FIELD GUIDE (WITH ROAD LOGS) TO SELECTED PARTS OF THE WESTERN AND CENTRAL SAN FRANCISCO VOLCANIC FIELD COCONINO COUNTY, ARIZONA

The Arizona Geological Society
Fall Field Trip

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by

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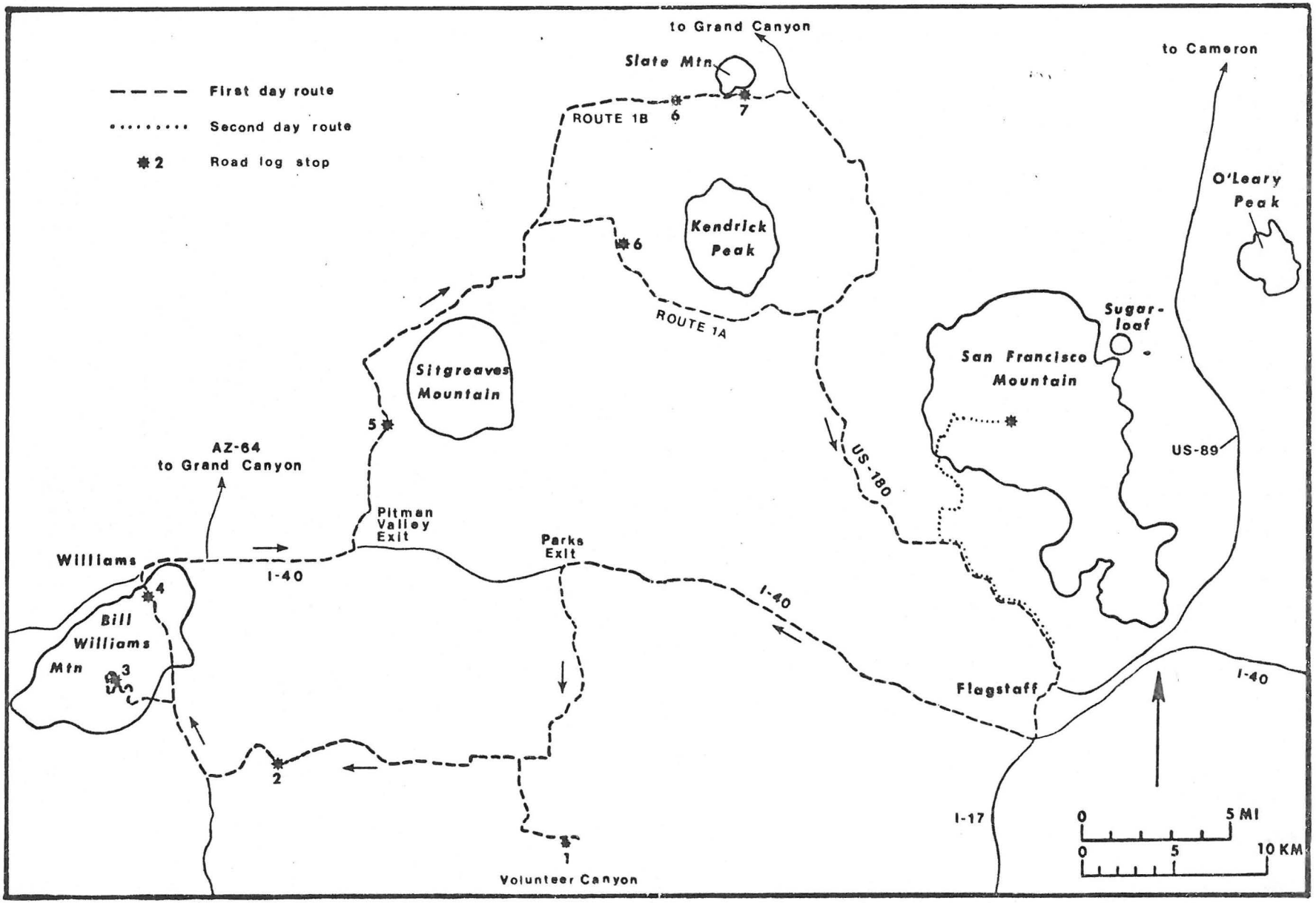

Figure 1 Map of the central and western San Francisco volcanic field showing field-trip routes

INTRODUCTION[1/]

The San Francisco volcanic field is one of several late Cenozoic, basalt-rich volcanic fields distributed around the southern margin of the Colorado Plateau. In the San Francisco field, more than 600 vents, basaltic to rhyolitic in composition, have erupted through the Precambrian basement and a kilometer of nearly horizontal sedimentary rocks. Together with their related flows and pyroclastic deposits, the mapped volcanic rocks cover approximately 2000 mi^2 of the erosionally stripped surface of the Colorado Plateau in northern Arizona.

