COSO CERAMICS CACHE: SOURCING AND DATING UTILITY WARE

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Following an archaeological survey, site-recording activities conducted at CNL-S-14 by Epsilon Systems Solutions, Inc., in mid-November of 2010 resulted in the recovery of 10 large ceramic sherds. All sherds were situated within a naturally sheltered alcove of a basalt outcrop that may be representative of a caching episode, or an instance where a single pot was broken and discarded. This somewhat unusual find with most of a pot present allowed for analysis and reconstruction, the results of which are discussed here.

SITE LOCATION

CNL-S-14 is located within the confines of the Naval Air Weapons Station at China Lake in the pinyon-juniper uplands common to the Coso mountain range of eastern California. The site itself is fairly small, covering approximately 0.5 acre (1,892 m^2).

TEMPORAL COMPONENT

Given this relatively recent ceramic encounter, time has not permitted exhaustive chronometric analyses. To date, a single temporal identification is known for this pottery. Results obtained from construction, finishing technique, and morphological analyses suggest that the pot was produced in the latter end of the Marana period (650 B.P.-Historic era) (Pierce 2011a).

SITE MAP

Though volcanic outcrops occur throughout the project area and the Coso range in general, CNL-S-14 remains the only site Epsilon Systems has encountered with such large ceramic pieces recovered together in a sheltered location. An additional 14 ceramic sherds were located within 20 m of the sheltered ceramic location, all of which are considerably smaller in comparison to those identified within the basalt flow. The site area also contains a midden feature just outside of the sheltered ceramic location, three outcrop milling slicks, and four outcrop mortars. A 25 cm^2 test probe was placed in the eastern extent of the site where deposition would allow. The test probe proved negative and was terminated after two levels, both of which were sterile.

DEBITAGE

Field staff conducted a technological analysis of all debitage observed on the surface at this site. This analysis encompassed 100 percent of the flaked-stone assemblage (n = 22) at CNL-S-14, inclusive of one cortical flake (5 percent), six simple interior flakes (27 percent), two complex interior flakes (9 percent), one early biface thinning flake (5 percent), four simple fragment flakes (18 percent), four complex fragment flakes (18 percent), and four pieces of shatter (18 percent). Due to an absence of tools, though, no temporal or cultural affiliation was discerned from the lithic assemblage.

Table 1. Metrics and sherd attributes from the pottery locus at CNL-S-14.

Cat. #	Context	Type	Count	Max. Length (mm)	Thick-ness (mm)	Rim Shape	Burning	Repair	Munsell Color	Max. Inclusion (mm)
14-4	near cache	body	4	52.0	5.4	-	interior	-	7.5YR 4/3	1.0
14-5	cache	rim	1	114.1	5.4	direct	interior	-	7.5YR 4.5/3	1.2
14-6	cache	basal body	1	180.0	4.7	-	interior/ exterior	-	7.5YR 4/2	1.7
14-7	cache	rim	1	152.0	5.6	direct	-	drilled	7.5YR 4/3	6.5
14-8-1	cache	body	1	67.0	4.9	-	-	-	7.5YR 5/3	0.7
14-8-2	cache	body	1	36.9	5.2	-	interior	-	7.5YR 4.5/3	0.8
14-9	cache	basal body	1	109.6	5.3	-	-	-	7.5YR 5/3	2.1
14-10	cache	body	1	90.3	5.3	-	interior	-	7.5YR 5/3	1.0
14-11	cache	rim	1	128.4	5.8	direct	interior	drilled	7.5YR 5/4	5.7
14-12	cache	body	1	158.0	5.4	-	interior	drilled	7.5YR 5/3	0.8
14-13	cache	body	1	123.1	5.3	-	interior/ exterior	-	7.5YR 4/2	1.6

CERAMIC SHERDS

A total of 24 ceramic sherds were collected from a single distinct locus and the general site. The distinct locus contained 10 large sherds recovered together in a sheltered basalt outcrop. All 10 sherds recovered from this locus belong to the same vessel and account for the majority of the pot, although portions of the base and body were missing. The remaining 14 considerably smaller sherds were located on the site surface, within approximately 20 m of the sheltered locus. Interestingly, four of the 14 sherds from the general site belong to the vessel from the sheltered locus. The remaining 10 sherds from the general site do not appear to belong to the sheltered locus pot and may represent at least one other vessel.

