

April 22, 2008

To: Robert Rosner Director
From: Bradley J. Micklich  ASRC Chair
Subject: Minutes of the 52nd Meeting of the ASRC, February 14, 2008

Enclosed are the minutes of the 52nd meeting of the Accelerator Safety Review Committee (ASRC) which was held on February 14, 2008. The committee met with representatives from the High Energy Physics Division Argonne Wakefield Accelerator to conduct a review of the facility.

Enclosure

JL

xc: M. Alewine
T. W. Barkalow
G. R. Dyrkacz
J. Houck (DOE-ASO)
S. G. Meredith
L. Reed
A. P. Sattelberger
P. Washburn (DOE-ASO)
H. J. Weerts
D. Whitaker-Sheppard
G. R. Zeman
ASRC Members
ASRC File

ARGONNE NATIONAL LABORATORY
ACCELERATOR SAFETY REVIEW COMMITTEE (ASRC)
Minutes of the 52nd Meeting
February 14, 2008

The 52nd meeting of the Accelerator Safety Review Committee (ASRC) was held on Thursday, February 14, 2008. The committee considered general committee business and then met with representatives from the High Energy Physics (HEP) Division Argonne Wakefield Accelerator (AWA) to conduct a review of the facility. Previous ASRC reviews of the AWA were conducted November 28, 1995, January 28, 1999, February 28, 2002, and March 23, 2005.

The following committee members were present:

- B. J. Micklich, Chair (PNS)
- R. C. Vondrasek, Deputy Chair (PHY)
- S. Butala (EQO)
- S. D. Chemerisov (CSE)
- M. Conde (HEP)
- J. C. Dooling (ASD)
- D. G. Ettinger (DEP)
- P. Den Hartog (AES)
- J. Noonan (ONR)
- J. P. Quintana (AES)

Members absent:

- P. M. Baldo (MSD)
- R. C. Mau (FNAL)
- J. K. Hawkins (ASE)

Others present:

- T. W. Barkalow (SUF)
- G. R. Dyrkacz (PS/CELS)
- W. Gai (HEP)
- J. Houck (ASO)
- P. J. Leggett (EQO)
- P. Piot (NIU)
- L. Reed (HEP)
- H. Weerts (HEP)

The meeting was called to order at 8:30 a.m. by the Chair, Brad Micklich.

General Committee Business

Steve Butala reported on the Accelerator Safety Workshop, conducted August 7-9, 2007. The workshop was hosted by Argonne in conjunction with Devaughn Nelson (DOE-SC). One of the major topics of discussion at the workshop was changes to 10 CFR 835. The changes to neutron quality factors will likely double neutron dose assignments, and will also impact instrument calibration and neutron shielding at accelerator facilities. This is a big impact which was not realized until the rule was published. There was also a lengthy discussion regarding the Richardson moratorium on radioactive waste. For example, waste retention, release of materials, accountability of all materials, certification, labeling, etc. Thomas Jefferson Laboratory will host the next workshop to be conducted in August 2008.

Tom Barkalow, SUF ESH/QA Representative, briefed the committee on the recent directive by the Office of Science to shutdown the IPNS due to a budget shortfall. IPNS will not restart from its last maintenance period and will remain in a shutdown mode. Eventually the DOE will declare the facility "excess" and will fund final decommissioning and decontamination. IPNS continues to fall under DOE Order 420.2b, *Safety of Accelerator Facilities*; accelerators are excluded from Rule 10 CFR 830. However, three targets remain in the IPNS and their radionuclide inventories may place the facility above the Category 3 nuclear threshold. Presently there is no drive to recategorize the facility. If the irradiated targets were removed, either by moving them to an onsite nuclear facility or disposing of them off site as radioactive waste, the remaining activated materials are unlikely to exceed the Category 3 nuclear threshold value. IPNS remains in compliance with its Safety Analysis Document and Accelerator Safety Envelope, and will be maintained in a safe shutdown condition. A transition plan is being prepared which will cover limited operations and surveillance for the remainder of FY 08. An independent review will be conducted of the plan. Since the ASRC still has oversight of the facility, they may be asked to either conduct the independent review or to participate in the review. Prior to the DOE shutdown directive, there were approximately 70 IPNS personnel; it is expected that about 20 IPNS personnel will remain after February 29, 2008.

Brad Micklich led a discussion regarding the implications of the location of the new Theory and Computing Sciences (TCS) building. The building will be constructed west of the Visitor Reception Center. The facility will be close to RIA; ALARA studies have been performed, and it should have no effect on the CARIBU project. The construction of the multi-story building, which will house ~ 700 personnel, will take place inside the present Argonne fence; however it is possible that the site boundary location will be moved.

The chair provided a schedule of future ASRC reviews. The next ASRC review will be conducted at the DEP Van de Graaff in mid-2008 followed by the CSE LEAF review in late 2008.

AWA Review

Prior to the meeting, the HEP Division responded to the request for information regarding description of the facility; physical, procedural and organizational changes; safety organization; independent safety reviews; internal self-assessments; safety occurrence and incidents; and anticipated facility modifications. (Note: this information is not included here, but is part of the ASRC file.) The AWA review consisted of several presentations, followed by a tour of the facility.

