

UNIVERSITY OF TEXAS AT AUSTIN RADIOCARBON
DATES XVI

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This list continues our program to put into print our large backlog of unpublished dates. Those listed here are not a specific block of dates but simply those ready for publication.

Age calculations are based on ^{14}C half-life of 5568 yr and modern standard of 95% NBS oxalic acid, supplemented by tree rings of pre-industrial wood from a log cut in the 1850s (Tx-540: R, 1970, v 12, p 249). Deviations reported are based on counting statistics of sample, background, and modern, and are $\pm 1\sigma$, except that when sample count approaches either modern or background, 2σ limits are reported. Unless noted, $^{12}\text{C}/^{13}\text{C}$ measurements were not made and results are not corrected for ^{13}C fractionation (assumed ratio = -25% wrt PDB). Our laboratory uses liquid scintillation counting of benzene, with Li_2C_2 and vanadium-activated catalyst in preparation; chemical yields range between 95% and 99%. Three counters were employed in assaying the samples in this list: a Packard Tri-Carb model 3002, and 2 Beckman LS230 spectrometers obtained through a grant from the National Science Foundation (in 1986 we retired the Packard and installed 2 new Beckman LS3801 spectrometers obtained through funds from the College of Natural Sciences of this university).

We acknowledge with gratitude the administrative support and assistance of Dean Robert E Boyer of the College of Natural Sciences, and Director William G Reeder and the staff of the Texas Memorial Museum.

We are also grateful for the cooperation of submitters who have commented on their dates. Where no comment is included here, none was received from the submitter.

GEOLOGIC SAMPLES

Canada

Alberta

Tx-2918. Little Fish Lake **3240 \pm 150**

Lake core sample from Little Fish Lake, 40km E of Drumheller ($51^\circ 22' 04''$ N, $112^\circ 12' 12''$ W). Basal 18cm of 140cm lake core. Coll in paleoenvironmental study of short-grass prairie ecotone. Coll 1977 and subm 1978 by S Kroker, Archaeol Lab, Univ Manitoba, Winnipeg.

Mexico

Samples coll and subm as part of study of vulcanism by Wayne Lambert, Dept Prehist, Inst Nacl Antropol e Hist, Mexico, D F.

Tx-1783. Amecameca road 73L60 **14,580 ± 170**

Dark paleosol from upper 10cm of unit of dark brown, pebbly, muddy, very fine epiclastic sand immediately overlain by Paraje ash and lapilli, from lower 0.5m of road cut at 8.4km on Amecameca-Tlamacas rd, ca 2.5km SE of San Pedro Nexapa (19° 04' 31" N, 98° 42' 34" W). Sample should provide date for eruption. Coll and subm 1973.

Tlamacas Tephra Locality series

Samples coll from 2m deep excavation for SOP Alberque de Alto Montana lodge at Paraje de Tlamacas, ca 4km N of Popocatepetl crater (19° 03' 35" N, 98° 37' 57" W). Coll and subm 1972.

Tx-1679. Tlamacas 72L148B **1710 ± 60**

From paleosol in upper 5cm of Unit 7, dark coarse reworked ash, near center of excavation. Paleosol buried by eruption of Tephra Layer H (Units 8, 9, 10); sample should date eruption. Same soil as Tx-1683 (below) but 14.3m E of that sample. Should be younger than Tx-1680, -81, -82.

Tx-1680. Tlamacas 72L172 **5270 ± 90**

Dark organic sand from mixture of all subunits of Unit 4, 13cm thick horizontally stratified ash falls, some containing black viscous organic matter that may represent vegetation killed by ash fall; from extreme NW corner of excavation. Will date Tephra Layer O (Units 4 and 5), which may extend to Basin of Mexico and was produced by major eruption of Popocatepetl.

Tx-1681. Tlamacas 72L145B **3080 ± 70**

Dark paleosol, upper 30cm of Unit 6, dark coarse reworked ash with pumice fragments; same soil as Tx-1682 but 14.3m E, near center of excavation. Paleosol developed after eruption of Tephra Layer O and before eruption of Tephra Layer H. Provides date for formation of paleosol in central Mexico and limiting date of eruptions.

Tx-1682. Tlamacas 72L145A **3630 ± 50**

Dark paleosol from same soil as Tx-1681, but from W side of excavation midway between N and S ends.

Tx-1683. Tlamacas 72L148A **1690 ± 70**

Dark paleosol from upper 5cm of Unit 7, 15 to 45cm thick unit of dark coarse reworked ash, in same soil as Tx-1679 but 14.3m W, in W side of excavation midway between N and S ends. Paleosol buried by eruption of Tephra Layer H, and should give date for that eruption.

*United States**Colorado***Big Thompson series**

Charcoal from alluvial fan 1.8km SW of Drake, S bank Big Thompson R, alt 1950m (40° 25' N, 105° 21' W). Coll and subm 1977 by J E Costa,

Dept Geog, Univ Denver, Denver. Coll to date alluvial fan eroded by catastrophic 1976 flood and determine min recurrence interval for flood of this magnitude.

Tx-2836. BT-77-2 **10,210 ± 680**

2.06m above base of exposure, 0.3m above unconformity with alluvial sands; dates base of fan.

Tx-2837. BT-77-3 **7420 ± 90**

4.5m above base of exposure; dates middle of fan deposits.

Connecticut

Tx-2957. Boggy Meadow #1 **2360 ± 50**

Wood from Boggy Meadow, N of Mattabesset R near Middletown (41° 35' N, 72° 40' W). Fragment from wood layer ca 1.8m deep in marsh sediment. Coll and subm 1978 by P C Patton, Dept Earth & Environmental Sci, Wesleyan Univ, Middletown.

Florida

Apalachicola River series

Wood from log projecting from river bank, ca 1.5m below surface, River Mile 38.7, Apalachicola R, NW Florida (ca 30° 20' N, 85° 05' W). Dated to determine age of channel meander. Coll and subm 1980 by H A McClellan, U S Army Corps Engs, Mobile, Alabama.

Tx-4464A. ACF #001, middle of log **550 ± 60**

Tx-4464B. ACF #001, inside of log **590 ± 60**

Illinois

Ottawa Silica Quarry series

Samples from peat and marl deposit in presumed Pleistocene channel cut into Ordovician sandstone, Ottawa Silica Co quarry, Illinois R valley, Ottawa (41° 21' N, 88° 53' W). Geol context indicates Late Wisconsin to subrecent. Subm 1972 by W D Turnbull, Field Mus Nat Hist, Chicago.

Tx-1432A. Ottawa bison apatite **3530 ± 90**

Tx-1432B. Ottawa bison collagen **2720 ± 60**

Apatite and collagen fractions from radius of *Bison bison bison*, 1 of 3 partial skeletons ca 5m deep in channel fill. Coll by S Streuver and G Houart.

Tx-1559. Ottawa wood **7780 ± 80**

Wood from remnant of channel fill deposit near base of channel. Coll 1972 by W D Turnbull.

Tx-1560. Ottawa peat **7480 ± 80**

Peat from approx same loc as Tx-1559. Coll 1972 by W D Turnbull.

General Comment (WDT): exact location of bison relative to wood and peat samples not certain. Evidently bison bones came from part of channel infilling that accumulated later than those parts yielding Tx-1559 and -1560.

*Indiana***Tx-1651. Lafayette *Mirounga*** **1260 ± 90**

Apatite fraction from elephant seal (*Mirounga*) maxillary and tusk, 9 to 10m deep in Pleistocene (Wisconsin) terrace gravel along Wabash R within town of Lafayette (40° 25' N, 86° 54' W). Coll by commercial excavator; subm 1973 by W D Turnbull. *Comment* (WDT): no living or known fossil *Mirounga* has previously been found in Great Lakes drainage; all known cases are from Pacific Ocean.

Tx-3243. Dyer Elk **9120 ± 280**

Tibia of elk (*Cervus canadensis*), ca 1.8m below surface in back dune swamp behind Glenwood level of Lake Chicago, ca 3km SSE of Dyer (41° 29' N, 87° 28' W). Assoc with elk-antler artifact (awl or flaker). Coll by Anderko & Koufos and subm 1978 by W D Turnbull. *Comment* (WDT): relative to other finds in this area, preservation and location of this specimen suggested age appreciably younger than 14,000 yr; date agrees.

*Louisiana***LaTerre 30 series**

Samples from cypress stumps blown to surface when string of protective pipe in Exxon's LaTerre 30 gas well ruptured, ca 32km SE of Houma in Lirette Gas Field (29° 30' N, 90° 30' W). Believed to be post-Pleistocene; dated to establish age and sedimentation rate. Coll and subm 1978 by David Ivy, Prod Dept, Exxon Co, New Orleans.

Tx-2933. LaTerre 30/1-A	8480 ± 80
Tx-2934. LaTerre 30/1-B	8800 ± 80
Tx-2935. LaTerre 30/2-1	8580 ± 140
Tx-2936. LaTerre 30/2-4	8830 ± 110
Tx-2937. LaTerre 30/3-II	8690 ± 110
Tx-2938. LaTerre 30/3-III	8460 ± 80

*Nevada***Tx-4269. Marietta M-128** **3590 ± 100**

Peat from site M-128, tr 100m N of spring, 6km NE of Marietta, Mineral Co (38° 15' 39" N, 118° 16' 14" W). Coll 1980 and subm 1981 by L J

Garside, Nevada Bur Mines & Geol, Univ Nevada, Reno. *Comment* (LG): date discussed in Garside (1982).

Oklahoma

Clayton Lake series

Mud from core sample in shallow water, Clayton Natural Lake, on flood plain of Jackfork Creek, ca 16km NW of Clayton (34° 40' N, 95° 25' W). Coll 1977 by Wyckoff, Mehringer and Sanders; subm 1978 by L E Sanders, Oklahoma Archaeol Survey, Univ Oklahoma, Norman.

Tx-3258. Clayton Core III, #2 **620 ± 50**

From 4 to 7m below top of core. *Comment* (LES): UGa-2013, 330 ± 160 (B L Brandau, pers commun), is from 7 to 10cm depth in same core.

Tx-3259. Clayton Core III, #4 **2460 ± 730**

From 104 to 107cm below top of core. *Comment* (LES): UGA-2012, 840 ± 230 (Brandau, pers commun) is from 107 to 110cm dept in same core.

General Comment (LES): only Tx-3258 and UGa-2012 agree, and they are from different depths and agree only broadly. Thus, rate of sediment deposition remains unknown.

Texas

Tx-3759. Buffalo Lake A **990 ± 80**

Bone (unid.) from alluvium, 120 to 125cm below ground surface in NE wall of canyon, unnamed tributary of Tierra Blanca Creek, 16km SW of Canyon, Randall Co (34° 55' N, 102° 05' W). Dated to determine rate of alluviation. Coll and subm 1979 by R J Finley, Bur Econ Geol, Univ Texas, Austin.

Tx-3906. Site 110679-B **920 ± 190**

Bison bone from alluvial fill of abandoned stream channel, W bank of unnamed tributary of Little Red R in Caprock Canyons State Pk, Briscoe Co (34° 28' 09" N, 101° 03' 14" W). Dated in study of alluviation. Coll and subm 1980 by R J Finley.

Tx-4452. Twin Buttes Dam **27,390 ± 920**

Wood from gray clay layer, 16.25 to 16.5m below surface, in bucket auger hole AP-100-81, near downstream toe of Twin Buttes Dam, 8km SW of San Angelo, Tom Green Co (31° 23' N, 100° 32' W). Coll to date alluvial foundation material beneath dam to aid in prediction of seepage and pressures. Coll 1981 by J L Jackson and S J Shadix, and subm 1981 by S J Shadix, U S Bur Reclamation, Amarillo. *Comment* (SJS): date indicates alluvial material is not of Recent age as expected.

*Virginia***Davis Creek series**

Charcoal flecks (except Tx-4329) from buried soils at three sites in Nelson Co. Coll to date recurrence interval of large-magnitude floods in Davis Creek. Coll 1981 by R C Kochel and R A Johnson; subm 1981 by R C Kochel, Dept Environmental Sci, Univ Virginia, Charlottesville.

Tx-4328. MA-A-12 **370 ± 70**

From cutbank, NE end Matthews farm, left bank Davis Creek, 9.5km NE of Lovington, near Woods Mill (37° 50' 20" N, 78° 49' 45" W). From buried B horizon ca 120cm below surface.

$\delta^{14}\text{C} = + 55.35 \pm 6.0\text{‰}$

Tx-4329. MA-A-10 **Modern**

Charred log from same loc as Tx-4328 but stratigraphically deeper, ca 220cm below surface near base of buried A horizon. *Comment* (RCK): re-inspection of site after dating indicates sample may have been root of tree growing on surface until Hurricane Camille flood of 1969.

Tx-4330. VV-4 **10,840 ± 200**

From left cutbank of main tributary to N prong of Davis Creek on Valentino Farm, 7km N of Lovington (37° 49' N, 78° 54' W). From lowermost of three debris avalanche deposits in alluvial fan, ca 2.5m below surface.

Tx-4331. VV-13 **10,510 ± 190**

From cutbank of small E tributary to N prong Davis Creek, 61m upstream from main tributary, on Valentino Farm (37° 49' N, 78° 54' W). From lowermost layer of 5 debris avalanche deposits in alluvial fan, 4.2m below surface (this is separate fan, 1km from site of Tx-4330 and -4332).

Tx-4332. VV-5 **6340 ± 120**

Same loc as Tx-4330, from central of three debris avalanche deposits in alluvial fan, ca 1m below surface.

Tx-4333. HA-7 **660 ± 80**

From base of steep slope along right bank of tributary to Davis Creek, Harvey Farm, 6.2km NW of Lovington (37° 48' 45" N, 78° 54' 45" W). From Buried A horizon at top of lower of two debris avalanche deposits in alluvial fan, ca 2.8m below surface.

*Wyoming***Washakie Bighorn series**

Horn core of fossil bighorn sheep (*Ovis* sp) from alluvial terrace of presumed Late Pleistocene age, Adobe Town member, Washakie fm, Washakie Basin, 10.4km E and 0.8km N of Kinney Spring, Sweetwater Co (41° 18' N, 108° 21' W). Skull differs from living sp and previously known fossils. Coll 1973 and subm 1974 by W D Turnbull.

Tx-1917A. PM 26667, apatite	Modern
Tx-1917B. PM 26667, collagen	270 ± 80

*Venezuela***Upper Rio Mucujún series**

Soil samples from river terraces near Mérida. Coll 1971 and subm 1972 by C Schubert, Inst Venezolano Investigaciones Cientificas (IVIC), Caracas. Comments by CS.

Tx-1436. MUC-5, point 10 **2410 ± 80**

Left bank R Mucujún, ca 0.5km N of gap through lowermost moraine, ca 20km NE of Mérida (8° 46' N, 71° 03' W). From fill of 1 to 1.5m terrace consisting of alternating gravel, sands, and silts; believed to be fluvio-glacial sediments deposited after glacier retreat. Sample from black sandy gravel, 10 to 20cm thick, in middle of terrace fill.

Tx-1437. MUC-14; point 18 **4780 ± 70**

Right bank R Mucujún, at junction with Quebrada La Corcovada, ca 21km NE of Mérida (8° 46' 24' N, 71° 02' 48' W). Outcrop of 2m terrace consisting of 1m of gravel, overlain by 30cm brown sand, overlain by black silt to top of terrace. Sample is from base of soil, ca 50cm below surface. *Comment:* date should give min age of fluvial sediments deposited after glacier retreat and of minor moraine downriver.

Tx-1438. MUC-20; point 23 **3820 ± 90**

Right bank R Mucujún, ca 22km NE of Mérida (8° 46' 42" N, 71° 02' 30" W). From probable outcrop of ground moraine consisting of non-sorted till in clay matrix overlain by 0.5m of river gravel and 1m of black silty sediment in which soil has developed. Sample is from black silt, probably representing peat bog after retreat of glacier. *Comment:* date should be min for retreat.

Tx-1439. MUC-24; point 29A **1610 ± 70**

Right bank R Mucujún just upriver from minor moraine ca 22.8km NE of Mérida (8° 46' 48" N, 71° 02' 00" W). From fill of 1m terrace consisting of sandy gravel overlying fluvial gravel above which is 10 to 30cm layer of black carbonaceous sand (postglacial bog) from which sample was taken. *Comment:* date should be min for minor moraine just downriver, and of glacier retreat.

