Fire safety
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Foreword

Ageing, unstable and excess ammunition stockpiles pose the dual hazards of illicit proliferation and accidental explosion, which have caused destabilization and humanitarian disaster in all regions of the world.

Crucial for adequate stockpile management is the identification of surpluses – that is, the portion of weapons and ammunition that does not constitute an operational need. When surpluses are not recognized, the entirety of the stockpile may continue to be seen as of operational value. Although not used, weapons and ammunition surpluses thus continue to fill warehouses and can thus pose a significant risk to safety and security.

Defective stockpile management has been assessed as the norm rather than the exception in many countries. Often it is not only surplus stocks that should be the focus of attention, but the lack of appropriate policy for stockpile management. Governments remain unaware of surpluses; their national stockpiles remain a risk to public safety; and diversion from warehouses feed into crime and armed violence.

In 2011, the United Nations developed the International Ammunition Technical Guidelines (IATG) to ensure that the United Nations as a whole consistently delivers high-quality advice and support in ammunition management. Many stakeholders, including international organizations, non-governmental entities and national authorities, use these guidelines.

The IATG, along with other conventional ammunition issues, are managed through the United Nations SaferGuard programme.

Taking into account the diversity in capacity of States, three levels of ascending comprehensiveness are offered in the IATG, referred to as “risk-reduction process levels” (RRPLs). These are indicated within each IATG as either LEVEL 1 (basic), LEVEL 2 (intermediate) or LEVEL 3 (advanced).

The aim of implementing partners should be to maintain stockpile management processes at RRPL 1 as a minimum. This will often reduce risk significantly. Ongoing and gradual improvements could then be made to the stockpile management infrastructure and processes as staff development improves and further resources become available. These additional actions would equate to RRPLs 2 and 3.

The RRPLs are determined by calculating a weighted score of questions about a particular ammunition stockpile. A checklist is available at: https://www.un.org/disarmament/un-saferguard/risk-reduction-process-levels/.

The IATG are reviewed on a regular basis to reflect developing ammunition stockpile management norms and practices, and to incorporate changes due to changing international regulations and requirements. The IATG are also available in multiple languages.

The latest version of each guideline, together with practical IATG implementation support tools, can be found at https://www.un.org/disarmament/un-saferguard/.
Introduction

The storage and handling of ammunition and explosives are operations that present inherent risks to persons and property. A national authority shall therefore have a legal responsibility to ensure that during storage its ammunition and explosives present risks that are both tolerable and As Low As Reasonably Practicable (ALARP) should an explosive event occur.

Any outbreak of fire in the vicinity of the explosives facility, or worse amongst the ammunition and explosives themselves, presents a significant hazard. In these circumstances there is a very high and immediate risk to life and property. The situation will undoubtedly require specialist fire assistance from the local civilian authority, (if this is available). Hence much detail is provided in this IATG to enable the staff of explosives facilities to liaise effectively with those local authority staff having a responsibility for preventing and fighting fires.

This IATG contains the principles and philosophy of fire-fighting, whilst also providing guidance on generic systems and procedures that should be applied. Definitive local policy can not be provided in this IATG on such matters as fire-fighting systems, numbers and the exact location of first aid fire-fighting equipment as this can only be determined after a detailed risk assessment. This should be undertaken in very close co-operation with specialist fire staff of the national technical authority and the local civilian authority.

Fire safety, and particularly fire prevention, is very dependent on local conditions, consequently management and supervisors within the explosives facility shall actively support and promote fire safety awareness for all personnel, including contractors and visitors to the unit.
1 Scope

This IATG introduces and explains the fire safety requirements for explosive facilities.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

A list of normative references is given in Annex A. Normative references are important documents to which reference is made in this guide and which form part of the provisions of this guide.

A further list of informative references is given at Annex B in the form of a bibliography, which lists additional documents that contain other useful information on fire safety within explosive facilities.

3 Terms and definitions

For the purposes of this guideline the following terms and definitions, as well as the more comprehensive list given in IATG 01.40:2015(E) Terms, definitions and abbreviations, shall apply.

The term ‘fire safety’ refers to a generic term pertaining to fire prevention, fire-fighting and other fire related matters.

