



Schedule Forecasting Methodology

Measurement of Potential Risks on High
Technology Projects

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Objective and Approach

- Approach developed by the Gravity Probe B business team and applied to X-37.
- Identifies threats and liens above and beyond project risks. These threats and liens could result in new project risks.
- Apply threats and liens to current contractor forecasts, based on past contract performance and assessment by gov't technical and business experts.
- Method enables evaluation of the day-to-day project issues that may impact critical path.
- As key technical risk and liens are “burned down” they are removed from the forecast and retired. Forecast dates are improved (if applicable).

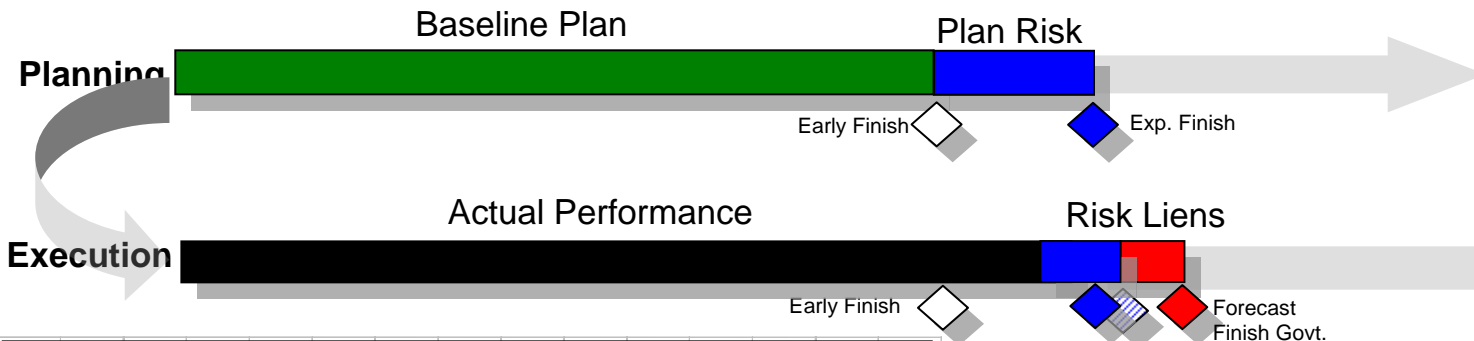


Schedule Reserve vs Liens Threat Comparison

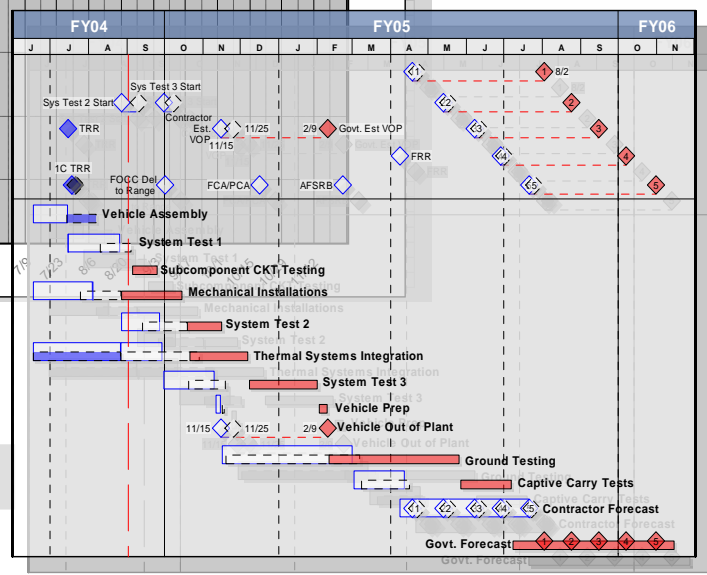
