CNS BULLETIN SNC

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Editorial

A Call for Papers

One of the most depressing, not to say agonizing, moments faced by any speaker or lecturer is that timeless space of utter silence that greets the request "Are there any questions?" following the prepared part of the speech or lecture. (If a chairman is conducting the proceedings, a dimension of pathos is added with the comment "I'm sure many of us have questions...")

The editorial staff of the *CNS Bulletin* face this resounding silence with each issue. To say that contributions are few and far between is to understate the case by a couple of orders of magnitude. Actually we *did* get a contribution for this issue — we were going to have it bronzed, but this would have left a rather noticeable hole in a publication already showing too many signs of editorial fraying.

If this publication is to become anything more than a list of past and future society functions combined with clippings scalped from other publications, then we need contributions from members. We believe the *Bulletin* can offer a valuable service as a forum for debate within the CNS — there are certainly enough issues in the nuclear energy business. Any comment — informed, opinionated, or both — will be afforded a warm welcome. And if we don't get contributions we're going to be forced to adopt the dreadful expedient of writing our own letters of abuse to the editor, publishing them, then concocting our responses. Not a pretty prospect, is it?

So, ladies and gentlemen, are there any questions?

President's Message

The Committee on Branch Activities

A society meets the needs of its members via two main routes — first by its technical conferences, seminars, and publications; aspects that have no geographic boundaries, and second by regional or branch programs. Whereas a society's technical program is essential in gaining the national and international recognition necessary to attract individuals to contribute to and participate in the learned aspects of that society, branch activities are equally important as a means of bringing members together and providing communication between the membership and the officers responsible for the affairs of the society. Grass roots input is important to any learned society, and the Canadian Nuclear Society is no exception.

The Committee on Branch Activities is the means through which the affairs of the branches are monitored and coordinated by CNS Council. This Committee must devise policies, procedures, guidelines and forms to facilitate the flow of information between branch and Council. Aspects which fall under Branch Activities include:

- Manuals on branch operation; duties of branch executive.
- Branch by-laws, election of officers.
- Branch oriented policies and procedures of the society — how the society as a whole operates.
- Assistance on how to prepare a branch program — new branches in particular need to know what ideas other branches found that worked well in their region.
- A speaker's list.
- Reporting on branch programs — feedback is important to the interchange of experiences between branches.
- Ideas for membership drives — all branch members should encourage fellow workers to contribute to the society.
- Financial — council needs input from branches via budget, financial statements and feedback on how effective the funds used for programs were in meeting CNS and branch objectives.

Council is responsible for coordinating the efforts of the standing committees, i.e. Technical Divisions, Program, Communications, Membership and Finance, and the Committee on Branch Activities. Council compiles budgets and must arrange for the allocation of funds to meet the various needs; yet must keep membership fees to reasonably low levels. We hope to continue with funding of branch programs with a minimum of administrative interference. Now that the CNS branches have a few years of applicable experience, we believe we are in a good position to put together a simple set of policies and procedures to help both the branches and Council effectively meet the administrative needs of the society.

Ernie Card has the responsibility for preparing the necessary manuals and guidelines on branch activities. The branch executives are responsible in advising Ernie of their requirements. You as an individual member can and should contribute to the society by expressing your ideas and concerns directly to the executive of your branch.

The CNS was created as a learned society of individual members who have a voice in the affairs of their society. The Committee on Branch Activities is evolving guidelines for branches that will help achieve that objective.

P.A. Ross-Ross
President, CNS

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Message du Président

Le Comité des Activités des Sections Locales

Il existe deux façons principales par lesquelles une société peut satisfaire les besoins de ses membres. La première est par ses colloques, conférences et publications techniques, qui permettent de dépasser les frontières géographiques. La seconde façon consiste à avoir recours aux programmes des sections régionales ou locales. Le programme technique d'une société est essentiel à l'acquisition d'une réputation tant nationale qu'internationale capable d'inciter les gens à contribuer et à participer aux aspects académiques de cette société. Mais tout aussi importantes sont les activités des sections locales, car elles permettent aux membres de se rencontrer et procurent un moyen de communication privilégié entre les membres et les officiers responsables des affaires de la société. Toute société savante a besoin de communiquer avec sa base, et la Société Nucléaire Canadienne ne fait pas exception.

Le Comité des Activités des Sections Locales est l'instrument par lequel le Conseil de la Société Nucléaire Canadienne peut suivre et coordonner les affaires des sections locales. Ce comité doit établir les politiques, les procédures, les directives et les formes afin de faciliter la transmission d'information entre les sections locales et le conseil. Les aspects qui tombent sous la juridiction des sections locales incluent:

- la rédaction de manuels sur le fonctionnement des sections locales et sur les devoirs de l'exécutif des sections;
- l'adoption des réglements des sections et l'élection de leurs exécutifs;
- l'orientation des politiques des sections et celle des procédures de la société (comment la société fonctionne comme un tout);
- l'assistance à la préparation des programmes; (en particulier, les nouvelles sections locales doivent connaître les idées que les autres sections ont pu mettre en pratique avec succès dans leurs régions.);
- les listes de conférenciers;
- les rapports sur les programmes des sections locales; (il est important de connaître et de partager les expériences acquises entre les sections);
- la collection d'idées afin de favoriser le recrutement de membres; (tous les membres des sections devraient encourager leurs confrères à contribuer à la société);
- l'état des finances: le conseil doit connaître les besoins des sections locales, au moyen de leurs budgets, leurs états financiers et leurs rapports qui démontrent l'efficacité avec laquelle les fonds consacrés aux programmes ont été utilisés pour rencontrer les objectifs de la SNC et des sections locales.

