



# Latest Technologies



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# Introduction

- SVP Drifter Life & Performance
  - Constantly Monitored
- Discover Potential Weaknesses
  - Design Iterations
- Technological Improvements
  - Calculated Advancements



# SVP Hemisphere Design

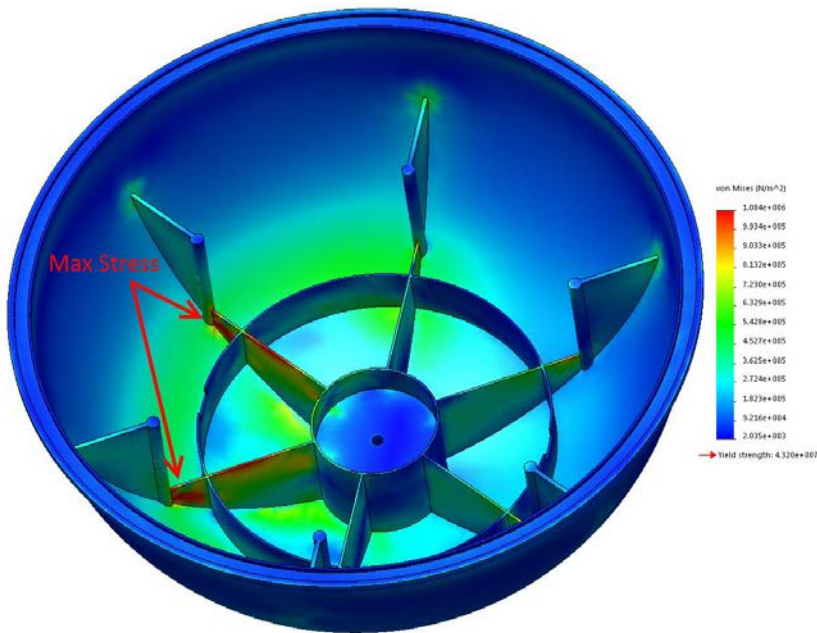


- Serviceable
- Versatile
- Durable



# Simulation Verification

- Finite Element Analysis (FEA)
  - Model drifter's environment
  - Stress concentrations
  - Deflections
  - Fatigue Life
- Recovered Drifters
  - No evidence of breached hull
  - Empirical evidence supports simulation results



Deployment Impact Stress Analysis



Drifter Recovered after grounding on rocky shore of Japan

# Drogue Loss – Part 1

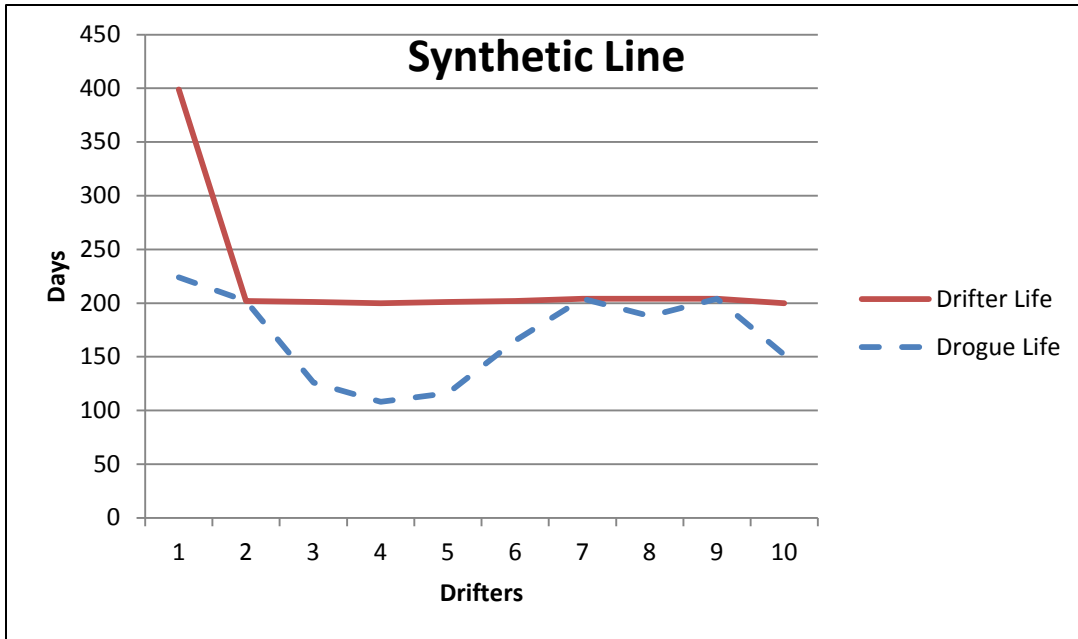
- Suspected Mode of Failure = Tether
- Response
  - Increase Diameter
    - Improvement from smaller tether but observe premature failure
  - Synthetic Line
    - Improvement from larger tether but observe premature failure



