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E354086-00000-271-078-0015

REV. 01

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DOCUMENT CHANGE HISTORY:

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APPENDIX A

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6.1


List of Flow Computers (COP):.....

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6.2

List of Consignee/Consignor Valves (COP):.....

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1 INTRODUCTION

1.1 Purpose

The purpose of this document is to:

- Define the interface between the OASyS Process Control System and the TPL ICT Custom Middleware System (SAP) as regards to the transfer of custody (Remote) and non-custody (Host) Metering data from the PCS System.
- The document identifies the tables and Metering data that is made available on the OASyS SCADA DSS Historian.
- The document also defines the frequency of update and how missing data is handled.

1.2 Scope

1.2.1 Requirements Included


This document provides detailed interface information on table associations such as field names, field types, field lengths and descriptions.

In addition, details of database types, database name, data structures, and function calls are provided to facilitate system interface.

The details for Host metering, while included here-in will be finalised in a future project.

1.2.2 Requirements Excluded

Remote and Host Metering functionality and Reports as implemented within the OASyS SCADA System are addressed in their separate respective documents [3], [4].

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1.3 Terms and Definitions


1.3.1 Abbreviations

Term	Definition
DSS	Decision Support Server
FC	Flow Computer
ICD	Interface Control Document
PLC	Programmable Logic Controller
SAP	Systems, Applications, Products software company


1.3.2 Definitions

The following definitions apply for this document:

Advanced Database Editor (ADE)	An OASyS DNA support and configuration program for editing the real-time database.
Control Panel	A standard graphic element that represents a telemetered value, for example, an analogue controller instrument, a hardwired push-button, or a switch, allowing operator monitoring and control of the device.
Completed Ticket Status – Unverified and Verified	A completed ticket has two statuses, unverified and verified. Unverified ticket is one where the delivery data has not been verified. A verified ticket is one where the delivery data has been verified. On the system the acceptance flag for verification is set on the successful upload of the ticket from the flow computer.
Display	Graphics which will show the information coming from the RealTime database statically or dynamically.
HMI	The graphical interface program for allowing an operator to interact with and control a process
Host Metering	Host metering is used to measure product volume moving within the TPL network. The volume measurement is done within the SCADA system. TPL uses Host metering for inter-tank transfers and blending.
Offline Delivery	An offline delivery is defined as a delivery captured within the stream FC, when the SCADA is not available. When the SCADA becomes available, completed delivery data within the FC will be uploaded to the SCADA and Batch ID numbers assigned.
Operator Workstation	Electronic equipment on which the HMI resides, including, at a minimum, PC workstation, a monitor, keyboard, and pointing device used by an operator to monitor and control his assigned process or manufacturing units

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Operator / Controller	One who exercises central surveillance and control of the field using SCADA.
PLC	Programmable Logic Controller used for discrete and continuous control in processing and manufacturing plants
Point	A process variable derived from an input signal or calculated in a process calculation
Real-time	The inherent property of a system to distribute data such that the users of the data always have the most current data at all times.
Remote Metering	Remote Metering refers to custody metering for all products received from and delivered to TPL customers. Custody metering makes use of certified flow computers for volume totalisation.
Stream FC	Stream Flow Computer used for custody volume measurement

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2 APPLICABLE DOCUMENTS

All documents of the exact revision cited in the Applicable Documents form part of this specification to the extent specified. In the event of a conflict between the text of this specification and the documents invoked herein, the text of this specification takes precedence. Nothing in this specification supersedes applicable laws and regulations.


2.1 TPL Applicable Specifications and Standards

No. and Title	Doc. No.	Rev.
[1] SCADA Functional Design Specification	E354086-00000-271-078-0018	Latest
[2] SCADA System Architecture	E354086-00000-271-256-0002	Latest
[3] Metering Functional Design Specification	E354086-00000-271-078-0020	Latest
[4] PCS Report Plan	E354086-00000-271-078-0009	Latest
[5] Custody Metering System User Requirement Specification	TPL-TECH-I-M-SPEC-011B	04
[6] Computer Naming Standard	2684358-S-A00-IS-ST-001	04
[7] S600 Flowboss Stream Functional Design Specification	TPL-TECH-I-M-SPEC-016	R4
[8] S600 Flowboss Prover Functional Design Specification	TPL-TECH-I-M-SPEC-017	R4
[9] LAN Network Specification	E354086-00000-271-078-0002	Latest

2.2 Other Applicable Specifications and Standards

The following national and international standards are complied with and can be read in conjunction with this specification.


