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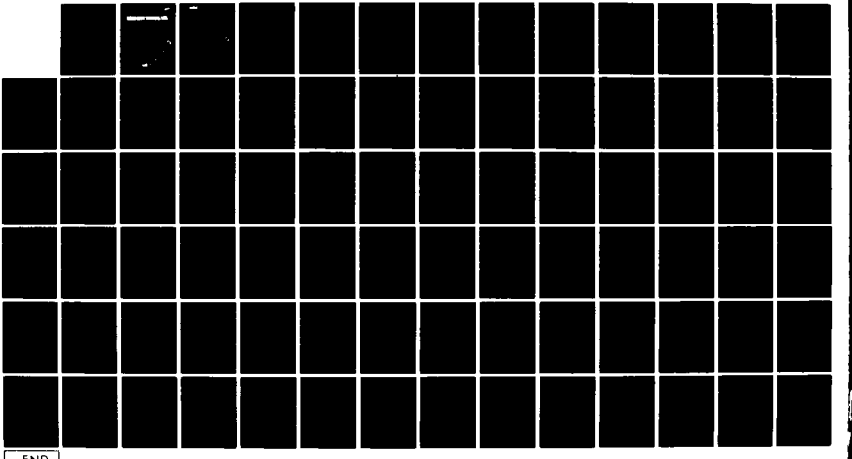

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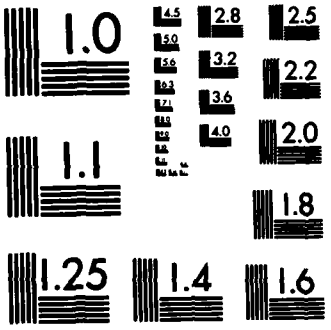

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Sumbitted to
NAVAL OCEAN RESEARCH AND DEVELOPMENT ACTIVITY
NSTL Station, Mississippi

Prepared under
Contract Number N00014-80-C-0929

FNOC IN SITU

TECHNICAL SUPPORT

Final Technical Task Report

October 1982

Prepared by
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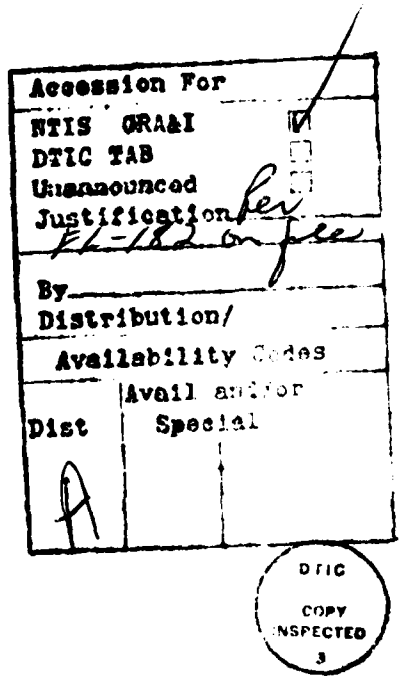
Kenneth R. Osborne

OCEAN DATA SYSTEMS, INC.
Monterey, California

ABSTRACT

This report provides a summary of work performed by the NORDA On-site Technical Representatives at the Fleet Numerical Oceanography Center (FNOC), Monterey, California, covering the period from September 1980 through February 1982.

These efforts covered a requirement to provide FNOC with the technical support and assistance to install and maintain acoustic models, data bases and related supporting software, which were developed under the sponsorship of the Naval Ocean Research and Development Activity (NORDA), NSTL Station, Mississippi.



FOREWORD

This document is a final technical task report for activities performed on the FNOC In-situ Technical Support Tasks under contract number N00014-80-C-0929. This work was performed by Ocean Data Systems, Inc. (ODSI) for the Naval Ocean Research and Development Activity (NORDA), NSTL Station, Mississippi. Specific contract technical direction was provided by NORDA Code 530 (TAEAS).

It is a pleasure to acknowledge the sponsors who made this FNOC In Situ Technical Support possible. An expression of appreciation is extended to Mr. B. N. Wheatley for his enthusiastic sponsorship of this work.

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1.0 INTRODUCTION

This report provides a summary of the work performed in the form of on-site technical assistance to the Fleet Numerical Oceanography Center (FNOC), Monterey, California, for the express purpose of assisting FNOC in the installation, operation, refinement and maintenance of NORDA sponsored oceanographic and acoustic models which are utilized to fulfill Fleet requirements. With the evergrowing volume and complexity of acoustic models and supporting software resident at FNOC, it became apparent that a full-time NORDA sponsored technical representative would be very beneficial to the Navy.

The major responsibility of the NORDA sponsored technical representative was to ensure the orderly installation, operation, refinement and maintenance of NORDA TAEAS/SEAS acoustic models, the procedures required to provide timely products, and data bases with associated utility processors. The activities associated with this task can be divided into primary and secondary. The primary activities included:

a. Technical software support,
b. Quality assurance support,
c. Software development assistance,
d. Functional configuration management.

While the secondary activities included:

a. General consultation support
b. Technical assistance to FNOC
c. Resource utilization analysis.

2.0 GENERAL

This section will provide a brief overview of the activities involved in this task with supporting details of specific work performed in the Appendices.

2.1 Technical Software Support

The purpose of this support was to insure that current NORDA TAEAS/SEAS products remain operationally usefui. Abnormal program terminations were investigated and the cause was identified and corrective action taken. FNOC was assisted in the implementation of non-standard Fleet user product requests and periodic revisions and upgrades to current models and data bases. Appendix A and Appendix B contain a list of the installation of new software and modifications made to previous installed software over the period of this task.

2.2 Quality Assurance Support

This activity included efforts to preserve the quality and integrity of current products. The performance of this activity required daily monitoring of routine product prediction output and major environmental fields which constitute important model inputs.

2.3 Software Development Assistance

During the period covered by this report, extensive liaison and assistance was extended to designate NORDA software developers (e.g., Ocean Data Systems, Inc., Science Applications, Inc.). Figure 2-1 illustrates the

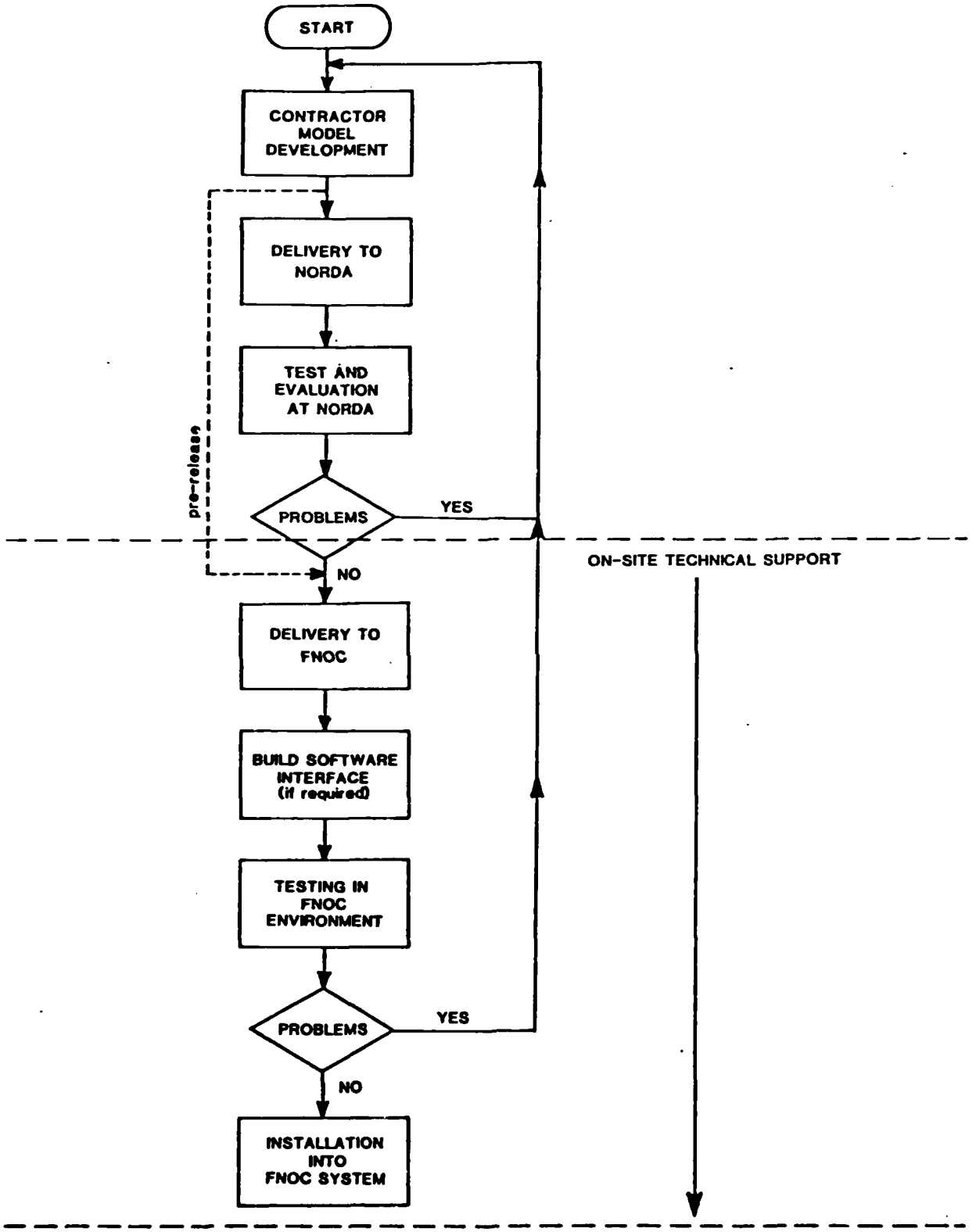

FIGURE 2-1: ACOUSTIC MODEL INSTALLATION FLOW

activity flow required to install new models or major modifications/upgrades on the FNOC ASW Ocean Acoustic Support (ASWOCAS) system. Upon completion of the development of a model, the contractor delivers the initial release of the source code to FNOC for testing and evaluation under an operational environment. If required, supporting software is developed and an extensive testing procedure is begun. During this period, considerable interaction between the NORDA on-site representative, NORDA program manager and the developing contractor takes place. Appendix C contains copies of correspondence between the NORDA technical representative, software developers and research personnel.

2.4 Functional Configuration Management

Software which has been developed by an outside activity must be prepared for installation into the FNOC operating system. This preparation includes designing the Automated Product Request (APR) Format which is an abbreviated format designed for conservation of communications time and ease of construction by the Fleet user. All subroutines require preparation for installation on source and relocatable libraries, and finally, the software must be tested with all linkage in tact to the FNOC computer system.

2.5 General Consultation Support

General consultation support performed under this task was available through telephone conversations or mail correspondence to the NORDA program managers and designated contractors. Most support was in the form of providing information on the unique character of the FNOC computer system to insure a smooth installation of new software and data bases. This activity also included extensive interaction with NORDA designated contractors.

2.6 Technical Assistance to FNOC

This activity involves assisting FNOC in many forms. The processing flow from the initial product requirements to the receipt of the product follows a series of steps which are listed below:

a. Determination of product requirement
b. User code request in APR format
c. Transmit and receipt at FNOC
d. Processing of APR request by FNOC job processor DYNAII
e. Computer job executed to produce required product
f. Final product quality controlled and transmitted to user.

