

SHCC operations were transferred September 26, 1980

to:

Mount St. Helens Review Committee (SHRM)
c/o J.K. Murata
Emergency Coordinating Center
500 NW 12th Street
Vancouver, WA 88660

Phone: (206) 696-7850
(503) 285-4600

Please address all future communications to the above

John Eliot Allen

*Don ~
Thanks for everything!
John*

Other sponsoring organizations	3
Names of party leaders	4-5
SHCC policy statement	6
Membership of SHCC	7
List of permits, party leaders, addresses, and fields of research	8-17
Financial statement	18

October 7, 1980

FINAL REPORT
on the operations of the
MOUNT ST. HELENS RESEARCH & EDUCATIONAL COORDINATING COMMITTEE

by
John Eliot Allen, co-chairman
Professor Emeritus of Geology
Portland State University

Abstract

A total of 121 permits were validated by SHCC between April 20 and September 17, 1980, permitting studies in 32 areas of volcanology by nearly 500 scientists (the average of about 4 on each permit) from 55 academic and 23 other organizations. Some permits were used for 5 to 15 visits, with many different party members. Names and addresses of 106 party chiefs are listed, names of other party members should be on file at the Gifford Pinchot National Forest office, 200 SW 12th Ave., Vancouver, Washington, 98660.

Contents

Fields of study	Page 1
Universities and colleges involved	2
Other sponsoring organizations	3
Names of party leaders	4-5
SHCC policy statement	6
Membership of SHCC	7
List of permits, party leaders, addresses, and fields of research	8-17
Financial statement	18

October 7, 1980

FIELDS OF STUDY

Ash (see Tephra)

Biology 6,35,38,43,55,68,70

Blast deposits 17,46

Blast effects 17,32,37,44,46,55,64,
77,92,102

Debris flows 17,41,82,113

Deformation 37,97

Dynamics of eruption 64,75,77

Educational 4,10,11,15,16,18,22,27,
29,30,40,47,54,61,63,65,80,
82,85,87,90,95,99,100,107,110,
117,118,119,120,121

Engineering 104,114

Eyewitness accounts 2,9,13,26,40

Gas analyses 42,69,84,116

Geochemistry 31,32,33,42,43,48,49,54,
58,59,66,69,83,89,103,104,114,
116,117

Geomorphology 50,56,57,79,93,97,105,
111,113

Geothermal 14,28,61,78

Gravity 51,52

Hazards 17,79,96

Hydrology 68

Infra-red imagery 14,101

Magnetism 67,109,113

Mudflows 17,19,36,41,46,48,56,64,65,
79,82,113

Petrology 31,32,33,47,58,66

Photography 1,2,10,11,12,13,15,16,18,
22,27,29,30,32,39,40,45,47,50,
63,64,65,80,85,90,95,97,106,110

Pyroclastic flows 64,77

Seismology 3,5

Social impacts 17,108,111,115

Tephra

collection 8,16,18,23,31,32,42,
43,45,48,49,53,59,64,82,83,84,
86,92,94,100,104,107,113,114,
116,118, 67

thickness 43,46,56

distribution & size 25,43,67,
89,103,107, 46,53

stratigraphy 49,52,58,67,82,86

Sound 11,91

Tiltmeters 20,51

Thermal imagery 14,28,40

Television tapes and film 2,22,27,
80,90

Volcanism, general 24,37,55,97

UNIVERSITIES AND COLLEGES INVOLVED

<u>Alabama</u>	
U.A., University	45
<u>Arizona</u>	
A.S.U., Tempe	56
U.A., Tucson	108
<u>California</u>	
U.C., Berkeley	83
U.C., Los Angeles	77
U.C., San Diego	47
C.S.U., Fresno	14,29
C.S.U., Fullerton	105
C.S.U., Hayward	120
Humboldt State, Arcata	35
San Jose State, San Jose	16
<u>Canada</u>	
Cariboo C., Kamloops	88
Queen's U., Kingston	33
U. Alberta, Edmonton	109
U. Victoria, Victoria	102
<u>Connecticut</u>	
U. Bridgeport	54
<u>Florida</u>	
F.Atlantic C., Palm Beach	18
<u>Germany</u>	
Deutsche Forschungsgemeinschaft	
Saarbrücken	112
U. Dusseldorf, Dusseldorf	103
<u>Hawaii</u>	
U. Hawaii, Honolulu	67
<u>Idaho</u>	
I.S.U., Pocatello	1
U. Idaho, Couer d'Alene	55
<u>Illinois</u>	
U. Chicago, Chicago	119
<u>Japan</u>	
U. Tokyo, Tokyo	41
<u>Maryland</u>	
U.M., Silver Springs	42

