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**Planning and siting of explosives  
facilities**



### **Warning**

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## Foreword

Ageing, unstable and excess conventional ammunition stockpiles pose the dual risks of **accidental explosions at munition sites** and **diversion to illicit markets**.

The humanitarian impact of ammunition-storage-area explosions, particularly in populated areas, has resulted in death, injury, environmental damage, displacement and disruption of livelihoods in over 100 countries. Accidental ammunition warehouse detonations count among the heaviest explosions ever recorded.

Diversion from ammunition stockpiles has fuelled armed conflict, terrorism, organized crime and violence, and contributes to the manufacture of improvised explosive devices. Much of the ammunition circulating among armed non-State actors has been illicitly diverted from government forces.<sup>1</sup> In recognition of these dual threats of explosion and diversion, the General Assembly requested the United Nations to develop **guidelines for adequate ammunition management**.<sup>2</sup> Finalized in 2011, the International Ammunition Technical Guidelines (IATG) provide voluntary, practical, modular guidance to support national authorities (and other stakeholders) in safely and securely managing conventional ammunition stockpiles. The UN SaferGuard Programme was simultaneously established as the corresponding knowledge-management platform to oversee and disseminate the IATG.

The IATG also ensure that the United Nations entities consistently deliver high-quality advice and support – from mine action to counter-terrorism, from child protection to disarmament, from crime reduction to development.

The IATG consist of 12 volumes that provide practical guidance for ‘through-life management’ approach to ammunition management. The IATG can be applied at the guidelines’ **basic, intermediate, or advanced levels**, making the IATG relevant for all situations by taking into account the diversity in capacities and resources available. Interested States and other stakeholders can **utilize the IATG for the development of national standards and standing operating procedures**.

The IATG are reviewed and updated at a minimum every five years, to reflect evolving ammunition stockpile-management norms and practices, and to incorporate changes due to changing international regulations and requirements. The review is undertaken by the UN SaferGuard Technical Review Board composed of national technical experts with the support of a corresponding Strategic Coordination Group comprised of expert organizations applying the IATG in practice.

The latest version of each IATG module can be found at [www.un.org/disarmament/ammunition](http://www.un.org/disarmament/ammunition).

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<sup>1</sup> S/2008/258.

<sup>2</sup> See also the urgent need to address poorly-maintained stockpiles as formulated by the United Nations Secretary-General in his Agenda for Disarmament, *Securing Our Common Future* (2018).

## Introduction

This IATG module details the general requirements and procedures for planning, siting and subsequent approval of new explosives facilities. These procedures vary considerably depending on whether the requirement is for a major new facility, such as an ammunition storage area (ASA), an individual new facility, such as an explosive storehouse (ESH) or ammunition process building (APB), or substantial alteration to an existing building. The requirements contained in this IATG module can also be retrospectively applied to existing facilities, and this should be encouraged.

Ammunition in transit that stops for more than a temporary halt, or that is being loaded to or unloaded from or between transportation conveyances, shall have each such location considered as an explosives facility or location that must meet the planning and siting requirements of this IATG module and shall have appropriate Quantity Distances (QD), as discussed herein, applied to all surrounding exposures. Examples include transportation hubs such as ports, airfields, railyards, inter-modal change areas (e.g. rail-to-truck, ship-to-truck, truck-to rail or ship), secure holding areas for ammunition conveyances, safe havens (stopping places for safe and secure temporary holding of an ammunition conveyance en-route to its final destination), etc. It is the aim of this IATG module to explain these procedures in detail to enable the reader to carry out all of the actions necessary to safely establish the required facility.

## Planning and siting of explosives facilities

### 1 Scope

This IATG module introduces the principles and requirements for the planning and siting of explosives facilities.

### 2 Normative references

A list of normative references is given in Annex A. These documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 further list of informative references is given in Annex B in the form of a bibliography, which lists documents that contain additional information related to the contents of this IATG module. .

