FIRE WATCH

ONTARIO INDUSTRIAL FIRE PROTECTION ASSOCATION

July 2005

NEW FIRE PROTECTION GUIDELINES

CSA N293-95 is a publication that outlines the requirements for fire protection in the CANDU power plants. While it is a regulatory requirement for the nuclear industry, it should be noted that there are some good operating practices addressed in this standard. For example, this includes comment on how to protect relocatable structures (usually known industry-wide as trailers). I think most of us can identify with the trailer issue – especially given the recent large loss fire in Texas. There are also other guidelines with respect to fire loading and hot work and other areas where tidbits for protection may be gleaned.

On a separate note, as individuals in the general public, you are also welcome to view this document and make comment from a public perspective. The public review draft is now online at CSA's website.

To access and/or comment on this draft:

1. Click Continue from the CSA Public Review Page (URL: https://review.csa.ca/opr/opr_about.asp?loc=CAN)
2. Select the N293 draft.
3. Select one of the two actions: Download Draft or Enter Comments

NOTE: *The public comment review period will come to an end on* ***02AUG2005***. So, take a look and if you feel the need please submit your comment(s) do so by this date. Nothing like a little light reading for the summer holidays!

INCIDENT MANAGEMENT SYSTEM

Development of the Incident Management System

The Incident Management System (IMS) has evolved from a combination of the original Incident Command System (ICS) and the Fire Ground Command System (FGC), both of which were developed in the United States in the 1970's and 80's.

The National Fire Protection Association (NFPA) has developed standards that incorporate incident management systems into standard practice for responses to both fire fighting and incidents involving hazardous materials emergency response. Rescue operations from confined spaces, trenches, high-level situations and other technical operations all utilize a form of IMS. Within Ontario our Ministry of Labour requires Municipal Fire Departments to use a "Command" system based on one of the "Recognized" systems at both structural fire and hazmat incidents. Although the Min. of Lab. requirements are specifically for Municipal Fire Departments, if an industrial establishment had this type of incident, because using an IMS is considered "Standard Practice", they could be subject to Min. of Labour scrutiny if they do not use an IMS at their emergencies.

Having an effective IMS in place will enhance the probability for the following concerns to be addressed;

Safety: First and foremost the IMS should address the responsibility of the Commander for the overall safety of each responder at the scene. Each crew leader has a legal responsibility as a supervisor for the safety of anyone under them within our provincial Occupational Health and Safety Act.

Command and Control: An effective IMS will have each responder responsible to only one individual. Commands will go up and down through the chain of command assuring the "Right hand knows what the Left hand is doing".

Planning: Although good pre-planning can cover many incidents, an effective commander will develop a strategy based on experience and understanding of potential behaviours of the hazard or incident.

Co-ordination: A good IMS will use the best possible resources for the task at hand and through effective communications efforts should be coordinated.

Action: A single commander can structure actions around tactical guidelines that see that all personnel follow standard rules of emergency response.

Organization: With no overall game plan, it is doubtful that participants will play their proper roles. This role confusion means uncoordinated actions leading to the breakdown of the strategic, tactical and task levels of response. A single commander who establishes the roles, relationships and functions for everyone on the emergency scene will lead to an organized response.

Communications: No matter how good your system is, communications will often be your "Weakest" link in the overall emergency response. Command should use Standard Operating Procedures that describe information flow for all types of emergency settings. One very important consideration should be "Radio discipline". Keep messages short and to the point. Identify who you are calling and who you are. Speak slower and more precisely on the radio. When at all possible "Echo" back radio transmissions rather than simply replying"10-4". A 10-4 response means you are acknowledging what you THINK you heard, not necessarily what was actually said!

Components of an Incident Management System

Common terminology: Different agencies do not use the same terms when responding to emergencies. For example Hazmat responders use different terms than do Fire fighters for similar activities. The first thing a Fire

fighter does is "Size up" the incident. A Hazmat responder does a "Situation analysis". You need to understand some of the terms other agencies may use when responding to an emergency at your site.

Modular organization: You will break up areas of responsibilities into different modules, groups or sectors to reduce the overall span of control on "Command". The break up may be by geographical location as in a large wild land fire or it may be by task such as valve isolation crew or cooling team etc.

Unified command structure: As discussed earlier, each individual on the scene should only have one direct supervisor to whom they report. This will help coordinate and maintain organization on the scene and should eliminate the possibility of "Freelancing".

Manageable span of control: Ideally Command should have no more than 6-7 individuals who can reach them by radio. If there are too many people trying to all communicate with Command by radio he/she will not be able to keep track of all transmissions and will likely have difficulties coordinating efforts.

