Are you familiar with this placard? If you are—get ready to learn the new symbols. More information can be found inside this Bulletin.
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FROM THE DIRECTOR’S DESK

By Jerry Monigold

As the new fiscal year begins and Fall rapidly approaches, activity becomes increasingly hectic around the Institute.

Our Fiscal Year 1981 appropriation amounts to $425,000. This is one of the first indications of an improved fiscal climate as a result of the Illinois Fire Service Institute Act. Of this total $111,800 is earmarked for planning and remodeling of training structures and facilities. This leaves us $313,200 for conducting programs, a $68,200 increase over 1979-80. Also freed up for use this year is approximately $22,300 that previously went for overhead charges. This means a total increase of available program funds of $90,500.

We'll need a sizeable portion of this to catch up our left over requests from last year. We finished the past fiscal year nearly 80 courses in arrears even though we taught 40 more courses than in 1978-79. A summary of the 1979-80 Annual Report appears later in the Bulletin.

We hope to begin the facility planning portion of our 5-year plan in the next month or two. If money is appropriated in Fiscal Year 1982 we should begin construction of the classroom/administration building then.

We are well under way with the planning and construction of our Mobile Breathing Equipment Training Laboratory. This is being built in a 40 foot moving van type trailer donated by the Illinois Central Gulf Railroad. Work is expected to be completed in time for the Spring training season if all the equipment arrives as ordered.

The Institute staff is also actively soliciting the tanks, valves, trailer frame etc., necessary to construct a mobile LPG training facility. This is being modeled after one shown recently in Fire Engineering and constructed by the Arkansas Fire Academy.

Advertisements have been placed and screening and selection of a new Institute faculty member should begin in about a month. This will provide the existing faculty a little more planning and preparation time and still increase training activity.

All in all this has the makings of a very busy and productive year for the Institute and fire service training in Illinois. A listing of our on-campus programs for the remainder of 1980-81 follows this article.
### 1980 - 1981

**SCHEDULE OF ON-CAMPUS COURSES**

Illinois Fire Service Institute

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INFORMATION NEEDED

Incident information is being requested in an effort to determine the need and type of training for handling electrical emergencies for fire service personnel. If you have had an incident involving electrical equipment, and were hampered by delays of responding power company personnel, please advise us. If possible, be as specific as possible in describing the incident, and let us know what you felt you needed to do immediately to relieve the situation.

Initial efforts are underway to determine the level of training necessary, and the appropriate equipment, to enable emergency service personnel to handle electrical emergencies when power company personnel are not available or delayed.

Please send this information to: Howard Eskridge, Illinois Fire Service Institute, 301 S. Wright Street, Champaign, Illinois 61820.

WHO'S MISSING IN YOUR DEPARTMENT?

By: David Clark

If your department, whether volunteer or paid, is like most you probably have a chief, a few officers, some drivers or engineers, and some hosemen. Their titles, if any, may vary, but the jobs they perform are obvious. We have the supervisors, the apparatus operators, and the men who handle the hoses, so who is missing? The missing man, the one who is absent in most fire departments, is the "Truckman." This term refers to the man who carries the axe, pole, and saw, and performs the ventilation, forcible entry, and overhaul work which is absolutely essential if you are to have an efficient fire department.

I know you are all short handed and most of us do not even have a ladder truck responding, but the fire doesn't know that. Therefore, the work of the Truckman must still be performed at every fire. Actually, the fewer men you have the more critical it becomes for you to make sure someone does the Truckman's job. He will make it easier to advance the line to the fire and extinguish it.

Probably the most important function of the Truckman is ventilation. Open the building up fast and completely so the heat and smoke escape and the fresh air and the firemen can get inside with the water. Often one man can vent a building sufficiently to permit entry. Without ventilation you cannot get inside that hot, smoky, pressurized box (building) and if you don't get inside--you lose.

The need for forcible entry is self-evident, but we too often lose buildings due to improper overhaul. A good Truckman will not only know where and when to open up walls, floors, ceilings, molding, etc. to search for spreading fire, but he will also have the necessary tools with him and know how to use them in the fastest, easiest, and least destructive manner.

Let's consider the tools of the trade. Three items are basic. They are a pick head axe, and short (6 or 7 ft.) pike pole, and a power saw for use on plywood and built-up roofs. To this you can add an endless assortment of bars, hammers, and other items. For now we are concerned with the basics.
Most work done with the axe should be done with the pick not the blade. Yes, you use the blade to cut floors and roofs, but when actually opening walls, floors, roofs, window sills, etc. the pick works wonders. If you cut with the blade, strike the surface at an angle rather than perpendicular to it. This is easier on you, and the wood cuts quicker. All paint should be removed from axe heads so they won't bind in flooring, and the axe should be sharp and free of rust and tar.

For most buildings a 6 or 7 foot pike pole is plenty long. It is almost impossible to use a 10 foot pole in a house with 8 foot ceilings. Once a pole is pushed through a ceiling you cannot see which way the hook is pointing, so it is helpful to mark the handle on the hook side with notches or in some other easily felt manner. Also, there is no law that says you cannot sharpen the tips of pike poles. I've seen many that were as blunt as your thumb, but a little filing will sharpen them so they'll easily penetrate lath or metal ceilings. As with the axe, keep them from rusting.

With the widespread use of plywood for roofs and side walls a power saw is a must. Both multi-purpose circular saws and chain saws are in use. If you have a circular saw, I suggest keeping a toothed carbide tipped blade in it, but you should also carry steel and concrete cutting blades. Do not store them in the same case as the gas for the saw, because that can deteriorate the composition blades. Keep fresh gas in the saw, and make sure it will start.

In future issues we will talk more about specific uses of these tools. A belt or rope hose tool tied around the waist permits you to carry the axe there and have both hands free for climbing or to carry other tools. It is also nice to hang a hand light from your belt. Such little things increase efficiency, safety, and professionalism. Take the tools in with you as soon as you step off the rig. Don't be a "go-fer." You will need the tools, so take them along.

There are some things you can do to find the missing Truckman in your department. Take the tools out of the compartments and mount them at the locations where the men ride. If they can be seen they are more apt to be used. In your tactics training, fire critiques, and fire fighting operations make a strong effort to emphasize Truck work and it's importance. Praise the guy who does it.

If your manpower is such that you can assign people as Truckmen do so, and then see that they work as Truckmen. If assigned men are not possible, pick out some of your best fire fighters and train them in Truck work, and then sell them on the importance of making sure the ventilation and other Truck duties are performed promptly. Perhaps an officer can look after this function at fires. In other words indoctrinate and even over-sell your people on Truck work, so that it becomes automatic, rather than an uncertain afterthought.

Put the missing Truckman on your fire department, and the improvement will be amazing. A fire department without Truckmen is like a one armed boxer, it really cannot do the job right.

**VOLUNTEERS: ARE YOU INSURED WHEN DRIVING?**

By: Howard Eskridge

A decision by the Court of Special Appeals of Maryland raises the question of personal liability for volunteer drivers.
The case of Macy vs. Heverin, et. al. resulted after an accident in which Macy was the authorized driver of a fire department ambulance. Defense, in Circuit Court, claimed governmental immunity. The fire company was allowed this defense. Macy, as an individual, was not.

The judge based the ruling on volunteers not being subject to the municipal control that is exercised over paid personnel (defined as public officials).

Volunteers should check with their personal auto insurance carrier. If you do not have a "drive other cars" endorsement, perhaps it should be added to your policy. Without this coverage, you may have no insurance coverage while driving fire department equipment, and be without the governmental defense immunity.