No.	Doc. No.	Rev.
[10] Nil.		

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2.3 Reference Documentation

The documents included in this section do not form part of the specification but are included for background and context.

No.	Doc. No.	Rev.
[11] Aveva Pipeline Operations – Liquids Administrator Guide	2018 SP1	Oct 2108
[12] Aveva Pipeline Operations – Liquids Controller Guide	2018 SP1	Oct 2108

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3 METERING DATA FLOW

3.1 Remote (Custody) Metering

The diagram below describes the remote metering (custody) system general concepts and data flow.

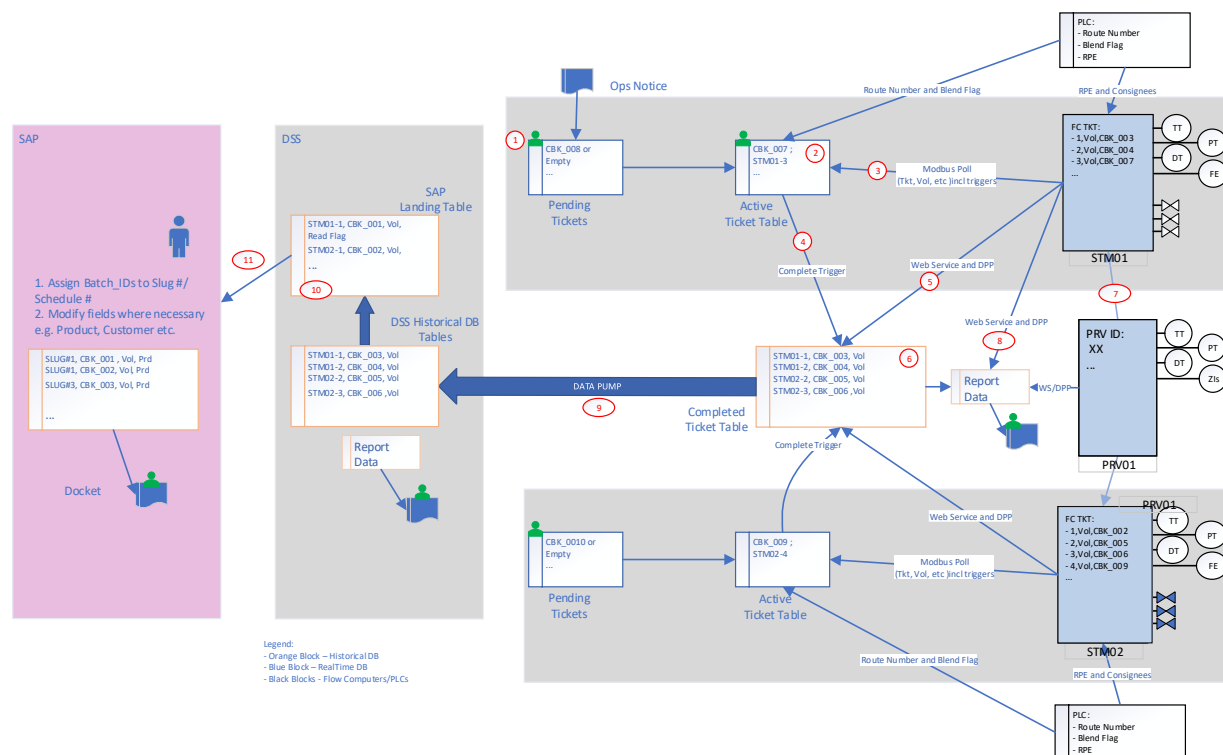



Figure 3.1-1 TPL Remote Metering Concepts and Data Flow

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NOTES:

Remote Metering (Custody) functionality:

1. "*Pending Table*" Tickets are used by the operator to plan the next ticket. The operator enters the planned volume and product type. The next *Batch_ID* is also generated by the system. The generated *Batch_ID* and the planned volume is sent to the FC.
2. The Batch Transfer display is used by the operator to manage the delivery. Delivery data is displayed, as uploaded from the stream FC and "*Pending Table*" ticket.
3. The Active Ticket data from the stream FC is polled by Modbus into LMS and displayed on the Batch Transfer display. Note that the active ticket trigger will come from the FC Modbus register and not from LMS.
4. After the FC indicates the Ticket has been completed, Host delivery data for the delivery is loaded into the Completed Ticket Table. The delivery record is marked as *Unverified* at this stage.
5. After the FC indicates the Ticket has been completed, LMS also triggers an Upload of the completed ticket (Consignee Batch Report) data which is parsed into the Completed Ticket Table delivery record. Note: The source of the data is the FC ticket Data and NOT the Active ticket data. This is to ensure the TPL Completed Ticket Data Table data matches and is traceable to the FC ticket.
6. Once the FC upload has been successfully completed, the ticket is marked as *Verified*. The TPL Completed Ticket Data Table is NOT the LMS standard host tables as those take data from the Active Ticket data. These are custom tables in the Historical Database. This table contains the Batch Id (e.g. CBK_xxx)) with the FC ticket (121,122..) and ticket data like Volume, prove data etc.
7. Proving: The Stream FC No and Delivery Report No (FC Docket No) is sent to the Prover FC and used as the key to get the Prove data. Some of the Prove information is on the Stream FC ticket and the rest is on the Prover FC.
8. Proving Report Data is uploaded and parsed into the report data tables which allow Prove Reports, Hourly Reports, Daily Reports and Delivery Reports to be generated. Reports also include data from the *RealTime* Database. Note: Reports are available on the Station as well as in the MCC\DSS.
9. The LMS Tables within the Station *Historical*/DB are Data Pumped to the MCC *Historical* DB and from there to DSS *Historical* DB.

TPL ICT Custom Middleware System (SAP) Interface:

10. Completed Ticket Data is sent to SAP Landing Table in the DSS.
11. SAP can retrieve the data from the landing data as required.

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4 CONNECTION INFORMATION

The OASyS (LMS) SCADA DSS Historian, SQL (2016) server named OASySHB, will host three SAP Landing tables as defined below and detailed within this document. The TPL ICT Custom Middleware System, acting as a SQL Client, will connect to the OASySHDB server on TCP port 20010 via SSL login to obtain information.

The OASySHB authenticated user access can be configured at time of commissioning as required by TPL.

The following are the three landing tables within the LMS database:

- *TPLDeliveryReportTable* – Delivery report
- *TPLHourlyReportTable* – Hourly Report
- *TPLDailyReportTable* – Daily Report

A sample “select” statement to access *TPLDeliveryReportTable* would be :

```
select * from LMS.dbo.TPLDeliveryReportTable
```

The OASyS SCADA DSS Historian database will be hosted on the DMZDSSDSS01.

All connectivity requirements are described in LAN Network Specification[9]

