OCEANOGRAPHIC DATA of the MONTEREY DEEP SEA FAN

by

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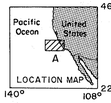
Scripps Institution of Oceanography

Inspired by and Dedicated to:
Francis P. Shepard



LEGEND

MERCATOR PROJECTION

SCALE
1 TO 898,524 AT 35° LATITUDE

CONTOUR INTERVAL = 100 METERS
CORRECTED FOR SOUND VELOCITY
FROM MATTHEWS TABLES, AREAS 43
AND 44.

EXPLANATION

THIS CHART WITH THE ACCOMPANYING FIGURES AND REFERENCES IS, FRANKLY, AN EXPERIMENT. FOR YEARS, WE HAVE FELT THE NEED FOR A NEW KIND OF CHART OF CONVENIENT SIZE THAT (1) SUMMARIZES ALL THE OCEANOGRAPHIC DATA TO DATE FOR A PARTICULAR AREA; (2) CAN BE USED BOTH AS A PLANNING DOCUMENT FOR UPCOMING CRUISES AND (3) AS A WORKING CHART DURING SHIPBOARD OPERATIONS; BUT (4) THAT COULD BE EASILY REVISED AND MODIFIED AS NEW INFORMATION IS RECEIVED FROM VARIOUS SOURCES. ALTHOUGH WE ARE MARINE GEOLOGISTS, WE RECOGNIZE THAT DATA FROM ALL OF THE BRANCHES OF OCEANOGRAPHY WILL ULTIMATELY HAVE BEARING ON MARINE GEOLOGIC PROBLEMS; THUS WE HAVE INCLUDED DATA FROM OTHER FIELDS OF MARINE SCIENCES.

THE SELECTION OF THE MONTEREY FAN AREA AS THE FIRST CHART OF THIS TYPE WAS A RELATIVELY EASY DECISION AS TWO OF US (NORMARK AND WILDE) DID OUR PH.D. THESIS ON PROBLEMS ASSOCIATED WITH THE MONTEREY FAN, FUTHERMORE, AS ATTESTED TO BY THE ACCOMPANYING LIST OF REFERENCES, THE CENTRAL CALIFORNIA OFFSHORE REGION IS BEING ACTIVELY STUDIED BY MANY DIVERSE GROUPS OF MARINE SCIENTISTS. THE BATHYMETRIC BASE MAP IS A REVISION BY CHASE OF WILDE'S (1965) THESIS MAP WHICH IN TURN WAS A REVISION (IN CORRECTED METERS) OF THE PIONEER SURVEY OFF-SHORE AND SHEPARD AND EMERY'S (1938) NEAR-SHORE MAP. WE CHOSE THE HYDROGRAPHIC OFFICE'S 3000 SERIES AS A CONVENIENT BASE FOR PLOTTING BECAUSE IT IS FAMILIAR TO BOTH OCEANOGRAPHERS AND PROFESSIONAL MARINERS AND ESPECIALLY BECAUSE (1) BLANK CHARTS AT THIS SCALE ARE READILY AVAILABLE; (2) THE NAVY'S BC SERIES AT THE SAME SCALE CAN BE USED FOR THE LAND BOUNDARIES; AND (3) THE BASE CHARTS AT THE SCRIPPS GEOLOGIC DATA CENTER INCLUDING THE COMPILATION TRACK CHARTS ARE ON 3000 SERIES BASES OR ENLARGMENTS THEREOF.

CORRECTED METERS, AT 100 METER INTERVALS, IS THE BATHYMETRIC STANDARD FOR THE CONTOURS IN ACCORD WITH THE CONVERSION OF AMERICAN NAUTICAL CHARTS TO METRIC UNITS. IN 1975 A VAST MAJORITY OF DEPTH SOUNDERS ON AMERICAN OCEANOGRAPHIC SHIPS STILL DISPLAY DEPTHS IN UNCORRECTED FATHOMS (CALIBRATED FOR A FIXED SPEED OF SOUND OF 800 FATHOMS PER SECOND) SO THAT THIS CHART CAN NOT BE CHECKED DIRECTLY AT SEA WITHOUT CONVERTING FROM FATHOMS TO METERS AND WITHOUT CORRECTION FOR THE VARIABLE SPEED OF SOUND IN REAL SEA WATER BY USING MATTHEWS TABLES OR EQUIVALENT CONVERSIONS. WE BELIEVE A CHART OF TRUE BOTTOM DEPTHS IS MORE VALUABLE TO THE MARINE SCIENTIST THAN ONE WHICH MAY BE COMPARED WITH THE OUTPUT OF DEPTH SOUNDERS PRESENTLY USED. BY THIS DECISION WE ARE HOPEFUL FOR FUTURE IMPROVEMENTS IN THE COLLECTION OF BATHYMETRIC DATA.

