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**Directory of Underwater Systems Tracking, Scoring and Data Proc--ETC(U)**

1981

**RANGE COMMANDERS COUNCIL WHITE SANDS MISSILE RANGE NM--ETC**

F/G 9/2

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**OTIC**
DIRECTORY OF UNDERWATER SYSTEMS
TRACKING, SCORING AND DATA PROCESSING
SOFTWARE

UNDERWATER SYSTEMS GROUP
RANGE COMMANDERS COUNCIL

WHITE SANDS MISSILE RANGE
KWAJALEIN MISSILE RANGE
YUMA PROVING GROUND

PACIFIC MISSILE TEST CENTER
NAVAL WEAPONS CENTER
ATLANTIC FLEET WEAPONS TRAINING FACILITY
NAVAL AIR TEST CENTER

EASTERN SPACE AND MISSILE CENTER
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AIR FORCE TACTICAL FIGHTER WEAPONS CENTER
Directory of Underwater Systems Tracking, Scoring and Data Processing Software

Underwater Systems Group
Range Commanders Council
White Sands Missile Range, NM 88002

Same as Block 7

Range Commanders Council
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Computer hardware, software configurations, application software, hardware, system costs, large cost savings, underwater tracking programs, impact scoring programs, surface and in-air tracking programs, geodetic data and survey programs, underwater sound propagation programs, ocean engineering programs, graphics and display programs, range data processing programs.

The members and associate members of the Underwater Systems Group (USG) of the Range Commanders Council (RCC) have exchanged information on the computer hardware and software configurations in use at their respective ranges and activities regularly over the years with significant success. The enormous investment made in the current inventory of application software and the increasing tendency of software to dominate hardware in systems costs indicated to the USG that an increased effort should be made to propagate information on existing programs in the expectation that large cost savings might accrue to the government,
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- Eastern Space and Missile Center (ESMC)
- Pacific Missile Test Center (PMTC)
- Atlantic Fleet Weapons Training Facility (AFWTF)
- Naval Air Test Center (NATC)
- Naval Undersea Warfare Engineering Station (NUWES)
- Naval Civil Engineering Laboratory (NCEL)
- Naval Underwater Systems Center (NUSC)
- Naval Coastal Systems Center (NCSC)
DIRECTORY OF UNDERWATER SYSTEMS TRACKING, SCORING AND DATA PROCESSING SOFTWARE.

Prepared by
UNDERWATER SYSTEMS GROUP
RANGE COMMANDERS COUNCIL

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New Mexico 88002

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### PACIFIC MISSILE TEST CENTER

### NAVAL UNDERSEA WARFARE ENGINEERING STATION

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### KWAJALEIN MISSILE RANGE

### EASTERN SPACE AND MISSILE CENTER

### PACIFIC MISSILE TEST CENTER

### NAVAL UNDERWATER SYSTEM CENTER

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### EASTERN SPACE AND MISSILE CENTER

### ATLANTIC FLEET WEAPONS TRAINING FACILITY

### NAVAL UNDERSEA WARFARE ENGINEERING STATION

### NAVAL UNDERWATER SYSTEMS CENTER

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### KWAJALEIN MISSILE RANGE

### EASTERN SPACE AND MISSILE CENTER

### PACIFIC MISSILE TEST CENTER

### ATLANTIC FLEET WEAPONS TRAINING FACILITY

### NAVAL UNDERSEA WARFARE ENGINEERING STATION

### NAVAL UNDERWATER SYSTEMS CENTER

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### EASTERN SPACE AND MISSILE CENTER

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### ATLANTIC FLEET WEAPONS TRAINING FACILITY

### NAVAL UNDERSEA WARFARE ENGINEERING STATION

### NAVAL UNDERWATER SYSTEMS CENTER

### NAVAL COASTAL SYSTEMS CENTER

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### NAVAL CIVIL ENGINEERING LABORATORY

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### ATLANTIC FLEET WEAPONS TRAINING FACILITY

### NAVAL UNDERSEA WARFARE ENGINEERING STATION
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INTRODUCTION

The members and associate members of the Underwater Systems Group (USG) of the Range Commanders Council (RCC) have exchanged information on the computer hardware and software configurations in use at their respective ranges and activities regularly over the years with significant success. The enormous investment made in the current inventory of application software and the increasing tendency of software to dominate hardware in system costs indicated to the USG that an increased effort should be made to propagate information on existing programs in the expectation that large cost savings might accrue to the government.

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Naval Civil Engineering Laboratory (NCEL)
Naval Underwater Systems Center (NUSC)
Naval Coastal Systems Center (NCSC)
Chapter 1

UNDERWATER TRACKING PROGRAMS
TITLE: BARSTUR - Barking Sands Tactical Underwater Range

ABSTRACT: Track up to eight surface and underwater vehicles equipped with MK-72 tuned frequency pingers on the 50-square mile range, located to the west of Kauai, Hawaii.

APPLICATION: UNIVAC 1230

LANGUAGE: CS-1 assembly language

VINTAGE: 1967

LOCAL CATALOG NUMBER: Tech Note 3430-16-74

REMARKS:

POINT OF CONTACT: Lancey Cascaden PMTC (805) 982-7077
                          Bob Gruber Code 3450 AV 351-7077

TITLE: BSURE - Barking Sands Underwater Range Expansion

ABSTRACT: Track up to four surface and underwater vehicles equipped with MK-84 phase coded pingers anywhere on the combined 50-square mile BARSTUR or 600-square mile BSURE range, located to the west of Kauai, Hawaii.

APPLICATION: UNIVAC 1230

LANGUAGE: CS-1 assembly language

VINTAGE: 1977

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Bob Gruber PMTC (805) 982-7077
                  Larry Anderson Code 3450 AV 351-7077
TITLE: Generating Simulated BSURE Data

ABSTRACT: Simulates a vessel with a periodic pinger, moving in various straight paths and bends. The ping data is organized into a general format and into special BSURE data format.

APPLICATION: CDC CYBER 175

LANGUAGE: FORTRAN IV

VINTAGE: 1978

LOCAL CATALOG NUMBER: Documentation: Tech Note 3450-3-78 Deck No. S20 SIMDAT 2J780986

REMARKS: This program generates test data to be used with the BSURE Prototype Tracking Program.

POINT OF CONTACT: Larry A. Anderson PMTC (805) 982-7177 AV 351-7177

TITLE: BSURE Prototype Tracking Program

ABSTRACT: The prototype of the tracking program used at the BSURE underwater range at Kauai, Hawaii.

