

Impact		definition	Risk Matrix		IMPACT (I)				
5	Critical	Permanent life-changing injuries multiple deaths Major environmental impact or multiple severe environmental impacts Permanent lost credibility			Minor 1	Moderate 2	Major 3	Severe 4	Critical 5
4	severe	Multiple life-threatening injuries A single death A single event causing multiple severe environmental impacts	Likelihood (L)	Highly probable 5	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
				Probable 4	Moderate 4	High 8	High 12	Extreme 16	Extreme 20
				Possible 3	Low 3	Moderate 6	High 9	High 12	Extreme 15
3	major	A single life-threatening injury or several minor injuries single event causing significant environmental impact		Unlikely 2	Low 2	Moderate 4	Moderate 6	High 8	High 10
				Rare 1	Low 1	Low 2	Low 3	Moderate 4	Moderate 5
2	moderate	Multiple injuries requiring first aid multiple instances causing minor environmental impacts		Likely hood		definition			
				5	Highly probable	is expected to occur in most circumstances			
1	Minor	And injury requiring first aid incident causing minor environmental impact		4	Probable	will probably occur at some point			
				3	Possible	pretty likely at some time or in some circumstances			
				2	Unlikely	it is unlikely to occur but could occur at some			
				1	Rare	exceptional circumstances			

This risk assessment covers the operation of an AK-47 rifle during live-fire exercises at a designated military test range. While considering military and civilian personnel as well as the public and the environment. The risk ratings are informed by a 5x5 matrix assessing Likelihood (L) and Impact (I) of harm. Likelihood and impacts are multiplied together to calculate the overall risk.

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Ref	Activity / element	Hazards identified	What and who may be harmed and how Military personnel Fatality – injury Civilian personnel Fatality – injury external contractors Fatality – injury General public Fatality – injury Environment	Causes of hazard	Assessment pre control measures			Considered control/mitigation measures rejected	Reasonable control measures that can reduce risk to ALARP	assessment post control measures			
					L (1 –5)	I (1 –5)	overall (L X I)			L (1 –5)	I (1 –5)	overall (L X I)	
OP-1	Live Fire on a range	Unintended Discharge	Who: Military, Civilian personnel, as well as external contractors participating in any form. General public in the vicinity of the range. What: Fatality, serious injury How: Incorrectly directed fire, misdirected fire leading to small arms fire striking unintended target	Cook-off, Poor training, ammunition quality, incompetence, negligence, slips, trips and falls, dropping, human error, safety lever slips	5	5	25	Use of blank rounds, no personnel on base during live fire tests, restrain firearm while firing, evacuate surrounding civilian areas, Electronic Trigger Locking System	Before ammunition is added ensure Firearm is clear and its safety works. appropriate Training, authorised personnel operate firearm Check the ammunition for grade, identification markings, and serviceability Controlled site, firing on suitable terrain, controlling what beyond target, Operate firearm in conditions of moderate temperature and humidity, Check the weapon for correct assembly and proper operation,	2	4	8	

OP-2	Live Fire on a range	Bullet does not Reach its intended target	Who: Military, Civilian personnel, as well as external contractors participating in any form. General public in the vicinity of the range. What: Fatality, serious injury How: Incorrectly directed fire, misdirected fire leading to small arms fire striking unintended target	Equipment failure, Incorrect handling, Damaged equipment, Incorrect/Inferior component, Tampering, worn components, Obstructed barrel, Misaligned sights/ broken, improper training, human error	5	5	25	Bring target to firearm, enlarge target, no personnel on base during live fire tests, evacuate surrounding civilian areas	Proper maintenance. zeroing weapons, sight testing, clear backstop, target in controlled area, firing range perimeter secured, firearm fundamentals training, SME overlooking the operation of firearm	3	3	9	
OP-3	Live Fire on a range	Toxic substances	Who: Military, Civilian personnel, as well as external contractors participating in firing/ handling of firearm Environment What: Fatality, serious injury environmental damage How: When ammunition is ignited during functional operation of the firearm toxic gasses are produced through the chemical reaction while toxic particulate matter is spread out leaving toxic residues Toxic substances also include oils lubricants and cleaning products used in upkeep and maintenance.	Firing of firearm/ignited ammunition Handling of firearm	4	5	20	Use ammunition that does not produce toxic gasses, modify firearm to capture toxic gasses, Operators use hazardous materials suit with oxygen tank,	Operate firearm in ventilated areas, don't operate firearm in enclosed spaces for prolonged periods, wear appropriate PPE when handling/operating, safety training, wash hands after operation, no consumables near firearm, use of approved safe cleaning products and lubricants,	2	3	6	
OP-4	Live Fire on a range	Hot/cold components	Who: Military, Civilian personnel, as well as external contractors participating in handling of firearm.	Successive fire, Incorrect storage, Improper environment, improper handling,	4	2	8	Only single shot firing	Operate firearm in conditions of moderate temperature and humidity, Check the weapon for correct	3	1	3	

			What: Injury, Burns How: Incorrect storage before operation, successive fire resulting in firearm getting hot	improper training, Human error, operation of firearm					assembly and proper operation, operation of firearm Training, control rate of fire to reduce heat, ensure firearm is stored in an environment of moderate temperature and humidity, PPE				
OP-5	Live Fire on a range	Barrel Breach	Who: Military, Civilian personnel, as well as external contractors participating in firing of the firearm. What: Fatality, Injury, Burns How:	Obstructed barrel, Inadequate parts/materials used, Excessive pressure, poor maintenance	2	4	8	Unmanned firing of firearm, increase barrel thickness, low pressure rounds for testing	Barrel inspections, use authorized ammo, cleaning checks, pre-fire inspection, Check the weapon for correct assembly and proper operation, control rate of fire, PPE, Operate firearm in conditions of moderate temperature and humidity	1	4	4	
OP-6	Live Fire on a range	Range Incursion	Who: Military, Civilian personnel, as well as external contractors on site. General public trespassing or lost What: Fatality, Injury, How: During live firing of weapon an individual or individuals are found in the area designated for live Fire.	Unrestricted access to range, Human error, lack of warnings, lack of communication, Lack of security	3	5	15	Range located on isolated island/area, Date of live fire will be broadcasted on local information platforms, no personnel on base during live fire tests, evacuate surrounding civilian areas,	Trespassing And Warning signs posted around perimeter, inform personnel on base that live firing will take place on the day, security to protect the perimeter, Alarm if range Incursion happens	1	4	4	

OP-7	Live Fire on a range	Ejected cases	Who: Military, Civilian personnel, as well as external contractors close to the operating firearm. Environment What: injury, burns environmental damage How: After the successful operation of the firearm a hot case is ejected from the firearm.	Successful operation of firearm ejects hot case.	4	1	4	Don't allow left hand shooters, modify weapon for case ejection collector,	Left hand shooter training, Firarm safety courses, controlled shooter zone, PPE, Environment: Collect used cases, ensure ground is suitable for cases to land on i.e. (non-flammable ground)	2	1	2	
OP-8	Live Fire on a range	Hang fire	Who: Military, Civilian personnel, as well as external contractors participating in any form. General public in the vicinity of the range. What: Fatality, serious injury How: Delay from trigger pull to round being fired	Poor quality ammunition, faulty firing pin, Improper reloading practices, Extreme temperatures, Old or deteriorated ammunition, Human error, poor training	2	5	10	Use bank rounds, no personnel on base during live fire tests, evacuate surrounding civilian areas, restrain firearm while firing	Quality ammunition, use ammunition with known history, correct training, Use of support documents (army equipment support publication), Implement test range controls to prevent range incursion,	1	4	4	

