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# Standard cost coding system for oil and gas production and processing facilities

*Système de codage du coût standard pour la production de gaz et d'huile, et des installations de traitement*

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# Foreword

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The committee responsible for this document is ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*.

# Introduction

This International Standard provides the specifications for a standard cost coding system (SCCS) to be used for classification of costs associated with the development and operation of oil and gas production and processing facilities.

The purpose of the SCCS is to enable the costs of exploration, development projects and operations to be organized, collected and reported allowing analysis and comparison across (parts of) projects and assets.

This International Standard is designed to provide a uniform coding basis for both estimate preparation and collecting/collating related historical data in order to facilitate benchmarking and analysis. It is also intended to provide the basis for exchange of cost and quantity data between parties, e.g. between companies or contractors or across projects.

This International Standard establishes a coding system that enables any in-house or commercial data system to meet these data exchange requirements.

The SCCS may also be utilized to capture consistent data for physical quantities, e.g. weight, length, areas, volumes, flow rate, work hours and durations. This will facilitate the development and measure of unit costs and cost metrics.

The scope of work that is being classified has three key aspects (also known as facets) namely, physical asset [coded by the physical breakdown structure (PBS)], activity [coded by the standard activity breakdown structure (SAB)] and resource [coded by the code of resource (COR)].

Hence the SCCS is composed of three complementary and disjoint sub-classifications, each one dealing with one of the aspects. This is technically known as a poly-hierarchical or faceted classification system.

The main body of this International Standard contains the principles and usage of the SCCS. It also includes implementation requirements for the expansion of the coding system by individual organisations.

The annexes include:

— the SCCS codes their names and description;

— examples of use of the codes.

Application of ISO 19008 can also be useful when performing production assurance, reliability management and Life Cycle Cost (LCC) analysis; see ISO 20815, ISO 14224 and ISO 15663.

# Standard cost coding system for oil and gas production and processing facilities

## 1 Scope

This International Standard describes the standard cost coding system (SCCS) that classifies costs and quantities related to exploration, development, operation and removal of oil and gas production and processing facilities and to the petroleum, petrochemical and natural gas industry. Upstream, midstream, downstream and petrochemical business categories are included.

The SCCS for coding of costs is applicable to:

— cost estimating;

— actual cost monitoring and reporting;

— collection of final quantities and cost data;

— standardized exchange of cost data among organizations;

— implementation in cost systems.

This International Standard is intended for users such as the following:

a) owner/operator/company (individual or grouped entity that is entitled or contributes to operations in the exploitation of oil and gas fields);

b) industry/trade associations;

c) manufacturers/contractors;

d) cost engineering service contractors, cost system providers, benchmarking providers, etc.;

e) authorities/regulatory bodies.

This International standard does not apply to the following:

1) cost classification relevant to cost accounting rules, specific contractual agreements, local requirements for cost reporting to national bodies, government rules and tax regulations, authorization for expenditure (AFE), billing purposes etc.;

2) specific project breakdown structures (e.g. work breakdown structures, contract breakdown structures, organizational breakdown structure) or asset breakdowns (e.g. TAG/system codes, area/module breakdown structure) which are and will remain unique.

However, this International Standard can provide a basis for the establishment of such specific classification systems.

## 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**2.1**
**code of resource**
**COR**
hierarchical structure of SCCS that classifies all project resources according to the type of contract/resource that is involved in the activity and has an associated set of rates

**2.2**
**cost item**
particular part/level that is coded/classified using the SCCS

EXAMPLE "Procurement of piping" would be a cost item in the "development of facility X".

**2.3**
**cost time resource**
**CTR**
document that describes each major element in the work breakdown structure, including a statement of work describing the work content, resources required, the time frame of the work element and a cost estimate

**2.4**
**faceted classification system**
collection of facet classifications that allows the classification of an object

EXAMPLE This International Standard specifies a faceted classification system for objects used in cost estimating for oil and gas production and processing facilities.

**2.5**
**scope of work**
**SOW**
division of work to be performed under a formal agreement (project assignment), contract or subcontract in the completion of a project

**2.6**
**physical breakdown structure**
**PBS**
hierarchical structure of SCCS that defines the types of physical asset components of field installations being delivered by the activity

**2.7**
**standard cost coding system**
**SCCS**
standard system for classification and coding cost estimates, monitoring and final quantities and cost data

Note 1 to entry: The SCCS code comprises three individual hierarchical coding structures named PBS, SAB, COR, each based upon a different aspect/facet of the scope of work.