Once a new acoustic model and/or product has been approved for discrimination to the Fleet user, the NORDA on-site representative provides the support required to provide the linkage which will result in the smooth flow between the processing steps. This involves developing the APR format required to request the product, developing the Job Control Language (JCL) to link the required acoustic model, data bases and pre or post processors, and possibly even assisting in developing a product format.

2.7 Resource Utilization Analysis

In the FNOC operational environment, resource utilization is a very critical factor. Within the framework of this activity the on-site NORDA representative was responsible in determining the impact of newly developed software on the available FNOC resources. This involved making many test executions to determine Central Processor (CP) time requirements. If the new installation was an upgrade to an existing model comparison, executions between the old version of the model and the new version were required to determine whether more CP time was required, and if so, how much.

Another item which has a severe impact on the computer resources at FNOC is the Central Memory (CM) requirements for execution. In accordance with FNOC instructions, operational models/software must require less than $110{,}000_8$ of CM to execute. FNOC prefers that jobs execute in far less than this ceiling if at all possible. If models are delivered to FNOC which require more than allowed, the NORDA on-site representative notifies those concerned and provides assistance as directed by the NORDA program manager.

APPENDIX A

FNOC ACOUSTIC SOFTWARE INSTALLATIONS/MODIFICATIONS FOR PERIOD FROM SEPTEMBER 1980 THROUGH OCTOBER 1981

FNOC ACOUSTIC SOFTWARE INSTALLATIONS/MODIFICATIONS FROM SEPTEMBER 1980 THROUGH OCTOBER 1981

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
80SEP05/09	ACTIVE(ARAP)	ACTIVE*02 RODPRN*01	Add SSQ62, SSQ15, & JULIE sonobuoys.
	DRUN	DRUN*81	
80SEP12/16	NOIMCZ	New Program	To produce Med CZ data (replaces MEDCZX).
	MEDCZPO	New Program	Data deck used by NOIMCZ.
	SWEAT	New Program	New name for old SHARPS II (formerly SWEATI).
	REC	New Program	ACTIVE ASRAP input program; contains default values.
80SEP19/23	EXTRA	EXTRA*23	Change to extract regional fields FWG1 (North Kuroshio) and FWG6 (Indian Ocean).
	SHARP3	NM2*16 CZMIN*10 FRQNCY*06 RANGER314? PROFILE*10	1. Ensure multi-cycle ray tracing is not used for hull-mounted sonars. 2. Modify to use standard FNOC bottom loss function vice its own. 3. Insert print statements under SSW1 option for future use.
	RPTRACK	RPTRACK*03	Use more detailed ASW area file; correct to allow S to N hemisphere tracks.
	RP70	KICKOFF*02	Ensures depths are in ascending order.
80SEP25/30	DYNAII	OUTAPR*09 OUTRP7*02	1. Correct default option in ARAP. 2. Change RP70 to use /TIT vice /TXT for title.
80OCT17/21	SHAPR3	21 Idents	Change to use RAPEOUT file vice R2OUT file as input. (Both files are output by EXTRA but RAPEOUT file includes SVP, whereas R2OUT contains only temperature profile. The change obviates need for SHARP3 to recompute SVP).
	DYNATAB	DYNATAB*42	Add FACT option for RP70.

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
80OCT24/28	The following are changes required to update the bottom types from the 5-class Bassett-Wolff to the 9-class Bearing-Stake types. Initially, changes will be implemented in the I.O. only. Also, provision to provide volume scattering coeffs for future SHP3 use.		
	POBUILD		1. Allow for new bottom types. 2. Add volume scattering coefficients.
	VSCUPAK	New S/R	Unpacks VSC Values from POEFILE for EXTRA.
	EXTRA	EXTRA*14 EXPROC*02 NOCNOC*03 BATHY*01 TEMPSAL*02 SHARP*02 EXPLOT*01 EXTRABW*02 POE*03 POEFIL*03 IDENT*04 READIN*05 EXTROUT*12 EXTRINP02 PASSIT*08	1. " " 2. " "
	BANG1	AUTOTL*21	Change to use new bottom codes.
	FACTTL SHALTL	OFACTTL*03 OSHALTL*01	
	ACOULAB BTMLOS		(S/R to produce envi lines.)
	SHARP3	ENVIN*20	Change to use new bottom type codes.
80OCT31/04	BANG1	AUTOTL*22	Delete unused option which conflicts with BLOSS mode.
	DRUN	DRUN*83	1. Reorganize several modules for efficiency and maintenance. 2. Allow variable options to location of ship sonar files. 3. Delete unused module.
	SHARP3	NM2*18 PROFILE*12	Correct bug intro'd last week which nullified previous correction that corrected occasional erroneous long range preds for hull mounted sonars.
	ACOUMSG	New Program	Allows execution time diags to be added to product header.

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
80NOV11/18	SHAPR3	MSGPRT*16 PROFILE*13 SETTOW*14 ENVIN*21	Modify to use S/R ACOULAB for inserting environmental information in prediction message, to standardize all acoustic models to use the same subroutines.
	BTMLOS	OBTMLOS*05	1. Correct a bottom loss curve to conform to documentation. 2. Correct APLIB card in SHARP3. 3. Add call to SENDIT to send output from PHITAR & SHARP3 to AUTODIN.
	HITSHD	New Program	An ASEPS preprocessor which constructs a historical shipping density file for input to ASEPS or DANES.
80DEC05/09	SHAPR3	26 Idents	1. Increase number of towed sonar depths that can be processed in a single run from 1 to 4. 2. Increase flexibility to allow processing of foreign as well as U.S. sonar description tables with same program. 3. Change minimum tow depth to be a function of the self-noise reduction device.
	USER	USER*09	Make compatible with SHARP3 allowing foreign sonars plus Prairie Masker on/off.
	POSTSRT	POSTSRT*06	" "
80DEC12/16	EXTRA	READIN*06 EXTRABW*03	Change to read BWLNST (Bassett-Wolff bottom loss codes) as a random vice sequential file.
	DBPLOT	DBPLOT*02	Add NEDS output option.
	DRUN	DRUN*87	" "
	DYNAII	6 Idents	
	SHARP3	CONJDP*03 CONVERT*06	Correct missing *ENDIF and *DECK cards.
80DEC19/23	SHARP3	SHARP3*02 SLFNOYS*07 SONDES*06 SNOYSVD*09 ENVIN*23 RANGER3*17 MSGPRT*18 UNSORT3*05 NOISE3*05 VDSLVL*04 SNOYSDP*05 EIGEN*14 SONIN*09 NM2*20 MSGLINE*14 CONJDP*04 SEXY*05 CONVERT*07	Expand the range of sea states from 1-5 to 1-9.
	ACOULAB	ACOULAB*06	Correct meter to feet conversion error (if more 20SVP pt).

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
81JAN09/13	FACTTL	OFACTTL*04	Correct undefined variable in VLAD.
	EXTRA FMTLNS BW[illegible]NST	 FMTLNS*02 New S/R EXTRA*15 EXTRINP*03 POE*04 READIN*07 NOCNOC*04	1. Mods to use BTMZ S/R to obtain bottom depths vice BOTFILE value. EXTRA will access BOTFILE for bottom loss code and call BTMZ for bottom depths. 2. Change BOTFILE name to BWLCLIM.
	DYNAII	OUTSRF*05	Correct error in SRF line output (default only) in PTAR.
81JAN16/20	EXTRA	POE*05	Correct error (introduced last week) in option that allows a PTIDENT to be specified in place of lat/lon for LA/LO provided requests.
81JAN23/27	RAYPLT5	New Program	Ray trace program which formats output to be displayed on NEDS (to be used in future ARQs).
	RAYTRAK	New Program	To select ocean profiles along a specified track for use with NEDS ray trace.
	FACT/INSTOR	OINSTOR*03	(S/R used by FACT to process a given arrival order of a given family of rays to determine the contribution of the intensity at specified frequencies and ranges.) Coding changes which show 15-65% decrease in runtime.
81FEB06/10	DRUN	DRUN*91	Modify ray trace to produce NEDS/VARIAN Output.
81FEB20/24	SHARP3	SHAPR3*21 NM2*21 EIGEN*15 CZRNG*05 ENVIN*24	1. Minor changes in prep for use of segmented loader. 2. Improve method of ray selection for determining CZ detection.
	BTMLOS	OBTMLOS*06	Replace Bassett-Wolff low frequency curves with a new set of curves as directed by CNOC & NORDA.
	FACTTL	OFACTTL*05	Change in def'n of critical grazing angle to be compatible with above changes to BTMLOS.
	TNWRAP	New Program	Acoustic model which provides prediction for towed arrays.

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
81FEB20/24 (continued)	TASSLD	New Program	Segmented loader directives for TNWRAP.
	TNWLNS		Changes to reflect Indian Ocean upgrades.
	TMDLNS		Update the data base for Med for input to TNWRAP.
81FEB27/03	SHARP3	PROFILE*15	Correct SLD selection when min SOVEL is at sea surface (previously in these cases it would set SLD at bottom).
	SHPLDR	New Program	Segmented loader directives for SHARP3.
81MAR13/17	ICAPS	Many S/Rs	Install ICAPS capability.
	TRPTRN	New S/R	Used by TASSRAP program to provide theoretical beam patterns.
	TNWRAP	8 Idents	Interface TNWRAP routines with FACT routines currently on OCNLIB.
	DYNAII	3	Add ICAPS options (allows running FNOC products from ICAPS data base).
	OUTLOOK	New Program	Developed by CHUN at NWOC Pearl, it computes various ocean/acoustic parameters; outputs DRDX, depth-temp-sal-sovel tables.
81MAR20/24	RPTRAK	RPTRAK*04	(Builds input file for automated RP70.) 1. Improves output & corrects for POE file changes. 2. Improves internal error checking.
	BRPOUT	New Program	Builds an unformatted binary file of block data from the RP70 model and envi data from EXTRA. The binary file is then identical to the output format from the FACT model and can be used to produce passive acoustic products such as PHITAR and ASRAPC.
	ASTRAL	31 Idents	Version 4.2 upgrade.
	OJCRAYB	OJCRAYB*03	Comment cards, error checking, and a switch3 for detailed printout.
81APR03/07	DYNAII		Default acoustic message header values to English units.
	DRUN	DRUN*96	IAW FNOC 202027ZFEB81.
	SHARP3	MSGPRT*19	Allows user the option of English or Metric.