**FOUR STEP APPROACH TO TEACHING**

By: Jim Straseske

Anyone who deals with educational processes is well aware of the need to establish solid relationships with students. The establishment of this process is essential in producing a high quality educational achievement. This type of achievement is sometimes difficult to cultivate. One approach, can be produced by incorporating four basic steps in the instructional process. These four steps allow for the development of student-instructor rapport and provide the instructor with a general direction to follow. These steps are preparation, presentation, application, and testing. Each step has a specific relationship to the teaching-learning process.

The preparation step is concerned with preparing the student to receive new information. One of the more difficult steps to perform is the preparation step. The tempo of the entire lesson is dependant upon how well this step is executed. This step needs to be a strong influence on the students. The characteristics of this step are:

1. Be prepared to teach the subject.
2. Prepare the men for instruction.
3. Establish a positive atmosphere.
4. Find out what the class already knows about the subject.
5. Be sure the class understands what the job or subject is about.
6. Get the class interested in learning the subject.
7. Be sure that all present are in correct position to see and hear.

Every instructor must be aware of all these items as the class begins. Some of the steps require specific information to be obtained and others can be used to help analyze the needs of the students.

From the preparation steps we proceed to the steps involved in the presentation portion of the lesson. The presentation step is the heart of the lesson. All of the items deemed necessary by the instructors are categorized and organized into the presentation step. The items needed in the presentation are critical to a successful lesson or class. These steps include:

1. Present the subject in a logical sequence by discussing one step at a time.
2. Use the most effective combination of methods of teaching.
3. Consider use of teaching aids.
(4) Instruct clearly, completely, and patiently.
(5) Include only as much material as can be mastered at one time.

Once the presentation step has been completed, the attention turns to the application of the material. The application is an opportunity for the students to practice new knowledge and skills gained during the presentation step. During the application step the instructor is concerned with the students mastering the new material, not testing them on the new material. The following are characteristics of the application step:

1. Have learners apply what they have seen, heard, and discussed as soon as possible after exposure to the new material.
2. Have each learner perform the job.
3. Assist only when necessary.
4. Have student explain the key points as he does the job.
5. When teaching theories or principles, get the learner to see where key points apply to efficient performance through statements, questions, and problems.
6. Make sure each student understands the lesson.

After the completion of the application step, the last step is testing. With the testing step the instructor measures how well the material was received by the student. The testing step should:

1. Help the instructor determine if the objectives have been achieved.
2. Let the student know where he stands.
3. Help the instructor determine if the student is ready to move on.
4. Put the student on his own.
5. Let the learner know where he can get help.
6. Encourage questions.

If the instructor practices these steps each lesson can be a successful learning experience.

**BREATHING STRATEGIES FOR FIREFIGHTERS USING SELF-CONTAINED BREATHING APPARATUS**

By: Jack Rutledge

With the majority of fire departments in the State of Illinois using either pressure demand or demand-type breathing apparatus, a knowledge of breathing strategies is essential for the firefighter to efficiently use breathing equipment.

In the average air cylinder utilized by fire departments, there are approximately 45 cu. ft. of air contained within a vessel at a pressure of about 2200 psi (pounds per square inch). The rate at which one uses this 45 cubic feet of air is dependent upon several factors. Some of these factors the firefighter can control, others he cannot.

One factor is the size of the firefighter. Larger people use greater quantities of air, and smaller people use smaller quantities of air. However, larger firefighters can handle some of the heavier workloads easier while smaller firefighters can maneuver easier in small spaces. Just be aware of your own air consumption rate.
A second factor that increases the amount of air used is that of heat. More than any other occupation, firefighting requires firefighters to enter areas of high heat. Physiologically, one of the responses of the human body when entering areas of high heat is to cause the person within that environment to breathe faster. This factor also increases the amount of air used.

A third factor is psychological, and that is apprehension. As a person becomes concerned about his safety, as most firefighters are inside a burning building, anxiety will be expressed directly to the physiological nerve centers, which will cause an increase in respiration. Repeated training to familiarize the firefighter with his equipment, the environment and his interaction with both is essential.

In order to understand breathing strategies better, a brief review of some of the physiological principles of respiration must be understood. First of all, some terms. Tidal volume is the volume of air inspired and expired with each normal breath, and it amounts to about 500 ml or a half quart in the average young adult male. Dead space volume is a portion of the inspired air that goes to fill the respiratory passageways, the membranes of which are not capable of significant gaseous exchange. Normal dead space volume on the young adult male is about 150 ml.

In order for air to work for us, it must enter into the alveoli. The volume of air that enters the alveoli with each breath, therefore, is equal to the tidal volume minus the dead space volume or Alveolar ventilation = Tidal volume - dead space volume. It is important to understand that the dead space volume will change with various breathing strategies. A brief illustration of this is shown on the graph located below.

Area of each small block represents tidal volume (250, 500, or 1000 ml). Total area of each large block (shaded + unshaded areas) = minute volume of ventilation; in each case it is 8000 ml. Shaded area of each block represents volume of alveolar ventilation per minute; this varies in each case since Alveolar Ventilation/min = (Tidal Volume - Dead Space) x Frequency. A dead space of 150 ml is assumed in each case, although actually the dead space would increase somewhat with increasing tidal volume.

In each of the three examples, the total amount of air to the total minute volume in each case is 8000 ml. In the first case, a firefighter breathed that 8000 ml by taking the 32 fairly shallow breaths of 250 ml. In the second case, he achieved
the 8000 ml by taking the average 500 ml tidal volume, 16 of these equal to 8000.
In the last case, the firefighter used a different strategy. He took very deep
breaths, 8 in number. As indicated, the shaded area of each block represents the
alveolar ventilation per minute. It can readily be seen that in utilizing breathing
strategies, the best strategy to be used by firefighters would be, if possible to
take infrequent deep breaths. This would lead to the greatest amount of alveolar
ventilation. Of course, this in reality can often times be difficult. The key to
breathing control for firefighters is training. It must be practiced. Body move­
ments must be conserved, and of course, the more a firefighter has a chance to
practice in the environment he's going to work in, the less apprehensive he is, and
the more efficient he will be.

All of these factors can lead to conservation of air for the firefighter.

To experiment with breathing strategies, fire departments can easily set up
an obstacle course within their own department. Make your obstacle course a
fixed length, and as you go around it from day to day do various physical tasks
which firefighters must be able to perform on the fireground. Practice doing
these tasks using different breathing strategies, and of course, measure the
amount of time it takes you to complete these tasks, and measure the amount
of air utilized for completion of the tasks. This will help the firefighter
achieve some baseline as to how much air he utilizes per minute and also to
help him in his or her most efficient breathing strategy.

HYDROGEN CYANIDE CYLINDERS SURFACE

By: Howard Eskridge

A recent article by Charles W. Orton has pointed out a problem that may be of
major concern to the fire service in Illinois. Old hydrogen cyanide cylinders
were discovered at an elevator in Texas. Their disposal required the services
of American Cyanamid and an Army E.O.D. team. The article points out that
although there are only a small number of the cylinders still unaccounted for,
they are probably in the Southwest, South, and Midwest.

These cylinders carried a clear warning to the users to return them after 90 days,
but...

The chemical was used as a fumigant by exterminators and farmers and at grain
elevators. Cyanamid has written letters and made phone calls to every known
distributor and user of HCn, stressing the danger of the cylinders.
"If the cylinders are found, UNDER NO CIRCUMSTANCES SHOULD THEY BE MOVED OR
TOUCHED. When asked what should be done in a fire fighting situation...
everyone should get away as quickly as possible. Trying to cool the cylinder
with a hose stream probably would not help at all, and may even aggravate the
situation."

