GRID #2. TEAM HAS FOUND BDU 33 PRACTICE BOMB. SPOTTING CHARGE APPEARS TO BE EXPENDED. NO HAZARD NOTICEABLE. ALERT OEW SCRAP. POSSIBLE

1350 SUXOS DOWN TO TEAM 2 SITE, GRID #2. SUSPECT UXO.

1415 SUXOS RETURN TO CP. UXO IS 40 MM TP-T. POSSIBLE M81A1. TRACER GONE. OEW SCRAP

1435 TEAM 2 REQUEST SUXOS FOR SUSPECT ORDNANCE

17 MAY 1995

1515 SUXOS RETURNS. UXO POSSIBLY ANOTHER 40mm AP-T, BADLY CORRODED.

1650 SUXOS REQUESTED AT TEAM 2 SITE. UXO.

1605 RETURN TO CP. TEAM HAS 3" 50 NAVY PROJECTILE. APPEARS TO BE TP, BADLY CORRODED, NO SIGNS OF FUZING, FILLER OR TRACER.

1635 SSO/OA WINTERS ESCORTS COE O'NEILL TO WORK SITE FOR PHOTO SHOOT OF ORDNANCE.

1640 TEAM 2 REQUEST SUXOS FOR UXO I.D.

1653 TEAM 2 HAS ANOTHER 3" 50 PROJECTILE SUSPECT THIS ONE COULD BE LIVE NEED'S FURTHER INVESTIGATION

1700 SSO/OA AND O'NEILL RETURN TO CP.

1710 TEAM'S RETURN TO CP.

1730 SECURED. FOLLOWING DATA REFLECTS AREA SEARCHED.

GRID #1 TEAM 1 19 LANES .305 ACRES

GRID #2 TEAM 2 22 LANE .360 ACRES

TOTAL .665 ACRES

PROJECT TOTAL 1.448 ACRES

WORK SITE HOCK'S 110

TODITE TOTAL 529

18 MAY 1995

0630 CP OPENED BY PM, SSO, AND ROBLEY.

0650: ALL PERSONNEL ON SITE

0700 SAFETY BRIEFING/TASKING: TEAM #1 TO COMPLETE GRID 1 AND START GRID 4. TEAM #2 TO COMPLETE GRID 2 AND START OFF IN GRID 3, LANE 3. QA TO START ON COMPLETION OF GRID 2. EXPECT UXO SPECIALIST'S CRAWFORD AND JOHNSON TODAY

0811 SUXOS TO TEAM 2, GRID 2, SUBJECT ORDNANCE

0830 TEAM 2 HAS ANOTHER BADLY CORRODED 40mm PROJECTILE.

0835 DETAIL DISCUSION WITH COE REP'S O'NEILL AND HUCKINS OVER ACERAGE TO BE SWEPT. WORK PLAN ESTIMATES 5 ACRES, 1993 SITE VISIT STATES 3 ACRES WORK PLAN MAP SHOWS STARTING POINT 100 METERS FROM FRONT GATE. THIS REFLECTS STARTING AT BOWIE GROUND'S ~~NEW~~ NICK CAMP GROUNDS. MTA, MIKE MORAN WILL CONTACT COE CONTRACT OFFICER FOR CLARIFICATION.

0955 AREA ISSUE RESOLVED. CAMP GROUND AREA ONLY TO BE SWEPT. GR

1229 TEAM 2 COMPLETE'S GRID 2, READY FOR QA GR

GR

1245 TEMPRATURE AT 94°. SSO RECOMMENDS 45 ON, 15 OFF. CONCUR, DONE. GR

1252 SSO/QA WINTERS READY TO QA GRID 2. UXO SPECIALIST ROBLEY TO ASSIST.

1300 SUXOS TO AIRPORT TO PICK-UP NEW PERSONNEL. TEAM 1 LEADER, DON ~~EBERSOLE~~ ~~IS~~ DESIGNATED SUXOS AS REQUIRED BY WP.

1335 CRAWFORD AND JOHNSON ARRIVE TAKEN TO CLUB SEAGOUANE TO CHANGE INTO

18 MAY 1995

WORK CLOTHES.

1400 TRANSPORTED TO WORK SITE.

1420 JOHNSON AND CRAWFORD ARRIVE WORK SITE. START ORIENTATION, WORK PLAN READING, HEAT ETRESS BRIEFING. GRID 1 COMPLETED AT THIS TIME. READY FOR QC.

1545 GRID 2 OK COMPLETE. TURN OVER TO COE FOR ACTION.

1620 DOWN TO SITE'S FOR VISIT

1630 RETURN TO CP. COE-SHFETY ADVISES THAT NEW PERSONNEL CANNOT WORK TOMORROW WITHOUT SUPERVISION IF HAVE SUPERVISION. NO PAY. ADVISED THEM THAT THEY DIRECTED THE IMMEDIATE MOBILIZATION OF THESE PERSONNEL AND THEY HAD WORK THAT COULD BE DONE ON FRIDAY. REFERRED TO COE-SM FOR ACTION.

17- COE-SM BELOW AUTHORIZES NEW PERSONNEL TO WORK WITHOUT SUPERVISION

1730 SITE SECURE FOLLOWING DATA RETAINED:

GRID 1	TEAM 1	16 LANES	.227 ACRES
GRID 2	TEAM 2	8 LANES	.136 ACRES
GRID 3	TEAM 2	7 LANES	.119 ACRES
GRID 4	TEAM 1	2 LANES	.037 ACRES
		TOTAL	.519 ACRES

PROJECT TOTAL 1.967 ACRES

WORK SITE HOURS 126

TO DATE TOTAL 655

19 MAY 1995

0800 SUXOS, UXO SPECIALISTS CRAWFORD AND JOHNSON READY FOR WORK. WILL ASSEMBLY THEM AND CATCH UP ON MY WORK SAFETY BRIEFING/TASKING: NO INTRUSIVE WORK, WILL ONLY FILL IN HOLES IN GRIDS 1 & 2 USING RAKES. 0655 0655 0715

1600 SECURE. ALL HOLES FILLED GRID 1 & 2. QC QA STILL REQUIRED FOR GRID 1 AND COC QA REQUIRED FOR 2. WILL PROBABLY HAVE TO RAKE ONCE MORE MR PENA AND OUR PERSONNEL CAME AND MOVED BEACH CLOSURE SIGN 100 YARDS DOWN THE BEACH. STATED HE WOULD RETURN SIGN ON SUNDAY EVENING. 0715

WORK SITE HOURS 26

TO DATE TOTAL 681

1006

1009

1017

1017

1026

1100

1200

22 MAY 1995

0650 PM, SSO, AND ROBLEY OPEN CP

0653 ALL PERSONNEL ON SITE WITH EXCEPTION OF LOCAL LABORER FERNANDO. UN-ACCOUNTED FOR.

0700 SAFETY BRIEF/TASKING: TEAM 1 TO CONTINUE WITH GRID 4, JOHNSON ASSIGNED TEAM 1. TEAM 2 TO CONTINUE GRID 3, CRAWFORD ASSIGNED TEAM 2. SSO/QC WINTERS TO DO GRID 1 AND TURN OVER TO COE REP HUCKINS. MR HUCKINS TO DO QA GRID 2 THIS MORNING.

0710 TEAMS TO WORK. SIGN ON SEARCH NOT RETURNED TO ORIGINAL LOCATION AS DUE PERSONNEL STATED. PM AND FLOR RETURNED SIGN TO BOUNDRY.

1006 TEAM 1 REQUEST SUXOS TO GRID #4, SUSPECTED ORDNANCE. SUXOS GONE TO GRID #4

1009 TEAM 1 HAS BASE TRACER FROM 5" 38.

1017 TEAM 2 REQUEST SUXOS TO GRID #3 SUSPECT ORDNANCE. SUXOS ENROUTE FROM GRID 4 TO 3.

1017 TEAM 2 HAS SAME ITEM AS TEAM 1 MINUS TRACER. AIMERS TO BE JUST TRACER/BASE HOUSING AND PLUG.

1020 SSO/QC COMPLETES QC OF GRID #1, TURNS OVER TO COE-REP HUCKINS

1100 QC WINTERS GETS PERMISSION FROM COE REP HUCKINS TO COMMENCE QC OF GRIDS 3+4 AS THE TEAMS PROGRESS THROUGH AREA

1200 QC COMMENCED ON GRID 3. QA COMPLETE ON GRID #2. QA COMMENCING ON GRID 1. GRID #2 ACCEPTED BY COE. WILL RECEIVE TICKET THIS EVENING.

?D AND
ACCOMPANY
RK SAFETY
E WORK,
RIDS 1 & 2
1 & 2. QC)
2 COE
BLY
TECH
2
CO YARDS
E MOVED
ING.

22 MAY 1975

1330 QC STARTED GRID #4

1430 GRID #1 ACCEPTED BY COE-QA HUCKINS.

1625 TEAM 1 REQUEST SUXOS, SUSPECT UXO.
SUXOS DEPARTS

1645 RETURN. TEAM 1 HAS 1/2 (BOTTOM) OF
40mm BOTTLES WITH TRACER PRESENT.

1705 TEAMS RETURN TO CP, START DOWNLOAD
DEBRIEF.

1730 SECURE. FOLLOWING DATA REPTING:

GRID 3	TEAM 2	24 LANES	.416 ACRES
GRID 4	TEAM 1	24 LANES	.383 ACRES
		TOTAL	.799 ACRES
	PROJECT TOTAL		2.766 ACRES
	WORK SITE HOURS		130
	TO DATE TOTAL		811

23 MAY 1995

0700 ALL PERSONNEL ON SITE.
0705 SAFETY BRIEFING/TASKING: TEAM 1 TO CONTINUE GRID 4, TEAM 2 TO CONTINUE GRID 3. SSO/QC TO CONTINUE QC OF AREAS
0710 TEAMS TO WORK
0720 SUXOS AND COE O'NEILL TO GRID 3 AND GRID 4 TO PHOTOGRAPH ORDNANCE LOCATED YESTERDAY.
0740 SUXOS AND O'NEILL BACK FROM AREA
0835 MR PEÑA, DNR, STOPS FOR VISIT
0840 MR PEÑA DEPARTS.
* LATE ENTRY 0810 TEAM 2, REQUEST SUXOS, SUSPECT ORDNANCE
* 0820 TEAM 2 HAS 5" BASE PLUG INERT ORD
0915 SUXOS SITE VISIT.
0940 TEMPERATURE READING 91° SSO RECOMMENDS 45/15. CONCUR, IMPLEMENTED. RETURN
1000 AM AND SSO DOWN TO SITE FOR VIDEO.
1115 PM RETURNS
1119 TEAM 1 REQUEST SUXOS, SUSPECT ORDNANCE
1130 TEAM 1 HAS 5" BUNDLE FROM PROJECTILE, LIVE. IN ADDITION, WHILE PRESENT TEAM DISCOVERS 40mm SHELLS, BOTTOM, TRACER PRESENT.
1225 TEAM 1, REQUEST SUXOS, SUSPECT ORDNANCE
1235 TEAM 1, SUSPECT ORDNANCE REQUIRES EXCAVATION IN EXCESS OF 24" COE HUCKINS AUTHORIZES EXCESS EXCAVATION
1245 TEAM 1 HAS INERT 2.25" AIRCRAFT ROCKET
1340 SUXOS ESCORTS COE SAFETY, HUCKINS, TO CP.
1440 SUXOS AND COE REP CLEAR OF OP.
1535 TEAM 1 COMPLETES GRID 4. DIRECT

23 MAY 95

THEM TO DO AREA IMMEDIATELY FOLLOWING WATER TOWER DO TO FLAT, ACCESSIBLE TERRAIN QC START

1613 QC ON GRID 4 COMPLETE. TURN OVER FOR QA TO COE.

1645 EXCESS GRID 4 COMPLETE BY TEAM 1

1700 TEAMS TO CP. DEBRIEF, UNLOAD

1730 SECURE. FOLLOWING DATA PERTAINS.

GRID 3 TEAM 2 20 LANES .367 ACRES

GRID 4 TEAM 1 37 LANES .294 ACRES

TOTAL .661 ACRES

PROJECT TOTAL 3.427 ACRES

WORK SITE HOURS 140

TO DATE TOTAL 951

24 MAY 1995

0700 ALL PERSONNEL ON SITE. SAFETY BRIEFING/TASKING AS FOLLOWS: TEAM 1 TO COMMENCE TEAR DOWN OF GRID 4 AREA, START CONSOLIDATION OF SCRAP, STAGE SCRAP, SORT SCRAP. TEAM 2 TO COMPLETE GRID 3 AND COMMENCE TEAR DOWN AND FILL HOLES IN ALL GRID'S. THIS AFTERNOON FINISH SETTING UP DEMOLITION SITE, WALK THROUGH TOMORROWS BLAST OF, MAKE ASSIGNMENTS PER INDIVIDUAL

0710 TEAM'S LOAD OUT, TO WORK.

0840 TEAM 2 REPORTS GRID 3 COMPLETE QC TO START.

0905 QC COMPLETE GRID 3. TURN OVER TO COE FOR QA.

0906 QA BY COE COMPLETE, GRID 4, COE ACCEPT.

0955 TEAM #2 TO MAG DEMO SITE

0956 QA GRID 3 COMPLETE COE ACCEPT

1025 TEAM #2 COMPLETED SEARCH OF DEMO SITE. MARKED AREA, READY FOR EXCAVATION TEMPERATURE 90°, 45-15 WIND NE

1330 FINAL WALK THROUGH OF CAMP GROUNDS WITH ALL PERSONNEL. POLICE CALL

1445 DEMO AREA WALK THROUGH AND REVIEW OF TOMORROWS OPERATION

1715 SECURE. FOLLOWING DATA PERTAINS:

GRID 3 TEAM 2 4 LANES .070 ACRES

TOTAL .070 ACRES

PROJECT TOTAL 3.497 ACRES

WORK SITE HOURS 140

ACTUALLY DO TO QC START TURN OVER

BY TEAM 1 UNLOAD PERTAINS

ACRES

ACRES

ACRES

25 MAY 1995

0600 PM, ROBLEY, FLOR OPEN OP 1

0630 BECKER, BROADWAY, CRAWFORD DEBRT VIA FERRY WITH DNR TRUCK AND DRIVER FOR SCRAP TURN-IN AT ROOSEVELT ROADS

0700 ALL PERSONNEL PRESENT. BACK-HOE ARRIVED 1

0715 SAFETY BRIEFING. TASKING AS FOLLOWS FOR DEMO OP:

PM - OP COMMAND

SUXOS - SITE CONTROL

SSO - SAFETY

EISENSOLE - BLAST SUPERVISOR

DAVIS - BLASTER 1

BURCHETT - BLASTER

BREUNIG - BACK HOE OPERATOR 1

JOHNSON - OP WATCH

ROBLEY - BEACH WATCH 1

0850 DRILLEX DELIVERS EXPLOSIVES; 10LBS KINESTIK, 100' 25GR DET CORD, 4- ELECTRIC BLASTING CAPS, 2-NON-ELECTRIC. NOTIFIED STATE POLICE, HAVE TO WAIT FOR THEIR ARRIVAL AND VERIFICATION OF EXPLOSIVES ON HAND 12

0930 STATE POLICE ARRIVE, INVENTORY

0935 EXPLOSIVES DOWN RANGE. JOHNSON AND ROBLEY IN PLACE AT THEIR ASSIGNED OBSERVATION POSTS. COE REP ALFONSO O'NEILL MAKING ALL APPROPRIATE NOTIFICATIONS 14

0945 SURVEY CREW ~~ARMY~~ DNR ARRIVED, ADVISED THEY TO RETURN AT 1115, SHOT SCHEDULED FOR 1100. PM DOWN RANGE FOR VIDEO. 15

25 MAY 1995

1004 MR ROLAND SELEN CALLED. ASKED HOW MUCH AREA WAS DONE. ATTY TOLD HIM ALL THE AREA WAS COMPLETE AND THAT WE WERE IN THE MIDDLE OF DOING OUR FINAL SHOT. STATED HE WAS PROUD OF OUR ACCOMPLISHMENT

1030 DOWN RANGE WITH MR O'NEILL. SHOT SET, READY FOR FINAL PRIMING AND TRIP CLEAR AREA OF ALL NON-ESSENTIAL PERSONNEL.

1045 TRIP IN PLACE, BACK HOE CLEAR OF AREA. BLAST TEAM READY TO TIE IN CAPS

1050 CARRING IN. AREA CLEAR. OP'S ADVISE ALL CLEAR.

1100 FIRE IN THE HOLE. WE HAVE DETONATION. CIRCUIT CHECKED OKAY

1105 SUXES AND EBERSOLE CHECK BLAST HOLE, ALL CLEAR. REQUEST BACK HOE FOR FILL IN. PERSONNEL TO PICK AREA

1130 RECEIVED BACK-HOE. (4) HOURS TIME ON SITE. SURVEY CREW HASN'T RETURNED

1230 SURVEY CREW ARRIVES. UXO SUP EBERSOLE TO ESCORT THROUGH WORK SITE AND DEMO AREA. REST OF PERSONNEL TASKED WITH MOVING PICNIC TABLES BACK, FINAL PREP FOR MR PENA'S 1400 TOUR OF AREA

1400 SUXES, PM, EOD REP O'NEILL, HUCKINS, AND MR PENA TOUR AREA.

1500 MR PENA VERY SATISFIED WITH AREA. REQUEST WE LEAVE SIGNS AND CAUTION TAPE UP UNTIL HIS PERSONNEL

25 MAY 95

PERSONNEL OUR READY TO OPEN PARK TOMORROW. HAVE PERSONNEL START PACKING OUT CP.

1700 SURVEYORS ADVISED NOT ABLE TO COMPLETE JOB TODAY. NEED TO RESEARCH IN MORNING AND WILL RETURN 0830-0900.

1730 SECURE.. PERSONNEL RETURN FROM ROOSEVELT ROADS. ALL SCRAP DELIVERED. OFFICIAL RECEIPTS WILL BE FILED AT A LATER DATE.

EXPLOSIVES USED:

KINISTIX 1065

DETCORD 25g 100'

ELECTRIC CAPS 4

NON-ELECTRIC CAPS 2

WORK SITE HOURS 107

TO DATE TOTAL 1198

26 MAY 1995

TO CREW PERSONNEL NOLE NEED S AND TURN ALL HEL E

0645 EBERSOLE, BURCHETT, DAVIS, JOHNSON AND BROADWAY DEPART FOR AIRPORT, THEY HAVE 0730 FLIGHT

0800 PM AT CP.

0815 SUXOS TO CP. NO SURVEYORS PRESENT. DNR HAS CREW CLEANING PARK. REQUEST WE REMOVE ALL EQUIPMENT FROM OFFICE SPACE.

0930 SUXOS RETURNS TO CLUIS SEABOURN PM AND ROBLEY FINISHING UP PACKING

1020 BRENNAN AND CRAWFORD DEPART FOR AIRPORT. THEY HAVE 1115 FLIGHT

SURVEYORS ARRIVE.

1220 SURVEYORS COMPLETE WORK SECURE WILL HAVE MAIL WITHIN (7) DAYS.

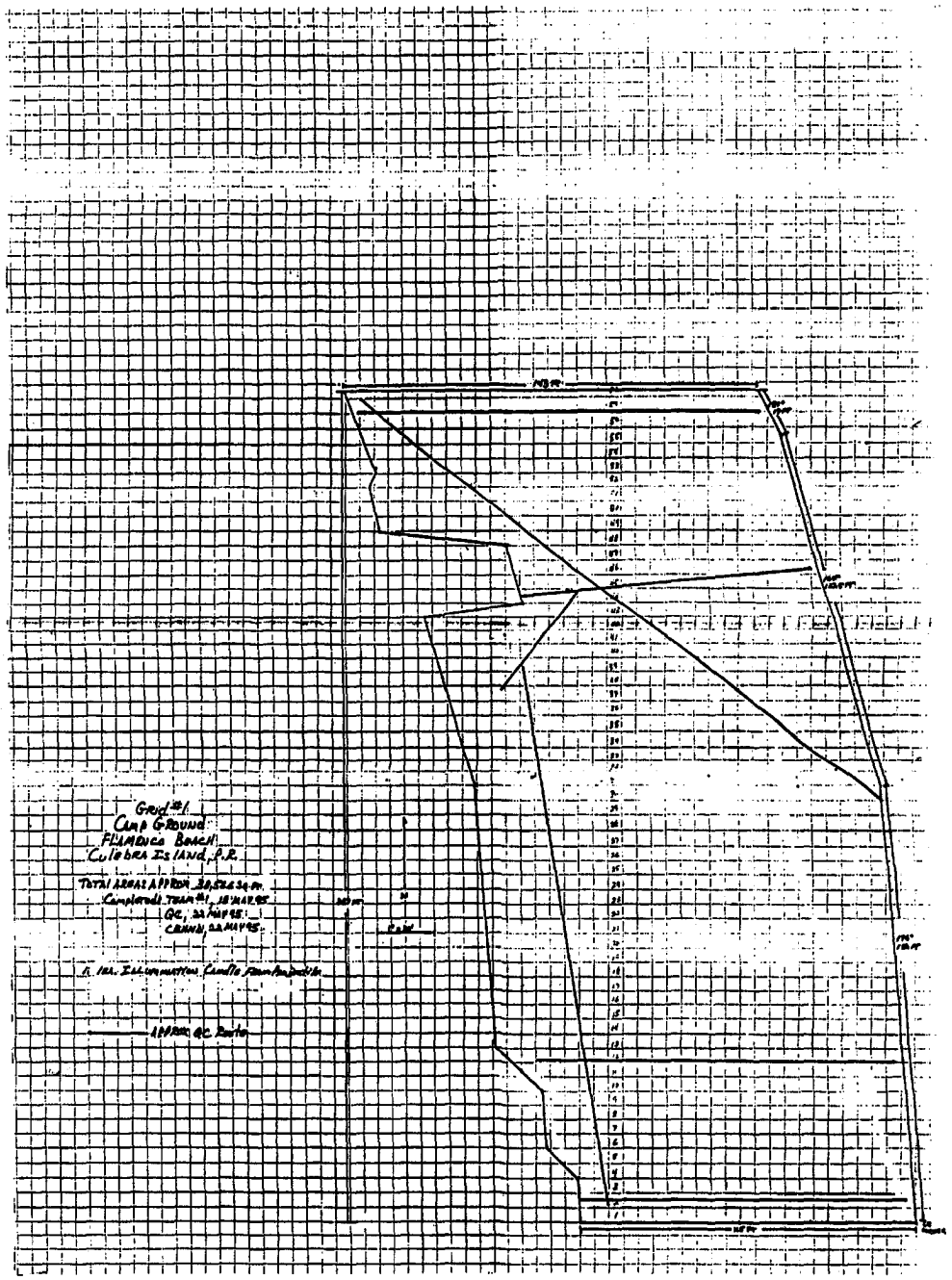
WORK SITE HOURS 11

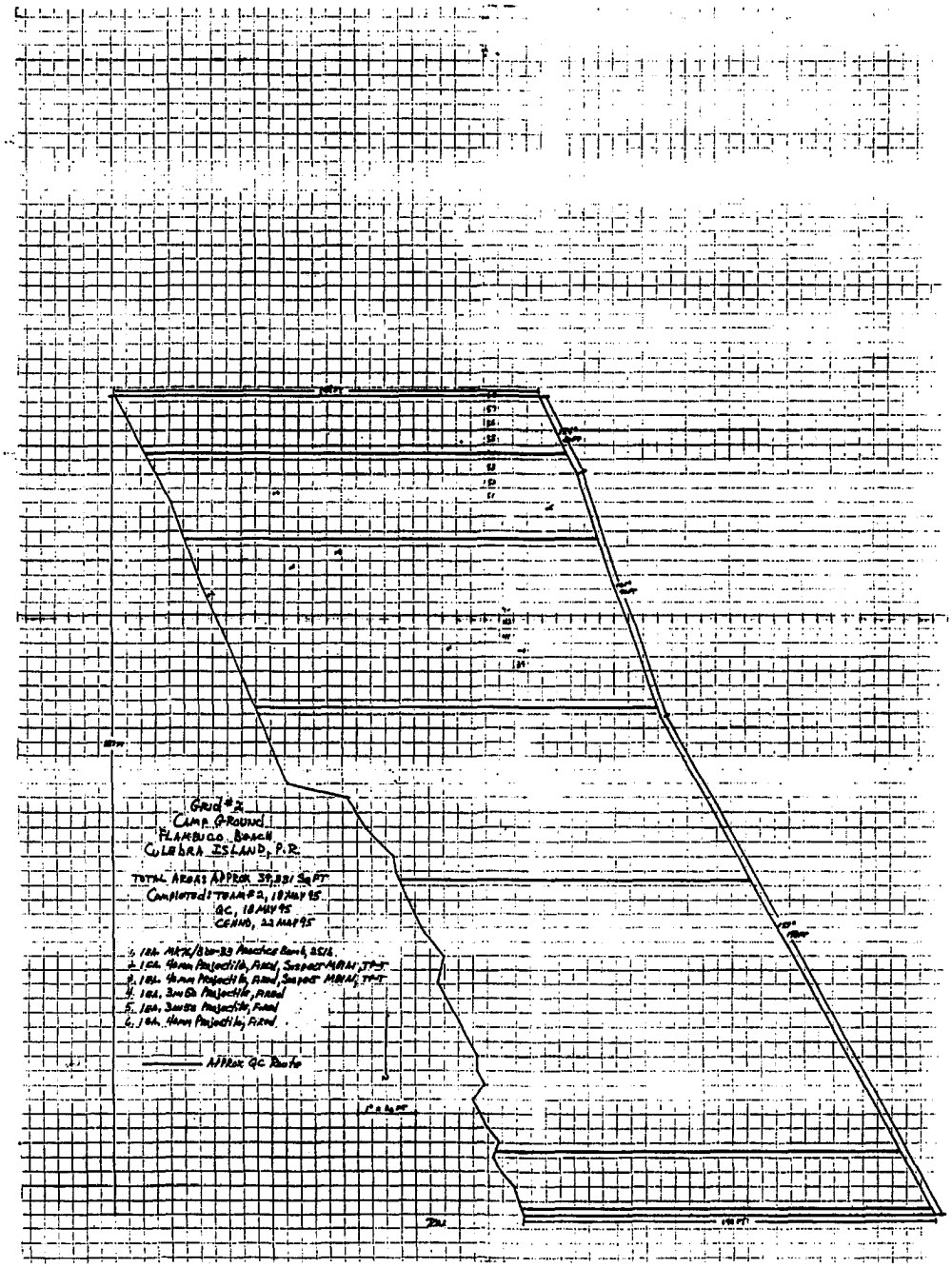
TO DATE TOTAL 1209

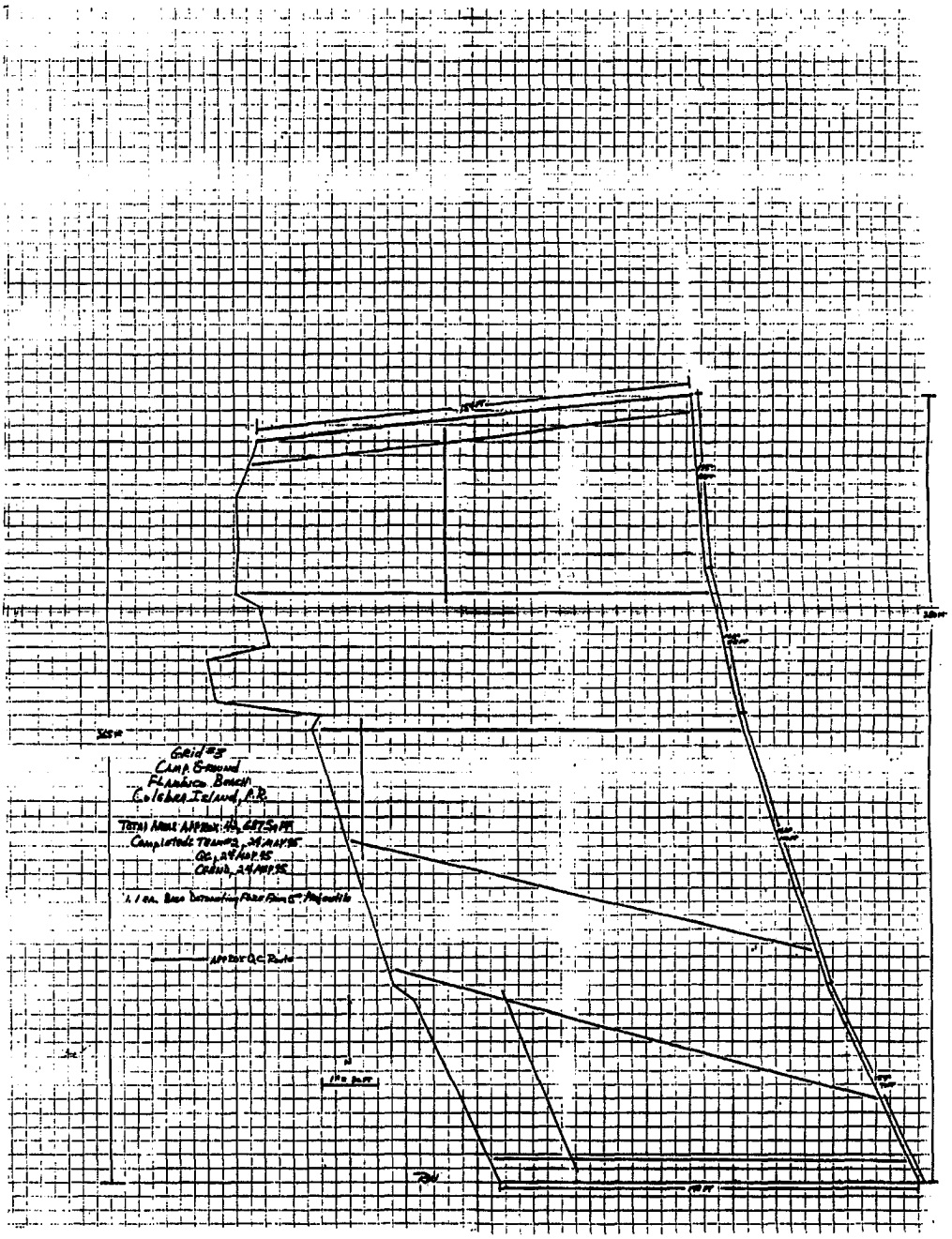
26

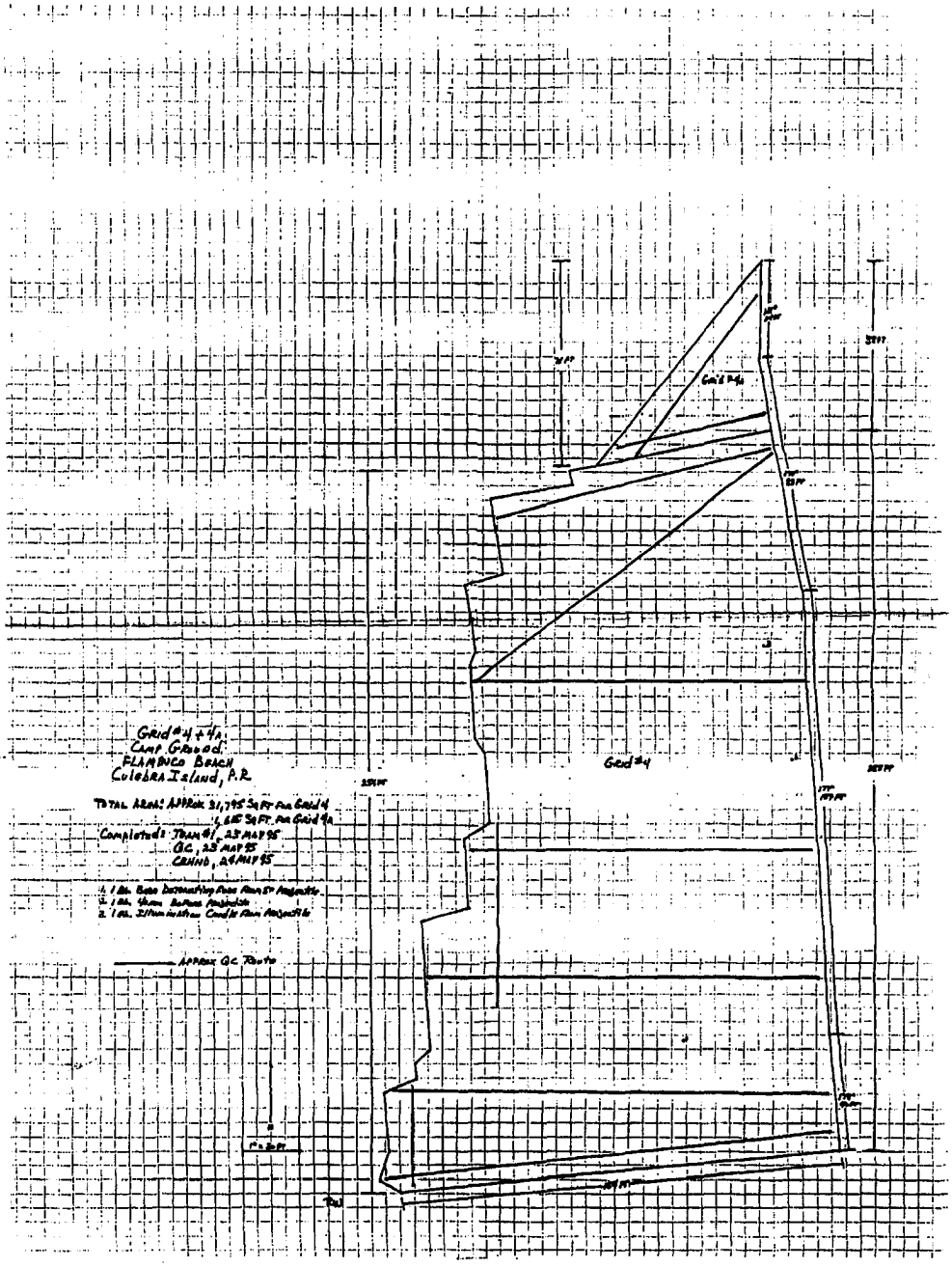
27 MAY 1995

0700 DAVE LINDSEY, DAVE BECKER TO AIRPORT FOR 0730 FLIGHT. T. ERICKSON, M. ROBLEY, R. WINTERS WILL DEPART AT 1115. THIS COMPLETES COLLEGE DEMOBILIZATION.