The field is loosely defined as an area of volcanic deposits generally younger and more varied in composition than the basaltic series typically burying the rim country of the Colorado Plateau margin. It extends from Bill Williams Mountain on the west to the Little Colorado River on the east, and from the area of Cameron on the north to an indefinite line where rim basalts are dominant on the south.

Major structural features trending northeast and north-south at the edges of the San Francisco field include the Mesa Butte and Oak Creek fault systems (Shoemaker and others, 1978). These zones and the related Black Point and Mesa Butte monoclines, by analogy with structures exposed in the Grand Canyon, probably had their origins in the Precambrian and have been reactivited in Cenozoic time. Late Cenozoic faulting continued until at least 0.5 m.y. ago, the age of the youngest displaced flows.

A general progression of volcanism across the Arizona transition zone northeastward on to the plateau in the last 15 m.y. is indicated by published K-Ar ages (Luedke and Smith, 1978). The oldest lava flows of the San Francisco volcanic field erupted about 6 m.y. ago. Ages decrease irregularly northeastward to the areas of youngest activity north and east of San Francisco Mountain, born out both by the basaltic ages and ages from five prominent centers (fig. 1) at which eruptions of intermediate to silicic lavas were concentrated. Three centers in the western part of the field are roughly on alignment with the Mesa Butte fault zone. Their age ranges are:

Bill Williams Mountain	4.2 - 2.8 m.y.
Sitgreaves Mountain	2.9 - 1.9 m.y.
Kendrick Peak	2.7 - 1.4 m.y.

The eastern centers are mostly younger. San Francisco Mountain, an andesitic and dacitic stratovolcano erupted primarily from 1 to 0.4 m.y. ago. However, dacites and rhyolites underlying the stratovolcano yield ages as old as 2.8 m.y. San Francisco Mountain lies approximately in line with the north-south trending Oak Creek fault zone. The O'Leary Peak dacite center, northeast of San Francisco Mountain, and the nearby Sugarloaf rhyolite dome have ages of 0.24-0.17 and 0.22 m.y., respectively. This youngest of the five centers will be viewed from San Francisco Mountain on the second day's field trip or will be visited on the ground depending on the weather.

[1/] This section is taken largely from an unpublished geologic summary on the volcanic field by E. W. Wolfe and G. E. Ulrich (1981).

The youngest lavas flows, represented by Merriam-age (<150,000 yrs) basalts and basaltic andesites and by Sunset-age (<1000 yrs) basalts are north and east of San Francisco Mountain.

ROAD LOGS

The road logs which follow are designed to visit those parts of the volcanic field not covered by the Geological Society of America field guides published in 1974 (Moore and others). Those interested in the geology of the eastern and northern parts of the volcanic field are referred to the earlier publication.

The first day's route covers a large part of the western San Francisco volcanic field, traversing broad expanses of Miocene to Quaternary basaltic cinder cones and lava flows surrounding the three prominent western centers (fig. 1). The log begins at the intersection of I-40 and I-17 just south of Flagstaff and heads west about 17 mi then south through Garland Prairie. The first stop is near the edge of the Colorado Plateau rim at the head of Volunteer Canyon. Here, the oldest lava flows are exposed unconformably on Triassic and Paleozoic sedimentary rocks. The trip proceeds to the top (if group size permits) of Bill Williams Mountain, a primarily dacitic volcano and the oldest of the five centers. Turning back to the east, we will visit the rhyolite dome cluster of Sitgreaves Mountain, circumvent the base of Kendrick Peak, an andesitic to rhyolitic complex, and visit the Bull Basin trachyte flow if time permits. An alternate route that is 8 mi longer includes a stop at the partly intrusive rhyolite dome of Slate Mountain. On this trip, vehicles with high clearance are desirable and, in wet weather, four-wheel drive may be required for the 5-mile loop to stop 1.

