Training and Developing CBRN Warrior Leaders: A CBRN AIT Analysis and the Way Ahead

By Lieutenant Colonel Thomas A. Duncan II

With the end of the war in Iraq and the ongoing reduction of combat power in Afghanistan, the Army is now focusing on the force of 2020 and the Chemical Corps is concentrating on how to best support weapons of mass destruction counterforce; chemical, biological, radiological, and nuclear (CBRN) defense; and CBRN consequence management. The force of the future will require that Chemical Corps Soldiers be more technically skilled so that they may confront a myriad of potential threats in an unpredictable world.

In response to demands from the field to modernize our courses and to ensure that initial military training is a ". . . rigorous, foundational learning experience that combines indoctrination into the Army culture (values, character, and the Warrior Ethos) with the basic skills training, comprehensive fitness, and specialized CBRN foundational skills and knowledge,"[1] Colonel Vance P. Visser—Chief of Chemical and Commandant, U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS)—published the Chemical Corps Regimental Campaign Plan for fiscal years 2011–2012.[2]

During the same time frame, Major General Richard Longo—Deputy Commanding General for Initial Military Training, U.S. Army Training and Doctrine Command—ordered a review of all advanced individual training (AIT) and basic officer leader courses throughout the Army. On 14 July 2011, Major General Longo concurred with Colonel Visser's plan to modernize CBRN (74D) AIT and meet the needs of operational CBRN brigades.

After several months of updating lesson plans, certifying instructors, and obtaining new equipment, the 84th Chemical Battalion—in close coordination with the Directorate of Training and Leader Development, USACBRNS, and the Directorate of Education and Training Execution, 3d Chemical Brigade—conducted a new CBRN AIT pilot course (Class 05-12) from January to March 2012 at Fort Leonard Wood, Missouri.

Pilot Course Demographics

CBRN AIT Class 05-12 was identified as the pilot course in July 2011—when the composition of the class was completely unknown. To help ensure that the class was comprised of a representative sample of students, participants were selected through normal U.S. Army Training and Doctrine Command acquisition processes. The percentages of students from the various components (28 percent from the Regular Army, 27 percent from the U.S. Army Reserve [USAR], and 44 percent from the Army National Guard [ARNG]) generally reflected the Army-wide composition of the Chemical Corps.[3] (See Figure 1.)

At the start of the class, there were 81 Soldiers—including 14 military occupational specialty–transfers (MOS-Ts), who are generally more experienced than the average student. While such a large percentage of MOS-T participants was unplanned, their presence allowed an assessment of the ability to integrate the new training into the USAR MOS-T course conducted by the Total Army School System Battalion at Fort Leonard Wood.

All Class 05-12 students were high school graduates, and six of them (7.4 percent) had college degrees. Fifteen of the students (18.5 percent) had Armed Services Vocational Aptitude Battery (ASVAB) General Technical (GT) scores of more than 110. (The maximum possible GT score is 160; a GT score of at least 110 qualifies a Soldier for any job in the Army.) Most of the Soldiers of Class 05-12 relied on their high school education and basic combat training and AIT coursework to meet the academic challenges of the pilot course.

Pilot Structure and Course Flow

All CBRN AIT classes are divided into two platoons that execute training on slightly different schedules, but with essentially the same course flow. This arrangement

Class 05-12 students

actually allowed the execution of two pilots within Class 05-12; Pilot 1 was conducted with 1st Platoon, and Pilot 2 was conducted with 2d Platoon.

For the pilot course, several key changes were made to the existing CBRN AIT blocks of instruction. The following changes—which were aimed at modernizing the course, implementing the Army Learning Model, adding academic rigor, and improving foundational technical instruction—were made:

- New chemical defense equipment (Joint Chemical Agent Detector) training was added.
- M26 Joint Service Transportable Decontamination System–Small Scale training was expanded.