The term ‘potential explosion site’ refers to the location of a quantity of explosives that will create a blast, fragment, thermal or debris hazard in the event of an accidental explosion of its content.

The term ‘(ammunition) process building’ refers to a building or area that contains or is intended to contain one or more of the following activities: maintenance, preparation, inspection, breakdown, renovation, test or repair of ammunition and explosives.

The term ‘process building distance’ (PBD) refers to the distance from a building or stack containing explosives to a Process Building, or from a Process Building to another Process Building, which will provide a reasonable degree of immunity for the operatives within the Process Building(s), and a high degree of protection against immediate or subsequent propagation of explosions.

NOTE 1 The PBD is a form of Inside Quantity Distance (IQD).

The term ‘inhabited building distance’ (IBD) refers to the separation between potential explosive sites and non-associated exposed sites requiring a high degree of protection from an accidental explosion.

NOTE 1 The IBD is a form of Outside Quantity Distance (OQD).

In all modules of the International Ammunition Technical Guidelines, the words 'shall', 'should', 'may' and 'can' are used to express provisions in accordance with their usage in ISO standards.

a) 'shall' indicates a requirement: It is used to indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.
b) ‘should’ indicates a recommendation: It is used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required, or that (in the negative form, ‘should not’) a certain possibility or course of action is deprecated but not prohibited.

c) ‘may’ indicates permission: It is used to indicate a course of action permissible within the limits of the document.

d) ‘can’ indicates possibility and capability: It is used for statements of possibility and capability, whether material, physical or casual.

4 Philosophy and principles of fire-fighting in explosive facilities

4.1 Philosophy

The overall philosophy of fire-fighting should be:

a) fire-fighters shall only risk their lives, and only after appropriate risk analysis, to save saveable lives;

b) fire-fighters shall only risk their lives, and only after appropriate risk analysis, to save saveable property; and

c) fire-fighters shall not risk their lives for lives and property that are already lost.

5 Principles (LEVEL 1)

5.1 Above-ground explosive facilities

The following principles should be applied to fire-fighting in above-ground explosive facilities:

a) initial direct fire-fighting activities should be aimed at preventing the ammunition and explosives from being involved in the fire;

b) for potential explosion sites containing ammunition and explosives of Hazard Division 1.1 (those with a mass explosion hazard) all fire-fighting activities shall take place from pre-planned and identified positions that are preferably behind hard cover. This should not be less than the appropriate Process Building Distance (PBD) (see Clause 6.1.1 in IATG 02.20:2015[E] Separation and quantity distances);

c) for potential explosion sites containing ammunition and explosives of Hazard Division 1.1 fire-fighting crews shall be prepared to immediately withdraw to an appropriate pre-planned safe distance. This shall not be less than the appropriate Inhabited Building Distance (IBD) (see Clause 6.2.2 in IATG 02.20:2015[E] Separation and quantity distances);

d) if ammunition and explosives of Hazard Division 1.1 do become involved in the fire all fire-fighting crews shall immediately move to the pre-planned safe distance (at Clause 5c above), even if it is likely to result in the complete loss of stocks. A close watch should then be kept for any secondary fires that may start as a result of any explosion;

e) following a mass explosion of Hazard Division 1.1 ammunition and explosives as a result of fire, action should be taken to prevent adjoining buildings becoming involved by the application of large quantities of cooling water if practicable;
f) for potential explosion sites containing ammunition and explosives of Hazard Division 1.2 (those with a projection hazard but no mass explosion hazard) all fire-fighting activities shall take place from pre-planned and identified positions that are preferably behind hard cover. This should not be less than the appropriate Process Building Distance (PBD) (see Clause 6.1.1 in IATG 02.20:2015[E] Separation and quantity distances);

g) for potential explosion sites containing Hazard Division 1.2 ammunition and explosives action should be taken to prevent adjoining buildings becoming involved by the application of large quantities of cooling water if practicable;

h) there is a risk during fires involving ammunition and explosives of Hazard Divisions 1.1 and 1.2 that ammunition may be expelled out of the potential explosion site and either explode on impact or become armed and hence unexploded ordnance (UXO).¹ Fire crews should ensure that these items are not disturbed by misdirected water jets;

i) for potential explosion sites containing ammunition and explosives of Hazard Division 1.3 (those with a mass fire hazard but no mass explosion hazard) all fire-fighting activities shall be aware of the risks of rapid increases of radiant, and sometimes perpendicular jetted, heat. Fire-fighting activities should concentrate on subduing the fire and protecting surrounding buildings;

j) for potential explosion sites containing ammunition and explosives of Hazard Division 1.4 (those with no significant hazard) fire crews should make use of available cover when fighting the fire. In these cases it may be possible to approach the fire at a range that allows the use of water spray; and

k) specialist advice shall be obtained on dealing with fires that may involve radiological hazards².