**2.8**
**standard activity breakdown structure**
**SAB**
hierarchical structure of SCCS that defines the type of activity that is being performed

## 3 Abbreviated items

COR code of resource

CTR cost time resource

EPC engineering procurement and construction

PBS physical breakdown structure

SAB standard activity breakdown

SCCS standard cost coding system

WBS work breakdown structure

# 4 Application

## 4.1 Users of this International Standard

This International Standard is intended for users such as the following.

— Company: organization that owns the scope of work.

— Contractor: organization that has been engaged to deliver (a part of) the scope of work.

— Operator: legal entity that is performing the role of operator under a host government contract or a petroleum exploration, development or production licence.

— Organization: unit that is performing a particular scope of work, which can be wholly part of one legal entity or composed of an integrated team of personnel from multiple legal entities.

EXAMPLE 1 The operations and maintenance organization performing production operations on a field installation. This can be a team of operator and contractor personnel working under an operations and maintenance contract.

EXAMPLE 2 The engineering organization of a development project working under the supervision of the operator and composed of personnel from the engineering contractors and operator personnel.

## 4.2 Principles

### 4.2.1 Coding basis

The SCCS, included in this International Standard, consists of three individual hierarchical classification structures (facets), each based upon a different aspect of the scope of work.

— PBS – physical breakdown structure. This hierarchical structure defines the physical/functional components of field installations. The PBS provides a classification structure, which enables an oil and gas production and processing facility configuration scheme to be classified. System/facilities descriptions in PBS are only intended to provide guidelines for cost coding, as the systems/facilities normally are designed and laid out differently and uniquely for each development project according to technical and functional requirements, construction philosophy and project realization strategies. As a system/facility can cross individual PBS boundaries as defined in Annex A, there is no exact correlation between a system/facility and PBS. The detailed list of PBS codes is given in Annex A.

— SAB – standard activity breakdown. This hierarchical structure classifies the activity component of the scope of work. The alphabetical prefix introduces a code for use of SCCS throughout all phases of a project, from exploration to removal of facilities. The detailed list of SAB codes is given in Annex B.

— COR – code of resource. This hierarchical structure classifies all project resources according to the type of contract/resource that is involved in the activity and has an associated set of rates. This hierarchical structure classifies the complete scale of resources involved in developing offshore and onshore facilities. The resource type used also depends on the compensation schedules used in project specific contracts (e.g. unit rates, or all-inclusive rates, lump sums). The detailed list of COR codes is given in Annex C.

### 4.2.2 Relationship between the codes

There are a number of relationships between the three SCCS hierarchies based on the interdependence between the three aspects (physical assets, activities and resources), i.e. only certain kinds of resources are associated with particular types of activities. For example the construction overheads can only relate to construction activities.

In order to facilitate assessment of implementation of the SCCS in a particular data set, a list of typical relationships between the hierarchies is provided along with the list of codes in Annex D.

## 4.3 Requirements

Every cost item will be associated with a scope of work and so can be classified by each of the three aspects/facets. Each of the classifications in the facet has a numerical or alphabetical hierarchical code. The codes are combined to create a complete composite code for the costs. The nominated order for the composite codes is: PBS, SAB, COR.

Reported costs and quantities can be both summarized and decomposed from a number of different perspectives. For data integrity purposes it is important that within any perspective, at each level of summarization, each cost item is allocated one SCCS code.

Examples of typical implementation of the SCCS are included in Annex D.

## 4.4 Extension

This International Standard provides a basic system based on the three sub codes PBS, SAB, COR.

The codes included in Annexes A, B, and C may be extended by each individual organization in order to:

— accommodate any new types that are not covered in the annexes, e.g. a new facility type not covered in the PBS;

— create more detailed types of existing types, e.g. to add a detailed resource code for different piping specifications under the bulk piping.

For expansion of PBS, SAB, COR the requirement is that:

a) the new codes shall be integrated with SCCS;

b) any expansion of the standard codes included in the annexes of this International Standard shall be clearly identified and documented;

c) new added specific codes including descriptions shall have a distinction element in the code to identify them;

d) an existing code shall not be used for anything new (i.e. it does not change the meaning/sense of descriptions and names of existing codes).