The second day's traverse begins at Sechrist Elementary School on north Ft. Valley Road (U.S. highway 180) and proceeds 13 mi to the Arizona Snow Bowl. From there, the chairlift and a 750-ft climb will bring us to the summit of Agassiz Peak for a panoramic view of the interior of San Francisco Mountain, the eastern and western parts of the volcanic field, and much of northern Arizona. The interested student may want to consult the field guide to San Francisco Mountain by Péwé and Updike (1976) for this trip. Food and beverages are normally available at the Snow Bowl.

FIRST DAY - Western San Francisco Volcanic Field

Cumulative Distance (miles)	Interval Between Points	
		7:30 a.m. - Assemble at Dennys Restaurant just north of the I-40 and I-17 interchange.
		Leave Flagstaff heading south on Milton Road to the intersection of I-40 and I-17. Take on-ramp for I-40 west to Williams and Los Angeles.
0.0		Set odometer at 0.0 at end of on-ramp.
	3.8	Roadcuts are Quaternary basalt flows and red pyroclastics from local vents.
3.8		Pass Exit 191.
	0.6	
4.4		Railroad on the right follows the base of the Oak Creek fault scarp. The outcrop is a benmoreite flow (soda-rich andesite).
	0.2	
4.6		Pass Exit 190, A-1 Mtn Road.
	4.7	
9.3		Mile Post (MP) 186. Entering Kaibab National Forest.
	1.0	
10.3		Pass Exit 185, Bellmont.
	2.6	
12.9		Pass roadside rest area.
	1.4	
14.3		MP 181. Benmoreite flow from Fortynine Hill on right.
	2.0	
16.3		MP 179. Abandoned Route 66 of musical fame on right.
	0.5	
16.8		Take Exit 178, Parks Road. Turn south (left), cross I-40 and Santa Fe railroad on Forest Road (FR) 141.
	1.5	
18.3		Pass FR 62 on right.
	0.6	
18.9		Kaibab Formation, Lower Permian cherty dolomite, on the right and ahead between basalt outcrops.
	2.8	
21.7		Enter Garland Prairie, a broad park with mostly interior drainage. The surface is largely eroded Kaibab Formation with a veneer of basalt flows and alluvium.
	0.3	
22.0		Cross FR 24.
	2.6	
24.6		FR 141 turns west (right). Bill Williams Mtn (Stop 3) is at 1 o'clock; Sitgreaves Mtn is at 2:30 (north).
	1.0	
25.6		Intersection. Turn south (left) on FR 527.
	1.0	
26.6		Bear left on FR 527. Entering Coconino National Forest.

	1.1	
27.7		Railroad Springs. In wet weather the road from here to Stop 1 may require 4-wheel-drive. Continue south on FR 527.
	0.6	
28.3		Fork. Keep left.
	0.1	
28.4		Gray Springs on right.
	1.9	
30.3		Stop 1 - Volunteer Wash. This is a turnaround point. A short walk along the north rim (about 1000 ft on the right side) leads to an excellent view down Volunteer Canyon. The right wall exposes a northwest-trending lava ridge fed by dikes that intrude a continuous section of basalt flows and basaltic tuff overlying the Kaibab Formation. Beyond the lava ridge, the basal part of the red Moenkopi Formation (Triassic) can be seen overlying the Kaibab. K-Ar ages of the basalt are reported by Damon and others (1974) and are shown in figure 2. Several such fissure-fed lava ridges occur on northwest trends (a few are north-south) near the Colorado Plateau margin and are parallel to the most prominent faults and joints in the underlying Paleozoic rocks.

