



# JOURNAL HOUSTON ARCHEOLOGICAL SOCIETY

NUMBER 75

APRIL 1983

SCOTTSBLUFF POINT  
SITE 41WH19

Joe D. Hudgins  
and  
L. W. Patterson

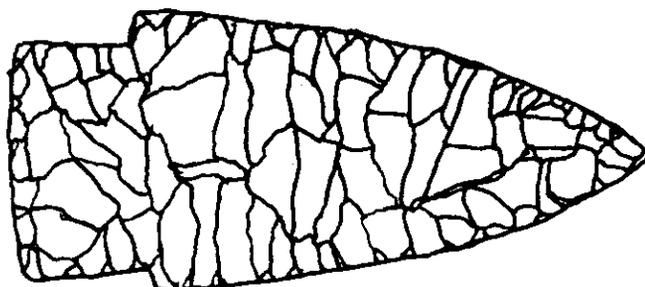


Fig. 1



The Scottsbluff point shown in Figure 1 was found on site 41WH19. This site is located on a high bluff on the West Bernard River in Wharton County. This site has been surface collected by members of the Houston Archeological Society and reported by L. W. Patterson and Joe D. Hudgins in the Houston Archeological Society Newsletter No. 70, August 1981. Evaluation of this site indicates a long occupation sequence from Paleo-Indian to late Pre-historic.

This point shows very good workmanship. The edges of the stem have been ground. It appears to be made from Edwards Plateau flint, and is dark in color with a mottled white section near the base. Dimensions of this specimen are: width 35.0 mm.; length 81.8 mm.; thickness 8.5 mm.; stem width 30.4 mm. The identification and measurements of this point was made by L. W. Patterson of the Houston Archeological Society.

This is the second Scottsbluff point reported from Wharton County. The base of another Scottsbluff was previously reported to the Texas Archeological Research Laboratory by Joe D. Hudgins. It was found on the surface of site 41WH69.

A REVIEW OF 1982 PROGRAMS

Pam Wheat

The variety of programs presented at the regular monthly meetings of the Houston Archeological Society reflected the variety of interests its members hold.

In January, Ms. Jerry Henderson, archeologist with the Texas Department of Highways, spoke on the "Archeological Investigations of a Paleo-Lithic Site in Northwest San Antonio." This site was discovered during construction of Loop 1604. Mitigation revealed a sparse camp site with tools from the Paleo Indian time period. The February program, "Urban Archeology in Galveston: Ashton Villa," was led by Rice University doctoral candidate Texas Anderson. Additional speakers included Dick Gregg, Shirley Wetzel, Roger Moore, and Pam Wheat. The project at Ashton Villa was the first archeological investigation of an urban site on the Gulf Coast. HAS members worked at the project in the fall, 1981, and spring, 1982. On March 12 Dr. Walter Widrig, professor of Art History, Rice University, updated the departments' work in Italy speaking on "The Roman Villa: Country House or Farm?."

Several films were shown at the April meeting - "Indian Origins" and "Indians Cultures." A.J. Taylor, A & M University, also showed slides on recent construction of a Caddoan house for Caddo State Park near Alto. In May Elton Prewitt, Prewitt and Associates, Austin, talked on "TAS Field School Review: The Loeve-Fox Site and Its Relationship to the Summers' Work." His discussion and invitation encouraged many HAS members to attend the summer field school sponsored by the state society. The July program was a slide review of "Archeological Methods Applied at the Rowe Valley Site: A Review of the TAS Field School". The presentation was made by Bill McClure, Marcy Grubbs, Joan Few, Lois Rappaport and Dick Gregg.

In August members attended the exhibit "Egypt's Golden Age" and viewed the film, "Of Time, Tombs, and Treasure", sponsored by the Houston Museum of Natural Science. "Lithics in Archeology" was the topic presented September 10. A film, "The Shadow of Man", showed flint knapper, Don Crabtree, at work on stone tools. Leland Patterson then discussed investigations and issues related to the Calico Site in California. Anne Fox, archeologist from the University of Texas at San Antonio, spoke on "Recent Work at Las Cabras: A Spanish Mission/Ranch in Wilson County" on October 8. Her expertise in historic site archeology greatly enriched HAS members' perspective on work of the mission period in Texas.

On November 12, Ron Ralph, Texas Department of Parks and Wildlife archeologist, presented "A Review of Recent Projects in Texas Parks." His report included Caprock Canyons, Seminole Canyon and Hueco Tanks. Dr. James Corbin, Stephen F. Austin University, spoke on his investigations of the "Washington Square Mound Site: A 13th Century Caddoan Ceremonial Complex." The site, located in central Nacogoches, may provide a link between the early George Davis site and later De Shazo site. This December program concluded presentations in 1982.

HAS Field Activities During the Calendar Year 1982Sheldon M. Kindall

This is a brief synopsis of HAS field activities for the year 1982. No attempt is made here to summarize the results of these activities. Instead, the intent of this report is to provide some flavor for the types of field activities in which the HAS participates.

During the Spring of 1982, mostly in March, HAS members worked several weekends on what has come to be known as the 'patio' site within the city of Wharton. This site was a large burial site which was discovered accidentally during the construction of a set of patio houses. Initially, this effort was considered a salvage project because the homes were being built directly on top of the burials. Later, the work settled into an organized investigation directed by Meg Kluge of the Texas Archeological Survey. Meg has since moved to Massachusetts, but reduction of the data and analyses of the artifacts continues at the University of Texas. It is believed that this site will be one of the more important and informative sites in Texas.

In April, several members of HAS helped survey one of Joe Hudgins' many site areas in Wharton County. This particular area was just outside the city of Egypt. A surface collection was taken from a plowed field adjacent to what was clearly an old stream bed. Due to years of plowing, it was no longer possible to determine whether the collected region was a large single site or a collection of small sites. Leland Patterson volunteered to analyse the surface collection. Other nearby site out-croppings were also surveyed.

All HAS field activity was suspended for the Texas Archeological Society field school - which itself was a very interesting dig. The 1982 TAS field school site, Rowe Valley, will be the field school site again this year. Anybody even remotely interested in field work would be well advised to join the many HAS members going to this year's field school.

During July, the HAS responded to an emergency call to re-visit the patio site because construction of a road through an untested part of the site was imminent. A series of six test pits were excavated, and the results were sent on to Meg Kluge. Fortunately, a downturn in the economy has delayed construction of the road.

Later, in August (HAS members are sometimes gluttons for punishment), the HAS visited a site on the Murchison Ranch near Hempstead in Waller County. This was a site in which Leland Patterson was interested. A series of test pits were excavated and a surface collection was made, despite starting the day trapped in the open by a rainstorm.

In October, the HAS went back to one of Joe Hudgins' sites in Wharton County, 41WH19. This particular site had yielded several plainview points from the nearby river, and it was desirable to locate exactly where the site was. A two-day search had been planned but after one full day of negative results, it was decided that the site had been completely eroded away by the river and the search was terminated. Later, however, Joe located an out-cropping of what may be part of the original site. It is clear from the very visible rate of erosion that the remaining life span of this site is short. This is an important site, and it will probably be a major item on the HAS agenda for 1983.

Finally, in October the HAS spent the first of what will be many weekends on Joan Few's early homestead site just outside of Jasper. This

particular site has an interesting technical aspect, in that all data will be collected and conclusions drawn by using a rigid systematic sampling technique.

The HAS does not have a planned calendar of events. Most of the regular participants in field activities have lists of projects they would like to undertake, and these items are scheduled as time and circumstance permit. Mostly, the HAS responds to calls for help in the field. Calls may come from our own members or from people external to HAS. In addition to the official HAS activities, individual HAS members participate in other projects, such as the Rice University project at Sam Houston Park in Houston. The University of Houston activities at Wallisville, or the Brazosport Archeological Society activities in the Freeport area. These activities are continuously reported on during HAS monthly meetings.