Le conseil est responsable de la coordination des efforts des comités permanents, tels que ceux des Divisions Techniques, des Communications, du Recrutèment des Membres, des Finances, le Comité organisateur et enfin, le Comité des Activités des Sections Locales. Le Conseil effectue la compilation des budgets et alloue les fonds destinés à rencontrer les besoins divers, tout en maintenant les cotisations des membres à des niveaux raisonnablement modestes. Nous espérons continuer la subvention des programmes des sections locales tout en minimisant toute interférence administrative. Maintenant que les sections locales de la SNC ont acquis quelques années d'expérience pratique, nous croyons être en bonne position pour mettre sur pied un ensemble simple de politiques et de procédures destinées à aider tant les sections locales que le conseil à rencontrer de façon effective les besoins administratifs de la Société.

M. Ernie Card est le responsable de la préparation des manuels et des directives sur les activités des sections locales. De leur côté, ce sont les membres de l'exécutif des sections qui doivent faire part à M. Card de leurs besoins. Comme membres individuels, vous pouvez et même devriez contribuer à la société en exprimant vos idées et vos préoccupations directement aux membres de l'exécutif de votre section locale.

La Société Nucléaire Canadienne a été créée comme une société savante de membres individuels qui ont une voix aux affaires de leur société. Le Comité des Activités des Sections Locales est justement à développer les directives qui permettront aux sections d'atteindre cet objectif.

P.A. Ross-Ross
Président, SNC

FYI

CANDU Performance, 1982 (Staff)

Preliminary figures for Ontario Hydro's eight commercial reactors suggest that once again they lead the world in performance. Best performer was Bruce Unit 3 with a figure of 95.9 per cent. Figures for the other units are as follows:

Bruce 1..... 80.7 per cent
Bruce 2..... 68.3 per cent*
Bruce 4..... 91.6 per cent
Pickering 1... 77.6 per cent
Pickering 2... 91.1 per cent
Pickering 3... 86.4 per cent
Pickering 4... 91.7 per cent

*(two shut downs in 1982 for pressure tube replacement)

Point Lepreau Reaches Commercial Operation (NB Power)

The Point Lepreau Generating Station was declared in commerical operation effective January 31, 1983, NB Power has announced. It immediately began the export of nuclear electricity to New England utilities.

The nuclear unit, which was integrated into NB Power's system in September 1982, has produced a substantial amount of electricity and has been performing satisfactorily at high load levels since mid-January. These factors led to the commission's decision to declare the unit commercial.

The commission also announced in January an agreement with Central Maine Power for the sale of additional electricity from New Brunswick to Maine, expected to provide benefits to New Brunswick customers of several million dollars per year through this decade and beyond.

The power purchase agreement calls for a 100,000 kilowatt sale of power from New Brunswick initially, with the amount increasing to 150,000 kilowatts after November 1, 1984. The agreement extends until October 31, 1991 and provides that the parties may agree to further extend it on a yearly basis to 1995.

The agreement does not require NB Power to supply power if it does not have sufficient capacity to serve its own New Brunswick load, firm commitments in Canada and specified export commitments or if the Point Lepreau Generating Station is out of service.

The new agreement is subject to approval by the Maine Public Utilities Board and Canada's National Energy Board. The NEB previously approved the export of 335MW of electricity from Point Lepreau to New England, more than half of the nuclear station's output.

Progress at Pickering Unit 5 (Staff)

Not totally unexpected, but nevertheless frustrating holdups, especially on the conventional side of the plant, have delayed the progress of Pickering Unit 5 to full power. Commissioning Manager Ken Talbot hopes the unit will reach full power by the beginning of March, though he emphasizes the word "hope." In the not untypical pattern of nuclear plant operation, problems have come predominantly from the non-nuclear portion of the plant — about 80 per cent have been non-nuclear related. The target in-service date for Unit 5 is April 1.

Reorganization at AECL (Arthur Guthrie)

In the face of worldwide declining reactor orders, AECL has recently announced a reorganization of its Engineering Company, International and Chemical Company into CANDU Operations, to place the company

in a better position to meet current challenges and future opportunities.
These changes coincide with the previously announced work force reduction of 600 from the Sheridan Park and Montreal locations.
The new organization integrates the functions of engineering, supply, project management and construction management. AECL International has been restructured and is responsible for all business development, promotion, proposals and contract negotiations. This group is now an integral part of CANDU Operations.
The extensive experience in design, construction, and business management of three new Vice Presidents has been added to strengthen the AECL management team.

Applications for Two Uranium Mines Near Elliot Lake (AECB)

The Atomic Energy Control Board has received licence applications from Rio Algom Limited and from Denison Mines Limited to operate two uranium mine facilities near the Town of Elliot Lake, Ontario.
Rio Algom Limited has applied for a licence to operate the Stanleigh Mine and its associated mill and waste management area, located approximately 3 km northeast of Elliot Lake. The application calls for an annual throughput of 1.5 million tonnes of ore, with operations scheduled to start in July, 1983. The mine was originally developed by the Stanleigh Uranium Mining Corporation and was in production from 1958 to 1961 when it was closed. It was later acquired by Rio Algom Limited which started rehabilitation work in 1979, obtaining an Underground Exploration Permit from the AECB.
The AECB has also received a licence application from Denison Mines Limited for its Stanrock Mine operations, located approximately 25 km northeast of Elliot Lake. The facility consists of the Stanrock and CanMet properties which are being reactivated as a single mining unit for the production of 18,000 tonnes of ore per week, starting in July, 1983. The ore will be trucked to the nearby main Denison site for milling and tailings placement at the existing facilities. The Stanrock Mine was originally in operation from 1958 to 1964, while the CanMet Mine was active between 1957 and 1960. Denison Mines Limited has been reactivating the mines under an AECB Underground Exploration Permit.
The applications will be reviewed by AECB staff in consultation with other federal and provincial agencies.

