

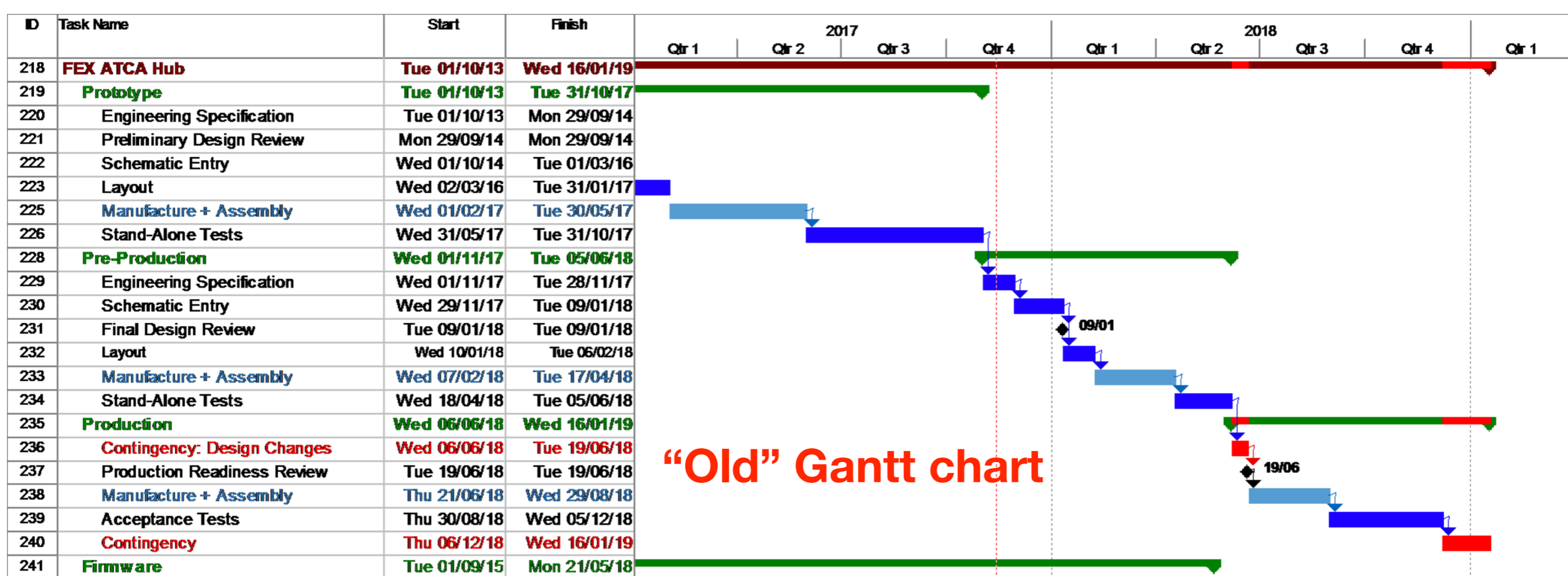


Hub Production Scope

- ❖ Hub module production run will be 19 modules
 - 8 modules for the system
 - 4x eFEX
 - 2x jFEX
 - 2x L1Topo
 - 3 dedicated spare modules
 - +1 relative to nominal L1Calo plan to counter longevity uncertainty
 - 2 modules for MSU test bench
 - 2 modules for CERN test installation
 - 2 modules for UK test benches
 - 2 overall “acceptance” spares



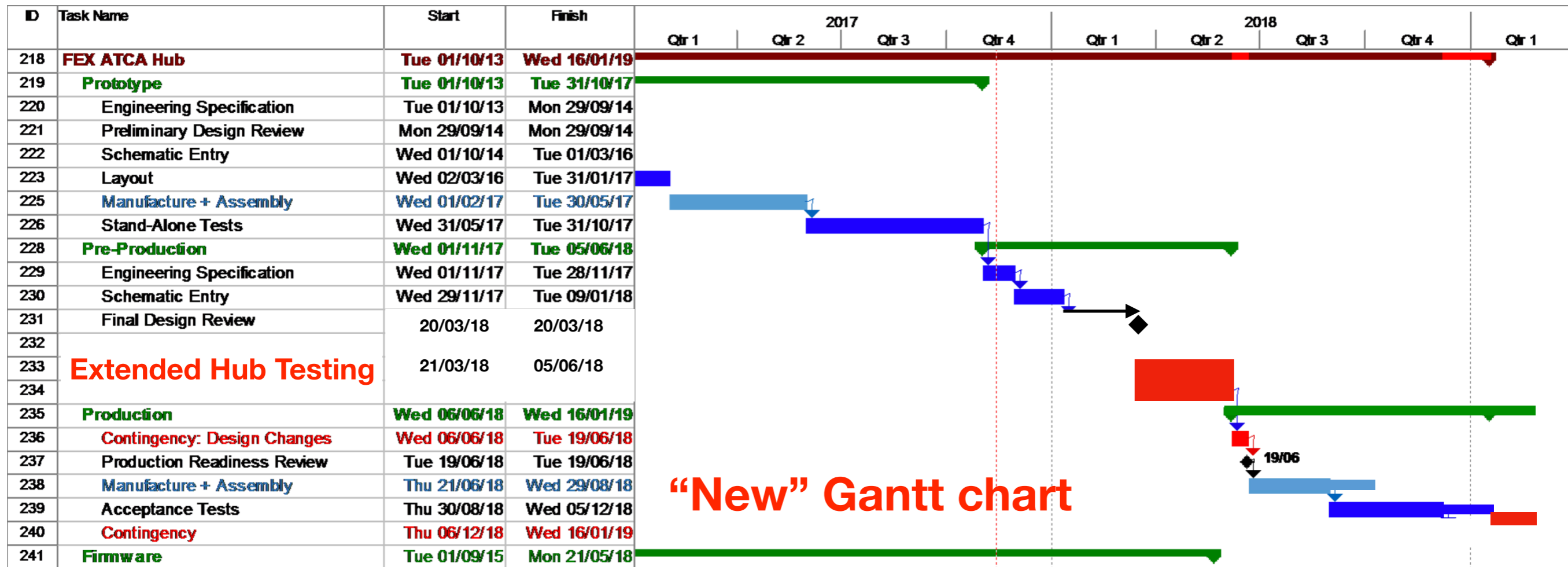
Post FDR Plans & Schedule



- ❖ Post-FDR schedule will change relative to our working schedule
 - FDR is happening 2 months later than hoped in 2017
 - This squeezes us a bit, but it's recoverable
 - No anticipated changes to Hub design or manufacture process
 - Pre-production phase can be phased out.
 - Use this period for extended Hub module testing, as described in testing presentation.
 - Will describe plan for the production step on next page.



Proposed Schedule



- ❖ PRR date stays at early or mid June ‘18
 - Review details of extended Hub testing
- ❖ Propose to split Hub production run into two chronological phases
 - Manufacture 22 production PCBs
 - Assemble 4 production Hubs as a pre-production phase to re-validate manufacturing process.
 - With two benches of HTMs, we can test 4 Hubs in just a few days.
 - If no problems are found, assemble remaining 15 Hub modules.
 - Extend manufacture/testing duration to accommodate full-bandwidth “soak tests” for all Hubs.