



**DEPARTMENT OF THE ARMY
MASSACHUSETTS ARMY NATIONAL GUARD TRAINING SITE
CAMP EDWARDS, MASSACHUSETTS 02542-5003**

REPLY TO
ATTENTION OF

19 January 2012

Lynne Jennings
MMR Program Manager
US EPA Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Dear Lynne Jennings,

The MAARNG in accordance with the USEPA approval letter dated 24 March 2010 regarding the use of the M116A1 Hand Grenade Simulator on Camp Edwards is submitting the enclosed Summary Report.

As you recall concerns were raised in regards to one of the constituents of this device, Chlorate. As such approvals from the USEPA and the EMC required sampling of for Chlorate. Through an approved project note sampling was conducted accordingly. All samples for the constituent of concern, Chlorate, were non-detect.

The enclosed summary report provides the required information as put forth in the approval letter and additionally the signed approval letters from the USEPA and the EMC, the project note, and a draft SOP are included within the report.

The MAARNG would respectfully request that the USEPA modify AO2 and its associated scope of work to allow the MAARNG to use this valuable training device on a permanent basis.

Copies of this letter will be furnished to Mark Begley, EMC and Len Pinaud, MassDEP.

The Point of Contact for this submission and request is LTC Richard Bertone, 508-968-5883,
Richard.bertone@us.army.mil

Sincerely,

A handwritten signature in black ink, appearing to read "Richard Bertone", is written over a circular stamp. The stamp contains the text "Richard Bertone", "LTC, MAARNG", and "Deputy Post Commander".

Richard Bertone
LTC, MAARNG
Deputy Post Commander

M116A1 Hand Grenade Simulator



Summary Report

Massachusetts Army National Guard

Camp Edwards

19 January 2012

Introduction

Pyrotechnics are hand-thrown military training devices used to simulate battlefield noises and effects during training. These devices help prepare Soldiers for the rigors of combat by simulating stress and confusion of artillery and hand grenade explosions—an important aspect of military training. Realistic training is a critical component of Soldier training, and factors that create realism—smoke, dust, noise, and pressure—all help create the confusion associated with realistic battle conditions. Many of the tasks that Soldiers are required to train on prior to deployment concentrate on reaction to contact, and combat contact normally takes the form of an explosion from either indirect fire or an improvised explosive device (IED). Pyrotechnics can be used to simulate IEDs, which have caused 80 percent of the US casualties in Afghanistan.

In 1997, the use of artillery and grenade simulator devices at Camp Edwards was suspended after the U.S. Environmental Protection Agency issued Administrative Order 2. One of the constituents in the pyrotechnics, perchlorate, was of particular concern due to its solubility and potential effects on human health.

The M116A1 Hand Grenade Simulator has been reformulated by the Department of the Army and is now perchlorate free. The basic reformulation is primarily composed of environmentally benign, biodegradable constituents. The simulators are constructed of cardboard tubes that contain a black powder and aluminum mixture, along with sodium salicylate, (a substance used as a pain reliever), red gum (eucalyptus), potassium chlorate, which is the same constituent as in matches and ultimately breaks down to oxygen and potassium chloride (a naturally occurring mineral), dextrin (breakdown product of starch), and potassium nitrate (a naturally occurring mineral used as a fertilizer).

On December 9, 2009, the Environmental Management Commission (EMC) unanimously approved the use of the M116A1 Hand Grenade Simulator at Camp Edwards and subsequently the U.S. Environmental Protection Agency (USEPA) also approved use of the grenade simulators. See Appendix A for 24 March 2010 approval letters from the EMC and USEPA. Compliance with EMC and USEPA approvals required: no grenade simulator use in wetland buffer areas, in water supply Zone 1 areas, in noise sensitive areas, such as near the base boundary, or when conditions indicate a fire hazard. In addition, Soldiers policed debris as required by regulation and policy. The EMC and USEPA limited use to 1000 per acre per year for two years while any possible environmental effects were evaluated.

It was required that information on simulated grenade use and monitoring, and relevant issues encountered during the applicable training year be included in the training section of the Annual Report. The approval specifically required including the numbers of simulated grenades used in the Reserve and, where applicable, the Training Areas where they were used.

Working with USEPA, the Massachusetts Department of Environmental Protection and the EMC, the Guard developed a sampling plan to test soils. The plan was approved (Appendix B) and sampling was done during a period of intense training at Camp Edwards during the summer of 2010. Results of the sampling showed non-detect for Chlorate, the constituent of concern (Appendix C). A briefing of results was given during the combined meeting of the EMC's advisory groups, the Science Advisory Group and the Community Advisory Group, on August 25, 2010.

These new pyrotechnics have greatly enhanced the realism of pre-mobilization training at Camp Edwards. The Guard will continue to use these new simulators to the benefit of Soldier training and is requesting permanent approval based on experience and environmental sampling.

Numbers, Training Area Use, Sampling, and Analysis

During training year 2010, 473 Hand Grenade Simulators were used-319 in the Camp Edwards Training Area and 154 in the Cantonment Area and in 2011 only 7 were used in the Camp Edwards Training Area. Table 1 and Figure 1 identify and illustrate the general training area location at which these pyrotechnic devices were used. In regards to dud hand grenade simulators; all such items will be handled in accordance with the hand grenade simulator Draft SOP (Appendix D). The relevant section is as follows:

DUDs:

- a. In accordance with TM 9-1370-207-10 (Pyrotechnic Simulator Operator's Manual) do not handle duds.
- b. Mark the location, Notify Range Control, Wait 1 hour.
- c. Range Control will notify post EOD for response to the training site.

Table 1. Hand Grenade Simulator Use, Camp Edwards Training Area, 2010-2011

Training Year	Training Area	Number Used
2010	A 3	5
2010	A 4	61
2010	B 9	23
2010	B 10	15
2010	B 11	42
2010	C 14	50
2010	C 15	50
2010	BA 1	20
2010	BA 6	28
2010	Wheelock Road	10
2010	North Power Lines	15
2010	Cantonment Area	154
2011	C14	3
2011	BP27	2
2011	A4	2
Total:		480