Canadian Science Association Formed (AASC)

On February 8, 1983, the Association for the Advancement of Science in Canada (AASC) received legal recognition of its existence by the Canadian Minister of Consumer & Corporate Affairs.
At its Annual General Meeting on November 29, 1982, the members of the Association of the Scientific, Engineering and Technological Community of Canada (Scitec) had initiated a dramatic change by voting to focus the organization's efforts on fostering an understanding of the significance of science, technology and engineering to Canadian society. The re-oriented organization also adopted a new name: The Association for the Advancement of Science in Canada (AASC).
The new name was adopted by members on the understanding it would be interpreted as implying the advancement of human welfare through the intelligent application of science, engineering and technology. The AASC will encourage the active participation of the Canadian public in the consideration of scientific and technological issues having social and economic implications.
The AASC is planning a membership campaign and expects to publish a science journal. It will hold a national conference in Ottawa in November. For further information contact:

Mr. A. Templeton, Executive Director
AASC National Office
805-151 Slater Street
Ottawa, Ontario
K1P 5H3
(613) 232-0240

PET Scanner Installed at MNI (AECL)

The first production unit positron emission tomograph (PET) scanner, with the trade name "Therascan," was installed at the Montreal Neurological Institute last year to undergo clinical trials. The machine has received enthusiastic approval from MNI staff both for its ease of use and for the results obtained. PET scanners, like CAT scanners, can show transverse sections, however the PET modality images function, rather than structure.
A MNI-AECL PET scientific team collaborated for about three years on the design and development of the Therascan and a prototype was earlier developed and tested at MNI. Basic research continues at AECL's Chalk River Nuclear Laboratories towards designing a higher resolution scanner.
The PET scanner is composed of a ring of scintillation detectors. A suitable compound is labelled with a radioactive marker. The compound is injected and the PET scanners follow its fate by observing the distribution of the marker atoms. When each atom decays it emits a positron, or positive electron, which travels a very short distance before it meets a normal electron. The two are annihilated and in their place appear two gamma rays travelling in opposite directions. If both rays are detected simultaneously by a ring of detectors surrounding the patient then one "event" is recorded. By collecting perhaps 5 million events a picture can be built up of the marker distribution in a slice through the patient defined by the detector ring. By stacking a number of rings together the whole brain can be covered, to map any interesting compound which can be labelled.
The novelty of the PET approach is that among the positron-emitting isotopes used are those of carbon, nitrogen and oxygen, which are the major constituents of human physiology.
At present the most useful PET protocols used are those which map the metabolism of either glucose or of oxygen and those which measure regional blood flow or blood pooling. The future looks bright, with advances being made in the labelling of various neuro-transmitters, the chemical messengers which help relay information around the brain. With these compounds, the biochemical basis for such diseases as epilepsy, Parkinson's disease, Huntington's chorea, premature senility, schizophrenia and manic depression can be investigated in considerable detail.

Vatican Supports Nuclear Energy (INFO)

The Vatican urged nuclear disarmament, but endorsed nuclear energy as a way to meet world energy requirements, in a message to an International Atomic Energy Agency conference in Vienna, last September.
"The advantages of the peaceful uses of atomic energy are generally recognized," the statement said.
"Those who hold that nuclear power can be utilized only in a 'zero risk' or 'no risk' situation are perhaps applying an unrealistic standard to endeavors which, like all human efforts, necessarily involve some risk," the Holy See indicated.
The message also urged industrialized nations "to extend to all countries, especially to the developing ones, the benefits contained in the peaceful use of nuclear energy."
The Vatican statement, "Risks and Benefits of Atomic Energy," appears in the October 7 issue of *Origins*, published by the US National Conference of Catholic Bishops.

Volcanic Emissions Cast Shadow on Solar Energy (Renewable Energy News)

The eruption of the Mount El Chichan volcano in Mexico last April is clouding the prospects for commercial solar energy. The directional solar towers in California could reportedly suffer efficiency losses of nearly 25% due to volcanic emissions, although total solar loss is about five per cent. The emitted sulphur dioxide gas, not the dust, causes the solar deflection when it is changed to droplets of sulphuric acid in an electrochemical reaction due to sunlight in the stratosphere. These sulphuric acid clouds form a belt around the earth and can remain for a year before dispersing, possibly affecting temperatures as well. Volcanic eruptions of this size occur about four or five times per century.

Support for Nuclear Power Lower

(Staff)

Results of a Canadian Gallup survey released in January show a drop in nuclear power support in the sample taken. Public opinion is running at a level comparable to the immediate post-Three Mile Island attitudes, as shown in the table below. Industry representatives have suggested the drop is due to economic conditions and negative attitudes generally, as well as antinuclear weapons campaigns.

The first question asked was: **"At present, very little of the total electricity used in Canada comes from nuclear power generation. What do you think should happen?"**

	NOV. 1982	OCT. 1981	MAY 1980	MAY 1979	OCT. 1978	SEPT. 1976
They should increase nuclear generation	20%	31%	30%	23%	35%	41%
They should not develop any more than at present	35	27	27	34	29	20
They should stop generation of nuclear power	31	23	27	29	15	14
Don't know	14	19	16	14	21	25

"What would you do if a nuclear power station were to be built in your area — would you agree to its being built, would you not oppose it although you would feel anxious about it, or would you oppose it?