5.2 Underground explosive facilities

The following principles should be applied to fire-fighting in underground explosive facilities:

a) the principles at Clause 5.1 above shall also be followed, but as soon as fire-fighting proves ineffective all personnel shall be immediately evacuated or withdrawn from the facility;

b) a very rapid response is required to ensure that initial direct fire-fighting activities may be aimed at preventing the ammunition and explosives from being involved in the fire;

c) self-contained breathing apparatuses (SCBA) shall be available and used under the direction of the senior fire officer (SFO). No personnel shall enter an underground site under fire without SCBA;

d) the SFO shall make all decisions regarding the opening or closing of any ventilation systems;

e) fires involving ammunition containing smoke, incendiary or toxic substances or compositions shall not be fought as they present unacceptable hazards in these circumstances; and

f) water shall not be used to fight fires where metallic powders³ are present as the application of water will cause an immediate and violent increase in the burning rate, with the possibility of subsequent explosion. Sites containing such powders should be marked with a NO WATER supplementary hazard warning sign.

¹ These UXO will require clearance at a later date by a pre-planned explosive ordnance disposal (EOD) operation.
² Some more advanced ammunition systems contain low level radiac sources and materials (such as tritium).
³ For example, aluminium powder being stored in manufacturing facilities prior to mixing with high explosive compounds to increase their power.
6 Fire prevention

6.1 Fire safety plan (LEVEL 1)

The Head of the explosives facility should be responsible for the development and implementation of a fire safety plan (FSP). The following should be covered as a minimum:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raising the alarm</td>
<td>• Fire alarm systems.</td>
</tr>
<tr>
<td>Tasking emergency services</td>
<td>• A system to ensure the rapid response of supplementary local authority</td>
</tr>
<tr>
<td></td>
<td>fire and rescue services is required, plus the ability to pass information to</td>
</tr>
<tr>
<td></td>
<td>them en-route if necessary.</td>
</tr>
<tr>
<td>Evacuation plan for personnel</td>
<td>• This should include appropriate safety distances, arrangements for roll</td>
</tr>
<tr>
<td></td>
<td>calls and the identification if persons are unaccounted for.</td>
</tr>
<tr>
<td>Pre-fire action plans for potential explosion sites (PES)</td>
<td>• Deployment of warning signs, sprinkler systems, drenching systems and first aid fire-fighting equipment.</td>
</tr>
<tr>
<td>Site plan</td>
<td>• This shall be updated on a regular basis to reflect current stock levels.</td>
</tr>
<tr>
<td></td>
<td>• It should include locations of PES, separation distances,4 location of emergency water supplies, location of energy sources etc.</td>
</tr>
<tr>
<td></td>
<td>• Copies should be made available to ensure they can be rapidly handed over to the local authority Senior Fire Officer (SFO) or other external emergency services.</td>
</tr>
<tr>
<td>Design drawings</td>
<td>• Line drawings of the PES should be available for the SFO.</td>
</tr>
<tr>
<td>Liaison mechanisms</td>
<td>• Arrangements for regular liaison with local authority emergency services and regular joint training and briefings.</td>
</tr>
<tr>
<td>Staff training</td>
<td>• Training requirements for unit staff.</td>
</tr>
<tr>
<td>Media briefing</td>
<td>• A pre-agreed media briefing should be available to reassure the local community that appropriate actions are being taken to resolve the situation safely.</td>
</tr>
</tbody>
</table>

Table 1: FSP requirements

7 Fire alarm systems (LEVEL 1)

Fire alarm systems may be mechanical or electrical but should always be:

a) readily accessible at all times;

b) clearly visible in the dark; and

c) positioned so that the alarm can be quickly raised.

