

24915-00-GPE-GGPT-00301

Resource Conservation and Recovery Act (RCRA)
**Class 2 Hazardous Waste Storage & Treatment Permit
Modification Request, Treatment of VX Rockets**

for the Blue Grass Chemical Agent-Destruction Pilot Plant
Blue Grass Army Depot, Richmond, Kentucky

EPA ID KY8-213-820-105



Submitted To:

Energy and Environment Cabinet
Kentucky Department for Environmental Protection
Division of Waste Management
300 Sower Blvd.
Frankfort, Kentucky 40601

Submitted By:

Blue Grass Army Depot
431 Battlefield Memorial Highway
Richmond, Kentucky 40475-5060

and

Bechtel Parsons Blue Grass
830 Eastern Bypass, Suite 106
Richmond, Kentucky 40475



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1.0 OVERVIEW

This document contains a Class 2 permit modification request (PMR) for treatment of VX agent-containing M55 rockets at the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP) Main Plant facility located at 431 Battlefield Memorial Highway, Richmond, Kentucky. The Bechtel Parsons Blue Grass (BPBG) Joint Venture is the operator of the BGCAPP and is a Co-Permittee with Blue Grass Army Depot (BGAD) under the Resource Conservation and Recovery Act (RCRA) Part B Permit (EPA ID #KY8-213-820-105, AI #2805) issued by the Kentucky Department for Environmental Protection, Division of Waste Management.

This PMR is being submitted in accordance with 401 Kentucky Administrative Regulation (KAR) 39:060, Section 5 (incorporating Title 40 Code of Federal Regulations (CFR) § 270.42). The following changes are requested:

- Transport of M55 rockets containing VX from Blue Grass Chemical Activity (BGCA) to the BGCAPP Main Plant facility Container Handling Building (CHB).
- Treatment of M55 rockets containing VX in the Munitions Demilitarization Building (MDB).
- Treatment of drained VX agent in the MDB and subsequent management of VX agent hydrolysate in the Hydrolysate Storage System (HSS) tanks.
- Transport of containerized VX warheads to BGCA for storage prior to treatment in one of the Static Detonation Chamber units.

These proposed changes are being submitted as a Class 2 modification requiring approval consistent with 40 CFR § 270.42(d)(2)(ii) and 40 CFR § 270.42 Appendix I. The changes do not alter the capability of the facility to protect human health and the environment.

2.0 PERMIT MODIFICATION REQUEST

2.1 Class of Permit Modification

The proposed changes are being submitted as a Class 2 permit modification based on the criteria in 40 CFR §270.42(d)(2)(ii), modifications that apply to changes that are necessary to enable a permittee to respond, in a timely manner, to (A) common variations in the types and quantities of the wastes managed under the facility permit, and Appendix I, *G. Tanks 5. Management of different wastes in tanks: b. That do not require additional or different management practices, tank design, different fire protection specifications, or significantly different tank treatment process than authorized in the permit, except as provided in (G)(5)(d)*. Justification for why the changes are needed for management of VX M55 rockets in the Main Plant is provided in Section 2.3.

2.2 Description and Justification for Permit Modification

The *Hazardous Waste Management Facility Permit* issued by KDEP effective November 25, 2020 allows treatment of VX agent-containing projectiles at the BGCAPP Main Plant facility. Several permit modifications have also been submitted by BGCAPP/BGAD to KDEP, including:

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- 1 • Class 1 (Requiring Approval) Permit Modification Item 1206 that requested updates to
2 align the issued permit with planned VX projectile operations.
- 3 • Class 3 Permit Modification Item 1093 (24915-00-GPE-GGPT-00361) requesting:
 - 4 ○ Elimination of equipment in the BGCAPP MDB associated with the destruction of
5 energetics in M55 rockets.
 - 6 ○ Elimination of equipment in the Supercritical Water Oxidation (SCWO) Process
7 Building (SPB) associated with destruction of energetics hydrolysate and the use
8 of energetics hydrolysate surrogate in the SCWO process.
 - 9 ○ Addition of the Rocket Warhead Containerization System (RWCS) for treatment
10 of GB M55 rockets.
 - 11 ○ Movement of GB rocket warheads that have been containerized from the MDB to
12 BGCA storage by flatbed trucks.
 - 13 ○ Other miscellaneous updates to support GB rocket operations.
- 14 • Class 2 Permit Modification Item 1214 (24915-00-GPE-GGPT-00300) requesting:
 - 15 ○ Substitution of four Vertical Rocket Cutting Machines (VRCMs) for the two
16 existing Rocket Cutting Machines (RCMs) in the MDB for processing
17 GB M55 rockets and VX M55 rockets.
 - 18 ○ Addition of Rocket Non-Destructive Examination (RNDE) technology to evaluate
19 M55 rockets for chemical agent liquid leaks prior to processing in the VRCMs.
- 20 • Class 3 Permit Modification Item 1209 (24915-00-GPE-GGPT-00394) requesting:
 - 21 ○ Off-site shipment of GB agent hydrolysate for treatment and disposal.
 - 22 ○ Off-site shipment of VX agent hydrolysate for treatment and disposal.
 - 23 ○ Discontinuance of SCWO development efforts for treatment of agent hydrolysate.
 - 24 ○ Addition of piping and ancillary equipment to provide an alternate route for Off-
25 gas Condensate Metal Parts Treater (OTM) condensate tanker loading for offsite
26 shipment.
- 27 • Class 3 Permit Modification Items 646 (24915-00-GPE-GGPT-00349) and 1205
28 (24915-00-GPE-GGPT-00389) requesting permitted storage for Uncontaminated Rocket
29 Motors separated from GB and VX M55 rockets.

30 The GB projectile campaign has been completed. Initial plans were for BGCAPP to next treat
31 GB rockets. However, installation, systemization, and testing of RWCS as well as VRCM
32 equipment will be required before the start of operations. Consequently, VX projectiles will be
33 the next campaign at BGCAPP. This change in order of operations required reconfiguration of
34 agent monitoring to include VX, GB decontamination of processing equipment and rooms within
35 the MDB, update of procedures, and changeover of equipment (e.g., replacement of the two
36 8-in. GB projectile cavity access machines [CAMs] with the three 155-mm VX projectile CAMs).
37 The current Part B permit will allow treatment of VX projectiles.

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1 However, the Class 3 Permit Modification Item 1093 only provided for treatment of GB rockets.
2 In order for the GB rockets campaign to follow the VX projectiles campaign, another
3 reconfiguration of agent monitoring would be required along with decontamination of VX
4 processing equipment and rooms within the MDB. The changeover and additional
5 decontamination efforts would result in additional risks to personnel performing these activities
6 as well as result in delay in the start of the next campaign. This delay would also result in
7 increased risk of storing the aging rocket stockpile.

8 This PMR requests inclusion in the Part B permit of VX rocket treatment by the RWCS as well
9 as other applicable requests in Permit Modification Item 1093. All information provided in Permit
10 Modification Item 1093 for processing of GB rockets is applicable to processing of VX rockets,
11 except as updated in Section 3.

12 Addition of VX rocket treatment to the Part B permit will allow processing of these after the VX
13 projectile campaign with minimal delay in schedule as well as minimize risk to personnel.
14 Consequently, the change will be more protective of human health and the environment. The
15 modification is consistent with a Class 2 permit modification per the criteria of 40 CFR
16 §270.42(d)(2)(ii)(A), with VX agent containing M55 rockets representing a variation in waste
17 type from GB agent containing M55 rockets. It is also consistent with 40 CFR §270.42 Appendix
18 I G.5.b., as the management of GB and VX containing M55 rockets will be essentially the same.
19 In addition, tanks systems within the MDB, including the Agent Collection System (ACS), Agent
20 Neutralization System (ANS), and Hydrolysate Storage System (HSS) will have already stored
21 and processed VX agent and VX agent hydrolysate under permitted VX projectile processing
22 operations.

23 **3.0 SUPPORTING INFORMATION AND DESCRIPTION OF** 24 **REQUESTED PERMIT CHANGES**

25 **3.1 Part A Update**

26 The Main Plant Part A forms are updated to include containerized VX rocket warheads.

27 **3.2 Other Required Updates**

28 Updated professional engineer (PE) stamped as-built piping and instrumentation drawings
29 (P&IDs) and process flow diagrams (PFDs) will be provided separately when these are
30 completed for the individual permit modification items 1093 (RWCS mod), 1214 (VRCM/RNDE
31 mod), and 1209 (hydrolysate offsite shipment mod). As indicated in Appendix A, no other permit
32 document changes are required, with exception of those documents updated by permit
33 modification items 1093, 1214, and 1209.

