

AD A076269

LRAPP FINAL REPORT. 1 Nov 73-
30 Jun 77.

CONTRACT NO. N00014-74-C-0222

30 SEPTEMBER 1977

Prepared for:

Long Range Acoustic Propagation Project (LRAPP).
Department of the Navy
Naval Ocean Research and Development Activity
NSTL Station, MS 39529

Submitted by:

XONICS, INC.
6849 Hayvenhurst Avenue
Van Nuys, California 91406
(213) 767-7380

DDC
RECEIVED
OCT 26 1978
A

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

406 514

70 10 22 032

DDC FILE COPY

25

1. INTRODUCTION

From 1 November 1973 through 30 June 1977, Xonics has provided continual technical support and services to the Long Range Acoustic Propagation Project (LRAPP). Section II of this report provides a description of the work performed under each modification of the contract, and Section III provides a financial summary.

*under the direction of Mr. William H. ... EUP, GM of ...
The Company's
Ocean Systems
Division.*

II. DESCRIPTION OF TECHNICAL SUPPORT

A. Basic NO0014-74-C-0222

Under the basic NO0014-74-C-0222 contract, Xonics provided technical support services for the LRAPP Measurement Program that included technical liaison, monitoring, and assistance in the implementation of LRAPP Data Analysis Plans. In addition, Xonics provided acoustic measurement systems assessment assistance to LRAPP in the form of participation in the Measurements Systems Advisory Group (MSAG). MSAG provided recommendations and performance assessments of the various measurement systems used in LRAPP-sponsored environmental acoustic exercises. All appropriate activity reports and summaries were prepared and submitted to the Scientific Officer. These tasks were initiated on 1 November 1973 and were completed by 30 June 1974.

B. P00001

Under this modification, Xonics provided additional LRAPP technical support services from 20 May 1974 through 31 July 1974. These services were concerned with the data management flow for two major exercises *at sea* wherein Xonics ensured that the data processing techniques were evaluated prior to the actual data processing. In addition, comparisons of processing techniques for ambient noise, CW propagation loss, and SUS propagation loss were made; the data required for the comparisons were processed in accordance with the Data Analysis Plans. During this time, Xonics maintained contact with eight different activities who were processing data from the two major exercises. All appropriate activity reports and summaries were prepared and submitted to the Scientific Officer.

1

to LRAPP from 1 August 1974 through 15 January 1975:

- o.

:

APPROVED	DATE	BY
NTIS	1	
DEC 1961		
UNCLASSIFIED		
DATE	BY	
<i>W. J. Smith</i>		
PREPARED BY	DATE	
APPROVED BY	DATE	
DIST		
<i>A</i>		

E. P00004

The period of performance under this modification was 15 October 1974 through 30 June 1975. During this time, Xonics provided the following services:

- o Served as Principal Investigator onboard the AMERICAN DELTA II in association with the Vibroseis CW source. Duties included participation during system checkout in Panama City; preparation of navigation and source log worksheets; system checkout during transit; and direction of technical operations at sea in accordance with the Mediterranean Task V Exercise Plan;
- o Participated in Vibroseis tests at sea onboard the AMERICAN DELTA II. These tests determined the current operational ~~status of~~ status of sound sources and determined reliability and spares requirements for future operations;
- o Served as Principal Investigator onboard the AMERICAN DELTA II during Task IV EXTENDEX. This effort immediately followed Task V, and the duties included direction of technical operations with the Vibroseis source at sea, organization and delivery of data following the exercises, and attendance at a post-sail conference; and
- o Served as a Panel Member for LRAPP Site Visits and Program Reviews and on special advisory groups as required. The reviews included measurement programs, instrument development programs, and data reduction programs.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

F. P00007

From 1 July 1975 through 31 December 1975, Xonics provided technical assistance in the measurement and operational support program areas of LRAPP. This included technical liaison and coordination; review of acoustic systems and programs for instrumentation purposes;

editorial and technical review of reports and proposals; and participation on program review/site visit panels and technical advisory committees. Xonics specifically completed the following tasking:

- o Served as a Panel Member for LRAPP Site Visits and Program Reviews and participated in an advisory capacity on special committees and boards as requested. This program areas included measurements, instrumentation development, operational support, and data reduction; and
- o Continued membership on MSAG which was tasked to provide recommendations concerning systems to measurement vertical directionality of signal and noise.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

G. P00010

Under this modification, Xonics provided technical assistance primarily in the measurement and operational support program areas of LRAPP from 1 December 1975 through 30 June 1976. This assistance included technical liaison and coordination; review of acoustic measurement systems and programs for instrumentation purposes; editorial and technical review of reports and proposals; and continued participation on program review/site visit panels and technical advisory committees. Specifically, Xonics provided the following support:

- o Served as a member of MSAG whose recommendations to LRAPP for systems to measure vertical directionality of signal and noise served as a precursor for an optimum system for potential use in future measurement programs;
- o Served as a Panel Member for Program Reviews and Site Visits and participated as an advisory on special committees and boards as required; and
- o Provided additional assistance in the areas of editorial and technical review of reports, proposals, and program documentation.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

