



Release Lanyard Project

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David Lofgreen

Overview

- Problem Statement
- Current Design
- Design Analysis
- Top Designs
- Gantt Chart
- Conclusion
- References

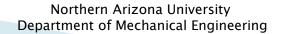
Problem Statement

- Issues with freezing temperatures and debris
- Issues not activating weapons system
- Issues with poor installation

General Constraints

- ► Temperature Range –50°C to 150°C
- Activation Force of 50N
- Breaking force of linkage 75N

Current Lanyard Design



Carly Siewerth

5

Design Analysis

- Mechanics of Material
- Material Science
- Vibration
- Fluid Mechanics
- Heat Transfer
- Manufacturing

Design Areas

- Cable Guide Components
- Cable Options
- Activation System

Design Ideas

- ▶ DuPont[™] Krytox[®] Lubricants
- Wide Temperature Range: -70 °C to 399 °C
- Suborbital, orbital, deep space flight, commercial, corporate and military aviation applications

Design Ideas

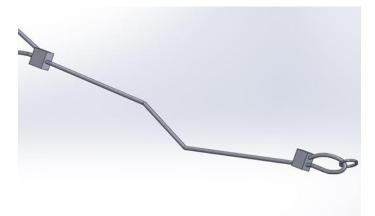
- Cap for Guide Pipe
 - Required Temp. range -50 to 150°C
- Fluorosilicone Rubbers
 - Temp. range -74 to 175°C
- Silicone
 - Temp. range -60 to 200°C





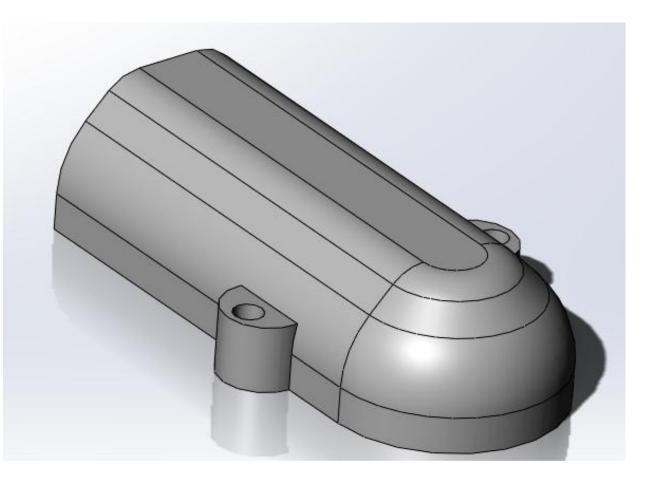
Design Ideas

- Cable Coatings
 - Required Temp. Range of -50 to 150°C
- Tyvek Wrap
 - Temp. Range of -73 to 135°C
- Teflon Wrap
 -73 to 204°C



Top Design

Housing



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Chris Temme

Top Design

Servos





Gantt Chart

		Oct				Nov						Dec				
16 Sep 23	Sep 30	Oct 7	Oct 14	Oct 2	1 Oc	t 28	Nov	4 Nov	11 Nov	18 Nov 2	25 Dec 2	Dec 9	Dec 16	Dec 23	Dec	
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		Report and	d Presenta	ation												
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											Final Desi	ign				
											Report an	d Presenta	tion			
											Prototype	ofLanyard	1			

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Milestone Presentation
 Milestone Report

Andrew Baker

Conclusion

- Problem Statement
- Current Design
- Design Analysis
- New Design Area of Focus
- Top Designs
- Gantt Chart

References

- Stephen Larimore
 - Raytheon Department Manager

Kelly Convington

Raytheon Mechanical Engineer

Internet

- <u>http://www.ahpseals.com/tech/materials.php</u>
- <u>http://www.materialconcepts.com/products/tyvek/sheets/</u>
- <u>http://www.boedeker.com/teflon_p.htm</u>
- <u>http://www2.dupont.com/Lubricants/en_US/industries/Aerospace_Industry.html</u>

Questions?

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