OSU Reactor Sharing Program FY 1995 Annual Report

Prepared for:

U. S. Department of Energy

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SUMMARY

This is the annual report of the activities supported under the Oregon State University Reactor Sharing Program, award number DE-FG06-NE38137. The beginning date for the award was September 30, 1995 and the end date was September 29, 1996.

Work conducted under this award is internally administered at the Radiation Center through a project tasking system. This allows for excellent quality control for the work which is performed from the point of initial contact, through the reactor application, project report generation and financial accounting. For the current fiscal year, FY95, the total cost of the reactor sharing program, including Radiation Center contributions, was \$66,323.20 of which \$40,000.00 was supplied by the DOE Reactor Sharing Program. The details of individual project costs is given in Table 1.

The work performed for the individual projects are described in the brief work descriptions given in Table 2.

DISCLAIMER

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Table 1. 1995-1996 OSTR Reactor Sharing Project Funding
DOE Agreement No.: DE-FG06-95NE38137

PROJ	INSTITUTION	DOE RUS CONTRIBUTION	RAD CTR CONTRIBUTION	TOTAL COST
1130	Univ Oregon/McBirney	1,000.00	654.00	1,654.00
1131	Franklin & Marshall/Wiebe	1,000.00	654.00	1,654.00
1132	Univ Colorado/Stern	1,000.00	654.00	1,654.00
1133	SUNY/Roden-Tice	330.00	0.00	330.00
1134	Univ Colorado/Verplanck	1,000.00	654.00	1,654.00
1135	Trinity Univ/Smith	1,000.00	654.00	1,654.00
1136	College of the Siskiyous/Hirt	1,000.00	654.00	1,654.00
1137	Clemson Univ/Warner	1,000.00	654.00	1,654.00
1138	Idaho State/Hughes	660.00	0.00	660.00
1139	N Carolina State/Fodor	1,000.00	654.00	1,654.00
1140	Texas Tech/Johnson	1,000.00	654.00	1,654.00
1141	Univ Florida/Mueller	1,000.00	654.00	1,654.00
1142	George Washington Univ/Tollo	1,000.00	654.00	1,654.00
1143	Colorado College/Noblett	2,000.00	1,308.00	3,308.00
1144	Univ Washington/Bergantz	CANCEL		
1145	City College of New York/Steiner	1,000.00	654.00	1,654.00
1146	McNary High School/Epperson	1,000.00	654.00	1,654.00
1147	Univ Puerto Rico/Joyce	1,000.00	654.00	1,654.00
1148	UCLA/Davidson	1,000.00	654.00	1,654.00
1149	California State/Weigand	1,000.00	654.00	1,654.00
1150	Univ Puerto Rico/Joyce	1,000.00	654.00	1,654.00
1151	UCLA/Castellana	1,000.00	654.00	1,654.00
1152	Univ Colorado/Farmer	1,000.00	654.00	1,654.00
1153	Rice Univ/Leeman	1,000.00	654.00	1,654.00
1154	Johns Hopkins Univ/Marsh	1,000.00	654.00	1,654.00
1155	E New Mexico Univ/Constantopo	1,000.00	654.00	1,654.00
1156	Union College/Garver	220.00	0.00	220.00
1157	California State/Kato	1,000.00	654.00	1,654.00
1158	Texas Tech/Barnes	1,000.00	654.00	1,654.00
1159	Univ Oregon/McBirney	1,000.00	654.00	1,654.00
1160	Univ Oregon/Goles	2,000.00	1,308.00	3,308.00
1161	Univ Oregon/Goles	2,000.00	1,308.00	3,308.00
1162	Univ New Orleans/Pavlis	182.80	1,471.20	1,654.00
1163	San Jose State/DeBari	2,000.00	1,308.00	3,308.00
1164	Corvallis HS/Pittinger	607.20	0.00	607.20
1165	Univ Utah/Adams	CANCEL		
1166	Univ Oregon/Reed	1,000.00	654.00	1,654.00
1167	Univ Arizona/DeCelles	1,000.00	654.00	1,654.00
1168	SUNY/Carl	1,000.00	654.00	1,654.00
1169	Williams College/Skinner	1,000.00	654.00	1,654.00
1170	Univ Idaho/Wood	1,000.00	654.00	1,654.00
	TOTALS	40,000.00	26,323.20	66,323.20

Table 2. OSTR Reactor Sharing Project Descriptions, 1995-1996

<u>Project</u>	<u>Description</u>
1130	Determination of trace elements to evaluate the behavior of components during crystallization and differentiation of magmas at shallow depths of the earth's crust and mantle.
1131	Investigations of the bimodal (granite-gabbro) complex where basaltic magmas have been emplaced into an active silicic magma chamber. Research is focused on the interactions between these two magmas at the bottom of the magma chamber and in composite dikes.
1132	Determination of spatial distribution of obsidian artifacts from different archaeological sites in Patagonia resulting from cultural exchange among pre-historic people by the use of trace element INAA.
1133	Evaluation of uplift and thermal histories in the Olympic Mts., WA; Adirondack Mts., NY; Trinidad; Hartford Basin, CT; and the Appalachian Basin.
1134	Identification of the processes responsible for the generation of zoned magma bodies and determination of how silicic magmas are formed, using the Organ Needle pluton as an example.
1135	Investigation of the origin and evolution of magmas emplaced in the Llano uplift of central Texas and the Cyprus ophiolite.
1136	Determination of the internal zoning in the Paradise pluton, Mt. Whitney, and characterization of several associated mafic rocks thought to be possible end members of the suite.
1137	Investigation to relate mineral chemistry to dike chemistry as a function of position in a diabase dike.
1138	Use of INAA to support a large variety of research projects involving the geochemistry of rocks in Idaho and surrounding regions. This includes support for two graduate classes Geology 615 and 625.
1139	Use of trace element abundances in clinopyroxene components of xenoliths to interpret the roles that tholeiitic and alkalic magmatism of Hawaiian shield volcanoes played in producing cumulates of dunite, wehrlite and clinopyroxene found as xenoliths in alkalic basalts of volcanoes such as Mauna Kea.
1140	Determination of the origin and source of magnetite ores found throughout one of the trondjemitic intrusions in the composite Cornucopia stock in the Blue Mountains, NE Oregon.