Fire alarms should be tested on a regular basis, (weekly for electrical systems and monthly for mechanical systems), and the results formally recorded.

8 Fire breaks and vegetation (LEVEL 1)

There is a major fire risk with any uncontrolled growth of vegetation, particularly during dry weather conditions. Therefore grass, trees and vegetation shall be controlled to ensure that they do not present a hazard to explosives.

4 See IATG 02.20:2015[E] Separation and quantity distances.
8.1 Control of vegetation

The use of a ‘three area plan’ to reduce the risk of fire from vegetation for explosive storehouses should be considered. Such a plan should have the following conditions:

a) Area 1. No vegetation should be permitted within 1 m of a PES (with the exception of earth-covered buildings). This will provide a basic fire-break;

b) Area 2. Whenever possible, no vegetation over 5 cm in height should be permitted within a further 5 m of a PES (i.e. out to 6 m). No vegetation longer than 5 cm on, or within 5 m of, earth-covered buildings, or on traverses should be permitted within 5 m of a PES. This will allow for the detection of ejected unexploded articles from any explosion; and

c) Area 3. Beyond 6 m, the length of vegetation should be in accordance with a site locally assessed risk.

8.2 Control of trees and shrubs

Trees and shrubs may be permitted within explosives areas provided that they do not provide a means by which a fire can bridge a firebreak.

Conifers and spruce should be kept at least 30 m away from explosives facilities. Other types of tree should be kept at 15 m.

Trees should be regularly maintained by a competent person to ensure that they remain healthy, are less susceptible to storm damage and cannot hazard the PES or the contents.

8.3 Cut vegetation

Cut vegetation, such as grass clippings, fallen branches, hay, etc., should be removed from the short grass areas around PES immediately after cutting. If the cuttings are removed to a distance of not less than 50 m from a PES, they may be temporarily stacked to await removal. Such removal shall be completed within 3 days from the date of cutting.

Cut vegetation should not be burnt within the explosives facility.

8.4 Agricultural chemicals

Only chemicals and fertilisers whose residue does not produce or cause a significant fire risk may be used to control vegetation in explosives facilities.

9 Fire practices (LEVEL 1)

Fire practices to test arrangements at the unit level should be held at irregular intervals of not less than two monthly. These should include fire and evacuation drills for ammunition process buildings.

Regular liaison with the local authority fire and rescue service shall be maintained as their assistance will be required in the event of a major fire. Regular liaison visits and exercises should take place on an annual basis so that they are aware of the particular requirements of fire fighting within an explosives facility and that they are familiar with the layout of the explosives facility and the availability of water supplies etc.

5 Similar principles should also be applied to field storage.
Records should be maintained of each fire practice and a post exercise report prepared to identify any deficiencies.

10 Evacuation of personnel (LEVEL 2)

Adequate provision shall be made for the requirements in Table 2:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means of escape</td>
<td>• Exit doors shall be kept clear and unobstructed.</td>
</tr>
<tr>
<td>Fire access</td>
<td>• Clear passageways and gangways through ammunition stocks within a PES shall be maintained. Painted lines should be used on the floor to indicate gangways and passageways.</td>
</tr>
<tr>
<td>Emergency lighting</td>
<td>• Emergency lighting should be present in above ground explosive facilities.</td>
</tr>
<tr>
<td></td>
<td>• Emergency lighting shall be present in underground explosive facilities.</td>
</tr>
<tr>
<td></td>
<td>• Emergency lighting shall operate independently of, and automatically on failure of, the normal lighting system.</td>
</tr>
<tr>
<td>Luminous guide-lines</td>
<td>• Luminous guide-lines indicating exit routes should be present on the floor of underground explosive facilities.</td>
</tr>
</tbody>
</table>

Table 2: Evacuation requirements

11 Fire fighting preparation

There are a range of preparatory measures and equipment that should be implemented and/or procured to assist in major fire fighting operations in the event of a fire.

11.1 Emergency water supplies (LEVEL 2)

Advice should be obtained from a SFO to determine the amount of emergency water supply (EWS) that should be stored within an explosives facility. As guidance there should be enough water for two hours initial fire fighting and the SFO can advise on the pressure requirements for, and flow rates of, the fire appliances that are likely to be required for initial fire fighting.