Grid No. 1
Camp Ground
Flamenco Beach
Culebra Island, P.R.
TOTAL AREAS APPROX. 28,526.34 sq. ft.
Completed: Team #1, 18 MAR 95
QC, 22 MAR 95
CRUNN, 22 MAY 95.
APPROX. QC Route


Grid # 2
CAMP GROUND
FLAMENCO BEACH
CULEBRA ISLAND, P.R.
TOTAL AREAS APPROX 39,331 SQ FT
COMPLETED TEAM #2, 18 MAY 95
QC, 18 MAY 95
CGMD, 22 MAY 95
1. 10A. MK2/81mm-83 Fuzes Bank, ESE
2. 10A. 40mm Projectile, Fired, Suspect MRAI, TNT
3. 10A. 40mm Projectile, Fired, Suspect MRAI, TNT
4. 10A. 3in50 Projectile, Fired
5. 10A. 3in50 Projectile, Fired
6. 10A. 40mm Projectile, Fired
APPROX QC Route


Grid #5
Camp Ground
Flambeau Beach
Colchester Island, P.E.
Completed: Trench 2, 24 Aug 95
QC, 24 Aug 95
Closed, 24 Aug 95


Grid #4 + 4a
Camp Ground:
FLAMENCO BEACH
Culebra Island, P.R.
TOTAL AREA: APPROX 31,795 SQ FT. FOR GRID 4
4,685 SQ FT. FOR GRID 4a
Completed: JAN 81 - 23 MAY 95
GC, 23 MAY 95
CRHNB, 24 MAY 95
Grid #4a
Grid #4
APPROX GC ROUTE

Appendix 2

to

ANNEX C

Unexploded Ordnance Supervisor's Log - Ebersole

This log opened by Wyle Team Leader Donald E Ebersole on 11 May 95 Donald E Ebersole

This log closed by Wyle Team Leader Donald E Ebersole on 25 May 95 Donald E Ebersole

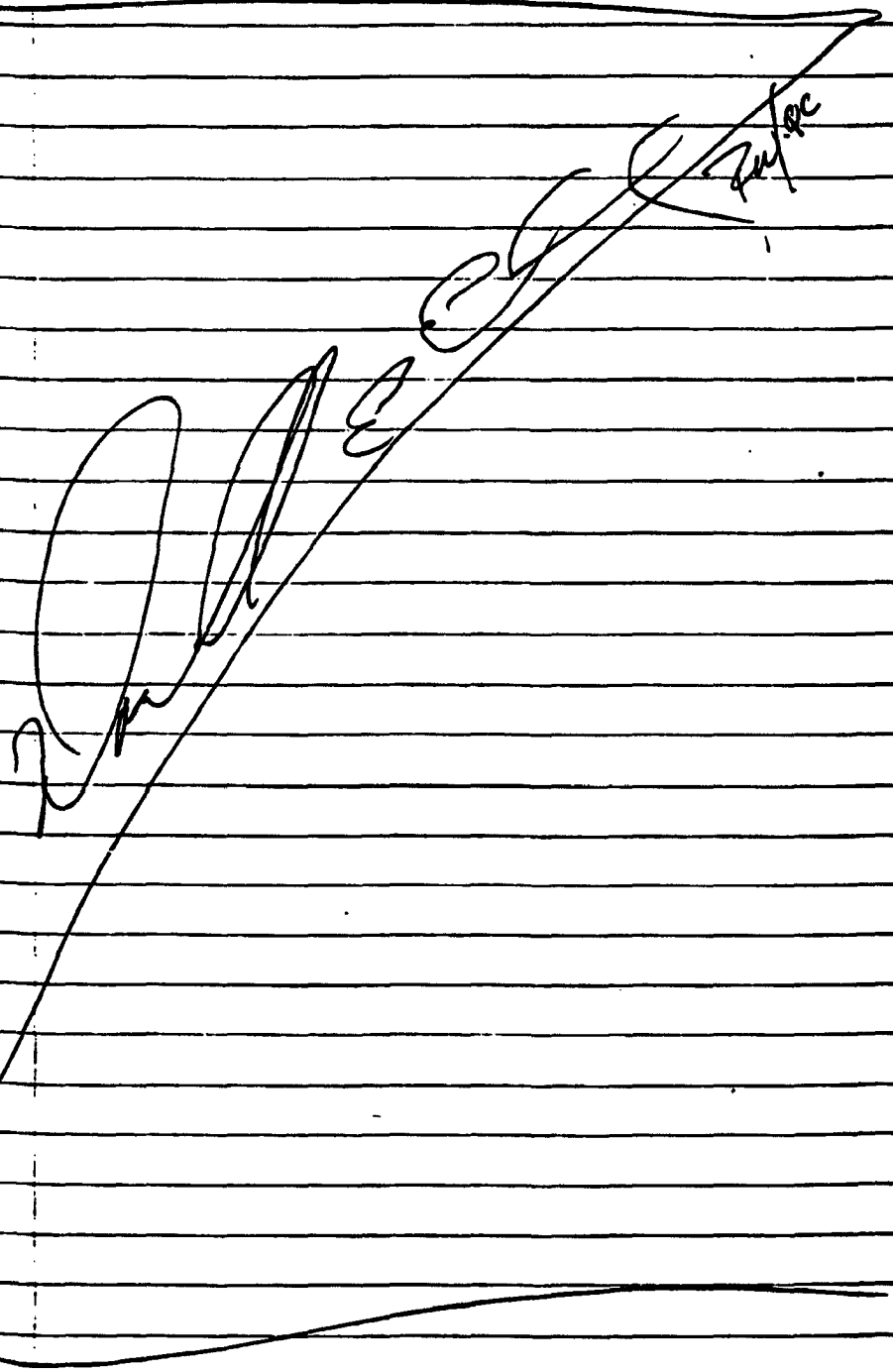
11 MAY 95

1400 Arrived at Job CP. Walked the job site with SUXO. Discussed plan of Attack with Dave.

1500 Departed CP for Club Sanford

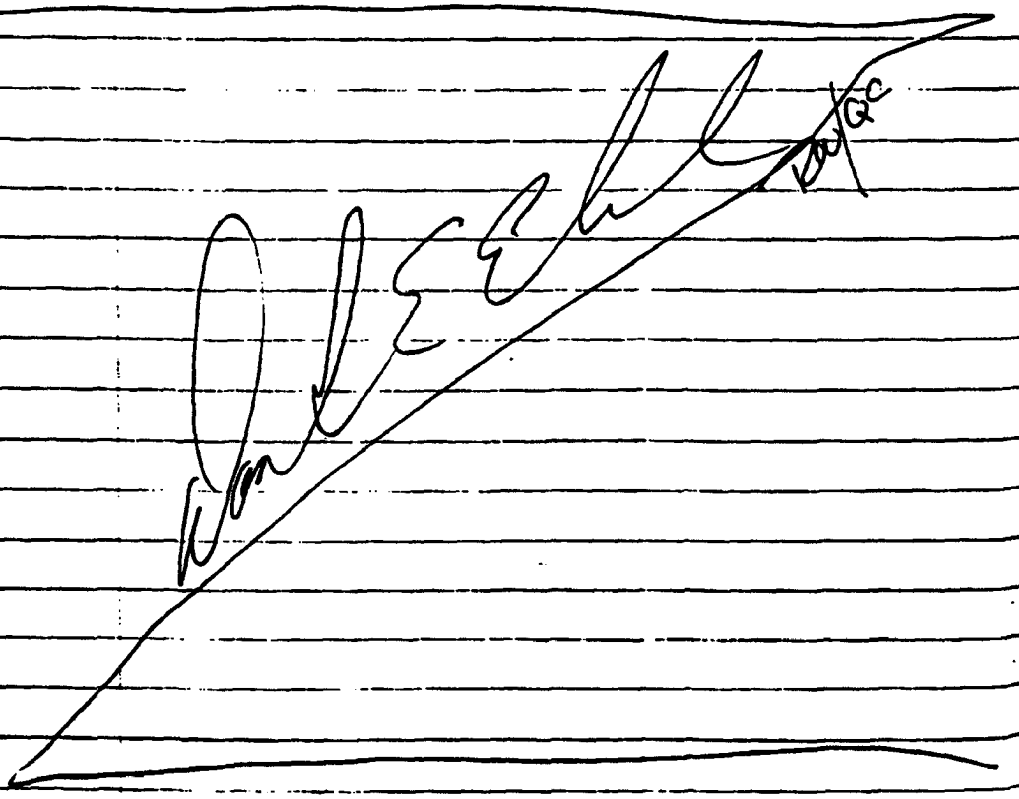
1900 Meeting by the pool for all personnel

2000 meeting over



12 MAY 95

0700	All personnel met at Club Sabarne. Don Ebersole, Terry Davis, Steve Burchett accounted for.	0700
0800	Departed for Job CP	0725
0840	Arrive at CP. Personnel reading workplan + APP.	
0730	Wyle Team Leader departing early Mike Moran to install marmonts	0740
1200	Taking Lunch	0745
1300	Back at CP. Meeting between Team Leaders, SUXO, SSO, PM's discussing work plans Scope of Work	0755 "
1400	All Members enter work site to split up Area into 4 Areas	0810 0815
1730	All personnel At CP EOD briefing	- 0825
1745	Wyle out of here	
		0835
		0840
		0850
		0900
		0915
		0930
		0955
		1010
		1020
		1050
		1140
		1240
		1315



0700 Morning meeting. Topics covered Heat stress program, PPE required for job, short sleeves authorized by SSO

0725 Meeting over. Departing for work site. Pulse rate Terry 66 Steve 80 Don 60

0740 Work site CP established. Radio CK load + clear.

0745 Lane 1 Grid 1 established 118527 + 60288 Schausted CK out OK

0755 Lane 2 Grid 1 established Beginning sweep operation Corp Rep here Huck.

0810 SSO Arrives

0815 SSO departs for other team location. Huck goes also

0825 SSO back. First Aid Kit + Eye wash inspected They're OK

0835 SUXO + Alphonso arrive.

0840 SUXO + Alphonso depart for other job site

0850 Taking water break

0900 Back to sweep ops

0915 SSO back here at site

0930 SSO departs

0955 SUXO + SSO by area

1010 Break Pulse count Don 89 Steve 94 Terry 94

1020 Back At it

1050 Press personnel show up + CE rep. 5 people

1140 Taking lunch break

1240 Back to work

1315 SSO reviewed work site for

15 MAY 95

SAFety compliance. Found no discrepancy. Slow going though.

1405 Taking a break. Pulse count Terry 92 Steve 80 Don 90 PM radio CK Loud & Clear

1425 Back to work

1630 Advised by SUXO to go to CP

1650 Back to worksite to pack up

1700 Departing worksite for CP

1725 EOD meeting

1730 Wing out of here. Logging comes later

1910 Here we are, logging our heart out. Here goes nothing. Grid 1 Lane 1 5'x 115' Lane 2 5'x 115' Lane 3 5'x 115 L4 5'x 115 L5 5'x 120 Hits are listed As follows L2 113 piece of steel L1 87 Fence post L2 95 Fence post L2 83 piece of steel L2 76 nails L1 60 nails L1 50 nails L1 pieces of steel L2 40 nail L2 38 nail or maybe a bolt L2 20 piece of pipe L2 16 nail L3 29 tent peg L3 2 nail L3 5 Bottle cap L3 5 nail L3 9 Bottle cap L3 12 bottle cap L3 15 nail L3 17 nail L3 18 Bottle cap L3 22 Bottle cap L3 23 Clothes Pin L3 31 5" Base L3 32 sand stake L3 33 Bottle cap L3 37 sand spike L3 40 bottle cap L3 44 nails L4 86 unknown scrap L3 L3 rock L3 65 Rebar L3 68 Bottle

15 MAY 95

found no
though
e count
DON 90
& Clear

to go to

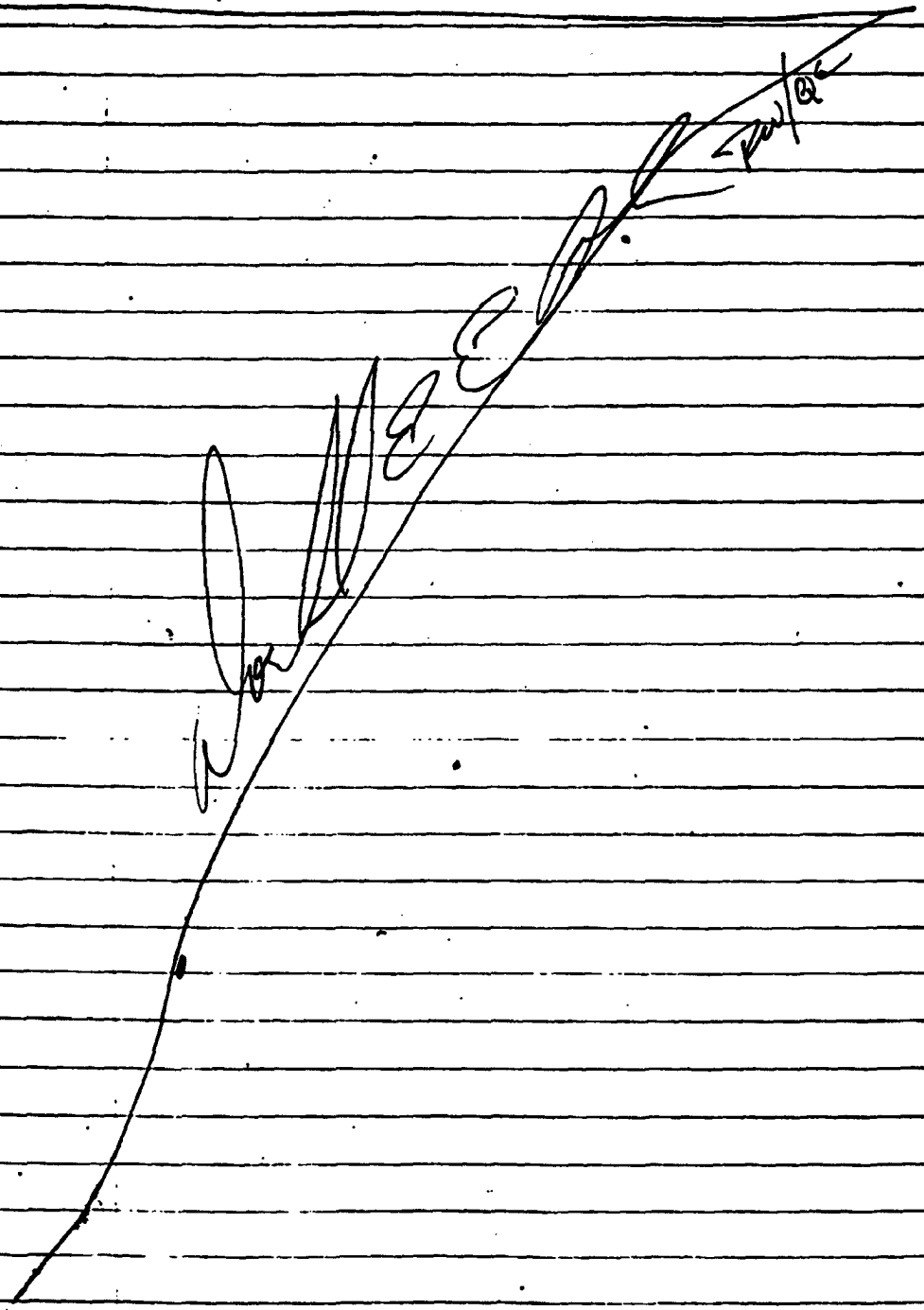
to pack up
for CP

Logging comes
ov heart
ng Grid /
2 5' x 115'
5' x 115
are listed
piece of steel
95 Fence post
2 76 nails
nails L1
nail L2 38
L2 20 piece
L3 29 tent
5 Bottle cap
tle cap L3 12
L3 17 nail
22 Bottle cap
31 5" BASE
Bottle cap
bottle cap L3
scrap L3
L3 68 Bottl

CAP L3 76 rebar L3 88 nail L3 58 pin L3 91 sand spike L3 98 pipe L3 99 2 battery L3 100 bottle cap L3 102 bottle cap L3 103 rock L3 110 wire L4 101 tent peg L4 94 tent peg L4 89 rock L4 69 steel L4 62 rebar L4 63 rebar L4 61 Rocks L4 46 bottle caps L4 44 bottle caps L4 43 bearing L4 41 steel L4 35 steel L4 30 tent peg L4 25 bottle cap L4 21 battery L4 18 many nails L4 13 bottle cap L4 7 battery L4 5 bottle cap L4 3 bottle cap L4 1 frag L5 8 steel L5 11 tent peg L5 14 tent peg L5 16 tent peg L5 16 Bottle cap L5 18 bottle cap L5 nail tent peg L520 bottle cap L5 20 rocks L5 21 tent peg L6 25 tent peg L5 26 tent peg L5 26 bottle cap L5 28 tent peg L5 30 bottle cap L5 31 tent peg L5 23 bottle cap L5 31 steel L5 34 steel L5 38 rust flakes L5 45 razor L5 48 nail L5 43 steel L5 45 nail L5 55 steel L5 46 tent peg L5 47 nails + Bottle cap L5 47 steel L5 52 rock L5 55 frag L5 60 bottle cap L5 61 bottle cap L6 76 frag L5 67 frag L5 66 unknown fuze L5 76 frag L5 70 nail L5 79 nail L5 87 frag L5 83 frag L5 86 Bottle cap L5 85 frag L5 87 frag L5 90 bobby pin L5 96 frag L5 102 stake L5 92 frag L5 94 frag L5 95 frag

15 MAY 95

1945 Well here I am, finally done logging so it's time to think about feeding the belly Adios until tomorrow



0100
0702
0710
0715
0850
0900
1530
1045
1105
1115
1445
1820
1320
1410
1420
1435
1500

25

16 MAY 95

0700 Morning meeting. SSO discussed PPE, water consumption, vehicle safety, ANIMALS, physical HAZARDS, Weather watch

0707 Meeting over. Loading out truck & departing for worksite from CP

0710 Radio CK Loud & clear

0715 Arrived at worksite. Detector 118527 & 60288 ck out. 18 inch detection. SSO arrives. Pulse count Don 90 Terry 82 Steve 86

0850 Taking break, Pulse count Don 100 Terry 106 Steve 92

0900 Back to work

1030 Break Pulse Don 96 Steve 110 but Steve just finished digging 2 holes Terry 88

1045 Off we go on our merry way

1105 SUXO informed me to keep track of number of investigations but only log actual UXO & OEW

1115 Taking Chow break Pulse Don 98 Terry 90 Steve 92

1145 Back to work we go. Using new procedure this afternoon. 158 digs this morning

1310 Break time Pulse Terry 96 Steve 98 Don 100

1320 Back to work

1410 Water break

1420 Back to work

1435 PM radio CK Loud & Clear

1500 break. Pulse count Don 92 Terry 92 Steve 100 Temp 88

SUXO Arrives

16 May 95

1503 SUXO leaves	0700
1508 Back to work	
1580 Break	0710
1600 Back to work	
1700 Breaking down work site. Today swept 18 LANES 6-10 5X 125 10 - 23 5X 140	0720
1718 Arrive at CP. Waiting for EOD meeting	0915
1715 EOD meeting.	
1720 Wire gone. Hits for today 624; 1 Inert OEW	0930
	1030
	1035
	1040
	1115
	1130
	1200
	1350
	1335
	1345
	1515
	1530
	1655
	1705
	1710

17 MAY 95

0700 Morning meeting. Daily safety meeting by SSO

0710 Meeting over. Departing for work site.

0720 Radio CK Loud & Clear Mag Ck out 118527 & 60288 Pulse count Don 82 Steve 82 Terry 84 all are @

0915 Taking a break. Temp 82 Pulse count Terry 80 Steve 86 Don 90

0930 Back to work

1030 Water break Pulse count Terry 82 Steve 82 Don 90

1035 Back at it

1040 Advised by SUXO to cease ops. Het & press personnel heading into AREA L 31 119 ft may be a candle

1115 Press personnel & SUXO & Corps reps departing AREA

1130 Lunch Pulse count Don 90 Terry 86 Steve 88

1200 Back to work

1350 Break Pulse count Don 96 Steve 86 Terry 86

1335 PM radio CK Loud & Clear

1345 Back to work

1515 Taking a break Pulse count Don 96 Steve 88 Terry 86

1530 Back to work

1655 Starting to pack up job site

1705 Departing for CP

1710 Arrive at CP. Daily paperwork

Fr. Today 5X 125

1/4 for

for today

17 May 95

1717 EOD Meeting

1720 We're gone. Hits for today

731. Lanes 19 Lanes 5X 140

L 24-42. 1 OEW 30 Invt OEW

0700

0708

0712

0720

0855

0910

0915

1045

1100

1105

1155

1225

1235

1250

1335

1350

1415

1500

18 May 95

0700 Morning Meeting
0708 Meeting over
0712 Radio Ck loud & clear
0720 At worksite & set up Pulse count Don 88 Steve 82 Terry 74. Off to work we go.
0855 Water break. Pulse Don 92 Terry 88 Steve 96. Temp 85
0910 Back at it
0915 Safety performed safety inspection All OK
1045 Break Pulse count Don 92 Terry 86 Steve 90
1100 Back to work
1105 Chow arrived. Taking lunch
1155 Back to work. Temp 94 Pulse count Don 88 Terry 88 Steve 88
1225 PM Radio CK
1235 Temp 98° Break every hour per instruction of SSO Pulse Also Don 94 Steve 98 Terry 94 45-15 schedule
1250 Back to work
1335 Break. Pulse count Don 94 Terry 88 Steve 96
1350 Back to work
1415 Grid 1 finished. Beginning teardown & move to Grid 4
1500 Base line South end of Grid 4 set up. Beginning lane lay out Small Break. Pulse count Terry 60 Don 86 Steve 86. Base line 161 Ft

today
X 140
next area

18 MAY 95

1600 L1+2 complete. Tearing grid down for certified.
L1 161 L2 159 L1 43 L2 50
hits 95 in Grid 4. Grid 16
Lines 541 hits
1645 Back CP awaiting EOD arrival

0700
0710
0715
0920
0955
1050
1105
1130
1215
1245
1855
1410
1525
1540
1700
1710
1730
1750

22 May 95

Timing Keed
43 L 2 5-0
Grid 16

EOD meeting

0700 Morning Meeting Topics covered PPE, water + Temp, wildlife, Plan for work
0710 Headed for worksite
0715 Arrive at worksite. Setting up Grid. Radio CK Loud + clear Pulse count Terry 66 Steve 78 Dave 66 Don 74 Mag CK out 0329 0163 2288 160 OK Temp 84
0920 Break Temp 86 Pulse count Don 92 Terry 72 Steve 86 Dave 82
0935 Back to work we go. Found Fuze
1050 Break Temp 88 Pulse Dave 86 Terry 78 Steve 88 Don 90
1105 Back at it
1130 Lunch Arrives Taking break Pulse Don 88 Steve 82 Dave 88 Terry 72 Temp 88
1215 Back to work
1245 6 more lanes laid out. Drank some water
1355 Break Pulse count Temp 88 Don 96 Dave 84 Terry 88 Steve 88
1410 Back to work. Safety did safety inspection. All is well
1525 Break Pulse count Don 94 Terry 88 Steve 84 Dave 86
1540 Back at it
1700 Shutting down.
1710 At CP EOD Meeting
1730 Wire gone.
1750 Logging the fun time that we had Today at Club Seahorse

22 MAY 95

.383 Acres 16685 Sq Ft 0700

24 LANES 96S hits 12 Intent

OEW 1 BASE FUZE IN LANE

9 at 5'

QC 0713

0720

0845

0855

0940

0955

1040

1140

1210

1255

1810

1900

1415

1500

23 May 95

24	0700	Morning meeting. Topics Safety
22 Inexp		PPE, water consumption, VXO ID
19 Lave		Slips, trips, falls, heat stress Plan
		for project end.
Rig QC	0713	OP to work
	0720	Arrive at work site. Radio Ck Loud
		and clear Temp 84 Pulse count
		Dan 88 Steve 80 Terry 66 Dave 68
		Mag 0329, 179 183 288 Ck out
		OK
	0845	Break Pulse count Temp 88
		Dan 94 Steve 92 Dave 90
		Terry 90
	0855	Back to work
	0940	Informed By SUXO to implement
		45-15 schedule. Break. Temp
		91 Pulse count Dan 90 Steve 88
		Dave 90 Terry 90
	0955	Break over.
	1040	Break Temp 93 Pulse Dan 94
		Dave 96 Terry 88 Steve 92
	1140	Taking lunch Pulse count
		Dan 90 Terry 74 Steve 84
		Dave 80
	1210	Back to work
	1255	Break. Temp 92 Pulse Dan 98
		Terry 102 Steve 96 Dave 100
	1310	Back to work
	1400	Break Temp 94 Pulse Dan 100
		Terry 102 Steve 98 Dave 100
	1415	Back to work
	1500	Break. Temp 92 Pulse
		Dan 100 Dave 94 Steve 99
		Terry 102. It's very hot

23 May 95

1515 Back to work 0700
1535 Original Grid 4 complete SUXO has extended our area another 60ft to take in all level ground + hump hill 2210
1635 Extra sixty feet complete 0715
Pulse Don 100 Terry 96
~~Ace~~ Steve 97 Dave 100
~~1715~~ 1650 Taping down work site
1705 At CP waiting for EOD asst. 0915
37 lanes 1092 hits CO
insert OEW 2 UXO 294 0930
Acres 1030
1715 EOD meeting
1720 Meeting over were gone

1045

1130

1215

1355

1350

1435

1650

1555

1610

1615

1650

24 May 95 LT

0700 Morning meeting. Topics covered PPE, water consumption, slips, trips, falls, frag handling, heat stress. Plan for days work.

0710 OP we go

0715 Arrive at work site. Starting the task of scrap movement. Temp 84 Pulse Don 86 Terry 82 Dave 82 Steve 80

0915 Break Temp 89 Don 80 Dave 88 Steve 90 Terry 82

0930 Back to work

1030 Break Temp 98. Pulse Don 80 Dave 72 Steve 80 Terry 82 Placed on 45-15 schedule

1045 Back to work. OP to ground reclamation & environmental restoration

1130 Break Temp 88 Pulse Terry 76 Don 84 Dave 86 Steve 84

Lunch

1215 Back to gardening

1335 Break Temp 92 Pulse Don 86 Steve 90 Dave 90 Terry 78

1350 Back to work

1435 Break Pulse Don 80 Dave 84 Steve 82 Terry 78

1450 Back to work

1555 Back at break area. Pulse Don 98 Terry 96 Dave 96 Steve 98

1610 Back at it

1615 At CP

1650 Planning meeting for Demo op

24 May

Positions assigned.

1700 Meeting over. Wire gone

I hope.