Category	Total	Male	Female
Regular Army	23	10	13
ARNG	22	15	7
USAR	36	22	14
MOS-T	14	13	1
Age 17−20	29	14	15
Age 21−25	26	14	12
Age 26−30	12	9	3
Age 31−35	8	6	2
Age 36+	6	4	2
GT score >105	21	12	9
GT score 100−105	23	14	9
GT score <100	36	20	16
GT score unknown	1	1	0
College degree	6	2	4
Prior hazmat certification	0	0	0
Total Soldiers	81	47	34

Figure 1. Pilot course demographics

- Mass casualty decontamination (MCD) training was introduced.
- Biological defense training time was expanded from 1 day to 3 days, with the addition of handheld assay training and a biological situational training exercise lane.
- Radiological defense training was modernized to include an introduction to high-frequency radio and laser threats and lessons learned from Operation Tomodachi. A practical exercise involving radioactive sources was also expanded.
- Hazmat operations and technician training was added.
- A culminating field training exercise (FTX) was updated to better serve as a test of students' newly acquired technical skills in the areas of new equipment, dismounted CBRN reconnaissance, and reaction to hazmat incidents.

Course Flow

The pilot course consisted of Modules A–L, and the course flow was conducted according to the vision outlined in the Deputy Commanding General for Initial Military Training-approved Chemical Corps Regimental Campaign Plan and the CBRN AIT program of instruction, which was approved by the U.S. Army Training and Doctrine Command Training Operations Management Activity in January 2012. (See Figure 2, page 14.) Some of the most significant course modules are discussed below.

Module B: Professional Military Training

Although the focus of the CBRN AIT class is now more technical, the emphasis on basic Soldier requirements such as Army values and physical readiness and other mandated training has not been lost. And the commitment to reinforcing Army values extends well beyond the formal 1.5-hour block of instruction. The enforcement of discipline and values is the number one task; these elements are integrated into all training. The AIT class builds upon the physical readiness training that Soldiers received during

