DNEPR ’04 Integration

Cal Poly CubeSat

Integration Coordinator:
Nash Clemens
Objective

Acceptance and Integration of CubeSats for Delivery to Kosmotras

14 CubeSats
11 Developers
5 P-POD Mk. II
1 Launch
Developers

What the developers need to supply:

• Ready to fly CubeSat
• Ground Support Equipment
• Testing Documentation
• Diagnostic and Charging Procedures
  (Time to Complete)
Cal Poly CubeSat

What we’re doing:

Assembly and Qualification of P-POD Mk. II to 150% of DNEPR launch levels

Preparation of facilities

Failing classes
DNEPR 2004 P-POD Allocation
Deployment Sequence

1. Cornell ICE CUBE1
2. Arizona RINCON
3. Japan SEEDS
4. Montana MEROPe
5. Arizona SACRED

(1) Illinois ION
(2) The Aerospace Corporation
(3) Norway nCube
(4) Cal Poly CP2
(5) Hawaii Voyager
(6) S. Korea HAUSAT-1
(7) Kansas KUTESat Pathfinder
(8) Cornell ICE CUBE2
What happens in the next three months?

- Early Delivery (Optional)
  - Aug. 12 – Sept. 10

- Documentation Delivery
  - Sept. 1

- Acceptance and Integration
  - Sept. 29 – Oct. 10

- P-POD Delivery
  - Oct. 14
Early Delivery

Voluntary early delivery of CubeSats ready for integration.

Allows the developer a more flexible delivery process

Longer diagnostic times

More personnel allowed
Supporting documentation to be delivered to Cal Poly CubeSat

• Out-gassing documentation

• Vibration testing results

• CubeSat standard conformation, CubeSat Acceptance Checklist

• GSE documentation

• Diagnostic and charging procedures and time to complete

• Unpacking procedures

• Any other procedures that may be used
Acceptance and Integration

CubeSats must be ready for flight by 8am on the day of integration.

<table>
<thead>
<tr>
<th>Time</th>
<th>Wednesday, September 29, 2004</th>
<th>Thursday, September 30, 2004</th>
<th>Friday, October 01, 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td></td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>9:00 AM</td>
<td></td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>10:00 AM</td>
<td></td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>11:00 AM</td>
<td></td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>12:00 PM</td>
<td></td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>1:00 PM</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2:00 PM</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3:00 PM</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4:00 PM</td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>POD3: Delivery</td>
<td>5</td>
<td>POD3: Diagnostic</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>POD3: Delivery</td>
<td>6</td>
<td>POD3: Diagnostic</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>POD3: Delivery</td>
<td>7</td>
<td>POD3: Diagnostic</td>
</tr>
<tr>
<td>8:00 PM</td>
<td></td>
<td>8</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>9:00 PM</td>
<td></td>
<td>9</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>10:00 PM</td>
<td></td>
<td>10</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>11:00 PM</td>
<td></td>
<td>11</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>12:00 AM</td>
<td></td>
<td>12</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>1:00 AM</td>
<td></td>
<td>1</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>2:00 AM</td>
<td></td>
<td>2</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>3:00 AM</td>
<td></td>
<td>3</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>4:00 AM</td>
<td></td>
<td>4</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>5:00 AM</td>
<td></td>
<td>5</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>6:00 AM</td>
<td></td>
<td>6</td>
<td>POD4: Extra Time</td>
</tr>
<tr>
<td>7:00 AM</td>
<td></td>
<td>7</td>
<td>POD4: Extra Time</td>
</tr>
</tbody>
</table>
Acceptance and Integration

• Developers are limited to three people in the lab
• Lab storage limited to GSE box
• Time to access CubeSats is limited
• Charging must occur within the diagnostic or extra time allotted
• Once integrated access to CubeSats will be through access ports only
Vibration Acceptance Testing

Testing will occur October 7\textsuperscript{th} and 8\textsuperscript{th}

Only Cal Poly CubeSat personnel will accompany the P-PODs.

Testing will be to launch levels.

After testing, Developers will have scheduled diagnostic time. This will be the last time developers have access to their CubeSat through the course of a normal launch.
Delivery to Kosmotras

• Cal Poly CubeSat is preparing for an earliest delivery date of October 14.

• Actual delivery and launch date will be announced August 31.

• Integration dates will not change based on actual launch date.
More information at
http://www.cubesat.org