PRESIDENT'S MESSAGE

December 2013

Well, we've seen some snow, some rain and more sunshine than not. This is good way to start the end of the year. The Farmers Almanac may be wrong on this one, as there is no El Nino, no La Nina, so do we call this "La Nada"?

We have our 2nd annual Christmas Cocktail party on Dec 5th at the Edelweiss, and then the Children's Christmas party on Dec 7th at Funworx. I hope that you will come out and join us in celebrating the season with a little Christmas cheer, or have signed your children up to meet Santa on the 7th. There is also the Toronto OIAA Christmas party on Dec 11th; I know that I will see some of our members there as well.

As this year draws to a close, there were events that occurred this year that directly affected our association; the catastrophic flooding in Southern Alberta, the Lac Megantic train derailment and the Toronto Floods. There were other less apocalyptic events that took place – we lost the penny, got a new premier (Kathleen Wynne) and Jack Layton was immortalized in both a statue and a ferry. We also lost the Marketplace building at St Jacob's Market.

This is the season where we draw closer to our families, to celebrate Christmas, Hannukah and Kwanzaa. It's at this time of year that we see the need to help ones that are not so fortunate. I would encourage you to contribute to the Salvation Army, the Food Bank, or whatever group you most closely associate with. It's a season to be thankful for our family, our friends, our livelihood that allows us to make that dream come true for some of those less privileged.

I look forward to seeing you at our next monthly meeting, if you are unable to attend our planned December events.

From our Association, to all of you and yours, we wish you a very Happy Holiday Season and a Prosperous New Year. All the best in 2014!

Cyndy Craig, CIP CRM
KW- OIAA President

December 2013

The Bulletin Index

Inside your December issue you will find:

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If you have any questions, concerns or comments, please do not hesitate to contact any of the above committee members.

SOCIAL CHIT-CHAT

Welcome December and the holiday season!
We'd like to thank everyone that came out to last month's chili cook off and a special thanks to those of you brave enough to enter a chili. It was a fabulous and delicious evening. Congratulations to Manish Patel for taking the People's Choice Award and to Curo for snagging the Chef's Pick Award!
As we are closing out 2013 remember to keep an eye out for upcoming educational opportunities. For the auto industry one to keep in mind is the upcoming Ontario Auto: Future Impact on the Insurance Industry. It is sponsored by the IBC and coming to southwestern Ontario on January 15, 2014. For more details check out http://www.insuranceinstitute.ca/en/institutes-and-chapters/Ontario.aspx.

We wish everyone a happy and safe holiday season!

Cheers,
Ashleigh Leon
2013 KW-OIAA Social Director

If you have an ad or an article you would like to place in the KW OIAA bulletin Please contact Randy Higgins – randy@pdskw.ca - 519-570-0438 x 242

Schedule of K-W Chapter Monthly Meeting 2013-2014

Date	Topic
October 24th, 2013	Educational Meeting
November 28th, 2013	Chili Cook Off
December 5th,2013	Adults Christmas Party – Edelweiss
December 7th, 2013	Kids Christmas Party - FunworX
January 30th, 2014	Educational Meeting – Non MVA Injuries
February 27th, 2014	Educational Meeting- Site Security - ESM
March 27th, 2014	Provincial Conference
April 24th, 2014	Elections and Fun Night
May 29th, 2014	Educational Meeting
June 26th, 2014	Annual Golf Tournament

Details of each event will be in that month's bulletin

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Duty to Defend in Parental Supervision Cases

Authored by:
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The Ontario Superior Court of Justice has recently reconsidered the issue of duty to defend in an application to the Court entitled *Bawden v. Wawanesa Mutual Insurance Company* – [reported at 2013 ONSC 1618]. The background facts involve an eight year old girl who was struck and injured by a motor vehicle while riding her bicycle along a sidewalk. The defendant motorist was sued and third partied both parents into the action alleging negligent supervision and instruction. Wawanesa refused to defend and the application was brought to determine that issue.

In revisiting the duty to defend issue, Justice Sanderson reviewed all of the principles of the law in relation to policy interpretation. To restate those briefly, the coverage grant in any policy is interpreted broadly so as to give the widest scope possible to things included in coverage. Exclusion clauses are interpreted narrowly and any ambiguity will be interpreted in favour of the insured. Generally, the Court can take into consideration what it infers to be the reasonable expectations of the parties, in reading the contract in its entirety. With respect to the duty to defend, the mere possibility that there may be coverage will suffice.

The coverage provision in the *Bawden* case read as follows:
You are insured for claims made or actions brought against you for: (1) Personal Liability: bodily injury or property damage arising out of your personal activities anywhere in the world.

The relevant exclusion read as follows:
Exclusions: you are not insured for claims made or actions brought against you for: (3) bodily injury to you or to any person residing in your household other than a residence employee.

Justice Sanderson conducted a detailed analysis of numerous cases dealing with the applicability of a wide variety of exclusionary wordings. The closest on point to the *Bawden* case is a 1997 Ontario Court of Appeal decision in a case called *Sheppard v.Co-operators General Insurance Company – Quick v. MacKenzie*. This was an interesting decision where the Court of Appeal considered, at the same time, two totally separate cases involving third party proceedings, parental supervision and the duty to defend.

In the *Sheppard* case, a motor vehicle accident claim, Co-operators' exclusion, upon which they relied, read:
You are not insured for claims arising from: … or between any person(s) insured by this policy named or not …
Justice Catzman, for the Court, considered these words to be "almost meaninglessly broad words" and the exclusion was held not to apply.

Conversely, in the *Quick* case, a dog bite claim, the exclusion read:
You are not insured for claims made against you arising from: e. bodily injury to you or to any person residing in your household other than a residence employee.

