PROPOSAL COVER SHEET

A proposal submitted to the West Coast National Undersea Research Center.

Project Title: SUBMERSIBLE STUDIES OF TECTONISM AND SEAWATER-CRUSTAL INTERCHANGE ALONG EXTENSIONAL AND STRIKE-SLIP SEGMENTS OF THE BLANCO TRANSFORM FAULT ZONE

Principal Investigator: Randolph A. Koski

Date Submitted: September 30, 1994 **Start Date:** August-September, 1995

We, the undersigned, certify that, in the event this proposal is accepted in whole or in part, our signatures on this proposal constitute intended acceptance of and compliance with applicable statutes, regulations, and policies of the U.S. Government and the U.S. Department of Commerce.

ENDORSEMENTS:

Submitted by:
Principal Investigator

Signature Randolph A. Koski

Typed Name
Randolph A. Koski

Title
Geologist

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MS999 345 Middlefield Road
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Approved by:
Institutional Representative

Signature

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Michael E. Field

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For Administrative Detail, Contact:

Name Randolph A. Koski

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MS999 345 Middlefield Road
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APPLICANT AGREEMENT

The principal investigator is requested to read, sign, and return this agreement to:

West Coast National Undersea Research Center
School of Fisheries and Ocean Sciences
P.O. Box 757220
University of Alaska Fairbanks
Fairbanks, AK 99775-7220

Failure to do so may result in cancellation of the proposed mission.

I FULLY UNDERSTAND AND ACCEPT RESPONSIBILITIES FOR:

- All travel arrangements for my scientific and support team members to the research site.
- Transporting mission-related equipment to and from the research site.
- Arranging personal ground transportation as needed while at the research site.
- Immediately notifying the West Coast Center of any alterations in the initial agreed upon schedule.
- Submitting a post-mission Quick-Look Report within 30 days of the mission, Annual Status Report by January 31 of each year, and a Final Report in accordance with Section 8.1 of the proposal guidelines.

Randolph A. Koski — PRINCIPAL INVESTIGATOR

9/21/94 — DATE

NURP PROJECT SUMMARY

Project No.: *Date Submitted:

*Title: SUBMERSIBLE STUDIES OF TECTONISM AND SEAWATER-CRUSTAL INTERCHANGE ALONG EXTENSIONAL AND STRIKE-SLIP SEGMENTS OF THE BLANCO TRANSFORM FAULT ZONE

*Research Category: OOGC, OOL, OOMF

*Principal Investigator: Dr. Randolph A. Koski

*Co-Principal Investigator(s): Dr. Robert W. Embley, Ms. Stephanie L. Ross

*Other Investigators: Mr. Robert P. Dziak, Dr. Robert G. Bohannon, Ms. Alice S. Davis Dr. Tracy Vallier

*Other Cooperating Institutions:

*Preferred Operations Dates: August-September, 1995 *Alternate Dates: June or July, 1995

Start Date: Completion Date: *Year 2 of 2

*System and Facilities:
Leg: 1 DWS 2 _____ 3 _____ 4 _____

Support Vessel:
Leg: 1 Laney Chouest 2 _____ 3 _____ 4 _____

*Operational Time: (No. Days/No. Dives per day) 9days/8 deployments

Leg: 1 9 days on station, 1 day transit *Requested: Awarded: Actual:
*Transit Days: 1

Leg: 2 *Requested: Awarded: Actual:
*Transit Days:

Leg: 3 *Requested: Awarded: Actual:
*Transit Days:

Leg: 4 *Requested: Awarded: Actual:
*Transit Days:

*Items marked should be completed on the proposal. Items without an asterisk are to be completed in post-mission reports.