0715 W
PP
ho
Gu
0730 A
A
0750 A
Te
0930 S
3
1050 S
1100 I
1105 H
1130 H
1230 I
27
1715 O

25 May 95 19

0715 Morning meeting. Topics covered PPE, water consumption, heavy equipment hazards, slips, trips, fall, heat stress first aid, Misfire procedures

0730 Meeting over, off we go to dig a hole

0750 At work site. Pulse Don 78 Tom 68 Terry 66 Steve 80 Dave 72

0930 SUXO enroute to our location with 3 vehicles transporting explosives

1050 Shot set up

1100 Detonation. SUXO & myself in to CK shot.

1105 All clear. Cleaning up

1130 Arrive at CP Taking lunch

1230 Don is Escorting Surveyors, rest of guys are moving tables & prepping area for Mr Penn

1715 Ops done for day. We're gone

Appendix 3

to

ANNEX C

Unexploded Ordnance Supervisor's Log - Becker

MTA - Team

BECKER - Dave

BROADWAY III - OSCAR

BRENNAN - Tom

Safety - WINTERS JR - Richard

SR EQ SUPV - LINDSEY - Dave

PM - EPPERSON - Tom

11 May 95

1400 Arrived at Hotel

1600 meeting w/ TG PM and SR USO Segrd.

2200 meeting over. QMS

12 May 95

0700 met in Hotel
0800 Dpt for site
0840 PRE MT CP = ALL MTA Team on site - Everyone Reading Work Plan.
1200 Lunch
1300 Back To work - meeting - Placing monuments in area
1745 Stopped work Dpt for Hotel.

063
065
068
070
073
074
084
084
085
07
092
093
100
100
1010
104
1120
1125
1205
1210
1217
1235
1250
1255
1305
1310
1320
1321
1329
1330

0635 DPT HOTEL FOR SITE
0650 ARR AT CP
0655 CHECKED MAGS 114434 - 401
Team 0705 SAFETY BRIEFING - PULSE ~~BRIEFING~~ BECKER 85,
ding work BROADWAY 65, BRENMAN 60
0734 RADIO CHECK
0740 STARTING GRID @ 3
vs - Flaccos 0840 ALFONSO / SR SUPV ON SITE
0845 DPT SITE SR SUPV / ALFONSO
Hotel. dpt 0850 550 ON SITE
0901 550 DPT SITE - BRENK PULSE BECKER
95, BRENMAN 70, BROADWAY 58
0920 BACK TO WORK
0955 COMP SAFETY ON SITE
1000 550 / SR SUPV ON SITE
1005 COMP SAFETY / 550 / SR SUPV DPT SITE
1010 MOVED TO GRID @ 2
1040 550 / SR SUPV ON SITE - PRESS ON SITE
WORKED STOPPED
1120 RECKLESSING MAGS - MAGS GOOD AT 2FT (401)
MAGS 114434 GOOD ONLY TO 1FT.
1135 LUNCH
1205 BACK TO WORK 550 ON SITE
1210 ~~BECKER~~ PULSE BECKER 50, BRENMAN 64, BROADWAY 64
1217 550 / SM STOPPED WORK FOR PRESS
1235 BACK TO WORK
1250 550 STOPPED WORK PERSONNEL ON BEACH
1255 BACK TO WORK
1305 SR SUPV ON SITE
1310 SR SUPV DPT SITE
1320 550 ON SITE
1321 STOPPED TO GET NEW SHOVEL
1329 BACK TO WORK
1330 550 CHECKED PERSONNEL AND FIRST AID KIT

15 MAY 95

1345 RAINING

1350 RAIN STOPPED

1405 RADIO CHECK

1520 BREAK - ~~PULSE~~ PULSE BECKER 80, BROADWAY 65, BRENNAN 80.

1531 BACK TO WORK

1628 STOPPED WORK NAVY 1600 TO 540T

1700 BACK TO WORK - CLEANING EQUIP — STOPPED AT 33' LANE 5, GRID-2

GRID - 3

LANE - 1 (148')	LANE 2 (148')
1 BATTERY 4FT	1 TENT PIN 6'
2 ~~FRAG~~ TENT PIN 10'	2 TENT PIN 7'
3 ~~WIRE~~ FRAG 14'	3 TENT PIN 9'
4 WIRE 18'	4 FRAG 11'
5 FRAG 21'	5 TENT PIN 15'
6 FRAG 24'	6 FRAG 19'
7 FRAG 26'	7 FRAG 20'
8 FRAG 32'	8 FRAG 43'
9 FRAG 52'	9 TENT PIN 48'
10 PIPE 58'	10 FRAG 55'
11 FRAG 62'	11 PIPE 64'
12 FRAG 68'	12 FRAG 88'
13 FRAG 87'	13 FUZE 94'
14 FRAG 91'	14 FRAG 114'
15 FRAG 97'	15 FRAG 117'
16 FRAG 119'	16 FRAG 127'
17 FRAG 120'	17 FUZE WELL, ADPTR 134'
18 FRAG 123'	
19 FRAG 133'	
20 FRAG 136'	
21 FRAG 143'	

GRID-2

LANES	
1	140'
2	141'
3	143'
4	143'
5	138'

GRID-3

LANE	
1	148'
2	148'

LANE

1 FRAG
2 TENT
3 NAIL
4 FRAG
5 TENT
6 TENT
7 TENT
8 FRAG
9 TENT
10 FRAG
11 BATTERY
12 TENT
13 FRAG
14 FRAG
15 FRAG
16 FRAG
17 FRAG
18 FRAG
19 FRAG
20 TENT
21 TENT
22 RUST
23 SMALL
24 FRAG
25 FRAG
26 6" B
27 FRA
28 TAR

FROM 1
15'

1730 C

15 May 95 Grid - 2

Lane 1 (140')	Lane 2 (141')	Lane 4 (143')
1 Frag 3'	1 Frag 12'	1 under Tent 8'
2 Tent Pin 5'	2 3" Ribbon 15'	2 Tent Pin 12'
3 Nail 7'	3 Nail 25'	3 Tent Pin 14'
4 Frag 7'	4 metal 37'	4 Frag 24'
5 Tent Pin 11'	5 metal 38'	5 Tent Pin 30'
6 Tent Pin 14'	6 Pipe 40'	6 3" Base plate 39'
7 Tent Pin 17'	7 Tent Pin 51'	7 Tent Pin 49'
8 Frag 19'	8 Tent Pin 52'	8 Frag 60'
9 Tent Pin 20'	9 Tent Pin 64'	9 Tent Pin 66'
10 Frag 24'	10 Nail 67'	10 Frag 77'
11 Battery 26'	Lane 3 (143')	11 Tent Pin 85'
12 Tent Pin 29'	1 [illegible] 5'	12 Frag 103'
13 Frag 29'	2 [illegible]	13 Frag 136'
14 Frag 33'	3 [illegible]	
15 Frag 39'	4 [illegible] 15'	Lane 5
16 Frag 40'	5 [illegible]	1 Frag 2'
17 Frag 44'	6 [illegible]	2 Frag 8'
18 Frag 46'	7 [illegible]	3 Pipe 5'
19 Frag 46'	8 [illegible]	4 Tent Pin 6'
20 Tent Pin 56'	9 [illegible]	5 Tent Pin 7'
21 Tent Pin 69'	10 [illegible] 37'	6 Tent Pin 8'
22 Rust From Curtain Fire 73'	11 [illegible] 37'	7 Tent Pin 8'
23 Small Blowout 82'	12 [illegible]	8 Frag 13'
24 Frag 119'	13 [illegible]	9 Frag 15'
25 Frag 124'	14 Tent Pin 60'	10 Nail 19'
26 6" Bolt 128'	15 Frag 67'	11 Tent Pin 26'
27 Frag 130'	16 Frag 100'	12 Pipe 27'
28 Trash Hole	17 Frag 135'	13 Tent Pin 30'
From 100' - 105' 5' wide	OEW - 2 Total Hits 128	14 Tent Pin 33'

1730 closed site for day

ORM-Leader

16 May 95

0635	Dpt Hotel for site	0655
0650	MRA cp	0705
0700	Safety Briefing - Pulse Beckee 50, Broadway 60, Brenman 64	0715
0708	Radio check	
0710	checked Mag # 401 Good at 1½', #4484 Good at 1'	0720
		0915
0715	START WORK Grid 2, Lane 5	1025
0730	SR supv on site	
0732	SR supv Dpt	1040
0950	Break Pulse Beckee 50, Broadway 62, Brenman 65	1043
		1110
1006	Back To WORK	1125
1105	SR supv on site - Keep Number of hits, and Log Ord.	1120
		1155
1115	Lunch - Pulse Beckee 50, Broadway 60, Brenman 65	1244
		1250
1145	Back To work	1440
1415	Break - Pulse Beckee 50, Broadway 60, Brenman 65, Roby 65	
1420	SSO on site	1455
1430	Back To work - Radio check	1545
1720	Site closed Dpt For Hotel	1645
	Grid - 2	

Lanes	6 139'	Lanes 17 122'	Lanes 27 124'	1720
	7 139'	18 122'	28 125'	Lanes
	8 139'	19 124'		29 - 12
	9 132'	20 124'	Total Hits - 555	30 - 14
	10 132'	21 123'	OEW - 2ea	31 - 14
	11 129'	22 123'		32 - 14
	12 129'	23 122'		33 - 14
	13 129'	24 122'		34 - 14
	14 129'	25 120'		35 - 14
	15 129'	26 122'		36 - 14

17 MAY 05

0655 MAR AT CP
0705 Safety Briefing - Pulse Becker 50, Brennan 50, Broadway 60, Broadway 65, Rob. 65
0715 Mass checked II 401 and # 114434 Radio check
114434 Good 0720 Start work GRID 2, Land 27
0915 550 call Temp 80°
1025 Break - Becker 55, Rob. 70, Brennan 72, Broadway 62
1040 Back To work
-dway 62, 1043 SR Supv Stop Work (Brennan on site)
1110 Back To work
1125 Lunch - Rob Dot site with PM
box of hats, 1130 Pulse Becker 55, Brennan 75, Broadway 62
1155 Back To work
1960, 1244 Rob Back on site - Pulse 65
1250 550 on site for site inspection.
1440 Break - Pulse Brennan 79, Becker 80, Rob 70, Broadway 65 - SR supv on site To look at 40mm Round.
1455 Back To work
1545 SR Supv on site To see 3" round
1645 550 / Alfonso (Carpl) on site To see ORD.
s 27 124' 1720 Site closed Dpt for Hotel
28 125'

Lanes	Lanes	Lanes
29 - 125'	37 - 143'	45 - 143'
30 - 143'	38 - 143'	46 - 143'
31 - 143'	39 - 143'	47 - 145'
32 - 143'	40 - 143'	48 - 145'
33 - 143'	41 - 143'	49 - 145'
34 - 143'	42 - 143'	50 - 145'
35 - 143'	43 - 144'	
36 - 143'	44 - 144'	

CL 1445 - 555
W - 2ea

17 MAY 95

GRID - 2

Hits	Hits	Hits
27 - 14	37 - 23	45 - 35
30 - 15	38 - 24	46 - 40
31 - 27	39 - 30	47 - 35
32 - 32	40 - 32	48 - 41
33 - 35	41 - 35	49 - 47
34 - 15	42 - 36	50 - 46
35 - 12	43 - 38	
36 - 15	44 - 32	

OEW

Lane 29 sleeve 102'
" 30 Base plate 134'
" 34 sleeve 12'
" 34 sleeve 11'
" 37 sleeve 27'
" 39 sleeve 6'
" 45 sleeve 66'
" 46 sleeve 72'
" 47 sleeve 2'
" 49 sleeve 60'
" 50 sleeve 55'
" 47 sleeve 3'

ORD

Lane 40 MK 76 - 66'
" 44 mixed 40mm - 143'
" 45 Faze 2'
" 46 mixed 40mm 117
" 47 3" Round 93'
" 50 3" 50 - 14'

TOTAL OEW - 13
TOTAL ORD - 5

TOTAL HITS - 658

ACRES - .360
Lanes - 3138' x 5' = 15690
15690 ÷ 43560 = .360

065-
070
070
0710
0715
0845
0915
0930
0945
1000
1110
1130
1200
1225
1227
1245
1300
1345
1400
1445
1500
1540
1605

18 May 95

0655 AAR CP

1405 0702 Safety Briefing - Pulse Becker 70, Brennan 65, Broadway 65

45 - 35 46 - 40 0705 changed Batteries in mags @ 401, 114434, 47 - 35 114175

48 - 40 49 - 47 0710 Radio check - operations check of the three mags

50 - 46 0715 start work at GRID-2, Lane 50.

0845 SR supv on site

0915 SSC on site

0930 SSO safety inspection

Rd 0945 Break - Pulse Becker 80, Brennan 70, Broadway 65

10 MK 76 - 56'

4 Mini Yomi - 143'

1000 Back to work

5 Saze 2' 1110 Lunch - Pulse Brennan 65, Broadway 60 Becker 52

2 401 Omni 117

7 3" Round 93' 1130 Back to work - Backup called to CP

3 3" 50 · 14' 1200 Becker back on site

1225 Radio check

1227 GRID-2 completed, moving to GRID-3 Temp 94°

1245 SSO on site - instructed us to work 45 min, rest 15 min, and take Pulse

1300 starting Lane 3, GRID #3

1345 Rest 15 min, water, Pulse Becker 70, Broadway 60, Brennan 59

1400 Back to work

1445 Rest 15 min, water, Pulse Becker 90, Broadway 60, Brennan 90, Rob. 53

1500 Back to work

1540 Rest, water, Pulse Becker 90, Brennan 80 Broadway 65

TCW/QC 1605 Back to work, picking up Lines Sure OEW and ord, cleaning area

18 May

for weekend

1700 at CP — 0655

1730 Dot Allen for Hotel — 0705

Lanes completed Grid-2 = 8

Lanes completed Grid-3 = 7 — 0705

Total Hits Grid-2 = 414 — 0710

Total Hits Grid-3 = 243 — 0715

Acres - Grid 2 = .136 — 0730

Acres - Grid 3 = .119

All Lanes in Grid 2, 50-58 were 148' — 0945

All Lanes in Grid 3, 3-9 were 148' — 1130

Grid-2

OEW — 1200

Lane 50 Fuze 85' — 1425

Lane 51 Sleeve 107'

" 52 Sleeve 120' — 1440

" 53 Sleeve 68' — 1450

" 53 Sleeve 130' — Gr

" 55 Sleeve 10' — Lan

" 56 Sleeve 122' — Lan

" 57 Sleeve 60' — Lan

" 57 Fuze 55' — To

ORD. Lane 51 40mm 108' — Ac

DE

Grid-3 No Items Found — DE

OR

Lan

1730

JRB Luther

0655 Mob. CP
0705 Safety meeting - Pulse Becker 80, Broadway 60, Brennan 65, Crawford 60
8 Red 5-10 Truck (Miles) 14926
7 0709 Radio check
414 0710 checked mags - @ 114173, 114175, 401
243 0715 Starting Lane 10, Grid 3
0830 Break - Pulse, Becker 80, Crawford 60, Brennan 72, Broadway 60
8 wore 148' 0945 Back to work
wore 148' 1130 Lunch - Pulse Becker 80, Brennan 75, Broadway 65, Crawford 65
1200 Back to work
1425 Break - Pulse Becker 85, Broadway 56, Brennan 69, Crawford 65
1440 Back to work
1450 550 on site Safety inspection
Grid-3 Total Lanes completed 24
Lanes 10-13 148'
Lanes 14-32 152'
Lanes 33 148'
Total Hits 913
108' Acres - .416
Found DEW - Sleeves 28
DEW - Fuze 2

ORD

DW

Lane 17, Grid-3, Base Fuze (5") 22'
1730 Closed for the day

DW

Dr. Bruchey

23 MAY 95

0659 Here at CP
0705 Safety meeting - Pulse Becker 80, Broadway 60, Brennan 60, Crawford 60
0710 Radio check
0720 Checked Mags, 114173, 114175, 401
0730 Start Grid 3, Lane 34
0935 Break - Pulse Becker 80, Brennan 76, Broadway 56, Crawford 74
0936 Temp 91°, CP stated to start 45min Rest 15 min
0950 Back to work
1030 Rest Break incl (Heat (45min + 15 min) Pulse Becker 85, Brennan 80, Broadway 56, Crawford 80
1045 Back To Work
The High Ground where the Bathroom sets is all fill dirt with Hot Racks.
Lane 44, Grid 3, old Pipe going straight down at 23'
1140 Lunch - Becker 80, Broadway 56, Brennan 66, Crawford 64
1215 Back to work
1300 Heat Break - Safety Inspection
Pulse Becker 85, Brennan 66, Broadway 56 Crawford 60
1315 Back To work
1400 Heat Break - Pulse Becker 80, Broadway 56, Brennan 59, Crawford 60
1415 Back To Work
1500 Heat Rest - Pulse Becker 80, Broadway 56, Brennan 80, Crawford 52
1545 Back To Work Total Lanes - 20
Total Hits - 868 Acres - .367
TOTAL CREW - 23

Lane
17

LANES —

34 – 37, – 148'

38 – 41, – 161'

42 – 45, – 168'

46 – 49, – 164'

50 – 161'

51 – 159'

52 – 157'

53 – 155'

1715 DpT FOR Hot. L (close site)

Police

Trucks

Zeros

N

6, Broadways

Broadway 56,

Broadway 56,

Broadway 56,

lanes - 20

.367

24 MAY 95

1450

0655 HHR CP 155

0700 Safety Meeting - Pulse - Becker 80, Broadway 60, Brennan 60, Crawford 60. 160

0710 Radio check 170

0715 checked MASS 114173, 114175, 401 starting Grid 3, Lane 54

Total Hits - 150

Total Lanes - 4

Acres - .070

OEW - 4

0830 Grid 3, completed

0930 Heat Break - Pulse Becker 80, Broadway 60, Brennan 65, Crawford 60

0940 Back To work

0955 Heading for Demo area

1005 HHR. Demo area - marking and sweeping - 20' Area

1015 Dpt Demo Area

1020 HHR. camping area - Fill Holes

1025 Start working 45 min work and Rest 15 min

1145 Heat Break - pulse Becker 80, Crawford 64, Brennan 65, Broadway 56

1130 Lunch

Total Hits 150

Total Lanes 4

Acres .070

OEW - 4

1200 Back To work

1330 Heat Break - Pulse Becker 85, Brennan 85, Broadway 60, Crawford 58

1345 Back To work - Temp 94°

1435 Heat Break Pulse Becker 80, Brennan 75, Broadway 60, Crawford 65

24 MAY 65

15

1450 Back to work

1555 Heat Break - Pulse Becker 50, Broadway 60, Brennan 65, Crawford 60

Becker 50, Crawford 60.

1605 Left CP for quarters

1705 Closed 5, TP

1175, 401

Col 50, Crawford 60

I saw

CL Holes

K Ford

ecker 50, Broadway 56

Ker 65, W Ford 55

CP 50, Ford 65

16 25 May 95

0600 safety meeting - personnel
Becker, Broadway, Crawford
0615 DOT for Ferry To FA Jayda PR.
0800 ARR FA Jayda PR
0805 DOT for Roosevelt Roads Naval
station.
0915 ARR DRMO at Roosevelt Roads.
1100 DOT Roosevelt Roads for Ferry
~~1600~~ 1300 ARR Ferry
1600 DOT FA Jayda for Culebra Island
1800 ARR Culebra - close of Day.

Appendix 4

to

ANNEX C

Site Safety Officer/Quality Control Specialist Log

SSO/QC Log started by Richard Winters, MTA
on 12 May 95.

PM: Tom Epperson – MTA
SR UXO Supervisor: Dave Linsey – Wyle Labs
SSO/QC: Richard Winters – MTA
UXO Supervisor Team #1: Don Ebersole – Wyle Labs
UXO Supervisor Team #2: Dave Beckner – MTA
UXO Team Members Team #1:
Terry Davis – Wyle Labs
Steve Burchett – Wyle Labs

Team #2:
Oscar Broadway – MTA
Tom Brennen – MTA
Rob Robley – MTA

UXO Team Members Added on 18 May 95

Team #1
Dave Johnson – Wyle Labs
Team #2
Chuck Crawford – MTA

SSO/QC Log closed by Richard Winters, MTA
on 26 May 95.

12 MAY 95

0830 opened log by R. Winters

Reviewed Work plans and App

0945 went with Mike Moran, Oscar Broadway and Don Eberwein to get Compass Azimuths from Geological marker on Rocks North of work Area on the Bay, Down to NE Corner of work Area.

1330 attended meetings with all and with PM, SR UXO Supervisors and Supervisors to Review scope of work.

1480 Teams with QC/SSO, Mike Moran started placing monuments in work area

1745 Dismantled work area to Hotel

End of Day RW

92.5 Manhours Expended in work Area.

15 MAY 95 Temp 78° Sunny 100%

0700 Opened CP Started preparing for work

0715 SSO gave Safety Briefing, Topic: Heat Stress and general Daily Briefing to all.

0730 TEAMS departing CP for work AREAS

0745 Team #1 started in Grid 1, mags checked ok # 118527 & 60288

0740 Team #2 started in Grid #2, mags checked ok AT 0645 # 114434 & 60461

0748 SSO/QC to work AREAS TO view operations with ~~distribution~~ split time between both TEAMS. Radio check, ok.

0800 Team Supervisors have checked + inventoried First aid kits and Eye wash kits, all ok.

0830 Returned to CP

0950 Returned to work AREA. 80°F Partly Sunny

1050 PRESS with work AREA Halted to all work, Safety Briefing by COE. TEAM 2 now in Grid 2. DW

1120 PRESS LEFT AREA. Mags tested in new location ~~early~~ ok.

1120 MORE PRESS ARRIVING AREA by Helicopter at Low Tide.

1140 LUNCH BREAK 83°F Partly Sunny

1205 LUNCH Finished - PRESS IN AREA. Held work also Fish + Wildlife personnel in work AREA.

1230 PRESS Departed

1240 Fish + Wildlife personnel departed Resuming work

1250 Swimmers coming up onto beach work (digging) Halted until they are Clear of the Area.

1258 Swimmers clear of AREA Resuming normal work.

1315 SSO inspection TEAM #1 in Grid 1, ok no problems. Personnel observing proper amount of mask

1330 SSO inspected TEAM #2 in Grid 2, ok no problems. Personnel observing proper amount of mask.

15 May 95 Cont

1350 Temp 80° cloudy

1420 Temp 80° cloudy

1535 NAVY EOD on Scene To destroy Tiny Tim out of work Area.

1615 SSO to OP for Beach clearance prior to NAVY EOD shot

1646 NAVY EOD shot finished SSO Returning to work area

1700 Teams to OP to clean Equipment + store it for night

1730 End of day, Leaving work site

RW

NOTE: Prior to starting work, A MK44 Aux Det Fuze was found in Road in front of OP Bldg. Not in work Area. Fuze was given to NAVY EOD to destroy with Tiny Tim Rocket unarmed. RW

100 MAN HOURS OF EXPOSURE IN WORK AREA.

RW
Rek.

TOTALS FOR day:

Grid #1 Team #1 Lane 1 x 115'

MKs: 115 " 2 x 115'

OEW Scrap, Inert: " 3 x 115'

UXO/OEW 0 " 4 / 115'

Grid 1 SqFT: 2900 " 5 / 120'

Grid #2 Team #2 Lane 1 / 140'

MKs: 90 " 2 / 141'

OEW Scrap, Inert: " 3 / 143'

ek

Grid 2 SQFT: 2835 UXO/OEW: 0 " 4 / 143'

Grid #3 Team #2 Lane 1 / 148'

MKs: 38 2 / 148'

OEW SCRAP, INERT: 0

RW

Grid 3

Lek

TOTAL SQFT: 1480 UXO/OEW: 0

For Day Team/SqFT: 7215

RW

16 MAY 95 76°F Cloudy

0700 opened CP. SSO presented Daily Safety Briefing to All. Grid

0710 TEAMS departed CP for Grids.

0715 SSO/QC departed CP for Grids to view operations and observe Safety. Radio check-ok.

Sq Ft:

0820 88° Sunny

0900 SSO/QC Returned CP

0925 SSO/QC Returned to work area.

1030 88° Sunny

1105 Informed by MTR PM THAT THE TEAMS WERE NOT Record All Scrap Hits. Only Count The Hits per Lane in Grid. Also That The Requirement To find a 20mm item at 2 Feet has been changed to a 3inch item at 2 Feet.

1120 Lunch - 89° Sunny.

1140 Returned to work, still in work area. 90° Sunny.

1230 89° Sunny checked personnel from both Teams, (Grid 1 + 2) All ok, drinking plenty of water.

1250 89° Sunny.

1355 89° Partly Sunny

1440 88° Partly Sunny checked Team #2's Area, No Safety Problems B. T. C G

1535 86° Partly Cloudy

1600 84° Mostly cloudy check Safety with Team #2 All ok

1700 Packing up to leave Grids.

1730 Departing CP to Hotel. End of day PW

Grid #1 Team #1	Lane #/ Ft	Lane #/ Ft
Hits: 624	6/125	13/140
OBW Scrap, Inert: 1	7/125	14/140
OBW/UXO: 0	8/125	15/140
	9/125	16/140
	10/125	17/140
	11/140	18/140
PW Sq Ft 12,225	12/140	19/140

PW

CONT: →

RW

16 MAY 95 CONT

~~Friday Sunday~~ RW

Grid #1 Cont. LANE #/FT

20/140

21/140

22/140

Grid 1 SQ FT: 18825 23/140

Grid #2 TGRM #2	LANE #/FT	LANE #/FT
Hits: 555	5/138	18/122
OGW Scrap, Inert: 2	6/139	19/124
UXO/OGW: 0	7/139	20/124
	8/139	21/123
	9/132	22/123
	10/132	23/122
	11/129	24/122
	12/129	25/120
	13/129	26/122
	14/129	27/124
	15/129	28/125
Grid 2 SQ FT: 15,330	16/129	
* FOR DAY TOTAL SQ FT: ~~24,285~~ 27,555 RW	17/122	

BOTH Grids TOTAL SQ FT TO Date: 33,290 ~~RW~~

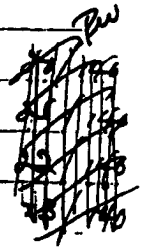
Grid 1 TOTAL TO Date: 15125

Grid 2 TOTAL TO Date: 18165

Grid 3 TOTAL TO Date: 1480

100 MAN HOURS OF EXPOSURE

RW



CONT: →

17 May 95 74°F Partly Sunny

0700 Ground Work Site.

0710 Conv. Safety Briefing to all.

0800 82°F Partly Cloudy

0915 SSO checked Bench. No Ground Personnel

informed OP. Local Hires will work Part Today

Normal Ground check not to show Fire work.

0920 82°F Partly Cloudy.

1005 Press at CP, Briefing given by CAE Rep.

1135 Team 1, Grid 1, Lane 31, 119 FT Found 1 EA

Illum Candle From Artly Round.

1210 Team 2, Grid 2, Lane 40, 66 FT Found 1 EA

MK 76/BDU-33 Practice Bomb, Mk 4 Cont. is

gone. Item is OEW Inert Scrap

1230 SSO/QC Inspected Team 1, Grid 1, No Safety or

operational Problems.

1245 SSO/QC Inspected Team 2, Grid 2, No Safety or

operational Problems.

1350 Team 2, Grid 2, Lane 44, 118 FT Found 1 EA

40mm, MBIA1, TP-T, Suspected D.

1425 Team 2 Grid 2, Lane 46, 111 FT Found 1 EA

40mm, MBIA1, TP-T, Suspected D.

1540 Team 2, Grid 2, Lane 47, 93 FT Found 1 EA

3" 50

1635 SSO/QC Escorted MR. O'Night, CAE into work Area

to photo items Found.

1640 Team 2, Grid 2, Lane 50, 14 Feet Found 1 EA

3in 50

1705 Teams to CP Area

1730 Departed From work Area to Hotel. Final NT work day.

Rec 100 Man Hours of Exposure

Grid #1 Team #1 Lane #/FT

Hits: 731 24 Team 42/all 140 FT

OEW Inert Scrap: 36

OEW/UXO: 1 SQ FT: 13,300

17 MAY 95 Cont.

Grid 2, Team #2

Hits: 658

OEW Insert Scrap: 13

OEW/UXO: 5

Grid 2 SQ FT: 15,690

Day TOTAL SQ FT: 28,990

TOTAL SQ FT To Date: 65,985 on Grid 1+2

TOTAL SQ FT To Date on all grids: 63,760

TOTAL Grid #1: 28,425

TOTAL Grid #2: 33855

TOTAL Grid #3: 1480

LANE # / FT

29/125

30/143

31/143

32 TO 42/44 143

43+44/144

45+46/143

47 TO 50/145

City OK

Work Area

work day.

18 May 95 78°F Partly Sunny

0700 Opened Site. SSO gave Safety Briefing to All.

0831 Grid 2, Team #2, Lane 51, 108 FT FOUND 1 EA 40mm, Suspect PD Rifle, Fired, UXO.

0850 SSO/QC in work area.

0915 SSO inspected Team #1 in Grid 1, no problems. Personnel are ok and consuming enough water.

0930 SSO inspected Team #2 in Grid 2, No problems. Team is drinking enough water and are in good shape.

1010 SSO/QC back to CP

1045 89°F Partly Sunny

1245 SSO/QC in work area. Lunch over. Teams going back to work. Grid 2 Completed by Team 2 just prior to Lunch. Starting Grid 3.

1315 96°F Sunny. Informed Supervisors to work 45 min's and Rest 15 mins due to Heat. SSO during QC on Grid 2.

1415 95°F Sunny. Team #1 Completed Grid 1. Moving on to Grid 4.

SSO checking to make sure all teams have taken Their breaks.

1430 QC Continuing on Grid Two. Will do 6 Lanes - Just over 10%

1510 Pulse From 1415 Baseline: Pebley 88, Wintons 96.

1540 Pulse, start of Break: Pebley 84, Wintons 88. Temp. 92°

1545 Pulse, start of Break: Pebley 80, Wintons 90. Temp 90°

1605 QC Completed on Grid 2, No problems, Informed CP Grid Passed 4 to inform COMMS Rep. Temp 88°

1610 work stopped for day to allow teams to collect Scrap and Clean Equipment and Secure it at CP. Also to clean Equipment and Secure it prior to weekend.

1730 Departed work area CP For Hotel. TDW

188 MANHOURS of Exposure

Grid #1	Team #1	Lane #/FT
Hits:	541	43 Threshold 47/105 FT
Ordnance/Scrap:	50	48 Threshold 51/147 FT
OBW/UXO:	0	52 Threshold 58/143 FT

SqFT: Approx 10141 SqFT TDW

18 May 95

Grid 2 Team 2 Lane #/FT

Hits: 571 5 Thru 58/148 FT

OEW Inert Scrap: 7

OEW/UXO: 1

Sq FT Per Day Grid 2: 5,476

Grid 3 Team 2 Lane #/FT

Hits: 243 3 Thru 9/148 FT

OEW Inert Scrap:

OEW/UXO: 0

Sq FT Per Day Grid 3: 5,180

Grid 4 Team 1 Lane #/FT

1/161 FT

2/159 FT

To Date:

Total Grid #1: 38,566 Sq FT — Finished

Total Grid #2: 39,331 Sq FT — Finished

Total Grid #3: 6,660 Sq FT

Total Grid #4: 1,600 Sq FT

Total of All Grids to Date: 86,157 Sq FT

19 THRU 21 MAY 95 – WEEKEND

SSO/QC doing MAPS

NOTE: MAP provided TO MTA/WAPLE LAKE IS A NOAA, NATIONAL OCEAN SERVICES, MAP # 25653, 10TH Ed, JUNE 7/86, WEST INDIES, ISLA DE CULEBRA AND APPROACHES. MAP shows NO detail OF AREA to be worked. Scale 1TO 20,000

2nd Map provided TO MTA/WAPLE LAKE IS A US Geological Survey, PUERTO RICO – CULEBRA And Adjacent Islands, 1948, Scale 1 TO 20,000. This map shows THAT THE AREA TO be cleared was SWAMP in 1948.

