

# AECB decisions

Over the period since the last issue of the CNS Bulletin, (November 1999 to January 2000) the Atomic Energy Control Board has announced a number of decisions of possible interest to readers of the Bulletin.

**Power reactors:** The AECB approved the renewal of the Operating Licence for the four-unit **Bruce "B"** nuclear generating station until October 31, 2001. The renewed licence stipulates that OPG must report every six months on the progress of improving the operation of the station.

**Uranium facilities:** The Board approved the issuance of an Operating Licence, valid to October 31, 2001, to Cameco Corporation for the **McArthur River Project** in northern Saskatchewan. The licence permits the transportation of the ore slurry to Cameco's milling facility at nearby **Key Lake**. The Board also approved the renewal of the Operating Licence for the Key Lake mine and milling facilities, which includes approval to process the ore from McArthur River and to place

tailings in the Deilmann Tailings Management Facility. The term for this licence is to November 30, 2001.

An Operating Licence was approved for the **McClellan Lake Project** of Cogema Resources Inc., which will permit the company to mine the SUE open pit and to operate associated facilities. The Board approved renewals, each for two years, of the Operating Licences for the **uranium refining** and processing facility of Cameco Corporation and the **fuel fabrication facility** of Zircotec Precision Industries Inc., both in **Port Hope**, Ontario. Also approved was the renewal for the Operating Licence for Cameco's uranium refinery at **Blind River**, Ontario.

**Waste Management Facilities:** The Operating Licence for Hydro Québec's **Radioactive Waste Storage Facility at Gently** was renewed until December 31, 2001.

The Board approved the construction of the **Modular Above-Ground Storage** facility for low level radioactive waste to be built at the Chalk River Laboratories of Atomic Energy of Canada Limited. Each unit will be a pre fabricated steel structure placed on a reinforced concrete pad and will hold about two years volume of low level waste at CRL.

Despite some emotional interventions at the its January 2000 meeting the Board approved the construction of a **used fuel dry storage facility** at the Bruce Nuclear Power Development site of Ontario Power generation. A condition requires OPG to conduct soil tests and provide the results to the AECB before beginning construction.

**Accelerators:** The Board has approved the construction of accelerators at:

- the University of Ottawa Heart Institute
- the Northeastern Ontario Regional Cancer Centre in Sudbury, Ontario
- the Fraser Valley Cancer Centre in Surrey, British Columbia.

An operating licence was approved for the accelerator at the Manitoba Cancer Treatment and Research Foundation in Winnipeg, Manitoba

## New CNO at OPG

In early January, Ron Osborne, president of Ontario Power Generation Inc. announced that **Gene Preston** would take over as executive vice-president and chief nuclear officer from **Carl Andognini**, effective January 10, 2000. Andognini will stay with OPG until June 2001 as a "special nuclear adviser".

Andognini and Preston are the only remaining members of the six person team of senior nuclear executives from the USA engaged by then Ontario Hydro to restore OH's nuclear plants to world class performance standards.

Osborne also announced the appointment of **Richard Dicerni** as executive vice-president, with responsibilities for waste disposal, environmental and public affairs and government relations.

*(See OPG's official announcement elsewhere in this issue of the CNS Bulletin.)*

## Environmental scope report for Whiteshell issued

In mid January 2000, the Atomic Energy Control Board announced that it had finalized the "Scope of Project and Assessment" report governing the decommissioning of the Whiteshell Laboratories in Manitoba.

This report is available through the AECB's Website < [www.aecb.ccea.gc.ca](http://www.aecb.ccea.gc.ca) >

## OPG invites proposals for Bruce units

In December 1999 OPG president Ron Osborne informed OPG staff that the company was inviting "expressions of interest" to take over the eight nuclear units at the Bruce site: the four "moth balled" units of Bruce "A" and the four operating units of Bruce "B". In mid January 2000, OPG spokespersons confirmed that the company had received some replies but declined further comment.

This move is the first of OPG to respond to the Ontario energy Competition Act which requires OPG to surrender 13 % of its market in Ontario by the spring of 2004 and 65 % by 2010. This will require OPG to "decontrol" about 10,000 megawatts of generating capacity.

# Sylvie Caron leaves CNA/CNS office

After 12 years of overseeing conference registrations, CNS memberships, and a myriad of other duties, Sylvie Caron has decided to leave the Canadian Nuclear Association. Under the arrangement between the Canadian Nuclear Society and the CNA, Sylvie has been the central person in the day to day operation of the Society.

The CNA's decision to move to Ottawa caused Sylvie to look at her situation with the result that she, with considerable reluctance, decided this was a good time for her to move on to other things. At the time of writing her plans were still fluid but she indicated that she would probably go back to her home in Montreal for a period.

*(Over the years in our role as editor of the CNS Bulletin, Sylvie has provided invaluable assistance. We wish her success and happiness in whatever endeavours she decides to pursue.)*

*Sylvie Caron is shown receiving a special presentation from then CNS president Paul Thompson at the CNS Annual Conference, October 1998.*



## AECB to conduct cancer studies around nuclear sites.

It has been learned that the Atomic Energy Control Board intends to conduct studies of cancer incidence around nuclear sites in Canada.

The AECB and Health Canada have agreed to develop jointly a system of cancer surveillance in the areas around major nuclear facilities, to include:

- nuclear research reactors
- nuclear power generating stations
- uranium mines
- uranium refining and conversion facilities fuel fabrication facilities

The development of the system will be carried out in several phases, starting before the end of this fiscal year (March 31) with a pilot project in the vicinity of the Pickering NGS. The proposed area to be studied is one of 25 km radius around the plant. The intent of the pilot study is to test different surveillance methodologies using available data from existing health records. Based upon the results of this pilot study the two agencies will decide on the specific surveillance methodology to be used at the other facilities.

The AECB and Health Canada propose to establish an advisory committee to review and comment on the studies.

The AECB had commissioned studies of leukemia around some nuclear facilities in 1989 and 1991. In neither case were the

results statistically significant. Dr. David Hoel, of the University of South Carolina, serving as an adviser to the Inverhuron & District Ratepayers Association in their legal suit against the AECB, Ontario Power Generation Inc., and others, has contested the conclusion that the observed increased rates of leukemia were insignificant. That suit claims that inadequate environmental assessments were conducted in support of the new dry storage facility for spent fuel at the Bruce site. The Board, at its January 21, 2000 meeting, approved that facility but acknowledged that the final decision could rest with the courts.

## Ontario issues new air quality regulations

The Ministry of the Environment of Ontario has issued new air quality regulations which include new emission limits for the electricity sector. The new limits for Ontario Power Generation Inc. are an annual cap for nitrogen oxides are 36,000 tonnes a year. OPG had, earlier, set its own voluntary limit of 38,000 tonnes. The limit for sulphur dioxide is 157,500 tonnes per year compared to the current limit of 175,000 tonnes. The new limits come into effect in 2001. The Ministry has stated that trading in emission reduction credits will be allowed.

# Environment Act under review

The federal government is reviewing the Canadian Environmental Assessment Act and the Canadian Environmental Assessment Agency is holding public consultations to receive comments. Open meetings will be held across the country from the end of January to the middle of March.

Some of the dates are:

January 31	Ottawa
February 22	Toronto
February 29	Saskatoon
March 2	Winnipeg
March 8	Fredericton
March 9	Montreal
March 15	Quebec City

Further details can be obtained from the CEAA Website  
< [www.ceaa.gc.ca](http://www.ceaa.gc.ca) >

## AECB releases responses to comments on Regulations

The Atomic Energy Control Board released in early January 2000 a 74 page (legal size) compilation of its responses to the large number of comments on the draft regulations under the Nuclear Safety and Control Act which had been submitted.

Copies can be obtained from the AECB. The e-mail address is: < [info@atomcon.gc.ca](mailto:info@atomcon.gc.ca) >

AECB staff are scheduled to present a final set of Regulations to the Board at its March 23 meeting. Approval by the Board is the next formal step toward putting the new Act in force.

## CNA moves to Ottawa

The Canadian Nuclear Association will be moving to Ottawa the middle of March 2000. The new address will be:

Canadian Nuclear Association  
130 Albert Street, Suite 1610  
Ottawa, Ontario  
K1P 5G4

The new telephone number was not available at time of publication.

For up to date information check the Association's Website  
< [www.cna.ca](http://www.cna.ca) >

### *Heat Transfer Enhancement in Multiphase Flow* at the 2000 ASME International Congress and Exposition (IMECE 2000)

**Orlando, Florida**

**November 5 - 10, 2000**

The goal of the session is to bring together persons interested in modern methods and techniques for enhancement of heat transfer in multiphase systems.

Although the nominal deadline for papers has passed, interested persons should contact:

Dr. Jovica Riznic  
Atomic Energy Control Board  
Ottawa, Ontario  
tel. 613-943-0132  
fax: 613-943-8954  
e-mail: < [riznic.j@atomcon.gc.ca](mailto:riznic.j@atomcon.gc.ca) >

### *Call for papers*

## **5th International Conference on CANDU Maintenance**

**Toronto, Ontario**

**November 19 - 21, 2000**

The Canadian Nuclear society's 5th International Conference on CANDU Maintenance will be held in Toronto, November 19 -21, 2000 at the Holiday Inn On King.

Papers are invited on all aspects of maintenance relevant to CANDU nuclear generating stations, especially papers pertaining to maintenance in a competitive, deregulated environment.

For information contact:

Martin Reid  
Ontario Power Generation  
P.O. Box 160  
Pickering, Ontario, L1V 2R5

tel. 905-839-1151 ext 3645      fax 905 837-7317  
e-mail: [martin.reid@ontariopowergeneration.com](mailto:martin.reid@ontariopowergeneration.com)

*(See flier mailed with this issue of the CNS Bulletin.)*

## Obituaries

*Perhaps reflective of the age of the Canadian nuclear program we record, sadly, the passing of several long time contributors to that program.*

### Charles Edward ELLS

"Chuck" Ells died November 30, 1999 in Deep River at the age of 76. He worked with the Bureau of Mines in both Ottawa and Chalk River (when the Bureau ran the metallurgical program at the then Chalk River Nuclear Laboratories in the early 1950s before returning to Birmingham University to obtain his Ph.D. He returned to Canada and after a short period with Canadian Westinghouse company he rejoined CRNL in 1957. Over the following years he was a key member of the team that developed the design of CANDU fuel channels. On retirement in 1990 he was appointed as an AECL Researcher Emeritus at the Chalk River Laboratories. In his retirement years Chuck was one of the authors of, *Canada Enters the Nuclear Age - A technical history of Atomic Energy of Canada Limited as seen from its research laboratories*, which was published in 1997 and launched at a special session of the 1997 CNA/CNS Annual Conference in Toronto.

### John McNair JARDINE

John Jardine, a long time officer of the Atomic Energy Control Board, died in Ottawa, December 10, 1999. He was 80 years old. A chemist, John worked for Eldorado Mining and Refining (later Eldorado Nuclear) at both the Port Hope refinery and in the research laboratories in Ottawa from 1948 to 1972. That year he joined the Atomic Energy Control Board in the materials licensing group. John retired from the AECB in 1981. He remained very active in local affairs, including the long standing "Friday luncheon club" at the Ottawa "Y" and was president of that group in 1996.

### Ernest Andrew LARSON

*(The following note is from Al Lane.)*

Ernest Andrew Larson, a widely known AECL employee at the Chalk River Laboratories for over 30 years, died in Deep River, Ontario on November 1999, after a twelve year battle with cancer. Ernie was well known by all local and visiting experimenters undertaking experiments in the NRX and NRU reactors at CRNL, and by the staff who operated and supported the operation of these reactors.