<u>Massachusetts</u>	
Boston U., Boston	110
Northeastern U., Boston	32
U.M., Amherst	118
<u>Michigan</u>	
Andrews U., Berrien Springs	38
C.M.S.U., Mount Pleasant	31
<u>Minnesota</u>	
U.M., Minneapolis	117
U.M., St. Paul	50
<u>Montana</u>	
M.S.U., Bozeman	82
U.M., Missoula	101
<u>New Jersey</u>	
Princeton U., Princeton	107
<u>New Mexico</u>	
U.N.M., Albuquerque	59
<u>New York</u>	
S.U.N.Y., Buffalo	62
<u>Oregon</u>	
Linfield C., McMinnville	61
Oregon Graduate Center, Beaverton	84
O.S.U., Corvallis	5,17,104
P.C.C., Portland	6
P.S.U., Portland	2,8,21,37,40,44
U.O., Eugene	24,57
<u>Texas</u>	
Rice U., Houston	58
Southern Methodist U., Dallas	78
Texas Tech.U., Lubbock	65
U. Houston, Houston	25
U.T., El Paso	49
<u>Utah</u>	
Brigham Young U., Provo	106
<u>Virginia</u>	
Old Dominion U., Norfolk	68
<u>Washington</u>	
E.W.U., Cheney	69
Lower Columbia C., Longview	48
U.W., Seattle	4,19
U. Puget Sound, Tacoma	51,52
W.W.U., Bellingham	113

OTHER SPONSORING ORGANIZATIONS

American Geological Institute	80
Association of Professional Geological Scientists	28
Batelle-Pacific Northwest	70
British Broadcasting Company, Television	27
Burlington Northern Inc.	115
Centre de Volcanologie, Cernay, France	64
Canadian Broadcasting System Television	90
Coconino High School, Flagstaff, Arizona	85
Encyclopedia Britannica	80
Gulf Research and Development Co.	46
Houston Geological Society	87
National Air and Space Administration	7,59
National Geographic Society	15,39
National Science Foundation	42,53,56,58,67,84,91,93,94,101, 104,113,121
Nature Episodes Magazine	22
Oregon Museum of Science and Industry	11
Schlicker & Associates, Consultants, Portland	79
Smithsonian Institution	63,86
U.S. Geological Survey	13,116
U.S. Army Research Office	114
Washington Department of Game	36
Western Speleological Society, Seattle	9,26,111
Woodward, Clyde, Consultants	96

NAMES OF PARTY LEADERS

Adams, A.B.	19
Anderson, Alfred	119
Anderson, David A.	35
Anderson, Duwayne	62
Avent, John	14
Bell, J.R.	104
Bennett, David	85
Benson, Larry	83
Bilodeaux, W.L.	89
Blackwell, David	78
Burnham, Rollins	6
Bushman, J.R.	106
Calvin, Edward	23
Carleson, S.N.	121
Chadwick, Robert	82
Chapelle, Edward	4
Cluff, L.S.	96
Corbett, Marsh	1,21
Cuffy, Roger J.	30
Cummings, Jon	120
Cushing, C.E.	70
D'Ailly, Diedrich	90
Danes, Z.F.	52
Dasch, Julian	8
Davidson, Clifford	43
Dewey, J.M.	102
Dorf, Erling	107
Easterbrook, Donald	113
Eggers, Albert	51
Evans, M.E.	109
Ewers, Ralph	18
Fehler, Michael	5,60
Giardino, R.A.	65
Graves, Susan	36
Grisham, D.H.	115
Halliday, W.R.	9,26,111
Hammond, P.E.	37,44,98
Harris, Stuart	27
Hayward, Alfred	11,81
Hinrichs, Clancy	61
Hoffer, Jerry	49
Holsinger, J.R.	68
Hughes, Travis	45
Irving, Anthony	66
Johnson, Ansel	21
Jorgenson, David	31