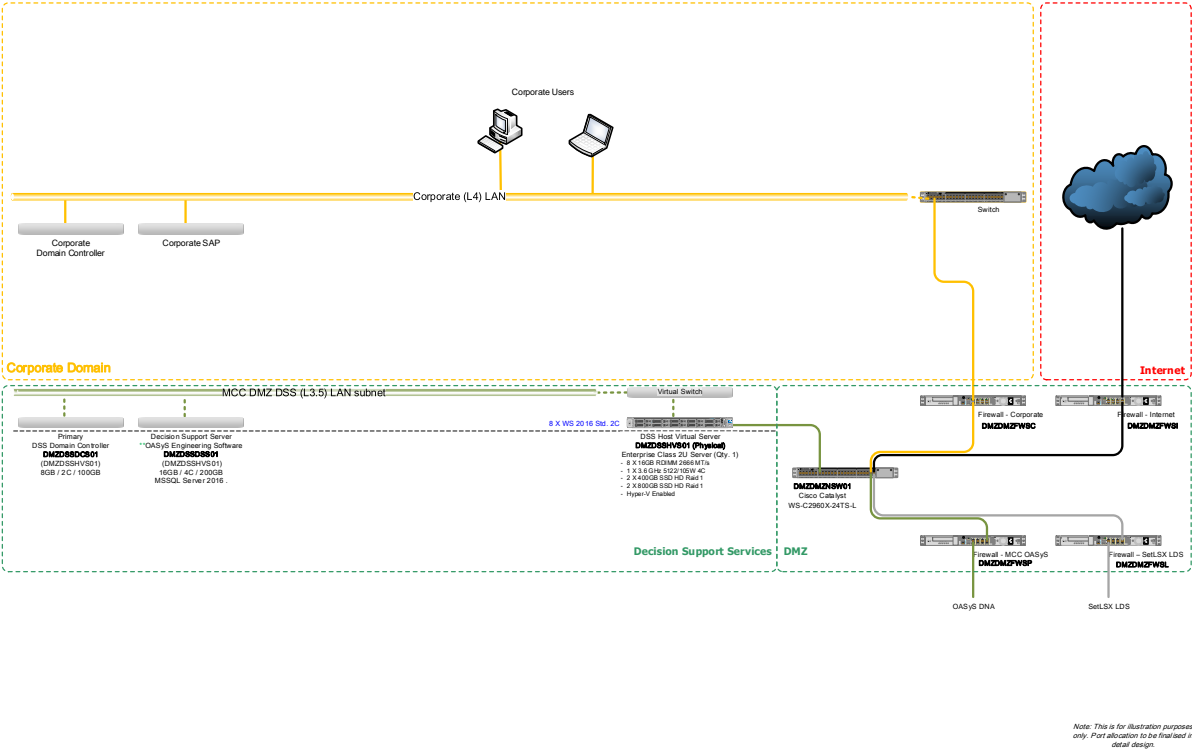



Figure 2 - DSS System Architecture

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5 TPL SAP DATA MAPPING INTERFACE

For remote metering, metering data from the flow computers to the local SCADA is uploaded when available and is polled on a per minute basis.

For both remote and host metering, the SCADA data is replicated to the MCC and from there to the DSS (under normal operating conditions). Selected data is replicated to SQL SAP Landing Tables within the DSS, for access via SAP query every two minutes.

5.1 TPL Delivery Report View

5.1.1 Remote (Custody) Metering

Operations Delivery data is extracted from the Consignee Batch Report within the stream FC on completion of a delivery, is polled on a per minute basis, and is used to populate the *ticketTotal* table within the LMS Historical Database.

Selected delivery data within the *ticketTotal* Table is replicated to the SAP *TPLDeliveryReportTable* Landing Table for access via SQL query.

1. When a delivery is completed, the following data is populated into the *ticketTotal* Table: Batch_ID, Product, Comment, Source and Destination data as provided by the SCADA. The remaining information is uploaded from the Consignee Batch report within the stream FC, polled once a minute. Only completed ticket data (with a *verified* status) is loaded into the *TPLDeliveryReportTable* for access by SAP.
2. In an offline delivery (when the stream FC is not connected to the local SCADA), the source and destination fields in the *ticketTotal* Table will be empty, and it will be assumed that there has been no blend. These fields will need to be populated in the SAP environment.
3. The unique primary key within the Metering system is the Batch_ID. No SQL index ID is provided within the respective tables.


The Batch_Id is created as a combination of <Station Name>, <Manifold> and <Station unique ticket number> such as CBK_AV_1700000001 where:

- <Station Name> is the name of the station, comprising of 3 alphanumeric characters
- <Manifold> is the name of the manifold, comprising of 2 alphanumeric characters
- <Station unique ticket number> comprising of ten digits which are globally unique and sequential across the station.

Batch_IDs will only become sequential on a station (within the *ticketTotal* Table) once all deliveries on the station are completed.

Note that Batch_ID numbers may be skipped if communications between the SCADA and stream FC fails at the pending ticket stage. In the case where Batch_ID numbers are identified as missing (by running a Station Audit Trail report *), a FC Audit Trail should be conducted.

* The station audit trail report comprises of a list of unverified and verified tickets filtered on Batch_ID.

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For data fields which are not available during time of field updates; if the field is numeric it will contain 0 (zero), if the field is alphanumeric, it will contain an empty string.

Refer to Appendix for a list of Flow Computers and Consignee Valves which are being used by TPL.

5.1.2 Host (Non-Custody) Metering

Operations Delivery data within the SCADA is, on completion of a delivery, used to populate the ticketTotal table within the LMS Historical Database. Selected delivery data within the *ticketTotal* Table is replicated to the SAP *TPLDeliveryReportTable* Landing Table for access via SQL query. For details on which fields are populated in the *TPLDeliveryReportTable* refer to Section 5.4.

5.2 TPL Hourly Report Table

The *TPLHourlyReportTable* will provide access to hourly volumes for in-progress and completed tickets on a per stream FC basis. The hourly report data is extracted from the Hourly Report within the stream FC and is closed at the top of the hour to start a new hourly report.

For Hourly Reports, each flow computer records flow information for up-to 20 consignees (customers).

For data fields which are not available during time of field updates; if the field is numeric it will contain 0 (zero), if the field is alphanumeric, it will contain an empty string.