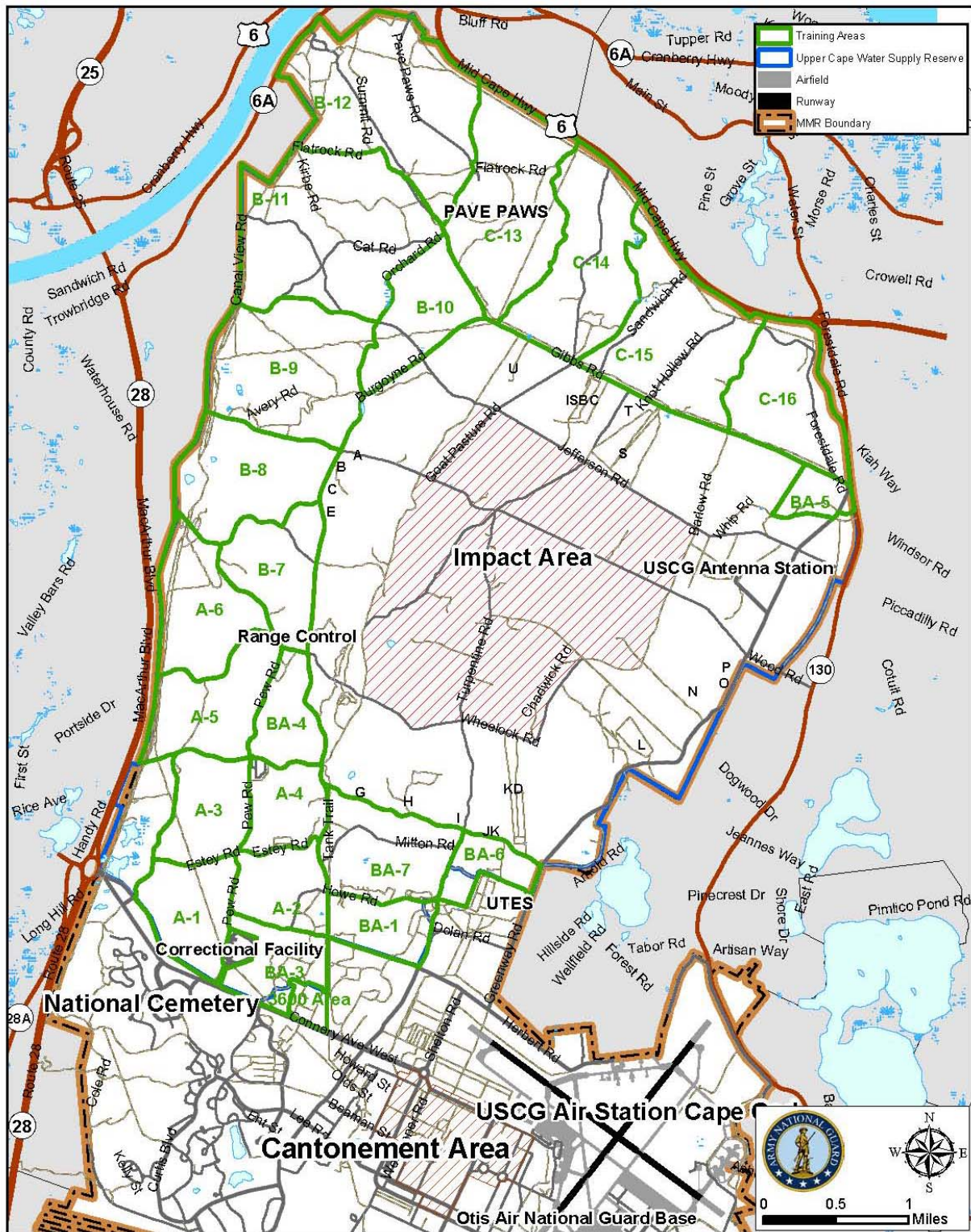


Figure 1. Hand Grenade Simulator Use, Camp Edwards Training Area, 2010-2011

As a requirement of the approval for use of the M116A1 Hand Grenade Simulator, the MAARNG sampled soils for the presence of chlorate associated with the pre-combustion composition of these devices. Sampling was conducted, in accordance with a signed project note (Appendix B), both before and after the exercise, with both pre- and post-exercise sampling completed.

It was requested by the EMC that the MAARNG sample surface soil for Chlorate following the 2010 Exportable Combat Training Capability (XCTC) exercise. The usage of the simulators was the highest during this training exercise in June 2010. It was requested that four or five grab samples be taken from a high use area (or areas) and analyzed for chlorate. It was also requested that at least one background sample be taken for the same location for comparison purposes. To this end, the E & RC contacted the Camp Edwards Trainers to determine the best sampling location. "Checkpoint Number Two" was identified as an expected highest use area for XCTC 2010.

Checkpoint Two was located on an unpaved section of Turpentine Road approximately 0.3 miles south of Wheelock Road and north of Pocasset-Forestdale Road. This was an ideal location for using IED simulated devices since convoys were regularly stopped here, and as such this particular location was used heavily in training scenarios for XCTC 2010.

On June 4, 2010, immediately prior to the XCTC training, surface samples were taken from the hard packed roadbed at Checkpoint Two. Three soil samples were scraped from the roadbed using a stainless steel spoon which was decontaminated by rinsing with distilled water between samples. Samples were immediately placed in amber glass sample collection bottles and labeled. Samples were transported in a cooler on ice and were refrigerated. XCTC training ended on June 21, 2010. Per a request from the USEPA multi-increment samples were taken. The samples were collected from the surface (0 -1 ") and delivered to a certified laboratory for analysis using EPA Method 300.1. All results were non-detect for Chlorate (Appendix C). Accordingly there were no known environmental impacts in using these devices on Camp Edwards during the two year pilot period of 2010-2011.

Appendix A

EMC and USEPA Approval Letters



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
ENVIRONMENTAL MANAGEMENT COMMISSION
Building 1204, Camp Edwards, MA 02542-5003
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TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
MARY B. GRIFFIN
RICHARD SULLIVAN
Commissioners

March 24, 2010

COL Francis M. McGinn
Commander, Camp Edwards
Headquarters, Camp Edwards
Camp Edwards, MA 02542

RE: Upper Cape Water Supply Reserve/Camp Edwards; Simulated Hand Grenade Approval

Dear Colonel McGinn:

This letter is in response to your request letter dated October 13, 2009. In that letter you, on behalf of the Massachusetts Army National Guard (MAANG), requested joint review and approval of the M116A1 Hand Grenade simulator (DODIC L601). The approval would include placement of the M116A1 Hand Grenade simulator (simulated grenade) on the list of munitions authorized for use at Camp Edwards pursuant to Chapter 47 of the Acts of 2002 and the Environmental Performance Standards. In a letter dated 12 January 2010, and in presentations to the Environmental Management Commission (EMC) and its Advisory Councils, the MAANG stated no more than 1000 simulated grenades would be used per year and the use of the simulated grenades would be distributed over an area considerably greater than 1 acre in size within the Upper Cape Water Supply Reserve.

At its December 9, 2009 meeting, the Environmental Management Commission (EMC) voted to authorize the EMC's Executive Director to issue a conditional approval letter in accordance with the recommendations of the Science Advisory Council and Community Advisory Council. The vote also noted the MAANG's Environmental & Readiness Center's recommendation for the simulated grenade's inclusion on the approved list. The MAANG conducted its own technical review and concluded that training with the simulated grenade could be accomplished while protecting the water supply and wildlife habitat.

The Science Advisory Council (SAC) and the Community Advisory Council, at their respective meetings on November 18, 2009 and December 3, 2009, were briefed on the simulated grenades. The Advisory Councils provided recommendations through unanimous votes to the EMC on the use of the simulated grenade. Given the number of simulated grenades proposed to be used by the MAANG each year, and the distribution of the training over a wide area, the contaminants released by the simulated grenade were not believed by the SAC to be a threat to the resources in the Reserve. The Community Advisory Council supported the SAC vote and deferred to the SAC's expertise in the matter. The SAC conditioned their recommendation to the EMC that the use of the simulated grenades be revisited in two years to be certain that the conceptual site model presented by the MAANG remains valid, i.e., no significant impact on groundwater and wildlife habitat based on a check of the environment where the simulated grenades were used.

In the December 9, 2009 vote, the EMC acted under the purposes and provisions of Chapter 47 of the Acts of 2002, "An Act Relative to the Environmental Protection of the Massachusetts Military Reservation," and the Environmental Performance Standards. The use was conditionally approved in accordance with the SAC's recommendation, the Environmental Performance Standards, and may be revoked at any time for failure to comply with the conditional authorization, if grenade formulations significantly change, or monitoring indicates a problem. The EMC vote directed that best management practices (BMPs) be included as conditions of the EMC's approval letter. A public comment period on the simulated grenades was also conducted by the Environmental Protection Agency (EPA) and no comments were received from the public.

The EMC hereby approves the use of the requested simulated grenades, subject to the following conditions:

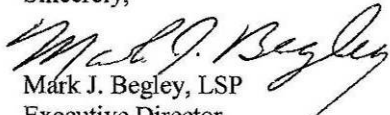
1. All simulated grenade use will be in accordance with the Environmental Performance Standards, Camp Edwards Regulations, BMPs, and all other applicable laws, regulations, Standard Operating Procedures (SOPs), the EPA authorization, and any other applicable approvals.
2. Best Management Practices will be developed and employed to prevent or mitigate adverse impacts, including litter, from the simulated grenade use. All adverse impacts shall be prevented and/or mitigated to the maximum extent feasible.
3. The MAANG shall notify the EMC's Executive Director through Range Bulletins or e-mail when the simulated grenades are proposed to be used in training in the Reserve.
4. The simulated grenade will not be used during fire hazard conditions, in Zone I areas of water supply wells, in restricted wetland buffer areas, nor in noise sensitive areas close to residential areas at the base boundaries.
5. Sixty (60) days prior to the end of the two year authorized use period, the MAANG shall submit a summary report on the use and environmental impacts of the simulated grenade to the EMC. The summary report shall identify the number of items used and the training areas over which they were used during the authorization period. It shall also present

sampling and analysis data, collected according to a sampling and analysis plan developed by the MAANG jointly with the EPA and the EMC, in consultation with the Massachusetts Department of Environmental Protection (MassDEP). The purpose of the summary report is to document and assess any environmental impacts resulting from the use of the grenade simulator. The contents of the report must also be presented to the Science Advisory Council and the Small Arms Working Group, and the results of the report will be used by the EMC and the MAANG's Environmental & Readiness Center to determine if the grenade simulator will remain on the approved list of munitions.

6. Should observation or monitoring of the training areas indicate the potential for damage to the resources within the Upper Cape Water Supply Reserve as a result of the use of the simulated grenades, the use or practices will be modified to eliminate the potential damage as directed by the EMC and the MAANG.
7. The Annual State of the Reservation Report's training section dedicated to the use of simulated munitions use shall include a section discussing the simulated grenades use, and monitoring, and relevant issues encountered during the applicable training year. More specifically, this section shall include numbers of simulated grenades used in the Reserve and, where available, the training areas where they were used. The summary in the Annual State of the Reservation Report shall also include confirmation that the chemicals and materials used in the grenade simulators have not significantly changed.
8. The community shall continue to be informed of the status of training through periodic updates at EMC meetings, Community Advisory Council meetings, Science Advisory Council meetings, and on the MAANG's Camp Edward/Environmental & Readiness Center web site, and other applicable outreach opportunities.

If you have any questions or comments regarding this letter, please contact me at (508) 968-5127.

