

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

April 2016

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

► Arrivals/Departures

 Safety Stats



NOTE FROM OUR CHAIR: Thomas Roser

This year's RHIC run is coming to an end and preparations for the summer shutdown are already in full swing. The four different center-of-mass energies for the deuteron-gold collisions, 20 GeV, 40 GeV, 60 GeV and 200 GeV, were all successfully completed and with only minimal setup time of RHIC.

The testing and commissioning of the electron accelerator for the Coherent electron Cooling (CeC) test has made very good progress. The SRF electron gun has produced high brightness electron bunches of more than 4 nC, a record for SRF guns. Unfortunately the main accelerating SRF cavity is contaminated, which limits the achievable beam energy to half of what would be needed for the cooling experiment. The plan is to remove the cavity and have it cleaned at Argonne National Laboratory over the summer to be ready for the CeC test during the next RHIC run.

A major milestone was reached with the Ultrafast Electron Diffraction (UED) facility of the Accelerator Test Facility. First beam was achieved from the RF electron gun. Congratulations to the whole team! The UED facility, built as a collaboration between HEP Accelerator Stewardship and BES, is the first element of the ATF II upgrade program.

[VIEW UPCOMING CONFERENCE PROJECTIONS](#)

PROJECTIONS DUE ASAP

DID YOU KNOW??

Check out who received an employee Service Award this year! Collider-Accelerator Dept. employees who received a [Service Award](#).

Check out who received an employee [Spotlight Award](#) this year!

Derek Lowenstein was recently recognized with the first ever Xie Jialin Prize for outstanding work in the field of accelerator physics from the 7th Annual International Particle Accelerator Conference. Berndt Mueller and Thomas Roser presented him with the award during a special presentation on June 7th. Read more [here](#).

EVENTS/SEMINARS

June 22 - (Bldg. 815E, Conference Rm. | 11a)
Environmental & Climate Sciences
Department Seminar "Large-eddy simulation
of complex turbulent flows in energy and
environmental applications"

**June 27 - (Bldg. 734, ISB Conference Rm. 201
| 1:30p)** Condensed-Matter Particle Physics &
Materials Science Seminar "Weyl semi-metal:
a new topological state in condensed matter"

June 29 - (Berkner Hall Auditorium | 4p)
Brookhaven Lecture "515th Brookhaven
Lecture: Sean McSweeney"

July 4 - Lab Holiday: Independence Day



July 8 - (Bldg. 535 | 2:30p) Instrumentation Division Seminar "Observatory Control System and Imaging System for Astronomical Telescopes"

July 10 - Summer Sunday: Family Fun Day

July 17 - Summer Sunday: Exploring the Ultra Small

IN OTHER NEWS...

SNMMI's 63rd Annual Meeting Highlights History of FDG and Showcases New Research
More than 5,700 physicians, technologists, scientists and exhibitors gathered at the Society of Nuclear Medicine and Molecular Imaging's 2016 Annual Meeting, held June 11-15 in San Diego, CA. This year's meeting included a celebration of the 40th anniversary of FDG. [Read more.](#)

Local Scientists Take Home First Place Honors in BNL Science Fair

Budding young scientists filled the auditorium of the Suffolk County Legislature on Wednesday to educate Legislators on their outstanding projects that won first place accolades at the year's Brookhaven National Laboratory's Science Fair. [Read more.](#)

New Graphene-Glass Combo Powers "Spontaneous" Solar Cell

Brookhaven Does (Graphene) Windows. Apparently the Brookhaven solution to the graphene problem has been staring everybody in the face, ever since graphene was first discovered in 2004: ordinary glass window. [Read more.](#)

Research Teams Use DNA to Make 3-D Nanoparticle Structures with High Precision
DNA strands anchored to the surface of nanoparticles allow researchers to assemble the particles into three-dimensional crystalline lattices. Such control allows researchers to make new materials with desirable properties. [Read](#)





[more.](#)

Farmingdale takes first in BNL High School Science Bowl

Farmingdale High School students have one contest down to a science. [Read more.](#)