Kaseweter	3
Kaupilla, James	44
Keating, Barbara	67
Kiver, Eugene	48,69
Krafft, Maurice	64
Kridebaugh, Stephen	47
Kupper, Harald	103
Lamb, G.M.	114
Larison, Grey	22
Lawrence, Donald	50
LeMasurier, W.E.	95
Livingston, Vaughan L.	97
Marshall, John F.	15
Meissner, Charled W.	12
Melson, W.G.	92
Merrill, Robert	29
Morisawa, Marie	93
Nicholas, John	54
Nuhfer, E.B.	94
Ominski, Stephen	10
Palmer, Leonard	40
Perry, Ralph	39
Prentice, R.C.	117
Preusser, H.	112
Quamar, Anthony	101
Rasmussen, R.A.	84
Ream, Lanny	55
Rhoder, J.M.	118
Ritland, R.M.	38
Roeder, Peter L.	33
Roger, Robert	13
Ross, Martin E.	32
Sahley, Rick	24
Saarinen, Tom F.	108
Saint, Prem K.	105
Schlicker, H.L.	79
Siebert, Lee	86
Sigurdssen, Harold	53
Smith, Diane	58
Smith, Roger S.U.	25
Smith, Timothy E.	46
Starborne, Michel	110
Taylor, Ralph E.	87
Thompson, Jav C.	28
Toups, Dean	7
Towne, R.M.	91

Uhland, William
Ui, Takahide

16
41

Van Boek, Bert
Varicamp, Johan
Vernon, Frank

80
116
48

Ward, John
Weaver, Barry

99 . .
100

Yeats, Robert S.

17

Zoller, Bill

42

SHCC POLICY STATEMENT

The Mount St. Helens Research and Education Coordinating Committee (SHCC) is a non-profit, volunteer organization established at the request of the U.S. Geological Survey to help coordinate requests for access to the mountain for geological and educational purposes, and to keep and publish records on those participating, with a view towards reducing duplication of effort and promoting cooperation between geologists and educators. It is composed of representatives from the Oregon and Washington State Departments of geology, the University of Washington, Washington State University, University of Oregon, Oregon State University and Portland State University.

Historically, up to now, scientists have always been able to freely risk their lives for legitimate scientific and educational purposes, without restrictions other than liability waivers. Like mountaineers, geologists have always reckoned these risks as well worth while. In science, there is no real excuse for restrictions to unlimited access to dangerous hazards.

SHCC has, since the first eruption of Mt. St. Helens, been committed to the easing and reduction of restrictions to access to the mountain, and with the cooperation of the U.S. Geological Survey has been able to reduce many of the complicated and multiple steps which have been required in obtaining access, by the federal, state and county agencies which have prevented complete coverage of one of the most important scientific events of the century. The highly competent U.S. Geological Survey scientists have not (and never have been) able to monitor all the aspects of any geological event, much less one of this magnitude. Geology has always relied upon professional competence outside the Survey, and should be able to continue to do so.

Access permits by SHCC have been granted to the following:

NSF funded projects

University funded projects

Personally funded projects
by University scientists

Personal educational projects
for course supplementation
by university or high school
teachers

Educational films and slide shows
(BBC, CBC, OMNI, Encyclopedia
Britannica, etc.)

Professional photographers and writers
for science magazines (Smithsonian,
Volcano News, Nature, etc.)

Industry-related science projects
(Battelle, Weverhauser, FGE etc.)

State funded science projects (DOGAMI,
WDES, WDCES, etc.)

Access permits have not been granted
to the following:

General public (sight seers and
tourists, even if geologists!)

Amateur or professional photographers
or writers for non-scientific
media

Families of scientists without
professional status

Mountaineers

MOUNT ST. HELENS RESEARCH & EDUCATION COORDINATING COMMITTEE
E.S., P.S.U., P.O. Box 751, Portland, OR 97207

Co-chairmen:

Ralph S. Mason, Oregon State Geologist (retired) (503) 244-2106
John Eliot Allen, Professor of Geology (emeritus) (503) 229-3022

Members:

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Portland State University
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Oregon State University
Corvallis, OR 97331

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Seattle, WA 98195

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Washington Department of Conservation
Division of Geology & Earth Sciences
Olympia, WA 98501

Philip E. Rosenberg (509) 335-3009
Department of Geology
Washington State University
Pullman, WA 99163

Permit No.