THE SCALE AND PROJECTION OF THE SUPPLEMENTAL FIGURES IS THAT USED BY THE SCRIPPS GEOLOGIC DATA CENTER FOR COMPILATION OF TRACK LINES OF VARIOUS CRUISES. THE SUBJECT MATTER OF THE ADDITIONAL FIGURES, IN ESSENCE, IS A DIGEST OF WHAT OCEANOGRAPHIC INFORMATION HAS BEEN COMPILED FOR THIS AREA. AT THIS STAGE, WE RELIED ON AVAILABLE WORK AND DID LITTLE OR NO REVISION OURSELVES. OUR PHILOSOPHY HAS BEEN THAT THE WORKERS IN A PARTICULAR DISCIPLINE KNOW MORE ABOUT THE QUALITY AND THE APPLICABILITY OF THEIR DATA THAN WE DO, SO THEIR DATA IS PRESENTED IN UNEDITED FORM EXCEPT FOR DRAFTING MODIFICATIONS TO MAINTAIN A STANDARD FORMAT. IF THE READER REQUIRES ADDITIONAL INFORMATION OR HAS QUESTIONS ABOUT THE DATA, WE HAVE GIVEN AN ADDRESS OR CONTACT FOR THE SOURCE OF DATA. IN THIS MANNER WE HOPE TO LINK DIRECTLY THE POTENTIAL USER OF THE DATA TO PEOPLE RESPONSIBLE FOR THE GENERATION OF THE DATA. IN PARTICULAR WE HAVE SOUGHT TO IDENTIFY DATA BANKS WHERE COMPILATIONS OF DATA IN VARIOUS FORMATS ARE READILY AVAILABLE TO THE USER.

THE REFERENCES LISTED ARE EXTENSIVE (BUT UNLIKELY TO BE EXHAUSTIVE) OF THOSE WRITTEN ABOUT THE AREA. WE LIST PARTICULARLY THOSE PAPERS AND REPORTS THAT WE BELIVE TO BE OF GENERAL INTEREST AND LET THE READER USE BIBLIOGRAPHIES SUCH AS BY TERRY (1955) AND BY BARON (1971) TO PURSUE MORE SPECIFIC INTERESTS. ALSO, WE INCLUDE REPORTS OF LIMITED AVAILABILITY BUT WHICH CONTAIN RAW DATA OR MORE COMPLETE DATA THAN IS PERMITTED BY SPACE CONSCIOUS JOURNALS.

AS OUR BASE CHART IS NOT TO BE USED FOR NAVIGATION, WE LIST THE PUBLISHED NAVIGATIONAL CHARTS PLUS THE PERTINENT COAST PILOT FOR THOSE PLANNING CRUISES IN THE AREA. THE COAST PILOT IS A VALUABLE AID AS IT GIVES WEATHER AND HARBOR INFORMATION WHICH IS NECESSARY FOR OPERATIONS IN THE ALL TOO ROUGH AND STORMY SEAS OFF THE CALIFORNIA COAST.

FINALLY, WE SOLICIT COMMENTS ABOUT THE APPROACH USED, THE FORMAT, CONTENT, ETC. OF THIS CHART AS WE INTEND TO PRODUCE CHARTS OF OTHER AREAS IN THIS GENERAL STYLE.