APPLICATION: CDC CYBER 175

LANGUAGE: FORTRAN IV

VINTAGE: 1978

LOCAL CATALOG NUMBER: Documentation: Tech Note 3450-4-78 Deck No. R15 BSURE 2J780987

REMARKS: The production tracking program was based on this FORTRAN version, and is in a UNIVAC assembly language. Some minor program modifications have been made in the production program which are not reflected in the FORTRAN program or its documentation.

POINT OF CONTACT: Larry A. Anderson PMTC (805) 982-7177 AV 351-7177
TITLE: Hydroacoustic Tracking (Short Baseline)

ABSTRACT: Hydroacoustic (75 kHz) three-dimensional tracking on waterborne (surface/sub-surface) objects is performed using an array (short baseline) of four orthogonal hydrophones. Eight objects can be tracked simultaneously.

APPLICATION: MODCOMP IV 35/B using a DATACOM Model 8200 interface

LANGUAGE: FORTRAN IV

VINTAGE: 1980

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: D. L. Pearson NUWES (206) 396-4541
AV 744-4541
Chapter 2

IMPACT SCORING PROGRAMS
TITLE: ESSEX

ABSTRACT: Computer program ESSEX processes the measurement data from the Electronic Scoring System (ESS) on the Splash Detection Radars (SDRs) to obtain impact scores for reentry vehicles.

APPLICATION: Harris 6024/4VM computer system

LANGUAGE: FORTRAN

VINTAGE: Initiated in May 1977

LOCAL CATALOG NUMBER: None

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850
AV 742-3850

TITLE: REDRESS

ABSTRACT: Computer program REDRESS reads the magnetic data tapes from the Electronic Scoring System (ESS) on the Splash Detection Radars (SDRs) and stores the measurements for processing by computer ESSEX.

APPLICATION: Harris 6024/4VM computer system

LANGUAGE: FORTRAN

VINTAGE: Initiated in May 1977

LOCAL CATALOG NUMBER: None

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850
AV 742-3850
ABSTRACT: Computer program ARIES optimally combines an extrapolation of the multisensor trajectory with impact sensor measurements to form a multisensor impact estimate for a reentry vehicle. The sensor measurements consist of impact measurements from ALCOR (ARPA((Advanced Research Project Agency))) Lincoln Observable Radar, TRADEX (Terminal Resolution and Detection Experiment), and ALTAIR (ARPA Lincoln Tracking and Instrumentation Radar), splash plume measurements from the Splash Detection Radars (SDRs), hydroacoustic impact timing system (HITS) measurements, and telemetry loss-of-signal time measurements.

APPLICATION: Harris 6024/VM computer system

LANGUAGE: FORTRAN


LOCAL CATALOG NUMBER: None

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850 AV 742-3850

ABSTRACT: Program ZSCORE2 computes impact location and time for a missile impacting at the Kwajalein Missile Range (KMR). The data for input to the program are obtained from Splash Detection Radars (SDRs), hydrophones, and telemetry loss of signal due to transmitter demise.

APPLICATION: CDC 6400 and CDC 7600

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER: K2661

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850 AV 742-3850
TITLE: RVSCORE

ABSTRACT: Program RVSCORE computes a splash point for reentry vehicles missions and computes a miss distance from a known target based upon radar inputs, RADOT inputs, or Splash Detection Radar (SDR) inputs.

APPLICATION: CDC 6400 or CDC 7600

LANGUAGE: FORTRAN

VINTAGE: 1976

LOCAL CATALOG NUMBER: K2618

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850

TITLE: SCORE

ABSTRACT: Program SCORE computes a splash point of a reentry vehicle in northings and eastings and in WGS66 Coordinates from Splash Detection Radar (SDR) inputs, RADOT inputs, or radar inputs.

APPLICATION: CDC 6400 or CDC 7600

LANGUAGE: FORTRAN

VINTAGE: 1976

LOCAL CATALOG NUMBER: K2619

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850

AV 742-3850
TITLE: ESS

ABSTRACT: The Electronic Scoring System (ESS) program accepts raw, noisy, video data from the Splash Detection Radar (SDR), and from this data produces an accurate range leading edge, and range and azimuth center of gravity.

APPLICATION: SEL 810A

LANGUAGE: Assembly

VINTAGE: 1976

LOCAL CATALOG NUMBER: K1627

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850

TITLE: ESSX

ABSTRACT: The X-Band Electronic Scoring System (ESSX) program accepts raw, noisy, video data from the Splash Detection Radar (SDR), and from this data produces an accurate range leading edge, range center of gravity and average azimuth.

APPLICATION: SEL 810A

LANGUAGE: Assembly

VINTAGE: 1976

LOCAL CATALOG NUMBER: K1636

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850

AV 742-3850
TITLE: HYDRO

ABSTRACT: Program HYDRO computes impact time and range of an reentry vehicle splash from an underwater hydrophone given a radar azimuth and range to the splash point, plus the time splash was recorded at the hydrophone.

APPLICATION: CDC 6400 or DCD 7600

LANGUAGE: FORTRAN

VINTAGE: 1976

LOCAL CATALOG NUMBER:

REMARKS: Program replaced by PROGRAM HITS, K2432.

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850

TITLE: HITS

ABSTRACT: This program computes for a missile impacting the ocean surface the impact time and its standard deviation, the impact sound transmission time through seawater to hydrophones and its standard deviations, and optionally, the velocity of sound in seawater and its standard deviation.

APPLICATION: CDC 6400/7600

LANGUAGE: FORTRAN

VINTAGE: 1972

LOCAL CATALOG NUMBER: K2432

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850

AV 742-3850
TITLE: FSSRP

ABSTRACT: FSSRP is a multistage general launcher setting angle program for small rocket operations to enable the correction of stage impact point(s) due to wind effects.

APPLICATION: CDC 6400/7600

LANGUAGE: FORTRAN

VINTAGE: 1968

LOCAL CATALOG NUMBER: S2623P

REMARKS: None

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850

TITLE: IMTA - MILS Target Array Program

ABSTRACT: A program for computing impacts of single or multiple reentry bodies (REBs). Gives least squares adjustment of position, splash times, relative distances, miss distances, etc., from data collected on deep ocean hydrophone arrays.

APPLICATION: CYBER 74/73

LANGUAGE: FORTRAN 2189

VINTAGE: November 1980

LOCAL CATALOG NUMBER: 970

REMARKS: For quick look and post-processing of POLARIS, POSEIDON, TRIDENT, and MINUTEMAN operational launches.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961
TITLE: MIRP - MILS/BOA Relative Program

ABSTRACT: This program computes the position and time of one event (impact/splash, or SOFAR bomb explosion) relative to another in the Broad Ocean Area (BOA) of the Missile Impact Location System (MILS). One Sigma confidence regions are computed for the estimated parameters.

