

Product Supplement for Energy Components Upstream

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Introduction

EC Upstream is a software solution for the oil & gas industry to manage upstream production data, perform hydrocarbon accounting and related workflows, and to ensure accurate and traceable reporting regulators for operated and non-operated hydrocarbon production licenses and fields. EC Upstream has a rich set of features and capabilities that are designed to support the physical and commercial operation of such assets, from analysis data management, well testing, deferment management and production allocation and forecasting to revenue accounting, ownership allocation, invoicing and reporting. EC Upstream is a flexible solution that supports conventional and unconventional resources, enhanced recovery techniques and hydrocarbons production flows of various chemical compositions. It also supports a wide variety of regulatory regimes, regional standards and commercial arrangements and enable a single source of truth to ensure confidence and effective collaboration between all stakeholders involved.

Software Subscription Options and Metrics

This document defines the Standard Functionality and Add-Ons together with applicable license metrics that are available for Customer's access under mutually agreed Energy Components ("EC") Upstream SaaS or Self-Hosted Subscription Order(s). Such Order(s) shall specify the authorized license metric quantity, the selected Add-On(s), and the licensed Operation(s) as defined below.

Vendor may update or revise this Product Supplement from time to time. Updates will be made available within this document including the date of change as well as the changes made. New versions will enter into force immediately, except for any ongoing annual or committed Subscription Term, for which the previous version will apply until the end of such ongoing term, subject to the terms of the Agreement and Order. Customer should review the Product Supplement prior to using the Software to stay informed about the applicable license metrics. Capitalized terms are defined herein or in the Agreement or the Order for the purchase of the Subscription(s).

Definitions

- **By-product(s)** means materials that are not listed as Product(s) but are managed in an EC Upstream implementation as an output from production, processing, storage, transportation and/or combustion of energy carriers, such as produced water, carbon dioxide ("CO₂"), and sulfur. Subject to licensing any required Add-On, By-product(s) can be managed in the same EC Upstream solution without impact to the Energy Export price model metric.
- **EC Upstream Software** means the EC Upstream Standard Functionality and Add-On(s) selected in an Order.
- **Energy Export** means the Product(s) that are either exported or produced for custody transfer. This is the metric used to determine pricing for the EC Upstream Software Subscription(s) and defines the maximum contracted level for which the Software Subscription(s) can be utilized. The Energy Export metric is calculated using a formula that aggregates energy and/or hydrocarbons exported or produced for custody transfer from (i) licensed Operations operated by Customer and its Affiliates, and/or (ii) Customer's share of energy and/or hydrocarbons exported or produced for custody transfer from their licensed non-operated Operations.
- **Operation** means a physical facility or infrastructure (ultimately as determined by Vendor in case of uncertainties) where there is a need to store or register data related to production, processing, storage, transportation and/or power generation involving one or more Product(s), and ultimately as granted in the Order.
- **Product(s)** means materials that are the output of production, processing, storage, transportation, and/or combustion of energy carriers managed in an EC Upstream implementation in one of the following categories:

- Oil, condensates, and derived base oil and fuel oil products
- Natural gas and derived fuel products such as NGL, LPG and LNG
- Electricity (export only)
- **Reagent(s)** means materials that are not listed as Product(s) and are not By-product(s) but are managed in an EC Upstream implementation as an input for production, processing, storage, transportation, and/or combustion of energy carriers, such as water, steam, coal, limestone, urea and electricity (consumption). Subject to licensing any required Add-On, Reagent(s) can be managed in the same EC Upstream solution without impact to the Energy Export price model metric.

Product(s), By-product(s) and Reagent(s) can be managed in an EC Upstream solution in solid, liquid and/or gaseous state where applicable.

EC Upstream Standard Functionality & Add-Ons Description

The EC Upstream Software consists of the Standard Functionality and related optional Add-Ons.

EC Upstream Standard Functionality

The EC Upstream Standard Functionality is the foundation of the Energy Components software in the Upstream segment and a prerequisite for all currently available EC Upstream Add-Ons. The features included in the Standard Functionality focus on supporting hydrocarbon accounting and related business processes for upstream operations and includes:

- **Allocation**, functionality for configuring and running production allocation calculations to back-allocate hydrocarbons to their respective sources either by volume, mass, or mass component. Use of ownership and commercial calculations are not included and require additional Add-Ons. For more details, refer to the Commercial Management Add-Ons.
- **Deferment Management**, functionality for creating calculations related to and management of deferred production and injection for single or multiple wells. This allows setting up classification or cause hierarchies, calculating how deferments or losses are allocated to wells, handling of overlapping events, and automatically generating events based on specified criteria.
- **Well Testing**, basic functionality for defining, importing and registering well tests. It also allows for selecting stable periods, summarizing data, performing basic PVT (Pressure-Volume-Temperature) calculations, validating results, storing information, and generating reports.
- **Business Process Modelling & Automation**, functionality for designing and automating execution of customer business processes (BPMs) in EC Upstream.
- **Mobile Task List**, functionality allowing users to receive notifications and confirm task completion from a mobile device.
- **Reporting**, functionality for configuring canned reports through built-in reporting features based on Microsoft Excel and JasperReports.

