

Hybrid Meeting Agenda 10/09/04

1) Start the research phase and the preliminary design of several aspects of the LOX/Paraffin hybrid that will eventually become the flight article motor.

In order for this to happen efficiently we need to define the overall long-term goals and design philosophy for the hybrid project. This will be the main point of the upcoming meeting. This will be an important meeting to attend because it will determine the future direction of the hybrid motor. Some example topics that we might want to discuss are: (feel free to add to this list)

Design Philosophy

- | | |
|--------------------------------|---|
| 1. Safety | SF's in Design/ failure modes |
| 2. Cost | Motor cost/ fueling cost/ infrastructure cost |
| 3. Complexity | complexity vs. weight/ weight vs. cost |
| 4. Manufacturability | COTS/in house/out of house |
| 5. Repeatability | Jigs/ how many motors |
| 6. Flexibility | Future motor changes |
| 7. Scheduling & Accountability | Component ownership/ weekly time commitment |
| 8. Commercial possibilities | Intellectual property |
| 9. Test plan | Goals/samples size/safety procedures |

Motor Performance

1. Burn time
2. Total Impulse
3. Thrust level
4. Mass Ratio

Motor Design

- | | |
|--|---|
| 1. Injector scheme | Pintel/showerhead/doublet/triplet/vortex/preburner |
| 2. Ignition scheme | Ignition ring/torch/steel wool/smaller rocket motor |
| 3. Oxidizer feed system | HP bottle/self pressurizing/gas generator/Tridyne |
| 4. Tanks | SS/AL/filament/insulation/ullage |
| 5. Valves | pyro/ball/ |
| 6. Plumbing | flexible/rigid |
| 7. Nozzle | Traditional graphite/aerospike/ablative |
| 8. Paraffin grain design and manufacture | Spin casting |

Thrust Vector Control and Throttling

How are we going to accomplish this in the future and how does it impact our design constraints now.

LiTVC/vanes/jetavator/gimbal

Design Constraints

1. Cost
2. Physical Constraints (maximum diameter LV3??)
3. Time limit
4. Facilities