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# J-2X Engine

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February 26, 2007

# J-2 Engine Lineage

*J-2X: Adding a new member to the family*



J-2 Engine Hot Fire

**1960-1970**



**1965-1971**



**1996-2001**



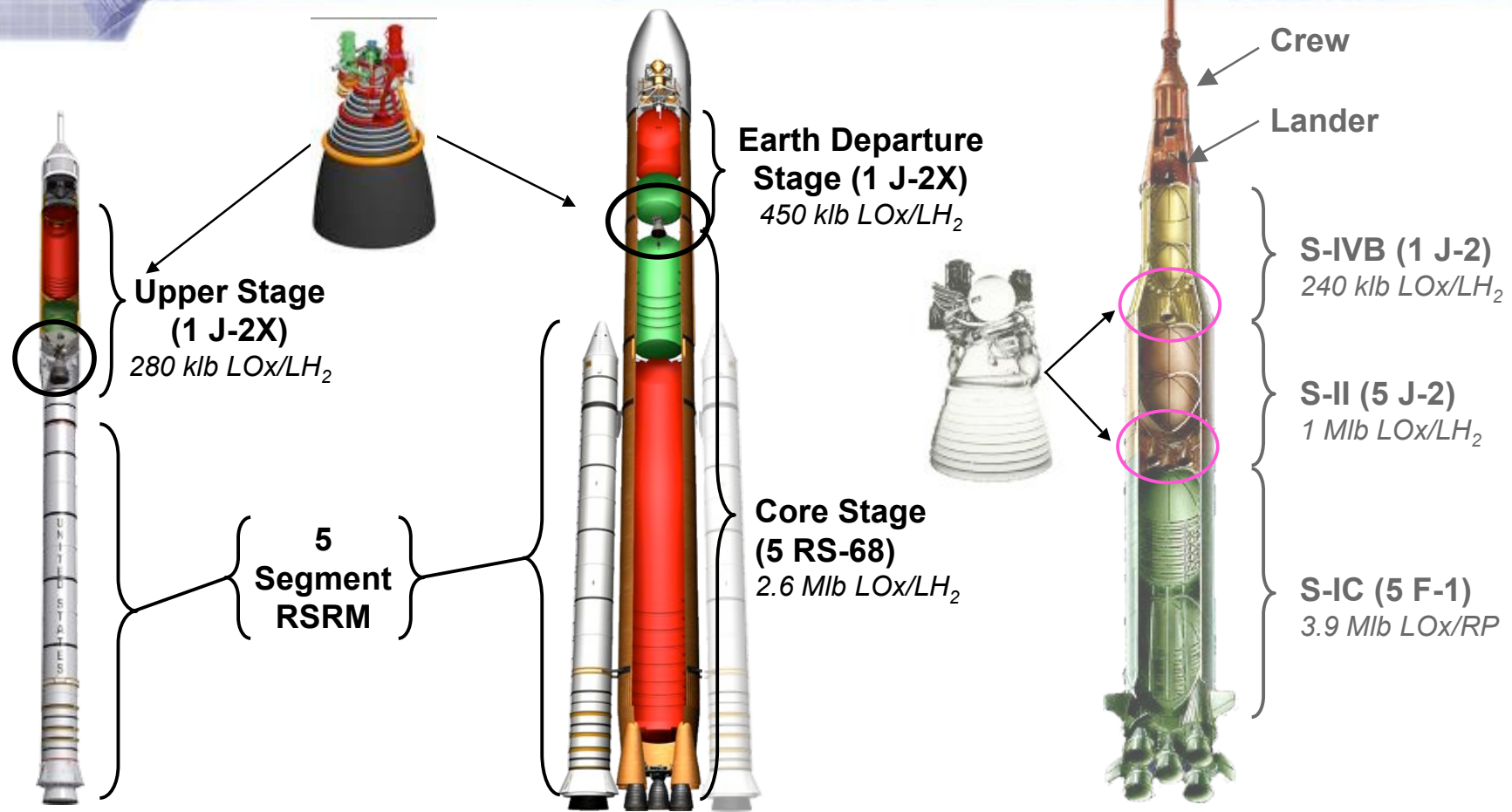
**2006-**

<b>Configuration</b>	<b>J-2</b>	<b>J-2S</b>	<b>X-33</b>	<b>J-2X</b>
<b>Thrust</b>	<b>230 klb</b>	<b>265 klb</b>	<b>261 klb</b>	<b>294 klb</b>
<b>Isp</b>	<b>425 sec</b>	<b>436 sec</b>	<b>419 sec</b>	<b>448 sec</b>
<b>Mass</b>	<b>3,492 lb</b>	<b>3,800 lb</b>	<b>7,500 lb</b>	<b>5,450 lb</b>
<b>Length</b>	<b>116 in</b>	<b>116 in</b>	<b>79 in</b>	<b>185 in</b>

*Requirements*

# J-2X: Apollo-era Derivative Engine

## CEV Upper Stage and CaLV EDS Engine



**Height:** 309 ft  
**Gross Liftoff Mass:** 2.0Mlb

### Crew Launch Vehicle

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**Height:** 358 ft  
**Gross Liftoff Mass:** 6.4Mlb

