

G. RISK ASSESSMENT CODE (RAC) ANALYSIS

As part of this CTT inventory, the CTT inventory team performed an assessment of explosives safety risk using the RAC process for each CTT military range and UXO-DMM site inventoried. RAC is a pre-response priority sequencing tool that does not take cleanup actions into consideration. As designed by USACE, a site's RAC score is calculated and revised up to the end of the site's investigation as an expression of the explosives risk at the site. The RAC scoring performed under this CTT inventory is based on the ordnance determined to have been used, discarded, or disposed of at the CTT military range or UXO-DMM site as determined through interviews, installation visits, and historic records reviews and does not reflect any cleanup actions that may have already been performed at the installation. Hence, the RAC score may not reflect the current risk at the CTT military range or UXO-DMM site. DoD is currently developing a new priority assessment tool for sites with explosives risk. Until the new tool is approved for use, DoD is mandating the use of RAC scoring for the analysis of explosives risk associated with CTT military ranges and UXO-DMM sites identified during this CTT inventory.

The RAC process uses a worksheet that consists of a series of questions regarding the range or site. As the worksheet is completed, it defines a relative value for the severity and probability of explosives safety associated with the range or site. The worksheet then combines the severity and probability values to arrive at an overall score (RAC score). The RAC score is an estimate of the relative explosives risk, which is reported as a number between 1 and 5. Response actions at a site may serve to reduce the explosive safety risk, but will not change the RAC score. The following is a description of the RAC scores.

RAC 1	High Explosives Safety Risk - Highest priority for further action.
RAC 2	Serious Explosives Safety Risk - Priority for further action.
RAC 3	Moderate Explosives Safety Risk - Recommend further action.
RAC 4	Low Explosives Safety Risk - Recommend further action.
RAC 5	Negligible Explosives Safety Risk - No explosive related action necessary.

The area, probability value, severity value, and overall RAC score for each of the CTT range, UXO, and DMM sites in the inventory are provided in Table G-1. RAC scores are not appropriate for sites containing only MC. The completed RAC worksheets for each range and UXO-DMM site in the CTT inventory are also included in this section.

Table G-1: Risk Assessment Code Analysis Results

Installation	Range or Site Name	Acres	Severity*	Probability**	RAC Score
Fort McClellan	Alpha EE/CA Area	930.0	I	B	1
Fort McClellan	Bravo EE/CA Area	3,387.0	I	B	1
Fort McClellan	Charlie EE/CA Area	8,566.0	I	B	1
Fort McClellan	Chemical Warfare Materiel Complex	19.8	I	B	1
Fort McClellan	Chemical Warfare Materiel Complex – XD	13.0	I	B	1
Fort McClellan	Eastern Bypass EE/CA Area	290.0	I	B	1
Fort McClellan	Eastern Bypass EE/CA Area-XD	271.7	III	B	3
Fort McClellan	M1.01 EE/CA Area	92.2	II	B	2
Fort McClellan	M2 EE/CA Area	20.3	II	B	2
Fort McClellan	Sandell Flamethrower Range	11.1	—	—	NA
Fort McClellan	Small Arms Complex-XD	52.2	V	—	5
Fort McClellan	Small Arms Complex-XG	196.3	V	—	5
Fort McClellan	Trench Hill Training Area-XD	89.4	IV	B	4
Fort McClellan	Trench Hill Training Area-XG	54.2	IV	B	4

* Severity – 5 possible classifications from I (catastrophic) to V (none).

** Probability – 5 possible classifications from A (frequent) to E (improbable).

***According to the RAC worksheet instructions, if the severity value is V, the probability value does not need to be calculated and a RAC value of 5 should be assigned to the range.

RISK ASSESSMENT CODE WORKSHEETS
Alpha EE/CA Area

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Alpha EE/CA Area</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferring</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>1</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	<u>10</u>
Bombs, explosive	10
Grenades, hand or rifle, explosive	<u>10</u>
Landmine, explosive	10
Rockets, guided missile, explosive	<u>10</u>
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	<u>4</u>
Landmine, practice (w/spotting charges)	<u>4</u>
Small arms, complete round (.22 cal -.50 cal)	<u>1</u>
Small arms, expended	0
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	10

What evidence do you have regarding conventional UXO?

Surveys in the Alpha EE/CA have found 60mm mortars, 75mm fragments, 2.36-in. and 3.5-in. rockets, grenades of all types, flares, smokes, and pyrotechnics, and small arms.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	4
Pyrotechnics (select the single largest value)	10

What evidence do you have regarding pyrotechnics?