During the early part of his career, when he was the reactor physicist for the NRX reactor, Ernie was the person that experimenters sought out to get the right neutron flux levels for their particular experiments. In the sixties, he moved to the Nuclear Materials Control Branch, and was one of the authors of the NRU Safety Assessment document, the basis for NRU's license to operate. In the seventies he transferred to the Nuclear Materials Control Branch, and in 1984 became manager of that

branch. Ernie became ill with cancer in 1987, and set a new standard for positive thinking and positive attitude in dealing both with the disease and his work responsibilities over a number of years. During his years at AECL he made an important contribution to the nuclear industry, and set a very impressive standard in his long fight with cancer. He will be much missed.

### Harold "Hank" MERLIN

As a Maritimer, Hank Merlin gained his engineering degree at Nova Scotia Tech. He entered the nuclear program when he was attached to the Chalk River Nuclear Laboratories in the 1950s from Brazilian Traction as part of the nuclear power study group. He joined the new Energy Policy sector of the Department of Energy, Mines and Resources (now Natural Resources Canada) when that sector was formed in 1972, as Uranium Adviser, and remained in that role until his retirement.

At EMR he handled many tasks over the years. In the late 1970s he worked with John Runnalls on what was called the uranium orderly marketing initiative, sometimes referred to as an attempt to create a cartel. During that same period he was the principal author of the uranium section of the energy policy papers prepared in the late 1970s. In the 1980s he was named co-chair of the Heavy Water Study Group of the International Fuel Cycle Evaluation, an initiative of US president Carter to examine plutonium reprocessing and other advance fuel cycles to prevent proliferation. He was a member of the board of Uranium Canada, a crown company set up to handle the uranium stockpile that had been accumulated over the 1960s and represented UCan at the Uranium Institute. Throughout his period at EMR he was involved in many other international activities and travelled extensively. Hank was a conscientious, capable, and concerned professional who brought credit to the term "public servant" and was a great person with whom to work.

### Tung TOONG

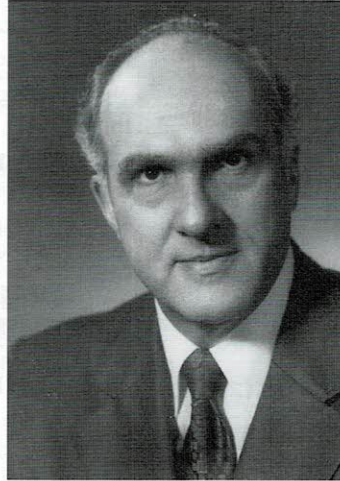
Tung Toong, a Senior Technical Specialist in the Thermal-Hydraulic Analysis Department of Ontario Power Generation Nuclear (previously Ontario Hydro), died January 8, 2000 in Toronto.

His career at Ontario Hydro began in 1973 as a Mathematical Programmer for the development of the SOPHT code. He continued in code development throughout his years at OH and OPG. In 1998 he was a co-winner, with Charles Chang and John Skears, of the CNS John S. Hewitt Team Achievement Award. The citation for that award read: "for outstanding contribution to thermal hydraulic process design and safety analyses for CANDU reactors, particularly with the development of the SOPHT computer code: successfully contributing to the identification, in a timely manner, of the figure of eight, two phase, oscillation phenomenon using SOPHT".

## In memoriam

# Harold Smith - the first winner of the W. B. Lewis medal was a key person in launching the CANDU program.

*Ed. Note: When we learned of the death of Harold Smith we turned to John Foster, former president of Atomic Energy of Canada Limited and a long term colleague of Harold, to prepare a note on this remarkable person who, as John Foster writes, was very much the "linchpin" in the creation and early expansion of the CANDU program. John's account is much longer than the normal obituary but it provides not only insight into the life of this largely unheralded Canadian but also into some of the history of the times in which he lived. It has been edited slightly to fit the space available.*



On January 8, 2000, a relatively small group of family and friends paid their last respects to Harold Smith. This quiet passing was in keeping with the way Harold had lived. He never sought special recognition, and did not engage in extramural activities that undoubtedly would have made him more prominent. Consequently he is not a well-known public figure. Nevertheless, he is one of the great Canadians of the twentieth century.

Harold Armstrong Smith was born in Lucknow, Ontario in 1919 and grew up in Dutton, a little town in Southwestern Ontario. Dutton does not have many claims to fame, but it was also the boyhood home of Kenneth Galbraith. Whether there was something in the Dutton water or whether it was simply a common Scottish ancestry, Harold was to exhibit some of the same sagacity and regard for public enterprise.

He went to Queens University, Kingston, and graduated with a Bachelor of Science in Electrical Engineering in 1940. He joined Ontario Hydro - electric power system planning.. In 1943 he joined the Navy and in 1944 was in charge of development of various shipboard electronic systems. He was made a Member of the Order of the British Empire (military).

## Early Days at Ontario Hydro

After the war he returned to Ontario Hydro, as System Planning Engineer - a position that required high technical competence. It entailed the use of analog simulators to model electrical transmission systems, with their power sources and loads. Ontario Hydro had one of the best simulators on the continent.

At that time the utility had two operating frequencies. A frequency of 25 cycles per second had been chosen for the region from Niagara Falls to Toronto as better suited to the steel rolling mills in Hamilton and other heavy industrial equipment. The 25 cycle system extended into parts of Toronto and other parts of Southern

Ontario. Most of Toronto, however, and the rest of the province was operating on the 60 cycle per second frequency generally adopted throughout North America. It was clear the use of two frequencies couldn't go on. The 25 cycle system and loads would be converted to 60 cycles.

Harold was made Frequency Standardization Engineer in charge of the logistical and technical aspects of the project. It was a very large logistical operation, using the latest punched card technology (solid state computers were 15 years away). There were many technical challenges, because of the great variety of loads. For the first two years, the expansion of the 25 cycle system exceeded the rate of conversion, but within two more the job was done.

## The Transition in Hydro's Resources

At the same time a much more fundamental change was going on in Ontario Hydro. The utility, which had been built on developing major hydro-electric resources, was running out of such resources. Development of more remote sites and the construction of the St. Lawrence Seaway would increase hydro-electric power generation for a few years, but by mid-century Ontario Hydro had to begin its conversion from a hydro-electric utility to one whose energy would come predominantly from thermal sources. A small oil-fired power plant was built in Scarborough and two large power stations were built at Windsor and Toronto. They would depend on American coal.

But there was another possibility. Only three months after nuclear fission was explained in February 1939, research scientists in Paris filed for patents for a power reactor. World War II diverted interest toward development of an explosive.. The French scientists escaped to Britain, and in 1943 the Franco-British effort was transferred to Montreal. A consequence was early development of the heavy water reactor in Canada and

---

{1} It was universal practice to identify nuclear reactors with acronyms. NPD had been identified in this way. When it was decided to proceed with work on the large power reactor, Lorne Gray asked Harold Smith for suggestions. Harold produced a fairly extensive list of acronyms, and from these Lorne chose CANDU (Canadian Deuterium Uranium). When the project went ahead and the site chosen, NPPD preferred to refer to the plant in the traditional utility way by the name of the site -Douglas Point. However, they continued to use the acronym CANDU to identify the nuclear steam supply system. The practice persisted with later plants, and CANDU became the official name of the process.

establishment of one of the world's leading nuclear research laboratories at Chalk River, Ontario. After the war attention of nuclear scientists, utilities and governments around the world turned again to the possibility of using nuclear fission for power production. In Canada a crown company, Atomic Energy of Canada Limited (AECL), was created. It assumed the Chalk River laboratory and announced that its prime objective would be development of nuclear power.

## The Nuclear Power Program

The first definitive step was the creation of the Nuclear Power Group. Eight engineers from utilities, and from a manufacturing, a chemical, and an engineering firm assembled at Chalk River at the beginning of 1954 to work with AECL scientists and engineers to explore the feasibility of developing a heavy water reactor for power production. Harold Smith had finished his Frequency Standardization assignment. R.L. ("Dick") Hearn, General Manager of Ontario Hydro, had no trouble in deciding who should be his point man on this new, potentially very important, venture. With his brilliant mind, great technical knowledge and competence, and now with the proven capacity to lead a team to successful accomplishment of a complex technical undertaking, Harold was a natural choice to be the leader of the Nuclear Power Group.

Progress was rather slow at first as the Group learnt the rudiments of reactor physics, something of materials and chemistry, and explored what form a small power reactor might take. When Dick Hearn visited the site in June and asked "Well, Harold, how are you getting on?" Harold replied "I think we're getting to the point where we know how to ask the question." What would a crusty old engineer, who spent much of his life in construction, where time is of the essence think of this? But he knew Harold, and said: "That's all we can expect at this time, Harold. Framing the question correctly is essential to getting a good result."

Besides guiding the Group to a sketchy design and a rough estimate of what a small plant might cost, Harold Smith made one other important, if less visible, contribution to the program at that time. It is probably fair to say that the President of AECL, Bill Bennett, one of C.D. Howe's "whiz kids", and the minister himself were moving toward building a small demonstration plant. However, it would be necessary to have the concurrence, indeed the recommendation of the AECL board. This hard-headed gang would need to be convinced.

Dr. W.B. Lewis, scientific head at Chalk River was a zealous proponent. Lewis was brilliant, had a tremendous memory, was very industrious, held strong opinions, and had great confidence in those opinions - but he had problems in communicating with the uninitiated. His quick mind flitted from topic to topic and he frequently drew on his great breadth of knowledge of technical minutiae. Just as a matter of course in the beginning, Harold Smith was invited to AECL board meetings to report on progress of the Nuclear Power Group. Harold had great facility in reporting clearly and succinctly, and above all, plainly. He spoke the Board's language. But he also had the technical equipment to converse, as an equal, with W.B. Lewis, and gain his friendship and respect. As Harold's enthusiasm for the heavy

water power reactor grew he became a very effective in the communication between Lewis and the Board.

## The Prototypes

The small plant project (10MWe - later 22MWe) called NPD (Nuclear Power Demonstration) went ahead in the spring of 1955. Following the practice in the United States and Britain, a private corporation, Canadian General Electric (which contributed \$2 million to the project), would design the nuclear portion and construct the total plant. It would be built near Chalk River, incorporated into the Ontario Hydro system, and be operated by Hydro.

As work progressed on NPD, the Nuclear Power Group continued work at Chalk River, looking forward to the next stage - a full scale power plant. Whereas the original NPD design had a pressure vessel, development in the United States made it possible to propose zirconium alloy pressure tubes for the larger plant. The NPD design was changed to match this in 1957.

With government support, AECL embarked on the engineering of the larger unit (200 MWe) at the beginning of 1958. Lorne Gray had become President of AECL, and Harold and he had struck up what would become a strong lifelong friendship. The composition of the AECL Board had changed too, with several of its members CEO's of the country's electrical utilities. Harold's ideas were guiding Ontario Hydro's approach to nuclear power, and this, together with the respect he was earning with Lorne Gray and the AECL Board, played a major role in determining AECL policy related to the development of nuclear power.

For the new project, the pattern of using a private company to do the engineering was abandoned. At the beginning of 1958 AECL created a new division in Toronto to do this. It was located at Ontario Hydro's A.W. Manby Service Center and Harold Smith was its first director. He explained that Canada required, and could afford, only one engineering organization in nuclear steam supply engineering; and Hydro could not be dependent on a private monopoly for something so vital to its future program. He would have preferred that Hydro perform this engineering itself; but since this was beyond its resources, AECL, another publicly-owned enterprise, and one with federal government backing, was clearly the best alternative. Furthermore, whoever did the engineering would be dependent on the publicly-funded research and development being conducted at AECL, and it seemed advisable to him that the fruits of this be kept in the public domain. Needless to say this was not a universally popular idea, but it did establish the pattern for nuclear power plant engineering that has persisted to this day in this country.

The original intention had been to carry out two years' exploratory engineering for the larger plant. However, the Canadian government put pressure on AECL to expedite the large plant project., referred to at that time as CANDU{1}. The project was committed in 1959.