EC Upstream Add-Ons

The Software can be enhanced with several Add-Ons, which are available for separate licensing in addition to the EC Upstream Standard Functionality. The following Add-Ons are currently offered:

Operational Scope Add-Ons

- **Simulator Integration Add-On** (not yet released), which allows integration of external simulator(s) to the Allocation calculation workflows, such as process simulators to calculate fluid properties or state conversions, or reservoir, well or pipeline simulators to calculate performance curves.
- **Chemical Management Add-On**, which allows utilization of functionality to manage, monitor and report on chemical inventories and demand, chemical usage and performance, sampling and analysis. Chemical

data can be combined with production, deferment and operational data to monitor, analyze and report flow assurance and operational integrity.

- **Forecasting Add-On**, which allows utilization of functionality for production forecasts with multiple scenarios, comparison of different scenarios, and analysis of opportunities by viewing well production profiles.
- **Pipeline Nominations Add-On**, which allows utilization of functionality for shipper to nominate Product(s) and By-product(s) export to pipeline operator. Actual metered quantities can also be captured for the nomination points, but complex allocation rules will require the Sales Contract Calculation Add-On.
- **Upstream Cargo Operations Add-On**, which allows utilization of functionality for planning, scheduling, and terminal operations of marine crude or condensate cargo at the loading location(s). This includes generation and maintenance of schedules for marine cargo loading, generation and storage of official cargo documents such as cargo analysis reports, bill of lading, certificate of discharge, timesheets, port log, and demurrage records.
- **Mobile Terminal Operations Add-On**, which allows utilization of a mobile application for marine terminal operations on handheld devices, including offline data capture and cargo document generation capabilities. The Mobile Terminal Operations Add-On is dependent on the Upstream Cargo Operations Add-On.
- **Emission Management Add-On**, which allows utilization of functionality for calculating, analyzing, monitoring and reporting of facility and source-level greenhouse gas (GHG) and non-GHG emissions from monthly, daily or sub daily allocations, current production and forecasted production. Includes a selection of template methods based on common industry- and regulatory guidelines and recommendations. Note that this Add-On does not include functionality for emissions management related to marine transportation of hydrocarbons.
- **Regulatory Reporting Add-On**, which allows utilization of functionality for scheduling, calculation and aggregating data for regulatory reporting, including features for validation, approval and issuing of reports. The Regulatory Reporting Add-On is available only for a specified selection of countries, as detailed and selected in the Order.

Commercial Management Add-Ons

- **Ownership Allocation Add-On**, which allows implementation of calculations for allocation of quantities between different owners or entities.
- **Cost and Revenue Allocation Add-On**, which allows implementation of calculations for allocation of costs and revenue back to individual entities, such as wells or fields.
- **Inventory Valuation Add-On**, which allows implementation of calculations of value of inventory stock of Products, By-products and Reagents at the time of preparation of financial statements.
- **Sales Contract Calculations Add-On**, which allows implementation of calculations related to the commercial terms for the custody transfer of Product(s) and By-product(s), such as Gas Sale Agreements (GSA) and Gas Purchase Agreements (GPA), including terms related to contract quantities such as Annual and Daily Contractual Quantity (ACQ and DCQ), Take or Pay clauses, Make-Up provisions, shortfalls and over deliveries.
- **Royalty and Production Sharing Agreements Add-On**, which allows implementation of calculations of royalties to the owners of the mineral rights, including implementation of the commercial terms for determining the production share for respective parties.
- **Price Calculations Add-On**, which allows implementation of Product and By-product price calculations and/or sales contract price calculations in multiple currencies according to published reference prices, consumer price indexes and applicable contractual terms.
- **Invoicing Add-On**, which allows utilization of functionality for generating financial statements, such as invoices and payment statements, while also managing data relevant for revenue recognition for the sale

and purchase of Product(s), By-product(s) and Reagent(s) managed in EC Upstream. It supports the creation of accrual and actual financial statements, preliminary and final financial statements, prior period adjustments, payment tracking, and the calculation of interest on late payments.

Generic Add-Ons

- **Business Intelligence Add-On** (not yet released), which allows utilization of the integrated Business Intelligence framework.
- **Product Customization Add-On**, which allows customers to extend the Software by adding custom elements such as domain model definitions, screens, calculations not configurable from the Software front-end, icons/logos, and integrations, Quality Assurance (QA)/test automation. All extensions must adhere to the EC extension coding standard. This Add-On is also mandatory if the EC Upstream implementation covers functional scope beyond what is available as Standard Functionality or Add-Ons. Note that in some cases the final assessment about whether a customer require this Add-On can only be completed during the Detailed Design phase.