In the event any of these cylinders are found, contact American Cyanamid, 24
hours a day, collect, at (609) 799-0400, extension 2157. A team of specially
trained personnel will be dispatched to dispose of the cylinder(s).
ADDITIONAL GASOHOL INFORMATION

By: Howard Eskridge

During the 1980 Fire College, a gasohol extinguishing demonstration was conducted on Sunday morning.

The test fire utilized a 10% alcohol/90% regular gasoline mix. The alcohol was 190 proof ethanol (denatured). Extinguishment was achieved by using 3% AFFF with a 60 gpm eductor and aspirator. No particular problems were observed, and the 3% concentrate was picked up at the 3% setting on the eductor.

Some tests have indicated that when dealing with a gasohol mixture, the next higher setting on the eductor should be used in picking up the concentrate. This problem did not occur in our test.

Following the gasohol test, an alcohol fire was ignited and PSL concentrate was applied for extinguishment. The alcohol was 190 proof ethanol (denatured). The PSL was picked up at a 6% rate, and provided an extremely quick extinguishment.

PSL is applicable for both hydrocarbon suppression (such as gasoline) and polar solvent suppression (such as alcohol). For hydrocarbons, a 3% pickup rate is recommended, and for polar solvents, either 6 or 10% is recommended by the manufacturer, National Foam Systems, Inc. In most cases, purchasers also notice another benefit... it costs less than standard 3% AFFF.

Editors Note: For more information see the following results of tests conducted by Iowa State University, Fire Service Education in conjunction with Archer Daniel Midlands Corp. and Iowa Fire Equipment Co.

GASOHOL EXPERIMENTS CONDUCTED BY FIRE SERVICE EXTENSION
IN COOPERATION WITH: ADM CORN SWEETENERS
IOWA FIRE EQUIPMENT

On November 20, 1979, Fire Service Extension, Iowa State University, Ames, Iowa, in cooperation with ADM Corn Sweeteners of Cedar Rapids, Iowa, and Iowa Fire Equipment of Des Moines, Iowa, conducted field research using alcohol and gasohol under fire conditions at the Demonstration and Research Area. The type of alcohol employed for the fire tests was C.D.A. 19, the chemically denatured ethyl alcohol currently used in practically all of the gasohol in the United States. The gasohol was composed of 10% C.D.A. 19 and 90% unleaded gasoline. This is presently a standard formula for commercial sales at service stations throughout the country. Several extinguishing agents were used at differing rates of discharge on various sizes of flammable liquid fires. The day was overcast, with light mist and rain showers. Temperatures were in the mid to upper 30's, with a light wind blowing.

48 Inch By 44 Inch Fire Pans

The first experiments were conducted in metal pans, 48 inches by 44 inches by 12 inches, using fire (5) gallons of alcohol, formula C.D.A. 19, containing 5% denaturants. The flame was light orange in color. Using a 15 second preburn to prevent excess heating of the container, a 20 pound 40 BC dry chemical extinguisher was applied for 5 seconds by a fire fighter to obtain extinguishment. The remaining fuel was reignited with various individuals using the same extinguishing agent with similar results,
even after heating of the container. The only difference noted was that the vaporization of fuel on subsequent fires resulted in a flash upon approach of the ignition source.

Pure alcohol burns with a pale blue flame and since the C.D.A. 19 grade of alcohol burned with an orange flame it was speculated that the denaturing agents contributed the orange color. A small amount was placed on the ground and ignited. The flame color was orange until it burnt itself out which indicated (1) the denaturants do not separate themselves by absorption into the soil, and (2) the denaturants do not burn out more or less quickly than the alcohol.

The next experiment used five (5) gallons of alcohol in the same size containers with a 15 second preburn before application of a 2½ gallon portable "Light Water" 20 B rated extinguisher. Two gallons were applied to obtain coverage of the alcohol in 51 seconds. Flame was detected near the hot pan walls resulting in a deterioration of the light water blanket and reignition at 2 minutes, 20 seconds from initial ignition. Several applications were made by individuals using light water with similar results.

The next fire in the same containers consisted of five (5) gallons of water mixed with five (5) gallons of alcohol. A 20 pound 40 BC extinguisher, applied after a 15 second preburn, required 2 seconds for extinguishment. The same results were obtained by several individuals using a 40 BC extinguisher.

The next experiment was performed in the same pans using five (5) gallons of water and five (5) gallons of alcohol as fuel. After a 15 second preburn, water was applied through a 1½ inch line with a 30 gpm nozzle, 30-60° fog at 100 psi. At the end of 7 minutes 26 seconds, the fire ceased and could not be reignited with an ignition stick. This showed that the fuel had been diluted to the point where it would not reignite, or the fuel had been completely consumed.

The last series of experiments in the 48 inch by 44 inch pans consisted of five (5) gallons of standard gasohol. A 15 second preburn required a 7 second application of the 30 pound 80 BC dry chemical extinguisher by the first operator. The second operator, after reignition of the remaining fuel, took 5 seconds and the third operator required only 3 seconds.

The five (5) gallons of gasohol in the 48 inch by 44 inch pans required 33 seconds of application with the portable light water extinguisher and resulted in reignition along the edges of the hot container. There was a slow breakdown across the surface resulting in total surface combustion.

5 Foot by 8 Foot Containers

The next series of tests were in 5 foot by 8 foot containers. Fifteen (15) gallons of alcohol were allowed a 15 second preburn. The fire was extinguished with a 4 second application of a 20 pound 40 BC dry chemical extinguisher. The same time was required by several operators in subsequent fires using a 30 pound 80 BC extinguisher.

The next fire was in the 5 foot by 8 foot pan with fifteen (15) gallons of alcohol. A 60 gpm nozzle of water was applied until the fuel burned out.
Then, fifteen (15) gallons of gasohol in the 5 foot by 8 foot pan was allowed a 15 second preburn and extinguished with a dry chemical extinguishers. Several operators extinguished the gasohol in an average time of 10 seconds.

The next experiment of gasohol in the 5 foot by 8 foot pans was with a 20 B light water portable extinguisher. This method was ineffective and the gasohol burned itself out.

55 Gallon Alcohol Spill

The next series of experiments consisted of fifty-five (55) gallons of alcohol spilled on the ground, resulting in a spill fire of approximately 100 square feet. The equipment used for extinguishment was a 1½ inch hose line with a 75 gpm constant gallonage fog nozzle at 100 psi and an in-line eductor set at 6% for all special foam agent tests. The first extinguishing agent used was 3M Light Water A.T.C. 6-9% concentrate. Following a 30 second preburn, control was obtained after 24 seconds of application.

The next spill of fifty-five (55) gallons of alcohol was extinguished in 30 seconds using the same hardware applying National Foam's Aer-O-Water P.S.L. 3, 6, or 10% Polymeric/Aqueous Film Forming Foam Liquid. This material was designed for use on polar solvents.

It should be noted that an equal volume of agent, approximately four (4) gallons, was used in each of the above experiments and reignition was not possible. Both agents seemed to be equally effective.

Simulated Bulk Plant Spill

The final experiment was a simulated bulk plant spill fire using 700 gallons of gasohol. Time was not measured for this exercise because the objective was to observe the agent reaction in and around the various tanks, valves, and other obstructions within the spill area. A simulated leak from a 1½ inch pipe was flowing gasohol during application of agent until the supply terminated which was approximately 200 additional gallons, about 3 minutes into the application phase of the agent. A 95 gpm fog nozzle was used with the in-line eductor and 3M "Light Water." Back-up lines were charged and manned for use if necessary but were not turned on during the exercise. The evaluation by observers of this gasohol fire noted no observable difference in extinguishment of gasohol from the many, many previous exercises in the same area using gasoline.

