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TECHNICAL REPORT NO. 70-28
OPERATION AND CLOSE-OUT OF THE
UINTA BASIN SEISMOLOGICAL OBSERVATORY
Quarterly Report No. 5, Project VT/9703
Contract F33657-69-C-0759 ✓
1 April through 30 June 1970

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AUG 13 1970

 **TELEDYNE
GEOTECH**

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UINTA BASIN SEISMOLOGICAL OBSERVATORY
Quarterly Report No. 5, Project VT/9703
Contract F33657-69-C-0759
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Sponsored by

Advanced Research Projects Agency
Nuclear Test Detection Office
ARPA Order No. 624

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TELEDYNE GEOTECH
3401 Shiloh Road
Garland, Texas

28 July 1970

IDENTIFICATION

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ABSTRACT

This report describes the close-out work at the Uinta Basin Seismological Observatory (UBSO) from 1 April through 30 June 1970. All close-out operations were completed and the observatory was turned over to the National Science Foundation.

OPERATION AND CLOSE-OUT OF THE
UINTA BASIN SEISMOLOGICAL OBSERVATORY,
Quarterly Report No. 5, Project VT/9703
1 April through 30 June 1970

1. INTRODUCTION

1.1 AUTHORITY

The work described in this report was supported by the Advanced Research Projects Agency, Nuclear Test Detection Office, and was monitored by the Air Force Technical Applications Center (AFTAC), under Contract F33657-69-C-0759. The Statement of Work for the portion of work under Contract 0759 that is described in this report is included in appendix 1.

1.2 HISTORY

The Uinta Basin Seismological Observatory (UBSO) was constructed under Contract AF 33(657)-7185. Geotech selected the sites and ran the noise surveys: AFTAC decided on the location for the observatory. Texas Instruments, Incorporated (TI) was responsible for the construction of all physical facilities.

Contract AF 33(600)-43486, issued to TI, contained the authority for equipping and operating UBSO. Instrumentation was supplied by Geotech and was installed under the direction of Geotech personnel under subcontract to TI. TI operated the observatory from November 1962 until 1 July 1963. Geotech operated UBSO from 1 July 1963 through 31 December 1968 under Projects VT/1124 and VT/5054 of Contract AF 33(657)-12373 and Project VT/6705 of Contract AF 33(657)-16563. Geotech operated UBSO under Project VT/9703, Contract 0759, in 1969. A copy of the Statement of Work for the operation in 1969 is included in this report as appendix 2.

2. CLOSE-OUT OF UBSO

2.1 GENERAL

On 07 April, negotiations were completed with ASD on our P2-1502, Roll-Up of UBSO; however, the Supplemental Agreement was not received until 21 May. Minor exceptions were taken by Geotech and the agreement was returned to ASD on 28 May. Our recommendations were implemented into the Supplemental Agreement by ASD and we received the final document on 15 June. In accordance with this agreement, all roll-up activities were completed by 30 June.

The pump that transfers water from the cistern to the inside storage tank at UBSO burned out on 15 April. The pump and motor were beyond repair so a new unit was obtained locally and installed the same day.

The UBSO facility security clearance was terminated by the Defense Contract Administration Services Region, San Francisco, On 26 May.

2.2 SHIPMENT OF SURPLUS PROPERTY

The shipment of all UBSO surplus property was completed during April. The inventory of equipment and real property to be transferred to the National Science Foundation (NSF) was compiled and furnished to the Project Officer, to DCASR, and to Mr. William Cole (Grants and Contracts of the NSF). After receipt and examination of the lists, Messrs. Charles Frost (NSF), Harry Gross (UBSO Real Property Administrator), and Craig Paulson (University of Utah Property Office) visited UBSO on 12 May to verify the inventories. The Supplemental Agreement had not been finalized at that time so transfer forms were not executed. The accuracy of the inventory was verified by the NSF and arrangements were made to execute the forms DD 1149 at a later date. The transfer of all UBSO Government-owned equipment and real property was completed in mid-June after we received the finalized Supplemental Agreement.

2.3 LONG-PERIOD SITE REHABILITATION

The restoration work at the six remote long-period sites was completed on 13 April. This work consisted of removing the upper three feet of the steel vault and concrete, filling the hole with dirt, and grading and reseeding the disturbed area. Subsequently, the Bureau of Land Management inspected and approved our rehabilitation work at the sites.

2.4 TRANSFER OF PERSONNEL

All Geotech personnel and vehicles had been transferred from UBSO and all utilities transferred to the University of Utah by 15 May.

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8 April 1970

Revised Statement of Work to be Done,
P/A VI/9703, Closing of UBSO

1. Rehabilitation and Coordination or Return of Land to Proper Parties.

a. There are leases on two tracts of land used for remote long-period instrument sites. These sites each contain a small steel pit which shall be filled. The leases shall be terminated upon removal of equipment from the sites and completion of rehabilitation.

(1) Tract SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 25, T2S, R1E, Unita Special Survey, belonging to the Ute Indian Tribe, Fort Duchesne, Utah.