The EWS should be made up of a combination of mains fire hydrants and emergency water tanks.

11.1.1. EWS locations

Mains fire hydrants should be located no more than 70m from the entry to a PES, whilst EWS tanks should be located no more than 100m from the PES. They should both have hard standing available next to them capable of taking the weight of fully laden fire appliances.

11.1.2. Mains fire hydrants

Mains fire hydrants should be capable of providing a minimum static pressure of 4 bar. If this is not possible then a water flow rate of 75 litres per second should be sustainable from one or more fire hydrants for a minimum of 2 hours.

The outlets of fire hydrants should be of a standard design that is compatible with both the explosive facility's and local authority's fire appliances.

If water supplies are metered there is a possibility that the meter may restrict flow rates. If this is the case a meter by-pass system should be fitted.
11.1.3. **EWS tanks**

The following may be considered as a form of EWS tank:

a) natural supplies. Rivers, lakes or tidal waters may all be utilised as an EWS if within the ranges at Clause 10.1.1;

b) engineered supplies. Reservoirs, canals and man-made ponds fall in this category. Again the ranges at Clause 10.1.1 shall apply; and

c) static tanks. Open topped tanks may be utilised. These may be above surface, partially buried or fully buried. If above surface consideration should be given to providing fragmentation protection. Experience suggests that static tanks should be of minimum capacity of 114,000 litres.

In very cold weather conditions a system of gaining access to the water through ice (e.g. ice axes) shall be maintained.

11.1.4. **Marking of EWS**

Mains fire hydrants and EWS should be clearly marked, and signposts indicating their location should also be provided within the explosives facility. A range of signs that may be used are illustrated at Table 3:

<table>
<thead>
<tr>
<th>Description</th>
<th>Pictogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Mains Hydrant</td>
<td><img src="image1" alt="Pictogram" /></td>
</tr>
<tr>
<td>Double Mains Hydrant</td>
<td><img src="image2" alt="Pictogram" /></td>
</tr>
<tr>
<td>EWS Tank (90,000 litres)</td>
<td><img src="image3" alt="Pictogram" /></td>
</tr>
<tr>
<td>Direction to EWS Tank (50,000 litres at 200 metres)</td>
<td><img src="image4" alt="Pictogram" /></td>
</tr>
</tbody>
</table>

**Table 3: EWS signs**

The location of mains fire hydrants and EWS tanks shall be clearly marked on the site plan (see Table 1 to Clause 6.1).

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6 100 is the Flow Rate in Litres per Second, and 9 is the Static Pressure in Bar.
11.1.5. Maintenance of EWS

EWS are to be inspected and tested monthly to ensure that they are in working order and that water levels are at an appropriate level. Persistent loss of water in non-drought conditions would indicate a leak that requires identification and repair.

Records of inspections and tests should be maintained. These records should include water flow rates, running pressure and static pressure.

11.2 Fire signs and symbols (LEVEL 1)

It is essential that external fire crews can rapidly identify the hazards contained within each PES within the explosives facility. Hazard division signs should therefore be physically displayed on all PES and on all the approaches to a PES. The hazard division signs should be removed when ammunition and explosives of that particular hazard division are no longer within the PES.

Background to the hazard division system is contained in IATG 01.50:2015 [E] UN explosive classification and codes. Table 1 of Clause 6.1 of IATG 01.50:2015 [E] contains the symbols that should be used. These are repeated in Annex C of this IATG for convenience.

There are also a range of supplementary fire signs that should be used to provide advice to fire crews. These cover issues such as the use of SCBA and are at Annex C.

11.3 Immediate fire fighting appliances (LEVEL 1)

Immediate fire fighting appliances (IFFA) shall be made available within and outside PES.\(^7\) The type and quantity of IFFA\(^6\) should be determined by an appropriate SFO. The requirements for the type and quantity of IFFA should also be determined by the building use:

a) explosive storehouses (ESH). Portable fire water and foam extinguishers should be available and capable of extinguishing small fires within the ESH due to electrical faults or accidents. Fire beaters should be available outside the ESH to fight small vegetation fires;

b) ammunition process buildings (APB). Fixed IFFA installations such as hose reels should be available within APB. Fire beaters should be available outside the APB to fight small vegetation fires, although the hose reels should have sufficient length to also do this; and

c) transit facilities. The risk at transit facilities is usually one of vehicle fires. Fixed IFFA installations such as hose reels should be available within transit facilities. Portable foam IFFA should be available for electrical fires on vehicles. Fire beaters should also be available outside the transit facility to fight small vegetation fires, although the hose reels should have sufficient length to also do this.