Designated incident facilities: Many plants will pre-designate certain areas to be used as staging areas, command post locations, assembly points etc. so that when an emergency occurs some areas of the response will be automatic.

Integrated communications: You need to be able to communicate with other agencies as well as your own responders at the scene. You may have to give a radio to an outside agency so that they can communicate with the "Command post". You also will likely not want outside agencies moving about your plant unescorted. A designated responder or security guard may be required to accompany outside responders. Also the more people on the same radio frequency the more likely you are to have communications problems. You may need to establish a system where each outside agency has an aide assigned to each radio frequency to help keep communications organized.

Comprehensive resource management: Incident Command needs to ensure that the proper type and level of resources must be available to support emergency operations in a timely manner for an overall successful outcome.

Roles and Responsibilities of the Incident Commander

The I.C. is responsible for overall co-ordination and direction of all activities at an incident. Risk Management shall be used based on the following principles;

Significant risk to responders shall be limited to situations with potential to save "savable" lives.
Minimum risk shall be taken to save property.
No risk shall be taken where lives or property cannot be saved.

The risk to responders is the most important factor considered in determining strategy.
The management of risk levels involves;

Routine evaluation of risks in all situations.
Well defined strategic goals.
Use of Standard Operating Procedures.
Effective training.
Proper use of the appropriate personal protective equipment.
Effective communications.

Use of known safety guidelines.
Adequate resources.
Back up crews for "Rapid intervention"
Regular re-evaluation of conditions.
Experience based on previous incidents and critiques.

Pre – Emergency Planning

Pre – emergency planning may involve Community disaster plans, potential industrial hazards, weather related emergencies and day-to-day occurrences.

When pre-planning we must consider;

1. Life hazards.
2. Risk factors.
3. Emergency control.
4. Property conservation.

Included on our plan should be the following;

1. Name and address of the building.
2. Interior and exterior floor plans.
3. Points of entry and exit.
4. Fire doors and walls.
5. Fire Department connections.
6. Hydrant locations.
7. Apparatus and staging locations.
8. Special Hazard locations.

Benefits of a good plan;

LEADERSHIP	vs.	FREELANCING
CONTROL	vs.	CONFUSION
SIMPLICITY	vs.	COMPLEXITY
ORGANIZATION	vs.	CHAOS

REMEMBER:

FAILING TO PLAN
IS LIKE
PLANNING TO FAIL

Standard Operating Procedures/Guidelines (SOP's / SOG's)

The goal of using SOP's/SOG's is to have responders do things the same way each time out. They will outline and describe similar approaches for the emergency scene.

Characteristics of SOP's

1. They must be written. Just because we do things in a similar fashion each time is not an SOP. It must be documented.

2. SOP's must be Official Policy.
3. They must be used for all situations. It is no good to pick and choose when you will work within your SOP's. They must be used all the time.
4. SOP's must be enforced. If it is determined that an SOP is not practical or not enforceable it must be revised. This should be done after the emergency, not during.
5. SOP's should become the foundation for control at all emergency scenes.

Strategy and Tactic Selection

Incident Command must work at the overall game plan or "Strategic" level. The I.C. must work at the "Thinking" level and not get involved with hands-on functions at the emergency.
The "Tactical" level is handled by the sector or crew leaders who are given an objective by the I.C. Their responsibility lies with having the responders complete the "Task" functions.

Strategy Selection:

Offensive strategy involves a direct attack with related support to bring a situation under control.

Defensive strategy involves an indirect attack to stop the forward progress of the incident then achieve control.

Offensive and Defensive strategies must not be used in the same place at the same time.

Sectoring

Sectoring reduces the overall span of control of the I.C. Ideally, sectoring will be delegated to other officers who will then maintain responsibility for their sector. This delegating should, result in more efficient communications up and down the "Chain of Command" and should ensure coordination of efforts. Sectors may be assigned geographically eg. North sector, West sector etc. which can help break up large areas into more manageable ones. Another way to sector is by function eg. Ventilation crew, Valve isolation crew etc. Both ways of sectoring should improve responder safety if individual sector officers and crew leaders remember their most important responsibility is the safety of the responders reporting to them.

Other functional sectors may be , Water / Foam supply, Staging, Hazmat, Decontamination, Public Information, Police liaison, Safety, Planning, Logistics, Rehabilitation and Medical.

Traits or Characteristics of a Good I.C.

There are many characteristics of a good leader. The following are just some of those.