New cathode material stops batteries turning crusty with age

Scientists at three US Department of Energy (DOE) national laboratories have discovered how to keep a promising new type of lithium ion battery cathode from developing a crusty coating that degrades its performance. [Read more.](#)

RHIC Particle Smashups Find that Shape Matters

Scientists colliding football and sphere-shaped ions discover evidence supporting a paradigm shift in the birth of the quark-gluon plasma. [Read more.](#)

Two American Physics Labs Are Vying for a Billion Dollar Particle Accelerator

Two labs are vying for government funding to host a billion-dollar atom smasher, and the battle is getting political. [Read more.](#)



Neutrinos Change Their Flavor and Snag Another Nobel Prize

Early this morning the world learned that the 2015 Nobel Prize in Physics has been awarded to Takaaki Kajita and Arthur B. McDonald for discovering that neutrinos can change from one type to another. [Read more.](#)

World's largest atom smashers create world's smallest droplets

How long can a droplet shrink and remain a liquid? [Read more.](#)

'Inflatable Dark Matter' Could Explain Why We See Less Than Many Theories Predict

Many wonderful theories that explain the evolution of the universe fail because they predict more dark matter than is actually out there. Now a new paper proposes one event in the early universe that would reduce the amount of dark matter in all the theories. [Read more.](#)



Congratulations, Derek!

C-AD also celebrated Lou Snyder as he prepares for a very happy retirement! Good luck, Lou!

Ion collider produces droplets of primordial goo
 The Relativistic Heavy Ion Collider just spit out tiny droplets of a liquid researchers say resembles the seeds of the cosmos, primordial goo created by the Big Bang, which existed on briefly before cooling the matter that helped birth stars, galaxies and planets. [Read more.](#)

Brookhaven National Laboratory projects are up for awards

Four projects developed at BNL have been nominated as finalists for awards to be presented this year by a national magazine. [Read more.](#)

Scientists Create Primordial 'Perfect Liquid' in Lab

The BNL's Relativistic Heavy Ion Collider smashed together large nuclei at nearly the speed of light to recreate the fundamental particles in the primordial soup present during the earliest days of the universe. [Read more.](#)

World's most powerful digital camera being built by US Department of Energy

The US Department of Energy is building a digital camera that puts your camera to shame. [Read more.](#)







WHAT'S GOING ON IN OUR NEIGHBORHOOD?

Interested in Cycling?

<http://www.bicyclelongisland.org/majoride.htm>
<http://www.cyclotour.com/events.htm>

Interested in Running or Walking?

City Running Tours - Brooklyn Bridge Running Tour - June 24 in NYC
Community Ambulance 5K - June 26 in Sayville, NY
Coney Island Boardwalk 5K - June 26 in Brooklyn, NY
Southampton Firecracker 8K - July 3 in Southampton, NY

DAY AT THE VINEYARDS...

Duckwalk North - SOUTHOLD - Music on Saturdays (4-6pm)

Castello di Borghese Vineyard & Winery - CUTCHOGUE - Vineyard Tours & Wine Tastings Every Thursday & Sunday at 1pm & FREE Jazz Every Saturday (2-4p) with Marguerite Volonts

Jamesport Vineyards - JAMESPORT -Live Music from 1-4pm every Fri, Sat & Sun

Martha Clara Vineyards - RIVERHEAD - Live Music every weekend

...Check out the [LI Running Calendar](#) for more!

For the Kids:

Youth Programs - Port Jefferson Village Recreation Department presents a number of youth programs and summer camps your child can enjoy this summer. Find more information [here](#).

Stony Brook Events:

It Take a Team to Build a Village Special Exhibit - May 21 - Sep 7 Experience the story of the reconstruction of Stony Brook Village in a Spring and Summer long exhibit on the building of the Stony Brook Village Center! On display will be historical documents, photos, original prints, sketches, memorabilia and more.

Performances at The Jazz Loft - Jun 3 - Jul 30 Check out upcoming performances in June by visiting their website's [box office](#).

