

Training Advanced Photon Source Operators: From the Street to the MCR

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Glossary of Terms

- ANL – Argonne National Laboratory
- APS – Advanced Photon Source
- CO – Chief of Operations
- ACO – Assistant Chief of Operations
- LINAC – Linear Accelerator
- PAR – Particle Accumulator Ring
- LOTO – Lock Out / Tag Out
- ACIS – Access Control and Interlock System

Our Kind of Operator

- We do not deliberately seek out scientific backgrounds
- Search for various technical backgrounds including:
 - Military Personnel
 - Facility Operations
 - Energy Generation Facilities
 - Electronic, RF generation, vacuum, etc.
- Hiring decisions are based mostly on:
 - Demonstrated ability to complete training
 - Ability to handle rigors of operators lifestyle



Approach

- Purpose of training is to become a fully qualified operator
 - A fully qualified operator is one who is qualified on all four APS accelerators
- Three components to training and qualification:
 - Component #1 – Argonne National Laboratory Specific Training
 - Component #2 – General Operations Training
 - Component #3 – Accelerator Specific Training





Component #1

ANL Specific Training

- Required courses for all employees that work on or around the APS
- Developed by ANL Environment Safety and Health Office
- Takes place in the first 30 days of joining the group
- Trainee is placed on a day shift for access to management and training
- Courses include:
 - General Employee Radiation Training
 - Facility Familiarization
 - Tunnel Training
 - Hand Tool, Ladder, and Enclosed Spaces
 - Electrical Safety Training
 - Logbook and Alarm Handler Training



Component #2

General Operations Training

- Conduct of Operations
- Accelerator Physics for Operators
- Group LOTO training
- ACIS Training
- Takes place in the first 60 days of training
- Reinforced with written tests



Component #3

Accelerator Specific Training

- Designed by the Chief of Operations of the individual accelerator machine
- Training is conducted jointly by CO and ACO
- Trainee is placed with a crew and begins rotation
- Training and qualification are performed sequentially starting with LINAC and ending with the Storage Ring
- Five Phases:
 - Required Reading
 - Equipment Walkthrough Test
 - Written Test
 - Complete on-shift training with ACO
 - Console Test

Qualification Timeline

- Qualification order: LINAC – PAR – Booster – Storage Ring
- Expected to be completed within LINAC within first 6 months of employment
- Expected to be completed with entire program within 2 years of employment
- If a failure occurs, the trainee will be re-trained and re-tested
- Re-qualification tests every 2 years.
- If a failure occurs with re-qualification the operator's qualification will be suspended until such time as they pass



Success

- Since 2003
- Hired 11 operators
- 7 are still with the group
- 1 has been promoted to ACO
- 4 left within 1 year
 - 1 left voluntarily for another opportunity
 - 3 did not complete the training



Challenges

- After qualification, the program effectively ends
- ACO's are encouraged to
 - Attend meetings with Physics and Operations staff
 - Keep abreast of operational and procedural changes
 - Communicate changes to crews
- Operator's are encouraged to:
 - Hone skills with regular practice during downtime
 - Expand skillset by completing operations projects including:
 - Web Page Development
 - Control Screen Development
 - Alarm Handler Development





Conclusion and Questions