EE/CA survey teams found flares, smokes, practice grenades, and mines.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	3
High explosives (select the single largest value)	8

What evidence do you have regarding bulk explosives?

Piece of TNT was found by EE/CA survey teams.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	6
Propellants	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	5
Chemical and Radiological (select the single largest value)	20

What evidence do you have regarding chemical or radiological?

Some former CWM areas exist within the Alpha Area. These were sampled and found to be free of CWM contaminants. No CWM munitions or remnants found during EE/CA survey.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 48 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3
 **If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

- A. Locations of UXO and OE hazards:**
- | | VALUE |
|---|----------|
| On the surface | 5 |
| Within tanks, pipes, vessels, or other confined areas | 4 |
| Inside walls, ceilings, or other building/structure | 3 |
| Subsurface | 2 |
| Location (select the single largest value) | 5 |

What evidence do you have regarding the location of UXO and OE?

Numerous UXO and fragments found on surface in Alpha area.

- B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):**
- | | VALUE |
|---|----------|
| Less than 1,250 feet | 5 |
| 1,250 feet to 0.5 mile | 4 |
| 0.5 mile to 1.0 mile | 3 |
| 1.0 mile to 2.0 Miles | 2 |
| Over 2 miles | 1 |
| Distance (select the single largest value) | 5 |

What are the nearest inhabited structures/buildings?

Cantonment is <1,250 ft west, off-installation residences <1,250 ft north.

- C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:**
- | | VALUE |
|--|----------|
| 26 and over | 5 |
| 16 to 25 | 4 |
| 11 to 15 | 3 |
| 6 to 10 | 2 |
| 1 to 5 | 1 |
| 0 | 0 |
| Number of buildings (select the single largest value) | 5 |
- Fort McClellan cantonment.

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of buildings (select the single largest value)	5

Describe the types of buildings:

Fort McClellan cantonment to west, residences to north.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	<u>5</u>
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	<u>0</u>
Accessibility (select the single largest value)	5

Describe the site accessibility:

Fort McClellan is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	<u>0</u>
Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____ 25
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT</u>	<u>PROBABLE</u>	<u>OCCASIONAL</u>	<u>REMOTE</u>	<u>IMPROBABLE</u>
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

RISK ASSESSMENT CODE WORKSHEETS
Bravo EE/CA Area

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Bravo EE/CA Area</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferring</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>1</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	<u>10</u>
Bombs, explosive	10
Grenades, hand or rifle, explosive	<u>10</u>
Landmine, explosive	10
Rockets, guided missile, explosive	<u>10</u>
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	<u>4</u>
Landmine, practice (w/spotting charges)	<u>4</u>
Small arms, complete round (.22 cal -.50 cal)	<u>1</u>
Small arms, expended	0
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	10

What evidence do you have regarding conventional UXO?

Surveys in the Bravo EE/CA have found 3-in. Stokes and 60mm mortars, 37mm, 75mm, 3.8 in., 155mm fragments and projectiles, 2.36-in. and 3.5-in. rockets, LAW rockets, grenades of all types, flares, smokes, and pyrotechnics, and small arms.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	4

What evidence do you have regarding pyrotechnics?

EE/CA survey teams found flares, smokes, practice grenades, and mines.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	<u>8</u>
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	8

What evidence do you have regarding bulk explosives?

Abundant fuzes, powder-train time fuzes, and one shaped charge slug.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	<u>6</u>
Propellants	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

Some former CWM areas exist within the Charlie Area. These were sampled and found to be free of CWM contaminants. No CWM munitions or remnants found during EE/CA survey.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 22 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Numerous UXO and fragments found on surface in Bravo area.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Cantonment and off-installation residences are <1,250 ft north and west.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	5

Fort McClellan cantonment.