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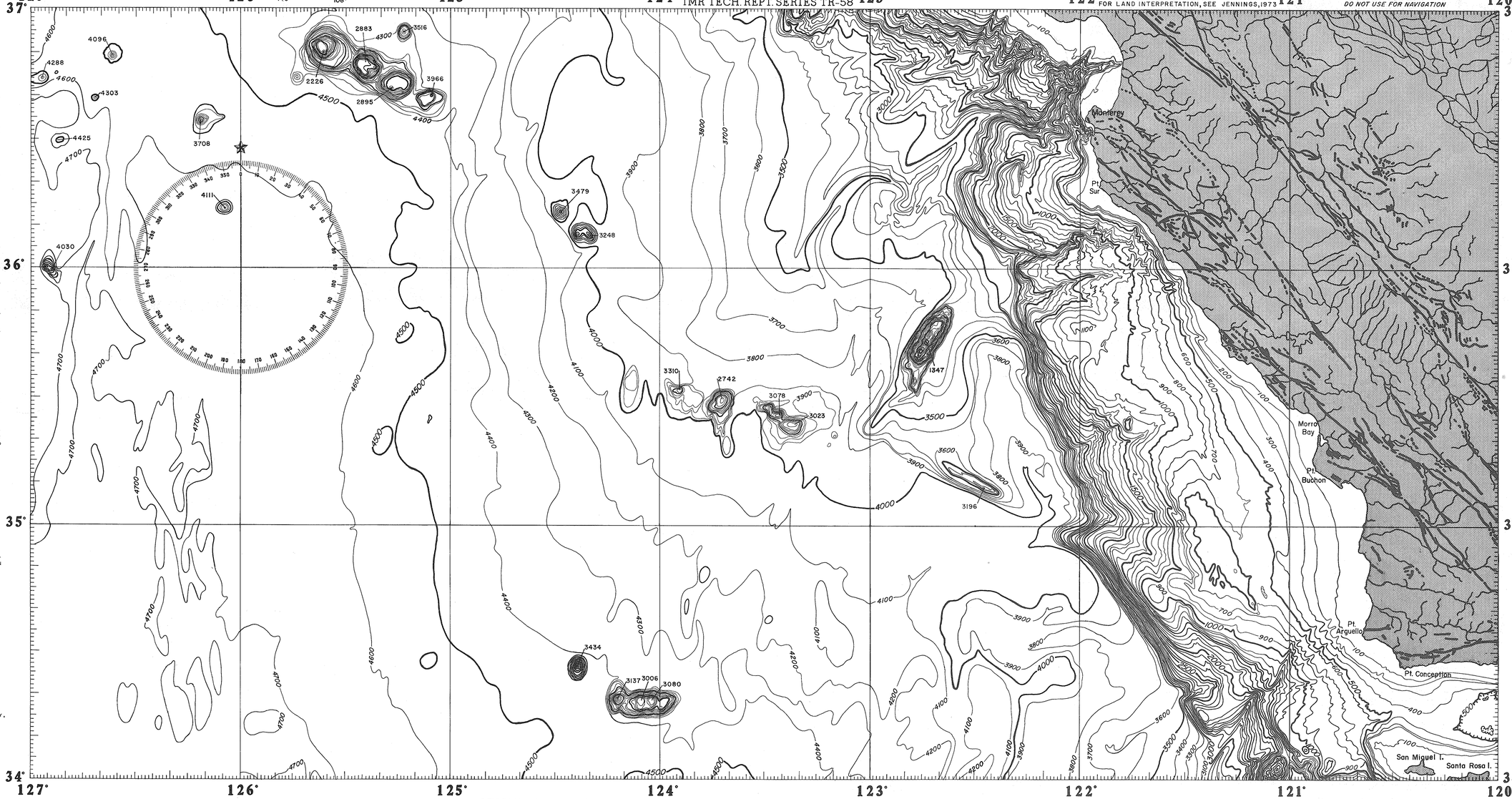
FOR LAND INTERPRETATION, SEE JENNINGS, 1973