Sincerely,



Mark J. Begley, LSP
Executive Director,
Environmental Management Commission

ec: EMC Commissioners
EPA
MassDEP



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

24 March 2010

Colonel Francis M. McGinn
Post Commander MANG
Camp Edwards, MA 02542

RE: Training Range and Impact Area, Massachusetts Military Reservation, EPA
Docket No. SDWA I-97-1030, Modification for Limited Authorization for M116A1
Hand Grenade Simulator (DODIC L601) Training

Dear Col. McGinn,

In a letter dated 26 October 2009, the Massachusetts National Guard (MANG), on behalf of itself and the National Guard Bureau (NGB), requested the United States Environmental Protection Agency (EPA) to modify the Scope of Work (SOW) to Administrative Order SDWA I-97-1030 (AO2) issued pursuant to Section 1431(a) of the Safe Drinking Water Act with respect to the Massachusetts Military Reservation (MMR). Specifically, the MANG requested approval to resume training using the reformulated pyrotechnic device M116A1 Hand Grenade (DODIC L601).

On 13 January 2010, EPA responded to this request. In its response, EPA proposed to modify AO2 and submitted this proposal for public comment. The public comment period ended on 16 February 2010 and no comments have been received from the public.

Thus, this letter constitutes EPA's modification to AO2 to allow a limited authorization for a two year period, under which MANG personnel and personnel from other military agencies, will be permitted to conduct training utilizing the reformulated pyrotechnic device – M116A1 Hand Grenade (DODIC L601).

Background:

In its efforts at protecting the sole source Cape Cod Aquifer, EPA has issued four administrative orders, including three pursuant to the Safe Drinking Water Act. The second Administrative Order, known as AO2, was issued in May 1997. Among other provisions, AO2 includes the suspension of particular military training activities at the Training Range and Impact Area of MMR (AO2, Scope of Work, Section II.A.1). Among the activities suspended were "[a]ll use of pyrotechnics at or near the Training Range and Impact Area". (AO2, Scope of Work, Section II.A.1.f).

AO2 also includes provision for modifying Scope of Work Requirements based on specified demonstrations. (Paragraph 125). If a Respondent to AO2 believes that a modification to the Work specified pursuant to AO2 is necessary and appropriate, the Respondent may petition EPA for a determination on the potential modification. Included among the bases for such a modification is "documentation demonstrating that the use of a ... pyrotechnic that is suspended pursuant to this Order does not present a threat of harm to the public or the environment that would warrant its continued suspension under this Order".

26 October 2009 NGB/MANG Petition for Modification:

As described above, the NGB/MANG petition requested a modification to allow use of the DODIC L601 M116A1 Hand Grenade for training purposes. According to the petition, this M116A1 Hand Grenade Simulator contains none of the hazardous constituents listed in Paragraphs 19 thru 22 of AO2, nor does this device contain perchlorate. The petition also states that these items are comprised of "black powder, aluminum and silica sand" and that "the grenade simulators contain no constituents of concern that would present a threat of harm to the public or the environment."

EPA Findings:

Based on a careful review of the information provided, EPA does not believe that the statements made in the petition and referenced above are completely accurate. Per the project note attached to the 26 October 2009 petition, Testing of Artillery and Grenade Simulators at Camp Edwards (dated 13 August 2009); the M116A1 contains the following constituents:

- 40 grams Flash Composition
 - 8% Flaked Aluminum
 - 92% Black Powder
- 41 milligrams Fuse Igniter Charge
 - 88% Potassium Chlorate
 - 10% Charcoal
 - 2% Dextrin
- 2 grams Primer Paste
 - 67% Potassium Nitrate
 - 14% Charcoal
 - 10% Binder Cell Nitrate
 - 9% Sulfur
- Safety Fuse
 - Cotton
 - Black Powder
 - Primer Paste
- Ignition Blasting Fuse Assembly (M3A1)
 - Steel Wire
 - 67mg Cadmium Chromate (49% Cd, 23% Cr)

Ferrule

Steel Wire

67mg Cadmium Chromate (49% Cd, 23% Cr)

0.3 grams Copper Alloy Ignition Charge Wire Assembly

95% Copper

4.92% Zinc

0.05% Iron

0.03% Lead

Some of the constituents described above can be harmful to public health and the environment depending on the quantity. In a letter dated 12 January 2010, MANG has indicated that they will use no more than 1000 grenades per year in an area of 1 acre in size at MMR. EPA finds that given the number of items to be used by the MANG in a given year, the size of the area where the items will be used and the amount of contaminants contained in the M116A1 grenade, EPA does not expect that the use of these items in this manner will present a threat to the sole source aquifer.

Modification:

Based on the above discussion and findings, EPA hereby modifies AO2 as specified below.

1. Modified AO2, Appendix A (Scope of Work), ¶II.A.1.f, as follows:

f. All use of pyrotechnics at or near the Training Range and Impact Area except as provided in Appendix D;

2. Newly added Appendix D to AO2 now allows a limited authorization to use one type of pyrotechnic device, the M116A1 Hand Grenade (DODIC L601), for a two year period to commence the first day of use. Effective immediately, EPA hereby modifies AO2 to append Appendix D at the end of AO2 and Appendix D is now fully enforceable as a part of AO2.

This action does not modify any other provision of the Statement of Work or the main body of AO2. This modification may itself be modified or withdrawn by EPA at any time on twenty-four hours' written notice. This modification is effective immediately.

If you have any questions about the terms of this modification, please contact Lynne Jennings at 617-918-1210 or Jennings.lynn@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "H. Curtis Spalding". The signature is fluid and cursive, with a long horizontal stroke at the end.

H. Curtis Spalding
Regional Administrator, EPA New England

cc: Mark Begley, EMC
Len Pinaud, Mass DEP
Mike Ciaranca, MANG
Jo-Anne Palmer, MANG
Kent Gonser, IAGWSP
Desiree Moyer, EPA
Tim Conway, EPA
Ron Fein, EPA

SCOPE OF WORK
MASSACHUSETTS MILITARY RESERVATION
TRAINING RANGE AND IMPACT AREA

Appendix D to
EPA Region I Administrative Order
SDWA I-97-1030

I. INTRODUCTION AND PURPOSE

This Limited Authorization for the use of one type of pyrotechnic device authorizes Respondents to conduct training under specified conditions for a limited time at Massachusetts Military Reservation (MMR) on Cape Cod, Massachusetts. This Limited Authorization is appended to the Administrative Order, Docket Number SDWA I-97-1030 (the "Order"), issued by the United States Environmental Protection Agency (EPA) regarding the Training Range and Impact Area at MMR, and specifies the conditions under which Respondents may conduct such training and the Work that Respondents must perform associated with such training.

II. LIMITED AUTHORIZATION

- A. Authorized Period: This Limited Authorization is in effect for a two year period beginning the day the first pyrotechnic device, M116A1 Hand Grenade (DODIC L601), is used on the MMR Training Ranges.
- B. During the authorized period, Respondents and persons operating under their supervision may use the reformulated pyrotechnic device, the M116A1 Hand Grenade (DODIC L601), subject to the following conditions:
 - 1. No more than 1000 of these pyrotechnic devices, M116A1 Hand Grenade (DODIC L601) shall be used within a one year time period.
 - 2. All metal wires associated with this device will be turned-in as accountable dunnage. This is also specified in the 13 August 2009 Project Note, Testing of Artillery and Grenade Simulators at Camp Edwards.

3. The limited authorization is conditioned upon compliance with all conditions established by the Environmental Management Commission.
4. Respondents shall provide EPA with copies of all documents or reports required by the Environmental Management Commission for consideration during the authorized period.
5. This approval is subject to periodic audits, including samples of environmental media, to be conducted by EPA or its contractors throughout the authorized period.
6. The limited authorization includes a requirement that, sixty days prior to the end of the two year authorization period, the MANG shall submit a summary report on the use and environmental impacts of the M116A1 Hand Grenade simulator. This summary report shall identify the number of items used and the area over which they were used during the authorization period. This report shall also present sampling and analysis data, collected according to a sampling and analysis plan developed jointly with EPA and the EMC, to demonstrate environmental impacts from the use of this hand grenade simulator. The EPA will evaluate this report and determine if future continued authorization shall be authorized.
7. Respondents shall schedule all training activities authorized by this Limited Authorization in a manner that does not interfere with, or slow down, the schedule for completing the investigation and cleanup required under the AOs. If a conflict arises, the investigation and cleanup activities take priority over any training, and training shall be

rescheduled. Respondents shall be responsible for communicating and conferring with the Army's Impact Area Groundwater Study Program (IAGWSP) to ensure that the requirements of this paragraph are satisfied. A violation of the requirements of this paragraph may result in modification or withdrawal of this Limited Authorization pursuant to Paragraph II.G.