Index for HAS Newsletters (Journals) Nos. 1 - 67 appears in HAS Newsletter No. 67. An index for Newsletters and Journals No. 68 - 75 is included below:

**Number 68 - December 1980**

"Regional Research Program On The Texas Coast" - L. W. Patterson  
 "Settlements, Galveston Island - History of a  
 Late 19th Century Lace Factory" - Shirley Wetzel  
 "Source Analysis of Obsidian Artifacts in Texas" - Thomas Hester,  
 Frank Asaro and Fred Stross  
 "White Oak Bayou Sites" - W. L. McClure  
 "The 1850-52 Topographic Maps of Galveston Bay Area" - Richard L. Gregg  
 "41HR7 - A Harris Co. Shell Site on Lower San Jacinto  
 Bay - Harris County" - Alan R. Duke and Frank Muller  
 "Multi-Component Site 41WH0, Wharton Co., Texas" - L. W. Patterson  
 and Joe Hudgins  
 Index - Newsletter No. 68 - Society Organization

**Number 69 - May 1981**

"Status Report on Ashton Villa Research" - Texas Anderson  
 "Preliminary Report on The Wharton Site - 41WH09" - Joe Hudgins  
 "Status Report on The Muller Site - 41HR74" - Alan R. Duke  
 "The William Dobie Survey, Harris Co., Texas" - Richard L. Gregg  
 "White Oak Bayou Site" - W. L. McClure  
 "Excavations at Site 41WR25, Wharton Co., Texas" - L. W. Patterson  
 Index - Newsletter No. 69 - Society Organization

**Number 70 - August 1981**

"Lithic Analysis of Site 41CD70 - Colorado Co., Texas" - L. W. Patterson  
 "Site 41WH19, A Long Occupation Period in Wharton  
 Co., Texas" - Lee W. Patterson and Joe Hudgins  
 "The William Dobie Survey, Harris Co., Texas" - Richard L. Gregg  
 "41HR74 - A Harris County Shell Site On Lower  
 San Jacinto Bay" - Alan R. Duke  
 "White Oak Bayou Sites" - W. L. McClure  
 Index - Newsletter No. 70 - Society Organization

**Number 71 - December 1981**

"The Goebel Site (41AU1) - An Archaic-Neo American Site In  
 Austin County, Texas" - Alan R. Duke  
 "Investigations at 41BQ35 - The Dow-Cleaver Site, Brazoria  
 County, Texas" - Ted D. Hollingsworth  
 "White Oak Bayou Sites" - W. L. McClure  
 "The William Dobie Survey - Harris County, Texas" - Richard L. Gregg  
 "Post-Ceramic Site 41HR6, Harris County, Texas" - L. W. Patterson  
 Southern Texas Archeological Society Information  
 Index - Newsletter No. 71 - Society Organization

**Number 72 - April 1982**

"1981 Programs In Review" - Pam Wheat  
 "Synopsis of HAS Field Activities - 1981" - Sheldon Kindall  
 "Abstracts of Talks - Feb. 1982 - HAS Meeting" - Texas Anderson, Dick  
 Gregg, Shirley Wetzel, Roger Moore and Pam Wheat  
 "The Goebel Site 41AU1, Texas (Part 2)" - Alan R. Duke  
 "White Oak Bayou Sites" - W. L. McClure  
 "Site 41WH26, Wharton Co., Texas" - L. W. Patterson and Joe Hudgins  
 "Planning by the U.S. Corps of Engineers" - Carolyn Good  
 "Survival of the Wittiest: Some Thoughts on the Prehistoric Lifeways  
 of South-central Texas" - Harry J. Shafer  
 Index - Journal No. 72 - Society Organization

**Number 73 - August 1982**

"Archeologists Pool Efforts to Salvage Archaic Cemetery -  
 (Quotable Quotes submitted by Dick Gregg)" - Suzanne Wilson  
 "A Restudy of Site 41HR185 - Harris Co., Texas" - Lee Patterson  
 "Results of Some Recent Studies by The Obsidian Project" -  
 Thomas R. Hester, Frank Asaro and Fred Stross  
 "The Wallisville Heritage Park Foundation" - John Middleton  
 "Whats' An Amateur, Pop?" - John Cotter (University of Penna.)  
 "White Oak Bayou Sites (Continued)" - W. L. McClure  
 "A Progress Report on the Brazoria County Historical Museum" -  
 Ted Hollingsworth  
 "Brazosport Archeological Society" - Johnny Pollan  
 "The Goebel Site (41AU1) - An Archaic-Neo American Site in Austin  
 Co., Texas (Continued from HAS Journal No. 72)" - Alan R. Duke  
 "Notes on Cameras and Film for Archeological Use" - Lois Rappaport  
 Index - Journal No. 73 - Society Organization

**Number 74 - December 1982**

"Joe D. Hudgins - A Brief Biography" - A. R. Duke  
 "Historic Indian Site in Wharton Co., Texas" - J. D. Hudgins  
 "The Goebel Site - 41AU1" - A. R. Duke  
 "A Multi-Component Prehistoric Site 41WH65" - L. W. Patterson and  
 Joe Hudgins  
 "Gloriana Homestead - 41LP94" - Joan Few  
 "Faunal Material from 41HR6" - W. L. McClure  
 Index - Journal No. 74 - Society Organization

**Number 75 - April 1983**

"Scottsbluff Point - Site 41WH19" - Joe Hudgins and L. W. Patterson  
 "A Review of 1982 Programs" - Pam Wheat  
 "HAS Field Activities During Calendar Year 1982" - Sheldon M. Kindall  
 Index - HAS Journals No. 68-75  
 "Cultural Property Assessment of West Bernard Station" - Alton Brigg  
 "Amateur Contributions to Archeology in Southeastern Texas" -  
 L. W. Patterson  
 "Etched Freshwater Clam Shells" - E. E. Ochsenr  
 "Word About IAS" - Jim Word  
 "Archeology In The Oil and Gas Industries" - L. W. Patterson  
 Index - Journal No. 75 - Society Organization

Cultural Property Assessment of West San Bernard Station, an  
Ordnance Depot of the Army of the Republic of Texas, Wharton County, Texas

Alton Briggs

West San Bernard Station served as a depot for the storage of the majority of the artillery, ordnance stores and heavy camp equipage of the Army of the Republic of Texas. Established shortly after the majority of the Army had been furloughed, the Station was activated in the late spring of 1837 and by July of that year had already received cannon hauled from Texana. Garrisoned by a few permanent volunteers under the command of Lieutenant H. L. Grush, little is known about the post itself other than that sheds were constructed to protect the artillery pieces stored there. The Volunteers were gradually replaced by troops under the command of Captain Martin K. Snell in February 1839. The last correspondence referring to the Post was during this same month (Pierce 1969: 179-80). How long the Station remained active is unknown, but it is probable that much of the ordnance and military stores there were transferred to the City of Houston to the Armory of the Army of the Republic soon after it was built in 1838 (Gilbert 1971: 196).

Abandonment may have come by the summer of 1839 or the Station could have continued to be used as a depot for a few years. In May of 1839, the artillery remaining at the Station was transferred to the Armory of the Ordnance Department at Houston and included two six-pounder howitzers, a brass and an iron six-pounder gun and a three-pounder field piece, all with their associated harness. These were apparently all that remained of 23 of the 25 guns of the Republic which had once been stored at the Station and at nearby Post Bernard (Gilbert 1971: 194-197).

Possibly because the site was inaccessible or because maps which might be used to relocate the Post were no longer extant, the location of the West San Bernard Station was an enigma until a few years ago when it was relocated by a member of the Houston Archeological Society while surveying for aboriginal sites along West Bernard Creek. The discoverer, Joe D. Hudgins, also a member of the Wharton County Historical Commission, had found an encrusted iron artifact which was later identified at a meeting of the Houston Archeological Society as a lockplate, the remains of a flint lock musket. Mr. Hudgins lives in nearby Hungerford and through an agreement with the landowner, has surveyed the site and collected artifacts from the surface after they have been dislodged by periodic plowing. A site number of 41WH16 was assigned by Texas Archeological Research Laboratory, Balcones Research Center, the University of Texas at Austin.

