

INSTITUTE FOR GEOPHYSICS  
THE UNIVERSITY OF TEXAS AT AUSTIN

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MEMORANDUM

January 16, 1987

TO: CR3D Participants and Bill Mitchell

FROM: Tom Shipley, Cruise Coordinator *TS*

SUBJECT: CR3D Memo #1

The Costa Rica project is scheduled to depart Balboa, Panama on 30 March and arrive in Puntarenas, Costa Rica on 29 April. Please plan to arrive in Panama on 28 March and immediately move onto the ship. Bill Mitchell will have details concerning the ship's agent later as well as last minute schedule changes.

We need to determine just who will be onboard for this cruise. Below are the possibilities as I understand it.

<u>Name</u>	<u>RT Travel by (*=actually budgeted)</u>
1. Ken Griffiths	*CS (UT Science Cost Center)
2. Mark Wiederspahn	*CS
3. TBA, EE	*CS
4. Dan Martin, ET	CS
5. Oscar Cordero, AT	CS
6. TBA, AT	CS
7. Don Dean, LO	*CS
8. TBA, ONI Nav. Tech.	*subcontract (UT Science Budget)
9. Tom Shipley	*UTS (UT Science Budget)
10. ?Cloos (or UCSC student)	*UTS
11. High Winkler (UT student)	*UTS
12. ?UT Post Doc (female)	*UTS
13. Alvaro Aguilar, CR Observer	*UTS
14. TBA, CR Observer	*UTS
15. Charles Windisch	*UTS
16. Eli Silver	*UCSC (UC Science Budget)
17. Don Reed	*UCSC

These seventeen people will make a highly competent team. I do not think we can do the work with fewer people. Total bunk space is 19. Up to 3 females share a room with one female crew member. With the present staff, no room will have to be co-ed.

Visas will be required for both Panama and Costa Rica. I suggest that you do not wait until the last minute to obtain your passport and visas. UT visas and travel will be coordinated by Kathy Moser.

THS:km

21 November 1986

DRAFT

Memorandum of understanding between the Institute for Geophysics (UTIG) of the University of Texas and the Refinadora Costarricense de Petroleo (RECOPE), SA

This is a statement of agreement between the UTIG and RECOPE with respect to the U.S. National Science Foundation (NSF) sponsored project titled "Three Dimensional Seismic Imaging of an Accretionary Wedge: Costa Rica". The intent is to specify some details of the joint program recognizing that it will be a best faith effort by both parties.

UTIG is interested in this project to understand the processes responsible for development of accretionary continental margins. Do they grow by simple addition of material at the base of the trench slope, by large scale low-angle thrust faulting, or by some viscous flow mechanism? To determine how continental margins grow requires high quality imaging of internal structure, a difficult geophysical problem in areas of rough seafloor and fine-scale structural complexities.

RECOPE is interested in this project because it will provide background information on the overall structural styles of basement and its evolution. The seismic reflection data should provide new knowledge concerning the tectonic emplacement of the Nicoya Complex. The data, when integrated with other RECOPE information should help in improving estimates of petroleum potential in sedimentary basins onshore. RECOPE will also be able to acquire training of staff in data acquisition program design and execution, as well as in seismic data processing and interpretation.

The UTIG Research Vessel *Fred H. Moore* will conduct multichannel seismic reflection surveys offshore Costa Rica after departing Panama, between about 29 March 1987 and arriving in Puntarenas, Costa Rica on or about 28 April 1987. The program consists of collecting 9 high resolution, deep penetration multichannel seismic lines extending from the coast of the Nicoya Peninsula to the trench. Also, two multichannel 3-D, 9 x 9 km grids with 100 m line spacings will be collected at two location on the continental slope.

The acquisition system parameters are:

- GUS 4200 Marine seismic recording system
- Record length 14 seconds, 4 millisecond sample duration
- 96-trace, 3200m hydrophone streamer
- 10 Syntron streamer compasses
- 12 Syntron depth controllers
- 12 Bolt airgun source array
  - 2130 cubic inches at 2000 psi
  - 50 bar-meter power
  - shot repetition rate about 16 seconds
- Highly accurate shorebased Maxiran navigation system

The data processing at UT will consist of:

Standard edit, sort, deconvolution, scaling, velocity analyses, normal moveout and stack using the UTIG VAX/780 computer with DISCO (Digicon) processing programs.

Three-dimensional migration of the data will be conducted on a Cray supercomputer at UT or in Houston. A major research effort in software development is underway at UTIG for 3-D migration programs.

#### RESPONSIBILITIES OF UTIG:

1. UTIG will provide space and travel expenses for two official Costa Rica observers for the shipboard program. These observers will participate in the data acquisition phase of the program and be part of the scientific party. It is the responsibility of RECOPE to have their representatives appointed as the official observers.
2. UTIG and Offshore Navigation, Inc. (ONI) will provide advance information on schedules, including early site visit by ONI, and lists of equipment to be temporarily imported. The navigation equipment and technician will be provided by contracting of ONI by UTIG.
3. UTIG will provide plotted preliminary navigation and microfilm of shipboard monitors by October, 1987. Hard copy displays of all processed seismic data in full and half scale forms will be provided as they are available, but should be completed by April, 1990. UTIG will also provide informal processed data, particularly the swath lines as soon as preliminary processing is complete. On request, UTIG will provide stack tapes in SEG-Y without cost until the end of the NSF grant period. Original data is always available from the UTIG Data Center at the cost of reproduction.
4. UTIG will provide RECOPE a Cruise Report within three months post-cruise. Progress Reports will be submitted October 1987 and October 1988 with a Final Report by April 1990.
5. UTIG will send a project scientist twice to RECOPE to provide informal reports and seminars on processing and interpretation at mutually agreed times. UTIG will provide the two roundtrip airfares, RECOPE will be responsible for expenses for the two one-week stays in Costa Rica.

#### RESPONSIBILITIES OF RECOPE:

6. RECOPE will coordinate the land navigation station installation, maintenance and dismantling.
7. After ONI site visit and before the ship is scheduled to reach the area, RECOPE will survey in the final locations and elevation of the stations.
8. RECOPE will insure that all appropriate clearances and licenses for radio navigation, radio communication, and site locations have been applied for and granted. UTIG has requested ship and navigation clearances through the U.S. State Department.
9. RECOPE will arrange customs waiver for temporary importation of the navigation equipment and exportation at the end of the program. All ground transportation, RECOPE field representatives, local help and security will be provided by RECOPE at no cost to UTIG or ONI.
10. At a mutually agreed time between October 1987 and December 1988, RECOPE will send one or two people to UTIG to work on the data processing and interpretation of the seismic data. The visit will be about one month in length. This is viewed as an informal training program for RECOPE staff. UTIG will pay airfares, RECOPE and UTIG will split normal living expenses.

## CONCLUDING STATEMENT

We will explore the possibility of conducting an onshore-offshore refraction velocity study as part of this program. The R/V *Fred Moore* may be able to shoot offshore into a RECOPE geophone array in Guanacaste, with UTIG supplying a radio shot-time from the ship to the RECOPE DFS-5.

Finally, it is the wish of both UTIG and RECOPE that longer term cooperation may be possible with student and staff training, *Fred Moore* use, and possible joint studies of interest to both RECOPE and UTIG.

Agreed to by:

Arthur Maxwell, Director  
Institute for Geophysics  
University of Texas

and  
RECOPE