34 **3.3 Requested Permit Modifications**

35 No permitting language changes outside of those already provided in permit modification items
36 1093, 1214, and 1209 are requested.

37 Destruction and removal efficiency (DRE) calculations for VX rockets are attached.

38 Critical parameters and interlocks for processing VX M55 Rockets will be provided in a revised
39 Pilot Test Demonstration Plan (PTDP) to be submitted as a compliance schedule item.

Appendix A Permit Related Information or Documents Affected by PMR

Regulatory Citation(s) 401 KAR 39 (incorporating 40 CFR Part 264 where applicable)	Description of Requirement	Modified or Clarified Information		
		Yes	No	Sections of the Part B Permit Modified or Supplemental Information Required
39:090 Sec. 1 (264 Subpart B)	General Facility Standards			
39:090 Sec. 1 (§264.11)	Identification number		✓	No change
39:090 Sec. 1 (§264.12)	Required notices		✓	No Change
39:090 Sec. 1 (§264.13)	General waste analysis		✓	No change
39:090 Sec. 1 (§264.14)	Security		✓	No change
39:090 Sec. 1 (§264.15)	General inspection requirements		✓	No change
39:090 Sec. 1 (§264.16)	Personnel training		✓	No change
39:090 Sec. 1 (§264.17)	General requirements for ignitable, reactive, or incompatible wastes		✓	No change
39:090 Sec. 1	Location standards Geological Information		✓	No change
39:090 Sec. 1 (§264.19)	Construction quality assurance program		✓	No change
39:090 Sec. 1 (264 Subpart C)	Preparedness and Prevention			
39:090 Sec. 1 (§264.31)	Design and operation of facility		✓	No change
39:090 Sec. 1 (§264.32)	Required equipment		✓	No change
39:090 Sec. 1 (§264.33)	Testing and maintenance of equipment		✓	No change
39:090 Sec. 1 (§264.34)	Access to communication or alarm system		✓	No change
39:090 Sec. 1 (§264.35)	Required aisle space		✓	No change
39:090 Sec. 1 (§264.37)	Arrangements with local authorities		✓	No change
39:090 Sec. 1 (264 Subpart D)	Contingency Plan and Emergency Procedures			
39:090 Sec. 1 (§264.51)	Purpose and implementation of contingency plan		✓	No change
39:090 Sec. 1 (§264.52)	Content of contingency plan		✓	No Change
39:090 Sec. 1 (§264.53)	Copies of contingency plan		✓	No change
39:090 Sec. 1 (§264.54)	Amendment of contingency plan		✓	No change
39:090 Sec. 1 (§264.55)	Emergency coordinator		✓	No change
39:090 Sec. 1 (§264.56)	Emergency procedures		✓	No change
39:090 Sec. 1 (264 Subpart E)	Manifest System, Recordkeeping, and Reporting			
39:090 Sec. 1 (§264.71)	Use of the manifest system		✓	No change
39:090 Sec. 1 (§264.72)	Manifest discrepancies		✓	No change
39:090 Sec. 1 (§264.73)	Operating record		✓	No change