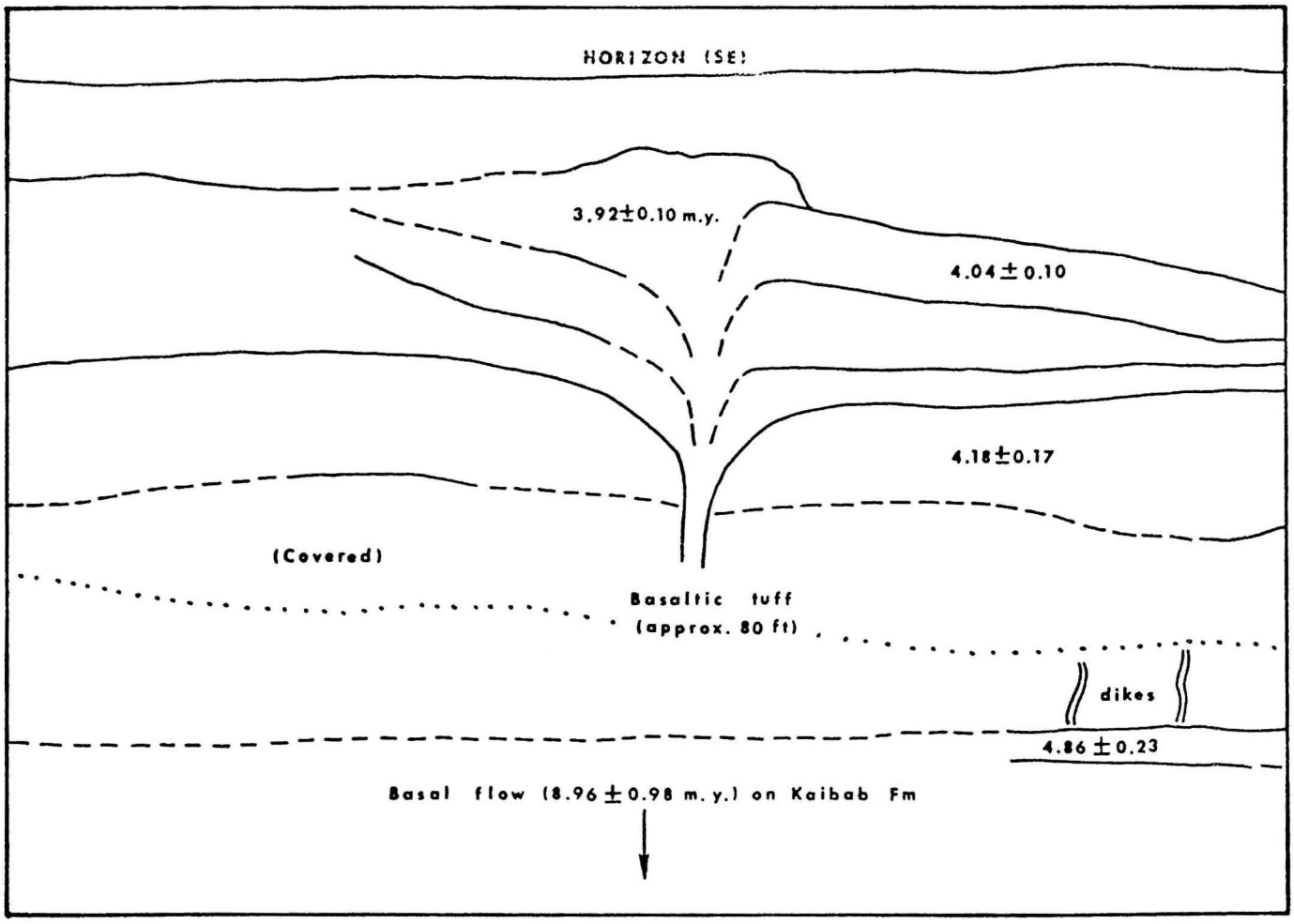

Figure 2 Sketch of fissure-fed lava ridge near head of Volunteer Canyon as viewed from the northwest rim. K-Ar ages of basalt flows are from Damon and others (1974)

	4.7	Return to the intersection of FR 527 and 141.
35.0		Turn west (left) on FR 141. This broad open area is underlain by the Garland Prairie flow (Late Pleistocene) which poured over into Sycamore Canyon 2 mi to the south.
	1.0	
36.0		Intersection of FR 141 and 13. Proceed straight west on unimproved 13.
	0.9	
36.9		Turn left on cindered FR 56.
	0.4	
37.3		Intersection. Turn west (right) on FR 13. From here to Bill Williams Mtn, the route traverses through older (Pliocene and Miocene) basaltic cones and flows.
	2.8	
40.1		Intersection with FR 109. FR 13 becomes FR 139. Continue straight on 139.
	0.9	
41.0		Pass FR 18 on right.
	1.5	
42.5		Pass FR 749 on right. Continue west on 139.
	1.7	
44.2		Stop 2 - Hyde Hill basalt dike. This nearly vertical dike intrudes two eroded cinder cones and is exposed on both sides of the road. Late stage feeder dikes are common in older vents in the western part of the field. This one is unusual in that it contains abundant partly melted plagioclase and quartz phenocrysts also typical of the south cone and its flow extending 4 mi to the east and southeast. The dike is 1800 ft long and trends north and northeast. Smaller dikes south of the road have easterly and southeasterly strikes.
	1.0	Continue west on FR 139.
45.2		Pass FR 48 on right. This area is typical of the older part of the volcanic field. Low cinder cones and deeply weathered basalt flows of generally monotonous olivine and clinopyroxene phenocrystic composition cover broad areas and extend to depths of several hundred to approximately 1000 ft.
	2.3	
47.5		Turn north (right) onto a paved road. This is the Perkinsville-Williams highway.
	1.2	
48.7		MP 179, Barney Flat. Bill Williams Mtn dacite complex is at 11 o'clock. North-trending basalt dike forms prominent ridge in foreground. The highway ahead climbs across the buried scarp of the Mesa Butte fault. This is a major northeast-trending fault zone that can be traced discontinuously for more than 130 mi from the Precambrian terrane southwest of Prescott to the Little

