

THE BRADLEY MASTER GUNNER COURSE AND ARFORGEN

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The Bradley Fighting Vehicle (BFV) was introduced to the Army in 1981, and the first Bradley Master Gunner Course was established in 1983. The 10-week course, modeled after the 11-week Armor Master Gunner Course, focused on skill levels I through III tasks and instructed 20 and 30-level maintenance on the M240C machine gun and the M242 Bushmaster cannon.

Over the last 25 years, the instruction for the Bradley Master Gunner Course has undergone 10 evolutions, growing from 11 to 14, to 13 to eight weeks. These changes occurred to meet the needs of the force and return highly trained NCOs who possess the technical expertise to implement BFV gunnery and turret maintenance training programs.

The introduction of Army Force Generation (ARFORGEN) necessitated that the 29th Infantry Regiment examine what critical tasks a master gunner must possess, how long it takes to train those tasks, and how to best support the operational force. This article explains not only the Bradley Master Gunner Course, but also what challenges and trends have been observed during ARFORGEN and how the 1st Battalion, 29th Infantry Regiment has adjusted and continues to adjust to support units.

Because of challenges within ARFORGEN and the needs that have been identified by the field, the course has now undergone its eleventh change in the last 25 years to return highly skilled, technically proficient NCOs to units. To that end, beginning in January 2007, the Bradley Master Gunner Course will increase from 49 training days to 55 training days, or 11 weeks, beginning with Class #1-07.

Mission

The current mission of the Bradley Master Gunner Branch is to train select NCOs to design and implement BFV gunnery and turret maintenance training programs. A trained master gunner can execute maintenance and maintenance management of all turret weapons systems and components; establish and conduct Bradley Tables I through XII; develop a short-range training program (SRTP) for a battalion-sized BFV unit from preliminary gunnery through platoon gunnery; and execute turret gun system malfunctions and troubleshooting.

The BFV Master Gunner Course is structured into two distinct phases: maintenance and gunnery. To earn the title of master gunner and the additional skill identifier J3, a student must attain 80 percent in all written examinations and a “go” in all hands-on testing, which includes the SRTP.

