



# Rear Suspension of a Snowmobile

By: Dekin Scroggins  
Derek Tippie  
Jake Simmons  
Rick Perry



# Need for a Better Design

- Increased power
- Extreme riders on rough terrain
- More riders + more power = more wear on trails therefore a rougher ride



# Goals of the Design

- Maximum track surface in contact with the ground
- Suspension must also allow enough room for the frame and exhaust systems



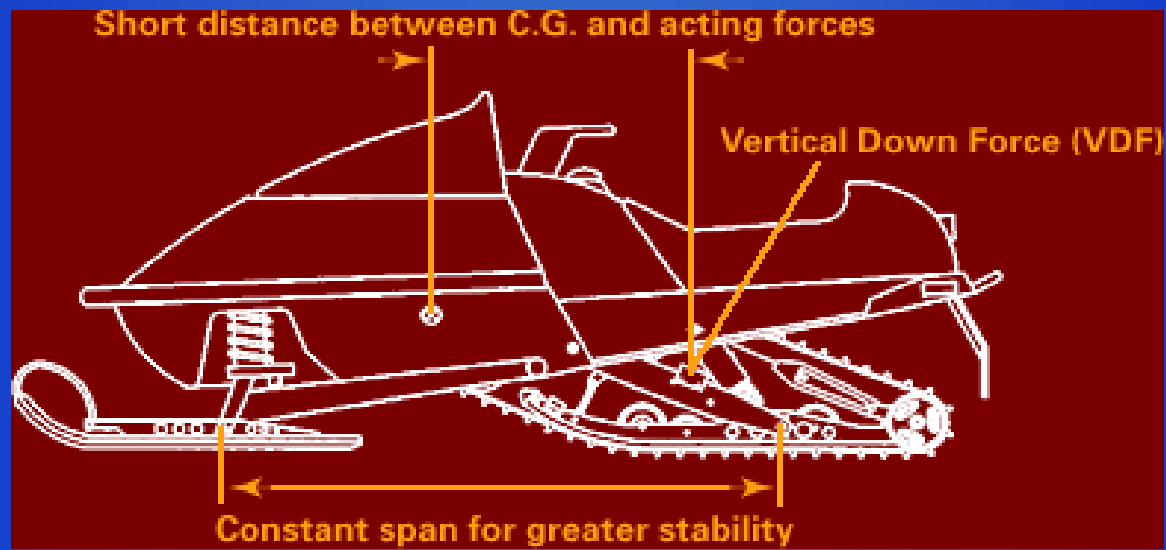
# Goals of the Design cont.

- Maximum acceleration of the center of mass never exceeds one-half the acceleration of gravity
- Most importantly a smooth ride for the rider



# Key to a Stable Ride

- Stability is increased with a shorter distance between the C.G. and the acting forces