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	<u>0</u>
Types of buildings (select the single largest value)	5

Describe the types of buildings:

Fort McClellan cantonment to north, private residences to west and south.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	<u>5</u>
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	<u>0</u>
Accessibility (select the single largest value)	5

Describe the site accessibility:

Fort McClellan is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	<u>0</u>
Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT</u> <u>A</u>	<u>PROBABLE</u> <u>B</u>	<u>OCCASIONAL</u> <u>C</u>	<u>REMOTE</u> <u>D</u>	<u>IMPROBABLE</u> <u>E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

- RAC 1 High Risk – Highest priority for further action.
- RAC 2 Serious Risk – Priority for further action.
- RAC 3 Moderate Risk – Recommend further action.
- RAC 4 Low Risk – Recommend further action.
- RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

RISK ASSESSMENT CODE WORKSHEETS
Charlie EE/CA Area

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Charlie EE/CA Area</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferred</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>1</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

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The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A.	Conventional ordnance and ammunition:	VALUE
	Medium/large caliber (20mm and larger)	<input checked="" type="checkbox"/> 10
	Bombs, explosive	10
	Grenades, hand or rifle, explosive	<input checked="" type="checkbox"/> 10
	Landmine, explosive	10
	Rockets, guided missile, explosive	<input checked="" type="checkbox"/> 10
	Detonators, blasting caps, fuzes, boosters, bursters	6
	Bombs, practice (w/spotting charges)	6
	Grenades, practice (w/spotting charges)	<input type="checkbox"/> 4
	Landmine, practice (w/spotting charges)	<input type="checkbox"/> 4
	Small arms, complete round (.22 cal -.50 cal)	<input type="checkbox"/> 1
	Small arms, expended	0
	Practice ordnance (w/o spotting charges)	0
	Conventional ordnance and ammunition (largest single value)	10

What evidence do you have regarding conventional UXO?

Surveys in the Charlie EE/CA have found 3-in. Stokes, 4-in., 60mm, 81mm mortars,
37mm, 57 mm, 75mm, 3.8 in., 105mm, and 155mm artillery fragments and projectiles,
2.36-in. and 3.5-in. rockets, LAW rockets, grenades of all types, flares, smokes,
pyrotechnics, and small arms.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	4

What evidence do you have regarding pyrotechnics?

EE/CA survey teams found flares, smokes, practice grenades, and other pyrotechnics.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	<u>8</u>
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	8

What evidence do you have regarding bulk explosives?

EE/CA survey teams found black powder.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	<u>6</u>
Propellants	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	<u>20</u>
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	20

What evidence do you have regarding chemical or radiological?

Some former CWM areas exist within the Charlie Area. These were sampled and found to be free of CWM contaminants. No CWM munitions or remnants found during EE/CA survey.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 42 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Numerous UXO and fragments found on surface in Charlie area.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Cantonment and off-installation residences are <1,250 ft north and west.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	5

Fort McClellan cantonment.

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	<u>0</u>
Types of buildings (select the single largest value)	5

Describe the types of buildings:

Fort McClellan cantonment to north, private residences to west.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	<u>5</u>
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	<u>0</u>
Accessibility (select the single largest value)	5

Describe the site accessibility:

Fort McClellan is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	<u>0</u>
Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____ 25
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
 HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
 RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT A</u>	<u>PROBABLE B</u>	<u>OCCASIONAL C</u>	<u>REMOTE D</u>	<u>IMPROBABLE E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

- RAC 1 High Risk – Highest priority for further action.
- RAC 2 Serious Risk – Priority for further action.
- RAC 3 Moderate Risk – Recommend further action.
- RAC 4 Low Risk – Recommend further action.
- RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

**RISK ASSESSMENT CODE WORKSHEETS
Chemical Warfare Materiel Complex**

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Chemical Warfare Material Complex</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferring</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>1</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	<input checked="" type="checkbox"/>
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

None.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	4

What evidence do you have regarding pyrotechnics?

None.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	<u>6</u>
Propellants	0

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	<u>25</u>
War Gas Identification Sets	<u>20</u>
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	25

What evidence do you have regarding chemical or radiological?

CWM was used at approximately 30 ranges at Fort McClellan. A site-wide EE/CA covering all CWM ranges and sites did not identify any CWM munitions, ID sets, or munitions constituents (chemical contaminants in environmental media). However, this RAC is based on former uses only.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 29 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	<u>5</u>
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	<u>2</u>
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Surface contamination is only likely.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	<u>5</u>
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	<u>1</u>
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Most of these sites are within cantonment; off-installation residences <1,250 ft north and west

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	<u>5</u>
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	<u>0</u>
Number of buildings (select the single largest value)	5
Fort McClellan cantonment.	

