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COVER PHOTO

Heceta Head, a promontory of late Eocene basalt on the central Oregon coast. Article beginning on next page presents geophysical and geological cross sections of this portion of the continental margin. (Photo courtesy Oregon State Highway Division)

Important notice to readers

Please note that your subscription expiration date is marked on the front cover of this month's *Oregon Geology.* Because we are unable to notify you by letter when your subscription is about to expire, it will have to be your responsibility to remember to renew at the appropriate time—or sooner if you want to be sure not to miss even one issue of *Oregon Geology.* □

Preliminary geothermal resource map of Oregon now available

The latest map released by the Oregon Department of Geology and Mineral Industries (DOGAMI) is Geological Map Series GMS-11, *Preliminary Geothermal Resource Map of Oregon.* The four-color map is at a scale of 1:500,000.

Compiled by DOGAMI Geothermal Specialist J.F. Riccio, the map relates heat flow, faults, earthquake epicenters, lineaments, thermal springs and wells, and Pleistocene-Holocene volcanic geology to recently identified low-temperature geothermal resource areas. It can serve as a basic tool for planning and coordinating geothermal projects and programs.

Requests for GMS-11, which is available free at one copy per customer, must be made in writing to the Oregon Department of Geology and Mineral Industries, 1069 State Office Building, Portland, Oregon 97201. □

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Geology of the continental margin near Florence, Oregon

by Richard Couch and David Braman, Geophysics Group, School of Oceanography, Oregon State University, Corvallis, Oregon

ABSTRACT

Compilations of well-log and geophysical data from investigations of rocks on the submarine continental margin and landward of the coast of central Oregon yield geophysical and geological crustal cross sections of the margin near Florence, Oregon. The sections show that oceanic crust 12 to 15 My old dips beneath the continental slope and outer continental shelf and that the magnetic basement, coincident with the Siletz River Volcanic Series landward of the coast, extends and deepens seaward to the continental slope. Approximately 2 to 5 km of sediments that include Tertiary rocks similar to the Flournoy, Nestucca, and Coaledo Formations, overlie the early Eocene volcanic series. The configuration of the rock units in the crustal section suggests that deformation of the units, attributable to plate convergence, is greatest near the outer margin of the continental shelf and decreases landward and that folding and faulting have uplifted the sedimentary layers that are above the magnetic basement to form a structural high along the outer continental shelf.

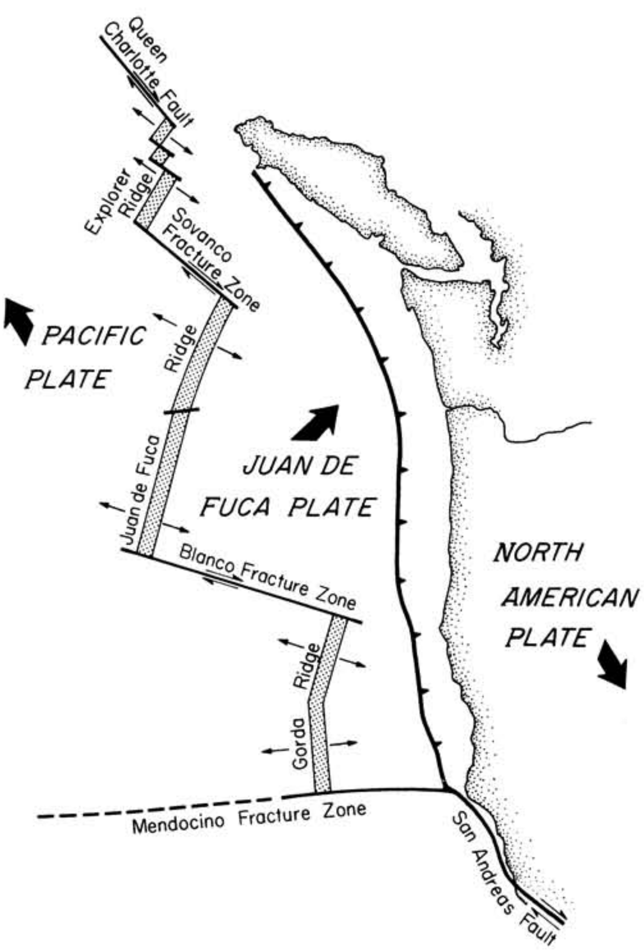
INTRODUCTION

Major fracture zones and mountainous ridges mark certain types of active boundaries between large lithospheric plates. Figure 1 schematically shows the kinematics of the plates off the coast of the Pacific Northwest. The San Andreas fault system in California and the Queen Charlotte-Fairweather fault system in British Columbia and southeastern Alaska comprise the transform faults along which the Pacific and North American Plates slide past one another in a right-lateral sense.

Between the San Andreas and Queen Charlotte-Fairweather transform faults, sea-floor spreading occurs along the Gorda, Juan de Fuca, and Explorer ridges as the Pacific and Juan de Fuca Plates diverge. The Blanco and Sovanco fracture zones, both right-lateral transform faults, offset the spreading ridges. The Juan de Fuca Plate moves toward the northeast relative to the North American Plate as a consequence of plate divergence approximately normal to the spreading ridges and right-lateral plate motion along the San Andreas and Queen Charlotte-Fairweather transform faults.

Convergence of the Juan de Fuca and North American Plates and subsequent oblique underthrusting of the Juan de Fuca Plate beneath the North American Plate occurs along the base of the continental slope off Oregon, Washington, and southern British Columbia. The direction of motion of the Juan de Fuca Plate relative to the continental slope off Oregon is toward but oblique to the strike of the slope, and the rate of convergence is estimated to be approximately 2 cm/yr (Atwater, 1970). However, migration and changes in the orientation and number of ridges and fracture zones during geologic time have caused marked changes in the directions and velocities of plate convergence along the continental margin and in the composition and structure

Figure 1. Plate tectonic motions in the northeast Pacific. Arrows indicate the general direction of relative motion of the Pacific, North American, and Juan de Fuca Plates.



