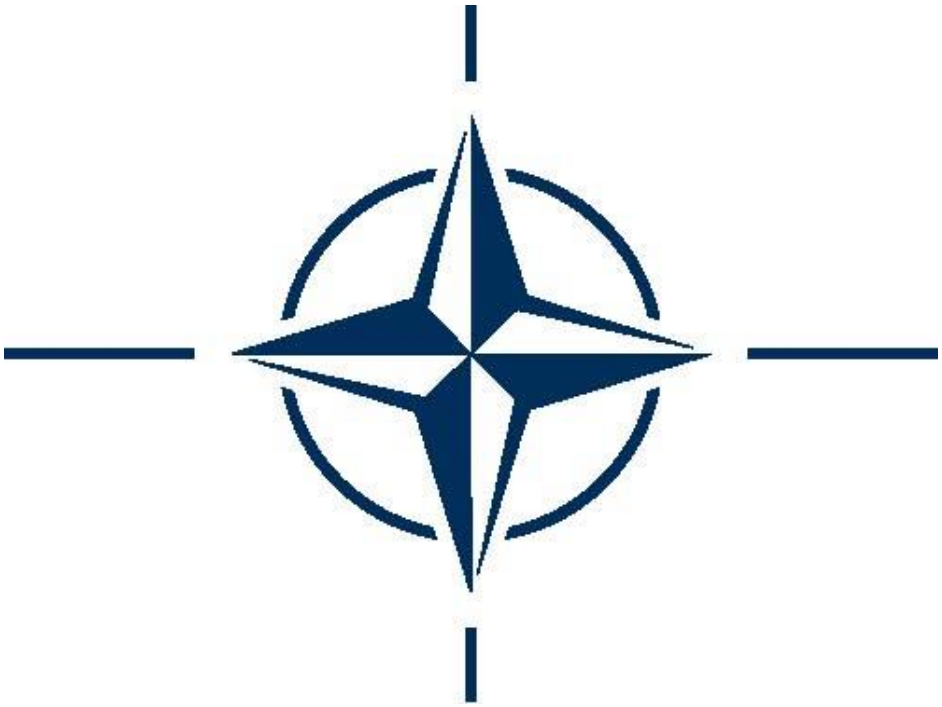
NATO STANDARD

AFLP-7102

ENVIRONMENTAL PROTECTION HANDLING REQUIREMENTS FOR PETROLEUM HANDLING FACILITIES AND EQUIPMENT

Edition A Version 2

OCTOBER 2018



NORTH ATLANTIC TREATY ORGANIZATION

ALLIED FUELS AND LUBRICANTS PUBLICATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

NATO STANDARDIZATION OFFICE (NSO)

NATO LETTER OF PROMULGATION

23 October 2018

1. The enclosed Allied Fuels and Lubricant Publication AFLP-7102, Edition A, Version 2, ENVIRONMENTAL PROTECTION HANDLING REQUIREMENTS FOR PETROLEUM HANDLING FACILITIES AND EQUIPMENT, which has been approved by the nations in the Petroleum Committee (AC/112), is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 7102.

2. AFLP-7102, Edition A, Version 2, is effective upon receipt and supersedes AFLP-7102, Edition A, Version 1, which shall be destroyed in accordance with the local procedure for the destruction of documents.

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4. This publication shall be handled in accordance with C-M(2002)60.

Zoltán GULYÁS
Brigadier General, HUNAF
Director, NATO Standardization Office

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RESERVED FOR NATIONAL LETTER OF PROMULGATION

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Database for the complete list of existing reservations.	

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TABLE OF CONTENTS

SECTION 1 GENERAL 1-1
SECTION 2 FIXED INSTALLATION ENVIRONMENTAL RESPONSIBILITIES 2-1
SECTION 3 TACTICAL FUEL HANDLING EQUIPMENT (TFHE) ENVIRONMENTAL REQUIREMENTS 3-1
SECTION 4 ESTABLISHING BASELINE ENVIRONMENTAL STANDARDS 4-1
SECTION 5 NATIONAL MOD POINTS OF CONTACT 5-1
SECTION 6 NATO PHE WORKING GROUP ENVIRONMENTAL QUESTIONNAIRE 6-1

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SECTION 1 GENERAL

0101. Participating nations agree:

a. that NATO petroleum handling equipment and those operating it must function in an environmentally acceptable manner whether at a national installation or deployed to another nation;

b. to provide supplies, equipment, and training to assure that environmental laws are followed as discussed in Sections 2 and 3;

c. to provide fixed and/or mobile equipment that meets either NATO environmental requirements or the requirements of the nation it is operated within, whichever is more stringent;

d. to establish and update an environmental questionnaire so that baseline environmental requirements can be established as discussed in Section 4 and as included in Section 6;

e. to identify to the custodian the national MOD Points of contact for environmental matters for inclusion in Section 5 of this agreement and to annually review this information and update as needed.

0102. This AFLP is implemented when a nation has issued the necessary orders and instructions to its forces to provide the facilities, equipment and training covered in Sections 2 and 3.

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SECTION 2 FIXED INSTALLATION ENVIRONMENTAL RESPONSIBILITIES

0201. **General**. Each nation has developed environmental standards that relate to petroleum handling operation, maintenance and construction. NATO standards include minimum environmental requirements that are followed primarily for new construction. Where older systems do not meet these standards, nations are encouraged to upgrade them. In many cases, national requirements exceed minimum standards and are mandated by law. Personnel from other nations deploying to a fixed installation as augmentees may not be aware of the host nation environmental requirements and may inadvertently operate outside the law. This section covers methods to assure proper operation occurs.

0202. **Host Nation Responsibilities**

a. When forces arrive from another nation to operate out of a fixed installation, the host nation shall brief incoming personnel of National environmental requirements, including the related transportation regulations for relevant POL, and provide the senior person a brief written synopsis. Equipment and procedures at the host installation may be unfamiliar to incoming personnel, thus the host shall identify training required and provide it. Disposal procedures of contaminated fuel, oily bilge water existing in tanks and vehicles, spent filter separator elements, oily and greasy POL products and other fuel-contaminated items should be covered. Additionally, the incoming personnel should be informed about the proper handling and storage of POL and associated products in accordance with the existing National regulations.

b. Provide clean-up supplies and equipment together with the appropriate capabilities/equipment to undertake disposal. Train incoming personnel to use them if they are unfamiliar. Train incoming personnel in host nation procedures for determining when a clean-up is complete.

c. Provide instruction on related areas such as protected ground water areas, confined entry rules if there are any, and handling of substances that may endanger human health and the environment, including ground water protected areas.

0203. **Deploying Force Responsibilities**

a. Emphasize to deploying personnel the importance of following host nation environmental requirements.

b. Where time allows, identify environmental requirements of the host nation before deploying and provide training where needed.

c. Emphasize the importance of spill prevention, containment, clean up, and disposal of fuel, and other fluids which may contaminate the water, in an environmentally beneficial manner. Discuss the requirements and costs for remediation if spills are not prevented or quickly controlled and contained. If capability exists, provide training on the procedures to

be followed.

d. Ensure that personnel supervise all petroleum transfer operations and that none are left unattended. Petroleum storage facilities will be visually inspected for spills and leakage at least on a daily basis.

e. Where conditions allow, deploying units should follow their National standards where they are more stringent.

SECTION 3 TACTICAL FUEL HANDLING EQUIPMENT (TFHE) ENVIRONMENTAL REQUIREMENTS

0301. **General**: Mobile equipment can increase the potential for adverse environmental impact. It is important that deploying forces know and accept the environmental requirements of the host nation. In a deployed situation, expedient actions may cause a lapse in environmental compliance leading to a leak or spill. The required clean up may adversely affect the mission. In a field environment, the support structure of a fixed base will not be available. It is doubly important that measures be taken by host nation and deploying forces to prevent adverse environmental impact.

0302. **Host Nation Responsibilities**

a. For deployments to a fixed site see Section 2. For deployments to a field location, the host nation must provide instructions to incoming forces. If no host nation personnel are assigned, then a package of information must be provided to the senior deploying person on the site and he must brief incoming personnel. If sufficient advance notification has been made of the deployment, the host nation shall provide environmental information directly to the deploying unit. Include information on spill prevention, containment, and clean-up and reporting spills.

b. Provide supplies and equipment for prevention, containment, clean-up, and reporting of spills. Provide means and equipment for disposal of spills.

c. Provide instruction for reporting spills, including a point of contact and immediate containment requirements.

d. Provide information about ground water protected areas. Provide operational instructions on the handling of materiel hazardous to the water.

0303. **Deploying Forces - Responsibilities**

a. Emphasize to deploying personnel the importance of following host nation environmental requirements where they are more stringent.

b. Where time allows, identify environmental requirements of the host nation before deploying and provide training.

c. Emphasize the importance of spill prevention, containment, clean up, and disposal of fuel, and other fluids which may contaminate the water, in an environmentally beneficial manner. If capability exists, provide training on the procedures to be followed. Discuss the requirements and costs for remediation if spills are not prevented or quickly controlled and contained.

d. Deploying equipment must be in good condition and not leaking. Provide drip pans, plastic sheeting and clean-up supplies to hold any fuel and other water endangering substances being spread by leaking or spilling during maintenance. Equipment couplings should be dry break type. Contaminated clean-up substances must be removed from the ground and disposed of according to National regulations.

e. Train forces on environmentally safe methods of operating and maintaining fueling systems and systems for handling water endangering substances.

f. Where conditions allow, deploying units should follow their national standards where they are more stringent.

