



Mars Reconnaissance Orbiter

Top Key Risk Chart

F. Li

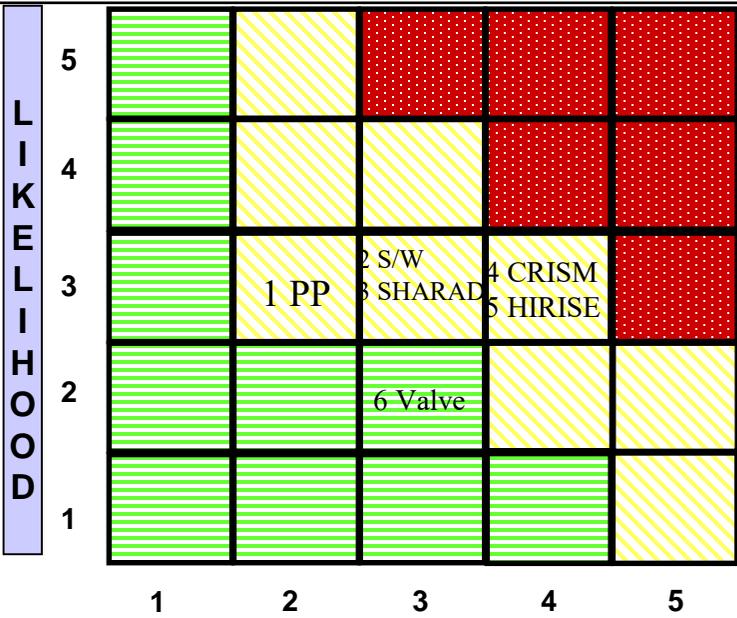
Jet Propulsion Laboratory/California Institute of Technology

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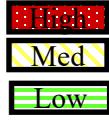
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MRO Top Key Risk



Severity



TOP KEY RISK LIST

- 1 Planetary protection not met
- 2 Flight software not completed
- 3 SHARAD development late or not at all
- 4 CRISM development problems result in cost/sch. hits
- 5 HiRISE development problems result in cost/sch. hits
- 6 Prop valve retrofit late - schedule hit

Consequence of Occurrence CONSEQUENCES

Level Mission Risk Level definitions:

- 5 Mission failure
- 4 Significant reduction in mission return
- 3 Moderate reduction in mission return
- 2 Small reduction in mission return
- 1 Minimal (or no) impact to mission

Level Implementation Risk Level Definition:

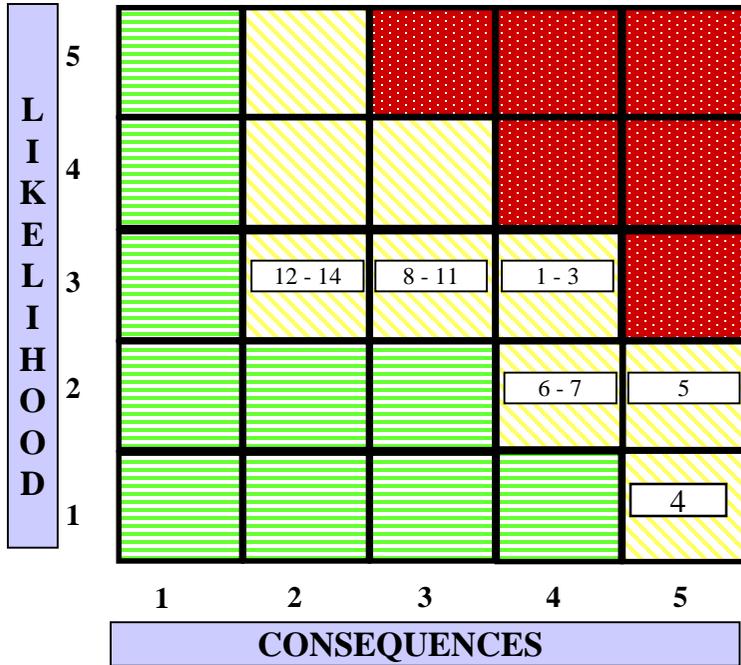
- 5 Overrun budget and contingency, cannot meet launch with current resources
- 4 Consume all contingency, budget or schedule
- 3 Significant reduction in contingency or launch slack
- 2 Small reduction in contingency or launch slack
- 1 Minimal reduction in contingency or launch slack