THE DIFFERENCE between conditions shown, From 1948 TO NOW, Leads to THE QUESTION – WAS THIS AREA Filled in OR WAS IT dredged? IF THE AREA WAS Filled in THEN THE ITEMS WE ARE finding WERE TRANSported to THE SITE.

22 MAY 95 79°F SUNNY

0700 ORGANIZED CP/WORK AREA. SSO GAVE DAILY SAFETY BRIEFING TO ALL.
0720 TEAMS DEPARTED FOR GRIDS.
0730 SSO/QC DEPARTED FOR GRIDS. CHECKED TEAMS – OK. RADIO CHECK OK.
0800 SSO/QC STARTED QC OF GRID #1. WIRELESS PULSE – 80
0800 WIRELESS PULSE 92, 85°F
0945 WIRELESS PULSE 9K – JUST FINISHED HEAVY DIGGING.
1020 COMPLETED QC OF GRID #1 – PASSED PULSE 92, 88°F
1025 SSO CHECKED ON BOTH TEAMS FOR WATER CONSUMPTION – OK.
WILL STAY IN AREA TO VIEW OPERATIONS.
1100 CGNNO SAFETY REP SAID IT WAS OK FOR QC TO BE DONE BEHIND TEAMS TO SAVE TIME.
1130 LUNCH
1300 SSO STILL IN AREA. STARTING GRID 3 QC WITH ONLY 2 LANES UNTIL TEAM MOVES FURTHER IN FRONT.
1240 FINISHED 2 LANES ON GRID 3, NO PROBLEMS.
RIGHT WIRELESS 94, 88°F
1300 INSPECTED TEAM #1 FOR SAFETY – NO PROBLEMS.
1330 88°F SUNNY
1330 QC STARTED ON 2 LANES OF GRID #4.
1445 COMPLETED 2/3 LANES OF GRID #4 – OK. 88°
PULSE – WIRELESS 92.
1450 INSPECTED TEAM #2 FOR SAFETY –
1600 SSO/QC RETURNED TO CP. 86°
1700 TEAMS RETURNED TO CP FROM WORK AREA.
1730 DEPARTED FOR HOTEL – END OF DAY
120 MANHOURS EXPOSURE IN WORK AREA. 12W

GRID #3, TEAM #2 LANE/FT
HITS: 913 16 THRU 13/148 FT
OEW INERT SCRAP: 30 14 THRU 32/152 FT
OEW/UXO: 1 33/148 FT
LANE 17/22 FT BD FUZE FROM 5" ROUND
SQ FT FOR DAY ON GRID #3: 18,140

CONT. →

22 MAY 95

Grid #4, Team #1

Hrs: 965

Dozer/Front Scrap: 12

Dozer/Misc: 1

~~Lane 9, 5TH 8D Fuel~~

SQ Ft For Day on Grid 4: ~~20,000~~ 16,635

Lane/FT
3 THRU 7 / 157 FT
8 THRU 9 / 145 FT
10 THRU 19 / 146 FT
20 THRU 25 / 128 FT
26 ~~THRU~~ / 114 FT
~~20 / 117 FT~~

TO Date:

Total Grid 1: 38,566 SQ FT - Completed

Total Grid 2: 39,381 SQ FT - Completed

Total Grid 3: 24,800 SQ FT

Total Grid 4: ~~20,000~~ 16,235 SQ FT

Total of All Grids to Date: ~~120,747~~ 120,932 SQ FT

23 MAY 95 78° Sunny

0700 opened site for work, gave All Daily Safety Briefings.
0730 SSO/QC Departed CP for work Area.
0800 Started QC Again In Grid #3. 84° P/Sa - Winters 85
0830 Completed QC OF 2½ Lanes of Grid #3. P/Sa - winters 90.
0840 Started QC in Grid #4 again. 89°
0915 Completed 2½ Lanes of Grid #4 For QC. P/Sa - Winters 84, 89°
0935 Informed Sr USO Supervision THAT THE Temp had gone up to 91° And THAT THE TEAMS NEEDED TO BE ON 45 mins OF work with 15 mins OF Rest. SR USO Supervision CONCURRED and informed THE TEAMS.
0945 SSO/QC Back to CP to do paperwork.
1030 with PM to video down Range operations. 94°
1130 Lunch
1220 Back down Range to view operations.
1300 94°. Safety Inspection OF TEAM #2.
1345 94°. Safety Inspection OF TEAM #1.
1500 94°
1550 Started Final QC OF Area. (Expanded to THE NORTH) Grid #4. P/Sa - winters 80.
1615 Completed QC For Grid #4. P/Sa - Winters 82.
1625 Started Final QC For Extended AREA OF Grid 4. will Collapse Grid 4A.
1645 Completed QC For Extended AREA OF Grid 4 Grid 4A. P/Sa - winters 86.
1700 Returned to CP.
1730 Departed For Hotel - End OF day.
— 120 man Hours Exposure in work Area.

Grid #3, Team #2 Lane/Ft

Hits: 868 34 THRU 37 / 184 FT
OBW Target Strap: 23 38 THRU 41 / 161 FT
OBW/UXO: 0 42 THRU 45 / 168 FT
SQFT For Day on Grid 3: 16,200

CONTD →

23 MAY 95

Lane / FT
46 THRU 49 / 164 FT
50 / 161 FT
51 / 159 FT
52 / 157 FT
58 / 155 FT

Grid #4, Team #1
Hits: 1092
OEW In Ort Scrap: 60
OEW/UXO: 2
Lane 28, 7FT 40mm Bofors
Lane 36, 14FT Illumination Double

Lane / FT
27 THRU 31 / 114 FT
32 THRU 37 / 117 FT
38 THRU 43 / 115 FT
44 THRU 49 / 101 FT
50 + 51 / 72 FT
52 / 57
53 / 50
54 / 45
55 / 38
56 / 32
57 / 29
58 / 22
59 / 18
60 / 17 Grid 4A
61 / 11
62 / 5
63 / 1700

SQ FT For Day on Grid 4: ~~11,945~~ 13,560
SQ FT For Day on Grid 4A: 1,615

To Date:
Total Grid 1: 38,566 - Completed
Total Grid 2: 39,331 - Completed
Total Grid 3: 44,500
Total Grid 4: ~~36,995 - Completed~~ ~~35,380~~ 37,795 - Completed
Total Grid 4A: 1,615 - Completed
Total of all Grids to Date: ~~152,391~~ 154,807 Sq FT

24 May 95 79° Sunny

0700 Opened site for work. Gave Safety Briefing to All.

0720 SSO/QC to work Area, to observe operations and Safety.

0800 84° Sunny Safety Inspection of Team #2.

0850 Starting Final QC of Grid #3. Pulse-Winters 78.

0910 Completed QC of Grid #3 - ok. Pulse-Winters 82.

0930 89° Sunny. Safety Inspection of Team #1.

1030 90° Teams placed on 45 mins work and 15 min's Rest due to Heat.

1115 94° to Demo Area with Team #2. Setting up Area.

1130 Lunch

1215 SSO/QC at CP for paperwork. 94°.

1510 92°. SSO to Demo Area for walk through.

1600 90° SSO Returned to CP Area, with Teams.

1730 Departed Worksite for Hotel. End of Day.

120 Man Hours Exposure in work Area.

Grid #3, Team #2	Lane/Ft	NOTE: Lanes 54
MVs: 150	54/154 Ft	Team 57 were
OEW Inert/Scrap: 4	55/153 Ft	not 57 Ft wide
OEW/UXO: 0	56/153 Ft	at Road. They
SqFt For Day Grid #3: 1,187	57/154 Ft	were Evenly Spaced along Road and were Shaped like Triangles.

9/18
0/17 Grid 4A
2/5
3/100

To Date:

Total Grid 1: 38,566 - Completed

Total Grid 2: 39,331 - Completed

Total Grid 3: 42,687 - Completed

Total Grid 4: ~~34,800~~ 34,795 - Completed

Total Grid 4A: 1,615 - Completed

Total of all Grids to Date: ~~153,999~~ 153,994 SQ FT

Dan

25 MAY 95 78° Sunny

0715 Opened Work Site. Gave Safety Briefing to All.

0730 550/QC Down Range to Demo Area. Watering Back Hog

Dig Hole For Demo Shot. Inspected For Safety - Ok.

0830 Demo Hole is 4 Feet Deep and 12 Feet Square.

Awaiting Explosives. 85°

0915 Kinepac Charges and Det Cord Arrived,

Mixing Explosives.

1000 OEW/UXO items in Hole. Team is preparing Shot.

1035 Shot prepared, Dirt being back filled into

Demo Shot Hole to Tamp.

1100 Shot Set Off. All items Destroyed.

1145 Lunch 90°

1240 Escorted Surveyors into work site with Dan

Ebersole to show Boundary markers For Survey

of work Area and Demo Site.

1320 Returned to CP

1415 Departed Area to Return to Hotel to Complete Grid

and Area Maps. ~~[illegible]~~ DW

1720 End of work day DW Job Completed!

go ~ very

26 May 95

ing to All.

watching Back Hoe

Safety - ok.

it Squaw.

visitor,

appearing shot.

filled with

f.

with Dan

Fa Survey

complete Grid

ited!

* Worked Finishing Maps of area. TOTAL Vehicle Milage: 1852

Flight Exposure: 26 Flights, 37.1 Travel Hours (including Legs)

POV Milage to + From Airport/Home: 84 miles

TOTAL Man Hours Exposure at Work Site: [redacted] - 995.75

Site Hours

1029 MTB/Wylie

180 Local

1209

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX D

EXPOSURE DATA

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

Exposure Data

	AIR TRAVEL	PERSONAL AUTO	# FLIGHTS	MAN HOURS ON SITE
MORAN	21:13	40	6	27
EPPERSON	21:13	20	6	102
ROBLEY	21:13	64	6	105
LINDSEY	40:15	84	10	110
WINTERS	20:30	30	6	85
BECKER	44:10	60	6	78
EBERSOLE	38:18	80	6	88
DAVIS	38:18	100	6	88
BURCHETT	38:18	80	6	88
JOHNSON	39:45	110	8	51
BRENNAN	17:45	80	6	88
BROADWAY	14:05	60	6	78
CRAWFORD	34:20	50	6	41
FLOR PENA	----------	----------	----------	96
FERNANDO FIGUEROA	----------	----------	----------	84
TOTALS	390:00	858(AIRPORT) 1852(RENTAL) 2710 TOTAL MILEAGE	84	1209

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX E

QUALITY CONTROL DOCUMENTATION

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX F

DEFENSE REUTILIZATION AND MARKETING OFFICE TURN-IN DOCUMENTATION

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

JUN-14-1995 14:54 FROM DRMO ROOSEY RODS TO 9912059221888 P.01

SCRAP

WITA, Inc
PO Box 712
Culleoka PR0775

DRMO USAS
Roosevelt Rods PR

Culleoka
Redimentation

CORPS OF ENG
Huntsville AL 35806

2806
ER

OBW Inert Residue

ER

I certify that the following Materials are free of explosives and have been inspected by Qualified Personnel

Sapper #1

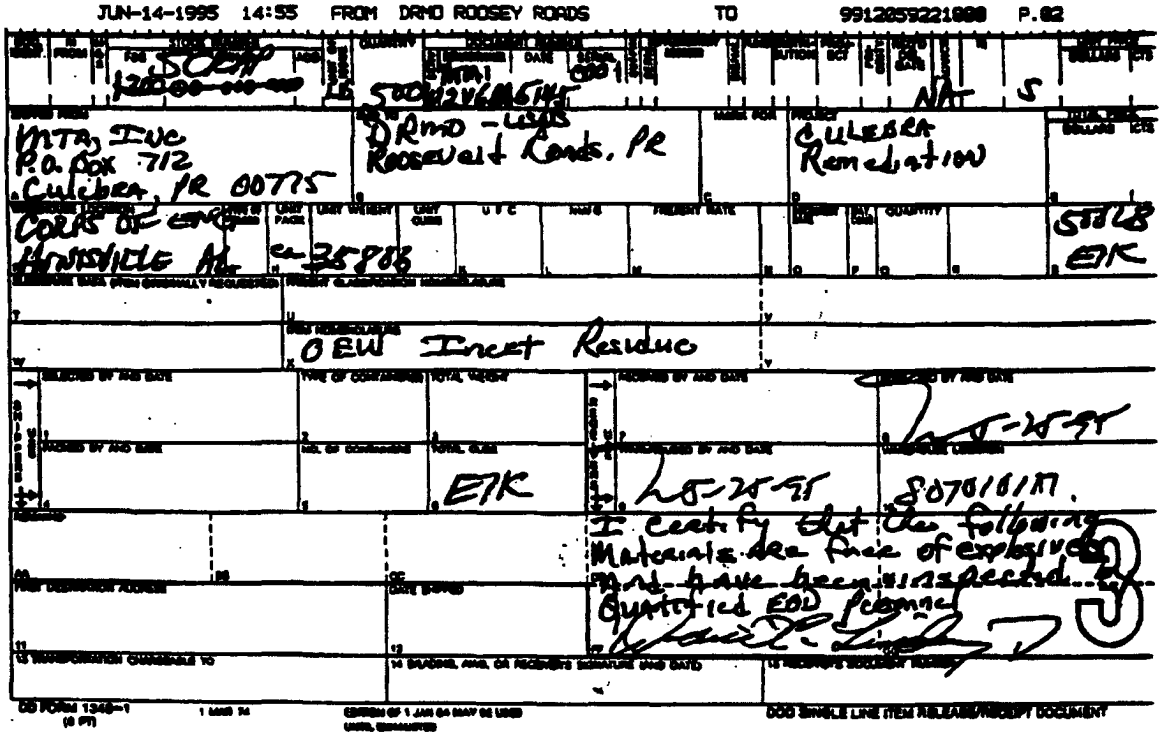
FAX TRANSMITTAL

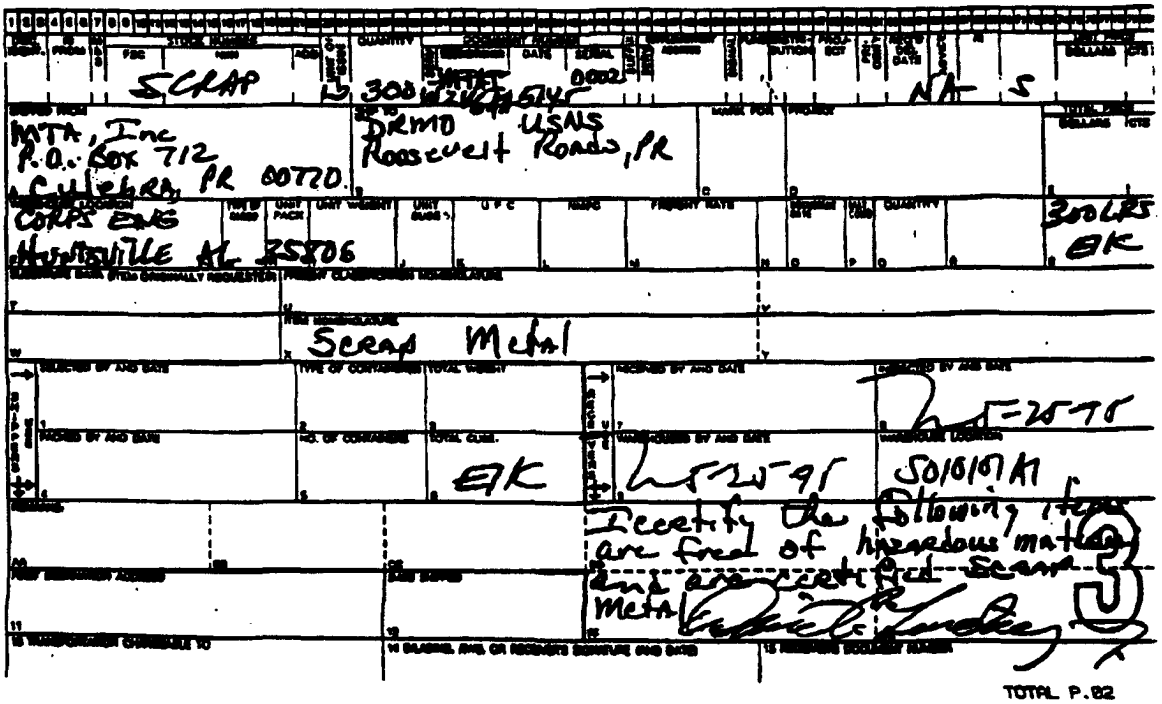
To: IA Epperson

From: Peter

Fax: 922-1888

Fax: 3406


SCRAP
NAT S
MTA, Inc
P.O. Box 712
Culebra, PR 00775
DRMO - USNS
Roosevelt Roads, PR
Culebra
Remediation
CORPS OF ENG
Huntsville AL 35806
55LB
EA
OEW Inert Residue
EA
5-25-95
S070161M
I Certify that the following
Materials are free of explosives
and have been inspected by
Qualified EOD Personnel


SCRAP
NA S
MTA, Inc
P.O. Box 712
Culebra, PR 00775
DRMO USNS
Roosevelt Roads, PR
CORPS ENG
Huntsville AL 35806
300LBS
EA
Scrap Metal
EA
5-25-95
S016161M
I Certify the following items
are free of hazardous mater
and are certified Scrap
Meta

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX G

PHOTOGRAPHS AND VIDEOS

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

ANNEX G

Appendix 1.....Pre-operational Environmental Survey Photographs 11 May 1995

Appendix 2.....Unexploded Ordnance Photographs

Appendix 3.....Post-operational Photographs 25 May 1995

Appendix 4..... Video of Public Meeting 4 May 1995

Appendix 5.....Video of Pre-operational Environmental Survey , Operations and Post-operation Survey

Note that only CEHND-PM-OT will receive the videos listed above.

Appendix 1

to

ANNEX G

Pre-operational Environmental Survey Photographs 11 May 1995

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX H

PUBLIC MEETING WRITTEN RECORD AND PUBLIC AFFAIRS

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

ANNEX H

PUBLIC MEETING WRITTEN RECORD AND PUBLIC AFFAIRS

PUBLIC MEETING ON CULEBRA ISLAND
THURSDAY, MAY 4, 1995
7:00 P.M.

Meeting was called to order at 7:30 p.m.

Lt. Col. Benton:	Appreciate your coming this evening. The first on the meeting this evening is to discuss the removal of ordnance on Flamingo Bay. Good evening, I am Lt. Col. Benton. We are here to discuss the ordnance at Culebra.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Lt. Col. Benton:	We are going to be taping the meeting this evening in both audio form and on video tape and if you have any objections to that, please let your objections be known now.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Lt. Col. Benton:	Additionally, if you have not signed up with Elsa Jimenez, from the Public Affairs Office in San Juan, we would like for you to sign up with her. We also have literature available for you to take back after the completion of the meeting.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Lt. Col. Benton:	The gist of tonight's meeting will be conducted by others here to my right, additionally there may be questions or comments from the Mayor of Culebra and then we will be opened for questions at the end.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Lt. Col. Benton:	Introduction of the people we have here this evening, I have already introduced Mayor Soto Ayala, Elsa Jimenez of the Public Affairs Office, my office in San Juan, Alfonso O'Neill, from the Corps of Engineers, who is the a Representative who will be on the ground doing the work, the next couple of weeks.
Alfonso O'Neill:	Repeated the above statement in Spanish.

Lt. Col. Benton:	I also have from our Huntsville Division of the Corps of Engineers, Mr. Roland Belew, who will be doing most of our presentations here and others from Huntsville who are here tonight.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Lt. Col. Benton:	Additionally, we have two contractors here on site. The first one will be headed by Mr. Michael Moran, from MTA, Incorporated out of Huntsville. They will be doing the work that starts here the next couple of weeks.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Lt. Col. Benton:	Additionally, we have Mr. Jeff Bleke from ESE Incorporated, another contractor.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Lt. Col. Benton:	Without further ado, I will turn the meeting over to Roland Belew who will give you an overview of what the Corps of Engineers will do. Thank you very much for coming this evening.
Alfonso O'Neill:	Repeated the above statement in Spanish.
Roland Belew:	Good evening, I am Roland Belew with the Huntsville Corps of Engineers. I would like to introduce a couple of others who are visited here with us, my boss, Mr. Stan Lee, I am the Project Manager for this project. Our Senior Bomb Expert, (Retired Military), Mr. Wayne Gallaway. Dr. Sam Sang, he is one of our Senior Environmentalist. I would also like for Mr. Mike Moran to introduce his staff.
Michael Moran:	This is Gloria Smith, who will be transcribing this public meeting.
Roland Belew:	Finally, Jeff Bleke, would you introduce your staff.
Jeff Bleke:	Sure, I have two people with me this evening, one Denise Feiber, who is our Public Relations Person, and Mike Zaloudek who is also UXO Unexploded Ordnance Specialist and retired military who is also with ESE.
Alfonso O'Neill:	Repeated the above statement by Roland Belew, Michael Moran and Jeff Bleke in Spanish.

Roland Belew: Okay, I think we are ready to start. Why are we here? We are were as we are all over the United States territories to make the area of Culebra safe and we do this nationwide. We will be presented this meeting tonight in both english and spanish. For those of you who want this in english I will tell you verbally and for spanish you have it on the view-graphs. If you need anything clarified, Alfonso is going to have me rephrase it or clarify it according to the view-graphs.

Alfonso O'Neill: Repeated the above statement in Spanish.

Roland Belew: Would you like the lights turned down, or is this okay?

General comments on whether to keep the lights on and it was decided that the lights should remain on.

Roland Belew: Okay, a discussion of the Corps objectives here in Culebra. One objective is to reduce risk to the general public through a series of regulations, to reduce risk of contaminated sites that have bombs on them. To execute a response action with minimal risk to the local residents. We want you to know exactly what we are doing, we want to answer all of your questions. (Mr. Belew explained how the process will be administered: with the Corps of Engineers in Jacksonville, two contractors, MTA, Incorporated in Huntsville, Alabama and ESE, Inc. of Jacksonville, Florida and working basically with the citizens of Culebra.

Please, if you have any questions, stop me or any of other the speakers, and ask you questions, and we will be more than happy to stop and answer them.

Alfonso O'Neill: Repeated the above statement in Spanish.

Roland Belew: Nobody knows better than you that you have a major ordnance problem here, you have shells laying everywhere. It has gotten to where it does not bother you anymore. We are experienced with this type of problem. We deal with many sites, particular Wayne Gallaway and Mike Zaloudek, they are retired EOD Specialists, they have seen this all over the world, not just the United States. What started our program in Huntsville, is when two teenage boys where killed in 1982 or 1983. Some people become complacent or relaxed and they find bombs and take them home not realizing the danger. It is a problem. People get these as souvenirs and

take bombs home. Even as recently as last week, a bomb was found at Flamingo Beach. The workers laid it aside for officials to pick up later and it disappeared a day later. We don't know where it is.

Alfonso O'Neill: Repeated the above statement in Spanish.

Roland Belew: Safety procedures. People must not pick these ordnance items up. They are not trained. They are not familiar with what could happen. Maybe it hasn't happened in many years. Of course it happened in the 40s, but it hasn't happened recently. You are not trained with what you dealing with, even though you think it is not dangerous. These are military experts that we have on our staff and our contractors are experts. They know what they are doing, when they see an ordnance item they understand it, that is why we have them on our staff. Children have been killed in San Diego. Intoxicated individuals have been injured. This happens nationwide. Example, New Jersey, we started a clearance like we are doing here. At Eisenhower Elementary School, a World War I 1918 shell was located. We didn't think there was anything there, but we found over 20 live shells in the school yards. It is dangerous, and it is not just here. I know you get frustrated with the ordnance problem you have. Unfortunately, it is not just here. It is nationwide.

Alfonso O'Neill: Repeated the above statement in Spanish.

Roland Belew: This slide shows what ordnance consists of UXO, Unexploded Ordnance. Alfonso, if you would translate that.

Alfonso O'Neill: Repeated the above statement in Spanish.

Roland Belew: Further discussion of the types of ordnance. Chemical weapons, chemical agents, very nasty stuff. Components of these, fuzes, boosters. Further explanation of what ordnance is. This is what you have at this time. This is known as a formerly used defense site. The way our program works is that Huntsville has been designated as a center for expertise for this ordnance disposal. The Corps of Engineers hires other expertise such as Wayne Gallaway and other individuals that we have and are setup to work for several geographical districts. In this case, we are setup to work for the Jacksonville District. They manage the problem, we just come in and do the technical work.

Alfonso O'Neill: Repeated the above statement in Spanish.

Roland Belew: The next slide are pictures of what we are investigating and believe may be ordnance contamination. Don't be shocked at the numbers, it is a figure that is not exact. There are a number of sites nationwide we are investigating for reasons we think there maybe ordnance contamination. There are some known sites in Puerto Rico where we absolutely know that there is ordnance contamination. There are others which we go through on a database and we look for key words such as there was an air field there. We go down a very long list of possible contaminated sites and we have finally reached to the ones on Culebra. Culebra ordnance problem is on top. We are slowly working our way down the list of those that are less contaminated. So, we want you to see that this site is one of the 78 possibilities. Other sites are Hawaii, Alaska, Puerto Rico and others. Please stop me if you have any questions. This meeting is for you. We are here to any your questions. This particular slide is not in spanish. I wanted to give you some understanding of the dollars being spent to cleanup sites. Not just here in Puerto Rico, but here and abroad, we are at $45,000,000.00, cleaning up sites around the United States. That is how important DoD feels this ordnance project is.

Mike Lostritto: Of that $45,000,000.00 who gets that, is that by contractor?

Roland Belew: That goes through our division to contractors everywhere.

Mike Lostritto: Who pays them now...

Roland Belew: For example, we have two contractors here now, Mike Moran will be cleaning up projects over at Flamingo Beach. Jeff Bleke. We pay them money to do the engineering studies: what do we do with the rest of the items, where is the contamination. It will take them approximately one year to do those studies.

Mike Lostritto: Okay, I have a follow-on question. Why are we using an outside contractor? Why not military units.

Roland Belew: That is a good question, we are, since the inception of the Army Corps of Engineers, we have sought out and used contractors for decades under our supervision. For example, Wayne Gallaway, he retired from the military. I don't know if Wayne has ever worked for a contractor or not, but we seek out these individuals to supervise greater numbers, so that much more work can be

done. If we relied on just 600 people to do the entire nation, we will probably do one site every ten years.

Lt. Col. Benton: Let me interject. I believe your question is why we are not using military units.

Mike Lostritto: Yes.

Lt. Col. Benton: You know that the Army, Navy, Marines, everybody is downsizing, we don't use military units except in those different types of circumstances, odd cases, sometime overseas. We go in and use units that are away from a military related activity to do it. Our desire is to use the civilian side of the Corps of Engineers, and we don't have that active workforce, we get that expertise from contractors. In essence, in truth, these contractors are former military. So the expertise you are talking about is now retired military men in many cases. They have to be qualified, Mike Moran is former military, all these guys out there who are now wearing civilian clothes are former military, making more money, coming back during the work necessary. But we just don't have the military services available to do the work.

Roland Belew: In all cases they are all military retired employees. Further discussion of the Culebra process. I will get into the basic and let Mike Moran tell you what he is going to be doing the Flamingo Beach project. If there is no bomb visible, if there is no immediate danger to what we do first, we go straight to what we call engineering evaluation and cost analysis, through Mr. Jeff Bleke. We do not use for this evaluation for Mr. Mike Moran. There are a lot of sites with bombs laying around, and we do first of all what we call the time critical removal.

Alfonso O'Neill: Repeated the above statement in Spanish.

Mayor Ramin: (Concerns were expressed by former Mayor Ramin Feliciano as to whether the ordnance removal work going to include the water?)

Roland Belew: Right now, we must take it one step at a time, our first priority right now is children, residences, and anybody on the land. That is where you will have your first possible injuries. These particular contractors are here to investigate what is on the land. Unfortunately the answer is No. We are taking this one step at a time. At this phase we are going to look at what is on the land and then after he (ESE) gets done with the engineering studies, he

will write a report. In this report, it will state certain things about the water, such as examination of the water, etc. That is something that could be done under a future contract. We welcome any letters that you would like to write in to the mayors' office, we will pursue those. Anything that you wish to address. I want to address that number one. This is the first phase. We just got here and we are going to do the land first and then after the land is done and you are satisfied with what we are doing on the land, then let us move to the water, but we cannot do both at the same time. The answer again basically is no. Let's do the first thing done first. Again, strategy is for Mr. Mike Moran to do the time critical removal first and Mr. Jeff Bleke will do the engineering studies. After this report is finished, we will give that report to you. You are going to have that report for 30 days. You may not agree with it, yes I do, no I don't. You may say, "you forgot about the bombs over here, let me give you something you may not know, there is a bomb over here." That is what we want to know. Then after it is all agreed on the approach and sites, then we go over here to the final removal, which could be one and one-half to two years away. Right now, we need about a year to do a study to know and what is contaminated what is not and how to come up with a list of all changes to present to you that say this is how we think we are going to cleanup these islands. And that is how this report will be presented to you.

Mike Lostritto: How do we get a copy of this report?

Roland Belew: There will be more public meeting as we go on. There will more meetings and announcements and then there will be copies in the libraries, how ever many depositories you want, the mayors office, there will be number copies. We can give you as many copies as you would like.

Alfonso O'Neill: Repeated the above statement in Spanish.

Angel Lupianez: Is this just limited to just Flamingo Bay?

General discussion as of the specific sites. If you know of any particular site or bomb, what should we do?

Roland Belew: Notify Mr. Mike Moran or Mr. Jeff Bleke. Mr. Bleke will be running newspaper articles with his telephone number in it and address. If you know of any locations, please let me know,

because that is how we can put the report together. We think we know through an archive search of where...we have a good idea of where the ordnance is located. But what you ask will be answer during this ESE process.

Mike Lostritto: Some people read the newspaper, some don't. Could we have his name, address, telephone numbers in an information sheet.

Jeff Bleke: We will do that, yes.

Lt. Col. Benton: We will do flyers, posting notices in grocery stores, etc.

General discussion of Lt. Col. Benton, Roland Belew and Jeff Bleke as to the process of getting the word out, i.e., posting notices around town with names, addresses and telephone numbers of individuals to contact or notify for ordnance project.