SECTION 4 ESTABLISHING BASELINE ENVIRONMENTAL STANDARDS

0401. **General**. Environmental requirements change over time, usually becoming more stringent. To provide a means to identify changes, a questionnaire has been developed and is included in Section 6. Prior to each meeting of the PHEWG, the custodian will provide updated results to the nations. This information will be used to update minimum environmental requirements established in related STANAGs to keep them current with national environmental regulations.

a. At each PHEWG, nations will review the questionnaire and recommend changes.

b. No later than two months after each PHEWG meeting, the custodian will mail the revised questionnaire, with applicable prior year responses, to the nations for update.

c. No later than three months prior to the next meeting, the nations will provide updates to the custodian.

d. The custodian will update the document and provide it to the nations not later than one month prior to the next meeting.

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SECTION 5 NATIONAL MOD POINTS OF CONTACT

Albania

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Croatia

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Denmark	Defence Command Denmark The Duty Officer Tel/fax: +45.45674567/ +45.45890748 E-Mail: fko@fko.dk
Estonia	
France	Direction centrale du service des essences des armées Sous-direction opérations 14, rue Saint Dominique 75700 PARIS SP 07
Germany	Bundesministerium der Verteidigung Dept. FüSK II 4 PB 1328 D-53003 Bonn Tel.: +49 228 12 14912 E-Mail: BMVgFueSKII4@bmvg.bund.de
Greece	Lt. Col. Andreas Mastichidis dadp_ye@mod.mil.gr Cpt. Ilias Manolis dadp_tm_periv@mod.mil.gr

Hungary	Lt.Col. Elek SZABÓ Logistic Center Hungarian Defence Forces Sororsári út 152. Budapest H-1095 szabo.elek@hm.gov.hu Tel: +36-1-434-6031 Cell: +36-30-815-0914 Fax: +36-1-434-6044
Iceland	
Italy	In Italy environmental matters are under control of regional environmental protection agencies (ARPAs). In case of deployments to Italy, it will be necessary to liaise with them via local military authorities to have answers to environmental questions.
Latvia	Ministry of Defence of Latvia National Armed Forces Joint HQ Logistics (J-4) department Armament and technical support branch Technical support section Tel.: 00371 6707 1047 Krustabaznicas iela 9/11 Riga, LV-1006 LATVIA
Lithuania	
Luxembourg	
Montenegro	
Netherlands	Mr A. van Leeuwen Netherlands Defence Materiel Organisation Land Systems Branch Fuels and Performance Chemicals Section P.O. Box 90882 2509 LV Den Haag Tel: +31 70 316 8990 Fax: +31 70 316 3190 E-mail: AJ.v.Leeuwen.02@mindef.nl

Norway	Mr. Tore-Martin Bredal Norwegian MOD / F 4 Tel: +47 2309 6439 E-mail: Tore-Martin.Bredal@fd.b.dep.no
Poland	
Portugal	Environment Division Direcção Geral de Infra-estruturas MOD Av. Ilha da Madeira, n.º 14 1400 Lisboa
Romania	
Slovakia	
Slovenia	
Spain	
Turkey	
United Kingdom	Defence Strategic Fuels Authority (DSFA) Larch 3b, MP2317 MOD Abbey Wood Bristol, BS34 8JH
United States	The US has hundreds of federal, state, and local offices with different environmental responsibilities. For deployments to the US, work through the host installation liaison office to identify environmental requirements. If this is not possible, contact PROAC, an Air Force organization charged with finding answers to environmental questions, toll free within the US at +1 (210) 536-4214

SECTION 6 NATO PHE WORKING GROUP ENVIRONMENTAL QUESTIONNAIRE

Revision #	Date	Description
1	July 31, 2008	Incorporating updates from Czech Republic (2007 & 2008), France, and Netherlands
2	October 5, 2010	Added new NATO Nations
3	September 12, 2012	Incorporated updates from Germany, Slovakia, and Latvia.
4	September 27, 2013	Incorporated updates from France.
5	November 5, 2014	Incorporated updates from Lithuania
6	August 1, 2017	Incorporated updates from US
7	August 22, 2018	Incorporated updates from Canada

1. What fuels do you store?

Albania	
Belgium	F-34, F-46, F-57 (Super leaded), F-59 (unleaded), F-76, Jet A1
Bulgaria	B-91/115 (F-18), F-46; F-67; Special Winter Diesel -30 (F-54); Marine Special Diesel (F-76); Kerosene PT ; Jet A1.
Canada	F-34, F-44, F-54, F-57, F-76, F-18, F-37,Diesel, Mogas
Croatia	
Czech Republic	F-18, F-34, F-54, F-58, F-67, Jet A-1
Denmark	F-34, F-75, Mogas (98 RON, Leaded)
Estonia	
France	Jet fuels and Diesel
Germany	F-34, F-44, F-75, MGO, diesel fuel (DIN EN 590), F-18
Greece	F-34 (JP-8), Diesel, Mogas
Hungary	F-34, F-35, F-54, F-57, F-67
Iceland	
Italy	F-18, F-34, F-35, Diesel Fuel, Mogas
Latvia	F-67; F-54; JET A-1 F-35; AVGAS 100LL F-18
Lithuania	F-18 (AVGAS), F-34 (JET A-1), F-57, F-67, F-54
Luxembourg	
Netherlands	F-34, F-65, F-44, F-76, Heating fuel
Norway	F-18, F-34, F-35, F-44, F-54, F-57, F-58, F-67, F-75, F-76
Poland	F-18, F-34, F-35, F-54, F-75, F-76
Portugal	F-34, F-44, F-54., F-57, F-58, Marine Diesel and commercial Diesel
Romania	
Slovakia	F-34, F-35, F-54, F-67

Slovenia	
Spain	F-34, F-35, F-18, Mogas (95 RON unleaded), Diesel and heating oil.
Turkey	F-34, F-40, F-54, F-57, 100/300, Mogas, F-46
United Kingdom	F-18, F-34, F-35, F-44, F-54, F-67, F-76
United States	F-34 (JP-8), F-40 (JP-4), F-44 (JP-5), JPTS, F-54 (Diesel (DF-2)), F-76 (DFM), Mogas

2. Which Fuels do not require environmental control?

Albania	
Belgium	All Require Control
Bulgaria	All Require Control
Canada	All Require Control
Croatia	
Czech Republic	All Require Control
Denmark	All Require Control
Estonia	
France	All Require Control
Germany	All Require Control
Greece	All Require Control
Hungary	All Require Control
Iceland	
Italy	None
Latvia	All Require Control
Lithuania	All Require Control
Luxembourg	
Netherlands	All Require Control
Norway	None
Poland	All Require Control
Portugal	All Require Control
Romania	
Slovakia	All Require Control

Slovenia	
Spain	All Require Control
Turkey	Unleaded fuels (F-30, F-40, F-54)
United Kingdom	All Require Control
United States	All Require Control

3. Is sludge removed during tank cleaning considered hazardous waste?

a. What tests must be performed on sludge to determine if it is a hazardous waste.

b. How do you dispose of the sludge

	3	3a	3b
Albania			
Belgium	Yes	None	Evacuation by licensed contractor
Bulgaria	Yes	None Required	Evacuation by licensed contractor
Canada	Yes	None Required	Drums, Contractor, Vaccuum Truck
Croatia			
Czech Republic	Yes	No test required	Sludge is collected and stored. Then Sludge is passed on a special commercial firm to dispose.
Denmark	Yes	No test required	Drums
Estonia			
France	Yes	There are no tests. The hydrocarbon sludge is considered a waste	Sludge is returned to a company managed by the Ministry of the Environment specialized in the treatment of wastes.
Germany	Yes	DIN 38409 T17/18	Sludge collected and returned to a waste treatment company. Burning or deposit possible
Greece	Yes	None	Weathering
Hungary	Yes	None	Sludge is kept in drums until burning by a contractor.
Iceland			
Italy	Yes	None	Drums, Contractors
Latvia	Yes	None	Evacuation by licensed Contractors
Lithuania	Yes	None	Sludge is handled by licensed hazardous waste treatment contractors
Luxembourg			
Netherlands	Yes	Microbiological	Sludge is returned to a waste treatment company for incineration. These companies are under supervision by the Ministry of the Environment.

	3	3a	3b
Norway	Yes	None	Drums disposed of through licensed contractors. Some is used for fire protection exercises.
Poland	Yes	No test required	Sludge is returned to a company hold of the Ministry of Environment Protection permission.
Portugal	Yes	Specific analysis	Through licensed contractors.
Romania			
Slovakia			
Slovenia	Yes	None	Evacuation by licensed contractor
Spain	Yes	None	Evacuation by licensed contractor
Turkey	Yes	Tests for lead	Burying in the ground.
United Kingdom	Yes	None	Through licensed contractors. MOD are liable if waste is disposed of incorrectly.
United States	Yes	None	Drums

4. Is Cathodic protection required for fuel storage tanks? For Piping?
a. What types of cathodic protection systems are used?