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	<u>0</u>
Types of buildings (select the single largest value)	5

Describe the types of buildings:

Fort McClellan cantonment, residences to west and north.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	<u>5</u>
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	<u>0</u>
Accessibility (select the single largest value)	5

Describe the site accessibility:

Fort McClellan is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	<u>0</u>
Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____ 25
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
 HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
 RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT</u>	<u>PROBABLE</u>	<u>OCCASIONAL</u>	<u>REMOTE</u>	<u>IMPROBABLE</u>
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

- RAC 1 High Risk – Highest priority for further action.
- RAC 2 Serious Risk – Priority for further action.
- RAC 3 Moderate Risk – Recommend further action.
- RAC 4 Low Risk – Recommend further action.
- RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

**RISK ASSESSMENT CODE WORKSHEETS
Chemical Warfare Materiel Complex-XD**

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Chemical Warfare Material Complex-XD</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferred</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>1</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A.	VALUE
Conventional ordnance and ammunition:	
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	<input type="checkbox"/>
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

None.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	0

What evidence do you have regarding pyrotechnics?

None.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	<u>6</u>
Propellants	

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	<u>25</u>
War Gas Identification Sets	<u>20</u>
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	25

What evidence do you have regarding chemical or radiological?

CWM was used at approximately 30 ranges at Fort McClellan. A site-wide EE/CA covering all CWM ranges and sites did not identify any CWM munitions, ID sets, or munitions constituents (chemical contaminants in environmental media). However, this RAC is based on former uses only.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 25 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Surface contamination is only likely.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Most of these sites are within cantonment; off-installation residences <1,250 ft north and west.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	5

Fort McClellan cantonment.

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	<input checked="" type="checkbox"/> 5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	<u>0</u>
Types of buildings (select the single largest value)	5

Describe the types of buildings:

Fort McClellan cantonment, residences to west and north.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	<input checked="" type="checkbox"/> 5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	<u>0</u>
Accessibility (select the single largest value)	5

Describe the site accessibility:

Fort McClellan is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	<input checked="" type="checkbox"/> 0
Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F):
 (maximum of 30)

25

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT</u>	<u>PROBABLE</u>	<u>OCCASIONAL</u>	<u>REMOTE</u>	<u>IMPROBABLE</u>
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

- RAC 1 High Risk – Highest priority for further action.
- RAC 2 Serious Risk – Priority for further action.
- RAC 3 Moderate Risk – Recommend further action.
- RAC 4 Low Risk – Recommend further action.
- RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

RISK ASSESSMENT CODE WORKSHEETS
Eastern Bypass EE/CA Area

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Eastern Bypass EE/CA Area</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferring</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>1</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	0
Practice ordnance (w/o spotting charges)	0
Conventional ordnance and ammunition (largest single value)	10

What evidence do you have regarding conventional UXO?

Surveys in the Bravo EE/CA have found 3-in. Stokes and 60mm mortars, 37mm, 75mm, 3.8 in., 155mm fragments and projectiles, 2.36-in. and 3.5-in. rockets, LAW rockets, grenades of all types, flares, smokes, pyrotechnics, and small arms. The Eastern Bypass EE/CA Area passes through the Bravo Area, and is assumed to contain similar UXO-DMM.

B.	Pyrotechnics (for munitions not described above):	VALUE
	Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
	Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
	Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
	Pyrotechnics (select the single largest value)	4

What evidence do you have regarding pyrotechnics?

EE/CA survey teams found flares, smokes, practice grenades, and mines. The Eastern Bypass EE/CA Area passes through the Bravo Area, and is assumed to contain similar UXO-DMM.

C.	Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
	Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
	Demolition charges	10
	Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	<u>8</u>
	Military dynamite	6
	Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
	High explosives (select the single largest value)	8

What evidence do you have regarding bulk explosives?

Abundant fuzes, powder-train time fuzes, and one shaped charge slug. The Eastern Bypass EE/CA Area passes through the Bravo Area, and is assumed to contain similar UXO-DMM.

D.	Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
	Solid or liquid propellants	<u>6</u>
	Propellants	0

What evidence do you have regarding bulk propellants?

None

E.	Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
	Toxic chemical agents (choking, nerve, blood, blister)	25
	War Gas Identification Sets	20
	Radiological	15
	Riot Control Agents (vomiting, tear)	<u>5</u>
	Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

No CWM Ranges or sites occur in the Eastern Bypass Area.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 22 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC		21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3
 **If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Numerous UXO and fragments found on surface in Bravo area. The Eastern Bypass EE/CA Area passes through the Bravo Area, and is assumed to contain similar UXO-DMM.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Cantonment and off-installation residences are <1,250 ft north and west.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	5

Fort McClellan cantonment.