Justice Catzman felt that this particular exclusionary wording was "precisely focused." The third party claim against the Quicks is one "arising from the bodily injury to [the family member] within the meaning of this clause." To the extent that to "arise from" has the dictionary definition of "originating from", this exclusion covers both direct and indirect claims against the Quicks. Consequently, the exclusion was held to apply and no duty to defend was owed by Lumbermens.

Counsel for Wawanesa, in the *Bawden* case, relied heavily upon the Court of Appeal interpretation of exclusionary wording in the *Quick* case, arguing that the Wawanesa exclusion clause and the Lumbermens exclusion clause were, essentially, the same.

Justice Sanderson disagreed. In reviewing the exclusion clause, Wawanesa did not use the words "arising from" or "arising out of" in relation to this particular exclusion. However, in many other exclusions contained in the Wawanesa policy the words "arising out of" were used, for example, the exclusions relating to ownership, use or operation of any motor vehicle, rendering of any professional service, ownership or operation of any aircraft, to name a few.

Consequently, Justice Sanderson felt that there was a subtle distinction between using the words "arising out of bodily injury" and "for bodily injury" because Wawanesa made that distinction in many other exclusion clauses. Justice Sanderson did not feel that the exclusion clause clearly and unequivocally restricted the extent and scope of coverage and that the policy wording was consistent with an intent to exclude only direct claims and leave coverage for indirect claims intact.

The exclusion did not, therefore, apply to the third party claim against the Bawdens and a duty to defend arose.
As can be seen from the above, one word or one phrase, viewed in the context of the entire policy, can make a significant difference in interpreting that policy. Certainly, when dealing with cases involving counterclaims or third party claims against parents referable to supervision issues, one cannot assume that just because there is an exclusion in the policy purporting to exclude coverage for bodily injury to an insured, as defined, that the exclusion will carry the day.

ENTER TO WIN

BULLETIN NEWSLETTER PHOTO CONTEST

The Kitchener-Waterloo Chapter OIAA Bulletin publication is known for traditionally representing an historical monument or event on its cover as an icon of our Region's history. This year, we are inviting all KW OIAA members to take part in a **Photo Contest to find next year's cover photo for our 2014-2015 Bulletin newsletter**. Submissions can be made online or via email to any of our executive team members and should include a short bio explaining the significance of the photo to Waterloo Region and/or the OIAA (examples below). The selected photo will remain on the cover of the Bulletin monthly for the duration of the 2014-2015 year circulation and the winner will receive recognition in the Bulletin as well as a free year's subscription and a big bottle of Grey Goose. Please submit your contest entries to: dstrigberger@millerthomson.com

DEADLINE FOR SUBMISSION IS MIDNIGHT ON TUESDAY DECEMBER 31st 2013 AND THE WINNER WILL BE ANNOUNCED AT THE JANUARY DINNER MEETING

Some examples for you to get into the spirit:

In 2012-2013, the Bulletin cover held an image of the West Montrose Covered Bridge (or "Kissing Bridge") which, according to the Waterloo Region Official Tourism Website, is: "recognized as an historic site by Ontario's Archeological & Historic Sites Board" and is "Ontario's last remaining covered bridge" with a "198' span across the Grand River. Visitors come from all over the world to see and photograph this picturesque bridge."

In 2013-2014, the Bulletin will show Woodside House on its cover, the Birthplace of William Lyon MacKenzie King and, according to Parks Canada's website (www.pc.gc.ca) was also "the boyhood home of William Lyon Mackenzie King, Canada's longest-serving Prime Minister. The house has been restored to the Victorian style of the 1890s. The importance of this residence is best reflected in King's own words: "The years that left the most abiding of all impressions and most in the way of family associations were those lived at Woodside."

What will the 2014-2015 Bulletin photo be?? WE NEED YOUR HELP!

Good Luck!!!
Your Executive Team
2013-2014

Kitchener-Waterloo Adjusters Association
Chapter of Ontario Insurance Adjusters Association

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BURNSIDE

Building Bridges in the Insurance World

Stephen Riley, B.E.Sc., P.Eng

Out of nowhere, the bridge jumped in front of my car. It didn't know which way to go.....so I hit it.

We have all read them before, the alleged and meant to be humorous witness statements given to police after a collision or accident. It could be a post, a moose or a deer or as in this case, a bridge barrier. In reality, there is nothing humorous about accidents and with the ever increasing volumes of traffic on our roads; the number of accidents continues to grow.

So too do the number of accidents that involve collisions with municipal infrastructure: in particular bridges, culverts and retaining walls.

Once the immediate emergency services calls have been made and the site is secured, the next call is to your insurance company. The vehicle driver is concerned about how their vehicle will be repaired or what happens to the cost of their insurance.

What about the municipality? What happens when their infrastructure is damaged and needs to be repaired? What does the insurance company do? When should an engineer be called in?

A recent case involved a small concrete bridge in a rural area on a low volume road.
A farmer, driving a tractor and pulling a large disk harrow attempted to cross a small reinforced concrete bridge with reinforced concrete barriers. The disk harrow turned out to be wider than bridge.

The result: the farmer's equipment was a write off and his insurance company would look after that.

Just as importantly however, there was significant damage done to the bridge barriers and potentially the bridge itself. What can the municipality do? What do their insurers do?

An engineering inspection is critical to assess the damage done to the bridge with recommendations provided to ensure the safety of its use.