8. This authorization is limited to one type of pyrotechnic device, the reformulated M116A1 Hand Grenade only.
- C. The conditions of Paragraph II.B are fully enforceable requirements of the Order and violations of any of the above conditions may be subject to penalties under the Order.
 - D. After the conclusion of the authorized period, Respondents may not utilize any pyrotechnic devices at or near the Training Range and Impact Area.
 - E. Respondents are responsible for supervising their own personnel, personnel from other agencies, and any contractors or consultants (including other government agencies) that Respondents engage or authorize to conduct any activities utilizing the pyrotechnic M116A1 Hand Grenade (DODIC L601) on the MMR Training Ranges. Respondents shall ensure that all persons conducting activities utilizing this M116A1 Hand Grenade (DODIC L601) at MMR Training Ranges comply with the requirements of this Order, other administrative orders issued by EPA with respect to MMR, and all applicable law. Respondents may be liable and subject to penalties for any violations of this Order, other administrative orders issued by EPA with respect to MMR, or other applicable law, caused by any persons conducting activities at the MMR Training Ranges.
 - F. Except as specifically stated in this Limited Authorization, Respondents remain obligated to comply with all the terms and conditions of the Order.

- G. The TPC or the Regional Administrator may modify or withdraw this Limited Authorization at any time upon twenty-four hours written notice.

Appendix B

Project Note: Sampling Plan for Grenade Simulators at Camp Edwards

Environmental and Readiness Center Camp Edwards, Massachusetts		PROJECT NOTE	
Confirmation of <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Date Held Not applicable Location Not applicable Date Issued June 22, 2010 Recorded By	
Subject SAMPLING PLAN FOR GRENADE SIMULATORS AT CAMP EDWARDS		Issued By MAARNG	
Item	Action Required By		
1.0	<u>INTRODUCTION</u> <p>From 1997 to 2010, the Massachusetts Army National Guard (MAARNG) suspended the use of artillery and grenade simulator devices on Camp Edwards pursuant to the U.S. Environmental Protection Agency's (EPA) Administrative Order SDWA I-97-1-030 ("AO2"). This order was issued based on findings related to potential environmental impact to groundwater below the base.</p> <p>Pyrotechnic devices used on MMR in the past contained such chemicals as hexachloroethane, zinc oxide mixtures, lead thiocyanate, nitroglycerin, diethylphthalate and acetone, all chemicals which have been eliminated in the reformulated devices.</p> <p>Perchlorate was also one of the constituents in the simulators. Perchlorate is a contaminant of high solubility and has potential effects on human health.</p> <p>Subsequently, the Department of Defense took the initiative to develop a simulated Hand Grenade which uses no perchlorate nor any of the other chemicals mentioned above.</p> <p>In "AO2", an allowance was made by EPA for modification of the "Scope of Work" prohibiting use of pyrotechnics in the Training Reserve. Specifically the AO allowed for "documentation demonstrating that the use of a propellant or pyrotechnic that is suspended pursuant to this order does not present a threat of harm to the public or the environment that would warrant its continued suspension under this order".</p> <p>Further, as described in the ENVIRONMENTAL PERFORMANCE STANDARDS of July 11, 2007 under CAMP EDWARDS TRAINING AREA GENERAL PERFORMANCE STANDARDS, "Blank ammunition for small arms and simulated munitions may be used in areas outside of the small arms ranges, using only blank ammunition and simulated munitions identified on an approved list of munitions. Joint review and approval for the inclusion on the list shall be through the Environmental & Readiness Center (E &RC) and the EMC."</p> <p>In letters dated 24 March, 2010, the MAARNG was given approval for use of the newly reformulated M116A1 Hand Grenade Simulator by both EPA and the EMC with conditions.</p>		

The work proposed in this Project Note addresses the requirements of the EMC Approval Letter of March 24, 2010 and the EPA Approval Letter of the same date. Through previous sampling and constituent analysis, the MAARNG has provided supporting evidence that the use of reformulated pyrotechnics "does not present a threat of harm to the public or environment that warrants its continued suspension under this order". This field sampling is verification to help obtain permanent EPA approval for use of the new M116A1 Hand Grenade Simulator on Camp Edwards. This work is also in support of obtaining the above cited permanent listing on the E&RC and EMC list of approved munitions.

In recent discussions between EMC, E&RC and Range Control representatives, a general sampling design was outlined. EPA and MassDEP input has also been sought per the approval letters mentioned above. Further discussion of the project and results will take place at the Small Arms Working Group (SARWG) Meetings.

2.0 OBJECTIVE

The objective of the proposed sampling and analysis is to obtain data to confirm that the reformulated simulators are appropriate for permanent use at Camp Edwards, and to support the MAARNG's request for permanent modification of "AO2" to allow the use of these reformulated pyrotechnics as an appropriate and vital part of military training.

3.0 DESCRIPTION OF SIMULATOR DEVICES

The M116A1 Hand Grenade simulators are hand thrown military training devices used to simulate battlefield noises and effects during troop maneuvers and training. The M116A1 has a 6-11 second delay followed by a flash/bang with a 125dB report. The M116A1 simulator consists of a M3A1 friction type initiator and a piece of safety fuse with 40 grams of a loose black powder/aluminum mixture. The simulator body consists of a 2 piece cylindrical cardboard tube measuring 4 inches long by 1.5 inches in diameter.

Use of these devices to prepare soldiers for the rigors of combat by simulating the stress and confusion is an important aspect of military training.

The simple cardboard tubes contain these specific constituents:

Black powder (a mixture of sulfur, charcoal and potassium nitrate);
Sodium salicylate (substance also used as a pain reliever);
Red gum (eucalyptus);
Aluminum (second most abundant metal in Earth's crust);
Potassium chlorate (the most common chlorate in industrial use – breaks down to oxygen, and potassium chloride - a naturally occurring mineral);
Dextrin (breakdown product of starch);
Potassium nitrate (naturally occurring mineral used as a fertilizer).

There is a metal wire visible on the outside, similar in appearance to a paperclip, and internally a wire can be seen in the drawings. These do not enter into the environment, but are held onto by the soldier when activating the device and turned in later as dunnage. Turning in dunnage by the soldiers is important as an accounting activity.

Because of this there should be no metal scraps being introduced to the environment with use of these simulators.

The detailed composition of the simulators is reflected in the following table:

	MA116A1 Hand Grenade Simulator- New Design
Flash Composition 40 g	Aluminum (flaked) 8 %
	Black Powder 92%
Fuse Igniter Charge 41 mg	Potassium Chlorate 88%
	Charcoal 10%
	Dextrin 2%
Primer Paste 2g	Potassium Nitrate 67%
	Charcoal 14%
	Binder Cell Nitrate 10%
	Sulfur 9%
Safety Fuse	Cotton
	Black Powder
	Primer Paste
Ignition Blasting Fuse (M3A1) Assembly	Steel Wire
	Cadmium Chromate 0.067 g (49% Cd/ 23% Cr)
Ferrule	Steel Wire
	Cadmium Chromate 0.067 g (49% Cd/ 23% Cr)
Ignition Charge Wire Assembly 0.3 g Copper Alloy	Copper 95%, Zinc 4.92% Iron 0.05%, Lead 0.03%

4.0 **SAMPLING AND ANALYSIS PROCEDURES**

The EMC has requested the MAARNG sample surface soil for chlorate following the upcoming Exportable Combat Training Capability (XCTC) exercise. It is expected that the usage of the simulators will be highest for the year 2010 during this relatively short training period in June. Initially it was requested that four or five grab samples be taken from a high use area (or areas) and analyzed for chlorate. It was also suggested that at least one background sample should be taken for the same location for comparison purposes. To this end, the E & RC contacted Camp Edwards Trainers to determine the best sampling location. "Checkpoint Number Two" was identified as an expected highest use area for XCTC.

Checkpoint Two is located on an unpaved section of Turpentine Road approximately 0.3 miles south of Wheelock Road and north of Pocasset-Forestdale Road. This is an ideal location for using IED simulated devices since convoys will be regularly stopped here, and as such this particular location will be used heavily in training scenarios for the XCTC exercise.

Once this location was determined as the best sampling site, E & RC personnel prepared to collect background samples. On June 4, 2010, immediately prior to the

XCTC training, surface samples were taken from the hard packed roadbed at Checkpoint Two. Three soil samples were scraped from the roadbed using a stainless steel spoon which was decontaminated by rinsing with distilled water between samples. Samples were immediately placed in amber glass sample collection bottles and labeled. Samples were transported in a cooler on ice and have been kept refrigerated awaiting approval of the test methodology.

XCTC training ended on June 21. Per EPA request multi-increment samples will be taken as more representative than grab samples to look at any measurable residual levels of chlorate in soil as a result of training with the M116A1 Hand Grenade Simulators. As soon as practicable after the training exercise multi-increment samples will be taken from the same location as the background samples, or other high use area if appropriate.

