

DARE SAFETY REGULATIONS

DARE rules and regulations as supplement to the DARE charter

Approved by the GMA on the 27th of September 2023. Signed and ratified by the DARE President Thijmen Odijk and the President of the DARE Safety Board Oszkar Varnagy on the 27th of September 2023

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Contents

Glossary	1
Preface	2
General	3
Article 1 Definitions	3
Article 2 Activities	3
Organisation	3
Article 3 Persons	3
Safety Board	4
Article 4 Definition and Task	4
Article 5 Candidates	4
Article 6 Activities	5
Safety Officers	5
Article 7 Definition and Task	5
Article 8 Capabilities	5
Article 9 Operational Safety Officer	6
Article 10 Range Safety Officer	6
Article 11 Pyrotechnician	6
Safety Trainees	7
Article 12 Definition and Task	7
Safety Committee	7
Article 13 Definition and Task	7
Laws and Regulations	8
Article 14 Laws	8
Article 15 Regulations of third parties	8
Procedures File	8
Article 16 Description	8
Dangerous Goods and Systems	9
Article 17 Dangerous goods and systems	9
Article 18 Electronic systems	9
Explosives	10
Article 19 WECG	10
Article 20 General Regulations	10
Article 21 Production	10
Article 22 Articles	11
Article 23 Storage	11
Article 24 Transfer and Transport	11
Pressure Systems	11
Article 25 General provisions for pressure systems	11
Chemicals	12
Article 26 General provisions for chemicals	12
Article 27 Procurement and storage	12
Article 28 Use	12

Tests		12
Article 29	General provisions for performing tests	12
Article 30	Persons	13
Launches		13
Article 31	General provisions	13
Workshop		14
Article 32	General	14
Article 33	Workshop rules	14

Version summary

Table 1: Overview of version numbers of the DARE Safety Regulations.

Version number	Date of GMA approval	Changes w.r.t. last version	Notes
1.0	Unknown	-	First official version known. This is the last updated Dutch version.
2.0	28-08-2014	Updates and corrections without major changes	This is the first version where the English version is the leading one, and the Dutch version is no longer updated.
3.0	27-09-2023	Almost entirely rewritten to reflect the current operational structure	Coherent legal basis implemented

Glossary

Term	Meaning	Term	Meaning
SC	Safety Committee	TDO	Test Day Officer
SB	Safety Board	IO	Inventory Officer
(O)SO	(Operational) Safety Officer	L&M	Logistiek & Milieu
ASO	Acting Safety Officer	QQ	Qualitate Qua
ST	Safety Trainee	WECG	Wet Explosieven voor Civiel Gebruik
DB	DARE (Executive) Board	NAVRO	Nederlandse Amateur Vereniging voor Raket-Onderzoek
RSO	Range Safety Officer	NERO	Nederlandse vereniging voor Raket Onderzoek
PYRO	Pyrotechnician	Charter	DARE Charter/Statutes
LDO	Launch Day Officer	NTC	Nitrocellulose
SARON	Samenwerkende Amateur Raket Organisaties Nederland	TNO	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek
ADR	Accord relatif au transport international de marchandises Dangereuses par Route	UN	United Nations
GHS	Globally Harmonized System of Classification and Labelling of Chemicals	WVGS	Wet Vervoer Gevaarlijke Stoffen
TC	Test Conductor	TO	Test Operator
CP	Command Post		

Preface

Dear reader,

This document presents the third major version of DARE's Safety Regulation, a document mandated by our Charter. This contains, as of writing, a more accurate account of how DARE Safety operates, and the rules that we follow. It also includes adjustments in safety operations based on experiences and incidents that have occurred since the last time the regulations were written, as well as changes recommended and discussed with the members of DARE.

In rewriting these regulations, DARE's manner of safety is updated to reflect how we operate. These regulations, in their current form, are written so that all DARE members, as well as those who are entrusted with overseeing the safety of DARE and its members, have a foundation on which to base decisions for activities regularly occurring within our society, as well as those activities which we have not yet undertaken.