### 3 Terms and definitions

For the purposes of this module the following terms and definitions, as well as the more comprehensive list given in IATG 01.40 *Glossary of terms, definitions and abbreviations*, shall apply.

The term 'ammunition storage area' refers to *an area used for the storage of ammunition and explosives and within which authorised ammunition or missile preparation, inspection and rectification operations may also be carried out.*<sup>3</sup> (c.f. explosives area).

The term 'national technical authority' refers to *the government department(s), organisation(s) or institution(s) charged with the regulation, management, co-ordination and operation of conventional ammunition storage and handling activities.*

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.*

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 Siting considerations

The explosives location or site, whether existing or proposed, should be formally selected by a Siting Board set up and approved by the national technical authority. When planning for a new location it is essential that all interested parties are involved from the earliest stage in the proceedings and take advice as necessary from appropriate technical experts.

When siting any explosives facility, whether above ground or underground, all factors that may affect its operation under all conditions should be considered. It is unlikely that one area or site will be found which meets all requirements, so the best combination of desirable features is to be aimed for and an acceptable compromise sought. The need for possible future expansion is a primary requirement.

Careful and correct assessment, planning, siting and construction of major ammunition storage areas (ASA) are essential to:

- a) ensure that they can be operated safely, economically and efficiently;
- b) ensure an acceptable level of protection to the public and individuals not connected to the ASA;
- c) keep the risks from explosive sites at a level that is preferably negligible, but at least as low as reasonably practicable (ALARP);<sup>4</sup>
- d) minimise the loss of stocks due to an accidental or deliberate explosive event;
- e) provide a storage and handling environment in which ammunition can be maintained in a fully serviceable condition to enable users to be supplied with reliable explosives natures at the right time and place; and
- f) ensure that the explosives licences of existing Potential Explosion Sites (PES) are not compromised.

### 4.1 Quantity distances (LEVEL 1)

The main consideration when siting a PES shall be to ensure that the quantity distances,<sup>5</sup> both inside and outside, are adequate, and that the best use is made of the area available. To achieve these aims, and to minimise the area subject to safeguarding restrictions,<sup>6</sup> PES for the most hazardous stores (Hazard Division (HD) 1.1) should normally be sited at the centre of the area, whilst those for the least hazardous (HD 1.4) should be nearest the perimeter. By ensuring that minimum inter-magazine distances are met between explosives sites, the maximum credible explosive event (MCE) will be limited, thereby minimizing required outside quantity distances.

Maximum safety and flexibility of use of buildings may be achieved by traversing all non-earth covered explosives buildings. However, the selection of the optimum combination of types of construction of PES, quantity distances (QDs) and explosive storehouse (ESH) construction requires a balance between construction costs, the cost of land and the cost of the ammunition to be stored. The Hazard Division (HD) and Compatibility Group (CG) of the ammunition natures to be stored should also be taken into account as some CG will require special storage. Therefore, the most vital piece of information required by the planners is the nature and quantities of ammunition to be stored.

The IATG Implementation Support Toolkit includes a [Quantity-Distance Map](#)<sup>7</sup> tool that can be used in the early planning stages to determine the area at risk from a given quantity of HD1.1 ammunition.

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<sup>4</sup> See IATG 02.10 *Introduction to risk management principles and processes*.

<sup>5</sup> See IATG 02.20 *Quantity and separation distances*.

<sup>6</sup> See IATG 02.40 *Safeguarding of explosive storage areas*.

<sup>7</sup> [www.un.org/disarmament/un-safeguard/map](http://www.un.org/disarmament/un-safeguard/map)



If the IATG-listed QDs cannot be achieved in a particular situation, the advice of an explosives safety expert should be sought, to conduct an explosives safety case using Risk Assessment techniques and commercially-available software

## **4.2 Location**

In the event of a completely new facility being built, location shall be of vital importance. In the event of modifications to PES, then some of the following factors may apply.