The review began with welcoming remarks by the HEP Division Director, Hendrik Weerts. Dr. Weerts provided an organization overview, and described the seven scientific program areas at HEP. He stated

that the division's priority is to conduct research, and to implement the work safely. The division has an excellent safety record. A briefing was provided regarding the new Argonne-Northern Illinois University (NIU) plan to house a facility next to the AWA in Building 366. The Laboratory is still negotiating a Memorandum of Understanding with NIU, and waiting for more clearly defined specifications (e.g., water and power requirements). A concrete enclosure has already been constructed. HEP will have responsibility for the facility, and for any required review processes.

A handout of each of the following presentations was provided to all attendees.

Wei Gai, AWA Group Leader, gave an overview of the AWA program and experiments. He described the mission of the AWA, which is to study advanced techniques of particle acceleration for future accelerators. He then focused on research at the facility. A listing of past accomplishments and notable contributions was provided. He discussed the role of AWA collaborators, noting that the AWA is not a user facility. Staffing at the facility was described. In addition to the HEP organization, AWA staff, students, collaborators, and support were noted. There are five certified AWA RF Operators. Gai provided a listing of the HEP ES&H Information, dated April 2007. It was noted that this information needs to be updated.

Gai then provided a lengthy description of the current AWA facility activities. The planned RF upgrade is now underway. The upgrade may double the beam energy and increase the beam power. It is anticipated that the beam power may exceed the Accelerator Safety Envelope as defined in the AWA Safety Assessment Document. Studies are now underway.

Manoel Conde, AWA Facility Manager, provided an overview of the AWA facility operations. Operations at the facility are always conducted in a safe manner. He then discussed the AWA Safety Envelope, which is defined by maximum intensity generated by the drive beam. However, actual performance is significantly reduced from the design maximum values. Hazards at the facility include radiation, laser, and electrical. Due to the small quantity of chemicals, hazards are not considered high. A discussion followed as to whether chemicals should be listed as a hazard. Information pertaining to the interlock system was provided. There have been no major changes to the interlock hardware. The interlock system is tested routinely. A discussion followed regarding access to the laser and vault.

The AWA continues to conduct formal reviews of new experiments and facility modifications. As defined by the AWA Group Leader, each is classified into one of three categories. A lengthy discussion followed regarding the rigor and resulting documentation of these reviews.

Other than relocations of the RF room and Cathode Preparation room, there have been no changes since the last ASRC review. A layout of the RF and Cathode Preparation room was provided. Several modifications and upgrades are now in the planning stages; all will require *ad hoc* safety reviews and shielding calculations. Conde then provided further details regarding the planned upgrades.

Leon Reed, HEP ES&H Coordinator, updated the committee on safety reviews and how they are conducted at HEP. A listing of subject matter experts was provided. Accelerator compliance is governed by the *Accelerator Safety Procedures Manual*, and the *ES&H Manual*, Section 5.16, "Radiation Safety Interlock Systems." Reed updated the ASRC on management/independent assessments, and HEP management walk-through inspections. Follow up of issues identified are tracked in Argonne's iCatch system. During the past three years, there have been no AWA safety accidents or incidents. From FY 06 through FY 08 there were a total of two HEP safety incidents.

Phillippe Piot (NIU) provided an additional informational overview of the Argonne-NIU Beam Laboratory. Dr. Piot described the layout of the new facility. The decision to construction the facility at Argonne was driven in part by the following: 1) existing support, i.e., radiation, health physics, personnel protection expertise, etc.; and 2) the close proximity of a near-by accelerator complex (AWA). He expanded on Dr. Weerts' description of the current status of the facility. It is expected the first beam will be delivered in the summer of 2008. Piot briefed the ASRC on the three phases of construction. The third phase, which will take five years to complete, will be to increase the energy to ~40 MeV using a microtron accelerator. Safety reviews were discussed. Installation and commissioning will comply with DOE O 420.2B and Argonne ES&H and HEP safety requirements.

Following the presentations, Manoel Conde conducted a tour of the facility.

Executive Session

During the executive session, facility personnel were excused. The following items were noted and/or discussed:

- Positive comments included: 1) housekeeping was much improved; 2) safety record very good; and 3) follow-up of resolutions to issues identified in inspections, etc., are documented in iCatch.
- The rule on the Richardson metal moratorium was discussed.
- A question was asked regarding the possibility of a key to override the interlocks on the cover of the Class 4 laser. At the present time, only administrative controls are in place. A list of certified laser operators should be maintained, training is provided per the JHQs, and approval is certified by the Argonne Laser Safety Officer. The facility will provide the chair with a list of trained laser users.
- There should be some sort of configuration control for lead shielding in the penetrations of the AWA vault. Radiation fields outside the vault should be re-surveyed if the shielding configuration is altered.
- The facility (or division) should document the level of safety reviews required, i.e., Category 1, 2 or 3. A description of the hazards and level of approval processes should be maintained.
- It was noted that a documented process is in place for chemical hazards.
- Training of collaborators was discussed, and it was determined that the division should review this process.
- It was felt that the division's response to the ASRC charge was transmitted rather late and should have been prepared in more detail.
- As discussed previously at other accelerator facilities, implementation of the electrical safety program at HEP should be reviewed.

The chair will send a memo to the HEP Division Director requesting some additional information that was discussed in the Executive Session. The chair will also send a memo regarding several minor items noted during the review to the division for their information and evaluation.

Following the Executive Session, HEP management was provided a summary of the Executive Session.

The meeting was adjourned at 1:30 p.m.

Prepared by:

P. J. Leggett *04/22/08*
P. J. Leggett Date

Approved by:

B. J. Micklich *4/22/2008*
B. J. Micklich, Chair Date