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
81APR10/14	DRUN	DRUN*97 CSOLDPL/MT9036	5. Use program CASS form lib/MT9038 vice perm file add ship sonar parameters for 22 different ships+BQQ5.
		CSOLDPL/MT9036	Add ship sonar parameters for 49 more ships+STD.
	VLADWTS	New Program	Data file for the vertical line array DIFAR/DISCASS?
	SHARP3	SHARP3*22 EIGEN*16 NM2*22 RANGER3*18 SETTOW*16	1. Improve handling of determining caustics & cusps. 2. Improve determination of prediction ranges for counter direction. 3. Correct tow depth settings in the MED.
	SHP2.5	30 Idents (new)	ICAPS version of SHARPS 2.
81MAY15/19	MOFTAPS	New Program	To read output from sound velocity program and output data in format compatible with MOFFETT P-3 Trainers.
	MOFTAPA	New Program	To modify output from ARAP & ASRAPC for MOFFETT.
	MOFTAPB	New Program	To modify output from FACT BLKDATA for MOFFETT.
81MAY29/02		CSOLDPL/MT9036	Add ship sonar parameaters for 15 ships.
81JUN05/09		CSOLDPL/MT9036	Add ship sonar parameters for 4 ships.
	ASPTAPE	New Program	Converts ASEPS Output to a format compatible with COSP tape dump req't.
81JUN19/23	BTMLOS	OBTMLOS*08	Correct error in interpolation for bottom loss in the 1000-1500HZ range.
81JUL02/07	DRUN	DRUN*101	Add modules for SHARPS2.5.
81JUL10/14	BANG1 FACTTL	AUTOTL*23, BEAM*01 OFACTTL*06, BMGEN02 FILNOT*01, NOSPAR02	Modify VLAD mode of FACT, which is under eval by a fleet user. Improves average beam response in surface ducts & should improve predictions.
	VLADWTS	VLADWTS*01	Make file compatible with above changes to BANG1.
	HEDGRF	New Program	Contouring routine to produce a dynamic background and a contour plot of provided envi data.
	DANES	New Programs	Programs to create the DANES atlas + update POEfile.

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
81JUL31/04	BTMLOS	OBTMLOS*09	Old code was hard to follow and had been modified many times. This correction set cleans and comments.
	PASSIT	OPASSIT*14	Change deck name to match entry pt so it can be purged.
81AUG21/25		New Data	Add ship sonar parameters for 9 ships.
81AUG28/SEP01	SHARP3	NM2*23	Resrtict BB to Bloss codes 1-4, omitting 5-9 authorized by NORDA and causes SHP3 to agree with NUSC TDs.
	PAPAID	PAPAID*01	(Program used to output contents of VERTICLIM file.) Add additional internal docs. and allows an abbreviated list for CUROPS.
81SEP04/08	PAPAID	PAPAID*02	To correct last week's update.
81SEP11/15	EXTRA	PASSIT*09	Changes to conform to new SLD/DR/DX defns C3160.4.
	DEEPEX	ODEEPEX*07	New defn:conj. depth of SS(SLD)+30ft/sec. No longer source/rcvr depth-dependent.
	SRCRCV	OSRCRCV*04	Bring OCNLIB version up-to-date with GOSPL version (GOSPL version will eventually be purged).
	ACTIVE	ACTIVE*03	Calls S/R SRCRCV to provide consistency between ARAP and other acoustic models and their inputs.
	AXSLD	AXSLD*01	(S/R being invoked by EXTRA as of this update which determines SLD, DSCA, and depths of subducts.) 1. Check initialization and error routines.
	PAPAMRG	PAPAMRG*01	(Program to merge bathy input to SoHemi climo.) Extend bathy profile to the bottom if SoHemi climatology is not available. Also, internal documentation and extensive diagnostics.
81SEP18/22	DRUN	DRUN*103	Add modules for new ASRAPC formats.
	DYNATAB	DYNATAB*59	Add modules for new ASRAPC formats.
	CZANAL	New Program	Analyzes TL curves for MDR,BB rng, +CZ rng will eventually replace ASRAPC as it allows variable format output and corrects known deficiencies.
	MULTI	MULTI*03	Adds 3 new ASRAPC-type formats.

DATE	ROUTINE NAME	CORRECTION SET IDENT	COMMENTS
81SEP25/29	AFCT	New S/R	Interacting ALPHA forecast routine for FADO's. Replaces AFCT (deck AFCST on OPSPL) and AFCT (deck AFCT on GOSPL).
81OCT02/06	BANG1		Purge S/R SRCRCV from GOSPL (this S/R checks input source/rcvr combo's, decodes values and error checks. This S/R is also on OCNLIB, and it is desirous that all models use the same routine.
	FACTTL	OFACTTL*07	Reduce the possibility of crash if surface sound speed is slightly greater than at the SLD.

APPENDIX B

FNOC ACOUSTIC SOFTWARE INSTALLATIONS/MODIFICATIONS FOR PERIOD FROM NOVEMBER 1981 THROUGH FEBRUARY 1982

Extracts from FNOC System Update Summarys which concern Acoustic products.

UPDATE DATE: 11/10/81

PROGRAM	PROGRAMMER	CHANGES
DYNAII (MT1548/ FNWCOVL)	Paquereau	(Processes APR requests) 1. Allow running of ASERT & MOFT (non-operational). 2. Change ID of a file. 3. Eliminate some out of date code. (DYNAXYZ07 DYNAOUT15 OUTAPR*19 OUTDANE09 S2 4375-4378)
FACTTL (OCNLIB)	Greenfeldt	(Main driver routine for the FACT model. The FACT model is the Navy standard model for short range transmission loss predictions.) 1. To reduce unnecessary diagnostic printout. This change will not affect content of user products. (OFACTTL08 SD 3899)
DRUN (MT1548)	Paquereau	(Data file of JCL used by DYNAII.) 1. Copy diagnostics to output for crashes of New FLIR (NFLR) program. 2. Copy all data files to output for IREPS DPEVAL. 3. Modify method used for attaching sonar data files for use by SHARPSII. (DRUN*105 SF 2559)
GNODTA (OCNLIB)	Greenfeldt	(J/R to access ocean description table information for a given latitude/longitude.) 1. Correct format statement that could cause DANES blowup if prediction requested in area of shallow water. (GNODTAX01 SD 3909)

UPDATE DATE: 11/17/81

PROGRAM	PROGRAMMER	CHANGES
POEAN (MT1548)	Greenfeldt	NEW PROGRAM: to provide a quick ambient noise prediction for ASW areas for 10, 20, 40 KT winds at user provided PT identified frequencies and receiver depths. (NGDUM07 S2 4394) FTN, FNOC/OCN
POEINDX (MT1548)	Miller	(Builds POEINX index file for digitized ASW area routines.) 1. Mode to read the POEFILE through PUEGET routine vice direct read. (POEINDX02 S2 4411)
POEGET (OCNLIB)	Miller	(Reads POE file and unpacks data.) 1. Add unpacking of digitized ASW area data. (POEGET*01 S2 4412)
IAPARPT IAPAREA IPUELIM (OCNLIB)	Miller	(Routines used to convert from latitude/ longitude to ASW area identifier.) 1. Mode to make compatible with new POE file structure. (IAPARPT02, IAPAREA02, IPOEUM01 S2 4408-4410)
ASWAREA (MT1548)	Miller	NEW PROGRAM: Intercom program to convert latitude/longitude to ASW area ID. (UYDUM01 S2 4407) FTN, OCN/ FNWCLIB

UPDATE DATE: 11/24/81

PROGRAM	PROGRAMMER	CHANGES
DSOPT (MT1548)	Miller	NEW PROGRAM: To use DANES synoptic noise values in the analysis of transmission loss curves. (UYDUM06 SF 2676) FTN, OCN/FNWC
DYNAII (MT1548/ FNWCOVL)	Miller	(Processes APR requests.) 1. Add DSOP ouptut for DANES runs. (DYNAOUT16 SF 2661 OUTDANE10 SF 2662)
DYNATAS (MT1548)	Miller	(Tables used by DYNAII to decode APR requests) 1. Add DSOP variables to /DANES input line. 2. Add DSOP job card, and add to product lines. 3. Correct spelling of IOPT parameter on /SRF line. (DYNATAB01 SF 2660)
POBUILD (MT1548)	Miller	(Convert POE file source to binary random POE file.) 1. Add processing /or digitized ASW area index cards. (POBUILD04 S2 4429)
POEINDX (MT1548)	Miller	(Builds POEINX file for use by latitude/ longitude to ASW area conversion routines.) 1. Mode to read POEFILE through POEGE. Routine vice direct read. 2. Remove internal cabalog of POEINX. (POEINDX02 S2 4427)
ANWMTCH (MT1548)	Miller	(Matches points in POEFILE with areas in ASW area file and add this information to POE source for input to POEBUILD.) 1. Change input format to match new POE source format. (ASWMTCH02 IGETARA01 IGETPNT01, S2 4424-4426)
WCPOE (WCFILE)	Miller	NEW JOB: Procedure to update the POEFILE. (YCDUM05 S2 4431)

UPDATE DATE: 11/24/81 (Continued)

PROGRAM	PROGRAMMER	CHANGES
ASOPT (MT1548)	Miller	NEW PROGRAM: Routine to sort proploss data by highest signal excess in CZ or by highest MDR. (UYDUM04 S2 4450) FTN FNWC/OCNLIB
ASRCIDX (OCNLIB)	Miller	(Computer depth excess for a specified SRC/RCV.) 1. Correct error in depth excess computation. (ASRCIDX01 S2 4453)
ASRCCZA (OCNLIB)	Miller	(Scan TL curve for CZ.) 1. Add parameter to return TL value when FOM intersects TL curve at the CZ. (ASRCCZA01 S2 4454)
ASRCMLT ASRCBOT ASOPSLV ASOPSIG ASOPCZI ASOPRNO (OCNLIB)	Miller	NEW SUBROUTINES: Various proploss analysis routines used by different programs. (ASOPT, CZANAL, DSCPT) (UYDUM02 S2 4455) FTN, FNWC/ICNLIC
CZANAL (MT1548)	Miller	(Scan TL curve from FACT model for MDR/CZ/BOTTOM BOUNCE and produces ASRAPC type message.) 1. Correct error in depth excess computation. (CZANAL*01 S2 4449)
EDTCPY (MT1548)	Greenfeldt	(Determines if data files are available for ASEPS/DANES/ASERT/CBAR executions and then attaches or restores those files for input into these models.) 1. Due to part of Indian Ocean being outside of the standard FNOC 63 x 63 grid, receiver sound velocity profiles for a receiver may have to be extracted from a data base vice extracted by EXTRA from FNOC fields. This change takes care of this possibility by ensuring the proper SVP file is attached. (EDTCPY*15 SD 4068)

UPDATE DATE: 12/1/81

PROGRAM	PROGRAMMER	CHANGES
EXTRA (MT1548/ FNWLOVL)	Miller	(Extracts DTS profiles from EOTS fields.) 1. Mode to call the latitude/longitude to ASW area routines if the ASW area not specified on input. (EXTRINP06 S2 4504 POE*08 S2 4505)
ASWAREA (MT1548)	Miller	(Converts a latitude/longitude to an ASW area identifier.) 1. Attach ORANDIO files with ATTDIOP routine prior to calling actual conversion routines. (ASWAREA01 S2 4502)
IAPAREA POEGET IPOELIM IAPARPT (OCNLIB)	Miller	(S/Rs to read the POE file and convert latitude/longitude to ASW area.) 1. Removes internal ORANDIO file attaches. (POEGET*02 IPOELIM02 IAPARPT03 IAPAREA03 S2 4496-4499)
DYNATAB (MT1548)	Pacquereau	(Decodes tables for DYNAII.) 1. Add decode tables for new products POAN & TASS. 2. Include OVERLAY directives for new routines FND & BDSPLY. (DYNATAB02 S2 4515)