Summary

Dry chemical hand extinguishers, foams, and water react the same on gasohol in field usage as you presently expect to occur with gasoline. When encountering a pure alcohol fire, it should be noted that it will break down light water and possibly some of the other foams normally found in the fire station.

Special thanks go to ADM Corn Sweeteners, Cedar Rapids, Iowa, Iowa Fire Equipment, Des Moines, Iowa, the Cedar Rapids Fire Department for personnel, and the many fire department individuals who were present for the tests and provided comments on their observations.
With the warm weather on us, this seems like the ideal time of the year to conduct service tests on fire pumps. Warm weather provides certain advantages for testing. No problems with ice formation or cold hands, easy access to most drafting areas, and a better indication of the condition of the pump and power train.

The latter item may cause some concern. Warm water is more difficult to pump than cold water. Maximum pump performance takes place when water is just above the freezing point, at its maximum density.

However, with warmer water, the water is less dense, and is not as easy to pump. Granted, a minor item, but of major concern with a marginal pump or power train.

A pump that meets or exceeds its ratings with the warm water will perform even better with cooler water.

Older service testing layouts called for the use of 100-foot lengths or 2 ½-inch hose to a deluge set for testing. For most applications, two 50-foot leads from the pump to the gun will perform adequately.

The original concept of using the 100-foot lengths of 2 ½-inch hose was to provide enough back pressure from friction loss to reach the desired pressures. Careful throttling of the discharge valves will create adequate back pressure, and reduce the amount of hose rolling after the test is completed.

LOCAL FIRE PROTECTION LEADERSHIP WORKSHOPS

A series of 7 workshops will be held around the State of Illinois by the Department of Commerce and Community Affairs, the Department of Law Enforcement and the Office of the State Fire Marshal. Several staff members of the Illinois Fire Service Institute will be speakers or panelists.

This series of workshops will help the top officials and fire chiefs of fire districts and municipalities to get on top of their job of leading their fire departments. Outstanding fire service and other professional and lay leaders will provide the program.

8:30 - 11:00 A.M. REGISTRATION

9:00 - 9:40 A.M. WELCOME and ADDRESS: "The Fire Challenge to the District Trustee and the Municipal Official"

PANELS

Track 1

9:40 - 10:50 A.M. 1. Fire Department Organization and Administration

Track 2

1. Fire Prevention I
10:50 - 11:00 A.M. .......... BREAK ............... 
11:00 - 12:15 P.M. 2. Fire District 
Financial Management
2:15 - 1:30 P.M. .......... "ON YOUR OWN" LUNCH .......... 
1:30 - 2:40 P.M. 3. Fire Service Liability 
3. Arson I 
2:40 - 2:50 P.M. .......... BREAK .......... 
2:50 - 4:00 P.M. 4. Disaster Management 
4. Arson II 
4:00 - 5:10 P.M. 5. Grantsmanship and 
Intergovernmental Training 
Cooperation 

Call or write Jarl Tremail, DCCA, 222 South College Street, Springfield, Illinois, 62706. Telephone (217) 782-5883, if you have any questions.

The workshops will be held at the following times and locations:

ELGIN    SEPT. 6
Holiday Inn - Elgin
345 River Road, Elgin
(Just off I-90)
(312) 695-5000

PEORIA    SEPT. 13
Holiday Inn - East Peoria
401 N. Main St., E. Peoria
(Just off I-74)
(309) 699-7231

QUINCY    SEPT. 20
Holiday Inn - Quincy
200 Maine St., Quincy
(near U.S. 24 and IL 104)
(217) 223-6610

MT. VERNON    SEPT. 27
Holiday Inn - Mt. Vernon
I-57 and IL 15, Mt. Vernon
(618) 244-3670

DIXON    NOV. 8
Sauk Valley College
R. R. 1, Dixon
(just off IL Rt. 2 between Sterling and Dixon)
(815) 288-5511
HYDRAULICS: WYED LINE ENGINE PRESSURE CALCULATIONS

By: Jack Rutledge

A wyed line usually means taking two smaller lines from one larger line. A typical example might be a wye coming from one 2½ inch line and separating it into 2 1½ inch lines. The fireground engineer must understand some basic hydraulics principles in order to rapidly calculate his engine pressure.

One of these principles is that when an engine pumps into a wye that a division of volume takes place. An equal volume of water flows through each of the wyed lines, assuming that they are of equal length and size. In other words one half the volume of water flowing through the larger line passes through each of the two smaller lines.

However, the pressure does not divide. If an engine develops a certain amount of pressure at its discharge port, that pressure is delivered through the large diameter hose, through the wye, and equally through each of the wyed lines. Therefore, in figuring the friction loss, if the pressure for loss due to friction is calculated in one of the wyed lines, it is automatically taken care of for the other wyed line, and need not be added or doubled.

These problems can usually be handled easily by using the basic engine pressure calculation formula where \( EP = NP + FL + EL \). In other words, engine pressure equals nozzle pressure plus friction loss, plus elevation loss. See the example problem which follows.

It is usually easiest to start at the furthest point away from the fire apparatus and work your way back. For instance, nozzle pressure in this case is 100 psi. Adding up the friction loss, you simply take the amount of friction loss in one of the 1½" lines. With 100 gallons of water flowing per minute per 1½" line, 100 feet in length, the friction loss is approximately 30 psi. Remember, we're adding pressure to overcome friction so if we add 10 pounds to overcome friction for one of the wyed lines, we don't need to add it for the other wyed line. Working our way backwards for additional friction losses, we'll add 10 more pounds for the wye. In calculating a friction loss for 2½ inch line, we note that if each 1½" is delivering 100 gallons of water per minute, and there are two of them, then 200 gpm must be flowing through our 100 feet of 2½" hose. If this is the case, then the friction loss in the 2½" hose is approximately 10 psi.
Assuming zero elevation, then we have 100 psi nozzle pressure, plus a total of 50 psi for friction loss. Adding together, we see that the engine pressure is 150 psi. or EP = NP + FL + EL = 100 + 30 + 10 + 10 = 50.

Hydraulics Problem: Wyed

Example:

100' of 2½"

ED = EN + FL

EP = 100 + 30 ½ loss
   10 Wye loss
   10 2½ loss
   50 Total loss

EP = 150 psi.

Practice Problems:

#1.

400' of 3"

300' of 2½" each with 250 GPM fog nozzles

#2.

400' of 2½"

150' of 1½" each with 125 GPM fog nozzles
HAZARDOUS MATERIALS UPDATE

Placards May Change...Again!

After two years of getting used to the current D.O.T. placarding regulations for hazardous materials, the placards MAY be changing later this year, or next year, or possibly not at all.

Earlier information indicated that November, 1980 would be the time for the initial implementation of the new system. This system would have a four-digit number on each placard. Once this number was obtained, a reference directory could be used to determine the exact product indicated by the number. Early estimates were that approximately 400,000 copies of the reference directory would have to be distributed to emergency service agencies in order to make direct use of the system.

The numbering system corresponds to the United Nations numbering system for placarding hazardous materials. Products not listed by the U.N. would be assigned numbers and placed in the reference directory.

On July 31, 1980, a hearing was held in Washington, D.C., at which time the status of the new regulations again went into limbo. Results of these hearings have not been finalized. Communication with D.O.T. officials following these hearings did not provide a clear answer as to what and when the new system will be implemented, if at all.