The sampling date will be coordinated with the regulators so that the regulators are afforded an opportunity to observe sample collection.

The samples will be collected from the surface (0 - 1") and delivered to a certified laboratory for analysis using EPA Method 300.1

5.0 SAMPLE PREPARATION

Samples will be handled in accordance with the Impact Area Groundwater Study Program Quality Assurance Project Plan (IAGWSP QAPP). To make the samples as representative as possible, the sample extraction process will be modified to include the following:

- Air drying on foil lined drying racks,
- Sieve through a #10 Sieve (2 mm),
- Homogenization by hand in zip-lock bags,
- 1-2 gram sub-samples taken for EPA Method 300.1 Chlorate extracted in 100 ml's DI-water.

Standard reporting and minimum detection limits specified in the QAPP will be achieved for all analyses or the results may be rejected during data validation.

6.0 EVALUATION OF SAMPLE RESULTS

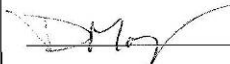



Results of soil sampling will be provided to stakeholders and discussed at a SARWG meeting. The results will be evaluated to determine if permanent training with the simulator devices is acceptable in terms of environmental protection.

7.0 SCHEDULE AND NEXT STEPS

With approval of this Project Note, the MAARNG will perform the analysis of the background samples and prepare for the sampling and analysis of the post exercise samples. Coordination steps include coordinating with Camp Edwards Headquarters, USACE and coordinating with Range Control. The regulators will be notified 48 hours in advance of the sampling so that they have the opportunity to be present.

8.0 CONCURRENCE

Concurrence with the activities presented in this project note is represented by the signatures below:

 USEPA Representative	<i>24 June 10</i> <i>to include multi-increment attached addendum</i>	 MassDEP Representative
 MAARNG Representative		 EMC Representative

Sampling Protocol for M116A1 Hand Grenade Simulators

Three multi-increment samples will be collected from 50 x 50 foot grids in the identified high use area. The samples will be made up of 50 increments collected from the surface to 1 inch deep. Soil and any vegetation will be included. Two replicates will be collected from one of the grids.

Appendix C

Soil Sampling Results: Chlorate



TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

July 21, 2010

Ms. Laurie Ekes
Environmental Chemical Corp.
PB 519 Gaffney Road
Otis ANGB, MA 2542

Re: Laboratory Project No. 29000
Case: 29000; SDG: EM627

Dear Ms. Ekes:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on June 26th, 2010. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 06/26/10 ETR No: 137913			
833826	GRID #1	06/25/10	SOIL
833827	GRID #1 REP #1	06/25/10	SOIL
833828	GRID #1 REP #2	06/25/10	SOIL
833829	GRID #2	06/25/10	SOIL
833830	GRID #3	06/25/10	SOIL

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

After their receipt at the Burlington laboratory, the samples in this delivery group were air dried, processed through a sieve, then spread out for removal of Incremental Sub-samples. The sub-samples were not ground in a Puck Mill for due to concerns over the loss of Chlorate. The sub-samples were sent to the TestAmerica laboratory in Irvine California to be analyzed for Chlorate. The results of those analyses are filed in their entirety after this cover letter.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Madison". The signature is stylized with a large, looped initial "J" and a cursive "Madison".

Jim Madison
Project Manager

cc: Jo-Anne Palmer
Environmental Compliance and Sustainability Specialist
Environmental & Readiness Center
1203 West Inner Road
Camp Edwards, MA

LABORATORY REPORT

Prepared For: TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Jim Madison

Project: MMR Site
EM627

Sampled: 06/25/10
Received: 07/01/10
Issued: 07/13/10 12:22

NELAP #01108CA California ELAP#2706 Arizona DHS#AZ0671 Nevada #CA-72

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.

This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ITG0052-01	GRID #1	Soil
ITG0052-02	GRID #1 REP #1	Soil
ITG0052-03	GRID #1 REP #2	Soil
ITG0052-04	GRID #2	Soil
ITG0052-05	GRID #3	Soil

Reviewed By:



TestAmerica Irvine
Steven Garcia
Project Manager



THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax: (949) 260-3297

TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Jim Madison

Project ID: MMR Site
EM627
Report Number: ITG0052

Sampled: 06/25/10
Received: 07/01/10

INORGANICS (EPA 300.1)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ITG0052-01 (GRID #1 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10G1161	200	ND	1	7/12/2010	7/12/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				99 %				
Sample ID: ITG0052-02 (GRID #1 REP #1 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10G1161	200	ND	1	7/12/2010	7/12/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				96 %				
Sample ID: ITG0052-03 (GRID #1 REP #2 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10G1161	200	ND	1	7/12/2010	7/12/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				101 %				
Sample ID: ITG0052-04 (GRID #2 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10G1161	200	ND	1	7/12/2010	7/12/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				101 %				
Sample ID: ITG0052-05 (GRID #3 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10G1161	200	ND	1	7/12/2010	7/12/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				99 %				

TestAmerica Irvine

Steven Garcia
Project Manager

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ITG0052 <Page 2 of 4>

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TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Jim Madison

Project ID: MMR Site
EM627
Report Number: ITG0052

Sampled: 06/25/10
Received: 07/01/10

METHOD BLANK/QC DATA

INORGANICS (EPA 300.1)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 10G1161 Extracted: 07/12/10									
Blank Analyzed: 07/12/2010 (10G1161-BLK1)									
Chlorate	ND	200	ug/kg						
Surrogate: Dichloroacetate (DCA)	9.89		ug/kg	10.0		99	90-115		
LCS Analyzed: 07/12/2010 (10G1161-BS1)									
Chlorate	938	200	ug/kg	1000		94	75-125		
Surrogate: Dichloroacetate (DCA)	9.81		ug/kg	10.0		98	90-115		
Matrix Spike Analyzed: 07/12/2010 (10G1161-MS1)									
Chlorate	992	200	ug/kg	1000	ND	99	75-125		
Surrogate: Dichloroacetate (DCA)	9.93		ug/kg	10.0		99	90-115		
Matrix Spike Dup Analyzed: 07/12/2010 (10G1161-MSD1)									
Chlorate	975	200	ug/kg	1000	ND	98	75-125	2	25
Surrogate: Dichloroacetate (DCA)	9.85		ug/kg	10.0		99	90-115		

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Project Manager

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TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Jim Madison

Project ID: MMR Site
EM627
Report Number: ITG0052

Sampled: 06/25/10
Received: 07/01/10

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD Relative Percent Difference

TestAmerica Irvine

Steven Garcia
Project Manager

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ITG0052 <Page 4 of 4>

Intercompany Chain of Custody

SDG/Job Reference: EM627
PO Reference: EM627
Project ID: ECCMMR
Project Name: MMR Site
Due Date: 07/14/10

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Tel: 802 660-1990 Fax: 802 660-1919

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ITG0052

	Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Time Sampled	Chlorate by 300.1
1	GRID #1	833826	SOIL	06/25/10	1128	X
2	GRID #1 REP #1	833827	SOIL	06/25/10	1128	X
3	GRID #1 REP #2	833828	SOIL	06/25/10	1128	X
4	GRID #2	833829	SOIL	06/25/10	1155	X
5	GRID #3	833830	SOIL	06/25/10	1215	X

15:26
7/1/10
AT

Relinquished By:	<i>J. Muel</i>	Date:	6/30/10	Time:	1600	Received By:	<i>P. Ryan</i>	Date:	7/1/10	Time:	10:58
							<i>CS</i>		4:10		4:10

Date	Time	Temp (oC)
6/28/2010	11:00	20.5
6/29/2010	7:15	20.0
6/30/2010	7:00	20.5

[illegible][illegible]

FRACTION	BG/AG
Met	NA
Hg	NA
SVOA	NA
8330	NA
6850	NA
TOC	NA

BG = Before Grind
AG = After Grind
NA = Not Applicable



TestAmerica Laboratories, Inc.

July 21, 2010

Ms. Laurie Ekes
Environmental Chemical Corp.
PB 519 Gaffney Road
Otis ANGB, MA 2542

Re: Laboratory Project No. 29000
Case: 29000; SDG: AM515

Dear Ms. Ekes:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on June 22nd, 2010. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 06/22/10 ETR No: 137846			
833364	CP2-01	06/04/10	SOIL
833365	CP2-02	06/04/10	SOIL
833366	CP2-03	06/04/10	SOIL

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

After their receipt at the Burlington laboratory, the samples in this delivery group were sent to the TestAmerica laboratory in Irvine California to be analyzed for Chlorate. The results of those analyses are filed in their entirety after this cover letter.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Madison". The signature is fluid and cursive, with the first name "Jim" and last name "Madison" clearly distinguishable.