CERAMIC ATTRIBUTE ANALYSIS METHODS

Ceramic analysis was performed by Wendy Pierce of Pierce Archaeological Consulting (Table 1). Pierce's (2011a) individual sherd analysis included identification of form (body, base, or rim), as well as rim and base shape when permitted. Measurements were made of the maximum thickness, taken arbitrarily from the midpoint, and maximum length, taken regardless of orientation. The largest inclusion present in each sherd was measured in millimeters and used to characterize the paste. Any decoration, repair, reworking, carbonized residues, and sooting or fire-blackening were noted for each sherd as well. Vessel orifice diameter and height were measured to the nearest half-centimeter on the refitted standing vessel. Surface attributes were described for the vessel as a whole. Distinctive traits observed during Pierce's (2011a) analysis were attributable to the vessel's well-preserved, very fine surface features, which were present on much of the vessel. Pierce (2011a) notes that many sherds exhibited little to no surface alteration, which facilitated a detailed description of surface finishing techniques, including burnish marks.

FORM

Fourteen sherds refit to account for most of a single brown ware vessel (Figure 1). This vessel falls within the metric range for conical pots, a shape which may be better described as a flower pot or truncated cone that can stand on its own. Pierce (2011a) describes this vessel as an undecorated specimen of utilitarian brown ware, which is often identified as Owens Valley Brown Ware or Great Basin

