U.S. ARMY TECHNICAL CENTER FOR EXPLOSIVES SAFETY

EXPLOSIVES SAFETY

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IN MEMORY OF JOHN L. BYRD, JR. JUNE 12, 1935 - JANUARY 19, 1995

Mr. John L. Byrd, Jr., Director of the U.S. Army Defense Ammunition Center and School and the U.S. Army Technical Center for Explosives Safety, Savanna, Il, died January 19, 1995, as a result of injuries suffered when a tractor he was driving overturned.

A native of Simms, Texas, Mr. Byrd started his federal career in 1955 as a surveillance inspector at Red River Arsenal Texarkana, Texas. From there, he served at Raritan Arsenal, N.J.; Pueblo Army Depot, Pueblo, Colo; and was initially assigned to the Savanna Ordnance Depot in 1959 as a training instructor in the ammunition school, a position he held until 1964.

In 1965 he was promoted to chief of the Management Engineering Office, an element of the Comptroller Directorate at the Savanna Ordnance Depot. He informally served as the deputy director for Supply and Transportation, which provided valuable ammunition management experience in depot operations involving more than 400 employees.

Mr. Byrd was the chief of the AMC Ammunition Center from 1967-79. He was responsible for career program management, design and testing of ammunition equipment and procedures, as well as management technical assistance programs.

From 1971-79, he was mainly involved in ammunition logistics engineering activities. During that time, development of the Army Ammunition Containerization Program, internal restraint systems for containers and Ammunition Peculiar Equipment occurred. A major thrust during that timeframe was pollution abatement and its impact on ammunition demilitarization. He served as the principal Army representative or chairman of the resulting Joint Service Panels.

In 1979, he was promoted to the position of Director of the U.S. Army Defense Ammunition Center and School. He was a giant who kept many programs on course by the shear weight of his personality and character. Since then, many new missions have been added and the organization doubled in size. He was also the Director of the U.S. Army Technical Center for Explosives Safety the organization that gives the Army a central repository for explosives and chemical agent safety information.

Mr. Byrd was appointed to the Senior Executive Service in 1989. In addition, he was designated as the Functional Chief Representative for Quality Assurance Specialist (Ammunition Surveillance) Career Program 20 in 1991.

Mr. Byrd was a tremendous visionary, developer and innovator of ammunition programs, many of which have become mainstays within the Department of Defense (DOD) ammunition community. He was nationally respected for identifying and solving challenges, then implementing practical, cost-effective solutions relating to the ammunition logistics mission.

He was a member of Vice President Al Gore's National Performance Review Management Advisory Council along with chairing many special efforts including: the U.S. Army Industrial Operations Command Senior Executive Service Sector Advocate Study, the Army Ordnance and Explosives Waste Task Force, The Joint Ordnance Commanders Group Wholesale Ammunition Stockpile Program Review, the Joint Ordnance Commanders Group Large Rocket Motor Demilitarization AD HOC Group, the Joint Ordnance Commanders Group Munitions demilitarization and Disposal Subgroup, and The Defense/Department of Energy Technology Coordination Group IX.

Having led by example, he received several prestigious awards in his career. Among them were the Department of the Army Decoration for Meritorious Civilian Service and the Decoration for Exceptional Civilian Service.

Mr. Byrd touched the lives of many people throughout the world who can reflect back and remember all that was made possible by the vision and determination of John L. Byrd, Jr. The USADACS employees and their families will miss the leadership and security Mr. Byrd provided, but will be steadfast in their effort to continue the excellence he instilled in all of us.

"HARMLESS" ORDNANCE KILLS!

A blinding flash followed by an explosion and the moans of several injured young people recently happened in a school band room. We think of these tragedies only occurring in Bosnia or the Gaza Strip. However, this incident took place in Folkston, GA in November 1994, after a student took a seemingly harmless piece of ordnance to school to show his friends.

This incident should never have happened. Unfortunately, such incidents are not as isolated as we would like to think. What can be done? What should be done? Education and training are the answers. Readers like you who know the hazards of unexploded ordnance (UXO) need to educate those with less knowledge.

Each Department of Defense (DOD) installation having explosives safety military or civilian personnel should begin a program of educating the less knowledgeable on the hazards of ordnance. Here are some of the first steps you can take in this effort:

- Review unit safety briefings to ensure dud threat warnings are explicitly stated.
- Show educational videotapes.
- Televise warnings to the military and civilian communities.
- Conduct classes in the military and civilian communities. Local Explosives Ordnance Disposal (EOD) units conduct classes on bomb/ordnance recognition and associated hazards. Written requests should be submitted to the nearest EOD unit. Class availability is mission dependent.
- Provide a manned "hot line" telephone number that is displayed in prominent locations -- including the inside front cover of local telephone directories.
- Assure the local amnesty program is working well.
- Review each of the above at least quarterly to ensure each is being accomplished correctly.