Discover Wetlands Cruise! - Take the pontoon boat "Discovery" on a 1.5 hour tour through an 88-acre wetlands preserve. A naturalist is onboard to describe the wildlife and flora that you'll see.

Port Jefferson Events:

Suburban Dreams : An exhibit showcasing the works of artists who are physically handicapped - May 3 - June 30 at the Port Jefferson Gallery at The Village Center

Farmers Market - Every Sunday through November (9a - 2p) at the Village Center. Purchase local produce, honey, bread and baked goods, seafood, international specialties, plants and flower bouquets.

Palmer Vineyards - RIVERHEAD - Live Music every Sat (12-4).

Pindar Vineyards - PECONIC - Live Music Every Saturday (1-5pm)

Baiting Hollow Farm Vineyard - BAITING HOLLOW - Music every Sat & Sun from (2-6)

Paumanok Vineyards - RIVERHEAD - Fresh, Local Oysters (2-5pm) every Sat & Sun starting Memorial Day through September

Check out Erik Forsyth's Travels:



[HTTP://WWW.YACHTFIONA.COM](http://www.yachtfiona.com)

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

NOTE FROM OUR ADMINISTRATION: Sue Pankowski



As many of you are planning your summer maintenance and upgrade activities, please pay close attention to use the proper project number on your webreqs., work orders, and time cards. It is critical that time and materials get charged to the program(s) that benefit from our efforts. If you're unsure of what program to charge, ask your manager or reach out to the PI.

The Procurement & Property Management Division (PPM) is implementing its new and improved e-Procurement system, E-Buy. This system will use the Vinimaya platform currently offered by the Department of Energy's (DOE) Supply Chain Management Center (SCMC), and it offers a wide range of products. E-Buy User training is required in order to get access to the system. Contact John Collins in PPM for more info.

Later this month, a DOE/PPM property walkthrough inspection will be conducted of all C-AD facilities. Previous walkthroughs have noted findings that can easily be avoided, such as:

- Personal property not labeled as such;
- Idle equipment not being used;
- Poor housekeeping.

Please take some time to tidy up your work areas. Make sure that any sensitive equipment that is not in use is stored securely. Also, keep in mind that if you are hosting a summer student or other guest, their personal property should also be identified as such. If you need a "personal property" sticker, or have any idle equipment to be excessed, please contact April Spencer (aspencer@bnl.gov) for assistance.

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

► Arrivals/Departures

 Safety Stats

NOTE FROM OUR ACCELERATOR DIVISION: Wolfram Fischer



Over the last month RHIC has shown its unique flexibility. d+Au collisions were provided at 4 different energies, with setup times to physics ranging from 20 h at the injection energy to only 3 days at the highest energies. For the highest energy the average collision rate is almost 4 times larger than in 2008, the last time we collided deuteron and gold beams.

Likely we will return to full-energy Au+Au collisions for the last week of the run so that the data set at this energy can be further increased. The present Run Coordinator Chuyu Liu will hand back the run coordination to Xiaofeng Gu.

An interesting fact showing how far we have come is the following: the Run-1 Au+Au luminosity of 7 inverse micro-barn delivered in 37 days, can now be delivered in less than 10 minutes.

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

NOTE FROM OUR EXPERIMENTAL SUPPORT & FACILITIES DIVISION: Bill Christie



As we reach the halfway point in June the end of RHIC Run 16 is in sight. The Run plan and goals set by the two RHIC Experiments for the year's run were extremely challenging. They included ten weeks of 200 GeV Au on Au running, followed by a week of 200 GeV deuteron on Au (dAu), a week of 62 GeV dAu, a bit more than one and a half weeks of 19.6 GeV dAu, a week of 39 GeV dAu, as of Friday afternoon June 17th, a return to the 200 GeV Au on Au for the remainder of the run.

C-AD has met the challenges that this Run plan put in front of us admirably. If we can get back to smooth running with 200 AuAu for the last about nine days of the run, both experiments should achieve 90% or more of all their various data set goals.