Maintenance Phase

This phase is broken down into three sub-phases. Maintenance I focuses

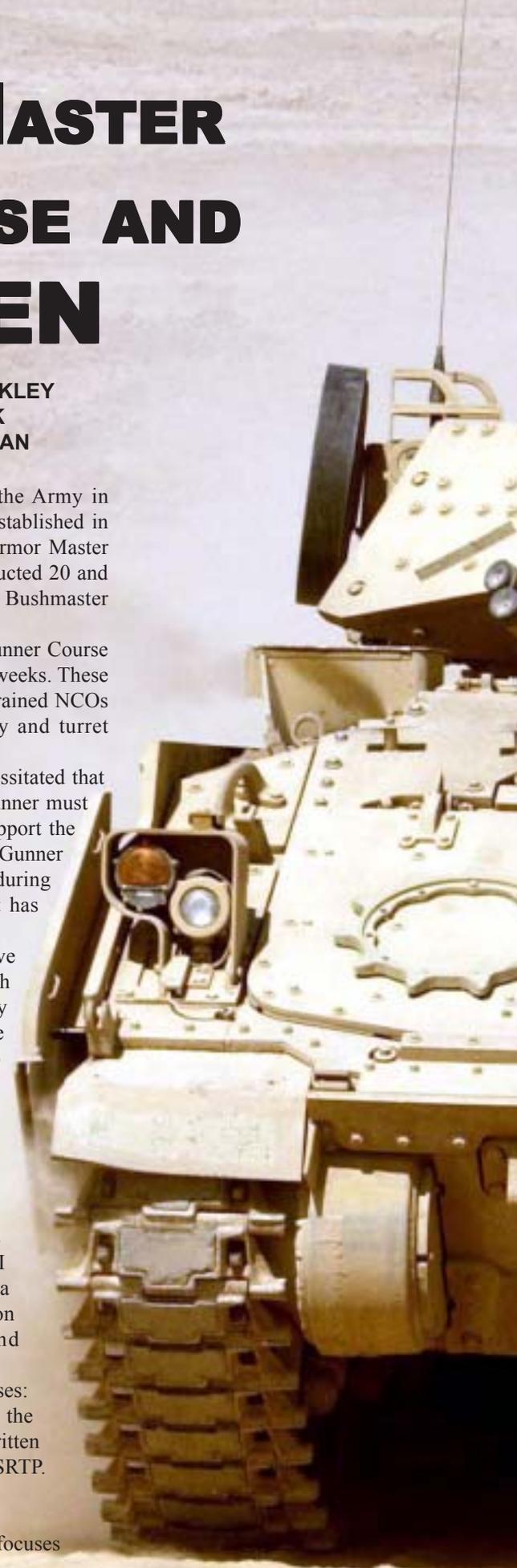




Photo by Staff Sergeant Suzanne Day

on turret components and functions (TC&F), and Maintenance II focuses on organizational maintenance of the M240C coaxial machine gun and the M242 25mm chain gun. Maintenance III focuses on surface danger area diagrams (SDAD), creation of a range overlay, safing of range targetry, Bradley weapon systems ammunition capabilities, and the ballistic firing tables for 25mm ammunition.

Maintenance I

The TC&F focuses the students on learning all aspects of the mechanical and electrical components within the turret and progresses to the components of the tube-launched, optically-tracked, wire-guided missile system (TOW). After initial familiarization training, the students study the schematics of the electrical components, the workings of the turret drive system, and the inner workings of the integrated sight unit (ISU). At the end of the Maintenance I block of instruction, students must successfully pass a graded examination to progress to the Maintenance II portion of this phase.

Maintenance II

This portion of the course transitions the student to organizational maintenance of the M240C coaxial machine gun and M242 Bushmaster. These lesson plans are based on 10- and 20-level maintenance from complete teardown of the weapons systems to a complete rebuild.

During these lessons, students learn some of the most used and critical skills required of a master gunner. A total of 11 days are devoted to this portion of the course, which covers all aspects of both weapon systems from troubleshooting faults, inspections, repair, and replacement of components to maintaining round count cards.

This portion of the course is historically one of the most challenging for the students and should be included in any pretraining that is conducted at the home station to help increase the chances of overall success.

Maintenance III

Students then transition to learning about the ammunition capabilities of the BFV. Emphasis of this portion is placed on ammunition effects, characteristics and capabilities; ammunition identification; and numerous additional lessons for 7.62mm, 25mm ammunition, and the TOW missile. The ballistics portion of the course instructs students on how to properly use the ballistic firing table's manual for 25mm ammunition (FT25-A-2). This lesson enables a Soldier to find the point of impact of a single round using math and the FT25-A-2.

The surface danger area diagram, range overlay, and safing lessons test a student's ability to properly draw an ammunition template and range overlay that will be used to ensure that specific targets within a range are safe to engage from specific firing positions. This lesson greatly enhances a unit's ability to safely establish live-fire ranges while deployed in contingency areas of operation. This skill also assists brigade combat teams (BCTs) and combined arms battalions to execute diverse gunnery operations of each unique weapon system across the unit.

Gunnery Phase

After successful completion of the maintenance phase, students



1st Battalion, 29th Infantry Regiment

A Bradley Master Gunner Course instructor shows a student the electric motor of the M242 25mm Bushmaster chain gun during the maintenance phase of the course.

transition to the gunnery phase and learn all the steps necessary to execute a successful Bradley gunnery. This phase begins with training devices and focuses on the proper employment and capabilities of numerous devices such as the precision gunnery system (PGS), targetry, target lift mechanisms, and thru-site video (TSV).

Once the student understands how to use these devices during gunnery, he then becomes intimately familiar with his core document Field Manual 3-22.1, *Bradley Gunnery*. This manual provides the student in-depth descriptions of the three phases of gunnery: preliminary, device, and live fire. Preliminary gunnery and range operations are where the student will learn the responsibilities and duties of the personnel that are key to any successful Bradley range — from the officer-in-charge (OIC) to ammo NCO — and the initial crew hands-on training that should be conducted prior to any live-fire event.

The preliminary phase consists of numerous training steps to build or reinforce the crew's ability to act as one unit. In the process of becoming a master gunner, the student will learn that this phase is extremely important in forming successful cohesive crews. With the completion of preliminary training, the students will now learn the behind-the-scenes intricacies of crew gunnery and crew gunnery scenario development.

This portion of the course will provide the Soldier with the knowledge of how to establish a full-caliber, live-fire range from the placement of targetry, scenario development, and certification of evaluators to the final execution of a live-fire range.

Upon completion of crew gunnery, platoons now come together to execute gunnery on a far larger scale. Again, the students learn how to establish a proper range for this training, including collective task selection with the support of their operations officers (S3s), targetry placement, dimensions of targetry, evaluator criteria, and ammunition requirements.