Roland Belew: As I mentioned, I am the Project Manager on site here, I have Mike Moran and Jeff Bleke, two contractors working for me, and the Corps of Engineers in Huntsville is working for the Jacksonville District. There are plenty of people you can contact. Again, for the land sites, we are going to do an engineering evaluation, cost analysis with public input. From that we are going to come up with a documented decision or action memorandum. That will lead to removal action, removal action, in other words actually removing the ordnance. In other words educating the public, showing your children photographs of bombs, so that they don't go out and play with them.

We are now going to get more specific, how are we going to do this? We have two other Corps of Engineers Districts working for the Huntsville Division and doing archive search, one is Rock Island District and the other is the St. Louis District. They recently obtained an archive search here which there are several copies here in the mayors office for you to look at. Engineers and UXO Specialist put together this report as to what happened here during the 1900s and where they think the ordnance has contaminated. This will be given to Mr. Jeff Bleke and he will continue to use this to come up with a plan and this is the archive search and I am not sure where Elsa has deposited these.

Elsa Jimenez: Repeated the above statement in Spanish.

Mike Lostritto: My understanding is that this is the result of 1975, 1974. Is there ordnance here since 1901.

Roland Belew: Yes, there is ordnance possibly here since World War II. There have been marine bases here since the early 1900s. Mike Moran has a better outline of the island and I will let Mike explain in more detail. This picture is a apart of the archive and you can see that this picture is from 1944.

Alfonso O'Neill: Repeated the above statement in Spanish.

Roland Belew: Read the archive report at your leisure.

Alfonso O'Neill: Repeated the above statement in Spanish.

General discussion in spanish reference location. Mayor of Culebra. Maria Padron, Explanation by Alfonso O'Neill and Elsa Jimenez.

Roland Belew: Plan of action. This is our plan of action. Public meeting, workshop, telephone contacts, public contacts is something Mr. Bleke will be doing. Posting notices, public meetings like we are having tonight.

Alfonso O'Neill and: Elsa Jimenez Repeated the above statement in Spanish.

Roland Belew: Finally, I would just like to talk about what we will be doing at Flamingo Beach. Even with the removals we will do at Flamingo Beach, we cannot be 100% certain that we are getting everything. We will do everything we can to try and remove everything, but we cannot be absolutely sure we have gotten everything. This is why we must have community awareness, community training as far as what to do, when you do see something. Even if it looks like nothing, a lot of this does not look like ordnance, we need to be aware. This is a concerns for your six or seven year old children.

Alfonso O'Neill: Repeated the above statement in Spanish. Translate question presented in audience.

Mayor of Culebra: If we cannot guarantee 100% clean up, can we put up a fence around those areas not guaranteed to be safe.

Roland Belew: My answer is that if we are working on a five acre area, we cannot guarantee that we will find every single piece of ordnance. But as far as other areas, that will be a part of the final report that

Mr. Bleke will recommend and we will consider it. We have a report such as that from California right now.

Question: Translated by Elsa and Alfonso.

Ramin Feliciano: Has concern over the loss of trails and fish and wildlife. Also denied access to the beach.

Lt. Col. Benton: We have a clock. We are doing Flamingo Beach, now. Then we will perform a cost analysis. Through that we will determine what areas should be developed. We will talk and meet with the Fish and Wildlife people on where they want to use the trails and then we will look at, can we do it, is it feasible, engineering wise, and is it cost effective.

Joizce Andrades: Question to Mr. Belew, what process; other than Flamingo Bay where we have an immediate need to take care of.

Digna Feliciano: I believe his reference to...at the northwest peninsula. Apparently he would like to know what the future plans are in reference to the northwest peninsula. I anticipate that we will not be able to get in there to do fishing... Is it going to be a part of the study?

Roland Belew: That is exactly the answer, we were out there yesterday, and the day before, and, it will be a part of the study. We are cleaning paths so that people can walk. We can do that, however, any other fishing, endangered species and birds, etc., will have to be cleared by the Fish and Wildlife Refuge. There may be reasons other than bombs that they don't want you there and we are not involved in.

Alfonso O'Neill: Translated above statement in spanish.

Lt. Col. Benton: It is most likely that some areas we will find nothing is there, some areas we will move to do something. But we are starting the process; other than Flamingo Bay where we have an immediate need to take care of.

Alfonso O'Neill: Translated above statement in Spanish.

Maria Padron: What about future land use?

Roland Belew: As far as future land use, the contractors will need to get that from you as far as the schedule goes, roughly approximately one year from now.

Ramin Feliciano: Reference the study.

Lt. Col. Benton: We will be starting that study the middle of August and they will be back. You need to be making your desires known to this group. Really as Mr. Belew has said, your interest, what you want to do, will carry great weight. But it is going to. We have a contract effort, we have a time line to meet. Let me tell you the true is, we never meets those things, things go on. We have an interaction process. We find more, we discover more and we may be doing this for one, two years. It may subsequently change to include (ordnance in) the water, I don't know. All I can say is that we are starting in August, you, Culebra Development Corporation, etc., need to be thinking about what your desires are. Talk to the Fish and Wildlife Service, because they are very important, they will be involved, they control a very large portion of this island, as you are well aware and all of that will be coming out in public meetings, but I, the U.S. Army Corps of Engineers, the federal government, does not tell you how you are going to use your land. The Fish and Wildlife Service might. If you are going to go out and do things which are dangerous, that is going to be your decision. We will tell you things you shouldn't do, we will try and protect the public, but we don't tell you your long range development. I don't have that authority.

Roland Belew: What we will do, this is the first town meeting, but what we need to do next is get with individuals like yourself for the next several meetings and tell us, so that we can narrow in on our focus of what we need to do and we can do that. Please sign your name over on the table.

Question from audience reference statements made earlier about bombs at Flamingo Bay.

Alfonso O'Neill: Was it an exception that we made to allow people on Flamingo Bay, even though we knew that there were bombs there. Did we make an exception?

Roland Belew: As we are doing all over the world, we are coming in where we know there are bombs and people are driving tent pegs in the grounds and it is our opinion that there could be an accident.

There are no bombs possibly on the surface, but there is a possibility that because they are there and build a fire for cooking hot dogs, that fire, there could be a bomb underneath the ground. That is why we are saying we don't want anyone there. We want the campgrounds to be perfectly clear.

Question: When was the last accident or explosion?

Lt. Col. Benton: The archive states sometime in the early 1960s.

General discussion.

Benjamin Percz: How are we going to dispose of any bombs we find?

Alfonso O'Neill: Translated in english. The question is how are we going to dispose of any bombs we find? Any live bombs we find?

Roland Belew: I will let Mike Moran discuss that next. I want to say a couple of other things.

Maria Padron: Question spoken in spanish. Reference meetings.

Roland Belew: This is the first meeting. We will set up through Jacksonville District, Corps of Engineers, regular meetings that will be with the Restoration Advisory Board. These will be regular meetings, however frequent the local community would like them and also we will be talking to you more about this, so don't think this is it for many, many months. The Jacksonville District and San Juan office will be communicating with you on a regular basis. You will elect a co-chairman, whoever you want that to be, and then Jacksonville Corps of Engineers will elect a co-chairman and you will have to communicate like this on a regular basis. Two last things, I would like to introduce Mr. Mike Moran and he will tell you what he will be doing in Culebra Beach and after this meeting is over, if you would like to point out different areas on the map as to where things are, take the little sticky and put your name and put an arrow on it and this will help Jeff Bleke to further zero in on the areas he may not know about. If you would like to do that. I think he pretty much knows all the places, but I think he would appreciate it. So, I will turn this meeting now over to Mike Moran so that he can tell you what he plans to do at Flamingo Beach.

Mike Moran:	Thank you Roland. Every employee at MTA realizes how important our work is. We are here to make your island as safe as possible. We are going to start with a very small part, that is, the five acres at the camp ground.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	Starting next week we will have ten master explosive ordnance technicians here from MTA, plus we will have two local people who will be working with us to clear this site.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	All of the master EOD Technicians are either retired military or former military with many, many years of experience. They are very good and I recognize them for what they are, they are really top notch people.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	Now, I will try an answer your question. What will we do if we find a piece of ordnance that must be disposed of.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	First we will find the piece of ordnance, with a magnetometer, which is a stick with two sensors on it that measures if there is any metal in the ground.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	If we get an indication, it is called an anomaly. We will put a flag in the ground and come back, once we see where all the flags are, we will come back and dig at that site.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	If the piece of munition can be moved, we will move it very carefully to a site just north of the Sherman tank
Alfonso O'Neill:	Translated above statement in spanish.

Mike Moran:	There we will gather all such munitions and probably on Tuesdays and Thursdays we are pretty sure it will be those days, we will set charges on top of those munitions to destroy them.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	Sometime however, the munitions is too dangerous to be moved, in that case, we will blow it in place.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	We hope that we find nothing, but we might and if we do, then we must make explosion too unfortunately.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	We have prepared a work plan and a statement plan to ensure everyone's safety, to include our own. We have coordinated with many agencies that you see here, the police, agencies in the government in Puerto Rico, municipal government, Corps of Engineers, and other federal agencies, such as the Fish and Wildlife. We spoke with the Coast Guard early on and other federal agencies.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	Again, our company MTA, while we are small, we have successful completed three other projects similar to this and the people who work for us are very good at what they do and we think we are good at our planning and our directions to insure that everyone gets the job done safely.
Alfonso O'Neill:	Translated above statement in spanish.
Mike Moran:	Let me echo Mr. Belew's comments. Please, please if you find a piece of ordnance or a bomb, don't touch it. Let someone know from the police or the Corps of Engineers. Please don't pick it up. I saw two this week that someone had picked up a shell on their shoulder and I think they were going to bring to class. Please leave it alone and let the Corps of Engineers know about it.
Alfonso O'Neill:	Translated statement/question in spanish.

Roland Belew: If you didn't understand what he was saying, a father gave his son a projectile 40 or 60 mm, gave it to his son for show and tell in South Georgia, no more than three months ago, the child took the ordnance to school, and passed it around. At recess, almost when the day was over, it was dropped and detonated and severely injured several children.

(General discussion over the incident. Also concerns as to whether or not signs should be posted.)

Roland Belew: I discussed that earlier with the Mayor about the signs, because at other sites I go to, they have sign. You do have sign here someone has made a good attempt at that, and we will try to help you put together even better signs. Yes in english and in spanish.

Questions and comments from Mr. Richard Kiegler on individuals taking ordnance as souvenirs to San Juan.

Roland Belew: That has to stop, we will follow up on that.

Alfonso O'Neill: Translated statement in spanish.

Comments from the Mayor of Culebra. Additional comments from Mr. Joizece Andrades, spoken in spanish.

Lt. Col. Benton: At this time if you have any questions we are prepared to answer them at this time.

Digna Feliciano: Thank you for at least getting something started.

Lt. Col. Benton: Are there any other questions.

Question or concern of the closing of the beach.

Lt. Col. Benton: Initially, starting the 15th we will close the area starting from the park gate in Culebra all the way beyond the disposal area. They will be working Monday through Friday. On the weekends, the beach will be opened so that people can use the beach. For a two week period. Any other questions.

Concerns on how to contact contractors and other officials.

Lt. Col. Benton: Again, you can contact me or Elsa Jimenez at the Corps of Engineers in San Juan and we will get in touch with the contractors for you, again, if you find anything out there and they will dispose of the ordnance.

General discussion of the areas, the contact of contractors.

Lt. Col. Benton: They will be going around talking to individuals and providing information. Any other questions. Thank you for coming.

Meeting adjourned at 9:10 p.m.

LIST OF CITIZENS/INDIVIDUALS WITH COMMENTS OR QUESTIONS ARE AS FOLLOWS:

The Mayor of Culebra (Mr. Soto Ayala)
Angel Lupinez
Joizce Andrades
Maria Padron
Benjamin Percz
Digna Feliciano
Richard Kiegler
Ramin Feliciano

ANNEX H

Appendix 1

Information Fact Sheet

US Army Corps of Engineers

INFORMATION FACT SHEET

Jacksonville District
Antilles Office

May 4, 1995

Ordnance and Explosive Waste Removal Flamingo Bay Area, Culebra

What is happening at the Flamingo Bay campground?

The U.S. Army Corps of Engineers, Jacksonville District, Antilles Office, will begin a search for ordnance and explosive waste with the intent to cleanup any items found at the Flamingo beach area on Culebra Island's Northwest Peninsula. The ordnance removal activities will begin on May 15 and should be completed by May 26, 1995. The project site is on public land managed by the Puerto Rico Department of Natural and Environmental Resources (DNER). The work requires closing the campground operated by DNER for two weeks.

The U.S. Army Corps of Engineers (USACE) has contracted with MTA, Inc. of Huntsville, Alabama to conduct this work and eliminate any possible impact upon human health and safety by safely locating, identifying, and disposing of all ordnance within the DNER campground area.

This initial effort, known as an interim removal action, will be limited to the five (5) acres site where the DNER Nature Trail and the Flamingo beach campground is located. This action will locate ordnance below the soil surface.

Why is this project being done and who pays for this?

In 1986 Congress established the Defense Environmental Restoration Program (DERP) under Public Laws 99-190 and 99-499. Under that program are two subprograms: the Installation Restoration Program (IRP), for active military bases, and the Formerly Used Defense Sites Program (FUDS) which deals with the Culebra Island site. Under DERP, the Defense Department's goal is to remediate environmental problems on present and formerly owned or used sites. USACE was given the management and execution responsibilities for cleanup activities at formerly used Department of Defense lands.

One of the major objectives of the DERP program is to remove ordnance and explosive waste. Huntsville Division, U.S. Army Corps of Engineers is responsible for this objective. In Huntsville, a team of engineers and other specialists study sites throughout the country to determine whether ordnance still exists.

This project is fully funded by the Federal Government. Estimated cost of the cleanup work at the Flamingo Bay campground area is approximately $350,000.

Is the public safe?

Safety is the U.S. Army Corps of Engineers' paramount concern. The contractor's team consists of highly skilled unexploded ordnance supervisors qualified in explosive ordnance disposal. The U.S. Army Corps of Engineers has reviewed all of the contractor's work plans and safety procedures to ensure the work is performed in a safe manner. In addition, all site personnel will receive daily safety briefings, with periodic quality assurance checks performed by USACE ordnance experts. A Corps of Engineers representative from our Antilles Office will be on site for the duration of work.

What is the history of this site?

From 1941 to 1975 the U.S. Navy used the Northwest Peninsula for shore bombardment centered on white

washed rocks along the shoreline, simu-ed gun emplacements, WWII M4 Sher-man tanks and fuel drums. The mid-peninsula area was used for napalm and air-craft delivery of inert bombs and rockets. The north part of the peninsula is now used by the U.S. Fish and Wildlife Service (USFWS) for the Culebra Island National Wildlife Refuge. The Government of Puerto Rico DNER manages the southern part of the peninsula for public camping, hunting, scuba diving, fishing and walking.

Are other areas on Culebra being examined?

Yes, the island of Culebra and the adjacent 20 cays are being examined. An Ordnance and Explosive Waste Archives Search Report and site inspection were onducted in February 1995. The archives search report determined that conventional explosive ordnance remains at the former Navy bombing and gunnery training ranges, including the following areas:

- Northwest Peninsula
- Cayo de Agua or Agua Cay
- Cayo Lobo or Cross Cay
- Cayo Alcarraza or Fungy Bowl
- Los Gemelos or Twin Rocks
- Culebrita Island
- Cayo Tiburón or Shark Key
- Cayos Geniqui or Palada Cays
- Cayo Botella or Cayo Ladrón.

What is the next phase for these other areas?

In March 1995 the U.S. Corps of Engineers contractor (ESE Inc. of Gainesville) began the next phase of the project, the Engineering Evaluation/Cost Analysis (EE/CA). The purpose of the EE/CA is to determine the extent and nature of contamination, evaluate remedial alternatives available, and select the best way to remediate the site. The first step of the EE/CA is a survey to determine the extent of ordnance contamination at the nine sites identified above. The information gathered will be the basis to determine if and what further actions are necessary at the former Navy gunnery training and bombing ranges.

Who can I contact for more information?

In Puerto Rico

U.S. Army Corps of Engineers
Antilles Office
ATTN: Elsa Jimenez, PAO
400 Fernandez Juncos Avenue
San Juan, Puerto Rico 00901
Telephone: 809-729-6876

or

Alfonso O'Neill
- at project site (15-26 May 95)

In Huntsville

U.S. Army Corps of Engineers
Huntsville Division
ATTN: Ron Belew
P. O. Box 1600
Huntsville, AL 35807-4301

Where can I get more information on these projects?

Relevant documentation compiled and generated for this work has been sent to the Culebra Public Library, Escudero Street where a repository has been established.

Who is the contact for questions related to the campground?

Questions on the use of the campground should be addressed to:

Mr. Abraham Peña, Executive Director,
Culebra Conservation Authority
Department of Natural and Environmental Resources
Telephone: 809-742-3525.

Culebra Island

National Wildlife Refuge

U.S. Army Corps of Engineers

Types of Ordnance

that could be found on Culebra Island and surrounding cays

Tipos de municiones militares que podrian ser encontrados en la isla de Culebra y en los cayos alrededor de la isla

81mm mortar rear body and fin assembly, Culebra display
Aletas y parte posterior de mortero de 81 mm, exhibición en Culebra

Projectile, Culebra ordnance display
Proyectil, exhibición de municiones en Culebra

MK 14/15 bomb fin on Giniqui west
Aleta de bomba tipo MK 14/15 en el oeste de Geniqui

Downtown Culebra ordnance display
Exhibición de municiones en Culebra

Tiny Tim rocket on DNER beach
Cohete tipo "Tiny Tim" en la playa de DRNA

5" rocket on FWS property
Cohete de 5" en la propiedad del Servicio de Pesca y Vida Silvestre

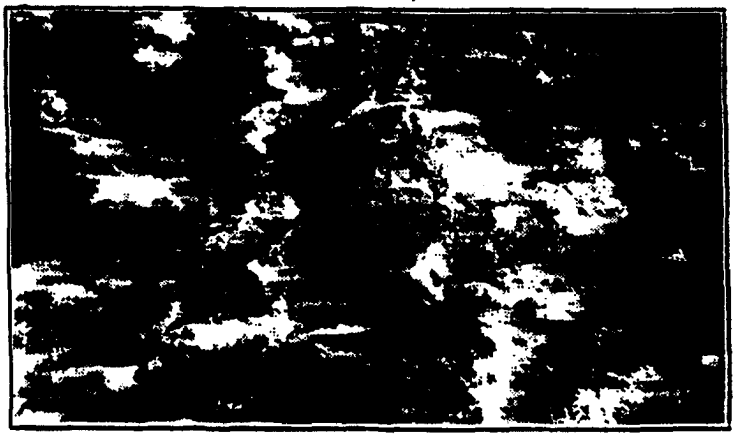
CAUTION:
If you see anything that resembles the ordnance shown, DO NOT TOUCH OR TRY TO MOVE IT. Please contact the proper authorities.

PRECAUCION:
Si usted ve algunas municiones que se asemejen a las mostradas, no las toque o mueva. Por favor ponganse en contacto con las autoridades pertinentes.

Types of Ordnance
that could be found on Culebra Island and surrounding cays
Tipos de municiones militares que podrian ser encontrados en la isla de Culebra y en los cayos alrededor de la isla

U.S. Army Corps of Engineers

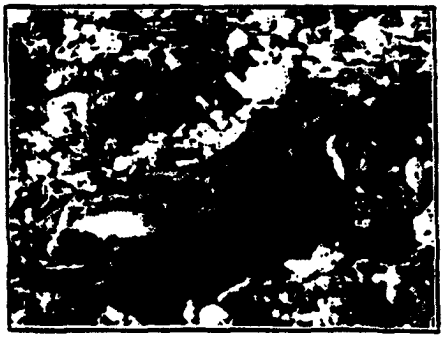
Possible OEW, North Bay, Cayo de Luis Pena
Posibles municiones y desperdicios explosivos en Bahia Norte de Cayo Luis Peña



Lower Camp, empty projectile at DNER office
Proyectiles vacios en la officina de DRNA, en el Campamento

Mortar Fragment
Fragmentos de mortero

HE bomb fragments, Cayo del Agua
Fragmentos de bomba de alto explosivo en Cayo del Agua



HE bomb fragments on Cayo Botella
Fragmentos de bomba de alto explosivo en Cayo Botella

Practice bombs on Cayo Botella
Bombas de practicas en Cayo Botella

CAUTION:
If you see anything that resembles the ordnance shown, DO NOT TOUCH OR TRY TO MOVE IT. Please contact the proper authorities.
PRECAUCIÓN:
Si usted ve algunas municiones que se asemejen a las mostradas, no las toque o mueva. Por favor pongase en contacto con las autoridades pertinentes.

US Army Corps of Engineers

HOJA INFORMATIVA

Distrito de Jacksonville
Oficina de las Antillas

4 de mayo de 1995

Remocion de Residuos de Municiones y Materiales Explosivos del Area de Acampar en Playa Flamingo, Culebra, Puerto Rico

¿Qué están haciendo en la Playa Flamingo?

El Cuerpo de Ingenieros del Ejército comenzará a buscar, con la intención de remover, los residuos de municiones y explosivos que pueda haber en el área de acampar de la Playa Flamingo en la porción noreste de la península. La Oficina de las Antillas del Distrito de Jacksonville supervisará las actividades de limpieza y remoción que comenzarán el 15 de mayo y deben estar terminadas para el 26 de mayo. El área donde se desarrolla el proyecto está bajo la jurisdicción del Departamento de Recursos Naturales y Ambientales (DRNA). Estos trabajos requieren que se cierre por dos semanas el área de acampar que opera el DRNA y durante los dias laborables en el area de balneario.

El Cuerpo de Ingenieros ha contratado la firma MTA de Huntsville, Alabama para realizar estos trabajos. Con los mismos se eliminará cualquier posibilidad de riesgo en torno a la seguridad y salud humana al poder localizar, identificar y disponer de todas las municiones en el área de acampar.

Este esfuerzo inicial, conocido como Acción de Remoción Interina, se limita a la restauración de un área de cinco (5) acres donde está localizada el área de acampar del DRNA en la Playa Flamingo. Se buscarán municiones que puedan encontrarse debajo de la superficie.

¿Por qué se hace el trabajo y quién paga?

En 1986 el Congreso Federal estableció el Programa de Restauración Ambiental del Departamento de la Defensa (DERP) mediante las Leyes 99-190 y 99-499. El programa funciona con dos subprogramas: el de Restauración en Instalaciones Militares, o sea, en las bases militares que aún se encuentran en uso activo y el de Lugares Previamente Utilizados por el Departamento de la Defensa, el cual aplica en este caso de Culebra. El objetivo del Departamento de Defensa con el Programa DERP, es remediar los problemas ambientales en lugares usados actualmente o previamente por la agencia federal. Al Cuerpo de Ingenieros del Ejército le asignaron la responsabilidad de administrar y ejecutar las actividades de limpieza solamente bajo el programa de los Lugares Previamente Utilizados por el Departamento de Defensa.

La remoción de residuos de municiones militares y explosivos es uno de los objetivos principales del Programa DERP. A nivel nacional, la responsabilidad para que esto se lleve a cabo recae en la División de Huntsville del Cuerpo de Ingenieros del Ejército. En Huntsville, grupos compuestos por ingenieros y especialistas en aspectos de seguridad estudian diversos lugares a través de toda la Nación con el fin de determinar si aún existe contaminación por actividades militares.

Este proyecto es financiado totalmente por el Gobierno Federal. El costo estimado de los trabajos de limpieza que se harán en el área de acampar de la Playa Flamingo asciende a unos' $350,000.

¿Puede sentirse seguro el público?

El aspecto de la seguridad en todos estos trabajos es un elemento crítico para el Cuerpo de Ingenieros. El grupo del contratista incluye tanto supervisores como técnicos que son expertos en los explosivos y en cómo disponer de los mismos. El Cuerpo de Ingenieros ha revisado cuidadosamente todos los planes de trabajo y procedimientos de seguridad que éstos seguirán a fin de asegurar un ambiente de trabajo seguro.

En adición, diariamente se dará una orientación sobre seguridad a todo el personal que labore en el proyecto. Expertos del Cuerpo de Ingenieros harán cotejos periódicos para asegurar que allí se cumpla con

todas las normas de seguridad. Además, un representante de la Oficina de las Antillas del Cuerpo de Ingenieros permanecerá en el área de trabajo durante las dos semanas que duren los mismos.

¿Cuál es la historia de esta área?

Entre los años 1941 y 1975 la Marina utilizó la porción noreste de la península para llevar a cabo prácticas de bombardeo principalmente en el área de la costa donde hay unas rocas blancas. También colocaron allí emplazamientos con armas largas, tanques tipo Sherman WW II M4 y tanques para gasolina. La porción media de la península se usó para practicar con napalm así como con bombas y cohetes inertes. Esta porción norte de la península la utiliza actualmente el Servicio Federal de Pesca y Vida Silvestre y ahí se encuentra el Refugio Nacional de Vida Silvestre de Culebra. El Gobierno de Puerto Rico, mediante el Departamento de Recursos Naturales y Ambientales, maneja la porción sur de la península y permite allí las casetas de acampar, la pesca, buceo y hay áreas de caminar.

¿Se están examinando otras áreas de Culebra?

Sí, toda la isla de Culebra y los 20 cayos adyacentes se están examinando bajo otras fases de este programa. En febrero de 1995 se completó el informe de Búsqueda de Información sobre Municiones y Explosivos en los Archivos. Copia de este informe se encuentra en la Biblioteca Pública de Culebra. El mismo conllevo examinar la documentación disponible y se encontró que aún quedan municiones convencionales en las áreas donde la Marina realizaba sus prácticas de tiro y de bombardeo. Estas áreas incluyen:

Península Noreste
Isla de Culebrita
Cayo de Agua
Cayo Tiburón
CayoLobo
Cayos Geniqui
Cayo Alcarraza
Cayo Botella
Los Gemelos

¿Cuál es la próxima fase en cuanto a las otras áreas?

El mes pasado, marzo de 1995, el Cuerpo de Ingenieros contrató la firma de ESE de Gainsville, Florida y les solicitó comenzaran con otra fase del proyecto: la Evaluación de Ingeniería y Análisis de Costos (EI/AC). El propósito de este trabajo es determinar la magnitud y el tipo de contaminación, evaluar remedios alternos y seleccionar el mejor mecanismo para los trabajos de restauración. La primera parte del EI/AC conlleva examinar los nueve (9) lugares antes mencionados y tratar de identificar la cantidad de municiones que puede encontrarse allí. La información recopilada será la base para determinar qué otras acciones pueden tomarse, de ser necesarias, en estas áreas donde la Marina realizó sus ejercicios militares.

¿Qué aspecto tienen las municiones?

Las municiones que podrían encontrarse en las áreas de Culebra utilizadas por la Marina para prácticas de tiro y otros entrenamientos pueden parecerse a las que se ilustran en la hoja adjunta.

¿Quién puede proveernos información adicional?

En Puerto Rico

Cuerpo de Ingenieros del Ejército
Oficina de las Antillas
Avenida Fernández Juncos 400
San Juan, Puerto Rico 009012
Atención: Elsa Jiménez
Tel. 809-729-6876

o

Ing. Alfonso O'Neill
En el área del proyecto en
Culebra (15-26 de mayo de 1995)

En Huntsville

U.S. Army Corps of Engineers
Huntsville Division
Box 1600
Huntsville, AL 35807-4301

¿Dónde podemos encontrar información adicional?

Se ha dejado copia de los documentos producidos para todos estos trabajos de Culebra en la Biblioteca Pública de Culebra, Calle Escudero al lado de la Escuela Pública.

¿Quién es el contacto para asuntos relacionados con el área de acampar?

Todas las preguntas sobre el área de acampar deben dirigirse al:
Sr. Abraham Peña, Director Ejecutivo
Autoridad de Conservación de Culebra
Departamento de Recursos Naturales y Ambientales
Teléfono: 809-742-3525

Culebra Island

National Wildlife Refuge — **U.S. Army Corps of Engineers**

Types of Ordnance

that could be found on Culebra Island and surrounding cays

Tipos de municiones militares que podrian ser encontrados en la isla de Culebra y en los cayos alrededor de la isla

81mm mortar rear body and fin assembly, Culebra display
Aletas y parte posterior de mortero de 81 mm, exhibición en Culebra

Projectile, Culebra ordnance display
Proyectil, exhibición de municiones en Culebra

MK 14/15 bomb fin on Giniqui west
Aleta de bomba tipo MK 14/15 en el oeste de Geniqui

Downtown Culebra ordnance display
Exhibición de municiones en Culebra

Tiny Tim rocket on DNER beach
Cohete tipo "Tiny Tim" en la playa de DRNA

5" rocket on FWS property
Cohete de 5" en la propiedad del Servicio de Pesca y Vida Silvestre

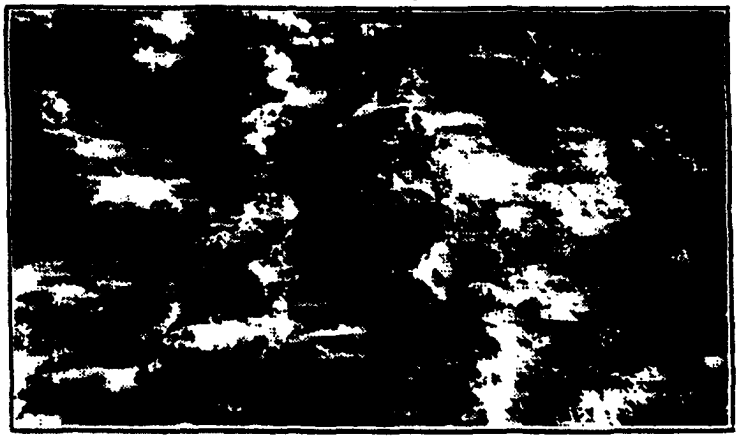
CAUTION:
If you see anything that resembles the ordnance shown, DO NOT TOUCH OR TRY TO MOVE IT. Please contact the proper authorities.

PRECAUCION:
Si usted ve algunas municiones que se asemejen a las mostradas, no las toque o mueva. Por favor pongase en contacto con las autoridades pertinentes.