1. Marshall Corbett
Idaho State Univ.
Dept. Geology
Pocatello, ID 83209
Extended time - ground based
photographic monitoring
of activity
2. Leonard Palmer & party
Earth Sciences
Portland State Univ.
P.O. Box 751
Portland, OR 97201
Same, mostly by air
3. Robert Kaseweter
Monitor seismograph at
Spirit Lake MISSING
4. Ed La Chapelle
Dept. of Atmospheric Sci.
Univ. of Washington
Seattle, WA 98195
Field Trip for Geophysics
Class
5. Michael Fehler
School of Oceanography
Oregon State Univ.
Corvallis, OR 97331
Set up digital seismic
records and maintain
periodically
6. Rollins Birnham
Portland Comm. College
12000 S.W. 49th Ave.
Portland, OR 97219
Effect of ash fall on
biology, collect ash
for analyses
7. D. Toups
NASA
Houston, TX
Recon. for STS3 OSTA 1
satellite coverage
8. John E. Dash
Dept. of Physics
Portland State Univ.
P.O. Box 751
Portland, OR 97207
Collect ash for analysis
- 9A,B,C Wm. R. Halliday
Western Speleological Sur.
1117 36th Ave. E.
Seattle, WA 98112
Monitor ice cave and lava
tube ash effects, etc.
continuous monitoring
10. Steve Ominski
10300 N.E. Thomson
Portland, OR 97220
Professional painter -
studies of a volcano

PERMITS ISSUED BY SHCC SINCE MAY 18

Permit number	Agency	Name and project
11	Oregon Museum of Science and Industry 4015 SW Canyon Road Portland, OR 97201	Alfred S. Hayward: filming activities for multi-media educational show
13	U.S.G.S.	Robert Roger: Pre- and post eruption photo, reoccupy base.
14	California State University at Fresno, Dept. of Geology	Jon Avent: to reoccupy stations for thermal imagery surveys, etc.
15	National Geographic Magazine 17th & M Sts., NW Washington, D.C.	John Marshall: to duplicate one picture taken before May 18
16	San Jose State University Washington Square, San Jose, CA 95112	Richard A. Smith: sample, photograph, film, for educational project
17	Oregon State University Dept. Geology, Corvallis, OR	Robert S. Yeats: volcanic hazards evaluation, structural control of cratering, surface features due to blast, flows, mudflows
18	Science Museum of Palm Beach County, Florida Atlantic University, Geol. Dept. 4801 Dreher Trail NW, Palm Beach FL 33405	Ralph O. Ewers: Samples, photo documentation, public & class instruction
20	University of Washington Botany & Geophysics Depts. Seattle, WA	A.B. Adams: collect mud from lows on Toutle River for PhD research
21	Portland State University Geology Dept. P.O. Box 751 Portland, OR 97207	Ansel Johnson: Install and maintain tiltmeters
22	Nature Episodes 1212 Auburn Road Locke, N.Y. 13092	Gray Larison: documentary motion picture film, for presentation in NY public schools
23	Colorado College Dept. Geology Colorado Springs, CO 80903	Edward Calvin: collect data on tephra for research
24	University of Oregon Center for Volcanology Eugene, OR	Richard M. Sahlev: research thesis on Cascade volcanism
25	University of Houston Geology Dept., also NASA Houston TX 77004	Roger S.U. Smith: wind distribution of tephra blanket
26	William R. Halliday Western Speleological Society 1117 36th Ave. E. Seattle, WA	Halliday: tephra filling of lava tubes, glacial caves, etc.