There is also a personal request - these regulations were not written by lawyers or those experienced in the legal field; these regulations will not be completely loophole-free, nor perfect. There will be clauses, paragraphs or otherwise which are open to interpretation, or upon reflection should be done differently. It goes, therefore, without saying that it is up to each member to have the best intention at heart when reading these regulations, and in case of doubt - ask! Undergoing activities within DARE with an understanding of these regulations increase the chance that you can be safe when understanding said activities; the opposite is also true - doing something with malicious intent, just because the regulations don't explicitly guide you only means that you are putting yourself, and others, at unnecessary risk. So to repeat - in case of doubt, ask!

With safest regards,

Roderick Wassenaar
September 2023

General

Article 1 Definitions

- 1 DARE Safety: This is the collective body comprising of the Safety Board, (Safety Officers) and Safety Trainees.
- 2 Safety Committee (SC): This is the collective body of five (5) members of DARE Safety, as well as one (1) member of the DARE Executive Board, who are responsible for organising and facilitating the administrative activities of DARE Safety.
- 3 Safety Board (SB): This is the collective body of Safety Officers with veto power concerning the safety of DARE and its activities.
- 4 Safety Officer (SO): This is a person, as authorised by the GMA, to oversee the safety activities of DARE as defined in [Article 2, paragraph 1](#)
- 5 Safety Trainee (ST): This is a person who is training to become a Safety Officer. They follow the Safety Officer during tests and activities.
- 6 DARE Executive Board (DB): The collective body with the responsibility of running DARE.

Article 2 Activities

- 1 Activities within the scope of these safety regulations are:
 - (a) all activities with explosives, including but not limited to:
 - (i) production of propellant, igniters and black powder;
 - (ii) storage of propellant, igniters and black powder;
 - (iii) transport of propellant, igniters and black powder;
 - (iv) all other activities with propellant, igniters and black powder, such as loading motors or igniters.
 - (b) activities with other dangerous substances or systems, including but not limited to:
 - (i) Springs;
 - (ii) Pressure vessels.
 - (c) launching of rockets, including but not limited to:
 - (i) in public space;
 - (ii) on a specially designated rocket range or military site;
 - (iii) on private terrain.
 - (d) executing tests in which a safety risk is present;
 - (e) work in the workshops utilised by the society;
 - (f) All other activities in which a safety risk is present also fall under the scope of these safety regulations.
- 2 Members of the society should, while performing these activities, follow the rules and procedures contained in the safety regulations. In case this does not happen the activities will take place on the responsibility of those members and sanctions can be imposed on those members in accordance with the internal regulations.

Organisation

Article 3 Persons

- 1 Members of the SB are those who have been appointed as such in accordance with the Charter.
- 2 A single person can be authorised to act in a multitude of the capacities listed in [Article 8, paragraph 1](#), but can only act in a single capacity during a specific activity. An exception to this is the case mentioned in [Article 11, paragraph 3](#).

- 3 The SB, with two-third majority of those eligible to vote, can elect to make an exception to [Article 11, paragraph 3](#), on a case-by-case basis. This decision will be communicated to the DB.
- 4 The SB maintains a record of all members of DARE Safety and contains relevant notes about those persons.
- 5 Besides those persons with a specific task or responsibility regarding safety, the safety within the society shall also be a concern of the DB. The DB shall have the right to review specific cases, if it feels it is warranted.
- 6 The SB can unanimously vote to put another member of the SB under supervision for all safety related activities, under the following considerations, including but not limited to:
 - (a) The DB or SB receives numerous complaints from the members of DARE about (the behaviour of) a member of the SB in their capacity as an SO.
 - (b) The SB has in its best capacity tried to resolve the complaints concerning the member of the SB.
 - (c) Or otherwise, the SB sees this decision to be in the member-in-question's best interest.
 - (d) The vote for supervision must be a unanimous vote not including the member in question.
 - (e) This member from the SB has the right to appeal this decision at the next GMA.
 - (f) The GMA can vote to reverse this decision per the Charter.
- 7 The action defined in [Article 3, paragraph 6](#) shall be communicated in writing to the DB, as well as the rest of the society, within the space of two (2) weeks.