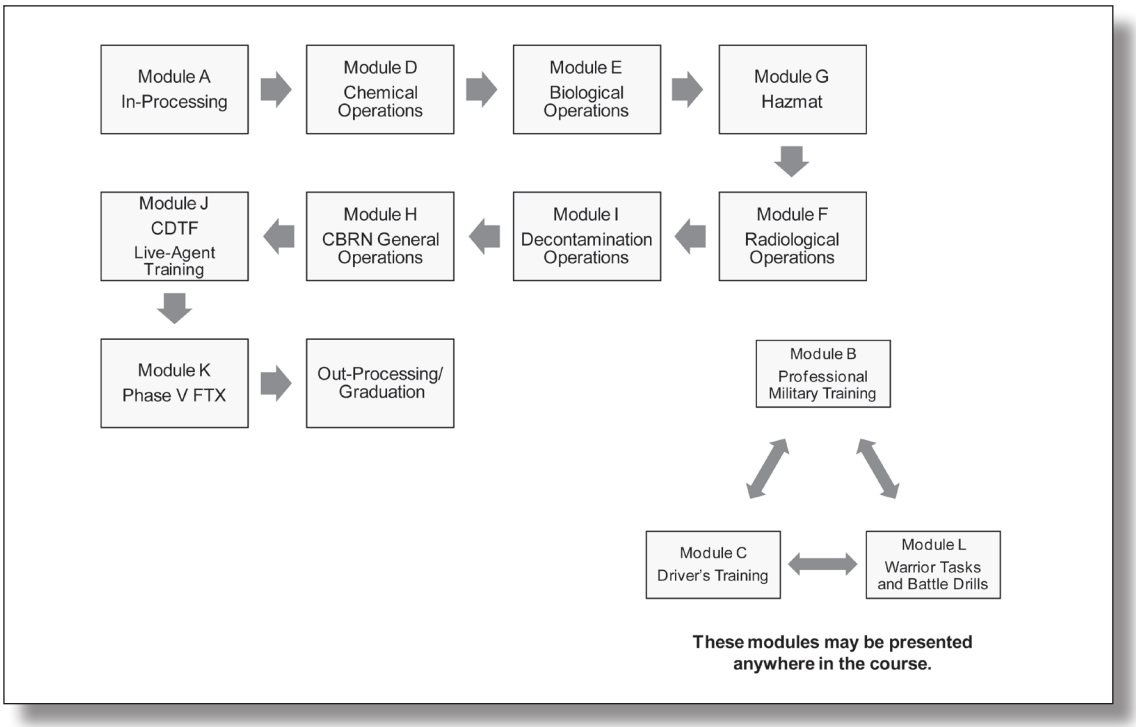

Figure 2. CBRN AIT class map

previous basic combat training. Other mandated training (personal finance, sexual harassment and assault prevention and response training) is also conducted. Time is spent enforcing Army standards and setting Soldiers on the path to success in their gaining units.

Module D: Chemical Operations

New Joint Chemical Agent Detector training was introduced in the Chemical Operations module of the pilot course, while training hours for the devices to be replaced by the Joint Chemical Agent Detector were reduced. Time spent training Soldiers to "Provide Technical Advice on Chemical Agents and Compounds" was also increased to expand Soldiers' basic understanding of chemical agents. Additional time was spent familiarizing Soldiers with threat agents in the Chemical and Biological Operations course modules.

Module E: Biological Operations

In an effort to meet the USACBRNS commandant's intent to expand the Corps ability to respond to potential biological threats, updates were made to the Biological Operations module. The module was expanded from 1 day to 3 days. The "Biological Warfare Agent and Dissemination Techniques" and "Effects of Weather and Terrain" classes present a firm foundation regarding the most significant potential biological threats. AIT students now receive training that is comparable to the instruction received by lieutenants attending the Chemical Basic Officer Leader Course. A biological situational training exercise that focuses on a sensitive-site assessment scenario was also added to increase hands-on application of the training. Furthermore, the academic rigor of the course was increased with the addition of a written biological test.

Module G: Hazmat

The most significant of the changes to the AIT class was the increase in the length of hazmat training from 10.2 hours to 89.1 hours. Previous AIT Soldiers were certified only on hazmat awareness and trained on only select hazmat operations tasks; however, students in the AIT pilot course had the opportunity to become hazmat operations-certified and hazmat technician-certified.

The hazmat awareness test results were typical for an AIT class: 88.9 percent of the class became certified on hazmat awareness, while 7.4 percent passed with scores ranging from 70 to 79 percent.[4] (See Figure 3.)

Hazmat operations test results demonstrated that some AIT students were challenged by the more technical material: 56.8 percent of the class was hazmat operations-certified, while an additional 17.3 percent were successfully trained; 22.2 percent of the class scored less than 70 percent and failed to achieve certification or training standards. A correlation between a Soldier's ASVAB GT score and his or her test performance was evident: 90 percent of the students who had GT scores of more than 105 received hazmat operations certification, while none of them failed; 33 percent of the students who had GT scores of less than 100 became hazmat operations-certified, while 25 percent of them were successfully trained and 39 percent of them failed. (See Figure 4, page 16.)