Important as it was, establishment of AECL's Nuclear Power Plant Division (NPPD) and commencement of engineering on the large plant, was not the chief reason Harold was brought back to Toronto. He had simultaneously been appointed Assistant General Manager - Engineering of Ontario Hydro, in charge of system planning, engineering and construction for all Ontario Hydro generation, transmission and transformation.

These broader responsibilities required him to relinquish the AECL position to his deputy, John Foster. but he continued to have a major influence in the development of NPPD. The agreement between Ontario Hydro and AECL included among other things the secondment of 15 engineers from Hydro to important design and development positions in NPPD, and when Douglas Point went ahead, Hydro would manage and did, in fact, perform much of the construction of the plant.

## The Power Plants

By 1963, only one year after NPD had begun operation and three years before Douglas Point started up, Ontario Hydro, on Harold Smith's initiative, was contemplating building a nuclear power station with four 500 MWe CANDU units. In 1964 two of these were committed under a tri-partite agreement involving the Federal Government, AECL, and Ontario Hydro. They would be built at Pickering on the eastern outskirts of Toronto. Proceeding with such a major CANDU plant, with so little experience, was a very daring move. Although, under the agreement, the commitment of capital by Ontario Hydro would only be what it would have invested in an equivalent coal-fired plant, the dependence that would be put on the nuclear units for generating capacity and the space taken up in the utility's financing and construction programs were major exposures. Needless to say many others besides Harold Smith in the Commission, in AECL, and in the Federal and Provincial Governments were involved in the decision and had their necks out, too.

Harold was a great believer in teamwork, and had tremendous confidence in the engineering and construction teams he led in Hydro, in the engineering and scientific teams in AECL., and in the nuclear operations team under Lorne McConnell. Nevertheless, **Harold Smith was the essential prime mover in this pivotal undertaking in the development of CANDU, the Canadian nuclear power program, and most importantly, from his point of view, the new form of Ontario Hydro.**

Over the next decade Harold Smith's responsibilities grew from being in charge of system planning and engineering and construction to embrace operation of the bulk power system and all thermal generating plants, and Ontario Hydro's impressive research activity. Hydro committed six more 500 MWe units at Pickering, eight 800 MWE units at Bruce, alongside Douglas Point on Lake Huron, and four 900 MWe units at Darlington on Lake Ontario.

Harold Smith was, for the metamorphosis of Ontario Hydro, what Adam Beck had been in its genesis. Sir Adam led in the application of indigenous water resources and human skills to the provision of electricity for the people of Ontario. Fifty years later Harold led in the application of indigenous mineral resources and human skills to continue and expand this.

## The Linchpin

The Canadian nuclear power program was a great collaborative endeavour, involving as it did the federal and provincial governments, and AECL, Ontario Hydro, Hydro Québec, NB Power, Canadian industry and engineering firms, and others; but Harold was the essential linchpin. Without his ready acceptance of the notion of using the heavy water reactor to produce power,

and his determination to move ahead swiftly, always striking when the iron was hot, there would have been no Canadian nuclear power program as we know it. Almost certainly Canadian utilities would have had some nuclear power stations, and Canadian industry would have played a part; but there would not have been the major Canadian technical involvement, nor the export program that flowed from that.

Harold was not enthusiastic about the export program; but once AECL embarked upon it, Ontario Hydro, under Harold's guidance, did everything it could to assist. As it had for the other Canadian utilities that adopted CANDU, Hydro gladly provided operating staff training, commissioning and other services to foreign organizations that bought CANDU plants.

## Recognition

Despite the remarkable contribution that he made to progress in power generation in Canada in the twentieth century, Harold was not well known publicly. This suited him. He did not seek public approbation or aggrandizement. It was not that he was any shrinking violet; far from it. He was a large man with a personality to match, who called a spade and spade, and made clear what he felt should be done. But he confined this presence to his professional sphere. Here he received all the recognition he wanted. He was made a Fellow of the Royal Society of Canada, and a Charter Fellow of the Canadian Academy of Engineering. His alma mater, Queen's University and McMaster bestowed honorary doctorates on him. He was the first recipient of the W. B. Lewis Award, the highest honour the Canadian Nuclear Association, representing the Canadian nuclear industry, can grant. He was a recipient of the Gold Medal of the Association of Professional Engineers of Ontario, and of the A. G. L. McNaughton Medal of the Canadian Region of the American Institute of Electrical and Electronic Engineers. He was a Member, and later Vice-Chairman of the Northeast Power Co-ordinating Council, and a Member of the Executive Committee of the (US) National Electricity Reliability Council. He was particularly pleased with the international recognition he received when he was made a Foreign Associate of the American Academy of Engineering.

## Epilogue

Harold was always very interested in organization; and finished his career at Ontario Hydro leading a small team in the production of an integrated management system for Hydro from top to bottom.

Privately, he was a warm likeable person - a great and loyal friend to all and a kind family man, beloved by all generations. He enjoyed music - Beethoven was his favourite composer ; woodworking - he made some fine furniture; cooking - and all that goes with it; and handiwork - in his time he practiced every building trade known to man; . He had a great admiration for skilled tradesmen, and enjoyed conversations with them.

Harold Smith was an exceptional man of his time - a leader in the great building era of the quarter century that followed the Great Depression and World War II, when cities were renewed and transportation, communication and energy systems transformed. And withal he was a very fine person.

John Foster

# The Deep River Science Academy

## National Academy Creating a Strong Science Culture among Canadian Youth

submitted by Michelle Long, DRSA Whiteshell Campus

This old proverb is proven time and time again at the Deep River Science Academy (DRSA). A private, not-for-profit, residential summer school, the DRSA offers high school students an innovative six-week summer program where they gain hands-on experience in scientific research and development. This award-winning program is dedicated to creating a strong science culture among Canadian youth and encourages students to choose university studies and careers in science or engineering.

The research experience offered to high school students each summer by the DRSA is unique in Canada, and possibly the world. The Academy's students work within real research teams, under the guidance of a university level tutor and the supervision of a professional scientist. These projects are a part of ongoing research programs at some of Canada's leading research facilities. Students do not simply watch demonstration projects, they are participants in science, contributing to real research.

There are now four DRSA campuses across Canada;

- The Deep River Campus in Deep River, ON;
- The Whiteshell Campus in Pinawa, MB;
- The Okanagan University Campus in Kelowna, BC and, opening this summer,
- a francophone campus at the New Brunswick Campus in Fredericton, NB.

All campuses offer a full research program. Each campus is associated with different research partners in their community and offers different research opportunities. Depending upon the campus they attend, students may receive high school credits and/or post-secondary credits.

The Deep River Campus offers high school credits upon successful completion of the program. The Whiteshell Campus grants two high school credits and one post-secondary credit in technical writing from Red River College.

The Okanagan Campus offers students a Certificate in Scientific Research Skills at the post-secondary level.

Discussions are still underway at the New Brunswick Campus with regard to credits.

During the six-week Academy term, high school students work in pairs on a research project under the close supervision of a university-level tutor. A tutor is hired for each project, providing daily instruction and monitoring. The students keep a daily laboratory log book, and present an oral and written report on their research at the end of the program.

Students live together in a relaxed, but well-supervised atmosphere. Both the Whiteshell Campus and the Deep River Campus house students at water-front resort facilities, while the Okanagan and New Brunswick Campuses are located at local universities.

*"I hear, and I forget,  
I read, and I remember,  
I do, and I understand."*

- An Old Proverb

Residence Supervisors, hired by the Academy, provide supervision during the students' stay at the residence and uphold a code of reasonable behaviour. Meals are provided by local restaurants and community organizations. The Academy also organizes many recreational activities in the local area for the evenings and weekends. Students participate in water-skiing and rowing clinics, as well as tennis, golf, swimming, hiking, canoeing and trips to local attractions. Considerable attention is given to these extra-curricular activities, as it is the intent of the Academy to generate a socially coherent student body. Indeed, many long-standing friendships are formed at the Academy, creating a network of young scientists across the country.

In 2000, the program dates for the four campuses across the country are as follows:

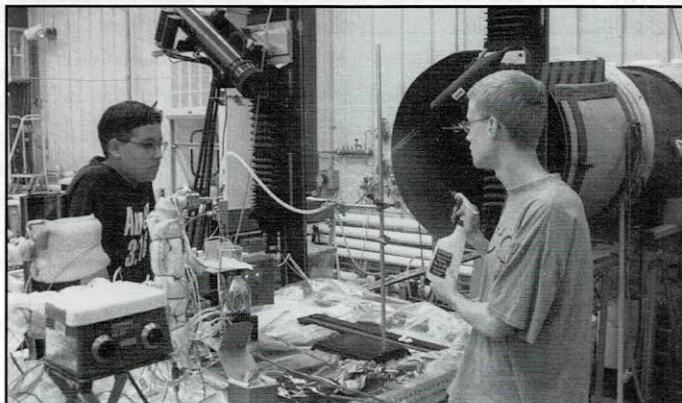
Deep River Campus	July 2 - August 12
Whiteshell Campus	June 26 - August 4
Okanagan University College Campus	July 2 - August 12
University of New Brunswick Campus	June 26 - August 3

Some of the research projects slated for this summer include:

- the study of the swimming performance of Manitoba fish;
- the effects of the Pinawa Diversion Dam on the limnology and aquatic ecology of the Pinawa Channel;
- the effect of forest-edges on insect communities, gas mixing, research on electron-beam curing of composite materials, and;
- an archaeological dig.

Further details of these and other projects can be obtained by contacting one of the Academy offices.

For additional information you can also check out our web site at [www.drса.ca](http://www.drса.ca).



McLean Edwards and Bob Wilson, students at the DRSA-Whiteshell Campus in 1999 are shown working on a project "Generating Caesium-Iodide Particulates for Studies of the role of Aerosols in Postulated reactor Accidents"



# CNS news

---

## From the President's desk



Dear CNS Members:

HAPPY NEW YEAR 2000!

We recently completed our first anniversary as an independent not-for-profit organization and our 20th anniversary as a society. To commemorate this event, we held a draw in December for 20 Inukshuk prizes. I would like to congratulate the winners. Membership in the CNS does have its benefits!

Since my column in the last issue of the *CNS Bulletin*, your society held many successful events – Quality Assurance Course, Reactor Safety Course, Climate Change and Energy Options Symposium (CCEOS), Journalism Workshop, etc. You will read about these elsewhere in this Bulletin. The CCEOS is noteworthy in that it brought together representatives from the government and most of the energy-producing sectors in Canada.

I teach part-time at McMaster University. Over the years I have observed the enrollment in nuclear-related courses has continued to drop significantly. The nuclear-engineering curriculum has all but disappeared from Canadian Universities. If this continues, I am afraid that we will face a dearth of technical and human resources needed to support the Canadian nuclear industry in the very near future. Nuclear education is vital to a strong and vibrant Canadian nuclear industry. I therefore appeal to the Canadian nuclear industry to provide much needed support to Universities. The support can be in many forms – R&D sponsorship, student scholarships, faculty-chair funding, etc. To maintain a bright nuclear future in Canada, we need to encourage students at Universities to learn, think and research nuclear. Many of them may choose nuclear as their career and work for the Canadian nuclear industry.

Your society has taken small steps in disseminating information on nuclear science and technology to high-school science teachers. The two sessions we organized so far at

McMaster University and the University of New Brunswick [for high school teachers] have been very successful. We will continue to sponsor these in the future.

Our membership drive has had some success. As of end of December, the total paid membership stood at about 750. We should be able to increase this even further. Please continue to support your Society, and suggest to your colleagues to join the CNS. It's a good cause.

The new year is also bringing new challenges to the CNS. The CNA is moving its office from Toronto to Ottawa. On behalf of the CNS, I wish the CNA good luck and success in their move and future endeavours. The CNS has shared the office and administrative services with the CNA for over 20 years, and for the first time since incorporation we are going to have to do it really by ourselves. As you know, your Council has sent out requests for proposals to provide office services. We will keep you posted on the developments.