It is recognized that several different additional perspectives of costs can be identified in order to meet either internal or external requirements of each organization. For this purpose additional perspectives to the basic SCCS may be included using facets that are not explicitly covered in this International Standard, e.g. add an 'Internal/External' facet to specify whether the resource is provided by company or contractor.

## 4.5 Reporting requirements

A company can specify the use of the SCCS to its contractors for cost reporting purposes. In such a case, there can be a different level of visibility of details within the contractor organization, as opposed to the reporting requirements of the company (e.g. the contractor can have detailed direct and indirect labour, material and overhead costs). However, the contractor might need to report a single all-inclusive rate. Both contractor and company can be using the SCCS for classifying their cost data, but the contractor in this case shall aggregate its report in accordance with the requirements of the company (e.g. the direct and indirect labour, material and overhead costs can be provided under one resource code to the company).

Figure 1 illustrates the situation where an operator has contracted an engineering procurement and construction (EPC) contractor. The EPC contractor in turn has contracted two construction contractors to perform parts of the scope of work. Each party in this arrangement can internally use the SCCS as well as present a cost time resource (CTR) report to its client in accordance with the contract. The appropriate codes to be used internally for cost management and controls can differ from the ones presented to the client for the CTR, but will usually be composed/aggregated according to the

 

requirements of the client. In this example the operator requires an all-inclusive labour rate which would be composed of overheads and direct and indirect labour. The EPC contractor can use the SCCS to separate these costs, but will report a single figure to the operator. The same applies to the contracts between an EPC contractor and its subcontractors.