After conducting preliminary research, Mr. Hudgins requested an historical marker discussing the site, to be placed at the county seat in order to protect the Station from relic hunters, etc. In order to proceed with the application, the Texas Historical Commission requested verification of the site by an independent investigator. Mr. Hudgins has retained Lone Star Archeological Services to review the data which he has gathered, to examine the artifacts and to pursue limited research concerning the post and the artifacts recovered at the site. The following is the report discussing the findings of that investigation.

West San Bernard Station is located in northeastern Wharton County, on the west bank of the West Bernard Creek. The location of the site can be found on the Egypt, Texas, U.S.G.S. 15' Quadrangle map at UTM Zone 14, 3257950 m. North, 778820 m. East. More than seven miles away from Egypt,

Texas and a similar distance from Hungerford and East Bernard, previous citations have located the post "four or five miles southwest of Post Bernard. This position is four miles south of the Nottawa Siding on the Southern Pacific Railroad tracks which parallel Alternate U.S. 90 east of Eagle Lake (Pierce 1969: 180)." When plotted using dividers and compass, intersection of the arcs described above does not occur. It does, however, plot a nebulous area within a short distance of the Post, which is located south. More specific locational information comes from a letter written to Ashbel Smith, Surgeon General of the Army of the Republic by Dr. Thomas P. Anderson, stationed at the Post from June 1838 to at least early 1839. Anderson, in a letter dated June 12, 1838, describes the location of the post as "some five or six miles remote from any human habitation..." and "eight miles from a post office." While this letter was never postmarked, Anderson's later correspondence is mailed from Egypt, about 7.2 linear miles from the Station (Ashbel Smith Papers: Letters 1836-1839).

Situated on a lowland terrace near West Bernard Creek, but free from flooding, the Post is a few meters from a prehistoric aboriginal campsite, separated from one another by an erosional zone about .5 meter lower than the two components. About 50 meters north of the site is a tributary gouge which drains eastward to the West San Bernard Creek. Another drain lies about 300 meters to the south. Artifactual material from the 1820's and 1830's are concentrated on the surface in an area about 5 meters wide by 17 meters long, slightly in excess of 30 square meters. The site has been contour mapped to within .1 meter, noting concentrations of cultural material including "gun locks, brass gun furniture, musket shot, brass and iron shot, spur, U.S. Army button, bayonet tip, flag pole finial, square nails, 2 padlocks, box handle and miscellaneous metal pieces (Anderson & Johnston 1980). Shown as being associated with the concentrations are two sandstone fragments, others having been recovered since. Other areas nearby include one where sherds of glass and dishes are encountered and another which exhibits clusters of cut nails. Features are notably absent, perhaps as a result of plowing but apparent activity areas are evident and the nail clusters could mark the location of a structure. There is probably little remaining in the form of structural remains; amenities were minimal at West San Bernard Station. This is verified by the impassioned letter Thomas Anderson wrote Ashbel Smith in June of 1838, copied below:

West Bernard Station  
June 12, 1838

To Ashbel Smith, M.D.  
Surgeon Genl. T.A.  
My Dear Sir

You will no doubt be somewhat surprised to receive my letter of resignation so soon after my arrival at this Post. I assure you sir it is with no small degree of reluctance that I solicit its acceptance. It has never been my wish to leave the service nor would I do so, could I remain with the slightest comfort to myself or without doing very great violence to my feelings. Our Station is in a perfect wilderness, some five or six miles from any human habitation, we have but five men and they are all on duty, consequently I am forced to bring my own wood and water, make my own fire and cook my own meals in the hot sun without a shelter to protect me from the weather and no place to sleep but in the open air, we are eight miles from a post office and thus I am cut off from all communication with my friends here or in the U.S. All this I could bear had I books to read but there is not one I presume within twenty miles of us.

I dislike very much sir, to admit the foregoing reasons as the cause of my desire to leave the service, a soldier should never complain of such things and did I conceive that there was the slightest necessity for it, I would remain without a murmur.

Could I be removed to any other station, I would still be pleased to retain my commission, or should this station be removed to any other point, I will have no objection to remain, but under existing circumstances, I hope sir that you will relieve me.

Most Respectfully your  
friend  
(signed) Ths. P. Anderson

Anderson's resignation was apparently refused; he was still at the post in January, 1839. His assessment, however, of conditions at the Post cannot be discounted. Anderson had joined the Army of the Republic in 1836 and had, because of his medical credentials, probably visited or taken an active part at several outposts throughout Texas before he was stationed at the post in June of 1838 (Ashbel Smith Papers: letters 1836-1839).

### The Artifacts

Most of the artifacts have been examined through the use of color prints made with a 35 mm camera. Selected artifacts were viewed and re-photographed but under marginal lighting conditions. Notes were taken and despite the brief period of analysis, a great deal was learned about the site from a variety of metal, glass and ceramic artifacts.

The majority of the metal artifacts is the residue of firearms refurbishing. This includes brass butt plates, iron sling swivels from the trigger guard and forearm, brass side plates, brass trigger guards, brass thimbles (for holding iron ramrods which were also found), iron triggers and breech plugs but especially flint lockplates. Twenty five locks and lockplates were examined and on the basis of preliminary analysis of heavily rusted and incomplete parts, twenty were from India Pattern or Third Model Brown Bess muskets which were made from the late 1770's to perhaps as late as the early 1820's (Peterson and Sprague 1954: 20-21). This gun was originally manufactured for the East India Company and was later pressed into service as an emergency weapon. It had a 39 inch barrel of .75 caliber and weighed 9 pounds 11 ounces. Its main distinctions from former Brown Bess models were a shorter barrel, fewer brass fittings and a steel ramrod (Tanner, ed. 1972: 193). Examination of twelve cocks revealed that six had the goosenecked form and six, the reinforced. The reinforced cock replaced the goosenecked variety in 1809 (Koury 1973: 8). Of the remaining five locks, one appears to be the lockplate of a British Service Pattern horse pistol (Metropolitan Museum of Art, 1971: 114-118), one may be an earlier Brown Bess, known as the "Long Land" pattern and one may have been the lockplate of a U.S. Model 1812 musket.

The remaining two locks are either U.S. Model 1816 muskets made after 1818, both having the slanted brass flashpans added that year or more likely, muskets made for the Republic of Texas in the pattern of the U.S. Model 1816 musket. These muskets were .69 caliber smoothbores, with 42 inch barrels, measuring 57 11/16 inches overall. Their main distinguishing feature was the detachable pan of brass. In 1839, the Republic of Texas received 560 the muskets in partial delivery from the contractor, Tryon, Philadelphia. By 1841, only 300 muskets remained in inventory, the rest being lost, in disrepair, taken home or captured (Koury 1973: 15-17). If these locks are from U.S. Model 1816 muskets, their presence in the site establishes a post-1818 date. If these locks are from the Texas Contract muskets, they could

have appeared in the site as early as 1839. The careful cleaning, analysis and preservation of these two locks is highly recommended.

Other gun parts found at the site are in equal abundance and continue to support the statistics of firearms types generated by the flint locks and lockplates. Butt plates, of iron and brass, were recovered which include the Brown Bess and one with an octagonal top, highly curved in the yager style. That a yager, or rifle, was worked on at the site is indicated by a small section of muzzle, perhaps four inches long and of about .45 caliber, which has been removed by sawing. The front loading of rifles wore away the lands of the rifling and "freshing" a rifle frequently included this removal of a short piece at the barrel end. Represented by more than a dozen each were frizzens, trigger guards, thimbles, sling swivels, side plates, leaf springs and nose caps. Several breech plugs for musket and pistol, fragmentary steel ramrods, bayonets, gauges or muzzle covers for six-pounders (3.65" O.D.) and 24-pounders (5.7" O.D.), tools such as a fragmentary file, tongs and lead dipper, and a wrought iron ward lock are a few of the more notable artifacts recovered. Copper bullets of about one inch in diameter and others about 1.5 inch, almost certainly captured Mexican ordnance, lead bullets of .45, .50, .75 caliber as well as a ball one inch in diameter and iron shot larger than 1.5 inch in diameter have also been found on the surface. Many other metal artifacts recovered from the surface remain unidentified because of their fragmentary condition and because they are distorted and/or burned.