Major events planned for 2000 include:

- the Annual Conference in June
- the Nuclear Simulation Symposium in September,
- a Joint CNS-SFEN Specialists' Meeting and Workshop on Hard Facing Alloys in Water Reactor Environments in the Fall, and,
- the CANDU Maintenance Conference in November.

Please note these in your calendar and be sure to attend.

I would like to thank all of you who are making our accomplishments possible.

Until next time,

V.S. (Krish) Krishnan.



## BRANCH ACTIVITIES

The following is drawn from notes compiled by Ken Smith, chairman of the Branch Affairs Committee. As he commented, branch activities were limited due to the holiday season. In addition the branches centred on OPG sites have had to curtail their activities in light of the major restoration programs underway. The names in parentheses are those of the Branch chairpersons.

### **BRUCE (Eric Williams):**

Despite the pressures at work the branch chairman is determined to get active again. He hopes to have three presentations this season.

### **CHALK RIVER (Michael Stephens):**

*Ed. Note: We apologize for not reporting in the previous issue that Michael Stephens had been elected the new chairperson of the Chalk River Branch*

On January 19, the chairman and Jeremy Whitlock put up a CNS display on the most prominent bulletin board at the Chalk River Laboratories (in the cafeteria lobby, right beside the entrance to the cafeteria). (See accompanying photograph.). Several speakers have been tentatively lined up for the spring season.

Other proposed activities include:

- Al Lane is investigating the possibilities for creating a CNS award in the name of Don Hurst, at either national or CR Branch level. Possible criteria that have been suggested for the award include recognizing either a nuclear educator, or balanced nuclear journalism, or a promising young nuclear scientist or engineer.
- Support to educational activities continue - including bussing local high school students to visit CRL, providing refreshments at Deep River Science Academy seminars, and a Geiger counter for a local high school.
- The Branch is working up a display of the periodic table of the elements for the CRL Visitors' Centre.

### **GOLDEN HORSESHOE (Dave Jackson):**

Although the Branch has been quiet, a few programs are being discussed for the spring season.

### **MANITOBA (Morgan Brown):**

Alistair Miller will be visiting on March 9th, and will talk on heavy water research.

### **NEW BRUNSWICK (Mark McIntyre):**

The New Brunswick Branch of the Canadian Nuclear Society hosted three events over the past couple of months.

**Dec. 9: "A Walk in the Exclusion Zone: Thirteen Years after the Chernobyl-4 Accident"** by Dr. Edward Waller, Adjunct Professor, Laboratory for Threat-Material Detection, University of New Brunswick.

Thirteen years after the Chernobyl-4 Nuclear Reactor accident, the radiological and psychological effects of the devastating event are still present in the Ukraine. Since the independence of the Ukraine from the former Soviet Union, decentralization of investigations into the long-term effects of the accident may have the net benefit of allowing independent development of programs to aid in a more rapid dissemination of information, data and lessons learned to the rest of the world. Dr Waller explained that the exclusion zone around Unit-4 is a unique practice and training area for radiation emergency response services, due to the widespread and varying levels of detectable radiation. Dr. Waller focused on his recent visit to the Ukraine, where he participated in a workshop on post-accident radiation monitoring techniques. The 1986 accident was briefly reviewed, emergency radiation monitoring techniques utilized in the exclusion zone were detailed and the current state of the sarcophagus was briefly presented. The audience also got a flavour for the Ukrainian society feelings in and around the capital of Kiev.

**Jan 13: "The Wonders of CANDU FUEL"** by Peter G. Boczar, Director, Fuel and Fuel Cycles Division, Atomic Energy of Canada Limited. The lecture took place at the Saint John Regional Library.

Peter spoke about the natural uranium fuel cycle, its cost benefits, and how the CANDU reactor is the most uranium-efficient reactor in the world. Moreover, advanced CANDU fuels offer benefits that go well beyond further reductions in fuelling costs. In fact, fuel is a key enabling technology for achieving improvements in the operation of current plants, and reductions in the cost of new reactors. Peter outlined near-term fuel cycle initiatives that will help ensure the competitiveness of the CANDU reactor.

**Jan 14: "The Real Source of Leadership-Be, Do, Have"** by Victoria S. Briant, President of Culture Works, Inc. The lecture took place at the Point Lepreau Generating Station.

Victoria Briant delivered a high energy speech and covered topics such as definitions of a leader and characteristics that we like to see in a leader. Victoria postulated that the real source of leadership power is from a "state of being". When aware of character and commitments- and lead from who we are- there is an enduring and powerful impact which inspires others to follow and achieve. With audience participation Victoria gave ideas on how to become instantly aware of your "state of being" and then followed that up with 5 specific means on how to start immediately applying practical leadership.

This lecture was part of the 2nd Annual CNS New Brunswick Branch Membership Drive and attracted over 70 people. The

membership drive is one way of raising the profile of the CNS. The branch chairman spoke about the benefits of membership and some of the work the CNS is doing to promote the exchange of information on all subjects related to nuclear science and technology. The audience was especially impressed that the CNS was supporting programs to give journalists, journalism students and high school science educators the tools to communicate nuclear science.

### **OTTAWA (Bob Dixon):**

The Ottawa branch's next meeting will be held on February 3, 2000. The topic of the presentation will be "The Physics of Modern Reactors: Cell/Lattice Codes", by Dr. Rudi Stamm'ler, Studsvik Scandpower AS, Kjeller, Norway. Dr. Stamm'ler is the principal author of the well-known monograph "Methods of Steady-State Reactor Physics in Nuclear Design".

CNS Ottawa is also actively supporting the W.B. Lewis Lecture for 2000, to be held at Carleton University, Ottawa on February 15. The title of the presentation is "Energy and Climate Change" by Brian George CBE, FEng (U.K.). Mr. George was a member of the group that prepared the report for the Royal Society and the Royal Academy of Engineering.

### **QUEBEC (Guy Marleau):**

Present plans call for at least 3 seminars for the members of the Branch, and possibly a series of lectures for High school and/or College teachers.

### **SHERIDAN PARK (Parviz Gulshani)**

The branch has a new executive:

Chair: Parviz Gulshani

Vice Chair: Rick Ricciuti

Treasurer: Olga Jevremovic

Secretary: Scott Guay

Education: Sadok Guellouz and Scott Guay

Membership: Wei Shen

Seminars: Pamela Tume, Wi Shen, Olga Jevremovic, Parviz Gulshani

As the guest lecturer at the Branch AGM on December 9, 1999, Jim Harvie of the AECB gave a presentation on "Convention on Nuclear Safety"

The Branch has arranged the following seminars for February:

February 09, at noon: Keith Dinnie on: Environmental costs in the production of electrical energy

February 15 at 3:30 pm: Joseph Yeremian:, On some aspects of instrumentation qualification

February 29 at noon: Richard Sauve on: State-of-the-art explicit computational methods for use in the prediction of nuclear component response

The Branch has agreed to be a co-sponsor of a workshop promoting science-reporting journalism for students. The 2-day workshop, which is similar to the Journalism Workshop given by Clair Ripley in the Maritimes, is being organized by AECL and the Humber College School of Journalism. It will be held in March 2000 for 55 to 60 students from Humber College. The Branch has contributed \$800.

### **TORONTO (Chair: Adam McLean)**

On February 2 Ray Silver, veteran nuclear correspondent, will give a talk in the Ontario

Power Generation auditorium at lunch hour. Dr. Peter Boczar has agreed to give his view of CANDU Fuel Cycles in the New Millennium at a date still to be determined.

## **CNS and CNA move to separate offices**

After twenty years of sharing the same offices, the Canadian Nuclear Society and the Canadian Nuclear Association are going their separate ways.

Last year the CNA decided to move its office to Ottawa, to be closer to the political scene. The actual moving date is now planned for early March 2000.

After learning of this decision and considering various options, the CNS Council concluded that Toronto continued to be the best venue for a CNS office. That was followed by the issuance of invitations for proposals to provide office services, either through a physical office or a "virtual" one. Subsequently the possibility of subletting office space in an appropriate location

in downtown Toronto arose and at the time of writing that option was being pursued.

It is anticipated that if the CNS stays in the downtown Toronto area it can retain its current telephone number - 416-977-7620.

In a related action, Denise Rouben will be joining the CNS as of March 1 to take over the functions now performed by Sylvie Caron who has decided to leave the CNA/CNS office. (See separate article in "General News".)

Current information on the CNS office move will be posted on the CNS Web site < [www.cns-snc.ca](http://www.cns-snc.ca) >

# Inukshuk winners

by Ben Rouben

Chair, Membership Committee

président, comité d'adhésion

As announced in the last issue of the CNS Bulletin the Society held a draw for 20 sculptures featuring a miniature Inukshuk (an Inuit stone structure). All CNS members whose membership for the year 2000 was in good standing as of Dec. 10 were eligible.

The draw was held on December 15, 1999.

The event was organized by Ken Smith, CNS First Vice-President, and was supervised independently by Brian Blosser, CNS Accountant. Winners' names were drawn at random by Ken and by Sylvie Caron, Zanna Panton, Gabriel Beyer, and Carol Tomany.

## New Members

*Ed Note: Unfortunately we missed printing the names of new members in the last issue of the CNS Bulletin.*

A belated welcome to the following members who joined in the period July 20 to October 4, 1999.

Andrew J. White	Ed Pecs
Gordon F. Hendrie	Yat Khay Lau
Ian A. Milne	Chandru Kumar Asnani
Ralph Bettig	James M. Elgee
Cheryl Anne Gaver	Michael J. Ward
Daniel C. Rouben	Antony G. Morris
Amy Yun Murphy	Usha Menon
Richard A. Fortman	Tabitha G. Poehnell
Shahriar Sadeghieh	Julius Lengyel

And welcome to those who have joined between October 4 and December 23, 1999.

Clifford W. Zarecki	Michel Garceau
David Cox	Wei Shen
Bernard Hao	Edward G. Bazeley
Tong Zhou	Iwona Matulewicz
Agustina Prawirosoehardjo	Martin K. Griffith
Joseph Yeremian	Brent E. Smith
Robert A. Ion	Glendon S. Stackhouse
Richard Saunders	Derek M. D'Costa
Nigel P. Fitzpatrick	Ed Waller
Alexander H. Lempp	Gordon A. Gonchar
Robert W. Pridmore	Suthakar Sundralingam
Katherine Moshonas	

The names of the 20 lucky winners are given below. Each winner will receive an Inukshuk engraved with his/her name. The Inukshuit will be ready for delivery by mid January.

Congratulations to all the lucky winners!

## Tirage en célébration du 20ième anniversaire de la SNC

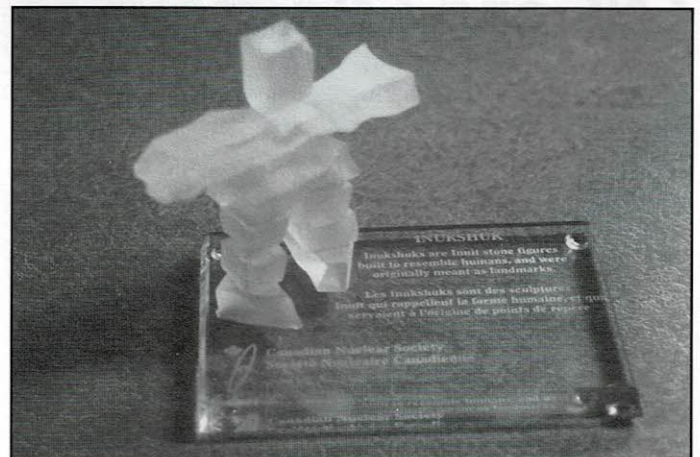
Le tirage en célébration du 20ième anniversaire de la SNC a eu lieu le 15 décembre. Il y avait en prix 20 superbes sculptures "Inukshuk". Tous les membres dont le compte était en règle pour l'an 2000 au 10 décembre 1999 étaient éligibles.