With the use of the BFV by a number of Army branches, students must understand military occupational skills (MOS) gunnery and learn the standards, requirements, methods and means to establish various gunnery tables that focus on scouts, engineers, and the fire support elements of a heavy brigade combat team (HBCT).

Following this classroom instruction, students execute their

live-fire gunnery on Fort Benning ranges, using Bradley crews from the 1st Battalion, 29th Infantry Regiment. A rifle company gun-line is replicated, showing the students how gunnery should be executed up through Bradley Table VIII crew qualification. At the completion of live-fire, students are tested on the gunnery phase of instruction.

Short Range Training Plan (SRTP)

This portion of the instruction spans 11 training days and serves as the culminating portion of the gunnery phase and the course. This phase is a check on learning and ties all previous lessons in the maintenance and gunnery phases to assess the student's technical abilities to earn the J3 ASI - master gunner.

The phase begins with students learning ammunition forecasting and training management. The emphasis for this block of instruction is placed on resourcing time and equipment (ammunition) from rifle qualification through a Bradley Table XII gunnery for a Bradley-equipped battalion.

During SRTP, students work individually on their gunnery plan. This plan will require the students to incorporate all of the information that they have learned throughout the gunnery phase of the course and establish a gunnery plan that they will brief to a panel of instructors.

Each student is assigned an instructor/mentor who acts as the student's operations officer. The S3 provides training guidance and the collective tasks to be trained and the student master gunner develops the



Annette Fournier

Kimberly Benford was present in July 2006 when the Master Gunner Course named its distinguished honor graduate trophy after her husband Staff Sergeant Jason A. Benford, who was killed in Iraq in 2005.

gunnery. During SRTP, the instructors will conduct several in-progress reviews (IPRs) to ensure that the students are progressing properly and to demonstrate the planning process found within battalions. The instructors are available to the students 24 hours a day to assist students as required.

A student who has the highest academic average and first-time "GOs" in all hands-on testing and SRTP is awarded the title of distinguished honor graduate. In July 2006, the distinguished honor graduate trophy was named after Staff Sergeant Jason A. Benford, the distinguished honor graduate from Class #4-04, who was killed in Iraq in 2005. Since 1983, there have been more than 3,000 graduates, and only 66 have earned the title of distinguished honor graduate.

Master Gunner Trends (FY05 / 06)

Over the last year a number of trends have emerged as NCOs are attending the Bradley Master Gunner Course. In particular, the historical 74 percent graduation rate has dropped to a 61 percent rate during FY06.

— During exit interviews, the students who did not meet the academic or technical

standards identified that the majority of the course prerequisites had not been completed.

Course prerequisites include that students:

- Be instructor/operator certified,
- Be certified on Bradley Gunnery Skills Test (BGST) within six months and Bradley Crew Evaluator (BCE) within three months,
- Complete formal train-up by the unit,
- Qualify on Bradley Table VIII from a gunner or BC position (within nine months for AC Soldiers, 12 months for NG enhanced brigades, 18 months for NG non-enhanced Soldiers).

These prerequisites were adjusted in January 2006 to reduce the amount of time that a student was at Fort Benning as well as to set the conditions for success for an NCO prior to his arrival at the Master Gunner Course.

— Current execution of ARFORGEN results in BCTs returning to the fight in less than a year; this results in battalions sending the most available NCO to the Master Gunner Course and not necessarily the best qualified NCO. This is directly correlated to the decrease in the graduation rate over the last two years.

— NCOs who are being sent to the Bradley Master Gunner Course have limited experience on the BFV; in many cases, they were dismantled squad leaders who have not received any pretraining. This lack of experience creates a steep learning curve that many NCOs cannot overcome to meet the intense technical or academic standards of the course.

— Very few units provide pretraining (Sabot academies) to NCOs prior to arrival at the Bradley Master Gunner Course.

o Some units have been flooding the course with the most available NCOs and not the most qualified NCOs. Historically, the candidate who completes a pre-course two to three weeks prior to the start of the Bradley Master Gunner Course has greatly increased his chance of success. The focus of this type of course should be on 25mm organizational maintenance (TM 9-1005-200-23&P), Plotting of eight-digit grid coordinates as a refresher (overlay), crew gunnery, and platoon gunnery.

— There are not enough instructor/operators (I/Os) or senior instructor/



1st Battalion, 29th Infantry Regiment

Master Gunner Course instructors evaluate students' Surface Danger Area Diagrams.

operators (S/O) in the field; many NCOs who come to the course fail to have this prerequisite training.