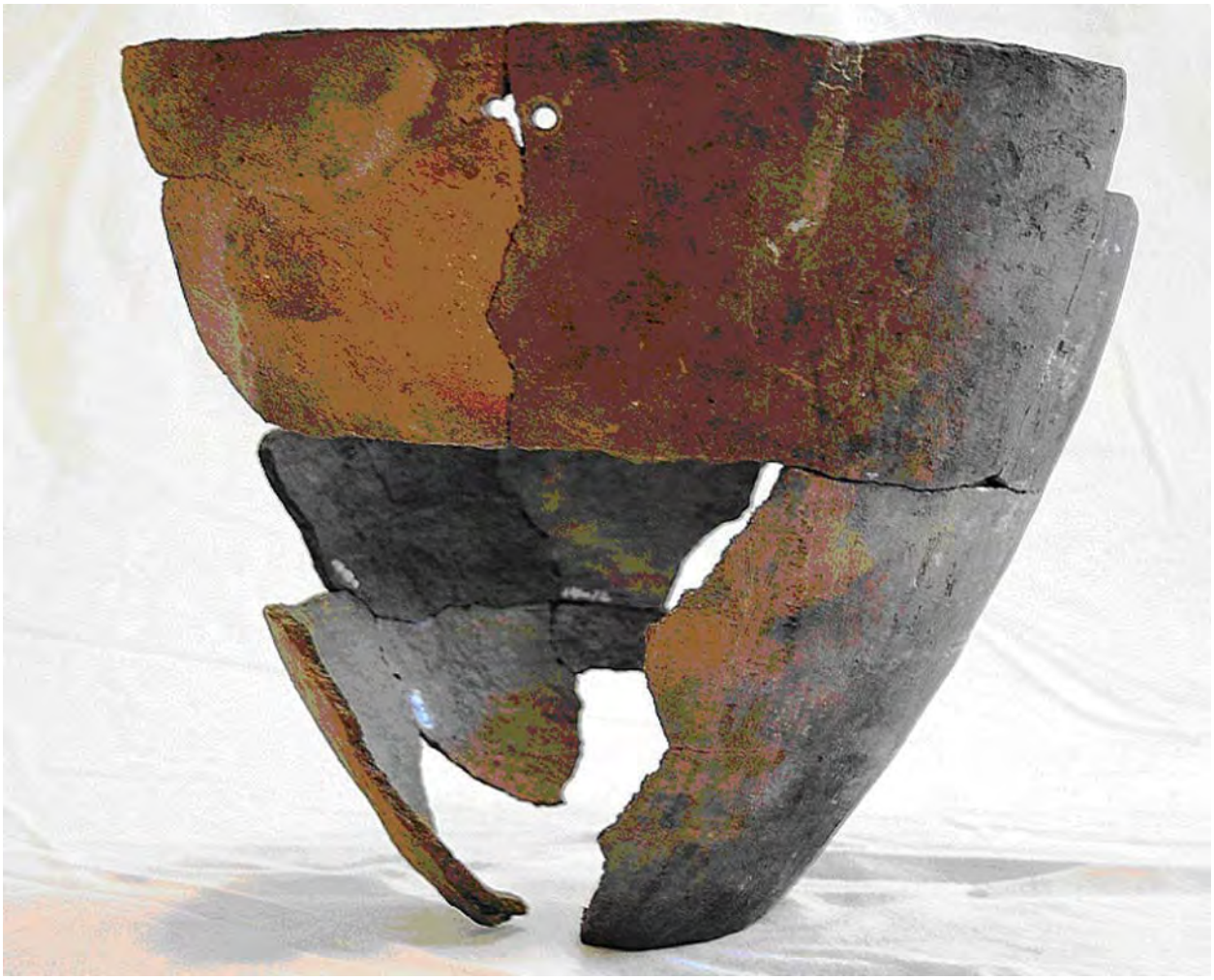

Figure 1. Reconstructed pot (Pierce 2011a).

Brown Ware. The vessel measures 23 cm tall and exhibits a direct rim with an orifice diameter of 27.5 cm. While the base was not recovered, the bottom of the pot includes the primary coil (Figure 2), which Pierce (2011a) suggests was probably hand-molded. It is estimated that the base was flat to slightly rounded in form and measured 7.5 cm in diameter (Pierce 2011a). If the base were present, vessel height is estimated to increase by approximately 1 cm. Overall, Pierce (2011a) notes the basal diameter and height-to-orifice ratio conform with the average of measured whole and nearly complete conical pots, which makes this a fairly typical specimen with regards to size and shape.

CONSTRUCTION

The body of the vessel was constructed by coiling, as is evident from coil junctions that remain visible in some broken edges (Pierce 2011a). Cracks and breakage are common along the coil junctures. The clay orientation visible in broken edges slants upwards on the exterior of the pot and downward on the interior. Wall thickness is fairly uniform, with only slight undulations. In general, walls are thinnest at the very edge of the rim and thickest where the base meets the bottom. Thickness varies throughout the vessel, but walls average 5.3 mm thick. Paste contains the occasional larger rock fragment, but generally consists of fine particulate constituents. One such large rock fragment is split and present in two sherds (6.5 mm and 5.7 mm respectively), but excluding these, the average inclusion measures 1.2 mm.

Figure 2. Close-up of basal coil.

FINISHING

Overall, the exterior of the pot is smooth, and a direct result of wet-smoothing actions. Vertical drag marks on the exterior of the pot, not obliterated by wet-smoothing, indicate that the pot was finished with an upward scraping motion. Evidence of interior scraping was not present, but these traces may have been obliterated by burnishing or attrition. Burnishing marks (Figure 3) made while the clay was slightly wet appear on both the interior and exterior, and appear to have been made by a small, smooth stone (Pierce 2011a). Interior burnishing marks are prominent and overlapping, running first horizontally, but are overprinted by marks running diagonally. Conversely, exterior burnishing marks are vertically oriented and most visible near the base. These exterior basal burnishing marks are obvious, but go almost unnoticed on the body, which indicates that the body was much drier than the base when those marks were made (Pierce 2011a).

The Yokuts and Western Mono of the Sierra Nevada range were reported by Gayton (1929) to burnish their pots with a smooth piece of steatite after formation and before firing, which left visible horizontal or oblique marks on the exterior of the pot. No description of interior treatment was made by Gayton (1929), but Pierce (2011a) notes that the current vessel had been finished in a similar manner, but with horizontal strokes on the interior and vertical on the exterior. Based on this similarity, Pierce (2011a) suggests that a Sierran provenance is not out of the question for this vessel.

