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Sally K. Ride Papers - STS-51L Mission Operations Manual

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a. Schedule and Crew Workload

Currently, crew training is normally scheduled over a 25-week period. From launch minus 25 weeks (L-25) to L-11, standalone training is accomplished utilizing training software loads for other missions. At L-11, the flight-specific training software load is scheduled to be available for standalone training. From L-11 to L-0, SMS training is accomplished with flight-specific software in a flight configured SMS using flight-specific procedures. If any of the necessary elements is late (software, SMS configuration, procedures), required training is compressed, increasing the number of hours that are scheduled in the last few weeks prior to flight. Figure 1 shows the number of days prior to launch during which standalone training began for flights Space Transportation System (STS) 41-B through STS 51-L. There is a trend beginning with STS 51-I towards a late start of standalone training. Both STS 61-C and STS 51-L were about 3 weeks late. STS 61-E was going to begin standalone training at least 1 month late. The trend was projected to continue into the future and is discussed further in section VE. Figure 2 shows the number of hours per week scheduled for the crew from missions STS 51-I through STS 51-L. The average begins at about 45 hours per week at L-9 and increases to about 60 hours per week at L-1. This chart includes 10 hours per week for meals and travel. The result is that the hours per day workload of the crew close to flight is large. Reducing the formally scheduled training to the projected template levels would aid in lowering the crew workload during this timeframe.

Two factors causing the late delivery of the required training elements are late changes in the mission manifest and flight design and failure of the production system to meet schedule commitments. If the manifest, including secondary payloads and payload specialists with their experiments, could be stabilized at the L-5 month milestone, it would give the training process a chance to proceed according to the template. Late manifest changes initiate unplanned training requirements, especially if the crew assignment is impacted. Launch slips have provided some schedule relief in the past. However, launch slips also cause inefficiency in the training system by necessitating a reallocation of previously scheduled facilities and a replanning of training schedules. The impact of a launch slip affects not only the assigned crew, but the crews immediately following in the training cycle. If one element of the production process fails to meet its schedule, the effect is to serially impact the training schedule until the product is available.

b. Facilities

The main STS training facility is the SMS. It has been a constant source of problems throughout the entire program. Today, the facility computers and equipment are old and obsolete. Plans exist to update the equipment and increase the capacity of the SMS as a teaching machine. However, the funds for those modifications are programmed out over a 10-year period and are minimal.

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