

FINAL REPORT, FACULTY RESEARCH PROJECT

***SALT AND SODA KILN CONSTRUCTION***

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## **B. Restatement of Problem Researched**

This research project involved the construction of a 30 cubic ft. salt/soda kiln to be used by both faculty and art students for the purpose of firing ceramic artworks. The works fired in this unique kiln will exhibit a much richer surface quality than those fired in the kilns we currently have at our disposal. A salt/soda firing differentiates itself from a standard gas kiln firing by the process of adding salt and soda through a port located in front of the gas burners at approximately 2000 degrees Fahrenheit. The salt and soda is vaporized and as a vapor it attaches itself to the glazed or bare surface of the clay rendering an orange peel texture and varied serendipitous surface markings created by the volatile atmosphere.

## **C Brief Review of Research Procedure**

Two of my advanced ceramic students and myself constructed the kiln, utilizing bricks donated by Acme Brick of Clarksville. The students gained valuable insight and hands on experience in kiln building during the process. The main structure was completed in late April 2009 and the burner system and gas line plumbing was installed in early May 2009. Two firings of student wares were completed soon afterwards.

## **D. Summary of findings**

During the initial firing of the kiln we became aware of difficulties reaching the desired temperatures needed to complete the firing. The problem we encountered was due to the type of hard brick used in construction that was needed to withstand the caustic effects of salt vapor on the internal structure of the kiln. This brick is denser than typical soft brick or fiber lining therefore requires increased BTU's to attain stoneware temperatures. We took several measures to correct this problem. Orifices on the burner systems were resized to help increase gas flow. Gas pressure was increased at the meter and finally where possible the cold face surfaces of the kiln were replaced with soft insulating firebrick and fiber fax.

## **E. Conclusions and recommendations**

On the second firing we were able to attain desired temperatures but I still feel the burner systems on the kiln needs to be upgraded in the future. The burner system that the kiln is using is one that I have provided from my personal fiber kiln. We did not have enough financial resources to purchase or build two new burners after shelving and other supplies had been purchased. It is my intent to seek additional funding for new burners in the near future.

As mentioned in the proposal, I am currently on sabbatical and in the process of creating both sculptural and functional works to be fired in the new kiln. My show of new works is scheduled to be shown in the Norman Hall Art Gallery in early January 2010.



A.T. U. Art Dept. Salt Kiln