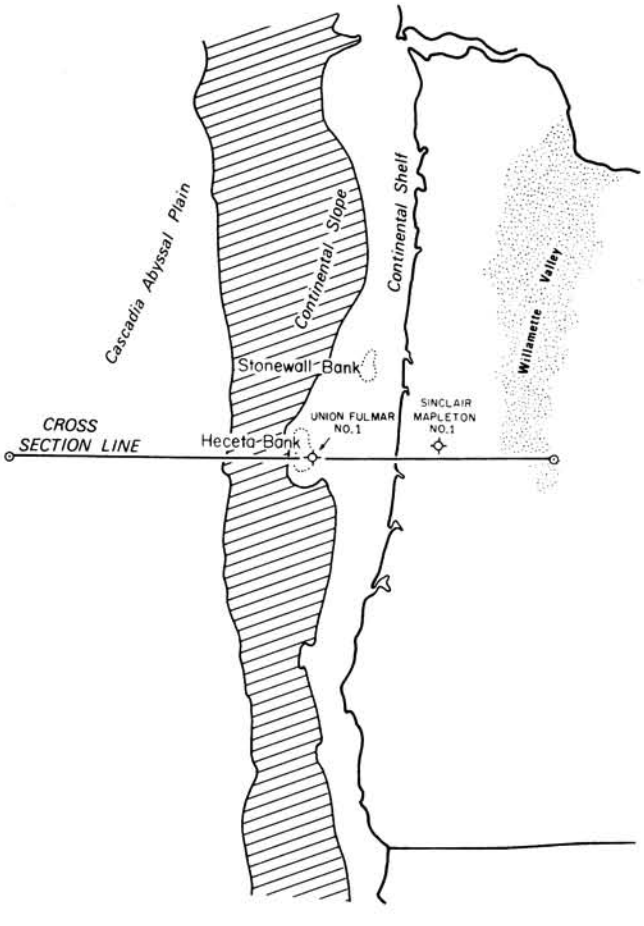


Figure 2. Geomorphology of the continental margin near Florence, Oregon.

of the accreted and subducted materials.

Along the continental slope off the Pacific Northwest coast, sea-floor sediments are carried landward during plate convergence. At the subduction zone, some of these sediments apparently are scraped off of the oceanic plate, accreted to the continental plate, and subsequently uplifted and emplaced in the continental slope (Byrne and others, 1966; Kulm and Fowler, 1974). Seely and others (1974) proposed an imbricate thrust model, wherein wedges of sediments are thrust successively one under another at the base of the slope, to explain the uplift and emplacement of deep-sea sediments on the continental slopes of convergent continental margins. Kulm and Fowler (1974) have shown that the imbricate thrust model is consistent with the composition, ages, and paleodepths of the sedimentary units which form the continental slope and outer continental shelf off the central Oregon coast. However, because data are sparse on the geology of the continental margin, it is not known to what extent the imbricate thrust model, when complicated by changes in the rates and directions of plate convergence, can explain the composition, structure, and evolution of the continental margin. The purpose of this paper is to summarize the geophysical data obtained from the continental margin off the central Oregon coast near Florence, to present a geophysical model constructed to be consistent with the data, and to offer an interpretation of the model in the form of a geological crustal section.

GEOMORPHOLOGY OF THE CENTRAL OREGON CONTINENTAL MARGIN

In Oregon, the zone of transition between true oceanic and continental crust extends from the deep-sea floor of Cascadia Abyssal Plain west of the continental slope to at least the high plateaus east of the Cascade Mountain Range. The transition zone includes the continental slope and continental shelf, which together comprise the submarine continental margin. Figure 2 outlines the general geomorphology of the central Oregon continental margin.

The continental shelf dips gently seaward and reaches depths of 200 to 300 m approximately 30 km seaward of the coast. Off Florence, the continental shelf is approximately 60 km wide and shoals to depths of less than 45 m over Heceta Bank on the outer continental shelf. Seaward of the continental shelf, the relatively steep continental slope descends to abyssal sea-floor depths of approximately 3,000 m. North of Heceta Bank, a series of north-to-northwest trending ridges occur on the slope in water depths of more than 1,000 m (Braislin and others, 1971; Kulm and others, 1973; von Huene and Kulm, 1973; Snavely and others, 1977). Figure 2 shows that the geographical and geological cross sections of Figure 3 and Figure 5 are oriented approximately normal to the continental margin and pass through the south end of Heceta Bank.

MEASUREMENTS AND DATA

Figure 2 shows the line along which the Florence crustal and subcrustal cross section was constructed. The section extends from a point in Cascadia Abyssal Plain, approximately 200 km west of the coast, to the east side of the Willamette Valley. The section intersects the south end of Heceta Bank and the Union Fulmar No. 1 well, located on the continental shelf west of Heceta Head, and passes south of the Sinclair Mapleton No. 1 well, located north of Mapleton, Oregon. Logs of the two deep wells; bathymetric, gravity, magnetic, and seismic reflection and refraction measurements at sea; and topographic, geologic, gravity, and aeromagnetic observations on land constrain the geophysical model section.