This would entail:

- Assessing the structural integrity of the entire structure to determine if there was any load critical damage done to the primary structural components;
- Assessing the damage to the barrier system itself to determine if it would still perform its intended function;
- Determining the extent of damage caused by the collision. Not just the immediate and obvious damage but the extent of cracking in adjacent components which can lead to further damage in time due to water, ice and freeze thaw effects;
- Establishing whether the barrier could be repaired or required replacement;
- Providing direction to the municipality as to whether the structure could remain open and what temporary or interim steps could be taken to reopen the structure; and
- Identifying the cost of any repairs, replacements or interim steps necessary.

These are the fundamental issues that can be addressed by engaging engineers to assist the insurance industry when accidents involve municipal infrastructure. Most municipalities in Ontario maintain an inventory and up to date condition rating of their infrastructure which includes bridges. These inspections, required every two years under Regulation 104/97 of the Public Transportation and Highway Improvement Act, document the existing condition of a structure at the time of the inspection. These are critical in assessing and differentiating potential new damage from existing conditions during an insurance claim repair evaluation. It is therefore important that a municipality keeps a record of these inspections.

Similar cases have involved losses related to loose loads being transported.

A large excavator being transported on a flatbed truck came loose from its moorings and collided with the steel and concrete barriers on a small culvert. Specialized engineers were engaged to carry out the same activities as identified above, but in this case, additional concerns were raised with respect to the potential leakage of oil and fuels into the nearby river. In these cases, environmental engineers and habitat specialists can provide additional services to assess habitat impacts and identify spill mitigation and remediation measures.

Beyond the noted, more routine activities, engineers can also provide more in depth review and analysis related to insurance claims and structure damage.

A railway bridge was struck and damaged by heavy construction equipment being transported across the country. While this instance could be seen as being similar to those previously discussed, this case was made more complicated by the fact the load was originally secured by the equipment owner and later revised by railway staff en route. Responsibility for the loss and the costs became critical concerns.

BURNSIDE

Insurance claims then became legal claims and beyond the initial structural and environmental services provided, engineers were engaged to review detailed construction time and material claims to assess their compatibility with the work required. This involved a review of the scope of repair works, assessment of work crew hours, pay rates, materials, supplies, accommodations and related sundry items to confirm that the ultimate costs associated with the loss, were compatible with the extent of the damage.

The range of services that can be provided by engineers to support the insurance industry is extensive, particularly when claims involve bridge and culvert infrastructure. After the fire, police, ambulance and insurance calls are made, the next call should be to your engineer for specialty technical support.

Stephen Riley, B.E.Sc., P.Eng
Bridge Group
R.J. Burnside & Associates Limited

Stephen Riley is a senior technical manager responsible for the Bridge Design Group at R. J. Burnside & Associates Limited. He is responsible for all technical aspects and project delivery for bridge structure related projects including: structure inventory inspections, development of maintenance routines and strategies, load capacity evaluations, rehabilitation feasibility studies and program development and the complete planning and design of new structures.

For more information contact: Nancy Orr
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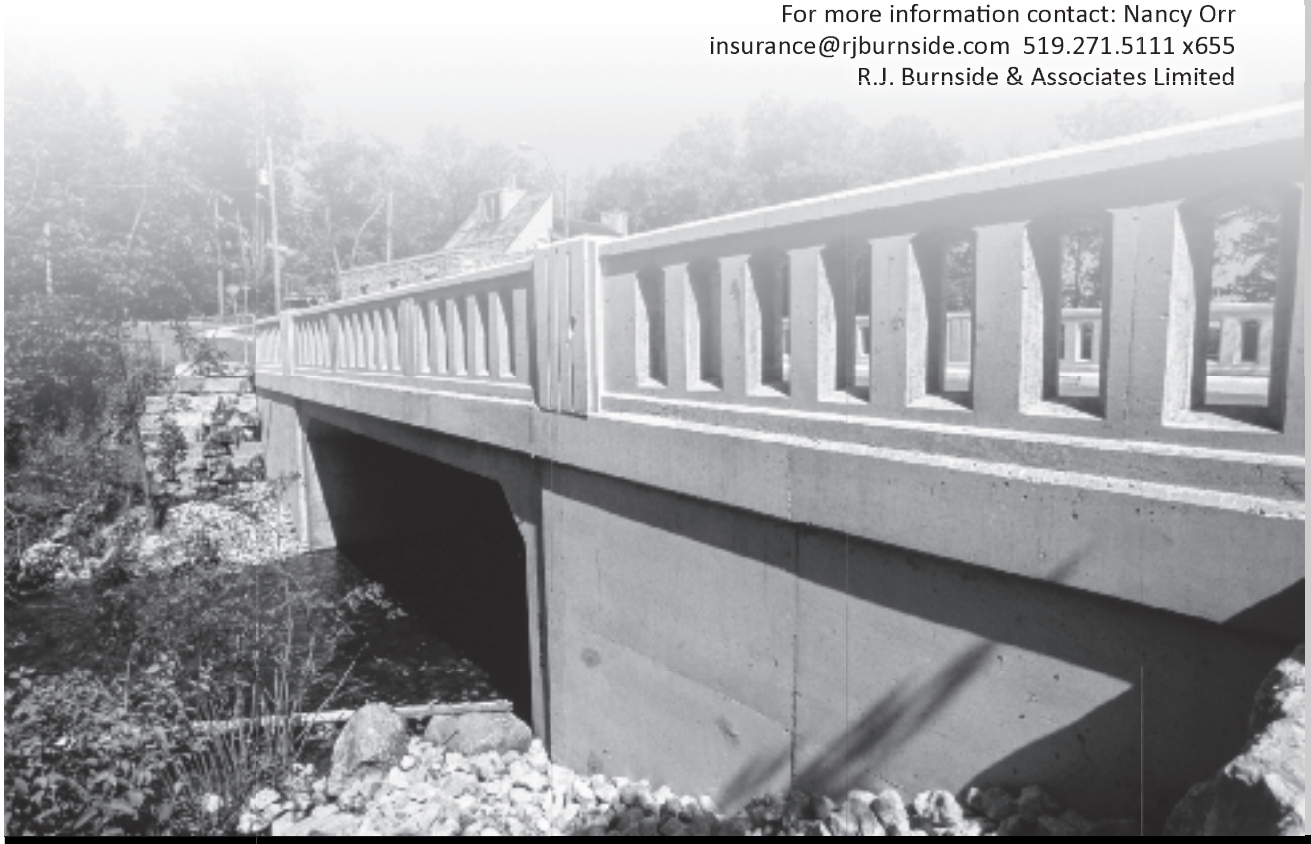