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Regulatory Citation(s) 401 KAR 39 (incorporating 40 CFR Part 264 where applicable)	Description of Requirement	Modified or Clarified Information		
		Yes	No	Sections of the Part B Permit Modified or Supplemental Information Required
39:090 Sec. 1 (§264.74)	Availability, retention, and disposition of records		✓	No change
39:090 Sec. 1	Annual report		✓	No change
39:090 Sec. 1 (§264.76)	Unmanifested waste report		✓	No change
39:090 Sec. 1	Additional reports		✓	No change
39:090 Sec. 1 (264 Subpart F)	Releases from Solid Waste Management Units			
39:090 Sec. 1 (§264.91)	Required programs		✓	No change
39:090 Sec. 1 (§264.92)	Ground-water protection standard		✓	No change
39:090 Sec. 1 (§264.93)	Hazardous constituents		✓	No change
39:090 Sec. 1	Concentration limits		✓	No change
39:090 Sec. 1 (§264.95)	Point of compliance		✓	No change
39:090 Sec. 1 (§264.96)	Compliance period		✓	No change
39:090 Sec. 1 and §264.97	General ground-water monitoring requirements		✓	No change
39:090 Sec. 1 (§264.98)	Detection monitoring program		✓	No change
39:090 Sec. 1 (§264.99)	Compliance monitoring program		✓	No change
39:090 Sec. 1 (§264.100)	Corrective action program		✓	No change
39:090 Sec. 1	Releases from solid waste management units - corrective action for solid waste management units		✓	No change
39:090 Sec. 1	Incorporation by reference - groundwater analysis and report forms		✓	No change
39:090 Sec. 1 (264 Subpart G)	Closure and Post-Closure			
39:090 Sec. 1 (§264.111)	Closure performance standard		✓	No change
39:090 Sec. 1 and §264.112	Written plan, content of plan, amendment of plan, notification of partial closure and final closure, removal of wastes and decontamination or dismantling of equipment		✓	No change
39:090 Sec. 1 and §264.113	Time allowed for closure		✓	No change
39:090 Sec. 1 (§264.114)	Disposal or decontamination of equipment, structures, and soils		✓	No change
39:090 Sec. 1 (§264.115)	Certification of closure		✓	No change
39:090 Sec. 1 (§264.116)	Survey plat		✓	No change
39:090 Sec. 1 and §264.117	Post-closure care and use of property		✓	No change
39:090 Sec. 1 and §264.118	Post-closure plan and amendment of plan		✓	No change
39:090 Sec. 1 (§264.119)	Post-closure notices		✓	No change

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Regulatory Citation(s) 401 KAR 39 (incorporating 40 CFR Part 264 where applicable)	Description of Requirement	Modified or Clarified Information		
		Yes	No	Sections of the Part B Permit Modified or Supplemental Information Required
39:090 Sec. 1 (§264.120)	Certification of completion of post-closure care		✓	No change
39:090 Sec. 1 (264 Subpart H)	Financial Requirements		✓	No applicable
39:090 Sec. 1 (264 Subpart I)	Use and Management of Containers			
39:090 Sec. 1 (§264.171)	Condition of containers		✓	No change
39:090 Sec. 1 (§264.172)	Compatibility of waste with containers		✓	No change
39:090 Sec. 1 (§264.173)	Management of containers		✓	No change
39:090 Sec. 1 (§264.174)	Inspections		✓	No change
39:090 Sec. 1 (§264.175)	Containment		✓	No change
39:090 Sec. 1 (§264.176)	Special requirements for ignitable or reactive waste		✓	No change
39:090 Sec. 1 (§264.177)	Special requirements for incompatible wastes		✓	No change
39:090 Sec. 1 (§264.178)	Closure		✓	No change
39:090 Sec. 1 (§264.179)	Air emission standards		✓	No change
39:090 Sec. 1 (264 Subpart J)	Tank Systems			
39:090 Sec. 1 (§264.191)	Assessment of existing tank system's integrity		✓	No change
39:090 Sec. 1 (§264.192)	Design and installation of new tank systems or components		✓	No change
39:090 Sec. 1 (§264.193)	Containment and detection of releases		✓	No change
39:090 Sec. 1 (§264.194)	General operating requirements		✓	No change
39:090 Sec. 1 (§264.195)	Inspections		✓	No change
39:090 Sec. 1 (§264.196)	Response to leaks or spills and disposition of leaking or unfit-for-use tank systems		✓	No change
39:090 Sec. 1 (§264.197)	Closure and post-closure care		✓	No change
39:090 Sec. 1 (§264.198)	Special requirements for ignitable or reactive wastes		✓	No change
39:090 Sec. 1 (§264.199)	Special requirements for incompatible wastes		✓	No change
39:090 Sec. 1 (§264.200)	Air emissions standards		✓	No change
39:090 Sec. 1	Effective dates		✓	No change
39:090 Sec. 1 (264 Subpart X)	Miscellaneous Units			
39:090 Sec. 1 (§264.601)	Environmental performance standards	✓		Described in Section 2 of this PMR – Treatment of VX M55 Rockets
39:090 Sec. 1 (§264.602)	Monitoring, analysis, inspection, response, reporting, and corrective action		✓	No change
39:090 Sec. 1 (§264.603)	Post-closure care		✓	No change