D.	Types of Buildings (within a 2 mile radius):	VALUE
	Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
	Industrial, warehouse, etc.	4
	Agricultural, forestry, etc.	3
	Detention, correctional	2
	No buildings	0
	Types of buildings (select the single largest value)	5

Describe the types of buildings:

Fort McClellan cantonment to north, private residences to west and south.

E.	Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
	No barrier nor security system	<u>5</u>
	Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
	A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
	Security guard, but no barrier	2
	Isolated site	1
	A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0
	Accessibility (select the single largest value)	5

Describe the site accessibility:

Fort McClellan is open to public access.

F.	Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
	Expected	5
	None anticipated	<u>0</u>
	Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT A</u>	<u>PROBABLE B</u>	<u>OCCASIONAL C</u>	<u>REMOTE D</u>	<u>IMPROBABLE E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	2	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

**RISK ASSESSMENT CODE WORKSHEETS
Eastern Bypass EE/CA Area-XD**

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Eastern Bypass EE/CA Area- XD</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferred</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>3</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	<input checked="" type="checkbox"/> 4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	0
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	4

What evidence do you have regarding conventional UXO?

Surface UXO surveys conducted in the Eastern Bypass (OES-3) Area found one expended practice mine.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	4

What evidence do you have regarding pyrotechnics?

One expended smoke grenade was found by survey teams.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	6
Propellants	<u>0</u>

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

No CWM Ranges or sites occur in the Eastern Bypass Area.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 8 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	<u>5</u>
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	<u>2</u>
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Surface munitions debris only.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	<u>5</u>
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	<u>1</u>
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Off-installation residences are <1,250 ft south and west.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	<u>5</u>
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	<u>0</u>
Number of buildings (select the single largest value)	5
<u>City of Anniston, AL</u>	

D.	Types of Buildings (within a 2 mile radius):	VALUE
	Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
	Industrial, warehouse, etc.	4
	Agricultural, forestry, etc.	3
	Detention, correctional	2
	No buildings	0
	Types of buildings (select the single largest value)	5

Describe the types of buildings:

Private residences and commercial areas to west and south.

E.	Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
	No barrier nor security system	<u>5</u>
	Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
	A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
	Security guard, but no barrier	2
	Isolated site	1
	A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	<u>0</u>
	Accessibility (select the single largest value)	5

Describe the site accessibility:

Fort McClellan is open to public access.

F.	Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
	Expected	5
	None anticipated	<u>0</u>
	Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F):
 (maximum of 30)

25

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT</u> <u>A</u>	<u>PROBABLE</u> <u>B</u>	<u>OCCASIONAL</u> <u>C</u>	<u>REMOTE</u> <u>D</u>	<u>IMPROBABLE</u> <u>E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

RISK ASSESSMENT CODE WORKSHEETS
M1.01 EE/CA Area

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>M1.01 EE/CA Area</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferring</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>2</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	0
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

Data from M1.01 EE/CA and Eastern Bypass clearance operations.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	4
Pyrotechnics (select the single largest value)	10

What evidence do you have regarding pyrotechnics?

Debris from flares, simulators, and smokes found during clearance operations.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	3
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	6
Propellants	0

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	5
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

No evidence of CWM was observed at the site, and no documents exist to suggest that CWM was present at this location.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 10 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	<input checked="" type="checkbox"/> 5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	<u>5</u>

What evidence do you have regarding the location of UXO and OE?

Findings of M1.01 EE/CA.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	<input checked="" type="checkbox"/> 5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	<u>5</u>

What are the nearest inhabited structures/buildings?

Site is on west edge of Main Post, adjacent to commercial residential areas. Also adjacent to cantonment.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	<u>5</u>

Sites is adjacent to moderately dense commercial residential area and to cantonment.

D.	Types of Buildings (within a 2 mile radius):	VALUE
	Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
	Industrial, warehouse, etc.	4
	Agricultural, forestry, etc.	3
	Detention, correctional	2
	No buildings	<u>0</u>
	Types of buildings (select the single largest value)	5

Describe the types of buildings:

Sites is adjacent to moderately dense commercial residential area and to cantonment.

E.	Accessibility to site refers to access by humans to ordnance and explosives.	VALUE
	Use the following guidance:	
	No barrier nor security system	<u>5</u>
	Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
	A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
	Security guard, but no barrier	2
	Isolated site	1
	A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	<u>0</u>
	Accessibility (select the single largest value)	5

Describe the site accessibility:

Area is open to public access.