Le tirage a été organisé par Ken Smith, premier vice-président de la SNC, et vérifié indépendamment par Brian Blosser, comptable de la SNC. Les noms des gagnants ont été tirés au sort par Ken, ainsi que par Sylvie Caron, Zanna Panton, Gabriel Beyer, et Carol Tomany.

Les noms des 20 heureux gagnants apparaissent plus bas. Chaque gagnant(e) recevra un Inukshuk avec son nom gravé. Les Inukshuit devraient être prêts à être livrés vers la mi-janvier.

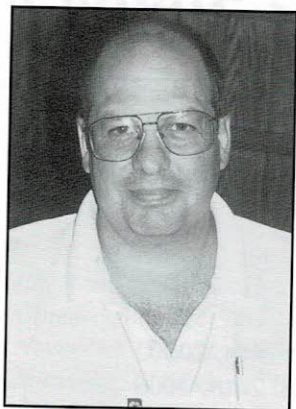
Félicitations à tous les heureux gagnants!

Mamdooh E. Abdelbaky	Marilyn F. Lightstone
A. Raymond Burge	David G. Malcolm
Gaston Chartrand	Frank N. McDonnell
Nick Fragiadakif	Richard W. Sancton
David L. Freeman	Ramazan Sonat Sen
Melvyn F. Grandame	Uditha P.M. Senaratne
Joe Huterer	Philip C. Simpson
Paul E. Hynes	Bruce Willemsen
Dominic Iafrate	Ian Wilson
Lloyd R. Jones	Paul P.H. Wilson



CNS Inukshuk award

# From Paul Thompson - a year after his accident



Paul Thompson

Ed. Note: As readers of the CNS Bulletin know, CNS past president Paul Thompson was in a very bad car accident on December 8, 1998. (See Vol. 19, No. 4) Now, over a year later, Paul is still recovering. Following is the note he sent to the CNS Bulletin just before Christmas 1999.

December 8th marked the anniversary of my motor vehicle accident. I had a flood of emotions as I remembered that fateful night. I have come a long way in the last year, and whenever I get despondent about the speed of my recovery, I remember back to when I was lying flat on my back in the hospital, and it always makes me feel better and very fortunate.

I think I have progressed about as far as I am ever going to with my neck, right wrist and right foot. Although they are not back to 100%, I am learning to work around the limitations. My

left leg continues to give me the most trouble, however I am able to walk unaided for short distances during the day, although it hurts a lot and I have a considerable limp. I have to use a cane by the end of the day and I get very tired.

I am now working two full days a week and taking Physiotherapy on the other 3 days. It feels good to be back at work. The therapy is also helping a lot (I feel great after they get done with me!) and I sense that I am still progressing, although the progress is slow. I remain optimistic that I will regain most of my physical abilities and hopeful that the arthritis that the Doctor keeps warning me about will not take root.

In reflecting about the accident, I remembered the great support I received from my friends and colleagues. This had a lot to do with keeping my spirits high and in helping me make a speedy recovery.

I wanted to take this opportunity to say thanks for the fantastic support you have shown me and my family through this very difficult time.

Yours....

Paul D Thompson

## McMaster venue for 25th Annual Student Conference

The 25th annual CNS/CNA Student Conference will be held in Hamilton, Ontario, at the Visitor's Inn, which is near McMaster University, on Friday and Saturday, March 10 and 11, 2000.

This year's Conference is being hosted, and organized, by the McMaster Engineering Physics Society. The conference committee includes Nima Safaian, Sonia Lala and Joe Dallaire graduate students, with Dr. Bill Garland as adviser.

In addition to the technical sessions there will be a tour of the McMaster Nuclear Reactor (MNR) and associated facilities and an opening conference dinner on the Friday evening with a prominent guest speaker (not finalized at press time). It is expected that all of the papers can be presented on the Saturday morning. That will be

followed by an Awards luncheon and the tour in the afternoon.

Papers are invited from both graduate and undergraduate students on any topic involving nuclear science and technology. Prizes will be awarded in both categories. Travel assistance is available.

The nominal deadline for registration is February 16. Further information is available through the following Web site, and registration can be done on-line.

< <http://epic.mcmaster.ca/~garlandw/univcomm/stud-conf2000/confindex.htm> >

There is also general information on the CNS web site < [www.cns-snc.ca](http://www.cns-snc.ca) >, while the e-mail address of Nima Safaian is: < [safaian@mcmaster.ca](mailto:safaian@mcmaster.ca) > and Prof. Garland: [garlandw@mcmaster.ca](mailto:garlandw@mcmaster.ca)

## A plea for history

Morgan Brown, chair of the CNS Manitoba Branch is attempting to pull together a number of items of history of the Canadian nuclear program to add to those he has already placed on the Manitoba Branch page under the CNS Web site (< [www.cns-snc.ca](http://www.cns-snc.ca) >). Those include:

- his Canadian Nuclear History page
- AECL's 1982-revised WR-1 reactor brochure (including the French 1973 revision)

- brief biographies of three Canadian nuclear pioneers (H.E. Johns, D.G. Hurst and R. Hart).

He intends to add the paper by Dr. G.C. Laurence "Early Years of Nuclear Energy Research in Canada", which was published by AECL in 1980.

He is seeking material on other Canadian nuclear pioneers. Readers of the CNS Bulletin who may have some information or references are invited to contact him at his e-mail address: < [brownmj@aecl.ca](mailto:brownmj@aecl.ca) >.



# **21st CNS Nuclear Simulation Symposium**

## **Sheraton Ottawa Hotel, Ottawa, Ontario**

### **September 24-26, 2000**

## **Call for Papers**

The 21st Nuclear Simulation Symposium organized by the Canadian Nuclear Society will be held September 24 to 26, 2000 at the Sheraton Ottawa Hotel in Ottawa, Ontario.

The scope of the Symposium covers all aspects of nuclear modelling and simulation, and generally includes sessions in thermalhydraulics, reactor physics, and safety analysis. The main objective of the Symposium is to provide a forum for discussion and exchange of views amongst scientists and engineers working in the nuclear industry.

Papers are invited on technical subjects relating to simulation of applications of nuclear technology. Papers on advances in the state of the art, on future developments, on novel technical approaches and on work under development are encouraged. In particular, papers are welcome in the following topics:

- \* System and sub-channel thermalhydraulics.
- \* Reactor physics, including nuclear fuel management and advanced fuel cycles.
- \* Safety analysis methods including code uncertainty analysis.
- \* Computer code validation.
- \* Fuel and fuel channel behaviour.
- \* Containment behaviour.
- \* Severe accident analysis.
- \* Passive safety concepts.
- \* Advanced reactor design concepts.
- \* Research reactors.

### **General Information**

Deadline for summaries: March 24th, 2000  
Notification of acceptance: April 24th, 2000  
Deadline for full papers: August 14th, 2000

### **Abstracts and Papers Information**

Abstracts should not exceed one page in length and should reflect the work to be presented. They should contain not only the work that has been performed but also the results achieved. All abstracts should include an introductory statement indicating the purpose of the work and a closing statement summarizing the significant new results or basic conclusions. The author(s)'s affiliation and contact information should be properly specified.

Full papers should be around 10-12 pages in length and should not exceed 15 pages total. Although these could be sent electronically, a hard, camera ready copy of the final paper should also be mailed to Anca McGee (see below). Please note that the papers not received by the specified deadline, will not be included in the symposium proceedings. The Technical Program Chairs for the symposium are Anca McGee (AECL) and Glenn Harvel (AECL).

Abstracts should be submitted to:  
**CNS Nuclear Simulation Symposium**

c/o **Anca McGee**  
**AECL**  
**2251 Speakman Drive**  
**Mississauga, Ontario**  
**Canada, L5K 1B2**

phone: **(905)823-9060 ext. 6540**  
fax: **(905)403-7364**  
e-mail: **mcgeea@aecl.ca**

## NEWS OF MEMBERS



Ed Price

Two active members of the Canadian Nuclear Society have announced their retirements.

**Ed Price**, a former president of the Society, has announced that he will retire from his current position as Director of Materials Engineering in the Office of the Chief Engineer, Atomic Energy of Canada Limited, at the end of March this year.

Originally a New Zealander, Ed studied metallurgy at the University of Otago, the most southerly university in the world. Graduating in 1957. With limited work in that field in New Zealand he moved to Australia and then, three years later, to England where he worked with International Nickel company. There he met his wife, Barbara, and in 1963 they decided to emigrate to Canada to work for Orenda, the aircraft engine company, which had refocused its work after the demise of the Arrow project. Orenda began to do some testing of pressure tubes for AECL and Ed was attached to the Chalk River Laboratories. That experience enticed him to join AECL in 1971 as a metallurgical engineer at Sheridan Park. Shortly thereafter he became a senior consultant and, subsequently, absorbed into the office of the chief engineer where he remained until now.

Over the years since joining AECL he has been involved in many investigations into reactor problems and has represented AECL and Canada at many international meetings. He has served on a number of committees of COG (CANDU Owners Group). A few years ago he led a group that produced a section of the western-style safety analysis report for the Russian designed RBMK reactors in Lithuania.

Ed was president of the Canadian Nuclear Society in 1994/95. In 1997 he was made a Fellow of the CNS (FCNS). Before then, and since, he has been involved in many aspects of the Society's work, especially in organizing conferences. He is currently on the Council of the Society and is assisting in the planning of the 5th International conference on CANDU Maintenance to be held this fall in Toronto.

He reports that he is planning a round-the-world trip soon after his retirement. Anticipated stops include; Vienna, where he is still involved in activities of the International Atomic Energy Agency, the middle east, and Sarawak, Malaysia where he intends to join a class reunion from his university, since many of his fellow mining school graduates ended up there. On his return he states that he will be spending more time on the golf course (and, we hope, with the CNS).

**Duane Pendergast**, the chairman of the recent successful

*Climate Change and Energy Options Symposium*, has announced that he, also, will be retiring the end of March, 2000, from his current position as Principal Engineer, Safety, Licensing, Environment, at Atomic Energy of Canada Limited.

Following graduation with a B. Sc. in Mechanical Engineering from the University of Alberta in 1963, he worked in industry for three years before entering New

Mexico State University in 1967. There he earned a Masters and, in 1970, a Ph. D. in Mechanical Engineering. The next four years he spent as assistant professor at universities in the United States and Nigeria. He joined AECL in 1974 where he has been involved in various aspects of CANDU nuclear reactor safety analysis, environmental assessment and reactor licensing.

In recent years Duane has concentrated on issues relating to climate change and has published several papers positioning nuclear energy with respect to climate change. The Canadian Nuclear Association asked him to represent the industry on the Technology Issue Table of the federal government's Climate Change Secretariat. (The Technology Table is one of sixteen Issue Tables, involving 450 experts, established to help develop Canada's response to the Kyoto Protocol on greenhouse gases.) Subsequently he was elected to join the Integrative Group as well. This Group is studying all of the Options Reports being prepared by the 16 Issue Tables representing all sectors of the Canadian economy. The ultimate goal is to develop, with the National Air Issues committee, options for consideration by federal and provincial ministers of energy and the environment.

Duane has been an active member of the Canadian Nuclear Society including co-chairing the Environmental and Waste Management Division. Over the years Duane has been involved in the organization of many conferences and symposia primarily with the CNS but also with other groups. Most recently he was the driving force behind the very successful *Climate Change and Energy Options Symposium* (which is reported in this issue of the *CNS Bulletin*).

He states that his long-term goal is to broaden his involvement in the issues identified in that symposium and to work with Canadian industry and government, seeking strategies for greenhouse gas reduction. He will be continuing his career as Principal Engineer with Computare. Computare is authorized by the Association of Professional Engineers of Ontario to offer professional engineering services related to climate change, nuclear safety and licensing.