	NATIONAL				
	TODAY	1981	1978	1977	1976
Agree to its being built	15%	19%	24%	24%	28%
Not oppose though would feel anxious	20	21	26	29	23
Would oppose it	57	49	39	34	35
Don't know	8	11	12	13	14

CANDU on Top: University of Sussex

(Nuclear Engineering International)

Continuing features of worldwide power plant performance are the outstanding record of the Canadian CANDU reactors and the superior performance of KWU PWRs among PWR designs (see table below).

These are just two of the conclusions drawn from a recent detailed analysis of plant performance in non-CMEA countries during 1978 to 1981 carried out by Steve Thomas of the Science Policy Research Unit of the University of Sussex*. The study looked at plant performance by country, by NSSS design, by manufacturer, by the size and age of the unit, and by the nature and cause of the outage. The study follows a similar analysis published in 1979.

The most pressing problem facing the industry, Thomas says, is how to maintain critical resources through the current period of low orders. Utilities may find their construction skills are at risk, but for vendors the problems are more serious. If there is a revival in ordering, actual operating performance will be a more important criterion in the choice of supplier than in the previous period of large-scale ordering, when the utilities had to base their decisions on promised rather than proven performance. Vendors will need to demonstrate that their designs do not contain major generic flaws "and they will also need to consider carefully what resources are most important and how they can be maintained. If this is not accomplished, much of the learning that has taken place could be lost."

Worldwide nuclear plant performance, 1981, % load factor:

	PWR	BWR	PHWR	GCRs
United States	57.3	57.6	—	—
Canada	—	—	89.5	—
United Kingdom	—	—	—	48.7
France	66.8	—	—	40.2
West Germany	78.9	42.8	—	—
Sweden	46.3	74.7	—	—
Japan	57.5	62.3	—	70.5
Total*	61.9	60.4	87.5	48.3

(Total is for listed countries plus: Belgium; Italy; Netherlands; Finland; Spain; Switzerland; Argentina; India; South Korea; Taiwan.)

*Steve Thomas, *Worldwide nuclear plant performance revisited: an analysis of 1978-81 experience*, SPRU Occasional Paper Series No. 18, Science Policy Research Unit, 1983. Available from: Energy Group, Science Policy Research Unit, University of Sussex Mantell Building, Falmer, Brighton BN1 9RF, England. £10 or £5 to academics.

Settlement of B&W-GPU Suit

(Nucleonics Week)

In what veteran legal observers have termed an almost total victory for Babcock & Wilcox, the $4 billion dispute between B&W and GPU arising out of the March 1979 accident to Three Mile Island-2 has been settled. One source, a long-time utility litigator, called the settlement a "face-saving" action by GPU. While asserting that the case was apparently going against the utility holding company, this source and others said GPU had to sue B&W in order to display vigilance of its interests, and they agreed that proving B&W's liability for the massive consequential damages arising from the accident was an extremely difficult legal proposition.

The settlement calls for B&W to provide "rebates" to GPU of "up to $37 million in proportion to GPU purchases from B&W of services and equipment over a period of 10 years," a joint statement by the parties said. The statement went on to say that the settlement resulted from "the difficult questions of fact and law presented in the case..., the mutual interest of B&W and GPU in maintaining their business relationship and the importance of additional progress in funding the TMI-2 decontamination and cleanup." The delicate nature of the relationship between a utility and its NSSS supplier, particularly in legal matters, is illustrated by the fact that GPU Nuclear, the operator of Three Mile Island, recently asked for a delay in NRC restart hearings for TMI-1 because a witness from B&W who was to testify on behalf of GPU was due at the same time to testify against the utility in the damage suit.

The rebates applied to the estimated $1 billion TMI-2 cleanup represent the first money, exclusive of insurance payments, to materialize for the cleanup.

Nuclear Accident Study Clarified

(INFO)

The US Nuclear Regulatory Commission released a Sandia National Laboratories study November 1 assessing the consequences of severe fuel-melt accidents at 91 nuclear-plant sites and at the same time, discounted recent newspaper accounts of "worst case" accidents based on computer models developed during the study.

The Sandia study ("Technical Guidance for Siting Criteria Development" /NUREG/CR2239) examined the health consequences and property damages that would result from a core melt, plus breach of containment. The probability of such an accident causing a large, uncontrolled release of radiation is approximately 1 in 100,000 years per reactor, the NRC said.

The media furor over the Sandia study had little to do with the report itself. It resulted instead from an article about the study in *The Washington Post*, which published a chart projecting large potential fatalities at reactor sites. The chart was based on computer models developed during the study, but which were not included in the report. The models calculated worst-case damages that would result if the severest type of core-melt/breach-of-containment accident, in which all safety systems capable of reducing radioactive releases to the atmosphere failed simultaneously, was coupled with unlikely weather combinations that caused a plume to rain down on a major population center, where no measures were taken by people to protect themselves. In the worst case, such an event could cause more than 100,000 fatalities at certain locations, the *Post* said, but the NRC noted the probabilities were so small — one chance in a billion years per reactor — that they were not considered in the Sandia report.

Burying the Nuclear Waste Issue (Public Utilities Fortnightly)

Suddenly all the pieces are beginning to fit in the puzzle of what to do with commercial nuclear wastes. Science has long known what the technical problems of waste management are, and more than twenty-five years ago began developing a technology to deal safely with them. What has been missing until now, however, has been the political will to let science get on with the job.

