[RADIOCARBON, VOL. 19, NO. 3, 1977, P. 460-464]

US GEOLOGICAL SURVEY, MENLO PARK, CALIFORNIA, RADIOCARBON MEASUREMENTS I

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A radiocarbon laboratory at the US Geological Survey Western Regional Headquarters in Menlo Park, California was established in temporary rooms in March, 1976. In August, 1976 the laboratory was dismantled and moved into a new building that was designed specifically for the facility. This list contains results of operations in the temporary laboratory, which was located in the basement of a two-story building. The counter shield was 15cm lead and 5cm borated paraffin with an additional 5cm of lead above the counters. The anticoincidence ring consisted of copper tubes, 5cm in diameter, mounted around a copper tube with an inside diameter of 15cm. Installed in the anticoincidence ring were the four sample counters, whose characteristics are shown in Table 1. The counting electronics unit, which is designed to service five sample counters, follows the design of Gulliksen (1972) in most respects. The sample counters were constructed of copper and quartz; their design is described in detail by Robinson (1977). The CO_2 counting gas was purified by recirculation over copper and silver at ca 450°C. Wood samples were typically pretreated by leaching for 24 hours alternately in 1N sodium hydroxide and hydrochloric acid solutions at 70°C.

Samples were counted for at least 2,400 min, and ages calculated using the Libby half-life of 5570 years. The age dating limits are stated for samples whose activity was measured as less than 4σ, where σ is the standard deviation due to counting statistics. The stated age limit is the age calculated for an activity of 4σ.

To provide an interlaboratory comparison, two samples previously dated at the Teledyne Isotopes laboratory were remeasured (Table 2). The apparent discrepancy for USGS-28 may indicate that the pretreatment used at the Teledyne laboratory is not sufficient for complete removal of humic-acid contamination, a problem also suggested by Stuiver *et al* (1975). Unless otherwise indicated, the collectors and submitters are US Geological Survey personnel.

SAMPLE DESCRIPTIONS

Colville River, Alaska series

Sec of dune sands and channel sands exposed in bank of Nechelik Channel distributary near its divergence from Colville R (70° 13.4′ N, 150° 52.0′ W). Coll and subm by L D Carter.

USGS-32. **1110 ± 65**

Detrital wood from channel sands ca 4.9m above river level.

USGS-39. **1280 ± 70**

Wood in growth position in dune sand overlying channel sands. Ca 5.5m above river level.

USGS-73. **4290 ± 570**

Wood fragments from 42m depth in core taken near Portage, Alaska (60° 49′ N, 148° 59′ W). Coll and subm by A T Ovenshine, S Bartsch-Winkler, R Kachadoorian. Undersized sample.

USGS-44. Galbreath Lake Moraine, Alaska **1850 ± 85**

Peat from headwall of active earthflow 5km NW of Galbreath Lake (68° 29′ N, 149° 34′ W). Dates interval of slope stability that preceded late Holocene solifluction. Coll and subm by T Hamilton.

USGS-42. Galbreath Lacustrine Plain, Alaska **4800 ± 100**

Wood from E bank Atigun R 7.5km S of Galbreath Lake (68° 23.5′ N, 149° 21′ W). Dates high-water phase, ca +10 to +15m, of Galbreath Lake. Coll and subm by T Hamilton.

Blakely Harbor, Washington series

Dates from marine terrace deposits exposed near Blakely Harbor, Bainbridge I., Washington (47° 35.7′ N, 122° 30.7′ W).

USGS-6. **4530 ± 90**

Wood from S side of Blakely Harbor ca 2.7m above mean high tide. Coll and subm by K Marcus and H Gower.

USGS-7. **3260 ± 80**

Marine shells from S side of Blakely Harbor ca 4.5m above mean high tide. Sampling site ca 25m W of USGS-6 and ca 100m E of USGS-65. Coll and subm by K Marcus and H Gower.

TABLE 1
Counter characteristics

Counter volume (L)	Filling pressure (atm)	Net modern count rate (cpm)	Background count rate (cpm)
0.74	2.04	9.3	1.91
1.02	2.04	12.7	2.52
1.22	2.72	20.9	3.01
2.48	2.04	30.5	5.49

TABLE 2
Interlaboratory check samples

Sample material	USGS results		Teledyne Isotopes' results	
Peat	USGS-27	2610 ± 110	I-7586	2475 ± 85
Wood	USGS-28	>39,400	I-7555	30,400 ± 1200

https://doi.org/10.1017/S0033822200003775 Published online by Cambridge University Press

USGS-65. **5880 ± 70**

Marine shells from base of marine terrace sec ca 1m above mean high tide. Marine sec is ca 3m thick. Coll and subm by J Yount.