Safety Board

Article 4 Definition and Task

- 1 The SB is defined in [Article 1, paragraph 3](#).
- 2 The SB comprises all SOs and its number is limited by the Charter.
- 3 All members of the SB are entitled to one (1) vote each unless the provisions of [Article 6, paragraph 3](#) apply.
- 4 The SB is tasked with recommending nominations for new members for the SB. These are recommended to the DB who can choose to treat this at the next available GMA.
- 5 The SB elects a president among its members.
- 6 Per [Article 5, paragraph 11](#) of (v6.0 of) the DARE Bylaws, the SB will have a QQ. They facilitate the communication between the SB and the DB. They are also entrusted with the responsibility to check, under their discretion, that the relevant steps, procedures and decisions as entrusted to the SB are followed - they are otherwise entrusted with the ability to question, investigate and seek justification in case of non-compliance.

Article 5 Candidates

- 1 The entitled parties who can put forth a nomination of a DARE member to the SB are defined in [Article 14, paragraph 3](#) of our Charter.
- 2 In nominating a DARE member, prior to the GMA for which this vote will take place, the following steps shall be taken:
 - (a) Before the nomination to the GMA a person as a candidate for the SB, the skills and knowledge of the nominated candidate in the areas of safety during experimental rocketry can be investigated.
 - (b) In case the SB is not the nominating party, the SB will be involved in the investigation mentioned in [Article 5, paragraph 2, subparagraph \(a\)](#). The SB shall advise the DB concerning the candidates for nomination.

- (c) The DB may also be involved in the investigation mentioned in [Article 5, paragraph 2, subparagraph \(a\)](#)
- (d) The advice of the SB concerning the nominated candidate will be included in the presentation during the GMA.

Article 6 Activities

- 1 The SB shall meet at least once every academic quarter.
- 2 Decisions of the SB are taken with a two-thirds majority of votes of all SB members entitled to vote.
- 3 An SO can temporarily resign their commission, which removes their veto right. This also removes their ability to supervise the safety activities within DARE.
 - (a) As long as the commission is resigned, the right to vote in SB matters is also temporarily suspended.
 - (b) They are still entitled to give advice to the SB.
 - (c) The act of temporarily resigning their commission does not affect the total number of members as defined in [Article 4, paragraph 2](#).
 - (d) This act of temporarily resigning their commission can last at most two (2) academic quarters within a one (1) year period.
- 4 A decision of the SB can be achieved not only in a meeting but also electronically, or by letter.
- 5 The SB can mandate one (1) or more of its members to take decisions or give directions on its behalf, within those limits set by the SB.
- 6 In the annual report of the SB it shall mention at least:
 - (a) all incidents that have taken place in that year;
 - (b) the changes in the SC and SB;
 - (c) (upcoming) changes in the relevant laws and regulations of which it has knowledge;
 - (d) recommendations for improving the safety during activities of the society.
- 7 The SB organises at least once a year, in cooperation with the safety personnel, a safety instruction for all members of the society.
 - (a) This can take place on a team-by-team basis, or
 - (b) During a GMA.
- 8 In case the SB exercises the authority under [Article 14, paragraph 9](#) of the Charter to overturn a decision of the DB because it considers that the safety is at stake, it can do this only with a two-thirds majority of the votes of all SB members entitled to vote.

Safety Officers

Article 7 Definition and Task

- 1 An SO is defined in [Article 1, paragraph 4](#)

Article 8 Capabilities

- 1 An SO is expected to have expertise and experience in the following areas (but is not limited to):
 - (a) Operational Safety Officer (OSO)
 - (b) Range Safety Officer (RSO)
 - (c) Pyrotechnician (PYRO)
- 2 During a test, the responsible SO present will always fulfil the role of the OSO. They can fulfil multiple roles as defined in [Article 8, paragraph 1](#), with the provisions of [Article 3, paragraph 3](#) and [Article 11, paragraph 3](#).