	Tanks	Pipelines	Type
Albania			
Belgium	Yes	Yes	Impressed Current, Sacrificial Anodes
Bulgaria	No	No	
Canada	Yes	Yes	Impressed Current, Sacrificial Anodes
Croatia			
Czech Republic	No	Yes	Impressed Current, Sacrificial Anodes
Denmark	No	Yes	Impressed Current, Sacrificial Anodes
Estonia			
France	No	Yes	Impressed Current, Sacrificial Anodes
Germany	Yes, depending on disadvantageous soil conditions and soil resistivity.	Yes, depending on disadvantageous soil conditions and soil resistivity.	Impressed Current, Sacrificial Anodes
Greece	No	Yes	Impressed Current
Hungary	No	Yes	Impressed Current, Sacrificial Anodes
Iceland			
Italy	Yes	Yes	Sacrificial Anodes
Latvia	No	No	
Lithuania	Yes	Yes	Impressed Current, Sacrificial Anodes
Luxembourg			
Netherlands	Yes depending on soil conditions and soil resistibility	Yes depending on soil conditions and soil resistibility	Impressed Current, Sacrificial Anodes
Norway	No	Mandatory only if over 3km long but often used on shorter lengths.	Impressed Current, Sacrificial Anodes used in some places in combination with impressed current.
Poland	Generally no	Generally no	N/A

	Tanks	Pipelines	Type
Portugal	Yes	Yes	Impressed Current, Sacrificial Anodes
Romania			
Slovakia	No	No	
Slovenia			
Spain	Yes	Yes	Impressed Current, Sacrificial Anodes
Turkey	No	Yes	Impressed Current, Sacrificial Anodes
United Kingdom	As determined by designer	Yes	Impressed Current, Sacrificial Anodes
United States	AST - Yes	Yes	Impressed Current, Sacrificial Anodes

5. Is a leak detection system required for aboveground and/or below ground storage tanks? For piping?

a. If so, what type of systems are used?

b. If secondary containment is required, describe the system used.

	5	5a	5b
Albania			
Belgium	Leak detection is required for below-ground tanks	Level indicator.	Buried tanks have double walls. Others have a secondary containment
Bulgaria	Leak detection is required for underground tanks	Tanks: fuel level indicator, Piping: pressure indicator and visually control	Some of storage tanks have double bottoms
Canada	Leak detection is required for aboveground and below-ground tanks and piping.	Liquid probe for sumps, line leak detection and visual monthly inspection are used.	secondary containment - Double wall and/or membrane.
Croatia			
Czech Republic	Yes.	According to the type of the basin, detection of leakage at the bottom by means of a probe (single-skin basis) is required or measuring the level (height) of indicating liquid (double-skin basis). In basis, liquid level is measured, including indication of reaching the maximum permissible capacity. After the maximum	Yes. Doubling the walls of basis or their fitting into leakproof concrete case, fitting the underground piping in leakproof drain.

	5	5a	5b
		level is reached, filling is automatically interrupted. In case of underground piping, leakage is indicated by hydrostatic (overpressure) testing or by a designating cable	
Denmark	Yes	Controlled drain systems under tanks. Comparison of delivered Vs received fuel. (For On Base installations, pipes are pressure tested with fuel every 5 years).	Steel tank surrounded by concrete with special controlled drain system. (For On Base installations, no secondary containment).
Estonia			
France		Level indicator, warning mechanisms and vacuum indicator.	Half buried and underground tanks are double lined.
Germany	Yes	Tanks: Level/vacuum indicator. Piping: Double walled pipes for below ground pipelines only on base.	Secondary containment required. Bulk storage tanks have double bottoms.
Greece	Leak detection is not required.		
Hungary	Leak detection is required for underground and aboveground tanks.	Level indicator	Below ground tanks must have double walls, others secondary containment
Iceland			
Italy	Yes	Tanks: level indicator, Piping: pressure indicator.	N/A

	5	5a	5b
Latvia	Yes	Level Indicator	Secondary containment is not required. Some tanks have concrete sheltering wall.
Lithuania	Leak detection is required for belowground tanks	Level indicator	Secondary containment is required for single-walled belowground and aboveground tanks: an impervious pan (concrete), which is of the same volume as a tank. Secondary containment is not required for double-walled tanks.
Luxembourg			
Netherlands	Yes	Aboveground tanks in a concrete barrier or dike of special clay. Nothing for below ground tanks. For piping, leak detection is not required, but is controlled by periodic inspections.	secondary containment not required.
Norway	Tanks - yes. Piping – no.	Tank monitoring equipment/controlled drain under tank.	N/A
Poland	Yes	Controlled drain system or level indicator or alternative control systems.	Yes, bulk storage tanks have double bottoms and walls or alternative structure.
Portugal	Yes. For tanks and piping.	Controlled drain system under tanks, Tanks level controlled frequently. Piping - pressure indicator	Retainer wall exits connected to a Deballasting Recover System, water separator. Tanks within concrete walls.
Romania			
Slovakia	Yes	Tanks: Level and Vacuum indicator	Double walls and/or controlled drain system

	5	5a	5b
		Piping: Pressure indicator	
Slovenia			
Spain	Leak detection is required for underground, aboveground tanks and all piping.	Tracer system, automatic tank gauging and environmental network surveillance.	Secondary containment is not required.
Turkey	Yes, both.	Tanks - Level indicator, Piping - Pressure indicator.	Tanks are double layered with inner steel wall and outer concrete shell. Leakage is directed by pipe to a pit.
United Kingdom	Tanks limited, piping not yet	Operational monitoring	Aboveground fuel tanks are required to have an impervious bund which can hold 110% of the volume of the largest tank in the installation. If more than 1 tank, then 110% of the largest tank or 25% of the total tanks, which ever the greater. NATO protected designs include operational monitoring of the space between the steel and the concrete outer protection. Buried tanks are designed to suit the local environmental conditions. Where groundwater is at risk of contamination, double skin tanks are used with level and interstitial monitoring.

	5	5a	5b
United States	Aboveground tanks - Some States require leak detection; belowground tanks - leak detection required. Piping - all except hydrant systems	Aboveground tanks - vapor detection, tracer, telltales. belowground tanks - automatic tank gauging, vapor detection, vacuum, level monitoring, and tracer. Piping - fuel detectors, vapor detectors, tracer, and pressure detectors.	Some states require secondary containment. In such cases, bulk storage tanks are constructed over membrane or have double bottoms. Underground tanks are either double walled or constructed with a membrane.

5. Continued

c. If leaks in storage tanks or piping are monitored, what is the minimum detection capability of the system?

d. When this quantity is reached or exceeded, are you required to report it to an environmental agency?

	5c	5d
Albania		
Belgium	Precision leak tests - 0.76L/H within 24 hrs. with a probability of detection of 95% or better and a probability of a false alarm of 5% or less.	Yes
Bulgaria	A few tens of liters	Reporting is not required
Canada	(1) Precision Leak test - 0.38 L/H with probability of detection 95% or better and probability of false alarm 5% or less. Measurement of water to within 3mm with 95% probability over full range. (2) On Stream Leak Detection - leak rate of 0.78 L/H within 24 hours with same probabilities as (1) above. (3) Interstitial Leak Detection - detects product or water	Releases into the environment must be reported to an environmental agency and to the Department of National Defence. Releases of 30 litres or kilograms of inflammable materials from mobile equipment must also be reported to the Canadian Transport Emergency Centre (CANUTEC) by calling +1 888 CANUTEC (2268832), +1 613 996 6666, or *666 on any cellular network. Releases of 100 litres or more from fixed tanks must also be followed up with a written report to the federal Ministry of Environment and Climate Change. Individual operations and exercises may have more restrictive reporting requirements depending on the province, territory, municipality, or First Nation where they are located; these will be specified in Operation Orders. DND maintains an internal tracking database using SAP for all spills and releases.

	5c	5d
	level change of 12.7mm or less with 100% repeatability, within a 24 hour period.	
Croatia		
Czech Republic	A few tens of liters.	Yes
Denmark	Tanks: approx 50 l/day, Pipes: approx 1000 l/hr.	Yes. Any leak must be reported to the environmental authorities
Estonia		
France	Between 50 and 200 liters per hour according to tank capacity.	No, if there is no loss to the environment. Yes if there is polution of the environment. Environmental control organizations are informed.
Germany	Precision leak-tests; any spill/leak over more than some liters is monitored.	Environmental agency must be informed, if the water polluting materials have penetrated or threatens to penetrate into surface waters, into a sewer system, or into soil.
	5c	**5d**
Greece	Storage tank leaks are monitored visually.	Reporting not required.
Hungary	A few tens of liters.	Any leaks must be reported to the environmental authorities.
Iceland		
Italy	Tanks: approx 50 lt/day, Pipes: 1000 lt/h.	Any leak must be reported to the environmental authorities.
Latvia	A minimum detection quantity is not defined.	Any leak required to report it to the environmental authorities.
Lithuania	A minimum detection quantity is not defined	Any leak that results in pollution of the environment must be reported to environmental protection authorities
Luxembourg		
Netherlands	Static leak detection.	Any leak to the environment must be reported to the authorities.