Duane Pendergast

# Canadian Nuclear Society Honours and Awards - Call for 2000 Nominations

**DEADLINE FOR ALL NOMINATIONS: 2000 April 14**

## ***Fellows of the Canadian Nuclear Society***

CNS members who have been designated "Fellows of the Canadian Nuclear Society" belong to a membership category established by the Society in 1993 to denote outstanding merit. The criteria for admission to this membership category include "major and sustained contributions to the sciences and/or professions that relate to the advancement of nuclear technology in Canada." Demonstrated maturity of judgement and breadth of experience, as well as outstanding technical capability, service to the Society, and current CNS membership of at least five years standing, are also requirements for admission.

The newly admitted fellows are presented with special membership certificates on a suitable occasion at the time of the annual conference of the CNS. In the tradition of honorary membership categories of learned societies, CNS Fellows are entitled to add the letters "F.C.N.S." to letters denoting degrees and professional certifications following their names. The maximum number of CNS Fellows at any one time is limited to not more than five per cent of, the total membership.

All CNS branches and technical divisions are encouraged to forward confidential nominations statements, signed by three members, to the Chairperson of the CNS Honours and Awards Committee. Alternatively, any three CNS members, not necessarily of the same branch or division, may together forward a nomination. The nomination statement should include a focused rationale for the nomination, supported by information on the candidate's:

- (i) formal education or equivalent,
- (ii) work history, professional achievements, publications, patents,
- (iii) experience, demonstrated maturity of judgement and contribution to nuclear science and technology, and
- (iv) past services to the CNS.

The Honours and Awards Committee will consider the above criteria with weights of 20%, 20%, 25% and 35%, respectively.

## ***CNS Innovative Achievement Award***

The Innovative Achievement Award was established by the CNS in 1991. Recipients of the award are specially recognized for

*"Significant innovative achievement, implementation of new concepts, or outstanding contribution in the nuclear field in Canada."*

The award trophy, on which all recipients' names are inscribed, is in the form of an original sculpture showing three figures supporting the Society's logo. Each recipient retains a miniature replica of one figure from the sculpture, as well as a commemorative certificate presented at the annual conference of the CNS.

Members of the Society are strongly encouraged to nominate individuals who have made key contributions to the Nuclear Science and Technology. Such contributions should have been to the conceptual design, development or implementation phase of the concept, or to a combination of these phases.

Nominations letters should be signed by three persons and accompanied by:

- (i) a short biography,

- (ii) a description of the particular innovative or outstanding achievement for which the award would be made, and
- (iii) a well focused rationale supporting the nomination.

## ***CNS John S. Hewitt Team Achievement Award***

The John S. Hewitt Team Achievement Award was established by the CNS in 1994. This awards aims at recognizing the recipients for

*"Outstanding team achievements in the introduction or implementation of new concepts or the attainment of difficult goals in the nuclear field in Canada."*

The award is in the form of one or more engraved plaques or certificates presented to the members of the team at the annual conference of the CNS.

Members of the Society are strongly encouraged to nominate teams of generally not more than five persons who have made key contributions to the introduction or the implementation of new concepts or the attainment of difficult goals in the nuclear fields in Canada. Such contributions should have been to the conceptual, design, development or implementation phase leading to the achievement, or to a combination of these phases.

Nomination letters should be signed by three persons and accompanied by:

- (i) a short biography of each team member,
- (ii) a description of the particular achievement for which an award would be made, and
- (iii) a well focused rationale supporting the nomination.

## ***CNS Education /Communication Award***

The Education / Communication Award was established by the CNS in 1997. This awards aims at recognizing the recipients for

*"Significant achievements in improving the understanding of nuclear science and technologies among educators, students and the public"*

The award is in the form of a certificate, presented to each person being recognized, at the annual conference of the CNS.

All CNS branches and technical divisions are encouraged to forward confidential nominations statements, signed by three members, to the Chairperson of the CNS Honours and Awards Committee. The nomination statement should include a focused rationale for the nomination, supported by information on the candidate's:

- (i) biography of the nominee,
- (ii) description of the achievement(s) with specific references, examples, etc.

Please send your nominations in confidence, before 1999 March 15 to :

**The Chair, Honours and Awards Committee  
Canadian Nuclear Society  
144 Front Street West, Suite 475  
Toronto, Ontario M5J 2L7**



# CNS Fellows and Award Winners

## *Fellows of the Canadian Nuclear Society*

George Howey	1992
John Hewitt	1992
Phil Ross-Ross	1992
John Foster	1993
Terry Rummery	1993
Ken Talbot	1993
Alan Wyatt	1993
Fred Boyd	1994
Stan Hatcher	1994
Daniel Rozon	1994
Michel Ross	1995
Bob Jervis	1995
Dave Torgerson	1995
Bill Midvidy	1996
Terry Rogers	1996
Paul Fehrenbach	1997
Edward Price	1997
Richard Bolton	1998
Hugues Bonin	1998
Dan Meneley	1998
Benjamin Rouben	1999

## *CNS Innovative Achievement Award*

Bill Morison	1991
Wing Tao	1991
Andrew Stirling	1992
Dé C. Groeneveld	1993
Tom Holden	1994
Ray Metcalfe	1998

## *John S. Hewitt Team Achievement Award*

- Don McLean, Bill Morgan and Mitch Ohta  
- for the development and demonstration of dry spent fuel storage  
1995
- Charles Kittmer, Roger Joynes and Larry Green  
- for the development and demonstration of micro-sampling of pressure tubes  
1996
- Staff of Point Lepreau G.S.  
- for excellence in nuclear power plant operation and exceptional sustained plant performance  
1996
- The Members of the Nuclear Fuel Waste Management Team at Atomic Energy of Canada Limited and Ontario Hydro  
- for Development of the Concept, and Preparation of the Environmental Impact Statement for Disposal of Canada's Used Nuclear Fuel  
1997
- Charles Y. F. Chang, John Skears, and Tung Toong  
- outstanding contribution to thermal hydraulic process design and safety analyses for CANDU reactors, particularly, the development of the SOPHT computer code  
1998

## *CNS Education / Communication Award*

Aslam Lone	1997
Morgan J. Brown	1998
Ronald G. V. Hancock	1998
Jeremy Whitlock	1999

## Adhésion

Cher membre:

Si vous n'avez pas encore renouvelé votre adhésion pour l'an 2000, veuillez le faire au plus tôt. Cette année, les adhésions non en règle seront désactivées tôt. Pour continuer à recevoir le Bulletin et les autres envois de la SNC, veuillez donc renouveler aujourd'hui-même.

Si vous avez déjà renouvelé, nous vous en remercions. Voudriez-vous encourager vos collègues à joindre aussi la SNC?

## Membership

Dear member:

If you have not yet renewed your membership for the year 2000, please do so now. Please note that unpaid memberships will be deactivated early this year, so to keep receiving the Bulletin and other CNS mailings, please renew today.

If you have already renewed, thank you. Please consider encouraging your colleagues to join the CNS too!

Ben Rouben  
Chair, Membership Committee  
président, comité d'adhésion



## **The Waste Crisis - landfills, incinerators, and the search for a sustainable future**

by Hans Tammemagi

ISBN 0-19-512898-2

1999

Published by Oxford University Press, 198 Madison Avenue, New York, NY, USA 10016

This book is NOT about high (or low) level radioactive waste, although that topic is included. Rather it is a broad look at solid waste management in North America, focussing on municipal wastes and discussing them in relation to hazardous, biochemical, and, radioactive wastes. It presents the essential components of an integrated waste management program, including recycling, composting, landfills, and incinerators.

The bulk of the book examines, in reasonable but easy to read details, the various current approaches to municipal waste management, with fascinating tidbits such as the fact that the Fresh Kills landfill on Staten Island, New York City's primary waste disposal site, is now the highest man-made hill in the eastern USA. An interesting chapter describes seven case histories, four from the USA, two from Canada, and one from Sweden. The last deals with the Swedish Final Repository for low level radioactive waste which is located at the site of the Forsmark nuclear power station, 160 kilometres north of Stockholm. It is actually under the Baltic Sea reached by a 1 kilometre tunnel. Tammemagi presents an interesting comparison between this "high-tech" repository and a typical landfill.

Another chapter discusses the pervasive NIMBY (Not In My Back Yard) syndrome. Tammemagi does not pretend to have the answer but he does describe a success story, the Swan Hills waste disposal and treatment facility in Alberta. He offers an analysis of typical situations and some "Tips from the Trenches".

The book concludes with two optimistic chapters, one on "A New Approach" which he advocates a comprehensive program, and the last on "Futuristic Garbology - a vision" in which he foresees a time when there is a completely different view from our current "throw away" society with extensive reduction and recycling of waste.

Although this book does not deal explicitly with radioactive waste it is recommended reading for anyone interested or involved in that problem. On a broader level, it should be in every library and school.

*Dr. Hans Tammemagi is a former researcher at the Whiteshell Laboratories in Manitoba. He now heads an environmental consulting firm, Oakhill Environmental, in St. Catharines, Ontario and is an adjunct professor at Brock University.*



## **Atomic Rise and Fall - the Australian Atomic Energy Commission 1953 - 1987**

by Clarence Hardy

ISBN 0 9586303 0 5

1999

Published by: Glen Haven Publishing, P.O. Box 85, Peakhurst, New South Wales, Australia 2210 (fax 61-2-9570.6473)

Price: \$60.00 (Can), \$42.00 (US) including airmail postage to Canada or USA (Visa and Mastercard accepted.)

This book, the second by the author on the work of the Australian Atomic Energy Commission (AAEC), describes both the political and technical story of the AAEC over its 34 year history. As the author comments, it was a "chequered life". (His first book *Enriching Experiences* dealt with Australia's venture into the realm of uranium enrichment.)

The AAEC was created in April 1953 and abolished in April 1987, to be replaced by the Australian Nuclear Science and Technology Organization (ANSTO). Drawing loosely on Shakespeare's "seven ages of man" Hardy divides his treatise into seven parts: "Background to conception - before 1953"; "Conception, 1949 - 1953"; "Infant with building blocks, 1953 - 1963"; "Teenager, 1963 - 1973"; "Maturity and Instability, 1973 - 1983"; "Death throes 1983 - 1987"; "Were three decades worthwhile?".

The bulk of the text is in sections three, four and five, in which he describes the many programs carried on by the AAEC. Many of those involved uranium, in exploration, research on refining, and upgrading (including enrichment). He writes enthusiastically about the work done by his fellow researchers in the 1950s, 1960s and early 1970s. In his penultimate chapter he discusses the successes and failures of the AAEC over its lifetime, in both the areas of management and projects. In the latter category he includes the program on a high temperature gas-cooled reactor with beryllium oxide as a moderator and gas as the coolant which was abandoned in 1966. He also refers to the short-lived proposal for a nuclear power station at Jervis Bay which was advanced in 1969 and died in 1971.

The book includes a number of photographs and other illustrations which are clearly reproduced on the high grade paper used in this attractive volume.

This book should be read by anyone interested in the organization, operation and politics of an advanced technology program such as nuclear research and development. It should be in all libraries dealing with science and technology.