Glass artifacts have also been gathered from the surface and all these seem to be the fragments of a few broken bottles. The sample consists of necks and bases, with a few wall sections; some may prove reconstructable. Most are of the dark green glass which is commonly called black and the rest are of patinated colorless glass. All are either free-blown or blown into molds and have hand finished necks in a variety of early 19th-Century forms. Drinking glasses are absent.

The ceramics sample from the site bears more careful analysis than the glassware and provides almost as much information concerning the site and dating as do the ordnance parts. Of the 85 sherds discovered, all save perhaps the crockery, are British, representing eight different ceramics types. Mocha or banded slipware, in bowl forms, was represented by two specimens from 13 sherds. Transferprinted ware representing five vessels (two bowls, two plates and a cup) from 17 sherds included "Blue Willow" and "Autumn", a brown transfer patterns. These two patterns and one red transfer are found on the interior, while two others have transfers on exterior and interior surfaces. Hand painted edge ware or "shell edge" in blue on white pearlware consisted of 8 sherds representing four plates. Three of the plates have additional decoration in the form of impressed designs on the interior edge. Three hand painted thin creamware vessels, represented by 12 sherds, were painted either blue and red, red, and blue. Banded creamware was represented by 9 sherds and included a plate with a blue band near the interior edge, a bowl with a black band on the interior and exterior and one of unknown form with an exterior green band. Pearlware, consisting of 19 sherds, may be related to some of the above vessels, as most are body sherds and cannot, at this early stage of analysis, be determined to be a particular vessel form. Stoneware was represented by two types of sherds, one a hard brown paste, salt-glazed bowl with a bright orange interior and a hard brown paste salt-glazed jug with an unglazed interior. All totalled, the 85 sherds represent at least 19 separate vessels. The eclectic collection of ceramic types and that so many vessels are represented points to individuals not being provided mess kits, and that they brought their own dinnerware. Virtually all of the ceramics appear to be of the Regency period (1810-1830) and none appears to

be of the post-1837 Victorian era.

### Interpretation

The presence of a large number of British service muskets and other ordnance parts from England may initially seem puzzling. The British were selling their surplus muskets, however, to countries which still had use for the obsolete arms. By 1833, British Ordnance had 440,000 India Pattern arms of which 176,000 were still serviceable, but by then, this was no longer the standard arm. It was being replaced with a model that had a 42" barrel (Koury 1973: 8). Research into the question concerning when the Republic of Mexico bought the British surplus and the number of arms acquired has not been productive. Nevertheless, the muskets were purchased and the lockplate re-marked with the Mexican Eagle between the cock and the pan. By late 1839, there were more than 600 refurbished Mexican arms at the Armory in Houston (Gilbert 1971: 198). According to Koury, "As late, then, as 1839, the Texas army was still being armed with weapons left over from, or captured during the Texas Revolution. Many Americans coming to Texas to fight Mexicans were armed with Mexico's own weapons. This also means that India Pattern Brown Bess muskets found in Texas could well be Army of the Republic of Texas arms (1973: 9). The two lockplates with brass pans serve to narrow the date of occupation to not before 1818 and perhaps to the year 1839. The discarding of the gun parts may be associated with a fire which apparently took place at the site. The uncontrolled heat of a fire would have rendered the springs, the frizzen and other critical parts unserviceable. Some of the smaller parts were removed, but parts on these guns were individually fitted and hence, would not interchange without re-fitting.

The sample of glassware found at the site does not lend itself to dating. Little can presently be said about the glass other than it appears to have been made before the middle of the 19th-Century and it consists of a few bottles. The ceramics, on the other hand, are a small but outstanding sample of early 19th-Century types which excludes the ironstone sherds which are everpresent in Anglo or Euroamerican sites after 1840. In addition, the sample of 85 sherds represents at least 19 different specimens. When viewed as a collection, the ceramics offer little to detract from the date already established by the firearms. All support a date starting in the 1820's terminating by the early 1840's.

### Conclusions

The site of West San Bernard Station, or a portion of the site, has been discovered. The location of the post, vaguely known, has been established by ground truth and supported by correspondence from the Post during the period of occupancy. The correspondence indicates that at the time it was written, there was no construction or structure there that would be recognized at present.

The extraordinary collection of artifacts, both in ordnance and ceramics deserves thorough analysis. The metal artifacts should be cleaned, analysed and preserved. Incorrect assumptions as a result of this hasty inspection should be rejected.

The site itself is worthy of a great deal of further investigation. Sites such as this are rare in the annals of Texas history and even more in the archeological record. As such, it merits recognition. The site should be appropriately marked and entered into the National Register of Historic Places as an important historic site in Texas history, with a state

level of significance. Any support that can be given to the Wharton County Historical Commission, through the site's finder and patron, Mr. Joe D. Hudgins, would prove a worthwhile investment.

References Cited

- Anderson, Texas and Mike Johnston  
1980 Map of Historic Site 41WH16.
- Anderson, Thomas P.  
1838 Letter to Ashbel Smith. Ashbel Smith Papers: Letters 1836-1839. Archives and Manuscript Unit, Barker Texas History Center. The University of Texas at Austin.
- Gilbert, Randal B .  
1971 Arms for the Revolution and the Republic. Military History of Texas and the Southwest 9(3):191-214. Austin.
- Koury, Michael J.  
1973 Arms for Texas. The Old Army Press. Fort Collins.
- Metropolitan Museum of Art  
1971 Early Firearms of Great Britain and Ireland from the Collection of Clay P. Bedford. New York Graphic Society. Greenwich.
- Peterson, Harold L. and Richard Kimball Sprague  
1954 Brown Bess, the Standard Arm. American Rifleman 102(4): 20-22. National Rifle Association. Washington, D.C.
- Pierce, Gerald S.  
1969 Texas Under Arms. The Encino Press. Austin.
- Tanner, Hans, ed.  
1972 Collector's Catalog. Guns of the World 152-254. Peter-  
sen Publishing Company. Los Angeles.

Ceramic Notes published by the Florida State Museum (University of Florida) is a new publication of interest to anthropologists and archeologists who deal with pottery in their research. Ceramic Notes No. 1 (93 pages) is currently available for distribution at \$8.00 per copy. Address orders for this annotated bibliography of ceramic studies to:

Dr. Prudence M. Rice  
Ceramic Technology Laboratory  
Dept. of Anthropology  
Florida State Museum  
Gainesville, Florida 32611

Amateur Contributions to Archeology in Southeastern Texas

L. W. Patterson

Introduction

It has been recognized for some time that amateurs, as well as professionals, make major contributions to North American archeology. The extent of amateur contributions to this field of study is seldom documented, however. It seems desirable to give a current summary of amateur contributions to the archeology of southeastern Texas, as an example of the importance of the work of serious amateur archeologists in the United States. An attempt will be made here to do this in fairly specific terms, rather than using broad general statements that have little meaning.

The Houston Archeological Society

The focal point of archeology in southeastern Texas has been and continues to be the Houston Archeological Society, which is composed mainly of serious amateurs. This society was started in 1959, and currently has a membership of 154 amateurs and 9 professionals. The efforts of the HAS and its individual members have accounted for most of the amateur contributions to the archeology of southeastern Texas. The monthly meetings of this society serve to coordinate the various activities of serious amateur archeologists in this region. Some of the formal activities sponsored by the HAS include field surveys, excavations, and public education programs. An extensive library of regional archeological publications is maintained by the HAS. An active publication program by the HAS will be discussed in more detail. None of the active programs of this society are administrated by professionals. Activities of the HAS cover both historic and prehistoric archeology, and some research on historic records.