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Regulatory Citation(s) 401 KAR 39 (incorporating 40 CFR Part 264 where applicable)	Description of Requirement	Modified or Clarified Information		
		Yes	No	Sections of the Part B Permit Modified or Supplemental Information Required
39:090 Sec. 6	Treatment of Nerve and Blister Agents		✓	No change
Appendices				
39:090 Sec. 1 (264 Appendix I)	Recordkeeping instructions		✓	No change
39:090 Sec. 1 (264 Appendix IV)	Cochran's approximation to the Behrens-Fisher Students' T-Test		✓	No change
39:090 Sec. 1 (264 Appendix V)	Examples of potentially incompatible waste		✓	No change
39:090 Sec. 1 (264 Appendix IX)	List of hazardous constituents for groundwater monitoring		✓	No change

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Regulatory Citation(s) 401 KAR 39 (incorporating 40 CFR Part 270 where applicable)	Description of Requirement	Modified or Clarified Information		
		Yes	No	Sections of the Part B Permit Modified or Supplemental Information Required
39:060 Sec. 5 (270 Subpart A)	General Information			
39:060 Sec. 5	Considerations under Federal law		✓	No change
39:060 Sec. 5 (§270.4)	Effect of a permit		✓	No change
39:060 Sec. 5	Prohibition of use of unpermitted facility		✓	No change
39:060 Sec. 5 (§270.5)	Noncompliance and program reporting by the cabinet		✓	No change
39:060 Sec. 5 (270 Subpart C)	Permit Conditions			
39:060 Sec. 5 and §270.30	Conditions applicable to all permits		✓	No change
39:060 Sec. 5 (§270.31)	Requirements for recording and reporting of monitoring results		✓	No change
39:060 Sec. 5 and §270.32	Establishing permit conditions	✓		Requested modifications provided in Section 3 of this PMR – PTDP as compliance schedule item with critical parameters and interlocks
39:060 Sec. 5 (§270.33)	Schedules of compliance		✓	No change
39:060 Sec. 5	Contents of Part A of the Permit Application (Form 7058A)	✓		Updated Part A included with this PMR
39:060 Sec. 5	General Contents of Part B Application			
39:060 Sec. 5 (§270.14(a))	Contents of Part B: General requirements Certified documents	✓		Updated permit drawings to be provided as-built; mark-ups included with permit modification items 1093, 1214, and 1209.
39:060 Sec. 5 and §270.14	General information requirements General description Topographic map Seismic considerations Subsurface geology and Karst features Groundwater monitoring Floodplain requirements Traffic information Alternative analysis plan Past compliance record Financial responsibility to construct and operate		✓	No change
39:060 Sec. 5 (§270.14(b) (11))	Location information		✓	No change
39:060 Sec. 5 (§270.14(c))	Additional groundwater protection information requirements		✓	No change
39:060 Sec. 5 (§270.14(d))	Information requirements for solid waste management units		✓	No change

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39:060 Sec. 5 (§270.15)	Specific Part B information requirements for containers		✓	No change
39:060 Sec. 5 (§270.16)	Specific Part B information requirements for tanks Number, location, and types of tanks Tank dimensions and capacity Procedures for handling incompatible, ignitable, or reactive wastes Material of construction, volume, dimensions and all design details Type of waste contained in tanks Operating pressure and temperature Description of the feed systems, safety cutoff, bypasses systems, and pressure controls Diagrams of piping, instrumentation and process flow for each tank system		✓	No change
39:060 Sec. 5 (§270.23)	Specific part B information requirements for miscellaneous units. Description Treatment unit design/construction details Site assessments Potential exposure pathways Effectiveness of treatment	✓		Provided in Sections 2 and 3 of this PMR – Addition of VX M55 Rocket treatment; critical parameters and interlocks provided in revised PTDP to be submitted

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REVISED PART A AND DRE CALCULATION