Ralph Bechtold

Engineering Specialist
Accelerator Systems Division
Mechanical Engineering Group

Major Tasks

- Daily planning, work assignment and coordination of maintenance and monitoring tasks
- Implementing safety and cross training programs for the ME/Water technicians
- Provide computer and Web support for the Mechanical Engineering Group

Debbie doing a LOTO station audit

Cross-training room secondary pumping system MCC

Planning and Scheduling

- Daily work assignments
  - User support
  - Routine maintenance
- Coordinate maintenance and upgrades during shutdowns
  - User support
  - Support of other groups within APS
- Work Schedules

ME/Water Technician Weekly Assignments

Technician	Task	R.E.
Bergthold	Work on Love controller replacement with PLC prototype	Putnam
Bosek	RF maintenance	Morrison
Bracken	RIA prototype work	Sharma
Burke	DI water manifold work in Beamline 11BM A	Dortwegt/Theres
Croupat	Spare DPT work & hose inventory	Theres
Deleon	New test pumping skid	Ferry
Dench	New test pumping skid	Ferry
Eriksen	Vibration & SWAA monthly compliance check	Putnam/Theres
Furst	DI water manifold work in Beamline 11BM A	Dortwegt/Theres
Johnson	Chilled water line removal for Beamline 14	Dortwegt/Theres
McKenzie	RF maintenance	Morrison
Moonier	New DI water manifold installation in Beamline 26	Putnam/Theres
Pace	RF maintenance	Morrison
Rauba	Absorber flow checks & Love controller replacement	Putnam
Rice	New DI water manifold installation in Beamline 26	Dortwegt/Theres
Wright	Chilled water line removal for Beamline 14	Dortwegt/Theres

Last Update: 07/14/2005

ME test station

Users beamline hutch installation

Technician work assignment

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Last Update: 07/14/2005

Cheryl B. wiring a PLC chassis

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ACCELERATOR SYSTEMS DIVISION
MECHANICAL ENGINEERING GROUP

ARGONNE NATIONAL LABORATORY

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| | APRIL 05 | | |

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ASD-ME/Water Group April 05 - May 05 Shutdown Work List

Location of Work	W.R. #	Techs	R. E.	Procedure# & Technical Notes		
LEUTL						
LINAC						
Install lower flow Griswolds in the in the LINAC water stations	17409	JD	RD	Technical Notes		
Repair RG2 scraper actuator	17427	MB	MJ			
Implement pressure logic in Allen-Bradley PLC for LINAC klystrons, tie-in with Johnson Controls	17407	JD	RD	Technical Notes		
Install flow orifice and transmitter for RF load in waveguide mounted above linac water station L1:WS1	17405	JD	RD	Technical Notes		
Check and lubricate the bunch compressor actuator screws if necessary	17430	MB	MJ			
lubricate the chicane scraper	17429	MB	MJ	Technical Notes		
Install new throttle valve in supply piping from standby pump for linac gallery (pumnp P-PR-SB or P-103)	17408	MJ/JR	RD	7-00322		
Loosen tubing clamps and pipe support bolts to move waveguide	17445	JD	RD			
Install flow orifice and transmitter for laser chiller	17406		RD	Technical Notes		
Remove corrector magnet L5:SC4	17770	HD/GM	MJ			
Remove unused water spigot from the tunnel wall	17801	HD	RB			
Disconnect water from PC Gun in tunnel	17876		RD			
PAR						
Leak check the bellows at the PAR horizontal scraper	17424	Vac	MJ			
Install two flow meters and two temperature sensors in return water lines for tuners for PAR-RF cavities.	17404	JD/GM	RD	710302-00002	Technical	
Remove covers on PAR kicker magnets and check for damaged or loose components	17616	DEB	CCP			
Repair leak in compressed air line.	17787		GS			
BOOSTER						
Pump Maintenance	17276	BF/RW	RF	7-00322		
RF Maintenance	Multi	JP/AM/Bos	LM			
Calibrate the septum microphones	17432		MJ			
fix the water leak on quad PTBQ5	17771	GM	MJ			
Fix the water leak on leutl quad BBQ5	17821		MJ			
Bldg. 420						
Install new Griswold cartridges on RF loads	17312	MB	GS			
Rebuild RF2's 3 way valve	17649	HD	GS			
Install piping ID tags for P-RFTS			GS			
RF Maintenance	Multi	JP/AM/Bos	LM			
Pump Maintenance	17276	BF/RW	RF	7-00322		
Drain water and reconnect hoses on RF loads in support of WR#17310	17746	JD	GS			
Modify RF 3/5 waveguide shutters support system in bld'g 420 to create access to electronics box.	17688	JP/AM/Bos	LM			
STORAGE RING						
Remove water and manifold from S38 RF (REPLACE TEFLON TAPE WITH SEALANT)	17439	MB/DB	RB	710302-00002		
Commission new monitoring equipment aboard mobile polishing cart used during SR vacuum chamber bakeout	17397	RW	RD			
Replace magnet hoses in sectors 10 and 11	17423	JP/AM/Bos	MJ	3101-00015		
Repair nonworking PN junctions on storage ring magnets	17673	CB/RR	MJ			
Disconnect the water from 14ID P1 and P2 XBPMs	17448	MB/DB	MJ	710302-00002	4102-00046	
Continue to paint Epoxy coating on AQ4 and BQ3 damaged quad water tubes	17425	DEB	MJ	Technical Notes		
Replace wiring on Sector 40 scraper	17426		MJ			
Investigate the SR dipole Klixon and PN junction wires touching bus, fix if necessary	17823	CB	MJ			
Replace ID vacuum chamber in S3	17657	MB/DB	CCP	710302-00002		
Support Bake-out in Sec. 13, 14, 15, 16	17396	BF/RW	BD	310301-00388		
Disconnect and blow out absorber circuits in sectors 13, 14, 15 and 16 in support of bakeouts for those sectors	17659	BF/RW	CCP	710302-00002		
Go - no - Go gauge measurements	17440	DEB/CB	RB			
Measure gap between pole tip and vacuum chamber on SR Sextupole	17428	CB	MJ			
Pump Maintenance	17276	BF/RW	RF	7-00322		