General EC Upstream Licensing Terms

The EC Upstream Software is licensed separately for the Standard Functionality and each Add-On according to the licensing scheme described in the Agreement and this Order (including this Product Supplement) for usage by the Customer’s and its Affiliates authorized operated Operations and for recording the Customer’s and its Affiliates share of exported energy and/or hydrocarbons from agreed non-operated Operations. A pre-requisite for licensing Add-Ons is that the EC Upstream Standard Functionality is licensed.

Subject to the terms of the Order, an EC Upstream Software Subscription entitles the Customer to receive access to the Standard Functionality and selected EC Upstream Add-On(s) for the term of the Order in connection with and for the benefit of the authorized Operation(s) and Energy Export (“License Metrics”) as applicable and identified in the Order.

The Standard Functionality and Add-Ons are licensed under a scheme where the Energy Export of the Customer’s licensed Operation(s) is used to determine the annual Subscription Fee. The Energy Export is based on a formula that allows for calculation of multiple Products into one single value through nondimensionalization (i.e. by multiplying with Product factors that results in unitless numbers), hence it does not have a unit:

$$Energy\ Export = \sum_{i=1}^n (Product_i * Factor_i)$$

Only Product(s) will be considered when calculating the Energy Export. By-product(s) and Reagent(s) can be managed in the same EC Upstream solution without being included in the Energy Export. The unit of measurement of the Product quantities, and the corresponding Factor used to calculate Energy Export, will vary depending on the type of Operation and Product(s):

Energy Export			
Conversion Types	Product	Unit	Conversion Factor
Oil equivalents	Thousand BOE per day	kBOE/d	1.00
	Thousand tonnes(T) OE per day	kTOE/d	7.33
Hydrocarbon export	Crude Oil	kbbbl/d	1.00
		ksm3/d	6.29
	Condensate	kbbbl/d	1.00
		ksm3/d	6.29
	NGL	kbbbl/d	1.00

		ksm3/d	6.29
	Natural Gas	mmscfd	0.0283
		kSm3/d	6.29
Electricity export	Electricity	GWh	14.12

The selected Standard Functionality, Add-On(s) and the authorized License Metrics are identified in the Order together with any special terms agreed between the Parties.

Changes to Metrics

Renewal Terms: Before each renewal term, the Vendor is permitted to access and review Customer’s actual daily Energy Export in the Software for the previous twelve (12) calendar months (“Actual Export”) to determine the Fees for the next renewal term. If Customer’s Actual Export on all days is less than the authorized Energy Export, the applicable annual price adjustment will be applied for the renewal term. If Customer’s Actual Export on any day exceeds the authorized Energy Export, the Fees for renewal and remaining ongoing annual or committed Subscription Term will be determined based on the Actual Export, using the Vendor’s then current pricing formula.

Exceeding License Metrics: The Licensed Materials may be used for no more than the License Metrics. Additional entitlements must be paid in the event usage on any day exceeds the License Metrics, at the pricing in effect at the time the additional entitlement is added.

Increasing License Metrics During a Subscription Term: When increasing the License Metrics level during an ongoing Subscription Term, the difference in Subscription Fee(s) is calculated at the year of the increase and an additional Subscription Fee will apply as of the triggering event until the remainder of the ongoing 12-months period unless otherwise agreed and will be invoiced in full the month after setting the higher License Metrics level. Thereafter, the applicable Subscription Fee(s) are again invoiced annually in advance for each annually recurring 12-months during the committed Subscription Term.

No Decreases to License Metrics During a Subscription Term: Customer may not decrease the Licensed Metrics during the initial, committed and/or an ongoing Subscription Term.

Delivery of the Software

The Software Subscription(s) will be delivered to the Customer on or before the License start date specified in the Order. Delivery shall be deemed to occur upon the Software being made available to the Customer, including but not limited to the physical delivery of media, provision of a download link, provision of login credentials, the issuance of license keys or any other means by which the Software is made available to the Customer. If access to the Software includes access to Module(s) or Add-On(s) of the product suite for which Customer has not procured a Subscription, Customer is not entitled to extend the use of the Software to such additional Module(s) or Add-On(s) without procurement of additional Subscription(s). Any hardware and software needed for the Customer to access the Software shall be at the Customer’s responsibility to acquire, install and maintain.

An Order for the relevant Software Subscription must be in place before starting any design, configuration, and/or implementation activities in the Software.

Change Log

Date of Change	Details of Changes
May 5 th , 2023	Initial Release
October 15 th 2024	Updated the Add-On list, made the document generic across SaaS and Self-Hosted Subscription Order(s), and structurally aligned to Product Supplements for other Quorum products.