F.	Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
	Expected	5
	None anticipated	<u>0</u>
	Site Dynamics (select the single largest value)	0

Describe the site dynamics:

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F):
(maximum of 30)

25

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT</u>	<u>PROBABLE</u>	<u>OCCASIONAL</u>	<u>REMOTE</u>	<u>IMPROBABLE</u>
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Data are from ASR and EE/CA reports. Site is being cleared of UXO to varying depths, depending on planned end use.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

**RISK ASSESSMENT CODE WORKSHEETS
M2 EE/CA Area**

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>M2 EE/CA Area</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferred</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>2</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

	VALUE
A. Conventional ordnance and ammunition:	
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	0
Practice ordnance (w/o spotting charges)	0
Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

Data from M1.01 EE/CA and Eastern Bypass clearance operations.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	<u>10</u>
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	10

What evidence do you have regarding pyrotechnics?

One live WP hand grenade was found during clearance operations.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	6
Propellants	<u>0</u>

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

No evidence of CWM was observed at the site, and no documents exist to suggest that CWM was present at this location.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 10 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Findings of M1.01 EE/CA.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Site is on west edge of Main Post, adjacent to commercial residential areas. Also adjacent to cantonment.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	5

Sites is adjacent to moderately dense commercial residential area and to cantonment.

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of buildings (select the single largest value)	<u>5</u>

Describe the types of buildings:

Sites is adjacent to moderately dense commercial residential area and to cantonment.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0
Accessibility (select the single largest value)	<u>5</u>

Describe the site accessibility:

Area is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	0
Site Dynamics (select the single largest value)	<u>0</u>

Describe the site dynamics:

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____ 25
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
 HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
 RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT</u>	<u>PROBABLE</u>	<u>OCCASIONAL</u>	<u>REMOTE</u>	<u>IMPROBABLE</u>
<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Data are from ASR and EE/CA reports. Site has been cleared of UXO and is now owned/occupied by the Anniston Star (newspaper).

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

**RISK ASSESSMENT CODE WORKSHEETS
Small Arms Complex-XD**

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Small Arms Complex-XD</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferred</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>5</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A.	Conventional ordnance and ammunition:	VALUE
	Medium/large caliber (20mm and larger)	10
	Bombs, explosive	10
	Grenades, hand or rifle, explosive	10
	Landmine, explosive	10
	Rockets, guided missile, explosive	10
	Detonators, blasting caps, fuzes, boosters, bursters	6
	Bombs, practice (w/spotting charges)	6
	Grenades, practice (w/spotting charges)	4
	Landmine, practice (w/spotting charges)	4
	Small arms, complete round (.22 cal -.50 cal)	1
	Small arms, expended	<input checked="" type="checkbox"/>
	Practice ordnance (w/o spotting charges)	<u>0</u>
	Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	0

What evidence do you have regarding pyrotechnics?

None.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	<u>6</u>
Propellants	0

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

None.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 0 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

- A. Locations of UXO and OE hazards: VALUE**
- | | |
|---|---|
| On the surface | 5 |
| Within tanks, pipes, vessels, or other confined areas | 4 |
| Inside walls, ceilings, or other building/structure | 3 |
| Subsurface | 2 |
- Location (select the single largest value)**

What evidence do you have regarding the location of UXO and OE?

- B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.): VALUE**
- | | |
|------------------------|---|
| Less than 1,250 feet | 5 |
| 1,250 feet to 0.5 mile | 4 |
| 0.5 mile to 1.0 mile | 3 |
| 1.0 mile to 2.0 Miles | 2 |
| Over 2 miles | 1 |
- Distance (select the single largest value)**

What are the nearest inhabited structures/buildings?

- C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary: VALUE**
- | | |
|-------------|---|
| 26 and over | 5 |
| 16 to 25 | 4 |
| 11 to 15 | 3 |
| 6 to 10 | 2 |
| 1 to 5 | 1 |
| 0 | 0 |

Number of buildings (select the single largest value)

Narrative:

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of buildings (select the single largest value)	<u>0</u>
Describe the types of buildings:	

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0
Accessibility (select the single largest value)	<u>0</u>
Describe the site accessibility:	

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	0
Site Dynamics (select the single largest value)	<u>0</u>
Describe the site dynamics:	

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT A</u>	<u>PROBABLE B</u>	<u>OCCASIONAL C</u>	<u>REMOTE D</u>	<u>IMPROBABLE E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

RISK ASSESSMENT CODE WORKSHEETS
Small Arms Complex-XG

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Small Arms Complex-XG</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferring</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>5</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	<input checked="" type="checkbox"/>
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	0

What evidence do you have regarding pyrotechnics?