In these final days of the run we still have a number of activities scheduled. In addition to the top energy AuAu physics running there are two accesses scheduled for the Coherent electron Cooling Proof of Principle experiment, two dedicated periods of CeC running (no beam in RHIC) on Wednesday, June 22nd and Friday, June 24th, with accesses into RHIC at the same time for diode measurements and 56 MHz RF work.

Beam Operations are scheduled to cease Monday morning on June 27th, at which time the about 3 day Cryo warm up of the RHIC rings will commence. This will end a very successful RHIC Run 16.

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

Link to: [ATF Newsletter](#)

NOTE FROM OUR ACCELERATOR R&D DIVISION: Ilan Ben-Zvi



Not available for comment at the time of this publication.

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

NOTE FROM OPERATIONS: Paul Sampson



RHIC continues to run well for the deuteron gold run. Successful runs at 200 and 62GeV were completed. Presently RHIC is running 19.6 and will complete the energy runs with 39GeV later this month. The final species and energy for the RHIC run is still to be determined.

The AGS continues to run very well, providing gold and deuterons for RHIC setup. Later this month, after RHIC shutdown, the AGS will run Polarized Proton studies.

LINAC is running well for BLIP, NSRL and Polarized setup. The Raster system is running well and the current on target has been steady at a current exceeding 150uA at 117MeV. Higher energy runs are scheduled for July, with contingency for repair of tank 6, should it become an issue.

EBIS and Tandem continue to run reliably providing beams for the programs at C-AD.

The RHIC run officially ends on June 27th. Preparation for the end of run and upcoming shutdown are underway. Schedules and work lists are presently being created and will be available online by the end of the month.

The "[RHIC Broadcast](#)" link displays the latest schedules for testing, power disruptions, outages and daily schedules.

To view a list of approved work for the Shutdown or to review past results, go to the [Job Request System](#) and select the appropriate date. This link is behind the firewall and requires privileges to view.

For weekly schedule updates see: [This Week](#), which can be viewed by all.

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

Link to: [ATF Newsletter](#)

NOTE FROM OUR ACCELERATOR TEST FACILITY: Mark Palmer



No comment at the time of this publication.

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

NOTE FROM OUR MEDICAL ISOTOPE RESEARCH & PRODUCTION PROGRAM: Cathy Cutler



The top meeting in our field in the US is the Society of Nuclear Medicine and Molecular Imaging (SNMMI). This meeting provides the opportunity to learn the latest advances in the field and for networking to reestablish old collaborators or to establish new ones. Additionally it offers the DOE isotope program the opportunity to meet with their current and potential customers. Several members of the MIRP group are attending the meeting in San Diego in which Brookhaven National Laboratory is well represented. Members of DOE/NP staff, including Jehanne Gillo, also attended.

This year marks the fortieth anniversary of the first human tests of F-18 FDG in humans. This drug was developed at BNL in collaboration with the NIH and UPenn. Based on this anniversary, Dr. Joanna Fowler gave the keynote plenary lecture highlighting its development and testing. FDG is currently the most widely used positron emission tomography (PET) agent for assessment of a number of disorders but primarily used for oncology applications. Attached is a link to the video developed by the SNMMI to commemorate the occasion and a separate link to Dr. Fowler's talk. In addition a session was organized by Dr. Suresh Srivastava on radionuclide therapy and theragnostics. Dr. Srivastava presented the history of theragnostic development at BNL which can be seen in the following link.

Finally, at the meeting several individuals were recognized for their service to the organization and their efforts in developing novel inroads in imaging and therapy. Our own Lisa Muench was recognized at the meeting by receiving a laboratory staff award for her efforts at both the BLIP and in Dr. Fowler's groups in radiotracer development for clinical trials.

[SNMMI video "FDG: Forty Years of Changing Lives"](#)

[Dr. Joanna Fowler's presentation "Working Against Time: Designing and Synthesizing FDG for the First Human Studies in 1976"](#)

[Dr. Suresh Srivastava's presentation "Initial Concept, Promotion, and Practical Applications of the Game-Changer Paradigm Theragnostics"](#)

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

ARRIVALS: Welcome!

