

RAMTECH LABORATORIES, INC.

14104 ORANGE AVENUE, PARAMOUNT, CALIFORNIA 90723 • TELEPHONE (213) 633-4824

SUBJECT: TEST PROCEDURE FOR TWO HOUR FIRE TEST ON
5' X 5' PROTOTYPE NONLOAD BEARING WALL ASSEMBLIES

Prepared For:

Lundeen Coatings Corp.
2701 East Chapman Ave.
Fullerton, California 92631

Mr. Ken Toy

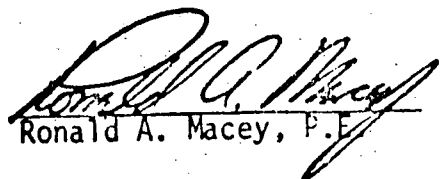
REVISION NUMBER: 1

RAMTECH, PROCEDURE NO. 1143-79

RAMTECH, LABORATORY NO. 5319-79

Prepared By:

RAMTECH LABORATORIES, INC.


Ronald A. Macey, P.E.

January 31, 1980

ENGINEERING • MATERIAL TESTING

1.0 PURPOSE

- 1.1 This procedure describes the design and assembly of a prototype test of walls similar to the walls constructed at the San Onofre Nuclear Generating Station.
- 1.2 This procedure describes the method by which the walls are to be constructed, utilizing the procedures defined herein to provide approximately a 2 hour fire barrier.
- 1.3 This procedure describes the fire test method for the verification of the fire rating of the walls.

2.0 GENERAL

- 2.1 The fire test shall be performed at Ramtech Laboratories, Inc.
- 2.2 Testing may be witnessed by representatives of the following organizations.
 - 2.2.1 Southern California Edison Company
 - 2.2.2 Bechtel Power Corporation
 - 2.2.3 Nuclear Regulatory Commission
- 2.3 Upon completion of testing a report shall be prepared and copies of the report forwarded to Southern California Edison Company and Bechtel Power Corporation within 3 weeks from date of test.

2.0 GENERAL (continued)

- 2.4 A test assembly shall be constructed by Lundeen Coating Corporation. The dimension of the assembly shall be five feet by five feet.
- 2.5 The wall will be installed in the test opening by Ramtech Laboratories, Inc.
- 2.6 Walls shall be representative of the typical installations at the San Onofre Nuclear Generating Station.
- 2.7 Walls shall be constructed as indicated in Bechtel bill of material No. S023-103-1A, Revision 0 dated November 30, 1979.
- 2.8 The fabrication of the test walls shall be inspected by Ramtech Laboratories, Inc. in accordance with the design criteria set forth in this procedure and the Ramtech inspection report form. (Attached)

3.0 DESIGN

- 3.1 The fire testing shall be performed in accordance with this procedure on a test furnace assembly with approximately a 4' x 4' opening. (Sketch of test furnace is attached.)
- 3.2 Walls shall be constructed utilizing the methods of Bechtel bill of material No. S023-103-1A, Revision 0 dated November 30, 1979. This procedure is attached hereto and becomes part of the fire test procedure.

4.0 TESTING

4.1 The wall assemblies shall be subjected to a maximum of a two hour fire exposure on the horizontal test furnace at Ramtech Laboratories.

4.1.1 The fire exposure shall follow the standard time-temperature Curve of ASTM E119-78 which is outlined as follows:

5 Min.	1000°F.
10 Min.	1300°F.
30 Min.	1550°F.
1 Hr.	1700°F.
2 Hrs.	1850°F.

4.1.2 Temperature measurement will be made on the unexposed surface at (6) six locations, and the furnace temperature will also be monitored at (6) six locations. The furnace temperature probes will be located six inches from the face of the exposed surface. The temperature reading will be taken throughout the test at intervals not exceeding five minutes or in accordance with the ASTM E119-78 requirements, which allows 15 minute intervals on the unexposed surface.