Types of Ordnance
that could be found on Culebra Island and surrounding cays
Tipos de municiones militares que podrian ser encontrados en la isla de Culebra y en los cayos alrededor de la isla

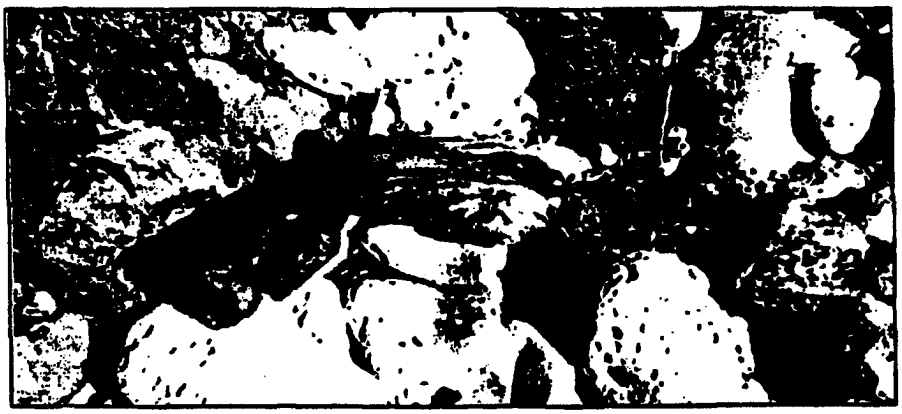
U.S. Army Corps of Engineers

Possible OEW, North Bay, Cayo de Luis Pena
Posibles municiones y desperdicios explosivos en Bahia Norte de Cayo Luis Peña



Lower Camp, empty projectile at DNER office
Proyectiles vacios en la officina de DRNA, en el Campamento

Mortar Fragment
Fragmentos de mortero



HE bomb fragments, Cayo del Agua
Fragmentos de bomba de alto explosivo en Cayo del Agua

CAUTION:
If you see anything that resembles the ordnance shown, DO NOT TOUCH OR TRY TO MOVE IT. Please contact the proper authorities.
PRECAUCIÓN:
Si usted ve algunas municiones que se asemejen a las mostradas, no las toque o mueva. Por favor pongase en contacto con las autoridades pertinentes.

HE bomb fragments on Cayo Botella
Fragmentos de bomba de alto explosivo en Cayo Botella

Practice bombs on Cayo Botella
Bombas de practicas en Cayo Botella

11 April 1995

To: DDE
CESAJ-PA
CESAJ-DP-I(Bridgers)

Subject: Arrangements for Culebra Community Meeting (DERP-FUDS)

1- Meeting is scheduled for:
Date: Thursday 4 May,1995
Time: 7:00 P.M.
Place: Municipal Services Center (Alternate site, Gymnasium)

2- Local contacts:
*DNER- Abraham Pena, CCA (742-3525)
*Mayors Office- Mayor Feliciano (Zulma) (742-3521)

3- Events for the day:
A- Meeting with Mayor Feliciano -Tentative early in the afternoon

B- Community Meeting- Presentation will be in Spanish by a person from the Antilles Office, probably Eng.Alfonso O'Neill. LTC Benton will make a brief introduction. Contractor and other CORPS staff will be available to answer any questions.

4- Information needed for presentation:
A- From MTA - Explanation of work, schedules,and work specifics of relevance to the community. Map deliniating areas to be off limits due to work,particularly the beach area. Any other information of interest.

B- From ESE (Gainsville)- Information on their work,the Engineering Evaluation/Cost Analysis to explain at the meetings. Need something brief in writting to use for press releases and information to present to attendees.

5- Publicity of activities;
I will prepare the information to be disseminated to the public. Both DNER and the Mayors office has agreed to assist in the distribution of the invitations.
* Press Releases for the media
* Invitation Fliers for residents of Culebra
* Radio messages

6- Any items needed to support the presentations must be identified ahead of time.

Elsa Jimenez

cc.CESAJ-DS-C

ANNEX H

Appendix 2

Public Meeting Announcement

US Army Corps of Engineers

NEWS RELEASE
COMUNICADO DE PRENS

Antilles Office

400 Fernandez Juncos, San Juan, Puerto Rico 00
Phone: 723-0133 *Release date:* 21 APRIL 1995

REMOVAL OF ORDNANCE AND EXPLOSIVE WASTE
FROM FLAMINGO BEACH IN CULEBRA

San Juan...The USACE announces that ordnance and explosive waste cleanup activities at the Flamingo Beach area in Culebra are about to begin. The cleanup work is scheduled to be done from 15 to 26 May by a contractor selected by the federal agency.

The project is conducted in accordance with the Department of Defense Environmental Restoration Program at Formerly Used Defense Sites (DERP-FUDS). The cost of this work is funded by the Federal Government.

The objective of the DERP-FUDS program is to cleanup and restore formerly used Department of Defense sites of which munitions, storage tanks, metals, oils or chemical products may have been left.

At the National level the Corps of Engineers was given the management and execution responsibilities for the cleanup at formerly used DOD lands.

Within Puerto Rico there is another environmental cleanup project ongoing at the former San Juan Naval Base in Miramar. There are several projects scheduled to start later this year.

FOR MORE INFORMATION CONTACT ELSA JIMENEZ

The work at Playa Flamingo requires closing for two weeks the campground operated by the Department of Natural and Environmental Resources (DNER).

Corps of Engineers officials and representatives of the contractor, MTA Inc. of Huntsville will be in Culebra on Thursday, 4 May 1995 where a community meeting will be held at 7:00 p.m. at the Multiple Services Center, next to City Hall. They will explain to residents the nature of the work, the detailed schedule, and answer their questions.

#

Cuerpo de Ingenieros del Ejército
Distrito de Jacksonville

INVITACION A LA COMUNIDAD

REUNION

REMOCION DE RESIDUOS DE MUNICIONES DE LA PLAYA FLAMINGO

El Cuerpo de Ingenieros del Ejército de los Estados Unidos y el Departamento de Recursos Naturales y Ambientales invitan a los vecinos de Culebra y personas interesadas a una reunión donde explicarán los trabajos que están próximos a comenzar en la Playa Flamingo. A tenor con el Programa de Restauración Ambiental en Lugares Previamente Utilizados por el Departamento de Defensa, se removerán del área de acampar, remanentes de municiones que aún se encuentran allí enterradas.

Los trabajos están pautados para llevarse a cabo del 15 al 26 de mayo y el área de acampar permanecerá cerrada por dicho período. En la reunión se darán detalles de estos trabajos y se contestarán preguntas del público.

Todas las personas interesadas están invitadas a la reunión a celebrarse:

FECHA : JUEVES, 4 DE MAYO DE 1995
HORA : 7:00 P.M.
LUGAR : CENTRO DE USOS MULTIPLES
AL LADO DE LA CASA ALCALDIA
CULEBRA, PUERTO RICO

US Army Corps of Engineers

NEWS RELEASE
COMUNICADO DE PRENSA

Antilles Office

400 Fernandez Juncos, San Juan, Puerto Rico 009
Phone: 723-0133 **Release date:** 21 APRIL 1995

REMOCION DE RESIDUOS DE MUNICIONES DE LA PLAYA FLAMINGO EN CULEBRA

San Juan...El Cuerpo de Ingenieros del Ejército de los Estados Unidos anunció que los trabajos de remoción de los residuos de municiones que aún se encuentran en el área de acampar de la Playa Flamingo habrán de comenzar próximamente. Los trabajos están pautados para realizarse entre el 15 y 26 de mayo del corriente por un contratista seleccionado por la agencia federal.

Este proyecto se lleva a cabo a tenor con las disposiciones del Programa de Restauración Ambiental en Lugares Previamente Utilizados por el Departamento de Defensa. El costo de toda la labor es financiado por el Gobierno Federal por disposición expresa del Congreso.

El objetivo del programa es limpiar y restaurar los lugares que fueron utilizados por el Departamento de Defensa y en los cuales al marcharse pueden haber dejado municiones, tanques de almacenaje, metales, aceites o productos químicos. A nivel Nacional, se le asignó al Cuerpo de Ingenieros la responsabilidad de supervisar, administrar y contratar las actividades de limpieza en las áreas que utilizó el Departamento de Defensa.

FOR MORE INFORMATION CONTACT ELSA JIMENEZ

Actualmente se están llevando a cabo en Puerto Rico dos proyectos de limpieza y restauración ambiental bajo este programa específicamente en el área de Tortuguero y en la Antigua Base Naval de San Juan en Miramar. Hay otros proyectos pautados para los próximos años.

Los trabajos en el área de la Playa Flamingo requerirán el cierre de área de acampar por el período de dos semanas que tomará el trabajo. Esta labor se realiza en estrecha coordinación con el Departamento de Recursos Naturales y Ambientales.

Funcionarios del Cuerpo de Ingenieros y del contratista, MTA Inc. de Huntsville estarán disponibles para explicar los trabajos y contestar preguntas de la comunidad en una reunión a celebrarse el jueves 4 de mayo de 1995 a las 7:00 p.m. en el Centro de Usos Múltiples de Culebra, al lado de la Casa Alcaldía.

#

ANNEX H

Appendix 3

MTA Public Meeting Slides

CULEBRA TOWN MEETING

MTA, Inc.
Huntsville, Alabama

CULEBRA REUNION CON LA COMUNIDAD

MTA, Inc.
Huntsville, Alabama

OUR GOALS

- SAFETY
- Protect Property
- Protect the Environment
- Minimum Disruption
- Duration - 2 Weeks

NUESTRAS METAS

- SEGURIDAD
- Proteccion De Propiedad
- Protecction Del Ambiente
- Minimzar Los Inconvenientes
- Duracion - 2 Semanas

COORDINACION

- POLICIA DE PUERTO RICO
- AGENCIAS DEL GOBIERNO DE PUERTO RICO
- GOBIERNO MUNICIPAL
- CORPO DE INGENIROS
- AGENCIAS FEDERALES

COORDINATION

- PUERTO RICO POLICE
- PUERTO RICO GOVERNMENT AGENCIES
- MUNICIPAL GOVERNMENT
- CORPS OF ENGINEERS
- FEDERAL AGENCIES

ANNEX H

Appendix 4

Mandatory Center of Excellence (MCX) Information Packet

U.S. Army Corps of Engineers

REMOCION RESIDUOS DE MUNICIONES CULEBRA, P.R.

EXPLOSIVE ORDNANCE ENGINEERING MCX AND DESIGN CENTER

OBJETIVO --
HACER EL AREA SEGURA PARA LOS RESIDENTES DE CULEBRA Y VISITANTES

OBJETIVOS DEL PROYECTO

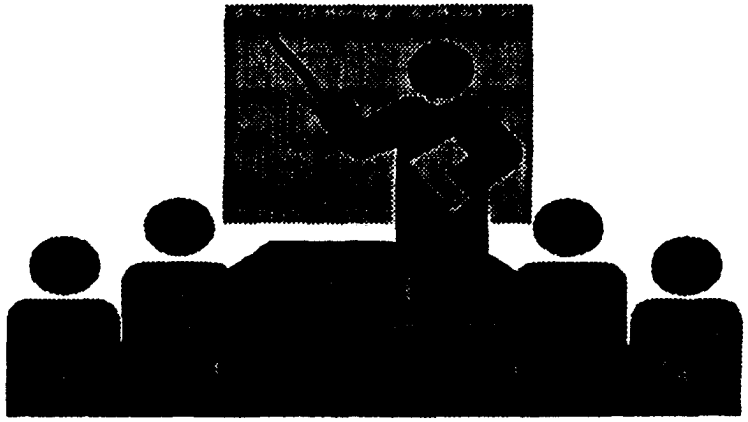
U.S. Army Corps of Engineers

EXPLOSIVE ORDNANCE ENGINEERING MCX AND DESIGN CENTER

OBJETIVOS DEL PROYECTO

REDUCIR EL RIESGO AL PUBLICO EN GENERAL ACTUANDO, SEGUN LA LEY, EN SITIOS CONTAMINADOS CON MUNICIONES Y DESPERDICIOS EXPLOSIVOS.

EJECUTAR LAS ACCIONES CON EL MINIMO DE RIESGO PARA EL PERSONAL DEL GOBIERNO Y CONTRATISTA.

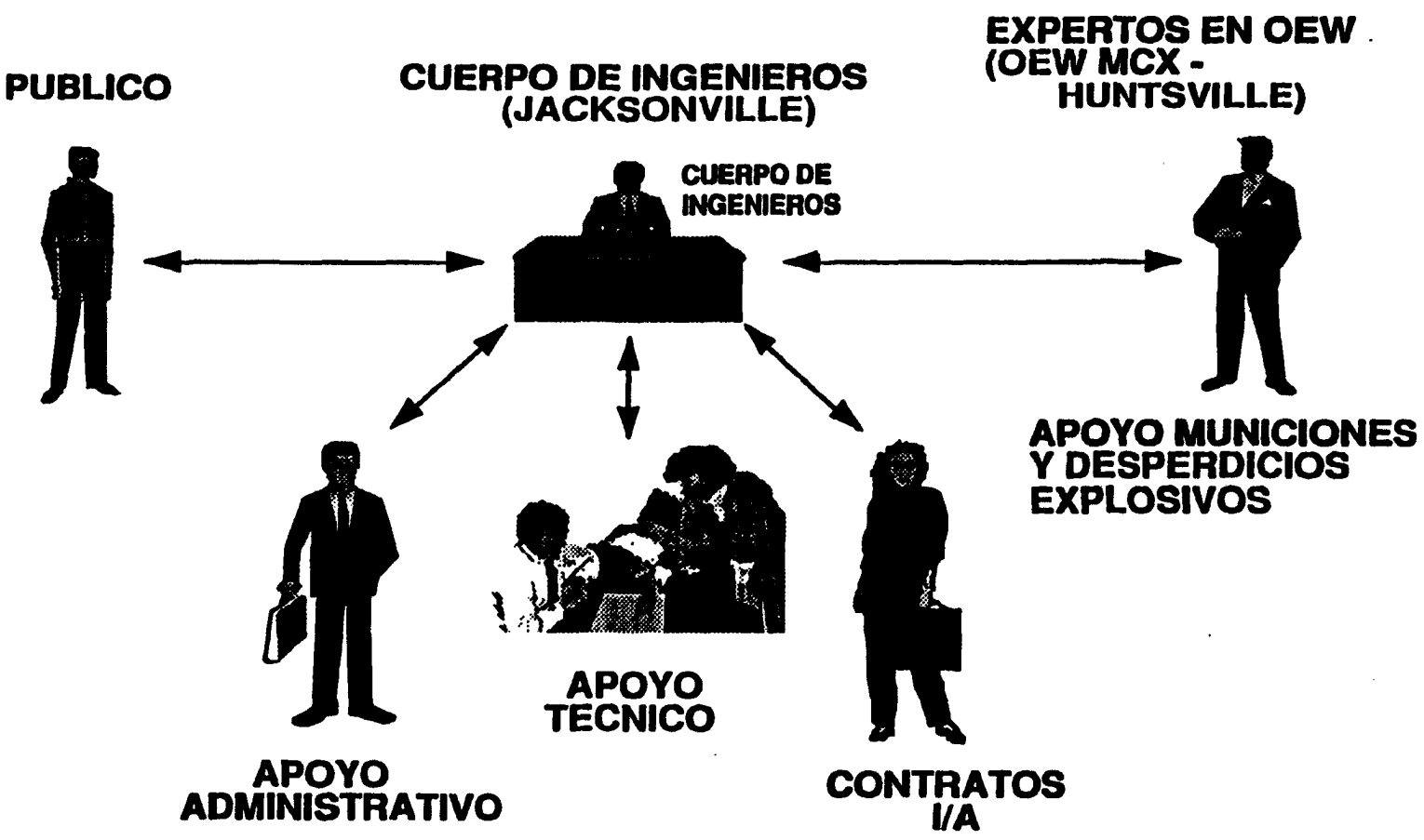


DIALOGO CON PUBLICO

U.S. Army Corps of Engineers

DIALOGO CON PUBLICO

EXPLOSIVE ORDNANCE ENGINEERING MCX AND DESIGN CENTER



EL PROBLEMA DE LAS MUNICIONES

LAS MUNICIONES SON PELIGROSAS

- LAS MUNICIONES SON PARA LA GUERRA
- LAS MUNICIONES HAN SIDO SOMETIDAS A CAMBIOS

LAS MUNICIONES SON MAS INESTABLES CON LOS AÑOS

- LOS EXPLOSIVOS SE CRISTALIZAN
- MECANISMOS DE SEGURIDAD SE DETERIORAN
- UNA VEZ DISPARADA, LA MUNICION QUE NO EXPLOTA ES EXTREMADAMENT PELIGROSA.

EL SECTOR PRIVADO NO ESTA ADIESTRADO PARA MANEJAR MUNICIONES

- EL PERSONAL MILITAR ESTA ADIESTRADO EN PROCEDIMIENTOS SEGUROS
- LAS MUNICIONES MILITARES SE ALMACENAN BAJO

ALGUNOS INDIVIDUOS O GRUPOS PUEDEN PRESENTAR SERIAS AMENAZAS

- NIÑOS HAN MUERTO
- PERSONAS EBRIAS HAN SIDO HERIDAS
- CRIMINALES PUEDEN USAR LAS MUNICIONES

U.S. Army Corps of Engineers

EL PROBLEMA DE LAS MUNICIONES

EXPLOSIVE ORDNANCE ENGINEERING
MCX AND DESIGN CENTER

MUCHO DE LOS LUGARES ABANDONADOS POR LA DEFENSA SON AHORA:

COMUNIDADES

PARQUES

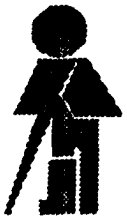
ESCUELAS

U.S. Army Corps of Engineers

MUNICIONS

EXPLOSIVE ORDNANCE ENGINEERING MCX AND DESIGN CENTER

LA CONTAMINACION POR MUNICIONES Y DESPERDICIOS EXPLOSIVOS PRESENTAN PELIGRO PARA LAS PERSONAS EXPUESTOS A ESTOS



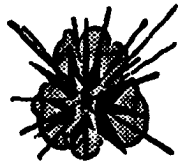
QUIMICOS MILITARES
- CARGAS DE DEMOLICION
- PIROTECNIA
- EXPLOSIVOS
- IMPULSADORES
- AGENTES QUIMICOS

UXO
- BOMBAS
- OJIBAS
- PROYECTIL DIRIGIDO
- MUNICIONES DE ARTILLERIA
- MUNICIONES DE MORTERO
- MUNICIONES DE ARMAS PEQUEÑAS
- MINAS ANTI-PERSONALES
- MINAS ANTI-TANQUES

COMPONENTES
- DETONADORES
- BOOSTERS
- EXPLOSIVO
- MOTORES DE COHETES

SUELO CONTAMINADO

U.S. Army Corps of Engineers



EXPLOSIVE ORDNANCE ENGINEERING MCX AND DESIGN CENTER

PROGRAMA PARA LUGARES PREVIAMENTE UTILIZADOS POR EL DEPARTAMENTO DE DEFENSA

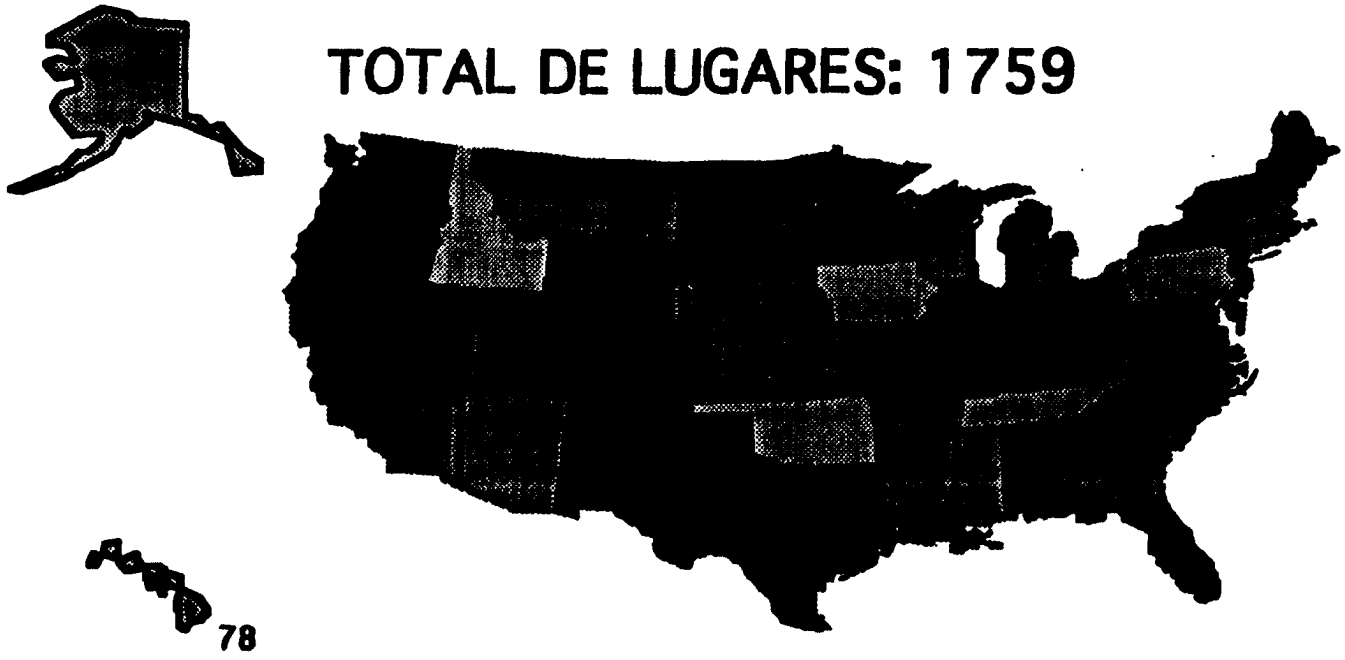
(FUDS PROGRAM)

U.S. Army Corps of Engineers

LUGARES DONDE PUEDER HABER MUNICIONES Y RESIDUOS QUIMICO DE ACTIVIDADES MILITARES

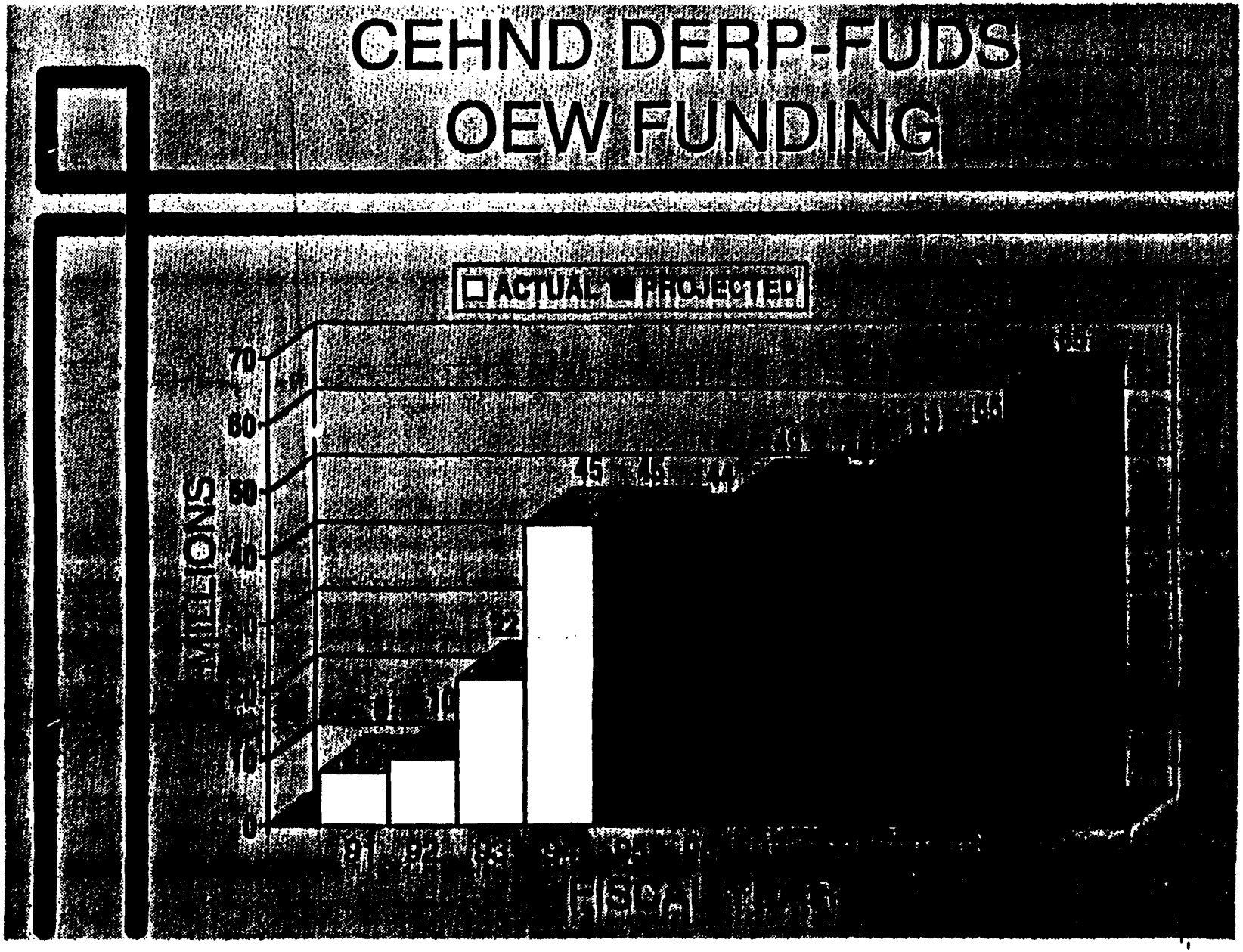
EXPLOSIVE ORDNANCE ENGINEERING DESIGN AND DESIGN CENTER

TOTAL DE LUGARES: 1759



3	ISLAS VIRGENES
19	PUERTO RICO
4	GUAM
6	SAIPAN

CEHND DERP-FUDS OEW FUNDING



U.S. Army Corps
of Engineers

EXPLOSIVE ORDNANCE ENGINEERING
MCX AND DESIGN CENTER

EJECUCION DEL PROYECTO

U.S. Army Corps of Engineers

ESTRATEGIA DE CONTRACTACION

EXPLOSIVE ORDNANCE ENGINEERING BCX AND DESIGN CENTER

DESCRIPCION DEL AREA, EI/AC, DISEÑO DE LIMPIEZA FINAL

CONTRATOS CON SUBCONTRATISTAS ESPECIALIZADOS (UXO)

REMOCIONES CRITICAS

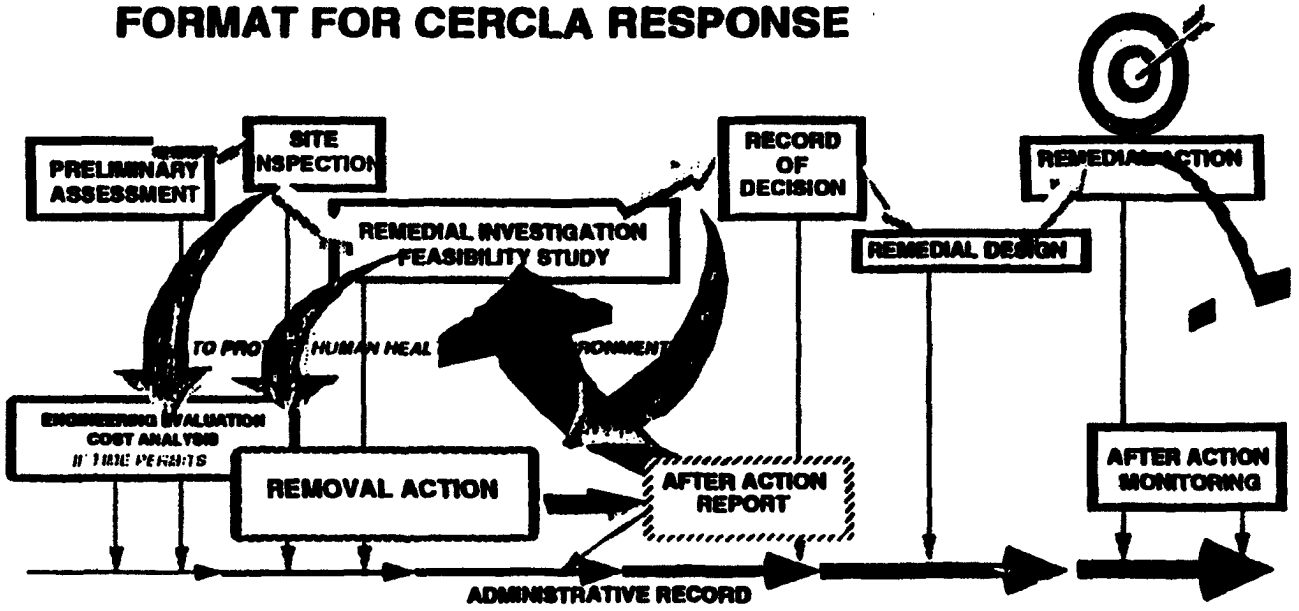
CONTRATOS LOCALES

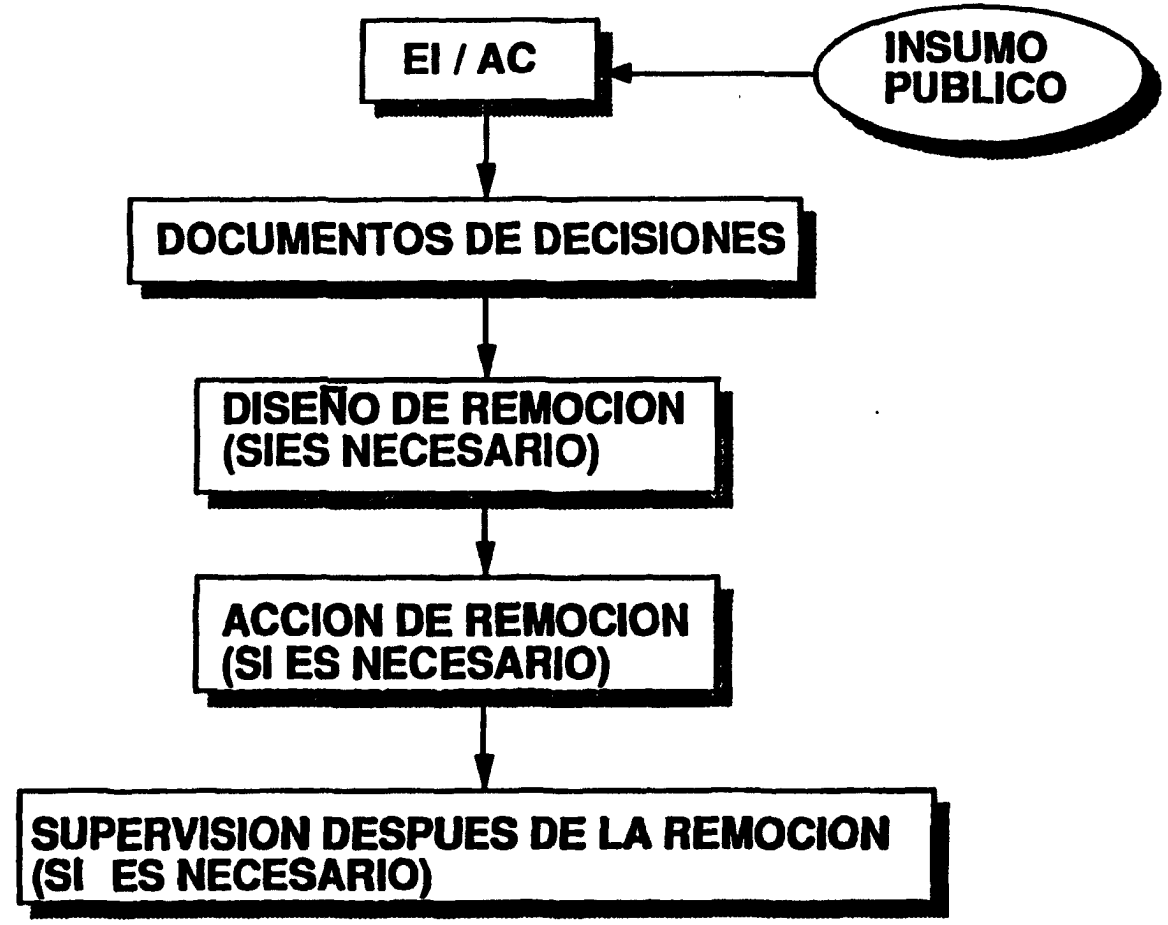
LIMPIEZA FINAL

DOCUMENTOS DE CIERRE DE CONTRATO

NCP

FORMAT FOR CERCLA RESPONSE




EI / AC
INSUMO PUBLICO
DOCUMENTOS DE DECISIONES
DISEÑO DE REMOCION (SIES NECESARIO)
ACCION DE REMOCION (SI ES NECESARIO)
SUPERVISION DESPUES DE LA REMOCION (SI ES NECESARIO)