5.3 TPL Daily Report Table

The *TPLDailyReportTable* will provide the SQL view of daily volumes for in-progress and completed tickets on a per stream FC basis. The daily report data is extracted from the Daily Report within the stream FC and is closed at top of the hour at midnight to start a new daily report.

For Daily Reports, each flow computer records flow information for up-to 20 consignees (customers).

For data fields which are not available during time of field updates; if the field is numeric it will contain 0 (zero), if the field is alphanumeric, it will contain an empty string.

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5.4 Delivery Report Information

Table view name: *TPLDeliveryReportTable*

Table 5.4-1 Delivery Report

SAP Field	SQL ticketTotal Fields	Type	Units	Custody \ Host \ Both	Sample data	Description
Station	stationName	char(32)		B	CBK	Station Name (Depot)
batchId	batchId	char(32)		B	CBK_AV_1700000001	Key
FCNo	FCNo	uint		C	1	Flow computer number
FCDocketNo	FCDocketNo	uint		C	54	FC docket number
consignee	consigneeValveCode	char(32)		B	CM1A	Consignee valve
measType	KFactorOutOfRange	int		C	1	0: MATRIX=transfer without accepted proof 1: METERED = accepted proof
openReading	StationStartCVol	float	L	B	53327	Stream Open meter reading
openTime	sTime	datetime		B	DD-MM-YYYY 15:00:00	Open date/time
closeReading	StationEndCVol	float	L	B	253099	Stream Close meter reading (CSG start)
closeTime	eTime	datetime		B	DD/MM/YYYY 15:00	Close date/time
totalVolume	BatchTotalCVol	float	L	B	199772	Total Delivery. Vol.
transmissionType	ppltask	char(1)		C	Delivery	Intake /Delivery: R- Receipt (Intake) D – Delivery
product	prdTypCode	varchar(32)		B	CRUDE	Product
tdestination	ticketDst	varchar(32)		C	CM1	Destination
tsource	ticketSrc	varchar(32)		C	H1A	Source
maintenance	maintenance	char(1)	Y/N	C	N	Maintenance
comment	opcomment	char(80)		B	CBK-03C452/K14-LM(6)	comment
blend	blend	char(1)	Y/N	C	Y	Blend Flag
creepStartVol	creepStartCVOL	float	L	C	0	Creep Start CVol.
creepEndVol	creepEndCVOL	float	L	C	0	Creep End CVol.
creepGSV	creepTotalCVOL	float	L	C	0	Creep Total CVol.
creepStartTime	creepStartDateTime	datetime		C	DD-MM-YYYY 15:00:00	Creep Start Date/Time
creepEndTime	creepEndDateTime	datetime		C	DD-MM-YYYY 15:00:00	Creep End Date/Time
custody	custody	char(1)	Y/N	B	Y	Custody delivery = Y, Non-custody delivery = null

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5.5 Hourly Report Information

Table view name: *TPLHourlyReportTable*

Note: This table will only exist for Custody Metering Deliveries\Intakes.

Table 5.5-1 Hourly Report

SAP Field	SQL <i>TPLHourlyReport</i> Fields	Type	Units	Sample Data	Description
hourlyReportTime	hourlyReportTime	datetime		DD-MM-YYYY 15:00:00	Date/Time of Hourly report
stationNo	stationNo	char(32)		17	Station number
FCNo	FCNo	uint		3	Flow computer number
FCDocketNo	FCDocketNo	uint		54	FC docket number
deliveryStatus	deliveryStatus	char(32)		Delivery	Delivery/Creep/No Delivery
cVolOnHour	cVolOnHour	float	corrected volume (L)	15565.17	corrected Volume
cVolPrvHour	cVolPrvHour	float	L	22	corrected Prev. Hour
cVolFlowRate	cVolFlowRate	float	L/min	400	cVol flowrate
avgPrs	avgPrs	float	kPa.g	170	avg Pressure
avgTemp	avgTemp	float	degrees Celsius	20	avg Temperature
avgBaseDens	avgBaseDens	float	Kg/L		avg Base Density
avgCvolFlowRate	avgCvolFlowRate	float	L/min	355	avg CVol flowrate
creepCvolOnHour	creepCvolOnHour	float	L	11	Creep CVol
creepCvolPrvHour	creepCvolPrvHour	float	L	15	Creep Prev. CVol
consigneeStatus1	consigneeStatus1	char(32)		CLOSED	Consignee Status 01
consigneeStatus2	consigneeStatus2	char(32)		CLOSED	Consignee Status 02
consigneeStatus3	consigneeStatus3	char(32)		CLOSED	Consignee Status 03
consigneeStatus4	consigneeStatus4	char(32)		CLOSED	Consignee Status 04
consigneeStatus5	consigneeStatus5	char(32)		CLOSED	Consignee Status 05
consigneeStatus6	consigneeStatus6	char(32)		CLOSED	Consignee Status 06
consigneeStatus7	consigneeStatus7	char(32)		CLOSED	Consignee Status 07
consigneeStatus8	consigneeStatus8	char(32)		CLOSED	Consignee Status 08
consigneeStatus9	consigneeStatus9	char(32)		CLOSED	Consignee Status 09