### **4.2.1. Isolation**

In order to meet the safety distance requirements of IATG 02.20 *Quantity and separation distances* it is necessary for the new facility to have a degree of isolation. PES should not normally be sited closer than 25m from the explosive storage area (ESA) fence and should be increased to 50m where there is an external road giving access for vehicles to the fence-line.<sup>8</sup>

New building encroachment within the outside quantity distances is always possible where quantity distances extend beyond the perimeter of the ESA. Where this is a possibility, the land in question should be purchased to prevent such encroachments or appropriate safeguarding arrangements should be made.<sup>9</sup> Particular consideration should be given to exposed sites that are considered to be of 'vulnerable construction'.

Overhead power supply systems and associated networks and installations should be avoided but, if this is not possible, then the facility should be sited in accordance with IATG 05.40 *Safety standards for electrical installations*. Similarly, mains water, gas and oil networks should be avoided.

To reduce and/or mitigate the risk from aircraft accidents in explosives areas during take-off and landing, the sites selected should not normally be within an airfield circuit. If the facility is to be constructed at an airfield, PES shall not form an obstruction to flying and shall not be built within the flight strips or approach/departure funnels associated with runways. The air traffic control organisation should be involved at all stages of planning.

Due consideration should also be given to the effects on the ammunition and explosives of radiation hazards (RADHAZ) from mobile and fixed transmitters that are often found near airfields, ports and other major transportation hubs and the risk to these facilities from the explosives.<sup>10</sup>

### **4.2.2. Accessibility**

The explosives facility should have a certain level of accessibility to:

- a) the customer units which the facility is intended to supply;
- b) stockage support facilities such as the sources from which stocks are likely to be received, e.g. ammunition manufacturers and other explosives storage facilities;
- c) roads, rail, ports and airfields from which shipments will be made and received; and
- d) the civilian labour force (if required).

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<sup>8</sup> The quantity distances will generally be much greater than the recommended minimum for the fence and therefore the area should be safeguarded in accordance with IATG 02.40 *Safeguarding of explosive facilities*.

<sup>9</sup> See IATG 02.40 *Safeguarding of explosive facilities*.

<sup>10</sup> See IATG 05.60 *Hazards of electromagnetic radiation*.

There should also be a clearly defined internal traffic circuit within the ESA with distinct IN and OUT routes to each ESH. The layout of the ESH, Process Buildings (PBs) and other ancillary buildings should be such that vehicles need not retrace their steps.

#### **4.2.3. Storage and handling capacity**

The area or site selected should be able to store the specified quantity of ammunition as described at Clause 4.1 above and it should also have the facilities for handling this ammunition in a logistically efficient manner.

#### **4.2.4. Communication – road and rail**

The area selected should be accessed by good roads of sufficient width and strength to allow constant use by heavy traffic. However, care must be taken to ensure that Public Traffic Route Distances (PTRD) do not cause a storage problem.<sup>11</sup> Access roads and rail tracks should not pass through congested towns, thereby reducing the hazard from an accident involving a vehicle or rail carriage carrying ammunition.

The facility should have a one-way traffic system, where possible, with appropriate speed limitations imposed. Roads within an explosives area should serve all significant explosive storehouses and process buildings and should be capable of use by the largest and heaviest vehicles likely to be used. Gradients should be minimised wherever possible and it is recommended that no gradient should exceed 1:20 and, where trolleys without brakes are used, e.g. alongside buildings or open bomb bays, the gradient should not exceed 1:100. The minimum inside radius at corners should be not less than 9m for normal road vehicles and may be increased to cater for trailers if they are used. Stabling and lay-be areas should also be established.

