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Working Party on the Transport
of Dangerous Goods
(Sixty-seventh session,
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**REPORT OF THE WORKING PARTY ON ITS SIXTY-SEVENTH SESSION
(8-12 November 1999)**

Restructuring of ADR

Part 1 -General provisions

The secretariat reproduces below the text of Part 1 of the restructured ADR as adopted by the Working Party at its sixty-seventh session, as editorially revised by the ad hoc drafting group set up but the RID/ADR/ADN Joint Meeting at its session held in Bonn from 15 to 19 November 1999.

PART 1

GENERAL PROVISIONS

CHAPTER 1.1

SCOPE AND APPLICABILITY

1.1.1 Structure

Annexes A and B of ADR are grouped into nine parts. Annex A consists of Parts 1 to 7, and Annex B of Parts 8 and 9. Each part is subdivided into chapters and each chapter into sections and sub-sections (see table of contents). Within each part the number of the part is included with the numbers of the chapters, sections and sub-sections, for example Part 4, Chapter 2, Section 1 is numbered "4.2.1".

1.1.2 Scope

1.1.2.1 For the purposes of Article 2 of ADR, this Annex specifies:

- (a) dangerous goods which are barred from international carriage;
- (b) dangerous goods which are authorized for international carriage and the conditions attaching to them (including exemptions) particularly with regard to:
 - classification of goods, including classification criteria and relevant test methods;
 - use of packagings (including mixed packing);
 - use of tanks (including filling);
 - consignment procedures (including marking and labelling of packages and placarding of means of transport as well as documentation and information required);
 - provisions concerning the construction, testing and approval of packagings and tanks;
 - use of means of transport (including loading, mixed loading and unloading).

1.1.2.2 This Annex contains certain provisions which, according to Article 2 of ADR, pertain to Annex B or to both Annexes A and B, as follows:

- 1.1.1 Structure
- 1.1.2.3 (Scope of Annex B)
- 1.1.2.4
- 1.1.3.6 Exemptions related to quantities carried per transport unit
- 1.1.4.1 (Applicability of other regulations) General
- 1.1.4.5 Carriage other than by road
- 1.6.6 (Transitional measures for) Class 7
- Chapter 3.1
- Chapter 3.2 columns 1, 2, 14, 15 and 19 (application of provisions of Parts 8 and 9 to individual substances or articles).

1.1.2.3 For the purposes of Article 2 of ADR, Annex B of ADR specifies the conditions regarding the construction, equipment and operation of vehicles carrying dangerous goods authorized for transport:

- requirements for vehicle crews, equipment, operation and documentation;
- requirements concerning the construction and approval of vehicles.

1.1.2.4 In Article 1(c) of ADR, the word “vehicles” need not refer to one and the same vehicle. An international transport operation may be performed by several different vehicles provided that the operation takes place on the territory of at least two Contracting Parties to ADR between the consignor and the consignee indicated in the transport document.

1.1.3 Exemptions

1.1.3.1 Exemptions related to the nature of the transport operation

The provisions laid down in ADR do not apply to:

- (a) the carriage of dangerous goods by private individuals where the goods in question are packaged for retail sale and are intended for their personal or domestic use or for leisure or sporting activities;
- (b) the carriage of machinery or equipment not specified in ADR and which happen to contain dangerous goods in their internal or operational equipment;
- (c) the carriage undertaken by enterprises which is ancillary to their main activity, such as deliveries to building or civil engineering sites, or in relation to surveying, repairs and maintenance, in quantities of not more than 450 litres per packaging and within the maximum quantities specified in 1.1.3.6.
Carriage undertaken by such enterprises for their supply or external or internal distribution does not fall within the scope of this exemption;
- (d) the carriage undertaken by, or under the supervision of, the emergency services, in particular by breakdown vehicles carrying vehicles which have been involved in accidents or have broken down and contain dangerous goods;
- (e) emergency transport intended to save human lives or protect the environment provided that all measures are taken to ensure that such transport is carried out in complete safety.

NOTE: For radioactive material see 2.2.7.1.2.

1.1.3.2 Exemptions related to the carriage of gases

The provisions laid down in ADR do not apply to the transport of:

- (a) gases contained in the tanks of a vehicle, performing a transport operation and destined for its propulsion or for the operation of any of its equipment (e.g. refrigerating equipment);
- (b) gases contained in the fuel tanks of vehicles transported. The fuel cock between gas tank and engine shall be closed and the electric contact open;
- (c) gases of Groups A and O (according to 2.2.2.1), if the pressure of the gas in the receptacle or tank at a temperature of 15/ °C does not exceed 200 kPa (2 bar) and if the gas is completely in the gaseous state during carriage. This includes every kind of receptacle or tank, e.g. also parts of machinery and apparatus;
- (d) gases contained in the equipment used for the operation of the vehicle (e.g. fire extinguishers or inflated pneumatic tyres, even as spare parts or as a load);
- (e) gases contained in the special equipment of vehicles and necessary for the operation of this special equipment during transport (cooling systems, fish-tanks, heaters, etc.) as well

as spare receptacles for such equipment or uncleaned empty exchange receptacles, transported in the same transport unit;

- (f) uncleaned empty fixed pressure tanks which are carried on condition that they are hermetically closed; and
- (g) gases contained in foodstuffs or beverages.

1.1.3.3 Exemptions related to the carriage of liquid fuels

The provisions laid down in ADR do not apply to the transport of:

- (a) fuel contained in the tanks of a vehicle performing a transport operation and destined for its propulsion or for the operation of any of its equipment.
The fuel may be carried in fixed fuel tanks, directly connected to the vehicle's engine and/or auxiliary equipment.
The total capacity of the fixed tanks shall not exceed 1500 litres per transport unit and the capacity of a tank fitted to a trailer shall not exceed 500 litres. A maximum of 60 litres per transport unit may be carried in portable fuel containers. These restrictions shall not apply to vehicles operated by the emergency services;
- (b) fuel contained in the tanks of vehicles or of other means of conveyance (such as boats) which are carried as a load, where it is destined for their propulsion or the operation of any of their equipment. Any fuel cocks between the engine or equipment and the fuel tank shall be closed during carriage unless it is essential for the equipment to remain operational. Where appropriate, the vehicles or other means of conveyance shall be loaded upright and secured against falling.

1.1.3.4 Exemptions related to special provisions or to dangerous goods packed in limited quantities

NOTE: For radioactive material see 2.2.7.1.2.

1.1.3.4.1 Certain special provisions of Chapter 3.3 exempt partially or totally the transport of specific dangerous goods from the requirements of ADR. The exemption applies when the special provision is referred to in column [6] of Table A of Chapter 3.2 against the dangerous goods entry concerned.

1.1.3.4.2 Certain dangerous goods packed in limited quantities may be subject to exemptions provided that the conditions of Chapter 3.4 are met.

1.1.3.5 Exemptions related to empty uncleaned packagings

Empty uncleaned packagings (including IBCs and large packagings) which have contained substances of Classes 2, 3, 4.1, 5.1, 6.1, 8 and 9 are not subject to the conditions of ADR if adequate measures have been taken to nullify any hazard. Hazards are nullified if adequate measures have been taken to nullify all hazards of Classes 1 to 9.

1.1.3.6 Exemptions related to quantities carried per transport unit

1.1.3.6.1 For the purposes of this sub-section, dangerous goods are assigned to transport categories 0, 1, 2, 3, or 4, as indicated in column [15] of table A of chapter 3.2. Empty uncleaned packagings having contained substances assigned to transport category "0" are also assigned to transport category "0". Empty uncleaned packagings having contained substances assigned to a transport category other than "0" are assigned to transport category "4".

1.1.3.6.2 Where the quantity of dangerous goods carried on a transport unit does not exceed the values indicated in column [(3)] of the table in 1.1.3.6.3 for a given transport category (when the dangerous goods carried

in the transport unit belong to the same category) or the value calculated in accordance with 1.1.3.6.4 (when the dangerous goods carried in the transport unit belong to different transport categories), they may be carried in packages in one transport without application of the following provisions:

- Chapter 7.2, except for 7.2.3, V4, V5, V7 and V8 of 7.2.4;
- CV1 of 7.5.11;
- Part 8 except for 8.1.2.1 (a) and (c)
 - 8.1.4.1 (a)
 - 8.3.4
 - chapter 8.4
 - SO1(3) and (6)
 - SO2(1) and (3)
 - SO4 and
 - S14 to S21 of Chapter 8.5.

NOTE: *For the information in the transport document see 5.4.1.10.*

1.1.3.6.3 Where the dangerous goods carried in the transport unit belong to the same category, the maximum total quantity per transport unit is indicated in column [(3)] of the table below.

Transport category (1)	Substances or articles Packing group or classification code/group or UN No. (2)	Maximum total quantity per transport unit (3)
0	Class 1: 1.1A/1.1L/1.2L/1.3L/1.4L and No. 0190 Class 4.2: Substances belonging to Packing Group I Class 4.3: 1183, 1242, 1295, 1340, 1390, 1403, 1928, 2813, 2965, 2968, 2988, 3129, 3130, 3131, 3134, 3148, 3207 Class 6.1: 1051, 1613, 1614, 3294 Class 6.2: 2814,2900 without packing group Class 7: 2912 to 2919, 2977, 2978, 3321 to 3333 Class 9: 2315, 3151, 3152 and equipment containing such substances or mixtures and empty uncleaned packagings having contained substances classified in this transport category	0
1	Substances and articles belonging to Packing Group I and not classified in transport category 0 and substances and articles of the following classes: Class 1: 1.1B to 1.1J ^{a/} 1.2B to 1.2J/1.3C/1.3G/1.3H/1.3J Class 2: groups T, TC ^{a/} , TO, TF, TOC and TFC Class 4.1: 3221 to 3224 and 3231 to 3240	20
2	Substances or articles belonging to packing group II and not classified in transport categories 0, 1 or 4 and substances of the following classes: Class 1: 1.4B to 1.4G/1.5D ^{a/} and 1.6N Class 2: group F Class 6.1: substances and articles belonging to Packing Group III Class 6.2: 2814,2900 Packing Group II	300
3	Substances and articles belonging to Packing Group III and not classified in transport categories 2 or 4 and substances and articles of the following classes: Class 2: groups A and O Class 9: 2990,3072	1 000
4	Class 1: 1.4S Class 4.1: 1331,1345,1944,1945,2254,2623 Class 4.2: 1361,1362 Packing Group III Class 7: 2908 to 2911 Class 9: 3268 and empty, uncleaned packagings having contained dangerous goods, except for those classified in transport category 0	unlimited

a/ For UN Numbers 0081, 0082, 0084, 0241, 0331, 0332, 0482, 1005 and 1017, the total maximum quantity per transport unit shall be 50 kg.

In the above table, “maximum total quantity per transport unit” means:

- for articles, gross mass in kilograms (for articles of Class 1, net mass in kg of the explosive substance);
- for solids, liquefied gases, refrigerated liquefied gases and gases dissolved under pressure, net mass in kilograms;
- for liquids and compressed gases, nominal capacity of receptacles in litres.

The term “nominal capacity” of a receptacle means the nominal volume, measured in litres, of dangerous goods which the receptacle contains. For compressed gas receptacles, this will be equivalent to the water capacity.

1.1.3.6.4 Where dangerous goods of different transport categories are carried in the same transport unit, the sum of

- the quantity of substances and articles of transport category 1 multiplied by "50",
- the quantity of substances and articles of transport category 2 multiplied by "3", and
- the quantity of substances and articles of transport category 3

shall not exceed "1000".

1.1.3.6.5 For the purposes of this sub-section, liquids or gases contained in the ordinary fixed tanks of means of transport for their propulsion or for the operation of their specialized equipment (e.g. refrigerating appliances) or for ensuring their safety, as referred to in 1.1.3.2 (a), (b), (d), (e) and 1.1.3.3 (a) and (b) or exempted in accordance with special provision 119 of Chapter 3.3 shall not be taken into account.

1.1.4 Applicability of other regulations

1.1.4.1 General

1.1.4.1.1 In accordance with Article 4, paragraph 1 of ADR, the entry of dangerous goods into the territory of Contracting Parties may be subject to regulations or prohibitions imposed for reasons other than safety during carriage. Such regulations or prohibitions shall be published in an appropriate form.