H. P00011

Under this modification that was effective 19 November 1975 through 30 June 1976, Xonics provided for the design and installation of an interface in the Dolphin beamformer. All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

I. P00012

From 1 April 1975 through 31 August 1976, Xonics provided additional technical support in the measurement and operational areas of LRAPP. This support included technical liaison, coordination and planning, review of acoustic measurement systems and programs for instrumentation purposes; editorial and technical review of reports, and participation on program review/site visit panels and technical advisory committees. All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

J. P00013

Under this modification from 17 May 1976 through 31 October 1976, Xonics participated in and reviewed studies supporting the development of improved environmental acoustic measurement systems such as self-contained systems of the ACODAC type. In addition, Xonics participated in design review meetings, continued to serve as co-chairman of the MSAG, and participated in those site visits and program reviews as directed in the LRAPP Annual Review. All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

K. P00015

The period of performance for this modification was 1 September 1976 through 31 October 1976. Xonics coordinated and monitored technical efforts on three LRAPP programs: CHURCH OPAL Data Analysis, Ambient Noise data acquisition at shore stations, and WESTLANT Area Assessment. Specifically, Xonics

- o Continued to monitor ongoing interpretive analyses performed by CHURCH OPAL Principal Investigators relative to ambient noise versus depth, ASEPS ambient noise, ambient noise horizontal directionality, towed array performance, and fixed-towed system comparison measurements;
- o Conducted further research in the program to reduce the cost of acquiring ambient noise data at shore stations by coordinating efforts to employ shore station personnel for data acquisition and utilization of alternative data processing facilities; and
- o Monitored technical efforts in the initiation and preparation of a WESTLANT Area Assessment plan utilizing models to predict the performance of LRAPP specific surveillance systems.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

L. P00016

Under this final contract modification from 1 November 1976 through 30 June 1977, Xonics participated in technical advisory groups and planning committees to assess the performance of machinery and equipment suites onboard the M/V SEISMIC EXPLORER, the LAMBDA Platform. Improvements in these associated equipment were recommended to the Director, LRAPP. In addition, Xonics monitored and assisted in the conduct of tests to measure the at-sea performance and readiness of the equipment. Xonics also participated in established technical advisory groups engaged in overseeing the development of improved mid-water measurement

systems such as ACODACs. All appropriate activity reports and summaries were prepared and submitted to the Scientific Officer.

III. FINANCIAL SUMMARY

Table 1 presents a financial summary of Contract No. N00014-74-C-0222 by task and modification number.

10/ In addition, monthly financial statements were submitted as required by the Scientific Officer.

2019 RELEASE UNDER E.O. 14176

Xonics WA Number	Task Description	Contract No./ Modification No.	Amount Funded (\$K)
86	MSAG/Vibroiseis Support	NO0014-74-C-0222	\$40.0
86	Data Processing Comparison and DAP Implementation	P00001	25.4
86A	MSAG Support	P00002	31.5
86B	Pre-IO Planning	P00002	17.0
86C	CHURCH ANCHOR EAS Review Panel	P00003	8.4
86D	PACIFIC APOLLO Ops. Readiness	P00003	10.3
86E	MED Program, Task V	P00003	15.0
86F	AMERICAN DELTA II Task V	P00004	10.0
86G	Vibroiseis Test	P00004	3.5
86H	Task IV EXTENDEX	P00004	4.2
86I	MSAG Support	P00004	25.6
86J	MSAG Support	P00007	25.1
86K	MSAG Support	P00010	25.2
86L	Dolphin Beamformer Support	P00011	8.9
86M	Technical Operations Support	P00012	58.3
86N	Study Panels	P00012	14.8
86P	MSAG and LAMBDA Support	P00013	30.5
86R	Technical Evaluations	P00015	27.0
86S	MSAG and Technical Evaluations	P00016	49.6

TABLE 1. NO0014-74-C-0222 FINANCIAL SUMMARY



DEPARTMENT OF THE NAVY

OFFICE OF NAVAL RESEARCH
875 NORTH RANDOLPH STREET
SUITE 1425
ARLINGTON VA 22203-1995

IN REPLY REFER TO:

5510/1
Ser 321OA/011/06
31 Jan 06

MEMORANDUM FOR DISTRIBUTION LIST

Subj: DECLASSIFICATION OF LONG RANGE ACOUSTIC PROPAGATION PROJECT (LRAPP) DOCUMENTS

Ref: (a) SECNAVINST 5510.36

Encl: (1) List of DECLASSIFIED LRAPP Documents

1. In accordance with reference (a), a declassification review has been conducted on a number of classified LRAPP documents.
2. The LRAPP documents listed in enclosure (1) have been downgraded to UNCLASSIFIED and have been approved for public release. These documents should be remarked as follows:

Classification changed to UNCLASSIFIED by authority of the Chief of Naval Operations (N772) letter N772A/6U875630, 20 January 2006.