11.4 Major fire fighting appliances

In some States the local authority fire and rescue service may be available to support fire fighting activities, and they would have the major appliances (such as tenders, mobile pumps and extendable ladders) necessary to fight major fires.

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\(^7\) This may not necessarily mean that IFFA are permanently located within explosive storehouses (ESH) as long as they are taken to the ESH on each visit.

\(^6\) ABCE Generic Dry Powder extinguishers are now available that have the versatility to be used on all types of fire. These extinguishers should replace current foam and water extinguishers on a rolling replacement programme.
For those explosive facilities where local authority fire and rescue support is unavailable a much larger scale of major fire fighting equipment should be held within the explosives area. Staff shall be trained to operate such equipment and should also be trained in how to fight major fires. Professional fire fighting personnel should be used to develop the appropriate training packages and to deliver such training. Similarly, their advice shall be sought as to the type and quantity of major fire fighting equipment required for each particular explosives facility.

12 Fire fighting

There should be two types of fire fighting measures:

a) immediate fire fighting by unit personnel. This may involve the use of equipment such as portable extinguishers. It shall only be conducted during the early stages of a fire; and

b) major fire fighting. This shall be conducted by trained fire personnel and will involve the use of a wide range of equipment such as mobile fire appliances and SCBA. It could be undertaken by specially trained unit staff or by local authority fire and rescue services (if available).

12.1 Unit immediate actions (LEVEL 1)

The following immediate actions should be taken by unit staff if a fire is detected before any ammunition and explosives are involved, and it is small enough to be dealt with by unit level fire fighting equipment:

a) Unless ammunition or explosives are already on fire, immediately attempt to extinguish or control the fire with the immediate fire-fighting equipment available;

b) sound the fire alarm;

c) evacuate all non-essential personnel in the immediate vicinity of the fire to an appropriate safe distance;

d) immediately call the appropriate fire and rescue service and request their assistance, (as time may be a factor later on if first aid fire-fighting fails); and

e) prepare personnel for a wider evacuation should immediate fire-fighting fail to extinguish or control the fire.

Should the immediate fire-fighting actions fail to control the fire and it begins to spread towards the ammunition and explosives the following immediate action should be taken:

a) all personnel are to be evacuated to an appropriate safe distance based on the separation distance for the potential explosion site involved in the fire;

b) a roll call should be taken to ensure that all unit personnel and visitors are accounted for;

c) the fire and rescue service should be alerted (en route of necessary) that immediate fire-fighting has failed and that the fire is spreading towards the ammunition and explosives;

d) the fire safety plan (FSP) should be fully instigated.
12.2 Briefing to Senior Fire Officer (LEVEL 1)

The Senior Fire Officer (SFO) will require as much information as possible to allow him/her to develop an action plan on how to most appropriately deal with the incident and how to deploy the fire-fighting appliances. The following information should be made available as a minimum:

a) the last known location of any individuals unaccounted for;

b) the hazard division, type and quantity of ammunition and explosives in the potential explosion site on fire;

c) the presence of anything that may constitute a special risk (e.g. depleted uranium);

d) the separation and quantity distances extant for the site;

e) the location of emergency water supplies;

f) information from telemetric sources (e.g. temperature and humidity indicators); and

g) any further information available from eye-witnesses.

12.3 Major fires (LEVEL 2)

Major fires shall be fought in accordance with the direction and instructions of the SFO based on the principles at Clauses 5.1 and 5.2. Unit personnel shall follow all instructions from the SFO who shall command all fire fighting activities. He/she shall be advised on explosive risks by a senior ammunition trained and qualified officer.