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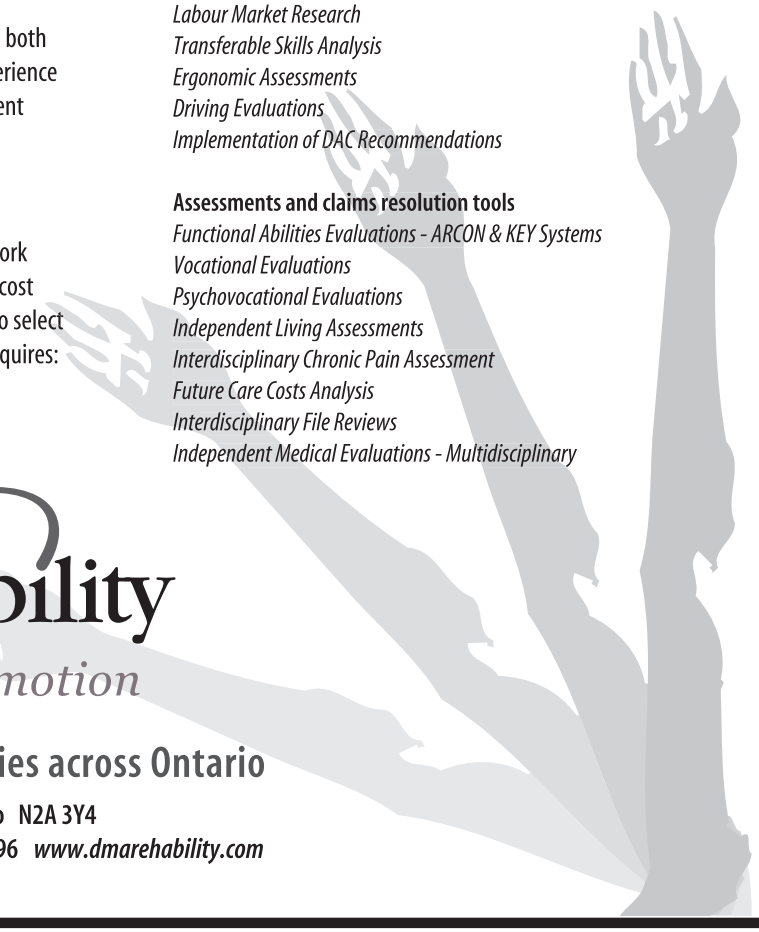

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TORONTO DELEGATE REPORT

The 2013 OIAA Holiday Party was December 11, 2013 at the Westin Harbour Castle in Toronto. The sold out event was a great start to the holiday season.

We look forward to the new year which brings us the OIAA Claims Conference 2014 at the Metro Toronto Convention Center on February 5, 2014. The event is a full day of seminars, networking, luncheon with keynote speaker David Chilton and over 150 trade show exhibitors profiling the latest products and services for the claims industry.

You can always stay up to date and register for upcoming events at www.oiaa.com.

If you would like more information or have any questions or concerns please do not hesitate to contact me at Michael.mcleod@crawco.ca.

On behalf of the OIAA we wish you all a safe and happy holiday season.

Regards,

Michael McLeod
Chapter Toronto Delegate

CHILI COOK-OFF 2013

Thank you to everyone who contributed a chili at our annual Chili Cook-off event!
We had a record 19 chili's present!!

People's Choice Winner – Larrek Investigations

(with Ground Force a very close second!!)

Chef's Choice Winner – CURO

(the chef did have trouble making a decision and had to go back for a second opinion – congrats to FOS who was runner-up)

TOILET WATER SUPPLY LINES: THE LOW-PRICED CULPRIT OF HIGH-PRICED INSURANCE CLAIMS

Dinu G. Matei, M.Sc., P.Eng., Consulting Forensic Engineer

ORIGIN AND CAUSE INC.

Toilet water supply lines (or toilet connectors) are relatively simple components that play a vital role in a residential plumbing system (Photograph 1). As the name implies, their function is to supply water to the toilet's water holding tank. A toilet connector consists of an internally elastomeric hose protected by an outer layer of stainless steel (or in cheaper versions, PVC braids) which are arranged in a woven pattern. The braids are designed to enhance the inner hose's integrity and the component's overall strength. One of the ends of the connector is attached to a chrome plated brass threaded compression fitting which allows for its connection to the main water supply line; meanwhile a plastic coupling nut (usually made of a polymer-based material known as *Acetal*) is attached at the other end to allow connection to the threaded end of the toilet's ballcock assembly.