Tx-1440. MUC-25; point 29B **1200 ± 70**

Approx same loc as Tx-1439; coll ca 0.5m above Tx-1439. Fluvial sediments separate bog deposit of this sample from that of Tx-1439.

Tx-1441. MUC-29; point 33 **5630 ± 70**

Left bank R Mucujún, ca 23km NE of Mérida (8° 46' 54" N, 71° 01' 48" W). Fill of 1m terrace; fluvial gravel under 30cm of sandy gravel; over this is

30cm of black silty clay from base of which sample was taken, overlain by sandy soil. *Comment:* date should be min for glacier retreat in area and for postglacial sediments. *Lab Comment:* date is average of separate runs of 2 parts of sample: 5680 ± 120 , 5550 ± 80 .

Tx-1442. MUC-30, point 34A **1110 \pm 70**

Outcrop of 1.5m terrace, right bank R Mucujún, ca 0.5km S of El Saladito, 23.3km NE of Mérida ($8^{\circ} 47' 00''$ N, $71^{\circ} 01' 48''$ W). Terrace fill consists of alternate layers of sand and sandy gravel, with 3 intercalated layers of dark brown and black carbonaceous silts and clays. Sample is from middle of second carbonaceous layer, ca 75cm from top. *Comment:* date should be min for glacier retreat.

Tx-1443. MUC-31; point 34B **1480 \pm 70**

Same loc as Tx-1442, from top of lowest carbonaceous layer, below Tx-1442, ca 1.2m from surface.

Tx-1444. MUC-32; point 34C **2560 \pm 80**

From base of same layer as Tx-1443.

Tx-1445. MUC-33; point 35 **2490 \pm 50**

Outcrop of probable minor moraine, ca 0.5km S of El Saladito, ca 23.3km NE of Mérida ($08^{\circ} 47' N$, $71^{\circ} 01' 42'' W$). From center of black carbonaceous silty clay probably representing bog deposited before renewed advance of glacier. *Comment:* should date small glacier readvance, and min for glacier retreat. *Lab Comment:* date is average of runs on 2 parts of sample: 2380 ± 80 , 2600 ± 70 ; difference may be due to heterogeneity of soil.

Tx-1446. MUC-46; point 51 **2070 \pm 50**

Upper Quebrada La Tapita, dry bed of lagoon, ca 3800m elev, near outlet of 2nd cirque level, ca 20.8km NNE of Mérida ($8^{\circ} 46' 42'' N$, $71^{\circ} 04' 12'' W$). From black silty clay ca 25cm from surface. *Comment:* date should be min for glacier retreat above this level and for cirque. *Lab Comment:* date is average of runs on 2 parts of sample: 1950 ± 80 , 2180 ± 70 .

Tx-1447. MUC-47; point 52 **1230 \pm 70**

Upper Quebrada La Tapita, dry bed of lagoon near outlet of lowermost cirque in valley, ca 20.8km NNE of Mérida ($8^{\circ} 46' 42'' N$, $71^{\circ} 04' 12'' W$). From ca 25cm below surface, in black silty clay ca 50m from where quebrada cascades down cirque step. *Comment:* date should be min for glacier retreat above this level.

Tx-1448. MUC-54; point 58 **5060 \pm 90**

Páramo de La Culata; outcrop of lagoonal or bog sequence within dry lagoon cut by creek, ca 25km NE of Mérida ($8^{\circ} 47' 18'' N$, $71^{\circ} 00' 48'' W$). Sandy conglomerate is overlain by thin layer of sand and silty sand, between which are two layers of black silty clay. Sample is from lower clay layer, just above gravel. *Comment:* date should be min for glacier retreat above this elev (ca 4000m).

Tx-1449. MUC-60; point 84 **3970 ± 60**

Outcrop of fluvio-glacial deposits in 1m terrace fill, right bank R Mucujún, ca 200m N of El Saladito, ca 23.7km NE of Mérida (8° 41' 06" N, 71° 01' 30" W). Fluvial gravels are overlain by alternating beds of sand and silty sand. Sample is from 10 to 20cm bed of black sandy silt at base of sands. *Comment:* date should be min of glacier retreat at this loc. *Lab Comment:* date is average of runs on 2 parts of sample: 3830 ± 80, 4100 ± 100.

OCEANOGRAPHIC SAMPLES

*British West Indies**Grand Cayman Island*

Carbonate sediment core samples from N side Grand Cayman I. Coll 1977 by C H Moore and subm by J C Hanna, Dept Geol, Louisiana State Univ, Baton Rouge (note slightly different data for Tx-3080). Measurements are depths (cm) below top of core.

Core 31432 series

Ca 6km N of Grand Canyon I (19° 26.0' N, 81° 20.3' W). Water depth 1860m.

Tx-3075. 31432-1, 106–110cm **3370 ± 70**

Tx-3076. 31432-2, 145–150cm **7230 ± 140**

Tx-3077. 31432-3, 187–191cm **23,360 ± 500**

Core 31429 series

Ca 10km N of Grand Cayman I (19° 28.10' N, 81° 19.22' W). Water depth 2170m.

Tx-3078. 31429-1, 30–34cm **9090 ± 80**

Tx-3079. 31429-2, 66–70cm **21,090 ± 370**

Tx-3080. 30158-14 **14,200 ± 220**

Carbonate reef rock, 2.3km NW of Northside community, on talus at base of forereef wall (19° 22' N, 81° 13' W), ca 900m water depth. Coll 1976 by C H Moore; subm 1978 by R C LeBlanc, Dept Geol, Louisiana State Univ.

Tx-3277. Core E-31432, 200–206cm **13,550 ± 200**

Ca 4km N of Grand Cayman I (19° 26.0' N, 81° 20.3' W).

Tx-3278. Core E-31427, 30–36cm **15,370 ± 250**

Ca 7km of Grand Cayman I (19° 30.1' N, 81° 21.7' W).

Straits of Florida

Samples from Great Bahama Bank and Little Bahama Bank, NE Straits of Florida. Coll to determine age of lithification of rock samples in area. Coll 1974-5 and subm 1977 by A C Neumann and R J Wilbur, Dept Marine Sci, Univ North Carolina, Chapel Hill.

E-26019 series

Samples from dredge in lithoherm band ca 20km W of Northern Little Bahama Bank; depth 675m. Begin dredge 27° 16.8' N, 79° 25' W; end dredge 27° 17.0' N, 79° 25.4' W.

Tx-2628. E-26019-A **24,880 ± 590**

Well-lithified whole rock, submarine-lithified biomicrite-biomicrudite; forams, pteropods with large ahermatypic coral fragments; bored and stained. Represents one main episode of cementation as well as old fossil material.

Tx-2629A. E-26019-B; friable rock **27,150 ± 800**

Tx-2629B. E-26019-B; coral **27,790 ± 1450**

Tx-2629C. E-26019-B; sediments **24,090 ± 1110**

Poorly cemented whole rock, same composition and location as Tx-2628. Stratigraphic relationship lower than Tx-2628; should antedate lithification.

Tx-2630. E-26019-C **13,940 ± 160**

Loose ahermatypic coral fragments.

Tx-2631. E-26019-D **9720 ± 100**

Coarse (> 62m μ) sediment, forams, pteropods; some may be re-worked.

Tx-2632. E-25019-E **3080 ± 70**

Fine (< 62m μ) loose sediment; possible recent bank-top origin.

Tx-2633. E-26538-A **6520 ± 110**

From ca 5km W of Little Bahama Bank (27° 13' N, 79° 14' W); depth 420m. Lightly cemented grainstone-pachstone, submarine-lithified biomicrite-biomicrudite, forams, pteropods, and shallow water debris.

Tx-2634. E-26560-B **22,240 ± 420**

From ca 40km NW of N corner, Great Bahama Bank (26° 59.5' N, 79° 14.6' W), depth 560m. Lightly cemented grainstone, submarine-lithified biomicrite-biomicrudite, foram-pteropod grainstone-pachstone with little boring or staining.

Tx-2635. E-26037-B 15,550 ± 260

From ca 30km N of NW corner of Great Bahama Bank, depth 350 to 365m. Begin dredge 26° 26' N, 79° 4.3' W; end dredge 26° 27.5' N, 79° 4.5' W. Lightly cemented grainstone-pachstone, submarine-lithified biomicrite-biomicrudite, forams, pteropods, with little boring or staining.

Tx-2638A. 6-1-A loose coral (white) 5350 ± 90**Tx-2638B. 6-1-A loose coral (beige) 3840 ± 80**

Loose ahermatypic coral fragment from dredge ca 25km W of N Great Bahama Bank, mid-Straits of Florida; depth 765m. Begin dredge 25° 52.2' N, 79° 33.8' W; end dredge 25° 52.7' N, 79° 32.6' W. Subm for comparison with coral-bearing rocks from same loc. Coll 1977 by A C Neumann.

*United States**Texas Gulf Coast***Tx-2773. JLR-1, Baffin Bay 4860 ± 80**

Shell (*Chione cancellata*) from middle spit of Drum Point spit complex in Cayo del Grullo arm of Baffin Bay, 4.3km NNW of Loyola Beach (27° 22' 15" N, 97° 42' 20" W), -4 to -6m. From youngest horizon of *Chione* and *Crassostrea* in Holocene sediment. May determine Baffin Bay change from open marine-influenced to restricted. Coll and subm 1977 by J L Russell, Dept Geog-Geol, Texas A & I Univ, Kingsville.

Laguna Madre series

Selected samples from 50 jet-down holes and 50 fixed-piston cores drilled into Holocene sediments under Laguna Madre, Cameron Co. Coll 1978 and subm 1979 by J P Herber, Dept Geol Sci, Univ Texas, Austin. All sample depths are with respect to mean sea level.

Tx-3464. JB 18 5100 ± 90

Oyster reef shell, NE edge Primero I., 24km N of Port Isabel (26° 16' 48" N, 97° 16' 52" W). From jet-down drill cuttings, -4.0 to -4.5m.

Tx-3465. JB 21 4880 ± 440

Shell (from buried berm?) ca 19km N of Port Isabel (26° 14' 25" N, 97° 16' 13" W). Jet-down sieve sample, -3.8 to -4.6m.

Tx-3466. JB 24 5940 ± 230

Wood from distributary sand, ca 14km N of Port Isabel (26° 11' 39" N, 97° 15' 18" W). From jet-down sample, -15.2 to -16.8m.

Tx-3467. JB 30 6420 ± 70

Wood from delta sand, ca 4km NNE of Port Isabel (26° 07' 00" N, 97° 12' 46" W). From jet-down sieve sample, -7.3 to -8.8m.

Tx-3468. JB 33#1 **6990 ± 140**

Wood from sand body, ca 0.8km W of Padre I (26° 04' 56" N, 97° 10' 19" W). From jet-down cuttings, -6.9 to -8.4m.

Tx-3469. JB 33#2 **6620 ± 100**

Wood from sand body, same loc as Tx-3468. From jet-down cutting, -9.9 to -11.4m.

Tx-3470. JB 33#3 **6580 ± 90**

Fluvial wood, same loc as Tx-3468. From drill cutting, -13.0 to -14.5m.

Tx-3471. JB 45 **3160 ± 50**

Shell from alternating gray mud and sand, ca 10km NE of Port Isabel (26° 09' 30" N, 97° 11' 05" W). From jet-down sieve sample, -2.4 to -4.0m.

Tx-3576. JB 22 **6610 ± 280**

Charcoal, 19km N of Port Isabel (26° 13' 33" N, 97° 15' 50" W), -7 to -8.5m.

Tx-3577. JB 29 **2890 ± 60**

Shell (mixed bay types, *Mulina* sp dominant), ca 4.5km N of Port Isabel (26° 07' 44" N, 97° 13' 15" W). From shell-mud layer -11.4m.

ARCHAEOLOGIC SAMPLES

Ecuador

Vegas Culture

Samples from Vegas culture preceramic middens on Santa Elena peninsula, Prov Guayas. Coll and subm 1979 by K E Stothert, Paleo-Indian Proj, Central Bank Ecuador, San Antonio, Texas. All shell samples are *Anadara tuberculosa*.

Tx-3773. OGSE-38, Cut 2 **8100 ± 130**

Shell from Site OGSE-38, E of Salinas (2° 12' S, 80° 57' W). From deepest shell layer, Level 4, 10cm above sterile ground.

Tx-3774. OGSE-201, Cut 2 **9460 ± 100**

Shell from Site OGSE-201 on W bank R Vegas, 1km S of Santa Elena (2° 14' S, 80° 52' W); from 10 to 20cm below ground surface.

Tx-3775. OGSE-78, Cut 2 **8600 ± 100**

Shell from Site OGSE-78, on edge of hill ca 1km S of Cautive (2° 12' S, 80° 53' W); from 15 to 25cm below ground surface.

Tx-3776. OGSE-202 7780 ± 90

Shell from Site OGSE-202 on hill N of confluence of Rios Grande and Vegas, 4km S of Santa Elena (2° 16' S, 80° 52' W). Coll from surface scatter of midden material.

Tx-3777. OGSE-203, Cut 3 6900 ± 80

Shell from Site OGSE-203, on hill overlooking R Grande, 1km SE of Santa Paula (2° 16' S, 80° 55' W); 0 to 10cm below ground surface.

OGSE-80 Series II

Samples from Site OGSE-80, type site of Vegas culture, 1km SW of Santa Elena (2° 13' S, 80° 52' W). For previous dates from site, see R, 1980, v 22, p 1111–1112.

Tx-3770. OGSE-80, Quad D-E110 10,840 ± 410

Charcoal, from 185 to 205cm level.

Tx-3772. OGSE-80, Quad SC-9 9800 ± 100

Shell, from 100 to 110cm level.

Tx-3898. OGSE-80, Quad C-Ch 7 7710 ± 240

Apatite fraction of human bone from burial, Feature 86; from 115cm level. Intrusive into Vegas midden; no assoc artifacts.

Tx-4706. OGSE-80, Quads B-F 112–113 10,300 ± 240

Charcoal composite sample from deep levels of sandy fill in fossil gully.

Egypt

Tx-2871. Tell Maskhutah 2280 ± 120

Animal dung coll from exposed mud-brick wall at N wall of temple complex, SW quarter of fortification complex, Tell Maskhutah, Wadi Tumilat, ca 20km W of Ismâ'ilîya at Abu Suweir (30° 35' N, 32° 17' E). Coll and subm 1977 by R E Cooley, Center Archeol Research, Southwest Missouri State Univ, Springfield. *Comment* (REC): sample dated to determine whether 19th dynasty (ca 3200 BP) or Ptolemaic (2250 BP ff); date indicates Ptolemaic.

Mexico

Tx-4638. Fiero/THC-CCRI 1450 ± 200

Charcoal and carbon sample from Fiero site (CC2), on high silt terrace on right side of R Grande in Chihuahua, ca 30km NW of Lajitas, Texas (ca 29° 20' N, 104° 03' W). From hearth cut by erosional gully, ca 2m below present ground surface. Assoc with probable Paisano preform. Coll 1975 and subm 1982 by R J Mallouf and C D Tunnell, Texas Hist Comm, Austin.

Comment (RJM): date appropriate for determining temporal span of Paisano points in E Trans-Pecos region.

Peru

La Galgada Series III

Charcoal from La Galgada (Grieder & Bueno Mendoza, 1981), Preceramic and Initial Ceramic period site, 1km S of La Galgada village, E bank R Tablachaca, Prov Pallasca (8° 28' S, 78° 09' W). Tx-3663, -3664 coll and subm 1979; others coll and subm 1981, by T Grieder, Dept Art, Univ Texas, Austin. Comments by TG.

Tx-3663. La Galgada 1 **3540 ± 50**

Sec G11/G8; pit in Floor 9, S wing of North Mound, 2m below top of mound; Initial period.

Tx-3664. La Galgada 2 **4110 ± 50**

Sec I11/D5, Floor 30 fire pit; 2.35m below Floor 10, at NW corner of North Mound. *Comment*: too old for strat loc; indicates fill is backdirt from deep adjacent looters' pit that went below Floor 40. If so, indicates that North Mound was first area built in ceremonial complex.

Tx-4446. La Galgada 3 **3130 ± 80**

Sec G12/H4, Floor 8, Initial period fire pit. *Comment*: seems late.