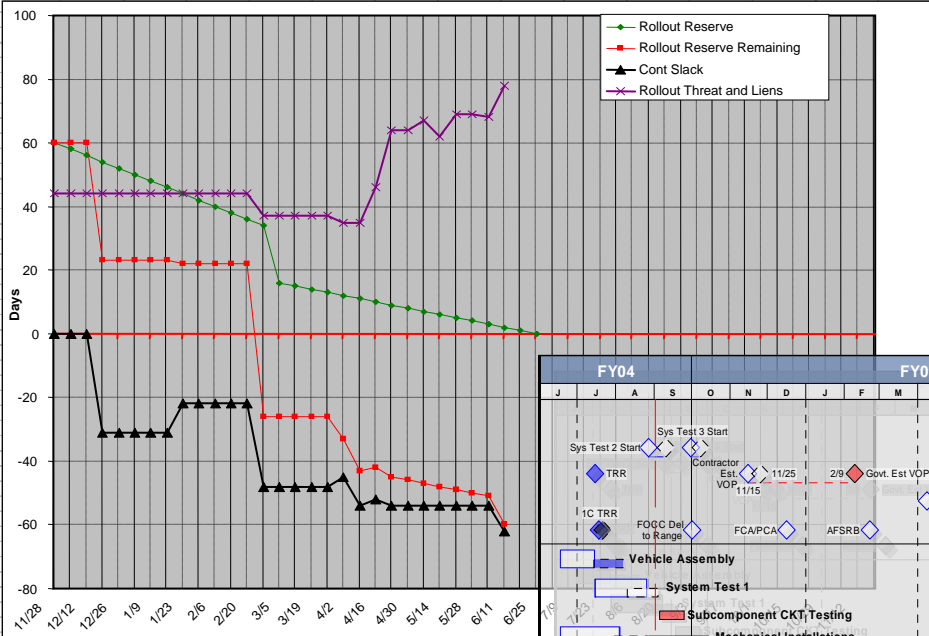
- Identify project liens and threats
 - *Durations not in the baselined plan (liens)*
 - *Durations approved by Program Control Board (PCB) and in baselined schedule plan (threats)*
 - *Quantify unplanned durations in time (weeks, days, hours)*
 - *Develop a realization factor (subjective assessment)*
 - *Compute the total unplanned durations into a lien and threat amount.*
- Develop schedule reserve
 - *Weekends are used for schedule reserve. Other methods can be used to develop schedule reserve.*
- Compare the actual schedule reserve plot to the liens and threats.
- Provides advance planning techniques by using quantifiable measures of schedule risk.



Project Assessment Model



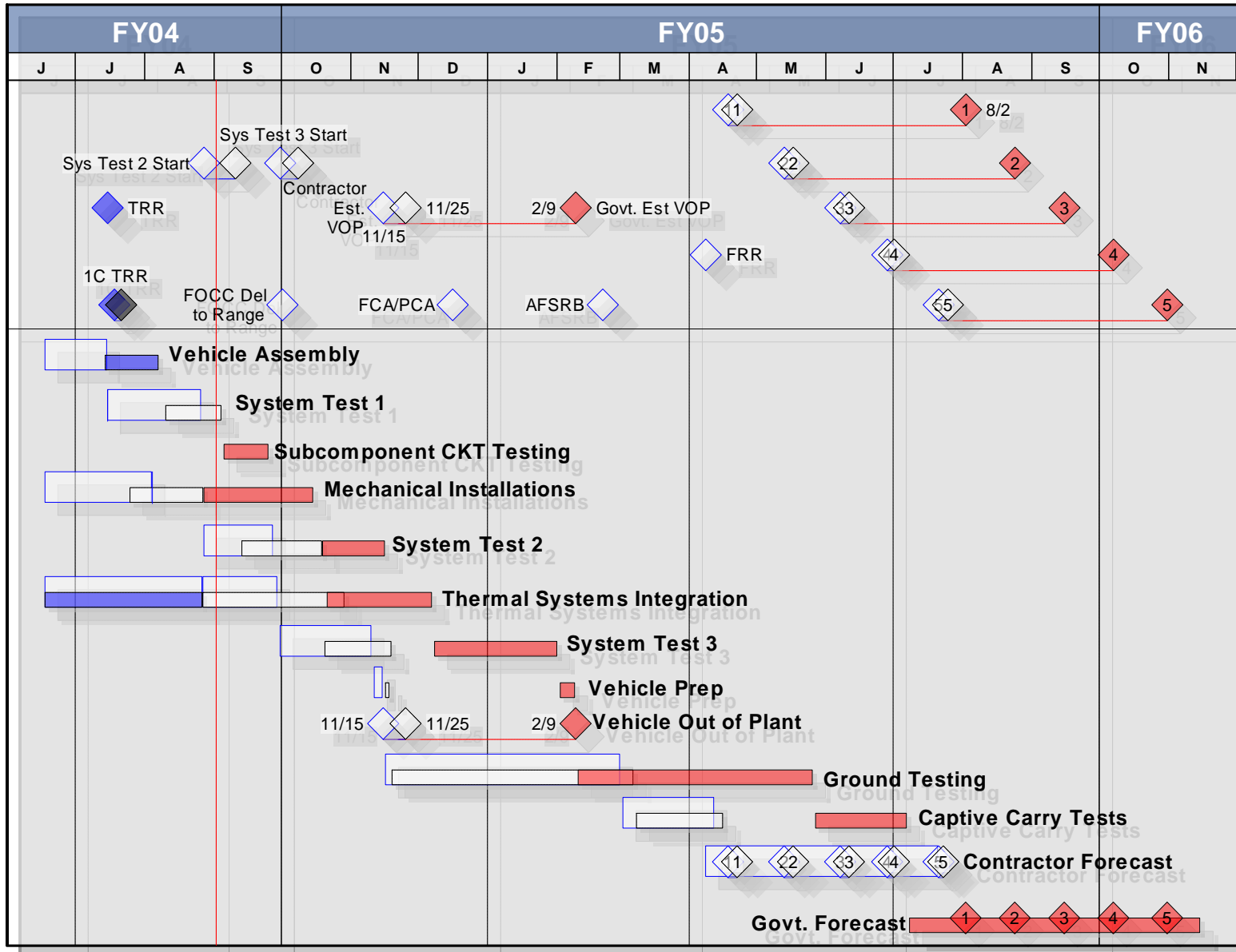
- Task in place with resources
- Contractor identified risks monitored with Continuous Risk Management (CRM)
- Budget reserve provided