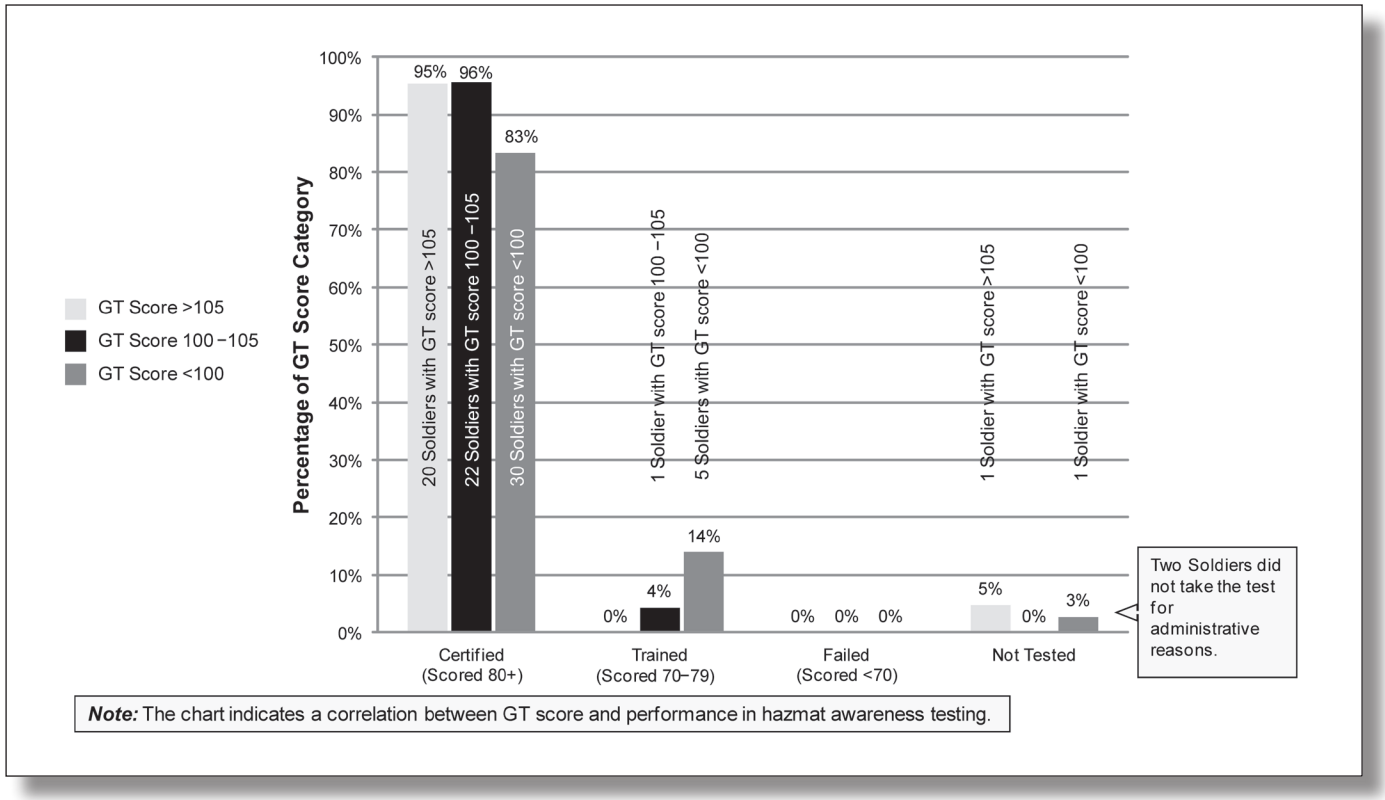

Figure 3. Hazmat awareness certification by GT score

There was also a correlation between a Soldier's ASVAB Skilled Technical (ST) score and his or her test performance: 90 percent of the students who had ST scores of more than 105 received hazmat operations certification, while 43 percent of the students who had ST scores of less than 100 became hazmat operations-certified.[5]

The hazmat technician evaluation was split into two tests—Technician I and Technician II. To become hazmat technician-certified, individuals must pass the hazmat awareness and hazmat operations tests with scores of 80 percent or greater. (See Figure 5, page 16.)

In the AIT pilot course, 44.4 percent of the students became hazmat technician-certified, 17.3 percent were successfully trained, and 33.3 percent failed. Again, test results showed a correlation with students' GT scores: 86 percent of the students who had GT scores of more than 105 became hazmat technician-certified, while none of them failed; only 17 percent of the students who had GT scores of less than 100 became certified; and 56 percent of the Soldiers who had GT scores of less than 100 failed the hazmat technician certification test.

And, again, there was a correlation between a Soldier's ASVAB ST score and his or her test performance: All students who had ST scores of 100 or more were successfully trained—and 89 percent of them received hazmat technician certification; 25 percent of the students who had ST scores of less than 100 failed the hazmat technician test.

These analyses have led to the conclusion that more analyses are required before hazmat operations and hazmat technician certification can be fully implemented in the AIT class. The next AIT class scheduled to conduct hazmat operations certification is to be held in June 2012. Adjustments will be made in an attempt to improve the success rate of trained and certified students, and resources will be organized to execute this training for about 2,200 CBRN AIT students each year. The inclusion of this training represents an increase in USA-CBRNS hazmat operations training of about 46 percent, which requires additional certified instructors, nursing support, costly equipment, maintenance support, and compliance (testing and quality assurance) personnel.