Jim Madison
Project Manager

cc: Jo-Anne Palmer
Environmental Compliance and Sustainability Specialist
Environmental & Readiness Center
1203 West Inner Road
Camp Edwards, MA

LABORATORY REPORT

Prepared For: TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Joe Carabillo

Project: MMR Site

Sampled: 06/04/10
Received: 06/23/10
Issued: 07/02/10 16:41

NELAP #01108CA California ELAP#2706 Arizona DHS#AZ0671 Nevada #CA-72

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.

This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ITF2221-01	CP2-01	Soil
ITF2221-02	CP2-02	Soil
ITF2221-03	CP2-03	Soil

Reviewed By:



TestAmerica Irvine

Steven Garcia
Project Manager



THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax: (949) 260-3297

TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Joe Carabillo

Project ID: MMR Site

Report Number: ITF2221

Sampled: 06/04/10

Received: 06/23/10

INORGANICS (EPA 300.1)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ITF2221-01 (CP2-01 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10F3725	200	ND	1	6/30/2010	6/30/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				103 %				
Sample ID: ITF2221-02 (CP2-02 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10F3725	200	ND	1	6/30/2010	6/30/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				102 %				
Sample ID: ITF2221-03 (CP2-03 - Soil)								
Reporting Units: ug/kg								
Chlorate	EPA 300.1 Mod.	10F3725	200	ND	1	6/30/2010	6/30/2010	
Surrogate: Dichloroacetate (DCA) (90-115%)				102 %				

TestAmerica Irvine

Steven Garcia
Project Manager

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ITF2221 <Page 2 of 4>



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TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Joe Carabillo

Project ID: MMR Site
Report Number: ITF2221

Sampled: 06/04/10
Received: 06/23/10

METHOD BLANK/QC DATA

INORGANICS (EPA 300.1)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 10F3725 Extracted: 06/30/10									
Blank Analyzed: 06/30/2010 (10F3725-BLK1)									
Chlorate	ND	200	ug/kg						
Surrogate: Dichloroacetate (DCA)	10.4		ug/kg	10.0		104	90-115		
LCS Analyzed: 06/30/2010 (10F3725-BS1)									
Chlorate	1000	200	ug/kg	1000		100	75-125		
Surrogate: Dichloroacetate (DCA)	10.3		ug/kg	10.0		103	90-115		
Matrix Spike Analyzed: 06/30/2010 (10F3725-MS1)									
Chlorate	881	200	ug/kg	1000	ND	88	75-125		
Surrogate: Dichloroacetate (DCA)	10.2		ug/kg	10.0		102	90-115		
Matrix Spike Dup Analyzed: 06/30/2010 (10F3725-MSD1)									
Chlorate	883	200	ug/kg	1000	ND	88	75-125	0.2	25
Surrogate: Dichloroacetate (DCA)	10.4		ug/kg	10.0		104	90-115		

TestAmerica Irvine

Steven Garcia
Project Manager

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ITF2221 <Page 3 of 4>



THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax: (949) 260-3297

TestAmerica Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403
Attention: Joe Carabillo

Project ID: MMR Site

Report Number: ITF2221

Sampled: 06/04/10
Received: 06/23/10

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD Relative Percent Difference

TestAmerica Irvine

Steven Garcia
Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced
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ITF2221 <Page 4 of 4>

Intercompany Chain of Custody

SDG/Job Reference AM515
PO Reference AM515
Project ID ECCMMR
Project Name MMR Site
Due Date 07/06/10

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403



Tel: 802 660-1990 Fax: 802 660-1919

ITF2221

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

	Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Time Sampled	Chlorate by 300.1
1	CP2-01	833364	SOIL	06/04/10	1125	X
2	CP2-02	833365	SOIL	06/04/10	1128	X
3	CP2-03	833366	SOIL	06/04/10	1131	X

00
6/24/10
15:15

Relinquished By: 	Date: 6/22/10	Time: 1450	Received By: 	Date: 6/23/10	Time: 10:55
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#1014

05

2.6

Appendix D

Camp Edwards, Range Control, M116A1 Hand Grenade Simulator

Draft Standard Operating Procedure

M116A1 Hand Grenade Simulator SOP

**Pyrotechnic Simulator
M116A1 Hand Grenade DODIC L601
STANDARD OPERATING PROCEDURES (SOP)**

**Camp Edwards, Army National Guard Training Site,
Massachusetts National Guard**

January 2012



REPLY TO

DEPARTMENT OF THE ARMY
MASSACHUSETTS ARMY NATIONAL GUARD TRAINING SITE
CAMP EDWARDS, MASSACHUSETTS 02542-5003

10 JAN 2012

NGMA-CPE-RC

Range Control Standard Operating Procedure (SOP)

HISTORY: This is the second publication of this SOP and supersedes the XCTC- 1003 Camp Edwards Pyrotechnic Hand Grenade Simulator M116A1 SOP.

SUMMARY: This SOP establishes policies, procedures, and guidelines governing the use and operation of the M116A1 Hand Grenade Simulator.

APPLICABILITY: This publication applies to all users of the M116A1 Hand Grenade Simulator to include the issuing and oversight of operations for Range Control employees.

PROPONENT AND EXCEPTION POLICY: Range Control Officer in Charge (OIC) is the proponent of this SOP, and has the authority to approve exceptions to this SOP that are consistent with safe training and environmental regulations.

DISTRIBUTION AND IMPLEMENTATION: Range Control OIC is responsible for the distribution and implementation of this SOP for all users and staff. All units requesting the use of the M116A1 Hand Grenade Simulators will familiarize themselves with this SOP.

SUGGESTED IMPROVEMENTS: Users are invited to provide comments and suggested improvements to this SOP directly to the Range Control OIC.

RESTRICTIONS: This SOP is for Range Control staff and user use only and is not to be distributed for public use.


Ryan P. Walsh
CPT, MP
Range Control Officer

M116A1 Hand Grenade Simulator SOP

1.0 INTRODUCTION

1.1	Purpose.....	pg.4
1.2	Background.....	pg.4
1.3	Environmental Requirements.....	pg.4
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1.4.1	Training Site Commander.....	pg.5
1.4.2	Director of Plans and Training	pg.5
1.4.3	Range Control Officer.....	pg.6
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1.4.7	Training Event OIC.....	pg.7

2.0 RANGE OPERATIONS

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2.2	Issuing and Clearing of Training Areas.....	pg.8
2.2.1	Special Police Requirements.....	pg.8
2.2.2	Restrictions and Limitations.....	pg.9

3.0 Safety

3.1	Proper Protective Equipment.....	pg.10
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Appendix A	Utilization Report
Appendix B	Training Areas acceptance/clearance checklist
Appendix C	Map of restricted areas

M116A1 Hand Grenade Simulator SOP

1.0 Introduction

Camp Edwards continues to improve, upgrade, and maximize the bases' training effectiveness, efficiency, and realism while continuing to ensure sustainability of our training lands. The purpose of the M116A1 Hand Grenade Pyrotechnic Simulator is to increase battlefield realism by creating battle noises and flashes allowing Soldiers to prepare for possible situations in a deployed environment. With the addition of the Soldier Validation Lane (SVL), this simulator will greatly enhance Soldiers training on Counter-Improvised Explosive Device (C-IED) training. The new Pre-Mobilization mandatory training requirement consisting of; 15 Army Warrior Tasks (AWT) and 4 Battle Drills (BD), place an even stronger emphasis on utilizing local training areas and increasing their potential. Camp Edwards is the National Guards Local Training Area in New England and it provides us the ability to train our Soldiers on these AWT and BD while maximizing the limited time given as compared to active duty counterparts.

1.1 Purpose

The purpose of this Standard Operating Procedure (SOP) is to standardize procedures for units training with the M116A1 Hand Grenade Simulator at Camp Edwards Massachusetts Military Reservation (MMR). The plan will allow for maximum effective use of the hand grenade simulator while abiding by training and environmental guidelines. The M116A1 Hand Grenade Simulator will only be used at Camp Edwards with the approved SOP implemented.

1.2 Background

In May of 1997 the United States Environmental Protection Agency (USEPA) issued Administrative Order 2 (AO2) which suspended the use of all pyrotechnics at or near the training Range and Impact Area. In October of 2009, the MANG petition for a modification of AO2 to allow the use of the M116A1 Hand Grenade Simulator, DODIC L601, for training purposes. USEPA modified AO2 to allow a limited authorization to use one type of pyrotechnic device, the M116A1 Hand Grenade Simulator, for a two year period to commence the first day of use.

The Environmental Management Commission (EMC) also approved the use of the M116A1 Hand Grenade Simulator, under a two year pilot program.

Both the USEPA and EMC's approval are based on a number of conditions, which will be detailed in section 1.3 in this SOP.

1.3 Environmental Requirements

In order for the MAARNG to utilize the M116A1 Hand Grenade Simulator in the "reserve" portion, or Northern 15,000 acres of Camp Edwards, Appendix D to EPA Region I Administrative Order SDWA I-97-1030 and Massachusetts General Law Chapter 47 of the Acts of 2002 must be adhered to.