DO NOT USE FOR NAVIGATION



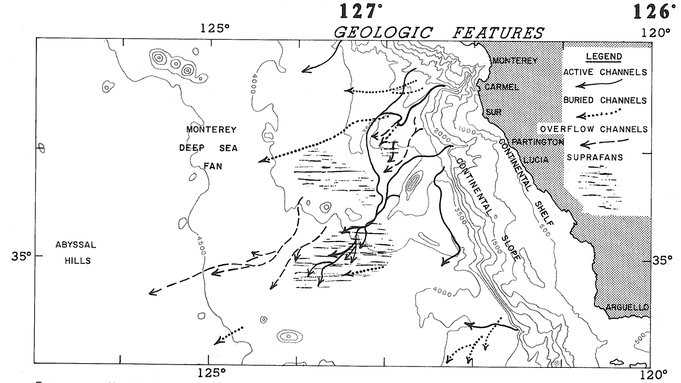


FIGURE 1. MAJOR GEOLOGIC FEATURES IN THE AREA. INTERPRETATIONS OF THE INFERRED AND BURIED CHANNELS FROM WILDE, NORMARK, AND CHASE, 1975.

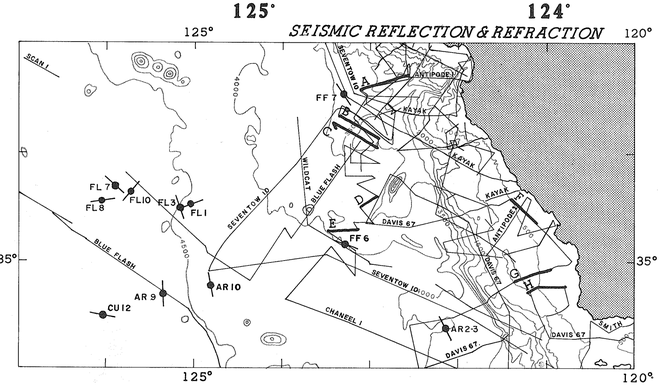


FIGURE 2. SEISMIC REFLECTION LINES AND REFRACTION STATIONS WITH AZIMUTHS. FOR EXPLANATION OF THESE DATA PLUS PROFILES INDICATED BY A,B,C,D,E,F,G,AND H, SEE EXPEDITIONS AND KEYS ON REVERSE SIDE OF THIS SHEET.

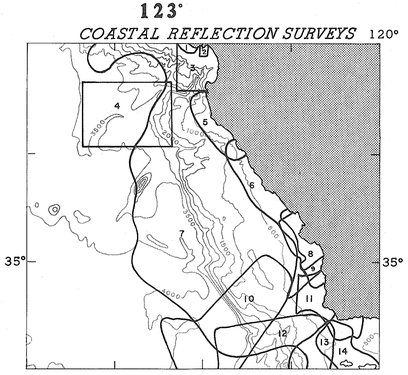


FIGURE 3. SURVEYS FROM FOUR ADDITIONAL SOURCES. SEE EXPEDITIONS AND KEYS FOR EXPLANATION.

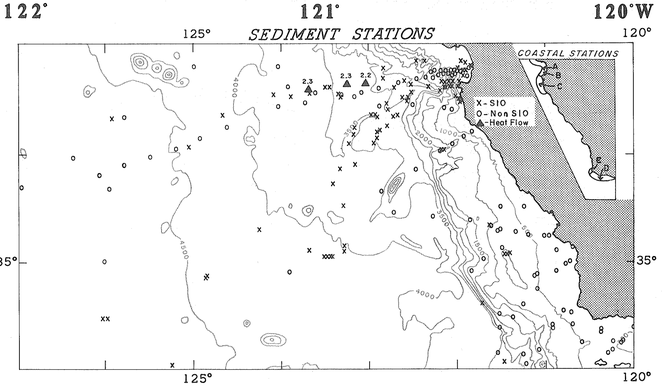


FIGURE 4. LOCATIONS OF DATA IN SIO WORLD OCEAN SEDIMENT DATA BANK. FOR INFORMATION ABOUT THESE DATA, CONTACT J.Z. FRAZER, SCRIPPS INSTITUTION OF OCEANOGRAPHY. SEE EXPEDITIONS AND KEYS FOR INFORMATION ABOUT COASTAL STATIONS. HEAT FLOW VALUES ADDED WHERE AVAILABLE.