Field Surveys and Excavations

Each year, amateurs account for a significant portion of new archeological site discovery and reporting in the United States, including southeastern Texas. The roll of amateur archeologists in cultural resource survey activities has become more important because of the recent laws and regulations for the protection of cultural resources. Recent regulations and resulting funding have focused the major portion of activities by professional archeologists on work relating to public lands. This means that archeological activities on private lands are now mainly the provence of the amateur archeologist, almost by default (Patterson 1980a, 1981). In many states, such as Texas, where a major portion of the lands are under private ownership, a high percentage of potential cultural resources are under consideration mainly by amateur archeologists. I have previously commented (Patterson 1979, 1980b) on the need for more uniform regional archeological surveys. This work now appears to be possible only if the resources of amateur archeology are fully developed.

Over the last twenty years, several members of the Houston Archeological Society have officially recorded a large number of archeological sites for the state records of the Texas Archeological Research Laboratory. There are at least 3 HAS members who have each recorded over 50 prehistoric sites, such as W. L. McClure's survey of White Oak Bayou. Most of the available data for the

earlier prehistoric periods in southeastern Texas have been obtained by amateur archeologists. Survey activities of members of the Houston Archeological Society cover a region larger than the area of the State of Connecticut. Many of the field surveys done by HAS members are of a higher quality than could have been done by professionals, because amateurs can devote long time periods to the survey of specific areas, where the usual rapid surveys by professionals would locate fewer sites and recover fewer diagnostic artifacts.

Archeological excavations are important for obtaining more detailed data and in defining chronological sequences. The HAS performs several excavation projects each year for more extensive testing of archeological sites. Site 41HR315 in Harris County (Patterson 1980c) is a good example of a successful excavation project by a large number of HAS members. The HAS has also furnished high quality manpower to assist in surveys and excavations conducted by professional archeologists. Some examples of this are Livingston Reservoir (McClurkan 1968) and the Mitchell Ridge Site on Galveston Island (Burger 1974). In addition, expert amateur archeologists have acted as area consultants for professional activities in southeastern Texas.

Wharton County furnishes a good example of contributions by amateurs to the archeology of southeastern Texas. The archeology of this county would be virtually unknown, except for the work here by serious amateurs. The field survey work by Joe Hudgins and subsequent work by the HAS has produced a significant literature on the prehistory of this county.

The HAS is involved in field projects covering both historic and prehistoric sites. In addition, some HAS members such as Richard Gregg, are involved in research on historic records for this region.

### Publication

Archeological information is of complete value only when it is publically available. Amateur archeologists have made a major contribution to the literature on the prehistory of southeastern Texas. Of the 310 publications listed in the latest bibliography of the upper Texas coast (Patterson 1982), 45% were done by amateurs, 50% by professionals, and 5% by others, such as newspapers and related sciences.

The Houston Archeological Society has published a periodic journal since 1959, which has been under the editorship of Alan Duke for the last 20 years. Three separate detailed reports of archeological excavations have also been published by the HAS (Aten 1967, Hole, et al. 1974, Patterson 1980c), two of which furnished financial support for publication by professionals. The quality of publications by the HAS can be compared favorably with the quality of publications in any local region of the United States.

### Funding Considerations

Amateur archeologists make significant contributions to archeological research in terms of funding and manpower (Patterson 1981), at no cost to government agencies or the taxpayer. This is very important because of the limited public funding available for general archeological research. The bulk

of public funding currently available is mainly for preservation of cultural resources on public lands.

Amateur archeologists provide all of their own expenses for activities is field surveys, excavations, public education, and publication. For the HAS, amateur contributions amount to several thousand manhours and several thousand dollars per year. It should also be noted that journals funded mainly by amateurs provide considerable support for publication by professionals.

#### Other HAS Activities

Aside from research, HAS members participate in a number of other activities that benefit archeology in general. The HAS has sponsored a number of public exhibits and lectures covering both prehistoric and historic archeology. High school and college students have attended HAS field activities, to obtain direct learning experiences in archeology.

Various members of the HAS provide support to the Texas Archeological Society, in terms of funding, publication, and administrative personnel for the TAS and the TAS annual field school. The HAS has twice hosted the TAS annual meeting, and once hosted the TAS field school; in addition to continuing participation in TAS activities at other locations. The touring exhibit prepared for the TAS by Pam Wheat and Texas Anderson of the HAS has enjoyed considerable success in a variety of public displays.

#### Summary

This article has summarized the range of contributions to archeology being made by amateurs in southeastern Texas. The Houston Archeological Society is a key factor in these activities. The successes of serious amateur archeologists are mainly the result of the initiative of the amateur archeologists themselves, as little outside support is available. The understanding of man's past in southeastern Texas over the last 12,000 years has increased rapidly in recent years, and much of this increase in knowledge is due to the contributions of serious amateur archeologists. Increases in knowledge of the archeology of southeastern Texas will continue to be dependent on activities of amateurs in this region.

#### References

Aten, L.E.

1967 Excavations at the Jameson Site, Liberty Co., Texas. Houston Archeological Society, Report No. 1

Burger, B.

1974 Status of Work at 41GV66. Houston Archeological Society Newsletter 47:9-10

Hole, F; M.J. O'Brien and B. Hole

1974 Archeological Investigations along Armand Bayou, Harris Co., Texas. Houston Archeological Society, Report No. 2

McClurkan, B.

1968 Livingston Reservoir, 1965-66: Late Archaic and Neo-American Occupations. Texas Archeological Salvage Project, Paper No. 12

Patterson, L.W.

- 1979 Archeological Surveys and Settlement Patterns on the Upper Texas Coast. Houston Archeological Society Newsletter 65:2-8
- 1980a Failures in Environmental Law in the Preservation of Cultural Resources. American Society for Conservation Archaeology Newsletter 7:2-4
- 1980b Regional Research Planning on the Texas Coast. Houston Archeological Society Newsletter 68:1-4
- 1980c The Owen Site, 41HR315:A Long Occupation Sequence in Harris County, Texas. Houston Archeological Society, Report No. 3
- 1981 Funding and Efficiency Considerations in Archeology. Man in the Northeast 21:139-142, reprinted in Ohio Archaeologist 32(2):18-19, 1982
- 1982 Bibliography of the Prehistory of the Upper Texas Coast, No. 5. Houston Archeological Society, special publication

### Editor's Comments

In addition to the surveys and excavations listed by Lee Patterson in his article, amateur members of the HAS have directed and participated in surveys and/or excavations at Wallisville, Armand's Bayou, Jamaica Beach (Galveston), Allens Creek, Mill Creek, Boy's School Site, Houston Ship Channel area, and many others.

It is encouraging to note that more credit is being given in print to the amateur archeologists. Recently, in Volume III of the Corps of Engineers Interim Feasibility Report and Environmental Impact Statement on the Texas City Channel, the statements are made that "amateur archeologists were active (in the Galveston Bay region) during the 1950's and contributed information on the numerous sites in the region" and "This increase in activity and interest resulted in the formation of the Houston Archeological Society. Through this group, amateur archeologists have contributed significantly to the field".

We received an accolade also from the Southern Texas Archaeological Association in an editorial written by James Mitchell in the April 1982 issue of La Tierra. He referred to the Wallisville and Allens Creek projects and stated "These kinds of involvements by the Houston Archeological Society in key projects in their area of the state reflect the kinds of actions and activities where avocational groups can make significant and lasting contributions to the archeology of Texas".