1.1.4.1.2 Subject to the provisions of 1.4.1.3, a Contracting Party may apply to vehicles engaged in the international carriage of dangerous goods by road on its territory certain additional provisions not included in these Regulations, provided that those provisions do not conflict with Article 2, paragraph 2 of the Agreement, and are contained in its domestic legislation applying equally to vehicles engaged in the domestic carriage of dangerous goods by road on the territory of that Contracting Party.

1.1.4.1.3 Additional provisions falling within the scope of 1.1.4.1.2 are as follows:

- (a) additional safety requirements or restrictions concerning vehicles using certain structures such as bridges or tunnels, vehicles using combined transport modes such as ferries or trains, or vehicles entering or leaving ports or other transport terminals;
- (b) requirements for vehicles to follow prescribed routes to avoid commercial or residential areas, environmentally sensitive areas, industrial zones containing hazardous installations or roads presenting severe physical hazards;
- (c) emergency requirements regarding routeing or parking of vehicles carrying dangerous goods resulting from extreme weather conditions, earthquake, accident, industrial action, civil disorder or military hostilities;

- (d) restrictions on movement of dangerous goods traffic on certain days of the week or year.

1.1.4.1.4. The competent authority of the Contracting Party applying on its territory any additional provisions within the scope of 1.1.4.1.3 (a) and (d) above shall notify the Secretariat of the United Nations Economic Commission for Europe of the additional provisions, which Secretariat shall bring them to the attention of the Contracting Parties.

1.1.4.2 Carriage prior to or following maritime or air carriage

Packages, containers, portable tanks and tank-containers, which do not entirely meet the packing, mixed packing, marking and labelling requirements of ADR, but are in conformity with the requirements of the IMDG Code or the ICAO Technical Instructions for the Transport of Dangerous Goods by Air shall be accepted for carriage prior to or following maritime or air carriage subject to the following conditions:

- (a) If the packages are not marked and labelled in accordance with ADR, they shall bear markings and danger labels in accordance with the requirements of the IMDG Code or the ICAO Technical Instructions;
- (b) The requirements of the IMDG Code or the ICAO Technical Instructions shall be applicable to mixed packing within a package;
- (c) For carriage prior to or following maritime carriage only, if the containers, portable tanks or tank-containers are not marked and labelled in accordance with ADR, they shall be marked and labelled (placarded) in accordance with the IMDG Code. In such case, only [paragraph (1) of marginal 10 500] is applicable to the marking of the vehicle itself. For empty, uncleaned portable tanks and tank-containers, this requirement shall apply up to and including the subsequent transfer to a cleaning station.

This derogation does not apply in the case of goods classified as dangerous goods in classes 1 to 8 of ADR and considered as non-dangerous goods according to the applicable requirements of the IMDG Code or the ICAO Technical Instructions.

NOTE: For the information in the transport document see 5.4.1.1.7; for the container packing certificate, see 5.4.2.

[1.1.4.3 Use of tank-containers approved for maritime transport

Tank-containers which do not fully meet the requirements of Chapter 6.8, but which have been approved in accordance with [the transitional provisions of IMDG Code Amendment 30-00] for maritime transport, as portable tanks, may be used under the following condition: only those substances which are allowed to be carried in portable tanks in accordance with the IMDG Code may be carried.

NOTE: For the information in the transport document, see 5.4.1.1.8.]

1.1.4.4 Reserved

1.1.4.5 *Carriage other than by road*

1.1.4.5.1 If the vehicle carrying out a transport operation subject to the requirements of ADR is conveyed over a section of the journey otherwise than by road haulage, then any national or international regulations which, on the said section, govern the carriage of dangerous goods by the mode of transport used for conveying the road vehicle shall alone be applicable to the said section of the journey.

1.1.4.5.2 In cases where a transport operation subject to the provisions of ADR is likewise subject over the whole or a part of the road journey to the provisions of an international convention which regulates the carriage of dangerous goods by a mode of transport other than road carriage by virtue of clauses extending the applicability of that convention to certain motor-vehicle services, then the provisions of that international convention shall apply over the journey in question concurrently with those of ADR which are not incompatible with them; the other clauses of ADR shall not apply over the journey in question.

1.1.4.5.3 Unless this would contravene the international Conventions governing the carriage of dangerous goods by the mode of transport used for conveying the road vehicle on the said section of the journey, [or when such conventions do not impose specific requirements,] the ADR Contracting Parties may agree to apply the requirements of ADR to this section of the journey, supplemented, if they consider it necessary, by additional requirements. Any such agreements concluded between Contracting Parties shall be [notified to the Secretariat of the United Nations Economic Commission for Europe which shall bring them to the attention of all Contracting Parties] [published in Appendix XXX].

CHAPTER 1.2

DEFINITIONS AND UNITS OF MEASUREMENT

1.2.1 Definitions

NOTE: This section contains all general or specific definitions.

For the purposes of ADR:

A

“*Aerosol*”, see “*Aerosol dispenser*”;

“*Aerosol dispenser*” means any non-refillable receptacle made of metal, glass or plastics, containing, under pressure, a gas or a mixture of gases, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state;

B

“*Bag*” means a flexible packaging made of paper, plastics film, textiles, woven material or other suitable material;

“*Battery vehicle*” means a vehicle containing elements which are linked to each other by a manifold and permanently fixed to a transport unit. The following elements are considered to be elements of a battery-vehicle cylinders, tubes, bundles of cylinders (also known as frames), pressure drums as well as tanks destined for the carriage of gases of Class 2 with a capacity greater than 450 litres;

“*Biological/technical name*” means a name currently used in scientific and technical handbooks, journals and texts. Trade names shall not be used for this purpose;

“*Body*” (for all categories of IBC other than composite IBCs) means the receptacle proper, including openings and closures, but does not include service equipment;

“*Box*” means a packaging with complete rectangular or polygonal faces, made of metal, wood, plywood, reconstituted wood, fibreboard, plastics or other suitable material. Small holes for purposes of ease of handling or opening or to meet classification requirements, are permitted as long as they do not compromise the integrity of the packaging during carriage;

“*Bundle of cylinders (frame)*” means a transportable assembly of cylinders which are interconnected by a manifold and held firmly together;

C

“*Calculation pressure*” means a theoretical pressure at least equal to the test pressure which, according to the degree of danger exhibited by the substance being carried, may to a greater or lesser degree exceed the working pressure. It is used solely to determine the thickness of the walls of the shell, independently of any external or internal reinforcing device (see also “*Discharge pressure*”, “*Filling pressure*”, “*Maximum working pressure (gauge pressure)*” and “*Test pressure*”);

“*Carriage*” means the change of place of dangerous goods, including stops made necessary by transport conditions and including any period spent by the dangerous goods in vehicles, tanks and containers made necessary by traffic conditions before, during and after the change of place.

This definition also covers the intermediate temporary storage of dangerous goods in order to change the mode or means of transport (transshipment). This shall apply provided that transport documents showing the place of dispatch and the place of reception are presented on request and provided that packages and tanks are not opened during intermediate storage, except to be checked by the competent authorities;

“*Carriage in bulk*” means the carriage of unpackaged solids or articles in vehicles or containers. The term does not apply to packaged goods nor to substances carried in tanks;

“*Carrier*” means the enterprise which carries out the transport operation with or without a transport contract;

“*Closed container*” means a totally enclosed container having a rigid roof, rigid side walls, rigid end walls and a floor. The term includes containers with an opening roof where the roof can be closed during transport;

“*Closed vehicle*” means a vehicle having a body capable of being closed;

“*Closure*” means a device which closes an opening in a receptacle;

“*Collective entry*” means an entry for a well defined group of substances or articles (see 2.1.1.2, B, C and D);

“*Combination packaging*” means a combination of packagings for transport purposes, consisting of one or more inner packagings secured in an outer packing in accordance with 4.1.1.5;

NOTE: The “*inners*” of “*combination packagings*” are always termed “*inner packagings*” and not “*inner receptacles*”. A glass bottle is an example of such an “*inner packaging*”.

“*Combustion heater*” means a device directly using liquid or gaseous fuel and not using the waste heat from the engine used for propulsion of the vehicle;

“*Competent authority*” means the authority or authorities or any other body or bodies designated as such in each State and in each specific case in accordance with domestic law;

“*Compliance assurance*” (radioactive material) means a systematic programme of measures applied by a competent authority which is aimed at ensuring that the requirements of ADR are met in practice;

“*Composite IBC with plastics inner receptacle*” means an IBC comprising structural equipment in the form of a rigid outer casing encasing a plastics inner receptacle together with any service or other structural equipment. It is so constructed that the inner receptacle and outer casing once assembled form, and are used as, an integrated single unit to be filled, stored, transported or emptied as such;

“*Composite packaging (plastics material)*” is a packaging consisting of an inner plastics receptacle and an outer packaging (made of metal, fibreboard, plywood, etc.). Once assembled such a packaging remains thereafter an inseparable unit; it is filled, stored, despatched and emptied as such;

NOTE: see **NOTE** under “*Composite packagings (glass, porcelain or stoneware)*”.

“*Composite packaging (glass, porcelain or stoneware)*” is a packaging consisting of an inner glass, porcelain or stoneware receptacle and an outer packaging (made of metal, wood, fibreboard, plastics material, expanded plastics material, etc.). Once assembled, such a packaging remains thereafter an inseparable unit; it is filled, stored, despatched and emptied as such;

NOTE: The “*inners*” of “*composite packagings*” are normally termed “*inner receptacles*”. For example, the “*inner*” of a 6HA1 (composite packaging, plastics material) is such an “*inner receptacle*” since it is normally not designed to perform a containment function without its “*outer packaging*” and is not therefore an “*inner packaging*”.

“*Consignee*” means the consignee according to the contract for carriage. If the consignee designates a third party in accordance with the provisions applicable to the contract for carriage, this person shall be deemed to be the consignee within the meaning of ADR. If the transport operation takes place without a contract for carriage, the enterprise which takes charge of the dangerous goods on arrival shall be deemed to be the consignee.

“*Consignment*” means any package or packages, or load of dangerous goods, presented by a consignor for carriage;

“*Consignor*” means the enterprise which dispatches dangerous goods either on its own behalf or for a third party. If the transport operation is carried out under a contract for carriage, consignor means the consignor according to the contract for carriage;

“*Container*” means an article of transport equipment (lift van or other similar structure):

- of a permanent character and accordingly strong enough to be suitable for repeated use;
- specially designed to facilitate the carriage of goods, by one or more means of transport, without breakage of load;
- fitted with devices permitting its ready stowage and handling, particularly when being transloaded from one means of transport to another;

- so designed as to be easy to fill and empty (see also “*Large container*” and “*Small container*”).

A swap body is a container which, in accordance with European Standard EN 283 (1991 edition) has the following characteristics:

- from the point of view of mechanical strength, it is only built for carriage on a wagon or a vehicle on land or by roll-on roll-off ship;
- it cannot be stacked;
- it can be removed from vehicles by means of equipment on board the vehicle and on its own supports, and can be reloaded;

NOTE: The term “*container*” does not cover conventional packagings, IBCs, tank-containers or vehicles.

