

| Name | Reports_to | Title | Department | Telephone | Email |
|-------------------|---------------|--------------|------------------------------|-----------|-------|
| Gary Barnhard | | Team Lead | Systems Engineering | | |
| Matteo Borri | Gary Barnhard | Engineer | Attitude Control Systems | | |
| Ethan Chew | Gary Barnhard | Engineer | Propulsion Systems | | |
| Adam Glickman | Gary Barnhard | Engineer | Safety & Quality Assurance | | |
| TJ Mckinney | Gary Barnhard | Engineer | Radiation & Electronics | | |
| Joseph Rauscher | Gary Barnhard | Engineer | Documentation | | |
| Jephrey Rodriguez | Gary Barnhard | Engineer | CAD/CAE/Testing | | |
| John Tascione | Gary Barnhard | Engineer | Structures & Mechanisms | | |
| Mike Doty | Gary Barnhard | Engineer | Structures & Electronics | | |
| Aaron Harper | Gary Barnhard | Engineer | Communications & Power | | |
| Anastasia Ford | Gary Barnhard | Intern | Systems Engineering (Intern) | | |
| Eric Dahlstrom | Gary Barnhard | Advisor | Astrophysics | | |
| Jerry Isdale | Gary Barnhard | Advisor | Software Architect | | |
| Chris Cassell | Gary Barnhard | Advisor | Orbital Dynamics | | |
| Craig Foulds | Gary Barnhard | Advisor | Systems Engineering | | |
| James DiCorcia | Gary Barnhard | Advisor | Mechanical Systems | | |
| Patrick Barthelow | Gary Barnhard | Advisor | Communications Systems | | |
| Isaac Desouza | Gary Barnhard | Int. Liaison | Electrtical Engineering | | |
| Chris Cassell | Gary Barnhard | Int. Liaison | Systems Engineering | | |
| Joe Hatoum | Gary Barnhard | Int. Liaison | Collaboration | | |

| TO | | | | | | | | | | |
|-----------------------------|---------|------------|----------|-----------|----------|----------|----------|----------|----------|-----------------|
| FROM | OFF | ACTIVATION | BOOT | LOAD CODE | DEPLOY | DETUMBLE | POINTING | SAFE | CHECKOUT | PLAN TRAJECTORY |
| OFF | - | Timer | - | - | - | - | - | - | - | - |
| ACTIVATION | - | - | Scripted | - | - | - | - | - | - | - |
| BOOT | H-Reset | - | - | Scripted | - | - | - | - | - | - |
| LOAD CODE | - | - | - | - | Scripted | - | - | - | - | - |
| DEPLOY | H-Reset | - | - | - | - | Scripted | - | - | - | - |
| DETUMBLE | - | - | - | - | - | - | Scripted | - | - | - |
| POINTING | - | - | - | - | - | - | - | Scripted | - | Scripted |
| SAFE | - | - | - | - | - | - | - | - | Scripted | - |
| CHECKOUT | H-Reset | - | S-Reset | - | - | - | Scripted | - | - | - |
| PLAN TRAJECTORY | - | - | - | - | - | - | - | - | - | - |
| EXECUTE TRAJECTORY MANEUVER | - | - | - | - | - | - | - | Timer | - | - |
| VERIFY TRAJECTORY | - | - | - | - | - | - | - | Scripted | - | Scripted |
| PLAN COMMUNICATIONS | - | - | - | - | - | - | - | - | - | - |
| EXECUTE COMMUNICATIONS LINK | - | - | - | - | - | - | - | Timer | - | - |
| VERIFY COMMUNICATIONS | - | - | - | - | - | - | - | Scripted | - | - |

| EXECUTE TRAJECTORY MANEUVER | VERIFY TRAJECTORY | PLAN COMMUNICATIONS | EXECUTE COMMUNICATIONS LINK | VERIFY COMMUNICATIONS |
|-----------------------------|-------------------|---------------------|-----------------------------|-----------------------|
| - | - | - | - | - |
| - | - | - | - | - |
| - | - | - | - | - |
| - | - | - | - | - |
| - | - | - | - | - |
| - | - | - | - | - |
| - | - | Scripted | - | - |
| - | - | - | - | - |
| - | - | - | - | - |
| Scripted | - | - | - | - |
| - | Scripted | - | - | - |
| - | - | - | - | - |
| - | - | - | Scripted | - |
| - | Scripted | - | - | - |
| - | - | Scripted | - | - |