Shor and others (1968) made seismic refraction measurements on the continental shelf west of the

Union Fulmar No. 1 well and in Cascadia Abyssal Plain along lines parallel to the continental margin. Their measurements provide data on the depth and seismic velocities of the crustal layers and top of the mantle. Sonobuoy refraction measurements (Keser, 1978) near the section provide thicknesses and velocities of the sedimentary layers overlying the oceanic crust seaward of the slope and the shallow layers on the continental slope and shelf. Seely and others (1974) show a multichannel seismic reflection profile shot by Exxon along the section line from the abyssal plain to a point east of the Union Fulmar No. 1 well. The reflection line provides information on water depths and the thicknesses of the sedimentary layers above the abyssal sea floor and above an acoustic basement on the continental margin. When reduced to anomaly values by removal of appropriate regional fields (International Association of Geodesy, 1971; International Association of Geomagnetism and Aeronomy, 1976), gravity and magnetic measurements made by the National Ocean Survey (National Oceanic and Atmospheric Administration, 1978) yield gravity and magnetic data along the marine portion of the section. Gravity anomalies reported by Thiruvathukal (1968) and aeromagnetic measurements reported by Bromery (1957) provide control for the land portion of the section. The empirical relations between seismic velocity and density (Ludwig and others, 1970) and well-log data guided the selection of model densities. The crustal section assumes a two-dimensional structure, a standard mass column of 50 km and 6,442 mgals corresponding to a zero free-air gravity anomaly (Barday, 1974), and no lateral variations in density below 50 km depth. Iterative adjustments of layer boundaries, constrained by water depth, land elevation, abyssal sediment thickness, refracting horizons, and horizons determined from the well logs, were made until the gravity, computed with the method of Talwani and others (1959) and Gemperle (1975), agreed with the observed free-air and Bouguer anomalies, and the magnetic intensity, computed by the method of Lu and Keeling (1974), agreed with the observed magnetic intensity. This yielded the Florence geophysical cross section.

THE FLORENCE CRUSTAL AND SUBCRUSTAL CROSS SECTION

Figure 3 shows the Florence geophysical cross section. The section, approximately 300 km long, is oriented N 91° E normal to the continental margin and intersects the coastline north of Florence, Oregon. The crystalline oceanic crust at the seaward end of the section is approximately 6 km thick and is composed of a lower crustal layer with a density of 2.95 gm/cm^3 and an upper layer with a density of 2.65 gm/cm^3. More than 1 km of sediments, with an average density of 1.85 gm/cm^3, overlie the basaltic rock of the upper oceanic crust. The total thickness of the oceanic crust of Cascadia Abyssal Plain, including 3 km of water, is approximately 10 km.

The topmost lines of Figure 3 show the observed magnetic anomalies over the section and, for comparison, the theoretical sea-floor magnetic anomalies which assume an apparent half-spreading rate of 2.0 cm/yr and use the magnetic time scale of Blakely (1974) and Ness and others (1980). A good correlation exists between the observed and theoretical magnetic anomalies over the abyssal plain extending to just landward of the continental slope. The magnetic anomalies indicate that the age of the oceanic basement rock ranges from approximately 8 My (anomaly 4'.1) to 11.7 My (anomaly 5A).

The crystalline oceanic crust dips landward, and the depth to the top of the mantle beneath the continental shelf is 15 to 20 km. Few gravity data and no seismic data are available to constrain or resolve the continental section, indicated by the blocks of density 2.35, 2.60, 2.70, and 2.95 gm/cm^3 east of the coast line. However, the computed gravity based on the depicted structure and constrained by a standard mass column suggests that the depth to the top of the mantle is approximately 20 to 25 km beneath the Coast Range of the central portion of western Oregon.

On the continental shelf, a thick sedimentary basin, indicated by a 15 mgal negative gravity anomaly and composed of sediment layers with densities of 1.80, 1.90, 2.20 and 2.35 gm/cm^3, deepens seaward. Near the outer edge of the continental shelf, the 2.20 and 2.35 gm/cm^3 sediment layers rise steeply toward the surface beneath Heceta Bank and cause a marked positive gravity anomaly. The sedimentary layers overlie material which has a density of 2.60 gm/cm^3 and a magnetization of 0.005 emu/cm^3. These rocks, identified in the Sinclair Mapleton No. 1 well as members of the Siletz River Volcanic Series, extend from the eastern slopes of the Coast Range to the middle of the continental slope. Near the coast, other rocks identified as Yachats Basalt (Snavely and MacLeod, 1974), with a density of 2.60 gm/cm^3 and magnetization of 0.001 emu/cm^3, extend seaward beneath a thin cover of sediments. Connard and Levi (1979, personal communication) have used direct methods to identify other magnetic sources near the interface between the 2.20 and 2.35 gm/cm^3 layers.

A large block of material of density 2.15 gm/cm^3 underlies the continental slope and is interpreted as accreted oceanic and continental sediments. A relatively thin veneer of continental sediments of varying thickness overlies the accreted sediments of the slope. The section also shows layers of density 2.30 and 2.50 gm/cm^3 beneath the sediments of Cascadia Abyssal