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Safety and Cross Training

- Monitor safety and training requirements
- Keep training current

- Implement and coordinate cross training
  - Cross-training room

Cross Training Facility

Data monitoring of pumping system

Storage Ring Absorber Cabinet

Two pump secondary water system with Mixing valve for temperature control

Love controller chassis and Allen-Bradley chassis

PSS Transmitter Box simulation

Pump rebuilding and alignment area

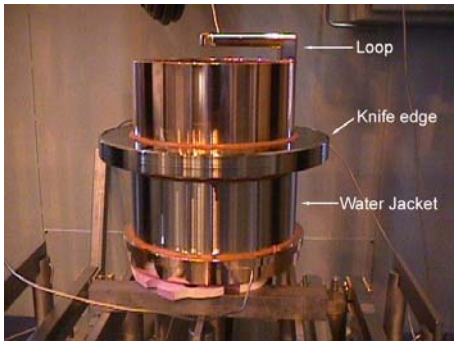
Secondary pumping system Motor Control Center

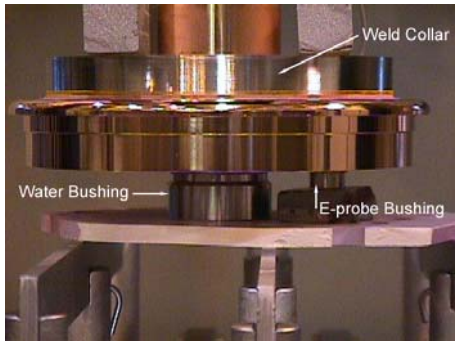
Computer and Web Support

- Provide quick resolution to problems
- Develop and update the extensive ME Website
  - Process variables
  - Spare parts
  - Technical systems status
  - Schedules and Calendars

Technical Highlights

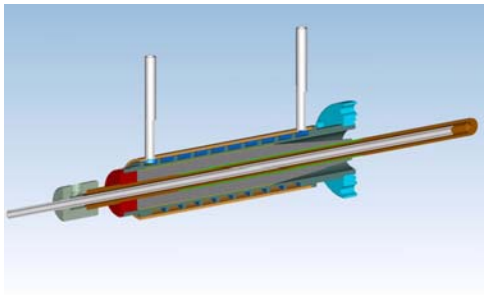
R.F. Support





- I participated in the redesign of the SR RF input Coupler. The new design significantly improved the ease of manufacturing and assembly, subsequently reducing the cost and producing a more reliable component.

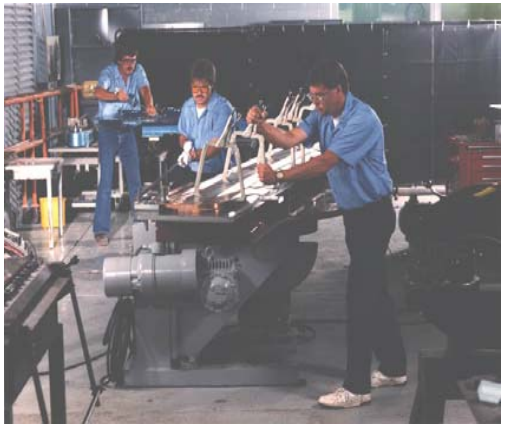
- In a coordinated effort with ANL Central Shops we developed a method in which the new SR RF Couplers could be gold brazed at the ANL site. This limits the chance of damage in transportation and gives us control over when and how the brazing gets done.