UPDATE DATE: 12/8/81

PROGRAM	PROGRAMMER	CHANGES
SCBASC (MT1548)	Greenfeldt	(Main driver for ASEPS model.) 1. Reduces CM by changing a binary read type file to a BUFFER in file. (SCBASC*14 SD 4135)

UPDATE DATE: 12/8/81 (Continued)

PROGRAM	PROGRAMMER	CHANGES
VPVANL SCZSVP GNENVR CBNITP CBHYPZ RDBNIO GNASTL (OCNLIB)	Greenfeldt	(S/Rs used by certain ASEPS modes for transmission loss and beam former calculations.) 1. Minor changes for compatibility with new TASSRAP mode of ASEPS. Lessons amount of debug printer output, decreases CM requirements by changing binary read file to BUFFER in file, and lowers beam noise floor so that extraneous beam noise is not introduced in low noise directions. (VPVANL*01 SCZSVP*06 GNENVR*12 CBNITP*03 CBHYPZ*02 RDBNIO*04 GNASTL*12 SD 4136-4142)
SCWATL (MT1548)	Greenfeldt	(Calculates polar radial transmission loss and ambient noise.) 1. Reduces central memory size by changing binary read file to BUFFER in type file with zero program buffer size specification. 2. Adds TL grid specification and processing options to wide area message. (SCWATL*09 SD 4144)
SCCBAR (MT1548)	Greenfeldt	(Computer mean horizontal sound speed and transmission loss between receivers and selected targets.) 1. " (SCCBAR*04 SD 4143)
ASRTDV (MT1548)	Greenfeldt	(ASERT transmission loss program.) 1. " 2. Minor changes for compatibility with new TASSRAP mode of ASEPS. 3. Prints ACOULAB SVP data on ASERG message. (ASRTDV*08 ATLPOL*05 CMPOUT*03 SD 4146-4148)
ASERTLD (MT1548)	Greenfeldt	(Segmented loader directives for ASERT.) 1. Changes to accomodate new ACOULAB output on ASERT message. (ASERTLD09 SD 4149)

UPDATE DATE: 12/8/81 (Continued)

PROGRAM	PROGRAMMER	CHANGES
DANDRV (MT1548)	Greenfeldt	(DANES directional ambient noise model.) 1. Decreases CM size by changing binary read type filer to BUFFER in file which has zero buffer size. 2. Minor changes for compatibility with new TASSRAP mode of ASEPS. 3. Printer ACOULAB SVP data on DANES message. (DANXQT*12 DANDRV*12 DANOIS*10 DNTSVP*09 SD 4180-4183)
SCTRAK (MT1548)	Greenfeldt	(Track mode of ASEPS) 1. " (SCTRAK*04 SD 4145)
DANELD (MT1548)	Greenfeldt	(Segmented louder directives for DANDRV.) 1. Changes to accomodate option to output ACOULAB data in DANES message. (DANELD*13 SD 4184)
DSOPT (MT1548)	Miller	(Perform CZ analysis of transmission loss curve using ambient noise from synoptic DANES.) 1. Correct error with overlapping ECS record. (DSOPCZP01 DSOPMDP01 DSOPT*01 DSOPANS01 SF 2816-2819)
ASOPCZI ASOPSIG (OCNLIB)	Miller	(CZ analysis routines.) 1. Add a parameter to ASOPSIG to pass minimum proploss value in CZ back to ASOPCZI for return to calling routine. ASUPCZI currently returns proploss value at FOM/CZ intersection. (ASOPCZI01 SF 2820, ASOPSIG01 SF 2821)
SYNS (MT1548)	Miller	(Compares synoptic ocean parameter with week old history and outputs difference message.) 1. Expand format for SLD parameter. Current format is to small when SLD is at the bottom and results in *** being printed in message. (SYNS*03 SF 2777)

UPDATE DATE: 12/8/81 (Continued)

PROGRAM	PROGRAMMER	CHANGES
PHITAR (MT1548)	Miller	NEW PROGRAM: Alpha-numerical AUTODIN formatted plot of transmission loss data. This program will replace current program PHITARA after operational testing. (UYDUM08 SS 1930)
DYNAII (MT1548/ FNWCOVL)	Paquereau	(Processes APR requests) 1. Mode to allow FADC/FADPO to trace a batch job in execute mode. 2. Inclusion of code for TASS (FACT predictions for TASS ships), POAN (produces DANES atlar ambient noise values), PTARF (similar to PAITAR). (OUTAPR*20 OUTSRF*07 DYNACUT17 PQDUM01 S2 4732-4735)
DYNATAB (MT1548)	Paquereau	(Table used by DYNAII to decode APR requests.) 1. Set character lengths for products POAN and TASS. 2. Change overlay number for POAN & TASS. 3. Insert a default subject line for SAR. (DYNATAB03 S2 4679)
DRUN (MT1548)	Paquereau	(Control card modules used by DYNAII in answering APR requests.) 1. Add procedures for new products MOFT, PORN, TASS, and PTARF (MOFT produces ASRAPL & BLKDATA for FASOTRAGRU moffett). (DRUN*106 S2 4682)

UPDTE DATE: 12/15/81

PROGRAM	PROGRAMMER	CHANGES
POEINDX (MT1548)	Miller	(Builds POEINX file for use by LA/LO to ASW area conversion routines.) 1. Modes to read POEFILE through POEGET routine will direct read. 2. Revove internal catalog of POEINX file. (POEINDX03 S2 4738)

UPDATE DATE: 12/22/81

PROGRAM	PROGRAMMER	CHANGES
DANELD ASERTLD (MT1548)	Greenfeldt	(Segmented loader directives for DANDEV.) (Segmented loader directives for ASRTDV.) 1. Correct segmented loader directives to force input S/R into root segment. (Probable cure for occasional DANES & ASERT crashes). (DANELD*14 SD 4434 ASERTLD10 SD 4490)
DANDRV (MT1548)	Greenfeldt	(DANES acoustic forecasts.) 1. Corrects misspelled control parameter, that could allow program to alter SVP profiles provided by EXTRA, when intention was to check only profiles provided by a requestor. (PNTSVP*10 SD 4433)

UPDATE DATE: 1/5/82 NONE

UPDATE DATE: 1/12/82

PROGRAM	PROGRAMMER	CHANGES
DYNATAB (MT1548)	Paquereau	(Decode tables used by DYNAII in processing APR requests.) 1. Add job card into for processing TASS requests. (DYNATAB04 S2 511)
PAPA (MT1548)	Sims	(Prints the POEFIL in various formats.) 1. Modes to output the correct flag when an ASW area is off the grid. (PAPALIM01 S2 502)
EDTCPY (MT1548)	Greenfeldt	(An ASEPS & DANES preparer which attaches data files for input to ASEPS & DANES. If files are missing retrieve from backup tape.) 1. Modify to attach a wind file containing wind data for the Indian Ocean . (EDTCPY*16 SD 4636)
ASRTDV (MT1548)	Greenfeldt	(ASERT transmission loss.) 1. Write more information for an optional binary output file that is used by subsequent plot programs for R & D work. (This change will not affect Fleet acquisition). (ASRTDV*09 SD 4640)

UPDATE DATE: 1/19/82

PROGRAM	PROGRAMMER	CHANGES
EXTRA (MT1548 FNWCOVL)	Miller	(Extracts DTS profiles from FNOC fields.) 1. Correct error in which program attempts to use POE file when running in R & D mode. (EXTRINP07, POE*09 SS 2120-2121)
HCHTST (OCNLIB)	Miller	(Determines if a provile is half-channel ISO or NEG gradient.) 1. Correct error in negative gradient case. Dosen't always pick up negative gradient cases correctly which results in wrong SLD selection. (HCHTST*02 SS 2119)

Extracts from FNOC System Update Summarys which concern Acoustic products.

UPDATE DATE: 1/26/82

PROGRAM	PROGRAMMER	CHANGES
DANMOD DANOUT DANWMO DANXQT DNBKNS DWNDSM DZTABS DZWINDS DANOIS CMPOUT TLGRID (OCNLIB)	Greenfeldt	NEW SUBROUTINES: Used by certain ASEPS modes. Subroutines are currently on GOSPL/MT1548, but are being placed on OCNLIB for access by future SURTASS/TASSRAP installation. (Will be purged from GOSPL/MT1548 after successful checkout from OCNLIB). (UNDUM23 SD 4795) (UNDUM25 SD 4779) FTN

UPDATE DATE: 2/2/82

PROGRAM	PROGRAMMER	CHANGES
DANDRV ASRTDV (MT1548)	Greenfeldt	(Danes Directional Ambient Noise Model.) (ASERT Transmission Loss Model.) 1. Purge subroutines from GOSPL/MT1548, that were installed on OLDPL34/OCNLIB last update. (UNDUM24 SD 4798) (UNDUM22 SD 4794)
DYNAII (MT1548/ FNWCOVL)	Paquereau	(Processes APR requests.) 1. In TASSRAP overlay, change system type default form SURTASS/MV to SURTASS/MN. 2. Change NEDS output overlog to make it more efficient. (OUTNEDS03 APRDEFT17 OUTTASS02 SF 3197-3199)

Enclosure 1

UPDATE DATE: 2/2/82 (Continued)

PROGRAM	PROGRAMMER	CHANGES
ASOPT (MT1548)	Miller	(Orders proploss S/R combinations based on signal excess in CZ or max MDR.) 1. Correct error in source level selection which results in the thousandths position being transferred; i.e., .147 becomes .14. (ASOPINP01 S2 657 ASOPSAV01 S2 658)
ASOPSLV (OCNLIB)	Miller	(S/R that selects a source level based on a specified frequency.) 1. Remove transaction of thousandths position at source level. (ASOPSLV01 S2 659)
PHITAR (MT1548)	Miller	(Produces proploss data in PHITAR format with output grouped by frequency.) 1. Correct error in SRC/RCV scaling in output message (i.e., divide by 10). (PTAROUT02 SF 3206)
EXTRA (MT1548/ FNWCOVL)	Miller	(Extracts D, T, SV profiles from FNOC fields.) 1. Remove mode that sets SLD to the surface in all negative gradient cases; use SLD as selected by AXSLD routine. (PASSIT*14 2322)
NUMNAM (OCNLIB)	Miller	(Computes a points relative position within the POE file.) 1. Correct problem where the 1st 3 characters of a PTID are the same as a valid PTID but the 4th character is not (currently crashes). 2. Remove "O" from deck name so deck and S/R name are the same. (ONUMNAM16 SS 2312)
VSCUPAK (OCLIB)	Miller	(Unpacks volume scattering data from POE file.) 1. Remove diagnostic print no longer needed. (VSCUPACK02 SS 2313)

UPDATE DATE: 2/2/82 (Continued)

PROGRAM	PROGRAMMER	CHANGES
ACOULAB (OCNLIB)	Miller	(Outputs common acoustic product heading.) 1. Correct error in converstion from meters to feet (feet, as output in heading, can be off by as much as 3 feet). (ACOULAB08 SS 2314)

Extracts from FNOC System Update Summarys which concern Acoustic products.