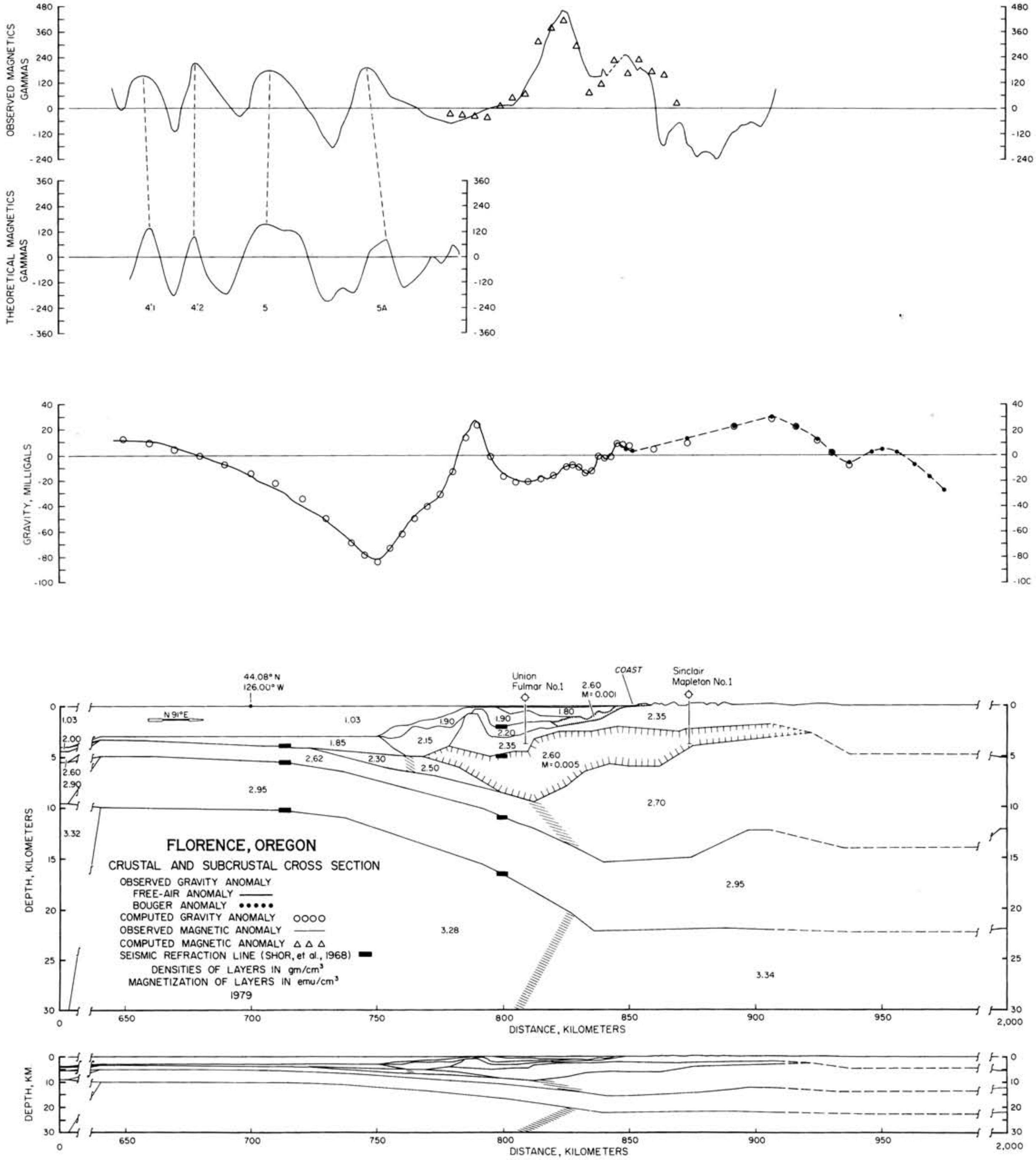


Figure 3. Geophysical crustal and subcrustal cross section. The section, oriented approximately east-west, extends from Cascadia Abyssal Plain to the east side of the Willamette Valley.

Plain and beneath the continental slope, respectively. The layer of 2.30 gm/cm^3 is visible on multichannel seismic reflection records (Seely and others, 1974) and is interpreted as partially compacted oceanic sediments which overlie the acoustic basement. The block of 2.50 gm/cm^3 is also interpreted as sediments, but here they are thrust beneath rocks of the denser Siletz River Volcanic Series, resulting in an even greater density increase caused by additional compaction and dewatering.

Below the annotated section, which has a vertical exaggeration of 4:1, an unexaggerated 1:1 section is illustrated.

Figure 4 shows a free-air gravity anomaly map of the central Oregon continental margin adapted from Dehlinger and others (1970). An elongate negative gravity anomaly, which reaches values of -100 mgals, occurs along the base of the continental slope. The axis of the negative anomaly approximately coincides with the base of the continental slope. As shown in Figure 3, the landward dipping oceanic crust and an increasing thickness of relatively light sediments, including those of the lower slope, cause the negative anomaly. The gravity map shows that the positive anomaly caused by the shoaling of denser sedimentary rocks extends north along the outer continental shelf. The continuity of the anomaly suggests that similar structures exist beneath the northern end of Heceta Bank and also possibly beneath Stonewall Bank, west of Newport, Oregon. South of Heceta Bank, a large negative gravity anomaly, which reaches values of -60 mgals, outlines a sedimentary basin whose center is located near the middle of the continental shelf west of Reedsport. The anomaly values suggest that sediment thicknesses may exceed 7 km. The sedimentary layers of the shelf above the magnetic basement shown in Figure 3 and found in the Union Fulmar No. 1 well are in the northern end of the basin. The anomaly gradients suggest that these layers probably thicken toward the south and that the outer structural high, formed by the shoaling of the deeper sedimentary layers, decreases in amplitude.

THE FLORENCE GEOLOGICAL SECTION

Figure 5 shows a geological interpretation of the geophysical section. Geological information is provided by the lithologic logs of the Union Fulmar No. 1 and Sinclair Mapleton No. 1 wells; by Deep-Sea Drilling Project holes drilled in Cascadia Basin (DSDP Site 174) and in the continental slope (DSDP Site 175) north of the section (Kulm, von Huene, and others, 1973); by marine core data (Kulm and Fowler, 1974); by studies of the geology of western central Oregon (Snavely and Vokes, 1949; Baldwin and Beaulieu, 1973; Baldwin, 1975, 1976; Snavely and others, 1977); and by the physical parameters, depths, and continuity of horizons provided by the geophysical data.

