



Date: 3/11/89

Subject: Initial Screening

From/Location: C. G. Blount, PRB 20

To/Location: S.J. Massey/E.W. Skaalure, PRB 20

John Nydegger recently requested some testing of an Insulating ceramic paint for possible application as tubing insulation. The product is marketed as having excellent radiant heat insulating properties. Additional literature is enclosed covering the product. Tests were run using 2 7/8 inch tubing to check the conductive properties for Insulating production tubing and possible application for surface pipe.

Test Procedure: Four test cylinders 15" long with .5" end caps and 1/2" pipe threads cut in one end to accept 12" long thermometers, were built (drawing attached). Three of the cylinders were painted with the TEMP-COAT paint in 18.8, 33-0, and 55.6 mil coatings respectively. The fourth cylinder was bare, sand blasted tubing. Two tests were run: one in ice and the other in ice water. All four cylinders were pre-heated and immersed 14" into the ice bath. The baths were regularly agitated to prevent holidays and minimize local warm spots. The resulting information is included for review.

Results: From the results the material would seem to extend the time before freeze-up approximately 2 to 4 times that of bare tubing. Dave Hearn is working up the BTU / hour calculations to give a more usable estimation of insulating value for the product. These values will be distributed when they become available. Dave Hearn's values will be used to predict the potential benefit of the product when used as an insulator for production tubing.

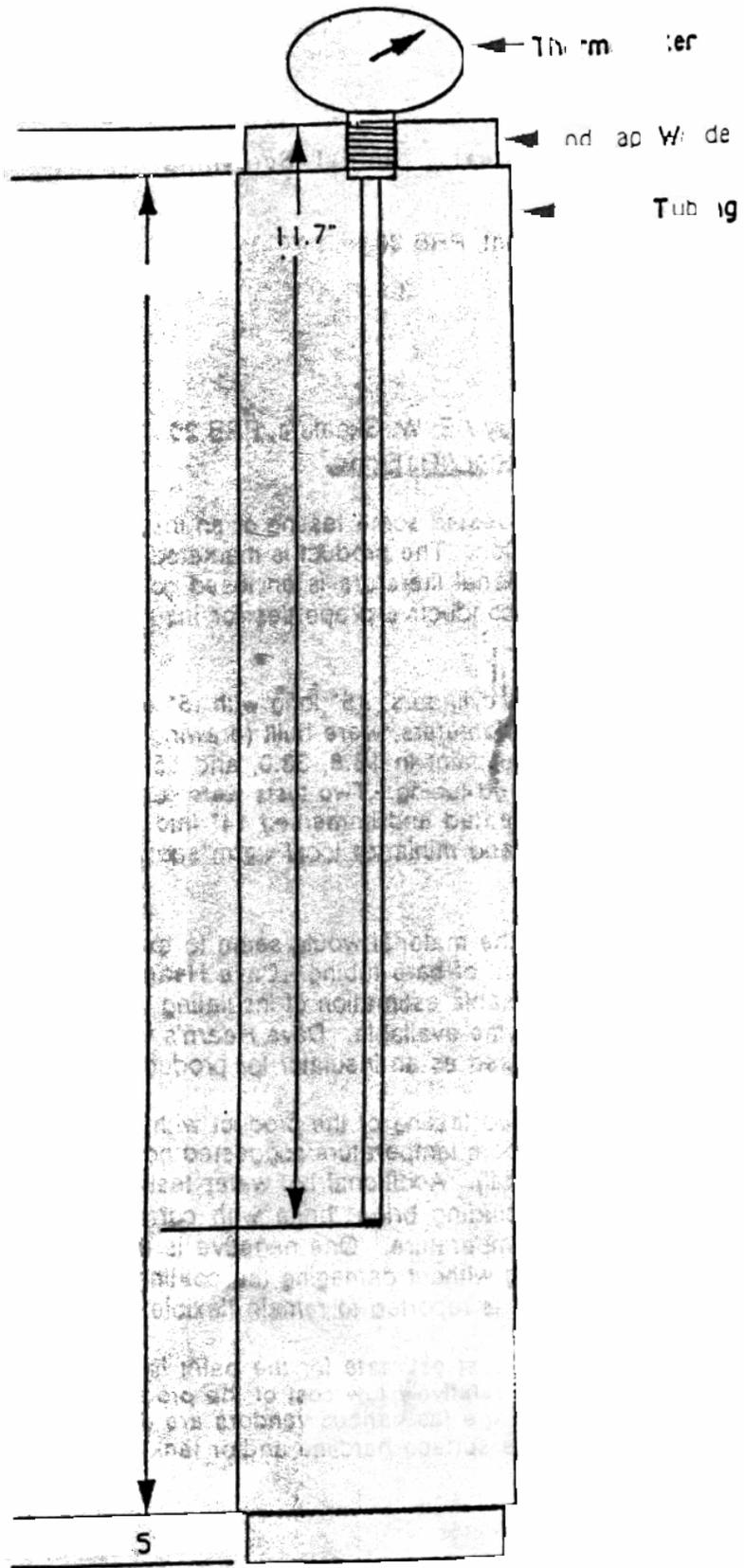
Arti-Cote has done some limited testing of the product with brine and arctic diesel in agitated bowls. The 3 day to 18 day tests at room temperature suggested no swelling or degradation of the product (end pages of enclosed material). Additional hot water testing is underway to check compatibility with various packer fluids including brine, brine with corrosion inhibitor, Arctic diesel, and Arctic diesel with C-120 at temperature. One negative is that the product remains soft complicating running the tubing without damaging the coating. It does, however, exhibit a tenacious bond to sand blasted pipe and is reported to remain flexible to -40 F.

