THE 2006 KILN FIRING DEMONSTRATION
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On June 10, 2006, William A. Lucius of the Institute for Archaeological Ceramic Research (IACR) and Dorde Woodruff, representing the Leupp Kiln Conference, accepted an invitation by Winston Hurst and by extension the Utah Bureau of Land Management, to demonstrate a replica Black-on-white trench kiln firing on the occasion of the 100th anniversary of the Antiquities Act. The event took place at the Edge of the Cedars Museum in Blanding, Utah. Various folks dropped by to observe, comment or just enjoy the firing—although watching a fire burn was definitely less interesting than the various Pueblo dances, which we also managed to find time to watch. Thanks to Winston for thinking of us, and to Dorde's daughter Lisa Stickrod and Irene Lopez Wessell for help with the demonstration and for taking photos.

We hoped for perfect firing weather; although it was pleasantly cool the winds quickly came up and continued throughout the day and into the night with gusty, swirling winds. Lacking the option to postpone the demonstration, we went ahead. We began by excavating a small, shallow rectangular trench into the hard packed soil, and lined the edges with upright sandstone slabs provided by Winston for that purpose. We didn't have enough slabs to line the bottom of the trench.

With the pit finished and the heat shield in place (to protect the pyrometer from the extreme heat generated by the fire), we piled on a substantial amount of juniper branches also provided by Winston, and set them on fire. This preheating fire serves to dry out the trench, to drive trapped moisture out of the sandstone slabs (several exploded due to water trapped in concretions), to preheat the pots, and to create a thick layer of charcoal (approximately 6 inches deep) in the bottom of the trench. In order to evenly heat the pots, they were regularly rotated while the preheating fire gradually burned down.

When the preheating fire had burned down to coals we added small sandstone slabs on top of the charcoal to serve as kiln furniture, platforms on which to place the vessels. The slabs are critical since they isolate the pots from direct contact with the hot coals. From experience we know that placing pots directly on the coals results in explosive destruction from rapid steam formation. The jar forms were place onto the slabs mouth up and then covered with the inverted bowl forms to create a tight arrangement of pots within the slab-lined trench.

Following the firing model demonstrated by potter Rick St. John during our Leupp Kiln Conference over Labor Day, 2006, we used the tops of the upright slabs to support an open cribwork of long interlaced juniper branches. We raised the framework to just below waist high and then allowed the pottery to continue to absorb heat from the charcoal base for approximately an hour. This critical water-smoking period serves to drive any remaining water out of the vessel walls slowly.

With the assistance of some of the bystanders, we started an ancillary fire adjacent to the main trench and laid six or so longish branches across it in order to ignite the centers. When they were ablaze we carefully lifted them across the cribbing with the burning centers positioned over the stacked pots below. This action created an updraft, which pulled the hot air from the coals up through the pots. As the branches burned through, their weight pulled the unburned ends down, preventing them from falling onto the fragile pots and instead formed a simple tent structure that only dropped small embers into the firing chamber. As the fire grew, more and more branches were added to the cribbing until the pit was covered by a raging inferno of flames.

In all, the amount of fuel used in the firing was considerable, and we would have used more if any more were available. When the fire had burned down to white ash, the mouths of several vessels began appearing, so we shoveled some spare coals over them and then went back to watching the Zuni dances, with the announcement that we would return the next morning to open up the trench.

The next morning we were greeted with the sight of extensive white ash with occasional exposed pottery mouths and vessel walls. It was readily apparent that the overnight wind gusts had kept the embers burning, resulting in oxidation observable as light orange blushes on exposed vessels. Indeed, the exposed sandstone slabs of the kiln were distinctly orange from the oxidation.

We began a slow, methodical unloading of the kiln, following the practice of merely lifting the pots out of the pit onto the still quite warm ash, allowing them to cool slowly, all the while discussing the firing successes and failures. Despite the unwanted oxidation, the firing was generally successful and apparently quite hot (the pyrometer probe was incorrectly placed into the coals so we had no record of the heat rise). Examination of the pottery revealed that most were well fired. One bowl constructed with local white clay was fired extremely hard, and despite a crack in the rim rang with a sound indicative of full maturation of the clay body. The carbon painted pots revealed a rich, glossy black paint under the fine covering of ash that results from the incineration of the beeweed paint. Dorde's manganese paint came out powdery, and one of her iron-painted pots came out quite black on one side.

In contrast to previous kiln firings with high vessel breakage rates, only one vessel (a large bowl) suffered from steam explosions, due to a sudden gust of wind when the main firing had just begun. We did note a number of cracks, usually extending vertically down from the vessel rim, a fault that may be due in part by the wide range of body clays represented in the firing. Similarly, some vessels suffered from spalling, and in every case that was examined a small air bubble trapped within the vessel wall was the instigator. Vigorous kneading and use of a wire cutter may aid in air pocket removal but the association of this fault with commercially prepare clays suggests that they may be inappropriate for this type of pit firing.

In summary, a lot of folks wandered by to watch the firing and we fired a lot of pots. We came close to successfully firing Black-on-white replicas in a pit kiln. Although we could have done without the demon wind, we learned more about how to make and fire pots.

This report as well reports of previous kiln conferences and miscellaneous submissions are available at our MSN Groups page http://groups.msn.com/LeuppKilnConference