Magnetic anomalies indicate that the oceanic crust beneath the sediments is middle to late Miocene in age. The oldest identifiable anomaly along the section is about 12 My old. However, the model suggests that the oceanic crust is continuous beneath the continental slope and the outer continental shelf. If this is correct, then the outer shelf sediments overlie oceanic crust approximately 15 My old. The oceanic sediment in contact with the sea-floor basalt is approximately the same age as the basalt and decreases in age upward. Multichannel seismic reflection data show acoustic horizons in the sediments indicative of unconformities (Seely and others, 1974). These were also observed in the cores at DSDP Site 174 (Kulm, von Huene, and others, 1973). The geologic section indicates only the unconformities between the Miocene-Pleistocene and late Quaternary and between the Miocene-Pleistocene and late Miocene. Cores from DSDP Site 175 indicate that late Pleistocene muds of the continental slope overlie partially consolidated mudstones and silt turbidites from the adjacent abyssal plain (Kulm, von Huene, and others, 1973). The interpretation of multichannel reflection data by Seely and others (1974) suggests that these deposits are a series of imbricate thrusts. Penetration of the abyssal plain deposits in the lowermost part of the section at site 175 also suggests imbrication of the sediments (Kulm, von Huene, and others, 1973; Kulm, 1979, personal communication).

Lithologic logs of the Mapleton Sinclair No. 1 well indicate that the hole penetrated approximately 2.5 km of rocks of the Flournoy Formation and about 1.5 km of rocks of the Siletz River Volcanic Series. Baldwin (1975, 1976) describes rocks of the Flournoy Formation as graded micaceous and arkosic sandstones and sandy siltstones. These rocks of middle Eocene age are found also in the Union Fulmar No. 1 well offshore and are interpreted to be the major constituent of the structural high beneath Heceta Bank. The nature of the contact between these middle Eocene rocks and the Tertiary volcanic rocks of the Cascade Range is unknown. Sedimentary rocks of late Eocene age overlie rocks of the Flournoy Formation. These rocks are thought to be similar to the tuffaceous shale, siltstone, sandstone, and interbedded volcanic rocks of the Nestucca Formation, described by Snavely and Vokes (1949), and/or the coarse-grained, nodular sandstone with intercalated shale beds of the Coaledo Formation, described by Baldwin and Beaulieu (1973). These rocks are apparently capped by late Miocene siltstones and claystones (Kulm and Fowler, 1974).

The lower section of the Siletz River Volcanic Series, which underlies the Flournoy Formation, is considered to be formed of upper oceanic crustal rocks, whereas the upper part of the series is thought to have

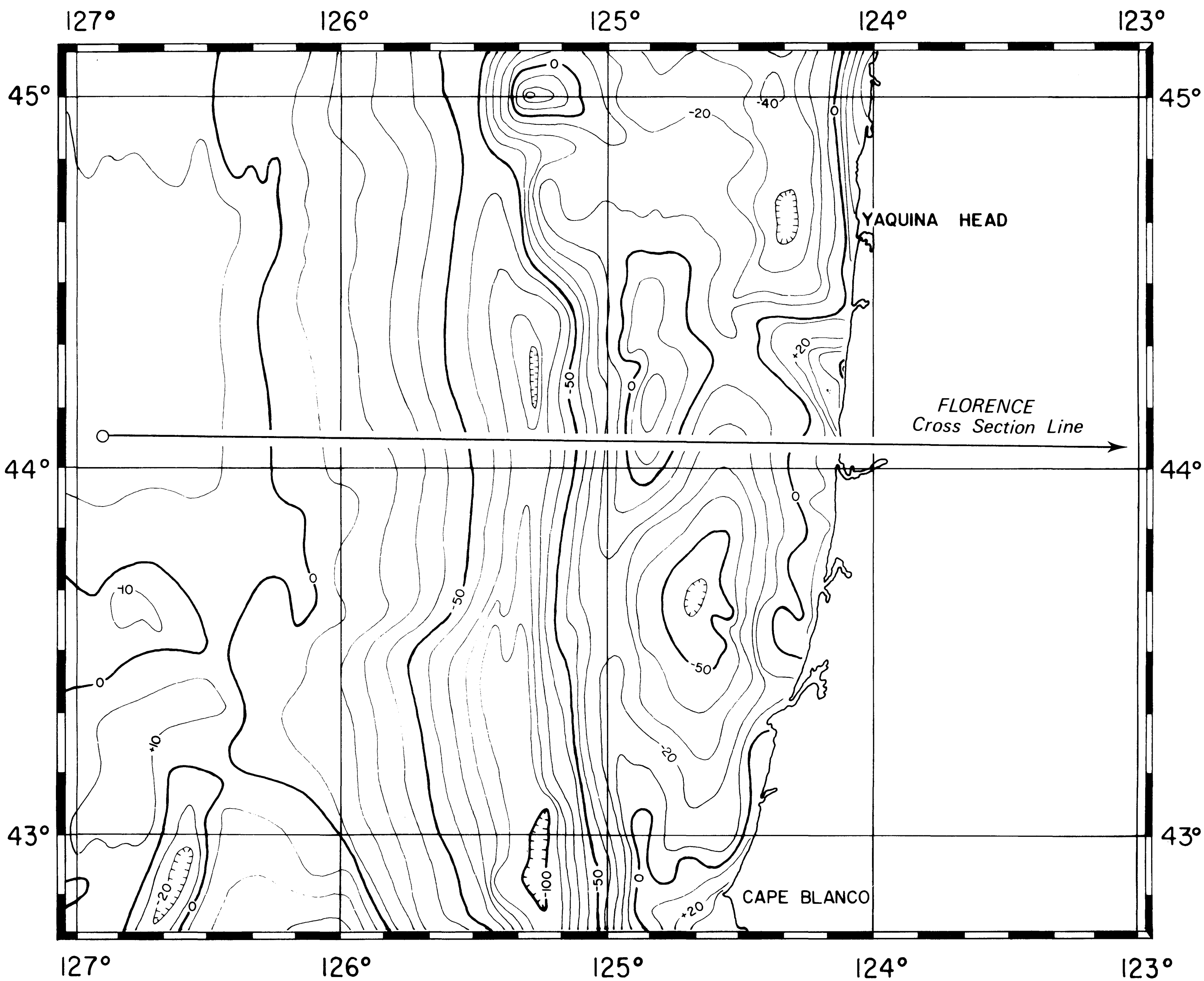


Figure 4. Free-air gravity anomaly map of the area offshore of the central Oregon coast (after Dehlinger and others, 1970). The line north of the 44th parallel indicates the location of the crustal cross sections of Figures 3 and 5.