There are many components in water supply lines that can potentially fail and cause water damage; however, the focus of this article is on plastic coupling nut failures that often result in large residential and commercial insurance claims**.** To accurately determine the cause of a failure is not a straight forward process and, contrary to popular belief, this process is often a complex investigation. Failures of coupling nuts are not necessarily limited to one cause but rather can be the result of a synergy of several factors. Although the appearance of failed couplings might be similar usually observed as the formation of a partial or complete circumferential split in the body which creates a pathway for water under pressure (typically at 60-80 psi) to escape, in actuality, no two failures are alike; each failure has its own unique characteristics.

Until a few years ago, toilet connector couplings were designed in the shape of a hex nut and consequently were often overtightened by installers using a wrench/plier to ensure a tight seal; however, this overtightening could cause subsequent cracking. Nowadays, the design has changed: the hex portion of the coupling has been replaced with a cylindrical unit with wings for manual tightening. The accepted practice for tightening the plastic couplings to the threaded end of the toilet assembly is simply to *not overtighten* them! Most manufacturers provide recommendations on the product information sheet such as "tighten coupling nut ¼ turn beyond hand-tight". However, we have seen so-called "expert advice" in a plumbing self-help book (available at a major hardware store) that illustrates how to use pliers when tightening toilet water supply lines' plastic couplings! Photograph 4 in this article shows a stereo microscope image of a plastic nut that was so overtightened that mechanically-induced indentations were formed on its outer surface and on the face towards the ballcock's end. Another example is shown in

Photograph 5 where one can see tool marks and severe rounded edges on the remnants of an old style hexagonal shaped coupling that was overtightened. In general, if a coupling is overtightened, it will usually fail in a relatively short time following installation and not after years in service.

A large percentage of the failed couplings that we have examined exhibited a sharp change in the component's geometry, namely a 90° transition between the body and the end face, as seen in Photograph 6. This change is considered to be a design deficiency as it acts as a stress concentrator area because it introduces undesirable additional stresses in the component. Some toilet connector manufacturers have started to change the coupling's design by eliminating the sharp edges which is a measure that bypasses issues associated with potential stress concentrators. However, there are thousands of poorly designed plastic nuts still being produced and still in service; they can fail without warning at any time.

Another factor that can lead to the failure of *Acetal* couplings is associated with their manufacturing (molding) process. The presence of manufacturing defects simply weakens the component's integrity and significantly reduces its load carrying capability. For example, the stereo microscope image in Photograph 7 illustrates an undesirable void within the component. This void was 6 mm in length which, in fact, is several times longer than the component's wall thickness! And this was not the only significant void present in this component.

The scanning electron microscope image in Photograph 8 shows the fracture surface and the flank of the last bottom engaged thread from a failed plastic coupling. The wavy lines visible on the flank's surface cannot be detected under a stereo microscope, hence the need for a more powerful microscope. These features are called *mold lines* and are also considered a manufacturing deficiency. In this particular case, the fracture in the plastic coupling was initiated at multiple sites on the inner diameter where the mold lines intersected the root of the thread.

Another common type of manufacturing deficiency is the so-called *lack of fusion,* a typical example of which is shown in Photograph 9. Basically, a lack of fusion is represented by areas where, during the fabrication stage, the molten material apparently solidified before the mold cavity was filled.

Although one major plumbing fitting manufacturer took steps to reduce the failure of couplings by manufacturing them from a different engineered polymer material, the vast majority of the toilet connectors' coupling nuts are still made from *Acetal.* Although *Acetal* exhibits good dimensional stability, structural strength, toughness and absorbs little water, its weakness is the fact that it is notch sensitive; and as such**,** a sharp change in the part's geometry can create undesirable stress risers in the component.

Acetal is not compatible with chlorine, even in small concentrations, and it is susceptible to a degradation mechanism known as *chlorinolysis* of which symptoms such as discoloration, embrittlement, oxidation and reduction in molecular weight may manifest. How/why would a toilet connector be exposed to chlorine? Chlorine is used in many household cleaners or disinfectants and even city water, itself, contains chlorine in which it is added as a disinfectant. There has been little scientific work done on *Acetal's* degradation by chlorinolysis; however, it is believed that this process oxidizes the polymer chains causing cleavage, an event which takes place over time rather than instantaneously. Depending on the site condition, this degradation can take a few months or several years until a complete failure occurs.

Unlike some mechanical properties (i.e., strength, toughness) of common metals and alloys which, in the absence of corrosion and/or fatigue will not change over time, the same cannot be said of polymers. Also, if a plastic component is subjected to a constant applied and/or residual stress over time, it will eventually fail by *creep*. For plastic materials *creep* (or cold flow) is defined as the tendency of the material to deform permanently under the influence of a load, below the yield strength of the material, over a long period of time. Usually, *creep* in polymers can be identified by the presence of elongated fibrils on the fracture surface which cannot be seen with the naked eye but rather under a powerful microscope, as seen in Photograph 10.

In short, *fatigue* is a failure mechanism that occurs progressively over time under cyclic stress conditions, usually below the material's ultimate strength limit. A *fatigue* fracture initiates at a stress riser which can be a design deficiency (i.e. a notch) or a material defect. *Fatigue* in components is usually revealed by the presence of successive elliptical macroscopic marks on the fracture surface, known as *beach* marks, as shown in Photograph 11, or by patterns which can only been seen under a powerful microscope. Fatigue cracks in polymers may not propagate steadily, like in metals (with an increment of growth for each fatigue cycle), but rather they may grow in spurts.

