

GENERAL SPECIFICATION

ENVIRONMENT

GS EP ENV 001

Environmental requirements for projects design and E&P activities

06	05/2015	Organisation change – January 2015
05	01/2011	General revision
04	09/2009	Addition of section 5.2, appendixes 1 and 2. Update of sections 5.3; 5.4; 5.7; 5.8
03	10/2005	Addition of EP root to document identification and update. Refer to the text for main changes
02	10/2003	Change of Group name and logo + modif. Chap.2 page 4
00	04/2001	Old Elf SG SHE 004

Document update realised by
standards coordination
Reorganisation 2015

Owning entity: HSEQ/ESSH

Managing entity: HSEQ/ESSH

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1. Scope

1.1 Purpose

The purpose of this General Specification is to establish the environmental requirements for projects design and E&P activities.

1.2 Applicability

This General Specification applies to all operated affiliates and projects managed by the E&P branch of the Group.

It covers all the phases of the projects design and E&P activities: seismic exploration, exploratory and production drilling, preliminary and conceptual, pre-project, basic and detailed engineering, construction, installation, commissioning, production, decommissioning.

Remark: some requirements cannot be applied as early as the preliminary or conceptual stages or pre-project study (data not available, not relevant to apply so early in the project life, etc.). In this case, they shall be applied at a later stage.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the effective date of this document.

Reference	Title
Decision 2000/532/EC	Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (and subsequent amendments and/or corrections)
Directive 99/31/EC	Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (and subsequent amendments and/or corrections)
Directive 2000/76/EC	Directive 2000/76/EC of the European Parliament and of the Council of 04 December 2000 on the incineration of waste (and subsequent amendments and/or corrections)
Directive 2008/98/EC	Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

Reference	Title
IFC Policy and Performance Standards	Policy and performance standards on social & environmental sustainability, International Finance Corporation, World Bank Group, 2007
IMO MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL) and subsequent amendments (2008)
IMO Resolution A.672 (16)	Guidelines and standards for the removal of offshore installations and structures on the continental shelf and in the Exclusive Economic Zone, adopted on 19 October 1989
ISO 1996-1	Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures
ISO 1996-2	Acoustics - Description, measurement and assessment of environmental noise - Part 2 : determination of environmental noise levels
Montreal Protocol	The Montreal Protocol on substances that deplete the ozone layer, September 1987 and subsequent amendments
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic, September 1992 and subsequent amendments
OSPAR Recommendation 2008/1	OSPAR Recommendation 2008/1 amending OSPAR Recommendation 2000/4 on a Harmonised Pre-screening Scheme for Offshore Chemicals (HOCNF), 2008
Regulation (EC) No 1907/2006	Regulation (EC) N°1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
Report No 29555	A voluntary standard for global gas flaring and venting reduction, World Bank Group, May 2004

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published in the applicable yearly collection.

Reference	Title
GS EP CIV 401	Minimum requirements for building design and construction
GS EP CIV 403	Temporary construction camps and associated facilities (onshore)
GS EP ENV 111	Environmental baseline and monitoring studies: Onshore Sites

Reference	Title
GS EP ENV 112	Environmental baseline and monitoring studies: Offshore and Nearshore Sites
GS EP ENV 113	Environmental Baseline Study: Coastal survey (cancelled document)
GS EP ENV 120	Environmental impact assessment of E&P activities
GS EP ENV 270	Deep well disposal
GS EP ENV 421	Landfill design and operation for E&P sites
GS EP GEO 505	Monitoring of Metocean Conditions for Offshore Units
GS EP MEC 010	Rotating Machine Package Specification - Turbogenerator
GS EP MEC 020	Rotating Machine Package Specification - Turbopump
GS EP MEC 030	Rotating Machine Package Specification - Turbocompressor
GS EP MEC 032	Rotating Machine Package Specification - Gas Engine or Electrical Motor driven Reciprocating Compressor
GS EP MEC 292	Rotating Machines Packages Installation Requirements
GS EP SAF 221	Safety rules for buildings
GS EP SAF 228	Liquid drainage
GS EP SAF 262	Pressure protection relief and hydrocarbon disposal systems
GS EP SAF 341	Location and protection of onshore hydrocarbon storage
GS EP STR 651	General principles for a F(P)SO design

3. Terms and Definitions

Best Available Techniques (BAT)

The latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste ([OSPAR Convention](#), appendix 1), when economically achievable.