Likelihood of Occurrence

Level	Likelihood	Level Definition
5	Very High	>70%, Almost certain
4	High	>50%, More likely than not
3	Moderate	>30%, Significant likelihood
2	Low	>1%, Unlikely
1	Very low	<1%, Very unlikely



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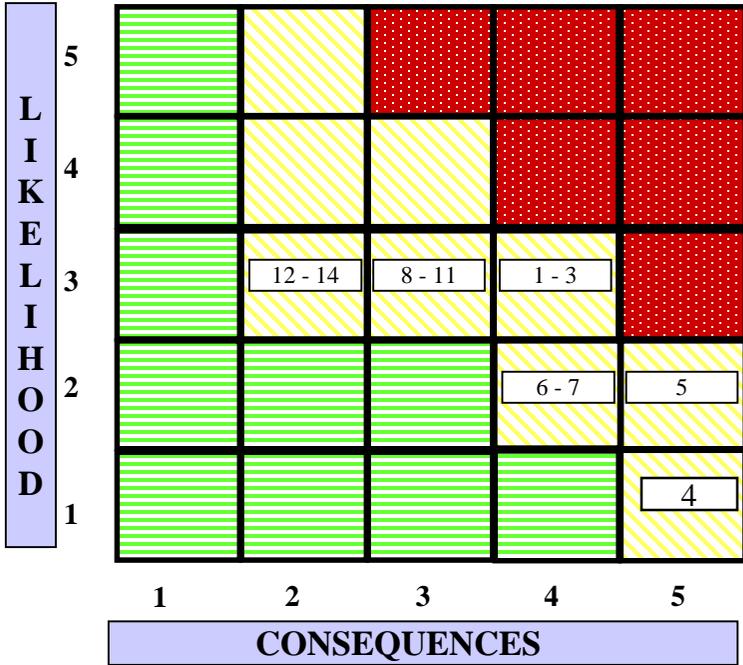
Rank & Trend	Risk ID	Approach	Risk Title
1 ↓	457	M	MCS Jitter exceeds requirements
2 →	441	M	HiRISE gain instability resolved late
3 →	459	M	HiRISE does not work properly at its extreme (PF) temperatures.
4 □	467	W	Battery Charge Module Single Point Failure
5 →	463	W	SHARAD using MEC FPGAs
6 □	468	M	UMC FPGA ESD Sensitivity
7 ↓	466	M	Residual contamination on MCS
8 ↓	175	M	SHARAD antenna fails to deploy fully after aerobraking
9 →	442	M	SoftSim Platform not proven to be suitable for FSW testing
10 →	443	M	OTB certification is insufficient or late

Criticality	L x C Trend	Approach
High	↓ Decreasing (Improving)	M - Mitigate
High	↑ Increasing (Worsening)	W - Watch
High	→ Unchanged	A - Accept
Low	□ New Since Last Period	R - Research



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Rank & Trend	Risk ID	Approach	Risk Title
11 ↓	456	M	JAXA does not provide separation coverage
12 →	358	W	Nav unable to meet Short Term Nav Predict Requirement
13 ↓	449	M	Late check out of FSW on vehicle may identify problems late in the flow
14 →	450	M	TLYF exceptions may not be approved and will require additional testing

Criticality	L x C Trend	Approach
	↓ Decreasing (Improving)	M - Mitigate
	↑ Increasing (Worsening)	W - Watch
	→ Unchanged	A - Accept
	□ New Since Last Period	R - Research