	5c	5d
	Pipeline put under static pressure. If the pressure decreases to swift, the operators will get an alarm signal. Dynamic leak detection. Flow in – flow out monitoring on pipelines. In case the difference exceeds 1 %, the operator will get an alarm signal.	
Norway	N/A	Any spill/leak over 20 L must be reported to environmental authorities.
Poland	N/A	N/A
Portugal	Tank leaks are detected visually through tracer; are monitored through pressure. In some cases, variation above 50 L can be detected.	Environmental conditions are under Infrastructure control.
Romania		
Slovakia	A few tens of liters.	Yes
Slovenia		
Spain	Precision Leak test - 0.20 L/H with probability of detection 97% and a probability of a false alarm of 3%.	Yes
Turkey	No detail is available. There is no authority.	

	5c	5d
United Kingdom	A minimum detection quantity is not defined. Quiescent period monitoring/operational awareness is relied on to identify leaks. Different systems apply according to the application. STANAG 7011 applies to JFSIs. If monitoring reveals the possibility of a leak, this is investigated and, if proven, is reported.	Any leak that results in pollution to land and / or controlled waters must be reported to the Environment Regulator.
United States	Precision leak tests - .38 L/H, Continuous and Interstitial monitoring - .76 L/H within 24 hrs with a probability of detection of 95% or better and a probability of a false alarm of 5% or less.	Yes

5. Continued

5e. What procedure is used to clean-up the fuel leak? Does the procedure also require the soil to be cleaned?

5f. Do you have national or regional teams to respond to large spills from tanks?

	5e	5f
Albania		
Belgium	Procedure for cleanup depends on the circumstances (land foaming, bio-remediation, vapor extraction, evacuation); Polluted soils must be cleaned	Cleaning by specialized firms under control of the environmental authorities.
Bulgaria	Depends on the circumstances. Soil must be cleaned.	Regional teams and fire brigades.
Canada	Fuel spill containment equipment and fuel spill removal and disposal materials and equipment are used to clean up a spill. Soil is cleaned by land farming, bio-remediation, vapor extraction and/or incineration.	No national or regional teams. Site personnel are trained in the principles of pollution prevention. For serious contamination, cleaning by specialized firms under control of the environmental authorities.
Croatia		
Czech Republic	If leakage of POL and extent of contamination is identified, soil decontamination is performed (extracting the soil and depositing it at suitable place with consequent biodegradation), clearance of underground water by drawing (dumping) the POL away from the water surface or by biodegradation, clearance of surface water by using baffles and absorbents, disposal of escaped POL.	Underground water and soil decontamination is performed by specialised national institutions.
Denmark	Depends on the circumstances. Soil must be cleaned or destroyed.	Off Base - yes. On Base - no.

	5e	5f
Estonia		
France	Pumping, use of absorbing materials, removal of soil, if necessary, cleaning of the soil.	No National team. Site personnel are trained in the principles of pollution prevention. For serious contamination, a specialized firm would be called in to diagnose the situation.
Germany	Pumping, the use of absorbing material, removal and cleaning/deposit of soil if necessary.	No national teams. Fire-brigades mostly are trained/prepared for removing oil pollution.
Greece		No regional spill response.
Hungary	The circumstances of the accident determine the procedure for cleanup (land farming, bio-remediation, vapor extraction).	There are specialized companies under control of the environmental authorities.
Iceland		
Italy	Fuel spill containment equipment and fuel spill removal and disposal materials and equipment are used to clean up a spill. Soil is to be cleaned.	Yes
Latvia	Fuel spill containment equipment and fuel spill removal and disposal equipment are used. Polluted soil must be removed or cleaned.	No national teams. There are specialized and licensed companies for decontamination of soil and groundwater.
Lithuania	All free-floating contaminants must be cleaned by collecting (absorbing, pumping) them from the surface of the soil, water bodies and groundwater. Deeper layers of the contaminated soil might be cleaned or left for natural biodegradation. In all cases a remediation plan must be approved by local environmental protection authorities not later than 7 days after spill response actions and may last no longer than 6 month.	Spills smaller than 200 L are responded by military bases themselves. For spills greater than 200 L the MOD makes a waking contract with a specialized company. No special national or regional teams, but assistance from fire and rescue brigades may be invoked for large spills.
Luxembourg		

	5e	5f
Netherlands	Spill containment and spill removal and disposal equipment are used. Soil and ground water is cleaned by a special industry.	There are third parties contracted for cleaning spills. Personnel is trained for prevention and reporting.
Norway	Absorption. Yes.	Yes, Government Pollution Control Agency - SFT and local government petroleum control.
Poland	Procedure for cleanup depends on the circumstances, generally by absorbing materials. Polluted soils must be cleaned.	Yes-for serious contaminates.
Portugal	The most important products are stored in POL depots within a barrier wall to contain spills. Expert contractors may clean the soil. Absorbents are also used.	There are specialist contractors. Site personnel are trained for pollution prevention.
Romania		
Slovakia	Procedure for cleanup depends on the circumstances (land foaming, bio-remediation, vapor extraction, evacuation). Polluted soils must be cleaned.	No National team. Personnel are trained in the principles of pollution prevention. Cleaning is performed specialized firms under control of the environmental authorities.
Slovenia		
Spain	Procedure for cleanup depends on the circumstances.	No national or regional teams. Fire-brigades mostly are trained/prepared for removing oil pollution.
Turkey	Evacuated by tankers	There are regional teams.

	5e	5f
United Kingdom	Fuel leaks cleaned up using 3 methods: sorbents held at unit level in the areas where petroleum products are handled, specialist oil pollution control equipment held at specialist petroleum/at risk units, and utilizing specialist clean-up contractors who have equipment prepositioned to support the MOD. Land Quality Assessments (LQA) are required on all MOD property. Environmental Regulators will enforce for all contaminated land to be remediated.	National Based Emergency Pollution Response Service Contractor.
United States	Same as Canada.	Same as Canada

6. Is water removed from storage tanks collected in a container or is it drained to the ground?

6a. Does above depend on type fuel? Explain.

6b. If collected in a container, what tests are required to determine method of disposal?

6c. If tests are run, what properties or contaminants are investigated? What are the limits?

6d. How do you dispose of water drained from tanks when not drained to the ground?

	6	6a	6b	6c	6d
Albania					
Belgium	Yes, collected in a container or drums.	No	Water is disposed of as a hazardous waste.	N/A	Removed by licensed contractors
Bulgaria	Water is collected in drain tanks, visually checked and drained to the ground.	No	No	N/A	removed by licensed contractors or drained oil water in the ballast water separator system.
Canada	Water is drained to the ground. Ground water accumulates into a sump. Sump is drained manually. In new installation water goes thru an oil/water Separator	No	N/A	N/A	Removed by licensed contractors
Croatia					

	6	6a	6b	6c	6d
Czech Republic	Yes, it is collected in clarifying basis.	No	Without testing, sludge water is considered hazardous waste.	No limits or characteristics are monitored.	Sludge water is concentrated in sludge basis from where it is forwarded to a specialized firm for disposal.
Denmark	Water is drained to the ground.				
Estonia					
France	Water is collected in an oil/water separator and then is drained to the ground network.	Separators are sized based on rain measure-ments and the surface area of the collecting surface.	The rate of hydrocarbon, resulting of the filtration oil/water, must be less than 5 particles per million.	NF 90-203	After treatment in the oil/water separator, water is released to a waterway. French policy sets maximum hydrocarbon concentrations in the discharge permit.
Germany	Water is collected in drain tanks and disposed of as hazardous waste or separated in an oil/water separator.	No	Oil concentration according to DIN 38409 T 17/18 (if necessary).	Oil; 20mg/l when draining in waste water-sewer.	See answer to 6.
Greece	Water is collected in drain tanks.	No, all fuels.	None	N/A	Oil-water separator.

	6	6a	6b	6c	6d
Hungary	Water is collected in drain tanks.	No	Specialist contractor is responsible for ensuring safe and correct disposal.	N/A	
Iceland					
Italy	Water is collected in drain tanks, is visually checked and disposed of through oil-water separators.				
Latvia	Water is collected in containers	No	No tests. Sludge water is considered hazardous waste.	No test	Removed by specialized and licensed companies.

	6	6a	6b	6c	6d
Lithuania	Water is collected by a drainage system and treated in an oil separator before is discharged to the environment or municipal storm waters systems	No	None	Oil must not exceed 5 mg/l when water is discharged to the environ-ment and 10 mg/l when water is discharged to municipal systems	Oily water and sludge from oil separators are handled as hazardous waste by licensed hazardous waste treatment contractors
Luxembourg					
Netherlands	Water is collected in drain tanks, visually checked, and disposed of through oil-water separators.	No			
Norway	Water is collected into drain tanks, is visually checked and disposed of, to ground, through oil-water separators.	No	None.	N/A	Drums

	6	6a	6b	6c	6d
Poland	Yes, collected in bulk tanks or containers.	No	Water is disposed of as a hazardous waste.	N/A	Removed by licensed contractors or water is run through an oil/water separator to storm water sewer systems.
Portugal	Depends on the Infrastructure, but the most important ones collect the drained water to the oil water separator in the Ballast Water separator System. Small installations collect water in containers that will be sent to separator systems.	No	No tests are carried out.	N/A	Same as 6.
Romania					
Slovakia	Water is collected in drain tanks and disposed of as hazardous waste.	No	Water is disposed of as a hazardous waste.		Removed by licensed contractors.
Slovenia					

	6	6a	6b	6c	6d
Spain	Water is collected in drain tanks, and disposed of through fuel recovery system and oil-water separators. Water hydrocarbon less 5 mg/l. is drained to the ground or it can be disposed of in the sanitary or storm water sewer systems.	No		Oil; 5mg/l in all cases, according to DIN 38409 T 17/18.	See answer to 6.

