

**Master Builders Inc.**

23700 Chagrin Boulevard  
Cleveland, Ohio 44122-5554  
Phone 216/831-5500



Master Builders Technologies

September 29, 1997

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington DC 20555

Attn. Mr. Joel Monday

**RE: Final Disposition of Masterflow 713 (CMTR) and Embeco 636 (CMTR)  
Grout Nonconformance**

Dear Mr. Monday:

This is to provide you with a summary of the final disposition of Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grout nonconformance reported by Master Builders, Inc. earlier this year.

Please find attached, a letter of notification that will be mailed to the affected nuclear utilities. It summarizes the nature of the reported nonconformance, suspected cause, additional testing/points of relevance, and actions to prevent recurrence.

As mentioned in the letter, the suspected cause of the nonconformance is an incompatibility between key formulation components and the locally available portland cement (Streetsboro, OH) used in the above mentioned products. Further, we have determined that the specific nonconforming behavior is observed only after the Streetsboro, OH formulated products "ages" (shelf-life) for more than 3 months. These problems **DO NOT** exist with the products produced at our Rancho Cucamonga, CA plant from portland cement which is locally available in Southern California.

Additionally, the matter was discussed extensively with representatives from Entergy Operations during a NUPIC audit in March of this year. Unfortunately, these discussions produced no additional insights as to the exact cause of the nonconformance.

In any event, we are issuing the attached letter in an effort to bring this issue to closure. It will be mailed to all utilities originally notified earlier this year.

If you have any questions, or need additional information, please contact John Dorado or myself at 216-831-5500.

Respectfully Yours,

William K. Secre  
Vice President, Research & Development  
Master Builders, Inc.

cc: L. M. Shydrowski, J. P. Boyer, P. Vinocur, B. Violatta, L. Yappel  
B. Smith, T. Coverdale, B. Caine, C. Yerico, R. Wells, J. Dorado

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Date

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Customer

## *Sample*

Attn.

**RE: Final Disposition of Masterflow 713 (CMTR) and Embeco 636 (CMTR)  
Grout Nonconformance**

Dear Customer,

This is to provide you with a summary of the final disposition of Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grout nonconformance reported by Master Builders, Inc. earlier this year.

### Nature of the Observed Nonconformance

As reported by Grand Gulf Nuclear, in November 1996, the following nonconformances were observed during their testing of Masterflow 713 (CMTR) Grout:

- foaming/frothing
- segregation
- shrinkage
- slow setting
- low compressive strength

Material was returned to the Master Builders Streetsboro, Ohio QC Lab for testing. Our preliminary testing confirmed the nonconformances noted by Grand Gulf Nuclear with the exception of the low strengths (1 day compressive strengths of approximately 2,900 psi were obtained from our testing).

In addition, we have tested several bags of material, produced at different points of the year, and have observed the same foaming/frothing and segregation. Similar behavior was also observed for Streetsboro produced Embeco 636 (CMTR) Grout, which is based on the same primary formulation as Masterflow 713 (CMTR) Grout.

### Suspected Cause

The suspected cause of the nonconformance is an incompatibility between key formulation components and the locally available portland cement (Streetsboro, OH) used in the above mentioned products. Further, we have determined that the specific nonconforming behavior is observed only after the Streetsboro, OH formulated products "ages" (shelf-life) for more than 3 months. These problems **DO NOT** exist with the products produced at our Rancho Cucamonga, CA plant from portland cement which is locally available in Southern California.

### Additional Testing/Points of Relevance

Testing to date, has demonstrated that any Masterflow 713 (CMTR) Grout or Embeco 636 (CMTR) Grout that was used within 3 months of the manufacture date is not affected by the suspected shelf-life instability problem. Initially, testing was performed by Grand Gulf Nuclear and subsequently retested by Master Builders on a lot of Masterflow 713 (CMTR) Grout (Lot No. 24-4844-W6) that was less than 3 months old. In both cases, the grout performed as expected (i.e. no signs of foam/froth or segregation). Subsequently, this material has been retested at 3, 4, 5 and 6 months of age. We found that, up to 5 months, the material performed in an acceptable manner. However, the material showed signs of the undesirable behavior at 6 months. Testing of Embeco 636 (CMTR) Grout produced similar results. In any event, the 3 month timeframe is a very conservative estimate.

In addition, we have confirmed through testing that the irregular behavior only occurs in the unhardened state, immediately after mixing. Therefore, material that does not exhibit this behavior (i.e. foaming/frothing, segregation) will perform as expected in the hardened state (i.e. conformance to the requirements of ASTM C1107 and CRD-C621).

Furthermore, we have confirmed that the undesirable behavior occurs only when the grout is mixed to a fluid consistency (20-30 sec. through a flow cone). Suspect grout mixed at flowable, stiff or damp-pack consistencies does not exhibit the behavior, and performs as intended (i.e. no foaming, frothing, segregation; and meeting the requirements of ASTM C1107 and CRD-C621).