UPDATE DATE: 2/9/82

PROGRAM	PROGRAMMER	CHANGES
BANG1 (MT1548)	Greenfeldt	(Driver for FACT model) 1. Improve VLAD/FACT beam former model (will not affect normal FACT prediction). (AUTOTL*25 BMGEN*03 BEAM*02 NGDUM08 S2 669-672)
VLADWTS (MT9038)	Greenfeldt	(Data file containing beam data for generating beam patterns for vertical array passive source systems) 1. Change data so that beam patterns better represent this VLAD system. (VLADNTS02 SC 303)

UPDATE DATE: 2/16/82

PROGRAM	PROGRAMMER	CHANGES
GEOACU (MT9038)	Greenfeldt	NEW DATA FILE: Contains geo-acoustic data for Atlantic ASW areas. This data is part of a bottom loss upgrade for FNOC acoustic models. (NGDUM02 SC 3104) Data, N.A.
DYNAII (MT1548)	Miller	(Processes APR requests.) 1. Add routines for new EXTRA program (EXTRACT). (DYNAOUT18 VALPTID03 APRCEFT18 DYNAPTI02 DYNAXYZ08 OUTNEDS04 UYDUM01 SF 3304-3310)
DRUN (MT1548)	Miller	(APR control card modules) 1. Add GRID & EXTRA modules (EXTR module will replace EXTRA when operational). 2. Add HEOFRF & COMGRAF modules. (DRUN*107 SF 3303)
DYNATAB (MT1548)	Miller	(DYNAII APR line decode tables.) 1. Add imput lines for new EXTRA program (EXTRACT). 2. Add new product grid. (DYNATAB05 SF 3289)

APPENDIX C

NORDA ON-SITE TECHNICAL SUPPORT CORRESPONDENCE FOR PERIOD FROM SEPTEMBER 1980 THROUGH FEBRUARY 1982

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-[illegible]33

November 7, 1980

CDR Kirk E. Evans
Manager, SEAS Modeling Program
Naval Ocean Research and Development Activity
Code 520
NSTL Station, Mississippi 39529

Dear CDR Evans:

(U) Under cover of this letter, I am providing you one copy of a Confidential Technical Task Report. This is a preliminary draft and is submitted for your review and approval. The task report is titled as follows:

"Revised Indian Ocean Bottom Loss Model FNOC Implementation (U)", October 1980, Preliminary Draft.

This report summarizes efforts associated with the implementation of a revised Indian Ocean Bottom Loss Model into the FNOC ASWOCAS operational product line.

(U) This actual capability was made operational on 28 October 1980. FNOC has been requested to provide NWOC Pearl Harbor and NOCC Guam with preliminary documentation as soon as possible. Consequently, as Mr. Osborne discussed with you, copies of this preliminary draft will be made available to FNOC in response to this need. After your approval, final revisions and final drafting, final copies will be distributed as directed.

(U) Please let me know if I may be of further assistance.

Respectfully,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

cc: Mr. K. Osborne, ODSI (1 copy)
CDR R. Graff, FNOC (4 copies)

UNCLASSIFIED UPON REMOVAL OF ENCLOSURES

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

November 17, 1980

Mr. Charles W. Spofford
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Chuck:

I am enclosing a listing of FNOC's subroutine INSTOR and a set of sound velocity profiles which may be used in further testing of the routine. It is evident that the version of FACT held by you does not contain all of the correction sets which have been installed at FNOC.

In testing the correction set you sent Ken Osborne, we are going into an infinite loop with a deep source (300 feet) and a deep receiver (400 feet). If you would update your routine with the one enclosed and test on the profiles provided, we may be able to track down the problem.

We will be awaiting your results.

Yours truly,
OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosure

cc: Mr. Kenneth R. Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

December 17, 1980

Mr. Charles W. Spofford
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Chuck:

As per our telephone conversation on December 16th, I am forwarding the following enclosures:

1. Modified INSTOR crash - 1000 meter bottom
2. Modified INSTOR crash - 2500 meter bottom
3. Modified INSTOR crash - 3500 meter bottom
4. Modified INSTOR good run - 5000 meter bottom, plus plot of FACT output.
5. Modified INSTOR good run - 6500 meter bottom, plus plot of FACT output and listing of modified INSTOR routine.
6. Plots of unmodified FACT output with bottom set at various depths.

In checking out the problem with the corrections to subroutine INSTOR, you can use the profiles in the printouts and plots enclosed or use the following data:

Frequencies - .100, .400, .800, 2.000 KH
Receiver Depths - 50 and 400 feet
Source Depths - 70 and 514 feet

DEPTH (M)	SOUND SPEED
0.0	1521.72
25.0	1521.84
40.18	1522.17
65.18	1522.68
77.68	1517.75
90.18	1516.72
115.18	1515.64
125.0	1515.28
150.0	1514.34
200.0	1514.13
250.0	1514.81
300.0	1515.05
400.0	1516.45
600.0	1518.61
800.0	1521.18
1000.0	1524.11

Frequencies - .100, .400, .800, 2.000, KH
Receiver Depths - 50 and 400 feet
Source Depths - 70 and 382 feet

DEPTH (M)	SOUND SPEED
0.0	1530.29
25.0	1530.62
50.0	1530.25
55.56	1530.25
80.56	1530.42
93.06	1527.03
105.56	1525.43
300.56	1523.34
150.0	1522.51
200.0	1521.75
250.0	1522.02
300.0	1521.58
400.0	1520.80
600.0	1514.37
800.0	1505.90
1000.0	1497.44
1500.0	1495.84
2000.0	1499.37
2500.0	1505.42
3000.0	1512.32

If you have any questions, please contact either myself or Ken Osborne in our San Diego office (714-226-1617).

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosures

cc: Mr. Kenneth R. Osborne, ODSI

OCEAN DATA SYSTEMS, II
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1

January 15, 1981

Mr. Charles W. Spofford
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Chuck;

I am forwarding several DB plots for you to look at. Each plot is annotated so you can compare what is currently installed at FNOC with the new fast bottom/low frequency curve output.

Even though we changed the critical angle designations for bottom classes 1, 2, and 3 to .5 the running time did not increase significantly. Actually, the change in critical angle did not change the DB loss.

I am also including a few Mediterranean shallow water plots. There appears to be little if any change in DB loss when comparing the before and after cases.

I will await your comments before I take any further action to get these modifications to FACT installed at FNOC.

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

enclosures

cc: Mr. Kenneth Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

MEMORANDUM

TO: CDR Russell J. Graff, Code 30, Fleet Numerical Oceanography Center, Monterey, California

FROM: Nathan L. Greenfeldt, Ocean Data Systems, Inc., Monterey, California

SUBJ: Interim Bottom-Loss Upgrade

REF: Science Applications, Inc. (SAI) Document titled "Interim Bottom-Loss Values and Geographic Assignment Based Upon Sediment Thickness".

DATE: January 26, 1981

1. Based upon the above reference, NORDA tasked ODSI to assist FNOC in implementing subject Bottom-Loss Upgrade into all active and passive acoustic models which reside at FNOC. This task involved replacing Bassett/Wolff bottom loss curves with a set of curves developed by SAI, in the Function BTMLOS and updating data bases POEFILE and TNWLNS.

2. Extensive testing was performed with final results examined by Mr. Chuck Spofford of SAI. The final results were determined to provide the desired results.

3. Based upon the testing and evaluation of the required program and data base modifications required for this upgrade, it is concluded that it is now available for installation into FNOC acoustic products.

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD. MONTEREY. CALIFORNIA 93940 • 408/649-1133

January 27, 1981

Mr. Edward H. Goit
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Ed:

In response to our telephone conversation of January 26, 1981, I am enclosing a punched card deck of the Bottom-Loss Function BTMLOS which is the current function now installed at FNOC. I am also enclosing a punched card deck of the bottom type assignments for the area from the Equator to 70N and 43E to 103E. The bottom type assignments 4 through 9 on the card deck correspond to the 1 through 6 assignments which were received from NAVOCEANO and which I have enclosed for your information.

If I can be of further assistance or if you have any questions, please feel free to contact me.

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosures

cc: K.R. Osborne, ODSI
R. Wheatley, NORDA

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

MEMORANDUM

TO: Ken Osborne
FROM: Nate Greenfeldt
DATE: January 28, 1981
SUBJ: Proposed Message Concerning ASEPS Upgrade

1. I have attached a rough draft of a message which I recommend FNOC send to ASEPS/DANES users prior to commencing installation of V4.2. I would appreciate your comments. I am sure FNOC will put things in their own words but this will give them something to start with.

MEMORANDUM

TO:

FROM: FNOC

INFO: NORDA

1. A major upgrade of ASEPS will be installed over the next 3-4 weeks. Because of the extent of this upgrade, it would be inappropriate to attempt a complete upgrade in one step. Upon completion of this installation, ASEPS Version V4.1 will be designated V4.2 and will be so indicated on all ASEPS products (i.e., BASEPS, DANES, ASERT).

2. The first step in the upgrade process will be the replacement of the 5-degree watermass (sound velocity profile) files with a watermass file which better defines homogenous watermass areas and are not confined to 5 degree areas.

3. Step two will involve major modifications to the transmission loss model (ASTRL) which resides within the ASEPS systems.

4. The final step in the sequence will involve the replacement of the old RMS historical shipping distribution data base with the HITS data base. The HITS data base is a monthly data base with shipping identified by class (i.e., super tanker, tanker, fishing, etc.) and is the most recent data available of this type.

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

MEMORANDUM

TO: Chuck Spofford, SAI
FROM: Nate Greenfeldt
DATE: February 4, 1981
SUBJ: ASEPS V4.2 Ambient Noise Data

I am forwarding ASEPS Version 4.2 ambient noise predictions for selected Atlantic and Pacific locations for your evaluation. I have also included noise plots which may be helpful in the evaluation.

If I can be of further assistance, please let me know.

cc: Ken Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

MEMORANDUM

TO: CDR Russell J. Graff, Code 30, Fleet Numerical Oceanography Center, Monterey, California

FROM: Nathan L. Greenfeldt, ODSI, Monterey

DATE: February 18, 1981

SUBJ: Major ASEPS Upgrade

A major upgrade of the ASEPS prediction system will be installed into the FNOC ASWOCAS operational product line in the near future. This upgrade represents ASEPS Version 4.2, replacing V4.1. It is anticpated that the users should note significant differences between the versions.

The benefits of the V4.2 upgrade are twofold. First, acoustically, V4.2 involves refinements to the ASTRAL transmission loss model mode coupling algorithms. The V4.2 revision also incorporates the Interim Spofford-Hanna three type bottom treatment. Secondly, the new V4.2 ASEPS upgrade makes provisions for new future capabilities such as mean-horizontal sound speed calculations, target track geometry and vertical receiver sensitivity.

This revision will be implemented in three phases. The first phase will involve the installation of revised data bases - the ocean description table, shipping density and watermass profile files. In this phase, the revised Colborn/White watermass area designation will be installed. The shipping designation will still be the RMS density specification.

One week following the installation of the initial phase, the second phase will be installed. This phase constitutes installation of the revised ASEPS V4.2 model. It will contain changes to the ASTRAL TL model, changes to the MUDLOS function bottom treament, and changes to the RMS Atlantic and Pacific shipping spectra.