Team Alpha CubeSat Schedule

| Milestone | Date | Date End applicable) (if | Status |
|--|--------------------------|--------------------------|-----------------------|
| Cube Quest Challenge Team Registration Opens | November 24, 2014 | December 31, 2018 | Challenge Announced |
| In-Space Competition; non-EM-1 launches | November 24, 2014 | EM-1 Launch + 365 days | Competition Begins |
| Summit | January 7, 2015 | | Attended |
| Notice of Intent to Form Team Alpha CubeSat | January 1, 2015 | | Submitted & Confirmed |
| Formal Registration Acceptance | March 2, 2015 | | Confirmed |
| Notice of Intent of Team Alpha Cubesat to Compete | March 2, 2015 | | Submitted & Confirmed |
| Mission Concept Registration Data Package | April 30, 2015 | | Submitted |
| Monthly Report Team Inception through March 2015 | April 30, 2015 | | Submitted |
| Monthly Report - April 2015 | May 7, 2015 | | Submitted |
| Monthly Report - May 2015 | June 7, 2015 | | Submitted |
| Cube Quest Challenge Townhall | June 11, 2015 | | Attended |
| Monthly Report - June 2015 | July 7, 2015 | | Submitted |
| Alpha CubeSat Conceptual Design Review | | | |
| GT1 Data Submission | July 3, 2015 | | Submitted |
| GT1 Tournament | August 3, 2015 | | |
| Monthly Report - July 2015 | August 7, 2015 | | |
| Phase 0 Safety Review | TBD | | |
| Monthly Report - August 2015 | September 7, 2015 | | |
| Monthly Report - September 2015 | October 7, 2015 | | |
| Monthly Report - October 2015 | November 7, 2015 | | |
| Monthly Report - November 2015 | December 7, 2015 | | |
| Monthly Report - December 2015 | | | |
| Alpha CubeSat Preliminary Design Review | | | |
| GT2 Data Submission | January 3, 2016 | | |
| GT2 Tournament | February 3, 2016 | | |
| Alpha CubeSat Critical Design Review | | | |
| GT3 Data Submission | July 3, 2016 | | |
| GT3 Tournament | August 3, 2016 | | |
| Alpha CubeSat Flight Readiness Review | | | |
| GT4 Data Submission | January 6, 2017 | | |
| GT4 Tournament | February 6, 2017 | | |
| Winning CubeSats Delivered for SLS Integration | March 1, 2017 | | |
| In-Space Competition; EM-1 launches | EM-1 Launch (early 2018) | EM-1 Launch + 365 days | |

Alpha CubeSat Dimensions

| Alpha CubeSat Volume | A | | B | | C | | Volume | | Mass | |
|----------------------------|----|----|----|----|----|----|-----------------|-----------------|------|----|
| | in | mm | in | mm | in | mm | in ³ | mm ³ | lbs | kg |
| | ft | | ft | | ft | | ft ³ | | | |

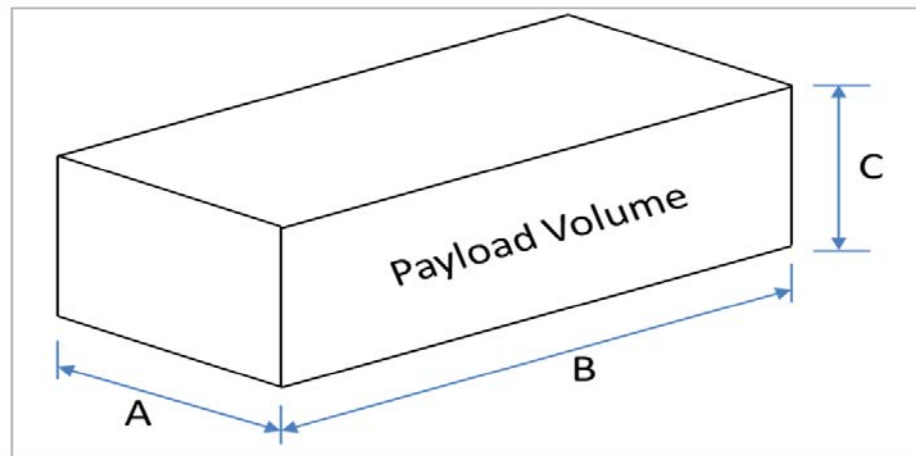
| | | | | | | | | | | | |
|--------|----|---------|-----|---------|-----|---------|-----|--------|-----------|-------|----|
| Stowed | 6U | 9.41 | 239 | 14.41 | 366 | 4.45 | 113 | 603.41 | 9,884,562 | 30.86 | 14 |
| | | 0.78417 | | 1.20083 | | 0.37083 | | 0.3492 | | | |