APPLICATION: CYBER 74/73

LANGUAGE: FORTRAN 634 ASSEMBLY 0

VINTAGE: December 1977

LOCAL CATALOG NUMBER: 946

REMARKS: Project supported: POLARIS, POSEIDON. Quick-look and post-processing application.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961

TITLE: MIBC - MILS BOA Multiple Impact Program

ABSTRACT: Program reduces data collected by Missile Impact Location System/Broad Ocean Area (MILS/BOA) hydrophones for single and multiple reentry bodies (RB). It provides least squares estimate of RB position, time for event, miss distances, relative distances between pairs of events, and associated confidence estimates.

APPLICATION: CYBER 74/73

LANGUAGE: FORTRAN 1738 ASSEMBLY 0

VINTAGE: January 1979

LOCAL CATALOG NUMBER: 905

REMARKS: Poseidon and Polaris programs for quick-look and post-processing information.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961
TITLE: SPOT FIX

ABSTRACT: SPOT FIX provides the user with hyperbolic and spherical fixes when given sound velocity profile data and ping arrival time. It operates on a discrete level; no tracking is done. Although this is a general purpose program, it was developed with sonobouy fixing in mind.

APPLICATION: 1230 UNIVAC (PODAF - Barking Sands) FORTRAN IV

LANGUAGE: FORTRAN

VINTAGE: March 1980

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: A. R. Wolf PMTC (805) 982-8785
                         Priscilla Becker Code 3453 AV 351-8785

TITLE: IMPACT

ABSTRACT: From a set of arrival times, measured at N bottom mounted hydrophones, of a splash or explosive activated sound source, the program computes the time and location (X-Y) of the impact from all combinations of three hydrophones.

APPLICATION: CDC 3400 (48) computer

LANGUAGE: FORTRAN

VINTAGE: 1978

LOCAL CATALOG NUMBER:

REMARKS: Marking use of weighted solutions, editing, and statistical analysis, the program computes the most likely solution to the impact source. The output includes a listing of all acceptable solutions, the optimal solutions, and statistical measures of accuracy.

POINT OF CONTACT: Henry Maurais NUSC (401) 841-4800
                                                  AV 948-4800
ABSTRACT: Given the transit times from $N$ (6) sound sources (coplanar) to each of three hydrophones, this program computes the depths and interhydrophone distances of the triad.

APPLICATION: CDC 3300 computer

LANGUAGE: FORTRAN

VINTAGE: Not certified for general distribution purposes

LOCAL CATALOG NUMBER:

REMARKS: The algorithm used is a least square version of a method originally attributed to Dr. Vanderkulk and published in a JUA journal. Inputs include a sound velocity profile in addition to the $3N$ transit times.

POINT OF CONTACT: Henry Maurals NUSC (401) 841-4800 AV 948-4800
Chapter 3

SURFACE AND IN-AIR TRACKING PROGRAMS
TITLE: ABCD Autotape BCD Tape Reduction Program

ABSTRACT: This program decodes the 7-track BCD tapes generated by the Autotape Electronic Positioning System. The Autotape raw data is written to 9-track magnetic tape in standard mediary binary format. The 7-track input tapes are multifile.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 187 ASSEMBLY 0

VINTAGE: October 1978

LOCAL CATALOG NUMBER: 973

REMARKS: Offshore ship tracking for calibration purposes.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961

------------------------------------------------------------------

TITLE: OTRACK

ABSTRACT: This program accepts readings taken during a 3-D 'SAD' from each of the three theodolite stations and calculates the ship's position in range coordinates and range and bearing from a specified 3-D target. 'OPTRACK' also has the option of accepting a ship's position (determined by 3-D) and giving the resulting look angles for each theodolite station.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS: OTRACK has built-in values for St. Croix grid using 'Sandy', 'Two Bro', and 'Sprat'; St. Croix grid using 'Sandy', 'Long Point', and 'Sprat'; or 'Roosevelt Roads Grid System'. The operator also has the option of selecting other coordinate systems and entering theodolite and backsite positions through the console typewriter.

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: Autotape Tracking

ABSTRACT: Range 1/Range 2 data are acquired, corrected and transformed to range (local) coordinates in real time or post real time via digital playback.

APPLICATION: MODCOMP IV via RS232 post, using a CUBIC DM40 autotape, and a STROBE DATA Model NUWES interface.

LANGUAGE: FORTRAN IV

VINTAGE: See remarks.

LOCAL CATALOG NUMBER:

REMARKS: System presently under development; to be certified/operated by June 1981.

POINT OF CONTACT: D. L. Pearson

TITLE: Radar Mark 35 Tracking

ABSTRACT: Range, azimuth and elevation data are acquired, corrected and transformed to range (local) coordinates in real time.

APPLICATION: MODCOMP IV via DATACOM Model 8200 interface using ASTRODATA Syncro-to-Digital Converters.

LANGUAGE: FORTRAN IV

VINTAGE: 1980

LOCAL CATALOG NUMBER:

REMARKS: Not recommended for new applications.

POINT OF CONTACT: D. L. Pearson

(206) 396-4541

AV 744-4541
TITLE: TRACAR

ABSTRACT: This program is used at the Atlantic Undersea Test and Evaluation Center (AUTEC) Range to process raw theodolite data from up to six cameras. Raw azimuth and elevation angles are corrected and position coordinates, velocity, acceleration, and trajectory angles are then computed.

APPLICATION: CDC 3400

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: E. Moody NUSC (401) 841-4800
Code 38213 AV 948-4800

TITLE: AERIS Real-Time Tracking Program

ABSTRACT: Processes tracking data from two targets. Range-range position information derived from Cubic DM-40 distance-measuring equipment interfaced with the computer system is processed and converted to X-Y coordinates, speed, and heading.

APPLICATION: Digital Equipment Corporation PDP-11/35

LANGUAGE: FORTRAN and ASSEMBLY language, DEC RT-11 Version 2 operating system

VINTAGE: 1979

LOCAL CATALOG NUMBER: None (File name is AEREMS.SAV)

REMARKS: Requires special hardware interfaces.

POINT OF CONTACT: H. P. Trujillo NCSC (904) 234-4495
Code 733 AV 436-4495
TITLE: AERIS Post-Run Tactical Diameter Plot Program

ABSTRACT: Post-run plotting of AERIS* tracking data. Tracking data accumulated on magnetic tape or disk is read and processed for selectable time slices. Output is an 8-1/2" x 11" report quality plot produced on a Versatec printer/plotter.

APPLICATION: Digital Equipment Corporation PDP-11/35

LANGUAGE: FORTRAN, DEC RT-11 Version 2 Operating System

VINTAGE: 1978

LOCAL CATALOG NUMBER: None (File name is TACTD2.SAV)

REMARKS: Requires a Versatec electrostatic printer/plotter for output.

