



Schedule for Ladder Assembly

Eduardo do Couto e Silva



Assumptions for Calculation

- 2 trays a day
- Include minimum time for cleaning and moving parts in the lab
- No equipment downtime (usually uptime is 80 -90%)
- All parts available (assume HPK & others will never be late. Note that delay on parts is usually is one of the main problems)
- 1 minute to upload data into database for every step in the production (this is very efficient and the database is not yet designed !)
- 2 bonds/s (for typical wire bonder settings)
- 1 strip/s (for typical probe station with step and repeat)
- Time estimation for encapsulation may not be accurate
- Minimal visual inspection (Note that CDF & D0 spent 25% of their time in repairs)
- Usually 30 minutes a day required for clean up.
- Rely on QA from baby detectors + test structures (see Hartmut's talk)
- Because of all the above , I decided to ADD 50% contingency for the time estimated



Assembly scheme – 8 Steps

1. SSD – IV+Vdepletion
2. Ladder assembly
3. Mechanical Survey
4. Electrical test (IV)
5. Wirebond
6. Electrical Test (IV) + C strip
7. Encapsulation
8. Electrical Test (IV)



Man years for Ladder Assembly

CERN year = 200 days , SLAC year = 240 days

		200 days	240 days
Number of man hours needed for ladders	6086		
Number of days (8h)	761	4	3
Number of days (6h)	1014	5	4
Number of days (8h) + 50% contingency	1141	6	5
Number of days (6h) + 50% contingency	1521	8	6

Total number varies between 5 to 8 FTE to get the job done in one year

Equipment: 1 wire bonder

2 probe stations (1 manual + 1 semi-auto)

1 automated gluing dispenser



Overview

- Begin Ladder production – Apr 24, 2001
- End Ladder Production – Apr 30, 2003
- Note: if SSD production is consistently late by one week every month, then SSD production may push the schedule further into Oct 2003. (Other experiments experienced delay in the delivery of parts)
- There is an overlap between the last 8 months of Ladder production and beginning of Tray assembly (assume tray assembly has to be finished by Sep 15, 2003). This will require ramp up of resources in Oct 2002)