On May 22, 1980, the Federal Register carried the new regulations, along with a list of hazardous materials and their assigned numbers. One particular item noted is that there is no pattern for the numbering system. Products are assigned the next number as they come along.

Placards will still have their basic color configurations to indicate hazard class. However, the number will indicate specific product.

Further information will be presented in future Bulletins as it becomes available.

On a pessimistic note, are these numbers going to reduce the number of highway accidents and train derailments involving hazardous materials? If a container with a numbered placard is involved in an incident, and you are close enough to read the numbers, aren't you a little too close?

SPECIFICATIONS BY OBJECTIVE: REVISED THINKING FOR APPARATUS PURCHASING

By: Howard Eskridge

Few departments in Illinois, or for that matter, across the country have not felt the economic crunch of inflation. It is not unusual to find apparatus purchased in the 60's or early 70's being replaced with similar units at a cost of two to three times that of the older units.
In earlier years, some apparatus was purchased on a "wish list" or "parade piece" basis. In retrospect, many of the "goodies and pretties" often did little or nothing in regard to the functional necessities of the apparatus.

One of the major realizations that must be accepted by those responsible for apparatus acquisition is that in order to obtain a functional piece, it does not need to cost more than someone else's. Keeping up with the Jones' is poor rational and ineffective management.

When starting consideration for a new piece of apparatus, input should be obtained from all possible sources. These include all members of the fire department, people from the business community, people from the governmental unit(s) dealt with, and any other sources within the community.

Personnel from the fire department can assist in evaluating present apparatus. How well does what we have work? Could some things be changed, or eliminated, making the unit more efficient and more functional? What are the engineers' evaluations, and those of the company officers and firefighters? What do training personnel have to say about the ease of training with current units?

What information can be obtained from outside sources in regard to possible expansion? Are changes going to occur in the community that will require something different or additional in the area of fire protection?

After evaluating present equipment and anticipated changes in the future, the next step is to objectively identify the functional needs of a piece of apparatus. At this point, equipment and accessories should not be stated, but what are the performance requirements. The performance requirements become the objectives the apparatus is to satisfy.

Once the performance requirements, or objectives are identified, they should be arranged in a priority sequence. Then, various alternatives can be developed which will meet the objectives.

Each alternative should include the pros and cons, the cost, the interrelation it has to the satisfaction of other objectives, and a statement as to what the results will be if the particular alternative is not included at all.

Once tentative decisions have been reached, they need to be combined to determine if the items chosen will work, or fit together. What may sound good, may not be engineeringly possible.

With a reasonably firm final decision, look at the overall unit and consider ease of maintenance. Preventative, and both minor and major corrective maintenance procedures should be capable of being performed without having to autopsy the apparatus.

At this time, representatives of apparatus manufacturers can be contacted. See what they have to offer, and how well it fits your tentative plans. You may find some items that will cause you to return to the planning stages, and make revisions.

When all the revisions have been made, the final specifications for the apparatus can be drawn and submitted for bids. The specifications should be clear, and as detailed as necessary so that "what you say is what you get". Manufacturers do not add items that are not called for, so be sure each item is included. N.F.P.A.
pamphlet 1901 is an excellent guide for writing specifications. You may even wish to use the paragraph numbers in the specifications. 1901 is particularly helpful in not forgetting to include items in the specifications.

When bids are received, go through each one, item by item, comparing it to your specifications. A checklist will help in this process. If no one satisfactorily meets your specifications, don't hesitate to re-bid. There are more than 50 apparatus manufacturers in this country.

When a satisfactory bid is received and the contract signed for the apparatus, the unit delivered and accepted by the department should be a functional unit, designed to serve the needs, not the "shopping list" of the department.

The process of developing specifications by objective provides another method of providing fire protection to a community, where the fire protection needs are satisfied. There will usually be a number of ways of reaching a particular objective. The most feasible way may also help keep the cost of the already expensive apparatus as low as possible.

SOLUTIONS TO PRACTICE PROBLEMS FROM PAGE 17

1. \[ EP = NP + FL + EL \]

\[
\begin{align*}
FOG &= 100 + \text{Gun loss} = 10 + EL = 0 \\
2\frac{1}{2} \text{ loss} &= 45 \\
\text{Wye loss} &= 10 \\
3" \text{ loss} &= 100 \\
(\text{using } Q^2) \\
100 \text{ Total} &= 165 \text{ psi.} = 265 \text{ psi.}
\end{align*}
\]

2. \[ EP = NP = FL = EL \]

\[
\begin{align*}
FOG &= 100 + 1\frac{1}{2} \text{ loss} = 75 \\
\text{Wye} &= 10 \\
2\frac{1}{2} \text{ loss} &= 60 \\
\text{I45}
\end{align*}
\]

\[ EP = 245 \]

The following three articles have been supplied us by other agencies and contain information useful to the Fire Service and applicable to training. The Fire Service Institute Bulletin is happy to print such articles.

ILLINOIS FIRE CHIEFS ASSOCIATION PRESENTS:

Subject : "WOMEN IN THE FIRE SERVICE SYMPOSIUM"

Date : NOVEMBER 18-19 & 20, 1980
(Starting at 7:30 on Tuesday evening November 18th)
OPEN LEARNING FIRE SERVICE AT WESTERN ILLINOIS UNIVERSITY.

Beginning in the fall semester of 1979 Western Illinois University, in cooperation with the Open Learning Fire Service sponsored by the U.S. Fire Academy began offering courses for fire fighters and other professionals in related fields. This cooperative effort enables individuals from the states of Illinois, Iowa, Missouri, Nebraska and Kansas to complete a bachelor's degree through the Board of Governors Bachelor of Arts degree program. Established in 1973 to meet the educational needs of mature adults with family and employment commitments, the BOG Program enables students to apply credits earned at other accredited colleges or universities, credits awarded for non-academic prior learning, as well as credits earned at Western Illinois University, toward completion of a Bachelor of Arts degree. Each student is encouraged to develop an individualized program including course work which directly benefits career development or personal needs.

FALL SEMESTER COURSES. During fall semester of 1980, the following courses will be offered: Personnel Management for the Fire Service (LEA 483--Wall): Personnel practices and management procedures. Included are manpower planning, labor relations, recruitment, selection, testing, performance appraisals, classification, motivation, politics, and management. Fire Prevention Organization and Management (LEA 484--Fischer): Examines and evaluates the techniques, procedures, programs and agencies involved with fire prevention. Topics include public and private fire prevention functions, licenses, permits, zoning, legal aspects, inspection, investigations, planning, arson and incendiary analysis. Fire-Related Human Behavior (Psychology 490--Smith): Dynamics of human behavior in fire incidents related to fire prevention.
practices, programs, codes and ordinances, concepts of role, personal invulnerability, risk and group dynamics, as related to design aspects of buildings and the mitigation effects of fire in the modern society. The psychological effects of communications during emergencies and the conduct of post fire interviews. Disaster and Fire Defense Planning (Safety Education 475--Sigwart): Concepts and principles of community risk assessment, regional and cooperative procedures and plans, the relationship of structural, climatic, and topographical variables to group fires, conflagrations, and natural disasters, pre and post occurence factors, communications, planning organization, coordination, command, and logistics. There are UPPER DIVISION COURSES for which previous practical or educational background is presumed. THREE SEMESTER HOURS OF CREDIT are awarded upon successful completion of each course. In addition, Western Illinois University offers a selection of courses in a variety of other fields through independent study.

