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tascc

News about Chalk River's Tandem Accelerator Superconducting Cyclotron facility for users and potential users

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Over 250 letters of support received

As of the end of January, over 250 people had sent letters of support for basic research at Chalk River Laboratories, which includes TASCC. The letters were sent to the Canadian Minister of Natural Resources, Anne McLellan, who is the minister responsible for AECL.

The letters were prompted by news that a "program review," undertaken by government as a cost-reduction measure, was likely to recommend major cuts to AECL, particularly in its basic research programs. The letters were aimed at helping the Minister persuade her Cabinet colleagues—especially the Finance Minister—that basic research programs at AECL are important not just for AECL but for the whole country.

The letters came from 28 countries in all with more than 100 from Canada and about 65 from the United States. Universities, government and industry were all well represented.

Copies of many letters sent to the Minister were received by TASCC Director John Hardy, who says he is overwhelmed by the scale of the response.

"The Minister cannot help but be impressed by the number and quality of these letters," he said. "People obviously felt strongly enough to write forcefully, yet very thoughtfully, about the issues. We are really grateful for everyone's support."

TASCC user group announces homepage

Our plans to have a TASCC homepage available on the Internet by the middle of 1995 (see 1995 April TASCC Newsletter) were foiled by our last-minute discovery that all Internet material originating from government departments and crown corporations like AECL must be presented in both English and French.

Unfortunately, we had no easy way to translate so much material into French, nor keep it up to date. But,

Facility report

This month we studied the decay of Ga-62 and the Coulomb excitation of Er-168. We also analysed the Cl-36 and I-129 content in numerous samples, tested particle detectors, measured the half-life of Sc-42m, attempted to produce high-energy He-3 from the cyclotron, and performed commercial single-event-effect tests. The latter experiment required three cyclotron beam change-overs in the off-shifts, achieved with an average time of about five hours each.

Several failures of helium compressors that supply the cyclotron cryogenic system occurred during January, though with no disruption to experiments.

However, a power outage caused by failure of a large electrical feeder, and an unplanned discharge of the cyclotron main-magnet coils both resulted in experimental time being lost midmonth.

Beams produced during January were:

Ion	Energy (MeV)
¹⁴ H	14 & 17
³ He	172.5
⁶ Li	27
¹⁵ F	145
³¹ P	200
Cl	100
⁷⁹ Br	1185
¹²⁷ I	1905
I	250
¹⁹⁷ Au	1970
²⁰⁹ Bi	1129 & 1327

English information on TASCSC is now available via another source.

The TASCSC Users Group, headed by McMaster University's Professor Jim Waddington, has just posted a homepage on McMaster's computers containing over 80 pages of TASCSC material. The homepage includes: educational material, beam schedules, lists of available beams, staff phone numbers, descriptions and specifications of equipment, information on research programs, and some recent issues of the monthly TASCSC newsletter.

The material can be accessed through the URL <http://www.physics.mcmaster.ca/TASCSC/>

Requests for targets now require more notice

With the departure of Maurice Moreau from the TASCSC target laboratory in December, target-maker Peter Dmytrenko has requested that he be informed of the target requirements for all scheduled experiments well in advance, even when targets are believed to exist.

Early requests are especially advised for cases in which target lab work is required to produce new targets and foils. Researchers are asked to provide target specifications with the beam request form, when possible.

Mike Steer from Nuclear Physics Branch has agreed to assist in foil-stretching operations in the lab whenever required.

More cooling added to cyclotron

Preparations have been made to add additional water cooling to TASCSC's superconducting cyclotron. During a scheduled period of three weeks in February, two specific modifications will be made.

An extended water-cooled mounting bracket will

be installed on a hill lens, used to refocus the beam before extraction from the midplane. And, a water-cooled shroud will be installed on the stripper-foil guide, also located in the midplane.

These modifications are intended to prevent heating damage that might otherwise occur as a result of high r.f. fields required for some beams recently requested by researchers.

TASCSC collaborates on Vsystem with HMI

This month, David Caswell, a member of the TASCSC computer-control software team spent a week at the Hahn-Meitner Institute (HMI) in Berlin where he assisted the software group there with its project to implement Vsystem®.

Vsystem is a commercial control-system tool box from which a graphically based control system can be developed.

Both TASCSC and HMI have similar control-computer systems running in their facilities and have collaborated before. For example, beginning in the late 1970's three TASCSC computer-control specialists spent extended periods at HMI learning to use HMI control-system software and contributing to its development.

Since 1985, TASCSC has added special-purpose software such as a beam-line setup program while still operating the facility mainly through the original HMI software.

In 1990, TASCSC began to replace its HMI software and PDP-11 computers with Vsystem running on a VAX/VMS computer. One of the main criteria at TASCSC was that replacement software be functionally equivalent to the existing version of HMI software running at TASCSC. The success of this philosophy enables specific-purpose replacement modules written at TASCSC to run directly on HMI's Vsystem.

Much progress was made during Caswell's week at HMI and further collaboration may occur as HMI progresses with its Vsystem development.

January experiments

Experiment	Cyclotron beam development of 57.5 MeV-per-nucleon He-3. Although accelerated to larger radius than before, the beam could not be accelerated to extraction radius. Changes in thickness of stripper foils under various conditions were also studied with Au-197.
Researchers	E.H. Lindqvist and G.R. Mitchel (TASCSC)
Beams	57.5 AMeV ³ He; 10 AMeV ¹⁹⁷ Au
Duration	3 days



SPECIAL INSERT

1996 March 20

**Federal Budget Aftermath
TASCC Has One Year to Find Alternative Funding**

On March 6, the federal budget was tabled in parliament and its impact on research programs at AECL was made public. The cuts to AECL were severe –from an annual appropriation of \$174M down to \$100M by April 1, 1998.