Phase three will follow the successful installation of phase two by several weeks. Phase three will provide for the HITS shipping density specifications, the TRACK mode of ASEPS, and the ability to calculate mean horizontal sound speed as an ASEPS SOSUS product.

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

April 23, 1981

Mr. Charles W. Spofford
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Chuck:

(U) A copy of the ASEPS Version 4.2 Ambient Noise Predictions for Selected Atlantic and Pacific Locations is enclosed for your evaluation. These predictions are based on HITS data and are provided to assist in determining historical shipping spectra based on ocean basin.

If you have any questions or if I can be of further assistance, please let me know.

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosure

cc: Mr. Kenneth R. Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

April 23, 1981

Mr. Frank Ryan
Science Applications, Inc.
Suite 301 El Patio Building
P.O. Box 1454
La Jolla, California 92038

Dear Frank:

In response to your telephone call of April 21, 1981, I am enclosing the following data:

1. FACT model subroutine listings with 9I mods.

2. Program EXTRA output with detail profile data for February, May, August and November.

If I can be of further assistance, please let me know.

Yours truly,
OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosures

cc: Mr. K.R. Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

April 28, 1981

Mr. John Cornyn
Naval Ocean Research and Development Activity
Code 321
NSTL Station, Mississippi 39529

Dear John:

Enclosed are copies of:

1. "Subroutine BTMLOS Upgrade Description (U)", July 1980, and
2. "Revised Indian Ocean Bottom Loss Model FNOC Implementation (U)", October 1980.

I am forwarding copes of the above documents as requested in our telephone conversation of April 21, 1981. These documents cover modifications made to the FNOC Bottom Loss Function prior to the Interim BLUG Upgrade of this year.

If I can be of further assistance, please let me know.

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosures (2)

cc: Mr. K. Osborne, ODSI
CDR. K. Evans, NORDA

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/645-1133

April 30, 1981

Mr. Frank Ryan
Science Applications, Inc.
Suite 301 El Patio Building
P.O. Box 1454
La Jolla, California 92038

Dear Frank:

In response to our telephone conversation of yesterday, I am enclosing the following FACT model listings:

1. All FACT routines (including VLAD routines) as they currently exist on FNOC libraries.

2. FACT routines with 91 mods.

3. New surface DUCT routines.

If I can be of further assistance, please let me know.

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosures

cc: Mr. K. Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

July 10, 1981

Mr. Charles W. Spofford
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Chuck:

A copy of the ASEPS Version 4.2 Ambient Noise data for HITS historical shipping noise study (Atlantic) is enclosed for your evaluation. I have also enclosed copies of HITS shipping distribution plots by ship type which may be helpful in the evaluation.

For comparison purposes, noise calculations were made for the complete HITS data base, HITS data base without super and large tankers, large tankers only and super tankers only. The spectra used was 177.0, 6.5, 0.0, -32.0

If you have any questions or if I can be of further assistance, please let me know.

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:mwa

enclosure

cc: Mr. Kenneth R. Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

August 26, 1981

Mr. Charles W. Spofford
Science Apoplications, Inc.
1710 Goodridge Drive
P. O. Box 1303
McLean, Virgina 22102

Dear Chuck:

A copy of the ASEPS Version 4.2 Ambient Pacific Noise data for HITS historical shipping noise study is enclosed for your evaluation.

Noise calculations were made for the complete HITS data base. The spectra used was 171.0, 6.5, 0.0, -24.5.

If you have any questions or if I can be of further assistance, please let me know.

Yours truly,
OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Senior Technical Associate

NLG:ccf

cc: Mr. Kenneth R. Osborne, ODSI

UNCLASSIFIED UPON REMOVAL OF ENCLOSURE

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD. MONTEREY. CALIFORNIA 93940 • 408/649-1133

August 26, 1981

Mr. Frank Ryan
Science Applications, Inc.
1200 Prospect Street
La Jolla, CA 92038

Dear Frank:

I am enclosing the following fact output data for your evaluation:

1) Computer listings of fact corrections and new subroutines concerning surface duct, surface loss and cusped caustic upgrade.

2) Computer printouts with detail of environmental data used in producing TL predictions.

3) Plots of TL predictions from unmodified fact model (marked old).

4) Plots of TL predictions from modified face model (marked new).

The modified fact model appears to increase CP time requirements from 3-42%. This increase in CP time would have a tremendous impact on FNOC's resources.

I will not attempt to install this upgrade until you have had time to evaluate the results.

If I can be of further assistance, please let me know.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

NLG:cf

cc: CDR M. McCallister, NORDA Code 522
Mr. B.N. Weatley, NORDA Code 530
Mr. C.C. Wilcox, NORDA Code 115
Mr. Kenneth R. Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

September 24, 1981

Mr. Frank Ryan
Science Applications, Inc.
1200 Prospect Street
La Jolla, CA 92038

Dear Frank:

To assist in your evaluation of the FACT model upgrade, I am forwarding you the following:

1) DB plots for the 10 points/4 seasons

2) Program EXTRA outputs

3) Table of Sonic Layer Depths and Wind Speeds

4) Table of CP times required to compute the transmission loss for each point.

The enclosed data was created with program EXTRA modified to eliminate the previous update, which in some cases modified the profile above the SLD. Program EXTRA will continue to utilize subroutine AXSLD which selects the SLD by examining the sound speed gradient between levels.

If you desire further testing or assistance, please let me know. The correction sets for this upgrade can be installed when you are satisfied with the results and upon official notification to FWOC by NORDA.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

NLG:cf

Enclosures

cc:
CDR M. McCallister, NORDA Code 520
Mr. B.N. Weatley, Code 530
Mr. C.C. Wilcox, NORDA 115
Mr. Ken Osborn, ODSI

FACT RUNS 9/23/81

SLD/Wave Ht Table

ID	MONTH 2	5	8	11
G001	90.42/8	36.89/13	0.0/16	52.12/10
G002	3125.0/15	15.75/12	22.52/9	50.82/10
G003	2075.0/15	19.47/9	16.25/6	42.02/12
G004	60.65/12	0.0/16	25.75/14	37.78/11
G005	122.77/22	71.36/18	28.72/14	67.24/22
G006	0.0/17	0.0/11	0.0/10	0.0/14
G007	1375.0/23	0.0/16	19.52/11	61.13/18
G008	134.12/15	29.03/11	29.67/8	0.0/12
G009	119.3/20	39.53/14	28.27/9	121.92/17
G010	300.0/18	0.0/13	0.0/13	98.86/18

FACT RUNS 9/23/81

CP Time Table

ID	MONTH 2	5	8	11
G001	44.52	25.43	39.85	38.48
G002	11.01	103.86	59.05	39.01
G003	8.15	114.74	59.91	57.16
G004	15.87	11.84	22.00	22.21
G005	22.63	49.81	61.46	38.13
G006	16.43	12.64	13.65	19.68
G007	6.66	272.77	56.72	84.27
G008	14.91	13.67	17.25	13.42
G009	19.37	14.71	38.74	23.75
G010	22.32	94.42	47.91	27.51

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

November 6, 1981

Mr. Charles W. Spofford
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Mr. Spofford:

At the request of Mr. Ken Osborne, I am inclosing Danes ambient noise estimates for the 12 Pacific points attached. Hopefully, this information will assist you in your evaluation of the shipping spectra for the HITS and RMS historical shipping distribution data bases. These noise estimates are based on historical shipping only, using a spectra of 171.0 with offsets of 6.5, 0.0 and -24.5 DB at 10,50 and 300 HZ respectively. The noise data was calculated for 25, 50, 150 and 300 HZ, at receiver depth settings of 60, 400 and 1000 feet.

If I can be of further assistance, please let me know.

Yours truly,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

Enclosures

NGL/cf

4-105-05

cc: Mr. B.N. Weatley, NORDA Code 530
Mr. Ken Osborne, ODSI

DANES PREDICTION POINTS

PCS1	35N	125W
PCS2	35N	145W
PCS3	40N	145W
PCS4	25N	148W
PCS5	34N	171W
PKO1	37N	127W
PKO2	47N	138W
PKO3	54N	145W
PKO4	15N	149W
PKO5	38N	166W
PKO6	33N	165E
PKO7	42N	157E

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

November 16, 1981

CDR. Jon W. Carlmark
Commander Third Fleet Code N33
Pearl Harbor, HI 96860

Dear CDR. Carlmark:

At the request of Mr. Ken Osborne, I am enclosing a copy of the North Pacific Ocean HITS Reference Acoustic Level Printer Plot. This plot represesnts the HITS shipping distribution for the month of April.

To support noise estimation applications based on the HITS data base, the shipping densities for various ship classes are multiplied by scalar weighting factors and are summed to produce an acoustic equivalent number of cononical ships for each one degree square. The Scalers for the different ship classes are as follows:

Ship Class	Scalar	DB Equivelent
merchant	1.0	0.0
tanker	0.13	-9.0
large tanker	7.9	+9.0
super tanker	25.0	+14.0
oil rigs	0.0	Not included
fishing	0.016	-18.0

The cononical ship densities are converted to a singel digit for plotting purposes using a one to nine "exposential" scale. The characters plotted have the following representation:

Characters	Description
blank	less than 0.01 cononical ship
1	0.01 to 0.1 ships
2	0.1 to 0.5 ships
3	0.5 to 1.0 ships
4	1 to 2 ships
5	2 to 5 ships
6	5 to 10 shipls
7	10 to 20 ships
8	20 to 50 ships
9	50 ships and above
X	land mass.

If I can be of further assistance, please let me know.

Yours truly,

OCEAN DATA SYSTEMS, INC.

NGL/cf/4-105-05

Nathan L. Greenfeldt
Technical Director

cc: CDR. M. McCallister, NORDA
Mr. Ken Osborne, ODSI

OCEAN DATA SYSTEMS, INC.

Memorandum

To: Ken Osborne II

NLG/cf/4-105-05

From: Nathan L. Greenfeldt

Date: November 17, 1981

Subject: George Osullivan/Kent Lunsford Support

As you requested, I have provided Mr. Kent Lunsford with DANES and ASERT predictions for a Pacific area based on August climatology. I am enclosing a copy of the data telecopied to Mr. Lunsford for your information and records.