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| 41 | Earthquake Research Institute
University of Tokyo, Hongo,
Bunkyo-ku, Tokyo, 113, Japan | Takahide Ui: observation of ash fall,
mudflow, debris flow |
| 42 | University of Maryland
Dept. of Chemistry
Silver Spring, MD | Bill Zoller: NSF grant to sample
fumarolic condensates and ash for
detailed analysis of trace elements |
| 43 | Carnegie-Mellon University
(EPA contract) 5000 Forbes
Pittsburgh, PA 15213 | Cliff L. Davidson: to obtain airborne
size distribution data for trace
element analysis |
| 44 | Portland State University
Earth Sciences, P.O. Box 751
Portland, OR 97207 | Paul Hammond: collect ash, measure comp-
action, depth of penetration into trees,
orientation of blow-down trees |
| 45 | University of Alabama
Dept. of Geology & Geography
P.O. Box 1945, University, AL
35486 | Travis H. Hughes: update previous photos;
collect wide size-range of tephra, etc. |
| 46 | Gulf Research & Development Co.
11111 S. Wilcrest Drive
Houston, TX 77091 | Timothy E. Smith: directive effects of
horizontal blast, distribution & thickness
of tephra and mudflows, for comparison
with Tertiary volcanic units now producing
oil and gas in Nevada |

As of July 1, 1980

John Eliot Allen, for SHCC

PERMITS ISSUED BY SHCC, July 1 to July 10, 1980

Permit #	Agency	Name and project
47	University of California at San Diego, La Jolla, CA 92093	Frank Vernon: continue aerial recon., for photographic sequence of events
48	Lower Columbia College, 1600 Maple, Longview WA 90632	Stephen J. Kridelbaugh: sample ash and mudflows for trace analysis by atomic absorption and neutron activation, leaching rates and mineral composition
49	University of Texas at El Paso El Paso, Tx 79968	Jerry M. Hoffer: collect ash for anal. of major, minor & trace elements, obtain vertical section for sequence of ash fall
50	Dept. of Botany, University of Minnesota, St. Paul, MN 55108	Donald B. Lawrence: telephoto photography, rephotos of 1938, geomorphology study
51	Geology Department, University of Puget Sound, Tacoma, WA 98416	Albert Aggers: reoccupy gravity station & set up new ones; set up tilt stations, survey first order level line
52	Physics Department, University of Puget Sound, Tacoma WA 98416	Z.F. Danes: reoccupy gravity stations, construct Bouguer map
53	School of Oceanography, University of Rhode Island, Kingston, RI 02881	H. Sigurdsson: ash fall for modal, grain-size & petrographic analyses, core lake sediments (NSF)
54	University of Bridgeport, Dana Hall of Science, Bridgeport, CT 06602	John T. Nicholas: information for teaching classes in environmental geology & geochemistry
55	P.O. Box 1154, Couer d'Alene ID 83814	Lanny Ream: study types of eruption, materials erupted, effects on physical & biotic landscapes, and recovery rates
56	Arizona State University, Tempe AZ 85281	Michael Malin: geomorphology of pyroclastic flows and mud flows; study of rheological characteristics, collect for analysis. (NSF)
57	Department of Geology, University of Oregon, Eugene, OR 97403	Jack P. Merowka: changes in river channel geomorphology and hydrology
58	Department of Geology, Rice University, Houston, TX 77001	Diane R. Smith: stratigraphic, petrologic and geochemical study of deposits of ancestral St. Helens east of the volcano (NSF)
59	Department of Geology, University of New Mexico, Albuquerque, NM 87131	Carlton C. Allen: collect ash for electron microprobe and scanning electron microscope analysis, for study (NASA) of weathering of volcanic glass.