A large percentage of the failed toilet connectors that we examine originate from manufacturing plants located outside Canada (i.e., China, Taiwan, Korea, and Mexico). The *Ontario Code and Guide for Plumbing* requires that plumbing fittings shall meet *CAN/CSA B-125 Plumbing Fittings* standard requirements which, in turn, requires that all plumbing fittings be marked in such a way that the manufacturer can be identified. Some overseas manufacturers have a so-called *Canadian Standard Association Certification Record* in the *CSA* database of certified products. In the case of toilet water supply lines, the *CSA* shield of approval and the manufacturer's name or code are usually stamped on the toilet connectors' crimped ends. Often times, a printed label with the same markings, which also includes the manufacturer's address

and the component's part/catalogue number, is attached on the connector's braided area. It must be noted that although a component may lack the *CSA* mark of approval, this does not necessarily mean that the product is substandard.

However, this is not always the case and it appears that the Canadian market is flooded with poor quality toilet connectors originating from obscure sources. We have examined toilet water supply lines that did not bear any identification marks and also toilet water supply lines that were marked with a fake *CSA* shield of approval; they were all substandard. Photograph 12 illustrates a fraudulent *CSA* shield of approval stamped on the crimp of a failed toilet connector. Note the maple leaf symbol nearby: *CSA* never uses symbols in their markings but rather numbers, letters, a combination thereof, or the full name of the manufacturer.

Some toilet connectors that we examine do not have the *CSA* shield of approval, but do have the *UPC* (*Unified Plumbing Code*) shield of approval stamped on the crimps. Apparently, this is not against the requirements of the *CAN/CSA B-125 Plumbing Fittings* standard since it appears that the *CSA* requirements for these products are met by the products certified by *IAPMO* (*The International Association of Plumbing and Mechanical Officials*, headquartered in the US), the developer of the *UPC.*

In conclusion, there's good news and there's bad news when it comes to addressing toilet coupling failure claims. The bad news is that it is hard to control the risk around plastic coupling nut failures. Whether a failure was caused by overtightening, a design deficiency, fatigue, creep, a manufacturing defect or exposure to aggressive chemicals, the probability of failure is extremely high, and extensive resultant damages are almost unavoidable unless caught immediately. Despite the high occurrence rates of plastic coupling failures that can often result in large insurance claims, the good news is that the grounds for subrogation is, in most instances, provable. As mentioned earlier, the proof is in the coupling and the reason for its failure cannot be hidden from us.

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Lightning Claims – feel like you bought the farm? By Greg Gummerson at Relectronic-Remech Inc.

We have investigated thousands of lightning strike claims since it began servicing the insurance industry in 1992. Throughout this period we have witnessed damages to a myriad of equipment and control systems including commercial and residential losses.

By and large commercial claims involving control systems are the most expensive to settle. There are many reasons for this however before diving into the whys, hows, and wherefores of these losses, a brief explanation of lightning should be addressed.

Lightning is an atmospheric discharge of electricity, which typically occurs during thunderstorms, and sometimes during volcanic eruptions or dust storms. In the atmospheric electrical discharge, a leader from a bolt of lightning can travel at speeds of 60lm/second and can reach temperatures approaching 30,000°C (54,000°F) - hot enough to fuse soil or sand into glass channels. There are over 16 million lightning storms every year worldwide. Of these strikes, the resulting damages are generally of two classifications: from direct lightning strikes and from indirect lighting strikes.

A direct lighting strike is normally the type that people most often try to protect themselves against. A direct lighting strike can generate surges up to and beyond 6kV. A direct lighting strike places an electrical surge on the mains of a power utility and causes damage to equipment that is connected to the grid. Battery back-ups and line conditioners are used to protect equipment from damages due to a direct strike. Surge protectors that plug into a receptacle are also devices used to protect against this type of strikes and the resulting damages.

In our experience, **indirect strikes** are more frequently the cause of loss. Indirect strikes can put surges on utility lines, but more often put surges on data communication lines as well. When a lightning strikes, a substantial transfer of stored electrical energy is discharged. When this flow of electrical current occurs, an associated magnetic field is created. When the discharge of electrical energy is complete, the resulting magnetic field collapses. The laws of electromagnetic principles show that when a magnetic field is created and collapsed, a conductor located within the magnetic field has an associated induced current on it. (This is the same principle that an automobiles' charging system uses to keep the vehicles battery fully charged). Following a lightning strike, the induced current searches for a path to ground, usually damaging electronic components along the way.

There are three different recognized means by which these surges are induced: resistive coupling, inductive coupling and capacitive coupling.

Resistive Coupling occurs when lightning strikes within close proximity to a facility. This results in a massive rise in ground voltage. The rise in ground voltage affects electrical grounds (buried rods or buried pipe work) and can be conducted back to a building and to its electrical systems. Additionally, any communications cabling connecting the affected building to a second building provide a path for surges, allowing them to damage equipment in the second building as well.

Inductive Coupling occurs when a lighting strike hits a conductor forming part of the structural protective system of a building or a structure in close proximity of the building. This generates a large electromagnetic pulse of energy that can be picked up by nearby cables, and cause damage as well.

Capacitive Coupling occurs when lighting directly hits the electrical utility grid. High voltage protection devices that are in place on the power grid dissipate much of the energy caused by the strike, but a large portion still travels along the lines. The high frequency nature of this surge can couple the low-voltage and high-voltage windings in local transformers at facilities and damage equipment that the transformers normally feed.

So why do adjusters, in many cases after a lightning, strike feel like they have bought the farm? There are many reasons for this and in most cases it comes down to the manufacturers support for the device, the type of interconnection between devices in a system, and the relatively low protection that communication devices inherently have available.