Article 9 Operational Safety Officer

- 1 The OSO is ultimately responsible for the safety during:
 - (a) the execution of tests that include a safety risk;
 - (b) the activities on the ground during launches;
 - (c) activities for which the SB has decided that an OSO should be present. The type of activities can be found on the DARE Safety Poster
- 2 Without the presence of an OSO it is not allowed to perform these activities.
- 3 The OSO tries to minimise the risks during activities under their supervision as much as reasonably possible.
- 4 The OSO shall not have active involvement in the activities and should focus on supervising and monitoring, as long as, in the OSO's opinion the activity is running nominally, or a step in the procedures for the activity explicitly requires OSO interaction.
- 5 The OSO shall not be personally involved with the project for which the activity is being conducted.
- 6 The requirement described in [Article 9, paragraph 5](#) should be followed at all costs, including considerations of altering the date(s) of a test to accommodate SOs not involved in the project.
- 7 If the requirement described in [Article 9, paragraph 5](#) cannot be reasonably met (which includes all possible efforts to resolve the conflict), the scope and limitations of the responsibilities of the OSO in question, as well as eventual limits for the test to occur under these circumstances, needs to be agreed upon by the SB. The QQ must also agree that all steps taken, as well as the scope and limitations as agreed for the test to take place are justified to warrant the increased risk of a conflict-of-interest.
- 8 Concerning [Article 9, paragraph 7](#), on a case-by-case basis, the QQ or the SB are also able to require unanimous consent amongst the DB.
- 9 The requirement described in [Article 9, paragraph 5](#) is no longer applicable to the SO in question after they have left the respective project and one (1) year has passed since. In other words, a one (1) year cool-down period applies prior to an SO being allowed to supervise a test of a project they were previously associated with.
- 10 The OSO can decide at any time to halt the activity.

Article 10 Range Safety Officer

- 1 The RSO is ultimately responsible for the safety during launches executed by the society.
- 2 The RSO is also specifically responsible for the safety during the flight of the rocket.
- 3 For launches executed under the responsibility of a third party the society shall have its own RSO present as much as possible. It is however not necessary for the third party's RSO to hold an official position within the organisation of the launches.
- 4 In case launches are executed under the responsibility of a third party, DARE's RSO shall be involved as much as possible. The RSO can, independently of those authorised persons, decide not to proceed with the launch.
- 5 All rockets constructed by the society must be approved before launch by an RSO of the society regarding their flight safety. As part of this the RSO will be present while trajectory calculations/simulations are made. The RSO documents the outcome of the scrutiny.
- 6 Similar to [Article 9, paragraph 5](#), the RSO cannot approve a rocket for launch of a project of which they are a member.

Article 11 Pyrotechnician

- 1 The PYRO is responsible for overseeing all operations with explosives.
- 2 These activities can only take place by or under supervision of a PYRO.
- 3 In cases designated by the SB a single person can act in the capacity of both PYRO and OSO.

Safety Trainees

Article 12 Definition and Task

- 1 STs are defined in [Article 1, paragraph 5](#).
- 2 As part of their training the OSO can authorise STs to perform the actual activities in the capacities of an SO for a specific activity. They will be treated as the acting SO (ASO). This can only be done under the supervision of the OSO.
- 3 The OSO remains end-responsible during activities conducted by the ST.
- 4 The OSO can retract this authorisation at any time.

