

FROM J. D. BOYCE

TO MEMORANDUM

PITTSBURGH OFFICE - 19

1986 October 07

RE: MINUTES OF MEETING WITH MANVILLE CORP, 1986 OCTOBER 02

The meeting took place in Pittsburgh to discuss technical status, establish direction in our effort to replace Molten Metal Marinite (MMM) and summarize action plans. Attending were:

ALCOA

G. E. Graddy, ATC
J. D. Boyce, Pittsburgh
M. W. Leeper, Pittsburgh
S. D. Pitts, Pittsburgh
E. L. Rooy, Pittsburgh
F. D. White, Tennessee
D. Dunigan, Tennessee
S. T. Davis, Warrick
E. F. Smith, Warrick
J. E. Reynolds, Warrick
W. Lansdale, Warrick

MANVILLE

W. A. Riaski
D. E. Guy
Ward Hobert
Paul White

The meeting opened with a review of the technical meeting held at ATC September 30 in which Ed Graddy indicated action plans and responsibilities. (See G. E. Graddy's letter 1986 October 01).

Chipping of headers in Al/Li continues to be our biggest problem; MMM is still the best product for this application. Discussed "Sander Dust" (that which is collected from Manville's sanding unit) and its application to new MetALform boards. Noting that this by-product contains some SiC particles, all agreed that this should not be detrimental in the making of new boards.

Apex Machine (Evansville) now has a bigger machine which now can support the entire board during machining operations.

Discussed coating of boards with some other materials to prevent oil absorption and subsequent coking. Alcoa prefers incorporating materials in the formulation vs. coating.

Warrick presented information on machining, handling, casting performance and concerns. Noted that:

- MMM has approximately 10% rejects prior to casting
- MetALform has approximately 30%!
- MetALform absorbs more water than MMM



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- MetALform fails as a feedboard
- MetALform reacts more quickly to failure than MMM because of oil absorption and lower strength
- MetALform failure prior to casting has been reduced in stages from 67% to 50% to 30%.
- Header clamping has again been improved, by a factor of 4, while we continue to review mold design, oil ring changes and clamping.

Modes of failure and average mold life were reviewed and handed out to all.

Tennessee reviewed R-680 mold life history at their plant. They also noted that they have had problems with MMM for years when trying to store it under tension in fabricated headers.

Manville said their target density of MetALforms is 44PCF ± 2 . They are now conducting a press capability study prior to instituting SPC control charting; noted that Manville's press gages show variations in pressing of 1,000 psi.

Manville presented graphs showing board density vs. conductivity with spirited discussions around the implications of this information.

We then launched into a discussion of SPC.

Paul White told us they've begun training of hourly people now with full Denver and plant support. Main concerns are to:

- Bring the operation into statistical control
- Monitor the operation to prevent defects
- Understand the capability of the operation
- Search for continuing improvement

Primary initial focus is raw materials and press operation. Showed data on lime bag weights. While control limits are not yet established, 50 LB. nominal bag weight is coming down from 58 to approximately 52+. We agree that this is critical as is press operation.

Reviewed other forms (some old). Lively discussion continued about pinpointing a few important areas initially and making better use (SPC) of recorded data. Discussed W. Lansdale's reporting "failure data" in Pareto analysis form vs. spread sheet to allow better utilization of data by all.

Based on present production, MMM inventory is in the range of 17 months stock. All agreed that this is not excessive and that circumstances can considerably alter this inventory.

E. Rooy closed the meeting emphasizing that HDC is "alive and well", viable and vitally important. We're desperately concerned about finding substitutes in both alithilite and HDC.

SUMMARY OF ACTION PLANS

Manville

- o Monthly letter from W. Hobert on progress/activities on substitute products (particularly for alithilite).
- o Develop, produce (in their Lab) and ship 10 new products for ATC to test - by 1987 January 31.
- o Produce and ship production quantity of MetALform board using sander dust by early 1987 February.
- o Continued accelerated emphasis on SPC (P. White and D. Guy)

Alcoa

- o Refine data format of Warrick testing to allow quicker, more easily understandable analysis of failures (W. Lansdale and D. Pitts).
- o Reinstate internal Alcoa monthly conference calls between plants, Pittsburgh and ATC (E. Rooy, starting 1986 October).
- o Summarize Alcoa conference calls and review results with W. Hobert (J. D. Boyce, et al).
- o Test, evaluate and review results of 10 sample-testing by end of 1987 January (E. Graddy).
- o Run test of production samples of sander dust MetALform boards as soon as received at Warrick (W. Lansdale).

Next meeting scheduled after 10 samples are analyzed (approximately 1987 February 15).

Please let me know if you have any comments or questions.


J. D. BOYCE

JDB:gyl

Distribution:
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Info cc: M. W. Vance - ATC
R. Pataki - Warrick
J. L. Moore - Tennessee
D. L. Stone - Wenatchee