As a result, AECL has announced that in future it will be unable to pay for any basic research at its laboratories. Some will disappear as soon as June 1996.

The news is not all bad, however. Intense political lobbying, which included 250 letters from prominent scientists in 28 countries to Natural Resources Minister Anne McLellan in the run-up to the budget, led to a one-year extension of funding (to April 1, 1997) for two programs. Heavy-ion nuclear physics (TASCC) and condensed-matter science (neutron scattering) at Chalk River have been given the opportunity to seek alternative funding.

Natural Resources Canada will lead this process. It will be a very difficult job, though, and one that must show some real progress within a few months or the AECL teams that support these programs will begin to dissipate from natural causes.

Many have asked how they can help. The cut to AECL was the result of a Finance-driven "program review" that received Cabinet approval; it is unlikely to be reversed.

However, Minister Anne McLellan is sympathetic to basic research, and Len Hopkins, the MP representing the Chalk River area, has been tremendously supportive and continues to take every opportunity to persuade his colleagues in the Liberal caucus to help find alternative funding. User help should focus on this search for funding.

People in our Canadian user community who wish to help should:

- Contact their MP to inform her/him of their concern, and the effect the cuts could have on people in her/his riding.
- Suggest their MP support Len Hopkins in urging Ministers to help provide alternative funding. (TASCC Director John Hardy was told that only a few calls to an MP on one subject constitute a "near avalanche.")
- Write a letter to one of the major papers in their area and see that their MP gets a copy.
- Write to Ministers directly (or to one with copies to the others) urging them to help provide alternative funding.

A list of names and fax numbers of Ministers can be obtained from:
TASCC@CRL.AECL.CA

Experiment	Initial test to produce O-14 via the $^{14}\text{N}(p,n)$ reaction at 16 MeV, transfer the O-14 activity via a He-jet system to an AMS source cone, and produce an isotopically enriched counting sample at an AMS detector. Further tests are planned.
Researchers	V.T. Koslowsky, E. Hagberg, G. Savard, J.C. Hardy, M.J. Watson, D.L. Beeching, H.R. Andrews, W.G. Davies, B.F. Greiner and Y. Imahori (<i>TASCC</i>)
Beam	14 MeV protons
Duration	2 days
Experiment	Study of the decay of Ga-62 with the He-jet system. Beta transitions that ultimately de-excite through the first excited 2+ state were observed to have a total intensity of $\approx 0.2\%$.
Researchers	E. Hagberg, J.C. Hardy, V.T. Koslowsky and G. Savard (<i>TASCC</i>)
Beam	27 MeV ^6Li
Duration	2 days
Experiment	Test of prototype detectors for the detection of heavy-ion recoils produced in Coulomb excitation.
Researchers	A. Galindo-Uribarri, G.C. Ball, V.P. Janzen and D. Ward (<i>TASCC</i>)
Beam	5.4 A MeV ^{209}Bi
Duration	2 days
Experiment	Study of Coulomb excitation of Er-168 with the 8π spectrometer.
Researchers	G. Gervais, S. Flibotte and J.N. Wilson (<i>McMaster University</i>); P. Garrett (<i>University of Kentucky</i>); M. Cromaz (<i>University of Toronto</i>); D. Ward, A. Galindo-Uribarri and V.P. Janzen (<i>TASCC</i>)
Beam	6.35 A MeV ^{209}Bi
Duration	4 days
Experiment	Analysis of Cl-36 and I-129 content in various samples by AMS. Samples included: reactor-fuel leachates, Chernobyl soils, groundwaters and rocks, meteorites, and human and animal teeth.
Researchers	H.R. Andrews, W.G. Davies, B.F. Greiner, Y. Imahori, V.T. Koslowsky, J.W. McKay and J.C.D. Milton (<i>TASCC</i>); R.J.J. Cornett and G.M. Milton (<i>Environmental Research Branch, CRL</i>)
Beam	100 MeV Cl and 250 MeV I isotopes
Duration	3 days
Experiment	Measurement of half-life of Sc-42m with ISOL to an accuracy of 0.2%, a factor of three more precise than the worldwide standard.
Researchers	E. Hagberg, J.C. Hardy, V.T. Koslowsky, G. Savard, M.J. Watson and D.L. Beeching (<i>TASCC</i>)
Beam	17 MeV protons
Duration	2 days
Experiment	Commercial irradiations to study single-event effects in a variety of samples.
Researchers	H.R. Andrews, J.S. Geiger and V.T. Koslowsky (<i>TASCC</i>)
Beams	10 A MeV ^{197}Au ; 15 A MeV ^{127}I ; 15 A MeV ^{79}Br ; 145 MeV ^{19}F ; 200 MeV ^{31}P
Duration	5 days

"THE WORLD WE HAVE MADE AS A RESULT OF THE THINKING WE HAVE DONE THUS FAR
CREATES PROBLEMS THAT WE CANNOT SOLVE AT THE SAME LEVEL,
AT WHICH WE CREATED THEM"

EARTHKEEPER MAGAZINE, FEBRUARY/MARCH 1994

Next month

- ISOL gas-jet tests
- 8π spectrometer background tests
- Study of entrance-channel effects in Eu-143
- ERDA analysis of various samples
- AMS development
- Search for superdeformation in Nd-131 and Ce-128
- Study of weak decay of Ni-53/Ca-38

Facility operating record

Elapsed Time (Year-to-date) 672 h

Beam Available	
Tandem Only	245
Tandem + Cyclotron	180.5
Beam Preparation	102.5
Beam Development	110
Planned Shutdown	24
Unplanned Shutdown	10

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