4.1.3 The hose stream test shall be made immediately following the expiration of the fire endurance test. The hose water pressure shall be 30 psi and the duration of water application shall not be less than 45 seconds to one minute maximum.

4.0 TESTING (continued)

4.1.4 The testing shall be terminated at two hours or when any flame through occurs.

5.0 RESULTS

- 5.1 Furnace temperature and individual wall surface temperature records shall be reviewed to determine the performance of the wall during the exposure.
- 5.2 The cotton waste test as described by ASTM E-119-78 shall not be a part of this test procedure.
- 5.3 The failure of any one part of the various items included in this test procedure shall not be construed as failure of the entire test per ASTM E-119-78.

Field Inspection Data

Re: Proto-type Wall Sections
for Fire Testing
Lundeen Coatings/Bechtel Corp.
Lab No. 5319-79

The three panels whose fabrication is described herein are intended to duplicate wall sections proposed for retro-fit at the San Onofre Nuclear Generating Station, in 2-hour fire resistant service. They were fabricated at the Fontana yard of Lundeen Coatings in accordance with the direction provided by Bechtel Drawing No. SO 23-103-1A, 30 Nov, 1979.

On 21 December 1979, when fabrication was about three fourths complete, I examined the panels, confirmed dimensions and took samples of the expanded metal lath and of the channel stock used for studs. Fabrication was then completed and I observed the mixing and application of the scratch coat. The bottoms and vertical edges of the specimens were plastered, to retain the light-weight fill that will be injected later, but the top was left open so that this injection process can be observed.

Fabrication and plastering were performed by experienced mechanics, called into the shop by Lundeen from one of their field crews.

The scratch coat consisted of Gold Bond Two-way Gypsum Plaster and vermiculite plaster aggregate. These components were machine mixed in the proportions of 50 lb plaster (one sack) to 20 lb. lightweight aggregate (one sack), together

Field Inspection Data

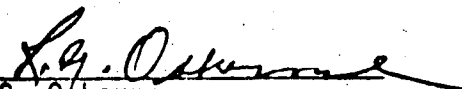
with enough water to give a workable consistency. The plaster was applied by hand with a hawk and trowel.

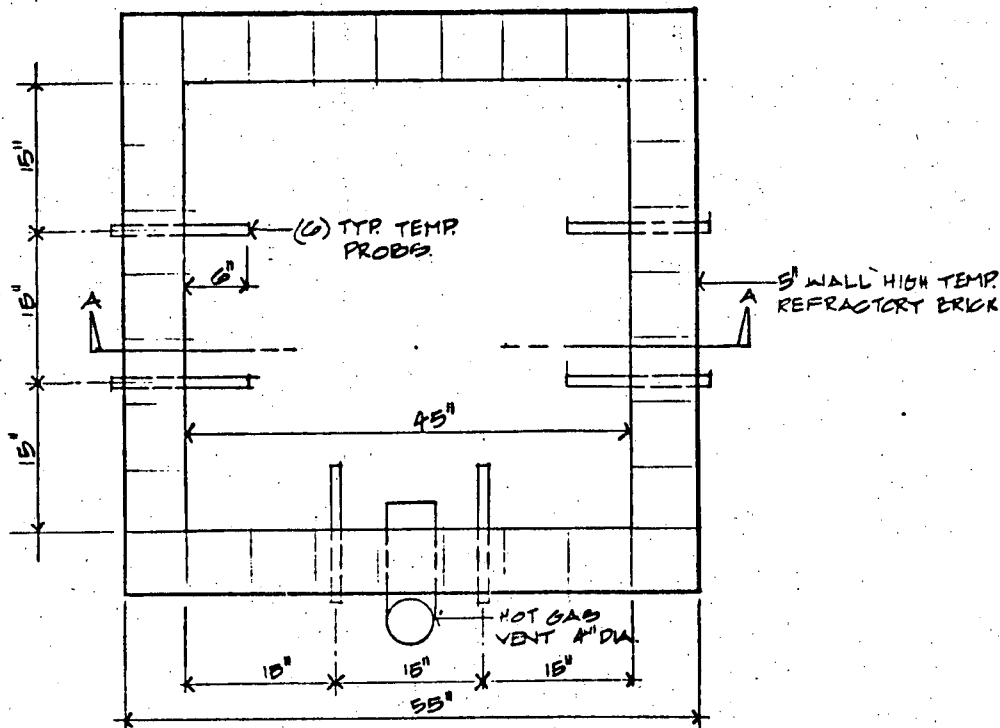
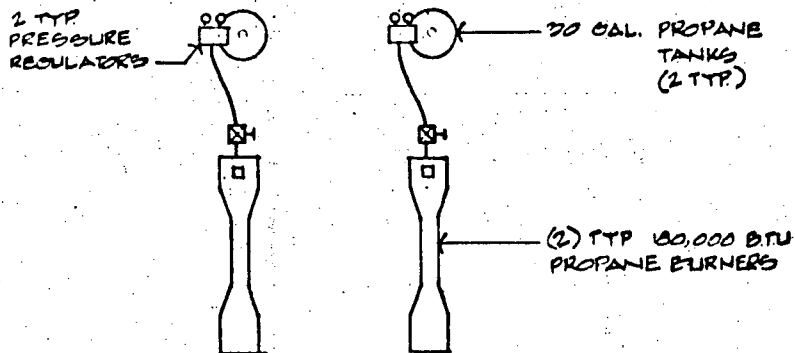
On 27 December the brown coat was applied (by the same plasterer) using the same proportions of plaster and aggregate described above. This coat was held back 1/8-in. from the ground to allow for a finish coat within the nominal thickness.