Module F: Radiological Operations

The Radiological Operations module carried CBRN Soldier training into the 21st century. Students were introduced to radiological dispersion devices, high-frequency radio and laser hazards, and lessons learned from Operation Tomodachi.

The radiological laboratory team introduced students to radiological dispersion devices—the most likely near-term radiological terrorist threat. Radiological dispersion devices are explosive devices that are capable of spreading radiologically contaminated material throughout an area, causing fear and creating a detection and decontamination challenge. The use of live sources and an increase in hands-on training with radiation detection equipment boosted Soldiers' confidence in their ability to identify and mitigate radiological threats.

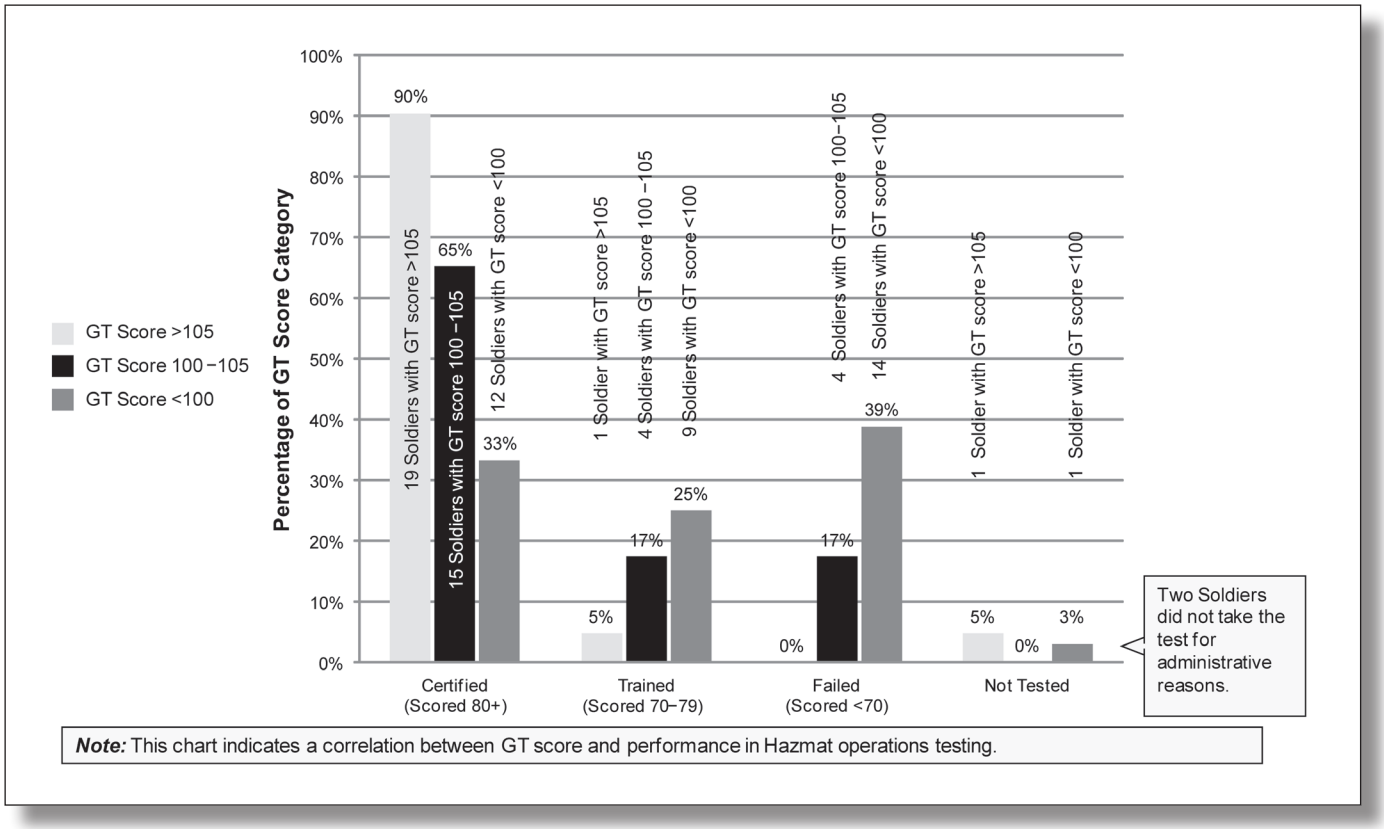

Figure 4. Hazmat operations certification by GT score

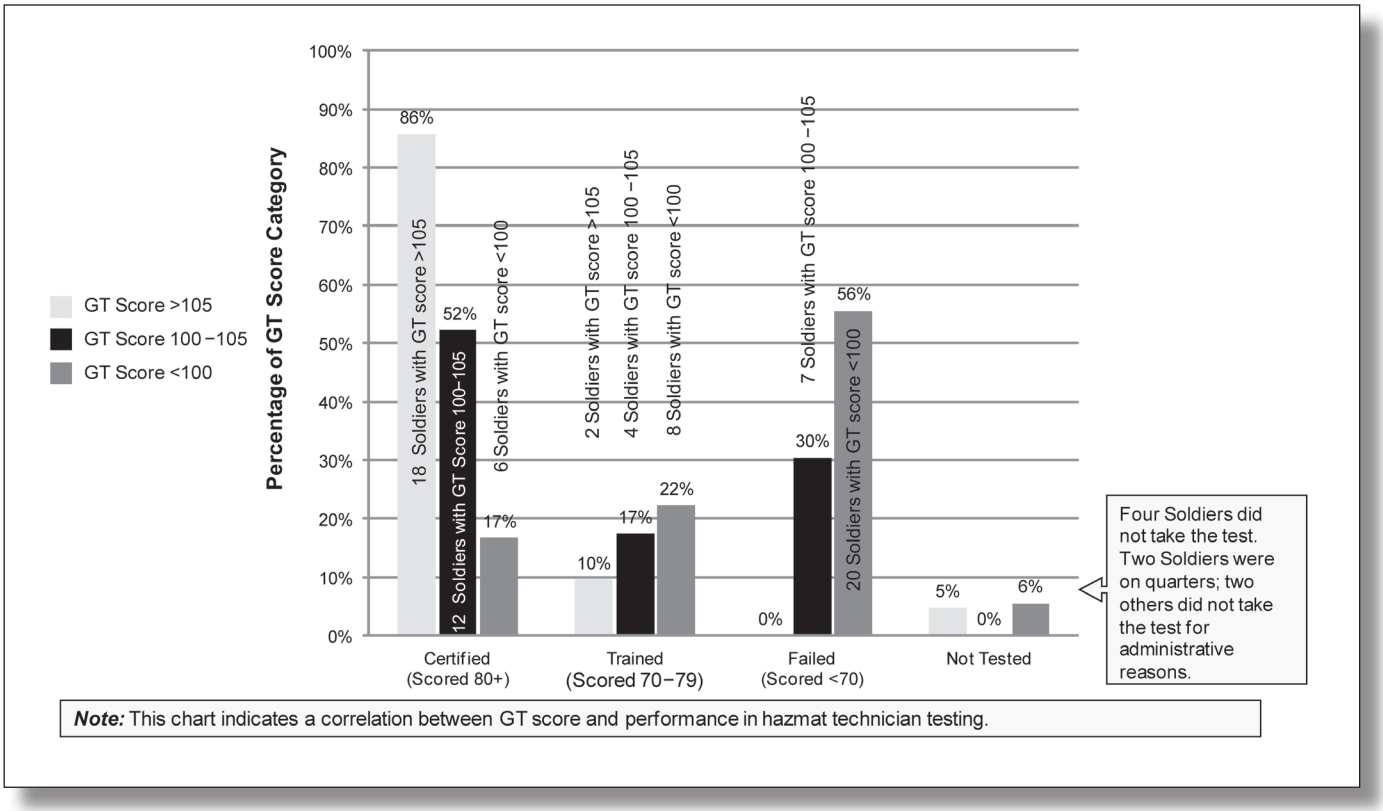

Figure 5. Hazmat technician certification by GT score

Students were also introduced to two new threats encountered on the battlefields of Iraq and Afghanistan—high-frequency radio and laser hazards, which (due to changes in communications and targeting technology) have become more prevalent on today's battlefield. Soldiers are becoming familiar with these new threats as part of a comprehensive introduction to modern threats on a complex battlefield.

The United States contributed significantly to Japan's response to the Fukushima nuclear disaster, which was triggered by a major March 2011 earthquake and tsunami. Within a short time, instructors with the Edwin R. Bradley Radiological Teaching Laboratories at Fort Leonard Wood were integrating lessons learned from Operation Tomodachi into the classroom, laying a foundation for Soldiers to react to battlefield and civil radiological incidents.