None.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None,

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	6
Propellants	<u>0</u>

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

None.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 0 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

- A. Locations of UXO and OE hazards: VALUE**
- On the surface 5
 - Within tanks, pipes, vessels, or other confined areas 4
 - Inside walls, ceilings, or other building/structure 3
 - Subsurface 2
- Location (select the single largest value)**

What evidence do you have regarding the location of UXO and OE?

- B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.): VALUE**
- Less than 1,250 feet 5
 - 1,250 feet to 0.5 mile 4
 - 0.5 mile to 1.0 mile 3
 - 1.0 mile to 2.0 Miles 2
 - Over 2 miles 1
- Distance (select the single largest value)**

What are the nearest inhabited structures/buildings?

- C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary: VALUE**
- 26 and over 5
 - 16 to 25 4
 - 11 to 15 3
 - 6 to 10 2
 - 1 to 5 1
 - 0 0
- Number of buildings (select the single largest value)**

Narrative:

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of buildings (select the single largest value)	<u>0</u>

Describe the types of buildings:

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0
Accessibility (select the single largest value)	<u>0</u>

Describe the site accessibility:

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	0
Site Dynamics (select the single largest value)	<u>0</u>

Describe the site dynamics:

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT A</u>	<u>PROBABLE B</u>	<u>OCCASIONAL C</u>	<u>REMOTE D</u>	<u>IMPROBABLE E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

**RISK ASSESSMENT CODE WORKSHEETS
Trench Hill Training Area-XD**

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Trench Hill Training Area-XD</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferred</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>4</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	<input checked="" type="checkbox"/>
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

None found in a reconnaissance sweep.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	4

What evidence do you have regarding pyrotechnics?

Five smoke expended grenades found in a reconnaissance survey of area.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	<u>6</u>
Propellants	0

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

None.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 4 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Smoke grenades found on surface only.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Cantonment is <1,250 ft west, off-installation residences <1,250 ft north.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	5
Fort McClellan cantonment.	

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of buildings (select the single largest value)	<u>5</u>

Describe the types of buildings:

Fort McClellan cantonment to west, residences to north.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0
Accessibility (select the single largest value)	<u>5</u>

Describe the site accessibility:

Fort McClellan is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	0
Site Dynamics (select the single largest value)	<u>0</u>

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____ 25
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT A</u>	<u>PROBABLE B</u>	<u>OCCASIONAL C</u>	<u>REMOTE D</u>	<u>IMPROBABLE E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.

**RISK ASSESSMENT CODE WORKSHEETS
Trench Hill Training Area-XG**

**THE RISK ASSESSMENT CODE FOR
ORDNANCE AND EXPLOSIVES SITES**

Site Name	<u>Trench Hill Training Area-XG</u>	Rater's Name	<u>C. Wieland</u>
Site Location	<u>Fort McClellan</u>	Phone Number	<u>(865) 483-9870</u>
Range Classification	<u>Transferring</u>	Organization	<u>URS Group, Inc.</u>
Date Completed	<u>24 June 2003</u>	Score	<u>4</u>

BACKGROUND:

These risk assessment procedures were developed by the U.S. Army Engineering and Support Center, Huntsville, Ordnance and Explosives Team (CEHNC-OE) to prioritize the response action(s) at formerly used defense sites. The procedures were developed in accordance with MIL-STD 882C and AR 385-10.

The Department of Defense (DoD) is adopting the procedures, as an interim DoD-wide standard, to provide a set of uniform procedures for assessing explosives safety risks at Defense Environmental Restoration Program sites.

Risk Assessment Code (RAC) scores developed using these procedures will be used by DoD for risk assessment at sites suspected to contain unexploded ordnance (UXO) or other explosive safety hazards.

The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) Detachment actions, field observations, interviews, and measurements. This information is used to assess the risk involved base on the *potential* explosives safety hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

PROCEDURES

PART I. HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional ordnance and ammunition:	VALUE
Medium/large caliber (20mm and larger)	10
Bombs, explosive	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Grenades, practice (w/spotting charges)	4
Landmine, practice (w/spotting charges)	4
Small arms, complete round (.22 cal -.50 cal)	1
Small arms, expended	<input checked="" type="checkbox"/>
Practice ordnance (w/o spotting charges)	<u>0</u>
Conventional ordnance and ammunition (largest single value)	0

What evidence do you have regarding conventional UXO?