“*Control temperature*” means the maximum temperature at which the organic peroxide or the self-reactive substance can be safely carried;

“*CSC*” means the International Convention for Safe Containers (Geneva, 1972) as amended and published by the International Maritime Organization (IMO), London;

“*Crate*” is an outer packaging with incomplete surfaces;

“*Cryogenic receptacle*” means a transportable thermally insulated receptacle for deeply refrigerated liquefied gases of a capacity of not more than 1,000 litres;

“*Cylinder*” means a transportable pressure receptacle of a capacity not exceeding 150 litres (see also “*Bundle of cylinders (frame)*”);

D

“*Dangerous goods*” means those substances and articles the carriage of which is prohibited by ADR, or authorized only under the conditions prescribed therein;

“*Dangerous reaction*” means:

- (a) combustion and/or evolution of considerable heat;
- (b) evolution of flammable, asphyxiant, and/or toxic gases;
- (c) the formation of corrosive substances;
- (d) the formation of unstable substances; or
- (e) dangerous rise in pressure (for tanks only);

“*Demountable tank*” means a tank, other than a fixed tank, a portable tanks, a tank-container or an element of a battery-vehicle which has a capacity of more than 450 litres, is not designed for the carriage of goods without breakage of load, and normally can only be handled when it is empty;

“*Discharge pressure*” means the maximum pressure actually built up in the tank when it is being discharged under pressure (see also “*Calculation pressure*”, “*Filling pressure*”, “*Maximum working pressure (gauge pressure)*” and “*Test pressure*”);

“*Drum*” means a flat-ended or convex-ended cylindrical packaging made out of metal, fibreboard, plastics, plywood or other suitable materials. This definition also includes packagings of other shapes, e.g. round, tapered-necked packagings or pail-shaped packagings. Wooden barrels and jerricans are not covered by this definition;

E

“*EC Directive*” means provisions decided by the competent institutions of the European Community and which are binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods;

“*ECE Regulation*” means a regulation annexed to the Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles equipment and parts which can be fitted and or used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions (1958 Agreement, as amended)

“*Emergency temperature*” means the temperature at which emergency procedures shall be implemented in the event of loss of temperature control;

“*Enterprise*” means any natural person, any legal person, whether profit-making or not, any association or group of persons without legal personality, whether profit-making or not, or any official body, whether it has legal personality itself or is dependent upon an authority that has such personality;

F

“*Fibreboard IBC*” means a fibreboard body with or without separate top and bottom caps, if necessary an inner liner (but no inner packagings), and appropriate service and structural equipment;

“*Filler*” means any enterprise which loads dangerous goods into a tank (tank-vehicle, demountable tank, portable tank or tank-container) and/or into a vehicle, large container or small container for carriage in bulk, or into a battery-vehicle or MEGC;

“*Filling pressure*” means the maximum pressure actually built up in the tank when it is being filled under pressure (see also “*Calculation pressure*”, “*Discharge pressure*”, “*Maximum working pressure (gauge pressure)*” and “*Test pressure*”);

“*Fixed tank*” means a tank having a capacity of more than 1 000 litres which is permanently attached to a vehicle (which then becomes a tank-vehicle) or is an integral part of the frame of such vehicle;

“*Flammable component*” (for aerosols and gas cartridges) is a gas which is flammable in air at normal pressure or a substance or a preparation in liquid form which has a flash-point less than or equal to 100E C;

“*Flash-point*” means the lowest temperature of a liquid at which its vapours form a flammable mixture with air;

“*Flexible IBC*” means a body constituted of film, woven fabric or any other flexible material or combinations thereof, and if necessary, an inner coating or liner, together with any appropriate service equipment and handling devices;

“*Frame*” (Class 2), see “*Bundle of cylinders*”;

“*Full load*” means any load originating from one consignor for which the use of a vehicle or of a large container is exclusively reserved and all operations for the loading and unloading of which are carried out in conformity with the instructions of the consignor or of the consignee;

NOTE: *The corresponding term for Class 7 is “exclusive use”, see 2.2.7.2.*

G

“*Gas*” means a substance which:

- (a) at 50 °C has a vapour pressure greater than 300 kPa (3 bar); or
- (b) is completely gaseous at 20 EC under standard pressure of 101.3 kPa;

“*Gas cartridge*” means any non-refillable receptacle containing, under pressure, a gas or a mixture of gases. It may be fitted with a valve;

H

“*Handling device*” (for flexible IBCs) means any sling, loop, eye or frame attached to the body of the IBC or formed from the continuation of the IBC body material;

“*Hermetically closed tank*” means a tank whose openings are hermetically closed and which is not equipped with safety valves, bursting discs or other similar safety devices. Tanks having safety valves preceded by a bursting disc shall be deemed to be hermetically closed;

I

“*IBC*”, see “*Intermediate bulk container*”;

“*ICAO Technical Instructions*” means the Technical Instructions for the Safe Transport of Dangerous Goods by Air, which complement Annex 18 to the Chicago Convention on International Civil Aviation (Chicago 1944), published by the International Civil Aviation Organization (ICAO) in Montreal;

“*IMDG Code*” means the International Maritime Dangerous Goods Code, for the implementation of chapter VII, part A, of the International Convention for the Safety of Life at Sea, 1974 (SOLAS Convention), published by the International Maritime Organization (IMO), London;

“*Inner packaging*” means a packaging for which an outer packaging is required for carriage;

“*Inner receptacle*” means a receptacle which requires an outer packaging in order to perform its containment function;

“*Intermediate bulk container*” (IBC) means a rigid, or flexible portable packaging, other than those specified in Chapter 6.1, that:

- (a) has a capacity of:
 - (i) not more than 3 m; (3000 litres) for solids and liquids of Packing Groups II and III;
 - (ii) not more than 1.5 m; for solids of Packing Group I when packed in flexible, rigid plastics, composite, fibreboard and wooden IBCs;
 - (iii) not more than 3 m; for solids of Packing Group I when packed in metal IBCs;
 - (iv) not more than 3 m³ for radioactive material of Class 7;
- (b) is designed for mechanical handling;
- (c) is resistant to the stresses produced in handling and transport as determined by the tests specified in Chapter 6.5 (see also “*Composite IBC with plastics inner receptacle*”, “*Fibreboard IBC*”, “*Flexible IBC*”, “*Metal IBC*”, “*Rigid plastics IBC*” and “*Wooden IBC*”);

NOTE 1: *Tank-containers that meet the requirements of Chapter 6.7 and 6.8 are not considered to be intermediate bulk containers (IBCs).*

NOTE 2: *Intermediate bulk containers (IBCs) which meet the requirements of Chapter 6.5 are not considered to be containers for the purposes of ADR.*

“*Intermediate packaging*” means a packaging placed between inner packagings or articles, and an outer packaging;

J

“*Jerrican*” means a metal or plastics packaging of rectangular or polygonal cross-section with one or more orifices;

L

“*Large container*” means

- (a) a container having an internal volume of more than 3 m³;
- (b) in the meaning of the CSC, a container of a size such that the area enclosed by the four outer bottom corners is either
 - (i) at least 14 m² (150 square feet) or
 - (ii) at least 7 m² (75 square feet) if fitted with top corner fittings;

NOTE: For radioactive material see 2.2.7.1.2.

“*Large packaging*” means a packaging consisting of an outer packaging which contains articles or inner packagings and which

- (a) is designed for mechanical handling;
- (b) exceeds 400 kg net mass or 450 litres capacity but has a volume of not more than 3 m³;

“*Light-gauge metal packaging*” means a packaging of circular, elliptical, rectangular or polygonal cross-section (also conical) and taper-necked and pail-shaped packaging made of metal, having a wall thickness of less than 0.5 mm (e.g. tinplate), flat or convex bottomed and with one or more orifices, which is not covered by the definitions for drums or jerricans;

“*Liner*” means a tube or bag inserted into a packaging, including large packagings or IBCs, but not forming an integral part of it, including the closures of its openings;

“*Liquid*” means a substance which at 50/ C has a vapour pressure of not more than 300 kPa (3 bar), which is not completely gaseous at 20/ C and 101.3 kPa, and which

- (a) has a melting point or initial melting point of 20/ C or less at a pressure of 101.3 kPa, or
- (b) is liquid according to the ASTM D 4359-90 test method or
- (c) is not pasty according to the criteria applicable to the test for determining fluidity (penetrometer test) described in 2.3.4;

NOTE: “*Carriage in the liquid state*”, for the purpose of tank requirements, means:

- *Carriage of liquids according to the above definition, or*
- *Solids handed over for carriage in the molten state.*

“*Loader*” means any enterprise which loads dangerous goods into a vehicle or large container;

M

“*Manual of Tests and Criteria*” means the third revised edition of the United Nations Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, published by the United Nations Organization (ST/SG/AC.10/11/Rev.3);

“*Mass of package*” means gross mass of the package unless otherwise stated. The mass of containers and tanks used for the carriage of goods is not included in the gross mass;

“*Maximum capacity*” means the maximum inner volume of receptacles or packagings including intermediate bulk containers (IBCs) and large packagings expressed in cubic metres or litres;

“*Maximum net mass*” means the maximum net mass of contents in a single packaging or maximum combined mass of inner packagings and the contents thereof expressed in kilograms;

“*Maximum permissible gross mass*”

- (a) (for all categories of IBCs other than flexible IBCs) means the mass of the body, its service equipment and structural equipment and the maximum permissible load;
- (b) (for tanks) means the tare of the tank and the heaviest load authorized for transport;

“*Maximum permissible load*” (for flexible IBCs) means the maximum net mass for which the IBC is intended and which it is authorized to carry;

“*Maximum working pressure (gauge pressure)*” means the highest of the following three pressures:

- (a) the highest effective pressure allowed in the tank during filling (maximum filling pressure allowed);
- (b) the highest effective pressure allowed in the tank during discharge (maximum discharge pressure allowed); and

- (c) the effective gauge pressure to which the tank is subjected by its contents (including such extraneous gases as it may contain) at the maximum working temperature.

Unless the special requirements prescribed in Chapter 4.3 provide otherwise, the numerical value of this working pressure (gauge pressure) shall not be lower than the vapour pressure (absolute pressure) of the filling substance at 50/ C.

For tanks equipped with safety valves (with or without bursting disc), the maximum working pressure (gauge pressure) shall however be equal to the prescribed opening pressure of such safety valves (see also “*Calculation pressure*”, “*Discharge pressure*”, “*Filling pressure*”, and “*Test pressure*”);

“*MEGC*”, see “*Multiple-element gas container*”;

“*Metal IBC*” means a metal body together with appropriate service and structural equipment;

“*Mild steel*” means a steel having a minimum breaking strength between 360 N/mm² and 440 N/mm²;

“*Multiple-element gas container*” (MEGC) means a unit containing elements which are linked to each other by a manifold and mounted on a frame. The following elements are considered to be elements of a multiple-element gas-container: cylinders, tubes, pressure drums and bundles of cylinders as well as tanks for the carriage of gases of Class 2 having a capacity of more than 450 litres;

N

“*Nominal capacity of the receptacle*” means the nominal volume of the dangerous substance contained in the receptacle expressed in litres. For compressed gas cylinders the nominal capacity shall be the water capacity of the cylinder;

“*N.O.S. entry (not otherwise specified entry)*” means a collective entry to which substances, mixtures, solutions or articles may be assigned if they:

- (a) are not mentioned by name in Table A of Chapter 3.2, and
- (b) exhibit chemical, physical and/or dangerous properties corresponding to the Class, classification code, packing group and the name of the n.o.s. entry;

O

“*Open container*” an open top container or a platform based container;

“*Open vehicle*” means a vehicle the platform of which has no superstructure or is merely provided with side boards and a tailboard;

“*Outer packaging*” means the outer protection of the composite or combination packaging together with any absorbent materials, cushioning and any other components necessary to contain and protect inner receptacles or inner packagings;

“*Overpack*” means an enclosure used by a single consignor to contain one or more packages, consolidated into a single unit easier to handle and stow during carriage.

Examples of overpacks:

- (a) a loading tray such as a pallet, on which several packages are placed or stacked and secured by a plastic strip, shrink or stretch wrapping or other appropriate means; or
- (b) an outer protective packaging such as a box or a crate;

P

“*Package*” means the complete product of the packing operation, consisting of the packaging or large packaging or IBC and its contents prepared for dispatch. The term includes receptacles for gases as defined in this section as well as articles which, because of their size, mass or configuration may be carried unpackaged or carried in cradles, crates or handling devices. The term does not apply to substances which are carried in bulk, nor to substances carried in tanks.

NOTE: For radioactive material, see 2.2.7.2.

“*Packaging*” means the receptacle and any other components or materials necessary for the receptacle to perform its containment function (see also “*Combination packaging*”, “*Composite packaging (plastics material)*”, “*Composite packaging (glass, porcelain or stoneware)*”, “*Inner packaging*”, “*Intermediate bulk container (IBC)*”, “*Intermediate packaging*”, “*Large packaging*”, “*Light-gauge metal packaging*”, “*Outer packaging*”, “*Reconditioned packaging*”, “*Remanufactured packaging*”, “*Reused packaging*”, “*Salvage packaging*” and “*Sift-proof packaging*”);

NOTE: For radioactive material, see 2.2.7.2.