*Dr. Clarence Hardy began his nuclear career at Harwell in the UK in 1955. In 1971 he was appointed Chief of the Chemical Technology Division of AAEC. He was appointed Chief Scientist for the Nuclear Fuel Cycle in 1977 and, in 1983, Chief of the Isotope Division. With ANSTO he was Director of Industrial Technology. Now "semi-retired" he is president of the Australian Nuclear Association"*

---



---

# REVIEW

---



---

## "Nuclear Energy - the future climate"

A report by The Royal Society and the Royal Academy of Engineering (UK)

Reviewed by Neil Craik

ISBN 0 85403 546 5 Published June 1999,  
 Printed by Holbrook Printers Ltd.  
 Norway Road, Hilsea, Portsmouth, Hants, PO3 5HX, UK.  
 Cost £20

*Ed. Note: Neil Craik is now "semi-retired" in Fredericton N.B. Before coming to Canada in 1966 he worked on the design and commissioning of the Hunterston "A" two Magnox reactor 360 MWe nuclear generating station in Scotland. Here he has worked for NPower and AECL. The review has been edited for length.*

As the Foreword and Key points from this report were published in the July 1999 CNS Bulletin, Vol.20, No.2, pages 43 to 44, these are not repeated in the following review. A summary is available on the Royal Society's Website: < www.royalsoc.ac.uk >

The following review is from a reading of the full 80 page report, provided by Clair Ripley. It is noted that Brian George, CBE, a member of the group who wrote the report, will be addressing the CNA/CNS Nuclear Industry Winter Seminar in Ottawa on February 14, 2000, [and giving the W.B. Lewis Lecture at Carleton University the following day]. Following are excerpts from the report with the reviewer's comments in italics.

### 1. Introduction

"Burning fossil fuel is cheaper than any of the alternatives - provided one treats the emission of carbon dioxide into the atmosphere as a 'free' resource.....economic instruments must be devised to rectify this deficiency in the energy 'market'."

### 2. Energy Demand

"...it would be unwise to anticipate growth of world primary energy requirements, relative to year 1995 figures, by a factor of less than 2 times by 2050 and 5 times by 2100."

### 3. Fossil fuels - impact on climate

"CO<sub>2</sub> is not the only greenhouse gas - but it contributes about 80% of the impact from anthropogenic (man made) sources. There are strong indications that if too little is done about greenhouse gas, the impact on human affairs would be drastic. Foregoing a portion of present affluence in order to prevent problems in 50 or 100 years hence is not an easy message to convey."

### 4. Strategies for reducing emission - the role of energy efficiency and renewable energy technologies.

"The simplest way of reducing CO<sub>2</sub> emission for power stations is to switch from coal to gas as primary fuel. This reduces the emission by a factor of two."

*No mention is made of methane which is 30 times more potent a*

*greenhouse gas than CO<sub>2</sub> and that a 5% leakage of methane from gas well, processing plant, and along the pipeline would eliminate this factor:*

### 5. Carbon sequestration

".... annually about 0.2 million km<sup>2</sup> of tropical forest is felled and burned. This releases about 2.4 GtC per annum into the atmosphere..... This descent has to be arrested before we can contemplate any net help from this quarter."

### 6 Nuclear reactors - the current situation and the immediate future.

"Of the 428 reactors currently operating in the world, 80% are light water. 21 CANDUs have been built - 16 in Canada."

*Actually 22 in Canada, excluding NPD and Douglas Point, for a total of 39; cannot rationalize the difference. We must have caused confusion by mothballing the 4 Bruce A units and maybe nobody counts the 11 CANDUs in India.*

### 7. Nuclear reactor fuel - the current situation.

#### 7.4 Reprocessing spent fuel.

"The central dilemma remains: is plutonium to be considered as a valuable resource or a waste product ?"

### 8. The problem of waste disposal

"From a global point of view the existence of a small number of very large repositories rather than many small ones has advantages, including the permanent supervision by the UN."

### 9 Nuclear technology - the future prospects.

#### 9.3 Fast neutron reactors

"If the plutonium stockpile is regarded as a waste product requiring safe disposal, burning it in a fast (non-breeder) reactor would be an effective solution.

*No mention that this could probably be done in existing CANDUs*

#### 9.5 The thorium cycle

"The motivation for destroying Pu was to reduce any proliferation risk; irradiating Th leads to <sup>233</sup>U which is fissile and could also form the basis of a nuclear weapon."

#### 9.6 Fusion

"Will fusion energy work ? There is now no serious doubt that a machine could be built that would provide net energy. The issue that is still highly controversial is whether the technological difficulties can be overcome so that a machine producing energy at an economic rate could be anticipated."

## 10. Safety

"It is the public concern that has to be addressed, and striving for safety that goes beyond what rigorous analysis might require is part of the remedy."

## 11. Economic instruments

"One barrier to the more rapid implementation of both renewable and nuclear is price..... the price barrier appears to be of the order of one p/kWh (= Can 2.3 c/kWh).....the level of carbon tax that would bring significant benefits to non-fossil fuel electricity generation."

### Dimensions of the Report;

*This 80 page report is an excellent treatise on the future of nuclear*

*energy. Although mainly from the UK perspective it examines some of the world wide aspects, including global warming. It includes excellent coloured diagrams and data on the six main power reactor types, a flow diagram of the basic steps in the fabrication of fuel and the storage of reprocessing of spent fuel explaining the activities at Capenhurst, Springfields and Sellafield, 15 other figures or tables, over 500 words of text and over 150 references, charts of CO2 and temperature against time past and predicted.*

*This report explains the technical aspects of this broad subject very well, has a good list of acronyms and glossary, and is therefore good reference material for all students of nuclear energy.*

---

---

# CALENDAR

---

---

## 2000

Feb. 14, 15

### CNA/CNS Nuclear Winter Seminar

Ottawa, Ontario  
contact: Sylvie Caron  
CNA office  
416-979-2442  
e-mail: carons@cna.ca

March 10, 11

### CNA/CNS Student Conference

Hamilton, Ontario  
contact: Prf. Bill Garland  
McMaster University  
Hamilton, Ontario  
Tel: 905-525-9140  
e-mail: garlandw@mcmaster.ca

March 19 - 24

### 6th International Conference on Tritium in Fission, Fusion and Isotopic Applications

Augusta, Georgia USA  
contact: Faye M. Williams  
Westinghouse Savannah  
River Site  
773 A  
Aiken, S.C. 29808 USA  
Fax: 803-725-2756  
Website: [www.tritium2000.org](http://www.tritium2000.org)

March 22 - 23

### Women in Discovery Symposium

College Station, Texas  
contact: Ms. Beth Earl  
Texas A & M University  
Tel: 409-458-1061  
Fax: 803-725-2756  
e-mail: [bethearl@trinity.tamu.edu](mailto:bethearl@trinity.tamu.edu)

Apr. 2 - 6

### 8th International conference on Nuclear Engineering (ICONE - 8)

Baltimore, Maryland, USA  
contact: Dr. Jovica Riznic  
AECB Ottawa  
Tel. 613-943-0132

April 9 - 14

### International Youth Congress

Bratislava, Slovakia  
contact: Stanislav Rapavy  
Okruzna, Slovak Republic  
Fax: +421-805-5991-191

May 7 - 11

### PHSOR 2000 ANS International Topical Meeting on Advance in Reactor Physics, Mathematics and Computation into the Next Millennium

Pittsburgh, Pennsylvania, USA  
contact: I.K. Abu-Shumays  
Bettis Atomic Power  
Laboratory  
e-mail: [abushuma@bettis.gov](mailto:abushuma@bettis.gov)

May 14 - 19

### 10th International congress of the International Radiation Protection Association

Hiroshima, Japan  
For info. Website:  
[www.convention.co.jp/irpa10](http://www.convention.co.jp/irpa10)  
e-mail: [irpa10@convention.jp](mailto:irpa10@convention.jp)

May 29 - 31

### Canadian Radiation Protection Association Annual Conference

Montreal, Quebec  
contact: CRPA office  
Tel: 613-258-9020  
Fax: 613-258-1336

- June 4 - 8**      **ANS 2000 Annual Meeting**  
San Diego, California  
contact: ANS Office  
LaGrange Park, Illinois  
Tel: 708-579-8257  
Fax: 708-579-8234
- June 11 - 14**      **21st CNS Annual Conference**  
Toronto, Ontario  
contact: Ms. Jad Popovic  
AECL Sheridan Park  
Tel: 905-823-9060 ext. 4709  
e-mail: popovicj@aecl.ca
- July 10 - 13**      **Plutonium Futures - The Science**  
Sante Fe, New Mexico, USA  
For info.  
Website: www.lanl.gov/Pu2000  
e-mail puconf2000@lanl.gov
- Aug. 6 - 11**      **10th International Symposium  
on Thermodynamics of Nuclear  
Materials**  
Halifax, Nova Scotia  
contact: Richard Verrall  
AECL - CRL  
Tel. 613-584-3311  
e-mail: verrallr@aecl.ca
- Sept. 24 - 26**      **21st CNS Nuclear Simulation  
Symposium**  
Ottawa, Ontario  
contact: Ms. Anca McGee  
AECL-SP  
Tel. 905-823-9060 ext. 6540  
e-mail: mcgeea@aecl.ca
- Sept. 24 - 28**      **Spectrum 2000  
International Conference on  
Nuclear and Hazardous  
Waste Management**  
Chattanooga, Tennessee  
contact: Spectrum 2000 secretariat  
Tel: 865-974-5048  
e-mail: spectrum2000@engr.utk.edu
- Sept. 25 - 28**      **ICENES 2000: 10th International  
Conference on Emerging Nuclear  
Energy Systems**  
Petten, The Netherlands  
contact: Dr. Harm Gruppelaar  
Petten, The Netherlands  
e-mail: gruppelaar@ec.n.nl  
website: www.ecn.nl
- Oct. 15 - 19**      **12th Pacific Basin  
Nuclear Conference**  
Seoul, Korea  
contact: Mr. Kyo-Sun Lee  
KAIF  
Seoul, Korea  
Fax: +82-2-785-3975  
e-mail: kaif@borna.dacoin.cc.kr
- Nov. 5 - 10**      **Heat Transfer Enhancement in  
Multiphase Flow at 2000 ASME  
International Congress &  
Exposition (IMECE 2000)**  
Orlando, Florida  
contact: Jovica Riznic  
AECB Ottawa  
Tel: 613-943-0132  
e-mail: riznic.j@atomcon.gc.ca
- Nov. 12 - 17**      **ANS/ENS 2000 International  
Meeting**  
Washington, D.C.  
contact: ANS Office  
La Grange Park, Illinois  
Tel: 708-579-8257  
Fax: 708-579-8234
- Nov. 13 - 17**      **ANS International Topical  
Meeting – Nuclear Plant  
Instrumentation, Control and  
Human-Machine Interface  
Technologies**  
Washington, DC  
contact: Richard Wood  
Oak Ridge National  
Laboratory  
Tel: 865-574-5578  
e-mail: woodrt@ornl.gov
- Nov. 19 - 21**      **CNS 5th International Conference  
on CANDU Maintenance**  
Toronto, Ontario  
contact: Martin Reid  
OPG Pickering  
Tel: 905-839-1151 Ext. 3645  
e-mail:  
martin.reid@ontariopowergeneration.com
- Dec. 14 - 19**      **Radioisotope Production and  
Applications in the New Century  
at 2000 International Chemical  
Congress**  
Honolulu, Hawaii  
contact: Dennis Phillips  
Los Alamos National  
Laboratory  
Tel: 505-667-5425  
Fax: 505-665-3403



## One Flew Over The Cuckoo's Nest

by Jeremy Whitlock

On a frosty Friday in January, AECL and the federal government achieved much more than the simple transport of MOX fuel from Sault Ste. Marie to Chalk River. They achieved something as rare and priceless as a pictograph on Oiseau Rock, and as intangible as a Friday afternoon smile. So rare, in fact, was this ancillary achievement, that observers in the nuclear community had trouble recognizing it at first.

Their morale had been boosted.

Even as helicopters swept eastward out of the Great Lakes basin and down the Ottawa Valley, bearing their precious yet technically insignificant cargo, workers at Chalk River Laboratories toiled unsuspectingly. True, some had keenly eyed the helicopter by the outer gate that morning. The protective tarpaulin it had worn since appearing several days earlier had conspicuously disappeared, but generally there was no alarm. With heads bent to the winds of January and public contempt, backs shouldering the load of heavy parkas and downsizing, they scurried from building to building, furthering the cause of nature's most almost-perfect energy source.

