May/June 1983

ZEPHYR

Garden observing stations aid AES

Environment Canada
Environnement Canada
Canada

Minister announces Dash 7R purchase for Ice

On May 9 Environment Minister John Roberts, announced at de Havilland's Toronto office, the purchase of an extended-range Dash 7 Ranger aircraft for ice reconnaissance to be carried out by AES personnel. The plane, an adaptation of de Havilland's short-take-off-and-landing (STOL) aircraft, will be ready in late 1984.

The purchase is part of the $2.4 billion Special Recovery Projects Program announced in the April 19th budget speech. All projects in the program have dual benefits, contributing to economic recovery and employment over the next four years, and also putting in place key facilities, equipment or services that will enhance economic and regional development opportunities for the private sector in this decade and beyond. The $37 million Dash 7R project will provide approximately 185 person-years of employment at various Canadian high-technology companies located in British Columbia, Saskatchewan, Ontario and Quebec.

The Dash 7R and associated equipment will allow AES Ice Branch to provide an iceberg surveillance and forecasting service for Canada's East Coast from northern Labrador to the Grand Banks. Sensors and sideways-looking radar (SLAR) will enable the aircraft to observe ice conditions during the Arctic night, which lasts nearly five months of the year. Federal regulations control the activities of offshore drilling companies. The new iceberg service will allow Environment Canada to carry out this regulatory role and guarantee that operations are carried out in a safe manner.

The new aircraft will be equipped with Canadian-built state of the art sensing equipment designed to provide all-weather capability for observing icebergs and sea ice. The range of the Dash 7R will be approximately 2,200 kilometres, twice the range of the normal, 50-passenger Dash 7R commuter airliner. The aircraft's structure will be designed to take extra fuel tanks and observational equipment. Small domed bubbles will be built into the Dash 7R body to enable observers a good vantage point.

The Dash 7R will join the two Lockheed Electras currently being used by ice services to monitor pack ice in support of safe navigation in the Arctic, Great Lakes, Gulf of St. Lawrence and along the East Coast. The addition of this third aircraft will increase current coverage by approximately 500,000 square kilometres.

A model of the extended-range Dash 7R as it will look while on AES ice reconnaissance was displayed at de Havilland's Toronto office during Mr. Roberts's announcement.

Zephyr Highlights

Cover: March 23 was volunteer climate observer day in Canada and around the world. This quiet garden station in Andrew, Alta. with its Stephenson screen and rain gauge typifies some 2,000 volunteer stations all over the country. See article, page 6.

Zephyr is a periodical publication for employees of the Atmospheric Environment Service, Environment Canada. It is produced for the Atmospheric Environment Service by the Information Directorate of Environment Canada.

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(416) 667-4551

Environment Canada / Environnement Canada

Atmospheric Environment Service / Service de l'environnement atmosphérique

U.S. Weather Office uses hurricane probs

The United States National Weather Service (NWS) has announced that hurricane/tropical storm probabilities are being issued in public hurricane advisories during the 1983 hurricane season. The probabilities, according to NWS are defined as the percentage probability that the centre of the storm will pass within approximately 95 km of 44 selected coastal locations from Brownsville, Texas to Eastport, Maine.

Explaining how to interpret the probabilities, NWS says that as the storm approaches, probabilities slowly increase. They are generally quite low one or two days before forecast landfall but then increase rapidly. When landfall is forecast to occur in 72 hours, the maximum probability is only 10 percent. At 48 hours before forecast landfall, the maximum probability is 13-18 percent. At 36 hours it is 20 to 25 percent; at 24 hours it is up to 35 or 45 percent and about 12 hours before forecast landfall maximum probability reaches 60 to 70 percent.

NWS says it is issuing hurricane probabilities four times a day, at 6 am, noon, 6 pm and 10.30 pm EDT.

We kid "genot" — admin messages are here to stay

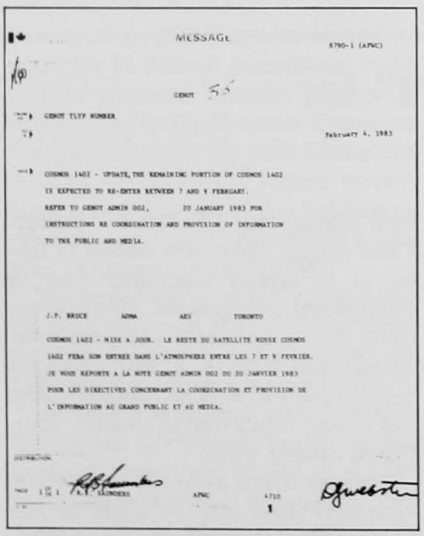
In these days of rapidly changing communications and with office automation just around the corner, it's comforting to know that a longstanding AES procedure is alive and well and plans to outlive the current teletype network.

GENOTS or General Notices are an important means of informing AES staff, especially those in outlying areas. Basically they are messages issued by AES Downsview advising of changes in teletype or facsimile schedules, but quite often they are used to advise employees of staffing competitions or projects of interest to meteorologists or met techs. They are also sometimes used to announce special assignments or projects, or they may canvas weather offices for volunteers.

In fact GENOTS may cover just about any subject. For example, a message went out last March announcing the proposed privatization of the NOAA (U.S. Weather Service) satellites and advising AES staff not to comment on it to the media.

Commenting on the continuance of GENOTS, Remo Massaroni, chief Communications Management Division, says that although the teletype network within AES will probably vanish within the next several years and be replaced by digital networks with computer terminals, the structure and format of the GENOT should not alter that much.

Phil Aber, director, Field Meteorological Systems Branch of Field Services Directorate, adds "GENOTS will continue to be a useful tool for relaying important messages to AES employees across the system and are unlikely to be replaced by office automation techniques in the near future."



MESSAGE

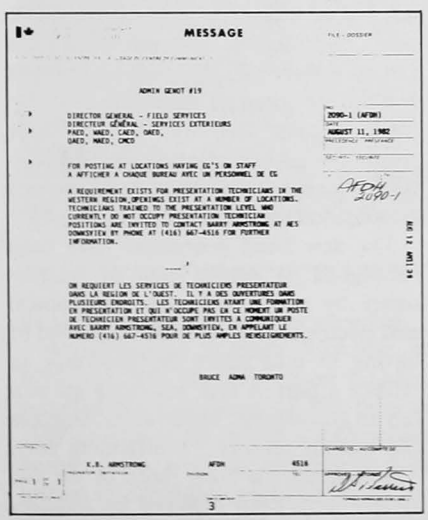
GENOT TLTY NUMBER

February 4, 1983

COSMOS 1402 - UPDATE, THE REMAINING PORTION OF COSMOS 1402
IS EXPECTED TO RE-ENTER BETWEEN 7 AND 9 FEBRUARY.
REFER TO GENOT ADMIN 002, 20 JANUARY 1983 FOR
INSTRUCTIONS RE COORDINATION AND PROVISION OF INFORMATION
TO THE PUBLIC AND MEDIA.

J.P. BRUCE ADMA AES TORONTO

COSMOS 1402 - NISE A JOUR. LE RESTE DU SATELLITE RUSSE COSMOS
1402 PERA SON ENTREE DANS L'ATMOSPHERE ENTRE LES 7 ET 9 FEVRIER.
JE VOUS REPORTE A LA NOTE GENOT ADMIN 002 DU 20 JANVIER 1983
POUR LES DIRECTIVES CONCERNANT LA COORDONATION ET PROVISION DE
L'INFORMATION AU GRAND PUBLIC ET AU MEDIA.



MESSAGE

ADMIN GENOT #19

DIRECTOR GENERAL - FIELD SERVICES
DIRECTEUR GÉNÉRAL - SERVICES EXTÉRIEURS
PAED, WAED, CAED, OAED,
DAED, WAED, CMCD

FOR POSTING AT LOCATIONS HAVING EG'S ON STAFF
A AFFICHER A CHAQUE BUREAU AYEC UN PERSONNEL DE EG

A REQUIREMENT EXISTS FOR PRESENTATION TECHNICIANS IN THE
WESTERN REGION.OPENINGS EXIST AT A NUMBER OF LOCATIONS.
TECHNICIANS TRAINED TO THE PRESENTATION LEVEL WHO
CURRENTLY DO NOT OCCUPY PRESENTATION TECHNICIAN
POSITIONS ARE INVITED TO CONTACT BARRY ARMSTRONG AT AES
DOWNSVIEW BY PHONE AT (416) 667-4516 FOR FURTHER
INFORMATION.

ON REQUIERT LES SERVICES DE TECHNICIENS PRESENTATEUR
DANS LA REGION DE L'OUEST. IL Y A DES OUVERTURES DANS
PLUSIEURS ENDROITS. LES TECHNICIENS AYANT UNE FORMATION
EN PRESENTATION ET QUI N'OCCUPE PAS EN CE MOMENT UN POSTE
DE TECHNICIEN PRESENTATEUR SONT INVITES A COMMUNIQUER
AVEC BARRY ARMSTRONG, SEA, DOWNSVIEW, EN APPELANT LE
NUMERO (416) 667-4516 POUR DE PLUS AMPLES RENSEIGNEMENTS.

BRUCE ADMA TORONTO

K.B. ARMSTRONG AFDH 4516

Two examples of GENOTS typed on standard Government of Canada message forms: the one above covers the unusual situation of a possible re-entry of part of the Soviet satellite Cosmos 1402 over Canadian territory. (It actually splashed down in the Indian Ocean). The one on the right is more conventional, telling AFDG and other regions of a requirement for presentation technicians in Western region.

DM visits AES Downsview

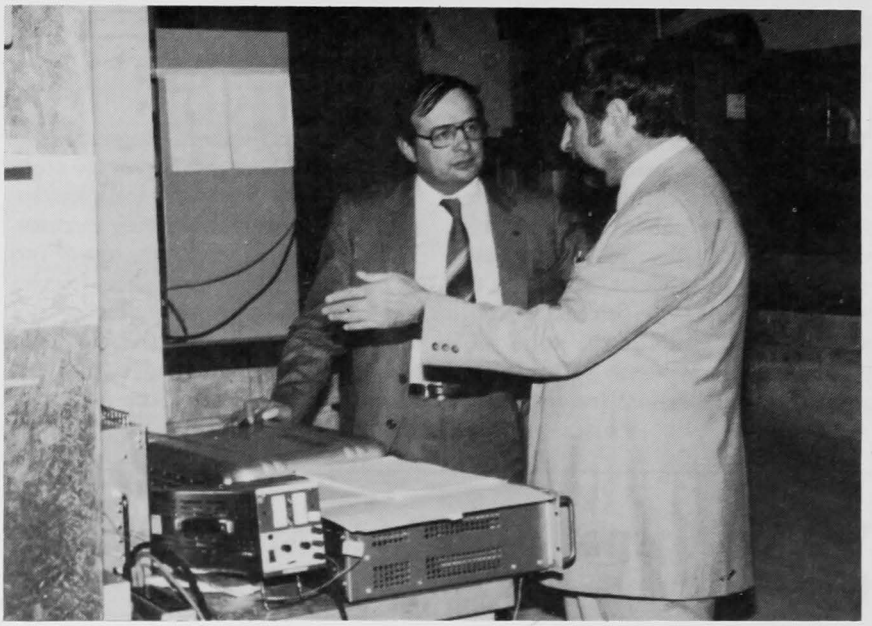
Jacques Gérin, whose appointment as deputy minister, Environment Canada, was announced late last year, paid his first official visit to the AES Downsview building on March 25.

Mr. Gérin's program included attendance at a regular AES Management Committee (AMC) meeting, an address to many AES employees in the auditorium and a tour of the building.

In his talk, Mr. Gérin expanded on certain themes first covered in his February cross-Canada video message to all DOE employees. In particular he mentioned the department's role as a "down-to-earth service-oriented organization" and emphasized that AES was leading the way to the service of the future through the acquisition of such hi-tech equipment as the Cray vector computer and new weather radar facili-

ties. He also praised AES work in such service areas as acid rain and toxic chemicals.

Highlight's of the DM's tour of the building included a visit to the MAPS II automatic weather station test facility (Central Services Directorate); attendance at a Canadian Climate Centre presentation by George Boer on the El Niño effect as well as a visit to the CCC's climate monitoring section; and finally, an inspection of the building's unique day care centre.



Deputy minister Jacques Gérin listens as Jerry Musil, project manager, explains the MAPS II auto station test facility in the AES Downsview building.

Climatologists plan "liveable winters"

Urban design, with climate in mind, could best describe the aims of the "Liveable Winter City Association", a group of urban planners, designers, climatologists, environmentalists and other interested parties.

The association was formed to do something that has never been done before: match building and community designs in Canada with the prevalent climate of the area. According to Jack Royle, a retired technical journalist and initiator of the group. "We have to stop designing Canadian projects as if they were located in the southern United States." Winnipeg, for example, with its broad avenues, has a design more compatible with Arizona than Manitoba. The Sparks Street Mall, in Ottawa, was designed after a mall in Toledo, Ohio. Ottawa weather makes it impossible for the mall to operate effectively for more than two months a year. The association hopes to increase the effectiveness of urban design projects and prevent costly climate oversights.

The association was officially formed this January and Joan Masterton, of AES Climate Application and Impact Division is Secretary/Treasurer. Ms Masterton says that the Canadian Climate Centre wants to encourage architects and urban planners to incorporate climatic data and principles into building structure, design and location, and the layout of the city as a whole. In return, AES hopes to gain a greater awareness of the type and format of climatological data best suited to this important group of users.

A "Liveable Winter City" conference for Edmonton, hosted by the Association is currently being planned and will bring together other climate and urban design organizations from the U.S.A. and Canada.

New "balloon blowers" for aerological stations

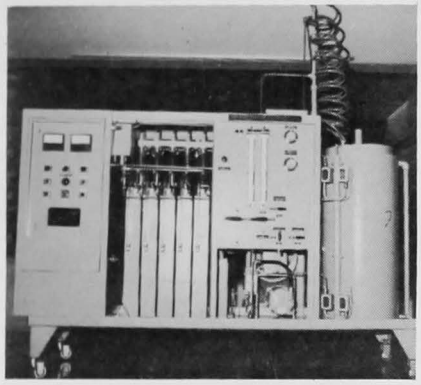
For most upper air technicians, the nightmarish task of repairing hydrogen generators will soon be made easier. A new generation of five cell generators will be installed at 28 upper air stations and the meteorological training centre in Cornwall over the next two to three years. The high Arctic stations will continue to use their recently-purchased 7-cell generators.

The new 5-cell generators have been redesigned to permit ease of maintenance by simplifying their mechanical and electrical networks. Now, instead of having to take apart the generator to replace a part, a task requiring up to a day to accomplish, upper air technicians can quickly remove the offending part. The inaccessable steel pipes in the old system have been replaced by stainless steel tubing with "Swagelok" fittings. These fittings allow each section of tubing to be rapidly unscrewed from its components and replaced. Electrical circuitry in the generator has been redesigned; and includes a new electronic current control module, plug-in relays and clear, color-coded, easily identifiable electric wires.

The generator is a significant improvement over those used by upper air stations during the Second World War. Then, technicians would fill a bomb-shaped cylinder with water, place chemicals in its cap, screw on the cap, tilt the whole assembly to an upright position and wait for an explosion of chemicals and water to produce hydrogen at great pressure.

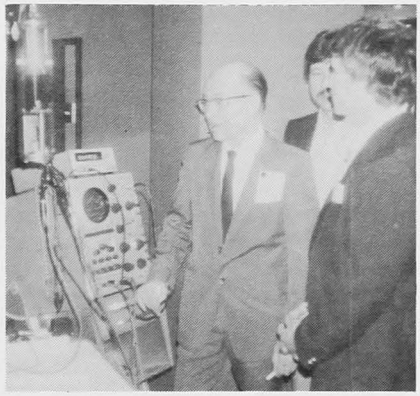
Today, technicians flick a switch

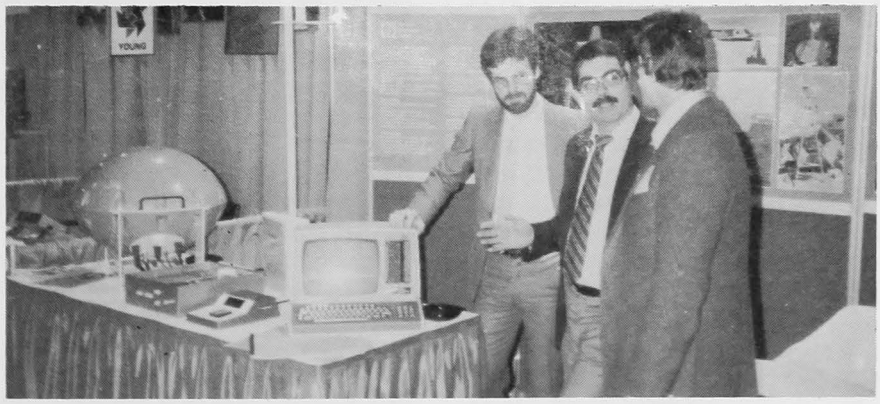
which sends a direct current into the electrolytic cells filled with water. This electrolysis of water produces hydrogen and oxygen. The oxygen is vented away from the generator while the hydrogen is stored in a gasholder. The hydrogen then travels through a compressor into a storage tank where it is held until it is time to fill up the next weather balloon.



The new hydrogen generator that will be installed at the Fort Nelson Upper Air Station, B.C. this June is seen in the AES Downsview building lobby.

Two hundred scientists and meteorologists from many different countries attended the American Meteorological Society's Symposium on Meteorological Observations and Instrumentation in Toronto April 11-15. Some 125 papers were presented, covering several major areas including observations from satellites, new techniques for remote sensing the atmosphere, technologies for mapping severe weather, operation of new meteorological radars from aircraft and application of ultra-light aircraft to meteorological observation. In addition Loew's Westbury Hotel was the scene of a large exhibit area. The photos show exhibits of major interest to AES: ***above*** *Bernie Wiebe (left) of Bristol Aerospace Limited shows AES exhibit coordinators Matt Stauder (centre) and Bill Crowley the equipment forming part of the new READAC automatic weather station;* ***below*** *Ron Cunningham (left) and David Rankin of Hermes Electronics Limited show Matt Stauder the new shipboard automatic weather platform.* ***(Right)*** *Bill Clink, chief of the Technology Support Division and chairman of the AES Host Organization, demonstrates his own "Humdinger" barometer to Earl Robinson, head of the Information Technology Section (centre) and Dave McKay, senior instrument meteorologist AES.*





AES recycles quality paper

Results of the 1982 Waste Recovery Program for 16 Federal government buildings in southern Ontario, announced recently by the Environment Protection Service, show that the AES Downsview building generated the highest revenue from recycled paper of any building on the list — around $2,800 out of a total take of approximately $10,000.

The large Environment Canada building recycled a total of 43 tonnes of paper between January 1 and December 31, 1982 placing it fourth among the 16.

According to Linda Stirling, manager, Computing Operations System, the high revenues raised may be due to the fact that large quantities of high quality computer print-out paper are used in the AES building. For example, her section alone, is responsible for the complex AS 6 in-house computer, requires the use of over four million sheets of 30M print-out paper per year. Although her section is not responsible for the recycling of sheets that leave her office and end up in other AES branches, she says she believes the vast majority of this high grade 30M paper is rapidly returned for recycling.

According to Stephen Radcliffe of EPS, the 4905 Dufferin Street building recycled the equivalent of 803 trees in 1982 or enough oil to heat 6.3 Canadian homes for a year. In addition to 5.94 tonnes of computer print-out paper, the AES building recovered 3.37 tonnes of manilla tabs, 1.49 tonnes of colored tabs, 6.10 tonnes of white ledger, 13.06 tonnes of colored ledger, 12.75 tonnes of low grade mix and 0.46 tonnes of corrugated cardboard.

Overall, Canadians spent $967,000 in 1982 to import 6,062 tonnes of waste paper.

March 23 was AES's "Big Thank You Day"

Officially it was called World Weather Observer Day, but hundreds of AES staff will simply remember March 23, 1983 as the day of the Big Thank You.

It was a once-in-a-lifetime opportunity for employees to express appreciation to more than 2,000 volunteer weather observers in all parts of Canada. In every occupation and age group, they observe and record the weather day after day in backyard or workplace observation stations sending information on temperature, precipitation and other parameters once a month to AES. All this forms an invaluable data base for answering climate questions in key economic, social and scientific areas.

Events were held all over Canada, but the tone of the day was set at AES Downsview headquarters. Personnel jammed the auditorium to watch ADMA Jim Bruce and recently retired Canadian Climate Centre director general Morley Thomas honor two specially-invited veteran volunteers. They were 91-year-old Vernon Tuck of Grimsby, Ont., Canada's oldest weather observer who has maintained a volunteer station at his home since 1944 and who retired as an optometrist only three years ago and Robert McPherson, a farmer from Waseca, Sask., who took over his father's observation station in 1951.

Both guests received the newly-created Morley K. Thomas award for 30 years outstanding individual service. In addition, Mr. McPherson who was accompanied by his wife, received a 75-year longevity award for the station, established in 1908.

In his speech Mr. Bruce said that Canada's weather people, meteorologists and climatologists, could not do their jobs without the unseen and often unheralded work of volunteer weather observers across the country and around the globe. ADMA also reiterated a point made by Environment Minister John Roberts in a letter sent to all volunteer observers: he was proud that the number of volunteers associated with the weather service exceeds that of paid employees.

One of the highlights of volunteer climate observer day was the honoring at AES Downsview of two specially selected veteran observers: Robert McPherson (centre left) of Waseca, Sask. and Vernon Tuck of Grimsby, Ont., Canada's oldest observer. They are flanked by Morley Thomas (left) and George McPherson, director, AES Ontario Region.

The Downsview ceremonies also stressed the international aspect of the day: that Canada is one of the 157 member countries of the World Meteorological Organization and that each year this UN agency sets aside March 23 to highlight some aspect of meteorology or climatology. This year the theme was the vital world-wide contribution of the weather observer.

Thank You Day was also a major event in the AES regions. More than 20 Morley K. Thomas awards were distributed either on the day itself or during that week. At the same time AES officials handed out dozens of Certificates of Achievement or Awards of Merit to volunteers with 5-20 years meritorious service.

In the Pacific Region surface station supervisors Dave Phillips and John Luckett embarked on an adventurous two day journey to isolated Cortes Island off the north east coast of Vancouver Island to present an MKT Award to veteran observer Mrs. Gilean Douglas. The journey involved three ferry changes and a rugged hike through steep, forested terrain to reach Mrs. Douglas's home. Along with the award, the AES pair brought some hard-to-obtain fresh fruit; in return Mrs. Douglas who is also a writer, donated one of her books. The Region distributed 12 other awards to volunteers.

In Western Region the main interest of the day centred around presentation of both an MKT and a "longevity" award to Thomas Waite of Ranfurly, Alta. (about 120 km east of Edmonton). The weather station was established by Mr. Waite's grandfather in 1905 and has been on the same farm and run by the same family ever since.

Central Region's main Observer Day award centred round an institution rather than an individual. Agriculture Canada's Regina station received its 50-year longevity citation. The occasion ties in with another event due to be celebrated this December — the centennial of weather recording at what is now

the Regina airport weather office.

Just prior to Observer Day, Steve Hardaker of Ontario Region spent a week travelling more than 1500 km handing out Achievement or Merit awards to some dozen volunteer observers. On the day itself Steve played a busy part in the Downsview ceremonies acting as guide and companion to 91-year-old Mr. Tuck.

In the Atlantic Region AES regional director Des O'Neill attended an award ceremony for Mrs. Warren Gray of Kemptville, N.S. who has been a volunteer observer for 31 years. Her husband, an avid outdoorsman, who helps her with her weather recording work, was also on hand. Meanwhile in Aroostock, N.B. Mrs. Georgia Curry was honored at a ceremony attended by Fredericton weather office OIC Lloyd Veinot. It marked her 37 years service as an AES volunteer and for widowed Mrs. Curry it was a big family occasion.

Despite different levels of involvement by Downsview headquarters and the various AES regions, all Observer Day events had one thing in common: good media coverage.

The Downsview ceremonies received exposure on CBC national radio, on Toronto television and on CKO Information Radio. The Toronto Globe and Mail did a front page interview with Mr. Tuck. Morley Thomas appeared on CFRB's popular Betty Kennedy Show and on CBC's Radio Noon.

In the Pacific Region Kelowna weather station OIC Ralph Janes spoke about Weather Observers Day on CBC and the broadcast was carried on 93 outlets. In addition, Vancouver weatherman Phil Reimer mentioned the Big Day during his regular morning weather presentation. There was also media coverage of several AES award ceremonies at the local level.

Both Western and Central Regions saw considerable media coverage of their main award ceremonies. Even veteran Thomas Waite who is said to be reticent about his observation work, was interviewed on Edmonton's CFRN Radio during the presentation on his farm.

The media in Ontario Region went wild over the Big Day. Regional Offices received dozens of calls from daily and weekly newspapers, local and big city radio stations, requesting interviews with the local volunteer observer. Even though AES usually discourages such direct media exposure, officials waived the rules just this once to honor a unique occasion.

In Atlantic Region most media coverage centred around the two veteran MKT winners. Mrs. Curry's presentation was covered by Fredericton television and the weather office managed to obtain a videotape of the proceedings not only for their records . . . but also as a valuable souvenir.

A major regional celebration took place at Aroostock, N.B. where Mrs. Georgia Curry, a volunteer observer with 37 years experience receives her Morley K. Thomas award from Lloyd Veinot, OIC Fredericton Weather Office. Looking on is Bob Reid, CBC TV weatherman.

El Niño ocean current caused mild winter

by Amir Shabbar

In the last issue a news item appeared titled "1982-83, year without a winter?" It cited many examples showing that last year most Canadians escaped the sting of winter. Seeking possible causes for the mild December through February period, the article mentioned "El Niño". The current feature analyzes this major weather phenomenon in much greater detail.

Canada's generally balmy weather last winter was only part of the unusual weather pattern that affected other parts of the world.

In the United States, torrential rain and strong winds pounded California, while most of the country enjoyed an abnormally mild winter. Staggering record rainfalls caused floods and landslides that claimed hundreds of lives and destroyed millions of dollars of property in Ecuador and Peru. The eastern half of Australia experienced one of its worst droughts in 200 years. Severe drought struck parts of Africa, and winter was unusually cold in India.

Other curious events accompanied these weather extremes. Millions of sea birds have fled their traditional nesting grounds on Christmas Island and many other islands in the mid-Pacific. Warm water mammals have shown up as far north as northern California.

Climatologists with Environment Canada and elsewhere believe that there is a common denominator explaining these confusing weather events. It is a phenomenon known as El Niño: A weak warm coastal current that develops off Peru and Ecuador around Christmas every year and that creates a vast body of warm water in the Equatorial Pacific

Ocean. Peruvian fishermen gave it the name of "Corriente del Niño", in English, "Current of the (Christ) Child".

During most of the year, the combined action of southeasterly trade winds and the Earth's rotation maintains the cold South Equatorial Current off western South America (see map). This cold current allows nutrient-rich water to upwell off Peru and Ecuador, thus providing one of the world's most productive fisheries. Every year, during the Christmas season the warm El Niño Current moves southward off Ecuador, literally blocking the nutrients from surfacing. A decrease in the quantity of phytoplankton available to the marine food chain causes a reduction in population of zooplankton, fish, sea birds and marine animals, but the effect is short-lived.

Occasionally however, the El Niño current is very intense and prolonged. Sea-surface temperatures rise 2-3°C above normal in the equatorial eastern Pacific and may remain high for as long as 18 months. Fishery yields are significantly diminished, and unusually heavy rainfall in Ecuador and Peru results in flooding. In recent times, the term "El Niño" has come to be identified with the more extreme warming of the surface waters that occurs at intervals of 2 to 7 years. Since World War II, nine such El Niño events have occured, the more notable in 1957, 1965 and 1972-73.

1982-83 El Niño strongest on record

It is clear that the 1982-83 event will be the strongest on record and in many ways one of the most unusual. The 40-70 metre deep warm pool of surface water expanded from a few million square kilometres last October to nearly 30 million square kilometres by mid-March — an area about three times the size of Canada! Surface water temperatures were near 28°C with spot values up to 32°C: a startling 5°C above normal.

The 1982-83 El Niño caught most scientists off guard. In contrast to earlier El Niños, the 1982-83 event first manifested itself in the mid-Pacific rather than off Ecuador and Peru. Also, the strong easterly trade winds that usually precede El Niño were absent. Last year's El Chichón eruption compounded the problem; the Mexican volcano injected huge clouds of dust and aerosols into the atmosphere. Consequently, satellites over the Pacific were sensing temperatures which were, lower than true values.

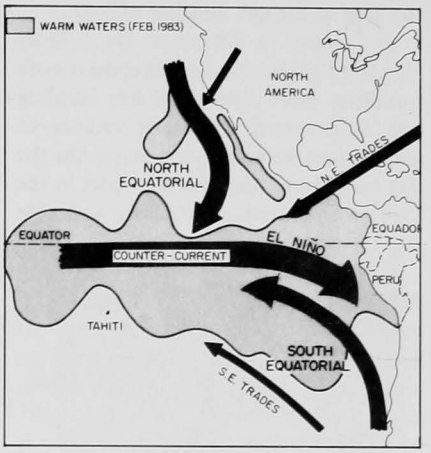
By the end of October, when warm water appeared off western South America, it was clear that an El Niño of major proportions was occurring. And, as predicted, weather patterns were affected. Heavy rains caused flooding in Ecuador and Peru and elevated ocean temperatures resulted in the loss of a whole generation of anchovies off Peru. A high pressure area remained stagnant over the western Pacific and caused the driest season on record in Australia. In contrast, vigorous storms lashed the west coast of North and South America.

Trade Winds may signal onset of El Niño

As weather experts try to unravel the mystery of El Niño, they are discovering that a sequence of ocean-atmosphere related events usually take place before the warm episode in the Equatorial Pacific. One component, dubbed the "Southern Oscillation" (since the air pressures on opposite sides of the Pacific follow a see-saw like curve), has a low value before the onset of El Niño. The 1982 value of this component was the lowest ever recorded.

The most widely accepted theory concerning El Niño was proposed by Klaus Wyrtki of the University of Hawaii. In summary, abnormally strong trade winds in the lowest 2 kilometres of the atmosphere blow for a couple of months raising the sea level in the western Pacific ocean and lowering it in the eastern portions. These winds then weaken considerably. The accumulated water in the west Pacific is then transported to the east via the Equatorial Counter-Currents (much like water in a bathtub). The sea level and water temperature both increase along the South American Coast, burying the cool waters off Peru, and El Niño is born.

The burgeoning question remains: How does an oceanic process in Equatorial Pacific Ocean affect the winter in Canada? Climatologists at Environment Canada have been monitoring El Niño carefully. Computer models at Environment Canada's Canadian Climate Centre in Toronto revealed that the sea-surface temperature anomalies in the central equatorial Pacific may have a significant influence on winter climate in



The map illustrates the 1982-83 El Niño configuration.

Canada. The development of a warm episode in the Equatorial Pacific is accompanied by a general warming of the Atmosphere near the equator. Since the equator-to-pole temperature difference is enhanced, the mean westerly air flow accelerates, bringing milder Pacific air over most of North America.

El Niño indeed affected the atmospheric circulation over North America last year. Instead of the usual wintry blast of cold air from the Arctic, air masses originating over the mild waters of the north Pacific dominated weather in southern Canada. Air pressures in the Gulf of Alaska have been exceptionally low; consequently, storms were pushed hundreds of kilometres southwards. California which lay in their tracks, received the brunt of these storms. More than the usual number of storms also swept across the Gulf of Mexico, deluging Florida and Louisiana with heavy rains.

In their search to develop seasonal forecasts, climatologists have recognized that the El Niño phenomenon, which occurs on a sufficiently long time-scale and follows *some* rhythmic pattern, may be used as a predictive tool. Unfortunately, El Niño does not come with an iron-clad guarantee of a mild winter. In the past, some El Niños accompanied very cold Canadian winters. When will the next strong El Niño develop and which of its many faces will it show in Canada? As yet, no one can answer these questions with certainty.

Mr. Shabbar is with the Monitoring and Prediction Division, Canadian Climate Centre, Downsview.

The Arctic Basin Buoy Program

by Bill Hume

The rear loading door of the Hercules is now fully open and the view out the back is impressive. You gingerly approach the end of the ramp to get a better look at the multiyear ice and open leads racing by 300 metres below. Your tether has been checked and double checked but still a chill runs down your back as you realize you are 1000 kilometres west of Eureka over the Arctic pack, just 700 km from the pole.

The aircraft roars along, exhaust trailing out behind in a lazy swirl, as the drop site is approached. On your headphones you hear the navigator begin his ten second countdown and the loadmasters move the small buoy to the edge of the ramp.

"Two, one, drop" and the buoy goes over the edge — the chute blossoms and it drifts down the surface. You hear a calm "let's take a look" over the phones and suddenly the aircraft goes into a tight bank and you are standing parallel with the horizon. Yes, it looks like the buoy landed safely on a large ice floe and another data buoy has been successfully deployed. On we go to the next deployment site.

Starting in 1982, the AES began active cooperation with the National Oceanic and Atmospheric Administration (NOAA) on the Arctic Basin Buoy Program. It originated as part of the U.S. contribution to the First (GARP) Global Experiment. The object was to study the large scale motion of the Polar ice pack and deduce how this motion related to atmospheric circulation patterns,

The Hercules aircraft used to deploy data buoys in the Arctic Basin Buoy Program makes a refuelling stop in the northern Arctic.

The Data buoys

Aircraft deployable data collection platforms (DCPs) were developed by the Polar Science Centre at the university of Washington in Seattle. By 1979, a network of buoys was being maintained on the permanent ice pack in the Arctic Ocean. The instrumentation package consists of an aneroid barometer, temperature sensor, timing logic and a small radio transmitter all powered by a lithium battery pack. The meteorological data is transmitted every 55 seconds for a two hour period. The transmitter then shuts off for two hours thereby extending the life of the buoy to about 18 months. The instruments are housed in a spherical fibreglass shell to which a small parachute and shock absorption pad are attached.

Data transmissions from the buoys are received by the polar orbitting NOAA weather satellites and retransmitted to ground stations along with conventional satellite imagery.

DCP processing

To ensure timely receipt of DCP data, AES installed minicomputer systems at ground receiving stations in Edmonton and Toronto. The Edmonton system became operational in 1980 as part of the Pacific Area Data System and has been decoding and inputting data to the AES communication system since 1981. The system not only decodes the sensor data but also calculates platform location by means of a technique based on the slight change in detected transmission frequency, or Doppler shift, as the satellite approaches or moves away from the platform. The accuracy of the calculation is 10 to 20 kilometres which is adequate for buoys that are several hundred kilometres offshore. More exacting location calculations are desirable however for measuring ocean current, tracking ice motion or for detailing the wanderings of polar bears.

Data applications

Regular receipt of data from the Arctic Basin buoys has proven invaluable to the meteorologists in Edmonton's Arctic Weather Centre, the industry funded Beaufort Weather and Ice Office in Tuktoyaktuk and to the U.S. National Weather Service Office in Fairbanks, Alaska. All now receive data within one half hour of transmission from the surface of the Arctic Ocean. The data fills what until recently was a significant gap in the northern hemisphere meteorological data network. The Canadian Meteorological Centre also uses the data in its analysis program, augmenting other remote sensed data over the Arctic Ocean.

Begun as a research project, the program interested Canada enough to persuade it to co-fund some of its operational applications with NOAA.

At an international meeting held last year in Seattle (Wash.), all parties pledged to maintain the network for two more years. For example, Norway deployed several buoys north east of Greenland, the U.S. Navy two near the pole; Shell

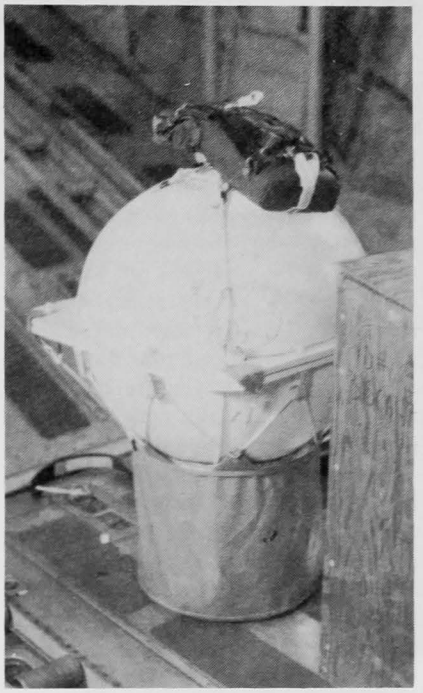
Oil two off Prudhoe Bay and Dome Petroleum three in the southern Beaufort Sea. A memorandum of understanding was signed between NOAA and AES committing Canada to a transfer of funds to the U.S. for purchase of buoys in 1982-83. Canada would ensure deployment of buoys in the Arctic Ocean. Assistance of the Department of National Defence has also been received and to date 13 buoys have been deployed in four missions flown by 435 Transport Squadron based at Canadian Forces Base, Edmonton.

The future

It is planned to deploy 10 additional buoys during 1983 in two exercises. Because the buoys are parachuted onto constantly moving ice, the network needs relatively frequent reseeding. In addition, some of the buoys fail to operate for various reasons (landing in water, electronic failure) or die a natural death when the batteries wear down.

AES will seek funding to continue the program for several years beyond the original term of the research program. The technology is proven and even with the expense of purchase and deploy, the buoys are a cost effective addition to the northern data collection network.

Mr. Hume is Officer-in-Charge, AES Satellite and Beaufort Office.



A fully rigged buoy awaits deployment over the Arctic ice pack. The instrumentation package includes an aneroid barometer, temperature sensor, timing logic and a small lithium battery powered radio transmitter.

The Categorical Imperative

by Spencer Silver

Have you ever wanted to apply for a job you *really* wanted, but it was bilingual *imperative,* and you are unilingual? What can you do? (Bilingual imperative means that to succeed in getting the job, you must be bilingual to begin with i.e. The government will not pay for second-language instruction).

This was the situation that faced me in the spring of 1980. The Base Meteorological Instructors Job at Moose Jaw was soon to be empty, and a bilingual replacement was urgently needed! I wanted the job and I had five months to learn to be bilingual! What to do?

Luckily I had a good 9 to 5 type teaching job at Transport Canada Training Institute in Cornwall Ont., and had all my evenings free. To think and worry in. Also, the staff at Cornwall was, at the time, in large part bilingual, and was more than pleased to speak to me in French whenever I requested it. Finally, a language instructor and a former student had left me some good notes from their classes. But how to begin? How to start penetrating the jungle of masculine and feminine nouns, the miasma of conjugal verbs, the tenseness of being subjunctive? How can I start to relate to word endings that changed at the drop of a gender? How can I relax and enjoy the humor of Bobino, and "Les Nouvelles Nationales?"

Perhaps a supreme being was looking out for me the day I saw some "Teach Yourself" — type French records in a local library! I began by listening to the records several hours each night, over and over, and over, beginning with Lesson No. 1 "Bow-Wow! Qu'est ce que c'est? C'est un chien!" And ending several months later listening to "Molière" on the same set of records! Quel progrès! One night I *forced* myself to watch T.V., and after several weeks noticed that if I relaxed, and kept my motivation, was able to understand the *gist* of what they were saying! and finally, I took a risk and employed a French Tutor 4 hours per week — this was again a stroke of luck as this Tutor enjoyed, like myself playing with words, puns, and funny stories! (but this time in French).

The day came when, after my second try at the L.K.E. exams, a pretty voice came on the phone from Ottawa to congratulate me on succeeding at the exam! Sacré bleu!

Yes, it was hard work! Yes, it cost some money! But I wanted that job. Anybody else can do this, if they are motivated enough. There are several sets of language instruction type records in libraries or record stores: Berlitz, Coles, to name a few. It is easier than you think to hire a French Tutor, and there is always French language radio and T.V. to listen to.

If you choose the route I took, remember that you *can* do it!

Mr. Silver is now Base Meteorological Instructor, Canadian Forces Base, Portage la Prairie, Man.

STAFF CHANGES

IMPORTANT

Please note that Zephyr has printed the information that appears in these columns exactly as received.

When submitting material for these columns, please use the appropriate forms (available from ID-Downsview) and follow the instructions given on those forms. For instance when mentioning position titles and location use designators rather than names, e.g. WAED rather than Western Region. Be sure to check everything carefully.

Promotion & Appointments

N. Abramsen (CS-4) Sr. Planner, ACPB, Downsview, Ont.
B. Barrette (EG-6) Bilingual Tech. Writer, ACSN, Downsview, Ont.
P.A. Berthelot (EG-3) U/A Tech. WS1, Alert, N.W.T.
J. Bobby (EG-4) Officer-in-Charge, WS3, Gimli, Man.
J. Brkic (EG-3) Pres. Tech. WS1, Moosenee, Ont.
B. Campeau (GSSTS-4) Warehouse Storeman, AAM, Downsview, Ont.
J. Carriere (CS-1) Sr. Computer Consultant, ACPT, Downsview, Ont.
T.H. Cutler (CS-2) Computer Systems Analyst, CCAS/D, Downsview, Ont.
S.D. D'Amour (EG-3) U/A Tech. WS1, Eureka, N.W.T.
N.M. Davis (DA-PRO3) Data Processor, CCAA/D, Downsview, Ont.
G.A. DeVeau (EG-3) U/A Tech. WS2, Mould Bay, N.W.T.
M.J. Doucette (EG-3) U/A Tech. WO3, Resolute, N.W.T.
J. Edwards (EG-5) Pres. Tech. WO4, Calgary, Alta.
L.J. Enns (EG-6) Pres. Tech. WO3, Saskatoon, Sask.
P. Ford (MT-3) Meteorologist, WO1, PRWC, Winnipeg, Man.
J.F. Fortin (CS-1) Computer Systems, CCRN, Downsview, Ont.
F. Harrison (EG-2) Met. Tech. WS3, Cape Parry, N.W.T.
A.D. Hilton (EG-3) U/A Tech. WS1, Eureka, N.W.T.
B.A. Jensen (EG-7) Officer-in-Charge, WO4, Kamloops, B.C.
B. Kessler (EG-5) Met. Tech. WO4, Calgary, Alta.
C.E. Klaponski (MT-7) Meteorologist, WO1, PRWC, Winnipeg, Man.
S.L. Klaudt (EL-5) Electronics Tech. PAEOE, Vancouver, B.C.
D. Lane (RES-1) Research Scientist, ARQA, Downsview, Ont.
M. Law (EG-1) Met. Tech. WO3, Victoria, B.C.
G. Ledrew (EG-2) Met. Tech. WS3, Fort Reliance, N.W.T.
A. MacLeod (CM-6) Communicator, PWC, Vancouver, B.C.
M. MacNaughton (CM-6) Communicator, WAED, Edmonton, Alta.
M. McGregor (EG-6) Officer-in-Charge, WO4, Inuvik, N.W.T.
R.J. McLeod (EG-8) Head, Weather Service Stnds. AFWC, Downsview, Ont.
R. McRae (EG-5) Pres. Tech, WO4, Edmonton Int'l. Airport, Alta.
J.R. Mills (SM) Chief, APEC, Downsview, Ont.
I. Morrison (EG-1) Met. Tech. WS3, Lytton, B.C.
L. Nicholson (CR-3) Clerk, PAED, Vancouver, B.C.
G. O'Hara (CS-1) Systems Programmer, ACPS, Downsview, Ont.
D. Oliver (GL-VHE-9) Station Mech., Sachs Harbour, N.W.T.
A. Pankratz (EG-5) Pres. Tech. WO4, Calgary, Alta.
P. Pietrobon (CR-3) Clerk, PAED, Vancouver, B.C.
M. Rice (EG-1) Met. Tech. WS3, Cape Parry, N.W.T.
F.L. Risbey (EG-6) Inspector, CAED, Winnipeg, Man.
G. Roberge (MT-2) Meteorologist, WO1, PRWC, Winnipeg, Man.
J.M. Robert (Eng-3) Engineer, CAED, Winnipeg, Man.
J. Rousseau (MT-2) Meteorologist, WO1, PRWC, Winnipeg, Man.
T. Rylett (EG-3) Pres. Tech. WS1, Moosenee, Ont.
F.M. Saccucci (SCY-3) Secretary, AFSD, Downsview, Ont.
R. Sauvageau (MT-6) Meteorologist, CMC, Dorval, P.Q.
P. Schwarzhoff (EG-5) Tech., Edmonton, Alta.
A. Shim (CS-3) Project Leader, ACPP, Downsview, Ont.
R. Sikora (GSSTS-4) Warehouse Storeman, AAM, Downsview, Ont.
T. Smith (EG-5) Pres. Tech. WO4, Sudbury, Ont.
C.V. Stewart (AS-4) Proj. Admin/Communications, ACPB, Downsview, Ont.
S. Stobbe (MT-6) Supervising Meteorologist, PWC, Vancouver, B.C.
A. Street (CR-3) Clerk, PAED, Vancouver, B.C.
F.W. Trow (TI-4) Sr. Quality Inspector, ACSQ, Downsview, Ont.
J. Turner (EG-5) Pres. Tech. WO4, Thunder Bay, Ont.
R.T. Varriano (AS-1) Admin. Officer, APEC, Downsview, Ontario.
C. Webber (EG-5) Pres. Tech. WO4, Sudbury, Ont.
P. Witty (EG-5) Pres. Tech. WO4, Sudbury, Ont.
N. Wozny (EG-6) Pres. Tech. WO4, Ottawa, Ont.

Transfers

K. Almquist (AS-2) Admin. Officer, ARPD, Downsview, Ont.
J. Archibald (MT-2) Meteorologist, Beaufort Office.
J. Barron (EG-2) Met. Tech. WS3, Hope, B.C.
G. Boisvert (CS-2) Program Analyst, CMC, Dorval, P.Q.
M. Boncza (MT-2) Meteorologist, OWC, Toronto, Ontario
A. Bouchard (EG-3) Aero. Tech. WS1, Sable Island, N.S.
B. Brasnett (MT-2) Meteorologist, ARWC, Edmonton, Alta.
J. Broszkowski (MT-2) Meteorologist, Beaufort Office.
R. Campbell (EG-1) Met. Tech. WS3, Revelstoke, B.C.
T. Carrieres (MT-2) Meteorologist, CFWS, Esquimalt, B.C.
J. Charest (MT-2) Meteorologist, ALWC, Edmonton, Alta.
M.D. Conner (CR-3) Clerk, AAFA, Downsview, Ont.
L. Couturier (MT-2) Meteorologist, WO1, Gander, Nfld.
R. Déry (EG-4) Aero. Tech. WS1, Maniwaki, P.Q.
R. Dobinson (EG-4) Met. Tech. WO4, Fort Nelson, B.C.
T.C. Farrell (MT-2) Meteorologist, METOC, Halifax, N.S.
M. Forbes (EG-6) Pres. Tech. WO1, ATWC, Bedford, N.S.
D. Fulcher (EG-2) Met. Tech. Vancouver Harbour, B.C.
S.A. Gauthier (EG-6) Met. Tech, WO4, St. Hubert, P.Q.
W. Getman (AS-3) Admin. Officer, ARMI, Downsview, Ont.
L. Grahn (EG-4) Aero. Tech. Norman Wells, N.W.T.

STAFF CHANGES

L. Haché (MT-2) Meteorologist, METOC, Halifax, N.S.
L.S. Hawley (EG-2) Weather Obser., Winnipeg, Man.
C. Hayes (SCY-2) Secretary, ACTS, Downsview, Ont.
C. Henley (EG-2) Met. Tech. WS3, Slave Lake, Alta.
B. Heslip (EG-4) U/A Tech. WO4, Fort Nelson, B.C.
J. How (EG-2) Met. Tech. Cape St. James, B.C.
S. Johnson (MT-2) Meteorologist, Halifax, N.S.
A. Julien (MT-2) Meteorologist, ALWC, Edmonton, Alta.
P. Koclas (MT-2) Meteorologist, WO1, OWC, Toronto, Ont.
D. Kurowski (EG-2) Met. Tech. WS3, Fort McMurray, Alta.
M. Lessard (EG-4) Aero. Tech. WS1, Maniwaki, P.Q.
M. Loch (EG-2) Met. Tech. WS3, Edson, Alta.
P. MacDonald (EG-4) Officer-in-Charge, WS1, Sachs Harbour, N.W.T.
C. MacPherson (MT-2) Meteorologist, WO1, Gander, Nfld.
M.A. Majcher (EG-2) Weather Obser. WO3, Saskatoon, Sask.
S. Morgan (EG-2) Met. Tech. WS3, Edson, Alta.
G. Munson (EG-2) Met. Tech. WS3, Slave Lake, Alta.
H. Murray (MT-2) Meteorologist, WO1, Gander, Nfld.
J.P. Noel (EG-2) Weather Obser. WS3, Cree Lake, Sask.
I.L. Paré (EG-4) Aero. Tech. Nitchequon, P.Q.
G. Pearson (MT-2) Meteorologist, METOC, Halifax, N.S.
M. Pleau (EG-5) Met. Tech. WO4, Inuvik, N.W.T.
P. Raczynski (EG-4) Aero. Tech. WS1, Sachs Harbour, N.W.T.
P. Richardson (EL-4) Electronics Tech. PAEOE, Vancouver, B.C.
S. Romano (MT-2) Meteorologist, WO1, MWO, Bedford, N.S.
R. Sanheim (EG-2) Met. Tech. WS3, Dease Lake, B.C.
A. Schmiedel (EG-2) Met. Tech. WO4, Vancouver, B.C.
R. Stainer (EG-2) Met. Tech. WS3, Vancouver Int'l., B.C.
P. Staples (EG-4) U/A Tech. WS1, Hall Beach, N.W.T.
J. Stewart (EG-4) U/A Tech. WO4, Port Hardy, B.C.
T. Sutherland (MT-2) Meteorologist, PWC, Vancouver, B.C.
N.B. Trivett (RES-2) Research Scientist, ARQM, Downsview, Ont.
S. Van Balen (EG-2) Met. Tech. WS3, Slave Lake, Alta.
D. Wartman (MT-2) Meteorologist, PWC, Vancouver, B.C.
D.A. Watts (EG-2) Weather Observ. WS3, Island Lake, Man.
H. Wilkinson (EG-2) Met. Tech, WS3, Revelstoke, B.C.
W. Woolverton (MT-3) Meteorologist, Whitehorse, Y.T.
M. Zavada (EG-4) Aero. Tech. WO4, Sept-Iles, P.Q.

Temporary & Acting Positions

D. Bouchard (OCE-2) Word Processor Op. QAEM, St.-Laurent, P.Q.
C.H. Carter (FI-4) Head, Accounting, AAF, Downsview, Ont.
N. Chung (EL-5) El. Tech. WAED, Edmonton, Alta.
Y. Durocher (MT-8) Meteorologist, CCAA, Downsview, Ont.
R. Easto (FI-4) Head, Systems, AAF, Downsview, Ont.
Y. Gagnon (EG-7) Officer-in-Charge, WO4, St. Hubert, P.Q.
B.D. Greer (MT-7) Meteorologist, MOP, OAED, Toronto, Ont.
C. Hayward (CR-3) Clerk, WC1, Edmonton, Alta.
M. Kauer (CR-4) Clerk, AAM, Downsview, Ont.
P. Ladouceur (EG-7) Regional Climate Specialist, QAESC, St.-Laurent, P.Q.
M.A. MacAulay (EG-8) Superintendent Standards & Requirements, MAED, Bedford, N.S.
J. Martire (CR-4) Clerk, OAEWR, Toronto, Ont.
E.S. Millar (FI-4) Head, Program Analysis, Estimates, AAF, Downsview, Ont.
J. Richard (EG-6) Pres. Tech. WO4, Dorval, P.Q.
K. Roth (EL-4) El. Tech. WAED, Edmonton, Alta.
J. Sadubin (CS-3) Project Leader, Mini-Computer, AFSP, Downsview, Ont.
J.E. Shaykeivich (MT-5) Meteorologist, MOP, APPA, Downsview, Ont.
J.A. Sutherland (EG-8) Dartmouth, N.S.
D. Veale (EG-5) Officer-in-Charge, Cape St. James, B.C.

Departures

P. Cadieux, Dorval, P.Q.
R. Caldwell, Sachs Harbour, N.W.T.
P. Dearden, Secretary, PAEO, Vancouver, B.C.
S. Duguay, ACPT, Downsview, Ont. to CEIC-Hull, P.Q.
L. Gable, Secretary, PAED, Vancouver, B.C.
M.G. Grace, Hall Beach, N.W.T.
S. Hamilton, Pincher Creek, Alta.
R.V. Horne, CFWS, Halifax, N.S. to EMR, Ottawa.
T. Park, ACPO, Downsview, Ont.
M. Sheppard, ACIR, Downsview, Ont.
C. Wahl, ALWC, Edmonton, Alta.

Secondment

P. Hunt, WAED, Alta.
C. Kreklywich, WAED, Alta.

Leave of Absence

M. Fedoreak, WS1, Sachs Harbour, N.W.T.
E. Gayle, OAEWR, Toronto, Ontario.
R.A. Howell, CFWO, Winnipeg, Man. to Canadian Forces Europe.
M. Richling, WO4, Thunder Bay, Ont. Development leave.

Retirements

S. Bendyna, ACPC, Downsview, Ont. May 1983.
T. Burling, ARMD, Downsview, Ont. June 1983.
F.L. Cushing, Canadian Forces Weather Service, Esquimalt, B.C. April 1983.
M. Lukaskyk, Alta. Weather Centre, Edmonton, Alta. March, 1983.
A. Swash, ACPC, Downsview, Ont. April 1983.
R.A. Treidl, CCAI, Downsview, Ont. April 1983.

Deaths

S. Byram, WO1, Gander, Nfld.
L. Tilbe, PWC, Vancouver, B.C. April, 1983