“*Packer*” means any enterprise which puts dangerous goods into packagings, including large packagings and intermediate bulk containers (IBCs) and, where necessary, prepares packages for carriage;

“*Packing group*” is a group to which, for packing purposes, certain substances may be assigned in accordance with their degree of danger. The packing groups have the following meanings which are explained more fully in Part 2:

Packing group I: Substances presenting high danger;

Packing group II: Substances presenting medium danger; and

Packing group III: Substances presenting low danger;

“*Portable tank*” means a multimodal tank having a capacity of more than 450 litres in accordance with the definition in the UN Model Regulations [or the IMDG Code] and indicated by a tank transport instruction (T-Code) in column [10] of Table A of Chapter 3.2;

“*Pressure drum*” means a welded, transportable pressure receptacle of a capacity exceeding 150 litres and of not more than 1 000 litres (e.g. cylindrical receptacles equipped with rolling hoops, receptacles on skids and receptacles in frames);

“*Pressurized gas cartridge*”, see “*Aerosol dispenser*”;

“*Protected IBC*” (for metal IBCs) means an IBC provided with additional protection against impact, the protection taking the form of, for example, a multi-layer (sandwich) or double-wall construction, or a frame with a metal lattice-work casing;

Q

“*Quality assurance*” means a systematic programme of controls and inspections applied by any organization or body which is aimed at providing confidence that the safety prescriptions in ADR are met in practice;

R

“*Receptacle*” (Class 1) includes boxes, bottles, cans, drums, jars and tubes, including any means of closure used in the inner or intermediate packaging;

“*Receptacle*” means a containment vessel for receiving and holding substances or articles, including any means of closing. This definition does not apply to shells (see also “*Cryogenic receptacle*”, “*Inner receptacle*”, “*Rigid inner receptacle*” and “*Gas cartridge*”);

NOTE: *Receptacles for gases of Class 2 are cylinders, tubes, pressure drums, cryogenic receptacles and bundles of cylinders (frames).*

“*Reconditioned packaging*” means in particular

- (a) metal drums that are:
 - (i) cleaned to original materials of construction, with all former contents, internal and external corrosion, and external coatings and labels removed;
 - (ii) restored to original shape and contour, with chimes (if any) straightened and sealed and all non-integral gaskets replaced; and
 - (iii) inspected after cleaning but before painting, with rejection of packagings with visible pitting, significant reduction in the material thickness, metal fatigue, damaged threads or closures or other significant defects;

- (b) plastics drums and jerricans that:
- (i) are cleaned to original materials of construction, with all former contents, external coatings and labels removed;
 - (ii) have all non-integral gaskets replaced; and
 - (iii) are inspected after cleaning with rejection of packagings with visible damage such as tears, creases or cracks, or damaged threads or closures or other significant defects.

“Recycled plastics material” means material recovered from used industrial packagings that has been cleaned and prepared for processing into new packagings;

“Reel” (Class 1) means a device made of plastics, wood, fibreboard, metal or other suitable material comprising a central spindle with, or without, side walls at each end of the spindle. Articles and substances can be wound onto the spindle and may be retained by side walls;

“Reference steel” means a steel with a tensile strength of 370 N/mm² and an elongation at fracture of 27%;

“Remanufactured packaging” means in particular

- (a) metal drums that:
- (i) are produced as a UN type complying with the requirements of Chapter 6.1 from a non-UN type;
 - (ii) are converted from one UN type complying with the requirements of Chapter 6.1 to another UN type; or
 - (iii) undergo the replacement of integral structural components (such as non-removable heads);
- (b) plastics drums that:
- (i) are converted from one UN type to another UN type (e.g. 1H1 to 1H2); or
 - (ii) undergo the replacement of integral structural components.

Remanufactured drums are subject to the requirements of Chapter 6.1 which apply to new drums of the same type;

“Reused packaging” means a packaging which has been examined and found free of defects affecting the ability to withstand the performance tests. The term includes those which are refilled with the same or similar compatible contents and are carried within distribution chains controlled by the consignor of the product;

“*RID*” means Regulations concerning the International Carriage of Dangerous Goods by Rail, Annex 1 to Appendix B (Uniform Rules Concerning the Contract for International Carriage of Goods by Rail) (CIM) of COTIF (Convention concerning international carriage by rail);

“*Rigid inner receptacle*” (for composite IBCs) means a receptacle which retains its general shape when empty without its closures in place and without benefit of the outer casing. Any inner receptacle that is not “rigid” is considered to be “flexible”;

“*Rigid plastics IBC*” means a rigid plastics body, which may have structural equipment together with appropriate service equipment;

S

“*Safety valve*” means a self-closing, spring-loaded device the purpose of which is to protect the tank against unacceptable excess internal pressure;

“*SADT*” see “*Self-accelerating decomposition temperature*”;

“*Salvage packaging*” means a special packaging conforming to the applicable requirements of Chapter 6.1 into which damaged, defective or leaking dangerous goods packages, or dangerous goods that have spilled or leaked are placed for purposes of carriage for recovery or disposal;

“*Self-accelerating decomposition temperature*” (SADT), means the lowest temperature at which self-accelerating decomposition may occur with substance in the packaging as used during carriage. Provisions for determining the SADT and the effects of heating under confinement are contained in Part II of the Manual of Tests and Criteria;

“*Service equipment*”

- (a) of the tank means filling and emptying, venting, safety, heating and heat insulating devices and measuring instruments;
- (b) of the elements of a battery-vehicle or of a MEGC means filling and emptying devices, including the manifold, safety devices and measuring instruments;
- (c) of an IBC means the filling and discharge devices and any pressure-relief or venting, safety, heating and heat insulating devices and measuring instruments;

“*Sheeted container*” an open container equipped with a sheet to protect the goods loaded;

“*Sheeted vehicle*” means an open vehicle provided with a sheet to protect the load;

“*Shell*” means the sheathing containing the substance (including the openings and their closures);

NOTE: *This definition does not apply to receptacles.*

“*Sift-proof packaging*” means a packaging impermeable to dry contents, including fine solid material produced during carriage;

“*Small container*” means a container having an internal volume of not less than 1m³; and not more than 3 m³;

NOTE: *For radioactive material, see 2.2.7.2.*

“*Small receptacle containing gas*”: see “*Gas cartridge*”;

“*Solid*” means:

- (a) a substance with a melting point or initial melting point of more than 20/ C at a pressure of 101.3 kPa, or
- (b) a substance which is not liquid according to the ASTM D 4359-90 test method or which is pasty according to the criteria applicable to the test for determining fluidity (penetrometer test) described in 2.3.4;

“*Structural equipment*”

- (a) for tanks of a tank vehicle or demountable tank, means the external or internal reinforcing, fastening, protective or stabilizing members of the shell;
- (b) for tanks of a tank-container, means the external or internal reinforcing, fastening, protective or stabilizing members of the shell;
- (c) for elements of a battery-vehicle or an MEGC means the external or internal reinforcing, fastening, protective or stabilizing members of the shell or receptacle;
- (d) for IBCs other than flexible IBCs means the reinforcing, fastening, handling, protective or stabilizing members of the body (including the base pallet for composite IBCs with plastics inner receptacle);

“*Swap-body*”, see “*Container*”;

T

“*Tank*” means a shell, including its service and structural equipment. When used alone, the term tank means a tank-container, portable tank, demountable tank or fixed tank as defined in this Part, including tanks forming elements of battery vehicles or MEGCs (see also “*Demountable tank*”, “*Fixed tank*”, “*Portable tank*” and “*Multiple-element gas container*”);

“*Tank-container*” means an article of transport equipment meeting the definition of a container, and comprising a shell and items of equipment, including the equipment to facilitate movement of the tank-container without significant change of attitude, used for the carriage of gases, liquid, powdery or granular substances and having a capacity of more than 0.45 m³ (450 litres);

NOTE: *IBCs which meet the requirements of Chapter 6.5 are not considered to be tank-containers.*

“*Tank-container operator*” means any enterprise in whose name the tank-container is registered;

“*Tank swap body*” is considered to be a tank-container;

“*Tank-vehicle*” means a vehicle built to carry liquids, gases or powdery or granular substances and comprising one or more fixed tanks.[In addition to the vehicle proper, or the units of running gear used in its stead, a tank-vehicle comprises one or more shells, their items of equipment and the fittings for attaching them to the vehicle or to the running-gear units];

“*Technical/biological name*” means a name currently used in scientific and technical handbooks, journals and texts. Trade names shall not be used for this purpose;

“*Test pressure*” means the highest effective pressure which arises in the tank during the pressure test (see also “*Calculation pressure*”, “*Discharge pressure*”, “*Filling pressure*”, and “*Maximum working pressure (gauge pressure)*”);

“*Transport unit*” means a motor vehicle without an attached trailer, or a combination consisting of a motor vehicle and an attached trailer;

“*Tray*” (Class 1) is a sheet of metal, plastics, fibreboard or other suitable material which is placed in the inner, intermediate or outer packaging and achieves a close-fit in such packaging. The surface of the tray may be shaped so that packagings or articles can be inserted, held secure and separated from each other;

“*Tube*” (Class 2) means a seamless transportable pressure receptacle of a capacity exceeding 150 litres and of not more than 5 000 litres;

U

“*UN Model Regulations*” means the Model Regulations annexed to the eleventh revised edition of the Recommendations on the Transport of Dangerous Goods published by the United Nations (ST/SG/AC.10/1/Rev.11);

“*UN number*” means the four-figure identification number of the substance or article taken from the UN Model Regulations;

V

“*Vacuum valve*” means a self-closing, spring-loaded pressure sensitive device the purpose of which is to protect the tank against unacceptable negative internal pressure;

“*Vehicle*” see “*Battery-vehicle*”, “*Closed vehicle*”, “*Open vehicle*”, “*Sheeted vehicle*” and “*Tank-vehicle*”;

W

“*Wastes*” means substances, solutions, mixtures or articles for which no direct use is envisaged but which are transported for reprocessing, dumping, elimination by incineration or other methods of disposal;

“*Wooden barrel*” means a packaging made of natural wood, of round cross-section, having convex walls, consisting of staves and heads and fitted with hoops;

“*Wooden IBC*” means a rigid or collapsible wooden body, together with an inner liner (but no inner packaging) and appropriate service and structural equipment;

“*Woven plastics*” (for flexible IBCs) means a material made from stretch tapes or monofilaments of suitable plastics material.

1.2.2 Units of measurement

1.2.2.1 The following units of measurement^{a/} are applicable in ADR:

Measurement of	SI Unit ^{b/}	Acceptable alternative unit	Relationship between units
Length	m (metre)	n	n
Area	m ² (square metre)	n	n
Volume	m ³ (cubic metre)	l ^{a/} (litre)	1 l = 10 ⁻³ m ³
Time	s (second)	min. (minute)	1 min. = 60 s
		h (hour)	1 h = 3 600 s
		d (day)	1 d = 86 400 s
Mass	kg (kilogram)	g (gramme)	1 g = 10 ⁻³ kg
		t (ton)	1 t = 10 ³ kg
Mass density	kg/m ³	kg/l	1 kg/l = 10 ³ kg/m ³
Temperature	K (kelvin)	°C (degree Celsius)	0°C = 273.15 K
Temperature difference	K (kelvin)	°C (degree Celsius)	1°C = 1 K
Force	N (newton)	n	1 N = 1 kg.m/s ²
Pressure	Pa (pascal)	bar (bar)	1 Pa = 1 N/m ² 1 bar = 10 ⁵ Pa
Stress	N/m ²	N/mm ²	1 N/mm ² = 1 MPa
Work	J (joule)	kWh (kilowatt hours)	1 kWh = 3.6 MJ
Energy			1 J = 1 N.m = 1 W.s
Quantity of heat		eV (electronvolt)	1 eV = 0.1602x10 ⁻¹⁸ J
Power	W (watt)	n	1 W = 1 J/s = 1 N.m/s
Kinematic viscosity	m ² /s	mm ² /s	1 mm ² /s = 10 ⁻⁶ m ² /s
Dynamic viscosity	Pa.s	mPa.s	1 mPa.s = 10 ⁻³ Pa.s
Activity	Bq (becquerel)		
Dose equivalent	Sv (sievert)		

^{a/}The following round figures are applicable for the conversion of the units hitherto used into SI Units.