It is interesting to note the reactions and comments of Earthwatch professionals who direct the work of amateurs who volunteer for work on various scientific projects, including archeological surveys and excavations, around the world. The comments include "Frankly we couldn't have done the work without them". "These volunteers do just as well, perhaps even better than some undergraduate and graduate students. They have enthusiasm and an eagerness to learn and to help". Also, "Sometimes they provide a fresh insight to certain studies by saying, 'Hey, why not try it this way?' "

ARD

Notched Freshwater Clam ShellsEugene E. Ochsner

On Page four of the JOURNAL of the Houston Archeological Society (Number 74, December 1982) under the heading "Shell Artifacts", subtitle Freshwater, mention is made that about 30% of the freshwater mussel shell fragments found on Site 41WH8 had been "notched", and the reason for such notching was unclear. I wish to offer the following comments regarding the notching of mussel shells:

Notched mussel shells found on many of the Fort Ancient Culture sites in the Ohio River valley and tributaries were ignored by collectors for years until their presence and possible use was documented by Ralph J. Servey of Portsmouth, Ohio (1). Servey postulated the notched shells were used to strip unwanted vegetable material from bast fibers in the manufacture of material suitable to be used for threads for weaving cloth. (Note: this author also believes the bast was twisted into cord suitable for fish lines). Many tall annual plants, such as nettles and giant ragweed, after they had been gathered and allowed to soak in water to rot the vegetable matter, can be easily stripped of the unwanted material, leaving long fibers. Servey reported that the width of the cuts at the edge of the shell ranged from 1/8" to 1/4" and the depth of the notches from as little as 1/2" to as much as 1-1/2". (In this authors collection of notched shells most are only about 1/2" deep). Mr. Servey's article appeared in the Ohio Archaeologist and subsequently other articles appeared on the subject: Peter S. Sindell, of Harvard University reported on similar notched shells recovered from excavations in Europe and the Eastern Mediterranean area. (2). Jane West reported on notched shells recovered from a site in Kentucky, along the Ohio River (3). Of interest, in addition to the notched shells four flint flakes having identical notches were found on the same site.

Subsequently, other reports appeared, one by Harold W. Mohrman in which he states he had found many of such notched shells on sites along the Mississippi River in Illinois and on the Tennessee River near Decatur, Alabama. (4). Another report by Richard P. Patterson of Marietta, Ohio documents the finding of many notched shells on a Fort Ancient Culture site near Marietta (5).

To my knowledge, notched shells are never found in association with a burial, all have been surface finds or mixed in with discarded refuse. Personal experiments illustrate the notches work very well in removing unwanted material to produce clean, long fibers suitable for twisting into twine, the shell being held in the right hand with the outer surface of the shell nestled in ones palm. The material to be scraped clean of vegetable matter is introduced into the notch and one or two passes through the slot is enough to produce clean fibers. The right thumb is used to provide guidance and slight pressure during the operation.

- References:
1. Ohio Archaeologist Vol. 11, No. 1 Jan. 1961, Pg. 30  
Notched Shells from Ohio Valley Fort Ancient Sites  
Ralph J. Servey, Portsmouth, Ohio
  2. Ibid. Vol. 11 No. 3 Jul. 1961 - Pg. 86  
Notched Shells from the European Neolithic  
Peter S. Sindell, Harvard University, Cambridge, Mass.
  3. Ibid. Vol. 11 No. 4 Oct. 1961 Pg. 129  
Notched Shell From a Kentucky Site  
Jane West, Wurtland, Kentucky

4. Ibid. Vol. 12 Nos. 1-2 Jan.-April 1962 Pg. 50  
Notched Shells in Illinois and Alabama  
Harold W. Mohrman, St. Louis MO.
5. Ibid. Vol. 12 Nos. 3-4 Jul.-Oct. 1962 Pg. 98  
Notched Mussel Shells From a Site at Marietta, Ohio  
Richard P. Patterson, Marietta, Ohio

WORD ABOUT T.A.S.

Jim Word

Several years ago I attended the spring meeting of a local archeological society in the Panhandle. I made my usual pitch to the members to tell them the benefits of TAS (Texas Archeological Society). These include 1) getting the Bulletin which is a highly rated journal; 2) receiving the Newsletter quarterly; and 3) being eligible to attend the summer field school and the annual meeting held each fall.

The program at the meeting was a presentation by a local member. It was the typical program describing the artifacts the speaker had found such as projectile points, pot sherds, objects of shell, and glass and turquoise beads. After the meeting as we were being treated to coffee and cookies, I approached the speaker and asked him to join the TAS. He replied that he knew all about the archeology of his county (which in a way was correct). I asked him how he could understand the archeology of his immediate area without learning about the origins of pottery, cherts and other non-local products and how they got there. He scratched his head and I could tell by the look in his eyes that he had never given these things any thought. I pointed out that although he was probably more knowledgeable than anyone about his area, it would be interesting to learn how foreign objects might have gotten into his area. Did the local people trade out of their area or did other people come into the area with their trade wares? I asked him if he could reconstruct the life-ways during the various time periods represented by the artifacts he used in his presentation. I suggested again that he join TAS, attend the annual meeting, and participate in field school. He wrote out a check for the annual dues and I filled in the application for him.

At the next field school, he arrived with his wife and camping gear. I introduced him to fellow campers and soon he was a part of the TAS "family". I suggested that, since this was his first field school, he participate in a variety of activities including surveying and recording sites, excavating, and working in the lab sorting and cataloguing cultural material. About midway through the field school, I asked him how things were going. He said, "You know, even though this area is some distance from my county, I can see some similarity with my area. Do you suppose the people from my county got down this far or did these people trade with my people?" I said, "What do you think?" He scratched his head and said, "It's beginning to look to me that my county is not an isolated area and that there was an interaction between the people in the South Plains area and the people from other areas. I guess the Indians did not know of county and state boundaries."

At the fall TAS annual meeting my new friend was there visiting with the people he had met at field school and was joining in on discussions around a table in the patio where we were headquartered. He attended every paper that was presented and I could tell that he was absorbing all he could. After that night's banquet, my wife and I invited him and other friends to a party in our room. It wasn't long until he was participating in heated discussions with our other guests.

Why am I telling you this story? For one thing, I have been told that some of you members of the Houston Archeological Society do not belong to the TAS. Some of you may be "arm chair" archeologists. Some of you may feel that you know it all and that the TAS has nothing to offer. Some of you may be experts in many ways, but learning opportunities are limited unless you are exposed to the whole spectrum of archeology.

In my opening paragraph I briefly outlined the benefits of TAS membership, but there are less obvious benefits. An important aspect of the activities provided by the TAS is the fellowship that develops while working on sites of state and national importance. You will soon discover that everyone is an equal. People from all walks of life and degree of education, such as bank presidents, farmers, school teachers, corporation executives and university professors, are peers. There is no caste system. Your field school friends will share their knowledge and skills in order to help you with your problems. They value your knowledge of your area of interest. It all boils down to one thing - you become an important member of the "TAS family."

The organization of the TAS is relatively simple. The President is the leader and guides the Society on a course to achieve its goals. The President Elect is in one respect a vice president, but principally his position provides the opportunity to learn the functions and responsibilities of the presidency and to provide a needed continuity. The Secretary-Treasurer is responsible for handling the finances of the Society. Through his records he can advise the president and the board on financial situations and if changes are needed to handle the obligations of the Society. The Directors are the "watchdogs" of the Society. Their critical examination of the operation of the TAS is most important in accomplishing the goals and purpose of the TAS. From a local stand point, the Regional Vice Presidents are the most important members of the Board. Their responsibility is to represent the TAS in their regions. They are the local contacts. They have the responsibility of encouraging people to join, to provide programs for local societies, and to help organize local societies. The Regional Vice Presidents are the connecting link between the TAS and the people of their areas. At directors' meetings they can present the problems and needs of their area.

I hope you will see that there are many benefits in becoming a member in the Texas Archeological Society. I hope you will join and become a member of the "TAS family."



