

APS-TD Quality Facilities and Tools

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Quality Function Organization

In the Applied Physics and Superconducting Technology Division the quality function resides within the Quality & Materials Department (QMD). QMD employs staff with expertise in quality-related fields and activities such as:

- Quality Programs (e.g. DOE, ISO) both for operations and for projects
- Metrology
- Application of the Geometric Dimensioning & Tolerancing (GD&T) Code, both for designs and for inspections
- Failure Modes & Effects Analysis (FMEA)
- Process Engineering
- High-vacuum leak checking
- Electrical (R, L, Q) testing
- Hydrostatic and flow testing
- Calibration

World-Class Process Quality Tool

In addition to expertise in measurements, we also developed an electronic traveler system, which is used for all travelers in APS-TD, along with Mu2e, LCLS-II, HiLumi LHC Upgrade Project (including work at BNL and LBNL), PIP-II, and LCLS-II HE.

The tool, Vector, has world read-only access for the purposes of sharing data amongst multi-site collaborations:
<https://vector.fnal.gov/>

Inspection Equipment

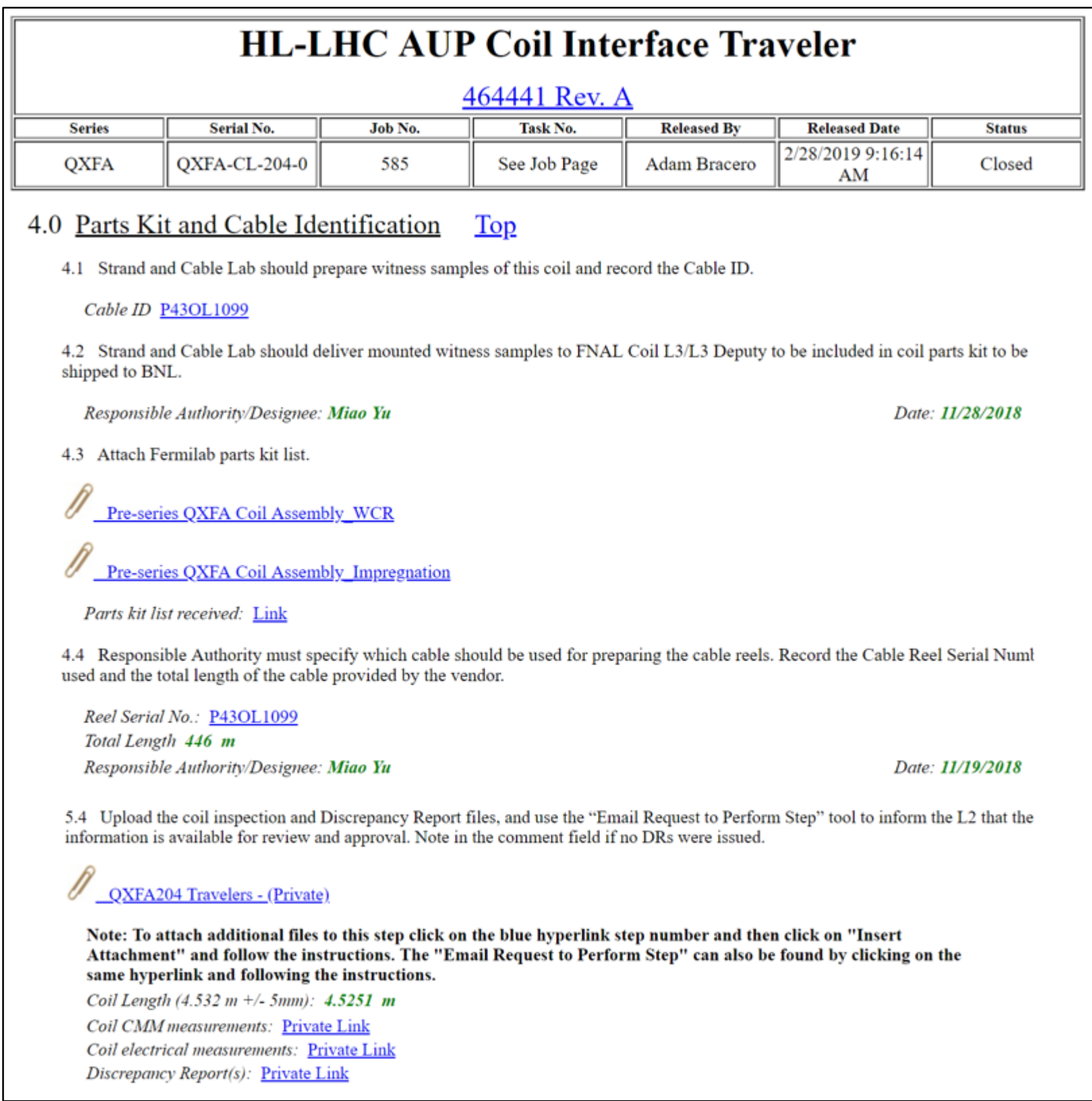
The department maintains and uses a wide range of inspection and measurement equipment in the support of the division, lab, and the projects. This equipment includes:

- Coordinate Measurement Machines, including the use of Scanning Probes to generate point clouds
- Laser Tracker
- Optical Comparators
- Alloy Analyzer
- Magnetic Permeability
- Leak checking and vacuum equipment, both conventional and contra-flow, and dry or oil-based
- Hipoters, Ringers, RLQ measurement tools
- Hydrostatic and flow carts
- A plethora of hand gauges

Services Offered

While our primary customers are within APS-TD, our services are offered to the entire laboratory as the primary resource within the lab with the breadth of skills, expertise, and facilities for high-precision measurements and process controls.

These tools and skills are suitable for work in the support of accelerator operations, R&D, as well as DOE O 413 Projects.



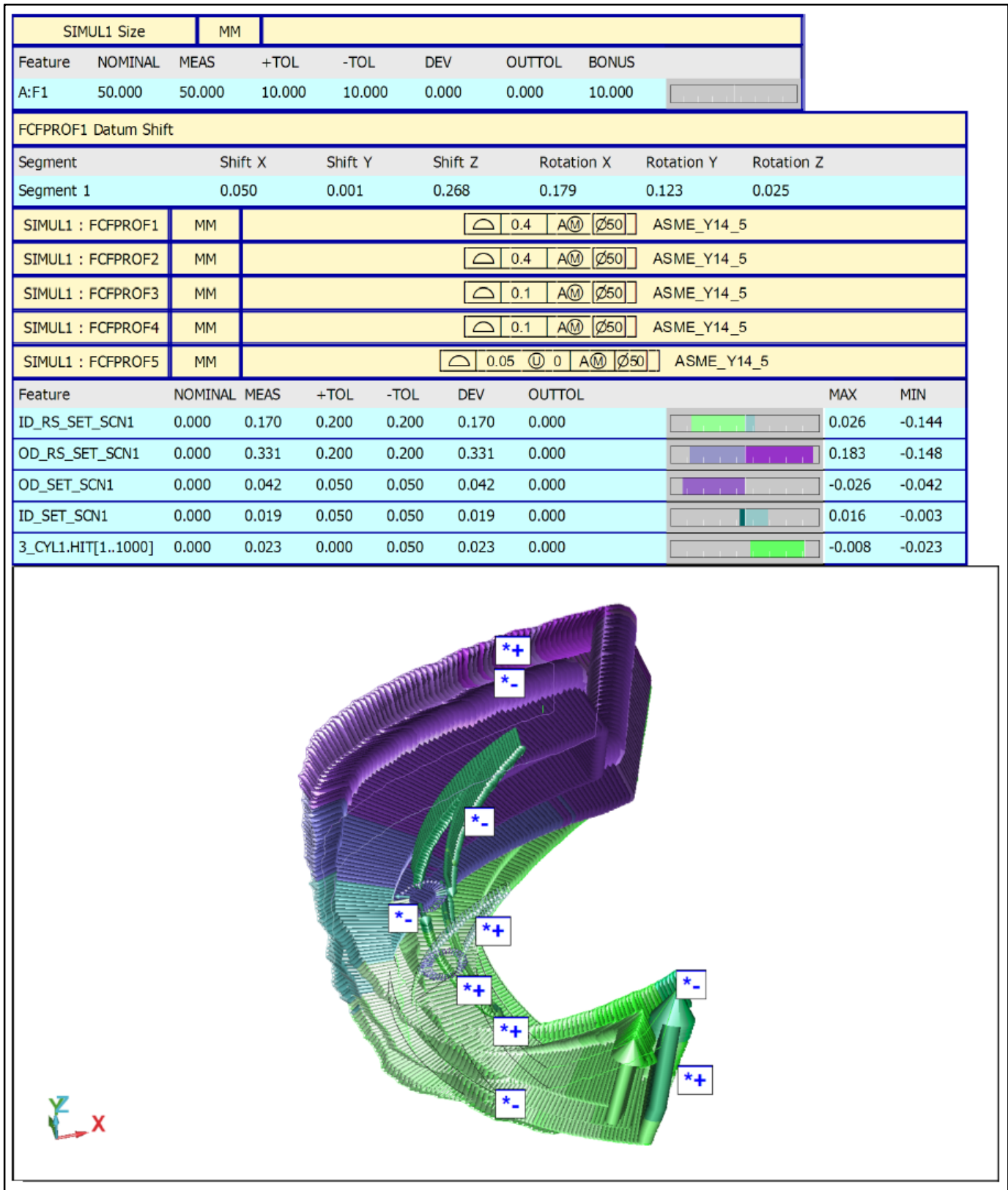
Example electronic traveler



Handheld Alloy Analyzer



CMM measuring HiLumi LHC coil



Example CMM inspection report

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