Unless a railway system exists, or can be constructed, good road communication with the nearest railhead is essential. Ideally, major explosives facilities should be served by rail as well as road systems, both inside the explosives area (in the case of larger depots) and connecting the depots with the public main lines. If this is the case, it is essential that the rail authorities should certify that the public railway system is capable of handling the increased amount of traffic. In order to reduce delays in loading and unloading, adequate provision should be made for marshalling and shunting trucks. The facility should also include stabling facilities, exchange sidings, sorting sidings, emergency alternative lines, turning facilities and rail lines to explosive storehouses, storage bays and ammunition process buildings.

#### **4.2.5. Climate and terrain**

Dry storage conditions are highly desirable, so the area chosen should be well drained and as dry as possible. Areas with high incidences of electrical storms or other atmospheric abnormalities, or terrain that is liable to flooding, should be avoided, as should areas in which the roads become easily blocked by snow.

The subsoil should be firm and stable, otherwise subsidence of barricades, roads and hard standings may result.

Thickly wooded sites have an inherent fire risk in dry weather and may require clearing of undergrowth and firebreaks. Such sites are normally poorly ventilated and are consequently excessively humid. They should be avoided.

Dry, gently undulating land provides natural barricades and is the most suited to the storage of ammunition.

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<sup>11</sup> See IATG 02.20 *Quantity and separation distances*.

## **5 Types of facilities within a depot (LEVEL 2)**

### **5.1 Disposals area**

Wherever possible, a major facility should possess its own disposal area to enable unserviceable or dangerous ammunition to be destroyed on site. The disposal area should be remote from the storage area to ensure complete safety, but it should also be easily accessible. See Annex D to IATG 10.10 *Demilitarization and destruction* for disposal area requirements.

### **5.2 Explosives storehouses (ESH)**

These buildings should be sited with due regard to the quantity distances calculated<sup>12</sup> to meet the forecast storage requirement.

ESH should be designed and constructed in accordance with IATG 05.20 *Types of buildings for explosives storage*.

### **5.3 Ammunition process buildings (APB)<sup>13</sup>**

If possible, APBs should be located in an area away from explosives storage facilities. If this is not possible, they are to be located in an area where the quantity distances for processing activities are achievable in accordance with IATG 02.20 *Quantity and separation distances*. Siting should also take into account the requirement to move and process ammunition. If the construction of buildings is impracticable, a mobile processing facility may be employed.<sup>14</sup>

APBs should be designed and constructed in accordance with IATG 05.20 *Types of buildings for explosives storage*.

### **5.4 Administrative buildings, non-explosive storage and other facilities**

These types of buildings directly connected with the operation of the ammunition storage facility should be located outside the explosives area but should be as close as quantity distances allow. Those facilities not directly connected with the presence of ammunition should be sited at greater distances. However, attention should be paid to the potential difficulties in explosives licensing, and the permissible limits thereof, if protective and non-protective structures are mixed together, particularly with regard to man-limits and construction considerations such as windows, walls and roofs. They should be in a separate administrative area which, together with the explosives area, makes up the overall explosive facility.

### **5.5 Temporary storage of vehicles loaded with ammunition**

When the ammunition storage facility is not suitable for use as a unit staging facility, then any fenced area outside the administrative area may be considered for use. However, this location should be patrolled or controlled under strict security arrangements. If an area is not fenced, it may still be used for staging, provided the security arrangements are agreed by the national technical authority. Areas adjacent to domestic accommodation should not be used.<sup>15</sup>

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<sup>12</sup> See IATG 02.20 *Quantity and separation distances*.

<sup>13</sup> Also referred to as Process Buildings (PB).

<sup>14</sup> Specialist technical advice should be sought on the design of a mobile processing facility as it will be dependent on the processing tasks needed to be carried out.

<sup>15</sup> See IATG 05.50 *Vehicles and mechanical handling equipment (MHE) in explosives facilities*

## 5.6 Lighting arrangements

Street lighting to the standard required in civilian built up areas should be provided for reasons of safety and security. They should be in accordance with the requirements of IATG 05.40 *Safety standards for electrical installations*.