*AERIS - Automatic Electronic Range Instrumentation System, a range-range, cooperative, microwave tracking system.

POINT OF CONTACT: H. P. Trujillo
NCSC
Code 733
(904) 234-4495

Title: AERIS Post-Run Velocity and Distance Plot Program

ABSTRACT: Post-run plotting of AERIS* tracking data. Tracking data accumulated on magnetic tape or disk is read and processed for selectable time slices.

APPLICATION: Digital Equipment Corporation PDP-11/35

LANGUAGE: FORTRAN DEC RT-11 Version 2 Operating System

VINTAGE: 1978

LOCAL CATALOG NUMBER: None (File name is VELDIS.SAV)

REMARKS: Requires a Versatec Electronic Range Instrumentation System, a range-range, cooperative, microwave tracking system.

*AERIS - Automatic Electronic Range Instrumentation System, a range-range, cooperative, microwave tracking system.

POINT OF CONTACT: H. P. Trujillo
NCSC
Code 733
(904) 234-4495

AV 436-4495

3-5
TITLE: AERIS Post-Run Time Slice Plot Program

ABSTRACT: Post-run plotting of AERIS* tracking data. Tracking data accumulated on magnetic tape or disk is read and processed for selectable time slices.

APPLICATION: Digital Equipment Corporation PDP-11/35

LANGUAGE: FORTRAN, DEC RT-11 Version 2 Operating System

VINTAGE: 1979

LOCAL CATALOG NUMBER: None (File name is TIMSLC.SAV)

REMARKS: Requires a Versatec electrostatic printer/plotter for output.

*AERIS - Automatic Electronic Range Instrumentation System, a range-range, cooperative, microwave tracking system.

POINT OF CONTACT: H. P. Trujillo
NCSC
Code 733
(904) 234-4495
AV 436-4495

TITLE: AERIS Post-Run Tracking Data Smoothing Program

ABSTRACT: Post-run smoothing of AERIS* tracking data. Tracking data accumulated on magnetic tape or disk is read and processed for selectable time slices. Seven-second data intervals are used in a third-order least squares curve fit routine.

APPLICATION: Digital Equipment Corporation PDP-11/35

LANGUAGE: FORTRAN, DEC RT-11 Version 2 Operating System

VINTAGE: 1979

LOCAL CATALOG NUMBER: None (File name is SMTHTP.SAV)

REMARKS:
*AERIS - Automatic Electronic Range Instrumentation System, a range-range, cooperative, microwave tracking system.

POINT OF CONTACT: H. P. Trujillo
NCSC
Code 733
(904) 234-4495
AV 436-4495
TITLE: AERIS Post-Run Track Plot Program

ABSTRACT: Post-run plotting of AERIS* tracking data. Tracking data accumulated on magnetic tape or disk is read and processed for plotting on a 8-1/2" x 11" Versatec electrostatic printer/plotter. Plot output is report quality.

APPLICATION: Digital Equipment Corporation PDP-11/35

LANGUAGE: FORTRAN, DEC RT-11 Version 2 Operating System

VINTAGE: 1978

LOCAL CATALOG NUMBER: None (File name is WHOLE.SAV)

REMARKS: Requires a Versatec electrostatic printer/plotter for output.

*AERIS - Automatic Electronic Range Instrumentation System, a range-range, cooperative, microwave tracking system.

POINT OF CONTACT: H. P. Trujillo

NCSC
Code 733
(904) 234-4495
AV 436-4495

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TITLE: AERIS Post-Run Reference Point Plot Program

ABSTRACT: Post-run plotting of AERIS* tracking data. Tracking data accumulated on magnetic tape or disk is read and processed for selectable time slices. Output is an 8-1/2" x 11" report quality plot produced on a Versatec printer/plotter.

APPLICATION: Digital Equipment Corporation PDP-11/35

LANGUAGE: RT-11 Version 2 Operating System

VINTAGE: 1980

LOCAL CATALOG NUMBER: None (File name is REFPLT.SAV)

REMARKS: Requires a Versatec electrostatic printer/plotter for output.

*AERIS - Automatic Electronic Range Instrumentation Systems, a range-range, cooperative, microwave tracking system.

POINT OF CONTACT: H. P. Trujillo

NCSC
Code 733
(904) 234-4495
AV 436-4495

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Chapter 4

GEODETIC DATA AND SURVEY PROGRAMS
TITLE: SURVEY

ABSTRACT: Program SURVEY calculates possible observer locations from possibly biased look-angles to known targets. SURVEY yields two-dimensional coordinate components relative to the same origin as for the known targets.

APPLICATION: CDC 6400/7600

LANGUAGE: FORTRAN

VINTAGE: 1973

LOCAL CATALOG NUMBER: K2424

REMARKS:

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850
                   AV 742-3850

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TITLE: GEORG

ABSTRACT: Program GEORG takes the latitude, longitude and height information of selected locations and calculates the (X,Y,Z) position using each of the selected locations as the origin of every other selected location to calculate azimuth and elevation angles. The earth model used is the Wake-Eniwetak 60 ellipsoid.

APPLICATION: CDC 6400/7600

LANGUAGE: FORTRAN

VINTAGE: 1972

LOCAL CATALOG NUMBER: K2412

REMARKS:

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850
                   AV 742-3850
MCOTRAN

ABSTRACT: Program MCOTRAN is a generalized coordinate transformation routine. Input/output options are E, F, G (geodetic coordinates), A, E, R (AZ/EL, range), X, Y, Z (earth surface fixed coordinates).

APPLICATION: CDC 6400/7600

LANGUAGE: FORTRAN

VINTAGE: 1974

LOCAL CATALOG NUMBER: K2407

REMARKS:

POINT OF CONTACT: Don Strietzel KMR (205) 895-3850 AV 742-3850

RCOM - SINS/ASPS NAV Data Comparison

ABSTRACT: This program compares Ship's Inertial Navigation System (SINS) data with the Acoustic Ship Positioning System (ASPS) navigation data.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 226

VINTAGE: October 1978

LOCAL CATALOG NUMBER: 1029

REMARKS: Mainly used for analysis/accuracy studies.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961
TITLE: MIGP - MILS GDOP Program

ABSTRACT: This program computes Geometric Dilution of Precision (GDOP) for events of interest by using various combinations of hydrophones internally or externally selected.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 1163 ASSEMBLY 0

VINTAGE: April 1978

LOCAL CATALOG NUMBER: 923

REMARKS: For POLARIS and POSEIDON programs and pre-mission operations

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961

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TITLE: MUSD - DOT Raw Data Decode