### Cargo Launch Vehicle

**Height:** 364 ft  
**Gross Liftoff Mass:** 6.5Mlb

### Saturn V



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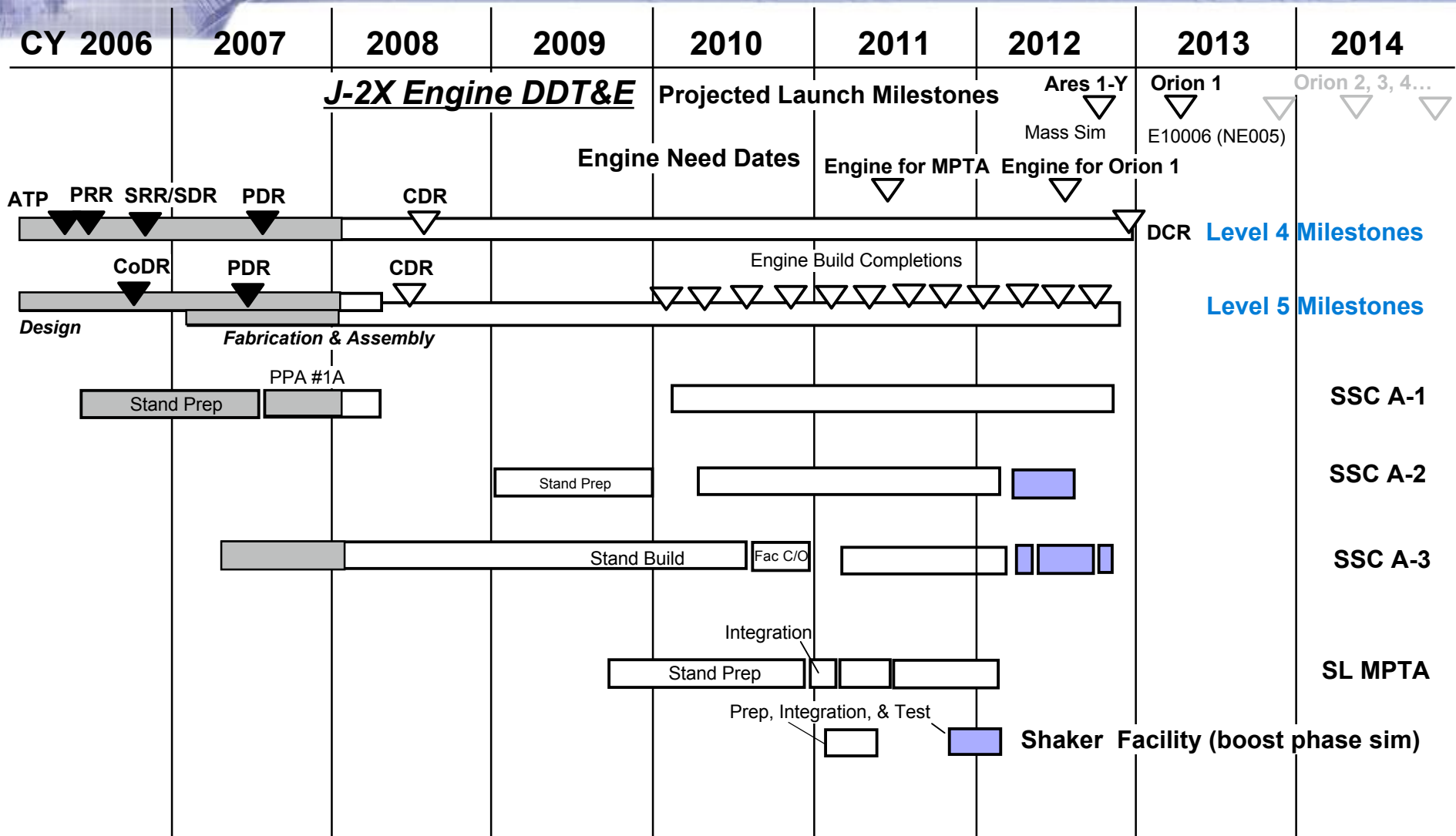
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# J-2X Basic Characteristics



- **Cycle** **GG**
- **Thrust, vac (klbs)** **294**
- **Isp, vac (sec)** **448**
- **Pc (psia)** **1,337**
- **MR** **5.5**
- **AR** **92**
- **Weight (lbm), max** **5,450**
- **Secondary Mode MR** **4.5**
- **Secondary Mode PC** **82%**
- **Restart** **Yes**
- **Operational Starts** **8**
- **Operational Seconds** **2,600**
- **Length (in), Max** **185**
- **Exit Dia. (in), Max** **120**

