REPORT TO USERS OF ATLAS

MARCH 1997

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ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

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This series of reports concerning the Argonne Tandem-Linac Accelerator System (ATLAS) is aimed at informing users about the operating schedule, user policies, and recent changes in research capabilities. The reports are issued approximately three times annually.

Edited by:

Irshad Ahmad
and
Bruce Glagola

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JAN LAMBERTUS YNTEMA (1920-1996)

Jan Yntema, whom most of you knew personally through your interactions concerning the scheduling of experiments at ATLAS, passed away on December 21, 1996 after a brief illness.

Born in Leeuwarden, the Netherlands, Jan studied at the University of Poitiers in France and at the Free University of Amsterdam in the Netherlands. He received his Ph.D. in Physics from the Free University of Amsterdam in 1952. He was a postdoctoral fellow at the Canadian National Research Council Laboratory in 1948 and 1949, and a Research Associate at Princeton University from 1949 to 1952. Then, as an Assistant Professor, he taught at the University of Pittsburgh until 1955. He joined the Physics Division in 1955 and remained with the Division until his retirement in 1986.

Jan held visiting appointments at the University of Amsterdam and the University of Utrecht. He authored and co-authored numerous scientific publications in the field of nuclear physics during his career and presented many papers at Universities and professional meetings in the United States and throughout Europe. In his early work at Argonne, Jan used his exceptional skills with experimental equipment to perform extensive spectroscopic measurements on direct nuclear reactions, which resulted in a large body of data providing a significant contribution to the basis of today's detailed understanding of the structure of atomic nuclei. In his later years, he became interested in the production and the optics of accelerated heavy-ion beams, a topic in which he made several noteworthy and original contributions.

Even after retirement, Jan made significant contributions to the Physics Division and to the ATLAS programs in particular. He was responsible for scheduling the experiments approved by the Program Advisory Committee. He was also chairman of the Physics Division Radiation Safety Committee and in that capacity he was extremely valuable to the division in handling all ESH related issues. Jan will be missed greatly by his colleagues in the Physics Division.

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I. STATUS OF THE ATLAS ACCELERATOR

The ATLAS accelerator set a new facility record when it delivered 5826 hours of beam for research and accelerator development during FY1996. This is a 10% increase over our previous best performance achieved in FY1994. A total of 27 different beams were accelerated during the year. The distribution of beam time by isotope is shown in Fig. 1. Approximately 35% of beams requested were for beams heavier than the nickel isotopes, although the demand for the heaviest of species was down somewhat this year. Beam from ATLAS was available 92% of the scheduled time. This is one of the best 'reliability' factors ever achieved by ATLAS.

The emphasis on providing exotic beams continued to increase during the year with the addition of beams of ^{56}Ni ($T_{1/2}=6.1$ d) and ^{17}F ($T_{1/2}=64.5$ s) to the previously developed ^{18}F ($T_{1/2}=1.83$ h). Radioactive beams accounted for 7.7% (407 hours) of the research time at ATLAS in FY1996; so it is fair to say that ATLAS has become a de facto radioactive beam facility in FY1996. Additional improvements planned for radioactive beams and details on the experiments performed are discussed later in this report.

Fig. 1. Pie chart showing the isotopic distribution of beam time provided by ATLAS in FY1996.

The new 14 GHz ECR ion source for ATLAS entered its commissioning phase by delivering its first analyzed beam in December, 1996. This momentous event was delayed approximately 3 months awaiting the delivery of the source 90° analyzing magnet. The first plasma had been achieved in September, 1996 but serious development and study of the new source could only begin in January. Since that time, we have focused on oxygen and argon as development beams and to provide a base of reference as we bring the new features of the source into operation.

At this time the source performance looks very exciting with much improvement certain to come since a number of features are not yet operational. Within the first month of operation, currents of 265 eμA of $^{16}\text{O}^{6+}$ and 78 eμA of $^{16}\text{O}^{7+}$ have been achieved. These early results are already 10 times more than the present 10 GHz ECR achieves for oxygen 6^{+} and 40 times more than it achieves for oxygen 7^{+} beams. A

charge state distribution for oxygen is shown in Fig. 2. The source performance is very stable. For argon 20 eμA of $^{40}\text{Ar}^{12+}$ has been measured.