ABSTRACT: This program decodes raw data-recorded during a Deep Ocean Transponder (DOT) array survey operation from shipboard SRN-9 or BRN-3.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 749

VINTAGE: August 1980

LOCAL CATALOG NUMBER: 1043

REMARKS: Pre-mission tasks for survey programs

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961

4-4
TITLE: MITQ – MILS Transponder Position

ABSTRACT: This program provides a least squares reduction of survey data for a Deep Ocean Transponder (DOT) array or for a Missile Impact Location System (MILS) target array.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 2236

VINTAGE: August 1980

LOCAL CATALOG NUMBER: 941

REMARKS: Project Support: POSEIDON, PERSHING programs and pre-mission operations. Program MITT (1027) is appropriate for generating or modifying general data tape for DOT array input to other programs.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961

TITLE: MVPA VPRS Survey General Data

ABSTRACT: This program establishes the general data for Deep Ocean Transponders (DOT) associated with Velocity and Position Recording System (VPRS) units.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 460

VINTAGE: November 1980

LOCAL CATALOG NUMBER: 1118

REMARKS: The program is the first step in reduction of survey data for VPRS array.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961
TITLE: MVBP VPRS Mini Survey

ABSTRACT: This program reduces ship geodetic and acoustic slant range data to provide an estimate of the positions of Deep Ocean Transponders (DOT) associated with Velocity and Position Recording System (VPRS) units.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 773 ASSEMBLY 0

VINTAGE: November 1980

LOCAL CATALOG NUMBER: 1119

REMARKS: Used for launch point arrays on POSEIDON and TRIDENT programs.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961

TITLE: MVPD - VPRS Range Matching

ABSTRACT: This program computes the ranges from the Acoustic Ship Positioning System (ASPS) transducer to Deep Ocean Transponders (DOT). Recorded ranges which differ from the computed ranges by no more than an input gate valve are selected as matched ranges.

APPLICATION: CDC CYBER 74/73

LANGUAGE: FORTRAN 404 ASSEMBLY 0

VINTAGE: November 1980

LOCAL CATALOG NUMBER: 1120

REMARKS: Used for launch point arrays on POSEIDON and TRIDENT programs.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961 AV 854-7961
TITLE: MECG Satellite Navigation Program

ABSTRACT: This program reduces satellite navigation system data from shipboard BRN-3 or SRN-9 to provide latitude and longitude positions. The program also handles Acoustic Ship Positioning System (ASPS) range data for use in subsequent programs.

APPLICATION: CYBER 74/73

LANGUAGE: FORTRAN 923 ASSEMBLY 0

VINTAGE: CDC CYBER 74/73

LOCAL CATALOG NUMBER: 1177

REMARKS: Projects supported are POLARIS, POSEIDON, and TRIDENT launches. Program breaks up satellite pass into ship's track of 20-minute increments.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961

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TITLE: Weighted Baseline Least Squares Lattice Locator WBLSLL

ABSTRACT: Computes the relative locations of hydrophones using Vanderkulk Survey baseline data as input.

APPLICATION: CYBER 175

LANGUAGE: FORTRAN

VINTAGE: 1978

LOCAL CATALOG NUMBER: Tech Note 3450-7-78 Deck No. R15 WBLSLL 2J780990

REMARKS:

POINT OF CONTACT: D. VanZante PMTC (805) 982-7177
Code 3452 AV 351-7177
TITLE: Least Squares Hydrophone Locator

ABSTRACT: Adjusts both the survey boat locations and the hydrophone locations to obtain the best estimate of the position of the hydrophone.

APPLICATION: IBM 7094

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER: Tech Note 3450-9-77 Deck No. R15 LSRL 25770980

REMARKS:

POINT OF CONTACT: D. VanZante PMTC Code 3452 (805) 982-7177 AV 351-7177

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TITLE: COORTR

ABSTRACT: This program accepts as input the coordinates of any point in the vicinity of the St. Croix AFWTF and outputs the coordinates of this same point in five different coordinate systems.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1970

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: SURV1

ABSTRACT: This program accepts several days of 3-D data tapes recorded on site and condenses survey data onto one magnetic tape. Smoothed data is written onto another tape. This program produces a line printer listing, a condensed 3-D range tape, and a 3-D tape which serves as input to the third link.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

TITLE: SURV2

ABSTRACT: This program accepts theodolite data and determines the position and closure. The program produces a line printer listing and a magnetic tape which serves as input to the third link.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: SURV3

ABSTRACT: This program accepts OPTRACT data, uncorrected array coordinates data, sound velocity/depth velocity data, and transducer depth to produce a calculated array location.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE:

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

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TITLE: Array Survey (SURVEY)

ABSTRACT: This program is used to establish the location (position, rotation, and depth) of an array (short baseline, orthogonal array of four hydrophones). The results are used in the hydroacoustic tracking program to transform the track of an object from "array coordinates" to range (local) coordinates.

APPLICATION: MODCOMP IV

LANGUAGE: FORTRAN IV

VINTAGE: 1980

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: D. L. Pearson NUWES (206) 396-4541 AV 744-4541

4-10
ABSTRACT: This program uses a noniterative closed form solution to calculate the positions of up to four hydrophones and calculate the track of an interrogator vehicle.

APPLICATION: DEC 11/05 Computer

LANGUAGE: FORTRAN IV and one short assembly language routine

VINTAGE: The program has successfully surveyed hydrophone positions using both simulated and actual range measurement acoustic time delay data. Certification pending.

LOCAL CATALOG NUMBER:

REMARKS: The HYSURVEY program analysis does not require prior knowledge in terms of a predetermined interrogator vehicle path and all results are exact.

POINT OF CONTACT: Boyd E. Smith NUWES (206) 396-4424
AV 744-4424

ABSTRACT: Computes interhydrophone baseline and hydrophone depths with no knowledge of the location of the ship's position required.

APPLICATION: IBM 7094

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER: Tech Note 3450-26-77 Deck No. R15 VUHS 2J770983

REMARKS:

POINT OF CONTACT: D. VanZante PMTC (805) 982-7177
Code 3452 AV 351-7177
TITLE: MAP

ABSTRACT: This program computes the transformation (a translation and a rotation) for mapping one set of coordinates into another given set having a one-to-one relationship.

APPLICATION: CDC 3300

LANGUAGE: FORTRAN

VINTAGE: 1975

LOCAL CATALOG NUMBER:

REMARKS: The program obtains the best transformation in a least square sense. It is used as part of a survey package to tie or transform a set of in-water coordinates to another land-based coordinate system.

