

# Technology Advances Breakout Group

1. Integration of interlocks. Some sites have already begun integration; e.g. ALS uses a single switch with isolated dual circuits for radiation safety system as well as laser system interlocks. A second such switch provides redundancy. Could likewise expand to include third isolated element for robotics. Needs single person as owner.
2. Inherently fail safe. Some sites already use beam transport characteristics for accident analysis, e.g. end user stations at ALS in which loss of vacuum would preclude radiation hazard.
3. ALS and SSRL are moving towards top-off mode. Safety analyses are underway. APS has operated in top-off for some time.
4. Relays for interlocks. Electromechanical relays are in use at ALS, SLAC, SSRL, LANSCE and possibly others. APS uses PLCs. The future will be with PLCs as state of the art has advanced, Software QA is an increasingly important issue.

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