- Contractor realizes effects of plan risks resulting in poor performance.
- Contractor establishes new forecast based on poor performance driving schedule logic.
- During performance, liens and threats are identified outside of the planned risk. Identified on a daily basis and assessed.
- Govt. establishes new forecast based on identified liens and threats.
- Govt. tracks reserve plan vs. actual reserve usage. In addition, liens and threats plot is provided.

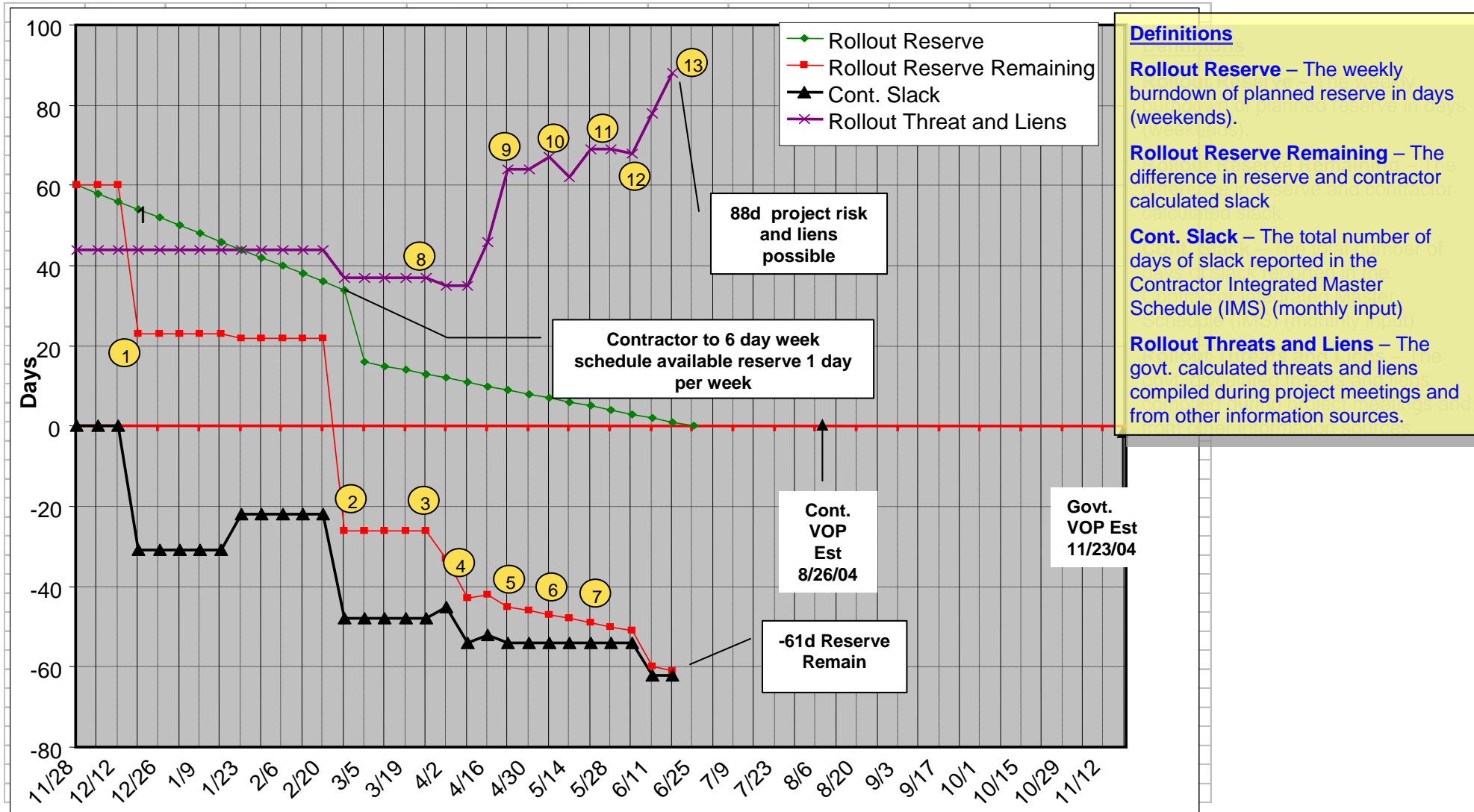


Threats and Liens Schedule





Vehicle Delivery Status Plot (Historical)





Events (Historical)

- 1 Delays in Pallet and Cabling Fabrication
- 2 Delays in Completing Wirebird Testing, electrical component delivery delays
- 3 Electrical component delivery, Control Surfaces Fabrication, Flight Actuator/Controller, TPS Fabrication and Installation delays. Improvement in Slack based on resolution of Testing starting earlier using 3.0 S/W.
- 4 Delays in Flight Controllers delivery, TCS and TPS Installation fab and installation delays.
- 5 Improvement in slack status due to contractor going to 6 day work week. Greater improvement if First flight slack and date than in the Rollout date. Rollout slack remains the same but since more work days are involved, improved rollout date is the result.
- 6 Delays in the completion of pallet integration for testing. Component 1 the primary driver. TPS installation could be the looming problem in the future. Contractor lacks the resources to stay on plan.
- 7 Delay in start of test pushes out both rollout and FF by 5 days.
- 8 Delay in S/W Delivery.
- 9 Improved Threats and Liens due to completion of testing, Ruddervator lien added.



Events (Historical)

- 10 Ruddervator Actuator Lien changed to a threat (within the Contractor schedule) increased to effect 10 days due to contractor forecast of 7/15 completion of installation of LH Ruddervator (Constraint to testing) and Pneumatic tubing lien added due to cleaning facility breakdown at plant, may result in up to a week slip (Contractor working to resolve ASAP).
- 11 Cleaning facility back in action; realized 1 day slip in pneumatic tubing installation.
- 12 CKT Adapter procurements may delay testing up to a month.
- 13 CKT Adapter procurements will delay testing for one month, expected testing start to be now 7/15.



Forecast Accuracy (Completed Activities)

- This schedule approach was implemented and forecasting of Test 1 validated this approach.
- The following table summarizes the comparison of the contractor forecast to the Govt. forecast.