REPAIR

Drilled sherds are commonly thought to reflect efforts to extend the use life of a vessel. Often referred to as crack-sewing, these repair efforts are performed by drilling a hole on each side of a crack and then tightly sewing the holes together with fiber or sinew. Three drill holes are present in the

Figure 3. Interior burnish marks.

recovered portion of this vessel, although no fiber or sinew remains. All three holes have been drilled unidirectionally from the exterior. Two of these holes (Figure 4) are adjacent to each other and span a crack with a large rock fragment, which may have caused the vessel to fail at this location (Pierce 2011a). The remaining drill hole is located at the top of a body sherd near the rim, in a similar position to the other two holes. Based on these holes, Pierce (2011a) concludes that the pot cracked in two separate places and was repaired successfully at least once.

POSTDEPOSITIONAL PROCESSES

Ceramic alteration from postdepositional processes is commonplace, and the current ceramics are no exception. Even though the majority of the vessel was located in a fairly well-sheltered area, signs of weathering are evident on some pieces, while not on others. These preservation differences are most readily identifiable with respect to surface attrition, color change, and the presence of sooting and carbonized residues on pieces that refit (Figure 4). Pierce (2011a) identifies the best examples of this as refit specimens 14-11 and 14-7. Sherd 14-11 is heavily sooted and contains carbonized residues, while sherd 14-7 is completely devoid of such features and exhibits a much lighter interior color. Given these stark contrasts, Pierce (2011a) cautions against negating interpretation of a vessel's cooking function based on an absence of sooting and carbonized residue.

FLOTATION

In an effort to recover carbonized botanical remains that may be associated with this pot, individual sherds were subjected to water flotation. Flotation analysis was performed by Pierce (2011b) and made possible as a result of soils adhering to the sherds. Light fraction consisted predominantly of