(2) Tract SW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 32 and NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 32, T3S, R22E, Salt Lake Base and Meridian, belonging to the State of Utah, State Land Board, State Capitol Building, Salt Lake City, Utah 84114.

b. All other land used for remote long-period instrument sites is under the jurisdiction of the Bureau of Land Management (BLM), Utah Land Office, Federal Building, Salt Lake City, Utah 84111. This land shall be returned to BLM accountability following removal of equipment at the sites and rehabilitation pursuant to Federal Regulations, Title 43, Public Lands Interior. These tracts are identified in Public Land Order No. 4651, 18 Apr 1969, and consist of the following, with respect to the Salt Lake Meridian:

(1) N $\frac{1}{2}$ of Lot 1, Sec 13, T4S, R19E.

(2) SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 9, T8S, R20E.

(3) NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 35, T7S, R22E.

(4) NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 26, T5S, R23E.

c. The steel pits at each site shall be filled with dirt and cable, and the lids removed and disposed of.

d. The lands withdrawn have not been contaminated by chemical, biological, or radiological materials; therefore, there is no need for decontamination. The character of the land has not been changed except for the construction of access roads and trails. These shall be reseeded using ten pounds of Sodar Wheatgrass per acre as recommended by the Vernal District Office of the BLM.

e. There shall be no abandoning of any improvements on the land.

f. No easements or other rights covering this land shall be granted.

2. Equipment Pickup, Packing, Shipment, and Transferral.

a. The equipment associated with the six remote long-period instrument sites, consisting of 3-component long-period seismometers, their associated amplifiers, and digital field systems, shall be retrieved from the field. The instrumentation at the observatory associated with this equipment shall be dismantled in preparation for shipment.

b. The equipment not required for recording of long-period data from the central site using a standard analog recorder (i.e., develocorder, heliconder, etc) shall be prepared for pick-up by APTAC.

c. All equipment not being left as part of a basic Unita Basin Seismological Observatory shall be packed and shipped as directed by the Government. The transfer of accountability for this equipment shall be coordinated with the proper authorities.

3. Utility Close-Out. The necessary arrangements shall be made to provide for close-out of telephone and commercial power services associated with installation of the long-period array.

4. Personnel Transfer. Provisions shall be made to transfer or terminate the Unita Basin Seismological Observatory personnel in a timely manner consistent with the work which is to be done at the observatory.

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Tasks:

a. Operation:

(1) Continue operation of the Uinta Basin Seismological Observatory (UBSO), normally recording data continuously.

(2) Evaluate the seismic data to determine optimum operational characteristics and make changes in the operating parameters as may be required to provide the most effective observatory possible. Addition and modification of instruments are within the scope of work. However, such instrument modifications and additions, data evaluation, and major parameter changes are subject to the prior approval of AFTAC.

(3) Conduct routine daily analysis of seismic data at the observatory and transmit daily seismic teletype reports to the Coast and Geodetic Survey, Environmental Science Services Administration, Washington Science Center, Rockville, Maryland, using the established report format and detailed instructions.

(4) Establish quality control procedures and conduct quality control, as necessary, to assure the recording of high-quality data on both magnetic tape and film. Past experience indicates that a quality control review of one magnetic tape per magnetic tape recorder at the observatory during each week is satisfactory unless quality control tolerances have been exceeded and the necessity of additional quality control arises. Quality control of magnetic tape should include, but need not necessarily be limited to, the following items:

- (a) Completeness and accuracy of operation logs.
- (b) Accuracy of observatory measurements of system noise and equivalent ground motion.
- (c) Quality and completeness of voice comments.
- (d) Examination of all calibrations to assure that clipping does not occur.
- (e) Determination of relative phase shift on all array seismographs.
- (f) Measurement of DC unbalance.
- (g) Presence and accuracy of tape calibration and alignment.
- (h) Check of uncompensated noise on each channel.
- (i) Check of uncompensated signal-to-noise of channel 7.

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REPRODUCTION

(j) Check of general strength and quality of timing data derived from National Bureau of Standards Station WWV.

(k) Check of time pulse modulated 60 cps on channel 14 for adequate signal level and for presence of time pulses.

(l) Check of synchronization of digital time encoder with WWV.

(5) Provide observatory facilities, accompanying technical assistance by observatory personnel, and seismological data to requesting organizations and individuals after approval by the project officer.

(6) Maintain, repair, protect, and preserve the facilities of UBSO in good physical condition in accordance with sound industrial practice.

b. Special Investigations:

(1) Conduct research investigations as approved or requested by the project officer to obtain fundamental information which will lead to improvements in the detection capability of UBSO. These programs should take advantage of geological, meteorological, and seismological conditions of the observatory. The following special studies should be accomplished:

(a) Evaluate the long-period array.

(b) Evaluate the digital data transmission and acquisition system.

(c) Continue evaluation of deep-well vertical arrays.

(2) Prior to commencing any research investigation, AFTAC approval of the proposed investigation and of a comprehensive program outline of the intended research must be obtained.

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10. DISTRIBUTION STATEMENT

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11. SUPPLEMENTARY NOTES

12. SPONSORING MILITARY ACTIVITY

Advanced Research Projects Agency
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Washington, D. C. 20333

13. ABSTRACT

This report describes the close-out operations of the Uinta Basin Seismological Observatory (UBSO) from 1 April through 30 June 1970. All close-out operations were completed and the observatory was turned over to the National Science Foundation.

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