POINT OF CONTACT: Henry Maurais NUSC (401) 841-4800
AV 948-4800

TITLE: Baseline

ABSTRACT: Given a set of interhydrophone distances and an initial estimate of the hydrophone coordinates (in a plane), this program generates an optimal set (in a least square sense) of coordinates for the hydrophones through an iterative process.

APPLICATION: CDC 3300

LANGUAGE: FORTRAN

VINTAGE: 1976

LOCAL CATALOG NUMBER:

REMARKS: If N hydrophones are given, then 2N-3 (minimum) baselines are required to establish the X-Y net.

POINT OF CONTACT: Henry Maurais NUSC (401) 841-4800
AV 948-4800

4-12
Chapter 5

UNDERWATER SOUND PROPAGATION PROGRAMS
TITLE: KIWC - MILS Velocity Profile

ABSTRACT: Given the velocity vs. depth profile data, the program computes the average vertical (effective) velocity and ray path data for selected starting and stopping depths for either the direct signal path or the surface reflect signal path.

APPLICATION:

LANGUAGE: FORTRAN 745, ASSEMBLY 0
FORTRAN 731, ASSEMBLY 0 (MIVP)

VINTAGE: September 1977

LOCAL CATALOG NUMBER: 916/965/1044

REMARKS: Used for POSEIDON and TRIDENT programs and pre-mission support. Program MIVF will also provide same results.

POINT OF CONTACT: Donald L. Leonard ESMC/ROA (305) 494-7961
AV 854-7961

TITLE: Underwater Sound Velocity (USV) Program

ABSTRACT: USV inputs depth vs. temperature or sound velocity via cards or a Sound Velocity Profile (SVP) tape. Outputs are a CALCOMP plot tape of the SVP and of sound ray path. An SVP tape can also be outputted.

APPLICATION: UNIVAC 1230

LANGUAGE: FORTRAN IV

VINTAGE: 1979

LOCAL CATALOG NUMBER: Tech Note 3450-31-79 Deck No. G19 USVP 03J 790018

REMARKS: Modification of NUWES SOUNDRAY program.

POINT OF CONTACT: Bruce Hill PMTC (805) 982-7077
Code 3453 AV 351-7077
TITLE: Underwater Refraction Correction

ABSTRACT: Calculates the effective sound velocity for sound paths correcting for the amount of refraction observed at Kauai, Hawaii.

APPLICATION: IBM 7094
CDC CYBER 175

LANGUAGE: FORTRAN IV

VINTAGE: 1973

LOCAL CATALOG NUMBER: Documentation: Tech Note 3430-45-73.
(The deck is included in the BSURE Prototype Tracking Program.)

REMARKS: Eleven sound velocity profiles representative of Kauai, Hawaii were used.

POINT OF CONTACT: Larry A. Anderson PMTC (805) 982-7177
AV 351-7177

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TITLE: Underwater Ray Tracing and Signal Strength


APPLICATION: IBM 7094, as documented.
CDC CYBER 175, available from author.

LANGUAGE: FORTRAN IV

VINTAGE: 1978

LOCAL CATALOG NUMBER: Documentation: Tech Note 3450-1-78, S14 ACOUST 2J78094

REMARKS: The ray tracing program was designed for speed to help in analysis work. It is limited in that it cannot process reflected paths, or paths reversing direction. The signal strength programs use standard methods for spreading loss, attention, ambient noise, etc.

POINT OF CONTACT: Larry A. Anderson PMTC (805) 982-7177
AV 351-7177
TITLE: RAYTRA

ABSTRACT: This program accepts card input containing velocity profile data to produce the sound ray trace plot.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125

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TITLE: Conductivity and Temperature vs. Depth (CTD)

ABSTRACT: Conductivity, temperature, and pressure (depth) data are acquired and processed from which salinity and sound velocity are then calculated.

APPLICATION: MODCOMP IV using the NEIL BROWN MARK 3 CTD system or HP9825 Calculator, both using the IEEE488 I/F bus

LANGUAGE: MODCOMP IV - FORTRAN IV

VINTAGE: MODCOMP IV - 1980
    HP9825 - 1978

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: D. L. Pearson NUWES

(206) 396-4542
AV 744-4541
TITLE: Sound Ray Path Plot (SRPP)

ABSTRACT: A plot of sound ray path(s) is generated from specified parameters.

APPLICATION: MODCOMP IV, using a HP7221A plotter via RS232 port

LANGUAGE: FORTRAN IV

VINTAGE: 1980

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: D. L. Pearson  
NUWES  
(206) 396-4541  
AV 744-4541

TITLE: XVR6

ABSTRACT: Program plots a sound velocity profile and the acoustic ray paths from a specified source in a two-dimensional medium and constant horizontal gradients.

APPLICATION: CDC 3400

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER:

REMARKS: Inputs consist of XBT profiles (temperature vs. depth) and a standard (AUTEC) salinity profile. Computation of velocity profile is based on Wilson's Equations. Outputs include listings and magnetic tape.

POINT OF CONTACT: Henry Maurais  
NUSC  
(401) 841-4800  
AV 948-4800
TITLE: Acoustic Ray Path Computation Program

ABSTRACT: The standard Navy acoustic ray path computer models FACT and NBSM II have been implemented on a general-purpose computer to make offline acoustic tables for the countermeasures evaluator hybrid computer simulation system.

APPLICATION: B-5500

LANGUAGE: FORTRAN

VINTAGE: Unknown

LOCAL CATALOG NUMBER:

REMARKS: The programs are adaptations of UNIVAC and CDC computer programs developed at other activities.

POINT OF CONTACT: Max F. Dannecker
NCSC
Code 732
(904) 234-4495
AV 436-4495

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Chapter 6

OCEAN ENGINEERING PROGRAMS
TITLE: SNAPLD


APPLICATION: CDC 175, CDC 7600

LANGUAGE: FORTRAN

VINTAGE: 1979

LOCAL CATALOG NUMBER: CEL Technical Memorandum M-44-80-1

REMARKS: Presently limited to two-dimensional problems; not more than two cables can connect at any node. Printed output includes positions, velocities, and tensions; plotted output includes geometry and tension history. Random excitations can be input.

POINT OF CONTACT: W. J. Nordell
                   NCEL
                   (805) 982-5500
                   AV 360-5500

TITLE: CABANA

ABSTRACT: Frequency domain solution for estimating peak tension variation in lifting lines. Uses spectral or sinusoidal excitation. Aids in selecting lines to withstand dynamic loadings.

APPLICATION: CDC 175, CDC 7600

LANGUAGE: FORTRAN

VINTAGE: 1978

LOCAL CATALOG NUMBER: CEL Technical Memorandum M-44-80-4

REMARKS: Produces printer plots showing peak tension vs. excitation frequency. Output shows probability of exceeding a given tension.