Enclosure

DANES FNOC V4.3C 08/91 NOISE PREDICTIONS AUG CLIMATOLOGY

[redacted] / [redacted]

ACCUM SECTOR SPECS 0.00 5.00 72

TIME STEP CONTROL 91111312 0.00 24.00 1

POINT LAT LON TAU FREQUENCIES= 50.0 150.0

GOO1 45.0N 155.0W 0.00 RC= 1000 CMNI= 84.2 74.9

FREQ= 50.0

65.4 64.6 63.6 64.8 67.7 69.3 69.6 68.5 69.1 68.3
68.2 67.2 67.5 67.5 65.4 64.7 65.3 64.1 65.1 64.4
62.7 62.6 63.9 62.4 61.5 60.6 61.0 60.7 62.0 61.7
61.3 59.1 62.6 61.2 62.1 63.3 62.5 61.7 60.2 61.4
61.1 61.4 61.6 61.5 63.0 62.1 60.6 64.3 63.6 62.9
63.6 65.5 67.6 68.4 66.7 66.2 70.6 70.4 70.1 69.7
66.9 67.1 66.6 65.2 65.6 66.2 64.9 65.3 65.7 64.2
65.4 65.9

FREQ= 150.0

57.3 56.4 55.6 56.7 56.5 57.2 57.6 56.8 58.5 58.3
57.9 56.9 58.1 57.4 56.9 55.9 56.5 54.4 55.6 55.4
53.9 53.5 54.2 53.2 53.0 51.9 52.8 52.6 54.0 54.9
53.6 51.4 55.0 53.4 54.3 55.6 54.9 54.1 52.7 53.7
53.3 53.7 53.9 53.8 55.4 54.5 52.9 56.5 55.9 55.1
55.8 57.4 59.0 59.5 57.2 56.1 58.6 58.8 59.6 60.1
57.7 58.1 57.8 56.8 57.2 57.5 56.7 56.9 56.7 55.2
56.1 57.2

END OF MESSAGE

ASERT FNOC V4.2E 08/81 TRANSMISSION LOSS AUG CLIMATOLOGY

OSULLIVAN RUN

TL RADIALS= 200.0 60.0 2 CMPC

PTID-GS01 BRNG=200.0 FQ= 50.HZ SD= 300.FT RD= 1000.FT 30 RNGS

1.0/ 63.2 2.0/ 72.0 28.4/ 86.3 54.8/ 89.4 81.1/ 91.1
156.2/ 94.1 317.7/ 97.8 345.7/ 99.9 632.7/102.7 883.4/106.9
1050.0/111.0 1091.6/114.9 1180.5/118.5 1195.5/120.9 1242.2/124.6
1340.8/126.2 1351.2/120.3 1361.6/114.4 1371.9/132.2 1382.3/150.0
1992.5/150.0 2002.8/145.1 2013.2/140.2 2179.3/140.6 2570.2/141.4
2598.5/142.6 2626.9/143.7 2655.2/144.9 2683.6/146.1 2708.3/150.0

PTID-GS01 BRNG=200.0 FQ= 150.HZ SD= 300.FT RD= 1000.FT 40 RNGS

1.0/ 63.2 2.0/ 71.6 28.4/ 85.7 54.8/ 88.7 107.5/ 91.8
191.0/ 94.5 267.0/ 96.8 345.7/100.9 606.6/104.1 632.7/105.6
803.5/107.9 820.8/109.8 1060.4/114.8 1070.8/116.8 1081.2/116.8
1091.6/121.2 1102.0/123.5 1195.5/126.7 1218.9/128.6 1289.0/130.9
1340.8/133.7 1351.2/125.9 1361.6/118.0 1371.9/134.0 1382.3/150.0
1392.6/150.0 1485.9/150.0 1568.7/150.0 1658.4/150.0 1741.1/150.0
1851.3/150.0 1940.9/150.0 2004.8/150.0 2157.7/150.0 2286.6/150.0
2389.7/150.0 2485.1/150.0 2570.2/150.0 2655.2/150.0 2708.3/150.0

PTID-GS01 BRNG=260.0 FQ= 50.HZ SD= 300.FT RD= 1000.FT 13 RNGS

1.0/ 63.2 2.0/ 72.0 23.6/ 85.3 45.1/ 88.5 183.3/ 94.2
497.7/ 98.6 1089.8/105.3 1437.5/107.6 1559.4/109.7 1616.7/113.5
1626.4/117.5 1636.0/134.4 1644.9/150.0

PTID-GS01 BRNG=260.0 FQ= 150.HZ SD= 300.FT RD= 1000.FT 10 RNGS

1.0/ 63.2 2.0/ 71.6 23.6/ 84.8 183.3/ 94.3 497.7/ 99.5
1437.5/113.2 1616.7/119.8 1626.4/127.4 1636.0/150.0 1644.9/150.0

END OF MESSAGE

OCEAN DATA SYSTEMS, INC.

Memorandum

To: Dr. Jim Crouch

NLG/cf/4-105-05

From: Nathan L. Greenfeldt

Date: November 19, 1981

Subject: MED HITS Reference Acoustic Level Printer Plot

As requested, I am enclosing the May Mediterranean HITS reference Acoustic Level Printer Plot.

To support noise estimation applications based on the HITS data base, the shipping densities for various ship classes are multiplied by scalar weighting factors and are summed to produce an acoustic equivalent number of cononical ships for each one degree square. The Scalers for the different ship classes are as follows:

Ship Class	Scalar	DB Equivelent
merchant	1.0	0.0
tanker	0.13	-9.0
large tanker	7.9	+9.0
super tanker	25.0	+14.0
oil rigs	0.0	Not included
fishing	0.016	-18.0

The cononical ship densities are converted to a singel digit for plotting purposes using a one to nine "exposential" scale. The characters plotted have the following representation:

Characters	Description
blank	less than 0.01 cononical ship
1	0.01 to 0.1 ships
2	0.1 to 0.5 ships
3	0.5 to 1.0 ships
4	1 to 2 ships
5	2 to 5 ships
6	5 to 10 shipls
7	10 to 20 ships
8	20 to 50 ships
9	50 ships and above
X	land mass.

If I can be of further assistance, please let me know.

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

January 4, 1982

ENS Debbie Poffenberger
Code 530
Naval Ocean Research and Development Activity
NSTL Station
Mississippi, 39529

Dear Debbie:

As requested, I am enclosing a card deck of the AMOS Cross-Layer correction set as delivered to FNOC Monterey in August of 1980.

If I can be of further assistance, please let me know.

Sincerely,

Nathan L. Greenfeldt
Technical Director

Enclosure

NLG/cf

4-105-5

cc: Mr. K. Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

January 18, 1982

Mr. Frank Ryan
Science Applications, Inc.
1200 Prospect Street
La Jolla, CA 92038

Dear Frank:

In follow-up to our phone conversation of 12 January, I am enclosing the following information to aid in debugging a FACT-81A program crash:

1) FACT-81A input data

2) listing of 81-A subroutines

3) loader map of FACT-81A and BLUG

4) crash dump

If I can be of further assistance, please let me know.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

Enclosures

NLG/cf

4-105-05

cc: Mr. C.C. Wilcox, NORDA 115
Mr. Ken Osborne, ODSI

FACT-81A INPUT DATA

PROFILE:

Depth (m)	Sound Velocity
0.0	1492.08
8.53	1492.31
33.53	1492.25
46.03	1487.19
58.53	1485.44
83.53	1483.85
100.00	1483.38
120.00	1482.52

BOTTOM TYPE:

Low frequency = 3 High frequency = 2

FREQUENCIES:

100 HZ, 400 HZ, 800 HZ, 2000 HZ

WAVE HEIGHT:

5 ft.

WIND SPEED:

13 kt.

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

January 27, 1982

Dr. Dave King
Code 320
Naval Ocean Research and Development Activity
NSTL Station
Mississippi 39529

Dear Dr. King:

As requested in our phone conversation of last week, I have enclosed two printouts of the Spofford/Hanna Low Frequency Bottom Types for the Northern Hemisphere. I have outlined the land areas as an example on one of the printouts. You will notice that the bottom type numbers are the Globel 1-9 Code where 1, 2, and 3 equate to the Spofford/Hanna 1, 3, 4 while 4 through 9 equate to Bearing Stake 1 through 6.

If I can be of further assistance, please let me know.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

Enclosure

NLG:cf

4-105-05

cc: Mr. C.C. Wilcox, NORDA Code 115
Mr. Ken Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

February 2, 1982

OCEAN DATA SYSTEMS, INC.
Attention: Mr. Bob Holt
6000 Executive Boulevard
Rockville, Maryland 20852

Dear Bob:

As requested, I am enclosing a copy of the Standard Sonar Description File currently installed at FNOC.

If I can be of further service, please let me know.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

Enclosure

NLG:cf

4-105-05

cc: Ken Osborne, ODSI
Mr. B.N. Wheatley, Code 530
Mr. Chet Wilcox, Code 115

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

February 10, 1982

Mr. Frank Ryan
Science Applications, Inc.
1200 Prospect Street
La Jolla, CA 92038

Dear Frank:

As requested, I am forwarding the following data for your information:

1. FACT Execution Time Comparison Table
2. TL Plots for ISH-81A and BLUG-81A Models
3. FACT-81A-BLUG Segment Loader Directives
4. Computer printouts generated by Model executions

If I can be of further assistance, please let me know.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

Enclosures

NLG/cf

4-105-05

cc: Chet Wilcox, NORDA Code 115
Kenneth Osborne, ODSI

FACT EXECUTION TIME COMPARISONS

POINT	DEPTH	MODEL		
		CURRENT	ISH-81A	BLUG-81A
G060	100 m	16.34	11.56	267.85
G062	499 m	202.32	177.12	186.91
G063	239 m	15.33	120.09	315.62
G093	120 m	49.92	21.21	325.73

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

MEMORANDUM NLG/cf/4-105-05

TO: Commanding Officer, Fleet Numerical Oceanography Center, Monterey

VIA: CDR Russell J. Graff, Code 30

FROM: N.G. Greenfeldt

DATE: February 11, 1982

SUBJECT: FNOC Rotating Mass Storage Limits, Request for Waiver

REFERENCE: (a) FNOC Computer Systems Officer Memo, 9 May 1980
(b) FNWC Computer User Guide, Edition 2, February 1974

ENCLOSURE: (a) Resource Limit Waiver Request Form

1. In response to Reference (a), I am forwarding Enclosure (a) which is a request for a waiver to exceed rotating mass storage limits as stated in Reference (b).

2. Under Navy Contract Number N00014-82-C-0030, Ocean Data Systems, Inc. has been tasked by NORDA to develop, maintain and upgrade various acoustic models and associated data bases which are ultimately installed for operational use at FNOC. Acoustic models (i.e., ASEPS, DANES) are large, complex programs requiring very large data bases as input. In the process of developing and upgrading software and data bases, several versions and backup files are necessary to compare output results during model development and refinement. This enables checkout prior to moving models and data bases onto the oprational facility environment on the PEPS System.

3. Our experience in the utilization of rotating mass storage over the past year has shown that an increase in limits for mass storage for R & D purposes to 100 permanent files with a total of 1,500 record blocks would allow for continued constructive software development. We have made it a practice to catalog all large files under one ID (ID=KY) and have made a conscious effort to ensure that other individual programmer ID libraries associated with NORDA contracts do not exceed mass storage limits as stated in Reference (b).

4. One alternative to the above recommended waiver involves utilization of a series of magnetic tapes. This inconvenient alternative would impair development activity, would introduce substantial operator intervention and introduce an additional source of errors. Consequently, this alternative would reduce turnaround time and increase model development costs.

5. A second alternative would involve the use of a dedicated disk pack for the development of all acoustic models and products.

cc: Kenneth Osborne, ODSI
CDR Michael McCallister, Code 522
B.N. Wheatley, Code 530

RESOURCE LIMIT WAIVER REQUEST FORM

1. Name Osborne (ID=KY) Contractor
Rank/ level/ Position

Organization Telephone ___ / 408 - 373-3636
A/V COMM Number

2. Project/Contract NORDA N00014-82-C-0030

3. Resource Waiver Requested:
(a) Computer(s):
(b) Programmer I.D.:
(c) Jobname:

Resource	FNOC Limit	Requested Limit
Central Memory	110KB	
Extended Core Storage	300KB	
TOTAL Mass Storage	5,000KB	
Priority	3	
Tapes (in use concurently)	2	
Rotating Mass Storage		
Total Perm Files	25	100
Total Record Blocks	100	1500

4. Effective date February 11, 1982

Expiration date indefinite

Review date August 11, 1982 (6 months from effective date or expiration date whichever is sooner)

5. Supporting documentation for this waiver must be attached. Minimum required inputs are:
   (a) Summary of alternatives considered by requestor and their associated trade-offs.
   (b) Statement of impact if waiver not approved.