So it was that knowledgeable Americans — and our overseas allies — looked on when Congress passed and the President signed landmark legislation that for the first time put all of the pieces together for a national radiation waste disposal program.

Naturally, such sites have to be selected carefully and the wastes packaged and buried so that future generations are passively — without doing anything on their own — out of harm's way. And over the past two decades of extensive long-term testing and demonstration, the worthiness of these new systems has been endorsed by most serious scientists and engineers.

The new legislation passed by Congress creates a comprehensive plan to safeguard the disposal of nuclear wastes on a national scale. It is a formula for every generation of Americans enjoying the benefits of nuclear power to handle safely the resulting wastes. And it is a system whereby the utilities that create the wastes in the first place also pay for treatment and perpetual storage of the residues.

The law, which was created by seven House committees and two Senate committees after years of deliberation, requires that the federal government and the states come up with a schedule, a timetable for the orderly disposal of wastes. Moreover, the law is written so that no one's rights will be trampled on — indeed, the normal function of government listening to the wishes of its citizens has not changed in any way — while the greatest good for the greatest number of us is vouched safe.

Under the terms of the new law, by March 31, 1987, the President will choose the nation's first permanent nuclear waste repository, and a second site must be chosen by March 31, 1991. There is a long way to go yet before these decisions are made, and we can be certain that in our democracy every voice will be heard before final commitments are made. But we can take comfort in the law. For the first time it holds an industry completely responsible — from raw material through finished product and beyond — for the wastes that must be put back into nature.

There will be, in short, no "Love canals" or abandoned chemical dumps with regard to nuclear wastes. No dump trucks rumbling through the neighborhood in the middle of the night with illicit wastes. No one waking up one day to discover his schoolyard or backyard contaminated by nuclear toxins.

Not only does this solution suggest how our society may handle other environmental threats — the decades-long indiscriminate dumping of toxic, mutagenic, and carcinogenic wastes in America, for example — but finally frees us to rationalize the full development of our nuclear resource.

It is the energy that will help us to compete again as an energy-abundant nation not held hostage to petroleum. Nuclear wastes are a dead issue; we are going to bury them.

US Sets New Safety Goals

(Nuclear Engineering International)

The US Nuclear Regulatory Commission adopted provisional safety goals for nuclear power plants last January which suggest that nuclear energy should pose a risk comparable to the risk of competing methods of electricity generation. Numerical guidelines to achieve this goal, which will be evaluated over two years call for:

- The risk to individuals living adjacent to nuclear plants of prompt fatality due to an accident to be 0.1 per cent of the sum of prompt fatality risks Americans face from all other types of accidents.
- The risk of cancer fatality to individuals living near nuclear plants from its routine operations to be less than 0.1 per cent of the sum of cancer fatality risks from all other causes.
- Nuclear plants to be designed to limit the probability of a core melt accident to no more than 1 in 10,000 per reactor year.

Separately, the NRC policy also sets a "benefit — cost guideline" of $1000/man-rem of radiation exposure averted, to help guide the staff in determining which safety improvements are warranted where the safety goals are not met.

To implement the new policy, the staff proposes to evaluate how the guidelines could be used to improve regulatory practices and to help determine the adequacy of, and the need for, certain current and proposed regulatory reforms. In addition, the staff plans to use the guidelines to help set priorities for safety research.

USSR Willing to Allow Inspection of Some A Plants (New York Times)

In a move that could have a major impact on arms agreements, the Soviet Union has said it wants to start talks this spring on opening some Soviet civilian nuclear plants to United Nations inspectors. Moscow's move was announced in Vienna by the International Atomic Energy Agency (IAEA), a United Nations body. The agency's Director General, Hans Blix of Sweden, said negotiations would begin in May or June "on a safeguards agreement with the agency."

Moscow's decision was foreshadowed last June when Foreign Minister Andrei Gromyko told a special United Nations session on disarmanent that the Soviet Union was willing to open some plants to the nuclear agency. He made clear that only some civilian plants would be subject to inspection, and the latest Soviet message reiterates this.

The Soviet negotiations this spring are expected to centre on which plants the agency will examine and how to insure that Moscow does not have to accept unwanted inspectors. The experts could not predict how long the talks would take, but they seemed confident that they would end in agreement. One specialist suggested that it would be a relatively modest step from agreeing to agency monitors for selected plants to accepting agency inspection of the amount of plutonium produced. But limiting plutonium production is not an issue in any Soviet-American talks now.

"No" Vote on Swiss Anti-nuclear Initiative Urged (Nucleonics Week)

The Swiss Federal Executive Council, in its recommendations to Parliament, has reaffirmed its belief that another nuclear power plant is needed beyond Leibstadt to assure adequate electricity supply for the nation. An initiative demanding that no more nuclear plants be built after Leibstadt must be put to a national vote which will probably come in the spring or summer of 1984. Parliament can formulate a counter proposal to the initiative to be voted on at the same time, or follow the recommendation of the executive body. In this case it's expected that Parliament will take cognizance of the initiative, not put forth a counterproposal and confirm the executive opinion that the initiative should be rejected. The initiative was launched and is supported by a wide group of antinuclear and environmental organizations. In its demands that no further plants be constructed after Leibstadt (scheduled to come on line in October 1984), the initiative seems clearly aimed at defeating the Kaiseraugst project, even without mentioning it.