None found in a reconnaissance sweep.

B. Pyrotechnics (for munitions not described above):	VALUE
Munition (containers) containing white phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	6
Flares, signals, simulators, screening smokes (other than WP)	<u>4</u>
Pyrotechnics (select the single largest value)	4

What evidence do you have regarding pyrotechnics?

Five smoke expended grenades found in a reconnaissance survey of area.

C. Bulk High Explosives (not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (lead styphnate, lead azide, nitroglycerin, mercury azide, mercury fulminate, tetracene, etc.)	10
Demolition charges	10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military dynamite	6
Less sensitive explosives (ammonium nitrate, Explosive D, etc.)	<u>3</u>
High explosives (select the single largest value)	0

What evidence do you have regarding bulk explosives?

None.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	6
Propellants	<u>0</u>

What evidence do you have regarding bulk propellants?

None.

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
Toxic chemical agents (choking, nerve, blood, blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control Agents (vomiting, tear)	<u>5</u>
Chemical and Radiological (select the single largest value)	0

What evidence do you have regarding chemical or radiological?

None.

TOTAL HAZARD SEVERITY VALUE (Sum of values A through E): 4 (maximum of 61)

Apply this value to Table 1 to determine Hazard Severity Category

**TABLE 1:
HAZARD SEVERITY***

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE	V	0

* Apply Hazard Severity Category to Table 3

**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY. The probability that a hazard has been, or will be, created due to the presence and other rated factors of UXO or explosive materials on a BRAC site.

AREA, EXTENT, ACCESSIBILITY OF UXO AND OE HAZARDS (Circle all that apply)

A. Locations of UXO and OE hazards:	VALUE
On the surface	5
Within tanks, pipes, vessels, or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (select the single largest value)	5

What evidence do you have regarding the location of UXO and OE?

Smoke grenades found on surface only.

B. Distance to nearest inhabited location/structure likely to be at risk from the UXO or OE hazard (road, park, playground, building, etc.):	VALUE
Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance (select the single largest value)	5

What are the nearest inhabited structures/buildings?

Cantonment is <1,250 ft west, off-installation residences <1,250 ft north.

C. Number(s) of building(s) within a 2-mile radius measured from the UXO or OE hazard area, not the installation boundary:	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings (select the single largest value)	5

Fort McClellan cantonment.

D. Types of Buildings (within a 2 mile radius):	VALUE
Educational, child care, residential, hospitals hotels, commercial, shopping centers	<u>5</u>
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of buildings (select the single largest value)	<u>5</u>

Describe the types of buildings:

Fort McClellan cantonment to west, residences to north.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:	VALUE
No barrier nor security system	<u>5</u>
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) that completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0
Accessibility (select the single largest value)	<u>5</u>

Describe the site accessibility:

Fort McClellan is open to public access.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams and increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.	VALUE
Expected	5
None anticipated	<u>0</u>
Site Dynamics (select the single largest value)	0

Describe the site dynamics:

Fort McClellan is being transferred out of Army ownership and into other government or private hands.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F): _____ 25
 (maximum of 30)

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2
 HAZARD PROBABILITY**

<u>DESCRIPTION</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY VALUE</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT. The risk assessment value for this site is determined using the following table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is 0, a Hazard Probability is not calculated and a RAC score of 5 is assigned to the site.

**TABLE 3
 RISK ASSESSMENT**

<u>PROBABILITY LEVEL</u>	<u>FREQUENT A</u>	<u>PROBABLE B</u>	<u>OCCASIONAL C</u>	<u>REMOTE D</u>	<u>IMPROBABLE E</u>
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	5
MARGINAL III	2	3	4	4	5
NEGLECTIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC):

RAC 1 High Risk – Highest priority for further action.

RAC 2 Serious Risk – Priority for further action.

RAC 3 Moderate Risk – Recommend further action.

RAC 4 Low Risk – Recommend further action.

RAC 5 Negligible Risk – No explosive related action necessary.

PART IV. NARRATIVE. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that were made.

Most data from ASR (USACE 2001) or from draft EE/CA reports being prepared in 2003.

RAC scores for the Army CTT inventory were developed from documentation of historical use.

Subsequent response actions may serve to reduce the explosive safety hazard, but will not change the RAC score.