Tx-4447. La Galgada 4 **3670 ± 70**

Sec H11/EF10, Floor 30, from firepit fill in center of principal ritual chamber of North Temple. *Comment*: sample divided: other half is UGa-4583: 3590 ± 75 (Grieder, pers commun). Strat earlier than Tx-4448 (below) which has slightly later date. However, 170-yr range of 2 dates taken together (with 1σ error) would give enough time for much building that occurred between them.

Tx-4448. La Galgada 5 **3650 ± 60**

Sec H11/EG9, Floor 20, from firepit fill; Initial period. *Comment*: see Tx-4447 (above).

Tx-4449. La Galgada 6 **3790 ± 70**

Sec E12/I2, debris on Floor 6, interior of Preceramic period chamber in one of first buildings S of North Mound. *Comment*: date plausible in relation to building, and agrees with Tx-4450 (below) and Tx-3167 (R, v 22, 1980, p 1111), which are also from these buildings.

Tx-4450. La Galgada 7 **3820 ± 100**

Sec F12/B2, chamber, from Preceramic firepit fill in center of floor, in one of first buildings S of North Mound. *Comment*: see Tx-4449 (above).

Tx-5606. La Galgada 8 **3320 ± 270**

Cotton cloth, H11/G7 sec, on Floor 11 fill; Initial period cache.

General Comment: this series, with samples previously dated (R, 1978, v 20, p 271; R, 1980, v 22, p 1111), is consistent with stratigraphy and generally agrees with other dates for this period in Peru. La Galgada series extends dated sequence into previously untested region in Andean highlands.

Tx-5607. Punta Mirador **450 ± 70**

Carbonized wood from Punta Mirador site, 1 km N of La Galgada (see above) on mine road; from dump on E side of site, halfway down collapsed surface exposure; Cerritos culture. Coll 1985 and subm 1986 by Terence Grieder.

Tx-4748. Choque Pukio **1090 ± 60**

Wood from SW wall Structure 1, Choque Pukio site (Cz 12-8), ca 30 km S of Cuzco on Puno rd (13° 36' S, 71° 45' W), near Pikillacta (below). From interior of stone wall of large Late Intermediate period building. Coll and subm 1980 by G F McEwan, Dept Anthropol, Univ Texas, Austin. *Comment* (GFM): date somewhat earlier than expected for Late Intermediate period site. Another date from site is BM-924, 695 ± 59 (Kendall, 1976, p 97).

Pikillacta series

Woody vines and wood charcoal from Pikillacta site (Cz 12-16), Wari Middle Horizon site in Lucre basin 30 km SE of Cuzco (13° 36' S, 71° 45' W). Tx-3996 and -4247 coll 1979 by G F McEwan and L Barreda M; others coll 1982 and subm 1982 by G F McEwan. Sample proveniences refer to Map #2 in McEwan (1984).

Tx-3996. Pikillacta RC 1 **1100 ± 60**

Woody *pispita* vines; taken from center of wall between structures 80-4C and 81-4C.

Tx-4247. Pikillacta RC2 **1140 ± 60**

Segment of same sample as Tx-3996; subm later to check unexpectedly late date.

Tx-4747. Pikillacta Unit 30 **1430 ± 370**

Charcoal from burned offering, NW corner of base of wall, Unit 30, Structure 24-4D. *Lab Comment:* large error due to small sample size.

Tx-4750. Pikillacta Unit 19 **1350 ± 60**

Charcoal from Feature 1, hearth in floor, Unit 19, Ext 1, Level IV, Canchon #1. Occupation underlying major architectural block; date should help narrow time range of construction of main part of architecture.

Tx-4751. Pikillacta Unit 16 B-D **1430 ± 90**

Charcoal from ash deposit on plaster floor, Bldg 12-2A, Unit 16 B-D.

General Comment (GFM): earlier dates (Tx-4747, -4750, -4751) agree with ceramic evidence of Wari occupation in Middle Horizon 1B or 2A; later date may indicate long period of occupation of site.

Virú Valley V-358 series

Charcoal from Test Pit 1, Site V-358, probable Middle Horizon specialized fishing site 300m from shore and 1.5km S of mouth of Virú R, Dept La Libertad (7° 29' S, 78° 51' W). Coll 1979 and subm by D G Julien, Dept Anthropol, Univ Texas, Austin. Depths are below surface.

Tx-3789. V-358-01-01/1 **1040 ± 60**

Level 1, 0 to 10cm depth.

Tx-3788. V-358-01-02/3 **950 ± 50**

Level 2, 10 to 20cm depth.

Tx-3790. V-358-01-04/12 **1020 ± 50**

Level 4, 30 to 40cm depth.

Tx-3787. V-358-01-05/2 **1060 ± 30**

Level 5, 40 to 50cm depth.

General Comment (DGJ): dates consistent with tentative ceramic dating of late Middle Horizon or early Late Ceramic period, and are strat consistent, except for Tx-3789, which may have been affected by materials from nearby looters' pits. Close clustering of dates indicates midden was formed quickly, perhaps within 50 to 100 yr, by relatively large population, not gradually by smaller population. Dates discussed further in Julien (1980).

*United States**Alabama***O'Neal Site series**

Charcoal from O'Neal site (1Je57), on flood plain of Five Mile Creek, 1km N of Birmingham city limits (33° 36' N, 86° 51' W). Coll 1977 and subm 1978 by C R Nance, Dept Anthropol, Univ Alabama, Birmingham.

Tx-3244. UAB-Je57-1 **4030 ± 80**

Hearth, Feature 4D, Sq 8B56, 85 to 109cm below surface. Part of complex of pits and hearth. Artifacts in pits suggest Late Archaic period.

Tx-3245. UAB-Je57-2 **5690 ± 70**

Hearth, Feature 9, Sq 8B47, 29 to 82cm below surface. No artifacts assoc.

Tx-3247. UAB-Je57-4 **4860 ± 240**

Hearth, Feature 12, Sqs 8B27 and 8B28, 25 to 79cm below surface. Assoc artifacts indicate Late Archaic period; id plant materials include maize. *Lab Comment:* pretreatment included hand-picked removal of coal particles from samples.

Arkansas

Standridge Site series

Wood charcoal from Standridge site (3MN53), W bank Caddo R, ca 0.5km W of Caddo Gap (34° 24.0' N, 93° 37.5' W). From strat series of five structures, Caddoan component. Coll 1976 and subm 1977 by A M Early, Arkansas Archeol Survey, Arkadelphia.

Tx-2860. 76-671-84 **900 ± 310**

Burned post, Feature 12, earliest structure.

Tx-2861. 76-671-31-407 **670 ± 60**

Floor of Feature 12, earliest structure.

Tx-2862. 75-250-231 **1090 ± 90**

Wall or roof log fallen onto floor of Feature 1, most recent structure.

Tx-2863. 75-250-234 **δ¹⁴C = + 40.30 ± 7.2‰**
Ultramodern

Wall post from Feature 1, most recent structure.

Tx-2864. 76-671-182 **750 ± 60**

Wall or roof beam buried in rubble of Feature 8, third structure.

General Comment (AE): dates indicate that use and destruction of Feature 12 and destruction of Feature 8 (later than Feature 12) occurred at ca AD 1300. Dates from Feature 1, most recent structure, are inconsistent with each other and with strat placement, and do not give basis for age estimate (Early, 1978, p 28–29).

Bayou Sel Site series

Wood charcoal from Bayou Sel site (3CL27), on Saline Bayou, 1.5km S of Arkadelphia, Clark Co (34° 07' 05" N, 96° 01' 48" W). Coll 1969 and subm 1978 by F Schambach, Arkansas Archeol Survey, Southern Arkansas Univ, Magnolia.

Tx-2966. 69-401-240-a **560 ± 80**

Post hole under Feature 7, Strat 7, Sec N4 E10, E wall. Assoc with early Caddoan (Mid-Ouachita phase) ceramics.

Tx-2967. 69-401-167-213 **700 ± 40**

From earth oven in Strat 6B, Sec N4 E10. Assoc with late Caddoan (post-Mid-Ouachita phase) ceramics.

Tx-2968. 69-401-246-a **410 ± 50**

Strat 4, NE quarter, Sec N2 E10. Assoc with intrusive late Mississippi Valley (Quapaw) ceramics.

Tx-2970. 69-401-256-a **500 ± 40**

Feature 9, Strat 6B, Sec N2 E10. Assoc with late Caddoan, (post-Mid-Ouachita phase) ceramics.

Mangrum Site series

Charcoal from Mangrum site (3CG636; Klinger, 1982), SW of Cockle Burr Slough ditch and levee, W of Mangrum, Craighead Co (35° 47' N, 90° 23' W). Both samples from Feature 13, irregular pit, 11.90m E, 164m S, 28 to 73cm below surface datum. Coll 1977 by R C Medlock and subm 1978 by T C Klinger, Arkansas Archeol Survey, Fayetteville.

Tx-3073. 77-1122-168-1 **930 ± 50**
 $\delta^{13}C = -25.5\text{‰}$

Tx-3074. 77-1122-168-2 **990 ± 60**
 $\delta^{13}C = -25.6\text{‰}$

General Comment (TCK): results are well within expected range for assoc Mississippian pottery: Barnes, Neeley's Ferry, and Varney wares (Klinger, 1982, p 120).

Sliding Slab Shelter series

Charred nuts (except where otherwise noted) from Sliding Slab Shelter (3SB29; Harden, 1981), stratified Archaic to Mississippian site, 14km W of Booneville, Sebastian Co (35° 09' N, 94° 03' W). Coll 1978 and subm 1979 by P L Harden, Environmental Assessments, Inc, Norman, Oklahoma. Depths are below ground surface.

Tx-3340. 78-87-319 **1100 ± 60**
 Sq E2, Level 4, 30 to 40cm depth, Strat 13.

Tx-3341. 78-87-346 **1160 ± 180**
 Charcoal from Sq N1/E2, Level 9, 80 to 90cm depth, Strat 10A.

Tx-3342. 78-87-349 **2460 ± 180**
 Sq N1/E2, Level 12, Strat 8.

Tx-3343. 78-87-406 **1360 ± 50**
 Sq N2/E3, Level 9, 80 to 90cm depth, Strat 9.

Tx-3344. 78-87-409 **1280 ± 60**
 Sq N1/E4, Levels 3 to 5, 30 to 50cm depth, Strat 9.

- Tx-3345. 78-87-412** **3510 ± 90**
 Sq N3/E1, Levels 18 to 22, 170 to 220cm depth, Strat 8.
- Tx-3346. 78-87-414** **3520 ± 80**
 Charred nuts and charcoal, Sq N3/E1, Levels 22 to 26, 215 to 253cm depth, Strat 3.
- Tx-3347. 78-87-418** **3920 ± 100**
 Sq N3/E1, Levels 24 to 26, 236 to 252cm depth, Strat 1B.
- Tx-3348. 78-87-422** **4600 ± 60**
 Sq N3/E1, Level 27, 260 to 270cm depth, Strat 1A.
- Tx-3349. 78-87-424** **750 ± 60**
 Charred nuts and charcoal, Sq N3/E4, Level 1, 3 to 8cm depth, Strat 14.
- Tx-3350. 78-87-426** **520 ± 50**
 Sq N3/E4, Levels 2 to 4, 20 to 40cm depth, Strat 10C.
- Tx-3351. 78-87-428** **1420 ± 110**
 Sq N3/E4, Level 7, 59 to 70cm depth, Strat 10A.
- Tx-3352. 78-87-430** **1380 ± 50**
 Sq N3/E4, Level 8, 70 to 80cm depth, Strat 9.
- Tx-3353. 78-87-431** **2070 ± 60**
 Sq N3/E4, Levels 7 to 10, 70 to 100cm depth, Strat 8.
- Tx-3354. 78-87-433** **3690 ± 70**
 Sq N4/E1, Levels 26 and 27, 225 to 235cm depth, Strat 1B.
- Tx-3355. 78-87-434** **4130 ± 50**
 Sq N4/E1, Levels 24 to 26, 235 to 255cm depth, Strat 1A.
- Tx-3356. 78-87-436** **630 ± 40**
 Sq N5/E4, Level 2, 8 to 15cm depth, Strat 10E.
- Tx-3357. 78-87-443** **930 ± 60**
 Sq S1/E2, Levels 2 to 4, 8 to 35cm depth, Strat 11. *Comment:* sample split; other part is UGa-2911, 185 ± 125 (Harden, 1981, p 135–137). Context thought to date ca 1250 BP.

General Comment (E M Davis): dates are discussed in Harden (1981, p 135–138): Strata 1A, 1B, 3, 8 are Archaic; Strata 10E and 14 are Caddoan. Strata 9, 10A, 10C, 11, 12, 13 are disputed: Harden feels they are Woodland (Fourche Maline); Rohrbach feels they are Mississippian (Caddoan) (Harden, 1981, Appendix VI).

*California***4Pl164 series**

Charcoal from Site 4Pl164, stratified site in Upper Truckee R Canyon, Squaw Valley (39° 14' N, 120° 13' W). Coll 1976 and subm by A Leventhal, Nevada Archaeol Survey, Univ Nevada, Reno.

Tx-2543. 4Pl164, 117 **1210 ± 70**

Unit 98N/314E, Level 3, Strata V and IV. Possible Rose Spring point assoc.

Tx-2544. 4Pl164, 122 **1310 ± 70**

Unit 96N/344E, Level 4, Stratum IV. No artifacts directly assoc.

Tx-2545. 4Pl164 123 **2170 ± 90**

Unit 96N/314E, Level 5, Strata IV and II. Elko points assoc.

Tx-2546. 4Pl164 133 **4300 ± 290**

Unit 98N/316E, Level 5, Stratum II. Martis complex artifacts assoc.

Tx-2547. 4Pl164 139 **330 ± 90**

Unit 100N/320E, Level 3, Strata V and IV. Elko and Martis points assoc.

Tx-2548. 4Pl164 166 **8130 ± 130**

Unit 100N/312E, Level 5, Stratum II. No diagnostic artifacts assoc.

*Colorado**Dolores Project*

Samples from Sagehen and Periman Localities, Dolores Reservoir basin, Montezuma Co (37° 31' N, 108° 33' W); coll 1979 as shown and subm 1980 by P J Farley, Dolores Archaeol Project, Univ Colorado, Dolores.

Sagehen Locality

Charcoal from sites in Sagehen Locality, W bank Dolores R.

Tx-3872. Horse Bone Camp 174-1 **5680 ± 2350**

Horse Bone Camp site (5MT2199), Unit 30S-42E, N half, Feature 2 fill. Great Cut phase, Four Corners Desert tradition (Archaic period). Coll by G A Brown. *Comment* (GAB): sigma value too large to date feature confidently. Date supports Archaic appearance of lithic assemblage from this limited-activity site (Brown, 1982, p 28). *Lab Comment*: large error due to small sample size.

Cascade House (5MT4512) series

Site is McPhee phase (Pueblo I). Coll by R Wilshusen.

Tx-3873. Cascade House 291-6 1630 ± 80
Pit Structure 1, Unit 63S-46E, Feature 12, hearth fill.

Tx-3874. Cascade House 402-8 1420 ± 80
Occupation Area 4, Unit 60S-56E, Feature 37, pit fill.

General Comment (Wilshusen, 1982, p 86): dates inconsistent with ceramics and architecture, which suggest occupation between AD 775 and 900.

Tx-3875. Faraway House 31-1 1710 ± 60

Faraway House site (5MT4763), Surface Structure 1, Strat 1, W half, 15 to 20cm below ground surface; Anasazi tradition. Coll by J Kleidon. *Comment* (JK): date inconsistent with ceramics and architecture, which indicate site dates 500 yr later (Kleidon, 1982, p 23).

Tx-3876. Ridgeline Camp, 437-1 3710 ± 90

Ridgeline Camp site (5MT2242), Unit 14S-34E, Feature 3, hearth fill. Great Cut phase, Four Corners Desert tradition (Archaic period). Coll by J Southward. *Comment* (JS): date supports Archaic age of one component at this limited-activity site (Southward, 1982, p 39–40).

Apricot Hamlet (5MT2858) series

Site is Sagehen phase (Basketmaker III). Samples are burned roof matting. Coll by J Montgomery.

Tx-3877. Apricot Hamlet, 289-6 2000 ± 60
Pit Structure 2m, fill, roof fall.