> **Calm under pressure:** The I.C. will be looked up to by the responders. He/She needs to project a calm confident manner to be a good example.
>
> **Knowledgeable:** The I.C. must understand the hazards, the capabilities of the responders, the resources available and his/her own capabilities. A commander that has "been there and done that" can use his/her personal experience as a knowledge base but must remember that he/she must stay at the "Strategic" level and not get involved with the hands-on operations.
>
> **Decision maker:** The I.C. must be able to process the information that is given and make reasonable decisions based on the evaluation of the information.

Good communicator: The I.C. must rely on the information of other sector officers and resources to be able to make effective decisions. A definition of good communications is "10 parts listening and 1 part talking".

Fair in assignments: The I.C. must use the best resources for the job and not dole out assignments as a form of punishment or reward.

Respect: The I.C. must show respect for the power of the hazard eg. the power of fire and also for the Safety of the responders. A commander who demonstrates by example that Responder Safety is his/her number one concern will be respected by his/her responders and in turn they will have confidence in the assignments they are given. They in effect will become better responders.

Tactical Worksheets

Tactical worksheets are a tool an I.C. can use to keep track of assignments, hazards, responsibilities and the command structure itself as it develops. It may contain valuable information to assist in your decision making process such as phone numbers of reference agencies, formulas for flow rate requirements etc.

In order to be effective the worksheet must be started early. The information will be invaluable at the time of transfer of command as well as when the incident is reviewed at a later time. It should contain the identity of the I.C. starting the sheet, a list of all responding units and assignments, a sketch of the emergency scene, life safety hazards that have been noted and any other that have been noted and any other pertinent information.

A worksheet can only be started when Command is in a stationary position. A sample worksheet follows this page.

Incident Management Summary

1. Establish an Incident Management System at **ALL** emergencies. If you think you only need to put an IMS into place at the "Big ones" you will find it very difficult to establish unless you have routinely used a system at smaller incidents.
2. Use an IMS during all of your training sessions so your responders and commanders are familiar with working within a system.
3. Establish pre-plans and SOP's for your major hazards. Review them and update as necessary.

Train all levels of responders in your IMS. Anyone who may be I.C. certainly needs to be trained but so does the responder you expect to work within your system.

Have you been practicing? The **Ontario Industrial Fire Protection Association's 10th Annual Wm. Beatty Memorial Golf Tournament** is scheduled for the 22nd of September again at the Niagara Parks Whirlpool Golf and Country Club, Niagara Falls.
Mark your calendars … start collecting those prizes (which you can send to us in advance), either for a day of golf or just for a day out and dinner (great food).
Hope to see you all there.

CODE UPDATE

June is an important month for anyone involved in water-based fire protection with the publication of the Report on Proposals (ROP). Technical committees reporting in June will be those responsible for NFPA 13, 13D, 13R, 15, 20 and 24. If you are interested in making comments on the proposed changes or simply want to get the jump on changes to the 2006 standards, you can order a copy of the ROP at http://www.nfpa.org/itemDetail.asp?categoryID=817&itemID=20929. The closing date for comments on the proposed changes is September 2nd, 2005.

FIRE PUMP POWER SOURCE RELIABILITY

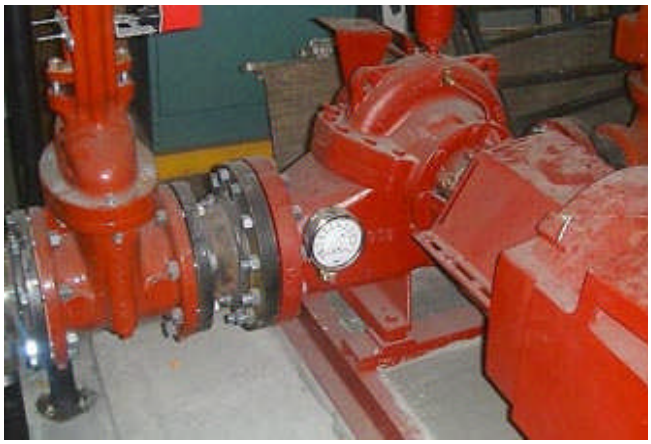
Ask three fire protection professionals what constitutes a reliable power source for an electric fire pump, and you're likely to get three different answers. The main reason for the confusion is the lack of clarity on power supply reliability in Chapter 9 of the 2003 and previous editions of NFPA 20. This lack of clarity leaves authorities having jurisdiction, designers, installers, and utility companies with a wide range of possible interpretations. What could be perceived as misinterpretations of NFPA 20 frequently result in either inadequate or over-designed fire pump systems? In extreme cases, local authorities for having more than two power sources have rejected installations. This is clearly not the intent of NFPA 20.