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SAP Field	SQL <i>TPLHourlyReport</i> Fields	Type	Units	Sample Data	Description
consigneeStatus10	consigneeStatus10	char(32)		CLOSED	Consignee Status 10
consigneeStatus11	consigneeStatus11	char(32)		CLOSED	Consignee Status 11
consigneeStatus12	consigneeStatus12	char(32)		CLOSED	Consignee Status 12
consigneeStatus13	consigneeStatus13	char(32)		CLOSED	Consignee Status 13
consigneeStatus14	consigneeStatus14	char(32)		CLOSED	Consignee Status 14
consigneeStatus15	consigneeStatus15	char(32)		CLOSED	Consignee Status 15
consigneeStatus16	consigneeStatus16	char(32)		CLOSED	Consignee Status 16
consigneeStatus17	consigneeStatus17	char(32)		CLOSED	Consignee Status 17
consigneeStatus18	consigneeStatus18	char(32)		CLOSED	Consignee Status 18
consigneeStatus19	consigneeStatus19	char(32)		CLOSED	Consignee Status 19
consigneeStatus20	consigneeStatus20	char(32)		CLOSED	Consignee Status 20
consigneeCvolOnHour1	consigneeCvolOnHour1	float	L	45483	Consignee CVol 01
consigneeCvolOnHour2	consigneeCvolOnHour2	float	L	0	Consignee CVol 02
consigneeCvolOnHour3	consigneeCvolOnHour3	float	L	0	Consignee CVol 03
consigneeCvolOnHour4	consigneeCvolOnHour4	float	L	0	Consignee CVol 04
consigneeCvolOnHour5	consigneeCvolOnHour5	float	L	0	Consignee CVol 05
consigneeCvolOnHour6	consigneeCvolOnHour6	float	L	0	Consignee CVol 06
consigneeCvolOnHour7	consigneeCvolOnHour7	float	L	0	Consignee CVol 07
consigneeCvolOnHour8	consigneeCvolOnHour8	float	L	0	Consignee CVol 08
consigneeCvolOnHour9	consigneeCvolOnHour9	float	L	0	Consignee CVol 09
consigneeCvolOnHour10	consigneeCvolOnHour10	float	L	0	Consignee CVol 10
consigneeCvolOnHour11	consigneeCvolOnHour11	float	L	0	Consignee CVol 11
consigneeCvolOnHour12	consigneeCvolOnHour12	float	L	0	Consignee CVol 12
consigneeCvolOnHour13	consigneeCvolOnHour13	float	L	0	Consignee CVol 13
consigneeCvolOnHour14	consigneeCvolOnHour14	float	L	0	Consignee CVol 14
consigneeCvolOnHour15	consigneeCvolOnHour15	float	L	0	Consignee CVol 15
consigneeCvolOnHour16	consigneeCvolOnHour16	float	L	0	Consignee CVol 16
consigneeCvolOnHour17	consigneeCvolOnHour17	float	L	0	Consignee CVol 17
consigneeCvolOnHour18	consigneeCvolOnHour18	float	L	0	Consignee CVol 18
consigneeCvolOnHour19	consigneeCvolOnHour19	float	L	0	Consignee CVol 19
consigneeCvolOnHour20	consigneeCvolOnHour20	float	L	0	Consignee CVol 20
consigneeCvolPrvHour1	consigneeCvolPrvHour1	float	L	2425	Consignee Prev. CVol 01
consigneeCvolPrvHour2	consigneeCvolPrvHour2	float	L	0	Consignee Prev. CVol 02