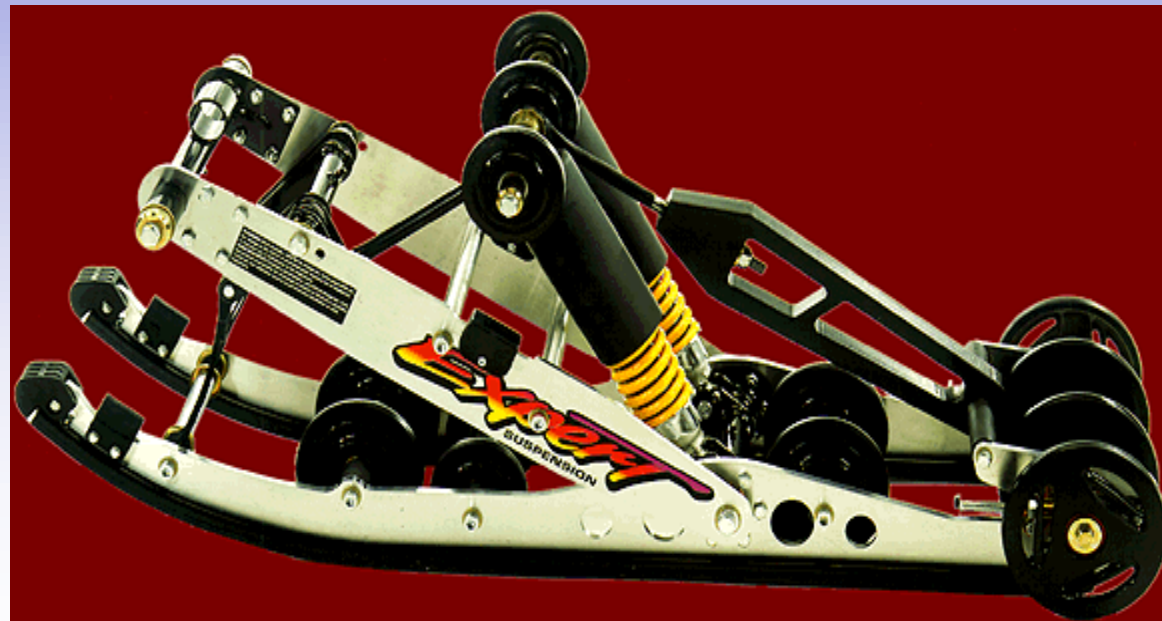


# Research



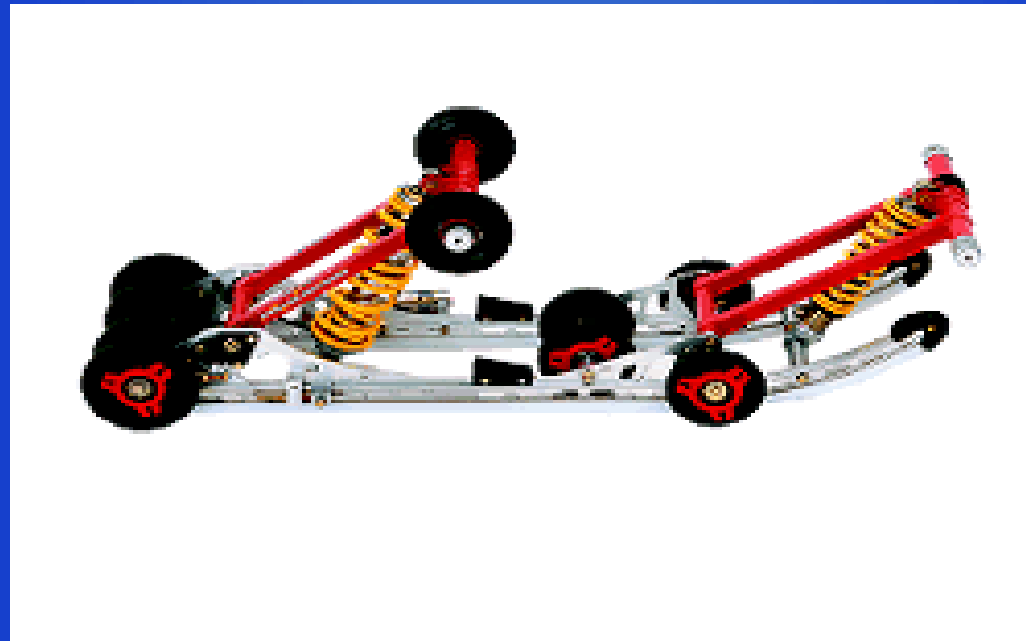
# Research

- A.D. Boivin Rear Suspension
  - 4 Bar with 2 Parallel Springs
  - Parallel Spring Split the Load in Half



# Research cont.

- M-10 Suspensions Rear Suspension
  - 4 Bar with 2 Different Springs



# Research cont. 2

- Redline T15 Rear Suspension
  - 4 Bar with Hydraulic Actuators
  - Totally Different Design because of the Frame