Turkey	Water is collected in drain tanks. It is separated and the water drained to the ground.				
United Kingdom	Removed by specialist contractors.	Waste water with more than 0.1% oil makes the waste special (hazardous)	Specialist contractor responsible for ensuring safe and correct disposal.	N/A	Specialist contractor

United States	Water is normally collected in drainage tanks or drums for all fuels. In most cases, the water is known to contain more than the acceptable levels of Benzene and FSII so only spot testing is accomplished. Depending on State regulations, water is either run through an oil/water separator to waste or placed in drums and disposed of as a hazardous waste. For these cases, tests are underway to filter the water to remove benzene and FSII so it can be disposed of in the sanitary or storm water sewer systems.				

7. Do you have any restrictions in the service life of underground storage tanks.

a. If so what are the age restrictions?

b. What must be done to the tanks to keep them in service?

	7	7a	7b
Albania			
Belgium	No	N/A	Periodic inspections and eventually repairs; tanks must have the necessary safety equipment to prevent any spillage/leak (leak detection, cathodic protection, overfill protection, removal of water.)
Bulgaria	Yes	35 years	Periodic inspection and maintenance. Restoration and epoxy coating.
Canada	Yes	Tanks must be removed after 25 years.	Tanks must have cathodic protection or be constructed of non-corroding material (FRP), be precision leak tested, and have overfill protection and spill containment installed
Croatia			
Czech Republic	No	It depends on actual technical conditions of a given tank, including its equipment (accessories).	Periodic checks on the technical conditions of basis (tanks) and internal pipings include: checks of shafts, fittings and conditions of surface protection with stress laid on anticorrosive protection, check of the impermeability of tank and associated pipings, measurement of basin walls‘ thickness, materiology check – crack detection, basis (tanks) clearing.

	7	7a	7b
Denmark	NEPS: no. On Base Tanks: yes.	Tanks built before 1970: less than 6000 l – 20 years, more than 6000 l – dependent on condition of the tank. Tanks built after 1970; no.	
Estonia			
France	There are no restrictions on tank life but periodic inspections allows monitoring of condition and accomplishing maintenance.	N/A	Experts realize periodic inspections each 5 years.
Germany	No	Regular cleaning, water is drained regularly.	Periodic inspections by experts (approximately 5 years) required, life expectancy calculation for single walled underground storage tanks.
Greece		30 years.	Restoration and epoxy coating.
Hungary	No	N/A	Cleaning, pressure test and inspection of wall thickness in every 5 years. Every storage tank must have double walls by 2004.
Iceland			
Italy		No	Tanks must be repaired as needed
Latvia	No restrictions.	N/A	Periodic inspections, cleaning, repairs as needed.
Lithuania	No	N/A	Periodic inspections (once every 30 months for a working/filled tank and once every 60 months for an emptied tank) and eventual repairs to eliminate identified defects
Luxembourg			

	7	7a	7b
Netherlands	Yes	Tanks must be removed after 15 years. If evaluation shows them to be OK, they may be reused for another 15 years. Maximum use 30 years. Synthetic tanks 10 years.	Periodic inspection, cleaning, and repairs as needed.
Norway		No	N/A. Note: Tanks are cleaned and maintained according to STANAG 3609
Poland	No	N/A	Periodic inspection by experts (every year and 5 years)
Portugal	Yes	25 years	Inspections allow monitoring of conditions and accomplishing maintenance. Restoration and epoxy coating are used in the initial tanks..
Romania			
Slovakia	There are no restriction on tank life but periodic inspections allows monitoring of condition and accomplishing maintenance.		Periodic inspections by experts required, cleaning, repairs as needed, tanks must have the necessary safety equipment.
Slovenia			
Spain	There are no restrictions on tank life.	N/A	Internal inspection every 4 years.
Turkey		No	There should always be fuel in the tanks, they should be cleaned regularly and water should be drained regularly

	7	7a	7b
United Kingdom	Not at present. Risk assessment/increased safety and structural checks carried out on older tanks (some pre WWII).		Proportionate risk based, on condition maintenance.
United States	No Federal requirement. Some states have restrictions.		Same as Canada except that some type of monthly monitoring is required also.

8. For underground storage tanks, what type of construction materials are required?

a. Are internal coatings required?

b. Are spill and overflow required?

c. Is cathodic protection required?

	8	8a	8b	8c
Albania				
Belgium	Simple or double wall in steel or steel surrounded by reinforced concrete.	No	Yes	Yes
Bulgaria	Tanks are constructed of steel and surrounded by reinforced concrete.		Spill and over flow protection are required.	Cathodic protection is not required.
Canada	Tanks are constructed of Steel or Fiberglass reinforced Plastic (FRP).	Internal coatings required for aviation fuel	Yes	Yes
Croatia				

	8	8a	8b	8c
Czech Republic	Especially steel.	For underground storage basis, internal surface protection is required (coating system, heat coating, cementing), mainly for aviation POL.	Yes	No
Denmark	Steel or steel surrounded by reinforced concrete.	Yes, bottom and walls to approx 1.5m from bottom.	Yes	No
Estonia				
France	Large vertical tanks – steel inner wall with external sealed concrete wall. Horizontal underground tanks are double wall design.	Internal coatings are required.	Spill and overflow devices are required.	Cathodic protection is not required
Germany	Iron	Aviation fuel tanks are coated internally.	Spill and overflow protection are installed on steel tanks.	Cathodic protection is installed on steel tanks
Greece		Internal coatings are required.	Spill and overflow protection is required	Cathodic protection is not required
Hungary	Double wall made of steel.	No coatings are required	Yes	No
Iceland				
Italy	Iron	Yes	Yes	Yes

	8	8a	8b	8c
Latvia	Steel, Iron	No coatings required.	Overflow protection is required.	No cathodic protection required.
Lithuania	Steel	Yes	Yes	Yes
Luxembourg				
Netherlands	Steel or fiberglass reinforced plastic (FRP).	No coatings required	Spill and overflow required.	Cathodic protection is required, if applicable.
Norway	Steel tanks	Aviation fuel tanks require internal coatings.	Spill and overflow protection is required.	Not required by law, but still used on big installations.
Poland	Steel or alternative materials.	Double walls or alternative structures are required.	Spill and overflow protection are required.	No
Portugal		Vertical tanks – steel inner wall with externally sealed concrete wall.	The restored ones are internally epoxy coated up to 1.5 Mts.	Cathodic protection is used on recently built tanks.
Romania	Steel	Yes	Yes	Yes
Slovakia	Steel or steel surrounded by reinforced concrete.	Yes	Yes	No
Slovenia				
Spain	Tanks are steel covered by concrete.	The tanks are coated to above the potential water level.	Overflow protection is required. An audio-visual detection system is used	

	8	8a	8b	8c
Turkey	GRP or steel. For PETROL storage, steel tanks shall be constructed iaw BS-EN-12285-1 double wall	Tanks must be coated	Yes	No, but if steel tanks are buried, it may be necessary to apply cathodic protection depending on the local corrosion conditions.
United Kingdom	Steel, Fiberglass Reinforced Plastic and, Fiberglass covered steel tanks are used.	Most tanks including all aviation fuel tanks are coated internally	Spill and overflow protection is installed on steel tanks.	Cathodic protection is installed on steel tanks.
United States	Steel, Fiberglass Reinforced Plastic and, Fiberglass covered steel tanks are used.	Most tanks including all aviation fuel tanks are coated internally	Spill and overflow protection is installed on steel tanks.	Cathodic protection is installed on steel tanks.

9. Do you have any special requirements for materials used to construct or line diked areas?

Albania	
Belgium	Impermeable barriers are necessary.
Bulgaria	No
Canada	Impermeable barriers must consist of the following materials: a. Impervious liners; b. concrete barrier; c. clay barrier; or d. steel barrier.
Croatia	
Czech Republic	If the piping is placed in sewerage net, the piping must be leakproof and waterproof.
Denmark	No
Estonia	
France	Areas where hydrocarbons are handled or stored must be waterproof using impermeable barriers or concrete surfaces.
Germany	Highly regulated by individual environmental agencies. Impermeable barriers are always necessary.
Greece	No
Hungary	Yes, they must be waterproof using impermeable barriers or concrete surfaces.
Iceland	
Italy	No
Latvia	Impermeable barriers are required according to national legislation.
Lithuania	Impermeable barriers or concrete surfaces
Luxembourg	
Netherlands	Impermeable barriers of concrete or a special clay barrier.
Norway	No
Poland	Regulated by Polish rules and individual environmental agencies.
Portugal	Impermeable barriers are always necessary.
Romania	
Slovakia	Yes, they must be waterproof using impermeable barriers or concrete surfaces.
Slovenia	

Spain	Yes, Impermeable Concrete.
Turkey	No
United Kingdom	Yes, Impermeable bunds are required.
United States	Highly regulated by individual States. Impermeable barriers can be impervious clay, clay with a membrane liner, concrete with a membrane liner, concrete with an impervious coating.