Coastal (also called nearshore) water

In the absence of more stringent local regulations, coastal water starts from the lowest low-tide point and extends up to 3 nautical miles towards the sea

Fresh water

Any surface or groundwater which can be used for human consumption or agricultural use without undergoing a complex processing. This usually applies to waters from utilities grid, from non-contaminated aquifers (private wells) and from non-contaminated rivers or lakes: dry residue < 1500 mg/l.

Hazardous waste

Any waste which displays one or more of the following hazardous properties: explosive, oxidizing, flammable, irritant, harmful, toxic, carcinogenic, corrosive, infectious, toxic for reproduction, mutagenic, sensitizing, ecotoxic..., for man and the environment

A complete list of hazardous wastes is usually provided in the respective regulations, and differentiates them from non-hazardous wastes (for example [Decision 2000/532/EC](#))

Inert waste

Waste which is not subject to any significant physical, chemical or biological transformation, shall not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact, in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant.

Low Pressure/ Low Low Pressure gases (LP/LLP gases)

Gases that include, but that are not limited to, condensate and crude stabilization units' emissions, TEG units' emissions, etc. Other sources, depending on the project.

Non-hazardous waste

Waste not covered in previous category (usually waste from households, as well as commercial, industrial, institutional and other waste which, because of its nature or composition, is similar to waste from households)

Potable water

Any water, pumped from surface water or groundwater which can be used directly for human consumption with limited treatment (also called drinking water).

Produced water

Means water which is produced in oil and/or gas production operations and includes formation water, condensation water and re-produced injection water; it also includes process water used for desalting oil.

“Unless not feasible”

Technical non-feasibility or disproportionate economic cost if compared to the environmental benefit.

Waste

Any substance or object which the holder discards or intends or is required to discard ([Directive 2008/98/EC](#)). Wastes are characterized according to their toxicity and degree of risk for the environment, and are classified into three main groups based on risk criteria ([Directive 99/31/EC](#))

The list of acronyms used in the present document is in **Appendix 1**.

4. Environmental regulations and standards

EP HSE Policy states that: *“In all its operations, the EP acts in compliance with national and international legislation and regulations, with the applicable industry standards and Company Specifications.”*

Local regulations and standards relevant to environmental preservation in offshore/onshore oil and gas activities shall be applied.

The provisions included in the present specification shall be applied in the absence of more stringent local regulations or standards.

5. Environmental requirements for projects design and E&P activities

To reduce any significant impact of the future activities on the natural and human environment, mitigation measures shall be identified and selected according to the BAT concept and approved by Company.

The Environmental Impact Assessment study (EIA) requirements, when available, shall be integrated in the design definition.

5.1 Environmental footprint

The minimisation of the environmental footprint of the project in any of its phase and including construction shall be systematically implemented.

Particular attention shall be paid to areas where biodiversity is particularly rich or sensitive.

The Environmental Baseline Study (EBS) and EIA studies (refer to [GS EP ENV 111](#), [GS EP ENV 112](#), [GS EP ENV 113](#) and [GS EP ENV 120](#)) or any relevant information provided by Company shall be used as a basis for localization of rich biodiversity and ecologically sensitive zones (deep offshore ecosystems, spawning grounds, sea grass beds, coral reefs, mangroves, natural reserves, pristine rain forest, etc.) and social aspects (fishing zones, water intake points, archaeology, rock art, community settlements, aquaculture, tourist areas, etc.).

Local environmental and social sensitivities shall be taken into account to determine the followings:

- Onshore: site selection, land use, layout of the installation, safety and security distances, pipeline RoW width limitation, pipe route selection, access, visual impact limitation, clearing limitation, landscaping and site conservation, erosion control, etc.
- Offshore: restricted areas, drawbacks to marine fisheries and maritime transportation, seabed disturbance, etc.

Site selection and location shall also take into account natural risks (flooding, seismic events, soil erosion, ground stability and other geo-hazards, etc.).

5.2 Flaring and GHG emissions

The design of new developments shall comply with the following:

- Elimination of continuous flaring and venting in accordance with Company's commitment to adhere to what is stated in the GGFR Voluntary standard ([Report No 29555](#)).
- To keep as low as possible GHG emissions. This includes temporary flaring and venting minimisation, and optimization of fuel gas and energy efficiency.
- To monitor directly or indirectly the flows and characteristics of significant GHG emission sources.
- GHG emission sources and associated emissions shall be identified according to the Company-approved methodology.