Colorado River near Cameron. In this area, the youngest unit displaced is a 2.8 m.y. basalt flow with 120 ft of offset (K-Ar age by E. H. McKee, personal communication).

1.5

50.2 Turn west (left) on FR 111, the road to Bill Williams Mtn lookout tower.

Note: If the field-trip convoy is too large, this segment of the log will be omitted and an alternate stop 2.5 mi farther north will be substituted. In that event, continue the log from this point at mile 64.2.

The basalt near the road erupted along a northwest-trending fissure that, projected 15 mi along strike to the southeast, coincides with the lava ridge seen at Stop 1. A K-Ar age of a flow from this vent is 6.4 ± 0.3 m.y. (E. H. McKee).

1.3

51.5 Colluvium of dacitic and andesitic composition forms a thick apron surrounding most of the mountain and is present here as the road begins to climb.

0.3

51.8 Basaltic tuff from a nearby vent crops out discontinuously for the next mile. Near its top, it contains scattered clasts of dacitic and andesitic composition; one clast of peridotite (lherzolite) has also been collected.

1.0

52.8 Sharp left bend. A feeder dike for the small dacite dome above and to the left crosses the road.

0.1

52.9 Highest basalt flow on the mountain. It may be an extension of the northwest-trending lava ridge at the base of the mountain.

0.1

53.0 From here to just below the summit, outcrops are typically hornblende dacite of the central complex including thick massive flows and radial spines constructed by multiple eruptions of relatively homogeneous lavas. One K-Ar age by E.H. McKee is 3.6 ± 0.4 m.y.

3.7

56.7 Sharp switchback to the right. Dacite pumice and ash on the left underlies the summit dome.

0.5

57.2 Stop 3 - Bill Williams Mtn summit (elevation 9256 ft). From the lookout tower, most of the western part of the San Francisco volcanic field can be seen. Three younger centers can be seen to the northeast. From west to east they are: Sitgreaves Mtn (a rhyolite dome cluster), Kendrick Peak (a composite center of andesite, dacite, and rhyolite), and San Francisco Mtn (an andesitic and

dacitic stratovolcano). The intervening areas are underlain mostly by Pliocene and Pleistocene basalt flows and generally subdued cinder cones. Scattered through the area are also a few intermediate-to-silicic individual domes and several composite vents ranging from basalt to dacite and from benmoreite to rhyolite.

To the south, the edge of the Colorado Plateau and the Black Hills bordering the southwest side of the Verde Valley tectonic basin can be seen.

The tower rests on top of a clinopyroxene- and quartz-bearing dacite dome, probably one of the last eruptive phases of the mountain. Its chemical composition is indistinguishable from the underlying hornblende dacites which contain only sparse amounts of these minerals. K-Ar age by E. H. McKee is 3.5 ± 0.1 m.y.

Return to the paved road.

7.0

64.2 Turn north (left) on highway.

2.5

66.7 MP 183, road to Williams Ski Area on left. Continue on pavement.

0.1

66.8 Alternate Stop 3 - Pumice and ash pit on west (left) side of highway. Hornblende dacite pumice and ash underlies much of the low-lying area here. It represents the vent-clearing pyroclastic phase of eruption prior to extrusion of the viscous dacite dome and flows. Clasts of Precambrian basement rocks found within the pumice include gneiss, schist, mylonite, and quartzite. Some fragments are hydrothermally altered. An airfall ash deposit overlies the pumice

Cataract Creek dome, 1/2 mi to the west, is one of several peripheral domes, 3 to 4 m.y. old around the central complex. Wounded Ranger Knoll, across the highway to the northeast is another.

A drill hole about one mile south of here penetrated 900 ft of basalt, intersecting thin zones of silicic debris at 120 and 490 ft.

Proceed north on the highway.