THE TEXAS ARCHEOLOGICAL SOCIETY  
Center for Archaeological Research  
The University of Texas at San Antonio  
San Antonio, Texas 78285

1983 Dues are now payable

- \$ 15.00 Regular Membership
- \$ 20.00 Family (Husband, wife, dependents)
- \$ 10.00 Student (H.S., Coll. Univ, actively pursuing diploma or degree)
- \$ 30.00 Contributing Membership
- \$ 300.00 Life Membership
- \$ 15.00 Societies and Institutional

ARCHEOLOGY IN THE OIL AND GAS INDUSTRIES

Leland W. Patterson

Introduction

Environmental regulations have caused the oil and gas industries to do a large number of cultural resource studies over the past 10 years, and work of this type continues at a significant level. While many contract archeologists now have experience in this type of work, and have performed satisfactory studies, the general literature still does not reflect the exact nature of requirements for archeological work in this area. The oil and gas industries contain a variety of operations, and requirements for archeological work vary accordingly.

Probably because most contract archeologists come from an academic background, much of the literature on contract archeology is of a theoretical nature, with great emphasis placed on research designs. The literature on practical applications in contract archeology is not well developed, or particularly oriented to the exact nature of regulatory requirements imposed on industry. One of the major problems with theoretical comments on contract archeology is that there is little relation to how planning, design, and construction are really done for new projects. Many client difficulties with contract archeologists and regulatory agencies result simply because the scope of work and project schedules are not fully understood by all parties involved.

I (Patterson 1980) have previously commented that environmental laws and regulations are aimed at the conservation of cultural resources, which does not necessarily involve specific problem oriented research, unless mitigation measures are required. The primary goal of cultural resource studies for industry is the avoidance of damage to existing significant cultural resources. Mitigation of damage to cultural resources, such as by archeological excavations, is a less preferred route by both regulatory agencies and industry. The oil and gas industries have generally adopted the strategy of avoidance of cultural resources, where practically possible.

There are few staff archeologists employed by oil and gas companies. This is because the need for cultural resource studies is not constant, and because there is a need to retain third party credibility by use of outside consultants. It is imperative that contract archeologists understand client requirements in relation to specific government regulations and specific project execution plans. By definition, contract archeologists do not have the broad freedom of action that is present in pure research. Contract archeologists are hired to apply their best professional judgment to the problems presented by the client.

The oil and gas industries interface with a large number of state and federal regulatory agencies, such as the EPA, BLM, USGS, U.S. Forest Service, state historic preservation agencies, etc. Contract archeologists must address the specific requirements of each agency involved. There can be considerable variation in regulations between different government agencies, even when regulations are promulgated under a single basic law.

Onshore Oil and Gas Production

Onshore exploration and production for oil and gas is characterized by the use of large numbers of small land tracts. Each site is occupied by a well or a small size oil gathering and storage area. Due to the scattered

nature and small size of these sites, few cultural resources are potentially impacted by the development of production fields, even of large overall size. Occasionally, a well site is moved prior to development to avoid an archeological site, but generally well pad archeological surveys are not very productive. Also, individual well pad surveys are not cost effective, as each survey of a small tract often involves a separate trip and report by a contract archeologist.

One way to improve the efficiency of archeological surveys for oil and gas operations is by the use of large block surveys. Tenneco has done this in the Custer National Grasslands, which is administrated by the U.S. Forest Service. Survey of a large block of land in a single visit is more cost effective, and drilling crews are given more flexibility in field operations. If critical areas are determined for a large block, drilling crews are then free to operate on all remaining land without delays for further surveys. In some areas, early surveys of large land blocks also helps prevent seasonal delays, where archeological studies could not be done well in the winter, but drilling activities could proceed.

Reliable predictive models could also aid in performing more efficient cultural resource management for oil and gas operations. There are many regions that contain areas with low potential for having significant cultural resources. Archeological survey work in areas of low potential could be minimized if reliable predictive models were available.

There is sometimes a financial problem in doing large block surveys or predictive models. This is due to the fact that more than one company may be involved in work on a large land area. A cooperative effort might be required between several companies to develop more efficient cultural resource management methods.

### Offshore Oil and Gas Production

Offshore oil and gas operations are controlled by the USGS for the Outer Continental Shelf (OCS), which is generally beyond the three mile limit from shore. Operations in inner waters are generally controlled by the states. The highest potential for historic shipwrecks is in the more shallow state waters. However, the USGS also requires the consideration of cultural resources on the OCS.

Offshore surveys to obtain data for both construction design and possible historic shipwrecks is done by remote sensing devices, such as side-scan sonar, magnetometers, and subsurface seismic profilers. Divers sometimes directly inspect questionable areas. More often than not, direct viewing of the ocean floor is blocked by mud and/or suspended sediments. Because of the construction design strategy used by industry, potential shipwreck areas are seldom impacted by offshore oil and gas operations. This strategy is simply to avoid all significant anomalies that are detected, which may or may not have any relationship to significant cultural resources. If potential underwater cultural resources are avoided, industry has met all legal requirements regarding the protection of these resources (Dept. of Interior 1980:598).

New regulations for Texas state controlled waters recognize that industry usually avoids significant underwater anomalies. These regulations minimize specific underwater archeological studies when normal industry construction practices are rigorously followed. Texas also has a predictive model, based on actual survey work, which identifies areas with high potential for containing historic shipwrecks. Although Texas regulations

minimize underwater archeological studies by industry, records from remote sensing instruments are still made available to the State Archeologist whenever requested for further study.

There has been recent interest in the potential for locating underwater prehistoric sites on the continental shelves, such as the symposium on this subject at the SAA 1980 annual meeting. Some predictive studies have been made (Gagliano, et.al. 1977, Roberts 1979), but there have been few actual discoveries. It would be especially difficult to locate underwater prehistoric sites in the deeper waters of the Outer Continental Shelf (Patterson 1981). Few discoveries of offshore prehistoric sites are likely with presently available detection methods, and environmental regulations cannot adequately address this vague subject area.

The oil and gas industries in general do not see the need for requirements to do cultural resource studies on the OCS. Many millions of dollars have been spent to-date on this subject (Jackson 1979) without significant results. My impression is that industry does not oppose expenditures for cultural resource studies in areas of high potential value, but does oppose continuing expenditures in areas of low potential value. A well known marine archeologist, George Bass (personal communication), feels that cultural resource studies by the offshore oil and gas industries have provided little data to-date of value for research, despite significant expenditures.

While on the subject of underwater archeology, it can be noted that the number of qualified marine archeologists is very limited. There are some individuals who represent themselves as marine archeologists, but whose qualifications in this field are questionable.

### The Shale Oil Industry

A new industry is developing to produce major amounts of hydrocarbon products from natural oil shale deposits. Two general process schemes are involved. In one scheme, oil shale is surface mined and then thermally retorted to produce product oils. In the other scheme, in-situ thermal retorting is done, using deep shaft mining, with raw shale produced in developing underground retorts brought to the surface for separate processing. In the first process, land is disturbed by surface mining, plant construction, and waste shale disposal. The second modified in-situ process results in similar land disturbance, except that there is no surface mining and a lower volume of waste shale disposal on the surface.

Major shale oil projects under development in the U.S. are located on both private lands and lands administered by the BLM in western Colorado. In general, environmental impact studies are required for development on federal lands, including archeological studies. Avoidance of cultural resources is more difficult in this type of project, because of large surface area requirements. However, prehistoric site densities may not be great either, at least from the experience on the C<sub>b</sub> tract.

### Coal Gasification

While the coal industry is being covered separately in this symposium, some comments can be given here on coal conversion projects. Several major energy companies are planning coal gasification and liquifaction projects, generally located near coal sources. A coal gasification (SNG) plant resembles a large oil refining operation in size and complexity. The main product is methane, for use as a supplement to natural gas supplies. A

coal liquifaction plant is similar in scope, and produces liquid hydrocarbon products which supplement conventional petroleum based products. Land requirements for each project will be in the order of 1,000 acres, not including coal mining activities.

Environmental impact studies will be required for major coal conversion projects, including archeological studies.