POINT OF CONTACT: W. J. Nordell
                   NCEL
                   (805) 982-5500
                   AV 360-5500
TITLE: DECEL 1

ABSTRACT: Performs static analysis of multileg, multimaterial cable structures. Can perform parametric analyses studying the effects of changing cable properties, drag coefficient, anchor locations, and current fields.

APPLICATION: CDC 175, CD 7600

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER: TN-1584

REMARKS: Spatially varying current fields can be described using data from up to four current meter strings. Plots underformed and deformed structure shape and current field representation.

POINT OF CONTACT: W. J. Nordell NCEL (805) 982-5500

TITLE: SEADYN

ABSTRACT: A general purpose nonlinear analysis program for underwater cable and truss structures. Options are provided for the treatment of mooring systems for surface ships.

APPLICATION: CDC 175, CDC 7600

LANGUAGE: FORTRAN

VINTAGE: 1981

LOCAL CATALOG NUMBER:

REMARKS: Finite element analysis techniques are used. Three-dimensional cable systems and three-dimensional current fields can be modeled. The program will perform static and dynamic analyses.

POINT OF CONTACT: P. A. Palo NCEL (805) 982-5736

6-3
Chapter 7

GRAPHICS AND DISPLAY PROGRAMS
TITLE: TACTN1

ABSTRACT: This program accepts 3-D range data recorded on site along with 'TACTURN/SPEEDAC' data recorded onboard ship. The program calculates smoothed posit, ship's head, and velocity at critical points on a tactical turn or in an acceleration/deceleration run.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS: For TACTURN: Compute drift-corrected transfer and advance at each critical point, steady turn diameter, tactical turn diameter, and steady turning speed. For SPEEDAC: Compute distance since 'COMEX', time since 'COMEX' and smoothed velocity.

POINT OF CONTACT: Toby Ramos

TITLE: TACTN2

ABSTRACT: This link accepts the link 1 generated data tape and the user inputs for scale factor and online/offline plot flag. The program plots the information calculated in link 1.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER

REMARKS:

POINT OF CONTACT: Toby Ramos

(809) 863-2000
AV 831-5314
TITLE: Graphics Tracking Display

ABSTRACT: This program formats in air (radar, cinesextant) and hydroacoustic tracking data for display in plan (X,Y) and elevation/depth on a multicolor video graphics display monitor.

APPLICATION: MODCOMP IV 35/B with DATACOM 8200 interface and GENISCO model GTC 3000 graphics system

LANGUAGE: FORTRAN IV

VINTAGE: 1980

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: D. L. Pearson

NUWES

(206) 396-4541

AV 744-4541
Chapter 8

RANGE DATA PROCESSING PROGRAMS
TITLE: **ASIM - MILS Target Array Simulation Program**

**ABSTRACT:** This program is a Monte Carlo simulation program designed to simulate complex missile impacts in Missile Impact Location System (MILS) target array. It loops through a set of logic and computations that determine if acoustic signals generated by Reentry Bodies (REBs) are masked at various hydrophones.

**APPLICATION:** CYBER 74/73

**LANGUAGE:** FORTRAN 1819  ASEMBLY 0

**VINTAGE:** April 1978

**LOCAL CATALOG NUMBER:** 752

**REMARKS:** Applicable to TRIDENT, POSEIDON, and MINUTEMAN programs. Used for analysis of pre-mission tasks.

**POINT OF CONTACT:** Donald L. Leonard  ESMC/ROA  (305) 494-7961  AV  854-7961

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TITLE: **Error Propagation Through Various Tracking Algorithms**

**ABSTRACT:** Propagates variances and biases through underwater tracking algorithms (2D and 3D, hyperbolic and spherical, least squares, etc.) and plots radius of error.

**APPLICATION:** CDC CYBER 175

**LANGUAGE:** FORTRAN IV

**VINTAGE:** 1978

**LOCAL CATALOG NUMBER:** Documentation: Tech Note 3450-2-78, S14 ERRPLT 2J780985

**REMARKS:** The output is 8.5 x 11 plots drawn by an SD 4460 plotter

**POINT OF CONTACT:** Larry A. Anderson  PMTC  (805) 982-7177  AV  351-7177

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8-2
TITLE: BQFIVE

ABSTRACT: This program reduces passive sonar data from reformatted shipboard tape, yielding statistical analyses of sensor vs. Underwater Tracking Range (UTR) track data in plot form and in statistical summaries as well as listings of ship's track and raw sensor data.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS: Totally interactive system.

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000
AV 831-5314

TITLE: CMPISL (Compass Island)

ABSTRACT: This program accepts multiple reels of 3-D range tape containing a ship's tracked data and intermittent track data on one of two target pingers mounted on a single (moored) Torpedo Recovery Boat (TRB).

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000
AV 831-5314
TITLE: CNEWS

ABSTRACT: This program accepts a range tape of 3-D data recorded on site and prepares a magnetic tape with retagged objects. A line printer listing is generated which includes retagged data of interest.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

TITLE: CNEWSII

ABSTRACT: This program accepts a 3-D range tape, tags the data, outputs a line printer listing of tagged data, and writes a 3-D format tape and/or 'CNEWS' format tape.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: DMP3D

ABSTRACT: This program lists or dumps the tagged data that was recorded on the 3-D range tape.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

TITLE: DUMP

ABSTRACT: This program reads a Mark 117 Fire Control System (FCS) Data Gathering Subsystem (DGS) tape and produces a "copy" (reformatted tape) from which the bi-octal redundancy has been removed and which has been reblocked so that one physical record on the new tape contains only one logical record.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS: Reformats shipboard tape for input to SENSA and/or FIRE.

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: EDTNL

ABSTRACT: This program accepts the 'NELC' data tape written by the 'ERROR' program (COMSTD, COMVDS, COMELO) and uses the error plot deck to edit the 'NELC' tape. An updated 'NELC' tape is written.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos

TITLE: EMLOG

ABSTRACT: This program accepts 3-D data recorded on site along with electromagnetic (EM) log data recorded onboard ship and determines EM log errors.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos
TITLE: EMLOG1-2

ABSTRACT: This program prepares a confidential 556BPI plot tape for the CALCOMP 780 offline plotter. The three (3) plots made are: distance indicator vs. speed, shaft turns vs. speed, and speed indicator error vs. speed.