0.6

67.4 Valley narrows. Pumice outcrop on the right. Cataract Creek, on the west (left) side of the road, heads near here. It marks the contact between a dacite flow on the west and an andesite dome and flow, transitional to dacite, on the east.

1.0

68.4 Entering the south edge of Williams.

Stop 4 - Santa Fe Reservoir, one of four in this area resting on the Saginaw basalt flow. Seeps and springs

occur near the base of the dacite and andesite flows overlying this basalt, providing a significant part of the city's water supply. The dam was built before 1905 for the railroad, using quarried siltsone blocks from the Supai Formation (Permian and Pennsylvanian). It was refurbished with concrete in 1942. The Saginaw basalt is characterized by abundant large clinopyroxene phenocrysts; it has an age of 4.0 ± 0.5 m.y. (E. H. McKee)
Proceed north on Fourth Street.

0.5

68.9 Turn east (right) at stop sign onto Bill Williams Ave.

1.0

69.9 Leave Williams. Railroad cut on the right is in the Saginaw basalt flow which is overlain by the andesite flow of High School Hill. A poorly exposed reworked dacite pumice and ash deposit separates the two units.

1.9

71.8 Santa Fe Railroad overpass.

0.5

72.3 Intersection with state route 64 to Grand Canyon and I-40. Take on-ramp to I-40 east.

1.4

73.7 Pass Exit 167, Garland Prairie road.

1.9

75.6 Davenport "Lake" (sometimes it is). Davenport Hill at 3 o'clock is a dacite dome capped by an andesite vent. The notch, which is just below the andesite, marks the Mesa Butte fault which continues under I-40 about 1.5 mi farther east and extends northeastward until it is lost under younger volcanic rocks.

2.2

77.8 Take Exit 171, Pitman Valley Road. Cross I-40 overpass and turn left on paved FR 74.

3.5 Road is on alluvial-covered basalt flows from local cones, Pliocene to Pleistocene in age.

81.3 Compressor station for the El Paso Gas pipeline on the left. End of pavement. Continue north on FR 74. Note rhyolite debris in alluvium being shed from Sitgreaves Mtn to the northeast.

0.4

81.7 Intersection with FR 74A; stay right on 74. The basalt flow on the left is from Frenchy Hill. Age of the flow is 1.1 ± 0.1 m.y. (E. H. McKee).

0.9

82.6 Turn left into Stop 5 - Frenchy Hill ash pit. The ash and pumice deposit underlies both the Frenchy Hill Pleistocene basalt cone to the west and a rhyolite flow capping the hill on the east side of the pit. A rhyolite clast from the ash yielded a biotite age of 2.0 ± 0.9 m.y. (E. H. McKee). The rhyolite flow is correlated with one of the older rhyolites on Sitgreaves Mtn. It contains biotite, sanidine, and quartz. Small clasts of Precambrian schist are common in the ash.

The cluster of rhyolite domes that form Sitgreaves Mtn ranges in age from 2.9 to 1.9 m.y. in age (Damon and others, 1974, and E. H. McKee, personal communication).

Return to FR 74. Continue northeast.

0.7

83.3 Pass FR 75 on right.

2.7

86.0 Intersection with FR 141, Spring Valley road. Turn right on 141.

0.6

86.6 Pass FR 730 on left.

3.5

90.1 Pass FR 713 on left. Enter Spring Valley.

0.8

90.9 Heading east. Kendrick Peak is at 12 o'clock; San Francisco Mtn is at 1 o'clock; Sitgreaves Mtn is at 4 o'clock.

1.0

91.9 Intersection with FR 141. Turn north (left) on 144.

1.7

93.6 Intersection of FR 171, 144, and 88. Moritz Ridge at 3 o'clock is an andesite flow dome. From 12 to 2 o'clock, the high flow front is the Bull Basin trachyte from a vent near Kendrick Peak.

At this point, there are two routes, both of which end in Flagstaff. Route 1A is 27 mi long and proceeds around the south flank of Kendrick Peak. It permits access to outcrops of both benmoreite and trachyte and is the shorter, faster route. Route 1B is 35 mi long and circumvents the north side of Kendrick Peak around the edge of the trachyte flow. Stops are scheduled on trachyte and at Slate Mtn, a rhyolite dome that has uplifted sedimentary strata of Paleozoic and Mesozoic age.

ROUTE 1A - South Side of Kendrick Peak

Turn east (right) on FR 171.