Tx-3878. Apricot Hamlet, 237-5 1660 ± 60
Pit Structure 1, Locus 21, Surface 1.

General Comment (JM): dates inconsistent with ceramics and architecture, which indicate occupation between AD 635 and 680 (Montgomery, 1982, p 114).

Prairie Dog Hamlet (5MT4614) series

Site is Sagehen phase (Basketmaker III/Pueblo I). Coll by R Yarnell.

Tx-3879. Prairie Dog Hamlet, 408-9 1660 ± 70
Pit Structure 2, Loc 8, Feature 29, central hearth fill.

Tx-3880. Prairie Dog Hamlet, 293-5 1590 ± 90
Pit Structure 1, Segment 2, Strat 9 fill.

General Comment (RY): dates inconsistent with secure dating by ceramics and architecture to AD 700 (Yarnell, 1982b, p 118).

Pheasant View Hamlet (5MT2192) series

Site is Sagehen phase (Pueblo I). Coll by R Yarnell.

Tx-3881. Pheasant View 121-1 **1990 ± 160**
Pit Structure 1, Strat 5, roof fall.

Tx-3882. Pheasant View 179-3 **1510 ± 70**
Pit Structure 1, Loc 13, Surface 1.

General Comment (RY): dates inconsistent with ceramics and architecture, which indicate occupation between AD 775 and 825 (Yarnell, 1982a, p 100).

Aldea Sierritas Hamlet (5MT2854) series

Site is Sagehen phase (Basketmaker III/Pueblo I). Coll by C Benson.

Tx-3883. Aldea Sierritas 693-7 **1680 ± 60**
Pit Structure 3, SE quarter, Feature 65, main support post hole.

Tx-3884. Aldea Sierritas 596-3 **1620 ± 60**
Pit Structure 1, Loc 44, Strat 7-3.

General Comment (KAK): dates inconsistent with ceramics and architecture, which date occupation ca 4 centuries later (Kuckelman, 1983, p 127–128).

Periman Locality

Beaver Trap Shelter series

Botanical samples from Surface Structure 6, Beaver Trap Shelter (5MT4654), in Periman Locality. From pack rat (*Neotoma* sp) midden in rock shelter. Coll by S Emslie.

Tx-3885. Beaver Trap 1014-1 **990 ± 190**
Plant remains, Unit 4, Strat 1.

Tx-3886. Beaver Trap 1002-2 **1450 ± 160**
Plant remains, rock shelf.

Tx-3887. Beaver Trap 1002-3 **580 ± 90**
Wood (*Quercus* sp), rock shelf.

Tx-3888. Beaver Trap 1010-5 **670 ± 40**
Wood (*Pinus edulis*), Unit 3, Strat 1, porcupine (*Erethizon dorsatum*) midden.

Tx-3889. Beaver Trap 1014-4 **900 ± 210**
Plant remains, Surface Unit 4, Strat 1.

General Comment (KL Petersen): samples analyzed to determine types of plants growing near rock shelter when middens were forming, during times dated (Van Devender, 1984).

*Idaho***Nahas Cave series**

Charcoal from Nahas Cave site (100E1674), 97km S of Grand View on Pole Creek (42° 37' N, 116° 38' W). Coll 1979 by MG Pfoertner and subm by MG Plew, Idaho State Hist Soc, Boise. Depths are in cm below surface.

Tx-3635. Nahas C 3 **350 ± 70**

From hearth, Unit S3/W1 & W2, Level 3, 20 to 30cm depth; assoc with basal-notched lanceolate projectile point and bone debris.

Tx-3636. Nahas C 11 **260 ± 50**

From Unit S2/W2, Level 2, 10 to 20cm depth; assoc with Rose Spring point.

Tx-3637. Nahas C 14 **2920 ± 70**

Unit S2/W2, Level 6, 50 to 60cm depth; assoc with non-diagnostic bone and groundstone artifacts and lithic debris.

Tx-3638. Nahas C 4 **400 ± 70**

Hearth in Unit S3/W1 & W2, Level 4, 30 to 40cm depth. Assoc with concentration of large animal bones.

Tx-3639. Nahas C 13 **300 ± 70**

Unit S2/W2, Level 5, 40 to 50cm depth; assoc with Camas Creek II phase artifacts.

Tx-3642. Nahas C 26 **1100 ± 80**

Hearth in W wall, Unit S2/W2, 45 to 55cm depth, in direct assoc with Camas Creek II phase artifacts.

Tx-3643. Nahas C 23 **1410 ± 200**

Hearth in W wall, Unit S2/W3, Level 5, 40 to 50cm depth; assoc with Camas Creek II phase artifacts.

Tx-3644. Nahas C 27 **5990 ± 170**

Unit S2/W2, Level 16, 150 to 160cm depth; base of deposit; assoc with mano and mortar.

General Comment (MGP): dates indicate occupation span of 6000 yr. Sequence confirms chronologic sequence for adjacent uplands (Plew, 1980).

Hatwai Series II

Samples from Hatwai site (10NP143), at confluence of Hatwai Creek and Clearwater R, 7km E of Lewiston (46° 26' 30" N, 116° 54' 00" W). Coll 1978 as shown and subm 1980 by J P Green and K M Ames, Dept Sociol,

Anthropol, and Criminal Justice Admin, Boise State Univ. Earlier series of dates from site is in R, 1980, v 22, p 1107-1109.

Tx-3933. Hatwai 41A,B **5050 ± 320**

Wood charcoal from lowest of 8 floors of House 6; Sq 6S/50E, elev 232.40m. Assoc projectile points of early Tucannon phase. Coll by B D Cochran, M A Davis, and P Sanders.

Tx-3982. Hatwai 86 **6260 ± 160**

Charcoal fragments from charcoal-stained organic sediment, Sq E2.59/N10.50-11.75, elev 231.65 to 231.70, from basal member in chute trough. Late Qae (Early Alluvium) or early Qam (Middle Alluvium); may enable separation of Qae and Qam. Coll by J P Green, K M Ames, and B D Cochran.

Tx-3983. Hatwai 118 **5780 ± 130**

Organic material from clayey silt, mud drape, 4.40-6.00N/61-62E, elev 232.22 to 232.29 (gravel surface). Probably assoc with late Early Alluvium or early Middle Alluvium. Coll by J P Green, K M Ames, and B D Cochran.

Road Creek Waterhole series

Soil samples from rodent-disturbed alluvium at Road Creek Waterhole site (10CR60), 39km SE of Challis (44° 10' N, 114° 02' W). Coll 1982 by C J Miss and N V Anderson; subm 1983 by N V Anderson, Bur Land Management, Salmon. "bud" signifies below unit datum.

Tx-4880. 10CR60 1 **4850 ± 90**

Unit B-J8, 68cm bud, and J6, 72cm bud.

Tx-4881. 10CR60 2 **3700 ± 70**

Bag 5, 58N/10E, Level 80, 61cm bud.

Tx-4882. 10CR10, 3 **4160 ± 350**

Unit B, 57cm bud.

General Comment (NVA): predominant point style at site is stemmed indented-base, recognized in Great Basin as part of Pinto series; in Idaho it dates ca 7800 to 3000 BP. Dates indicate later part of this range. Other point styles at site do not refine possible age of site.

Louisiana

Pargoud Landing series

Samples from Pargoud Landing site (160U1), W side Ouachita R levee at confluence of Bayou de Siard and Ouachita R in Monroe (32° 33' 00" N, 92° 07' 30" W). Coll 1975 & 1976; subm 1976 by G S Greene, Geosci Dept, Northeast Louisiana Univ, Monroe.

Tx-2386. 16OU1/Fea 17 **730 ± 50**

Burned cane matting from basket-loaded mound fill, Sq N500/W504, 97.85m below datum.

$\delta^{14}\text{C} = +568.37 \pm 2.8\text{‰}$

Tx-2387. 16OU1/454 **Ultramodern**

Partially charred wood, Sq N502/W504, Level 4. Basket-loaded mound fill.

Salsbury Site series

Samples from T E Salsbury site (16OU15), E bank Ouachita R opposite confluence of Cheniere Creek, ca 19 river km S of Monroe, Ouachita Parish (32° 24' 53" N, 92° 08' 49" W). All samples from shell midden deposits in Area III, except where noted. Assoc with pottery similar to Mid-Ouachita and Plaquemine foci, mostly grog-tempered; some shell tempering. Coll and subm 1977 by G R D Price, Research Inst Pure & Applied Sci, Northeast Louisiana Univ, Monroe.

Tx-2839. 16OU15/C-14/6 **600 ± 60**

Fresh-water mussel from N664/E495, lower half of Strat 2, Levels 4 and 5. Assoc with Belcher Ridged, Hodges Engraved, and other shell- and grog-tempered ceramics.

Tx-2840. 16OU15/C-14/6 **520 ± 50**

Fresh-water mussel from N664/E495, Strat 3, Levels 6 and 7.

Tx-2842. 16OU15/C-14/8 **770 ± 70**

Shell from N670/E490, Strat 5, Levels 2 and 3.

Tx-2843. 16OU15/C-14/9+12 **820 ± 120**

Combined sample; charcoal from Levels 5 and 6, below Feature 71, flexed burial.

Tx-2844. 16OU15/C-14/10+11 **660 ± 300**

Combined sample; charcoal from Area I, mortuary area with extended burials; assoc pottery is not shell tempered; N511/E515 & N513/E514, Level 2; elev 101.6 to 101.4m.

Tx-2845. 16OU15/C-14/5+13+15+17+18 **630 ± 140**

Combined sample, charcoal from N664/E495 to N664/E498, Strat 3, Levels 5, 6, 7.

Tx-2846. 16OU15/C-14/14+16 **900 ± 100**

Combined sample charcoal from N664/E495, N664/E497, Strat 3, Levels 7 & 8; elev 99.8 to 99.9m.

Montgomery site series

Charcoal from Montgomery site (16WE32), 5km ESE of Springhill, on E margin of terrace on knoll in angle of junction of Braley Creek and Bayou Dorcheat (32° 58' 39" N, 93° 24' 30" W). Bossier focus hamlet, final occupation of multicomponent site. Coll 1977 and subm 1981 by D R Jeane, Springhill. Depths are in cm below ground surface.

Tx-4373. 16WE32, 6 **320 ± 70**

Unit N2/W5, Feature 1 (elevated area of reddish-yellow sandy clay with charcoal and daub) in center of unit. Coll at base of midden, 15cm depth.

Tx-4374. 16WE32-7 **150 ± 140**
Modern

Unit N2/W6, Feature 3 (elevated area of reddish-yellow soil with charcoal) in N-central area of unit, at base of midden, 14 to 17cm depth.

Tx-4375. 16WE32-8 **110 ± 100**
Modern

Unit N2/W6, Feature 1, probable post, in E-central area of unit, 28 cm depth.

Tx-4376. 16WE32-9 **1270 ± 70**

Unit N4/W6, SE sec of unit, from possible charred post, 18 to 24cm depth.

Tx-4377. 16WE32-10 **30 ± 120**
Modern

Unit N2/W5, Feature 2 (elevated area of reddish-yellow fired sandy clay with charcoal), at base of midden, 17cm depth.

Montrose site series

Samples from Montrose site (16NA37), 23km SE of Natchitoches on E bank Bayou Gorum, Natchitoches Parish (31° 34' 00" N, 92° 59' 12" W). Coll and subm 1983 by G R D Price, Heartfield, Price, and Greene, Inc, Monroe.

Tx-4867. 16NA37/936 **2070 ± 90**

Burned cane, Excavation Area C, N16.9/W78.05, Feature C-28A, Level 4. From pit with undecorated late Marksville/Issaquena-like ceramics.

Tx-4868. 16NA37/935 **1450 ± 420**

Woody charcoal, Feature B-27, Excavation Area B, N32.4/W118.7, Level 4. From pit with Churupa Punctated ceramics, Gary points, large mass of deer bones; late Marksville/Issaquena.

Tx-4869. 16NA37/940**1430 ± 320**

Woody charcoal, Feature A-45, Excavation Area A, N62.5/W129.17, Level 4. From pit with Marksville Incised, variety Leist, ceramics.

 $\delta^{14}\text{C} = +202.12 \pm 6.5\text{‰}$ **Tx-4971. Will North Estate canoe****Ultramodern**

Wood from alongside and apparently broken from dugout canoe (16CD169), protruding from silts ca 8.8m below floodplain surface in right bank of Red R, ca 3km NE of Dixie, ca 24km N of Shreveport, Caddo Parish (32° 43' 06" N, 93° 48' 37" W). Coll 1983 by K Kelly and C H Webb, and subm 1983 by C H Webb, Shreveport. *Comment* (CHW): 2 dates on wood from canoe by Univ Georgia are UGa-5294, 885 ± 70, and UGa-5295, 945 ± 65 (Webb, pers commun). These dates agree with age of Mounds Plantation site < 8km downstream from site (Tx-55, 860 ± 120; R, 1964, v 6, p 155; M-1446, 900 ± 100, R, 1966, v 8, p 269). Evidently wood in present sample does not derive from dugout. *Lab Comment*: to check result, additional assay was made on separate part of same sample after especially rigorous pretreatment, with similar result: $\delta^{14}\text{C} = +256.9 \pm 7.5\text{‰}$.

*Mississippi***Hurricane Landing Mound series**

Charcoal from Hurricane Landing Mound (22LA516), ca 300m E of confluence of Hurricane Creek and Tallahatchie R, Lafayette Co (34° 31' N, 89° 35' W). Coll and subm 1981 by R M Thorne, Center Archaeol Research, Univ Mississippi, University.

Tx-4253. 22LA516, upper floor**830 ± 90**

From upper floor, S trench, E wall; at base of loam, on surface of dark clay midden.

Tx-4254. 22LA516, 1**1940 ± 190**

From within Stage 3 cap fill consisting of yellow basket-loaded clay.

Tx-4255. 22LA516, lower floor**860 ± 90**

From lower floor, S trench, E Wall, directly below dark clay midden.

General Comment (RMT): no artifacts in direct assoc with samples. Dates Tx-4253 and -4255 indicate that sand- and shell-tempered ceramics and Madison points found in mound vicinity washed out of pre-mound midden deposits that are dated by those samples, since dates are appropriate to those types of artifacts. Tx-4254 is stratigraphically between other two samples but is much older; may indicate that Stage 3 cap fill was brought in from adjacent midden of older age. Dates discussed in Thorne (1981).

*Missouri***Cobb Cave series**

Charcoal from midden in Cobb Cave (23CN71), rock shelter 5.6km SW of Nixa, Christian Co, on W side James R valley (37° 01' 30" N, 93° 21'

00" W). Coll 1976 & 1977, and subm 1978 by R E Cooley, Center Archeol Research, Southwest Missouri State Univ, Springfield. Depths are in cm below datum.

Tx-2953. Cobb Cave 6 **2180 ± 120**
Sq 4N/1E, 25.4 to 30cm (100 to 118in) depth.

Tx-2954. Cobb Cave 7 **2530 ± 140**
Sq 2N/1E, 24.1 to 25.4cm (95 to 100in) depth.

Tx-2955. Cobb Cave 8 **2980 ± 370**
Sq 3N/1E, 30.7 to 31.5cm (121 to 124in) depth. *Comment* (B J Turner & C Helm): dates consistent with stratigraphic positions, and show that Langtry Stemmed points (Chapman, 1980, p 309–310), occurring throughout deposit, were used from local Late Archaic into Woodland period.

Tx-2956. Crowley 9Aa **2250 ± 380**
Charcoal from Test Pit A at Crowley site (23CN58), midden on hilltop above Cobb Cave (see TX-2953ff, above). Coll 1976 and subm 1978 by R E Cooley. *Lab Comment*: large error due to small sample size. *Comment* (BJT & CH): date is inconsistent with ages of assoc Early and Middle Archaic projectile points; should be 9000 to 5000 BP (Chapman, 1975, p 229 and *passim*). Reason for discrepancy not evident, possibly testing program provided inadequate sample of diagnostic artifacts, not fully representative of time of occupation.

Tx-4090. Gooseneck, MWAC-1 **1160 ± 80**
Charcoal from Gooseneck site (23CT54), W bank Current R, 31km downstream from Van Buren, Carter Co (36° 49' N, 90° 57' W), in E Ozark Mts; from Feature 6, large shallow pit, 31–32N/13–14E, 20 to 30cm below surface, related to main occupation of site, Developmental Mississippian. Coll and subm 1980 by M J Lynott, Natl Park Service, Federal Bldg, Lincoln, Nebraska.