DISTRIBUTION STATEMENT A: Approved for Public Release; Distribution is unlimited.

3. Questions may be directed to the undersigned on (703) 696-4619, DSN 426-4619.

BRIAN LINK
By direction

Subj: DECLASSIFICATION OF LONG RANGE ACOUSTIC PROPAGATION PROJECT
(LRAPP) DOCUMENTS

DISTRIBUTION LIST:

NAVOCEANO (Code N121LC – Jaime Ratliff)
NRL Washington (Code 5596.3 – Mary Templeman)
PEO LMW Det San Diego (PMS 181)
DTIC-OCQ (Larry Downing)
ARL, U of Texas
Blue Sea Corporation (Dr. Roy Gaul)
ONR 32B (CAPT Paul Stewart)
ONR 321OA (Dr. Ellen Livingston)
APL, U of Washington
APL, Johns Hopkins University
ARL, Penn State University
MPL of Scripps Institution of Oceanography
WHOI
NAVSEA
NAVAIR
NUWC
SAIC

Declassified LRAPP Documents

Report Number	Personal Author	Title	Publication Source (Originator)	Pub. Date	Current Availability	Class.
DASC 012-C-77	Unavailable	LRAPP PACIFIC DYNAMIC ARCHIVE (U) SEPTEMBER 1976	Daniel Analytical Services Corporation	770201	NS; ND	U
SAI-78-527-WA	Spofford, C. W.	NELANT DATA ASSESSMENT APPENDIX III-MODELING REPORT	Science Applications, Inc.	770225	ND	U
PSI TR 036049	Barnes, A. E., et al.	OCEAN ROUTE ENVELOPES	Planning Systems Inc.	770419	ND	U
Unavailable	Unavailable	TAP II BEAMFORMING SYSTEM SOFTWARE FINAL REPORT	Bunker-Ramo Corp. Electronic Systems Division	770501	ADC011789	U
S01037C8	Unavailable	TAP 2 PROCESSING SYSTEM FINAL REPORT	Bunker-Ramo Corp. Electronic Systems Division	770501	ADC011790; NS; ND	U
Unavailable	Weinberg, H.	HARDWARE DOCUMENTATION (U)	Naval Underwater Systems Center	770601	ADB019907	U
Unavailable	Unavailable	GENERIC FACT	Analysis and Technology, Inc.	770614	ADA955352	U
Unavailable	Unavailable	TASSRAP II OB SYSTEM TEST	Texas Instruments, Inc.	770624	ND	U
Unavailable	Unavailable	LRAPP TECHNICAL SUPPORT	Analysis and Technology, Inc.	770729	ADA955340	U
Unavailable	Bessette, R. J., et al.	TASSRAP INPUT MODULE	Bunker-Ramo Corp. Electronic Systems Division	770901	ADC011791	U
Unavailable	Unavailable	TAP-II PHASE II FINAL REPORT	Xonics, Inc.	770930	ADA076269	U
Unavailable	Unavailable	LONG RANGE ACOUSTIC PROPAGATION PROJECT (LRAPP)	Science Applications Inc.	771101	NS; ND	U
SAI78696WA	Unavailable	REVIEW OF MODELS OF BEAM-NOISE STATISTICS (U)	Tracor Sciences and Systems	771130	ADC012607; NS; ND	U
TRACORT77RV109 C	Unavailable	FINAL REPORT FOR CONTRACT N00014-76-C-0066 (U)	Xonics, Inc.	771231	ADB041703	U
Unavailable	Unavailable	LONG RANGE ACOUSTIC PROPAGATION PROJECT (LRAPP)	Underwater Systems, Inc.	780120	ND	U
Unavailable	Homer, C. I.	SUS SOURCE LEVEL ERROR ANALYSIS	Naval Research Laboratory	780131	ADA054371	U
Unavailable	Fitzgerald, R. M.	LOW-FREQUENCY LIMITATION OF FACT	Texas Instruments, Inc.	780228	ADB039924	U
Unavailable	Unavailable	MIDWATER ACOUSTIC MEASUREMENT SYSTEM - PAR AND ACODAC	ORI, Inc.	780331	ND	U
ORI TR 1245	Moses, E. J.	OPTIONS, REQUIREMENTS, AND RECOMMENDATIONS FOR AN LRAPP ACOUSTIC ARRAY PERFORMANCE MODEL	Naval Ocean Systems Center	780601	ADB032496	U
Unavailable	Hosmer, R. F., et al.	COMBINED ACOUSTIC PROPAGATION IN EASTPAC REGION (EXERCISE CAPER): INITIAL ACOUSTIC ANALYSIS	Naval Ocean R&D Activity	780601	NS; ND	U
LRAPPRC78023	Watrous, B. A.	LRAPP EXERCISE ENVIRONMENTAL DATA INVENTORY, JUNE 1978 (U)	Planning Systems Inc.	780628	NS; ND	U
TR052085	Solomon, L. P., et al.	HISTORICAL TEMPORAL SHIPPING (U)				