For illustration purposes, let us assume that a claim has occurred at a farm and the insured indicates that the feeding system and phones have been damaged. The feeding system provides feed to livestock and it does this through a computer that monitors the many factors including the weight of the livestock and the calculated age of the livestock. The computer has to be able to mix food recipes, weigh the livestock, and distribute the food to the proper eating areas. The manufacturer of this system has spent a great deal of resources to develop the software to perform these tasks in an accurate manner. All the electronics involved in the system have to be able to communicate with the computer so that the feeding operation can be adjusted appropriately. This means that load cells inside scales must weigh feeds, water, livestock itself, as well as the feeding bins. Load cells are devices that change in electrical resistance based on the force applied to them. They typically operate in the millivolt range (less than one volt) and have their own power distribution, shared from the communications lines back to the computer. However, there is no easy means to connect a load cell directly to a computer, so an interface circuit board is put in line to convert the normal load cell operating voltage to a number that can be communicated to the computer in a meaningful state. Then the computer can evaluate all of the weights required and start producing a feeding recipe to be distributed.

In most cases there is more than one feeding area so a network of piping is built throughout the building to accommodate the distribution of feed to each area. Normally, this is controlled through a series of valves in the piping network that open and close and each valve has its own unique ID or address so the computer can access it independently of other valves. Just like the load cells, these valves need to talk to the computer so again more interface circuitry is required to allow communications with the computer. For example feeding area “A” requires 10kg of feed and feeding area “B” requires 15kg. The valves would close so that the feed in the piping would be dispensed to area “A”, then the load cell at “A” would report back once the 10kg has been reached and the computer would then close off the valves to “A” and then open valves to area “B” and so on. Also thoughout this process the computer has to control a drive system that pushes the feed through the piping, meaning more circuitry to drive the food delivery system.

As you can see there are many aspects of the system that are depended on to perform the operations correctly. Independently each section of the system is relatively simple; therefore, the communication lines required are generally simple as well. The most common form of communication lines installed is serial communications RS232 or RS242. Serial communications allow many devices to be chained together on one line, but each of these devices, be it a valve control or load cell control, and have a unique address. From a lightning claim perspective this complicates things two-fold: first, because the devices on communication lines that are shared more than one device is at risk of being damaged and second, because the labour involved to troubleshooting this communications circuit can become expensive, depending on the number of devices there are to test on a particular circuit. Serial communications depend on at least three conductors: one for sending data, one for receiving data, and a common or ground cable. Serial communications generally operate in the 0 V to 12 V range and this is a low voltage cabling that is highly susceptible to induced currents. Furthermore, the electrical grounding of each device is tied along the communications line which exposes all the devices, even if only one was subjected to a surge.

So what about the computer itself? We have seen many of these damaged and generally they are little different than personal computers, the exception being in some cases they may have an interface card to allow communications. The software they run is normally proprietary and available from a single source and has a relatively expensive replacement cost. To add to this expense, the manufacturer of the system may insist on supplying the computer itself including the software. This makes supporting the system easier, because all of

their manufacturers' customers will have relatively the same configuration.

Finally what if the system fails to operate properly? Almost all feeding systems of this nature are tied into a phone system or alarm panel to allow the owner to be notified of a problem. So an additional set of communication lines have been added to the mix. We have seen cases where phone lines had induced charges from a lightning strike that has travelled through the alarm system dialer to the computer, and then out to the feeding system itself.

The electronics involved are not overly sophisticated; in fact they use technologies that were introduced into the market over thirty years ago. However, when combined, a sophisticated network of switches and sensors is created, all controlled by a computer running specialized software. The production volume of these systems is generally low, driving up the cost to supply the specific market.

In our experience of claims ranging from farms to factory industrial control systems, the cost can be high, but can be controlled if repair and service vendors are available and co-operative. If service vendors understand the process from an insurance point of view, they will try to repair and services the system cost-effectively. Furthermore, a third party's involvement can aid lightning repair issues where warranties are still in place on equipment. Example: a repair vendor may be indicating that the entire installation is suspect, due to a lightning strike, and apprehensive about making a repair. Allowing and paying for a recertification process can alleviate the vendors and suppliers concerns. By allowing a grace period for functional equipment that may have suffered marginal damages, but are not complete failures, may also assist in warranty matters.

When the repairs are made and the invoices are submitted, it's not uncommon to think that you just have "bought the farm." This is where a consultant should be able to assist in the settlement process, by reviewing repair invoices to confirm that the invoices submitted are directly related to the loss. If any upgrades have been supplied, these would be noted and valued. Having a consultant involved as early as possible is beneficial, as the steps to a complete repair will be clearer for both the insurer and the repair vendor. A consultant may also be able to provide input on possible alternative systems and repairs for obsolete equipment. The coverage can be better confirmed to the insured, and repair vendors will know that they are to be accountable.

Greg Gummerson is an electronic engineering specialist and senior technical advisor at RELECTRONIC-REMECH Inc., a loss recovery company serving the insurance industry since 1992, with offices in Mississauga and Waterloo. Greg can be reached at 1-800-465-9473, or visit our website at www.relectronic-remech.ca for additional information.

Chad Hanlon

Manager Corporate Investigations & Security Services

AFIMAC

The Best Kept Secret

There is a multi-billion dollar a year problem that we are only now starting to hear about in open forums and growing media coverage. Approximately 90% of North American consumer products have the potential to be affected on some level; however, as citizens we are all affected. Also this issue has a heavy influence on pricing in virtually every industry from the corner stores to insurance. I'm talking about cargo crime and the epidemic it has become.

Whether we are staring out an office window or a windshield, we are guaranteed to see trucks with thousands of goods in our constant view.

As we continue to become more of a global village, we are witnessing the exchange of product from country to country more than ever. This need for cargo delivery has spawned a number of opportunities for the business minded, some of these opportunities are legal and above board and some…..well you know the rest.