## 6 Underground storage (LEVEL 2)

The storage of ammunition in underground caves or caverns or the construction of new underground facilities is a complicated issue and the factors listed below should be considered if this type of storage is planned.

### 6.1 Advantages

The advantages of underground storage are:

- a) a smaller total land area is usually required in comparison with above ground storage, and land requirements are generally directional from the entrance;
- b) the area is easier to guard;
- c) should an explosive event occur in a storage chamber, damage to explosives in other chambers can be prevented. In above ground storehouses, other than those that are earth covered, damage could be severe, dependent on construction type and separation distance used;
- d) the temperature in underground sites remains fairly constant and is thus more conducive to the chemical stability of the ammunition, (but see also the disadvantages below);
- e) climatic changes such as rain, snow and ice, which may cause difficulties in above ground storage, may be more easily avoided;
- f) better protection is afforded against externally induced threats, such as fire, lightning strike, explosive accident; and
- g) maintenance of the underground infrastructure is less expensive than for that above ground so the initial high costs of providing underground storage may be offset in the long term.

### 6.2 Disadvantages

The disadvantages of underground storage are:

- a) the costs of the new excavation or modification of an existing excavation and the installation and maintenance of special equipment;
- b) restrictions imposed by the locality of the site due to unsuitable terrain features;
- c) the need to provide blast doors in a connected chamber storage site, or to accept the possibility of total loss of personnel and stocks;
- d) relatively high humidity underground may cause deterioration of stocks or packaging. Special attention may have to be given to controlling humidity where valuable or humidity sensitive items are to be stored; and
- e) it may be necessary to provide special mechanical handling equipment (MHE) and other vehicles unless the facility is designed to accommodate normal vehicles.

### 6.3 Terrain considerations

Some types of terrain are unsuitable for the construction of underground facilities namely:

- a) sand, clay, shale or broken rock, due to an inherent lack of structural strength;
- b) coal bearing strata due to the risk of combustion;
- c) rock which is steeply dipping due to potential instability during construction operations;
- d) areas with extensive underground workings where serious subsidence may occur; and
- e) permeable rock with a high-water table or fissured rock with underground water channels, even if dry as in limestone country.

Massive igneous rocks such as granite, though technically suitable, may give rise to prohibitive excavation costs.

Directional explosion effects from a potential incident may place serious limitations on the orientation of an underground facility. This is obviously applicable to the direction of the adit (the tunnel exit point) but also applies to crater projections in the event of an explosion, particularly where the cover surface is inclined.

### 6.4 Some design considerations

The advice of a mining engineer shall be essential and such a skill set should be involved at the very earliest stages of planning.

Connected chamber storage sites should have more than one entrance. Single entrances should be avoided because, in the event of an explosion, some of the chambers could be totally blocked. Ideally, adjacent chambers should be parallel to each other and the axes of the chambers at right angles to the axis of the main passageway rather than inclined. Adjacent junctions of branch passageways in connected chamber storage sites, with chambers on both sides of the main passageway, should be separated as much as possible.

Should a cavern storage site be chosen, the roof should be cleared of loose material, and any weak parts should be pinned or supported by some other method. Faults and fissures in the walls should be filled with concrete to prevent the passage of hot gasses or blast in the event of an explosion. Caverns with high roofs should be avoided because of the danger of roof falls and the difficulty of inspecting the roof.

Material excavated during construction may be of use in other parts of the project such as barricades.