10. Are vapor emission control devices (excluding pressure vents) required on tanks?

a. If so, what fuels?

b. What type of system is used?

	10	10a	10b
Albania			
Belgium	Yes, in the near future.	Fuels with vapor pressure above 27.5kPa.	Study is ongoing.
Bulgaria	Yes	Gasoline and jet fuels tanks	vapor change systems.
Canada	No		
Croatia			
Czech Republic	Yes, according to actual legislation it is necessary to equip the basis (tanks) with hydrocarbon vapor recuperation systems	For aviation oil and petrol, gasoline	In POL warehouses, recuperation systems are installed in order to reduce vapor emission
Denmark	No for NEPS. In general: yes from 1994 according to new EEC requirements.	Mogas (from 1994).	Nothing required at present.
Estonia			
France	Yes	for gas storage tanks equal to or greater than 1,500 m^3.	For aboveground tanks, a floating roof or pan is used to limit vapor loss.
Germany	Yes	For Petrol.	Vapor change systems, vapor recovery systems.
Greece	No		
Hungary	Yes	For petrol	Vapor change system and vapor recovery system must be built in all storage tanks by 2003.
Iceland			

	10	10a	10b
Italy	No		
Latvia	No	No	No
Lithuania	Yes. For filling-stations with annual turnover over 100 m^3 of fuel in urban areas and over 500 m^3 of fuel in rural areas	Petrol	Vapor recovery systems for collection and delivery of vapor to tankers
Luxembourg			
Netherlands	No		
Norway	No		
Poland	No	All fuels	Vapor change or vapor recovery systems.
Portugal	Pressure air ventilation valves are used in the jet fuel tanks.		
Romania			
Slovakia	Yes	For petrol.	Vapor change, Vapor recovery system.
Slovenia			
Spain	No		

	10	10a	10b
Turkey	Yes, for economical and environmental reasons.	On JP-4, Mogas, and Diesel fuels	On main fuel storage, low and high pressure air ventilation valves are used in $100m^3$ mixture and $10m^3$ drainage tanks to decrease the amount of vaporization which insures limited control. Seven and four cubic meter drainage tanks have no control system and their ventilation is directly open to atmosphere. However, since the amount of vaporization is small, it doesn't cause significant environmental problems. Using tanks with floating ceiling is the most common solution to prevent the vaporization leakage.
United Kingdom	Vapour emission controls apply to gasoline tanks when a minimum specified throughput volume is exceeded. ($100m^3$ Per Annum) The approach is vapor recovery to the delivery tanker.		
United States	Yes	These devices are required on Mogas and JP-4 tanks without floating pans such as underground operating tanks.	A variety of systems are used such as: absorption units which capture vapors, units which burn the vapors and units which refrigerate and condense the vapors.

11. Are vapor emission controls required for other types of equipment such as refuelers or for fillstands? Please describe.

Albania	
Belgium	Yes. The same as item 10.
Bulgaria	No
Canada	No
Croatia	
Czech Republic	Yes, the latest types of automobile tanks – tankers for aviation and ground equipment have the vapour recuperation system.
Denmark	Not at present, but from 1994.
Estonia	
France	For gas station deliveries, some control of vapor emissions is required when deliveries are more than 100m^3/yr.
Germany	Yes, vacuum vapor recovery systems on refuelers for petrol.
Greece	No
Hungary	Yes, vacuum vapor recovery systems on refuelers for petrol.
Iceland	
Italy	No
Latvia	No
Lithuania	Yes. Petrol vapor recovery systems for tankers to deliver vapor to vapor recovery units of terminals. Petrol vapor recovery systems to collect and deliver (through recirculation) vapor, which is emitted during filling of vehicles, to tanks.
Luxembourg	
Netherlands	No
Norway	No
Poland	No
Portugal	No
Romania	

Slovakia	Yes. For fillstands and bulk fuel carrying vehicles for petrol.
Slovenia	
Spain	Yes for fill stands are required. The normal devices are condensating system.
Turkey	No, but deemed necessary.
United Kingdom	Yes Type 1B vapour recovery is required to be fittd to tankers. Affects all PETROL issue points over 100m^3 Per Annum. Type 2 vapour recovery to be fitted to all PETROL nozzles and activates when PETROL is required.
United States	Yes, vacuum vapor recovery systems on JP-4 refuelers. Some fillstand systems require sophisticated equipment similar to that discussed in question 10.

12. Do you have any special requirements or restrictions on the use of fuel additives?

a. What additives are prohibited or restricted to a minimum level?

b. What additives are required?

	12	12a	12b
Albania			
Belgium	Use of fuel additives according to STANAG documents.	None	Corrosion Inhibitor, Anti-static additive, fuel system icing inhibitor, Anti-oxidant, Metal deactivation. Others may be used according to Specifications and/or STANAG.
Bulgaria	Yes	Anti-corrosion, anti-static, icing inhibitor	
Canada	There are no restrictions or prohibitions on additives. Additives used are fuel system icing inhibitor, static dissipater and corrosion inhibitor		
Croatia			
Czech Republic	None. According to STANAG.	Lead limitation in gasoline and sulfur limitation in diesel and gasoline accordance with laws.	Anticorrosive, conductance, lubricating, antistatic, FSII, antioxidation, metals deactivators – according to duality specifications or STANAG. According to the requirements additives for improvement of low temperature filtering, detergent characteristics or cetane number. For protecting of catalysts of exhausted gases, it is forbidden to add to the leadless gasoline car F-67 any additives containing phosphorus.

	12	12a	12b
Denmark	No	None	Corrosion Inhibitor, Anti static Additive, Fuel System Icing Inhibitor. Others may be used according to Specifications
Estonia			
France	Additives in Aircraft fuel fall into three groups: Icing inhibitor, corrosion inhibitor, and static dissipater. Some land fuels have additives (example: S 1750 in diesel fuel). All additives are stored and used in accordance with national laws and policies relating to toxicity, explosiveness, and transportation.		
Germany	Additives in Aircraft fuel fall into three groups: Icing inhibitor, corrosion inhibitor, and static dissipater. Some land fuels have additives (example: S 1750 in diesel fuel). All additives are stored and used in accordance with national laws and policies relating to toxicity, explosiveness, and transportation.		
Greece		Lead in Mogas should not exceed 0.4gr/l	
Hungary	Yes, quantitative ratio.		Anti-corrosion (HITEC 580), anti-static (STADIS 450), Icing inhibitor (Kerofluid AL-31)
Iceland			

	12	12a	12b
Italy		None	TEL for F-18; Anti-icing and corrosion inhibitor for F-34
Latvia	No restrictions or requirements	None	Additives according to legislation
Lithuania			
Luxembourg			
Netherlands	No	None	FSII (0.10-0.15%), SDA (3-5 g/m^3), CI/LIA (14-22.5 g/m^3)
Norway	No	None	Anti-static (STADIS 450), Anti-corrosion (Nalco 5403), Anti-ice (AL-41 is replacing AL-31. AL-41 has a higher flash point.) (planning on AL-41)
Poland	No	None	No special regulations
Portugal	There are no restrictions or prohibitions.	None	Corrosion inhibitor, anti-static addition, fuel system icing inhibitor, Others may be used according to specifications.
Romania			
Slovakia	Use of fuel additives according to STANAG documents.		Corrosion Inhibitor, Anti-static Additive, Fuel System Icing Inhibitor, Anti-oxidant, Metal deactivation. Others may be used according to Specifications and/or STANAG.
Slovenia			
Spain	Use of fuel additives according to STANAG	None	Those required by the STANAG.
Turkey		Defined in NATO requirements	Anti- oxidizing, anti corrosion, anti-icing agents etc.

	12	12a	12b
United Kingdom	None	None	FSII (A1-41), Corrosion inhibitor/lubricity improving additive to AL61. S 1750 in F34/35 diesel fuels to improve the cetane content.
United States		None	Additives required are FSII (0.07-0.15%), Corrosion/lubricity improver (0.015g/L), Static dissipater 2 ppm. Optional additives are anti-oxidant (0.2g/L), metal deactivator (0.006g/L), and leak detector (1ppm).

13. How do you dispose of used coalescer of filter elements that result from element changes?

Albania	
Belgium	Disposed of as a solid waste.
Bulgaria	As solid waste.
Canada	By burning and disposed of as hazardous waste.
Croatia	
Czech Republic	Same like in case of hazardous waste, they must be ecologically disposed.
Denmark	By burning.
Estonia	
France	Used elements are considered as hazardous waste.
Germany	Disposed of as hazardous waste.
Greece	By burning.
Hungary	It is considered a hazardous waste.
Iceland	
Italy	As solid waste.
Latvia	Disposed of as hazardous waste by licensed companies.
Lithuania	Disposed of as hazardous waste
Luxembourg	
Netherlands	Disposed of as hazardous waste through specialist waste contractors.
Norway	As solid hazardous waste through specialist waste contractors.
Poland	Disposed of as solid hazardous waste.
Portugal	As solid Waste.
Romania	
Slovakia	As solid hazardous waste.
Slovenia	
Spain	Disposal as hazardous waste by a specialist on waste disposal by certified contractors.
Turkey	As solid waste.