Broken 1/8" Spacelay Tether

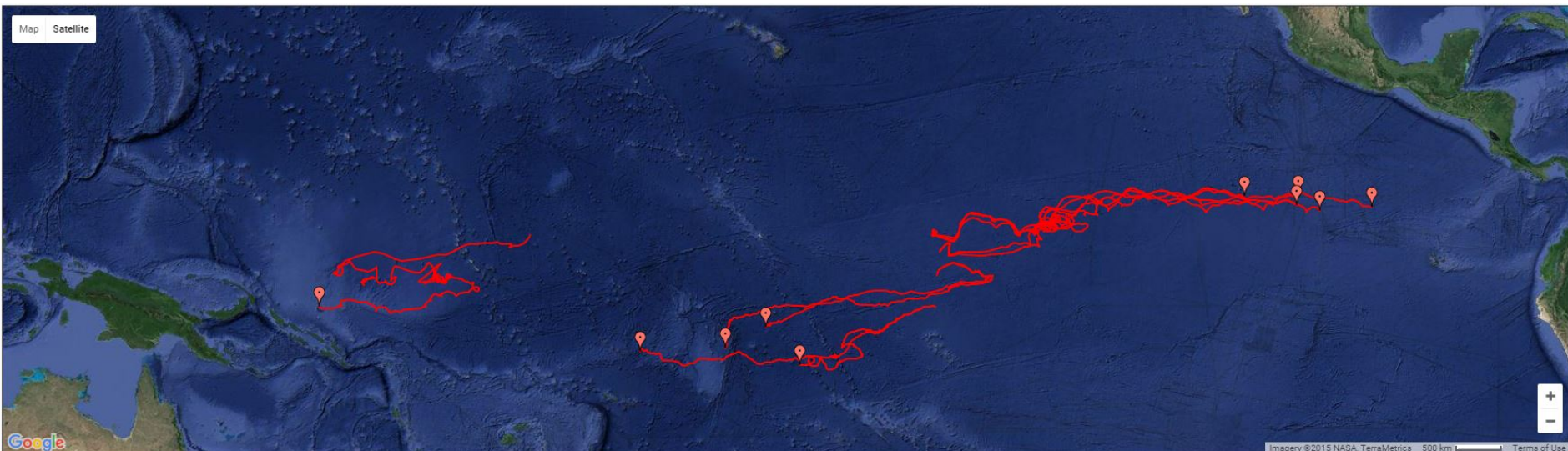


# Synthetic Line Application



10 Drifters over 200 days

- 70% with drogue loss
- Average Drogue loss at 169 days



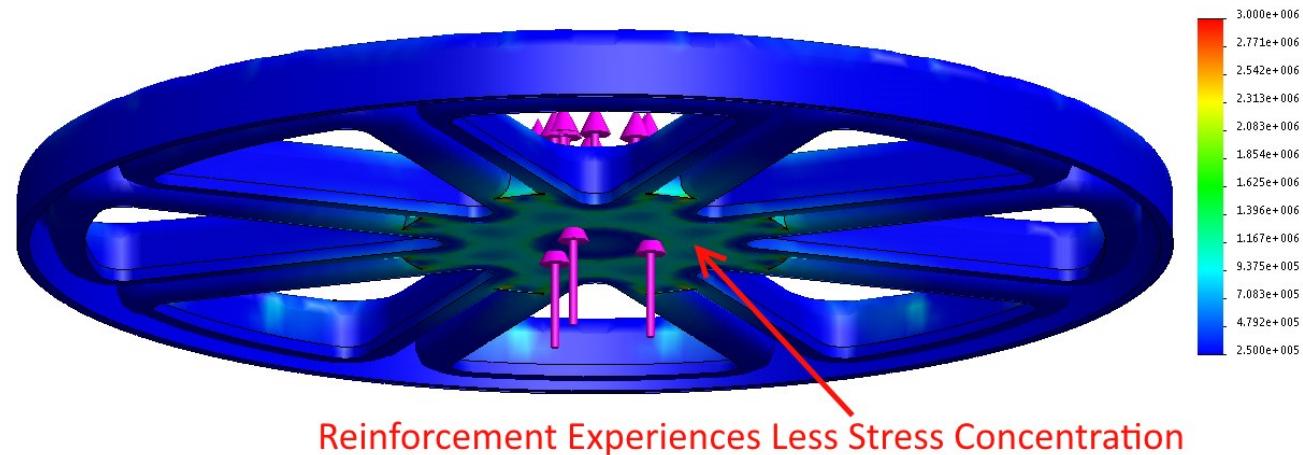