2.3

95.9 Pass FR 101 on left.
High ridge forming skyline ahead is the trachyte flow. Kendrick Peak summit with lookout tower is visible beyond the flow.

0.5

96.4 Turn south (right). Pass through "Pumpkin Center".

0.5

96.9 Pass unnumbered road on right. Continue straight on 171.

0.3

97.2 Stop 6 - Bull Basin trachyte flow (depending on time and interest). Trachyte exposed on left side of the road.

This is the only flow of its kind in the field. It is very fine-grained with small biotite and rare plagioclase phenocrysts. It is characterized chemically by its very high soda and potassium content (10.7%). The flow reaches a maximum thickness of approximately 800 ft. Its age is 1.1 ± 0.2 m.y. (E. H. McKee).

0.9

98.1 Pass FR 194 on right.

0.6

98.7 Pass FR 190 on left. Elk Tank.
This road (171) skirts the south flank of Kendrick Peak. The dome and flow complex includes rhyolite, dacite, and andesite, and is accessible only by foot trails. Ages range from 2.7 to 1.4 m.y. (E. H. McKee). Rocks seen along the road are from peripheral cones and flows of benmoreite, basalt, and the Bull Basin trachyte flow.

0.5

99.2 Road crosses a small draw in a clearing and climbs a short hill into the pines. Debris of a benmoreite flow occurs on the left slope. This flow is from the Newman Hill benmoreite cone. The rock is typically very fine-grained and contains very sparse small plagioclase phenocrysts. Total alkalis are 8.4% compared with 6-7 for the more common andesites in this field.

0.7

99.9 Newman Hill benmoreite cone on left. Kendrick Peak summit (andesite) above.

0.6

100.5 Pass FR 190 on left and 100 on right. Continue east on 171.

0.4

100.9 Pass FR 171A on left. This leads to an excellent trail to the summit.

0.2

101.1 Pass FR 793 on right.

1.6

102.7 Turn north (left) on FR 193. From here to Highway 180, the road is on Quaternary basalt flows. There are several good views of Kendrick Peak.

1.8

104.5 Humphreys Peak (elevation 12,633 ft) at 12 o'clock.

1.4

105.9 Turn south (right) on paved U.S. Highway 180.
The highway skirts the west side of San Francisco Mtn and is constructed on late Quaternary basalt flows.

14.5

120.4 Flagstaff city limit. Elden Mtn dacite dome and flow complex at 12 o'clock.

End of Route 1A - First Day

ROUTE 1B - North side of Kendrick Peak and Slate Mtn

93.6		Begin at intersection of FR 171, 144, and 88. Proceed north (middle fork) on FR 144.
	1.6	
95.2		Pass FR 90 on right. Quaternary basalt flow on left; Bull Basin trachyte flow on right.
	3.0	
98.2		Intersection with FR 736. Turn east (right) on 736.
	0.7	
98.9		Pass FR 101 on right.
	0.4	
99.3		Intersection with FR 91. Stay right on 736 following a buried telephone cable. South of the road on the right, the high-standing trachyte flow makes the skyline. The small rugged hill in the middleground is a Quaternary basalt vent.
	0.7	
100.0		Road rises on the basalt that flowed from the vent just noted.
	1.2	
101.2		Road drops to the east past the basalt flow and onto the underlying trachyte flow.
	0.2	
101.4		Stop 6 - Bull Basin trachyte flow in draw at Lost Tank. See mile 97.2 from Route 1A for description. The trachyte is glassy here at the northern end of the flow and the minerals are not readily visible.
	0.8	
102.2		Take left fork (better road).
	0.8	
103.0		Cattle guard. Enter Coconino National Forest. Road becomes FR 191. Slate Mtn is at 11 o'clock; Kendrick Peak is at 3 o'clock.
	0.7	
103.7		FR 191 leaves the buried-cable road and turns left. At the intersection with 164H, keep right on 191. The road skirts the south flank of Slate Mtn. On the immediate left is a satelitic dome of biotite rhyolite having an age of 1.9 ± 0.4 m.y. (E. H. McKee).
	0.8	
104.5		Stop 7 - Slate Mountain. Steeply dipping red beds of the Moenkopi Fm, cherty dolomite of the Kaibab Fm, and Coconino Sandstone are all uplifted a minimum of 900 ft on the southeast and eastern flank of the rhyolite dome. Not seen here but also exposed by the structure are Cambrian, Devonian, Mississippian, and Pennsylvanian-Permian formations with local hydrothermal alteration at the edge of the intrusion. On the opposite side of the dome, outcrops of sedimentary rocks are extremely sparse and the rhyolite appears to be mainly extrusive. The summit is completely free of sedimentary debris; it is a cryptocrystalline aphyric rhyolite whose age is 1.54 ± 0.02 m.y. (Damon and others, 1974).