The long wait for the new source analyzing magnet may have been worth it. The magnet is a 'split-pole' design with additional second order corrections applied in the center of the magnet by splitting the pole tip and shaping the field to give additional edge curvatures. Preliminary tests indicated the resolution of the magnet exceeds 5×10^{-3} in (M/Q). This resolution is about 3 times better than that of the analysis system of the 10 GHz ECR and hence provides improved ion species selectivity and allows more flexibility in charge state choice for operation.

Procurement of beamline components and high voltage systems for delivery of beams from the new source has begun. First beam for research is anticipated to be available in October, 1997. The source on its high-voltage platform is shown in Fig. 3.

Fig. 2. Charge state distribution for oxygen from the new ATLAS 14 GHz ECR ion source during its first month of operation.

Fig. 3. The completed new ATLAS 14 GHz ECR ion source on its high-voltage platform.

II. PROGRESS IN R&D TOWARDS A PROPOSAL FOR A NATIONAL ISOL FACILITY

The Argonne concept for how to implement a National ISOL Facility was developed in early 1995 and described in the working paper, "Concept for an Advanced Exotic Beam Facility Based on ATLAS," at that time (see www.phy.anl.gov/ and click on "Exotic Beam Facility"). Since then efforts have been directed towards R&D on various sub-systems of that preliminary plan. Recent progress and plans for the near future for this R&D are described below.

The plan presented in the working paper involves stripping of low velocity radioactive ion beams after the initial acceleration in a short CW RFQ. To quantify this concept it was necessary to measure the charge state distributions for a variety of ions because there were insufficient data in the literature. Measurements were carried out on beams of krypton, xenon, and lead at

velocities in the vicinity of 8 keV per nucleon using the Physics Division's Dynamitron facility. Using a windowless gas cell, results were obtained for stripping in helium and nitrogen gas for ions initially in the 1^+ charge state. The yields for stripping krypton and xenon to the 2^+ charge state were 40 to 50%, while the yield for stripping lead to the 3^+ charge state was approximately 40% when helium was the stripping medium. By using helium rather than nitrogen as the stripping gas, the yields of the 2^+ Kr and Xe are increased by about 30%, while the yield of the 3^+ lead is increased by 300%. The results of these measurements have been submitted for publication.

The Dynamitron is also being prepared to run in the near future as a neutron generator. The plan is to test and develop ISOL-type ion sources

using radioactive fission product beams. The neutron generator target will be closely coupled to ISOL sources which contain uranium targets. The neutron generator target and ion source system will be shielded by a recently constructed steel and concrete cave. At this time the safety documentation and various approvals necessary to operate the Dynamitron as a neutron generator are nearing completion. Tests of the system should begin in the next few weeks.

It was proposed in the working paper to use a 12 MHz CW RFQ for the first stage of acceleration for radioactive ions such as $^{132}\text{Sn}^{1+}$. A project to design and construct a prototype of this RFQ is now well along. A half-scale, uncooled model was constructed and tested in late 1996. Based on these results the design of a full scale prototype has been completed, and it is now under construction. The design concepts and beam dynamics simulations were presented at the 1996 Linac Conference. A surplus 350 MHz RF amplifier was obtained and is currently being modified to provide the 40 kW of RF power at 12 MHz which is required to test the prototype. The

prototype will first undergo electrical tests and then it will be tested with krypton and xenon beams at the Dynamitron.

As an alternative to the conventional copper driver linac structure discussed in the working paper, we are currently investigating the feasibility of a superconducting CW driver. Preliminary beam dynamics simulations indicate that such a linac could be based on two types of 300 MHz niobium resonators, optimized for ion velocities of 0.28 and 0.44 c. Prototyping of such resonators was initiated this year. This class of resonators would fill the gap between those previously developed at ATLAS for low-velocity ions and those being developed at Los Alamos and the Jefferson Laboratory for ions near the velocity of light. Simulations using the two types of resonators mentioned above indicate that this type of driver linac could deliver a variety of light ion beams for isotope production at the ISOL target, e.g. 208 MeV protons, 113 MeV per nucleon deuterons, and 100 MeV per nucleon ^{18}O .

III. HIGHLIGHTS OF RECENT RESEARCH AT ATLAS

Some highlights of recent experiments performed at ATLAS are summarized below. Figure 4 shows a photograph of an experimental group

which performed an experiment with the 36" scattering chamber.