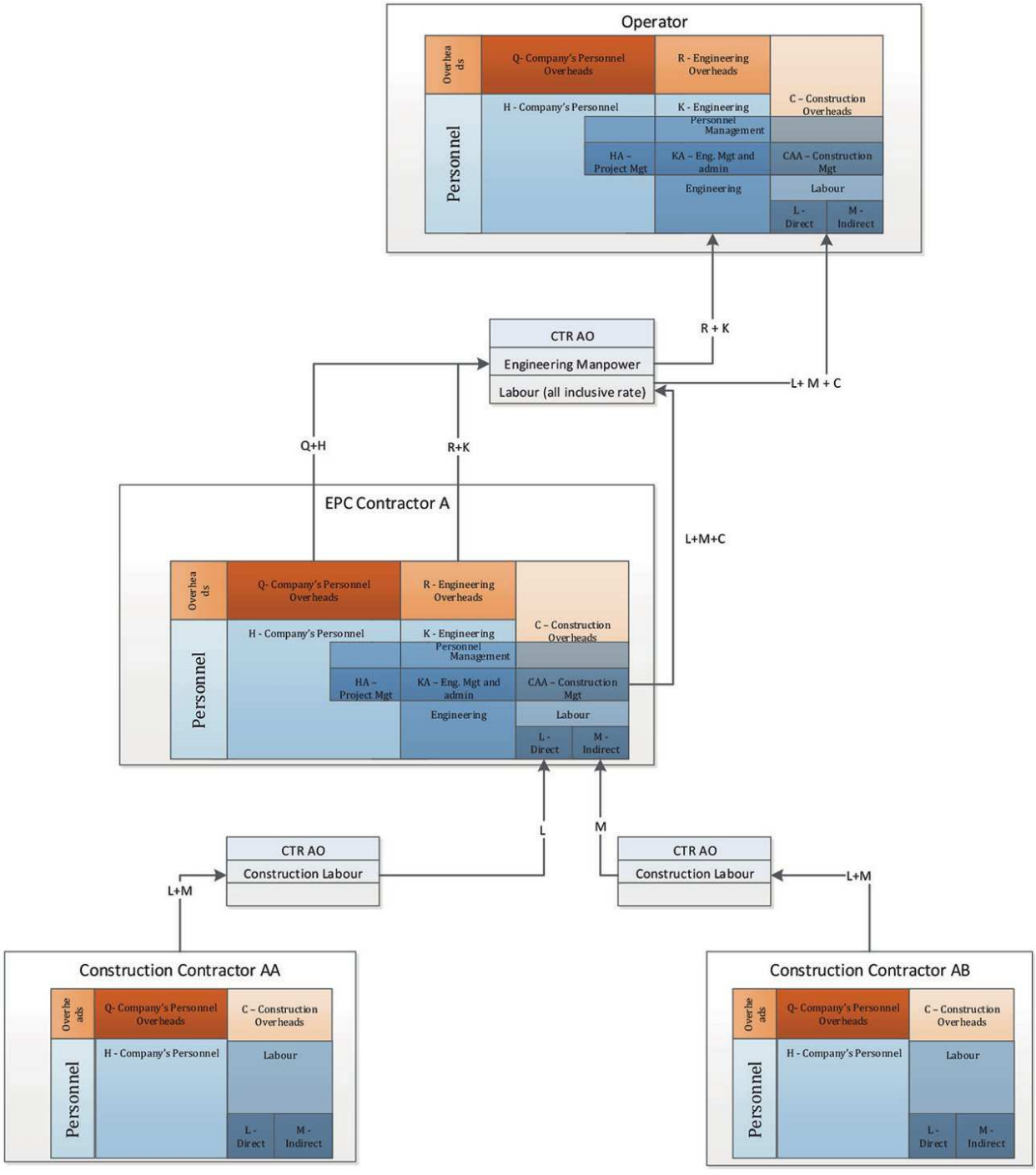


**Figure 1 — Illustration of how the SCCS is intended to be used across the supply chain**

## 5 Conformance

A data set conforms to this International Standard when each cost item in the data set is appropriately assigned to elements within the SCCS using the method and meaning defined herein.

# Annex A
(normative)

# Physical breakdown structure – PBS codes

This annex reflects the PBS in the SCCS.

The PBS is a hierarchical structure which defines the physical/functional components of oil and gas facilities/projects during any development phase and is independent of project-specific:

— area;

— module;

— preassembly;

— unit;

— structure;

— subproject;

— classification systems.

The physical breakdown structure is divided into

A: offshore installations;

B: onshore installations.

Offshore installations (PBS A) are confined to include all offshore, ashore and nearshore/inshore facilities. Amongst others, such facilities can include:

1) landfall for pipeline and cable systems, including shore approach via tunnels or at a beach site (onshore pipelines and cables are covered under PBS B);

2) tie-in and modifications to existing facilities for receiving, processing and further transport of products;

3) tie-in to existing pipeline systems for transport of products.

PBS codes can be found at http://standards.iso.org/iso/19008.

# Annex B
(normative)

# Standard activity breakdown – SAB codes

This annex reflects the standard activity breakdown structure (SAB) in the SCCS.

The SAB provides an activity-based breakdown of the scope of work for use primarily when preparing phased cost estimates, but also for estimating presentation and cost reporting.

The SAB includes activities related to the planning and execution of an oil and gas project.

With the introduction of the SAB code prefix this SAB structure opens up for use in all phases of oil and gas facilities development, i.e. from field exploration to facilities removal.

**SAB – phase prefix**

E exploration

A appraisal

D development

P production

S shutdown and decommissioning

R removal

***Exploration phase*** is defined to start when the block/area is assigned to the company.

***Appraisal phase*** is defined to start when an oil or gas field is discovered. It includes all activities required to establish the commerciality of the field and culminates in the declaration of commerciality.

***Development phase*** is defined to start from the licensee's acceptance of the development concept.

***Production phase*** is defined to start from regular start-up of production operations (this includes major modification work on existing facilities during the production phase).

***Shutdown and decommissioning phase*** is defined to start when the operator submits the schedule for shutdown of wells and facilities.

***Removal phase*** is defined to start when the operator confirms the current concept for removal of field installations.

SAB codes can be found at http://standards.iso.org/iso/19008.

# Annex C
(normative)

# Code of resource – COR codes

This annex reflects the code of resource structure (COR) in the SCCS.

The COR classifies all project resources and categorises resources according to the type of resource and the rate structure.

A graphical representation of the COR structure is shown in Figure C.1.

