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# TDRS Visiting Vehicle Vector Support

Network Support Group  
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# Agenda



- Background
- Forward Plans
- Vector Management ISI
- Conclusion





# Background



## HTV-2 Late Acquisition

- Problem
  - Two late acquisitions on TDE (F-10) (CDS # 61208) due to stale vector
- Impact
  - 088/1604Z and 088/1740Z: Total reported data loss 3 min 53 sec
- Resolution
  - New vector was delivered by FDF
    - 088/1921Z TDE event locked up as expected



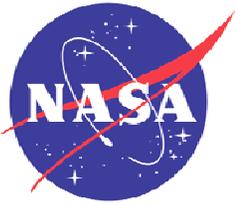


# Background Cont.



- The problem was identified as late acquisition on two TDRS events during the departure from ISS phase of the HTV-2 mission (29 March 2011). A similar occurrence happened during the HTV-1 mission.
- The problem was resolved once the JSC TOPO shipped out an updated vector to WSC.





# Background Cont.



- JSC TOPO indicated that the problem occurred during the post departure period of both the HTV1 and HTV2 missions and after the completion of the separation burns.
  - Problem occurred approximately 24 hours post departure
  - JSC TOPO received a call that there was a late acquisition on both TDRS spacecrafts.
- Initially, thought to be a vector problem
  - HTV-1: The updated vector was sent a little later because team was trying to investigate the anomaly.
  - HTV-2: The TOPOs generated a vectors after approximately two TDRS passes.
- JSC TOPO confirmed with WSC that the vector they sent out to FDF, and what FDF sent to WSC was the same. There was no data transmission problem.





# Background Cont.



- Thoughts were that the late acquisition was most likely due to an outdated vector.
- Once WSC received an updated vector, there were no more delays in acquisition.
- This late acquisition problem occurred on the ATV2, HTV1 and HTV2 missions.





# Forward Plans



- TOPO will update the vectors more often for visiting vehicles to prevent late acquisition problems from occurring in the future:
  - An updated vector will be sent out at a designated time between post departure and re-entry (18 to 24 hours).





# Vector Management ISI



*The purpose of this ISI is to ensure that solid lock is maintained on the HTV-3 spacecraft during the post-departure phase of the mission.*

*It has been determined that FDF should generate vectors at designated time frames during the departure and post departure phases of the HTV mission lessens the chance of losing lock with the spacecraft.*

*The plan is for FDF to generate vectors during the following times:*

*When HTV departs from ISS.*

- *L-18 hours from departure.*
- *L-24 hours from departure and prior to re-entry.*

*When there was a problem with maintaining lock during previous HTV missions, generating an updated vector seemed to resolve the problem.*





# Conclusion

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Open Discussion/  
Action Items