Fig. 4. Pictured from a recent University of Kansas experiment using the 36" Scattering Chamber are Frank Prosser, Tim Catterson, Drew Dummer, Steve Sanders (University of Kansas), Nemitala Added, Alex Szanto de Toledo (University of Sao Paulo), and Dale Henderson (ANL). Not pictured, Christian Beck (C.N.R.S.).

A. UNSAFE COULOMB EXCITATION SHEDS NEW LIGHT ON OCTUPOLES IN ACTINIDES

(G. Hackman, R.V.F. Janssens, T.L. Khoo, I. Ahmad, D. Ackermann, H. Amro, M.P. Carpenter, S.M. Fischer, J. P. Greene, T. Lauritsen, L. R. Morss, D. Nisius, D. Seweryniak, ANL; E.F. Moore, North Carolina State Univ.; D. Cline, C-Y. Wu, Univ. of Rochester)

Actinide nuclei present classic examples of collective nuclear behavior. Interest in the Coulomb excitation (coulex) of the actinides has been renewed by recent work by Ward et al. [1], who studied ^{238}U by $\gamma\gamma$ coincidence measurements following so-called "unsafe" coulex. In this technique, beams above the Coulomb barrier impinge upon the target material; both the beam and recoil are stopped in a backing layer. The main advantage of this technique over "traditional" coulex experiments, in which recoils out of a thin target are detected in position-sensitive heavy-ion counters, is that most of the γ rays are emitted after the recoiling nuclei have fully stopped, which means they are detected at the intrinsic detector resolution without any broadening due to detector opening angle.

Inspired by the results of Ref. [1], we have embarked on a program to perform similar experiments on actinide nuclei, with $\sim 300 \mu\text{g}/\text{cm}^2$ targets deposited on $50 \text{ mg}/\text{cm}^2$ Pb or Au backings and $\sim 6 \text{ MeV}/u$ ^{208}Pb ATLAS beams. The γ rays were detected with the Argonne-Notre Dame array, which comprises 50 BGO elements and 12 Ge γ -ray spectrometers. The multiplicity measured in the array is critical for attenuating backgrounds from X-rays, backing material coulex, and fission. So far we have completed experiments on ^{248}Cm and ^{240}Pu , and beam time has been scheduled for $^{242,244}\text{Pu}$.

In the ^{248}Cm data, three rotational bands have been identified. The yrast band is observed to $28\hbar$ [2]. A second band of seven states is observed in coincidence with low-spin transitions of the ^{248}Cm ground band, and is assigned as a side band in that nucleus. The two lowest-lying transitions in the third band are within 0.5 keV of the previously reported gamma cascade of the ^{246}Cm ground-state band [2]; we have extended this band to $20\hbar$. Based on measured activity of the target, this lighter even isotope is present at $\sim 3\%$ in the ^{248}Cm stock, which is consistent with the relative $^{246,248}\text{Cm}$ γ yields. In the ^{240}Pu data (see Fig. 5), the ground-state band [2] has been extended by $12\hbar$ to the 26^+ state. Ten new states in a side band have also been identified, and with rigorous coincidence information from interband decay we can confidently assign spin and excitation energies for this new band.

Fig. 5. (a) Coincidence spectrum for the ^{240}Pu ground-state band. (b) Coincidence spectrum for the ^{240}Pu side band. Ground-state band, new band, and interband transitions are indicated by g, n, and d, respectively. Capital letters indicate gating transitions.

It had been previously known that the even uranium isotopes and ^{248}Cm exhibit an increase in aligned spin i_x starting at a rotational frequency of $\hbar\omega \sim 0.2 \text{ MeV}$. This is attributed to a crossing involving the $\nu j_{15/2}$ and $\pi i_{13/2}$ quasiparticle pairs. Our new data show the same gentle upbending behavior in ^{246}Cm . In $^{242,244}\text{Pu}$, the same crossing is believed to generate a much steeper increase in i_x . However, our data show that a sudden upbend in ^{240}Pu does not occur at a frequency below 0.3 MeV; if anything, there is a very gradual increase in i_x relative to the other Pu isotopes below 0.2 MeV, suggesting an anomalously large interaction strength in ^{240}Pu . (^{238}Pu also shows a very slight upturn in i_x at 0.2 MeV.)