Safety Committee

Article 13 Definition and Task

- 1 The SC is defined in [Article 1, paragraph 2](#).
- 2 The SC is tasked with the administrative tasks of DARE Safety.
- 3 The SC's domain excludes tasks as deemed under the prerogative of the SB.
- 4 The SC comprises 6 distinct roles:
 - (a) Chairperson: Responsible for chairing meetings and leading the SC.
 - (i) This person is recommended to be, but is not required to be, president of the SB.
 - (ii) This person is recommended, but not required, to be an SO.
 - (b) Secretary: Responsible for minuting meetings of the SC and general meetings of DARE Safety. They are also responsible for any administrative matters that do not fall under the responsibility of other members of the SC. Unless agreed upon otherwise, the Secretary also has the responsibility to:
 - (i) Maintain the DARE Safety Poster, as referred to in [Article 9, paragraph 1, subparagraph \(c\)](#).
 - (c) Launch Day Officer (LDO): Responsible for organising all safety activities in relation to DARE launch days. Unless agreed upon otherwise with the relevant parties, this is defined as:
 - (i) Communicating with the relevant parties (municipalities, police, etc.) concerning the transport of dangerous goods for a launch day.
 - (ii) Organisation of casting of regular solid rocket motors to be used for launch day activities.
 - (d) Test Day Officer (TDO): Responsible for facilitating testing of systems on TU Delft property. This includes, but might not be limited to:
 - (i) Communicating with the relevant organ of the TU Delft who has jurisdiction over the testing location. By default this is Park Management (for the Fellowship Field).
 - (ii) Collecting the relevant documents into one (1) thread in the #safety-test-applications Slack channel.
 - (iii) Facilitating the selection of the OSO for the relevant test.
 - (iv) The OSO, or otherwise the TDO, will also select the relevant (number of) STs for the test.
 - (e) Inventory Officer (IO): Responsible for maintaining oversight of the inventory of relevant articles within DARE, as well as communication with L&M w.r.t. the inventory. The relevant articles include, but are not limited to:
 - (i) Black powder
 - (ii) NTC
 - (iii) Initiation devices
 - (iv) Solid propellant grains

- (f) QQ: Member of the current DB. Its role and responsibilities are identical as defined in [Article 4, paragraph 6](#) but instead apply to the SC. These can be the same people.
- 5 The SC decides amongst itself who handles its financial matters.

Laws and Regulations

Article 14 Laws

- 1 Members of the society shall act at all times during activities of the society in accordance with the Wet explosieven voor civiel gebruik (WECG), Wet vervoer gevaarlijke stoffen (WVGS), Luchtvaartwet, Wet luchtvaart, Regeling Modelraketten, municipal and provincial regulations and permits as well as other relevant laws.

Article 15 Regulations of third parties

- 1 During activities taking place under the responsibility of a third party the valid regulations and procedures of that third party apply.
 - (a) If the regulations and procedures of that third party conflict with any clause of the DARE safety regulations those clauses of the DARE safety regulations are not applied.
 - (b) If the regulations and procedures of that third party contain any provisions that are stricter than the equivalent provisions in the DARE safety regulations then those of the third party regulations and procedures will act as supplement.
 - (c) If the regulations and procedures of that third party contain any provisions that are less strict than the equivalent provisions in the DARE safety regulations then those specified in the DARE safety regulations prevail.
 - (d) The regulations and procedures of that third party will be supplemented where possible by the relevant provisions from the DARE safety regulations.
 - (e) The SB is obliged to examine the regulations and procedures of those third parties in advance of the activities mentioned in [Article 15, paragraph 1](#). In case the SB believes that, in consideration with [Article 15, paragraph 1, subparagraph \(a\)](#) to [Article 15, paragraph 1, subparagraph \(c\)](#), the activity cannot be safely performed the society will not take part in the activity.
- 2 The procedure mentioned in [Article 15, paragraph 1, subparagraph \(d\)](#) does not need to be followed if the activities are held under the responsibility of:
 - (a) Samenwerkende Amateur Raket Organisaties Nederland (SARON)
 - (b) the society Nederlandse Amateur Vereniging voor Raket-Onderzoek (NAVRO)
 - (c) Nederlandse vereniging voor Raket Onderzoek (NERO)
 - (d) TNO
 - (e) the competent authority of the Dutch government.