6. Forward this request to C. O. FLENUMOCEANCEN via:
   (a) FNOC personnel: Dept. Head
   (b) NEPRF personnel: C. O. NEPRF
   (c) NEPRF Contractors: C.O. NEPRF
   (d) FNOC Contractors: Contract Monitor

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

February 12, 1982

Mr. C.C. Wilcox
Code 115
Naval Ocean Research and Development Activity
NSTL Station
Mississippi 39529

Dear Chet:

As per your request, I have developed a computer program to reformat the RAPEOUT File into card image: I have enclosed a couple sample printouts of the results of this effort for your information and comments. I have also enclosed a copy of the RAPEOUT File format.

I will now proceed to develop a program which will convert the card images back to a RAPEOUT File.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt

Technical Director

Enclosures

NLG:cf

4-105-05

cc: Kenneth Osborne, ODSI

TABLE 4-1: RAPEOUT FILE FORMAT

Word Index	Data Mode	Description*
Header Information:		
1	A	Profile location name.
2-4	A	Run title/month identificaton: Words 2-3 — Run title annotation. Word 4 (Char. 1-7) — Run title annotation. (Char. 8-9) — Month, index for climatology profiles only. (Char. 10) — Blank, unused.
5	F	Transmission loss range, in meters.
6	A	Temperature at 1st depth/temp/salinity profile point plus two scattering coefficients: Char. 1-3 Temperature, in ° C. Char. 4-6 First coefficient. Char. 7-9 Second coefficient. Char. 10 Blank, unused.
7	I	Date/time group, in bbYYMMDDHH format where b is blank, Y is year, M is month, D is day and H is hour.
8	A	Ambient noise, in dB re μ -Pa: Char. 1-3 First level, at 50 Hz. Char. 4-6 Second level, at 300 Hz. Char. 7-8 Third level, at 850 Hz. Char. 9-10 Fourth level at 1700 Hz.
9	A	Depth/velocity at shallow channel axis: Char. 1-5 Depth, in meters. Char. 6-10 Velocity, in meters/sec.
10	A	Depth/velocity at deep channel axis: Char. 1-5 Depth, in meters. Char. 6-10 Velocity, in meters/sec.
11	A	Frequency cut-off point, in Hz. (Char. 1-5) followed by blanks (Char. 6-10).

*Word character references in this table are numbered from left-to-right.

Word Index	Data Mode	Description
12	A	Depths for convergence zone (CZ) transmission and depth excess: Char. 1-4 CZ depth, in fathoms. Char. 5 "/", slash. Char. 6-10 Depth excess, in fathoms. This word may contain the following mnemonic: "NAbXbbbbbb" where x is a variable number and b is blank.
13-21	A	Thermal profile data for first eight points: Word 13 Contains label option "bNAbHCHbbb" "bNAbISObbb" "bNAbNEGbbb" "SURFACEbbb" Words 14-21 Depth/temperature pairs (one point per word): (Char 1-4) Depth, in meters. (Char 5-7) Temp in ° F x 10.0. (Char. 8-10) Blank, unused. If < 8 points, remaining words are blank.
22	A	Destination code.
23	A	Profile control: Char. 1-3 Profile temperature gradient, $G=\Delta T/\Delta Z*1.8*0.3048*100.0$ where $\Delta T/\Delta Z$ is the temperature/depth change. Char. 4-5 Number of frequencies. Char. 6-8 Number of receivers. Char. 9-10 Number of sources.
24	A	Profile position: Char. 1-3 Latitude, in degrees from 0° Equator. Char. 4 "N"-north, "S"-south. Char. 5-8 Longitude, in degrees east or west from 0° Greenwich Meridian. Char. 9 "E" for east, "W" for west. Char. 10 Blank

Word Index	Data Mode	Description
25	F	Wind speed, in knots, from ADP file, record A27.
26	A/Binary	Sharps variability/number of bottom scattering coefficients: Leftmost 36 bits — Unused. Middle 6 bits — Number of volume scattering Coefficients that start at word 196, display code. Rightmost 6 bits — Sharps variability, display code.
27	A/Binary	Wind wave date-time-group and tau: Char. 1-8 — Date-time-group, display code. Rightmost 12 bits — Tau, integer.
28	A	ASW area identifier (4 characters, left justified). Remainder of word is unused.
29	A	EOTS area and source identification: Char. 1-4 — EOTS area name (or NHEM for Northern Hemisphere). Char. 5 — Unused. Char. 6-10 — EOTS input source identification.
30	I	Number of depth/temp/salinity profile points, maximum 50. The first 20 points are given in words 31-50. If more than 20 points are given the overflow will be stored in words 166-195.
31-50	A/Binary	Depth/temp/salinity profile (one word for each of $\leq$ 20 points): Char. 1-4 — Depth, in meters, alphanumeric. Char. 5-7 — Temperature, in ° C, alphanumeric, computed as Tc=T*10.0. Rightmost 18 bits — Salinity, in parts/1000, binary, computed as Sc=(S-30.0)*100.0.

Word Index	Data Mode	Description
Site Control Characteristics:		
51	F	ASRAP wave height, in feet.
52	F	Final (bottom) SVP depth less one, in meters.
53	Binary	Acoustic bottom loss types, in packed binary: Leftmost 53 bits — Blank, unused. Middle 3 bits — Bassett-Wolff bottom loss code. Rightmost 4 bits — NOO bottom loss code.
54	F	Sonic layer depth, in meters.
55-58	F	Source/receiver depths. Each depth is a separate word; i.e., Words 55,57 — Source depth, in meters. Words 56,58 — Receiver depth, in meters.
59-64	F	Frequencies array, maximum 6 levels (1 level per word, in kilohertz.)
65	I	Number of points in this profile, maximum 50. (NOTE: ASEPS uses only the first 35 points.)
Sound Velocity Profile Data:		
66-165	F	SVP depth/velocity pairs, maximum 50 points. Stored as 1 parameter/word: Even Words — Depth, in meters. Odd Words — Velocity, in meters/second.
166-195	A/Binary	Depth/temp/salinity profile (one word for each of $\leq$ 30 points): Char. 1-4 — Depth, in meters, alphanumeric. Char. 5-7 — Temperature, in ° C, alphanumeric, computed as Tc=T*10.0. Rightmost 18 bits — Salinity, in parts/1000, binary, computed as Sc-(S-30.0)*100.00.

Word Index	Data Mode	Description
196-201	F	Volume scattering data pairs for up to 3 frequencies. Stored 1 parameter/word: Even words — Frequency, in Hertz. Odd Words — Corresponding volume scattering data.
202-206	F	DANES ATLAS Shipping noise frequencies, in Hertz. Maximum of 5 values.
207-209	F	DANES ATLAS Ambient noise receiver depths, in feet. Maximum of 3 values.
210-214	Binary	DANES ATLAS ambient noise values. Each word contains packed data for 3 receiver depths (words 207-209) for one frequency. The frequency values are given in the same order as the frequencies in words 202-206. Each noise value was multiplied by 10, converted to integer and packed as follows: Leftmost 15 bits — First receiver depth (word 207) noise value Second 15 bits — Second receiver depth (word 208) noise value. Third 15 bits — Third receiver depth (word 209) noise value. Rightmost 15 bits — Unused.
215	I	Number of DANES ATLAS frequencies (stored in words 202-206).
216	I	Number of receiver depths for DANES ATLAS (stored in words 207-209).
217-220	-	Unused.

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

February 22, 1982

Mr. W.D. Kirby
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, VA 22102

Dear Bill:

The VLAD Update pertaining to the prediction improvements outlined in your memorandum of November 13, 1981 were installed on the FNOC System on February 9, 1982.

The difficulty in obtaining good comparison runs of before and after cases cleared up after extensive testing by myself and your people. The problem appears to have been in the FNOC System and not in the VLAD Model. In any case, several test cases now indicate that the VLAD Model is stable and comparisons of before and after cases show excellent results.

If I can be of further assistance, please let me know.

Sincerely,

Nathan L. Greenfeldt
Technical Director

NLG:cf

4-105-05

cc: Mr. B.N. Wheatley, Code 530
Mr. C.C. Wilcox, Code 115
Mr. Ken Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

February 23, 1982

Mr. C.C. Wilcox
Naval Ocean Research
and Development Activity
Code 115
NSTL Station, Mississippi 39529

Dear Chet:

I am enclosing a card deck of the correction set for subroutine EIGEN of SHARPS III for possible testing on your system. This is the correction set which will reduce the CP time of a SHARPS prediction by approximately 18%. I have also enclosed a listing of the routine for your information. This modification has not been installed on the FNOC system and will not be until you so direct.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

NLG:cf

4-105-05

Enclosures

cc: Ken Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

February 25, 1982

Mr. C.C. Wilcox
Naval Ocean Research
and Development Activity
Code 115
NSTL Station, Mississippi 39529

Dear Chet:

I am enclosing listings of the below listed programs for your information.

RPEFMT - Converts RAPEOUT File to Card Deck

RPECST - Converts Card Deck to RAPEOUT File

I have been in contact with Debbie Poffenberger and provided her with the location of the source code for the above programs.

If I can be of further assistance, please let me know.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

NLG:cf

4-105-05

Enclosures

cc: Ken Osborne, ODSI

OCEAN DATA SYSTEMS, INC.
2400 GARDEN ROAD, MONTEREY, CALIFORNIA 93940 • 408/649-1133

February 25, 1982

Mr. Charles W. Spofford
Science Applications, Inc.
1710 Goodridge Drive
P.O. Box 1303
McLean, Virginia 22102

Dear Chuck:

For your information I am enclosing TL Plots of the same areas I sent you before. There are two sets for each area. One set was generated from the current operational FACT Model, while the other was generated by FACT 81A with the new sediment thickness function and the correction to convert the basement reflection loss parameter currently in the geoacoustic data base to a DB value (DB = -20*ALOG10(BRFL)). Printouts of the geoacoustic parameters and the bottom loss curves generated from these parameters are also enclosed.

I have installed the geoacoustic parameters for the Atlantic and Mediterranean on the FNOC classified PL and hope to be ready for further testing in the near future. The BLUG routines have also been installed with a stand alone drive which will produce a message type output of grazing angle versus loss table for desired ASW areas.

I have not received bulk, surface and province data for the Pacific and Indian Oceans as of this date.

Sincerely,

OCEAN DATA SYSTEMS, INC.

Nathan L. Greenfeldt
Technical Director

NLG:cf

4-105-05

Enclosures

cc: Ken Osborne, ODSI
CDR Michael A. McCallister, NORDA
Mr. C.C. Wilcox, Code 115

END

FILMED

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DTIC