Octupole correlations have long been known to be important in the low-spin structure of actinide nuclei. If the experimental Routhian of the new ^{240}Pu band is extrapolated to low rotational frequencies, it would match that of a $K^\pi=0^-$ octupole band [2]. Furthermore, as rotational frequency increases, the new band approaches an alignment of $i_x \sim 2.5 \hbar$ relative to the ground-state band (also shown in Fig. 5), as expected for an octupole phonon aligning its angular momentum with the axis of rotation. This behavior is strikingly similar to that of the

octupole band (band B in Ref. [1]) in the isotone ^{238}U . If the ^{248}Cm interband transitions are $\Delta J=1$, then the Routhian of this band extrapolates at low frequency to that of a $K^\pi=1^-$ band, and that it also has an alignment of $3 \hbar$ relative to the ground band. The similarity to the ^{238}U band (D) is remarkable.

- [1] D. Ward et al., Nucl. Phys. A **600**, 88 (1996).
- [2] R.B. Firestone and V.S. Shirley, eds., Table of the Isotopes, 8 Ed. (1996).

B. FIRST OBSERVATION OF EXCITED STATES IN $^{118,117}\text{Cs}$ AND $^{119,118}\text{Ba}$

(J.F. Smith, C.J. Chiara, D.B. Fossan, G.R. Gluckman, G.J. Lane, J.M. Sears, I. Thorslund, SUNY; H. Amro, C.N. Davids, R.V.F. Janssens, D. Seweryniak, ANL; I.M. Hibbert, R. Wadsworth, Univ. of York; I.-Y. Lee, A.O. Macchiavelli, LBNL)

Nuclei in the $A \sim 120$, $Z \sim 55$ region have both neutrons and protons within the $h_{11/2}$ subshell. Neutrons occupy the upper/mid- Ω oblate-driving orbitals, while protons occupy the low- Ω prolate-driving orbitals. As a result the shape of the nucleus depends sensitively on the position of the Fermi level and the occupied quasiparticle configuration. It is interesting to study the most neutron-deficient cesium ($Z=55$) and barium ($Z=56$) nuclei that are accessible, in order to examine what happens to the deformation and the quasiparticle excitations as the neutron Fermi level moves successively lower within the $h_{11/2}$ subshell.

In a previous experiment with the Gammasphere array, the $^{58}\text{Ni}(^{64}\text{Zn})$ reaction was studied and many unknown band structures had been observed, which were assigned to the light cesium and barium isotopes on the basis of statistical-code calculations and excitation-energy systematics. In order to rigorously identify the nuclei associated with the bands, an experiment was performed at Atlas, in which the $^{64}\text{Zn}(^{58}\text{Ni})$ reaction ($E_{\text{beam}}=230$ and 240 MeV) was used. Gamma rays and x rays were detected at the reaction site in 10 25%-efficient germanium detectors, in coincidence with recoiling reaction products, which were dispersed according to their mass-to-charge state ratio by the fragment mass analyzer (FMA) and detected in a parallel-plate gridded-anode avalanche counter (PPAC) at the focal plane. With an M/q resolution of 1 in 470, recoils with charge states $q=24$, 25 and 26 were detected at the focal plane, which resulted in approximately 15% of the gamma rays being

detected in coincidence with recoils. Figure 6(a) shows the spectrum recorded by the PPAC.

Well-developed rotational bands in $^{117,118}\text{Cs}$ and $^{118,119}\text{Ba}$ have been confirmed. This represents the first identification of excited states in all of these nuclei; for ^{117}Cs the lowest five gamma rays in the $\pi h_{11/2}$ band had been suggested earlier [1] on the basis of excitation studies. In this work the $\pi h_{11/2}$ band in ^{117}Cs has been extended to $59/2^+$, and in addition two unconnected bands based on $\pi g_{7/2}$ and $\pi g_{9/2}$ orbitals have been identified. In ^{118}Cs , 4 bands have been observed to spins in excess of $36 \hbar$, including a band based on the $\pi h_{11/2} \times \nu(h_{11/2})$ configuration, which displays an unusually low signature inversion between 16 and $17 \hbar$. Figures 6 (b) and (c) show recoil-gamma and recoil-gamma-gamma spectra for the $\pi(h_{11/2}) \times \nu(h_{11/2})$ band in ^{118}Cs . In ^{119}Ba , bands based on $\nu h_{11/2}$ and $\nu g_{7/2}$ orbitals have been observed to spins of $65/2 \hbar$. In ^{118}Ba , the ground-state band has been observed to $20 \hbar$, and a negative-parity band, presumed to have a two quasiparticle $\pi h_{11/2} \times \pi d_{5/2}$ structure, is observed feeding the 4^+ , 6^+ and 8^+ states. Applying Grodzins' relation to these results suggests that ^{118}Ba is less deformed than ^{120}Ba , whereas both trs calculations and the Möller-Nix mass tables [2] predict that the ground-state deformation peaks at $A=118$ for the barium isotopes.

