GEORGIA INSTITUTE OF TECHNOLOGY
Office of Contract Administration

SPONSORED PROJECT INITIATION

no action
OCA
OHH

Date: March 12, 1976

Project Title: Furnish 100 Gallons of High Purity Fused Silica

Project No: A-1814

Project Director: J. N. Harris

Sponsor: Selenia S.p.A.; Rome, Italy

Agreement Period: From 2/2/76 Until Open

Type Agreement: P.O. 173335560

Amount: $7,105

Reports Required: as requested

Sponsor Contact Person(s):

Technical Matters
Mr. E. H. Villaseca
Selenia S.p.A.
Via Tiburtina Km 12,400
0131 Rome
ITALY

Contractual Matters
(thru OCA)
Mr. G. Guiliani
c/o Selenia S.p.A.
Via Tiburtina Km. 12,400
0131 Rome ITALY

Assigned to: Applied Sciences (School/Laboratory)

Copies to:

- Project Director
- Division Chief (EES)
- School/Laboratory Director
- Dean/Director-EES
- Accounting Office
- Procurement Office
- Security Coordinator (OCA) ✓
- Reports Coordinator (OCA)
- Library, Technical Reports Section
- Office of Computing Services
- Director, Physical Plant
- EES Information Office
- Project File (OCA)
- Project Code (GTRI)
- Other _____

A-3(3/76)

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION

No action

Date: 2/3/77

Project Title: Furnish 100 Gallons of High Purity Fused Silica.

Project No: A-1814

Project Director: Mr. J. N. Harris

Sponsor: Selenia S.p.A, Rome, Italy

Effective Termination Date: open

Clearance of Accounting Charges: _____

Grant/Contract Closeout Actions Remaining:

_ Final Invoice and Closing Documents
_ Final Fiscal Report
_ Final Report of Inventions
_ Govt. Property Inventory & Related Certificate
_ Classified Material Certificate
_ Other _____

Assigned to: Applied Sciences Laboratory (School/Laboratory)

COPIES TO:

Project Director
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Other _____

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A-1814

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ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

June 28, 1976

Selenia, S.p.A.
Via Tiburtina Km. 12,400
00131 Rome, Italy

Attention: Mr. Cesarotti

Subject: Characterization and Provision of High Purity Fused Silica Slip, Selenia Order Number 17333556, GIT Project A-1814

Gentlemen:

Three batches of Thermo Materials Corporation High Purity Fused Silica slip were examined in order to find a slip which would meet the specifications required for radome manufacture. The first batch was limited in quantity, the average particle size was too fine, the viscosity of the slip too high for radome use and the slip had an excessive amount of organic matter floating in it.

Because of Selenia's urgent need for the fused silica slip, fifteen gallons of the second batch was shipped to Selenia prior to complete characterization. The particle size and viscosity of this slip was in the correct range. However, upon sintering test bars for 5¼ hours at 2175° F (1190° C) the material was found to contain 2.8 percent cristobalite. This amount is far in excess of what is considered normal. Therefore, this batch also had to be rejected.

The third batch of material proved to be acceptable. This slip was Thermo Materials Batch Number 040976-1-G and had the properties shown in the following table. No cristobalite was detected.

Three-quarter inch diameter test bars were slip-cast in plastic molds, removed, dried and sintered for 5¼ hours in three different batches to temperatures of 2175° F, 2200° F and 2225° F.

Average property data obtained for each condition are given in Table II.

Based on these data the slip were judged to have satisfactory properties for radome manufacture and this slip was shipped to Selenia on

Respectfully submitted.

jw

TABLE I

FUSED SILICA SLIP PROPERTIES

Viscosity	
Rpm	Centipoise
6	135
12	115
30	119
60	133
Percent Solids	82.7
pH	5.35

TABLE II

FIRED PROPERTIES OF THERMO MATERIALS 040976-1-G FUSED SILICA SLIP

	Fired 5¼ Hours At:		
	2175° F	2200° F	2225° F
Percent Porosity (%)	12.71 ± 0.17	12.13 ± 0.10	10.62 ± 0.12
Bulk Density (gm/cc)	1.905 ± 0.004	1.915 ± 0.003	1.949 ± 0.003
Apparent Specific Gravity (gm/cc)	2.183 ± 0.002	2.179 ± 0.002	2.180 ± 0.002
Dynamic Elastic Modulus (psi)	$4.27 \pm 0.13 \times 10^6$	$4.79 \pm 0.11 \times 10^6$	$5.57 \pm 0.52 \times 10^6$
Modulus of Rupture (psi)	3719 ± 293		5011 ± 281