| | | | | | | | | | | | |
|----------|----|---------|-----|---------|-----|--------|-----|--------|-----------|-------|----|
| Deployed | 6U | 9.41 | 239 | 14.41 | 366 | 33.27 | 845 | 603.41 | 9,884,562 | 30.86 | 14 |
| | | 0.78417 | | 1.20083 | | 2.7725 | | 0.3492 | | | |

Engineering Notes:

- 1 Deployed Dimension C Calculation
 $B + C + B = \text{Deployed C}$

2.7725



| | Owner | Narrative Status | Block Diagram | Engineering Workbooks |
|--|----------|------------------|---------------|-----------------------|
| I. INTRODUCTION | | | | |
| Mission Statement | Barnhard | Barnhard | | |
| Team Members, Advisors & International Liaisons | Barnhard | Barnhard | | |
| Teammates & Sponsors | Barnhard | Barnhard | | |
| II. CONCEPT OF OPERATIONS | | | | |
| Concept of Operations Narrative | Barnhard | Barnhard | | |
| Concept of Operations Diagram | Barnhard | Barnhard | | |
| III. MISSION CONSIDERATIONS | | | | |
| Development Considerations | | Barnhard | | |
| Ground Segment Considerations | | Barnhard | | |
| Structural Considerations | | Barnhard | | |
| Launch Considerations | | Barnhard | | |
| Deployment Considerations | | Barnhard | | |
| Trajectory Considerations | | Cassell | | |
| Attitude Control System Considerations | | Barnhard | | |
| Communication Considerations | | Barnhard | | |
| Articulated Subsystem Considerations | | Barnhard | | |
| Electrical Considerations | | Barnhard | | |
| Navigation Concepts | | Barnhard | | |
| Propulsion Considerations | | Barnhard | | |
| Command & Control Concepts | | Barnhard | | |
| Thermal Considerations | | Barnhard | | |
| Conceptual Considerations | | Barnhard | | |
| Conceptual Method of Disposal | | Barnhard | | |
| IV. PRELIMINARY FREQUENCY ALLOCATION DATA PACKAGE | | | | |
| EL-CID Status | Harper | Harper | N/A | N/A |
| V. CONCEPTUAL DESIGN ELEMENTS | | | | |
| Spacecraft Architecture | Doty | Doty | | |
| Systems Overview | | | | |
| Communications System (COMM) | Harper | Barnhard | | |

Data Management System (DMS)
Structures & Mechanisms
Attitude Determination & Control System (ADCS)
Guidance, Navigation & Control System (GN&C)
Propulsion System (PROP)
Thermal Control System (TCS)
Primary Payload
Scar for Secondary Payload
Operational Modes and Transitions
System Budgets
o Volume Budget
o Mass Budget
o Power Budget

VI. SLS SECONDARY PAYLOAD USERS GUIDE QUESTIONNAIRE –

GT1

VII. SAFETY PHASE 0 PRESENTATION CONTENT MATRIX

**VIII. ENGINEERING WORKBOOKS, VENDOR DATA & OTHER
REFERENCES**

| | |
|-----------|----------|
| Barnhard | Barnhard |
| Tascione | Chew |
| Borri | Barnhard |
| Martin | Barnhard |
| Chew | Chew |
| Gustafson | Barnhard |
| | Barnhard |
| | Barnhard |
| Barnhard | Barnhard |
| | Barnhard |
| | |
| Barnhard | |
| Glickman | |
| | |
| Multiple | |

References

N/A