Module I: Decontamination Operations

Decontamination Operations training also underwent significant changes. Because more than 20 companies within the USAR and the ARNG still have the M12A1 Power-Driven Decontamination Apparatus, the CBRN AIT class continues to contain an introduction to the M12A1; however, now that the M26 Joint Service Transportable Decontamination System–Small Scale is the primary decontamination apparatus, the training time for the M12A1 was reduced from 16 hours to 3.5 hours for the pilot course, while the M26 training was expanded. The M26 instruction consists of a short classroom introduction, followed by hands-on equipment training and a practical exercise involving the decontamination of personnel and equipment.

Based on requests from the field for an increased focus on personnel decontamination, MCD training was also introduced in the AIT pilot course. An MCD practical exercise (with a complete equipment set) was implemented in AIT Class 05-12. Once hazmat operations training is fully implemented in the AIT class, students will have the opportunity to become MCD-certified.

Module H: CBRN General Operations

While the time spent training the CBRN General Operations module has been reduced from 77.7 hours to 54.6 hours, the training remains a relevant investment in the preparation of Soldiers who are not directly bound to a CBRN unit. The focus of this module is on CBRN equipment accountability and maintenance, mask fitting and maintenance, the development of a CBRN training program, the CBRN Warning and Reporting System, and the CBRN threat brief and U.S. policies. This instruction provides a foundation that enables students to operate as unit CBRN Soldiers. During the final after action review, several of the pilot course students who were headed to non-CBRN units emphasized the need for maintaining this module.