	0.1	
104.6		Slate Mtn trail on the left. Continue east on FR 191 across several Quaternary basalt flows. A drill hole in this area bottomed in basalt at 292 ft.
	2.0	
106.6		Highway 180. Turn south (right).
	5.3	
111.9		Kendrick Park picnic area on the west (right) provides a good view of Kendrick Peak, San Francisco Mtn (second day's field trip) and the White Horse Hills. The latter feature is seen at the north base of San Francisco Mtn. It is a rhyolite dome with a light gray outcrop on its summit of Mississippian Redwall Limestone. It postdates (uplifts) several of the San Francisco Mtn andesites.
	1.0	
112.9		The basalt flow exposed through the alluvium in Kendrick Park has an age of 0.35 ± 0.13 m.y. (E. H. McKee). It was extruded from a cinder cone on the flank of the Hochderffer Hills rhyolite dome seen at 12 o'clock. This old dome (1.64 ± 0.11 m.y., E. H. McKee) predates most of the construction of the stratovolcano.
		From here the highway skirts the west side of San Francisco Mtn on late Quaternary basalt flows, all from vents peripheral to the base of the mountain.
	15.5	
128.4		Flagstaff city limit.

End of Route 1B - First Day

Second Day - San Francisco Mountain

Cumulative Distance (miles)	Interval Between Points	
0.0		8:00 a.m. - Assemble at parking lot at Sechrist Elementary School at the north edge of Flagstaff on U.S. 180. Proceed north on 180
	1.0	
1.0		Museum of Northern Arizona on left. MNA Research facility on right.
	0.2	
1.2		Dry Lake Hills at 3 o'clock is a cluster of at least eight dacitic domes, all of similar lithology.
	1.0	
2.2		Road bends to north (right). Outcrops with sheeted fractures on both sides are a younger andesite flow of San Francisco Mountain.
	0.6	
2.8		Younger andesite flow of San Francisco Mtn in new roadcuts. This flow typically contains plagioclase, pyroxene, and olivine phenocrysts in glassy matrix.
	1.6	
4.4		Mile Post 222. Younger andesite becomes buried by surficial deposits being shed from the southwest flank of San Francisco Mountain. Road is in these deposits for the next 3.7 mi.
	0.9	
5.3		Turn north (right) at signs to the Arizona Snow Bowl, distance 7.6 mi.
	1.0	
6.3		Turn east (right) on main road. Coarse andesite rubble covers the surface here.
	1.8	
8.1		Left bend in road crosses from surficial deposits to an older andesite flow of San Francisco Mtn. Several varieties of this unit combine to form the most voluminous part of the stratovolcano. The rock is porphyritic with plagioclase and hornblende and/or pyroxene phenocrysts.
	0.5	
8.6		Sharp bend to the left crossing a draw that marks the contact between the older andesite and a younger andesite flow from a vent on the upper slopes of Agassiz Peak. This younger plagioclase-hornblende-pyroxene-phyric rock crops out for the next 2.7 mi. Composition is very similar to some older andesites of San Francisco Mtn.
	2.7	
11.3		Road crosses the mapped edge of the younger andesite of Agassiz Peak just above here into surficial deposits assigned to the Espil member of the Sinagua Formation by Péwé and Updike (1976).

	0.7	
12.0		Road forks. Stay to the right.
	0.9	
12.9		Arizona Snow Bowl parking lot. Lift tickets are for sale in the lodge. The chairlift climbs 2100 ft across the younger andesite of Agassiz Peak and, in the upper half, crosses an older andesite of San Francisco Mountain.

A climb of 750 ft to the Agassiz summit across rubble and outcrops of the older andesites of San Francisco Mountain affords excellent views of the stratified flows and breccias exposed in the walls of the Inner Basin, the vent complex of the Core Ridge, glacial deposits described by Péwé and Updike (1976), and the youthful O'Leary Peak dacite center, Sugarloaf dome, and basaltic cones of the eastern part of the volcanic field.

The trip ends with the return to the Snow Bowl Parking lot, by foot or by chairlift, and the drive back to Flagstaff.

References

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