- [1] X. Sun et al., Phys. Rev. C **51**, 2803 (1995).
- [2] P. Möller et al., At. Data Nucl. Data Tables **59**, 185 (1995).

Fig. 6. Representative spectra from the experiment. Panel (a) shows the spectrum of masses recorded by the PPAC at the focal plane of the FMA. The peaks are labeled with M/q . Panel (b) shows a gamma-ray spectrum gated by $M=118$ recoils, and (c) shows a gamma-ray spectrum gated by $M=118$ recoils and the 439 keV gamma ray, which is one of the most intense transitions in ^{118}Cs . In (b) and (c) the peaks are labeled with transition energies to the nearest keV and the transitions belong to ^{118}Cs unless otherwise indicated.

C. FIRST EXPERIMENTS WITH A ^{56}Ni BEAM AT ATLAS

The first transfer reaction studies with a radioactive ^{56}Ni beam ($T_{1/2}=6.1\text{d}$) have been performed at ATLAS. ^{56}Ni is the heaviest closed shell $N=Z$ nucleus for which a beam of sufficient intensity for direct reactions can be generated with present day technologies. The beam was produced using the two-accelerator technique that had been used in our previous studies with a ^{18}F beam. ^{56}Ni material was generated via the $^{58}\text{Ni}(p,p2n)^{56}\text{Ni}$ reaction using a 16 μA , 50 MeV proton beam from the injector of the Intense Pulsed Neutron Source (IPNS) at Argonne. The irradiated sample was then transported to ATLAS and installed in the negative ion source of the tandem injector and the mass 56 particles accelerated to 250 MeV. In the experiment we studied the one-neutron transfer reaction $d(^{56}\text{Ni}, ^{57}\text{Ni})p$ to measure spectroscopic factors of single-particle states in ^{57}Ni . Since the radioactive ion beam has impurities from the isobars ^{56}Co and ^{56}Fe which can also induce one-neutron transfer reactions, the protons need to be measured in coincidence with the outgoing heavy reaction products identified with respect to their mass and nuclear charge. This was accomplished by using the Fragment Mass Analyzer. A passive

absorber slowed down the mass-57 Fe, Co and Ni products such that they could be bent in the electric dipoles of the FMA and their energies measured in an ionization chamber mounted after the focal plane detector. For the measurement of the protons a large area, high-granularity, Si detector array with 182 individual channels, covering a solid angle of ~ 5 sr was constructed. The ^{56}Ni beam intensity on target, averaged over time in the experiment, was $\sim 3 \times 10^4/\text{s}$. The ^{56}Co and ^{56}Fe intensities were typically around $2 \times 10^5/\text{s}$. Because of the high detection efficiency of the Si array, angular distributions for the $^{56}\text{Ni}(d,p)^{57}\text{Ni}$ reaction in the range $\theta_{\text{cm}}=10\text{-}40^\circ$ could be measured for the first time.

This experiment is a collaborative effort between ANL, Hebrew University, Jerusalem, Northwestern University and Notre Dame University.

IV. THE MOVE OF GAMMASPHERE FROM LBNL TO ANL

Gammasphere is to be moved from LBNL to ANL for a cycle of experiments using the ATLAS accelerator and the Fragment Mass Analyzer (FMA) in 1998. I-Yang Lee and Kim Lister have been working to coordinate all the tasks, and a series of focus meetings on the many details are taking place. The distribution of tasks and budget between the laboratories has been agreed, and staff members from each laboratory have been allocated to each task. Re-analysis of each of the tasks, including accurate costing, effort requirements, and sequencing are complete and a formal management analysis is in progress, in order to identify possible conflicts of resources. There was an ANL Ad Hoc review of the project on February 12th to examine the progress in developing the plan for the move.