COURSE INSTRUCTION. The Open Learning concept makes it possible for students to complete these courses while maintaining a full-time job and without the necessity of coming to the campus. As soon as your application is processed, you will be sent a detailed course study guide, cassette tapes, study aids, and information on ordering textbooks. The course can be completed on your own, although working with colleagues enrolled in the same class can be helpful, and the course instructors will assist you through individual conferences, letters, or telephone calls. Two class meetings will be scheduled in Macomb during the semester and other meetings may be scheduled where several students live in the same area. Each course requires the completion of open-book examinations and a final which must be proctored by an individual employed in the field of education. The instructor will be responsible for assigning a letter grade for each course which has been designed to be completed in one academic semester.

COSTS. Tuition is $24 per semester hour or $72 per course. An additional charge is made for textbooks and a study guide. Details about financial assistance through Illinois Military Scholarships or Veterans benefits are available on request.

ENROLLMENT ELIGIBILITY. Enrollment is open to any individual with a high school diploma or GED certificate. Since the courses to be offered are at the advanced university level, the program is most appropriate to persons who have had some college work. Western Illinois University will serve students who reside in the states of Illinois, Iowa, Missouri, Nebraska, and Kansas only.

REGISTRATION. To register for one of the fall semester OLFS courses, complete the enclosed registration application. Applications, which must be accompanied by full tuition payment or an official document guaranteeing payment by your employer, will be accepted on a first-come basis. Enrollment is limited to 25 students in each class. If you decide to register for fire service courses, you should request institutions you have attended to mail official transcripts to:

Registrar
Sherman Hall 110
Western Illinois University
Macomb, IL 61455

For additional information about the Independent Study Program and/or a list of fall semester courses, please contact:
Editors Note: Courtesy of Bartlett and Countryside Fire Protection District, Elmer Hecht, Fire Chief.

POINTS TO REMEMBER WHEN WORKING ON A FIRE GROUND

* Have an objective—don't enter a building for the sake of just being there.
* Have attack line ready (check pattern, pressure, and bleed off air).
* Approximately 50 feet of hose should be available immediately (spread out) near the point of entry of attack crew. This will, in many cases, provide the attack crew with a high degree of freedom of movement while advancing to seat of fire.
* Wear full protective clothing (coat, boots, gloves, and helmet with ear-flaps down).
* Wear appropriate breathing apparatus, if necessary.
* Make certain that your breathing apparatus is working properly (check cylinder pressure, air tightness of facepiece).
* Work at least in groups of twos.
* Before attempting to force a door or window, check first to see if it is unlocked. Don't break windows unless there is definitely a need to do so.
* Avoid overcrowding of hose lines; permit only enough men to perform the task at hand.
* Stay close to floor.
* Keep physical exertion to a minimum.
* Avoid unnecessary conversation.
* Know who and how many men are on the attack line with you.
* Move slowly and deliberately through building—feel with your hands and/or feet as you move. (Watch out for burned out floor sections, stairs, and other conditions which may be hazardous).
* When moving through an opening, such as a window, make sure first that you have solid footing before releasing your hold.
* Avoid overcrowding of stairs, doorways, or other channels leading to safety.
* If you should become separated from attack line and are unable to relocate it or communicate with its crew, move to wall and follow to window or other opening to safety or help. Don't PANIC.
* If you should become lost in a building and come across a hose line, follow it to a coupling. Hold the coupling in front of you. Place your fingers on the rocker lug closest to you and then move your fingers toward your body. If your fingers drop off of lug and hit metal, you have the female coupling. You should move in the direction which you are facing. If your fingers drop off of lug and hit hose, you have the male coupling. You should turn around and go in the other direction. REMEMBER: THE MALE COUPLING GOES TOWARD THE NOZZLE (OR FIRE) AND THE FEMALE TOWARD THE SOURCE OF SUPPLY, (in most cases, unless double male and double female couplings have been used).
* Should it become necessary for you to leave the fire area, let someone on the attack line know.
* If it should become necessary for the attack crew to withdraw from the fire area (due to burst attack line, untenable heat conditions, etc.) be sure to close door as you leave, if possible.
* Don't apply water into a building without first checking to see if attack crews are working inside, (should the application of water from the outside be warranted).
* When applying water to a fire, rotate nozzle rapidly for a short period of time, and then, shut down. Take a moment to re-evaluate the situation.
* Use only enough water to do the job.
* Open and close nozzles slowly.
* Stay clear of openings when water is being applied into the fire area.
* Don't play water on smoke--unless perhaps in the case of untenable heat conditions.
* After "knocking down" a fire in a room, the fog pattern may be used to ventilate via a window until smoke ejectors are placed in service.
* It is a good practice to have all men of the attack crew to be on the same side of the hose, (during an interior attack).
* When checking for extension of fire in a wall or partition, take time to place a salvage cover below point of forcible entry before opening (so as to minimize damage and clean up time).
* Make sure before removing a smoldering mattress to the outside that it has been sufficiently wetted, so as to eliminate the possibility of it bursting into flame upon contact with fresh air.
* Avoid placing hand or flood lights in service for the purpose of locating seat of fire.
* To avoid possible overloading when starting smoke ejectors off of house current, first plug in cord 2 or 3 times quickly (to start blade turning) before running unit. Never use your fingers to turn blade.
* Avoid placing smoke ejectors in service near fire area until it is certain that their use will not increase the fire problem.
* When using a smoke ejector in a window, take the time to remove the screen. Much of the effectiveness is lost blowing through a common window screen.

Editor's Note: The following article is reprinted in part from "The Answer Sheet" vol. 3, #2, February, 1980, published by the Measurement and Research Division (MARD), Office of Instructional Resources, University of Illinois.

ARE YOU TESTING WHAT YOU WANT TO BE TESTING?

Students often complain that instructors' exam questions do not always match the course material or the difficulty level of the material as presented in either the textbook or class presentations. Students sometimes find that exams require either lower or higher mental processes than those developed or expected during the course. For example, an instructor may emphasize student integration and synthesis of course content during the semester but primarily test for recall of specific facts and figures yet expect students to integrate this knowledge in extended essay exam responses, without any experience in developing the integrative skills. To facilitate classroom learning students must know the expected levels of mental processing for the course and the examinations. At the same time, instructors should help prepare students for the desired levels and test accordingly. The following section describes a system that instructors can follow when constructing test items that measure student learning at the desired level(s) of mental processing.

Benjamin Bloom and his associates have developed a system which classifies instructional objectives into hierarchical levels of the learning process. The classifications identify the kinds of mental processes a student performs to accomplish a given objective. The major levels of "Bloom's Cognitive Taxonomy of Educational
Objectives," are:

Knowledge - Comprehension - Application - Analysis - Synthesis - Evaluation
(increasing complexity)

A brief description of each level is presented below.

1. Knowledge. Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.

2. Comprehension. Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.

3. Application. Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.

4. Analysis. Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition or the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.

5. Synthesis. Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.

6. Evaluation. Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgments based on clearly defined criteria.


Which learning outcomes do you emphasize and require students to perform satisfactorily in your course? Do you focus primarily on student attainment of knowledge? And/or, do you teach students how to analyze and synthesize course material? Your answers to these questions may vary from course to course due to the nature of course content, student ability or teaching philosophy? For example, most introductory courses
do not extend students past application processes. The attainment and understanding of a new content area is of primary concern in these courses.

After you have answered the above questions and identified the types of learning outcomes which you teach, ask yourself the question which cognitive behaviors do you most frequently test? Which cognitive processes are required of your students for them to satisfactorily perform on your course exams? For any given course, the mental processes required for the exam should be the same as those emphasized and taught in the course.

The required match between learning outcomes or objectives and test items is illustrated in the following examples:

**Knowledge Level**

Learning Objective: The Student will be able to identify the process used to form alloys.