Force

$$1 \text{ kg} = 9.807 \text{ N}$$

$$1 \text{ N} = 0.102 \text{ kg}$$

Stress

$$1 \text{ kg/mm}^2 = 9.807 \text{ N/mm}^2$$

$$1 \text{ N/mm}^2 = 0.102 \text{ kg/mm}^2$$

Pressure

$$1 \text{ Pa} = 1 \text{ N/m}^2 = 10^{-5} \text{ bar} = 1.02 \times 10^{-5} \text{ kg/cm}^2 = 0.75 \times 10^{-2} \text{ torr}$$

$$1 \text{ bar} = 10^5 \text{ Pa} = 1.02 \text{ kg/cm}^2 = 750 \text{ torr}$$

$$1 \text{ kg/cm}^2 = 9.807 \times 10^4 \text{ Pa} = 0.9807 \text{ bar} = 736 \text{ torr}$$

$$1 \text{ torr} = 1.33 \times 10^2 \text{ Pa} = 1.33 \times 10^{-3} \text{ bar} = 1.36 \times 10^{-3} \text{ kg/cm}^2$$

Energy, Work, Quantity of heat

$$1 \text{ J} = 1 \text{ Nm} = 0.278 \times 10^{-6} \text{ kWh} = 0.102 \text{ kgm} = 0.239 \times 10^{-3} \text{ kcal}$$

$$1 \text{ kWh} = 3.6 \times 10^6 \text{ J} = 367 \times 10^3 \text{ kgm} = 860 \text{ kcal}$$

$$1 \text{ kgm} = 9.807 \text{ J} = 2.72 \times 10^{-6} \text{ kWh} = 2.34 \times 10^{-3} \text{ kcal}$$

$$1 \text{ kcal} = 4.19 \times 10^3 \text{ J} = 1.16 \times 10^{-3} \text{ kWh} = 427 \text{ kgm}$$

Power

$$\begin{aligned} 1 \text{ W} &= 0.102 \text{ kgm/s} = 0.86 \text{ kcal/h} \\ 1 \text{ kgm/s} &= 9.807 \text{ W} = 8.43 \text{ kcal/h} \\ 1 \text{ kcal/h} &= 1.16 \text{ W} = 0.119 \text{ kgm/s} \end{aligned}$$

Kinematic viscosity

$$\begin{aligned} 1 \text{ m}^2/\text{s} &= 10^4 \text{ St (Stokes)} \\ 1 \text{ St} &= 10^{-4} \text{ m}^2/\text{s} \end{aligned}$$

Dynamic viscosity

$$\begin{aligned} 1 \text{ Pa.s} &= 1 \text{ Ns/m}^2 = 10 \text{ P (poise)} = 0.102 \text{ kgs/m}^2 \\ 1 \text{ P} &= 0.1 \text{ Pa.s} = 0.1 \text{ Ns/m}^2 = 1.02 \times 10^{-2} \text{ kgs/m}^2 \\ 1 \text{ kgs/m}^2 &= 9.807 \text{ Pa.s} = 9.807 \text{ Ns/m}^2 = 98.07 \text{ P} \end{aligned}$$

b/ The International System of Units (SI) is the result of decisions taken at the General Conference on Weights and Measures (Address: Pavillon de Breteuil, Parc de St-Cloud, F-92 310 Sèvres).

c/ The abbreviation "L" for litre may also be used in place of the abbreviation "l" when a typewriter cannot distinguish between figure "1" and letter "l".

The decimal multiples and sub-multiples of a unit may be formed by prefixes or symbols, having the following meanings, placed before the name or symbol of the unit:

<u>Factor</u>			<u>Prefix</u>	<u>Symbol</u>
1 000 000 000 000 000 000	= 10 ¹⁸	quintillion	exa	E
1 000 000 000 000 000	= 10 ¹⁵	quadrillion	peta	P
1 000 000 000 000	= 10 ¹²	trillion	tera	T
1 000 000 000	= 10 ⁹	billion	giga	G
1 000 000	= 10 ⁶	million	mega	M
1 000	= 10 ³	thousand	kilo	k
100	= 10 ²	hundred	hecto	h
10	= 10 ¹	ten	deca	da
0.1	= 10 ⁻¹	tenth	deci	d
0.01	= 10 ⁻²	hundredth	centi	c
0.001	= 10 ⁻³	thousandth	milli	m
0.000 001	= 10 ⁻⁶	millionth	micro	μ
0.000 000 001	= 10 ⁻⁹	billionth	nano	n
0.000 000 000 001	= 10 ⁻¹²	trillionth	pico	p
0.000 000 000 000 001	= 10 ⁻¹⁵	quadrillionth	femto	f
0.000 000 000 000 000 001	= 10 ⁻¹⁸	quintillionth	atto	a

NOTE: 10⁹ = 1 billion is United Nations usage in English. By analogy, so is 10⁹ = 1 billionth.

1.2.2.2 Unless expressly stated otherwise, the sign "%" in ADR represents:

- (a) In the case of mixtures of solids or of liquids, and also in the case of solutions and of solids wetted by a liquid, a percentage mass based on the total mass of the mixture, the solution or the wetted solid;

- (b) In the case of mixtures of compressed gases, when filled by pressure, the proportion of the volume indicated as a percentage of the total volume of the gaseous mixture, or, when filled by mass, the proportion of the mass indicated as a percentage of the total mass of the mixture;
- (c) In the case of mixtures of liquefied gases and gases dissolved under pressure, the proportion of the mass indicated as a percentage of the total mass of the mixture.

1.2.2.3 Pressures of all kinds relating to receptacles (such as test pressure, internal pressure, safety valve opening pressure) are always indicated in gauge pressure (pressure in excess of atmospheric pressure); however, the vapour pressure of substances is always expressed in absolute pressure.

1.2.2.4 Where ADR specifies a degree of filling for receptacles, this is always related to a reference temperature of the substances of 15 °C, unless some other temperature is indicated.

CHAPTER 1.3

TRAINING OF PERSONS INVOLVED IN THE CARRIAGE OF DANGEROUS GOODS

1.3.1 Scope and applicability

Persons employed by the participants referred to in Chapter 1.4, whose duties concern the carriage of dangerous goods, shall receive training in the requirements governing the carriage of such goods appropriate to their responsibilities and duties.

NOTE 1: With regard to training for the safety adviser, see 1.8.3.

NOTE 2: With regard to the training of the vehicle crew, see 8.2

1.3.2 Nature of the training

The training shall take the following form, appropriate to the responsibility and duties of the individual concerned.

1.3.2.1 General awareness training

Personnel shall be familiar with the general requirements of the provisions for the carriage of dangerous goods.

1.3.2.2 Function-specific training

Personnel shall receive detailed training, commensurate directly with their duties and responsibilities in the requirements of the regulations concerning the carriage of dangerous goods.

Where the carriage of dangerous goods involves a multimodal transport operation, the personnel shall be made aware of the requirements concerning other transport modes.

1.3.2.3 Safety training

Commensurate with the degree of risk of injury or exposure arising from an incident involving the carriage of dangerous goods, including loading and unloading, personnel shall receive training covering the hazards and dangers presented by dangerous goods.

The training provided shall aim to make personnel aware of the safe handling and emergency response procedures.

1.3.2.4 Training for Class 7

For the purpose of Class 7, personnel shall receive appropriate training concerning the radiation hazards involved and the precautions to be observed in order to ensure restriction of their exposure and that of other persons who might be affected by their actions.

1.3.3 Documentation

Details of all the training undertaken shall be kept by both the employer and the employee and shall be verified upon commencing a new employment. The training shall be periodically supplemented with refresher training to take account of changes in regulations.

CHAPTER 1.4

SAFETY OBLIGATIONS OF THE PARTICIPANTS

1.4.1 General safety measures

1.4.1.1 The participants in the carriage of dangerous goods shall take appropriate measures according to the nature and the extent of foreseeable dangers, so as to avoid damage or injury and, if necessary, to minimize their effects. They shall, in all events, comply with the requirements of ADR in their respective fields.

1.4.1.2 When there is an immediate risk that public safety may be jeopardized, the participants shall immediately notify the emergency services and shall make available to them the information they require to take action.

1.4.1.3 ADR may specify certain of the obligations falling to the various participants.

If a Contracting Party considers that no lessening of safety is involved, it may in its domestic legislation transfer the obligations falling to a specific participant to one or several other participants, provided that the obligations of 1.4.2 and 1.4.3 are met. These derogations shall be communicated by the Contracting Party to the Secretariat of the United Nations Economic Commission for Europe which will bring them to the attention of the Contracting Parties.

The requirements of 1.2.1, 1.4.2 and 1.4.3 concerning the definitions of participants and their respective obligations shall not affect the provisions of domestic law concerning the legal consequences (criminal nature, liability, etc.) stemming from the fact that the participant in question is e.g. a legal entity, a self-employed worker, an employer or an employee.

1.4.2 Obligations of the main participants

1.4.2.1 *Consignor*

1.4.2.1.1 The consignor of dangerous goods is required to hand over for carriage only consignments which conforms to the requirements of ADR. In the context of 1.4.1, he shall in particular:

- (a) ascertain that the dangerous goods are classified and accepted for carriage in accordance with ADR;
- (b) furnish the carrier with information and data and, if necessary, the required transport documents and accompanying documents (authorizations, approvals, notifications, certificates, etc.), taking into account in particular the requirements of Chapter 5.4 and of the tables in Part 3;
- (c) use only packagings, large packagings, intermediate bulk containers (IBCs) and tanks (tank-vehicles, demountable tanks, battery vehicles, MEGCs, portable tanks and tank-containers) approved for and suited to the carriage of the substances concerned and bearing the markings prescribed by ADR;

- (d) comply with the requirements on the means of dispatch and on forwarding restrictions;
- (e) ensure that even empty uncleaned and not degassed tanks (tank-vehicles, demountable tanks, battery-vehicles, MEGCs, portable tanks and tank-containers) or empty, uncleaned vehicles and large and small bulk containers are appropriately marked and labelled and that empty uncleaned tanks are closed and present the same degree of leakproofness as if they were full.

1.4.2.1.2 If the consignor uses the services of other participants (packer, loader, filler, etc.), he shall take appropriate measures to guarantee that the consignment meets the requirements of ADR. He may, however, in the case of 1.4.2.1.1 (a), (b), (c) and (e), rely on the information and data made available to him by other participants.

1.4.2.1.3 When the consignor acts on behalf of a third party, the latter shall inform the consignor in writing that dangerous goods are involved and make available to him all the information and documents he needs to perform his obligations.

1.4.2.2 Carrier

1.4.2.2.1 In the context of 1.4.1, where appropriate, the carrier shall in particular:

- (a) ascertain that the dangerous goods to be carried are accepted for carriage;
- (b) ascertain that the prescribed documentation is on board the transport unit;
- (c) ascertain visually that the vehicles and loads have no obvious defects, leakages or cracks, missing equipment, etc.;
- (d) ascertain that the date of the next test for tank vehicles, battery vehicles, fixed tanks, demountable tanks, portable tanks, tank-containers and MEGCs has not expired;
- (e) verify that the vehicles are not overloaded;
- (f) ascertain that the danger labels and markings prescribed for the vehicles have been affixed;
- (g) ascertain that the equipment prescribed in the written instructions for the driver is on board the vehicle.

Where appropriate, this shall be done on the basis of the transport documents and accompanying documents, by a visual inspection of the vehicle or the containers and, where appropriate, the load.

1.4.2.2.2 The carrier may, however, in the case of 1.4.2.2.1 (a), (b), (e) and (f), rely on information and data made available to him by other participants.

1.4.2.2.3 If the carrier observes an infringement of the requirements of ADR, in accordance with 1.4.2.2.1, he shall not forward the consignment until the matter has been rectified.

1.4.2.2.4 If, during the journey, an infringement which could jeopardize the safety of the operation is observed, the consignment shall be halted as soon as possible bearing in mind the requirements of traffic safety, of the safe

immobilisation of the consignment, and of public safety. The transport operation may only be continued once the consignment complies with applicable regulations. The competent authority(ies) concerned by the rest of the journey may grant an authorization to pursue the transport operation.

In case the required compliance cannot be achieved or no authorization is granted for the rest of the journey, the competent authority(ies) shall provide the carrier with the necessary administrative assistance. The same shall apply in case the carrier informs this/these competent authority(ies) that the dangerous nature of the goods carried was not communicated to him by the consignor and that he wishes, by virtue of the law applicable in particular to the contract of carriage, to unload, destroy or render the goods harmless.

1.4.2.3 Consignee

1.4.2.3.1 The consignee has the obligation not to defer acceptance of the goods without compelling reasons and to verify, after unloading, that the requirements of ADR concerning him have been complied with.