Procedures File

Article 16 Description

- 1 The SB establishes the necessity for procedures for an activity conducted in DARE.
- 2 The relevant project creates these procedures in co-operation with the SB.
- 3 The SB, with advisory input from DARE Safety, approves these procedures.
- 4 These procedures, once approved, shall be placed to be easily accessible prior to these activities taking place. These procedures can be placed on (but not limited to):
 - (a) Nextcloud
 - (b) Slack

- (c) Google Drive
- 5 It is the responsibility of the SB, in cooperation with DARE Safety, to communicate required changes to these procedures. The relevant team should then adjust these where relevant.
- 6 The procedures should be accessible to all members of the society.
- 7 The established procedure should be followed during an activity. If a deviation is necessary from a safety point of view these can only be done with the approval of the OSO. The deviation of the procedures should be noted. Afterwards it should be reviewed if, based on the deviation, a change in the procedures is necessary.
- 8 If there is no established procedure for an activity, the procedure that needs to be followed will be established by the SB, or knowledgeable members, or third parties as deemed so by the SB.
- 9 For some activities a general procedure can be established. Based on this general procedure a detailed procedure can then be established for a specific activity.
 - (a) By default the SB shall establish the general procedures.
 - (b) On a case-by-case basis, the SB can deem another party responsible for establishing these procedures.
 - (c) By default, per [Article 16, paragraph 2](#), the team/project remain responsible for further creating the detailed procedures. The SB can create exceptions for this on a case-by-case basis.
 - (d) The SB, as established by [Article 16, paragraph 3](#), shall remain the final authority to approve these procedures.

Dangerous Goods and Systems

Article 17 Dangerous goods and systems

- 1 Dangerous goods and systems as mentioned in these regulations are those goods and systems that by their nature can cause danger to people, goods or the environment during use, production, storage or transport.
- 2 The following are dangerous goods and systems in any case:
 - (a) Explosive substances and articles;
 - (b) Pressure systems;
 - (c) Chemical substances and articles with one (1) or more of these properties:
 - (i) Flammable, asphyxiating, toxic, oxidising or corrosive gases;
 - (ii) Flammable liquids;
 - (iii) Flammable solids;
 - (iv) Oxidisers;
 - (v) Toxic substances;
 - (vi) Corrosive substances;
 - (d) Other substances that fall under the Wet gevaarlijke stoffen.
- 3 These regulations contain specific provisions regarding:
 - (a) Explosive substances;
 - (b) Pressure systems;
 - (c) Chemical substances;
 - (d) Electronic systems.
- 4 For activities with other (possibly) dangerous goods and systems the SB should be consulted in advance.

Article 18 Electronic systems

- 1 This article applies to electronic or automated systems that can activate a dangerous system as mentioned in [Article 17](#). Such systems are hereafter called activation systems.

- 2 An activation system should have a mechanical safety switch or plug that separates the actuator from the activating command or activating power. After arming the system with the safety switch or plug a minimal number of actions should be performed on the system.
- 3 The use of a transmitter or receiver in combination with an activation system needs to be approved by the SB.
- 4 An activation system that can ignite a rocket motor or engine should require a double authorisation in the form of two (2) ignition keys.
- 5 The schematics and construction of an activation system used for the first time, including any changes to a previous system, should be submitted for approval to an expert appointed by the SB before this system can be used.
- 6 The SB can include additional rules or regulations on electronic systems in the procedures file.
- 7 This article also applies to electronic systems themselves which can be considered dangerous in nature. This can include, but is not limited to:
 - (a) Utilisation of large groups of LiPo batteries;
 - (b) High voltage systems;
 - (c) High power systems.

Explosives

Article 19 WECG

- 1 Only those members who meet the requirements according to the WECG (Dutch Civil Explosives Law) are authorised to handle explosive substances and articles.
- 2 The society will request a WECG licence only for those members who, in the judgement of the SB, possess the need for a WECG.
- 3 Members in possession of their own WECG licence are only authorised to handle explosive substances and articles if they are, in the judgement of the SB, sufficiently competent.
- 4 All members in the possession of a WECG licence will keep a register of the substances and articles in their (temporary) possession. They will also register all activities with these substances and articles in the central register that is administered by the SC, in cooperation with the SB.
- 5 The supervisor, as mentioned in the WECG licence of the society, will be appointed by the SB. This is preferably a member of the SB.