Project No.: *PI:

NURP PROJECT SUMMARY

*Depth Range (meters): Minimum: 1900 Maximum: 4500

Total Bottom Time (hr):

Mission Period:

Leg 1	Start Date:	Completion Date:
Leg 2	Start Date:	Completion Date:

*Location:

Leg 1	Geographic: Latitude:	43°00'N to 43°50'N	Longitude: -127°00'W to -128°45'W
Leg 2	Geographic: Latitude:		Longitude:

*Project Objectives: In a continuation of work begun in 1994, we propose 8 submersible deployments (6 ATV and 2 DSV Turtle) to investigate the structural setting and hydrothermal processes along the eastern part of the Blanco Transform Fault Zone off the coast of Oregon. We plan to conduct traverses within two extensional basins (Gorda and Cascadia) and across the major strike-slip fault zone (Blanco Ridge). The primary objectives are to: (1) examine the structural relationships along th strike-slip fault and at intersections of the strike-slip fault and extensional basins, (2) collect a sample suite to determine petrologic and petrochemical variations along the structural elements of the eastern BTFZ and the amount and style of alteration and mineralization resulting from seawater-rock interaction along this transform boundary, and (3) determine if venting is occurring or has occurred within extensional jogs of the strike-slip boundary and within the two extensional basins within the context of a model that predicts locations of mineralization within continental transform zones (Sibson, 1987).

*Summary of Research:

This project represents the first systematic approach to examine the structural style and fluid circulation and venting along an oceanic transform fault. We plan to test the model of Sibson (1987) during submersible investigations of two rhombohedral basins and a major strike-slip segment of the Blanco Transform Fault Zone. The program combines careful systematic mapping and sampling with the Advanced Tethered Vehicle and the DSV Turtle with extensive onshore laboratory analyes (e.g., petrography, electron microprobe, and stable isotopes) to achieve project objectives. The program of dives proposed in 1995 is a continuation and extension of the successful PACNORWEST program conducted on the BTFZ in 1994.

NURP PROJECT SUMMARY

*BUDGET

ITEM		AMOUNT
*A. Salaries and Wages	(Overtime and salary for USGS technical support staff)	8,500
*B. Fringe Benefits		0
*C. Travel	(2- San Diego and return for pre-cruise meeting; 7- join cruise from Menlo Park)	2,900
1. Domestic		
2. Foreign		
*D. Equipment	(Truck rental for on- and off-loading)	250
*E. Materials and Supplies		2,350
*F. Publication, Documentation, Dissemination	(1 abstract & 1 journal article)	1,000
*G. Other Direct Costs		
1. Subcontracts		0
2. Computer Services		0
3. Participant Support Costs	(Polished sections, XRD, and neutron activation analysis for 30 petrologic samples)	7,550
4. Miscellaneous	(Shipping)	1,000
*H. Indirect Cost	(*Rate: 35 % on $ 23,550)	8,243

NURC Funding

*Project Total: 31,800

Prorated Facilities/System:

*Co-funding (do not include any NURP support) Salaries of scientists paid for by USGS and NOAA.

Organization (Contact & Telephone)	Status	AMOUNT

*TOTAL Co-funding:

NURP PROJECT SUMMARY

Results, accomplishments, and benefits:

During the 1994 PACNORWEST III cruise, we had 6 deployments on the Blanco Ridge (4 ATV and 2 Turtle) and acquired the following data: 57 rock samples, 10 sediment cores, 67 hours of videotape, 1000 photographs, and excellent SeaBeam data.

The rock and core samples include many lithologies: basalt, metabasalt, diabase, gabbro, serpentinite and greenstone breccias, sedimentary breccias with volcanic and mudstone clasts, graywacke, and mudstone.

The data have given us a better understanding of the tectonized nature of the Blanco Ridge and its mixture of lithologies. The relatively greater amount of recent mass wasting on the north-facing slopes suggests that deformation is focused on the north side of the ridge. The flanks are draped with sediment while the ridge top appears to be sediment free. The presence of veined and altered rocks indicate that hydrothermal fluids have interacted with basaltic lithologies in the Gorda Depression.

Products resulting from project:

New SeaBeam maps of Blanco Ridge, 67 hours of videotape.

Number of Publications: (As yet. More will follow.)

Refereed:

Non-refereed:

Abstracts: One AGU abstract to be presented at the 1994 Fall AGU meeting in San Francisco. Copy attached.

New research topics or direction: