APRIL 2012 • NUMBER 123

BRITISH COLUMBIA
OPERATORS
Digest

The Role of a Certifying Agency

There's a whole lot of misinformation out there about certification and training. We get it all the time, and others, including trainers, can confirm it. One did a membership survey last fall that reaffirmed that many out there just don't understand the distinction between training and certifying. One of many things everyone needs to understand is that the certification program is in no way connected to any particular trainer.

Certification of water and wastewater Operators is meant to indicate that an individual has the experience, knowledge, and skills to perform their job correctly and in an efficient manner. It has nothing to do with any particular training course and it certainly is not up to trainers to review certification requirements. The certification program in BC is administered in accordance with guidelines developed over forty years across North America through the Association of Boards of Certification.

Training courses are just one piece of the puzzle necessary to provide the knowledge an Operator needs to pass a certification exam. They must also learn on the job and that is where "experience" comes in. If you ask any Operator who has become certified they will tell you that what they learned in any particular training course is only a part of what they needed to know to pass the certification exam. Many who fail their certification exams will be critical of the exam or the course they took because "there were a bunch of questions on the exam that weren't covered in the course." That is only

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The EOCP Annual General Meeting will be held in September this year on Vancouver Island. Stay tuned on our website for all the details.

PLANT PROFILE | Dawson Creek Water Treatment Plant – page 4

Dawson Creek's UV Disinfection System

Environmental Operators Certification Program

The BC Operators Digest is the official newsletter of the Environmental Operators Certification Program. Submissions for publication in the Digest are welcome. Please email the editor Brian Thorburn at bthorburn@epcor.ca. Changes of address, annual dues, certification education unit requirements, exam applications, as well as general inquiries about the program should be addressed to:

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The Environmental Operators Certification Program is a charter member of the Association of Boards of Certification and is a registered society with more than 3,700 active members.

2012 Board of Directors

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Burnaby, BC V5C 6N5

2012 EOCP Elections

This year's nominating committee members are Brian Thorburn, Mike Gosselin, and Brian Hale. There are five positions available on the Board to be filled by three Operators, one employer, and one educational representative. Each position is for a two year term. The following candidates have been nominated so far:

OPERATORS:	Pat Miller Darryl Bjorgaard Chris Brown
EDUCATION REPRESENTATIVE:	Steve Benoit
EMPLOYER REPRESENTATIVE:	Bob Smith

Further nominations are encouraged prior to the closing date. Stay tuned on the EOCP website for further announcements.

Office Bio

Kim Eames, our Office Manager, has been with the EOCP since early 2003 except for a year she spent getting up to speed with even more work, motherhood! In addition to supervising everyone in the office she manages to review about 1,200 applications for certification each year. She also answers at least as many questions from Operators, employers, regulators, prospective Operators, and the general public. She organizes all our meetings and elections and does it all with a smile that makes us all glad we came to work today.

EDITORIAL

The Training Registry

The EOCP Training Registry has been in full swing now for almost two years. There continue to be numerous questions on how it works and how it can help Operators gain credit for the training they need.

In addition to all the other traditional training courses there are becoming more and more opportunities, particularly on a local scale. As an Operator who has taken part in the Training Registry, let me try to explain the process.

Let's look at an Operator or possibly a supplier's rep that provides training for junior Operators on servicing and repairing fire hydrants or doing testing in a wastewater treatment plant. If they have been working actively in the field for at least three years and wish to become a Recognized Instructor they can do so easily using the EOCP's online forms. The only additional step is to have two other individuals confirm that they have three or more years of experience in the activities they wish to give training.

Once they are a Recognized Instructor they can either develop their own training program or get permission from another course developer to use one that has already been created by someone else. If they chose to develop the course themselves the Training Registry provides a step by step example, on-line, to outline what should be included in the course. If they chose to use a course developed by someone else and they get permission they will be added as an Instructor for that course.

If the Operator typically spends a day teaching staff the various aspects of the job, they just need to list the Topics and Learning Objectives they intend to cover, the approximate time they intend to spend on each topic, and submit it on-line to the Training Registry.

All course outlines and agendas are vetted by the Training Registry's group of Subject Matter Experts to ensure that the content and delivery is worthwhile and not just some Operators sitting around eating doughnuts and talking shop.

If the outline is accepted, the course will be assigned a number and listed as an approved course (with the number of CEU's) in the Training Registry. Now, anyone taking the hydrant maintenance course or the lab procedures course is able to get CEU's for taking the training and the Operator who developed the course outline is able to get double CEU's for the first time that they instruct the course.

Each time the course is given the students must fill out a course review sheet to confirm they took the course and to let the EOCP know that the course is satisfactory.

It is a fairly simple process that involves a little bit of paper work and some fees but it enables Operators to get valuable CEU's when there are not any available courses in a certain location. It also allows experienced Operators to provide training and to get CEU's. Any course in an area that you have expertise in can be deemed a worthwhile course by following the Training Registry online tools.

PLANT PROFILE:

Dawson Creek Water Treatment Plant

The City of Dawson Creek's water source comes from the Kiskatinaw River which is located in the Kiskatinaw watershed, consisting of over 2800km^2 of land. The headwaters are located at Bearhole Lake ending with the Kiskatinaw River which winds itself to the location where the raw water is pumped from. This location is approximately 20km west of Dawson Creek. Over the years the watershed has seen increased pressures from logging, ranching and oil and gas activity but with active support, networking with many agencies, and with watershed stewardship; the city is working to ensure that the Kiskatinaw River will remain a viable resource for our community for many years to come.

Hansen Reservoir
(100 Million US Gal.)

Hart Reservoir
(6 Million US Gal.)

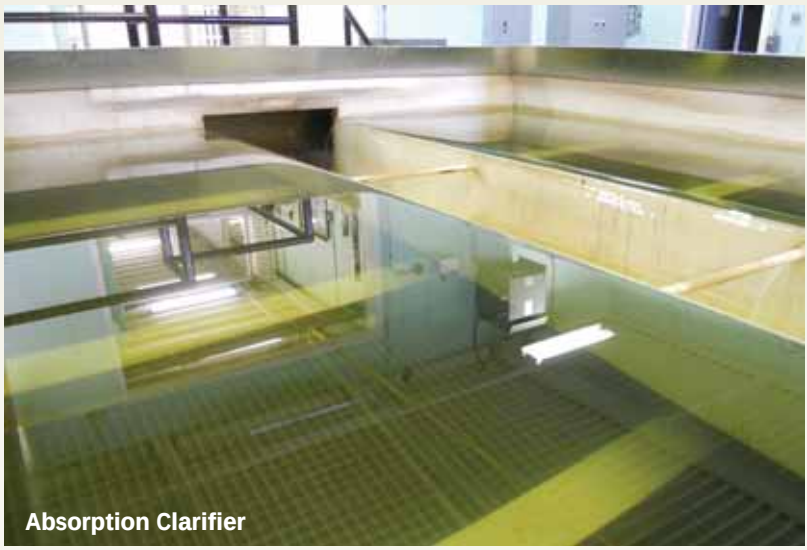
The raw water is pumped into one of five raw water reservoirs to allow for particle separation. With a total capacity of 186,000,000 US Gallons, water is able to settle to a lower turbidity prior to it entering the water treatment plant. Turbidity from the river can range from 10 NTU to 150 NTU within a few hours and remain high for a period of time but we have the option of shutting our pumps due to our significant storage.

Trail Reservoir
(80 Million US Gal.)

Main Clarifier

CLARIFIERS

Raw water enters the EOCP Level IV Water Treatment by gravity feed from Trail Reservoir. The water chemistry entering the WTP has high color, NTU, hardness, and taste and odors depending on the time of year. The flow is then split into 2 trains – one for the main clarifier and one for the adsorption clarifier. The main clarifier consists of tube settlers which is only used approximately 20% of the time as most of our water is run through the adsorption clarifier. After the water has been processed through the clarifiers, the water is mixed and distributed equally over the filters.



Absorption Clarifier

In 1991, the WTP was upgraded with the addition of the adsorption clarifier. The adsorption clarifier was implemented because of its unique function. The clarifier involves no settling steps. The adsorption clarifier uses the principle of the adsorption of solids onto a solid surface. This process does not depend on the formation of a large floc and can use less than 10-50% of the raw water chemicals that are required in other treatment plants. The addition of raw water chemical is controlled via aquaritrol which feeds the minimum level of coagulant to achieve optimum coagulation. The adsorption clarifier is a very simple piece of the process in terms of operations that incorporates mixing, flocculation, and the ability of solids removal in one process. You can note that conventional water treatment requires three stages for this process to take place, but with the adsorption clarifier it is an all in one process. Flocculation takes place in the adsorption

the City of Dawson Creek
BRITISH COLUMBIA
"the Capital of the Peace"


Filter Banks 5 and 6

clarifier as the coagulated water passes through the media and interfaces with the vast number of previously attached solids over a high surface area. Both flocculation and solids removal efficiency is enhanced when solids attach to the media particles. The solids removal is accomplished by attachment to the 1.2 m deep solid adsorption media, (polyethylene beads) and also to the previously removed solids. The media consists of large grains and it has the capacity to store great quantity of solids with little head loss. After a specific amount of flow has passed through the adsorption clarifier a backwash is automatically initiated. The backwash process which somewhat resembles the backwash process of a mixed or dual media filter takes approximately 10 minutes.

FILTRATION

Water is then gravity fed into one of three banks of mixed media filters. Bank A and B filters are the original filters of the water Treatment Plant. In 2000, the WTP was upgraded and two additional filters were added into the process. The new filters are Bank C of the process. With the addition of these filters, the WTP water quality was substantially increased. Due to the raw water chemistry, the City of Dawson Creek had to look at ways of reducing taste, odors, TOC, and THM limits. In 2003 the City of Dawson Creek went even further and installed a treatment process referred to as GAC treatment (Granular Activated Carbon). The process has been used exclusively for taste and odor control. The theory behind this process involves adsorption – a physical/chemical activity leading to accumulation of water impurities at the solid-liquid interface. The GAC process helps us meet the ever increasing water regulated guidelines, and assure we are distributing safe, potable, and esthetically pleasing water to our community. The GAC is divided into two trains which allow isolation for maintenance. Every three to six months the GAC is backwashed and the media is measured to ensure carry over loss is minimal.


GAC Treatment

DISINFECTION

As the water is treated through the physical process and eventually through the GAC, the water is then disinfected with both UV and hypo chlorination before is it pumped into the distribution system. The water passes through two in-line UV reactors which alters the DNA of the bacteria. Each reactor is designed for a flow of roughly 1.5M USGD with consistent UVT readings >74%. With recent optimization of filter performance, we have been able to achieve higher UVT readings nearing 80%. To carry a residual, 12% sodium hypochlorite is added to try and maintain a finished clear well Cl2 residual of about 1 mg/l prior to it leaving the Water Treatment Plant.

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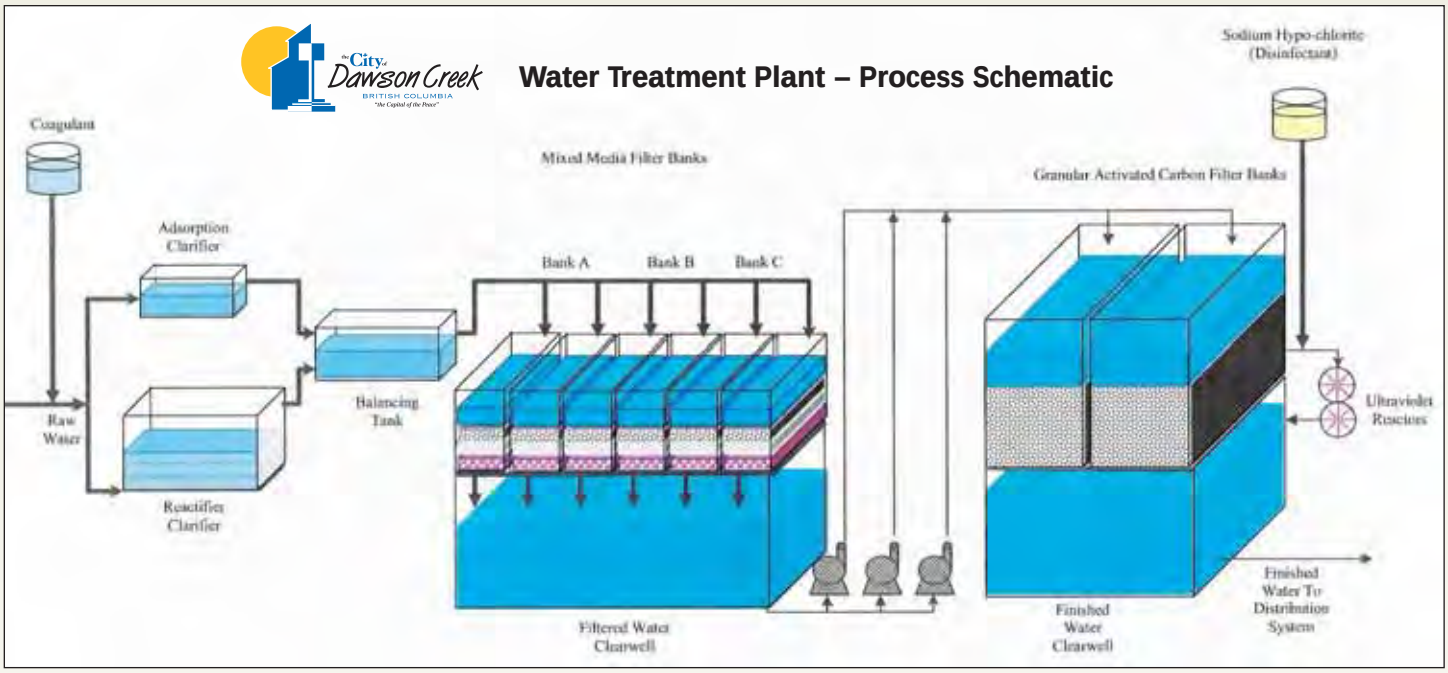
Operator Profiles Dawson Creek

Kevin Walters, Dawson Creek's newest Operator

The City of Dawson Creek has a unique situation with operation of two state-of-the-art treatment facilities; the water treatment plant described in the attached article and a wastewater treatment plant that has been created through a joint partnership with Shell Canada who will reuse the highly treated effluent up to 50 km away. By cross-training their staff, this relatively small community has a multifunctional operations crew including their manager that hold WWT-I to WWT-III certificates with these same Operators holding WT-OIT to WT-III. They also hold certificates in Water Distribution and Wastewater Collection. The operations team includes **Kerry DeVuyst** (#1223) who has been with the City for over thirty years and holds WWT-III, WTIII, & WWC-II; **John Kalinczuk** (#3275 – WWT-II, WT-III, WD-IV), a graduate of Okanagan College Water Quality Technology Program, who recently joined the City after ten years in Salmon Arm; **Mike Linthorne,** (#7752 - WT-OIT, WD-OIT) a graduate of Thompson Rivers University, Water Treatment Technology Program and the University of Northern BC; and their newest Operator, **Kevin Walters** (#7894) holds a WWT-I certificate after many years of work in related fields including as a red seal welder, power engineer, and Registered On-site Wastewater Practitioner (ROWP).

DISTRIBUTION

Once the water has been processed, the water is either pumped from the Water Treatment Plant or Gravity fed into the EOCP Level IV Water Distribution System. The City of Dawson Creek currently has a single reservoir with a capacity of 1,836,358 US Gallons = 6,941,433ML. We try to maintain an operating capacity of about 70% for emergency situations. Operating within this level allows the Water Treatment Plant to continually process water without having the WTP cycle on and off. This spring we are installing a submersible mixer that is permanently attached to our treated, in town, Parkhill Reservoir floor for enhanced mixing and Cl2 residuals. We also supply water to the Village of Pouce Coupe which has a population of about 1000 people. Last year a new treated water reservoir with constant mixing was brought on line for the residences of Pouce Coupe to provide better quality water, fire supply and storage. All testing performed relating to the distribution system is within the guidelines and is done bi-weekly. Quarterly analysis of minerals, THM and HAA's are submitted as well.



Water Plant Information

Main Clarifier Volume	136,906 US Gallon Capacity – 1200 GPM max. clarification with sludge blanket
Adsorption Clarifier	Capacity – 1,500 US GPM / 2,000 MPG when high (NTU > 24)
Filters	4 Filters – 12'×13' = 156ft2/filter = 624 ft^2 total surface area 2 Filters (New) – 12'×16' = 192ft^2 each x 2 = 384 ft2 total filter area *Total Filter Surface Area = 1008 ft^2*
Clear Well	Filtered Clear Well #1 = 78,000 US Gallons Filtered Clear Well #2 = 70,000 US Gallons *Total Filtered Volume = 148,000 US Gallons*
Finished Clear Well Volume	315,000 US Gallons

Water Quality Data

Avg. Raw Water NTU Entering WTP	4NTU
NTU After Filtration	< 0.2NTU
NTU After GAC Treatment	< 0.05NTU
Chemical Dosing	7 – 8.5mg/l Clear PAC
Colour – Raw Water	> 50 color units
Colour – Finished Water	< 7 color units
PH	7.8 – 8.5pH
Hardness	> 200
Average Daily Flow – Winter	1.8 million US Gal/day = **6.8MLD**
Average Daily Flow – Summer	2.5 – 2.8 million US Gal/day = **9.4 – 10.5MLD**

— Thanks to John Kalinczuk, Water Resource Manager, City of Dawson Creek

New Regulation Further Recognizes the Importance of Operators

The Ministry of Environment deposited the new Municipal Wastewater Regulation on Friday April 20, 2012. It replaces the Municipal Sewage Regulation and should be a lot easier for people to read and understand. It is a complete re-write but there are changes to only a few passages that impact Operators directly.

The first is that from now on, certification of Wastewater Collection Operators is mandatory along with the classification of the systems in which they work. Until last Friday, BC was the only jurisdiction in Canada working toward Certification Best Practices across the country that did not require collection system Operators to be certified. For a long time now we have had many classified wastewater collection systems and certified Operators to run them but it has all been voluntary and at least a few municipalities have refused to have their facilities classified and would not support the certification of their Operators.

Another important change in the regulation is the removal of the alternative to EOCP certification that has existed for many years but has been used only occasionally. Until last Friday it was possible for a facility owner to nominate an individual as being capable of operating a particular treatment plant even if they were not certified at the level of the facility. The process to be followed to show that the individual was capable was cumbersome and very expensive and very seldom used. This exception has now been removed.

The OIC (Order in Council) is now posted on the Ministry webpage – click on the April 2012 link on the following page **http://www.env.gov.bc.ca/epd/mun-waste/regs/msr/index.htm.**

Operator Pictures or Videos!

"You can never find a good seat!"

Do you have a picture worth printing? Do you have a better caption for the seat picture? Send it in to the editor at **bthorburn@epcor.com** along with a little explanation and we will publish it in the next newsletter.

Final Notice

EOCP Newsletter Goes Green

In an effort to become even more environmentally responsible and also to reduce our printing and mailing footprint and expenses, the EOCP is publishing an electronic copy of the newsletter that will be emailed to all Operators for whom we have a current email address. While recognizing there are still a few of you out there who do not do email and it is nice to have a hard copy available to read in the lunchroom on a break, we encourage as many of you as possible to receive the Digest in electronic form. If you wish to continue to receive a hard copy of the newsletter in the future, please contact the office (preferably by email at eocp@eocp.org) to request this.

The Role of a Certifying Agency continued from page 1

a legitimate complaint if the trainer offered the course as a "certification" course. Unfortunately many trainers "sell" their training on the basis that taking a particular course is all you need to do to pass a certification exam – nothing could be further from the truth.

We are all aware we will have an imminent shortage of manpower in many disciplines and water and wastewater operation is just one such field. We have a whole lot of baby boomer Operators out there who are a tremendous resource of knowledge and are about to reap the rewards of a long career in the industry and retire, taking their knowledge with them. One of the many attributes of the Training Registry created by the EOCP is the opportunity to mine these resources before or soon after they retire. Short courses developed and/or delivered by these individuals will provide firsthand knowledge and experience the young Operators need.

A recent development that has others talking is the move in Manitoba to include water and wastewater Operators in the apprenticeship model. Yes they are doing so but it really has no impact on the final result. All the Manitoba model will do is provide another means to direct training where it is needed. An individual will be able to register in an apprenticeship program that will involve classroom instruction and on-the-job training much the same as electricians, carpenters, and plumbers. Part way through the program the individual will have the opportunity to become certified at Level I based on a year's experience just as they would if there were no apprenticeship program. After three year's experience they will be eligible to write the Level II certification exam just like anyone else.

At the end of the program the individual may have a trades certificate but they will still have to have the requisite experience (including DRC experience) and a total of 90 CEU's education to qualify for Level III. To imagine that there will be a "Journeyman Water/Wastewater Operator" with a red seal that can go anywhere they want in Canada is a long way off, if ever. Every other jurisdiction in Canada would have to adopt an apprenticeship approach and abandon their present mandatory certification requirements that are based on a graduated qualification model.

We have also heard there are some in management in a few locations who think that because they are managers they make all the decisions and therefore we do not need Level III and IV Operators. They may be the ones who do the long range planning and prepare the budgets but frankly, I, for one, do not want them making decisions when there is a main break at two in the morning on a Sunday. Heaven forbid they might think they can make a decision on adjusting the sludge return or wasting rate if the F:M ratio is not correct or how to repair a broken chlorinator. There are many supervisor/mangers who have worked their way up through the ranks and indeed have the practical experience to make good operating decisions but unfortunately there are many more managers who do not have the background to do so.

Yes, many senior Operators are about to retire but heaven protect us from a manager who thinks the solution to the shortage is to leave the decisions to someone with no practical experience. Would you want Air Canada's CEO trying to take off and land a 777 when the pilot retired?

How are Certification Exams Created and Reviewed?

EOCP exams involve much more than simply choosing 50 or 100 questions to fit on a test. Questions in the four core certification categories (WWT, WWC, WD, WT) are drawn from an enormous exam question data bank developed and maintained by the Association of Boards of Certification of which the EOCP is a Charter Member. There are thousands of questions, covering all areas involved in a particular certification that have been developed nationally and internationally to strict psychometric standards.

A job task analysis is performed to determine what Operators do and what they need to know to do their job. Based on the results of the analysis an exam can be created that is appropriate for each level of each category. These exams are developed through Validation and Examination (V & E) committees for each category. Typically these committees are formed to include all perspectives of certification such as certified Operators, state and provincial regulators and certification officers, consultants, and trainers. This provides a wide array of experience to ensure all aspects and angles are covered during exam development meetings. Once the main data bank of questions has been established a further review and modifications are made with a second series of V&E committees who review everything from a Canadian perspective to develop the Canadian Standardized Exams we use. British Columbia has two members currently serving on both the Canadian and International V and E Committees.

Historically, ABC did not have appropriate exams available when the EOCP needed Small Water Systems, Small Wastewater Systems, and Industrial Wastewater Treatment exams and we had to develop our own exams in these fields and did so based on the ABC approach.

ABC's V & E committees meet in person annually and more frequently by phone and electronically to review portions of the exam question data bank, review "problem child" questions, and update questions involving new technology.

"Problem child" questions are questions that have come to our attention either through the psychometrics that are being applied as part of our on-going review or questions that have been drawn to our attention by Operators writing an exam.

You may have noticed in past two years that each time you write an EOCP certification exam that they now come with a new sheet or questionnaire. This questionnaire is used in the event that the candidate does not agree with either the question or the answers presented.

These questionnaires are reviewed whenever they are received to ensure that a fair examination is occurring. In some cases, as soon as the question is brought up the V & E members may agree that it does not make sense the way it is. These questions can either be re-worded, dropped down a level if it is determined to be too easy, or raised up a certification level if it is too difficult, or it may be placed back into the review stage for future development, or tossed out completely.

With respect to new technology, appropriate questions must be written and as with all other questions, there must be reference material readily available for these and any other questions to ensure Operators have available review or study material for their certification exams. This is another important part of the psychometric process that occurs with the examinations that most people do not realize.

Once these new exam questions are developed, they must also be reviewed to ensure that all metric values and conversions are current and relevant and there are no references to the US EPA or other US regulations. We have established a target of a two year life span for exams after which the questions are effectively returned to the data bank and a new exam created and the review process continues focused on the questions on the new exam.

In Memory

Michel Laforest (Operator #291) passed away April 2nd at the ago of 60 after a long struggle with COPD. Michel held numerous certifications in his career including WWT III, WD II, and WWC I while working for the Regional District of Nanaimo since 1981. Michel was also actively involved in the Boy Scouts of Canada for many years. He will be missed by his family, friends, and co-workers.

SAFETY CORNER

A near miss…

Do you report near misses or just brush them off as a near miss? Some utilities require a report and investigation into near misses to ensure that they do not happen again. Some near misses can be quite minor in nature but others can be major ones that could have resulted in a loss of life. Talk about any near misses to ensure that the same mistakes don't happen again as you might not get a second chance.

THERE ARE TOO MANY "NEAR MISSES"!

Seeking Hydrant Design Solutions

Did you ever think about how the fire department finds those fire hydrants in communities that get over 2 meters of snow each winter?

One community found a solution by a hydrant designed for deep snow by Kitagawa Iron Works Co., Ltd., Japan which overcomes deep snow by standing more than 2 meters tall (6½ feet). The hydrant has two operating nuts. The operating nut located about midway up the barrel is used for normal operation. A second operating

nut is atop the bonnet of the hydrant, and therefore remains accessible during heavy snow accumulations when much of the hydrant is buried. The Matsudai-town Fire Department in Niigata Prefecture reports great satisfaction with this design in their region of extreme heavy snowfall.*

The bad news is that this hydrant is not available to communities in British Columbia. So for communities that see over 2 meters of snow each year, other solutions have to be explored. At Sun Peaks, hydrants get buried very quickly on those days where the resort can see over 30 centimetres in a 20 hour period.

At the end of each summer period, the water distribution operators install 6 foot flags off the base of the hydrant. So when the snow comes suddenly, the operators have a chance to find the hydrants. The reflective flags can help the fire department can find the hydrants at night (website source: **www.hydrantmarkers.com**).

After each snow fall, the operators head out with a skid steer with a snow blower attachment and a small shovel. The procedure is to blow out the snow on both side of the hydrant and then use the shovel to make sure all the ports are accessible by the fire department crew in the event of a fire. Where the Highways crew has cleared the snow off the road and piled high too high and packed too hard for the skid steer to clear away, the backhoe gets brought into action.

What seems to be a great landscaping feature to protect the hydrant from damage in the summer becomes a logistical nightmare to clear snow away from hydrants.

Every community's water distribution operator must come up with solutions that work for them, their fire department and their customers. What works for your community? The Digest would love to hear from you and how you solved the issue of keeping your fire hydrants clear so we can share your solutions with other operators.

** Source: http://www.firehydrant.org/pictures/japan.html – Photo © 2001 Amparo Bertram.*

New Operators and Operator Upgrades!

Check out the newest and latest upgrades on Operator status. Go to the EOCP website **eocp@eocp.org** and click on the Operator Highlights tab and then click on New Operators for an up to date list.

Many Operators have not been keeping their certification valid by either not paying their annual dues or by fulfilling the Continuing Education Requirement. If your facility requires a certain level of certified Operator and you have let your certification become Not In Good Standing or worse, lapse, your utility could be in violation of their Permit to Operate. Please contact us so we may help you get back into "Good Standing" again.

Operator Certification to January 28, 2012 C-2012 to Present

Classification	IV	III	II	MUII	I	MUI	OIT	Total
WD	19	85	397	7	699	6	65	**1278**
WT	5	22	87	1	177	4	23	**319**
WWC	2	20	167	2	362	4	32	**589**
MWWT	31	10	197	3	331	8	48	**718**
IWWT		4	10		16			**30**
BWD								**13**
SWS								**360**
SWWS						L 29	M 47	**76**
CH								**219**
Total								**3604**

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