The following conditions must be met at a minimum;

- No more than 1000 of the pyrotechnic devices shall be used within a one year time period.
- All metal wires associated with the device will be turned-in as accountable dunnage.

M116A1 Hand Grenade Simulator SOP

- All simulated grenade use will be in accordance with the Environmental Performance Standards (EPS).
- Best Management Practices (BMPs) will be developed and employed to prevent or mitigate adverse impacts, including litter, from the grenade use.
- EMC's Executive Director will be notified prior to use through Camp Edwards Range Bulletin.

The Annual State of the Reservation Report's training section dedicated to the use of simulated munitions use shall include a section discussing the simulated grenade use, and monitoring, and relevant issues encountered during the applicable training year. The section shall include numbers of simulated grenades used, and training areas where they were used.

1.4 Roles and Responsibilities

To implement this SOP, Camp Edwards will require a team of leaders to manage training operations, facility maintenance, and environmental protection functions.

1.4.1 Training Site Commander

The Training Site Commander is responsible for the overall operation of Camp Edwards to include the immediate supervision, control, coordination, and safety of all Camp Edwards facilities and promotion of mission compatible and environmentally sustainable uses of Camp Edwards resources.

1.4.2 Director of Plans and Training

The Director of Plans and Training (DPT) is the primary advisor to the Training Site Commander on all matters concerning the safe, efficient utilization of Camp Edwards training facilities. Within the overall responsibility for Range Control operations, the DPT will:

- Provide review, comments, and approval of this individual SOP.
- Identify and program for range modernization, operations, and maintenance requirements based on training load and doctrine; and
- Include requirements within this SOP for planning and budgeting actions as appropriate for sustainable BMP's of ranges and training areas.

1.4.3 Range Control Officer

The Range Control Officer is the primary representative of the Training Site Commander at Range Control and, as such, will:

- Control access to ranges;
- Ensure that individuals identified as "throwers" received safety video from ASP.
- Conduct a Safety Danger Zone (SDZ) review for all M116A1 Simulated Grenade training events and proposed specific engagement areas prior to unit training events.
- Ensure that Grenade Simulators SDZ(s) for those events do not conflict with other units training in the area.

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- Coordinate operation of simulators and oversee using units while training in Camp Edwards training area;
- Enforce applicable guidance and regulations, EPS's, SOPs, and safety requirements;
- Schedule and issue training areas to units and clear/close out units upon completion of training area use.
- Ensure upon completion of training, that all training areas and engagement areas have been policed of debris and brass.
- Conduct periodic inspections of training area conditions and identify requirements for repair and maintenance.

1.4.4 Environmental and Readiness Center

The Environmental and Readiness Center (E&RC) is the primary representative for the Training Site Commander for accomplishment of sustainable environmental management requirements.

1.4.5 Ammunition Supply Point

Camp Edwards Ammunition Supply Point (ASP) is responsible for the care and storage of all munitions on the training base. All pyrotechnic residues from the M116A1 Hand Grenade Simulator will be disposed of at the Camp Edwards Ammunition Supply Point (ASP). All pyrotechnic dunnage (i.e. plastic and string initiators, wire safeties) and shipping/packaging waste will be turned into the ASP.

- The ASP will ensure that all personnel identified as "throwers" are briefed on safety measures and are required to watch the M116A1 safety video.

1.4.6 Unit Commanders

Unit commanders will comply with TAGMA PAM 350-2, AR 385-63 Range Safety, DA PAM 385-63 for Unit Range Safety Certification program, installation guidance, applicable technical manuals, field manuals and all provisions in this SOP.

- Designate a trained Range Officer In Charge (OIC) and Range Safety Officer (RSO) for each training event and ensure they have a current certification from Camp Edwards Range Control.
 - Per DA PAM 385-63 the minimum grade requirement for hand grenade simulators; OIC E6 or above, RSO E5 or above.
- Conduct risk management for all Range Operations and complete a DA Form 7566 Composite Risk Management Worksheet, ensure that the unit provides a copy of the risk management worksheet to range control.
- Submit a copy of the DA-581 to RC to ensure that the correct hand grenade simulator (DODIC L601, M116A1 Hand Grenade Simulator Manufactured after JAN 2009) is utilized on Camp Edwards.
- All training request must be submitted using RFMSS NLT 90 days out from training event, and ensure that request has been approved prior to arrival.
- Submit Map Overlay; 1:25,000 scale with clearly defined deployment area(s), 14 days prior to training event for approval.
- For convoy training include separate convoy route overlay, expect if the C-IED lane is being used as the convoy route, 14 days prior to training event.

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1.4.7 Training Event OIC

The unit appointed training OIC is responsible for the overall safety and use of the hand grenade simulators for that specific unit while conducting training on Camp Edwards.

- Account for the location of each M116A1 hand grenade simulator used within the training lane.
- Usage will be accounted for using the Training Utilization Report.
- Ensure that Map overlay's are submitted to Range Control prior to training.
- Any change in location of usage, as annotated in map overlay, and with the approval of Range Control will be tracked using the Camp Edwards Training Site MAP, issued upon check in at RC. Indicate the number of hand grenade simulations used and location.
- Ensure the utilization of Proper Protective Equipment (PPE) for participants and observers.
- Ensure that a Surface Danger Zone (SDZ) of 30 meters is established before deployment of simulator.
- Ensure training area is cleared and all dunnage, residues, and metal wires associated with the M116A1 hand grenade simulator are turned-in to ASP upon completion of training.
- Ensure all that all training specific requirements in this SOP are adhered to.

2.0 Range Operations

This section covers Range Controls duties and responsibilities in issuing and clearing training area's where the M116A1 hand grenade simulators are used. Range Control, under the Directorate of Plans and Training is responsible for the issue, clearance and safe utilization of all Camp Edwards training.

2.1 Range Scheduling

Per TAGMA PAM 350-2, Range Control schedules training usage based upon written input received from using units. Units use the Range Facility Management Support System (RFMSS), at <https://rfmss.belvoir.army.mil> to schedule training, stating the dates and facility desired. The request must include the anticipated number of soldiers or other users occupying and using the range, the types of weapons to be used, the types of ammunition to be used (by DoD Identification Code [DODIC]), and estimated amounts of ammunition and or pyrotechnics to be expended. A master schedule is available for viewing electronically via the RFMSS Program. To avoid conflicts, co-use of a previously scheduled area will be confirmed only after Camp Edwards Operations and Range Control receive a written consent from the originally scheduled unit.

Units schedule only the days that they will be training, not the day they intend to draw and occupy. Units schedule their anticipated training time, not the default 0000-2359 hrs. Units can modify their training request through RFMSS, but must call Range Control Operations to cancel and follow up with written confirmation by emailing ma-range@ng.army.mil (Camp Edwards Range Control in the global address book)

2.2 Issuing and Clearing of Training Area

A unit representative will sign out the training area from Range Control prior to occupation or use. Units must confirm the information provided at the time the range was scheduled (e.g., numbers of users,

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vehicles, location of training, location of deployment of grenade simulators). Each unit will receive a training area usage packet, Training Facility Utilization Report (appendix A) , Training area acceptance/clearance checklist (appendix B) , Camp Edwards Training Site Map (identify location of denotations, Appendix C), and a 5 gallon bucket for pyrotechnic residue.

Before training can begin, the unit must provide Range Control with a Map overlay of the proposed denotation location and a copy of the DA 581. Any change to employment areas as outlined in the map overlay needs prior approval from Range Control. Units will use the Camp Edwards Training Site MAP, issued at check in, to annotate new employment locations. This map will then be turned in to Range Control after training event. Prior to occupation, or immediately thereafter, the unit NCOIC and or OIC will inspect the training area and report any deficiencies immediately to Range Control. If no deficiencies are reported, then any deficiencies found in that training area when clearing will be the unit's responsibility to clear.

Prior to drawing any training area the unit must have a current certified unit OIC, RSO and Environmental Officer. All certifications are kept on file at Range Control and need to be updated annually. Contact Camp Edwards Range Control IOT schedule annual re-certification training. Range Control personnel will conduct safety, environmental and trespassing awareness briefings to designated OICs and RSOs prior to issuing the training area.

Once training is completed, the unit inspects the training area to ensure that all residue, trash and unit equipment is cleared. The training area is not considered cleared until Range Control personnel visibly inspects and clears the training area and signs the training area acceptance/clearance checklist. The unit representative will report to Range Control returning the Range packets, utilization form, Map identifying where the grenade simulators were deployed, and any equipment issued. Ensure all pyrotechnic dunnage is turned into the ASP.

2.2.1 Special Police Requirements

All pyrotechnic residues from the M116A1 Hand Grenade Simulator will be disposed of at the Camp Edwards ASP. If the device is hollowed out (i.e. the device end caps have blow out, with a cardboard tube intact) it is considered pyrotechnic residue and must be crushed, shredded, and /or destroyed so that it cannot be identified or reused as an expedient explosive device.