Round Spring series

Bone assoc with human burial and Mississippian artifacts at Round Spring site (23SH19), 15.3km N of Eminence on S side Current river, Shannon Co (37° 17' N, 91° 24' W). Subm 1980 by M J Lynott.

Tx-4093. 23SH19/MWAC-4 **300 ± 70**
Coll 1948 by L Anderson.

Tx-4094. 23S19/MWAC-5 **710 ± 150**
Coll 1958 by Univ Missouri.

General Comment (MJL): inconsistency in dates impossible to appraise, as conditions of storage between coll and subm not known.

Montana

Tx-3148. Old Homestead C141 **850 ± 50**

Wood charcoal from Old Homestead Kill site (24RB1014), W of Hwy 315, 5km S of Colestrip (45° 52' 00" N, 106° 38' 10" W). From hearth in S half Sq 3-5N/35-37E, 15 to 20cm below surface, part of single-component bison kill site with Late Prehistoric side-notched and corner-notched points. Coll 1978 by T McGinnis and subm 1978 by M L Gregg, Mineral Research Center, Butte.

Tx-3336. Prime Draw 78DPC **4310 ± 1790**

Humerus (apatite fraction) (*Bison bison*) from Prime Draw Kill and Feast site (24BH1641), near ephemeral tributary of Pearson Creek ca 15km NE of Decker (45° 04' 35" N, 106° 51' 45" W). From eroded area in hearth in arroyo cutbank. Coll and subm 1978 by M L Gregg. *Comment* (MLG): site has Besant phase component but this specimen was not necessarily assoc; date is much older.

Tx-3378. Trail Creek Hollow 1 **4060 ± 80**

Charred wood from buried stone-lined hearth, 2 to 3m above stream channel, Trail Creek Hollow site (24BE1025), 18km W of Lima (44° 40' 00" N, 112° 50' 30" W). No diagnostic materials assoc. Coll 1976 and subm 1979 by B J Earle, Dillon Resource Area, Bur Land Management, Dillon.

Coyote House series

Charcoal from Coyote House site (24PR601), 32km S of Ashland, near confluence of Lyon and Otter Creeks (45° 20' N, 106° 08' W). From hearth 10 to 30cm below present surface, in S side of cribbed log structure. Assoc with small triangular side-notched Late Prehistoric projectile points. Coll 1979 by J D Keyser and C M Davis, and subm 1979 by J D Keyser, U S Forest Service, Custer Natl Forest, Billings.

Tx-3688. Coyote House FS82H14 **1510 ± 60****Tx-3689. Coyote House FS81H13** **1530 ± 50****Tx-3690. One Bear K5-A** **1260 ± 40**

Charcoal from One Bear site (24PR402), 48km SE of Ashland, at Yonkee Spring on S Fork Taylor Creek (45° 15' N, 106° 01' W). From prepared hearth basin at N end of site, ca 15cm below ground surface; assoc with unid. large side-notched projectile points. Coll 1979 by C M Davis, and subm 1979 by J D Keyser.

Tx-3691. High Walker L4S-A **930 ± 40**

Charcoal from High Walker site (24PR627), 56km SE of Ashland at Mud Turtle Spring (45° 16' N, 106° 00" W). From hearth at S edge of site, ca 8cm below ground surface; assoc with pottery and small side-notched and corner-notched Late Prehistoric projectile points. Coll 1979 by J D Keyser and C M Davis; subm 1979 by J D Keyser.

Tx-3848. West Rosebud 1 **200 ± 70**

Charcoal from West Rosebud Lake (24ST651), multi-component camp site 3.2km NE Mystic Lake on West Rosebud Creek at inlet to lake, Beartooth Ranger Dist, Custer Natl Forest (45° 15' N, 109° 42' W). From 16N/28E, NW quad, 30cm below datum, beneath major concentration of lithic artifacts. Possibly assoc with corner-notched projectile points dating 1000 BC to AD 200. Coll by B Hogan; subm 1980 by S T Greiser, Mineral Research Center, Missoula. *Comment* (STG): very recent date indicates high degree of bioturbation within shallow site. For discussion, see Greiser and Plochman (1981).

Tx-3605. CRD-24RB-C142 **1190 ± 90**

Charcoal from Timi's Shelter (24B253), 6km SE of Colestrip (45° 50' 8" N, 106° 35' 12" W). From central portion of site, 40 to 60cm below surface. No diagnostic artifacts assoc. Coll and subm 1979 by Gene Munson, Mineral Research Center, Butte.

Dead Cow site series

Charcoal from Dead Cow site (24RB1005), 5.4km S of Colstrip, Rosebud Co (45° 49' 58" N, 106° 36' 44" W). Probably assoc with corner-notched projectile point resembling Pelican Lake type. Coll and subm 1979 by Gene Munson.

Tx-3667. CRD-24RB-C141 1 **2200 ± 80**

From Test Pit 9, SW sec of site.

Tx-3668. CRD-24RB-C141 2 **1910 ± 100**

From Test Pit 7, SW sec of site.

Tx-4167. Benson's Petroglyph **1730 ± 60**

Wood charcoal from burned area in Benson's Petroglyph site (24BH1077), N of Youngs Creek Rd, 75m E of Cook Homestead turnoff (45° 02' 15" N, 107° 01' 35" W). Coll and subm 1980 by L Fredlund, Mineral Research Center, Butte. *Comment* (LF): no other assoc cultural materials; petroglyphs assoc with loc, but not necessarily contemporaneous. Date indicates Late Plains Archaic/beginning of Late Prehistoric period for burned area, discussed in Fredlund (1981).

Tx-4168. Lonely Hearth **940 ± 40**

Charcoal from hearth pit fill at Lonely Hearth site (24TE36), ca 16km S of Hysham (45° 57' 11" N, 107° 04' 52" W); 10 to 20cm below surface. Coll and subm 1980 by L Fredlund. *Comment* (LF): date indicates Late Prehistoric period, discussed in Fredlund and Munson (1981).

Tx-4169. Palmer Quarry, 10 **3450 ± 90**

Charcoal from Palmer Quarry site (24JE226), 5.2km S of East Helena and 1.6km WSW of McClellan Creek (46° 32' 20" N, 111° 54' 30" W). From 140cm below surface in E wall Trench 2B, 94cm S of chert outcrop. No

assoc diagnostic artifacts. Coll 1980 by L Fredlund and D Herbort; subm by D Herbort, Mineral Research Center, Butte. *Comment* (LF): dates one of earlier episodes of chert quarrying at site, discussed in Herbort (1982).

Nevada

Tx-2817. 26HU873 **410 ± 60**

Burned wood from Site 26HU873, N end Pine Forest Range, NW edge of Onion Reservoir, 40km SW of Denio Junction (41° 42' N, 118° 45' W). Unit 726N/706W, from just below surface to 20cm below surface. Assoc with Cottonwood Triangular and Elko series projectile points dated between 1500 BC and AD 500. Coll and subm 1977 by C Covington, Nevada Archeol Survey, Univ Nevada, Reno.

Tx-3505. 26Ek183/1 **1150 ± 70**

Charcoal from hearth, Site 26Ek183, 2.3km E of intersection of Idaho and Fifth Sts in Elko (41° 45' N, 116° 45' W). No diagnostic artifacts assoc. Coll 1978 by E Seelinger; subm 1979 by Andrew Jensen, Archaeol Services, Nevada State Mus, Carson City.

Kittredge Creek series

Charcoal from Kittredge Creek site (26Ek1667), ca 2.4km NE of Elko, above confluence of Kittredge Creek and Humboldt R (40° 52' 33" N, 115° 43' 05" W). Coll and subm 1979 by A Jensen.

Tx-3506. 25Ek1667/254 **870 ± 100**

Assoc with scattered cobbles above hearth; 878 to 880m N, 255 to 257m W.

Tx-3507. 25Ek1667/298 **2520 ± 100**

Assoc with possible groundstone materials; 910m N, 123m W.

Tx-3508. 26Ek1667/341 **3170 ± 80**

Assoc with hearth and one Class III lithic artifact; 980m N, 123m W.

Tx-3509. 25Ek1667/332 **500 ± 80**

Assoc with rocks and one Class II lithic artifact; 878m N, 255m W.

Oklahoma

Tucker Site #2 series

Charred wood from Tucker Site #2 (34Lt-37), 11km SW of Wilburton on high terrace of Gaines Creek (34° 52' 23" N, 95° 26' 17" W). Early ceramic, similar to Fourche Maline. Coll 1976 by L Neal and D Wyckoff and subm by L Neal, Oklahoma Archeol Survey, Univ Oklahoma, Norman.

Tx-2485. 34Lt-37-22-1 **560 ± 70**

Feature 1, S15-W0, Grid B.

Tx-2486. 34Lt-37-23-2 **540 ± 60**
 Feature 1, S15-W5, Grid B.

Scott Site series

Mixed charred nutshells and charcoal from Scott site, 34Lf-11 (Galm & Flynn, 1978, p 77–86), multicomponent site N side Fourche Maline creek, 3.2km N of Summerfield, Leflore Co (34° 56' N, 94° 52' W). Coll 1977 and subm 1978 by J R Galm. Comments by J R Galm. Depths are in cm below surface.

Tx-2888. Scott, S-6 **2090 ± 50**

Unit N15/W7, Level 16, 80 to 90cm depth. From base of pit containing Burial 17. *Comment:* Late Archaic, Wister phase.

Tx-2889. Scott, S-8 **4590 ± 200**

Unit N15/W7, Stratum IV, Level 23, 120 to 125cm depth. *Comment:* too old for strat position; possibly contaminated by older midden debris.

Tx-2890. Scott, S-10 **3640 ± 110**

Unit N15/W7, Stratum V, Level 29, 150 to 155cm depth. *Comment:* consistent with strat position in unit, and within appropriate range for Stratum V, Middle Archaic.

Tx-2891. Scott, S-14 **1500 ± 140**

Unit N15/W1, Stratum II, Level 6, 25 to 30cm depth. *Comment:* consistent with strat position; appears to be in range of upper dates for transition from Stratum III (Late Archaic, Wister phase) to Stratum II (early Fourche Maline).

Tx-2892. Scott, S-15 **2160 ± 70**

Unit N15/W1, Stratum III, Level 9, 40 to 45cm depth. *Comment:* consistent with strat position in unit, Late Archaic, Wister phase.

Tx-2893. Scott, S-24 **3930 ± 90**

Unit N15/W1, Stratum V, Level 31, 150 to 155cm depth. *Comment:* slightly older than Tx-2890, but consistent with range of dates for this stratum, Middle Archaic.

Tx-2894. Wann site, W-11 **1220 ± 80**

Mixed charred nut shells and charcoal from Wann site (34Lf-27), multicomponent site SW of confluence of Holson and Fourche Maline Creeks, 2.4km NE of Summerfield, Leflore Co (34° 54' 40" N, 94° 50' 10" W). Middle of ceramic-bearing level, Fourche Maline complex. Unit N2/W13, Stratum III, Level 5, 45 to 50cm depth. Coll 1977 and subm 1978 by J R Galm, Archaeol Research & Management Center, Univ Oklahoma, Norman. Date discussed in Galm and Flynn (1978, p 81).

Tx-2944. 34Lf-5C, Br-3 **480 ± 120**

Charcoal from cedar posts at Site 34Lf-5C, Briar Locality, NW of Reichert, Leflore Co (34° 54' 45" N, 94° 46' 00" W). Unit N10/W12, 98.56 to 99.09m elev. Assoc with Sanders Plain and Sanders Engraved ceramics. Coll 1977 and subm 1978 by J R Galm. *Comment* (JRG): late for Sanders focus and indicates possible contextual problems.

Two Sisters Site series

Charred wood from Two Sisters site, 34Tx-32, N side N Canadian R, 8km NNE of Guymon, Texas Co (36° 45' N, 101° 27' W). Antelope Creek focus, Panhandle aspect. Coll 1972 by C Lintz; subm 1978 by L E Sanders, Archaeol Research & Management Center. Comments by C Lintz.

Tx-3260. 34Tx-32/291 **890 ± 50**

Fill matrix from Pit D (Feature 9) beneath W wall Room 5, Structure A. *Comment*: significantly earlier than expected; source of discrepancy unknown.

Tx-3261. 34Tx-32/287 **510 ± 50**

Fill matrix from Pit A (Feature 6), interior of Room 5, Structure A. *Comment*: agrees with UGa-2508, 545 ± 55 BP from Structure B, and UGa-2509, 600 ± 50 BP, from Structure A, (Lintz, pers commun) and with archaeomagnetic dates from Earth Sciences Observatory, Univ Oklahoma: #788, AD 1385; #887, AD 1420; and #888, AD 1320 (Lintz, pers commun).

Lane Lithic Scatter series

Charred wood from lithic scatter sites without diagnostic artifacts, near Lane, Atoka Co. Coll 1978 by McGuff and Gettys; subm 1978 by P L Harden, Environmental Assessments, Inc, Norman.

Tx-3337. 34At-31/16 **2170 ± 50**

Site 34At-31, 10.6km E of Lane, at confluence of Cat Hollow and McGee Creeks (34° 18' N, 95° 52' 30" W). Sq 80S/80E, Level 3, 20 to 30cm depth. Coll by P McGuff and P Legget.

Tx-3338. 34At-184/15 **410 ± 50**

Site 34At-184, 8.1km E of Lane, 2.7km (by river) N of confluence of McGee and Potapo Creeks (34° 20' N, 95° 53' W). Sq W-20, Level 3, 20 to 30cm depth. Coll by P McGuff and F Gettys.

Tx-3339. 34At-200/17 **310 ± 60**

Site 34At-200, 7.2km E of Lane (34° 22' N, 95° 54' W). Sq 10S, 1/2E, Level 3, 20 to 30cm depth. Coll by P McGuff and P Legget.

Uncas site series

Charcoal from burned posts of House 1 at Uncas site, 34Ka-172, on shoreline of Kaw Lake ca 22.5km NE of Ponca City, Kay Co (36° 47' 40" N,

96° 54' 50" W). Coll 1979 by S Svec and P Flynn; subm 1979 by J R Galm. Comments are from Galm (1979, p 29).

Tx-3512. Uncas, 1 **860 ± 60**

Wall or roof support, Sq N1/E8, 22cm below surface. *Comment:* although within acceptable range for Late Prehistoric House 1 occupation, date may be early; artifacts suggests slightly later date for House 1.

Tx-3513. Uncas, 2 **1100 ± 60**

From post, Sq N3/E9, 20cm below surface. *Comment:* too old for Late Prehistoric age of House 1.

Spiro 1979 series

Woody charcoal (except as noted) from Spiro site (34Lf-46), early Cad-doan center on S bank of Arkansas R, 7km NE of Spiro, LeFlore Co (35° 19' 5" N, 94° 34' 40" W). Previous Tx dates from site are in R, 1962, v 4, p 45-46; 1964, v 6, p 155. Coll and subm 1979 by J D Rogers, Oklahoma Archaeol Survey, Univ Oklahoma, Norman. Depths are in cm below surface.

Tx-3610. Spiro A **1160 ± 90**

Grid B, Unit N50/W50, Level 6, 50 to 60cm depth. From Feature 1 midden, Evans phase.

Tx-3611. Spiro B **1030 ± 90**

Grid B, House 4, Unit N33/W119, Level 5, 40 to 50cm depth. *Comment* (JDR): consistent with existing interpretations of village chronology; Harlan phase (Rogers, 1980, p 115).

Tx-3612. Spiro C **190 ± 40**

Grid B, from possible house, Unit N42/W200, Level 4, 30 to 40cm depth.

Tx-3613. Spiro D **950 ± 60**

House Mound 5, Grid E, Unit S61.5/W380.23, Level 5, Structure 15, post mold 20.

Tx-3614. Spiro E **1270 ± 290**

House Mound 5, Grid E, Unit S61.5/W381.73, Level 6, Structure 15, post mold 22.

Tx-3615. Spiro F **730 ± 210**

Grid E, House Mound 5, Unit S65.5/W380.73, Level 3, 20 to 30cm depth. From wall trench entryway assoc with Structure 16 or 17.