US Army Corps
of Engineers
Rock Island District

Defense Environmental Restoration Program
for
Formerly Used Defense Sites
Ordnance and Explosive Waste

Archives Search Report

FINDINGS

for

Culebra Island National Wildlife Refuge

Culebra, Puerto Rico
Project Number I02PR006802

February 1995

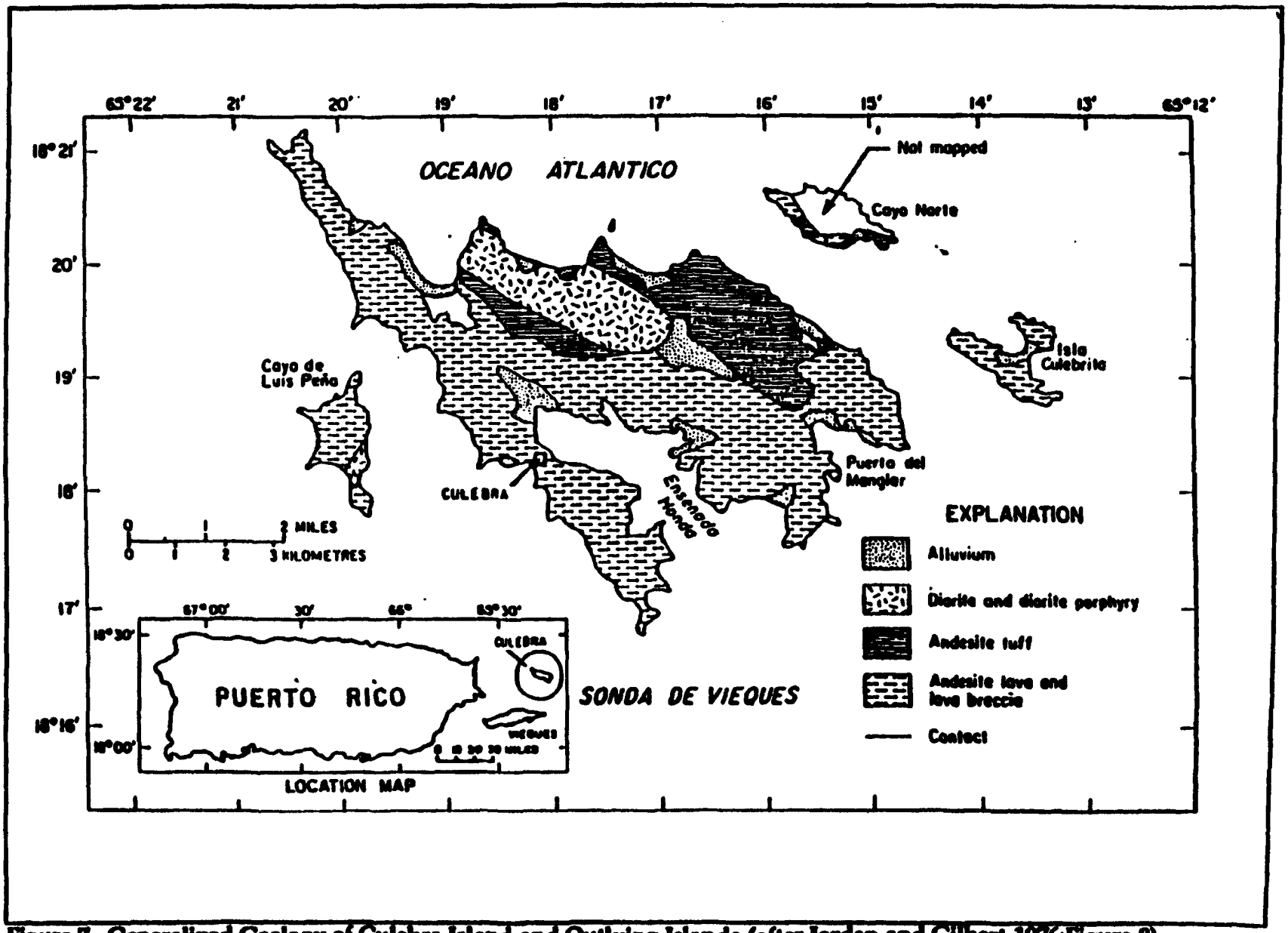
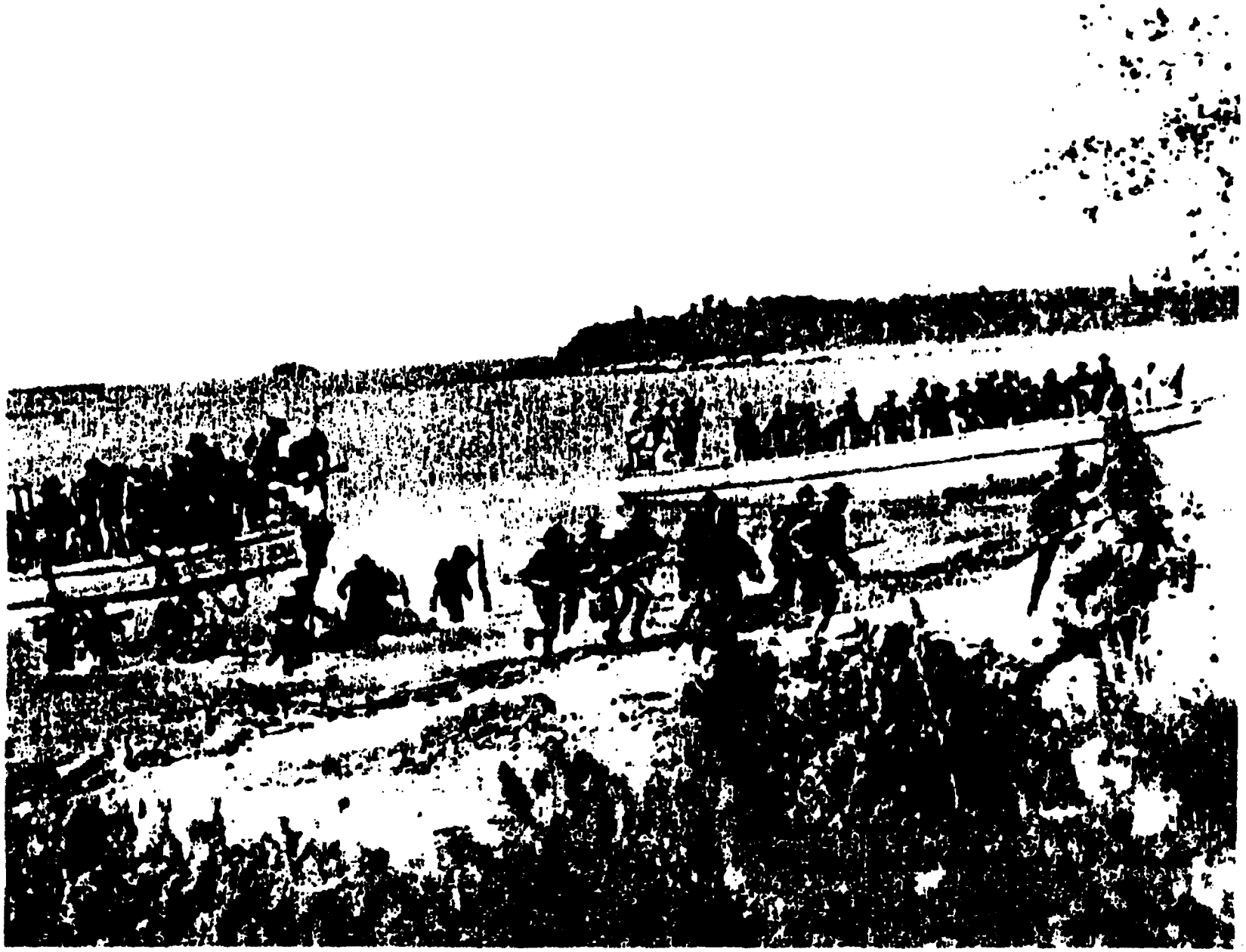


Figure 7. Generalized Geology of Culebra Island and Outlying Islands (after Jordan and Gilbert 1976:Figure 8).

Amphibious Development: Marines storm Culebra beaches, 1924



National Archives


NORTH
BULLSEYE TARGET

TABLE 3-1
CURRENT LAND USAGE

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
A-1	Isla Culebrita	Culebrita	OP, torpedos, & strafing	Wildlife refuge	FWS	266
A-2	-	Culebrita North Bay	Strafing	Water & beach	FWS, DNR	100
A-3	Cayo Botella	Ladrone Key	Aerial bombing & rockets	Wildlife refuge	FWS	3
A-4	Cayos Geniqui	Palada Keys	Aerial bombing & rockets, torpedoes	Wildlife refuge	FWS	4
A-5	Cayo Tiburon	Shark Key	Aerial bombing & rocke s	Wildlife refuge	FWS	1
A-6	Cayo Ballena	Whale Rock	-	Wildlife refuge	FWS	1
A-7	Cayo Sombrerito	Pajarito Key	-	Wildlife refuge	FWS	1
A-8	Cayo Norte (eastern)	Northeast Key	Possible run-in line to Cayo Botella	Undeveloped 1 part-time resident	Juan de la Cruz Padron	254
A-9	Culebra Island (eastern)	-	-	Undeveloped several residences	DNR, FWS, & private	598

** DNR owns all water from the high tide mark out to 9 miles.

TABLE 3-1 (continued)
CURRENT LAND USAGE

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
B-1	Cayo de Luis Pena	Luis Pena Key	OP, radar site, run-in line	Wildlife refuge	FWS	342
B-2	-	North Bay, Luis Pena Key	-	Water and beach	FWS & DNR	80
B-3	Cayo del Agua	Water Key, Agua Cay	Aerial bombing & rockets	Wildlife refuge	FWS	2
B-4	Cayo Yerba	Yerba Key	-	Wildlife refuge	FWS	3
B-5	Cayo Raton	Mono Cay	-	Wildlife refuge	FWS	3
B-6	El Mono	Roco Negra, Black Rock	-	Wildlife refuge	FWS	1
B-7	Cayo Lobo	Cross Key	Aerial bombing & rockets	Wildlife refuge	FWS	20
B-8	Cayo Lobito	-	Flight line approach marker	Wildlife refuge	FWS	7
B-9	Alcarraza	Fungy Bowl	Aerial bombing & rockets	Wildlife refuge	FWS	7
B-10	Los Gemelos	Twin Rocks	Aerial bombing, rockets, and missile	Wildlife refuge	FWS	2
B-11	Cayo Botijuela	Roca Lavador	-	Wildlife refuge	FWS	1

** DNR owns all water from the high tide mark out to 9 miles.

TABLE 3-1 (continued)
CURRENT LAND USAGE

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
C-1	Flamenco Peninsula	Northwest Peninsula	Naval gunfire, aerial bombing & rockets, strafing	Wildlife refuge, dump undeveloped	FWS, DNR, private	572
C-2	Flamenco Beach	Playa Flamenco	Naval gunfire	Beach, hotel campground	DNR & private	25
C-3		Peninsula Shoreline	Naval gunfire	Wildlife refuge	FWS & DNR	15
C-4	-	Carlos Rosario Beach	-	Water & beach	FWS & DNR	100
C-5	Piedra Stevens	Roca Pilots, Pilot Rock	-	Wildlife refuge	FWS	2
C-6		All other area C	-	Water, dump, & undeveloped	DNR & private	8327
D	-	Mortar Range	-	Grazing	Private	80
E	-	Airfield rifle range	-	Housing & undeveloped	City & private	22
F	-	Southern rifle range	-	Mostly undeveloped some houses	DNR	43
G	-	Lower Camp	Navy & Marine base	FWS & DNR offices, freshwater plant, open	DNR	60

** DNR owns all water from the high tide mark out to 9 miles.

TABLE 3-1 (continued)
CURRENT LAND USAGE

Area	Topo Name	Other Names	Documented Former Usage	Current Usage	Current Owner**	Approximate Size, Acres
H	-	Lower Camp dumps	-	FWS & DNR offices	DNR	1
I	Cayo Matojo	Matojo Cay	-	Wildlife refuge	FWS	1
J		Navy gun sites (7 each)	Possible coastal defense batteries	1 known residence & unknown	FWS, DNR, & private	13.83
K	-	Mining West	Aerial mining range	Open water	DNR	2,438
L	-	Marine water minefield	-	Open water	DNR	142
M	-	Confirmed water	-	Fishing	DNR	419
N	-	All other water	-	Fishing & swimming	DNR	57,284
O	-	All other land	Possible Marine training & gun sites, possible Army gun sites, coaling station & unknown	Mostly undeveloped some houses	DNR, FWS, & private	4,764
P	-	Flamenco Point OP	not eligible for DERP-FUDS		Navy	87.5

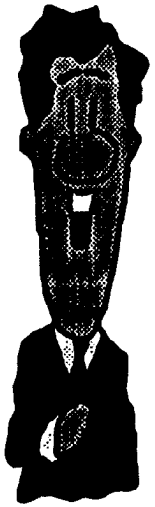
** DNR owns all water from the high tide mark out to 9 miles.

U.S. Army Corps of Engineers

EXPLOSIVE ORDNANCE ENGINEERING MCX AND DESIGN CENTER

PLANES DE ACCION

PARTICIPACION PUBLICO



- **REUNIONES PUBLICAS**
  - AL COMIENZO DEL PROYECTO
  - OTRAS DE SER NECESARIAS PARA TOMAR DECISIONES
  - PLANIFICACION
  - RECIBIR COMENTARIOS
  - CENTRO DE INFORMACION FORMAL
- **TALLERES DE TRABAJO** - CENTRO DE INFORMACION INFORMAL
- **DIA DE MEDIOS** - PRENSA PUEDE CUBRIR LAS ACTIVIDADES
- **CONTACTO TELEFONICO**
  - INFORMACION URGENTO
  - CONTACTO PERSONAL

PARA LA INMENSA MAYORIA DE LOS PROYECTOS DE REMOCION DE MUNICIONES LA TECNOLOGIA MODERNA NO NOS ASEGURA EN UN 100% LA REMOCION DEL MATERIAL.

DEBEN TOMARSE OTRAS MEDIDAS DE SEGURIDAD EN EL LUGAR PARA ASEGURAR EL BIENESTAR PUBLICO.

ANNEX H

Appendix 5

Newspaper Article, The San Juan Star, 19 May 1995, pp F-1 & F-2

PORTFOLIO

The San Juan Star — Friday, May 19, 1995

After the bombs

Two decades later, feds come back to Culebra

By DOUGLAS ZEHR
Of The STAR Staff

CULEBRA — The metal detector rises from a low-pitched whine to a shriek — the sound of a cat that's had its tail pulled.

The men get their shovels and dig. It might be a bomb or it could be a bottle cap.

"They do that real carefully," said David Lindsey, a supervisor who stood on Flamenco beach watching his men work the sand.

They dig with their hands for a while until they find the metal scrap that made the detector wail. It was a bottle cap, but the next shriek could be a bomb. Inch by inch, in rows 5-feet-wide by up to 150 feet long, Lindsey and his 10-member crew are repeating the procedure all over Flamenco Bay beach and campground.

Two decades after the Navy left this tiny island off Puerto Rico's east coast, the federal government has returned to pick up the bombs left behind during nearly 60 years of target practice.

The bombings enraged this community and protests erupted in the late 1960s.

There were marches, arrests and appeals to the president, Congress and United Nations. At one point, Congress considered forcibly re-locating Culebrenses so the Navy could have the island for itself. President Nixon, responding to political pressure, eventually ordered the Navy to leave Culebra.

Since Monday, a team from the U.S. Army Corps of Engineers has been sweeping a 6-acre tract on Flamenco Bay beach and campground for unexploded bombs. They've found an engine block from a car, scores of bottle caps, tent pegs and shrapnel from 3-inch anti-tank shells, but no bombs.

It is not known why Culebra wasn't swept for bombs earlier. Naval officials at the Roosevelt Roads base in Ceiba did not return STAR telephone calls.

The cleanup was spurred by a 1992 incident in Sierra Santa, Calif., where two young boys found two 30mm anti-tank projectiles at the old Camp Elliott Navy-Marine training center.

"They banged them together and they went boom," said Clinton Hankins, a Corps safety specialist who's working at Flamenco Bay. "Killed them both."

In 1990, Congress ordered the cleanup of Culebra and other former military sites. The Corps is also cleaning land in California, Texas, St. Thomas, New Jersey and Illinois.

Culebra is quiet these days. Twenty-five years ago, the island was a cauldron of discontent.

"I saw those planes dropping 500-pound bombs," said Juan B. Soto, a Culebra resident. "It shook all of Culebra."

The bombing, which began in 1936, was not much of an issue until 1968. The Vietnam War was peaking that year, and the practice bombing of Culebra intensified. On bombing days, boaters could not leave the islands. They were forbidden by the Navy from crossing a 3-mile belt surrounding Culebra.

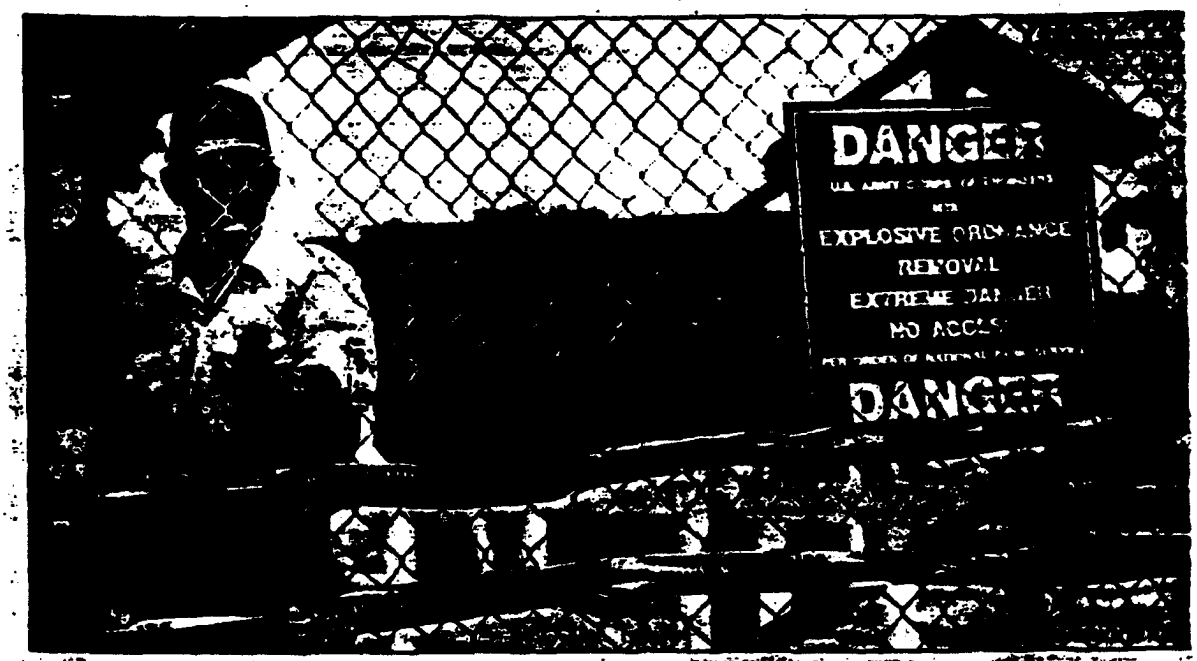
A small group of youth owners were infuriated by the ban and began protesting. Fishermen, who were losing days at sea because of the bombing, joined in.

"We couldn't use the best areas," said Culebra fisherman Héctor Pérez, 49. "And they bombed the places where fish were most abundant."

In 1970, the Navy pulled Culebra rockets on 238 days; air-to-ground sites on 13 days, and shells on 122, according to press reports. On 114 days the Navy cleared the island from it. Pilots would drop from 500 pounds to 2,000 pounds. Not only did the Navy bo

Please see Bombs, P

"We couldn't the best areas...and bombed th places where fish were m abundant. Culebra fisherman



From Page 1

Bombs

fishermen at part, but its bombs killed the fish, and its boats destroyed the lobster traps.

The fishermen protested to no avail. Sometimes they would anchor their boats in the bombing areas and refuse to leave. Pérez's brother spent three months in jail for such dodging. Authorities compiled a corpsess (dossier) on Pérez. It claimed he'd traveled to Cuba and was a communist. Neither was true, he said.

"We were just defending our right to make a living," Pérez said, sitting aboard "Kunta Kinte," his 23-foot fishing boat he named after the African warrior-turned slave in the Alex Haley saga "Roots."

There were injuries too: One fisherman lost his arm below the elbow when an explosive got tangled in his trap. The Armed Forces Journal reported four serious injuries and numerous accidents in the late 1960s. Bombs nearly hit a boat carrying Gov. Farré and several cabinet members in 1970.

The anti-Navy campaign turned raucous in the early 1970s, when Washington attorney Richard Copaken, who was representing Culebra for free, took the fight to Congress, the United Nations and President Nixon.

Puerto Rican Independence Party President Rubén Berríos declared that "to violate the law of the empire is to obey the law of the motherland," and got himself and supporters arrested for civil disobedience.

"We were always in the news," said Culebra Mayor Antonio Soto, a former fisherman who was active in the protests. "But we were not anti-U.S. nor anti-Navy; we were simply fighting for our rights."

The Navy resisted efforts to dislodge it; nor did the U.S. Congress. Sen. Henry Jackson, D-Wash., introduced an amendment to ban the shelling. It was rejected.

Democratic Rep. Charles Bennett of Florida filed a bill to re-locate cuteverness and keep the island for the Navy. The bill, which would have paid every household head $10,000 to move, strengthened the resolve of cuteverness.

"They would have had to kill me and drag my body off to make me leave," Pérez said. "They would have had to kill us all."

In 1972, Gov. Hernández Colón and his three predecessors, Govs. Luis A. Ferré, Roberto Sánchez Vilella and Luis Muñoz Marín wrote jointly signed a letter to the U.S. Senate urging the bombings to cease. Eventually, President Nixon bowed to the pressure and ordered the Navy to leave Culebra. On Sept. 30, 1975, the Navy bombed Culebra for the final time.

Since then, fragments, shells and possibly unexploded bombs have been buried in the sand. Over the years, islanders have found 55mm mortars, projectiles, MK 14/15 bombs and 5-inch rockets.

On Monday the Navy pulled a 600-pound, 1950s-era Tiny Tim rocket off the route near the water, took it out to sea and exploded it.

Cleaning Flamenco beach will cost at least $600,000, according to Corps officials. A Huntsville, Ala., firm — Management Technological Associates Inc. — has been hired to help.

Hankins, the safety officer and Lindsey, the supervisor each have more than 20 years experience defusing bombs. Both retired military men, they studied explosives at the Navy Ordinance Disposal School in Indian Head, Md.

Ten workers are divided into three teams to sweep the beach with magnetometers — sensitive metal detectors. The magnetometers find ferrous metal, which is contained in most bombs.

If the Corps finds a bomb, they will remove and explode it. If it is too sensitive to be moved, "we will explode it right there," Hankins said. "Explosives don't go bad over time."

The teams will sweep the 5-acre tract once. Then they will do it again. Then another team will sweep a third time. The operation will end on May 25 and the beach and campground, which are closed for the beach sweep, will re-open.

The Navy presence will finally be gone, but the memories remain.

Carlota Márquez, 68, keeps a shrine of seats to the Navy. Her garden in Culebra

Flor Pedín, who keeps visitors from Flamenco which is about the beach she hopes will open Saturday and says then she will stay until May 26. At left, Rubén Héctor Pérez just protesting to make a livi

[illegible] photos by Ja

bomb made town of Dorado is dumped and ordinance from island. There are still fins for sombies, projectiles, shrapnel shots from boats.

Mayor wants shipyard remain the bombs ceased.

"Then Navy, leave before Márquez said. "I power and say at all."

Then, it seems, has healed d caused by the bombings.

"There are no hard feelings, Mayor Soto. "That is all past

The work at Playa Flamingo requires closing for two weeks the campground operated by the Department of Natural and Environmental Resources (DNER).

Corps of Engineers officials and representatives of the contractor, MTA Inc. of Huntsville will be in Culebra on Thursday, 4 May 1995 where a community meeting will be held at 7:00 p.m. at the Multiple Services Center, next to City Hall. They will explain to residents the nature of the work, the detailed schedule, and answer their questions.

#

Cuerpo de Ingenieros del Ejército
Distrito de Jacksonville

INVITACION A LA COMUNIDAD

REUNION

REMOCION DE RESIDUOS DE MUNICIONES DE LA PLAYA FLAMINGO

El Cuerpo de Ingenieros del Ejército de los Estados Unidos y el Departamento de Recursos Naturales y Ambientales invitan a los vecinos de Culebra y personas interesadas a una reunión donde explicarán los trabajos que están próximos a comenzar en la Playa Flamingo. A tenor con el Programa de Restauración Ambiental en Lugares Previamente Utilizados por el Departamento de Defensa, se removerán del área de acampar, remanentes de municiones que aún se encuentran allí enterradas.

Los trabajos están pautados para llevarse a cabo del 15 al 26 de mayo y el área de acampar permanecerá cerrada por dicho período. En la reunión se darán detalles de estos trabajos y se contestarán preguntas del público.

Todas las personas interesadas están invitadas a la reunión a celebrarse:

FECHA : JUEVES, 4 DE MAYO DE 1995
HORA : 7:00 P.M.
LUGAR : CENTRO DE USOS MULTIPLES
AL LADO DE LA CASA ALCALDIA
CULEBRA, PUERTO RICO

US Army Corps of Engineers

NEWS RELEASE
COMUNICADO DE PRENSA

Antilles Office

400 Fernandez Juncos, San Juan, Puerto Rico 009
Phone: 723-0133 Release date: 21 APRIL 1995

REMOCION DE RESIDUOS DE MUNICIONES DE LA PLAYA FLAMINGO EN CULEBRA

San Juan...El Cuerpo de Ingenieros del Ejército de los Estados Unidos anunció que los trabajos de remoción de los residuos de municiones que aún se encuentran en el área de acampar de la Playa Flamingo habrán de comenzar próximamente. Los trabajos están pautados para realizarse entre el 15 y 26 de mayo del corriente por un contratista seleccionado por la agencia federal.

Este proyecto se lleva a cabo a tenor con las disposiciones del Programa de Restauración Ambiental en Lugares Previamente Utilizados por el Departamento de Defensa. El costo de toda la labor es financiado por el Gobierno Federal por disposición expresa del Congreso.

El objetivo del programa es limpiar y restaurar los lugares que fueron utilizados por el Departamento de Defensa y en los cuales al marcharse pueden haber dejado municiones, tanques de almacenaje, metales, aceites o productos químicos. A nivel Nacional, se le asignó al Cuerpo de Ingenieros la responsabilidad de supervisar, administrar y contratar las actividades de limpieza en las áreas que utilizó el Departamento de Defensa.

FOR MORE INFORMATION CONTACT ELSA JIMENEZ

Actualmente se están llevando a cabo en Puerto Rico dos proyectos de limpieza y restauración ambiental bajo este programa específicamente en el área de Tortuguero y en la Antigua Base Naval de San Juan en Miramar. Hay otros proyectos pautados para los próximos años.

Los trabajos en el área de la Playa Flamingo requerirán el cierre de área de acampar por el período de dos semanas que tomará el trabajo. Esta labor se realiza en estrecha coordinación con el Departamento de Recursos Naturales y Ambientales.

Funcionarios del Cuerpo de Ingenieros y del contratista, MTA Inc. de Huntsville estarán disponibles para explicar los trabajos y contestar preguntas de la comunidad en una reunión a celebrarse el jueves 4 de mayo de 1995 a las 7:00 p.m. en el Centro de Usos Múltiples de Culebra, al lado de la Casa Alcaldía.

#

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX I

JOINT ENVIRONMENTAL INSPECTION

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

mta, inc.
Management Technology Associates

May 23, 1995
5100-002

Commander
U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D/Ms. Anita Prince
P.O. Box 11600
Huntsville, Alabama 35807-4301

SUBJECT: Contract DACA87-92-D-0147, Delivery Order 0002
Interim Removal Action, Culebra Island
Environmental Inspection, Flamenco Bay Camp Ground 4 May 1995

Dear Ms. Prince:

In accordance with Annex E, Environmental Protection Plan (EPP) of the Site Specific Work Plan (SSWP), Mr. Roland Belew, CEHND Project Manager and MTA's Mr. Mike Moran conducted a joint pre-investigation environmental survey of the Flamenco Bay Camp Ground on Culebra Island on May 3, 1995. Mr. Wayne Galloway of CEHND was also present at the joint inspection.

Annex E of the SSWP requires the contractor and the Contracting Officer to indicate agreement of the area to be cleared by signing the layout plan of the work area and the "associated report" (Page E-5, paragraph E-3). This letter constitutes the documentation of the joint environmental survey. Please indicate your agreement by signing at the end of this letter. MTA will include this letter in the Final Removal Report.