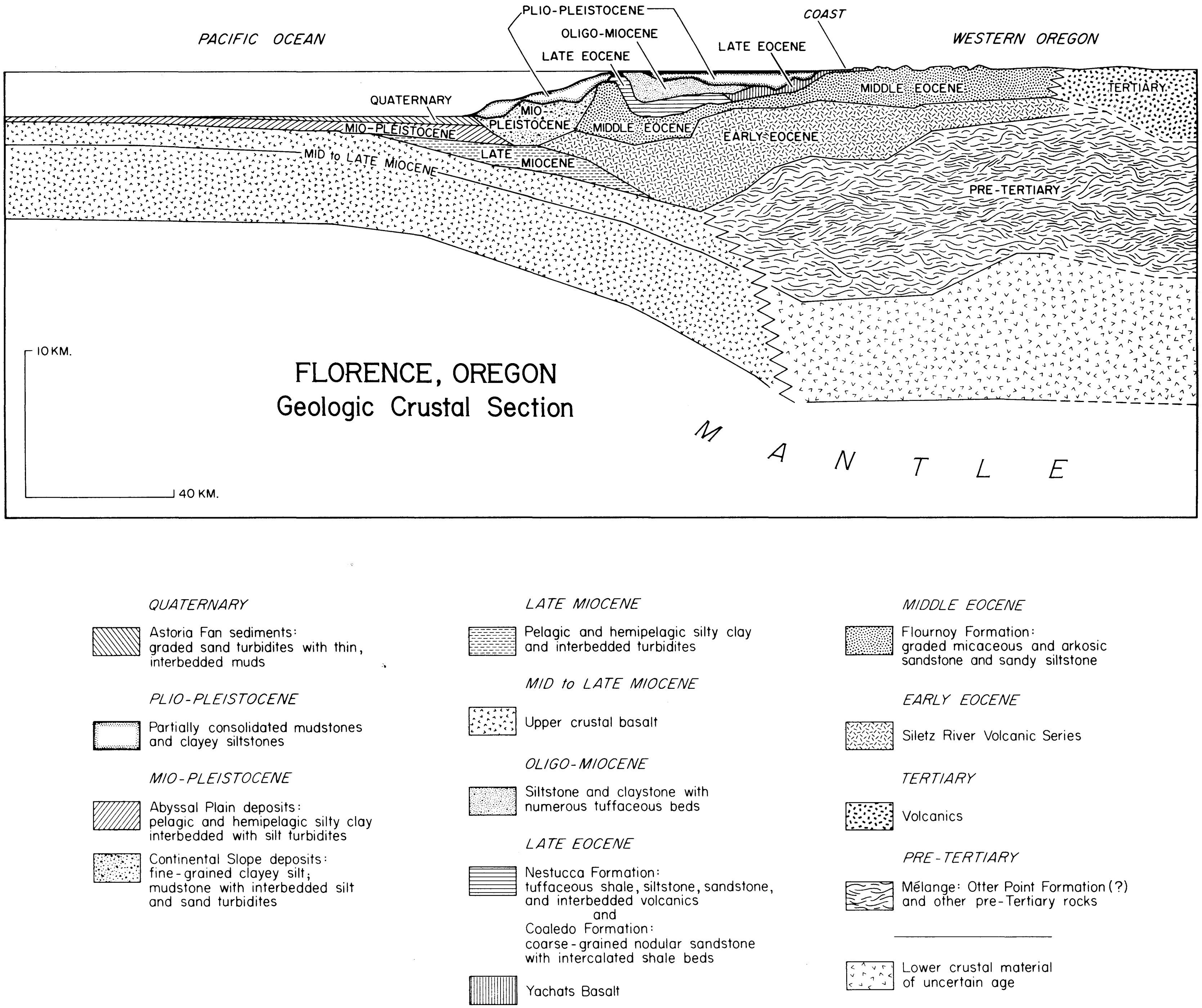


Figure 5. Geologic crustal section of the central Oregon continental margin north of Florence, Oregon.

been deposited in shallower water (Snavely and Baldwin, 1948; Baldwin, 1976; Snavely and others, 1977). This sequence of rocks apparently extends from near the base of the continental slope on the west to the Tertiary volcanic rocks of the Cascade Range and has its thickest section beneath the continental shelf. The nature of the pre-Tertiary rocks beneath the Siletz River Volcanic Series is unknown. Baldwin (1979, personal communication) suggests the rocks may be a mélange similar to the late Jurassic Otter Point Formation described by Kock (1966).

The landward dip of the westernmost part of the Siletz River Volcanic Series, as depicted in the geological section, suggests that this section of the series may have been carried or thrust landward beneath the same rocks nearer the present coast by the subducting oceanic crust, thereby foreshortening the continental margin and apparently thickening the volcanic sequence beneath the continental shelf. In this process, the westernmost ends of the overlying beds of the Flournoy Formation, the Nestucca/Coaledo Formation, and other Oligocene-Miocene sedimentary rocks were folded, faulted, and thrust upward to create an outer structural high that is manifested in the bathymetry as Heceta Bank.

Although the depth to the base of the Siletz River Volcanic Series is not well constrained by the available data, the configuration of the interface between the volcanic series and the underlying pre-Tertiary mélange suggests that the mélange also has been deformed contemporary with the deformation and uplift of the volcanic series. The deformation of the major crustal units appears to be greatest near the upper continental slope and outer continental shelf and to diminish toward the Willamette Valley.