Test Item: How are alloys ordinarily produced?

(M-C) A. Smelting an ore in an electric furnace.  
*B. Melting different metals together.  
C. Chilling a hot metal in water.  
D. Plating ore metal on the surface of another.

**Application Level**

Learning Objective: The student will be able to calculate the arithmetic mean for a given set of numbers.

Test Item: The arithmetic mean for numbers, 10, 8, 5, 7, 3, 4, 2, and 1 is:

(M-C) A. 8  
B. 7  
C. 6  
*D. 5

**Evaluation Level**

Learning Objective: The student will be able to evaluate the relative effectiveness of various types of psychotherapy.
Test Item: Considering the cost, time, patient and therapist benefits, range of disorders treated and history of success rate, evaluate the relative effectiveness of each of the following types of psychotherapy—Psychoanalysis, Gestalt, and Rational-Emotive.

For each example, the cognitive processes desired of the students were the same processes used to answer the corresponding test item. For your next exam, identify the taxonomic level(s) of your desired learning outcomes and check to see if such levels are being measured by your test questions. Analyze whether or not you are testing what you want to be testing.

Editor’s Note: In an attempt to share with the Fire Service, the wealth of information made available to us by Professor Earl Wolfe of the University of Illinois, Institute of Labor and Industrial Relations we present the following paper on Communications. The paper was written by Earl Planty who was associated with the Johnson & Johnson Company. Underlining of certain excerpts was done by Dr. Wolfe or the editor to point up key points.

GUIDING RULES FOR COMMUNICATIONS

By: Earl Planty

General

1. All people on the supervisory or management level must know and accept the value and importance of communications.

2. All people in management must themselves be informed if they are to carry out their own responsibilities for communications.

3. Every action of any executive department head or supervisor must include planning for communications as well as for other details. (For example, in replacing a man it is not enough to write a job description and job specification, recruit candidates, and interview and evaluate them and finally select one, a supervisor must also determine who the affected parties are, what shall be told them, how it shall be told, by whom, and when.)

4. The most difficult thing in communications is determining who will be affected by an event and, therefore, who should be told. This requires mature, stable, and successful people, usually well up in the organization, to put themselves in the shoes of others who are less secure and judge what the latter need and want to know.

The Timing of Communications

1. Timing of communications should be such that a supervisor always hears information before his subordinates.

2. All persons on any level who receive information for passing on must share a responsibility for passing it on as nearly simultaneously in all their units as possible.
3. If it is decided to inform people about any event, the informing should take place well in advance of rumors, gossip, and conjectures. If the information deals with vacations, shutdowns, bonuses, etc., it should be released soon enough to be useful to individuals whom it was intended to benefit.

4. All announcements should be timed so that the reasons given for them do not have any chance of conflicting with other information fresh in employees' minds. (The employment of outside consultants to study the need for a plant addition was announced on a bulletin board on the same day that employees were informed by bulletin that there were to be layoffs due to lack of sales.)

Who Should Be Told?

1. Telling is best accepted from one's immediate superior.

2. Where choice is possible in who should tell, always choose a person who is highly acceptable personally, and who has a record for telling things clearly, interestingly, and acceptably to the hearers.

3. While it may conflict with unity of command, we must remember that employees occasionally like to hear from their superior's boss or even higher levels in the organization.

What Do You Communicate?

1. We should tell people those facts most calculated to make them feel they belong, that they are an informed and inseparable part of their job, their department, and the company.

2. We should tell those things that will make employees and managers have a feeling both of opportunity and security, that will remove the wonderment, anxiety, and aimless questions that make for confusion, and indifference and even conflict at work.

3. We should select those things to tell which people will take pride in knowing, which will help satisfy the needs of attention, status, and the feeling of importance.

4. Some say we should tell all that employees will eventually learn by themselves. They say we should do this so that we can tell the facts constructively, truthfully, and shaped to whatever honorable purpose we have in mind before others distort the facts through lack of information or for their own ends.

5. There are three categories of facts to be communicated:

   a. Those that must be told. They are the things that directly or rather immediately affect a man or his job. These include work assignments, flow of work, methods of operation, standards of performance, pay, overtime hours, rules and regulations, duties and responsibilities, quality of work, job security, etc.

   b. Those that should be told. These are facts a little less directly or less immediately connected with work operations. These facts include knowledge and attitudes necessary to coordinate one's work with that of other people
or departments. They deal a little more with the future and with that environment which is a little distant from the job. They include vacation pay, services, management policy, departmental organization, the place of the job in the whole scheme of things, expected standards of personal conduct, the finished product, anticipated changes in operation, systems or personnel that influence the man, the job, or the department, the customer or recipient of service.

c. Those things that it would be nice to tell. These might be thought of by some as luxury items. They deal broadly with the organization, its leaders, its economy, its plans for growth and expansion, internal staff relations, the company production line or the service rendered, its advertising, income, research, legal, manufacturing departments, public relations and their problems, broad company policy, the economic order, citizenship, etc.

6. Things that are an absolute necessity for telling on one level may become luxury items for people at another level. There are no hard and fast rules for determining what to tell. Good judgment and knowledge of what the people need to know and want to know should guide.

How To Communicate

1. Success in communication depends upon gaining acceptance of what is said. Therefore, the communicator will carefully plan not only what to tell but how to tell it so as to gain most acceptance.

2. Keep the channels open both ways, by inviting employee response to your telling. Things will go down a lot easier if you welcome a few observations and opinions flowing up, even unpleasant ones.

3. One way to gain acceptance is to give reasons, reasons which have meaning to those being informed.

4. Where persuasion is needed, the oral word can be more effective than the printed word. There is a better opportunity to observe reaction and adapt your presentation to gain the required end.

5. If the details are complex or if the facts are those which the employees do not want to believe, you might as well expect at the outset that you will have to follow up by a review and a retelling.

6. In planning to communicate always seek for more than one media. A meeting which is reinforced by a letter sent home or a poster which is reinforced with an announcement over the P.A. system is startlingly more effective than an announcement which gets only one treatment.

7. Provide a sympathetic listener. Employees often want to talk over what they have been told. Frequently they want to gripe and complain. Giving them this opportunity, without arguing and disagreeing with them, helps in the end to get understanding and acceptance. It removes or reduces the negatives that stand in the way of understanding.
NATIONAL FIRE ACADEMY - COURSE
PARTICIPATION BY ILLINOIS FIRE FIGHTERS

By: Jerry Monigold

In a recent communication from J. Faherty Casey, Duputy Superintendent of the Field Programs Division we learned of the following attendance by Illinois fire fighters in National Fire Academy Courses. The figures cover the period from January 21 - June 27, 1980.

Ninety-five Illinois fire fighters from 27 fire departments have attended 100 courses at the National Fire Academy's residential program. The most popular course during this period was Arson Detection attended by 23 persons. Arson Investigation and Public Education placed second with 22 students each. Executive Development was attended by 14 persons, Educational Methodology I-10, Hazardous Materials-7, and Educational Methodology II-2 attendees.

The Rockford Fire Department has sent 33 students through NFA courses for 34.7% of the total enrollment. Peoria and Elk Grove Village were in second place with six each. Twenty-four other departments sent from 1-5 students each.

While the figures did not indicate any states ranking, at the end of the first quarters courses Illinois had supplied more students than any other state.

It would appear as though Illinois is making good use of the National Academy.

ILLINOIS FIRE SERVICE INSTITUTE
PART-TIME INSTRUCTORS

The following list is printed periodically to assist local fire officials in scheduling training. A letter or phone call to the instructor nearest you is often the simplest means of determining the availability of training dates. If possible do this before contacting IFSI offices.