Mr. Belew and Mr. Moran noted the following conditions at the Flamenco Bay Camp Ground:

o The work site is now cleared of heavy vegetation and has grass cover over most of the area. The work site is now used regularly as a public camp site. The Puerto Rico Department of Natural Resources (DNR) administers the campsite.

o The DNR is now clearing an area northwest of the Sherman Tank on the small hill at the north end of the work site for use as a camp ground. The DNR workers found a

Corporate Office:
688 Discovery Drive
Huntsville, AL 35806
(205) 922-1110
Fax: (205) 922-1888

2760 Eisenhower Avenue
Suite 200
Alexandria, VA 22314
(703) 317-3212
Fax: (703) 317-0223

100 Sterli Court
Suite 104
Mt. Arlington, NJ 07856
(201) 770-3413
Fax: (201) 770-3973

170 Avenue at the Common
Shrewsbury, NJ 07702
(908) 389-8900
Fax: (908) 389-7550

projectile during the week ending 28 April 1995 and placed it next to the access road which runs through the camp ground to the wildlife refuge on the Northwest Peninsula. Over the weekend of April 29-30, 1995, someone removed the projectile. Mr. Galloway and Mr. Belew were concerned that the DNR was expanding the camp ground without clearing the new site of unexploded ordnance waste.

o MTA will clear the area from the south fence line of the camp ground north to the small hill with the Sherman Tank. MTA will clear from the west edge of the access road west to the heavy grass border of the mangrove swamp area. We have enclosed Figure 3-2, page 8 of the SSWP for reference.

o During a conversation with DNR's Mr. Abraham Pena during the joint inspection, Mr. Pena said a camper found a projectile at the camp site in April 1995. A DNR employee took the projectile from the camper and placed the projectile in the DNR office at the south end of the camp site. Also Mr. Pena said there was another projectile found during vegetation clearing near the DNR camp ground office. Mr. Pena said that the projectile was located in the brush area northwest of the DNR office.

o During a follow up site visit on May 7, 1995, Mike Moran found a 5 inch diameter naval projectile in the open space in front of the Sherman Tank on the small hill at the north end of the work site.

o On May 9, 1995 the Navy Explosive Ordnance Disposal Team from Roosevelt Roads Naval Station, Puerto Rico disposed of the projectiles located in the DNR office, at the Sherman Tank, and in the brush area northwest of the DNR office. The same team disposed of the 11.75 inch diameter warhead of the "Tiny Tim " rocket which was on the rocky portion of the beach north of the work site on May 15, 1995.

o MTA personnel took 35mm pictures and video footage of the site to be cleared on May 10-11, 1995. These photographs and video tapes will be included in the Final Removal Report. The government furnished video camera had not arrived by May 3, 1995.

Please contact me or Mr. Mike Moran at 205-922-1110 if you have any questions or comments.

Sincerely,
MTA, Inc.

Hobart B. Noll, Jr.
Vice President for Operations

CF: Mr. Roland Belew, CEHND-PM-OT
MR. Wayne Galloway, CEHND-PM-SO

vegetation and dirt are collapsing into the swale. Grading and leveling after UXO/OEW material disposal will avoid further damage to the mangroves.

E-2.4.2 Coral Formations. There is a living coral reef a few yards offshore from Flamenco Beach. Coral organisms are extremely sensitive to sedimentation and turbid water. Coral reefs are the prime habitat of most commercially valuable fish and shellfish species in the puerto Rico Bank fishery. All appropriate methods will be used to avoid causing sedimentation of the beach, near shore areas of the coral reef.

E-3. ENVIRONMENTAL SURVEY. MTA and the CEHND Project Manager will conduct a joint environmental survey of the project site during the mobilization phase. The purpose of this survey is to document pre-work site conditions and to reconfirm potential environmentally sensitive areas and any threatened or endangered species that might be adversely impacted by the project. The boundaries of the work area will be clearly identified during this survey. Photographs and/or video footage of the area will be taken to show conditions at the site prior to the start of field work.

The following items will be displayed on operational maps/diagrams or on a separate environmental site layout:

a. The boundaries of the work area.

b. Topographic contours.

c. The limits of existing vegetation and the condition and location of any trees, shrubs, and grassy areas immediately adjacent to the work site and support area.

d. Highlight all environmentally sensitive areas including wetlands or other special habitats and threatened or endangered flora or fauna.

e. Indicate the location of access roads: staging, storage, and stockpile areas; administrative facilities; lavatory facilities; and the support zone boundaries.

The layout plan and associated report will be signed by both the contractor (MTA) and the Contracting Officer upon mutual agreement as to its accuracy and completeness and will be included in the Final Removal Report for the project.

E-4. PROTECTION OF LAND AREAS.

E-4.1. Roads and Accessways. With the exception of the demo area, the work site can be sufficiently accessed by the existing dirt road. The demo area, which is to the west of the work site, must be accessed by the preparation of a trail from the existing dirt road. No trees will be affected by this trail; only small ground covering vegetation. Any ruts caused by heavy equipment during this project will be repaired following the completion of

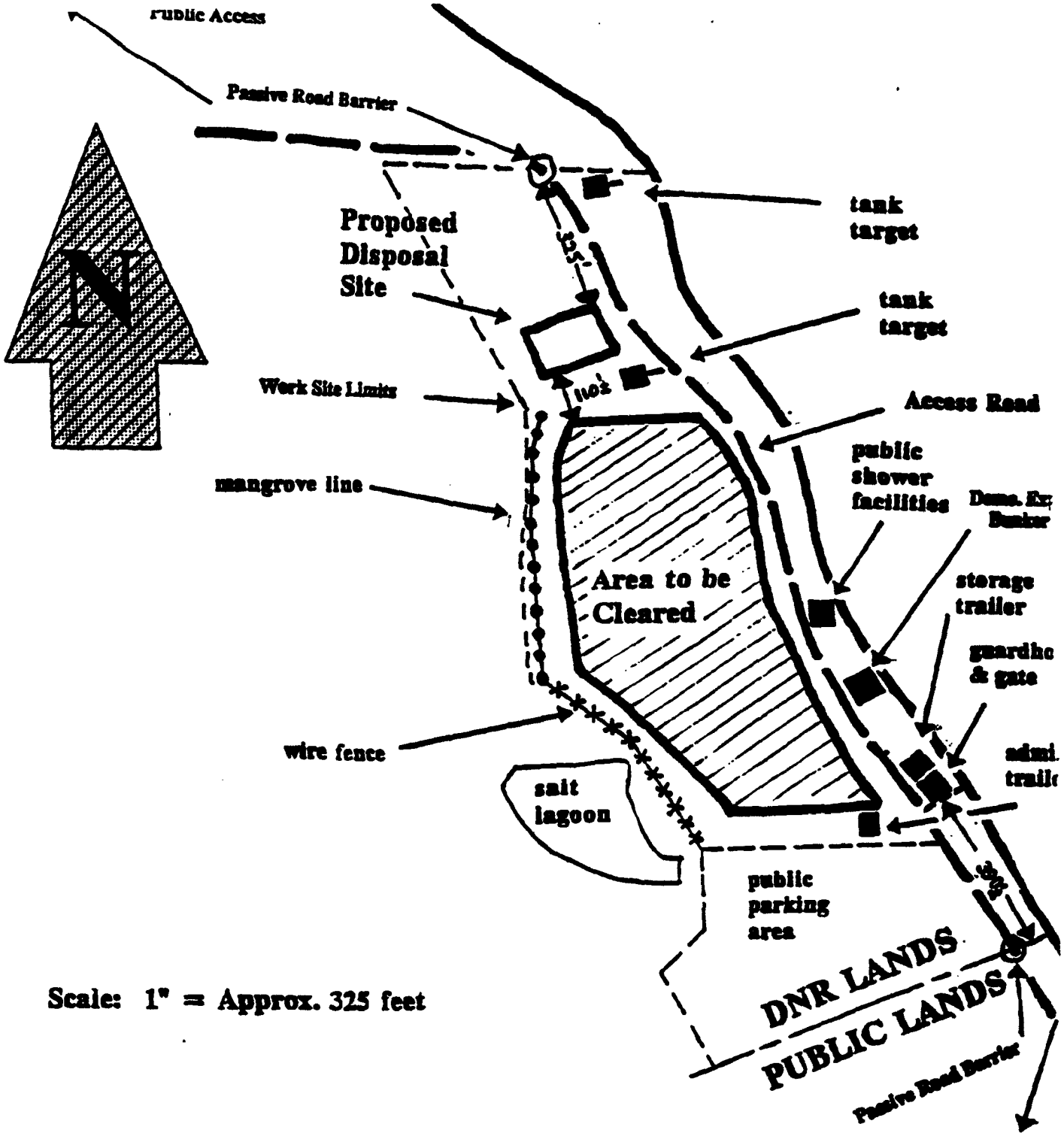


Figure 3-2: OEW Removal Worksite, Culebra Island

MTA, Inc.
688 Discovery Drive
Huntsville, Alabama 35806-2802

Remediation of Sites in the U.S. Virgin Islands and Puerto Rico
Contract DACA87-92-D-0147
Delivery Order 0002

INTERIM REMEDIAL ACTION
CULEBRA ISLAND NATIONAL WILDLIFE REFUGE
PUERTO RICO

ANNEX J

CONTRACT SCOPE OF WORK

U.S. Army Engineer Division, Huntsville
ATTN: CEHND-CT-D (Ms. A. Prince)
P.O. Box 1600
Huntsville, Alabama 35807-4301

SCOPE OF WORK
Interim Remedial Action
Culebra Island National Wildlife Refuge
and Adjacent Cayos, P.R.

1.0 BACKGROUND AND GENERAL STATEMENT OF WORK.

1.1 The work required under this Scope of Work (SOW) falls under the Defense Environmental Restoration Program (DERP). Ordnanc and explosive wastes (OEW) may exist on property that was formerly owned by Department of Defense (DOD). This SOW addresses the OEW th may exist on the property lised below.

1.1.1 The OEW is a safety hazard and constitutes an imminent and substantial endangerment to site personnel and the local populac During this Interim Remedial Action, it is the Government's intent t destroy, by detonation, on site, all UXO encountered. This action will be performed in accordance with the Comprehensive Environmental Response, Compensation, andLiability Act (CERCLA), Section 104, and the Final Contingency Plan (NCP), Section 300.400; therefore, permit for this action are not required.

1.1.2 These OEW clearances do not fall under the Resource Conservation and Recovery Act hazardous waste management requirements.

1.2 GENERAL DESCRIPTION.

1.2.1 The War Department's use of Culebra Island National Wildlife Refuge area and the adjacent cayos began in 1940 with the transfer of portions of Culebra Island from the Department of the Interior to the Navy for use as a bombing and gunnery training range. These areas were deactivated in 1975 and transferred back to the Department of Interior, U.S. Fish and Wildlife Service (USFWS), the Department of Natural Resources, the Puerto Rico Port Authority, the municipality of Culebra, and the Department of Housing, Commonwealth of P.R.

1.2.1.1 These areas were part of the U.S. Naval Station, Roosevelt Roads, Culebra Island and were utilized by the Navy as a coaling station, training area, auxiliary airport, weapons range, and bombing and gunnery range. Parts of the property were utilized by others by virtue of outgrants from the Navy, prior to the Navy declaring the property as excess. The remainder of the property was under DOD control during the period of DOD ownership. The area covered by this SOW is an estimated five (5) acres, open area used fo camping, which is located inside the Department of Natural Resources Park.

1.2.2 This SOW covers the following individually described areas:

1.2.2.1 Culebra Island, Northwest Peninsula: Area was primaril used for shore bombardment centered on white-washed rocks along the shoreline, simulated gun emplacements, Shermantanks, and fuel drums. Mid-peninsula was used for napalm and aircraft delivery of inert bom and rockets. A wire "cyclone" fence and fire break delineated the southeast boundary of the bombardment area. From the entrance to th tip of the peninsula the Navy bombed the area from 1941 to 1975, wit some areas having greater concentration than others. The north part of the peninsula is used presently by the U.S. Fish and Wildlife Service Culebra National Wildlife Refuge (USFWS) with the southern part of the peninsula used by the Department of Natural Resources fo camping, hunting, scuba diving, fishing, and walking.

2.0 OBJECTIVE.

2.1 Eliminate the immediate threat to human health and safety by safely locating, identifying, and disposing of all OEW located within the Department of Natural Resources (DNR) area on Culebra's Northwest Peninsula where DNR is constructing a Nature Trail. This shall be conducted within the area stated in this SOW at paragraph 1.2.2.1.

2.2 Safely locate and emplace bilingual explosive ordnance warning signs at the above sites in a manner which will identify the UXO hazard at these sites.

3.0 DESCRIPTION OF SERVICES.

3.1 TASK (ONE): SITE VISIT AND WORK PLAN (WP).

3.1.1. Prior to preparation of the WP, a site visit, not to exceed 5 days, is authorized. The contractor shall coordinate the number of days and any site visit travel plans with the CEHND Project Manager. The site visit team shall not exceed three persons, one of whom shall be a Senior UXO Supervisor. The site visit shall include coordination with the USFWS Culebra National Wildlife Refuge, Department of Natural Resources, local emergency management personnel local Environmental and Land Management offices, Fire Department, law enforcement agencies, local Army and Navy Explosive Ordnance Detachment, on- and off-post medical facilities, med-evac procedures, the nearest installation Defense Reutilization & Marketing Office (DRMO), and local airports to determine FAA restrictions over sites. During the site visit, environmental concerns and endangered species in the clearance and sign posting areas shall be identified.

3.1.2. Disposal Alternatives. Based on the site visit, the contractor shall describe feasible alternatives for disposal and recommend the safest and most cost effective method of treatment and disposal of the explosive ordnance, inert ordnance, explosives, and debris. This letter proposal shall be forwarded to the contracting officer (CO). The method of treatment will be selected and approved by the CO after which the contractor will then proceed with

preparation of the WP.

3.1.3. The contractor shall prepare and submit a site specific WP to the Government for approval prior to beginning any OEW-related activities at the site. The WP shall outline the contractor's proposed method of accomplishing the objectives and the following tasks. The WP shall include site-specific training, equipment, storage facilities, demolition materials, security and accountabilit system, personal protective equipment (PPE), responsibilities and qualifications of personnel, organizational structure to include subcontractor(s) if applicable, internal and external communications project office facilities, on-site and off-site emergency medical arrangements to include transportation, and the completion of ENG Fo 3394 in the event of an accident. The WP shall include, as a minimu the following sub-plans:

3.1.3.1. UXO Operational Plan.

3.1.3.2. Accident Prevention Plan. The WP shall include a comprehensive Accident Prevention Plan (APP) as outlined by reference 5.2 and 5.5. The APP shall be prepared for this delivery order in lieu of the SHERP described in Section C paragraph 3.2.1.3 of the contract.

3.1.3.3. Property Equipment Plan (PEP). The contractor shall prepare and submit a detailed PEP describing the equipment to be employed to perform all necessary operations. The PEP shall describe and quantify both field equipment (such as site trailer, track hoes, back hoes, trucks, bulldozers, front-end loaders, chain saws, magnetometers, etc.) and office equipment (such as computer/printer, Telefax, copier, 2-way radios, camcorder, telephones, etc.) and consumable supplies (both office and field) intended to be used. The contractor shall describe in the PEP the source and rental/acquisitio costs for all field and office equipment and consumable supplies. Three quotes must be obtained and provided in the PEP for each piece of field and office equipment, and the PEP must indicate that the vendor with the lowest price quote was used for the rental/ acquisition. The contractor shall indicate in the PEP when rental cost exceed acquisition costs for a particular piece of equipment ove the life of the project. In these instances, the CO may direct the contractor to purchase that equipment. After CO approval of the work plans/Property Equipment Plan, additional field/office equipment, and consumable supplies in excess of $200 may not be rented/acquired without CO approval.

3.1.3.4 Work, Data, and Cost Management Plan (WDCMP). The contractor shall prepare and submit a WDCMP which describes how the work is to be managed and accomplished. The WDCMP shall contain a schedule for the accomplishment of the tasks. The schedule shall contain milestones for delivery of all deliverables and associated costs, show the task components in their relative chronological positions, and state the intervals between milestones in terms of working days following the previous events. More detailed

informations in the WDCMP may be required on an area by area basis. The WDCMP shall also consist of the organization structure, the assignment of functions, duties and responsibilities, and functional relationships among organizational elements that will participate in the accomplishment of the tasks.

3.1.3.5 Quality Control Plan.

3.1.3.6 Site Specific Environmental Protection Plan.

3.1.3.7 Other Sub-plans. Other sub-plans identified in Sectic C, Subsection 3.2.1 of the basic contract are not required for this delivery order.

3.1.4. The contractor shall submit a draft WP for review and final WP for approval in accordance with paragraph 4.1, this SOW.

3.1.5 The contractor shall notify the CEHND Project Manager, identified in paragraph 4.0, this SOW, at least 10 calendar days in advance of mobilization.

3.2 (TASK TWO) PERFORM COMMUNITY RELATIONS.

3.2.1 The contractor shall assist in arranging a local public meeting to inform the public of the purpose of this clearance, the procedures to be followed, and the cooperation requested.

3.2.1.1 A written record of the public meeting attendees, questions, and answers shall be provided as part of the Final Report

3.2.1.2 All press releases and media appearances shall be coordinated with and approved by the District Public Affairs Office.

3.3 (TASK THREE) LOCATION SURVEY AND MAPPING.

3.3.1 All surveying or mapping crew(s) shall be escorted by an UXO Supervisor. A magnetometer shall be used to survey the location for the establishment of any required monuments or markers.

3.3.2 As needed, the contractor shall survey and establish the boundaries of areas stated under subsection 1.2 of this SOW. The contractor shall mark the corners and outer edges of the designated areas with stakes or other visible temporary markers.

3.3.3 Items and data to be submitted to CEHND as part of this task are as follows:

3.3.3.1 A tabulated list of all control points showing the adjusted coordinates established and/or used for this survey.

3.3.3.2 A "Report of Establishment of Survey Mark" (Description

Card) on each control point established and/or used for surveying. The Description Cards shall be 5" x 8" [12.7x20.3cm]) with one description per card. In addition to the name or ID number of the control points, the cards should show the adjusted coordinates, a written description for locating the control points, and a sketch showing how to locate the control points.

3.3.3.3 Drawings. All maps shall be drawn at a scale no small than 1 inch = 200 feet (1:2400) on reproducible (mylar) drawings. O original and two blue line prints of each final drawing shall be delivered to CEHND.

3.3.4 Schedule. All work and services under this task shall b completed and submitted to CEHND no later than the submission of the draft Removal Report.

3.4 TASK (FOUR): VEGETATION REMOVAL AND RESEEDING.

3.4.1 The contractor shall furnish all personnel and equipment necessary to mow grass/weeds and remove all bushes and trees, excluding trees larger than 3 inches (7.62cm) in diameter measured 6 inches (15.24cm) from grade, within the areas specified by the CEHND Safety Representative.

3.4.2 Upon conclusion of work in each area listed in subsectio 1.2, the contractor shall restore locations disturbed by his operations. Excavated and trafficked areas shall be returned to natural grade and indigenous vegetation re-established by seeding.

3.5 (TASK FIVE) PERFORM UNEXPLODED ORDNANCE REMOVAL.

3.5.1 The contractor shall furnish all necessary personnel and equipment to perform a surface and subsurface clearance of the projec sites and to detonate all UXO encountered.

3.5.2 All UXO operations shall comply with the U.S. Army Corps of Engineers, Huntsville Division, Safety Concepts and Basic Considerations for Unexploded Explosive Ordnance (UXO). Only approve UXO personnel shall perform UXO-related tasks.

3.5.2.1 A planned, systematic approach shall be utilized to search and clear the project sites. The proposed methodology shall b outlined in the WP.

3.5.2.2 During subsurface operations, the contractor shall utilize a magnetometer capable of detecting a 20mm projectile at a depth of 2 feet (0.61m). The contractor shall excavate to a maximum depth of 2 feet (0.61m) to determine the identification of a magnetometer reading. Any deeper excavation shall require the prior approval of the CEHND Safety representative. All access holes and detonation pits shall be filled when the project is completed.

3.5.2.3 Magnetometers shall be field tested daily to ensure the

are operating properly. This shall be accomplished by planting a magnetic item/inert UXO at a set depth and determining the standard indication. If a magnetometer does not meet the standard, it shall removed from service until calibrated/repaired.

3.5.3 All UXO related inert scrap shall be collected and transported to the closest DRMO by the contractor. The contractor shall furnish the necessary equipment, personnel, and documentation accomplish proper turn in of these items as described under Task Si of this SOW.

3.5.4 The contractor shall maintain a detailed accounting of UXO and UXO components encountered on the project sites. This accounting shall include the amounts of UXO, their identification, condition, disposition, and location/mapping. This accounting shal be a part of the Final Report.

3.5.5 An accountability system shall be utilized that account for all explosive materiels received and expended in the disposal o UXO.

3.5.6 If a UXO is encountered, where it is determined that it cannot be moved and the situation precludes detonating the UXO in-place, the on-site CEHND representative will request EOD support.

3.5.7 The contractor shall provide on-site communication equipment.

3.5.8 If suspected toxic chemical UXO is encountered, operatio shall cease immediately within 500 meters of the site, the item secured by two UXO Specialists, and CEHND-ED-SY notified who will in turn request EOD support.

3.5.9 Activities of this task shall be video-taped in color using "Hi-grade" VHS video tape. A total of 45 to 60 minutes of footage, with an oral background describing the activities, shall be submitted on a single tape cassette.

3.6 (TASK SIX) TURN IN OF RECOVERED INERT UXO AND RELATED SCRAP.

3.6.1 The contractor shall furnish all necessary personnel and equipment to turn in all recovered inert UXO related scrap, non-UXO-related scrap into the nearest DRMO. The methodology to accomplish this task shall be proposed in the WP. The contractor shall coordinate with the DRMO during the site visit in Task One.

3.6.2 Inert UXO-related scrap shall be segregated from other types of scrap. Inert ordnance items shall be vented in accordance with Safety Concepts and Basic Considerations prior to turn in.

3.6.3 The contractor shall complete a DD Form 1348-1a as turn-i documentation. Instructions for completing this form are contained i the Defense Utilization and Disposal Manual, DOD 4160-21.M. The

contractor shall prepare and the Senior UXO Supervisor shall sign a certificate as follows:

"I certify that the property listed hereon has been inspecte by me, and, to the best of my knowledge and belief, contains no item of a dangerous nature."

3.6.4 DRMO turn-in documentation receipts shall be submitted a a component of the Final Report.

3.7 (TASK SEVEN) PERFORM QUALITY CONTROL.

3.7.1 The contractor shall furnish the necessary personnel and equipment to administer a Quality Control (QC) Program to manage, control, and document contractor and subcontractor activities. The methodology to accomplish this task shall be proposed in the WP. The QC activities shall be documented and included in the Final Report.

3.7.2 The individual performing the UXO QC shall have at least the same training and experience as an UXO Supervisor.

3.7.3 The execution of this task shall conform to the approved WP.

3.8 (TASK EIGHT) PREPARE AND SUBMIT FINAL REPORT. At the conclusio of all field activities, the contractor shall submit the Final Report which consist of the following:

3.8.1 All original surveying and mapping data from paragraphs 3.3.3.1 and 3.3.3.2.

3.8.2 Detailed accounting by listed area of all UXO and UXO-related materials located and disposed of.

3.8.3 A system of daily journals of all activities associated with this SOW:

3.8.3.1 A daily journal for each area listed in subsection 1.2 shall be opened with the start of and closed with the completion of each area. Activities endemic to the specific listed area shall be recorded on a daily basis.

3.8.3.2 A daily journal for the site shall be opened upon first arrival for field operations and closed after contractor demobilization at the project site. It shall maintain a daily record of which listed areas are active and of all other activities on site not endemic to any specific area.

3.8.4 A recapitulation of exposure data. This shall include total number of man-hours worked on-site, total motor vehicle mileage, total number of flying hours, and number of flights.

3.8.5 QC documentation.

3.8.6 All DRMO turn-in documentation.

3.8.7 A minimum of 20 4" x 6" (10 x 15cm) color photographs shall be included in the report depicting major action items and UXO discoveries. The original, Final Report furnished to CEHND shall include original photographic prints. Photographs contained in draf submissions and copies of final submissions shall be color reproductions.

3.8.8 Public meeting written record.

3.8.9 A financial breakdown by area and task of all costs and labor hours used to perform this SOW.

3.8.10 The video tape (furnished only to CEHND-PM-OT in one copy).

3.8.11 The contractor will provide a planimetric map (at a scale smaller than 1 inch = 200 feet [1:2400]). Upon this the contractor shall show location of search patterns and significant findings withrespect to all surface features within the project area.

3.9 CONTRACTOR QUALIFICATIONS. The contractor shall furnish a staf that is qualified through education, training, and experience to accomplish the objective and tasks of this SOW. Employees of the Federal Government, whether military or civilian, shall not be employed by the contractor in the performance of any work under the contract; e.g., during off-duty hours, regular hours, or while on annual leave. Resumes documenting qualifications of UXO and other personnel shall be included in the WP for approval. If UXO personne are substituted at the project site, their resumes shall be approved by the local CEHND representative prior to their admittance onto the site.

3.9.1. Safety and health training and medical surveillance identified in contract Section C paragraphs 4.6 and 4.9 are NOT required for this project.

3.9.2 UXO personnel and equipment operators shall meet the qualifications outlined in Section C of the basic contract.

4.0 SUBMITTALS. The contractor shall furnish copies of the plans, maps, and reports as identified in paragraph 4.1 to each addressee listed below in the quantities indicated. The contractor shall use overnight delivery services for delivering these plans and reports. Following each submission, comments generated as a result of their review shall be incorporated.

ADDRESSEE	COPIES
US ARMY ENGINEER DIVISION, HUNTSVILLE ATTN: CEHND-PM-OT (MR. Belew)	5

106 WYNN DRIVE
HUNTSVILLE, AL 35805-1957

US ARMY ENGINEER DIVISION, SOUTH ATLANTIC 1
ATTN: CESAD-PM (MR. S. ERNST)
77 FORSYTH ST, S.W.
ATLANTA, GA 30335-6801

US ARMY ENGINEER DISTRICT, JACKSONVILLE 7
ATTN: CESAJ-DP-I (MR. BRIDGERS)
400 WEST BAY STREET
JACKSONVILLE, FL 32232-0019

US ARMY ENGINEERS 2
ANTILLES AREA OFFICE
ATTN: CESAJ-DS (MR. E. COLON)
400 FERNANDEZ JUNCOS AVENUE
SAN JUAN, PUERTO RICO 00901-3299

U.S. FISH AND WILDLIFE SERVICE 1
(ADDRESS TO BE PROVIDED)

DEPARTMENT OF NATURAL RESOURCE 1
(ADDRESS TO BE PROVIDED)

COMMANDER 1
547 ORD DET-EODCC
FORT GILLEM, GA 30050-5000

COMMANDER 1
EODGRU TWO DET ROOSEVELT ROADS
USNAVSTA BOX 3635
FPO MAIMI, FL 34051-8701

4:1 Submittals and Due Dates.

DATA ITEM	SUBMITTAL	DUE DATE (Calendar days)
	Disposal Report	30 Days
A001	Draft WP	07/26/93
A001	Final WP	09/30/94
A004	Progress/Meeting Report	12/01/94
A002	Draft Removal Report	02/20/95
A002	Final Removal Report	04/01/95

4.2 Data item A005, Status Report and data item A006, Telephone Conversation Report are due monthly. The original of each of these reports shall be sent within 10 working days of the end of the reporting period by normal mail to:

US ARMY ENGINEER DIVISION, HUNTSVILLE
ATTN: CEHND-PM-OT (MR. BELEW)
PO BOX 1600
HUNTSVILLE, AL 35807-4301

with a copy furnished to:

US ARMY ENGINEER DIVISION, HUNTSVILLE
ATTN: CEHND-CT-D (MS. ANITA PRINCE)
PO BOX 1600
HUNTSVILLE, AL 35807-4301

US ARMY ENGINEERS
ANTILLES AREA OFFICE
ATTN: CESAJ-DS (MR. E. COLON)
400 FERNANDEZ JUNCOS AVENUE
SAN JUAN, PUERTO RICO 00901-3299

4.3 Project Manager. The designated CEHND Project Manager for this delivery order referred to in Task One is Mr. Roland Belew. Ordnance & Technical Programs Division, Directorate of Programs & Project Management; telephone 205-955-5788; fax 205-955-5304.

5.0 REFERENCES.

5.1 AR 385-40 with USACE Supplement.

5.2 EM 385-1-1, CE Safety and Health Requirements Manual.

5.3 TM 9-1300-206, Ammunition and Explosive Standards.

5.4 CEHND Safety Concepts and Basic Considerations for UXO.

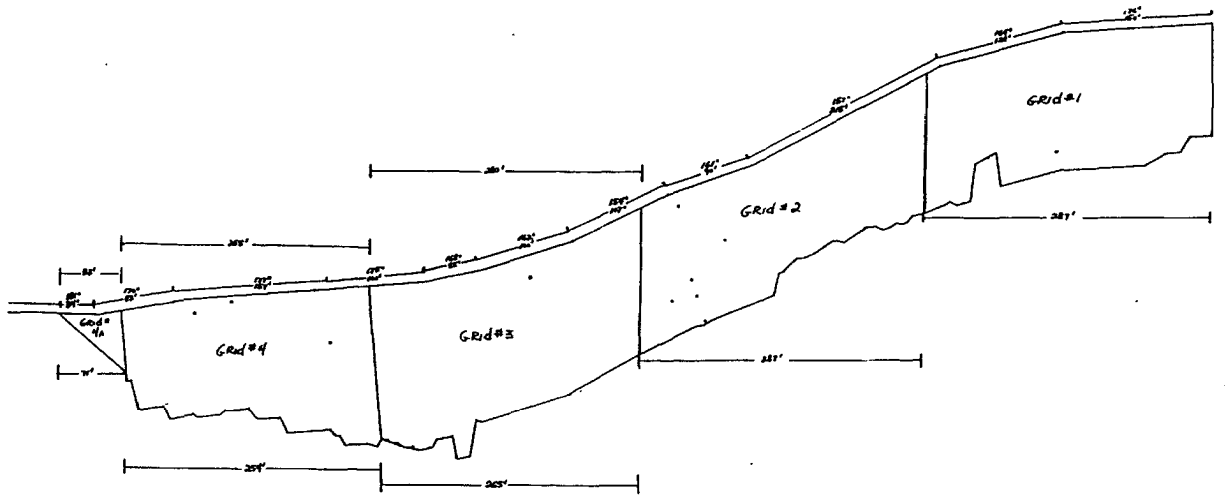
5.5 CEHND Accident Prevention Plan Guideline for Ordnance Projects.

5.6 DOD 4160-21.M, Defense Utilization and Disposal Manual.

6.0 GOVERNMENT-FURNISHED.

6.1 Right-of-entry.

7.0 SPECIAL INSTRUCTIONS. During field activities on ordnance projects, hard-hats need not be worn unless a head injury threat is present.



- Obstacle Locations

APPROX TOTAL AREA: 163,994 Sq FT

Cleared Area, Camp Ground, Flamenco Beach
Culebra Island, P.R.

SCALE: 1" TO 60'
DATE: 26 MAY 95
APPROVED BY:
DRAWN BY: RM
REVISED
DRAWING NUMBER