Tx-3616. Spiro G **1180 ± 160**

Wood, Grid E, House Mound 5, Unit S65.5/W380.73, Level 7, 17.5 to 20cm depth, post mold 75. Assoc with wall trench entryway related to Structure 16 or 17.

General Comment on Tx-3613 through Tx-3616 (JDR): dates overlap and suggest Harlan phase construction and use of 3 structures in House Mound 5 (Rogers, 1980, p 115).

Tx-4087. Spiro H **1040 ± 60**

Area E, House Mound 5, Unit S55.5/W379.73, Level 4, post mold 176, Structure 15, Harlan phase.

Tx-4088. Spiro I **1100 ± 30**

Area E, House Mound 5, Unit S60.5/W376.73, Level 4, post mold 122, Structure 15, Harlan phase.

Tx-4089. Spiro J **1090 ± 60**

Area E, House Mound 5, Unit S53.5/W382.73, Level 4, post mold 1, Structure 15, Harlan phase.

General Comment on Tx-37611, -3614, -4087, -4088, -4089 (JDR): dates from Structure 15 indicate beginning of Harlan phase at ca AD 850 at Spiro site; this is earlier than usual beginning dates of AD 950–1000 for beginning of this phase (Rogers, 1982, p 43).

Spiro Early Samples series

Samples from early excavations at Spiro site (see Tx-3610 ff, above), coll 1938-41 by K Orr and P Newkumet and subm 1982 by J D Rogers.

Tx-4613. Spiro D, LfBrIII, A-4 **1250 ± 60**

Wood from construction phase in Brown Mound, Harlan or Spiro phase.

Tx-4614. Spiro E, LfCrI, A24-1 **1040 ± 60**

Partially burned wood from Craig Mound, A24-1, R13-14, A3-4, main mound unit, elev 425.2 ft (129.6 m). Late Harlan or early Spiro phase.

Tx-4615. Spiro F, LfBrI, 34Lf-46/38 **1040 ± 60**

Charcoal from House Mound 1, LfBrI, 7:9. 4ft (1.2m) NE, approx depth 3ft. (0.9m). Harlan phase.

General Comment (JDR): other dates from early Spiro excavations are in R, 1968, v 10, p 87–88; discussed in Brown (1967).

Tx-3940. Chevrolet site, 1 **2070 ± 150**

Charcoal from fill of burial pit at Chevrolet site (34Ok-100), N side Crutcho Creek in Midwest City (35° 26' 40" N, 97° 25' 00" W). Assoc with cord-marked sherds, probably Plains Woodland. Coll 1979 and subm 1980 by R Drass, Oklahoma Archaeol Survey, Univ Oklahoma, Norman. *Comment (RD):* earlier than expected but not inconsistent with early Plains Woodland assignment.

Jenkin's Pit Site series

Charcoal from Jenkin's Pit site (34Cm-324), single burial on E side East Cache Creek in Lawton (34° 36' N, 98° 22' W). Coll and subm 1979 by T Spivey, Mus Great Plains, Lawton.

Tx-3900. 34Cm-324 B **3520 ± 280**

From laminated sand strata in which burial pit was dug, ca 3.5m below surface, 0.6m W of burial pit.

Tx-3901. 34Cm-324 D **2470 ± 60**

From hearth 28m N of burial in N wall of sand pit, ca 4m below surface.

Tx-4163. 34Ma-126/Feature 1 **1450 ± 90**

Wood charcoal from slab-lined hearth (Feature 1), 30 to 45cm below ground surface, Site 34Ma-126, on second terrace of Hauani Creek, 10km W of Madill, Marshall Co (34° 03' 41" N, 96° 52' 41" W). Hearth was 5m from midden with Late Archaic/Plains Woodland artifacts. Coll and subm 1980 by C Neel, Oklahoma Archaeol Survey.

Tx-4164. Mark Banks A **540 ± 80**

Wood charcoal from Mark Banks site, 34Cl-104, buried in N bank Canadian R, 10km W of Moore (35° 20' N, 97° 40' W). From Test Pit W-1, assoc with Washita R focus artifacts, Plains Village period. Coll by D Hughes and subm 1980 by L. Neal, Oklahoma Archaeol Survey.

Tx-4341. Young site **370 ± 80**

Charred hickory nut shells from Young site (34Mc-244), 21km SE of Idabel and ca 5km N of Red R (33° 43' N, 94° 44' W); Sqs 47S/104E and 49S/104E, 0 to 70cm below surface. From house with assoc ceramics from Caddo III or very early Fulton aspect or McCurtain focus. Coll 1980 and subm 1981 by T J Prewitt and D J Gaston, Prog Anthropol, Univ Tulsa, Tulsa. *Comment:* slightly more recent than expected from ceramic assemblage.

Texas

Tx-1735. Hueco Tanks, 41EP2A **800 ± 50**

Charred roof-support post, W side Feature 8 pit house, Area A, Hueco Tanks site (41EP2), Hueco Tanks State Park, 40km ENE of El Paso (31° 55' 18" N, 106° 02' 26" W). Doña Ana or El Paso phase. Coll 1972 by R Ralph and subm 1973 by G B Kegley, Texas Parks & Wildlife Dept, Austin.

Tx-2771. 41BX377-3/3 **890 ± 70**

Charcoal from Site 41BX377, on colluvial terrace of Cibolo Creek at N end of Camp Bullis, N edge of San Antonio (29° 45' N, 98° 33' W). From Unit 3, Sq 1008N/992E, Level 3, 13cm below ground surface. Assoc with Late Prehistoric Edwards points. Coll and subm 1977 by T C Kelly, Center

for Archaeol Research, Univ Texas, San Antonio. *Comment* (TCK): appropriate for Late Prehistoric (Gerstle, Kelly & Assad, 1978, p 253).

Tx-2931. Baker Cave 38 **8080 ± 80**

Woody charcoal from Baker Cave (41VV213), W edge of Phillips Creek, Val Verde Co (29° 59' N, 101° 06' W). Unit N2/E2, Zones 17-23, 5th arbitrary level, 97.65m elev. Lower part of pre-Archaic deposits. Coll 1976 and subm 1978 by T R Hester, Center for Archaeol Research. *Comment* (TRH): previous series from site are in R, 1965, v 7, p 305; 1978, v 20, p 258. This date and RL-829 (Hester, 1983, p 104), from upper part of pre-Archaic deposits, indicate time span of pre-Archaic in this area is similar to that in central Texas. All Baker Cave dates are discussed in Hester (1983).

Tx-2932. Chaparrosa-9 **800 ± 40**

Wood charcoal from Chaparrosa-9 site (41ZV10), E bank of Turkey Creek, 15km SW of La Pryor, Zavala Co (28° 51' N, 99° 58' W). SW quad Unit N136/W104, Level 4, 45 to 60cm depth. Assoc with Shumla-like points of Archaic age. Coll and subm 1976 by T R Hester.

Tx-3362. 41FD47-84 **860 ± 70**

Charcoal from 41FD47, N side Canal Creek, ca 14km NNW of Crowell, Foard Co (34° 05' 58" N, 99° 47' 11" W). From Feature 4, hearth; Washita point probably assoc. Coll 1978 and subm 1979 by M Etchieson, Archeol Research Lab, Kilgore Research Center, West Texas State Univ, Canyon.

Tx-3871. 41TV461-1 **1370 ± 60**

Woody charcoal from Site 41TV461, NW flank of Onion Creek, 1300m upstream from confluence with Colorado R, SE of Austin (30° 12' N, 97° 36' W). Hearth in backhoe trench 1, lower cultural level, 2.16m below modern ground surface. No assoc diagnostic artifacts. Coll 1980 by M Kluge and P Thurmond; subm by P Thurmond, Texas Archaeol Survey, Univ Texas, Austin.

Tx-4153. Sentinel Oak **>35,000**

Material resembling charcoal from hearth at Sentinel Oak site, 41VT79, on sand hill overlooking E side Guadalupe R valley, ca 16km S of Victoria (28° 40' 55" N, 96° 57' 51" W). Assoc with cache of lanceolate points resembling Kinney type. Coll and subm 1980 by J V Woodrick, E I Dupont de Nemours & Co, Victoria. *Comment* (JVW): much too old for age suggested by artifacts. Analysis of sample after submission showed it to be asphaltum.

Tx-4256. 41WY50, Burial 1 **500 ± 90**

Human bone (apatite fraction) from Burial 1, Site 41WY50, in clay dune on Laguna Madre on El Sauz ranch, 10.5km S of Port Mansfield, Wilacy Co (26° 27' 20" N, 97° 25' 56" W). Bone pin and two teeth (*Canis*

latrans) assoc. Coll 1980 by D W Day; subm 1981 by E R Prewitt, Prewitt & Assocs, Inc, Austin. *Comment* (ERP): date agrees with previous estimates of Late Prehistoric burials in Rio Grande delta (Day, Laurens-Day & Prewitt, 1981, p 413–415).

Tx-4453. 41GL112/1 **970 ± 100**

Human bone (apatite fraction) from Site 41GL112, flexed burial, 60cm below ground surface, 0.8km of Kerr-Gillespie Co line, 56km W of Fredericksburg (30° 14' 37" N, 99° 17' 40" W). No assoc artifacts; mid-Archaic point on surface. Coll 1981 by P Marschall and J McLerran; subm 1981 by McLerran, Leander. *Comment* (JM): date indicates Late Prehistoric.

Tx-4637. Lower Yarbrough THC-GM1 **2530 ± 60**

Charcoal from Lower Yarbrough site (41BS697), hearth field on slope below elevated bench SE of Cathedral Mt in foothills of Glass Mts, 12km NW of Marathon, Brewster Co (30° 16' 34" N, 103° 21' 52" W). From hearth eroding from gully face in SE quad of site, ca 1420m msl. Late Archaic and Late Prehistoric projectile points found near feature. Coll and subm 1982 by R J Mallouf, Texas Hist Comm, Austin. *Comment* (RJM): indicates Late Archaic date for hearth.

George C Davis site

Samples from charcoal-filled pits (except where otherwise stated) in village area at George C Davis site (41CE19), early Caddoan site on E side Neches R valley, 9.6km SW of Alto, Cherokee Co (31° 36' N, 95° 09' W). Previous series from site are: R, 1970, v 12, p 626–629; 1975, v 17, p 71–76; 1980, v 22, p 1100–1102. Coll and subm 1979–80 by D A Story, Dept Anthropol, Univ Texas, Austin. “Paired samples” are separate samples from same provenience. All dates are discussed in Story (1981, p 125–133) except for Tx-4616 through -4625.

Unit 64, Feature 196 series

Tx-4185. 41CE19/327 **750 ± 70**

Woody charcoal and charred nut shells, Feature 196-10.

Tx-4201. 41CE19/359 **1020 ± 110**

Woody charcoal and charred nut shells, Feature 196-11, trash-filled pit.

General Comment (DAS): despite small sample size and secondary-fill context of Tx-4201, age distribution of samples from Unit 64 is almost identical to those obtained by Thurmond and Kleinschmidt (1979, p 17, 24; R, 1980, v 22, p 1102) from nearby pit, Feature 193-1. Dates are consistent with site-wide dates for early Caddoan occupation (Story & Valastro, 1977).

Unit 65, Feature 195 series

- Tx-3692. 41CE19/339** **960 ± 60**
 $\delta^{13}C = -26.3\text{‰}$
Charred nut shells, Feature 195-137. Paired sample with Tx-3693 (below).
- Tx-3693. 41CE19/339b** **1400 ± 150**
 $\delta^{13}C = -10.1\text{‰}$
Charred maize cupules and kernels, Feature 195-137. Paired sample with Tx-3692 (above).
- Tx-3694. 41CE19/340** **820 ± 60**
 $\delta^{13}C = -10.1\text{‰}$
Charred maize cupules and kernels, Feature 195-133.
- Tx-3695. 41CE19/341** **1400 ± 60**
 $\delta^{13}C = -10.11\text{‰}$
Charred maize cupules and kernels, Feature 195-149, possible post-hole or charcoal-filled pit.
- Tx-3697. 41CE19/333** **820 ± 60**
 $\delta^{13}C = -27.3\text{‰}$
Woody charcoal, Feature 195-128.
- Tx-4186. 41CE19/336** **980 ± 40**
Woody charcoal and charred nut shells, Feature 195-22.
- Tx-4187. 41CE19/344** **990 ± 40**
Woody charcoal, Feature 195-145.
- Tx-4188. 41CE19/346** **1200 ± 50**
Woody charcoal and charred nut shells, Feature 195-166.
- Tx-4189. 41CE19/347** **1220 ± 60**
Woody charcoal, Feature 195-183.
- Tx-4190. 41CE19/348** **790 ± 80**
Woody charcoal and charred nut shells, Feature 195-189.
- Tx-4192. 41CE19/350** **860 ± 90**
Woody charcoal and charred nut shells, Feature 195-190.
- Tx-4193. 41CE19/351** **930 ± 70**
Woody charcoal and charred nut shells, Feature 195-191. Paired sample with Tx-4340 (below).

Tx-4194.	41CE19/352	1030 ± 70
Woody charcoal and charred nut shells, Feature 195-196.		
Tx-4199.	41CE19/357	830 ± 110
Woody charcoal and charred nut shells, Feature 195-197.		
Tx-4200.	41CE19/358	1240 ± 90
Woody charcoal and charred nut shells, Feature 195-198.		

Tx-4340. **41CE19/360** **520 ± 90**

Charred maize cob fragments, Feature 195-191. Paired sample with Tx-4193 (above).

General Comment (DAS): except for Tx-3693 and -3695, dates are consistent with previous dates from early Caddoan component. Maize dates Tx-3693 and -3695, when corrected for $\delta^{13}\text{C}$, are too late to be related to Caddoan component. Dates indicate full time span of early Caddoan occupation.

Unit 109, Feature 220 series

Tx-4195.	41CE19/353	1270 ± 70
Woody charcoal and charred nut shells, Feature 220-27.		
Tx-4196.	41CE19/354	1020 ± 80
Woody charcoal, Feature 220-42.		
Tx-4197.	41CE19/355	760 ± 80
Woody charcoal and charred nut shells, Feature 220-25.		
Tx-4198.	41CE16/356	1030 ± 70
Woody charcoal and charred nut shells, Feature 220-23.		
Tx-4616.	41CE19/362	780 ± 50
Charred hardwood nut shells, possibly hickory (<i>Carya</i>), Feature 220-30. Paired sample with Tx-4624 (below).		
Tx-4617.	41CE19/363	560 ± 120
Charred woody material, Feature 220-59.		
Tx-4618.	41CE19/365	880 ± 60
Woody charcoal, Feature 220-56.		
Tx-4619.	41CE19/366	770 ± 130
Woody charcoal (including bark), Feature 220-62.		
Tx-4620.	41CE19/368	750 ± 220
Charred woody material and hardwood nut shells, Feature 220-61.		
Tx-4621.	41CE19/369	730 ± 150
Woody charcoal and hardwood nut shells, Feature 220-79.		

TX-4622. 41CE19/370 **930 ± 70**
 $\delta^{13}\text{C} = -24.8\text{‰}$
 Charred pine bark, Feature 220-97. Corrected by $\delta^{13}\text{C}$, 935 ± 70.

Tx-4623. 41CE19/374 **1020 ± 60**
 $\delta^{13}\text{C} = -25.9\text{‰}$
 Woody charcoal and charred hardwood nut shells, Feature 220-64.
 Corrected by $\delta^{13}\text{C}$, 1005 ± 60.

Tx-4624. 41CE19/375 **1010 ± 60**
 $\delta^{13}\text{C} = -9.9\text{‰}$
 Charred maize cupules, Feature 220-30. Paired sample with Tx-4616
 (above). Corrected by $\delta^{13}\text{C}$, 1250 ± 60.

Tx-4625. 41CE19/376 **1000 ± 170**
 Woody charcoal and nut shells, Feature 220-113.

General Comment on all George C Davis site dates (DAS): dates cover full time span of early Caddoan occupation. Paired samples Tx-4616 and -4624 differ by 400 yr (when maize date Tx-4624 is corrected for fractionation); Tx-4624 is older and probably less accurate for target event.