In the context of 1.4.1, he shall in particular:

- (a) carry out in the cases provided for by ADR the prescribed cleaning and decontamination of the vehicles and containers;
- [(b) ensure that the vehicles and large containers once completely unloaded and cleaned, degassed and decontaminated, no longer bear danger markings.]

1.4.2.3.2 If the consignee makes use of the services of other participants (unloader, cleaner, decontamination facility, etc.) he shall take appropriate measures to guarantee that the requirements of ADR have been complied with.

1.4.2.3.3 [If these verifications bring to light an infringement of the requirements of ADR, the consignee shall return the container/large container to the carrier only after the infringement has been remedied.]

[NOTE of the editorial group: for the sake of clarity, substitute the sentence above with the following one: "A container shall not be returned or reused unless the above mentioned cleaning and decontamination have been carried out as prescribed."]

1.4.3 Obligations of the other participants

A non-exhaustive list of the other participants and their respective obligations is given below. The obligations of the other participants flow from paragraph 1.4.1 above insofar as they know or should have known that their duties are performed as part of a transport operation subject to ADR.

1.4.3.1 Loader

1.4.3.1.1 In the context of 1.4.1, the loader has the following obligations in particular:

- (a) he shall hand the dangerous goods over to the carrier only if they are authorized for carriage in accordance with ADR;
- (b) he shall, when handing over for carriage packed dangerous goods or uncleaned empty packagings, check whether the packaging is damaged. He shall not hand over a package the packaging of which is damaged, especially if it is not leakproof, and there are

leakages or the possibility of leakages of the dangerous substance, until the damage has been repaired; this obligation also applies to empty uncleaned packagings;

- (c) he shall, when loading dangerous goods in a vehicle, or a large or small container, comply with the special requirements concerning loading and handling;
- (d) he shall, when he hands dangerous goods over for carriage directly, comply with the requirements concerning labelling and the orange plates;
- (e) he shall, when loading packages, comply with the prohibitions on mixed loading taking into account dangerous goods already in the vehicle or large container and requirements concerning the separation of foodstuffs, other articles of consumption or animal feedstuffs.

1.4.3.1.2 The loader may, however, in the case of 1.4.3.1.1 (d) and (e), rely on information and data made available to him by other participants.

1.4.3.2 Packer

In the context of 1.4.1, the packer shall comply with in particular:

- (a) the requirements concerning packing conditions, or mixed packing conditions and,
- (b) when he prepares packages for carriage, the requirements concerning marking and labelling of the packages.

1.4.3.3 Filler

In the context of 1.4.1, the filler has the following obligations in particular:

- (a) he shall ensure prior to the filling of tanks that both they and their equipment are technically in a satisfactory condition;
- (b) he shall ensure that the date of the next test for tank-vehicles, battery-vehicles, demountable tanks, portable tanks, tank-containers and MEGCs has not expired;
- (c) he shall only fill tanks with the dangerous goods authorized for carriage in those tanks;
- (d) he shall, in filling the tank, comply with the requirements concerning dangerous goods in adjoining compartments;
- (e) he shall, during the filling of the tank, observe the maximum permissible degree of filling or the maximum permissible mass of contents per litre of capacity for the substance being filled;
- (f) he shall, after filling the tank, check the leakproofness of the closing devices;
- (g) he shall ensure that no dangerous residue of the filling substance adheres to the outside of the tanks filled by him;

- (h) he shall, in preparing the dangerous goods for carriage, affix the prescribed orange plates on the tanks, on the vehicles and on the large and small bulk containers filled by him;
- (i) he shall, in preparing the dangerous goods for carriage, affix the prescribed danger labels on the tanks, on the vehicles and on the large and small bulk containers filled by him;

1.4.3.4 Tank-container operator

In the context of 1.4.1, the tank-container operator shall in particular:

- (a) ensure compliance with the requirements for construction, equipment, tests and marking;
- (b) ensure that the maintenance of shells and their equipment is carried out in such a way as to guarantee that, under normal operating conditions, the tank-container satisfies the requirements of ADR until the next inspection;
- (c) have a special check made when the safety of the shell or its equipment is liable to be impaired by a repair, an alteration or an accident.

1.4.3.5 Reserved

CHAPTER 1.5

DEROGATIONS

1.5.1 Temporary derogations

1.5.1.1 For the purpose of adapting the requirements of ADR to technological and industrial developments, the competent authorities of the Contracting Parties may agree directly among themselves to authorize certain transport operations in their territories by temporary derogation from the requirements of ADR, provided that safety is not compromised thereby. The authority which has taken the initiative with respect to the particular derogation shall notify such derogations to the Secretariat of the United Nations Economic Commission for Europe which shall bring them to the attention of the Contracting Parties.

NOTE: "Special arrangement" in accordance with 1.7.4 is not considered to be a temporary derogation in accordance with this section.

1.5.1.2 The period of validity of the temporary derogation shall not be more than five years from the date of its entry into force. The temporary derogation shall automatically cease as from the date of the entry into force of a relevant amendment to ADR.

1.5.1.3 Transport operations on the basis of temporary derogations shall constitute transport operations in the sense of ADR.

1.5.2 Reserved

CHAPTER 1.6

TRANSITIONAL MEASURES

1.6.1 General

1.6.1.1 Unless otherwise provided, the substances and articles of ADR may be carried until 31 December 2002 in accordance with the requirements of ADR applicable up to 30 June 2001.

1.6.1.2 The danger labels which until 31 December 1998 conformed to the models prescribed up to that date may be used until stocks are exhausted.

1.6.1.3 Substances and articles of Class 1, belonging to the armed forces of a Contracting Party, that were packaged prior to 1 January 1990 in accordance with the requirements of ADR in effect at that time may be carried after 31 December 1989 provided the packagings maintain their integrity and are declared in the transport document as military goods packaged prior to 1 January 1990. The other requirements applicable as from 1 January 1990 for this class shall be complied with.

1.6.1.4 Substances and articles of Class 1 that were packaged between 1 January 1990 and 31 December 1996 in accordance with the requirements of ADR in effect at that time may be carried after 31 December 1996, provided the packagings maintain their integrity and are declared in the transport document as goods of Class 1 packaged between 1 January 1990 and 31 December 1996.

1.6.1.5 Reserved

1.6.2 Receptacles for Class 2

1.6.2.1 Receptacles built before 1 January 1997 and which do not conform to the requirements of ADR applicable as from 1 January 1997, but the transport of which was permitted under the requirements of ADR applicable up to 31 December 1996, may continue to be transported after that date if the periodic test requirements in Packing Instructions P200 and P203 are complied with.

1.6.2.2 Cylinders in accordance with the definition in 1.2.1 which were submitted to an initial inspection or periodic inspection before 1 January 1997 may be transported empty and uncleaned without a label until the date of the next refilling or the next periodic inspection.

1.6.3 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles

1.6.3.1 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles built before the entry into force of the requirements applicable as from 1 October 1978 may be kept in service if the equipment of the shell meets the requirements of Chapter 6.8. The thickness of the shell wall, except in the case of shells intended for the carriage of liquefied, refrigerated gases of Class 2, shall be appropriate to a calculation pressure of not less than 0.4 MPa (4bar) (gauge pressure) in the case of mild steel or of not less than 200 kPa (2 bar) (gauge pressure) in the case of aluminium and aluminium alloys. For other than circular cross-sections of tanks, the diameter to be used as a basis for calculation shall be that of a circle whose area is equal to that of the actual cross-section of the tank.

1.6.3.2 The periodic tests for fixed tanks (tank-vehicles), demountable tanks and battery-vehicles kept in service under these transitional requirements shall be conducted in accordance with the requirements [of 6.8.2.4 and 6.8.3.4] and with the pertinent special requirements for the various classes. Unless the earlier requirements prescribed a higher test pressure, a test pressure of 200 kPa (2 bar) (gauge pressure) shall suffice for aluminium shells and aluminium alloy shells.

1.6.3.3 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles which meet the transitional requirements in 1.6.3.1 and 1.6.3.2 may be used until 30 September 1993 for the carriage of the dangerous goods for which they have been approved. This transitional period shall not apply to fixed tanks (tank-vehicles), demountable tanks and battery-vehicles intended for the carriage of substances of Class 2, or to fixed tanks (tank-vehicles), demountable tanks and battery-vehicles whose wall thickness and items of equipment meet the requirements of Chapter 6.8.

1.6.3.4 (a) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed before 1 May 1985 in accordance with the requirements of ADR in force between 1 October 1978 and 30 April 1985 but not conforming to the requirements applicable as from 1 May 1985 may continue to be used after that date.

(b) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles, constructed between 1 May 1985 and the entry into force of the requirements applicable as from 1 January 1988 which do not conform to those requirements but were constructed according to the requirements of ADR in force until that date, may still be used after that date.

1.6.3.5 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles, constructed before 1 January 1993 in accordance with the requirements in force up to 31 December 1992 but which do not conform to the requirements applicable as from 1 January 1993 may still be used.

1.6.3.6. (a) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed between 1 January 1978 and 31 December 1984, if used after 31 December 2004, shall conform to the requirements of marginal 211 127(5), applicable as from 1 January 1990, concerning wall thickness and protection against damage.

(b) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed between 1 January 1985 and 31 December 1989, if used after 31 December 2010, shall conform to the requirements of marginal 211 127(5), applicable as from 1 January 1990, concerning wall thickness and protection against damage.

1.6.3.7 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed before 1 January 1999 in accordance with the requirements in force up to 31 December 1998 but which do not, however, conform to the requirements applicable as from 1 January 1999 may still be used.

1.6.3.8 Fixed tanks (tank-vehicles) demountable tanks and battery-vehicles intended for the carriage of substances of Class 2, which were built prior to 1 January 1997, may carry markings conforming to the requirements applicable up to 31 December 1996, until the next periodic test.

1.6.3.9 Reserved

1.6.3.10 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 1995, which were intended for the carriage of substances of UN 3256, but which do not, however, conform to the requirements applicable as from 1 January 1995, may still be used until 31 December 2004.

1.6.3.11 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 1997 in accordance with the requirements in force up to 31 December 1996 but which do not, however, conform to the requirements of marginals 211 332 and 211 333 applicable as from 1 January 1997, may still be used.

1.6.3.12 Fixed tanks (tank-vehicles) and demountable tanks intended for the carriage of UN No.2401 piperidine constructed before 1 January 1999 in accordance with the requirements of marginal 211 322 in force

up to 31 December 1998, but which do not, however, conform to the requirements applicable as from 1 January 1999, may continue to be used until 31 December 2004.

1.6.3.13 Fixed tanks (tank-vehicles) and demountable tanks intended for the carriage of substances with UN No. 3257 constructed before 1 January 1997 which do not however conform to the requirements applicable as from 1 January 1997, may continue to be used until 31 December 2006.

1.6.3.14 Reserved

1.6.3.15 Fixed tanks (tank-vehicles) and demountable tanks intended for the carriage of substances with the following UN Nos :1092, 1098, 1135, 1143, 1182, 1199, 1238, 1251, 1605, 1647, 1695, 1809, 2295, 2337, 2407, 2438, 2477, 2487, 2488, 2558, 2606, 2644, 2646, 2686, 3023, 3289 and 3290, constructed before 1 January 1997 in accordance with the requirements in force up to 31 December 1996, but which do not conform with the requirements applicable as from 1 January 1997 may continue to be used until 31 December 2002.

[1.6.3.16 Battery-vehicles first registered before 1 July 1997 which do not meet the requirements of 9.2.2, may continue to be used until 31 December 2004.]

1.6.3.17 Reserved

1.6.3.18 Tank-vehicles (fixed tanks), demountable tanks and battery-vehicles constructed before [1 July 2001] in accordance with the requirements in force up to [30 June 2001], but which do not however conform to the requirements applicable as from [1 July 2001], may still be used. Assignment to the tank code in the design type approvals and the relevant markings shall be carried out prior to [1 July 2007].

1.6.4 Tank-containers and MEGCs

1.6.4.1 Tank-containers constructed before 1 January 1988 in accordance with the requirements in force up to 31 December 1987 but which do not, however, conform to the requirements applicable as from 1 January 1988, may still be used.

1.6.4.2 Tank-containers constructed before 1 January 1993 in accordance with the requirements in force up to 31 December 1992 but which do not, however, conform to the requirements applicable as from 1 January 1993, may still be used.

1.6.4.3 Tank-containers constructed before 1 January 1999 in accordance with the requirements in force up to 31 December 1998 but which do not, however, conform to the requirements applicable as from 1 January 1999, may still be used.