CONCLUSIONS

The familiar rock units of western Oregon extend westward off the central Oregon coast to the edge of the continental shelf, and the oceanic crust of Cascadia Abyssal Plain has underthrust the continental margin eastward to at least the center of the continental shelf. The process(es) of thrusting or subduction profoundly influenced the conformation of the rock strata which form the continental margin. The convergence of the oceanic lithospheric plates and the continental plate appears to have uplifted and emplaced marine sediments in the continental slope, foreshortened the outer continental margin off the central Oregon coast, and folded and thrust up the sedimentary rocks to form an outer shelf structural high. Clearly, the geology of the margin is more complex than the models heretofore advanced have been able to explain.

ACKNOWLEDGMENTS

Discussions with Ewart M. Baldwin and LaVerne D. Kulm were informative and much appreciated. Gordon Ness and LaVerne D. Kulm critically reviewed the manuscript. Steven Troseth drafted the illustrations.

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John L. Schwabe elected Chairman of Department Governing Board

At a meeting of the Governing Board of the Department of Geology and Mineral Industries on September 26, John L. Schwabe, Portland, was elected Chairman.

The Board has scheduled its next meeting for November 20 to discuss changes in Oregon's oil and gas rules to regulate the spacing of wells and to determine categories under the Natural Gas Policy Act of 1978. □

Lab fees to increase

A new fee schedule for the analytical services offered by the Oregon Department of Geology and Mineral Industries will become effective January 1, 1980, and will supersede the fee schedule of September 1, 1974. Copies of the new fee schedule will be available upon request.

The Department laboratory provides analytical support for staff work. As provided in ORS 516, it also provides services to the public that are not generally offered by commercial laboratories. Because of the greatly increased demand for the lab services and the remodeling of the State Office Building, results of analyses will be delayed somewhat. The waiting period at this time is about four weeks. □

Correction:

The word "there" should not have appeared in line 2, paragraph 3, column 2, p. 161, in the October issue of *Oregon Geology*. The line should read, "Palagonite and peperites are commonly present, indicating that the basalt was interacting with water. . . ." □

Earthquake engineering conference held at Stanford University

The Second U.S. National Conference on Earthquake Engineering was held August 22-24, 1979, at Stanford University. The conference was sponsored by the Earthquake Engineering Research Institute (EERI) with the cooperation of Stanford University and 11 other professional and governmental organizations, including the American Society of Civil Engineers (ASCE), the Seismological Society of America, and the U.S. Geological Survey.

The conference attracted over 900 registrants, making it the largest earthquake conference ever held, according to its sponsors. The purpose of the conference was to "disseminate information about earthquakes and their effects in order to minimize the disruption, damage and loss of life caused by earthquakes; to stimulate cooperation between engineers and persons from other disciplines in coping with earthquakes; to spread new research and design knowledge to engineers and others; and to summarize current knowledge."

Technical sessions covered risk analysis, industrial facilities, seismology and geology, structural engineering, geotechnical engineering, public policy and economic studies, and lifeline engineering.

Preliminary data from the August 6, 1979, earthquake in central California were presented. This quake, which measured 5.9 on the Richter scale, underscored the fact that peak acceleration alone is an inadequate measure of an earthquake's potential for causing structural damage. Accelerations as high as 0.42 *g* near the epicenter at Hollister and 0.28 *g* in nearby Gilroy occurred, but structural damage was minimal or nonexistent. Inspections of the towns of Gilroy and Hollister showed only small amounts of fallen stucco, minor plaster cracking, and other generally insignificant damage.

Many foreign countries were represented at the conference. In attendance were ten delegates from the People's Republic of China, who presented six talks on the July 28, 1976, Tangshan earthquake. This earthquake had a magnitude of 7.8 and was followed by innumerable aftershocks, some with magnitudes as high as 7.1. Damage was severe, with 80 percent of the industrial facilities and 90 percent of the brick structures in the city destroyed or heavily damaged. An estimated 750,000 people were killed, making this the second worst earthquake in history. Although there was widespread destruction, the earthquake did illustrate that strengthening buildings to withstand seismic shaking could be effective. Those structures that were strengthened with added tie rods and spandrels or whose anchors, connections, and columns had been reinforced because a destructive 1975 earthquake had caused engineers to reconsider seismic potential in the area suffered much slighter damage than did unstrengthened structures.

Proceedings of the conference are available for inspection in the library of the Portland office of the Oregon Department of Geology and Mineral Industries. Conference proceedings are also available by mail from the Earthquake Engineering Research Institute, 2620 Telegraph Ave., Berkeley, California 94704 at a cost of $26 for EERI members and $36 for nonmembers. The cost includes handling, mailing (surface rate; additional charge for airmail delivery), and sales tax. □

James L. Bela, Environmental Geologist
Oregon Department of Geology and Mineral Industries

New geologic information on Mount Hood released

The Oregon Department of Geology and Mineral Industries announces the release of Open-File Report 0-79-8, *Geothermal Resource Assessment of Mount Hood.* The 273-page report, which presents geologic and geophysical information for the evaluation of the geothermal potential of Mount Hood, was prepared as part of the ongoing geothermal energy research effort by the Department in conjunction with the U.S. Department of Energy, the U.S. Geological Survey, the U.S. Forest Service, and Lawrence Berkeley Laboratory.

Topics discussed in 0-79-8 include:

- Stratigraphy and structure of the Columbia River Basalt Group in the Cascade Range, Oregon: by Marvin H. Beeson and Michael R. Moran, Earth Science Department, Portland State University.
- Geology and geochemistry of Mount Hood Volcano: by Craig M. White, Department of Geology, University of Oregon.
- Gravity measurements in the area of Mount Hood, Oregon: by Richard W. Couch and Michael Gemperle, Geophysics Group, School of Oceanography, Oregon State University.
- Heat flow modeling of the Mount Hood Volcano, Oregon: by David D. Blackwell and John L. Steele, Department of Geological Science, Southern Methodist University.
- Introduction, overview, and conclusions: by Joseph F. Riccio, Geothermal Specialist, Oregon Department of Geology and Mineral Industries.