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SAP Field	SQL <i>TPLHourlyReport</i> Fields	Type	Units	Sample Data	Description
consigneeCvolPrvHour3	consigneeCvolPrvHour3	float	L	0	Consignee Prev. CVol 03
consigneeCvolPrvHour4	consigneeCvolPrvHour4	float	L	0	Consignee Prev. CVol 04
consigneeCvolPrvHour5	consigneeCvolPrvHour5	float	L	0	Consignee Prev. CVol 05
consigneeCvolPrvHour6	consigneeCvolPrvHour6	float	L	0	Consignee Prev. CVol 06
consigneeCvolPrvHour7	consigneeCvolPrvHour7	float	L	0	Consignee Prev. CVol 07
consigneeCvolPrvHour8	consigneeCvolPrvHour8	float	L	0	Consignee Prev. CVol 08
consigneeCvolPrvHour9	consigneeCvolPrvHour9	float	L	0	Consignee Prev. CVol 09
consigneeCvolPrvHour10	consigneeCvolPrvHour10	float	L	0	Consignee Prev. CVol 10
consigneeCvolPrvHour11	consigneeCvolPrvHour11	float	L	0	Consignee Prev. CVol 11
consigneeCvolPrvHour12	consigneeCvolPrvHour12	float	L	0	Consignee Prev. CVol 12
consigneeCvolPrvHour13	consigneeCvolPrvHour13	float	L	0	Consignee Prev. CVol 13
consigneeCvolPrvHour14	consigneeCvolPrvHour14	float	L	0	Consignee Prev. CVol 14
consigneeCvolPrvHour15	consigneeCvolPrvHour15	float	L	0	Consignee Prev. CVol 15
consigneeCvolPrvHour16	consigneeCvolPrvHour16	float	L	0	Consignee Prev. CVol 16
consigneeCvolPrvHour17	consigneeCvolPrvHour17	float	L	0	Consignee Prev. CVol 17
consigneeCvolPrvHour18	consigneeCvolPrvHour18	float	L	0	Consignee Prev. CVol 18
consigneeCvolPrvHour19	consigneeCvolPrvHour19	float	L	0	Consignee Prev. CVol 19
consigneeCvolPrvHour20	consigneeCvolPrvHour20	float	L	0	Consignee Prev. CVol 20

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5.6 Daily Report Information

Table view name: *TPLDailyReportTable*

Note: This table will only exist for Custody Metering Deliveries\Intakes.

Table 5.6-1 Daily Report

SAP Field	SQL <i>TPLDailyReport</i> Fields	Type	Units	Sample Data	Description
dailyReportTime	dailyReportTime	datetime		DD-MM-YYYY 15:00:00	Date/Time of Daily report
stationNo	stationNo	char(32)		17	Station number
FCNo	FCNo	uint		3	Flow computer number
cVol	cVol	float	corrected volume (L)	155650	CVol
cVolPrvDay	cVolPrvDay	float	L	14774	CVol Prev. Day
FWAPress	FWAPress	float	kPa	33	FWA Press.
FWATemp	FWATemp	float	degrees Celsius	20	FWA Temp.
FWABaseDens	FWABaseDensity	float	Kg/L	0.8	FWA base Density.
FWACVolFlowRate	FWACVolFlowRate	float	L/min	500	FWA CVol Flow Rate
creepCvolOnHour	creepCvolOnHour	float	L	11	Creep CVol
creepCvolCumulative	creepCvolCumulative	float	L	15	Creep CVol Cumulative
cumulativeCVol1	cumulativeCVol1	float	L	855650	Consignee CVol 01
cumulativeCVol2	cumulativeCVol2	float	L	0	Consignee CVol 02
cumulativeCVol3	cumulativeCVol3	float	L	0	Consignee CVol 03
cumulativeCVol4	cumulativeCVol4	float	L	0	Consignee CVol 04
cumulativeCVol5	cumulativeCVol5	float	L	0	Consignee CVol 05
cumulativeCVol6	cumulativeCVol6	float	L	0	Consignee CVol 06
cumulativeCVol7	cumulativeCVol7	float	L	0	Consignee CVol 07
cumulativeCVol8	cumulativeCVol8	float	L	0	Consignee CVol 08