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9 The SFO may be a specially trained member of the unit, or, more usually, a senior officer of the local fire and rescue service.
Annex A
(normative)
References

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of the guide. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of the guide are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO maintain registers of currently valid ISO or EN:

a) IATG 01.40:2015[E] Terms, glossary and definitions. UNODA. 2015;

b) IATG 01.50:2015[E] UN explosive classification system and codes. UNODA. 2015; and


The latest version/edition of these references should be used. The UN Office for Disarmament Affairs (UN ODA) holds copies of all references used in this guide. A register of the latest version/edition of the International Ammunition Technical Guidelines is maintained by UN ODA, and can be read on the IATG website: www.un.org/disarmament/un-safeguard/. National authorities, employers and other interested bodies and organisations should obtain copies before commencing conventional ammunition stockpile management programmes.

Where copyright permits.
Annex B
(informative)
References

The following informative documents contain provisions, which should also be consulted to provide further background information to the contents of this guide:11

a) AASTP-1, Edition 1 (Change 3). Manual of NATO Safety Principles for the Storage of Military Ammunition and Explosives. NATO. 04 May 2010; and


The latest version/edition of these references should be used. The UN Office for Disarmament Affairs (UN ODA) holds copies of all references12 used in this guide. A register of the latest version/edition of the International Ammunition Technical Guidelines is maintained by UN ODA, and can be read on the IATG website: www.un.org/disarmament/un-saferguard/. National authorities, employers and other interested bodies and organisations should obtain copies before commencing conventional ammunition stockpile management programmes.

11 Data from many of these publications has been used to develop this IATG.
12 Where copyright permits.
### Annex C
(normative)

**Fire signs (LEVEL 1)**

The following hazard division signs and fire supplementary signs should be used within explosive facilities:

<table>
<thead>
<tr>
<th>Hazard Division</th>
<th>Description</th>
<th>Pictogram(^{13})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazard division signs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Ammunition that has a mass explosion hazard.</td>
<td><img src="image1" alt="Pictogram" /></td>
</tr>
<tr>
<td>1.2</td>
<td>Ammunition that has a projection hazard but not a mass explosion hazard.</td>
<td><img src="image2" alt="Pictogram" /></td>
</tr>
<tr>
<td>1.3</td>
<td>Ammunition that has a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.</td>
<td><img src="image3" alt="Pictogram" /></td>
</tr>
<tr>
<td>1.4</td>
<td>Ammunition that presents no significant hazard.</td>
<td><img src="image4" alt="Pictogram" /></td>
</tr>
<tr>
<td>1.5</td>
<td>Very insensitive substances, which have a mass explosion hazard.</td>
<td><img src="image1" alt="Pictogram" /></td>
</tr>
</tbody>
</table>

\(^{13}\) The examples shown also include the Compatibility Group.
<table>
<thead>
<tr>
<th>Hazard Division</th>
<th>Description</th>
<th>Pictogram$^{13}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>Extremely insensitive articles which do not have a mass explosion hazard.</td>
<td><img src="image" alt="Pictogram" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fire supplementary signs**

| N/A             | Respiratory protection using SCBA required. | ![Pictogram](image) |
| N/A             | Personal protective clothing required.      | ![Pictogram](image) |
| N/A             | Radiological hazard.                        | ![Pictogram](image) |
| N/A             | Water prohibited.                           | ![Pictogram](image) |

Table C.1: Fire signs
Amendment record

Management of IATG amendments

The IATG guidelines are subject to formal review on a five-yearly basis, however this does not preclude amendments being made within these five-year periods for reasons of operational safety and efficiency or for editorial purposes.

As amendments are made to this IATG they will be given a number, and the date and general details of the amendment shown in the table below. The amendment will also be shown on the cover page of the IATG by the inclusion under the edition date of the phrase ‘incorporating amendment number(s) 1 etc.’

As the formal reviews of each IATG are completed new editions may be issued. Amendments up to the date of the new edition will be incorporated into the new edition and the amendment record table cleared. Recording of amendments will then start again until a further review is carried out.

The most recently amended, and thus extant, IATG will be the versions that are posted on the UN SaferGuard IATG website at www.un.org/disarmament/un-safeguard/.

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Amendment Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>01 Feb 15</td>
<td>Release of Edition 2 of IATG.</td>
</tr>
</tbody>
</table>