- After building a prototype E-Probe HOM damper, design changes were made to simplify construction and assembly.

Coil Winding and Magnet Building

• Having been a part of the ASD Magnet Group from its infancy, I played a part in the development of virtually every magnet at APS that was not an “off-the-shelf” item. I was involved with every facet of magnet production, from the design of tooling and fixturing for the stacking of cores, winding and potting of coils and silver brazing conductors, to the techniques used assemble the magnets in final production.



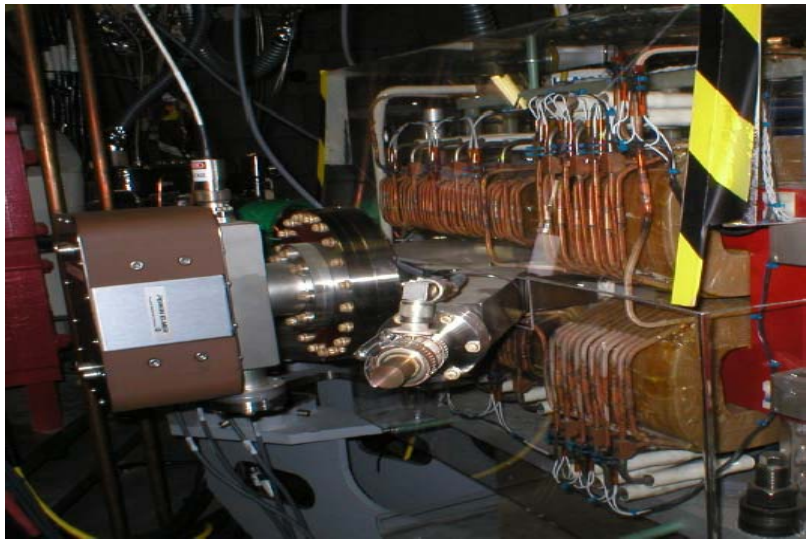
• The First Booster Dipole Coil being wound

• Winding a SR Quad Coil at Boston Transformer

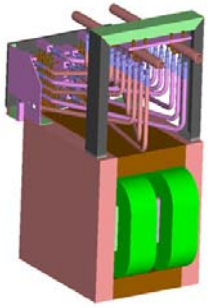
• A SR Sextupole being prepped for welding

• First SR Quad Prototype

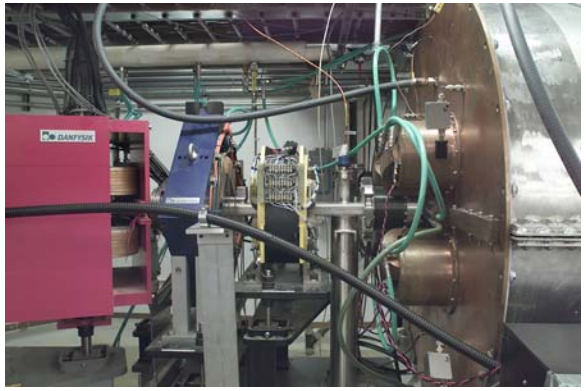
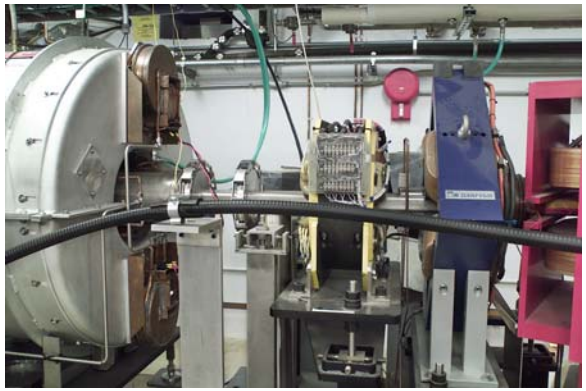
Coils and Magnets continued…



• The coils on the LINAC Alpha magnet, and the LEUTL end dump magnet are constructed of a series of "pancake coils". I developed a method to position and solder the many braze joints.



LEUTL End Dump Magnet



• The PAR Fundamental and Harmonic RF cavity tuners had to be wound around the ferrites. This required tooling and methods not used before.