A set of three 2-in. cubes were taken from each coat (scratch and brown) from which the strength and unit weight can be established. These data will be available when the material has hardened and dried to a constant weight.

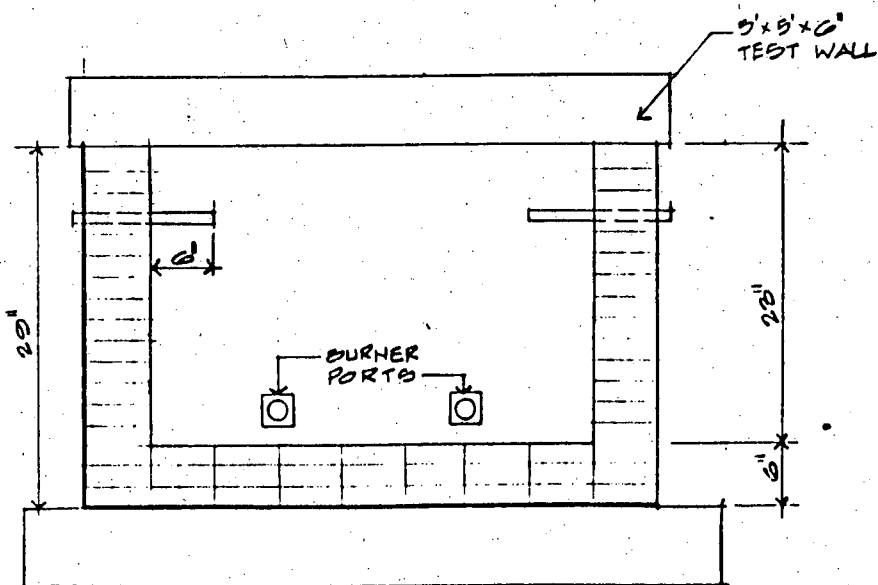
Some photographs were taken showing various stages of completion and these will be available for the final report.

RAMTECH LABORATORIES, INC.


R. G. Osborne



PLAN VIEW



SECTION AA

D x d ASTM E179	
HORIZONTAL TEST FURNACE	
SCALE: NONE	APPROVED BY: <i>[Signature]</i>
DATE: 2-5-50	DRAWN BY: <i>[Signature]</i>
RAMTECH LABORATORIES INC.	
LUNDEEN COATINGS CO.	
DRAWING NUMBER	5379-79