United Kingdom	Disposed of as hazardous waste through specialist waste contractors.
United States	Because of benzene content is usually disposed of as hazardous waste. Some States allow elements to be air dried and disposed of as solid waste.

14. Please describe any unique design or practices (not covered in this questionnaire) that you may use for environmental purposes.

Albania	
Belgium	N/A
Bulgaria	All new and restoration of current installation will be built in accordance with new criteria and standards for NATO POL facilities.
Canada	All new underground fuel storage tank installations must be double wall construction with interstitial space leak detection for both the storage tank and the piping, line leak detection on pressure piping, overfill protection devices, spill containment device around fill tube and leak detection for dispenser sump.
Croatia	
Czech Republic	Within the scope of building/modernizing the POL infrastructure in determined storage facilities and at airport bases which are earmarked as facilities for NATO Response Forces, all the equipment (installations), as to its design, must meet the requirements of STANAG 3784, Directives – AC/4-M(98)001, 6160 SHLOFA-059/82 and following NATO documents as well as current laws and standard of the Czech Republic.
Denmark	NEPS installations are constructed according to SHAPE criteria.
Estonia	
France	All new underground fuel storage tank installations must be double wall construction with interstitial space leak detection for both the storage tank and the piping, line leak detection on pressure piping, overfill protection devices, spill containment device around fill tube and leak detection for dispenser sump.
Germany	Same standards as Canada. More over, use of fuel with low sulfur content to avoid SO_2 and soot in the emissions of machines, tanks, and vehicles. Future sulfur limit will be 30 ppm.
Greece	
Hungary	For the new storage tanks, same as Canada and Germany.
Iceland	
Italy	All new underground fuel storage tank installations must be double wall construction with interstitial space leak detection for both the storage tank and the piping, line leak detection on pressure piping, overfill protection devices, spill containment device around fill tube and leak detection for dispenser sump.

Latvia	New fuel storage tanks will be built in accordance with environmental requirements of national legislations and NATO documents.
Lithuania	N/A
Luxembourg	
Netherlands	Until now the NEPS installations are constructed according to SHAPE criteria.
Norway	
Poland	N/A
Portugal	All new POL installations will be built in accordance with new technical criteria and standards for NATO POL facilities.
Romania	
Slovakia	All new underground fuel storage tank installations must be double wall construction with interstitial space leak detection for both the storage tank and the piping, line leak detection on pressure piping, overfill protection devices.
Slovenia	
Spain	Same as Canada.
Turkey	
United Kingdom	Pressurized hydrant ring main systems are provided with quiescent period monitoring. The application of double skin tanks is similar to the Canadian response, noting that the application of double skin tanks is governed by ground water vulnerability and other local environmental risks.
United States	

15. Mobility Equipment. What precautions do you take to prevent environmental damage?

a. Developing equipment

b. Setting up equipment

c. Operating equipment

d. Training operators/maintainers of the equipment.

e. Training deployment Commanders and other responsible leaders.

Albania	a	
	b	
	c	
	d	
	e	
Belgium	a	Nihil
	b	Always place bladder tanks in an excavated area protected by an impermeable fabric
	c	Provide the users of mobile equipment with a certain amount of material that could absorb fuel (and repel water) in order to cope with small leakage that could happen at connecting points.
	d	NCOs and privates in charge of mobile equipment receive a lot of theoretical information about how to cope with leakage. The users of the diverse materials follow a specific ADR formation. During exercises, they regularly react accordingly when spillage occurs.
	e	

Bulgaria	a	
	b	
	c	
	d	
	e	When deploying mobility equipment, rules and principles of pollution prevention and environmental protection must be enforced. Commanders and personnel are training to prevent ground and water pollution, and fire prevention during the storage, transportation and field refueling.
Canada		When deploying the Fuel Storage and Distribution System(FSDS) all local environmental laws or Canadian environmental laws whichever are most stringent are enforced.
	a	Commercially available equipment is adapted to military requirements as much as possible, taking in concedaration enviromental protection.
	b	FSDS is set up in containment berms, where possible, all POL distribution is performed on a concealed surface, protected by oil separators.
	c	Universal and special sorbants are instantly available. Local HAZMAT team is identified and SOPs are written
	d	Before deploying operators/maintainers are trained in the safe operation of the equipment and a key area of training revolves around the effect on the environment.
	e	Commanders and reponsible leaders are fully trained for environmental protection and are responsible to develop local SOP
Croatia	a	
	b	
	c	
	d	
	e	

Czech Republic		For mobile POL equipment, similar safety measures for environmental protection as in case of stationary POL equipment apply. When deploying and operating this equipment in field conditions, training regarding environmental protection is conducted for commanders of the units being deployed and consequently also mobile equipment's crew training for preventing soil contamination through oil products. The equipment being deployed must be in good technical condition and must not cause fuel leakage. Intercepting basis, plastic foils and absorption means for interception of any dropping, sludge fuel, used filtration materials (barrels, plastic bags etc.).
Denmark	a	
	b	
	c	
	d	
	e	
Estonia	a	
	b	
	c	
	d	
	e	
France	a	When deploying mobility equipment, rules and principles of pollution prevention and environmental protection must be enforced. These include: training personnel to prevent chronic ground and water pollution and fire prevention; developing mobility equipment, particularly vehicles for prevention of pollution; using impervious materials; collection and treatment of drain water from filter separators and dikes.
	b	
	c	
	d	
	e	

Germany	a	Specific development of material does not take place. Commercially available equipment is adapted to military requirements.
	b	(1) Currently fielded is a Disposable Equipment Set for dangerous goods and waste material. This equipment offers the capability to dispose of any dangerous matter during field maintenance operations and is stored on a trailer. (2) Currently under procurement is a containerized storage, distribution and transportation system for POL-products also for field maintenance purposes. The container is certified for dangerous goods storage and transportation by road, rail, and seagoing vessel.
	c	Where possible, all POL distribution is performed on a concealed surface, protected by oil separators. Universal and special sorbants are on instant availability. Spill clean-up equipment stored on a trailer is assigned to all fuel handling units (support troops and pipeline engineers). For naval POL activities oil booms and different skimmers are in GE army and navy stocks.
	d	Operators are steadily trained within the units, commanders have to attend updates in environmental protection matters every one or two years.
	e	
Greece	a	
	b	
	c	
	d	
	e	
Hungary	a	
	b	
	c	
	d	
	e	

Iceland	a	
	b	
	c	
	d	
	e	
Italy	a	When deploying mobility equipment, rules and principles of pollution prevention and environmental protection must be enforced. These include: training personnel to prevent chronic ground and water pollution and fire prevention; developing mobility equipment, particularly vehicles for prevention of pollution; using impervious materials; collection and treatment of drain water from filter separators and dikes.
	b	Always place bladder tanks in an excavated area protected by an impermeable fabric
	c	Operating procedures take into account the requirement for all equipment to be operated safely and to eliminate or minimize the risk of environmental damage
	d	Operators are trained within the units, commanders attend updates in environmental protection matters before deployment
	e	Environmental awareness and legal responsibilities are parts of the training given to deployment commanders
Latvia	a	Commercially available equipment is adapted
	b	Before setting up equipment, routine checks are made of the equipment serviceability.
	c	Operating procedures take into account the requirement for all equipment to be operated safely and to eliminate or minimize the risk of environmental damage.
	d	Environmental issues are included in the training of operators.
	e	Environmental awareness and legal responsibilities are parts of the training given to deployment commanders.

Lithuania	a	Commercially available equipment is used
	b	Secondary containment using impermeable berms
	c	Absorbents, drip pans
	d	Before deployment incoming personnel is trained in safe operation of the equipment and spill response
	e	Commanders must complete Commanders‘ Environmental Protection Course
Luxembourg	a	
	b	
	c	
	d	
	e	
Netherlands	a	During equipment deployment, care is taken to minimize the environmental risks associated with the use of the equipment, and to develop appropriate procedures for its use in service.
	b	Before setting up equipment, routine checks are made of the equipment serviceability and the area in which it is to be employed to identify potential risks.
	c	Operating procedures take into account the requirement for all equipment to be operated safely and to eliminate or minimize the risk of environmental damage.
	d	Operators are fully trained in the safe operation of the equipment and a key area of training revolves around the effect on the environment. Training is also given in the use of pollution control equipment.
	e	Environmental awareness and legal responsibilities are fundamental parts of the training given to deployment commanders and other responsible leaders. In addition, the relevant specialists are always on hand to advise, where necessary.