Module J: Chemical Defense Training Facility Live-Agent Training

Live-agent training at the Chemical Defense Training Facility continues to provide a critical, confidence-building exercise for trainees. Because Soldiers are not routinely exposed to toxic environments, the Chemical Defense Training Facility represents one of the few opportunities available to instill Soldiers with confidence in them and their equipment and to ensure that they are prepared to execute CBRN tasks in support of combined arms maneuver, wide area security, and homeland defense operations.

Module K: Phase V FTX

The key to adult learning is repetition in increasingly complex environments. CBRN AIT instruction often begins with an introduction in a classroom environment, continues with a hands-on practical exercise or a situational training exercise in a garrison environment, and culminates in an FTX. The FTX, which is a crucial element of the Army Learning Model, serves as a capstone training event in which student leaders have the freedom to plan and rehearse for missions in a field environment. The FTX is essential in preparing students to be flexible and adaptive Soldiers in an unpredictable operational environment.

Module L: Warrior Tasks and Battle Drills

AIT platoon sergeants and company leaders have the lead role in reinforcing the warrior tasks and battle drills presented to Soldiers during basic combat training. Warrior tasks such as "Move Under Fire," "Perform Voice Communications," and "React to Chemical and Biological Attack" are covered throughout the CBRN AIT class. Battle drills such as "React to Contact," "Establish Security," and "Evaluate a Casualty" are also reinforced. The FTX provides an opportunity to combine warrior tasks and battle drills with CBRN operational tasks such as "Conduct Chemical Survey."