The first phase of installation was carried out from February 19 to March 14 of this year. The

initial task involved making sufficient space around the target area to accommodate Gammasphere. The upstream beamline was rebuilt in a more compact geometry which can be seen to the left of Fig. 7. New elements include a beam-pickup (for non-invasive current integration) and a new pumping system which allows both controlled pumpout of fragile targets, and high vacuum operation. A new target chamber was built and installed, and the floor plates on which Gammasphere will stand were put in place. Downstream, the first quadrupole of the FMA was removed, a new streamlined stand was installed, and the system rebuilt and realigned. The first pumpout of the system gave an extremely good vacuum of 6×10^{-7} torr at the target position, which is important for experiments with the heaviest beams and for high field operation of the FMA. The new arrangement can be seen on the right of Fig. 7.

Fig. 7. Target chamber for the Gammasphere and the associated beam lines next to the FMA. The Gammasphere will be placed in the space surrounding the chamber.

The new layout allows for both full "stand alone" operation of Gammasphere or coupled operation to the FMA with 6 of the 110 detectors removed. The modifications were carried out by the

Physics Division technical support and division workshop staff. The reinstallation was achieved ahead of schedule and represents the first "milestone" of the project. The Gammasphere

chamber has been removed and conventional operation of the FMA has resumed with a series of proton radioactivity experiments. All the drawings for the Gammasphere support platform are complete and a package is out for bids. Design of the data shack and planning of all utilities (LN₂, emergency-backed, clean power, air conditioning, cable trays etc.) are advanced, and installation should start on May 5. All the components for the ten new annealing stations are delivered and the first pumping stations have been tested and found to achieve a base pressure of below 3×10^{-8} torr, an order of magnitude better than required. We hope to deliver the prototype station to LBNL for field tests in April.

The second workshop to further develop ideas, identify equipment needs, and discuss collaborations for Gammasphere use at ATLAS is being planned and will take place on May 9-10. (The first workshop on the science and operation of Gammasphere at ATLAS was held in July 1996.) The findings of this workshop will be presented to the spring Program Advisory Committee. The date for the shutdown of Gammasphere operation at LBNL has been agreed to be Monday 15th September 1997, with operation resuming in ANL in January 1998. The first call for proposals for experiments using Gammasphere at ANL will be in the early fall of 1997.

V. ACCELERATOR TARGET DEVELOPMENT LABORATORY

The Physics Division operates a target development laboratory that produces targets and foils of various thicknesses and substrates, depending on the requirements, for experiments performed at the ATLAS and Dynamitron accelerators. The targets are prepared from both naturally occurring materials and stable isotopes which are supplied either in pure, elemental form or as stable compounds.

The target development laboratory includes state-of-the-art equipment used for thin-film fabrication. The available techniques consist of multiple resistive heating, focused ion beam sputtering, glow-discharge plasma deposition, electron beam and electron bombardment evaporation, electrodeposition and mechanical rolling. The evaporators are maintained under high vacuum and each vessel contains a quartz-crystal film-thickness monitor with deposition rate indicators. Also included are movable

shutters, quartz-lamp substrate heaters and thermocouple temperature sensors, allowing for complete process monitoring during target deposition. For consultation on target related matters contact:

John P. Greene
(630)252-5364
greene@anlphy.phy.anl.gov

Radioactive sources commonly used for calibration of radiation detectors are available at ATLAS. Typical sources for the calibration of Ge detectors have strengths of ~10 microCurie and electron and alpha sources are ~1 microCurie. Special sources of similar strengths will be provided if there is need for an experiment at ATLAS. For details contact Irshad Ahmad, at (630)-252-3612, or ahmad@anlphy.phy.anl.gov.

VI. PROGRAM ADVISORY COMMITTEE

The ATLAS Program Advisory Committee met on November 15 and 16, 1997 and reviewed 25 proposals requesting 130 days running time and recommended 18 proposals (7 from outside user spokespersons) for 78 days.