# J-2X System Development Plan

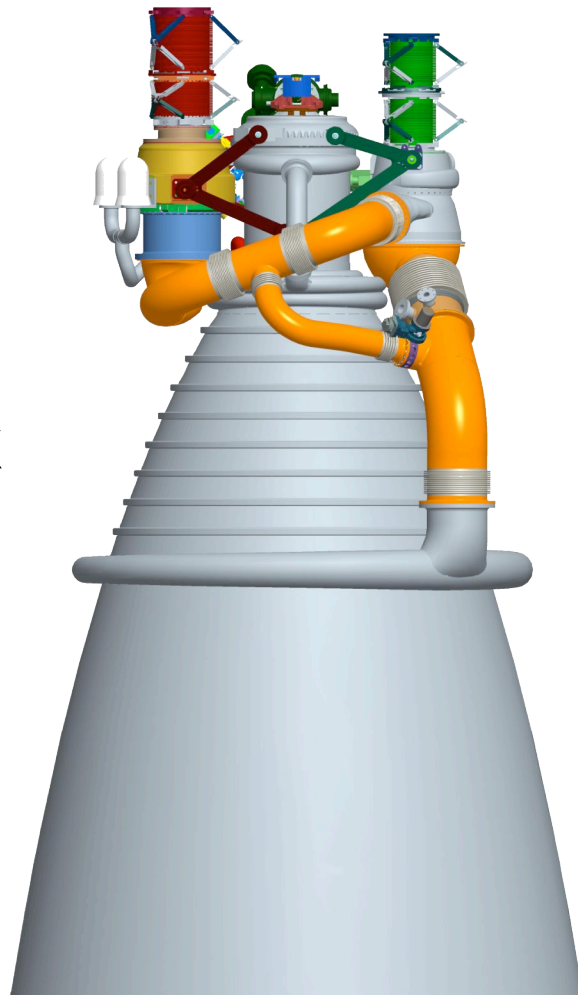




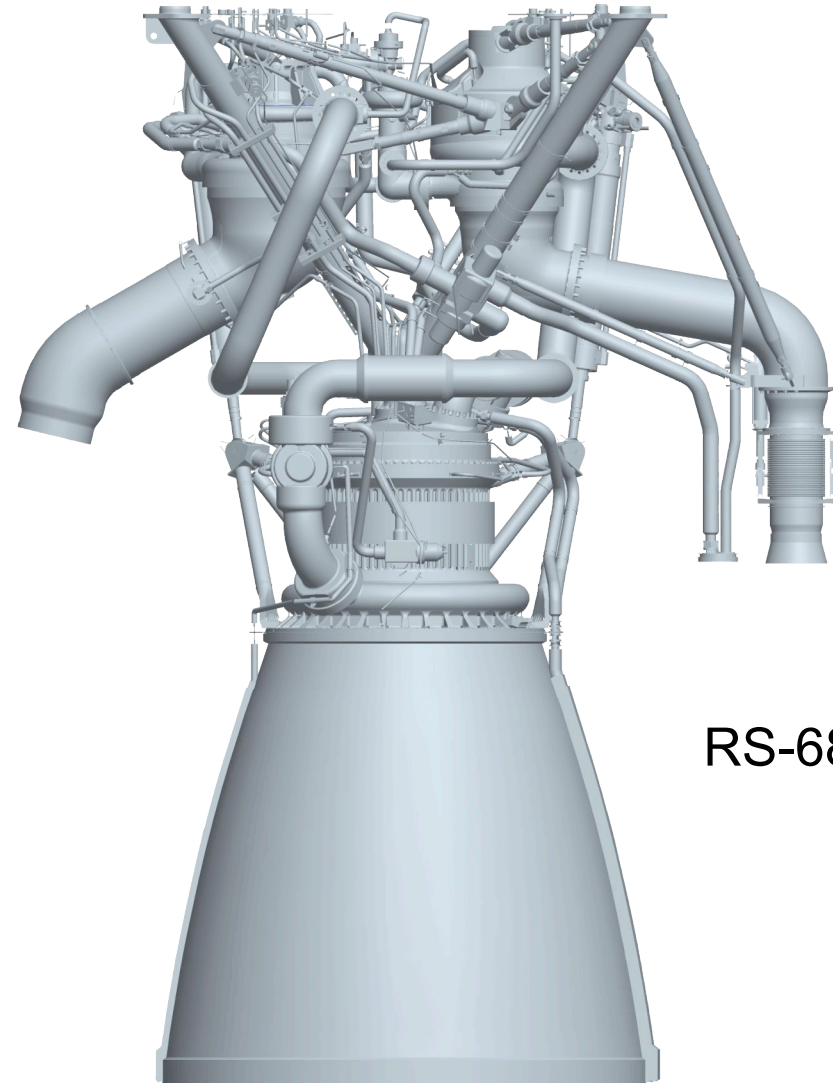
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# J-2X & RS-68 Size Comparison

J-2X



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RS-68

# J-2X Accomplishments



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**Powerpack 1A in A-1**



**51 Element Injector**



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# J-2X Program Summary

- **DDT&E Contract definitized through 2012**
- **Working proposal for additional tests/hardware**
- **Increasing staff to CDR next summer**
- **Long lead hardware orders underway**
- **Building supplier base for long production run**

**58 Months until J-2X DCR**