41LK106 series

Charcoal samples from Site 41LK106 (Creel *et al.*, 1979), along branch of Sulphur Creek 11km E of Three Rivers, Live Oak Co (28° 28' N, 98° 05' W). No artifacts directly assoc with dated specimens. Coll 1978 as shown; subm 1978 by D Creel, Center for Archaeol Research, Univ Texas, San Antonio. Comments by D Creel. Depths are in cm below modern ground surface.

Tx-2928. 41LK106-3 **720 ± 50**
 Unit G-2, Level 3, 28 to 32cm depth. *Comment:* date suggests Late Prehistoric. Coll by T Kelly, A J McGraw, and D Creel.

Tx-2929. 41LK106-2 **1140 ± 50**
 Unit D-1, Level 3, 21 to 27cm depth. *Comment:* date suggests transitional Late Archaic and/or early Late Prehistoric. Coll by T Kelly, A J McGraw, and D Creel.

Tx-2930. 41LK106-1 **840 ± 60**
 Unit H-2, Level 3, 26cm depth. *Comment:* date should be consistent with Tx-2929, but is later due to disturbed context. Coll by T Kelly.
General Comment: dates discussed in detail in Creel *et al.*, 1979, p 35.

Washington Square Mound series

Woody charcoal (except where noted) from Washington Square Mound (41NA49), Middle Caddoan site in center of Nacogdoches (31° 37' N, 94° 39' W). Coll 1979, 1980; subm 1980 by J E Corbin, Dept Sociol, Stephen F Austin State Univ, Nacogdoches.

Tx-3941. 41NA49/378	650 ± 80
Feature 8, Unit N230/W102.	
Tx-3942. 41NA49/261	1000 ± 260
Mound 1, Feature 31, burial pit.	
Tx-3943. 41NA49/198	710 ± 70
Feature 18, Unit N156/W96.	
Tx-3944. 41NA49/243	1150 ± 140
Feature 30, Unit N156/W95.	
Tx-3945. 41NA49/229	790 ± 200
Feature 9, Unit N156/W95.	
Tx-4257. 41NA49/1	620 ± 70
Charred pine cone fragments and hardwood nuts, Feature 75, N214/W160.	
Tx-4258. 41NA49/2	360 ± 70
Charred maize; Feature 30 (burial pit), Unit N156/W95.	

Hatchel series

Samples from Hatchel site (41BW3), 18km NW of Texarkana (33° 33' 15" N, 94° 07' 45" W); early through late Texarkana focus Caddoan site. Coll 1939 by W C Beatty, Jr; subm 1973 by D L Hamilton, Texas Archeol Research Lab, Univ Texas, Austin. Depths are in m below mound surface.

Tx-1903. Hatchel ES 5 **1250 ± 70**

Charred acorns from ash deposit under center of mound on sub-mound K floor, Sq 105, N-S trench, 7.31m depth; early Texarkana focus/Haley focus. Date should be earlier than initial construction of mound.

Tx-1904. Hatchel ES 4 **810 ± 40**

Hardwood charcoal from charcoal-filled pit between two house outlines on H floor, Sq 90R4, 3.57m depth; first occupation floor on platform mound; Texarkana focus. Should date climax of Texarkana focus with widest extra-areal contacts and influence.

Tx-1905. Hatchel DS 23 **1000 ± 40**

Uncharred cedar interior house post from F18, centrally located house on H floor, Sq 90L1, 3.23m depth; same occupation as Tx-1904.

Tx-1906. Hatchel DS 8 **660 ± 40**

Charred hardwood wall post of House F4 on B floor, sq 75L2, 1.55m depth; late Texarkana focus during its decline and just before abandonment of mound.

General Comment (DAS): dates difficult to evaluate since data from site have not been analyzed in detail and circumstances of samples in 34-yr storage were not controlled. Tx-1904 and -1905, from same occupation, do not agree. All dates seem early; should be comparable to Belcher site dates (Tx-472, -473, -474, -476, -477; R, 1968, v 10, p 391–392), but only Tx-1906 is consistent with those dates.

McKenzie Mound series

Charcoal from charred oak posts of structure covered by low mound at McKenzie Mound (41WD55), Caddoan site 150m E of Honey Creek, 40km E of Mineola, Wood Co (32° 44' N, 95° 10' W). Coll 1978 by D S Granberry and P Lorrain; subm 1980 by D S Granberry, Dallas Archeol Soc, Dallas. Depths are in m below datum.

Tx-4096. McKenzie NE-A-2-2B **660 ± 80**

Sq A-2NE, 1.98m E, 0.0m N of datum. From S wall of E-W trench, 1.3m depth.

Tx-4097. McKenzie NE-A-2-3 **630 ± 80**

Sq A-2NE, 2.44m E, 0.0m N of datum. From S edge of E-W trench, 1.22m depth.

Tx-4098. McKenzie SE-A-2-1 **630 ± 80**

Sq SEA2, 0.46m S, 2.54m E of datum, 1.19m depth.

Tx-4099. McKenzie, SE-A-3-6 **520 ± 80**

Sq SEA3, 0.76m S, ca 4.3m E of datum, 1.37m depth.

41BO126 series

Shells (*Rangia cuneata*) from Site 41BO126 (Dering & Ayers, 1977), Oyster Creek, Brazoria Co (29° 01' N, 95° 20' W). Assoc with possible San Jacinto or Goose Creek sherds. Coll and subm 1977 by P Dering, Anthrop Research Lab, Texas A & M Univ, College Station.

Tx-2783. 41BO126, B3-3a **1450 ± 60**

From Test Pit 6 in tightly packed *Rangia* shell midden, 21m from bank of Oyster Creek.

Tx-2784. 41BO126, B3-3b **1800 ± 60**

Same loc as Tx-2783.

Tx-2785. 41BO126, B3-2 **1440 ± 60**

Test Pit 3, in *Rangia* scatter, 400m from bank of Oyster Creek, Level I, 0 to 10cm depth.

General Comment (PD): Tx-2783 and -2784 are useful in providing approx occupation span and date of deposition of shell midden.

Milt Montgomery series

Charcoal from hearth in Unit 1, Level 7, 30 to 35cm depth in Milt Montgomery site (41FS6), 48km WNW of Abilene, on bluff fronting on Clear Fork of Brazos R, 3km SE of Sylvester, Fisher Co (32° 42' 26" N, 100° 12' 14" W). Archaic dart point assoc. Coll 1971 and subm 1981 by R J Mallouf, Texas Hist Comm, Austin.

Tx-4378. Milt Montgomery 1 **480 ± 80**

Inside NW edge of hearth.

Tx-4379. Milt Montgomery 2 **470 ± 80**

Inside hearth.

Alamo Spring series

Charcoal scatter from Test Pit 1, Alamo Spring site (41BS673), in foothills on W flank of Rosillos Mts, 30km SW of Persimmon Gap in Big Bend National Park, Brewster Co (29° 32' 17" N, 103° 16' 18" W). Coll 1980 and subm 1981 by R J Mallouf.

Tx-4380. Alamo Spring A **2250 ± 820**

Level 2, 5 to 10cm depth, 98.96 to 99.03m elev. Four samples of scattered charcoal, combined, from base of structural rock in circular stone structure. Livermore point nearby.

Tx-4381. Alamo Spring B **840 ± 60**

Level 7, 30 to 35cm depth, ca 98.71m level. Late Archaic contracting-stem point nearby.

Tx-4382. Alamo Spring C **1210 ± 70**

Level 9, 40 to 45cm depth, ca 98.66m elev. Points of transitional Late Archaic-Late Prehistoric types were nearby.

Tx-4383. Alamo Spring D **500 ± 50**

Level 10, 45 to 50cm depth. Same assoc as Tx-4382.

Tx-4384. Alamo Spring E **1150 ± 70**

Level 12, 55 to 60cm depth, ca 98.5m elev. Pandale point nearby.

41TG91 series

Charcoal from hearths in Site 41TG91, 10km S of San Angelo on both banks of S Concho R at FM 584 crossing, Tom Green Co (31° 19' 10" N, 100° 29' 00" W). Stratified site, 3 components: earliest, Late Archaic, Marcos points; next, zone without diagnostic artifacts; latest, Late Prehistoric, Toyah phase to Contact, Perdiz points. Coll 1978 by C Luke; subm 1982 by F A Weir and W C Young, Texas Dept Hwys & Public Transportation, Austin.

Tx-4757. 41TG91/15U	2070 ± 110
Feature 16, N52/E56, Level 21; underlying Toyah phase zone.	
Tx-4758. 41TG91/10Z	2370 ± 70
Feature 20, N52/E52, Level 26, Late Archaic.	
Tx-4759. 41TG91/3C	520 ± 60
Feature 1, Test Unit 2, probably Level 4, Toyah phase.	
Tx-4760. 41TG91/13U	2180 ± 60
Feature 18, N52/E54, Level 21, between Late Archaic and Toyah phase.	
Tx-4761. 41TG91/17AA	2480 ± 60
Feature 23, N56/E56, ca 2.5m below ground surface, Late Archaic.	
	$\delta^{14}\text{C} = -1.10 \pm 3.8\text{‰}$
Tx-4762. 41TG91/64K	Modern
N57/E73, Level 11, underlying Feature 1, Toyah phase.	
Tx-4763. 41TG91/10AB	2800 ± 60
Feature 21, Unit N52/E52, Level 28, Late Archaic.	
Tx-4764A. 41TG91/17Z, soil	2910 ± 270
Tx-4764B. 41TG91/17Z, charcoal	2540 ± 80

General Comment (WCY): Late Prehistoric to Contact dates, Tx-4759 and -4762, are as expected, but latter probably dates displaced material. Intermediate zone dates, Tx-4757 and -4760, agree with each other and with strat. Late Archaic dates, Tx-4758, -4761, -4764B, are consistent and agree with current consensus on age of Marcos points in central Texas (Prewitt, 1981, p 81), but are significantly earlier than Marcos points in Stratum 9 at Arenosa Shelter, 200km SSW (Tx-285, 2070 ± 140, with supporting dates Tx-286, -311 from earlier strata: R, 1967, v 9, p 444).

Leona River Watershed

Charcoal from Archaic and Late Prehistoric sites in Leona R watershed, ca 11km NE of Uvalde. Coll and subm 1981 by P D Lukowski, Center for Archaeol Research, Univ Texas, San Antonio.

41UV47 series

Samples from Site 41UV47, N bank Leona R (29° 17' 46" N, 99° 49' 07" W). From basal level of Late Prehistoric occupation.

Tx-4428. 41UV47/79	800 ± 110
Unit SE 138-1, Level 5, 40 to 50cm below surface.	

Tx-4435. 41UV47/274 **630 ± 70**

Unit SW 173-12 & 13, Feature 3, burned limestone hearth.

41UV48 series

From 41UV48, Late Prehistoric midden, W bank Leona R (29° 17' 55" N, 99° 46' 46" W). Depths are in cm below surface.

Tx-4429. 41UV48/149 **600 ± 40**

Unit 120-9, Level 3, 20 to 30cm depth, from center of midden.

Tx-4430. 41UV48/154 **740 ± 60**

Unit 91-17, Level 4, 30 to 40cm depth.

Tx-4431. 41UV48/163 **760 ± 70**

Unit 120-24, Level 2, 10 to 20cm depth, from upper levels of midden.

41UV45 series

Samples from Site 41UV45, E bank Boon's Slough (29° 17' 46" N, 99° 49' 07" W). Depths are in cm below surface.

Tx-4432. 41UV45/203 **410 ± 50**

Unit 47-22, Level 2, 20 to 40cm depth, from upper zone of unstratified burned rock midden, assoc with Late Archaic points.

Tx-4433. 41UV45/220 **2080 ± 70**

Unit 96-11, Level 3, 30 to 50cm depth, from terrace deposits probable Middle Archaic age.

Tx-4434. 41UV45/248 **1060 ± 60**

Unit 47-22, Level 4, 60 to 80cm depth, from lower zone of midden, below Tx-4432 (above).

San Pedro Springs series

Tooth fragments (apatite fraction dated) from late Pleistocene fauna assoc with artifacts, San Pedro Springs site, 8km NE of Ft Stockton, Pecos Co (30° 58' 30" N, 102° 49' 37" W). Coll and subm by F B Warnock, Univ Southern Mississippi, Hattiesburg.

Tx-3980. 1109-22-5-80 **20,960 ± 480**

Equus sp, Plot 22; coll and subm 1980.

Tx-4270. 1408-22-12-80 **18,950 ± 430**

Mammuthus columbi, Plot 22; coll and subm 1980.

Tx-4785. 2083-50-1-82 **20,840 ± 400**

Equus sp, Plot 50; coll and subm 1982.

General Comment (FBW): assoc artifacts and samples imply pre-Clovis hunting station (Warnock, 1971).

Lakeview Lake series

Charcoal from two sites in Lakeview Lake area SW of Dallas. Coll and subm 1980 by D McGregor, Archaeol Research Program, Dept Anthropol, Southern Methodist Univ, Dallas.

Tx-3999. 41DL189/H/1 **2430 ± 80**

Site 41DL189, E bank Mountain Creek, 8km W of Cedar Hill (32° 34' N, 97° 02' W). From rock-lined hearth exposed in stream bank 3.5m below floodplain surface. No temporally diagnostic artifacts directly assoc; surface materials eroded from context include Archaic dart points.

Tx-4000. 41DL189/T4/1 **2140 ± 250**

Site 41DL189 (see Tx-3999, above), from discrete occupation surface 2.5m below floodplain surface in creek bank. No temporally diagnostic artifacts directly assoc.

General Comment (DM): dates are from two of series of stratified features and occupation surfaces in alluvial floodplain deposits of Mountain Creek. Dates indicate substantial floodplain aggradation, >3m, occurred over past 2500 yr.

Tx-4001. 41DL149/2/1 **750 ± 200**

Charcoal from Site 41DL149, on W bank Baggett Branch, 3km W of Cedar Hill (32° 35' 25" N, 97° 00' 04" W). From trash pit (Feature 1) in Test Unit 2, 30 to 50cm below ground surface. Toyah focus (Perdiz points) with intrusive Caddoan ceramics and Alba point; appears to be single-component site. Coll and subm 1980 by D McGregor. *Comment* (DM): consistent with dates from similar sites in upper Trinity R basin.

Musk Hog Canyon Project

Charcoal from sites in right of way of Interstate Hwy 10, Musk Hog Canyon, E side Pecos R valley, NE of Sheffield, Crockett Co. Coll 1977 by B Fullem and subm 1977 by F A Weir, Texas Dept Hwys & Public Transportation, Austin. Dates are discussed in Luke (1983, p 64–65, 70, 81, 117–122).

41CX217 series

Site 41CX217, 3km NE of Sheffield, near mouth of Musk Hog Canyon (30° 42' 50" N, 101° 47' 45" W); Archaic, Ensor points.

Tx-2777. 41CX217/1 **1200 ± 60**
Unit VI, Level 6.

Tx-2778. 41CX217/2 **660 ± 60**
Unit IV, Level 6.

41CX216 series

Site 41CX216, ca 3km NE of Sheffield, near mouth of Musk Hog Canyon (30° 42' 53" N, 101° 47' 45" W).

Tx-2779. 41CX216/3 **520 ± 50**

Unit IV, Level 3, no diagnostic artifacts.

Tx-2780. 41CX216/4 **730 ± 60**

Unit XI, Level 3, arrowpoint assoc.

Tx-2781. 41CX162/5 **480 ± 70**

Site 41CX162, ca 6km NE of Sheffield, halfway up Musk Hog Canyon (30° 43' 03" N, 101° 46' 14" W), N470/E500, Level 2; no diagnostic artifacts.

Tx-2782. 41CX252C/6 **790 ± 50**

Site 41CX252, ca 6km NE of Sheffield, halfway up Musk Hog Canyon (30° 43' 05" N, 101° 46' 07" W), N540/E725, Level 2; no diagnostic artifacts.

41CX136 series

Site 41CX136, ca 10km NE of Sheffield, ³/₄ way up Musk Hog Canyon (30° 43' 55" N, 101° 43' 48" W); no diagnostic artifacts.

Tx-2786. 41CX136/7 **400 ± 70**

Feature B, N955/E1005, Level 2, Feature B.

Tx-2787. 41CX136/8 **360 ± 60**

Feature A, Hearth 1, N980/E975, Level 2, Feature A, Hearth no. 1.

Tx-2788. 41CX136/9 **620 ± 60**

Feature A, Hearth 2, N980/E1000, Level 2, Feature A, Hearth no. 2.