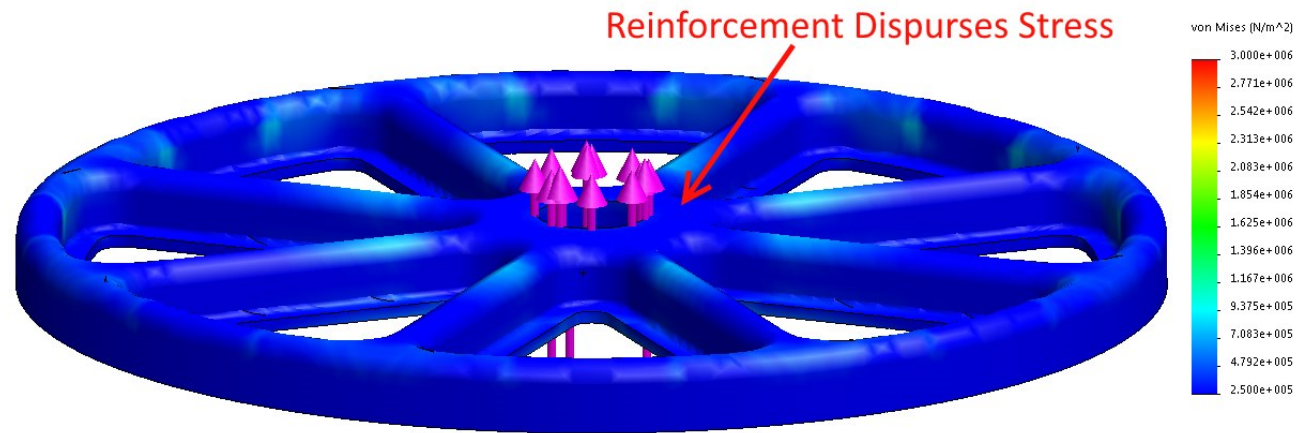
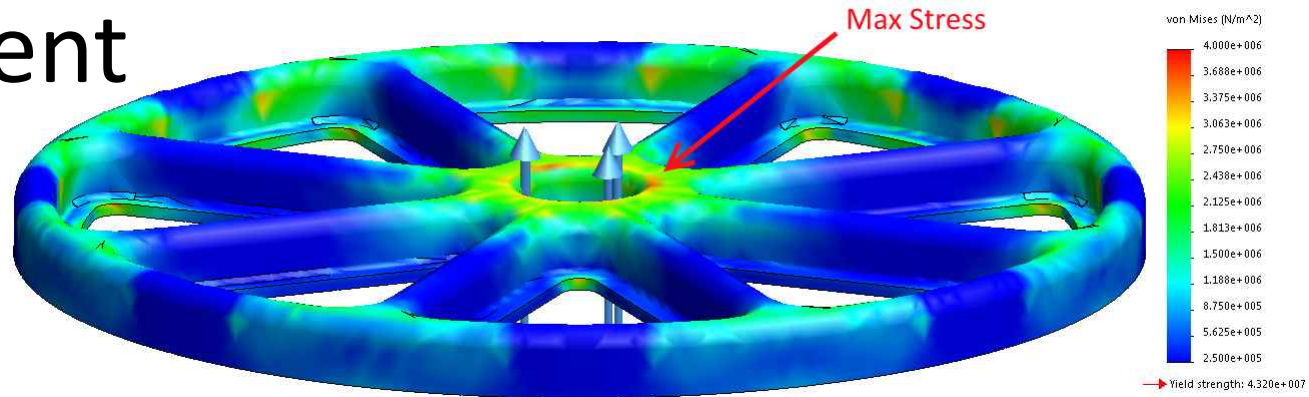
# Drogue Loss – Part 2

- Suspected Mode of Failure = Bridle
- Response
  - Interim Solution - Reinforce bridle with Urethane casting