## 7 Smaller facilities (LEVEL 2)

Requirements sometimes arise for smaller ammunition storage facilities e.g. unit ammunition storage facilities. The proposed facility shall still undergo the full approval process to ensure that all safety processes are carried out, and all interested parties shall be involved to define the extent of the works required and if it is possible to issue an explosives licence. A site visit should be carried out to ascertain the following factors:

- a) the need to identify the Net Explosives Quantity (NEQ) by nature(s), HD and CG to be stored;
- b) identification of the type, number and size of facilities required (including administrative buildings) and associated area and layout;
- c) the suitability of any existing buildings for their current task;
- d) the suitability of the planned facilities for their future task;

- e) the cost of the buildings when compared to the task both short-term and long-term;
- f) the technical specifications required for safe storage e.g. construction, barricades, heating, lighting, security features etc;
- g) the proximity of any protected areas such as UNESCO sites, sites of special scientific interest etc;
- h) the proximity of any structures which will affect storage such as hospitals, schools, churches, public roads etc; and
- i) the suitability of existing construction and buildings at sited IQDs.

The feasibility of the planned layout, adapted as necessary to meet local conditions, should then be discussed, along with confirmation of the type, number, size and layout of facilities required, enabling a formal Siting Board to be held.

## **8 Approval of facilities (LEVEL 1)**

### **8.1 New facilities**

Plans for the siting of any proposed new explosives facilities and the Siting Board results shall be submitted to the relevant authority for approval no later than the primary phase of the proposed procurement process. The plans should include the following:

- a) suitably scaled maps which show the location of each PES and ES within the impacted QD;
- b) NEQ and HD associated with each PES;
- c) a description of the purpose of each PES and ES and the numbers of persons located in each;
- d) the site perimeter, the actual boundaries of national authority owned real estate, the safeguarded area and the yellow and purple lines;
- e) the extent of any leased real estate;
- f) construction drawings, as appropriate, to ensure compliance with explosives safety requirements;
- g) any local authority, national and international borders; and
- h) any special sites or buildings that have sensitive scientific, cultural or other properties that lie within the purple zone (VBD) of the proposed facility.

On receipt of the above, the relevant body appointed by the national technical authority shall examine the documents and, if found suitable, shall officially confirm that the planned site and/or facility is suitable and formally approve commencement of construction. Official approval shall be in writing and copies of such documents kept indefinitely.

### **8.2 Changes to existing facilities**

When there is a requirement to substantially alter an existing facility then a formal siting board shall be convened. Examples of substantial alterations include, but are not limited to:

- a) use of an existing non-explosive facility as a PES;
- b) change of use, including ammunition processing, of an existing PES or ES;
- c) major structural alterations to, or refurbishment of, a PES; or

- d) any change of frangible materials, or alterations to designed operating criteria, such as venting arrangements.

Plans as described at Clause 8.1 a) – h) above should be submitted for consideration and approval.

When minor work, refurbishment, or any other modification, irrespective of size or value of the works is planned, the proposals should be co-ordinated with the relevant national technical authority. However, this may not apply to routine maintenance, if the work carried out is like for like and the existing facility is already fully compliant with IATG specifications.

The siting board results should be forwarded to the responsible national technical authority.

When it is proposed to construct, change the use of, or otherwise modify any non-explosives facility in the vicinity of an existing PES, a siting board shall be convened, the proposal reviewed, and the consequences considered. Failure to do so may render the PES unable to be licenced, and therefore unusable.

## **9 Possible procurement process**

Each national technical authority should have its own procurement and legal processes and bodies in place which govern and authorise expenditure, building processes etc. However, the following procedure covers a logical flow process and the national technical authority may consider these principle stages as part of its own processes, having agreed to the work taking place:

- a) project definition;
- b) project brief production;
- c) project manager (PM) appointment;
- d) project planning and initial design of the facility;
- e) interim approval by the national technical authority;
- f) detailed design, works tender preparation and the final project appraisal;
- g) invitation to tender (ITT), bid evaluation and awarding of contract;
- h) works construction period, quality assurance (QA) and staged payments authorisation;
- i) final approval and handover of facility; and
- j) financial completion.