#### Actions to Prevent Recurrence

Since the initial report from Grand Gulf Nuclear, Master Builders has discontinued production of Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts at the Streetsboro, OH plant. All orders for Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts have been and will continue to be supplied from our Rancho Cucamonga, CA plant. Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts, produced at this facility, have not exhibited the same undesirable behavior. We are continuing to monitor the shelf-life of Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts produced at Rancho Cucamonga, as a precautionary measure.

In terms of nuclear safety-related orders, we are shipping material from the Rancho Cucamonga, CA plant to the Streetsboro, OH plant (being held at and shipped from the Aurora, OH warehouse). The material is being dedicated for safety-related use by the Streetsboro QC lab, in accordance with Policy 10-*Commercial Grade Dedication of Products*, of the Master Builders QA Manual. Furthermore, we will continue to dedicate Rancho Cucamonga produced Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts in this manner, until the shelf-life issue with Streetsboro, Ohio produced Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts is resolved.

As I mentioned, our plan is to either reformulate Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts, or develop replacement grouts for Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts in order to correct and prevent recurrence of the nonconforming behavior. Until that time, Masterflow 713 (CMTR) and Embeco 636 (CMTR) Grouts, as mentioned above, will only be produced at our Rancho Cucamonga plant, and dedicated per our Policy 10.

I hope that this information is helpful to you. Please review the above information, and contact me, if any additional actions need to be taken. Unless we hear otherwise, we will consider this matter closed.

If you have any questions, or need additional information, please contact me at your earliest convenience at 216-831-5500, extension 2240.

Sincerely,



John Dorado  
Product Manager  
(formerly Quality Control Manager)  
Master Builders, Inc.

cc: B. Caine, G. Culton

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## Mailing List

*\*Final notification will be forwarded to all affected utilities, originally notified, that DID NOT respond.*

- South Carolina Gas & Electric Co.  
P.O. Box 88  
Jenkinsville, SC 29065

Attention: Mr. Thomas Borch - Product Quality

- Bechtel Power Corporation  
(R.E. Ginna Nuclear Station)  
89 East Ave.  
Rochester, NY 14649

Attention: Mr. Dave Fredrickson

- Rochester Gas & Electric Co.  
1503 Lake Rd.  
Ontario, NY 14519

Attention: Mr. Richard Biedenbach, Director, Safety & Health, Nuclear Power

- Public Service Electric & Gas Co.  
965 Chesterbrook Blvd.  
Mail Code 63C-1  
Wayne, PA 19087

Attention: Mr. Bill Bradley, Nuclear Quality Assurancecc: Ms. Cathy Talbert (Buyer)

- Virginia Power Co.  
Innsbrook Technical Center  
5000 Dominion Blvd.  
Glen Allen, VA 23060

Attention: Mr. Jeff Bailey

- Consolidated Edison of New York  
4 Irving Place  
Room 615 S  
New York, NY 10003

Attention: Mr. Arthur Ng, Q.A. Engineer

- Southern Nuclear Operating Co.  
Georgia Power Co. (re: Hatch and Vogtle plants)  
P.O. Box 1295  
Birmingham, AL 35201

Attention: Nuclear Engineering & Licensing Manager  
and Manager - Materials Services

- Georgia Power Co. (re: Vogtle plant)  
Nuclear Operations  
P.O. Box 1600  
Waynesboro, GA, 30830

Attention: General Manager

- Entergy Operations, Inc.  
P.O. Box 31995  
Jackson, MS 39286-1995

Attention: Glenn Griffen

- Consumers Power Co.  
212 West Michigan Ave.  
Jackson, MI 49201

Attention: Ms. Nancy Borton

- New York Power Authority  
James A. Fitzpatrick Nuclear Power Plant  
268 Lake Rd.  
P.O. Box 41  
Lycoming, NY 13093

Attention: Mr. Doug Mullens and Mr. Dan Sullivan

- Baltimore Gas & Electric Co.  
Calvert Cliffs Nuclear Power Plant  
1650 Calvert Cliffs Parkway  
Lusby, MD 20657

Attention: Supervisor, Vendor Audits

- North Atlantic Energy Services  
Seabrook Station  
Box 300  
Seabrook, NH 03874

Attention: B.L. Drawbridge, Executive Director, Nuclear Production  
R.J. DeLoach, Executive Director, Engineering & Licensing  
M.D. Harrington, Material Requirements Department Supervisor

- American Electric Power Co.  
Indiana/Michigan Power Co.  
1 Riverside Plaza  
Columbus, OH 43215

Attn. Manager - Nuclear Safety  
Licensing & Fuels Division

- Florida Power Corporation  
Crystal River Energy Complex  
15760 W. Power Line St.  
Crystal River, FL 34428-6708

Attention: Mr. J. O. Poston, Senior Nuclear Quality Assurance Specialist

<<<< \*Sent for informational purposes only.