— The force does not have enough master gunners to support transformation and modularity. According to the 2nd Quarter, FY06 career management field (CMF) review, there were 199 11B3OJ3 Soldiers in the Army. The Army requirement is 456. This deficit further demonstrates the need for qualified master gunners in the force.

How we can help the force

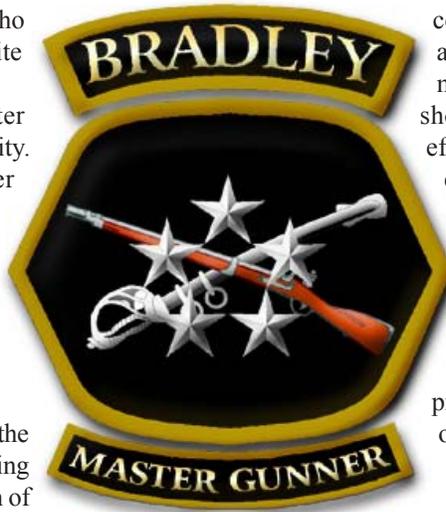
Based on the identified trends from across the force and ARFORGEN challenges, Fort Benning and the 29th Infantry Regiment developed a plan of action to provide the ways and means to assist the operational force achieve master gunner graduates and prepare for combat.

The six-day increase includes the addition of the I/O and S/O courses, increased hands-on training and practical exercises, and a modification of the prerequisites to attend the master gunner course.

– **Instructor/Operator (I/O) course (two-day increase):** Currently, units are unable to produce I/Os internally to meet their training needs. Additionally, units were unable to conduct I/O instruction at home station and, therefore, were unable to meet the old prerequisite for the master gunner course. The inclusion of the I/O instruction in the course will help alleviate that issue for units.

– **Senior/Instructor Operator course (two-day increase):** The operational force does not have enough S/Os to train I/Os in the unit. This also inhibits a Soldier from meeting the prerequisites to attend the Bradley Master Gunner Course. Inclusion of the S/O instruction will allow graduates to return to their units with the capability for them to train and certify I/Os.

o **Increase hands-on training and practical exercises (+ two days).** While training efficiencies were gained when the



course moved from 13 weeks, the net result was a compression of technical data that the student must understand and attempt to master in a short period of time. To counter this negative effect, additional hands-on training and practical exercises are being added to the Maintenance II, III, and Gunnery examinations. This time will allow the student to comprehend all of the technical data or master the skill sets required to progress to the next lesson plan.

o **Prerequisite adjustments.** Effective with Class #1-07 (January 2007) the prerequisites for attendance in the course will only require the following:

- Formal pretraining by the unit,
- Certified on BGST within six months,
- BCE certified within three months, and
- A minimum GT score of 100.

Enabling Actions

The battalion is assisting Fort Benning to establish a *hot loop* that allows the Infantry Center to push information to BCT battalion commanders (AC/RC, Infantry and Armor) to arm them with the latest information and points of contact to assist them during ARFORGEN and while deployed.

We will work with the U.S. Army Human Resources Command to manage the additional skill identifier J3 to ensure qualified Soldiers are manning critically short positions within units, especially during reset. The operational force is severely short master gunners, and it is critical to ensure that these NCOs are positioned to support ARFORGEN requirements.

Units are encouraged to pool resources at the BCT level and implement a Sabot academy (pre-master gunner training) to prepare candidates for the master gunner course. We can assist units with subject matter expertise from 1/29 Infantry during the development of a Sabot academy. The focus of this course should be 25mm organizational maintenance (TM 9-1005-200-23&P), plotting of eight digit grid coordinates as a refresher (overlay), crew gunnery, and platoon gunnery. We

recommend that BCT commanders be the approval authority for sending students to the Bradley Master Gunner Course. We encourage brigade and battalion master gunners to use the Fort Benning website as well as contact the Master Gunner Branch for assistance. The website contains an updated Sabot academy training program as well as points of contact for the 1/29 Infantry.

We will communicate with battalion commanders who have Soldiers on ATRRS prior to the beginning of each course to provide feedback on current trends or training issues to assist. We will also sustain a communications link with battalion commanders to provide feedback on their NCOs' progress during the course.

Due to the large number of NCOs who



U.S. Army photo

Soldiers in a Bradley Fighting Vehicle conduct live-fire training on Fort Benning.

do not have mechanized experience, we recommend that commanders use the Mechanized Leaders Course (MLC) as a means to mitigate training experience. While the Master Gunner Course is designed to be a graduate-level class, the MLC provides an opportunity for units to send NCOs (staff sergeants through master sergeants and lieutenants through majors) who are new to Bradley units to help them gain hands on experience and training. The resident Fort Benning course is four weeks (20 training days) in length and can be executed as an MTT at a unit's home station. The course has a modular capability when being executed as a MTT that allows commanders to meet the ASI requirements while adjusting the training to meet their specific needs.