Article 20 General Regulations

- 1 Activities with explosive substances or articles must be performed by or under supervision of a PYRO.

Article 21 Production

- 1 The SB establishes as part of the procedures file the procedure for the production of a specific kind of explosive substance. This procedure needs to be followed during the production process.
- 2 In establishing the procedure the following will be taken into account:
 - (a) the manner of production should be such that, during production, the possibility of the substance or parts thereof igniting should be excluded with the highest possible certainty;
 - (b) the consequences of an unexpected ignition should be reduced as much as possible;
 - (c) the procedure should mention a maximum amount that is allowed to be produced at the same time.

- 3 If there is no established procedure for the production of an explosive substance it may only be produced after the intended procedure has been approved by the SB. This procedure should meet the requirements of [Article 21, paragraph 2](#).
- 4 Production of explosive substances is only allowed if the SB has given its approval at least 24 hours in advance indicating the place and time of the production.

Article 22 Articles

- 1 The following activities with explosives are only allowed to be performed by, or under the authorisation of, a PYRO:
 - (a) production of igniters;
 - (b) loading rocket motors;
 - (c) placing igniters;
 - (d) connecting igniters.
- 2 The following activities can only be executed when instructed by the responsible person of the SB:
 - (a) arming the ignition system.

Article 23 Storage

- 1 Explosive substances and articles are only allowed to be stored:
 - (a) separated in a for-this-purpose dedicated closet or case;
 - (b) in locations where it is permitted by a valid environmental licence;
 - (c) if the conditions of the WECG and the environmental licence have been met;
 - (d) in quantities not exceeding those mentioned in the environmental licence.
- 2 The SB, in cooperation with all members in possession of a WECG licence, is responsible for keeping a register of the storage in accordance with the WECG.

Article 24 Transfer and Transport

- 1 Explosive substances and articles can only be transferred to third parties in possession of a WECG licence. The number of this WECG licence is subsequently noted in the relevant register.
- 2 Transport of explosive substances is only allowed if the receiving municipality has given a notice of no objection or the required permit.
- 3 The transport needs to meet the following requirements:
 - (a) the transport is in accordance with the ADR and the WVGS;
 - (b) the substances and articles are transported in approved casings that are intended for this purpose;
 - (c) The transport is performed under the supervision of a member in the possession of a WECG license, who may be driver or passenger in the transport vehicle;
 - (d) during transport the transport documents, the WECG licence(s), these safety regulations, any permits and the relevant procedures should be present.
- 4 The SB establishes the procedure and regulations for the transportation of explosive substances and articles in the procedures file.

Pressure Systems

Article 25 General provisions for pressure systems

- 1 Pressure systems should contain both measures to prevent overpressure from arising and measures to decrease pressure if the system pressure threatens to rise above the designed

- limit, such as a pressure relief valve or burst disk. In case the system is of such limited size that this is not necessary the SB can make an exception.
- 2 All parts of a pressure system must be suited for the expected pressure multiplied by a safety factor.
 - 3 This safety factor needs to be agreed between the SB and the relevant party.
 - (a) For the failure mode of radial burst, a minimum safety factor of 1.5 needs to be used. This safety factor can apply to either yield or ultimate strength. It is at the SB's discretion to decide which to use and to communicate it as such to the relevant project.
 - (b) For systems with numerous failure modes (e.g. motor test with the potential for nozzle shear-out, bulkhead shear-out and radial burst), a sufficient difference in the failure conditions needs to be present and highlighted per the description required by [Article 29, paragraph 3, subparagraph \(d\)](#).
 - 4 The parts of the system, including any lubricants or cleaning agents, must be chemically and thermally compatible with the other substances in the pressure system.
 - 5 In case the pressure system contains self-designed or self-fabricated parts these should be tested before use in a manner determined by the SB.