Conclusion

The CBRN AIT Class 05-12 pilot course is a good-news story! In combining the intent of the USACBRNS commandant with input from the field and from a team of USACBRNS course developers and subject matter experts, we have created a vastly improved CBRN AIT class. We are now on track to achieve the vision that the commandant has set for our Corps. Of course, there is still work to be done. As we continue to gain resources such as new facilities, improved training areas, and additional instructors and compliance and maintenance personnel, we will continue to improve the quality of USACBRNS instruction. We also continue to solicit input from the field; the demand for training is generated by operational CBRN brigades.

(Continued on page 42)

While he continued to wear the stripes of an engineer sergeant, Sergeant First Class Jacobson adopted the collar disk of the Chemical Warfare Service (the precursor to the Chemical Corp) and the common cobalt blue and golden yellow shoulder insignia worn by early Dragon Soldiers.

Today's Dragon Soldiers should take the time to reach back into the past and learn about the stories of the Hell Fire Boys who started it all. As members of the chemical, biological, radiological, and nuclear (CBRN) profession, we must remember that it is our responsibility to uphold the reputation and honor the sacrifices of those trendsetters from long ago. As we begin yet another period of dramatic transition, Soldiers like Simon Jacobson can serve as great examples of flexibility, professionalism, and selfless service.

Endnotes:

[1]James Thayer Addison, *The Story of the First Gas Regiment*, The Riverside Press, Boston and New York, 1919.

[2]State Historical Society World War I Service Questionnaires, Division of Archives & Records Service, State of Utah, 1914–1918, *<http://archives.utah.gov/research/inventories/85298.html>*, accessed on 22 March 2012.

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Don Strack (compiler), "International Smelter at Tooele," 27 May 2011, *<http://utahrails.net/mining/smelters-tooele.php>*, accessed on 22 March 2012.

"Utah, Military Records, 1861–1970," ancestry.com, *<http://search.ancestry.com/search/db.aspx?dbid=2228>*, accessed on 22 March 2012.

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("Training and Developing," continued from page 17)

We will also conduct a second CBRN AIT pilot course (AIT Class 12-12)—which will focus on hazmat operations and MCD certification—in June 2012. For this class, we will employ new techniques (a slower pace of instruction, instructor-facilitated study halls, and more hands-on training) and improve the organization of the hazmat operations block of instruction to increase student success rates. In addition, the USACBRNS Personnel Development Office will continue to examine the possibility of raising GT and ST scores required for entry into the Chemical Corps.

The improvements that were made to the CBRN AIT class were the result of 18 months of teamwork across the Chemical Corps. Input was obtained from the field and combined with the expertise of course developers from the Directorate of Training and Leader Development and the Directorate of Education and Training Execution and subject matter experts from the 84th Chemical Battalion, as well as guidance and oversight from leaders of the USACBRNS and the 3d Chemical Brigade. This joint effort served to modernize the CBRN AIT class and provide our Soldiers with the foundational training necessary to set the conditions for unit training across the Chemical Corps.

Endnotes:

[1]Chemical Corps Regimental Campaign Plan, U.S. Army Chemical Corps, December 2010.

[2]Ibid.

[3]Information regarding the fiscal year 2012 Chemical Corps force structure was provided by the Personnel Development Office, USACBRNS.

[4]For all types of hazmat certification, a score of 80 percent or greater is required to meet national certification standards for conducting hazmat operations within the United States. Such certifications are not required for Soldiers operating outside the United States. Students with scores of 70–79 percent meet the USACBRNS commandant's current guidance for AIT graduation, as well as current Maneuver Support Center of Excellence Noncommissioned Officer Academy CBRN Advanced and Senior Leader's Course graduation standards. Students in this category are classified as "successfully trained," but are not "certified." However, the possibility of establishing the 80 percent certification standard as a graduation requirement is currently under consideration by USACBRNS staff.

[5]An enlisted Soldier's entry into the Chemical Corps currently requires an ASVAB ST score of 91; however, some of the Soldiers accepted into AIT Class 05-12 had ST scores of less than 91.

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