Kaiseraugst is on the agenda for the Council of States, the smaller house of Parliament. A commission of that house has already considered whether Kaiseraugst should be given general permission to proceed and voted nine to four in favour of the plant. The entire Council of States is expected to reach the same conclusion. The larger house, the National Council, must also take up the Kaiseraugst question, but this won't be until some time next year. Delays, intervenor demonstrations, a change in Swiss laws and strong opposition from the Basel cantons (neighbours of the Kaiseraugst site) have stalled this project for 15 years.

Uranium Extraction from Seawater — Should Canada be Worried? (Staff)

With the cost of uranium extraction from seawater estimated at $3600(US)/lb of uranium in a recent Exxon study, the economics seemed doubtful. However this

appears to have changed with the announcement in June that the Japanese extracted 4.1 grams of yellowcake using a process 20 times as efficient as previous ones. The new adsorbent, poli-acryl amidoxine chelating resin, is reported capable of recovering 77% of uranium contained in seawater. The Exxon study had focused on a less-efficient titanium oxide adsorbent. The new adsorbent was contained in a fluidized-bed device, with hydrochloric acid elution and a two-stage enrichment process. Uranium costing $200(US)/lb by this process could mean that electricity production from recycled plutonium fuel and breeder reactors would be more expensive than that from reactors using uranium fuel, and that should the price drop further, uranium energy could truly become an unlimited energy source.

Considering the vast quantities of uranium dissolved in the seas, even at parts per billion levels, and the suggestion by Japanese scientists that the acrylic resin be processed into netting to boost its area of contact with water, uranium-mining countries and reactor-suppliers everywhere should at least be attentive.

CNS News

Lewis and McRae Awards — Nominations from CNS Members Welcomed

Many CNS members can identify among their mentors, colleagues and friends a singular individual whose demonstrated scientific, technical or business contributions in the nuclear field beg for special recognition. Each year the Canadian Nuclear Association, at its Annual International Conference, honours two such individuals through presentations of the W.B. Lewis Medal and the Ian McRae Award.

The distinctive features of these two prestigious awards and lists of previous recipients are indicated in the adjacent box. Members of the Canadian Nuclear Society are especially invited by the CNA Awards Committee to nominate candidates they believe are deserving of the recognition and honour bestowed by the awards.

The letter of nomination must cite evidence in support of the nomination as it relates to the eligibility criteria and must be supported in writing by three of the nominee's peers. In addition, supplementary information on the nominee's professional background together with relevant information on his past accomplishments is to be supplied.

Nominations, with supporting documentation, should be submitted to Mr. Jim Weller, Secretary to the CNA Awards Committee, by April 15, 1983. Further information on the awards and nomination guidelines may be obtained from the CNA Office, c/o CNS.

The CNA Awards

W.B. Lewis

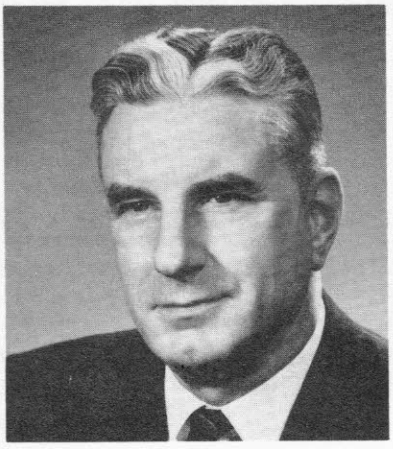
The W.B. Lewis Medal was established in 1973 in honour of Dr. W.B. Lewis, formerly Senior Vice-President (Science), Atomic Energy of Canada Ltd.

Its purpose is to recognize each year a Canadian scientist or engineer who has demonstrated a level of technical competence and accomplishment in the field of nuclear science and engineering as exemplified by Dr. W.B. Lewis during his involvement in the Canadian nuclear energy program from 1946 to 1973.

A medal and a certificate are presented to the winner at the annual conference of the Canadian Nuclear Association.

Criteria to be used in the selection procedure will include, but are not limited to, the nominee's competence and his accomplishments in the general advancement of nuclear science and engineering in Canada.

Previous recipients are (in reverse chronological order) Ernie Siddall, AECL; Robert G. Hart, AECL; Ara Mooradian, AECL; John S. Foster, Montreal Engineering Co. Ltd.; William G. Morison, Ontario Hydro; Arthur G. Ward, AECL; John W. Hilborn, AECL; George C. Laurence, AECB; and Harold A. Smith, Ontario Hydro.



Ian McRae

The Ian McRae Award of Merit was established in 1976 in honour of the late Ian F. McRae, the first president of the Canadian Nuclear Association and Chairman of the Board of Directors of the Canadian General Electric Company Ltd.

Its purpose is to honour an individual for outstanding contributions (other than scientific) to nuclear energy in Canada.

The trophy representing the award consists of a piece of original artwork denoting the theme "Nuclear Energy Serving Mankind." The name of each recipient will be engraved on the base and a replica of the centre of the trophy will be presented as a permanent memento.

To be eligible, a nominee for the award must have directly made an outstanding contribution to the general advancement of nuclear energy in Canada through such fields of activity as management, administration, public service, medicine, communication and the arts.

Previous recipients are (in reverse chronological order) Roy Errington, AECL; George Pon, AECL; O.J.C. Runnalls, University of Toronto; Yvon DeGuise, Nucleotec Inc.; William M. Brown, Canadian General Electric Co. Ltd.; and Lorne McConnell, Ontario Hydro.

CNS Radwaste Proceedings Published

The Canadian Nuclear Society has published the proceedings of the CNS International Conference on Radioactive Waste Management. This conference, the first international event sponsored by the CNS, attracted 250 scientists and engineers from around the world to Winnipeg last September to hear 115 papers on many aspects of research into radioactive waste management.

The mammoth proceedings volume (673 pages) is a substantial contribution to the world's nuclear waste research literature and is the first of its kind for Canada.

Papers review the Canadian, US, Swedish and other European waste management programs, as well as the program of the International Atomic Energy Agency (IAEA). Other sessions deal with research into the disposal of highly radioactive waste from nuclear reactors, and of low-level waste, uranium mine and mill waste, interim storage, transport, geoscience of waste disposal and environmental health and safety.

The Canadian Government also took the opportunity of the conference to announce the establishment of a Low Level Radioactive Waste Management Office, in an address by D.C. Dingwall, MP.

The volume is available for $50.00 from the Canadian Nuclear Society; 111 Elizabeth St., 11th Floor; Toronto, Ontario, Canada; M5G 1P7.

A summary volume is also available for $15.00 to CNS members, $20.00 to non-members.

CNS Bulletin — Call for Copy

The *CNS Bulletin* needs contributions to ensure it is a timely and informative publication for CNS members. Contributed copy need only be legible, of interest and intelligible to the CNS membership. It may be edited. The *Bulletin* appears every two months and averages 8,000 words of text. Editorial deadlines are the end of every odd-numbered month, except for the pre-conference issue (see below). To submit material, use one of the following procedures, and indicate your name and CNS Branch affiliation:

- Mail or deliver to David Mosey, Editor, *CNS Bulletin*, c/o Ontario Hydro, 700 University Ave., H19, Toronto, Ontario, M5G 1X6.
- Mail or deliver to the CNS office: *CNS Bulletin*, 111 Elizabeth St., 11th floor, Toronto, Ontario, M5G 1P7.
- Submit to local CNS Branch Chairman (listed on last page of this *Bulletin*) for forwarding to the CNS.

Any CNS member can contribute to the following sections:

- News items for the FYI section (maximum 400 words per item: Canadian, U.S. and International events).
- Feature articles for the Perspective section (1,000 to 2,500 words) on topics such as fuel cycle research, nuclear waste management, fusion research, nonproliferation, radioisotope use, etc.
- Others: book reviews, letters to the editor, notices of conferences and meetings, photos.

Contributions required from CNS Officers are:

- CNS Branch programs and activity updates (CNS Branch Chairmen take note: the text of addresses by guest speakers to your branches is required for the *Bulletin* Perspective section. Branch Chairmen should prearrange this.)
- CNS Division updates concerning activities, and reports of division-sponsored conferences and symposia (Up to 1,000 words).

***CNS Bulletin* Issue:**	**Editorial Deadline:**
January/February	End of January
March/April	End of March
May/June	Mid-May (Pre-Annual Conference Issue)
July/August	End of July
September/October	End of September
November/December	End of November

CNS Branch Programs

Toronto Branch

Many thanks to all of you who returned the branch questionnaires — we will be using your comments to guide our selection of future programs. Any members who wish to take a more direct role in formulating branch policies or programs please contact me.

On February 23, Dr. David Feiglin, head of nuclear medicine at Toronto General Hospital and Associate Professor of Radiological Science in the Faculty of Medicine at the University of Toronto, gave a very interesting and informative talk on recent advances in the use of radionuclides in the diagnosis of disorders of the liver, kidney and stomach. Upcoming events include: a talk on Ontario Hydro's new marketing strategies by Dane McCarthy on April 19 and on May 11, a discussion on world fusion programs by Terry Brown of the NRC (this will be complementary to Tom Drolet's talk last fall).

Arthur Guthrie

Conferences & Meetings

CEA Engineering & Operating Division Meetings

To be held **March 21 to 24, 1983** in Vancouver, BC. For information contact **Canadian Electrical Association, One Westmount Square, Suite 580, Montreal, Quebec, H3Z 2P9.**

5th Topical Meeting on Fusion Technology Issues

Co-sponsored by American Nuclear Society et al., to be held **April 26 to 28, 1983** in Knoxville, Tennessee. For information contact **Mr. James L. Scott, Oak Ridge National Laboratory, P.O. Box X, Oak Ridge, TN 37830.**

Commissioning Symposium

Co-sponsored by Canadian Nuclear Society and Canadian Nuclear Association, to be held **May 3, 1983** in Toronto, Ontario. For information contact **CNS.**

CRPA Fourth Annual Conference

The Fourth Annual Conference of the Canadian Radiation Protection Association (CRPA) will be held **May 3, 4, 5, 1983**, at the King Edward Hotel in Toronto, Ontario. Speakers are being invited to make expert presentations at the following sessions:

- Nuclear Power and the Public
- Non-Ionizing Radiation
- Professional Training and Development
- Hospital Radiation Safety
- Current Nuclear Events

The keynote address will be on "The Canadian Nuclear Power Program."

Early morning workshops, complete with a continental breakfast, will be held. A number of exhibitors will be demonstrating a variety of products.

