Trilliam Thermo Technologies

DOE/GO/10396-5

Summary of Project Status as of

10/31/99

1. High temperature refractory to be marketed under the name G-5, Trilliam Thermo Technologies Grant # DE - FG36-99GO10396
2. Milestones / Key Activities Completed Since Last Report- Include the following, as appropriate:
 - a) Describe the technical progress for the period, with ongoing activities and discuss the actions taken to meet the project deadlines
 1. Conducted test with Steel Industry
 2. Braun Intertech completed four tests requested by Steel & Petroleum Industries
 3. Beta Test in Progress in commercial Kiln a final report on this test will be available by the end of the year
 4. Ordered new high temperature test blocks and electrodes
 5. Made slight formula modifications which appear to greatly increase wear & strength characteristics
 6. Establishing protocols & complete advanced laboratory testing of revised formula of G-5 Initial test results should be available for December report
 - b) Provide an explanation of any technical difficulties encountered.
 1. We have had a problem with the amount of calcium in one of the commercially available raw materials we were using. This resulted in lower strength and potential contamination in some applications.
 2. The test box we designed would not allow us to heat test the material above 2430 degrees F. which has limited our ability to test our material at proposed operating temperatures of 3000 degrees F to 5000 degrees F
 - c) Explain the steps taken to resolve these difficulties.
 1. We have altered the formula for G-5 to a di-aluminate compound rather than an Aluminate compound and this has resulted in a much better product with lower thermal conductivity, better strength and lower calcium "bleed-out"
 2. We have altered the design and method of constructing the test boxes which should eliminate the heat flux problems and allow internal heating to

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much higher temperatures. Once these boxes are constructed, we will run additional high temperature verification of test results which will then provide the information to make G-5 commercially viable in the concrete, phosphate; petro-chemical and rocket testing markets.

d) Describe any known or potential schedule or scope changes

1. There are no anticipated schedule or scope changes at this time. We are still looking at completion of all laboratory testing by the end of February and be ready for full commercialization at that time.

e) Address activities and planned accomplishments for the upcoming period.

1. Complete modules of rupture and abrasion testing on samples we have prepared for this purpose
2. Complete examination of BETA test samples removed from around burner ring for six months.
3. Complete construction of 4 test boxes and conduct temperature testing of material at between 3000 to 4000 + degree temperatures in an attempt to determine melt point, high temperature wear characteristics and durability.

3. Are you on schedule and anticipated cost of original grant? If not, please explain.

1. We are currently on schedule and within budget for the original grant. We will probable not need quite as much funding for travel as originally budgeted, but will be over budget on contract resources for independent laboratory testing.

4. Discuss any key personnel changes.

1. There have been no personnel changes since the last report and no changes are anticipated.

5. If applicable, attach publications written that relate to the project (internally or externally produced). List any planned publications or conferences to be attended related to the project for the next period.

1. We have no publications or conferences to report. However, I have attached a Property comparison chart used as a marketing tool. In the next report, we will attach a copy of a letter from the General Manager of the Company who conducted the BETA test on our product which will demonstrate the commercial viability of G-5.