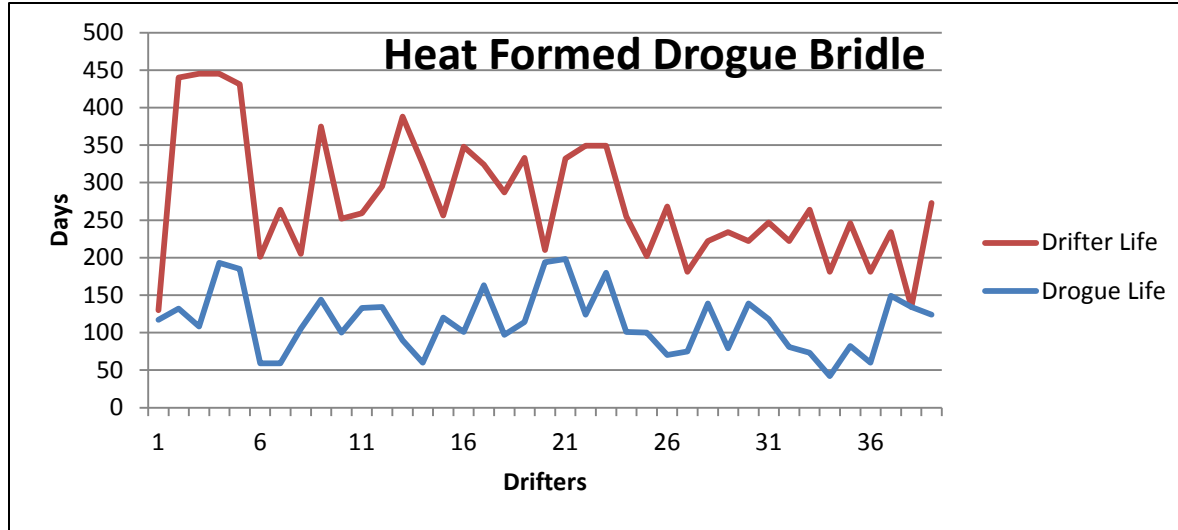
# Finite Element Analysis

- Non-reinforced
  - Max Stress = 10% of ABS Break Strength
- Reinforced
  - Max Stress = 7% of reinforcement material Break Strength
- Reinforcement Projected to Increase Life Expectancy by 280%