The center of gravity in the ARFORGEN model is a BCT; therefore it should be the primary headquarters that coordinate for mobile training teams (MTTs). Resource requirements for most MTTs exponentially surpass what a battalion can support; a pooling of assets at the BCT level will set the conditions for success.

Mobile Training Teams (MTTs)

The capability exists to export the resident instructional capability to the location that best suits a unit's needs; MTTs are the best method to do this. MTTs are flexible because they can be brought to a unit's home station or executed at Fort Benning by blocking an existing course, called "buying the course."

The benefit of bringing the course to a unit's location allows Soldiers the opportunity to go home each night and reduces the turmoil brought on by temporary duty. However,

executing an MTT at the unit's location is also resource intensive. By blocking a course at Fort Benning, a unit can leverage the existing resources (equipment, ranges and ammunition), minimize distractions on the Soldier, and allow him to be immersed in the course focusing his attention. The overall intent is to provide a unit the most amount of flexibility to support their ARFORGEN efforts.

We recommend that a brigade headquarters be the organization to coordinate for an MTT. The general rule is that MTTs (resident to Fort Benning or at a unit's location) must be coordinated and locked in one training quarter before execution. For MTTs going to a unit's location, the initial planning factor is for 12 instructors to train 20 students. Based on a unit's needs, these parameters can be adjusted. When a MTT comes to a unit's location, unit master gunners are used as assistant instructors.

There are three options that can be offered to a unit for MTTs to meet their training needs:

51 Training Days (10 Weeks). This training module can be used by a unit that has the ability to pretrain Soldiers by certifying and validating training before instruction begins. Student prerequisites for this module include the following:

- Formal pretraining (Sabot academy),
- Instructor/operator certified (I/O),
- BGST certified within six months, and
- BCE certified within three months.

55 Training Days (11 Weeks). This training module can be used by a unit that has the ability to certify and validate some training prior to instruction beginning but is not capable of training I/Os before instruction begins. Student prerequisites for this module include the following:

- Formal pretraining (Sabot academy),
- BGST certified

within six months, and

-BCE certified within three months.

65 Training Days (13 Weeks). This training module can be used by a unit that has not had the capability to execute pretraining or the ability to train and certify Soldiers on the prerequisites for the course. This module includes a Sabot academy as part of the module and trains and tests BGST. The only prerequisite for this module is that the unit must train and certify Soldiers as BCEs (within three months from the start of the Bradley Master Gunner Course)

Other training menu options. While executing an MTT at a unit's home station, the 1/29 Infantry has the capability to assist units with other potential training. The instructors can assist units executing a BCE or I/O course for those students not in the Bradley Master Gunner Course.

We encourage feedback from the operational force (AC/RC) to refine and make the course better to support a unit's needs. We remain committed to providing the force NCOs with the best technical training on the Bradley fighting vehicle to train Soldiers, leaders, and units in their preparation for combat and to save lives once deployed in harm's way.

Sergeant First Class Matthew Hinkley is the branch chief of the Bradley Master Gunner Course at Fort Benning, Georgia. He is responsible for leader training on all variants of the Bradley. He is the honor graduate of Master Gunner Class #4-99 and has served in numerous leadership positions. Most recently, he was a platoon sergeant with A Company, 1st Battalion, 41st Infantry Regiment, Fort Riley, Kansas.

First Sergeant Timothy Terpak is the first sergeant and acting commander of the Stryker/Bradley Instructor Company at Fort Benning. He is responsible for leader training on the Bradley Infantry Fighting Vehicle (BIFV) and Stryker Infantry Carrier Vehicle at Fort Benning. He is the distinguished honor graduate of Master Gunner Class #2-97. Most recently, he was a platoon sergeant with C Company, 3rd Battalion, 15th Infantry Regiment, Fort Stewart, Georgia.

Lieutenant Colonel Robert Cerjan is the battalion commander of the 1st Battalion (Mechanized/Stryker), 29th Infantry Regiment, responsible for leader training on both Bradley Fighting Vehicles and the Stryker Infantry Carrier for the United States Army Infantry Center & School. He has served in a variety of mechanized, light, Joint and Special Operations assignments in Europe, the Pacific, OIF and OEF. Most recently, he was the Chief of Strategy - J5 for the Special Operations Command Central, USCENCOM.