JAMES E. ARIE
101 E. Willard
Urbana, IL 61801
Tel: 384-6549

JACK BELDEN
120 N. Main - Box 12
Seneca, IL 61360
Tel: 815-357-6451 or
Bus. 815-727-8370

MARDELL BELLATTI
R. R. #2
Mt. Pulaski, IL 62548
H. Tel. 217-792-5503

JAMES T. BERGGREN
P. O. Box 105
Serena, IL 60549
H. Tel. 815-496-2800
Ms. Wk. 815-496-2317

WILLIAM BLAGG
1515 2nd St.
Winthrop Harbor, IL 60096
Wk. Tel. 312-872-4208
H. Tel. 312-872-3902

PAUL H. BOECKER
Lisle-Woodridge F.P.D.
4903 Main St.
Lisle, IL 60532
F.D. Tel. 312-964-2233
H. Tel. 312-852-1064

JAMES M. BROMAN
122 W. Jefferson
Wheaton, IL 60187
Tel: 312-668-2175

GEORGE CERMACK
#5 Alexander Court
Normal, IL 61761
F.D. Tel. 309-452-1689
H. Tel. 309-452-7696

STEVEN H. DELAI
P. O. Box 2545
Carbondale, IL 62901
H. Tel 618-942-7576
DONALD TWICHELL  
Alton Fire Dept.  
314 State St.  
Alton, IL 62002  
F.D. Tel. 618-463-3565  
H. Tel. 618-462-2569

JEFFEREEY A. WELCH  
R. R. 1, Lot 33  
Glendale Park  
Urbana, IL 61801  
Tel. 384-8086

THOMAS G. WATSON  
846 Fourth St.  
Charleston, IL 61920  
F.D. Tel. 345-2133  
H. Tel. 345-9381

DAVID M. WEST  
116 Thomas Terrace  
Edwardswille, IL  
Tel. 618-656-0899

RONALD WEAVEI  
3403 La Salle Ave.  
Rockford, IL 61111  
Tel. 815-877-3581

WALTER S. WILLIAMS  
2411 Park Ave.  
Cairo, IL 62914  
F.D. Tel. 618-734-1947  
H. Tel. 618-734-4086
### SYSTEMATIC TRAINING:

<table>
<thead>
<tr>
<th>COURSES</th>
<th>DEPTS.</th>
<th>HOURS</th>
<th>STUDENTS</th>
<th>INSTRUCTIONAL HOURS</th>
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<tbody>
<tr>
<td>A. FIRE TRAINING I</td>
<td>58</td>
<td>97</td>
<td>874</td>
<td>1,254</td>
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<tr>
<td>B. FIRE TRAINING II</td>
<td>43</td>
<td>56</td>
<td>645</td>
<td>889</td>
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<td>C. FIRE TRAINING III</td>
<td>10</td>
<td>14</td>
<td>150</td>
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<td>D. FIRE TRAINING IV</td>
<td>2</td>
<td>4</td>
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<td>E. FIRST AID &amp; RESCUE</td>
<td>9</td>
<td>22</td>
<td>135</td>
<td>201</td>
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<td>TOTAL SYSTEMATIC TRAINING:</td>
<td>122</td>
<td>193</td>
<td>1,834</td>
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### SPECIALIZED TRAINING:

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<th>INSTRUCTIONAL HOURS</th>
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<tr>
<td>A. AUTO EXTRICATION</td>
<td>11</td>
<td>50</td>
<td>115</td>
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<td>B. FIRE COLLEGE</td>
<td>1</td>
<td>175</td>
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<td>C. SPECIALIZED CLASSES</td>
<td>55</td>
<td>399</td>
<td>1,145.5</td>
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<td>D. REGIONAL SCHOOLS</td>
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<td>744</td>
<td>1,398.5</td>
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### COOPERATIVE TRAINING:

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<th>HOURS</th>
<th>STUDENTS</th>
<th>INSTRUCTIONAL HOURS</th>
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<tr>
<td>A. ASSISTING GOVERN. AGENCIES</td>
<td>23</td>
<td>8</td>
<td>122</td>
<td>176</td>
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<td>B. FIREMEN'S ASSOC. MEETINGS</td>
<td>27</td>
<td>128</td>
<td>117</td>
<td>649</td>
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<td>C. DEMONSTRATIONS &amp; LECTURES</td>
<td>17</td>
<td>40</td>
<td>64</td>
<td>771</td>
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<tr>
<td>D. SPECIAL MEETINGS &amp; AD HOC COMM.</td>
<td>14</td>
<td>113</td>
<td>113</td>
<td>500</td>
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<tr>
<td>TOTAL COOPERATIVE TRAINING:</td>
<td>81</td>
<td>176</td>
<td>416</td>
<td>2,096</td>
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### CONTINUING EDUCATION FOR FACULTY AND STAFF:

- CONSULTATION and INFORMATION SERVICES: 329

### TRAINING PROGRAM TOTALS:

<table>
<thead>
<tr>
<th>COURSES</th>
<th>DEPTS.</th>
<th>HOURS</th>
<th>STUDENTS</th>
<th>INSTRUCTIONAL HOURS</th>
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<tr>
<td>TOTAL</td>
<td>273</td>
<td>1,113</td>
<td>4,175.5</td>
<td>10,224</td>
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</table>
Classifications of Reported Activities:

1. Systematic Training. Courses taught in the local community according to a predetermined curriculum, normally 20 subjects, taught by a part-time instructor in fifteen hour blocks of instruction. These include Fire Training I, II and First Aid and Rescue I. Two new courses were added this year entitled Fire Training III and IV to complete the requirements for Fire Fighter I certification. (Courses showing less than 15 hours were canceled for low enrollment and those over 15 hours had two offerings).

2. Specialized Training. Courses taught locally, regionally or on-campus which are devoted to intensive training usually in one specific subject area. These vary from 3 to 240 hours in length.

3. Cooperative Training. Activities conducted in cooperation with national, state or regional Fire Service Organizations, local and state governmental officials and industries. The Institute frequently is not the initiator of these activities.

4. Continuing Education for Faculty and Staff. Credit and non-credit courses, seminars and conferences attended by Institute Faculty and staff for professional development and not as a presenter or working participant.

5. Consultation and Information Services. Those hours reported by the faculty on their activity reports as time spent assisting citizens, officials, fire personnel, and University departments with information or other problem solving assistance.

Terms:

1. Course/Location (County). Indicates the subject area covered if not specified in the major heading, the city where the course was held and the county in which the location lies. Totals indicate the number of courses offered not locations.

2. # Departments. The number of fire departments in attendance at that course. It is estimated by random sampling that 40-50% of the departments attended more than one course. Applying this figure to the total departments attending would indicate that 600-700 individual departments participated.

3. Class Hours. The total hours of instruction.

4. # Students. Indicates the number of persons registered during the duration of the course. The Institute no longer differentiates between fire service personnel and citizens. Of late citizens account for less than 5% of total enrollment. A sampling of enrollments indicates that about
1/3 of the students indicated in the total attended more than one course. Enrollment involved about 7,000 individuals using that figure to reduce for duplication.

5. Student Instructional Hours. Is the total hours of instruction attended by all the students enrolled in the class. As a result 20 students attending a 15 hour course will not necessarily generate 300 student instructional hours because of absences.

6. Fire College Report. Each class, and workshop has been reported separately to give a more accurate picture of the diversified activities which take place during this 3½ day school. Figures used in the Summary of this report are corrected for duplication of student enrollment.