PERMITS ISSUED BY SHCC July 11 to July 23, 1980

Permit #	Agency	Name and projects
60	(see #5)	
61	Linfield College Department of Physics McMinnville, OR 97128	C.H. Hinrichs: geothermal exploration with Yoshiro Ito, Kanto Gakuin University, Yokohama, Japan; also instructional data.
62	State University of N.Y. at Buffalo, 14260	Dean Duwayne M. Anderson:
63	Smithsonian Institution Washington, D.C. 20560	Lindsey McClelland: Prepare exhibit on St. Helens (Verne Hodson)
64	Centre de Volcanologie Volcain, B.P. 5, 68700, Cernav, France	Maurice Krafft: sample deposits and examine dynamic effects, movie film.
65	Institute for Disaster Research Texas Tech University, Lubbock, TX 79409	John R. Giardino: sample mudflows, photograph for instructional purposes and dynamic studies
66	University of Washington Dept. of Geological Sciences AJ-20, Seattle WA 98195	Anthony J. Irving: rock samples for petrographic research and geochemistry (trace element, electron microprobe, isotopes).
67	University of Hawaii Hawaii Institute of Geophysics 2525 Correa Road, Honolulu, HI 96822	Barbara Keating:
68	Old Dominion University Dept. Biological Sciences Norfolk Virginia, 23508	John R. Holsinger: groundwater hydrology and stream ecology in Deadhorse Cave
69	Eastern Washington University Cheney, WA 99004	Eugene Kiver: gases from fumaroles, precipitates, geochemistry
70	Battelle-Pacific NW Labs. Richland, WA 99352	C.E. Cushing: limnology, effects of ash on algal growth & macroinvertebrates
77	Univ. of Cal. at L.A. Dept. of Earth & Space Sciences Los Angeles, CA 90024	Michael McGurruy: mechanics of transport of pyroclastic flows, particularly surface bed forms before consolidation
78	Southern Methodist University Dept. of Geol. Sciences Dallas, TX 75275	Dave Blackwell: heat flows studies
79	H.C. Schlicker & Assoc. 7931 NE Halser St. Portland, OR 97213	H.C. Schlicker: mudflows on mountain flanks, and effect of drainages, for hazard studies
80	Encyclopaedia Britannica 425 N. Michigan Ave. Chicago, IL 60611	Bert Van Boek: scientific motion picture photography for use by A.G.I. in plate tectonics program: scientists in action
81	(see #11)	

Permit #	Agency	Name and project
82	Montana State University Bozeman, MT 59717	Robert A. Chadwick: examine mud flows, debris flows, ash fall for comparison with other deposits; educational use in classes.
83	University of California, Berkeley, Lawrence-Berkeley Labs., 90-11140, Berkeley, CA 94720	Larry Benson: sample ash to determine rate of break-down and release of chemicals and rate of movement.
84	Oregon Graduate Center 19600 NW Walker Road Beaverton, OR 97006	R.A. Rasmussen: (NSF) collect and analyse ash for trace gases.
85	Coconino High School 2801 N. Isabel Flagstaff, AZ 86001	David P. Bennett, Jr.: take photos and samples for classroom study and seminar presentation to geology faculty at Northern Arizona University.

PERMITS ISSUED BY SHCC, July 24 to August 13, 1980

No. Permit	Agency	Name and project
86	National Museum of Natural History - Smithsonian Inst. Washington, D.C. 20560	Lee Siebert : stratigraphic sections of airfall tephra, and samples
87	Houston Geological Society Esperson Bldg., Houston, TX	Ralph E. Taylor : to prepare slides for talks and samples for display
88	See 100	
89	University of Colorado, Denver Department of Geology 1100 14th St., Denver CO 80202	William L. Bilodeau : depth and composition of ash fall across ULS.
90	Canadian Broadcasting Corp. 790 Bay St., Toronto, Ontario, Canada M5W 1E6	Diedrik d'Ailly : filming segment on volcanoes for science program, "The Nature of Things".
91	National Science Foundation Washington, D.C.	Robin M. Towne : monitor infrasound from Mt. St. Helens during active period.
92	Smithsonian Institution Washington D.C. 20560	William G. Melson : documentation of blast effects, sampling of ejecta
93	State University of N.Y., Binghamton, N.Y. 13901	Marie Morisawa : NSF study of erosion & drainage development on ash
94	U. of New Mexico & U. of Wisconsin, Platteville, WI 53818	Edward B. Nuhfer : NSF study, to retrieve and replace automated trap and samples
95	University of Colorado, Denver 1100 14th St., Denver, CO 80202	Wesley E. LeMasurier : photography for class teaching, comparison with Antarctic volcanoes studied
96	Woodward-Clyde Consultants Suite 700, 3 Embarcadero Center San Francisco, CA 94111	Lloyd S. Cluff : consulting to WPPSS & Rockwell Hanford, for nuclear siting facilities : evaluation of volcanic hazards
97	Washington Div. of Geology & Earth Resources, Olympia, WA 98504	Ted Livingston : studies of geomorphology, structure, volcanology, and photographic documentation.
98	Portland State University Dept. Earth Sciences, P.O. Box 751, Portland, OR 97207	Paul E. Hammond : continuation of #144
99	Central Michigan University Mount Pleasant, MI 48859	John Ward : photography for teaching and research
100	Cariboo College Dept. of Geography Box 3010, Kamloops, B.C. Canada V2C 5N3	Barry Weaver : photography for lecture and mss. purposes, collect samples