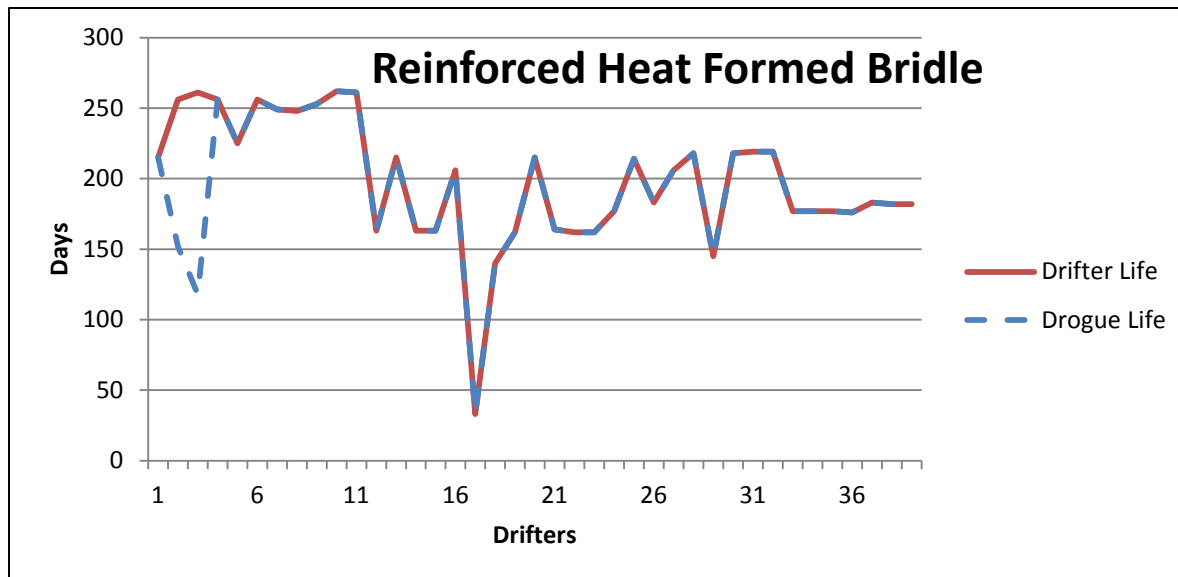




# Drogue Bridle Results



Average Drogue Life = 115 days



Average Drogue Life = 192 days

- 167% Increase and rising

# Heat Formed Bridle



Drogue Life = 60 days



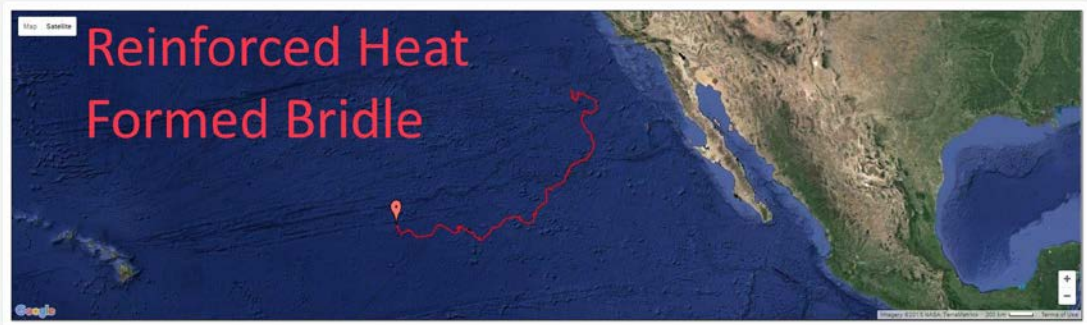
Drogue Off



Drogue Life = 120 days



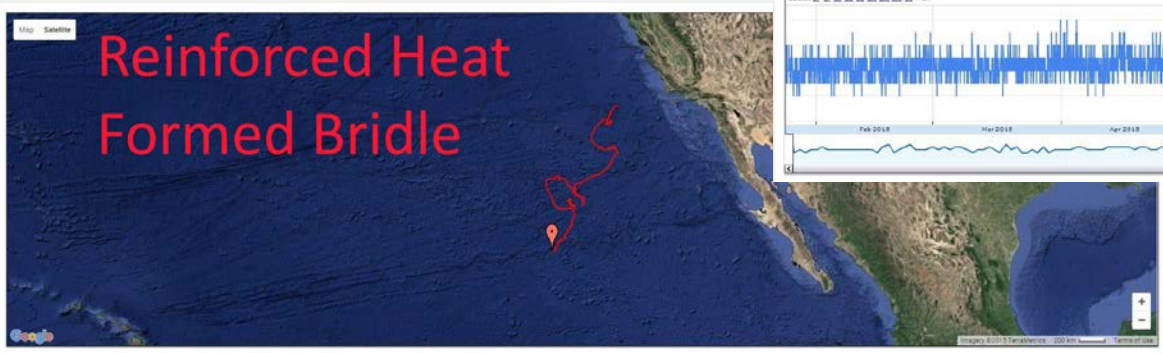
# Reinforced Heat Formed Bridle



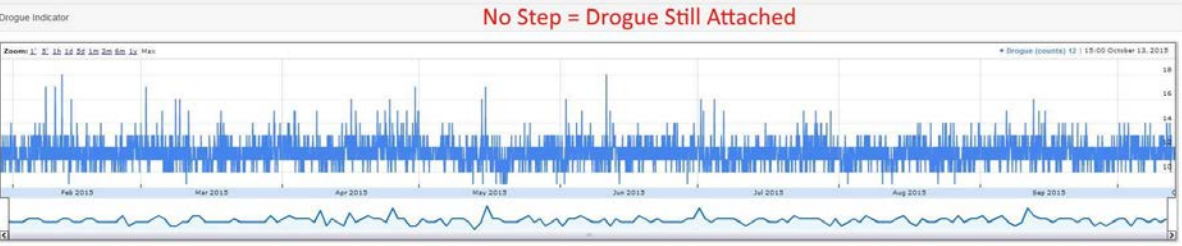
Drogue Off



# Reinforced Heat Formed Bridle



No Step = Drogue Still Attached



Drogue Life = 260 days  
And Counting!



# Closing Remarks

- Isolated Changes
- Encourage CAD & FEA
  - Discover weaknesses
  - Improve designs

Potential Problem	Solution	Results
Tether	Increase Diameter	❖ Increased Drogue Life ❖ No indication of tether failure ❖ Still underperforming
	Synthetic Line	
Bridle	Reinforce	❖ Increased Drogue Life by 167%+
	Injection Mold	❖ Design in progress