MASTERHELIOSTAT REFLECTOR STUDY

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TITLE OF CONTRACT: Evaluation of Specification of Reflector Panel Materials for Heliostats

COST: \$130 K

STARTING DATE: 2-27-78

OBJECTIVES: This program will provide DOE with background information and procurement specifications for materials which have potential applications in heliostat construction. The program will include comprehensive surveys, technical analysis and laboratory investigations. Two areas of major emphasis will be glass for second surface mirror applications and core materials for sandwich type reflective surface support structures. Also to be investigated are methods of edge sealing and adhesive bonding.

SCHEDULE: To be compatible with pilot plant requirements.

The program will encompass the following tasks:

Task 1 - Glass characterization and specification

1. Survey sources, both domestic and foreign.
 - which companies will produce low distortion, 1/8", low iron, float glass or a suitable alternative.
2. Determine availability of production lines
 - define possible schedule, deadlines and windows for production of special runs in existing float lines.
 - investigate alternate existing processes such as gravity drawn fusion, etc.
 - investigate feasibility of setting up special lines for pilot plant production run.
3. Estimate costs and lead times and industry interest for both pilot plant runs and future commercial runs.
4. Define specification for pilot plant glass
 - interact with sources to provide a realistic specification that will both meet the needs of the pilot plant and be within the capabilities of the glass producers without prohibitive cost increases.
 - factors to be considered include: flatness, parallism, stress, transmission, and edge, bulk, and surface flaws. ream or cord, durability.
5. Evaluate alternatives
 - provide background for recommendation on desirability of government furnished equipment (GFE).
 - define follow-on and recommend additional work.

Task 2 - Reflective Surfaces/Substrates Characterization and Specification

1. Evaluate and specify polystyrene, extruded as per Mac Dac module.
 - define characteristics important to heliostat applications.
 - define which polystyrenes should be considered, first emphasis to be placed on Styrofoam 1B.
 - make measurements of important characteristics where needed to supplement manufacturers' data.
 - define specifications for pilot plant foam core material keeping in mind future commercial development.

2. Survey alternative core materials

- survey other types of polystyrene and foam materials.
- survey aluminum and other honeycomb materials.
- recommend future development areas.

3. Survey methods of edge sealing and adhesive bonding used in sandwiches.

- survey present methods and materials for providing foam/core glass seal
- survey alternate methods of protecting glass/silver interface.
- recommend future development areas.

MILESTONES

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Task 1	1	2	3	4	5				6
Task 2	1	7	8		9		10		11 12

1. Funding authorization received.
2. Initial survey of glass companies completed - report of preliminary survey.
3. Report on production availability lead times, and schedule to establish whether glass should be government furnished.
4. Glass specification formalized.
5. Preliminary evaluation of alternative process.
6. Final report and recommendations on glass.
7. Define characteristics of foam core material important in heliostat applications.
8. Complete evaluation of styrofoam 1B
9. Polystyrene specifications drafted.
10. Preliminary survey of alternate core materials completed.
11. Preliminary survey of edge sealants completed.
12. Final report and recommendations on reflective surface/substrate.