The present Program Advisory Committee members are:

David Balamuth	Univ. of Pennsylvania
Russell Betts	ANL
David Fossan	SUNY @ Stony Brook
I-Y. Lee	LBL
Witek Nazarewicz	Univ. of Tennessee
Peter Paul	SUNY @ Stony Brook
Bradley Sherrill	Michigan State Univ.

The Committee is chaired by Peter Paul.

Summary of the November 1996 ATLAS PAC Meeting

- Number of new proposals submitted 25
- Total number of days requested in the proposals for this period 126
- Total number of proposals approved 18
- Total number of days recommended 78
- Active backlog of approved beam time (in days) prior to the PAC meeting 56

- Number of scientists involved in proposals submitted to the Nov. 1996 PAC 116
- Number of institutions represented 36
- Number of countries represented 7

**List of Proposals Approved After the
November 1996
Pac Meeting**

Exp. No.	Spokes-person	Title	Days Approved				
433-8	Steel	Anisotropic High-Tc Superconductors: Probing Dynamics of Magnetic Vortices	1	627	Berry	Lifetime Measurements in Na-Like Br ²⁴⁺	3
563-2	Wiescher	Lifetime Measurements of the N=Z Nucleus ⁸⁴ Mo for Study of rp-Process Nucleosynthesis at X-Ray Burst Conditions	7	628	Livingston	Atomic Spectra of Highly Charged Krypton Ions	3
607-2	DeCrock	Measurement of the ¹⁸ F(p,γ)/ ¹⁸ F(p,α) Branching Ratios using an ¹⁸ F Beam Post Accelerated by the Positive Ion Injector of ATLAS	2	632	Rehm	Study of the Influence of the s _{1/2} Proton Halo State in ¹⁷ F on Heavy Ion Fusion Reactions	5
621	Davids	Proton Radioactivity in Deformed Rare Earth Nuclei	5	633	Woods	The Alpha Decay of ¹⁰⁴ Te to ¹⁰⁰ Sn	6
622	Wuosmaa	Study of 2-α Decaying High-Spin States in ²⁴ Mg	2	634	Freedman	Study of ⁸ B Neutrino Spectrum through the Decay Chain ⁸ B(β ⁺) ⁸ Be(2α)	5
623	Chowdhury	High-K Isomers in Neutron-Rich A≈180 Nuclei using Deep Inelastic Reactions	5	635	Seweryniak	Measurement of the 6 ⁺ → 4 ⁺ Isomeric Transition in ¹⁰² Sn	5
624	Walters	Structure and Decay of the Odd-Odd N=Z Nuclide ⁷⁸ Y	5	636	Nanal	Exclusive Studies of GDR in the Decay of ¹¹⁰ Sn	6
				637X	Nisius	Test of a Double-Sided Ge Strip Detector	2
				638	Ahmad	Identification of the 1/2 ⁻ [521] Nilsson State in ²⁵⁵ Md(Z=101)	5
				639	Reiter	Measurement of the γ-Back-Decay of the Superdeformed Shape Isomer ^{238m} U by Exploiting the Inverse (d,pn) Reaction with an U-Beam	1
				641X	Seweryniak	Measurement of the Atomic Number at the FMA using the Passive Absorber Method	2

VII. ATLAS USER GROUP EXECUTIVE COMMITTEE

The current members of the ATLAS User Group Executive Committee are:

David Fossan	SUNY@Stony Brook
E. Frank Moore	NC State Univ.
Michael Wiescher	Univ. of Notre Dame
Frank Wolfs (Chair)	Univ. of Rochester

Frank Wolfs can be reached on INTERNET at wolfs@nsrl31.nsrl.rochester.edu. Users are encouraged to communicate with the Executive Committee about ATLAS issues. The location of the ATLAS World Wide Web pages (through the ANL Physics Division pages) is <http://www.phy.anl.gov/>.

VIII. ATLAS USER HANDBOOK AVAILABLE ON THE WORLD WIDE WEB

The updated and expanded ATLAS User Handbook is now available on the ATLAS Facility web-site. It can be found by following the links through the User Information page or by going directly to: [http://www.phy.anl.gov/atlas/user/userbook/Table of Contents.html](http://www.phy.anl.gov/atlas/user/userbook/Table%20of%20Contents.html). Any suggestions for corrections or additions should be sent to Bruce Glagola.