By the end of the day, they and their colleagues around the country were exhilarated. The industry that telegraphs its every cautious move months ahead of time had pulled a "Raid at Entebbe" in the pre-dawn hours. Employees were as surprised as the activists. Journalists scrambled to find the right spin for a story that defied all expectation.

Clearly, the timing could not have been better. Here was the darkest time of the year just passed, capping months of dispiriting Y2K preparation and vacuous "millennium" discussion, while anti-MOX campaigns waged endlessly in the media. The ancient pagans were wise to schedule a celebration of light and harvest at this time of year, and the Christians were equally wise to co-opt it. Schedule slippage is probably more to credit in the case of the MOX Affair, but a better-timed shot in the arm could scarcely be imagined.

It was akin to the spirits of infantry in the trenches, downtrodden by months of muddy stalemate, suddenly uplifted by the sight of a lone lunatic running through the lines clutching the enemy's flag. Here was Jack Nicholson thumbing his nose at Nurse Ratched; Paul Henderson scoring the winning goal; Mad Max driving the tanker truck through the outback. You can get behind a thing like this, even as you shake your head in disbelief.

Above all, pro-nuclear observers were struck by the efficacy of the one-two punch. Transporting the MOX by helicopter from the Canadian border was of course an entirely legal and safe manoeuvre, but it also instantly diffused a dozen brewing situations. No aboriginal land was crossed, no Canadian municipality entered (except, briefly, the Soo), and no activist plucked off the road.



Cartoon by Lorne Whitlock

Protesters were left stammering for something to protest. The government had, after all, done exactly what it said it would do - keep the date secret and notify only emergency personnel. In the end the most substantial complaint was that a similar airborne feat would be illegal in the States, much like universal medicare, gun restrictions, and anything to do with Cuba. Very obviously, the underlying emotion was a sense of being out-flanked and out-witted. The barn door was open and the MOX had bolted.

To be honest, observers on this side of the fence were beginning to wonder how it could possibly end in success. Would the government actually have the will to proceed, in the face of certain ugly and protracted engagements that would play out ad nauseam in the media?

Many felt that the folly was in the consultation strategy to begin with: the government, heavily lobbied by anti-nuclear groups, had decided that this routine shipment of entirely unremarkable material should be as public as possible. Its failing was the assumption that consensus could be reached where plutonium is involved. You will never, ever get the public to condone plutonium, and town-hall meetings only serve to bring the plutonium more to public attention. Those that do listen and learn, are few.

So in the end the government quite plainly had its back against the wall, and everyone knew it. Like doves of freedom, AECL's helicopters flew over that wall, and detoured beyond the CBC's sophomoric "Plutonium Highway". The coup was as undeniable as it was foreboding. As the lone protestor clutches his precious flag to the sound of renewed shelling and escalated violence, so too will this heroic interlude in Ontario bring only fleeting joy. Mass psychology is as rudimentary as that of a seven-year old, and surely vengeance will be sought in spades for the lost marbles.

Nevertheless, truth and reason prevailed for a day. One half of the Paralex MOX is now safely at Chalk River, alongside far more exotic and interesting fuels that the public cares little about. One hopes that the helicopter escapade was bold enough to stimulate serious introspection in the anti-MOX camp. Could plutonium really be safe enough to put on a helicopter? Do radiopharmaceuticals of much greater radioactivity really fly safely on a routine basis in Canada? Perhaps warhead destruction is worthy enough motivation for re-examining one's biases? Could protesters have been used as pawns by anti-MOX leaders with ulterior agendas?

Fat chance, but until a better morale-booster comes along for the industry (and one suspects there might be one or two more this year), we'll take what we can get.

# 1999 - 2000 CNS Council • Conseil de la SNC

## Executive / Exécutif

<b>President / Président</b>	Krish Krishnan . . . . . 905-823-9040 e-mail Krishnanv@aecl.ca
<b>1st Vice-President / 1ier Vice-Président</b>	Ken Smith . . . . . 905-828-8216 e-mail Unecan@echo-on.net
<b>2nd Vice-President / 2ième Vice-Président</b>	Dave Jackson . . . . . 905-525-9140 e-mail Jacksond@mcmaster.ca
<b>Secretary / Secrétaire</b>	Ian Wilson . . . . . 905-469-1179 e-mail lan.wilson@ilap.com
<b>Treasurer / Trésorier</b>	Andrew Lee . . . . . 416-592-6843 sya.lee@ontariopowergeneration.com
<b>Past President / Président sortant</b>	Paul Thompson . . . . . 506-659-6234 e-mail pthompson@nbpower.com

## Members-at-Large / Membres sans portefeuille

Parviz Gulshani . . . . .	905-823-9040
Glenn Harvel . . . . .	905-823-9040
Dave Jenkins . . . . .	905-823-9040
Kris Mohan . . . . .	905-823-9040
Aniket. Pant . . . . .	905-885-4537
Jad Popovic . . . . .	905-823-9040
Ed. Price . . . . .	905-823-9040
Michel Rhéaume . . . . .	819-298-2943
Ben Rouben . . . . .	905-823-9040
Duke Segel . . . . .	416-322-8363
Victor Snell . . . . .	905-823-9040
Judy Tamm . . . . .	905-823-8040

## Committees / Comités

<b>Branch Affairs / Affaires des sections locales</b>	Ken Smith . . . . . 905-828-8216 unecan@echo-on.net
<b>Education &amp; Communication / Éducation et communication</b>	Jeremy Whitlock . . . . . 613-583-3311 whitlockj@aecl.ca Dave. Jackson . . . . . 905-525-9140 Jacksond@mcmaster.ca
<b>Finance / Finance</b>	Andrew Lee . . . . . 416-592-6843 sya.lee@hydro.on.ca
<b>Fusion / Fusion</b>	Ed Price . . . . . 905-823-9040 pricee@aecl.ca Dave Jackson . . . . . 905-525-9140 Jacksond@mcmaster.ca
<b>Honours and Awards / Honneurs et prix</b>	Hugues Bonin . . . . . 613-541-6000 bonin-h@rmc.ca
<b>International Liaison / Relations internationales</b>	Fred Boyd . . . . . 613-592-2256 fboyd96@aol.com Kris Mohan . . . . . 905-823-9040 mohank@aecl.ca
<b>Internet /</b>	Dave Jenkins . . . . . 905-823-9040 jenkinsd@aecl.ca
<b>Inter-Society / Inter-sociétés</b>	Parviz Gulshani . . . . . 905-823-9040 gulshanip@aecl.ca
<b>Membership / Adhésion</b>	Ben Rouben . . . . . 905-823-9040 roubenb@aecl.ca
<b>Past Presidents / Présidents sortant</b>	Paul Thompson . . . . . 506-659-6234 pthompson@nbpower.com
<b>Program / Programme</b>	Glenn Harvel . . . . . 905-823-9040 harvelg@aecl.ca
<b>Universities / Universités</b>	Bill Garland . . . . . 905-525-9140 garlandw@mcmaster.ca
<b>Women in CNS / Femmes dans la SNC</b>	Jad Popovic . . . . . 905-823-9040 popovicj@aecl.ca

## CNS Division Chairs / Présidents des divisions techniques de la SNC

- Design & Materials / Conception et matériaux  
Bill Schneider 519-621-2130 schneiderw@pgg.mcdermott.com
- Fuel Technologies / Technologies du combustibles  
Joseph Lau (905) 823-9040 layj@aecl.ca  
Erk Kohn (416) 592-4603 erl.kohn@ontariopowergeneration.com
- Nuclear Operations / Exploitation nucléaire  
Martin Reid (905) 839-1151 reidmartin@hptmail.com
- Nuclear Science & Engineering / Science et génie nucléaire  
Anca McGee (905) 823-9040 mcgeea@aecl.ca
- Environment & Waste Management / Environnement et Gestion des déchets radioactifs  
Duane Pendergast (905) 823-9040 pendergastd@aecl.ca  
Judy Tamm (905) 823-9040 tammj@aecl.ca

## CNA Liaison / Agent de liaison d'ANC

Murray Stewart . . . . . (416) 977-6152

## CNS Office / Bureau d'ANC

Sylvie Caron . . . . . (416) 977-7620  
e-mail: carons@cna.ca

## CNS Bulletin Editor / Rédacteur du Bulletin SNC

Fred Boyd . . . . . (613) 592-2256  
e-mail: fboyd96@aol.com  
Richard Fluke . . . . . (416) 592-4110

## CNS Branch Chairs • Responsables des sections locales de la SNC

1999

<b>Bruce</b>	Eric Williams (519) 361-2673	<b>Ottawa</b>	Bob Dixon (613) 834-1149
<b>Chalk River</b>	Michael Stephens (613) 584-3311	<b>Pickering</b>	Marc Paiment (905) 839-1151
<b>Darlington</b>	Vacant	<b>Québec</b>	Guy Marleau (514) 340-4202
<b>Golden Horseshoe</b>	David Jackson (905) 525-9140	<b>Saskatchewan</b>	Ralph Cheesman (306) 586-6485
<b>Manitoba</b>	Morgan Brown (204) 753-2311	<b>Sheridan Park</b>	Parviz Gulshani (905) 823-9040
<b>New Brunswick</b>	Mark McIntyre (506) 659-2220	<b>Toronto</b>	Adam McLean (416) 534-3695

## CNS WEB Page

For information on CNS activities and other links

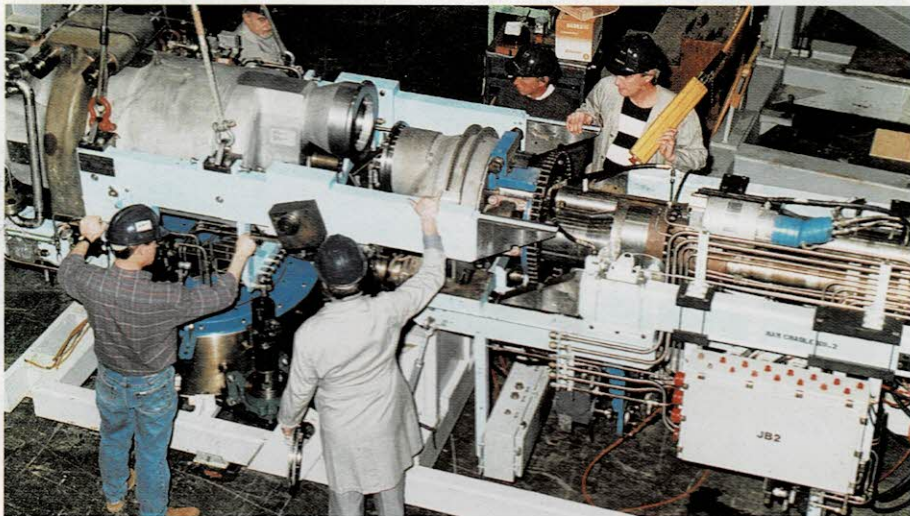
<http://www.cns-snc.ca>



## CANDU SERVICES: THE AECL ADVANTAGE

AECL has a proven track record:

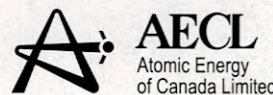
- fuel channel services
- advanced technologies
  - inspections
  - fuel channel replacements
  - fitness-for-service assessments
- plant life management
- spare parts provisioning
- equipment supply
- turnkey engineering
- field services
- pump seals and elastomers
- customer systems for control, display and reactor protection
- safety and licensing support
- steam generator and BOP services



AECL's successful station rehabilitation programs have been specifically developed by our industry experts to meet customer needs, based on customer feedback.

*At AECL our business is CANDU®, our commitment is to our customers.*

Canada



AECL Sheridan Park (Head Office) 2251 Speakman Drive, Mississauga, Ontario, Canada L5K 1B2

Telephone: (905) 823-9040 Fax: (905) 855-1383 Web Site: <http://www.aecl.ca>

CANDU® (CANada Deuterium Uranium) is a registered trademark of Atomic Energy of Canada Limited (AECL).