Each member of the explosives safety community has a responsibility to share his/her knowledge with those who are less informed. Are you meeting your responsibility?

Is your organization's explosives safety management philosophy proactive or reactive? If all seven of the above steps are not part of your explosives safety program, they should be. Education is key to assure our children's lives are not at risk.

by: Mr. Bill Akins
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STORAGE COMPATIBILITY GROUP (SCG)

We now hazard classify items by the predominant hazard. An example is an entry in the Joint Hazard Classification System (JHCS) as Hazard Class/Division 2.2 and United Nations (UN) Serial Number 1046. In this case, the item probably has a large container of compressed helium as the predominant hazard and a small squib to actuate a valve. Because the squib contains Class 1 material, the item does go into the JHCS. More than likely, the reaction from functioning the squib is self-contained, so the most significant hazard is the compressed helium. Consequently, the item is hazard classified as other than Class 1, but still put into the JHCS.

If the item is in the JHCS as something other than Class 1, why do we include an SCG? The SCG is only used with Class 1 material/items under the Department of Transportation (DOT) rules. **For transportation purposes, ignore the SCG when shipping Class 2 through 9 items listed in the JHCS.**

The SCG is provided for storage use, only. As a service to our customers in the field needing to store the item, the SCG tells them how they can properly group it with other ammunition items.

by: Mr. Mark W. Skogman
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IS IT LIVE OR INERT?

How do you identify if the ammunition or explosives item is live or inert? Stenciling, painting, applying decals, or labeling "INERT" or "EMPTY" ammunition and components alone is not sufficient. Except for explosives ordnance disposal (EOD) training rounds, to properly identify an item as inert or empty, look for **all** the following identifiers:

- Four holes no smaller than one-fourth inch drilled into the cartridge case at 90 degrees apart.
- Stamped or stenciled with the marking "EMPTY" or "INERT." Markings must be clear and obvious.
- Inert cloth-covered components such as bagged propelling charges will be marked "INERT." Markings will be in durable, waterproof, fade proof ink.
- Inert mortar sheet propellants will have the word "INERT" cut through each propellant increment.
- Small arms ammunition (SAA) or small objects mounted on wall plaques, display boards, display cases, or permanent museum exhibits should have the word "INERT" on an attached plate.

Each item of ammunition or component that is part of a permanent museum display will be inspected by EOD personnel or other persons familiar with explosives. Museum curators will use DA Form 2609 (Historical Property Catalog) to record the date of inspection and inspecting unit. The museum curator will note in the remarks section of DA Form 2609 that the item was found to be or made inert.

The conversion of live ammunition or an explosives item to an inert condition will not be done without approval from the major Army command (MACOM) commander and the item manager. The conversion is an explosives operation and must be performed at a properly sited location.

Don't overlook ordnance items on desks or at home.

by: Mr. Robert H. Davidson
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U.S. ARMY MATERIEL COMMAND (AMC) SITE PLAN/SAFETY SUBMISSION PROCESS REVIEW MEETING

On 16 June 1994 the U.S. Army Technical Center for Explosives Safety (USATCES) Explosives Safety Test Management Division hosted representatives of AMC; U.S. Army Armament, Munitions and Chemical Command (AMCCOM); U.S. Army Missile Command (MICOM); U.S. Army Test and Evaluation Command (TECOM); U.S. Army Chemical and Biological Defense Command (CBDCOM); U.S. Army Research Laboratory (ARL); U.S. Army Armament Research, Development and Engineering Center (ARDEC) (representing U.S. Army Tank-automotive and Armaments Command (TACOM); and U.S. Army Depot Systems Command (DESCOM) for the second annual AMC site plan/safety submission process review meeting. This meeting provides the opportunity for organizations involved with site plan/safety submission approval process to address concerns and make recommendations for process improvement. Topics addressed include lightning protection system (LPS) requirements; site plan/safety submission requirements for installations with facilities contracts; release of property to non-Department of Defense (DOD) users; proposed changes to chapter 8, DAP 385-64; and Department of Defense Explosives Safety Board (DDESB) explosives/chemical safety issues affecting site plan/safety submissions. Taskers for the USATCES and AMC Ammunition and Explosives Safety Policy Action Committee (AMMOPAC) were assigned. An in-process review (IPR) for these taskings remains to be scheduled.

by: Mr. Lyn Little
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ASK! YOU MAY BE SURPRISED

A recent site plan had major transmission lines within 640 feet of both existing magazines and a proposed magazine construction. These lines also had towers which were 1,000 feet apart.