APPLICATION: MODCOMP IV35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

TITLE: FIRE

ABSTRACT: This program isolates and converts certain data items from a redblocked (DUMP output) Mark 117 FCS DGS tape and creates listing for WSAT Firing Analysis Program.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: FORACS

ABSTRACT: This program computes the actual range, adjusted range, relative bearing and true bearing from shipboard equipment to on-range targets.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

TITLE: FORSUR

ABSTRACT: This program accepts OTRACK data, approximate FORACS location in range coordinates, velocity and other program constants; and through an iteration procedure, a posit for a FORACS is determined.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: HARBERT

ABSTRACT: This program computes 'PERICAL' (periscope calibration) data which includes the relative bearing values for one or two periscopes and the true ship heading. This data is derived from theodolite optical data.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

 REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

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TITLE: LISTAR

ABSTRACT: This program accepts a 3-D range tape and lists on a line printer positions by object and array for objects that are on range.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

 REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

8-9
TITLE: SENSA

ABSTRACT: This program isolates and converts certain data items from a reblocked (DUMP output) Mark 117 Fire Control System Data Gathering Subsystem (DGS) tape and assembles on a magnetic tape.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS: Produces input for BQFIVE program.

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

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TITLE: SEAT

ABSTRACT: This program computes the actual range, adjusted range, relative bearing, and true bearing from shipboard equipment to on-range targets.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

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TITLE: ERRCOM

ABSTRACT: This program produces 'SAD' test data and prepares the resulting error data for input to program 'ERRPLT'. Reference readings for each equipment are drawn from the 'SEAT' output tape and correlated with equipment readings input by cards.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314

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TITLE: ERRPLT

ABSTRACT: This program accepts the 'ERROR' output tape and produces various plots of the data generated by program 'ERRCOM'. This program has the capability to reject points by set general bounds and by deletion of individual points.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000 AV 831-5314
TITLE: SENSOR (MASS)

ABSTRACT: This program performs statistical analysis on the same data sets plotted by program 'ERRPLT'.

APPLICATION: MODCOMP IV 35/B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000

TITLE: SEPTAR

ABSTRACT: This program accepts 3-D range data or a 'CNEWS' formatted tape. Either tape must have at least two tagged objects. The program takes this data and computes smoothed position information on the two desired objects.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000

AV 831-5314
TITLE: SETERR

ABSTRACT: This program accepts card inputs containing settled error data, plots a settled error graph, and optionally outputs a line printer listing of error information for each equipment used in the exercise.

APPLICATION: MODCOMP IV/35B

LANGUAGE: FORTRAN IV

VINTAGE: April 30, 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Toby Ramos AFWTF-7125 (809) 863-2000
AV 831-5314

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TITLE: St. Croix and S3A SRS

ABSTRACT: Software package reads a formatted St. Croix tape and S3A tape from an Antisubmarine Warfare Operations Center (ASWOC/TSC). The output is CALCOMP plots and listings of SRS errors.

APPLICATION: Systems Engineering Laboratories (SEL-32/55)

LANGUAGE: FORTRAN

VINTAGE: 1979

LOCAL CATALOG NUMBER:

REMARKS: Range tape was formatted for FORTRAN. S3A cassette was dumped to tape at a ASWOC.

POINT OF CONTACT: Daniel W. Buckner NATC (301) 863-4612
AV 356-4612

9-13
TITLE: P3CII and Chesapeake Test Range

ABSTRACT: Software reads Chesapeake Test Range (CTR) tape and copy of navigation data from P3CII. Output is plot and listing of navigation error.

APPLICATION: System Engineering Laboratories (SEL 32/55)

LANGUAGE: FORTRAN

VINTAGE: 1979

LOCAL CATALOG NUMBER:

REMARKS:

POINT OF CONTACT: Daniel W. Buckner NATC (301) 863-4612 AV 356-4612

TITLE: RTOUT

ABSTRACT: Program RTOUT is a program to smooth and time correlate specified in-water and radar data. Input is from the Atlantic Undersea Test and Evaluation Center (AUTEC) real-time program.

APPLICATION: CDC 3400 and SEL 32

LANGUAGE: FORTRAN

VINTAGE: 1978

LOCAL CATALOG NUMBER:

REMARKS: Data is smoothed by a user controlled least squares filter.

POINT OF CONTACT: E. Moody NUSC (401) 841-4800 Code 38213 AV 948-4800
**AIREDIT**

**ABSTRACT:** Program AIREDIT is used at Atlantic Undersea Test and Evaluation Center (AUTEC) to read a raw radar data tape and outputs data in several tabular and tape formats. Its primary function is wild point editing of raw radar data.

**APPLICATION:** CDC 3400

**LANGUAGE:** FORTRAN

**VINTAGE:** 1968

**LOCAL CATALOG NUMBER:**

**REMARKS:** Primary raw radar editing programs used at the AUTEC range.

**POINT OF CONTACT:** E. Moody

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**CAKED**

**ABSTRACT:** This AUTEC program is designed for theodolite data editing. It is normally used to accomplish the initial editing before going into the final theodolite reduction program.

**APPLICATION:** CDC 3400

**LANGUAGE:** FORTRAN

**VINTAGE:** 1977

**LOCAL CATALOG NUMBER:**

**REMARKS:**

**POINT OF CONTACT:** E. Moody
TITLE: RPVA

ABSTRACT: Program RPVA takes uncorrected radar measurements for time, azimuth, elevation, and range as input and computes smoothed Cartesian position, velocity, and acceleration.

APPLICATION: CDC 3400

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER:

REMARKS: The origin for the coordinate systems for the output need not be the same as that for input.

POINT OF CONTACT: E. Moody NUSC (401) 841-4800
                Code 38213 AV 948-4800

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TITLE: PVATRNS

ABSTRACT: PVATRNS gives time correlated trajectory or point parameters (position, velocity, acceleration) referenced to some origin of latitude, longitude, and height. Will compute trajectory parameters referenced to a maximum of 19 sites.

APPLICATION: CDC 3400

LANGUAGE: FORTRAN

VINTAGE: 1975

LOCAL CATALOG NUMBER:

REMARKS: The program input is from cards or tape. The tape input is expected to conform to an AUTEC standard binary format.

POINT OF CONTACT: E. Moody NUSC (401) 841-4800
                Code 38213 AV 948-4800

8-16
TITLE: TRACKT

ABSTRACT: TRACKT is the AUTEC Range primary post-test in-water tracking program. Computations are based on an orthogonal X-Y-Z coordinate system and conversions to heights above sea level are made where necessary.

APPLICATION: CDC 3400

LANGUAGE: FORTRAN

VINTAGE: 1977

LOCAL CATALOG NUMBER:

REMARKS: Input to this program is the raw hydrophone data tape generated by the AUTEC real-time program.

POINT OF CONTACT: E. Moody  NUSC  (401) 841-4800
               Code 38213  AV  948-4800
DATE
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-8