In recognition of this fact, a very detailed proposal (Proposal 20-69) to clarify power source requirements was submitted by Dana Haagensen of the Massachusetts State Fire Marshal Office (formerly the NFPA's Staff Liaison for the Technical Committee for Fire Pumps). The proposal highlights numerous deficiencies in the current text of Chapter 9.

Power Source Reliability

Those of us who live in the Northeast became starkly aware of what power source reliability is all about in August of 2003. Prior to the blackout, a reliable power source was "de facto" defined in many jurisdictions as one, which has had no interruptions of service for more than four hours in the past year. This definition is an interpretation of NFPA 25, which requires a fire watch if a water-based fire protection system is taken off line for more than four hours. Clearly, by this definition, no utility in the North-eastern United States and Canada can be considered reliable.

Specific to NFPA 20, the major confusion has been around normal and alternate power source arrangements. One of the most prevalent misinterpretations of the code has been the use of a standby generator as a "normal" source of power. The intent of the code has been to have a continuously available source for normal power such as a utility or an on-site power generation facility. If this power supply is subject to interruptions of service (as most are), an alternate source of power should be available. Though there are six acceptable arrangements for alternate power sources, simply stated, the alternatives with respect to the alternate source are as follows:



- A second independent utility source
- An on-site power generation station
- A standby generator
- A second pump driven by a diesel engine

Power Source Protection

Though NFPA 20 does define requirements for protection of conductors and disconnecting devices on the service side of the fire pump controller, one very critical aspect was and is still not addressed. Good portions of fires require aerial apparatus to be used by the fire department. This means the fire department must physically cut or disconnect power for any overhead lines which may pose a hazard to fire fighters. The proposal included a section requiring backup power if the normal source is supplied via overhead conductors. Though this section did not make it past the committee, it should be noted that power source protection should consider all possible interruptions of service including those involved in fire fighting tactics.

Feeder Circuits and High Voltage Sources

A growing number of utility companies are now supplying building owners with a high voltage power source. This places the transformer, which originally belonged to the utility into the private domain, where NFPA 20 starts. This new practice prompted a proposal to change NFPA 70 Article 695 to allow almost any arrangement of service disconnects and meters on the private side of the electrical service. Though this proposal passed Code Making Panel 13, it was rejected by the Standards Council based on an appeal by John Jensen, Chairman of the Fire Pump Committee and the author. The error in acceptance of this proposal was a function of the lack of clarity in NFPA 20 regarding feeder circuits from high voltage power sources. This text has been cleaned up in the Report on Proposals, and the relevant text will be extracted to NFPA 70 Article 695 either by Committee Proposal for the next revision of NFPA 70 or by Tentative Interim Amendment.

Authorities Having Jurisdiction

Of critical importance to power supply arrangements is careful consideration of the uniqueness of every building. Though the 2006 edition of NFPA 20 will clarify power supply arrangements, it is not within the scope of NFPA 20 to dictate power reliability for every instance. In designing a fire protection system, a good knowledge of the local jurisdictional requirements and specific idiosyncrasies of the building being designed are critical. As always, if you are uncertain of the requirements in your area, it is best to consult the Office of the Fire Marshal during the design phase of the project rather than have the installation rejected after the fact. For anyone interested in reviewing the proposed changes and / or commenting on them, it is recommended that you order a copy of the Report on Proposals being published in June of this year. To order a copy, contact the NFPA or order on-line at www.nfpa.org.

FIRE PUMP TIPS

Question: The city plan review office has rejected my design for a high-rise apartment building. The basis of the rejection was the fire protection rating of the fire pump room. I was under the understanding that the fire pump room requires a 1-hour fire rating per NFPA 20. Am I wrong?

Answer: You may or may not be wrong. As a first comment, NFPA 20 requires that pump rooms be of 2-hour fire rated construction unless the pump room is sprinklered. If the pump room is sprinklered, the rating requirement drops to 1-hour construction. Of note, all diesel fire pump rooms are required to be sprinklered. One important consideration is that if the pump room is sprinklered, the fire pump controller should be upgraded from NEMA 2 (drip-proof) design to a NEMA 4 enclosure.

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Membership Update Sheets

Have been recently mailed to each member of the Association.
Due to company name changes, email changes our membership directory
is "out-of-date" and needs to be more current for our membership.
Please complete the form and make the necessary changes and/or deletions for us. Thank you.