1.6.4.4. Reserved

1.6.4.5 Tank-containers intended for the carriage of substances of Class 2, which were constructed before 1 January 1997, may bear markings conforming to the requirements applicable up to 31 December 1996 until the next periodic test.

1.6.4.6 Tank-containers which were intended for the carriage of substances of UN No.3256, constructed before 1 January 1995, but which do not, however, conform with the requirements applicable as from 1 January 1995, may still be used until 31 December 2004.

1.6.4.7 Tank-containers constructed before 1 January 1997 in accordance with the requirements in force up to 31 December 1996 but which do not, however, conform to the requirements of marginals 212 332 and 212 333 applicable as from 1 January 1997, may still be used.

1.6.4.8 Reserved.

1.6.4.9 Tank-containers intended for the carriage of UN No.2401 piperidine, built before 1 January 1999 in accordance with the requirements of marginal 212 322 applicable up to 31 December 1998, but which do not, however, conform to the requirements applicable as from 1 January 1999, may continue to be used until 31 December 2003.

1.6.4.10 Tank-containers which were intended for the carriage of substances of UN No.3257, built before 1 January 1997, but which do not conform, however, with the requirements applicable as from 1 January 1997, may still be used until 31 December 2006.

1.6.4.11 Tank-containers intended for the carriage of substances with the following UN Nos : 1092, 1098, 1135, 1143, 1182, 1199, 1238, 1251, 1605, 1647, 1695, 1809, 2295, 2337, 2407, 2438, 2477, 2487, 2488, 2558, 2606, 2644, 2646, 2686, 3023, 3289 and 3290, constructed before 1 January 1997 in accordance with the requirements in force up to 31 December 1996, but which do not conform to the requirements applicable as from 1 January 1997 may continue to be used until 31 December 2001.

1.6.4.12 Tank-containers and MEGCs constructed before [1 July 2001] in accordance with the requirements applicable up to [30 June 2001], but which do not, however, conform to the requirements applicable as from [1 July 2001], may still be used. Assignment to the tank codes in the design type approvals and the relevant markings shall be carried out prior to [1 July 2006].

1.6.5 Vehicles

1.6.5.1 Transport units intended for the carriage of tank-containers or portable tanks exceeding 3 000 litres capacity first registered before 1 July 1997 which do not comply with the requirements of 9.1.2 and 9.2.2 may continue to be used until 31 December 2004. These transport units shall be subject, until that date, to the provisions of marginal 10 283 which were in force until 31 December 1996.

As regards the construction of base vehicles, the requirements in force up to [30 June 2001] shall remain applicable until [...].

1.6.5.2 Vehicles carrying demountable tanks and vehicles intended for the carriage of tank-containers or portable tanks registered before 1 January 1995, which were used, before that date, for the carriage of substances of UN No.3256 and which do not fully comply with the requirements of 9.2.2, 9.2.3, 9.2.5, and 9.7.6 may continue to be used until 31 December 2004.

When a certificate of approval is required in accordance with 9.1.2.1.2, this certificate shall bear a mention indicating that the vehicle has been approved on the basis of 1.6.5.2.

1.6.5.3 Vehicles carrying demountable tanks and vehicles intended for the carriage of tank-containers or portable tanks registered before 1 January 1997, which were used, before that date, for the carriage of substances of UN No. 3257 and which do not fully comply with the requirements of 9.2.2, 9.2.3, 9.2.5, and 9.7.6 may continue to be used until 31 December 2006.

When a certificate of approval is required in accordance with 9.1.2.1.2, this certificate shall bear a mention indicating that the vehicle has been approved on the basis of 1.6.5.3.

1.6.6 Class 7

1.6.6.1 *Packages not requiring competent authority approval of design under the 1985 and 1985 (as amended 1990) editions of IAEA Safety Series No. 6*

Excepted packages, Industrial packages Type IP-1, Type IP-2 and Type IP-3 and Type A packages that did not require approval of design by the competent authority and which meet the requirements of the 1985 or 1985 (as amended 1990) Editions of IAEA Regulations for the Safe Transport of Radioactive Material (IAEA Safety Series No. 6) may continue to be used subject to the mandatory programme of quality assurance in accordance with the requirements of 1.7.3 and the activity limits and material restrictions of 2.2.7.7.

Any packaging modified, unless to improve safety, or manufactured after 31 December 2003, shall meet the requirements of ADR. Packages prepared for transport not later than 31 December 2003 under the 1985 or 1985 (as amended 1990) Editions of IAEA Safety Series No. 6 may continue in transport. Packages prepared for transport after this date shall meet the requirements of ADR.

1.6.6.2 *Packages approved under the 1973, 1973 (as amended), 1985 and 1985 (as amended 1990) editions of IAEA Safety Series No. 6*

1.6.6.2.1 Packagings manufactured to a package design approved by the competent authority under the provisions of the 1973 or 1973 (as amended) Editions of IAEA Safety Series No. 6 may continue to be used, subject to: multilateral approval of package design, the mandatory programme of quality assurance in accordance with the applicable requirements of 1.7.3 and the activity limits and material restrictions of 2.2.7.7. No new manufacture of such packaging shall be permitted to commence. Changes in the design of the packaging or in the nature or quantity of the authorized radioactive contents which, as determined by the competent authority, would significantly affect safety shall require that the requirements of ADR be met. A serial number according to the provision of 5.2.1.7.5 shall be assigned to and marked on the outside of each packaging.

1.6.6.2.2 Packagings manufactured to a package design approved by the competent authority under the provisions of the 1985 or 1985 (as amended 1990) Editions of IAEA Safety Series No. 6 may continue to be used until 31 December 2003, subject to: the mandatory programme of quality assurance in accordance with the requirements of 1.7.3 and the activity limits and material restrictions of 2.2.7.7. After this date use may continue subject, additionally, to multilateral approval of package design. Changes in the design of the packaging or in the nature or quantity of the authorized radioactive contents which, as determined by the competent authority, would significantly affect safety shall require that the requirements of these Regulations be met. All packagings for which manufacture begins after 31 December 2006 shall meet the requirements of ADR.

1.6.6.3 *Special form radioactive material approved under the 1973, 1973 (as amended), 1985 and 1985 (as amended 1990) Editions of IAEA Safety Series No. 6*

Special form radioactive material manufactured to a design which had received unilateral approval by the competent authority under the 1973, 1973 (as amended), 1985 or 1985 (as amended 1990) Editions of IAEA Safety Series No. 6 may continue to be used when in compliance with the mandatory programme of quality assurance in accordance with the applicable requirements of 1.7.3. All special form radioactive material manufactured after 31 December 2003 shall meet the requirements of ADR.

CHAPTER 1.7

GENERAL REQUIREMENTS CONCERNING CLASS 7

1.7.1 General

1.7.1.1 ADR establishes standards of safety which provide an acceptable level of control of the radiation, criticality and thermal hazards to persons, property and the environment that are associated with the transport of radioactive material. These standards are based on the IAEA Regulations for the Safe Transport of Radioactive Material (ST-1), IAEA, Vienna (1996). Explanatory material on ST-1 can be found in “Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (1996 Edition)”, Safety Standard Series No. ST-2, IAEA, Vienna (to be published).

1.7.1.2 The objective of ADR is to protect persons, property and the environment from the effects of radiation during the transport of radioactive material. This protection is achieved by requiring:

- (a) Containment of the radioactive contents;
- (b) Control of external radiation levels;
- (c) Prevention of criticality; and
- (d) Prevention of damage caused by heat.

These requirements are satisfied firstly by applying a graded approach to contents limits for packages and vehicles and to performance standards applied to package designs depending upon the hazard of the radioactive contents. Secondly, they are satisfied by imposing requirements on the design and operation of packages and on the maintenance of packagings, including a consideration of the nature of the radioactive contents. Finally, they are satisfied by requiring administrative controls including, where appropriate, approval by competent authorities.

1.7.1.3 ADR applies to the transport of radioactive material by road including transport which is incidental to the use of the radioactive material. Transport comprises all operations and conditions associated with and involved in the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, unloading and receipt at the final destination of loads of radioactive material and packages. A graded approach is applied to the performance standards in ADR that is characterized by three general severity levels:

- (a) Routine conditions of transport (incident free);
- (b) Normal conditions of transport (minor mishaps);
- (c) Accident conditions of transport.

1.7.2 Radiation Protection Programme

1.7.2.1 The transport of radioactive material shall be subject to a Radiation Protection Programme which shall consist of systematic arrangements aimed at providing adequate consideration of radiation protection measures.

1.7.2.2 The nature and extent of the measures to be employed in the programme shall be related to the magnitude and likelihood of radiation exposures. The programme shall incorporate the requirements in 1.7.2.3, and 1.7.2.4, CV33 (1.1) and (1.4) of 7.5.11 and applicable emergency response procedures. Programme documents shall be available, on request, for inspection by the relevant competent authority.

1.7.2.3 Protection and safety shall be optimized in order that the magnitude of individual doses, the number of persons exposed, and the likelihood of incurring exposure shall be kept as low as reasonably achievable, economic and social factors being taken into account, and doses to persons shall be below the relevant dose limits. A structured and systematic approach shall be adopted and shall include consideration of the interfaces between transport and other activities.

1.7.2.4 For occupational exposures arising from transport activities, where it is assessed that the effective dose:

- (a) is most unlikely to exceed 1 mSv in a year, no special work patterns, detailed monitoring, dose assessment programmes or individual record keeping shall be required;
- (b) is likely to be between 1 mSv and 6 mSv in a year, a dose assessment programme via work place monitoring or individual monitoring shall be conducted;
- (c) is likely to exceed 6 mSv in a year, individual monitoring shall be conducted.

When individual monitoring or work place monitoring is conducted, appropriate records shall be kept.

1.7.3 Quality assurance

Quality assurance programmes based on international, national or other standards acceptable to the competent authority shall be established and implemented for the design, manufacture, testing, documentation, use, maintenance and inspection of all special form radioactive material, low dispersible radioactive material and packages and for transport and in-transit storage operations to ensure compliance with the relevant provisions of ADR. Certification that the design specification has been fully implemented shall be available to the competent authority. The manufacturer, consignor or user shall be prepared to provide facilities for competent authority inspection during manufacture and use and to demonstrate to any cognizant competent authority that:

- (a) the manufacturing methods and materials used are in accordance with the approved design specifications; and
- (b) all packagings are periodically inspected and, as necessary, repaired and maintained in good condition so that they continue to comply with all relevant requirements and specifications, even after repeated use.

Where competent authority approval is required, such approval shall take into account and be contingent upon the adequacy of the quality assurance programme.

1.7.4 Special arrangement

1.7.4.1 Special arrangement shall mean those provisions, approved by the competent authority, under which consignments which do not satisfy all the requirements of ADR applicable to radioactive material may be transported.

NOTE: Special arrangement is not considered to be a temporary derogation in accordance with 1.5.1.

1.7.4.2 Consignments for which conformity with any provision applicable to Class 7 is impracticable shall not be transported except under special arrangement. Provided the competent authority is satisfied that conformity with the Class 7 provisions of ADR is impracticable and that the requisite standards of safety established by ADR have been demonstrated through alternative means the competent authority may approve special arrangement transport operations for single or a planned series of multiple consignments. The overall level of safety in transport shall be at least equivalent to that which would be provided if all the applicable requirements had been met. For international consignments of this type, multilateral approval shall be required.

1.7.5 Radioactive material possessing other dangerous properties

In addition to the radioactive and fissile properties, any subsidiary risk of the contents of the package, such as explosiveness, flammability, pyrophoricity, chemical toxicity and corrosiveness, shall also be taken into account in the documentation, packing, labelling, marking, placarding, stowage, segregation and transport, in order to be in compliance with all relevant provisions for dangerous goods of ADR.

CHAPTER 1.8

CHECKS AND OTHER SUPPORT MEASURES TO ENSURE COMPLIANCE WITH SAFETY REQUIREMENTS

1.8.1 Administrative controls of dangerous goods

1.8.1.1 The competent authorities of the Contracting Parties may, on their national territory, at any time, conduct spot checks to verify whether the requirements concerning the carriage of dangerous goods have been met.

These checks shall, however, be made without endangering persons, property or the environment and without major disruption of road services.