- Minimisation of GHG emissions and optimization of energy efficiency shall be considered in the selection of the development scheme and main equipments. The accordance with Company's objectives with respect to energy efficiency and GHG emissions reductions shall be considered.

5.2.1 Flaring and venting minimisation in new projects

Facilities shall be designed to comply with the following:

- No continuous flaring of associated gas, including LP and LLP gas streams, during normal operation, unless there is no feasible alternative. To be noted that safety flaring (gas purging of flare headers) is not covered by this requirement.
- If gas cannot be marketed or used as fuel gas, re-injection either into the producing reservoirs or other adequate reservoirs shall be the base case.
- No continuous venting of associated gas, unless there is no feasible alternative. If venting is to be considered, its replacement by flaring shall be evaluated wherever it represents an environmental benefit in terms of GHG emissions and complies with Company's safety requirements.
- No continuous venting of CO₂ from decarbonation units (amines, membranes), unless there is no feasible alternative or the native CO₂ vented is not significant when compared to the CO₂ from the combustion.
- Flaring during new field's start-up shall be minimized. The project team shall set a strategy and a detailed technical plan (available for internal review) to demonstrate how flaring shall be minimized: schedule of commissioning, flaring and venting profiles including well drilling, testing and workovers and mitigation measures.
- Temporary flaring related to operational upsets shall be minimized by ensuring the targeted availability of the critical systems. Adequate redundancy and/or adequate spare parts philosophy, preventive and curative maintenance strategy and means shall be implemented.
- Flare headers metering systems should cover all the range of gas flow to flare with a good accuracy.
- Instrumentation technologies powered by instrument gas should be avoided whenever feasible, or vented volumes should be minimized.

A non-exhaustive list of complementary measures to be studied in the design for flaring reduction can be found in **Appendix 2**.

5.2.2 Optimization of fuel gas and energy use in new projects

The design of a new facility shall ensure an optimized use of energy, including, but not limited to, the minimization of fuel gas consumption:

- Optimization of energy use shall be considered not only for the oil & gas plateau, but also for the entire life of the facility.
- Where justified by the process heat requirements, the installation of a WHRU on gas turbines shall be the base case.

- A system for quantifying the energy consumption (fuel gas, electricity, mechanical power) of each key component of the system (gas turbine, compressor, pump, and heater), shall be installed in order to enable the monitoring and optimization of the energy efficiency of that component.
- If possible, the main energy consuming machines should include a system to perform the on-line monitoring of the energy efficiency and to compare it to the expected energy efficiency, in order to be optimized by the operation's team.
- Sampling points shall be installed to characterize the composition of LP and HP fuel gases.

A non-exhaustive list of complementary measures to be studied in the design for optimizing fuel gas and energy use can be found in **Appendix 3**.

5.3 Other atmospheric emissions

Installations shall be designed to comply with the following principles:

1. To reduce the emission of gaseous or solid compounds that affect the air quality and human health: H₂S, SO_x, NO_x, VOC, CO, particulates, etc.
2. To monitor the flow and the characteristics of significant emissions before releasing them to the atmosphere.

5.3.1 Reduction of NO_x, SO_x, VOCs and particulate matter emissions

- When some flaring is unavoidable, an efficient flare tip (smokeless device, reference: **GS EP SAF 262**) shall be installed in order to maximize the combustion efficiency.
- Burning emissions from well testing or purging shall be minimised by optimising the burning system design and the testing procedures.
- Emission sources shall be designed so that ground level concentrations meet ambient air quality standards.
- Dispersion studies should be undertaken on a case by case basis in order to assess the potential impact on air quality.

5.3.1.1 NO_x emissions

Gas-fueled turbines used either for power generation or mechanical drive purposes shall be selected to reach a NO_x emissions target of 75 mg/Nm³ (i.e 37 ppm vol.) or less, at 15% O₂.

The selection of diesel and/or gas engines shall be done according to their NO_x emissions levels which shall be as low as possible. Engines equipped with a NO_x control system should be preferred.

5.3.1.2 H₂S and SO₂ emissions

Utility fuels with the lowest possible sulphur content shall be selected.

Where relevant, a H₂S removal and conversion system should be installed in order to avoid H₂S emissions.