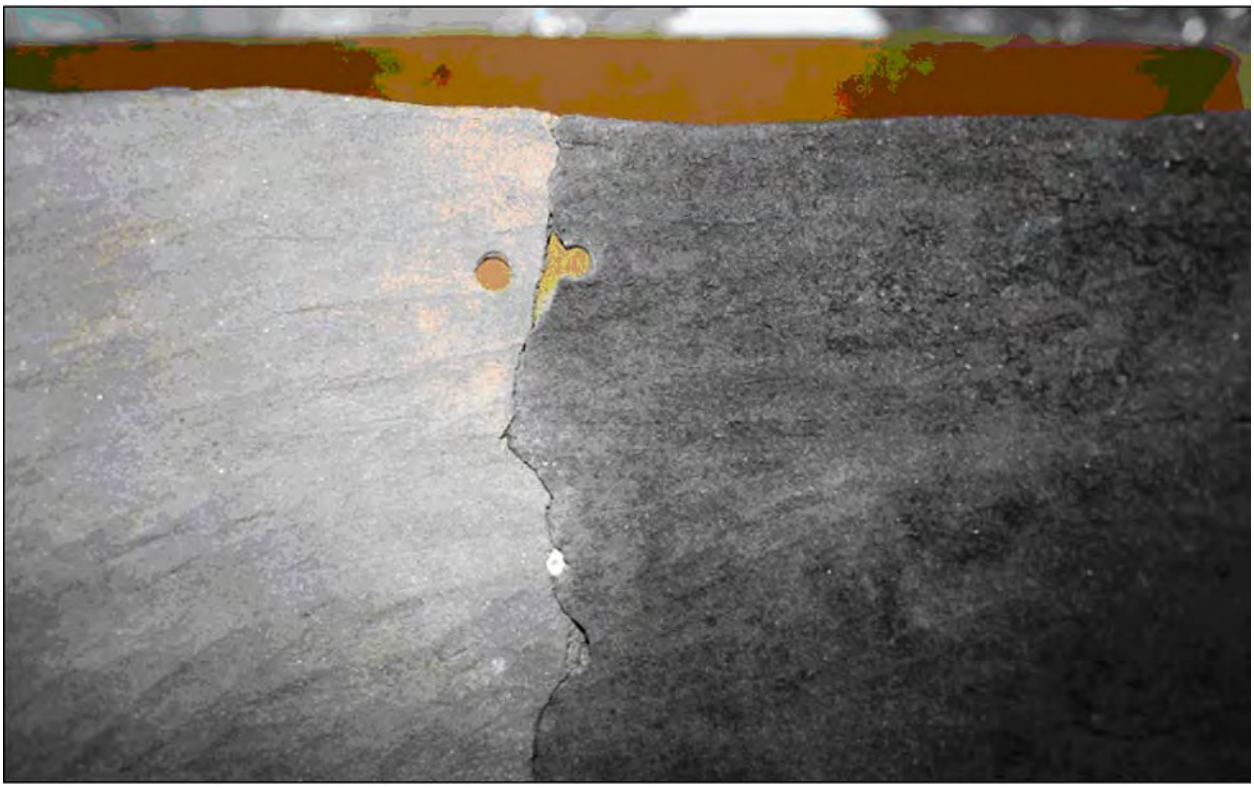

Figure 4. Drilled sherds and differential preservation.

rodent droppings, modern pinyon nutshell fragments, and other botanical remains. Small amounts of residue detached from the sherds during this process and were present in both the heavy and light fractions. Low densities of carbonized plant remains were present and included wood charcoal, some carbonized pinyon nutshell fragments, and possible bitterbrush seed fragments. Pierce (2011b) notes that pinyon nutshell and bitterbrush seeds are not dietary constituents that would have been cooked in pottery. Pine nuts were eaten of course, but the nutshells were not, and their presence along with bitterbrush seeds may represent items that were burned along with wood as fuel or as a result of the postdepositional rodent presence.

CONCLUSIONS

Based on wall thickness, repair, and geographic location, Pierce (2011a) concludes that this vessel dates to the terminal Marana period (200 B.P.-Historic era) of the late prehistoric. The vessel reported here is consistent with other vessels from the western Great Basin in manufacture. Including archaeological and ethnographic specimens, Eerkens (2001) reported that 53 whole and nearly complete ceramic vessels are known from the western Great Basin. Of these 53, six are known to be from the Coso-China Lake area, making this pot a unique find. Pierce (2011a) describes three of these previously reported vessels (Eerkens 2001) as conical, a count which can be increased with the addition of the current vessel.

Previous research by Pierce (2004, 2011c) in the region has revealed that the lower the pottery density, the higher the incidence of drill holes, and the greater the occurrence of vessels constructed from nonlocal clay sources. Based on these characteristics, Pierce (2004, 2011c) concluded that vessels from upland locations may have been transported fairly far from their origin of manufacture. The current vessel, recovered from an upland setting and containing evidence of at least two repair attempts, is no exception.

Ultimately, this vessel was either discarded or left in the outcrop for future use, but whichever the case, it serves as an important example of ceramic technology during the late Prehistoric period of the region.

FURTHER RESEARCH

This vessel is an ideal specimen for four additional analyses. Foremost among these further research efforts is Instrument Neutron Activation Analysis (INAA), which can be used to chemically characterize the vessel's clay and compare it to a regional dataset from the western Great Basin and northern Mojave Desert. If chemical signature results match any of the dataset, further insight into the vessel's provenance will be revealed.

The second additional research to be performed includes petrographic analysis of thin sections, which allows identification of human modification and the specific geologic composition of the paste and tempering agent. Petrographic analysis is particularly useful when chemical characterization results from INAA do not match any signatures for the existing dataset.

Third, Accelerator Mass Spectrometry (AMS) will be used to date the carbonized residues recovered during flotation.

Finally, in addition to AMS dating of residues, palynological analyses will examine residues for microscopic plant remains such as phytoliths and pollen, which may provide insight into the vessel's particular uses.

Combined, these further research efforts, along with the morphological description presented here, will provide a nearly complete picture of the vessel's use life, extending from construction to deposition.

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