The report, which is not for sale, is available for inspection in the Department library, Room 555, State Office Building, Portland, Oregon. □

Miners beware

When the Federal Land Policy and Management Act of 1976 (Bureau of Land Management Organic Act) was passed, it changed the recording requirements of the General Mining Law of 1872. Oregon mining laws, however, have not been changed to meet the new Federal requirements. Presently, Oregon does not require a notice of intent to hold a mining claim. Federal law, however, does require such a notice. Therefore, to keep from having your mill site or tunnel site claim become void, you must go beyond that which the State of Oregon requires. The Federal law requires that a notice of intent to hold a mill site or tunnel site be recorded with the local courthouse every year, and a copy of the recorded notice must be filed with the Bureau of Land Management, 729 NE Oregon St., Portland, OR 97208, before December 31 of the same year. The notice of intent to hold the claim can be in letter form and shall contain:

- Name and address of owner or owners;
- The name of the claim or claims, if grouped, and book and page of the record in which the location notice of each such claim is recorded;
- In the case of a mill site, a statement that the claim-related site will continue to be used for mining or milling purposes or that the independent mill site will continue to be used for the purposes of a quartz mill or reduction works, or
- In the case of a tunnel site, a statement that the owner(s) will continue to prosecute work on the tunnel with reasonable diligence for the discovery or development of the vein or lode.

The Federal law recording requirement is based on a calendar year that runs from January 1 to December 31, but Oregon law is based on an assessment year which starts and ends at noon, September 1st. Therefore, for any type of claim (lode, placer, mill, or tunnel) located during September, October, November, or December, a Notice of Intent to Hold Mining Claim needs to be filed in letter form for record during the first calendar year after location in the county in which the mining claim is situated. A copy of the recorded notice must also be filed with the Bureau of Land Management before December 31 of the same year. An affidavit of annual labor must be filed for record in subsequent assessment years. The letter shall contain:

- Name and address of owner or owners;
- Name of the claim or claims, if grouped, and book and page of the record where the location notice of each claim is recorded;
- Statement that annual assessment work is not due;
- Statement that the owner(s) intend to continue development of the claim for the valuable mineral contained therein.

Remember: before December 31 of each year, an affidavit of annual labor or a notice of intent to hold the mining claim must be recorded with the county in which the claim is located. Then a copy of the original which was recorded must be filed with the Bureau of Land Management. □

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In accordance with the provisions of this statute, I hereby request permission to mail the publication named in Item 1 at the phased postage rates presently authorized by 39 U. S. C. 3626.

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National State Land Reclamationists Conference held in Utah

The National Association of State Land Reclamationists held their annual conference in Salt Lake City, Utah, on September 12-14, 1979.

The theme of the meeting was "making reclamation decisions in a stringent performance standards regulatory program." The problems facing the various state reclamation agencies are not so much technical as they are administrative, in light of the very stringent coal mining rules adopted by the U.S. Department of the Interior, Office of Surface Mining.

Almost without exception, the states represented at this meeting expressed their concern over the dilemma of trying to draft a state surface coal mining reclamation program which (1) would meet the requirements of the Office of Surface Mining, and (2) would still be workable in terms of the local and regional conditions. It appears obvious that for a flexible regional application a strong and meaningful state program is needed.

In 1978, the National State Land Reclamationists prepared a resolution calling for a flexible regional concept in the development of surface mining reclamation regulations. This resolution was forwarded to the Office of Surface Mining, and copies were sent to the appropriate mining associations, including the Interstate Mining Compact.

This 1978 resolution was reaffirmed at the 1979 meeting, and letters stating that fact and referencing the 1978 resolution were sent to the Speaker of the House, the Interstate Mining Compact, the Administrator of the Office of Surface Mining, and the President of the United States. The letters also asked for support of the Jackson amendment (S 1403), which essentially accomplishes the aim of the State Land Reclamationists' resolution.

It was the feeling of the group that if Federal surface mining regulations are extended into the areas of noncoal minerals, strong State surface mining regulatory programs in noncoal states are needed for continued State control and regional flexibility. □

Standley L. Ausmus, Administrator
Mined Land Reclamation Division
Oregon Department of Geology
and Mineral Industries

Notice

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Ausmus elected to national office

Standley "Stan" L. Ausmus, Administrator, Mined Land Reclamation Division (MLR), Oregon Department of Geology and Mineral Industries, was elected Vice President of the National Association of State Land Reclamationists (NASLR) for 1980 at their annual meeting in Salt Lake City on September 12-14, 1979.

Prior to coming to the Department in 1974, Ausmus was with the U.S. Bureau of Mines and the General Services Administration. He currently supervises the Department's statewide Mined Land Reclamation program.

Standley L. Ausmus

The MLR law was passed in 1971 by the State Legislature and became effective in July of 1972. The Oregon Department of Geology and Mineral Industries was given the responsibility of administering the program, whose goals are to provide for the protection of the adjacent natural resources and the restoration of the land to a useful and beneficial second use following surface mining.

Initial groundwork, surveys, and contact with the mining industry took place between 1972 and 1974. The first surface permit was issued in the spring of 1974, and Ausmus began his tenure with the Department on May 1, 1974.

The program saw its greatest percentage of growth during the first two years. Since mid-1976, growth has been steady, with a net increase of permitted sites of about 1 percent per month. As of October 1, 1979, there are 691 actively permitted sites, making a total on file of over 2,000 sites which MLR has reviewed.

Currently, MLR is handling this program with one full-time field person, one administrator, and one secretary. The Legislature has authorized and funded another position, and the Division is currently actively recruiting to fill it. □

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