### **9.1 Key skills requirements**

Notwithstanding national technical authority requirements, the following key skills should be involved at all stages of the process during the planning and construction phases:

- a) trained ammunition technical personnel to advise on ammunition licensing, receipt, movement, storage, processing, issuing and disposal matters;
- b) the project manager (PM) to coordinate effort, establish technical and financial guidelines, and manage goal management;
- c) civil engineering technical advisors to advise on design, project management, contractual, construction and maintenance works matters; and
- d) specialist technical advisors to provide advice on the electrical design, lightning protection and suitability of electrical equipment for explosives related facilities.

## **10 Handover and takeover procedures for new or modified facilities** **(LEVEL 2)**

Before a new PES, or an existing PES which has had major works services carried out, is taken into use for the storage or processing of explosives, it should be formally handed/taken over for this purpose and licensed.



## Annex A (normative) References

The following normative documents contain provisions which, through reference in this text, constitute provisions of this module. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this module 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 *Glossary of terms, definitions and abbreviations*. UNODA;
- b) IATG 01.50 *UN Explosive hazard classification system and codes*. UNODA;
- c) IATG 02.10 *Introduction to risk management principles and processes*. UNODA;
- d) IATG 02.20 *Quantity and separation distances*. UNODA;
- e) IATG 02.40 *Safeguarding of explosive storage areas (ESA)*. UNODA;
- f) IATG 05.20 *Types of buildings for explosives storage*. UNODA;
- g) IATG 05.40 *Safety standards for electrical installations*. UNODA;
- h) IATG 05.50 *Vehicles and mechanical handling equipment (MHE) in explosives facilities*. UNODA;
- i) IATG 05.60 *Hazards of electromagnetic radiation*. UNODA;
- j) IATG 06.50 *Specific safety precautions*. UNODA; and
- k) IATG 08.10 *Transport of ammunition*. UNODA.

The latest version/edition of these references should be used. The UN Office for Disarmament Affairs (UNODA) holds copies of all references<sup>16</sup> used in this guideline and these can be found at: [www.un.org/disarmament/un-safeguard/references](http://www.un.org/disarmament/un-safeguard/references). A register of the latest version/edition of the International Ammunition Technical Guidelines is maintained by UNODA, and can be read on the IATG website: [www.un.org/disarmament/ammunition](http://www.un.org/disarmament/ammunition). National authorities, employers and other interested bodies and organisations should obtain copies before commencing conventional ammunition management programmes.

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<sup>16</sup> 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 module:<sup>17</sup>

- a) AASTP-1, Edition B, Version 1. *NATO Guidelines for the Storage of Military Ammunition and Explosives*. NATO Standardization Organization (NSO). December 2015.  
<http://nso.nato.int/nso/nsdd/listpromulg.html>;
- b) *Handbook of Best Practices on Conventional Ammunition*, Chapter 2. Decision 6/08. OSCE. 2008. [www.osce.org/fsc/33371](http://www.osce.org/fsc/33371);
- c) DSA03.OME part 2 provides for the safe storage and processing of Ordnance, Munitions and Explosives (OME). UK MOD. November 2020.
- d) The latest version/edition of these references should be used. The UN Office for Disarmament Affairs (UNODA) holds copies of all references<sup>18</sup> used in this module and these can be found at: [www.un.org/disarmament/un-safeguard/references](http://www.un.org/disarmament/un-safeguard/references). A register of the latest version/edition of the International Ammunition Technical Guidelines is maintained by UNODA, and can be read on the IATG website: [www.un.org/disarmament/ammunition](http://www.un.org/disarmament/ammunition). National authorities, employers and other interested bodies and organisations should obtain copies before commencing conventional ammunition management programmes.

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<sup>17</sup> Data from many of these publications has been used to develop this IATG.

<sup>18</sup> Where copyright permits.

## Amendment record

### Management of IATG amendments

A list of normative references is given in Annex A. These documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 further list of informative references is given in Annex B in the form of a bibliography, which lists documents that contain additional information related to the contents of this IATG module.

Number	Date	Amendment Details
0	01 Feb 15	Release of Edition 2 of IATG.
1	31 March 21	Release of Edition 3 of IATG.