Some of these projects will have associated water reservoir projects, which will require additional archeological studies. If reservoir projects make use of natural drainage systems, the potential for impacting archeological resources may increase, depending on specific locations utilized.

### Pipelines

Large pipeline systems are normally associated with the oil and gas industry for transportation of natural gas, crude oil and petroleum products. I (Patterson n.d.) have commented in some detail on archeological considerations connected with pipeline construction in a separate paper. One of the main characteristics of pipeline construction is that significant cultural resources can usually be avoided if locations are known during design. This emphasizes the need for good early survey work to avoid subsequent project delays and unnecessary expenses.

Pipeline work is executed in three phases, consisting of planning, design and construction. Environmental impact studies are made and public utilities permits are obtained during the planning phase. Acquisition of land has usually not been made at this time, so much of the pipeline right-of-way is not available for access to make archeological surveys. Therefore, plans must be formulated to do more detailed surveys during the second phase of pipeline design. These plans are incorporated in the environmental impact study, along with studies of known cultural resources that could be affected.

During the pipeline design phase, any required detailed archeological surveys are completed, along with any required mitigation efforts, so that pipeline construction will not be delayed. Then, during pipeline construction little further consideration need be given to cultural resources, unless something new is discovered during construction. A contingency plan is used during the pipeline construction phase to cover any unexpected discoveries. However, pipeline trenching machinery moves rapidly, and delays are costly, so the best protection for cultural resources is adequate surveys before construction. It should also be noted that pipeline rights-of-way disrupt relatively narrow corridors of land, and potential damage to large cultural resource sites is limited even when accidental damage occurs to previously undiscovered sites during construction.

### Comments on Methodology

Several key points can be made regarding successful completion of archeological studies for industrial projects. From the standpoint of the industrial project manager, timing is generally the most important consideration. Project delays can be very expensive, and should be avoided. The following are important considerations for adequate execution of contract archeological studies:

1. Early formulation of work plans
2. Adequate project definition, including schedules
3. Early consultation with regulatory agencies

4. Proper consultant selection
5. Adequate work contract terms
6. Proper phasing of work to meet schedules

Many problems in contract archeology result simply from the failure to have adequate communications between the client, the consultant, and regulatory agencies. The client cannot expect to hire a consultant archeologist and then have no further responsibilities in the administration of the work. On the other hand, the consultant must meet the specific regulatory requirements of the client, and not perform unnecessary generalized research not related to the specific project.

Although the principal strategy of the Oil and Gas industries is avoidance of damage to cultural resources, there are occasions when mitigation actions must be taken. The question is generally related to how much work should be done, and this is subject to negotiation on each specific project. If all parties involved can agree on a reasonable scope for mitigation work, problems can be minimized. However, this is not always possible, since each party involved has vested interests to support. Industry seeks to minimize costs and avoid time delays. Contract archeologists seek to maximize their profits. State archeologists seek maximum data collection and protection of cultural resources. There are times when an independent arbitrator is needed to resolve what is a reasonable scope for mitigation work. The Interagency Archeological Services has performed this role in the past on some projects. Hopefully, there will be some group in the new National Park Service organization that can serve this need for arbitration in the future, wherever federal environmental regulations are involved.

One major problem with contract archeology related to industrial projects is that few industrial project managers have the background to properly interface with and administer archeological consultants. This can lead to unnecessary administrative problems, higher costs and unwarranted project delays. It can also lead to abuses from unethical contract archeologists, who seek to perform more work than can be justified, because the industrial project manager is not knowledgeable enough to adequately control the work scope. In one recent example at a large synfuels plant site, a contract archeological group saturated the site with test pits, even though none of the test pits indicated the existence of any cultural resources. This was a costly, unjustified sampling strategy.

There have been several examples of oil and gas projects where changes in archeological consultants were required because of poor performances by the initial consultants. I am familiar with one case where superficial work by the initial contract archeologist could not withstand litigation from an environmentalist group that was seeking to stop an energy project for a variety of reasons. In another example, an oil well project was delayed because the initial consultant stated that an important Paleoindian site would be damaged. A second consultant could find no justification for the original finding.

A number of highly qualified contract archeology organizations are now available to the oil and gas industries. Selection of archeological consultants must still be made on a very careful basis, however, as many unqualified contract archeologists are still seeking work. One example of unqualified people is from universities, where graduate students and faculty members seek to obtain additional income from contract archeology, without developing proper qualifications to perform the work.

Summary

Intensified development in the oil and gas industries, including fuels, has created a number of opportunities for contract archeologists. At the same time, a challenge is presented to the contract archeologist to do work that is satisfactory to both clients and regulatory agencies. Efficient archeological work methods can minimize costs to industry, and thus to the ultimate consumer, while still giving adequate protection to existing cultural resources.

References

Department of the Interior

1980 Clarification of Authorities and Responsibilities for Identifying and Protecting Cultural Resources on the Outer Continental Shelf, Decisions of the Department of the Interior, pp. 593-601

Gagliano, S.M., et. al.

1977 Cultural Resource Evaluation of the Northern Gulf of Mexico Continental Shelf, Vol. 1: Prehistoric Cultural Resource Potential, prepared for Interagency Archeological Services by Coastal Environments, Inc.

Jackson, J.R.

1979 Comparison Between the Environmental and Cultural Impacts of Petroleum Operations with other Historic Users of the Outer Continental Shelf. Exxon public letter, Houston, April 23

Patterson, L.W.

1980 Research Deficiencies in Contract Archeology under Environmental Laws. American Society for Conservation Archaeology Newsletter 6(6):9-15

1981 OCS Prehistoric Site Discovery Difficulties. Journal of Field Archaeology 8:231-232

n.d. Cultural Resource Considerations for Pipeline Construction, in press in Contract Abstracts and CRM Archeology

Roberts, M.E.

1979 Summary and Analysis of Cultural Resource Information on the Continental Shelf from the Bay of Fundy to Cape Hatteras. Cambridge, prepared for the U.S. Department of the Interior, Bureau of Land Management

This paper was presented at the 1982 ASCA symposium on Industry and Archaeology. Patterson's paper gives us a comprehensive insight into the procedures followed by many enlightened companies in preserving archeological sites.

In the Houston area and in the state of Texas where an oil and gas economy exists, it is important that the public knows that the environment is being protected while necessary industrial objectives are met.

ARD

Index - Journal No. 75 - April 1983

<u>Page</u>	<u>Title</u>	<u>Author</u>
1	Scottsbluff Point - Site 41WH19	Joe Hudgins and L. W. Patterson
2	A Review of 1982 Programs	Pam Wheat
3-4	HAS Field Activities During Calendar Year 1982	Sheldon M. Kindall
4	Index HAS Journals No. 68-75	
5-10	Cultural Property Assessment of West Bernard Station	Alton Briggs
11-14	Amateur Contributions to Archeology in Southeastern Texas	L. W. Patterson
15-16	Notched Freshwater Clam Shells	E. E. Ochsner
16-17	Word About T.A.S.	Jim Word
18-23	Archeology In The Oil and Gas Industries	L. W. Patterson
24	Index - Journal No. 75 - Society Organization	

Houston Archeological Society, P. O. Box 6751, Houston, Texas 77005

<u>Dues</u>	<u>Officers 1982-83</u>
Single/Family - \$15.00	<u>Chairman</u> - Pam Wheat, 1901 Bolsover, Houston, Texas 77005 - 523-8048
Contributing - \$20.00 & above	<u>Sec.-Treas.</u> - Jean Clark, 519 W. Main #3, Houston, Texas 77006 - 523-5287
Student (Under 18) - \$4.50	<u>Directors</u> - Joe Hudgins, Charles Magan, Rod McIntosh
<u>Meeting Date</u>	
2nd Friday of each month - 7:30 P.M. Houston Museum of Natural Science	

HAS Journal Editor - Alan R. Duke  
1706 Oaks Drive  
Pasadena, Texas 77502 - 472-2954