Peter Galioto - Vacuum Systems, Accelerator Division

Timothy Phelps - Medical Isotope Research & Production

Robert Ritter - Design & Documentation, ES&F Division

2016 SUMMER STUDENTS & VISITORS: Welcome!

Jessica Abruzzese - eRHIC Research & Development

Mamoudou Ba - eRHIC Research & Development

Ryan Benante - Experimental Support & Facilities

Taylor Campbell - Mechanical Systems, Accelerator Division

Huseyin Cicek - Medical Isotope Research & Production

Marc Difilippo - Communications & Electronic Support, ES&F Division

Amani Ebrahim - Medical Isotope Research & Production

Lynn Francesconi - Medical Isotope Research & Production

Klaire Hubbard - Medical Isotope Research & Production

Nida Imtiaz - Electrical Systems, Accelerator Division

Kerry Jappe - Mechanical Systems, Accelerator Division

Wayne Johnson - Mechanical Systems, Accelerator Division

Matthew Killicharran - Accelerator Test Facility

Randy Kipnis - Physics Support, ES&F Division

Lisa Marie Marone - Accelerator Division

Fernanda Murillo - eRHIC Research & Development

Robert Nidzyn - Medical Isotope Research & Production

Jacqueline Noel - Medical Isotope Research & Production

Stacy Queern - Medical Isotope Research & Production

Hannah Lorraine Seymour - Physics Support, ES&F Division

Roger Smith - Controls Systems, Accelerator Division

Matthew Tomko - Controls Systems, Accelerator Division

Megan Wilken - Medical Isotope Research & Production

DEPARTURES: Farewell, you will surely be missed..

Nhat Duong

Brian Sheehy

Lou Snyderstrup

Guest Notices:

**JUNE '16
ISSUE**

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES

August 2015

Contact: [A. Lamberti](#)

[{HOME PAGE}](#) | [BNL WEBSITE](#) | [C-AD WEBSITE](#) | [ES&F WEBSITE](#) | [BERA](#) | [BNL CLASSIFIED ADS](#) | [INSIDE RHIC](#)

Quote of the Month: "The important thing is to never stop questioning." - Albert Einstein

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THE:***

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

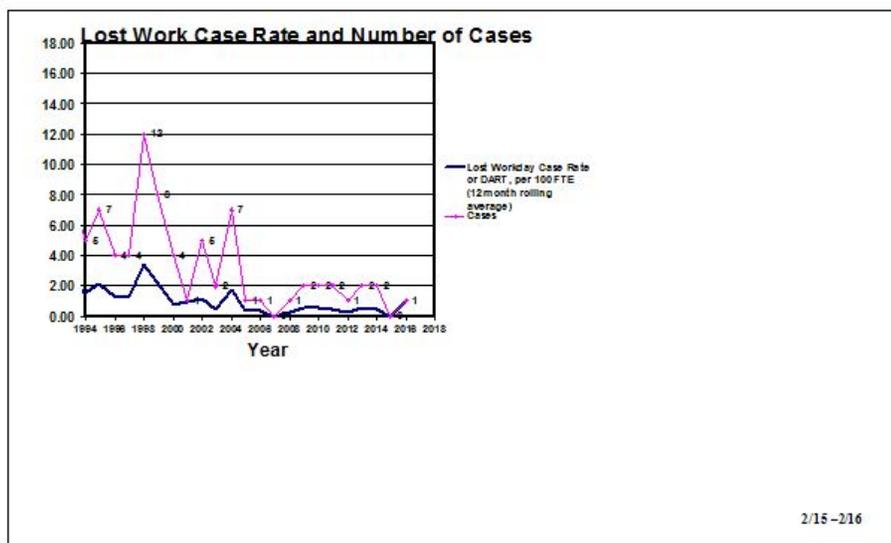
Acc. Test Facility

MIRP

▶ Arrivals/Departures

 Safety Stats

SAFETY STATS: Peter Cirnigliaro



**C-AD Occupational Injury
Statistics**

For Year 2015 For Year* 2016

First Aid Cases	5	1
Recordable Cases	1	1
Lost Work Cases	0	1

* Calendar Year through 2/15