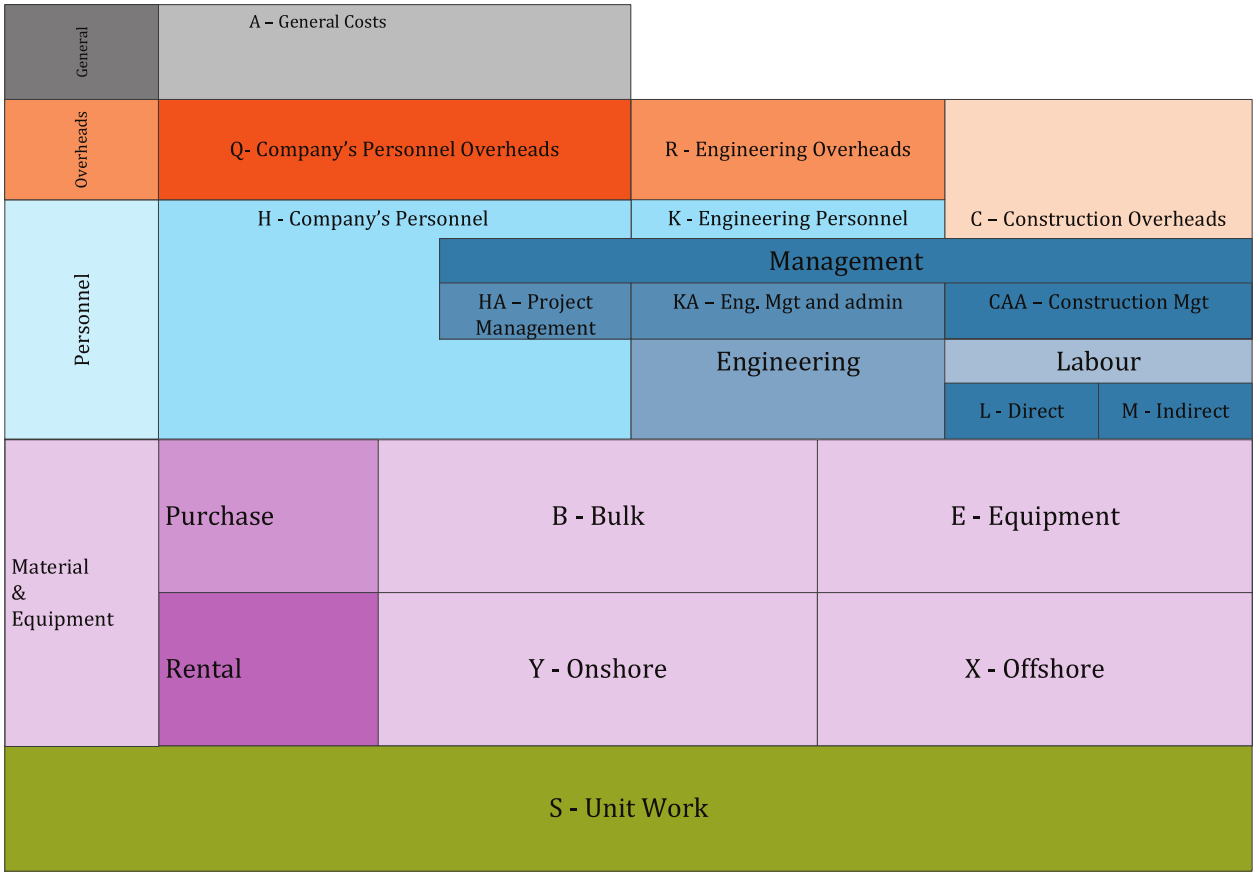


**Figure C.1 — COR structure in graphical representation**

COR codes can be found at http://standards.iso.org/iso/19008.

# Annex D
(informative)

# Example of use

This annex describes examples of use of the standard SCCS according to the PBS, SAB, COR structures defined in this International Standard. It also provides rules for combining the codes in accordance with the typical interpretation of the scope of each code. These combination/mapping rules are not exhaustive; however, they cover most cases that are either implied or explicitly mentioned in the definitions.

The examples included in this annex are:

1) SCCS coded estimate — this example shows a typical estimate coded in accordance with the SCCS.

2) SAB-COR mapping summary — this is a summary of the high level SAB and COR mapping. It illustrates which level 1 SAB codes relate to COR codes.

3) SAB-COR mapping detailed — this is a detailed SAB to COR mapping that illustrates some more SAB and COR combinations that are valid.

4) PBS-SAB mapping — this is a detailed PBS to SAB mapping that illustrates some lower levels of PBS and SAB combinations that are valid.

5) PBS-COR mapping — this is a detailed PBS to COR mapping that illustrates some lower levels of PBS and COR combinations that are valid.

Example estimate and mappings can be found at http://standards.iso.org/iso/19008.

# Bibliography

[1] ISO 14224, *Petroleum, petrochemical and natural gas industries — Collection and exchange of reliability and maintenance data for equipment*

[2] ISO 15663 (all parts), *Petroleum and natural gas industries — Life-cycle costing*

[3] ISO 20815, *Petroleum, petrochemical and natural gas industries — Production assurance and reliability management*

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