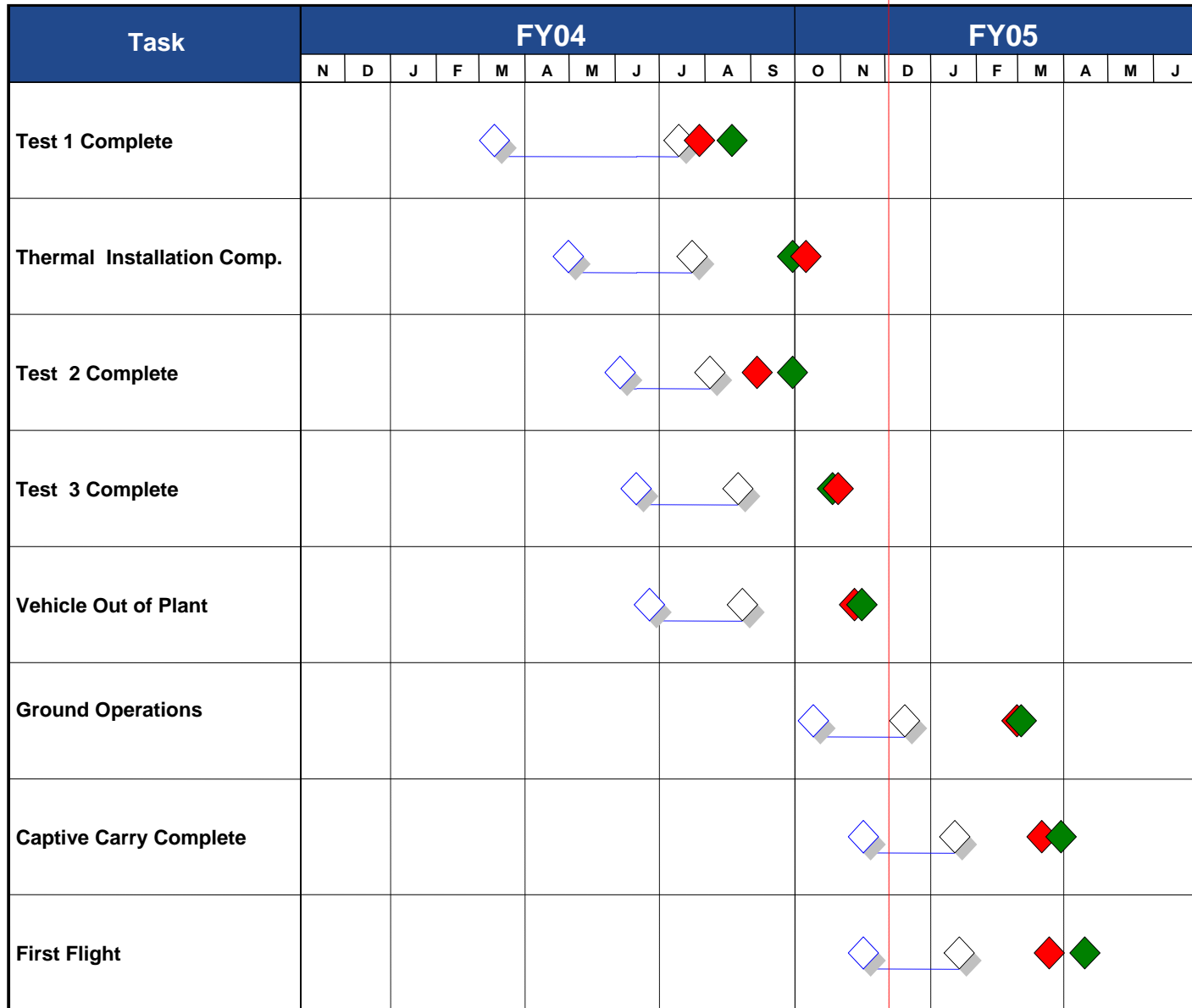
Test 1 Complete			
Govt. Schedule Update (Weekly)	Forecast Date	Cont. DR Submission	Forecast Date
3/24/04	6/7/04	March-04	5/11/04
3/31/04	6/7/04		
4/6/04	6/7/04	April-04	5/27/04
4/13/04	6/7/04		
4/21/04	6/15/04		
4/28/04	6/9/04		
5/5/04	6/14/04	May-04	5/27/04
5/12/04	6/17/04		
5/19/04	6/8/04		
5/26/04	6/8/04		

The Govt. generated Threats and Lien's not included in the Contractor plan correctly predicted the completion of testing 3 months prior to the contractor estimate. The Contractor schedule did not forecast the correct end date until June 04.

Test1 was completed on 6/7/04



Forecast Accuracy (Future Activities)



Contractor provided a new proposed baseline schedule in July 2004. The new dates coincide more correctly with the Govt. risk schedule predicted in June 2004.