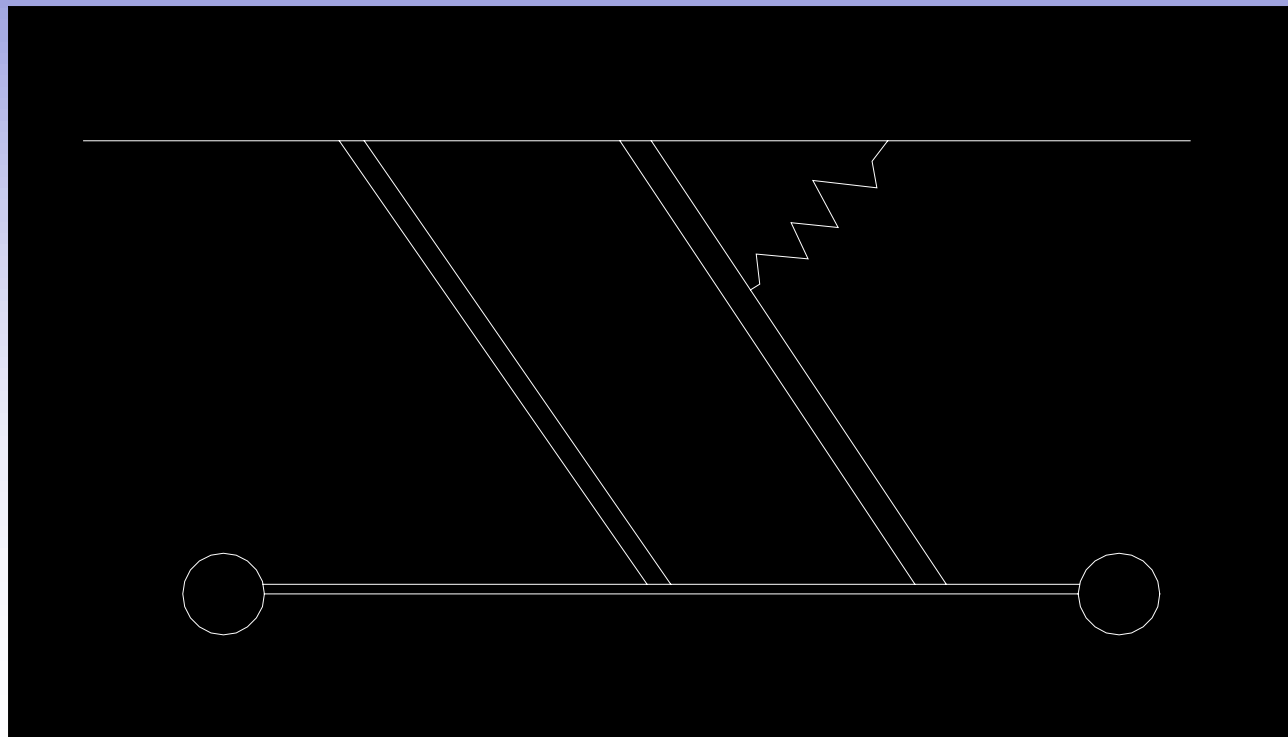
# Our Design

- Autocad Drawing
- Working Model
- Force Analysis



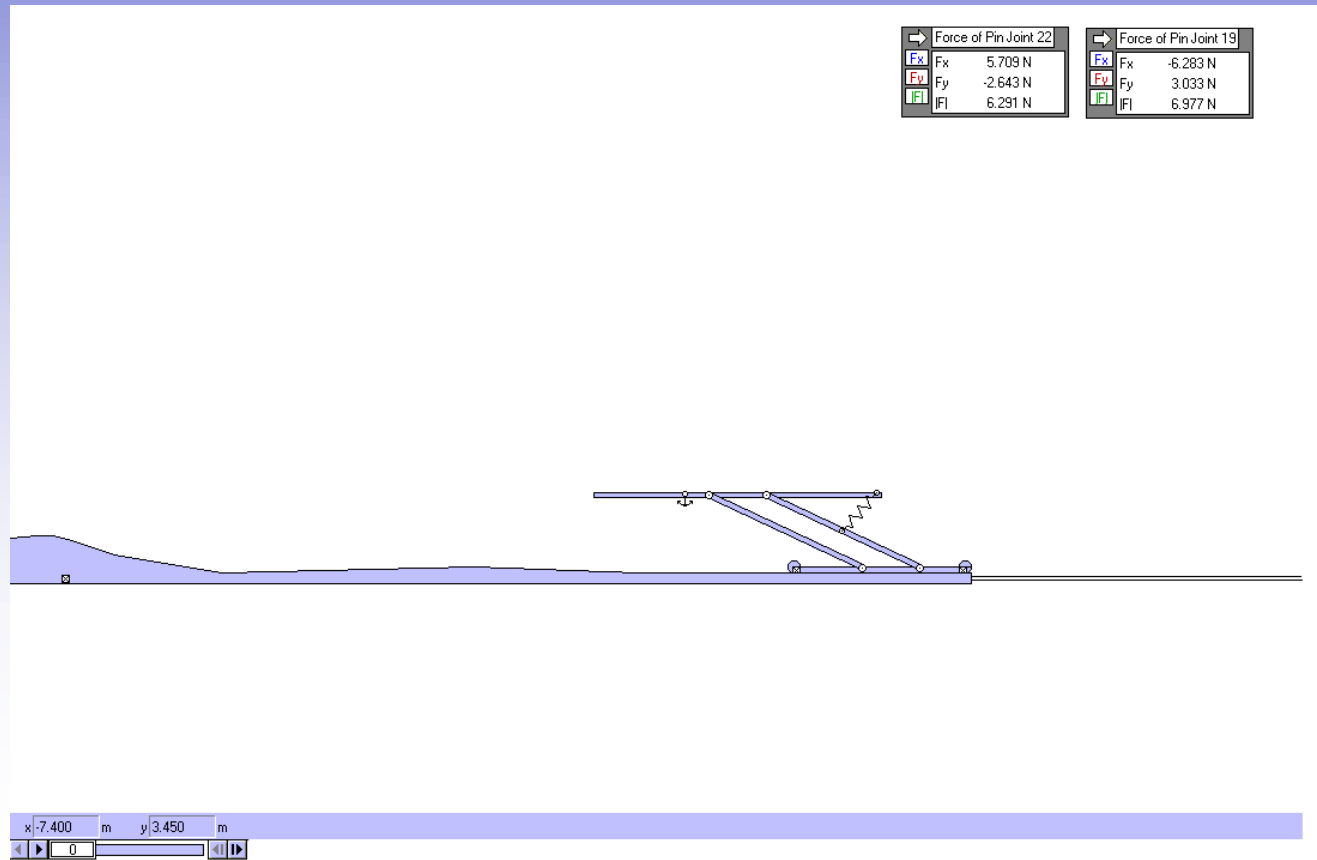
# Autocad

- Simple Autocad Drawing Showing Pin Location



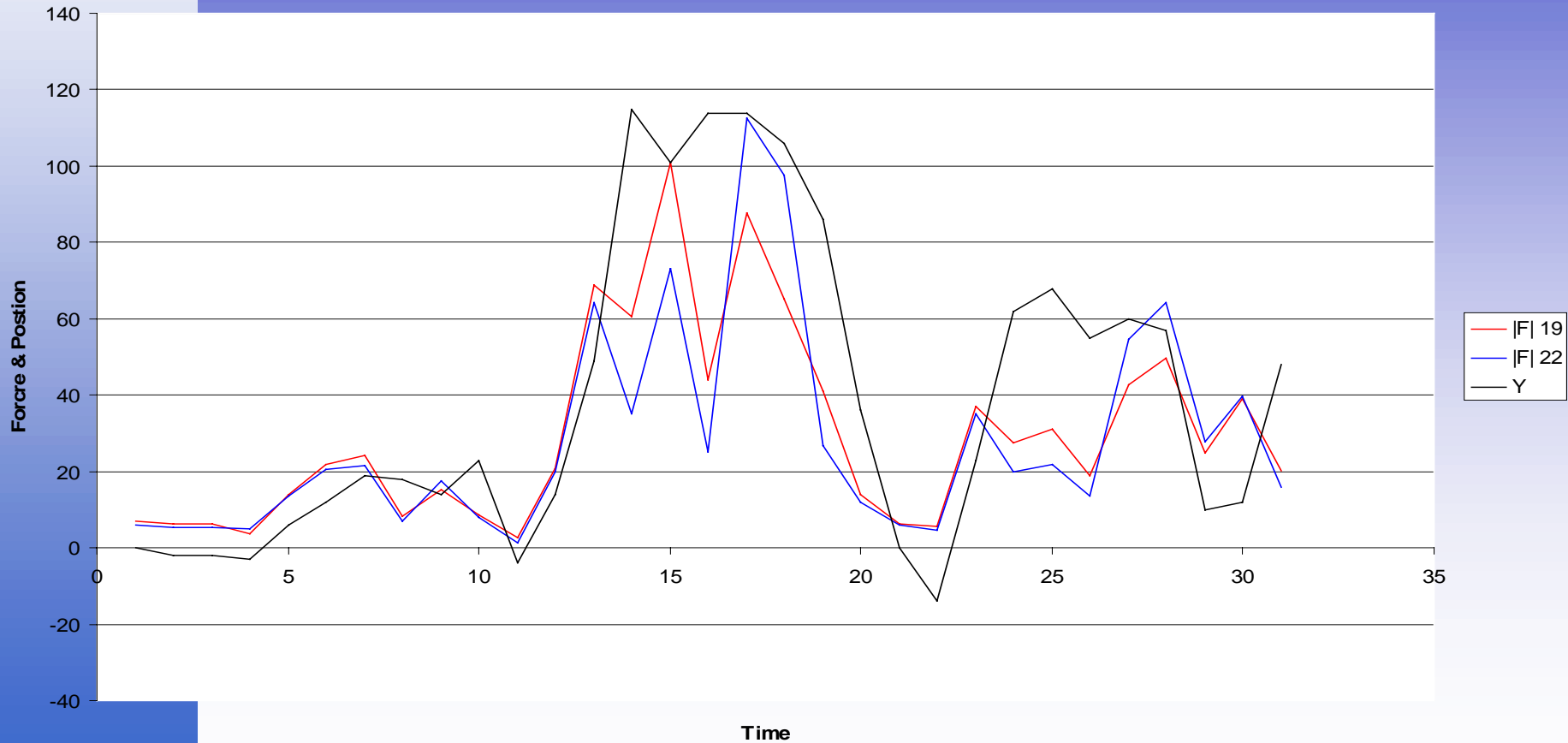
# Working Model

- Driven Ground Without Vertical sled Displacement



# Force Analysis

Force & Postion Relative to Time



# Project Planning

## Was the Plan the Right One?



- Was the plan a good one?
  - Good 4 Bar Design
  - Sufficient Clearance
- What was missing?
  - Track Flexibility



# Key Lessons



# What Went Right

- Good Ground Contact
- 15 inches of Travel in the Suspension
- Smooth Ride for the Rider



# What Went Wrong

- Working model
- How did team respond to problems?



# Questions & Comments