Chemicals

Article 26 General provisions for chemicals

- 1 Chemical substances regulated under these safety regulations are at least those:
 - (a) classified in the UN Recommendations on the Transport of Dangerous Goods;
 - (b) for which it is known that there are safety risks involved in their use or that specific precautionary measures are necessary;
 - (c) with a GHS hazard label.

Article 27 Procurement and storage

- 1 It is not allowed for individual members to purchase or acquire chemicals for use within the society without consultation with the SB. Exempt are substances identified by the SB in advance.
- 2 Chemical substances for use within the society are stored in appropriate storage mediums at locations designated by the SB.

Article 28 Use

- 1 While using these chemical substances, the instructions on the package and in the Material Safety Data Sheet should be followed in any case.

Tests

Article 29 General provisions for performing tests

- 1 Tests that are regulated in these safety regulations are those tests:
 - (a) In which use is made of:
 - (i) Explosive substances;
 - (ii) Chemical substances;
 - (iii) Pressure systems.
 - (b) With rocket motors or engines;
 - (c) With mechanical or electrical systems for which, by their nature, a safety risk can be expected, for example due to:

- (i) High potential or kinetic energy (springs, drop tests);
 - (ii) Heat development;
 - (iii) High voltage;
 - (iv) Sharp objects;
 - (v) Risk of entrapment, etc.
- 2 These tests can only be performed with prior approval by the SB
- 3 For approval, a test should be submitted at least three (3) weeks in advance, together with documentation regarding:
 - (a) The purpose of the test;
 - (b) A description of the test setup and location;
 - (c) The expected risks, including those measures to mitigate the risks;
 - (d) A sequence of failure modes and the conditions (e.g. pressure) under which these failures occur.
- 4 A test is officially approved once two (2) SOs have reviewed the application and given it a green light to commence.
- 5 For an approved test, the following documentation should be submitted at least one (1) week in advance (but is preferred to be sent with the documentation mentioned in [Article 29, paragraph 3](#)):
 - (a) The proposed procedure;
 - (b) The responsible persons and their roles.
- 6 If the required documentation is not received on time in regard to [Article 29, paragraph 3](#) and [Article 29, paragraph 5](#), the SB has the right to cancel or postpone the approval of the test.

Article 30 Persons

- 1 The SC designates an OSO to supervise the test.
- 2 If, due to the nature of the test, the safety risks are very limited, the SB can approve the test without requiring that an OSO be present.
- 3 During the test, as long as the safety risks are present, the work shall be performed with a minimum number of people.
- 4 The members of the team responsible for performing the test should have sufficient knowledge and skill to perform this work.
- 5 At least two (2) copies of the procedures that are to be followed must be present during the test.
- 6 During the test there is one (1) person who makes sure that the test procedure is followed. This person should not perform any work for the test itself.
- 7 The dangerous systems that are involved in the test may only be armed on instruction of the OSO.
- 8 Per [Article 9, paragraph 4](#), the person assigned as the OSO shall only act in their capacity as an OSO, and therefore will not act in any other role during the activity¹.

Launches

Article 31 General provisions

- 1 For launches on existing launch sites or under the responsibility of third parties the relevant rules and regulations of those third parties apply, taking into account the provisions in [Article 15](#).

¹This is referring to the roles commonly referred to as e.g. TC, TO, CP etc.

Workshop

Article 32 General

- 1 The workshop is under the shared authority of the DB and SB.
- 2 The DB ensures that, in cooperation with the SB, there is a sufficient amount of personal protective equipment and other safety equipment present.
- 3 The SB advises and instructs the members on how to work safely in the workshop.

Article 33 Workshop rules

- 1 The SB and the DB together determine the workshop rules which contain the rules for working in the workshop.
- 2 In case the workshop is owned by a third party, the rules from the third party take precedence over DARE rules.
- 3 If the rules in [Article 33, paragraph 1](#), as recommended by the SB, are stricter with respect to the rules mentioned in [Article 33, paragraph 2](#), the rules from the SB should be followed.