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SAP Field	SQL TPLDailyReport Fields	Type	Units	Sample Data	Description
cumulativeCVol9	cumulativeCVol9	float	L	0	Consignee CVol 09
cumulativeCVol10	cumulativeCVol10	float	L	0	Consignee CVol 10
cumulativeCVol11	cumulativeCVol11	float	L	0	Consignee CVol 11
cumulativeCVol12	cumulativeCVol12	float	L	0	Consignee CVol 12
cumulativeCVol13	cumulativeCVol13	float	L	0	Consignee CVol 13
cumulativeCVol14	cumulativeCVol14	float	L	0	Consignee CVol 14
cumulativeCVol15	cumulativeCVol15	float	L	0	Consignee CVol 15
cumulativeCVol16	cumulativeCVol16	float	L	0	Consignee CVol 16
cumulativeCVol17	cumulativeCVol17	float	L	0	Consignee CVol 17
cumulativeCVol18	cumulativeCVol18	float	L	0	Consignee CVol 18
cumulativeCVol19	cumulativeCVol19	float	L	0	Consignee CVol 19
cumulativeCVol20	cumulativeCVol20	float	L	0	Consignee CVol 20
previousDayCVol1	previousDayCVol1	float	L	458977	Consignee Prev. CVol 01
previousDayCVol2	previousDayCVol2	float	L	0	Consignee Prev. CVol 02
previousDayCVol3	previousDayCVol3	float	L	0	Consignee Prev. CVol 03
previousDayCVol4	previousDayCVol4	float	L	0	Consignee Prev. CVol 04
previousDayCVol5	previousDayCVol5	float	L	0	Consignee Prev. CVol 05
previousDayCVol6	previousDayCVol6	float	L	0	Consignee Prev. CVol 06
previousDayCVol7	previousDayCVol7	float	L	0	Consignee Prev. CVol 07
previousDayCVol8	previousDayCVol8	float	L	0	Consignee Prev. CVol 08
previousDayCVol9	previousDayCVol9	float	L	0	Consignee Prev. CVol 09
previousDayCVol10	previousDayCVol10	float	L	0	Consignee Prev. CVol 10
previousDayCVol11	previousDayCVol11	float	L	0	Consignee Prev. CVol 11
previousDayCVol12	previousDayCVol12	float	L	0	Consignee Prev. CVol 12

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SAP Field	SQL <i>TPLDailyReport</i> Fields	Type	Units	Sample Data	Description
previousDayCVol13	previousDayCVol13	float	L	0	Consignee Prev. CVol 13
previousDayCVol14	previousDayCVol14	float	L	0	Consignee Prev. CVol 14
previousDayCVol15	previousDayCVol15	float	L	0	Consignee Prev. CVol 15
previousDayCVol16	previousDayCVol16	float	L	0	Consignee Prev. CVol 16
previousDayCVol17	previousDayCVol17	float	L	0	Consignee Prev. CVol 17
previousDayCVol18	previousDayCVol18	float	L	0	Consignee Prev. CVol 18
previousDayCVol19	previousDayCVol19	float	L	0	Consignee Prev. CVol 19
previousDayCVol20	previousDayCVol20	float	L	0	Consignee Prev. CVol 20

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6 APPENDIX A

6.1 List of Flow Computers (COP):

Table 6.1-1 Flow Computers

Station	Flow Computer Name	Description
CBK Crude	CBK_STM01	Stream Flow Computer
	CBK_PRV01	Prover Flow Computer
CBK Multi-products	CBK_STM02	Stream Flow Computer
	CBK_PRV02	Prover Flow Computer
CBK Avtur	CBK_STM03	Stream Flow Computer
	CBK_PRV03	Prover Flow Computer
FYN Crude	FYN_STM01	Stream Flow Computer
	FYN_PRV01	Prover Flow Computer

6.2 List of Consignee/Consignor Valves (COP):

Table 6.2-1 Consignee/Consignor Valves

Station	Consignee /Consignor Valve	Product	Company	Stream FC	Physical FC Consignee Input
CBK Crude	XVCF1A	Crude	Natref	CBK_STM01	1
	XVCF1B	Crude	Natref	CBK_STM01	2
	XVCF5	Multi-products	Natref	CBK_STM01	3
	XVCF6	Multi-products	Natref	CBK_STM01	4
CBK Multi-products	XVCF2	Multi-products	Natref	CBK_STM02	1
	XVCF3	Multi-products	Natref	CBK_STM02	2
CBK Avtur	XVCF4	Avtur	Natref	CBK_STM03	1
FYN Crude	XVCF1A	Crude	Natref	FYN_STM01	1
	XVCF1B	Crude	Natref	FYN_STM01	2