Table 2. OSTR Reactor Sharing Project Descriptions, 1995-1996 (Continued)

<u>Project</u>	<u>Description</u>
1141	Evaluation of whether the Sr and Nd isotopic ratios of weathered Himalayan upper crust has changed over the last 15 Ma and, if so, whether it could account for the changes in Sr and Nd isotopes in seawater
1142	Analysis of late proterozoic, rift-related granitoids of the central and southern Blue Ridge Province of VA and SC to (1) distinguish different granitoid units (2) formulate petrologic models for the evolution of each pluton, and (3) serve as a basis for the selection of samples for U-Pb analysis of zircons.
1143	Geochemical & petrological analysis of rocks from 1) the Tobacco Root range to find a petrolith for these rocks, and 2) from the Southern Oregon Cascades to examine their tectonic origins.
1144	Canceled
1145	Rare earth element investigation of the Ravenswood Granodiorite exposed in the New York City tunnel project in order to provide adequate compositional control in tracing the boundaries of this, the Fordham Gneiss, and the Hartland Formation.
1146	Determination of the source of sediment brought into the Willamette Valley near Salem from ancient floods. The sediment for analysis includes two layers of silt with a layer of Malpas clay in between.
1147	Study of the potholith origin and metamorphic history of the metamorphic archean rocks from the Tobacco Root Mountains, Southwestern Montana, through whole rock geochemical analysis.
1148	Evaluation of changes in geochemistry across the Kamchatka Arc to constrain differentiation processes at individual volcanoes and to determine whether the mantle source differs due to variations in the slab derived component or variations in the degree of melting.
1149	Evaluation of the origin of Miocene volcanic rocks from San Clemente and Santa Cruz Islands, CA to document the origin of these calc-alkaline volcanics in an extensional environment.
1150	Detailed geochemical analysis of the Bermeja Complex to establish the relationships between types of alterations and mineralogical and chemical distributions in the Jurassic-Early Cretaceous oceanic crust.
1151	Comparison of the trace element behavior between Avachinskiy and Koryokskiy volcanoes to identify possible sources of magmatic modification.

Table 2. OSTR Reactor Sharing Project Descriptions, 1995-1996 (Continued)

<u>Project</u>	<u>Description</u>
1152	Evaluation of the intrusive rocks in paleoproterozoic collisional orogens as a key to tectonic settling and orogenic development and implications from the Labrador-Greenland connection.
1153	Petrogic study of eastern Snake River Plain basalts to determine the origin of hot-spot related magmatism related to passage of North America over the Yellowstone plume.
1154	Evaluation of rhyolite magma produced beneath Rapa Nui in order to determine what differentiation processes generated the material, and to establish under what heat flow conditions, in what tectonic settings and over what time periods these magmas can be generated from basaltic magmas.
1155	Characterization of the Bonito Lake stock in the Sierra Blanca Igneous Complex to provide a better understanding of the Lincoln County Porphyry Belt.
1156	Determinations of the cooling history of rocks caused by mountain building events.
1157	Analysis of coarse crystalline blueschists from the coast range of south central Chile to provide information on their metamorphism and their relation to other blueschists and greenschists in the region.
1158	Investigation of the origin of monzogranites and related intrusions emplaced during extensional deformation of the Ruby Mountain (NV) core complex during Tertiary time.
1159	Determinatopm of the abundance of Sc and transition metal in ilmenite and magnetite mineral seperates. The evaluation of artitioning coefficients of these elements between mafic silicate melts and iron oxide phases are fundamental in the interpretation of magma genesis and crystal fractionation.
1160	Determination of contents of Na, Ca, Zn, Sr, and Ba in bones as a guide to human palaeodiet.
1161	Characterization of komatiites from Australia for rare earth element and platinum group element abundances to evaluate their economic mineral resource potential.
1162	Determination of the structural and kinematic geochemical evolution of a zoned granitic pluton and its genetic relationship to apparent granitic pods in deformed country rock.

Table 2. OSTR Reactor Sharing Project Descriptions, 1995-1996 (Continued)

<u>Project</u>	<u>Description</u>
1163	Determination of the geochemistry of the Cardinal Peak pluton to track the petrologic and structural history of the magma chamber with a view to shedding some light on crustal processes worldwide.
1164	Characterization of the geochemistry of calcite and malachite veins in a schist collected in Montana in contrast to the host rock to evaluate the supergene copper mineralization on joint surfaces.
1165	Cancelled
1166	Investigation of compositional heterogeneity within single potsherd to aid in planning further research to determine if there are spatial or chronological groupings of ceramics that can be found via INAA studies.
1167	Geochemical provenance studies of Jurassic paleosols from the Morrison Fm. in Utah to assess paleosol horizonation in response to climatic variability
1168	A comparison of amphibolite layers inside and outside the Hyde School Gneiss to determine if they are geochemically similar and to assess if they are ductilly deformed, realigned dikes.
1169	Determination of the age of New World flint artifacts and fossile teeth from European Paleolithic sites using electron spin resonance to measure accumulated radiation damage.
1170	Determination of the origin, tectonic setting and nature of a series of picritic basalt flows in Eastern Oregon which contain anomalous concentrations of platinum group elements.