41CX131 series

Site 41CX131, ca 13km NE of Sheffield, near head of Musk Hog Canyon (30° 44' 04" N, 101° 43' 33" W); no diagnostic artifacts.

Tx-2789. 41CX131/10 **290 ± 50**

NE feature, N1050/E1020, Level 2.

Tx-2790. 41CX131/11 **170 ± 50**

SW feature, N1030/E1010, Level 2.

Tx-2791. 41CX131/12 **260 ± 50**

Central hearth, N1040/E1015, Level 2.

Tx-2792. 41CX131/13 **290 ± 60**

SE feature, N1030/E1020, Level 2.

Tx-2793. 41CX121/14 **410 ± 60**

Site 41CX121, ca 13km NE of Sheffield, near head of Musk Hog Canyon (30° 44' 11" N, 101° 43' 20" W), N115/E100, Level 2; no diagnostic artifacts.

Tx-2794. 41CX125/15 **520 ± 50**

Site 41CX125, ca 13km NE of Sheffield, near head of Musk Hog Canyon (30° 44' 11" N, 101° 43' 20" W); part of same site cluster as 41CX121 (see Tx-2793), N40/E30, Level 2; no diagnostic artifacts.

Olmos Dam site series

Wood charcoal from Olmos Dam site (41BX1), Archaic site, W bank Olmos Creek, San Antonio (29° 28' N, 98° 28' W). Subm 1978–80 by T R Hester.

Tx-2927. 41BX1-1 **3560 ± 70**

W wall Trench 5, 90cm below undisturbed ground surface, 8 to 20cm N of Unit 1. Nolan point 20cm above sample. Coll 1978 by C A Assad. *Comment* (CAA): corresponds to Middle Archaic as defined by Weir (Assad, 1979, p 18).

Tx-3799. 41BX1/Area B **4110 ± 70**

Area B, profile, on top of burned rock zone (lowest zone exposed). Middle Archaic Pedernales points assoc with burned rock zone. Coll 1979 by T R Hester.

Tx-3989. 41BX1/64, 9 **2200 ± 70**

Unit E1012/N1002, Level 2, 98.62m elev. From suspected transitional Archaic occupation zone; Fairland, Frio, and Pedernales points assoc with zone. Coll 1980 by P K Lukowski.

Tx-3990. 41BX1/130, 24 **3310 ± 110**

Unit E1014/N1002, Level 7, 98.18m elev. Assoc Archaic point types Pedernales and Marshall. Coll 1980 by P K Lukowski.

Tx-3991. 41BX1/187, 37 **4380 ± 100**

Unit E1029/N1001, Feature 10, Level 13, 98.11 to 98.19m elev. From possible pit 30cm below thin burned rock midden in which were Travis points. Coll 1980 by P K Lukowski.

Tx-3992. 41BX1/171, 40 **3710 ± 250**

Unit E1022/N1065, mainly E half, Level 8, 98.9 to 98.8m elev. Assoc with Kinney-like biface. Coll by P K Lukowski.

Tx-3993. 41BX1/50, 2&3 **1920 ± 160**

Unit E1014/N1001, Feature 2, Level 2, 98.76m elev. Coll from transitional Archaic feature assoc with two infant burials. Coll 1980 by P K Lukowski.

Blue Bayou series

Human bone (apatite fraction) from burials at Blue Bayou site (41VT94), 16km S of Victoria near confluence of Blue Bayou and Victoria Barge Canal, Victoria Co (28° 41' 05" N, 96° 58' 04" W). Tx-4894, -95 coll 1983 by W W Birmingham and D W Will; subm 1983 by D W Will, E I DuPont de Nemours and Co, Victoria; Tx-4972 coll 1982; subm 1983 by W W Birmingham, Victoria.

Tx-4894. Blue Bayou 1 **1590 ± 210**

Burial 20, Unit S3/W8, elev 14.7 to 14.8m.

Tx-4895. Blue Bayou 2 **1120 ± 80**

Burial 24, Units S2/W7, S2/W8, S3/W7, S3/W8, elev 14.5 to 14.7m.

Tx-4972. Blue Bayou 3 **1490 ± 90**

Burial 16, Units N4/W8, N5/W8, N4/W9, N5/W9, elev 15.88 to 15.98m, assoc with Scallorn arrowpoint (Late Prehistoric, Austin phase).

Berger Bluff series

Wood charcoal from bench area of Berger Bluff site (41GD30A), W bank Coleto Creek in Coleto Creek Reservoir basin, Goliad Co (28° 47' 12" N, 97° 10' 20" W). From cultural deposits ca 7.6 to 7.9m below bluff top, in floodplain sediments later cemented by CaCO₃ precipitated from nearby spring discharge. Tx-3569 coll and subm 1979 by D O Brown; Tx-4095 coll 1979, 1980 and subm 1981 by K M Brown, both from Center for Archaeol Research, Univ Texas, San Antonio.

Tx-3569. 41GD30A/1 **11,550 ± 800**

From Excavation Unit 2 within and adjacent to hearth, Feature 1, N114.46 E98.33, elev 92.38m, near base of Stratum 2B. Assoc with deposit of microfauna suggesting decomposed human coprolites.

Tx-4095. 41GD30A/10,23,24 **7770 ± 810**

Three samples combined, from buried occupation surface marked by mussel shell scatter, in Stratum 2A, ca 24cm below Tx-3569.

General Comment (KMB): dates should be approx equivalent, but are in reverse strat order. AMS date, Beta-16929, 10,190 ± 160 (K M Brown, pers commun) also is seemingly reversed with T-3569 but agrees within 2σ and is consistent with evidence of assoc fauna indicating late Pleistocene or early Holocene age. *Lab Comment*: large deviations due to small sample size; Tx-3569 counted 3 days, Tx-4095 counted 41.6 hr.

Buckhollow series

Charcoal from Buckhollow site (41KM16), Toyah phase component, W bank Copperas Creek at US Hwy 290, 19km W of Junction, Kimble Co (30° 30' N, 100° 00' W). Coll 1977 by G L Moore and subm 1977 by F A Weir.

- Tx-2851. 41KM16/1** **350 ± 60**
Area 1, Feature B (hearth), N1685/W545, Level 3; Perdiz point assoc.
- Tx-2852. 41KM16/2** **260 ± 60**
Area 4, Feature D, inside hearth, N1521/W620, Level 3; scrapers, pottery assoc.
- Tx-2853. 41KM16/3** **330 ± 70**
Area 4, Feature A, stone-lined pit in SW area, N1530/W61; Perdiz and Fresno point, pottery, scrapers, sandstone artifacts assoc.
- Tx-2854. 41KM16/4** **230 ± 50**
Feature B (hearth), N1540/W610, Area 4; Perdiz and Harrell point assoc.
- Tx-2855. 41KM16/5** **190 ± 30**
Hearth, N1845/W365, Area 5, Level 1; Perdiz points and pottery assoc.
- Tx-2856. 41KM16/6** **110 ± 50**
Hearth, N1610/W615, Area 10, Level 3; Perdiz points, 4-edged beveled knife, scraper, pottery assoc.

Landergin Mesa series

Charcoal from Landergin Mesa (41OL2), Late Prehistoric (Antelope Creek focus) village, E side Ranch Creek, 56km NW of Amarillo, Oldham Co (35° 28' 47" N, 102° 21' 31" W). Coll 1981; subm 1982 and comments by R J Mallouf.

- Tx-4639. Landergin 1A** **1120 ± 180**
Charcoal scatter and charred bone from vicinity of Structure 1 wall, Unit N130/E95.5, Level 2, 10 to 20cm below ground surface. *Comment:* date unexpectedly early and probably indicates mixing of strata.
- Tx-4640. Landergin 1M** **1440 ± 340**
From midden soil adjacent to Feature 2 (storage pit), within Structure 1, N125.5/E98, elev 99.45m, assoc with arrowpoint. *Comment:* much too early; probably reflects contamination of sample by rodent activity.
- Tx-4641. Landergin 1K** **1380 ± 210**
From living floor within Structure 1 at base of wall rock, N127.5/E96, elev 99.26m. *Comment:* unexpectedly early; sample may have been adversely affected by pothunting.
- Tx-4642. Landergin 1N** **720 ± 70**
From clay layer in Feature 2 (storage pit), inside Structure 1, N125.5/E98, elev 99.14 to 99.07m. *Comment:* from apparently intact feature; date agrees with known range of Antelope Creek focus.

Tx-4643. Landergin 2BB 1880 ± 660

From Area A, trash midden, Structure 2, N118/E110, Level 4, elev 99.37m. *Comment:* sample underlay floor level of Antelope Creek focus structure; date may indicate Late Archaic occupation.

Tx-4644. Landergin 2Q 630 ± 80

From Feature 3 (hearth), inside Structure 2, N118/E110, Level 2, elev 99.66m. Apparent assoc with Washita and Fresno points. *Comment:* consistent with artifactual and architectural remains at site; hearth appears to be assoc with squarish slab-stone habitation.

Tx-4645. Landergin 2J 1430 ± 340

Scatter from Feature 1 (basin hearth), inside Structure 2, N118/E110, Zone 2, elev 99.90m. *Comment:* too early for Antelope Creek focus; sample was from rodent-disturbed fill above floor of structure and may be contaminated.

Tx-4647. Landergin 2Y 590 ± 190

From Feature II (hearth), Structure 2, N118/E110, Level 4, elev 99.50m. From hearth containing bison bone, arrowpoints, and mano. *Comment:* date agrees with artifacts assoc with feature and may indicate Antelope Creek focus occupation beneath floor of Structure 2.

Tx-4648. Landergin 2W 1010 ± 280

Same loc as Tx-4647. *Comment:* date overlaps with Tx-4647 in range appropriate for early occupation of site.

Tx-4649. Landergin 2G 1110 ± 630

From base of wall rock in Structure 2, N118/E110, Zone 2, elev 99.82m. *Comment:* too early for Antelope Creek focus; may indicate that context of sample had been affected by pothunting.

Tx-4651. Landergin 2U 570 ± 710

From Feature 5, trash midden, Structure 2, N118/E110, Level 3, elev 99.52m. *Comment:* date agrees with artifacts in feature and falls within expected range of Antelope Creek focus occupation.

Black Cave series

Charcoal flecks from floor remnants cemented to wall of Black Cave (41VV76), in Presa Canyon 3km from confluence with Seminole Canyon, in Seminole Canyon State Historical Park, Val Verde Co (29° 41' N, 101° 17' W). Coll and subm 1981 by D S Dibble and S A Turpin, Texas Archeol Survey, Univ Texas, Austin.

Tx-4334. 41VV76/2 5500 ± 80

Ash pit resting on Pleistocene spall layer, 1.5m above current floor in basal cultural zone. Lowest visible pit in profile.

Tx-4335. 41VV76/1 **6800 ± 160**

Burned soil from pit, same elev as Tx-4334. Pit may be intrusive.

Tx-4336. 41VV76/3 **5650 ± 140**

Burned soil from pit, 1.75m above current floor. From highest occupation level represented by cemented charcoal, above Tx-4334 and -4335.

General Comment (SAT): difference in dates between strat equivalent Tx-4334 and -4335 explained by loss of upper portions of pits; dates discussed in Turpin (1982, p 73–77). *Lab Comment*: general pretreatment and removal of CaCO₃ followed procedure described in White and Valastro (1984, p 25–28).

Hidden Shelter series

Charcoal from ash pit exposed by vandal's hole ca 20cm below surface, 4.2m below site datum, in center of Hidden Shelter site (41VV408), at confluence of Rio Grande and first tributary W of Seminole Canyon, on W boundary of Seminole Canyon State Historical Park, Val Verde Co (29° 38' 32" N, 101° 19' 10" W). Coll and subm 1983 by S A Turpin.

Tx-4811. 41VV408/1 **4030 ± 80**

Tx-4812. 41VV408/2 **4200 ± 70**

General Comment (SAT): dates appear accurate, and confirm Middle Archaic age estimated from surface artifacts; discussed in Turpin (1984, p 191).

Bonfire Shelter, Series V

Charcoal and burned soil from Intermediate zone at Bonfire Shelter (41VV218), stratified bison kill site near Langtry, Val Verde Co (29° 49' N, 101° 33' W). Coll and subm 1983 by S A Turpin and L C Bement, Texas Archeol Research Lab, Univ Texas, Austin.

Tx-4870. 41VV218/98 **4850 ± 80**

Feature 56, large hearth, Unit N500/W500, elev 97.89m; Eagle Nest phase.

Tx-4871. 41VV218/107,112,115 **6340 ± 100**

Feature 57, small hearth, Unit N511/W500, elev 97.55 to 97.60m; Viejo phase.

Tx-5084. 41VV218/102 **4270 ± 60**

Feature 56, same hearth as Tx-4870, but separate sample.

General Comment (SAT & LCB): no artifacts directly assoc with samples, but strat assignments are clear. Dates consistent with strat relationships, and with overall strat sequence at site. Discrepancy between Tx-4870 and -5084, from same feature is unexplained; both dates fit strat situation. This is 5th series from site; 4th series (with refs to earlier series) is in R, 1977, v 19, p 308; further discussion in Bement (1986, p 6–9).

*Washington***Skamokawa series**

Charcoal from Skamokawa site (45WK5), right bank Columbia R between River Mile 33 and mouth of Skamokawa Creek, Wahkiakum Co (46° 16' N, 123° 28' W). Site has 3 occupational strata. Coll 1979 by R Minor and subm 1980 by J V Jermann, Office Public Archaeol, Univ Washington, Seattle. Depths are in cm below surface.

Tx-3806. 45WK5/1979/1 **1350 ± 90**

Excavation Unit D, 40 to 50cm depth. Feature 1, burned timber and rock cluster; latest component.

Tx-3807. 45WK5/1979/2 **2300 ± 40**

Excavation Unit D, 130 to 140cm depth. Assoc with net weights in earliest component. UW-488, 4335 ± 95 (Jermann, pers commun) may be from same component.

Tx-3808. 45WK5/1979/3 **1740 ± 60**

Excavation Unit E, 100 to 110cm depth. Assoc with Feature 2, hearth, in middle component (Merrybell phase). UW-489, 1760 ± 70 (Jermann, pers commun) may be from same component.

Tx-3809. 45WK5/1979/4 **1950 ± 50**

Excavation Unit E, 130 to 140cm depth; earliest component.

Tx-3810. 45WK5/1979/5 **2110 ± 90**

Excavation Unit F, 130 to 140cm depth; earliest component.

*Wyoming***Daniels Indian site series**

Mixed charcoal and earth from Trench 2, Daniels Indian site (Turnbull T-18-74), rock shelter ca 55km SSE of Bitter Creek (41° 09' 30" N, 108° 26' 00" W). Coll 1974 and subm 1975 by W D Turnbull, Field Mus Nat Hist, Chicago, Illinois.

Tx-2182. Daniels, Fire Pit 3 **1370 ± 90**

From fire pit at contact of Recent fill (Unit II) and underlying Eocene sediments (Unit III, Washakie fm). Assoc pottery and other artifacts in Unit II; deepest sample.

Tx-2183. Daniels, Fire Pit 4 **1150 ± 80**

From middle of Unit IB; uppermost of three samples.

Tx-2184. Daniels, Fire Pit 2 **1190 ± 40**

From fire pit at base of Unit IC, on surface of Unit II; stratigraphically between Tx-2182 and -2183. Transition from earlier humid period to drier

time of windblown sand deposition. *Lab Comment*: sample split and two parts prepared and counted separately: 1100 ± 60, 1280 ± 60.

Venezuela

Tx-4002. Las Tortolitas

2050 ± 50

Charcoal from las Tortolitas, ca 70km NW of Maracaibo, Zulia (10° 47' N, 72° 13.5' W); Trench B-3, level 0.25 to 0.40m depth. Coll and subm 1980 by Erika Wagner, Dept Anthropol, Inst Venezolano Investigaciones Cientificas, Caracas. *Comment* (EW): a little older than expected but agrees with dates from related Lagunillas phase of Lake Maracaibo Basin: Tx-1948 to -1951 (R, 1978, v 20, p 264); GrN-7111 (Wagner & Tarble de Ruiz, 1975, p 116-118); and La Pitía (Y-855, 1880 ± 110 BP; Gallagher, 1976, p 172). See also Arvelo and Wagner (1983).

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