USGS-64. Double Bluff, Widbey Island, Washington **12,670 ± 90**

Marine shells in slightly oxidized sandy till, ca 100m ENE of most S point of Double Bluff (47° 58.1′ N, 122° 32.7′ W), ca 3m above present sea level. Till appears to be deposited against older Double Bluff drift ca 300m to E. Date agrees with other dates on glaciomarine drift in N Puget Lowland, 10,370 ± 300 BP to 13,100 ± 170 BP (Easterbrook, 1969). Coll and subm by J Yount.

USGS-54. Alta Coulee, Washington **430 ± 80**

Freshwater snail shells from surface sediments. Dates episode of ponding on floor of Alta Coulee (47° 58′ N, 119° 56′ W) in depression at least partly closed because of accumulation of Antoine Creek fan. Ponding records either neoglacial pluvial event or interval when Antoine Creek discharged across N sec of fan rather than across S sec as it does today. Coll and subm by R B Waitt.

USGS-80. Gas Line Flow, Newberry Craters, Oregon **6150 ± 65**

Charcoal from tree mold in lava, 16km S of Bend, Oregon (43° 50′ N, 121° 21′ W). Dates eruptions from NW rift of Newberry Volcano. Coll by N V Peterson, Oregon Dept Geol & Min Resources, and E A Groh; subm by D Champion, California Inst Tech and USGS.

USGS-38. Bakersfield, California **14,100 ± 200**

Wood, 12 to 15m below surface of Kern R alluvial fan (35° 21′ N, 119° 02′ W). Dates major phase of late Modesto (Modesto formation, upper member) glacial outwash, presumably correlative with major phase of Tioga glaciation of Sierra Nevada. Coll by S Soenke, US Dept Agr, subm by D Marchand.

USGS-62. Pixley, California **4600 ± 100**

Calcium carbonate- and silica-cemented hardpan horizon (Ccam). Fresno soil series (36° 58′ N, 119° 14′ W). Young apparent age demonstrates that hardpan was open to exchange with younger carbonate throughout Holocene time. Coll and subm by D Marchand.

USGS-87. Mule Creek, California **310 ± 45**

Wood from W side Mule Creek (122° 48′ 40″ W, 40° 52.07′ N). Sample from near base of foreset beds topographically higher than normal level by Clair Engle Reservoir, or Trinity Lake. Foreset beds may represent deposition in water body occupying present site of reservoir. Coll and subm by J Wolfe.

USGS-33A. Searles Valley, California 14,300 ± 200

Tufa from compound gravel bar formed in ancient Searles Lake (35° 50.8′ N, 117° 18.4′ W). Grains picked from crustal tufa sample, washed in ultrasonic bath, and outer 10% dissolved in acid. Coll and subm by G I Smith.

USGS-33B. Searles Valley, California 12,800 ± 150

Bulk sample not washed or picked, but with very short acid leach. Demonstrates that bulk sample contains significant contamination with younger carbon.

USGS-67. Searles Valley, California 7700 ± 75

Green calcareous lacustrine silt. Contains ostracods dated at 9070 ± 300, W-1894 (R, 1969, v 11, p 213). Coll and subm by G I Smith.

Dumbarton West series, California

Samples from bore-hole drilled 0.5km N of W end of Dumbarton Bridge (37° 30′ 09″ N, 122° 07′ 49″ W). Coll and subm by M Bennett.

USGS-35. 6.6m depth 3070 ± 90

Ostrea sp from upper part of Oyster mud.

USGS-36. 11.7m depth 4830 ± 130

Ostrea sp from lower part of Oyster mud.

USGS-55. 16m depth >37,600

Wood fragment, near top of alluvial sand deposits. *Comment*: Oyster mud was deposited for ca 2000 yr with only 1 break in deposition. Alluvial sand is unconformably overlain by Holocene bay sediments.

Bolinas Lagoon Spit series, Marin Co, California

Shells from Borehole 3 on Bolinas Spit (37° 54′ 28.3″ N, 122° 40′ 39.5″ W). Coll and subm by J R Bergquist and B Atwater.

USGS-71. 7.9 to 8.2m depth 1160 ± 60

Macoma nasuta and *Tresus* sp.

USGS-72. 15.2m depth 6450 ± 100

Macoma nasuta, Tresus sp, *Clinocardium nuttalli,* and *Protothaca staminea.*

USGS-74. Burdell Mountain Landslide >29,700

Disseminated plant fragments from 23.6m below surface in large landslide mass (38° 7.5′ N, 122° 35′ W). Date is minimum for last activity

of Burdell Mt slide. Coll by Cooper-Clark Assoc, Palo Alto, Calif and subm by S Ellen. Undersized sample.

USGS-90. Listvyanya Cove, Siberia, USSR 1750 ± 50

Charcoal from 50cm depth in excavation at Listvyanya Cove (52° 14′ N, 107° 27′ E). Assoc with Bronze age pottery. Coll and subm by S L Troitskiy, Inst Geol & Geophys, Acad Sci, USSR, Novosibirsk, and D M Hopkins.

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