PERMITS ISSUED BY SHCC, August 14 to September 19, 1980

Permit no.	Agency	Name and project
101	University of Montana Department of Geology Missoula, MT 59812	Anthony Qamar: NSF, ground-based infrared surveys
102	University of Victoria Department of Physics Victoria, B.C., Canada	John M. Dewey: estimate explosive energy of blast wave, from effects on trees, buildings, etc.
103	University of Dusseldorf Lobbecke-Museum 4000 Dusseldorf, Universitäts- Strasse, West Germany	Harald Kupper: comparison of geo-chemical and structural characters of St. Helens ash falls with those of other volcanoes
104	Oregon State University Dept. Civil Engineering Corvallis, OR 97331	J.R. Bell: NSF, locate test sites for monitoring of properties of tephra, baseline determination of engineering properties
105	California State University Department of Geology 1110 State College Avenue Fullerton, CA 92667	Prem K. Saint: compare pre-and post-eruptive geomorphology, for study of regeneration
106	Brigham Young University Department of Geology 258 FSC, Provo, UT 84602	Jess R. Bushman: photographic survey of effects of eruption
107	Princeton University Department of Geology Princeton, NJ 08540	Erling Dorf: preparation of lectures on eruption, and study of deposits
108	University of Arizona Department of Geography Tucson, AZ 85721	Thomas F. Saarinen: study of warning system of USGS
109	University of Alberta Department of Geology Edmonton, Alberta Canada T6G 2J1	M.E. Evans: magnetic properties of mud flows, to be compared with those at Vesuvius
110	Boston University Department of Geology Boston, MS 02215	Michel Starborne: photography for book on plate tectonics
111	Halliday (see 9,26)	
112	Deutsche Forschungsgemeinschaft Breslauer Strasse 19 Saarbrücken, West Germany	Hubertus Preusser: study of geomorphology and cultural geography
113	Western Washington University Department of Geology Bellingham, WA 98225	Don Easterbrook: NSF, investigation of pyroclastics, debris, mud flow magnetism and morphology

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| 114 | University of South Alabama
Dept. of Geology/Geography
Mobile, AL 36688 | George M. Lamb: U.S. Army Research
Office, relationship between the
geochemistry of rock weathering
and engineering properties of rocks:
compare old and new ash falls |
| 115 | Burlington Northern, Inc.
704 1st NW Bank Center
175 North 27th Street
Billings, MT 59101 | Douglas H. Grisham: to assess and
recon damage to BN land in Sec. 9,
T.8 N., R. 5 E. |
| 117 | University of Minnesota
Department of Chemistry
207 Pleasant St., SE
Minneapolis, MN 55455 | Robert C. Prentice: chemical analyses
of eruption products for instructional
purposes |
| 118 | University of Massachusetts
Amherst, MS 01002 | J.M. Rhoder: observation for teaching
and research, collection of samples,
recon for future field excursion |
| 119 | University of Chicago
Dept. of Geophysical Sci.
5734 S. Ellis Ave.
Chicago, IL 60637 | Alfred Anderson: field course trip
for 12 faculty and students |
| 120 | California State University
Dept. Geological Sciences
Hayward, CA 94542 | Jon Cummings: observation and Photos
for educational/instructional purpose |
| 121 | Estacada Public Schools
P.O.Box 519
Estacada, OR 97023 | Stephen N. Carleson: NSF grant to
prepare teaching module for secondary
schools |

FINANCIAL STATEMENT

Income from 100 permits (21 were duplicates, were cancelled,
or were not paid)

Deposited in PSU account	\$ 790
Cash received and expended	210
	<u>\$ 1000</u>

Expense	Paid	Encumbered	
Typing	97.00	30	\$ 127.00
Duplicating	304.29	150	454.29
Mailing	36.15	30	66.15
Telephone	54.04	30	84.04
Books on St. Helens	46.55	60	106.55
Travel	7.00	3	10.00
Miscellaneous	10.25		10.25
	<u>\$ 555.28</u>	<u>303</u>	<u>\$ 858.28</u>

Balance* \$ 141.72

*To be turned over to PSU research fund on Mt. St. Helens