Norway	a	N/A
	b	N/A
	c	For land spills Norwegian air stations have absorbents, blow-up balloons to block-off contaminated piping, and explosion-proof pumps. In addition, equipment for collection of sea/water spillage is available.
	d	Environmental issues are included in the training of operators/maintainers and deployment commanders. In addition, operating courses are held for all involved personnel.
	e	Environmental issues are included in the training of operators/maintainers and deployment commanders. In addition, operating courses are held for all involved personnel.
Poland	a	When deploying mobility equipment, rules of pollution prevention and environmental protection must be enforced. Commanders and personnel are training to prevent ground and water pollution and fire prevention.
	b	
	c	
	d	
	e	
Portugal	a	Personnel training and handling, transportation and storage regulation. Increased periodic inspections. Catwalk and pier piping leakage is reported to PO Navy maritime authorities. To prevent any environmental damage in Tagus River, specialized brigades and floating barriers would be provided by Lisbon Harbour pollution authorities. Two vehicles are equipped with water, pumps, hoses, absorbents and dispersants. 5a. Yes.
	b	Yes
	c	Yes
	d	Yes
	e	Yes

Romania	a	
	b	
	c	
	d	
	e	
Slovakia	a	When deploying mobility equipment rules and principles of pollution prevention and environmental protection must be enforced. Commanders and personnel are training to prevent ground and water pollution, and fire prevention.
	b	
	c	
	d	
	e	
Slovenia	a	
	b	
	c	
	d	
	e	
Spain	a	During equipment deployment, care is taken to minimize the environmental risk related to use of equipment.
	b	
	c	
	d	
	e	

Turkey	a	
	b	
	c	
	d	
	e	
United Kingdom	a	During equipment development, care is taken to minimize the environmental risks associated with the use of the equipment, and to develop appropriate procedures for its use in service by use of environmental safety cases
	b	Before setting up equipment, routine checks are made of the equipment serviceability and the area in which it is to be employed to identify potential risks.
	c	Operating procedures take into account the requirement for all equipment to be operated safely and to eliminate or minimize the risk of environmental damage.
	d	Operators are fully trained in the safe operation of the equipment and a key area of training revolves around the effect on the environment. Training is also given in the use of pollution control equipment/ pollution control sorbent.
	e	Environmental awareness and legal responsibilities are fundamental parts of the training given to deployment commanders and other responsible leaders. In addition, the relevant specialists are always on hand to advise, where necessary.

United States	a	During equipment deployment, care is taken to minimize the environmental risks associated with the use of the equipment, and to develop appropriate procedures for its use in service.
	b	Equipment is located to minimize environmental damage should a leak occur. Impervious sheeting, drip pans, dike liners recovery bladders, etc. are provided as applicable.
	c	Operators must use the environmental equipment provided and maintain vigilance in anticipating environmental problems.
	d	The Services use training sites, audio/visual resources, technical orders, etc. to cover environmentally safe operation and maintenance of mobility equipment.
	e	Deploying personnel are mandated to follow local environmental laws or US laws whichever are most stringent.

16. Leak Detection Technologies – Over the past several years there have been technological advancements on detecting and locating leaks in POL systems. These systems are used continuously, daily, annually, or even more infrequently. Address the questions below in relation to the frequency of use.

a. What recently developed technologies used to detect leakage in above and underground tanks and piping are you aware of?

b. Are you using these newer technologies? If so, which technologies work well? Not so well?

c. Do you need information on recently developed technologies used to detect leakage in above and underground tanks and piping?

	16a	16.b	16c
Albania			
Belgium			
Bulgaria			
Canada			
Croatia			
Czech Republic	We use only leak detection technologies stated in par. 5	No	Yes
Denmark			
Estonia			
France	Hydrocarbons detection wire, leak detector wire, leak detection in interstitial space for double wall construction tanks.	Only use for few tanks. No feedback available.	Yes, France needs more information on recently developed technologies.
Germany	No technical changes according to Number 5	No	Yes
Greece			
Hungary			

	16a	16.b	16c
Iceland			
Italy	No technical changes according to Number 5	No	Yes
Latvia	None	No	
Lithuania			Yes
Luxembourg			
Netherlands			
Norway			
Poland			
Portugal			
Romania			
Slovakia	No	No	Yes
Slovenia			
Spain			
Turkey			
United Kingdom	DFG are aware of the 5 classes of leak detection systems detailed in EN 13160-1 to 13160-7.	Within MOD the main method of identifying leaks is through regular periodic stocktaking and inventory accounting of the product. Some MOD sites do have leak detection systems.	Yes, DFG would be interested in obtaining relevant information.
United States			

17. Secondary Containment of POL facilities

a. Do your environmental regulations require secondary containment for buried piping, such as double wall or trenching?

b. Do you require use of double wall tanks?

c. Do you use aboveground vertical cylindrical field constructed tanks? If so do you line your above ground tank containment basins with synthetic liners? Clay? Concrete? Combination? Nothing?

d. Does your environmental regulations require secondary containment for:

i) Truck fill stands
ii) Pantograph areas
iii) Truck parking areas
iv) Pump houses

	17a	17b	17c	17d
Albania				
Belgium				
Bulgaria				
Canada	Yes double wall for piping less the 75 mm	Yes: underground tanks	Yes: synthetic liners and Concrete	i. Yes ii.N/A iii.Yes: **Interior** oil interceptor; **Exterior** storm water oil/water separator iv. Yes: drainage tank
Croatia				

	17a	17b	17c	17d
Czech Republic	The piping have to be placed in sewerage net and have to be leakproof and waterproof	For new stationary POL equipment are required double-wall basis	Vertical cylindrical field constructed tank are not used	For stationary POL equipment is required leakproof floor. For track fill stands, pantograph areas as well as for fuel truck parking areas. Appropriate leak is led to storage reservoir.
Denmark				
Estonia				
France	Yes, double wall or equivalent structure	Yes, but only for buried tanks.	Yes – Synthetic liners, concrete, and combination.	i. Yes ii. N/A iii. Yes iv. Yes: Exterior storm water oi/water separator and drainage tank
Germany	Yes, but no trenching	Yes, but only for buried tanks	No	i. Yes ii. Yes iii. Yes iv. Yes i.,ii.,iv.: there are legal initiatives to reduce these requirements with simultaneous increase of the technical safety standards.
Greece				
Hungary				
Iceland				

	17a	17b	17c	17d
Italy	Only when crossing protected areas or major rivers.	Yes	No	No
Latvia	No.	No.	N/A	i. No. ii. No. iii. No. iv. No.
Lithuania	No	Both types of tanks are allowed: single-walled with an impervious pan (concrete) or double-walled	N/A	Secondary containment measures (impermeable barriers, concrete surfaces, emergency closure bolts in rain-water drainage systems) in filling-stations must ensure that fuels, which are spilled during storage or loading operations, will not escape from the site
Luxembourg				
Netherlands				
Norway				
Poland				
Portugal				
Romania				
Slovakia	Yes	Yes, only for buried tanks.	No	i. Yes ii. Yes iii. Yes iv. Yes
Slovenia				

	17a	17b	17c	17d
Spain				
Turkey				
United Kingdom	No. There is no known environmental regulation for secondary containment for buried piping. Oil Storage Regulations (England) 2001, Water Environment (Oil Storage) (Scotland) Regulations 2006, states underground pipes are not recommended, but if there is no alternative the pipes are to be designed to set standards, and underground pipes must be protected from physical damage and have	Anecdotal evidence suggests that most MOD above ground storage tanks are of double skinned construction.	No. All MOD ***field*** constructed tanks are manufactured from a rubber material, and are therefore sited horizontally. All field-constructed tanks are positioned in an earth bund and covered with a synthetic POL proof impermeable fabric.	17d (i.ii. iii) Fill truck stands, Pantograph areas, Truck parking areas: Secondary containment No. However the Water Resources Act 1991 Sect 83, 161, & 161A; Schedule 22 of the Environment Act; the Water Industry Act 1991; and Anti Pollution Regulations 1999 (SI/99/1006) state that spillage must be contained on site and cleaned up. The spilled liquid must not be allowed to escape from the site because of risk pollution. Discharge consents required for vehicle parks in excess of 2000m^2 . Surface water drained from such areas will pass to the surface water via an interceptor. The Waste Regulation Authority recommends the provision of fuel cut off valves and raised kerb surrounds to isolate drainage.

	17a	17b	17c	17d
	adequate facilities for detecting leaks			JSP 317 Part 3 Ch 9 recommends that a bowser park should have a sloped run off to a drain to an interceptor. The interceptor should be of sufficient size to contain the POL from the largest bowser parked. <u>17d (iv.) Pump houses: secondary containment.</u> No. However as above, spillage must be contained on site and cleaned up. The spilled liquid must not be allowed to escape from the site because of risk of pollution.
United States				

18. Fuel Piers

a. Do your environmental regulations require surge pressure control systems (relief) on pipelines located on fuel piers?

b. Do you require secondary containment under all piping, risers, valves, pumps, and tanks on fuel piers?

c. Do you require the pipelines on your piers to be stripped of product when not in use?

	18a	18b	18c
Albania			
Belgium			
Bulgaria			
Canada			
Croatia			
Czech Republic	We don't use POL equipment on fuel piers.		
Denmark			
Estonia			
France	N/A	N/A	N/A
Germany	Yes, if necessary for technical reasons	No	No
Greece			
Hungary			
Iceland			
Italy	Yes, if necessary for technical reasons	No	Yes
Latvia	Yes	Yes	Yes

	18a	18b	18c
Lithuania			
Luxembourg			
Netherlands			
Norway			
Poland			
Portugal			
Romania			
Slovakia	N/A	N/A	N/A
Slovenia			
Spain			
Turkey			
United Kingdom	JSP 317 Art 3.10.44 states “dependent on the location of the control point for transfer operations a manual or remotely actuated shutdown valve is required to reduce environmental damage in the event of tanker interface equipment failure	No	No
United States			

AFLP-7102(A)(2)