As the times have changed, so has the loot of choice for the modern day pirates of the highway. With the economy in a slump, the justification of crime becomes easier causing a Robin Hood like mentality with some. For this reason the main type of cargo being taken currently is food and beverages. Prior to the load even being in the wrong hands, the buyers are arranged and the goods are already sold. For the most part a syndicate of various small to medium grocery marts are willing to accept the deals that are clearly too good to be true (or at least legal).

Even though this type of loss may seem very costly, it pales in comparison to others. On average a theft of pharmaceuticals equals $3.7 million per loss and a load of cigarettes is $1.4 million. Now that is just the cost of the stolen goods but what we don't see is the ripple effect that it causes as a result. Sure it raises insurance rates and the price of goods; everything that any crime against property will do. What makes this type of theft unique however, is the fact that the sheer amount of product being taken makes it very difficult to assume that it would be for personal use in any capacity; therefore, this product will find its way back into the market.

This becomes a matter of health and safety when we are dealing with non-perishables and…you guessed it – pharmaceuticals. Even if one pallet is taken, the risk is there that someone could be drastically affected if it were to find its way back on the shelves. Any type of sensitive medication such as immune system builders for transplant patients or the much more common insulin must be handled and stored in very particular ways. For this reason, a $25,000 loss can quickly become a multi-million dollar settlement. In most cases however, the organization is forced to destroy the entire lot as a risk mitigation strategy to ensure the stolen medication can be tracked by a lot number, in turn costing them millions in product and production.

These are the types of issues that we are now being exposed to more and more. The public needs to realize that when it comes to cargo crime, it's not just the rising costs that we should be concerned about. In some cases it could literally be a matter of life and death. This is why many media outlets and statistics surrounding the cargo industry are finally letting this secret out.

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Barriers to Quick Remediation. By Tony Petruccelli, Marketing and Sales

Remediation of oil spills have been well documented and presented by esteemed Environmental Consultants in past articles, but often times the initial conditions of the site were not fully detailed to give an indication of how the spill spread to encompasses the area that it did. In this article, we will examine the telltale signs of features or barriers to quick remediation that often lead to cost overruns and inevitably lead to a larger total job cost. These initial conditions, as we will call them, are real and often visible and in specific instances can turn even a small amount of oil into a costly claim:

Worst case scenario, a Homeowner while attempting to fill his lawn mower tips over the fuel can, approximately 2.5Gallons of gasoline spills towards his neighbors home, he thinks nothing of it and does nothing about it, the neighbour a few days later complains of a gas smell inside his home and headaches, the fuel reached the weeping tile system of the home, permeated underneath the home's foundation causing extensive and costly environmental remediation due to concrete underpinning of the foundation required to remove contaminated soils and other complications.

A simple barrier to quick remediation that is often overlooked is Communication. At times Insured's are not fully aware of the gravity of their problem, cannot fathom the extent of the potential damages, which in turn may lead to a job stoppage, or push them to seek outside advice to the situation. A site meeting with the Adjuster, Consultant, Contractor and the Insured goes a long way to minimizing these types of delays. Once Insurance coverage is out in the open, all parties involved can commence work appropriately to achieve a clean result, on time and on budget.

Government and regulatory requirements such as city permits, locates of underground utilities, and the involvement of Conservations Authorities (in certain geographical areas) can also prove to be costly barriers to a quick clean up. Utility locates are only valid for 30 days except Bell which allows 60 days and municipal permits can vary greatly from city to city. Timely permit application and utility locates are critical in some circumstances to the progress of the cleanup. Exploratory drilling companies are often required when a Consultant is given the go ahead to delineate a spill site, unfortunately at times Drillers may not be free to schedule the work for days or weeks given their busy schedules, so having the utility locates in place are critical.

When a spill is located in close proximity to a building or some other structure, and the oil is confirmed below the footing of the foundation of the building, Consultant recommendations, the involvement of a Structural Engineer and the cost comparisons between underpinning, moving and demolition of the home can often cause delays that may allow oil to spread on site. In most cases these are unavoidable, but if all parties communicate and co-ordinate effectively these delays can be minimized and scenario costs determined quickly.



Above are a few examples of underpinning often required when contamination has reached below a foundation, and moving the home is out of the question, or not cost effective.

Many residential spills occur without being noticed, especially when dealing with home heating fuel systems; leaks from an outdoor tank, copper line perforations in basements, and underground storage tanks leaks. The time lapse between the spill and discovery often leads to increased costs on a file since the fuel has had ample time to penetrate into the soil, or under a concrete basement floor, weeping tile system, or into a sump pump basin. These are certain barriers to quick clean up and often times lead right to the delineation stage of the cleanup with little to no initial immediate removal of glut contaminated soil.

Winter conditions, snow and ice often obscure the fact that an outdoor tank has spilled into the environment since the fuel can travel under the accumulated white stuff and before you know it has traveled quite a distance, but on the positive side the frozen soil does not allow for deep penetration of the fuel so contamination remains relatively close to the surface and can be readily remediated.

A definite barrier to quick cleanup is the presence of water on a site, be it a nearby stream, creek or river, a high water table causing basement flooding, a weeping tile system leading to a sump system which pumps water out to the environment and the close proximity to a drinking water well. Nothing excites the Ministry of the Environment more than contaminated water running off site so these features often take precedent on such sites and may delay the commencement of contaminate soil removal, ability to underpin, and cause days of delays associated with inclement weather.

There are many great environmental consulting firms in this province very capable of delineating and managing fuel cleanups, the ease of co-operation between the consultant, contractor and insurance company is critical to recognize, plan, and attack an oil spill so as to diminish the barriers and efficiently complete the remediation of the property all the while minimizing the cost.

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