For further information please contact the Chairman, Local Arrangements:

D.A. Lee
Ontario Hydro
700 University Avenue
Toronto, Ontario
M5G 1X6
Telephone: (416) 592-2487

Conference on the Nuclear Services Business in the 1980s

Sponsored by McGraw-Hill, to be held **May 17 to 20, 1983** in Washington, DC. For information contact **Nucleonics Week, McGraw-Hill, 1221 Avenue of the Americas, New York, NY 10020.**

Uranium Mine Radiation Safety Course

Sponsored by the Atomic Energy Control Board, to be held **May 30 to June 3, 1983** in Saskatoon, Saskatchewan. For information contact **Canadian Institute for Radiation Safety, P.O. Box 460, Elliot Lake, Ontario, P5A 2J9.**

23rd Annual International Conference of the CNA and 4th Annual Conference of the CNS

Co-sponsored by CNS and CNA, to be held **June 12 to 15, 1983** in Montreal. For information contact **CNS.**

ANS 1983 Annual National Meeting

To be held **June 12 to 17, 1983** in Detroit, Michigan. For information contact **Mr. W.J. McCarthy, Jr., Chairman and Chief Executive Officer, Detroit Edison, 2000 Second Ave., Detroit, MI. 48226.**

CNS BULLETIN SNC

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Le Bulletin SNC est l'organe d'information de la Société Nucléaire Canadienne.

CNS provides Canadians interested in nuclear energy with a forum for technical discussion. For membership information, contact the CNS office, a member of the Council, or local branch executive. Membership fee is $30.00 annually, ($5.00 to students).

La SNC procure aux Canadiens intéressés à l'énergie nucléaire un forum où ils peuvent participer à des discussions de nature technique. Pour tous renseignements concernant les inscriptions, contacter le bureau de la SNC, les membres du Conseil ou les responsables locaux. La cotisation annuelle ext de $30.00, ($5.00 pour les etudients).

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Uranium Institute Eighth Annual Symposium

To be held **August 24 to 26, 1983**, in London, UK. For information contact **The Uranium Institute, 8th Floor, New Zealand House, Haymarket, London SW1Y 4TE, United Kingdom.**

International Conference on Numerical Methods in Nuclear Engineering

Co-sponsored by Canadian Nuclear Society and American Nuclear Society, to be held **September 6 to 9, 1983** in Montreal, Quebec. For information contact **R.A. Bonalumi, Conference Chairman, Nuclear Studies and Safety Dept., H16-H17, Ontario Hydro, 700 University Ave., Toronto, Ontario, M5G 1X6.**

4th Pacific Basin Conference

Co-sponsored by CNS, CNA et al., to be held **September 11 to 15, 1983** in Vancouver. For information contact **CNS.**

12th World Energy Conference

Sponsored by the International Executive Committee, World Energy Conference, to be held **September 18 to 23, 1983** in New Delhi, India. For information contact **Mr. E. Ruttley, Secretary-General, World Energy Conference, 34 St. James's St., London SW1A 1HD, UK.**

33rd Chemical Engineering Conference — Call for Papers

The Canadian Society for Chemical Engineering will hold its 33rd Chemical Engineering Conference **October 2 to 5, 1983**, in Toronto, Ontario. Papers covering a wide variety of topics are invited on the following themes, but not restricted to them: Plant Operations, New Fuels, Hazard Control, Computer Applications, Polymer Engineering, Frontier Engineering, Biochemical Engineering and Chemical Engineering Fundamentals. For information contact:

Professor Donald E. Cormack
Department of Chemical Engineering and Applied Chemistry
University of Toronto
200 College St.
Toronto, Ontario
M5S 1A4
Telephone: (416) 978-4074

Workshop on Analytical Chemistry Related to Canada's Nuclear Industry

Co-sponsored by Canadian Nuclear Society, Canadian Nuclear Association, AECL et al, to be held **October 24 to 26, 1983** on Hecla Island, Manitoba. For information contact **P. Campbell, Whiteshell Nuclear Research Establishment, Pinawa, Manitoba, R0E 1L0.**

The Unfashionable Side

Solar Apocalypse — The Threat from the Sky **Part 1**

For more than five years the people of the little southern Ontario town of Leamington have watched the growing array of coruscating reflectors atop skeletal support towers — clearly visible, though ten miles away. To the townsfolk the towers meant an economic rejuvenation as thousands of workers, engineers and scientists flocked to the town, providing the biggest boom since the boom days of the local newt-skinning industry.

To Canada the towers offered a glittering promise of freedom from energy constraints. But now the promise is tarnished. The townsfolk cast uneasy glaces at those huge structures whose gleam seems more threatening day by day.

The towers are Sunnyside Stream Generating Station — a joint federal-provincial project to harness solar energy, and the world's first large scale solar power station. When work first started on Sunnyside in 1974, solar energy seemed to offer safe, clean, economical and limitless power — and that's how CORPSE (Canadian Organisation for Research and Promotion of Solar Energy) still sees it.

But CORPSE seems to be in the minority. Dr. William Spineways, a University of Western Ontario Professor of Mathematics, is Chairman of CASH (Citizens Against Solar Harassment) and he's worried.

Professor Spineways believes that behind the technological hype and the smoothly reassuring CORPSE press releases there exists a frightening story of design errors, operating misjudgments, carefully concealed major failures and near-disasters as scientists and engineers wrestle to control a half-understood technology.

While CORPSE remains close-mouthed about its station's performance, some details have leaked out — disturbing details. For example, Professor Spineways describes incidents when tracking control of all the station's giant solar reflectors was lost, when sixty operating staff were over-exposed to sunlight in an eight-month period, and when three of the station's four coffee machines broke down simultaneously.

Local residents, too, have noticed disturbing incidents. Maurice Onions, a retired newt-skinner, describes one: "It was a lovely spring afternoon, and I was out throwing stones at small birds when suddenly there was a chill in the air and the sky got dark. I heard the alarm sirens go at the plant so I ran back home as fast as I could go. CORPSE sent some PR fellow out to explain to us that it was just a cloud passing, or the sun going down, but now I wonder..."

Ernest Worthing (to be continued)