Present Applications; The cost estimate for the paint is +/- \$50 a gallon that will cover ± 100' of 3.5" tubing. Because of the relatively low cost of the product, it does appear to offer benefits for coating surface hardline or tankage (as various vendors are doing). Based on information to date, I would recommend coating some surface hardline and/or tankage to see if it will hold up to field use.

Thermometer

End Cap, Welded

2 7/8" Tubing



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Cerama-Seal was the earlier name of TEMP-COAT®

Comments and results from ARCO Alaska

This is a brief progress report on certain items and areas we have sprayed Cerama-Seal on, in the Prudhoe Bay area.

Con-Am

We recently sprayed the drums and water tanks on the slurry trucks for Con-Am Alaska. The thickness of the coating was 40 mils. on both tank and drum. We then put 300 gallons of 158° water into the drum and, set the truck outside and let it slowly rotate. The outside temperature was -37° ambient. The truck rotated from 9:00 AM to 5:30,PM and then was brought inside and the water was dumped. The water temperature recorded was 82° F. We also coated two 500 gallon propane tanks on trailers after heat wrapping the tanks. The coating thickness was 26 mil. and determined we had minimum liquefaction of the gas.

ARCO

We recently sprayed some areas at the Lisburne Production Facility In Prudhoe Bay. One of these areas was a turbine exhaust that was sprayed hot at 460°. After application of the 40 mil - we found you could comfortably place your hand on the exhaust. We did experience some peeling of the material after about three weeks and discovered that on the flange areas where the heat was above 600° that the Cerama-Seal being applied over silver heat paint could not allow itself the full ability to push the heat back into the exhaust as the paint acted as a reflectant. In further tests we discovered that with a clean metal surface we did not experience these problems.

An outside test was done on a firewater drain pipe to see if we could up the temperature of a pipe by applying the material on an inner surface of the pipe. The outside of the drain pipe was both heat taped and insulated but could not keep the alarm mode off on the control board. After applying a 40 mil . thickness on the interior of the pipe the temperature came up 42° eliminating the alarm. We are currently doing extensive conductive thermal tests with ARCO Alaska.

FIRESTONE

We have recently tested this material as a shop insulation on the Interior of the Firestone shop in Prudhoe Bay. After coating the interior of sliding doors in shop with a 13 mil. coating we measured the bare tin siding against the coated siding and found a 41° difference in the areas. We have found the material to be an excellent shop insulation.

DOWELL

Recently we tested the material to see if it could be used as an interior tank coating. The results varied in the products tested. Listed below are the materials tested against.

A) Xzylene - Caused material to slightly crack but did not remove material'

- B) U66 - Caused material to become soft and mushy but did not remove material
- C) HYDROFLUORIC ACID - Caused material to slightly bubble but material stayed together in general
- D) HYDROCHLORIC ACID - Same as above
- E) SALT BRINE No noticeable effects what so ever. The method used in testing these were Cerama-Seal coated bowels in which we poured the material into and agitated for a period of 18 days.

MARATHON OIL -

In July we coated the crane beams on the Steelhead platform for Marathon Oil to reduce the tensile strength problem due to cold weather and winds in the inlet. We first heat traced the beams. As of to date we have experienced excellent results in that the beams are maintaining a good constant temperature alleviating the problem.

In a recent test for ARCO Alaska a large bowl was coated with a 26 mil . coating and let to dry. We then added arctic diesel to the bowl and agitated. it for a period of 60 hours and found absolutely no penetration of the diesel through the Cerama-Seal, or any effects to the product what-so-eyer.

Cerama-Seal in Ice