The requirements of Chapter 5, draft DAP 385-64 state if power can be rerouted within a reasonable period of time, so as not to cause a hardship, then these lines can have the required distance for quantity distance (QD) reduced to the distance between poles. This distance can further be reduced if some way is found to cut the power when the line breaks.

The power company was contacted and the representative stated power could be rerouted in approximately 30 seconds. The representative also said the lines had computer controlled relays on the towers. These relays would cut power to a broken line in approximately 0.2 seconds. This would mean that the line would be dead before it hit the ground. This would allow requirements of DAP 385-64 to be met. The site plan was forwarded.

by: Mr. Greg Magerl
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and

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QUANTITY DISTANCE (QD) AND THE "K" FACTOR

Explosives facilities are required to be sited at certain distances from adjoining facilities or areas. The required separation distances depend on several factors, such as the amount of explosives and/or activity being performed in the facility being sited and at nearby sites, the distance between facilities, and any protective construction features.

To determine the distance required, use the formula **D=KW1/3** where:

D is the distance in feet,

W is the Net Explosives Weight (NEW) in pounds, and

K is a factor that is used to quantify the risk that is assumed or permitted.

The K factor is often expressed in terms such as K11 or K18 meaning K=11 or K=18.

Different risks are permitted or assumed based on the activity that is being pursued at each location. For example, in determining the required intermagazine distance between two unbarricaded above ground magazines the K factor of 11 is used.

Unbarricaded intraline (IL) distance is required between facilities that are part of the same operation or contain similar hazards. This distance has been given a K factor of 18. The higher the K factor the less risk is being accepted.

In order to calculate QD accurately it must be determined what protection is required for each exposed site (ES) and the amount of explosives at the building being sited. When that determination has been made, plug the K factor value into the formula to determine the distance required between the two sites.

The values of the K factor can be found in the Draft DAP 385-64 as can QD tables in which the calculations have already been performed.

by: Mr. Richard Albrecht
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The EXPLOSIVES SAFETY BULLETIN targets the ammunition/explosives community. It is printed in Savanna, Illinois. If you wish to submit an article that is of interest to the ammunition/explosives community, or if you have a request for more copies of the bulletin, please forward it to: Director, U.S. Army Technical Center for Explosives Safety, ATTN: SMCAC- ESM, Savanna, IL 61074-9639 or call us at DSN 585-8710/ COMMERCIAL (815)273-8710.

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CHEMICAL HAZARD PREDICTION

Prediction of potential downwind hazard is important for chemical agent operations. These predictions are required for site plans and safety submissions in order to gain approval for the operation. They are required for operational purposes in order to determine whether or not the operation can proceed. They are required for accident response purposes in order to determine who is at risk from a release of chemical agent and influence response activities.

Most installations use the program D2PC to calculate the predicted downwind hazard. The program was approved for this use, 27 July 1992, by HQDA. The version currently approved for use has a file date of October 1993; earlier versions should not be used.

When a site plan involving chemical agents is received at U.S. Army Technical Center for Explosives Safety (USATCES) for review, one of the things we do is verify the hazard prediction. Recently, however, we were not able to verify the hazard prediction submitted with a site plan. Using the same input values as the installation, our results were only 1/2 to 1/3 of theirs. The source of this error was eventually traced to an out of date copy of D2PC which should have been taken out of service two years previously.

Take the time to assure that all copies of D2PC available for use at your installation are the approved version, with a file date of Oct 1993. Other versions may give incorrect results, adversely impacting planning, operations, or emergency response.

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QUANTITY DISTANCE (QD) FOR HAZARD DIVISION (HD) 1.1 ITEMS WITH SPECIFIED FRAGMENT DISTANCES

Specified fragment distances for HD 1.1 munitions apply only when you have inhabited building distance (IBD) or public traffic route (PTR) exposures. These distances do not apply for intraline (IL) or magazine distance exposures. Apply the associated IBD and PTR fragment distances only when these munitions are stored in the open (not in a structure). For example, a box of M67 hand grenades HD (04)1.1 has a minimum fragment distance of 400 ft from an IBD exposure and 240 ft from a PTR exposure. When that box of hand grenades is placed inside a magazine, the minimum IBD fragment distance is 670 ft for IBD and 402 ft PTR (for net explosives weights [NEWs] under 100 lbs) or 1,250 ft IBD and 750 ft PTR (when the NEWs are greater than 100 lbs). These distances are greater because the structure will become part of the debris, should an explosives accident occur within the magazine. Intraline distances and magazine separations from these grenades would be based on the blast effects only. Items that have larger fragment distances, for example an M107, 155mm, high explosives (HE) projectile (HD [18]1.1), would have minimum fragment distances 1,800 ft for IBD and 1,060 ft for PTR. These distances apply whether stored in the open or in a magazine, until the requirements for protection from blast overpressure exceeded the required default fragment distance.

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