Throwers are responsible to observe/ account for the correct functioning of the pyrotechnic hand grenade simulator to ensure that DUD devices are not mistakenly brought to the ASP. Designated receptacles' (5 gallon buckets) for the M116A1 Hand Grenade Simulator will be used for pyrotechnic residue. When all training is complete these receptacles' will be returned to Range Control.

2.2.2 Restrictions and Limitations

All proposed training events will be requested through RFMSS not later than 90 days prior to the training event. As a minimum the training request will include the following information:

- Unit(s) requesting the event.
- Date of event, include starting and ending times.

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- Description of the training event and number of troops.
- Map Overlay; 1:25,000 scale with clearly defined deployment area(s), 14 days prior to training event.
- For convoy training include separate convoy route overlay, expect if the C-IED lane is being used as the convoy route, 14 days prior to training event.

The M116A1 hand grenade simulators are approved to be used in the Northern training area except for the following:

- Pyrotechnics will not be used within any wetlands or in any body of water. A 50 meter buffer zone will be used around wetlands and bodies of water.
- Pyrotechnics will not be used within 400 feet of a public water well.
- Pyrotechnics will not be used within 500 feet of a residential area. (i.e portions of Greenway and Canal View roads)
- During times of increased fire hazard conditions, Range Control may temporally restrict pyrotechnic use until fire hazard conditions improve. However, use may be restricted to designated points (i.e. pits, steel drums) in clear un-vegetated areas during increased fire hazard conditions.
- Quantities of greater than 1000 M116A1 Hand Grenade Simulators will not be used within a 1 acre area per year. Range Control will use the Utilization Reports to track total usage and advise units where pyrotechnic hand grenade simulators may be used.
- See attached Map of Camp Edwards wetlands, water bodies and wells (Annex C).

3.0 Safety

Safety is the primary concern when conducting any training on Camp Edwards. Safety is the primary responsibility of every leader down to the smallest element. Reference: DA PAM 385-63, AR 385-63, AR 385-10, DA PAM 385-10 and TAGMA PAM 350-2. Units are required to appoint a Range Safety Officer (RSO) for every training event. Unit commanders must provide written documentation of appointment by using either the Camp Edwards RSO form or memorandum of record. Per DA PAM 385-63 the minimum grade requirement for a hand grenade simulator RSO is an E5.

The RSO is responsible for reporting all accidents no matter how minor in nature. All accidents will be immediately reported to Range Control who will then contact appropriate personnel. All incidents will require the RSO to fill out a Camp Edwards Incident Report form which will be issued by Range Control once the incident is reported.

Commanders are required by DA PAM 385-63 to conduct risk management for all range operations. For all Range Operations, the unit must complete a DA Form 7566 Composite Risk Management Worksheet; ensure that a signed copy of the risk management worksheet is provided to range control prior to training. The unit commander is responsible for the overall safety of the units training event. A designated unit RSO will be identified prior the training and use of the M116A1 hand grenade simulator. Only the M116A1 hand grenade simulators (DODIC L601) manufactured after JAN 2009 will be utilized on Camp Edwards. The following safety measures must be implemented:

- Ensure that a SDZ of 30 meters has been established.

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- Ensure that when a simulator is initiated, it must be immediately thrown in a direction away from unprotected personnel THERE IS NO WARNING WHISTLE for M116A1 DO NOT "COOK OFF" pyrotechnic hand grenade simulators.
- These devices shall not be activated in loose gravel, debris, or other materials that are subject to projection. Also they should not be thrown into dry leaves, grass, or other flammables.
- Restrict use and handling of simulators to designated, authorized Personnel. Personnel shall be limited to experienced, thoroughly trained Combat trainers/controllers who have been briefed on potential hazards of these items including and especially 30 meter SDZ.
- Observe SDZ for unprotected personnel at all times. SDZ distances less than 30 meters are only acceptable for protected personnel. Protected personnel are those protected by suitable cover, such as armored vehicles, buildings, or dug-in emplacements etc. Furthermore, personnel are normally considered protected when simulator detonations are separated from personnel by masking terrain or within designated barricaded areas and/or pits. Combat trainers/controllers shall work directly with local safety and QASAS personnel to evaluate, design, and/or approve locations on the training range for simulator use.

In accordance with TM 9-1370-207-10 (Pyrotechnic Simulator Operator's Manual) do not handle duds. Mark the location and notify Range Control and wait one hour. Range Control will notify appropriate EOD personnel for response. Ensure that the simulator is clearly marked and that a safe standoff distance of 30 meters is implemented.

3.1 Proper Protective Equipment

A full complement of Proper Protective Equipment (PPE) is mandatory to exercise hand grenade simulation training. Commanders will be required to ensure that Soldiers are wearing the proper PPE prior to deployment of any grenade simulators. Soldiers not following proper PPE requirements increase the opportunity for serious injury or impairment. Commanders can upgrade the required PPE pertaining to individual M116A1 hand grenade training, but cannot remove from the standard. The basic equipment is as follows:

Throwers: personnel designated and authorized to use simulators shall follow precautions and warnings below. When using M116A1 Simulators, thrower shall wear:

- Standard-issue leather glove on throwing hand
- Safety eyewear (e.g. "gargoyle" eyewear or safety glasses).
- Thrower shall also seek suitable cover/barricade, turn away from simulator point of detonation and assume protective stance after throwing. Thrower shall also assure simulator is thrown at least 30 meters from unprotected personnel.

Additional specific M116A1 hand grenade simulator thrower guidance:

- Will be employed only from behind suitable cover/barricade.
- Hearing protection (as required based on thrower proximity to detonation area).
- Pyrotechnics will not be thrown from a building or vehicle.
- Pyrotechnics will not be thrown into a building or vehicle.

Trainee's specific personnel protection requirements exposed to M116A1 effects:

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- Safety eyewear (IAW APEL).
- Kevlar helmet
- Body armor (SAPI plates are not required)

Exposed or target personnel who are not under cover shall be instructed to follow current doctrine for action normally taken when exposed in combat.

M116A1 Hand Grenade Simulator (DODIC L601) Manufactured after January 2009 is the only authorized hand grenade simulator to be used on Camp Edwards.



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CAMP EDWARDS TRAINING FACILITY UTILIZATION REPORT (Appendix A)

(This form will be completed by all units/ organizations conducting training at Camp Edwards IAW CE Reg 385-63, AUG 2006. Return form to Range Control upon completion of training.) Appendix A

UNIT:										UIC:										COMPONENT:														
ADDRESS:																				DATE OF TRAINING:														
POC CONTACT NUMBERS										DSN:										CELL:														
NAME/ RANK / LAST 4 RANGE OIC:															NAME/ RANK / LAST 4 RANGE RSO:																			
NUMBER OF PERSONNEL TRAINED:															RANGE HOT TIME:										RANGE COLD TIME:									
FIRING LANES USED DURING TRAINING																																		
(circle the lanes used): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29																																		
WEAPONS SYSTEMS:															TYPE OF AMMUNITION:										NUMBER EXPENDED:									
VEHICLES BY TYPE PRESENT ON RANGE:																				QTY:														
BIVOUAC AREA USED:										NUMBER of PERSONNEL:										NUMBER of NIGHTS:														
TYPES OF EXERCISES CONDUCTED:																																		
AAR COMMENTS:																																		
SIGNATURE OF RANGE OIC/ RSO:																																		
DATE:																																		

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Camp Edwards Range Control

Training Area Acceptance/Clearance Checklist (Appendix B)

(The "Pre" section of form is to be completed by the using unit. Camp Edwards Range Control personnel with a using unit representative will complete the "Post" Section)

A. Administrative Data	
Facility:	Issue DATE:
	Clearance DATE:
Range Control Inspector:	
Unit Representative :	UNIT:

B. Training Area Inspection					
	Pre Inspection		Post Inspection		DEFICIENCIES
	SAT	UNSAT	SAT	UNSAT	Note if deficiency was found Pre or Post Inspection
Road entering the area have been policed and barricades removed					
Parking Area/other POL use areas (POL leaks or stains)					
Trees and other vegetation have not been cut					
Foxholes have not been created w/o RC authorization					
Grass area's (Trash, cleanliness)					
No indication of Hazardous Materials or solid waste					
Wood Line (Trash, cleanliness)					
Concertina wire, Class IV and training materials have been removed from area					
Brass and debris from UTM, Blank fire, and M116A1 grenade simulator has been policed					
*Connex windows and doors are secured. (SVL Lane)					
NOTE: All UNSAT conditions must have deficiencies comment. Use N/A if not applicable. If deficiencies require maintenance then ensure copy of this inspection is giving to fire desk IOT notify maintenance of requirements.					
C. Signatures					
Range Control Inspector:			Unit Observer:		