1.8.1.2 Participants in the carriage of dangerous goods (Chapter 1.4) shall, without delay, in the context of their respective obligations, provide the competent authorities and their agents with the necessary information for carrying out the checks.

1.8.1.3 The competent authorities may also, for the purposes of carrying out checks on the premises of the enterprises participating in the carriage of dangerous goods (Chapter 1.4), make inspections, consult the necessary documents and remove samples of dangerous goods or packagings for examination, provided that safety is not jeopardized thereby. The participants in the carriage of dangerous goods (Chapter 1.4) shall also make the vehicles or parts of vehicles and the equipment and installations accessible for the purpose of checking where this is possible and reasonable. They may, if they deem necessary, designate a person from the enterprise to accompany the representative of the competent authority.

1.8.1.4 If the competent authorities observe that the requirements of ADR have not been met, they may prohibit a consignment or interrupt a transport operation until the defects observed are rectified, or they may prescribe other appropriate measures. Immobilization may take place on the spot or at another place selected by the authorities for safety reasons. These measures shall not cause a major disruption in road services.

1.8.2 Mutual administrative support

1.8.2.1 The Contracting Parties shall agree on mutual administrative support for the implementation of ADR.

1.8.2.2 When a Contracting Party has reasons to observe that the safety of the carriage of dangerous goods on its territory is compromised as a result of very serious or repeated infringements by an enterprise which has its headquarters on the territory of another Contracting Party, it shall notify the competent authorities of this Contracting Party of such infringements. The competent authorities of the Contracting Party on the territory of which the very serious or repeated infringements were observed may request the competent authorities of the Contracting Party on the territory of which the enterprise has its headquarters to take appropriate measures against the offender(s). The transmission of data referring to persons shall not be permitted unless it is necessary for the prosecution of very serious or repeated infringements.

1.8.2.3 The authorities notified shall communicate to the competent authorities of the Contracting Party on the territory of which the infringements were observed, the measures which have, if necessary, been taken with respect to the enterprise.

1.8.3 Safety adviser

1.8.3.1 Each undertaking, the activities of which include the transport, or the related loading or unloading, of dangerous goods by road shall appoint one or more safety advisers for the transport of dangerous goods, responsible for helping to prevent the risks inherent in such activities with regard to persons, property and the environment.

1.8.3.2 The competent authorities of the Contracting Parties may provide that these requirements shall not apply to undertakings:

- (a) the activities of which concern quantities in each transport unit smaller than those referred to in 1.1.3, 2.2.7.1.2 and in Chapters 3.3 and 3.4, or
- (b) the main or secondary activities of which are not the transport or the related loading or unloading of dangerous goods but which occasionally engage in the national transport or the related loading or unloading of dangerous goods posing little danger or risk of pollution.

1.8.3.3 The main task of the adviser shall be, under the responsibility of the head of the undertaking, to seek by all appropriate means and by all appropriate action, within the limits of the relevant activities of that undertaking, to facilitate the conduct of those activities in accordance with the requirements applicable and in the safest possible way.

With regard to the undertaking's activities, the adviser has the following duties in particular:

- monitoring compliance with the requirements governing the transport of dangerous goods;
- advising his undertaking on the transport of dangerous goods;
- preparing an annual report to the management of his undertaking or a local public authority, as appropriate, on the undertaking's activities in the transport of dangerous goods. Such annual reports shall be preserved for five years and made available to the national authorities at their request.

The adviser's duties also include monitoring the following practices and procedures relating to the relevant activities of the undertaking:

- the procedures for compliance with the requirements governing the identification of dangerous goods being transported;
- the undertaking's practice in taking account, when purchasing means of transport, of any special requirements in connection with the dangerous goods being transported;
- the procedures for checking the equipment used in connection with the transport, loading or unloading of dangerous goods;
- the proper training of the undertaking's employees and the maintenance of records of such training;

- the implementation of proper emergency procedures in the event of any accident or incident that may affect safety during the transport, loading or unloading of dangerous goods;
- investigating and, where appropriate, preparing reports on serious accidents, incidents or serious infringements recorded during the transport, loading or unloading of dangerous goods;
- the implementation of appropriate measures to avoid the recurrence of accidents, incidents or serious infringements;
- the account taken of the legal prescriptions and special requirements associated with the transport of dangerous goods in the choice and use of sub-contractors or third parties;
- verification that employees involved in the transport, loading or unloading of dangerous goods have detailed operational procedures and instructions,
- the introduction of measures to increase awareness of the risks inherent in the transport, loading and unloading of dangerous goods;
- the implementation of verification procedures to ensure the presence on board means of transport of the documents and safety equipment which must accompany transport and the compliance of such documents and equipment with the regulations;
- the implementation of verification procedures to ensure compliance with the requirements governing loading and unloading.

1.8.3.4 The adviser may also be the head of the undertaking, a person with other duties in the undertaking, or a person not directly employed by that undertaking, provided that that person is capable of performing the duties of adviser.

1.8.3.5 Each undertaking concerned shall, on request, inform the competent authority or the body designated for that purpose by each Contracting Party of the identity of its adviser.

1.8.3.6 [Whenever an accident affects persons, property or the environment or results in damage to property or the environment during transport], loading or unloading carried out by the undertaking concerned, the adviser shall, after collecting all the relevant information, prepare an accident report to the management of the undertaking or to a local public authority, as appropriate. That report shall not replace any report by the management of the undertaking which might be required under any other international or national legislation.

1.8.3.7 An adviser shall hold a vocational training certificate, valid for transport by road. That certificate shall be issued by the competent authority or the body designated for that purpose by each Contracting Party.

1.8.3.8 To obtain a certificate, a candidate shall undergo training and pass an examination approved by the competent authority of the Contracting Party.

1.8.3.9 The main aims of the training shall be to provide candidates with sufficient knowledge of the risks inherent in the transport of dangerous goods, of the laws, regulations and administrative provisions applicable to the modes of transport concerned and of the duties listed in 1.8.3.3.

[1.8.3.10 The examination shall be organized by the competent authority or by an examining body designated by the competent authority.

The examining body shall be designated in writing. This approval may be of limited duration and shall be based on the following criteria:

- competence of the examining body;
- specifications of the form of the examinations the examining body is proposing;
- measures intended to ensure that examinations are impartial;
- independence of the body from all natural or legal persons employing safety advisers.]

1.8.3.11 The aim of the examination is to ascertain whether candidates possess the necessary level of knowledge to carry out the duties incumbent upon a safety adviser as listed in 1.8.3.3, for the purpose of obtaining the certificate prescribed in sub-section 1.8.3.7, and it shall cover at least the following subjects:

- (a) Knowledge of the types of consequences which may be caused by an accident involving dangerous goods and knowledge of the main causes of accidents;
- (b) Requirements under national law, international conventions and agreements, with regard to the following in particular:
 - classification of dangerous goods [(procedure for classifying solutions and mixtures, structure of the list of substances, classes of dangerous goods and principles for their classification, nature of dangerous goods transported, physical, chemical and toxicological properties of dangerous goods)];
 - general packing provisions, provisions for tanks and tank-containers [(types, code, marking, construction, initial and periodic inspection and testing)];
 - danger markings and labels [(markings on packages and on danger labels, placing and removal of danger labels, placarding and labelling)];
 - particulars in transport documents [(information required, consignor's declaration of conformity)];
 - method of consignment and restrictions on dispatch [(full load, transport in bulk, transport in intermediate bulk containers, transport in containers, transport in fixed or demountable tanks)];
 - transport of passengers;
 - prohibitions and precautions relating to mixed loading;
 - segregation of goods;
 - limitation of the quantities carried and quantities exemptions;

- handling and stowage [(loading and unloading - filling ratios -, stowage and segregation)];
- cleaning and/or degassing before loading and after unloading;
- crews, vocational training;
- vehicle documents [(transport document, instructions in writing, vehicle approval certificate, driver training certificate, copies of any derogations, other documents)];
- instructions in writing [(implementation of the instructions and driver protection equipment)];
- supervision requirements, [(parking)];
- traffic regulations and restrictions;
- operational and accidental discharges of pollutants;
- requirements relating to transport equipment.

[1.8.3.12] The examination shall consist of a written test which may be supplemented by an oral examination.

The written examination shall consist of two parts:

- (a) Candidates shall receive a questionnaire. It shall include at least 20 open questions covering at least the subjects mentioned in the list in 1.8.3.11. However, multiple choice questions may be used. In this case, two multiple choice questions count as one open question. Amongst these subjects particular attention shall be paid to the following subjects:
- general preventive and safety measures;
 - classification of dangerous goods;
 - general packing provisions, including tanks, tank-containers, tank-vehicles, etc.;
 - danger markings and labels;
 - information in transport document;
 - handling and stowage;
 - crew, vocational training;
 - vehicle documents and transport certificates;
 - instructions in writing;
 - requirements concerning transport equipment.

- (b) Candidates shall undertake a case study in keeping with the duties of the adviser referred to in 1.8.3.3, in order to demonstrate that they have the necessary qualifications to fulfil the task of adviser.]

[1.8.3.13 The Contracting Parties may decide that candidates who intend working for undertakings specializing in the carriage of certain types of dangerous goods need only be questioned on the substances relating to their activities. These types of goods are:

- Class 1,
- Class 2,
- Class 7,
- Classes 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2, 8 and 9.
- UN numbers 1202, 1203, 1223, [1268 and 1863].

The certificate prescribed in 1.8.3.7 shall clearly indicate that it is only valid for one type of the dangerous goods referred to in this sub-section and on which the adviser has been questioned under the conditions defined in 1.8.3.12.]

[1.8.3.14 The competent authority or the examining body shall keep a running list of the questions that have been included in the examination.]

1.8.3.15 The certificate prescribed in 1.8.3.7 shall take the form laid down in 1.8.3.18 and shall be recognized by all Contracting Parties.

1.8.3.16 The certificate shall be valid for five years. The period of validity of a certificate shall be extended automatically for five years at a time where, during the final year before its expiry, its holder has followed refresher courses or passed an examination both of which shall be approved by the competent authority.

1.8.3.17 The requirements set out in 1.8.3.1 to 1.8.3.16 shall be considered to have been fulfilled if the relevant conditions of Council Directive 96/35/EC of 3 June 1996 on the appointment and vocational qualification of safety advisers for the transport of dangerous goods by road, rail and inland waterway^{1/} and of [Council Directive .../.../EC of on the minimum requirements applicable to the examination for safety advisers for the transport of dangerous goods by road, rail or inland waterway]^{2/} are applied.

^{1/} *Official Journal of the European Communities, No. L145 of 19 June 1996, page 10.*

^{2/} *[Official Journal of the European Communities, No. L of]*

1.8.3.18

FORM OF CERTIFICATE

Certificate of training as safety adviser for the transport of dangerous goods

Certificate No:.....

Distinguishing sign of the State issuing the certificate:.....

Surname:.....

Forename(s):.....

Date and place of birth:.....

Nationality:.....

Signature of holder:.....

Valid until for undertakings which transport dangerous goods and for undertakings which carry out related loading or unloading:

G by road

G by rail

G by inland waterway

[(Strike out what does not apply)]

For the following goods:

Q Class 1 (explosives);

Q Class 2 (gases)

Q Class 7 (radioactive materials)

Q Class 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2, 8 and 9

Q Class 3, UN numbers 1202, 1203, 1223, 1262 and 1863]

[(Strike out what does not apply)]

Issued by:.....

Date: Signature:

Extended until: By:

Date: Signature:.....

1.8.4 List of competent authorities and bodies designated by them

The Contracting Parties shall communicate to the Secretariat of the United Nations Economic Commission for Europe the addresses of the authorities and bodies designated by them which are competent in accordance with national law to implement ADR, referring in each case to the relevant requirement of ADR and giving the addresses to which the relevant applications should be made.

The Secretariat of the United Nations Economic Commission for Europe shall establish a list on the basis of the information received and shall keep it up-to-date. It shall communicate this list and the amendments thereto to the Contracting Parties.

1.8.5 Reserved

1.8.6 Reports on accidents or incidents

1.8.6.1 If a serious accident or incident takes place during the carriage of dangerous goods on the territory of a Contracting Party, the carrier is required to make a report to the competent authority of the Contracting Party concerned, which shall in turn, if necessary, make a report to the Secretariat of the United Nations Economic Commission for Europe with a view to informing the other Contracting Parties.

1.8.6.2 The Contracting Parties may draw up a standard model for the report.
