



Methods of assessing JODI oil data quality

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- **Balance Check**
 - Primary side vs. Secondary side
- **Internal consistency checks**
 - Primary side vs. Secondary Side
- **Other checks**
 - Comparison with other information
- **Meta Data**
- **Smiley faces**
- **Cost and burden**

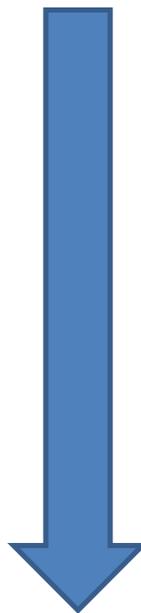
Balance check



Table 1 Oil balance

Primary oil

	Crude Oil	NGL	...
	(1)	(2)	(3)
+ Production			
+ From Other sources			
+ Imports			
- Exports			
Products			
+ Transferred /Backflows			
- Direct Use			
- Stock Change			
- Statistical Difference	0	0	0
= Refinery Intake			
Closing stocks			



Secondary oil

	LPG	Naphtha	...
	(5)	(6)	(7)
+ Refinery Output			
+ Receipts			
+ Imports			
- Exports			
- Products Transferred			
+ Interproduct Transfers			
- Stock Change			
- Statistical Difference	0	0	0
= Demand			
Closing stocks			

Balance check



Primary oil

	Crude Oil	NGL	...
	(1)	(2)	(3)
+ Production			
+ From Other sources			
+ Imports			
- Exports			
Products			
+ Transferred /Backflows			
- Direct Use			
- Stock Change			
- Statistical Difference	0	0	0
= Refinery Intake			
Closing stocks			

Secondary oil

	LPG	Naphtha	...
	(5)	(6)	(7)
+ Refinery Output			
+ Receipts			
+ Imports			
- Exports			
- Products Transferred			
+ Interproduct Transfers			
- Stock Change			
- Statistical Difference	0	0	0
= Demand			
Closing stocks			



- **Calculated** refinery intake \approx **reported** refinery intake
- Calculated refinery intake := production + from other sources + imports – exports + products transferred/backflows – direct use – stock change
- **Calculated** refinery intake - **reported** refinery intake = **Statistical Difference**
- Statistical difference should be small in relative terms (**less than 10% of Reported Intake??**)

Balance check – primary oil



		Crude oil (tb/d)
+	Production	3681
+	From other sources	0
+	Imports	2
-	Exports	0
+	Products transferred/backflows	0
-	Direct use	200
-	Stock change	-295
-	Reported refinery intake	3550
=	Statistical difference	228
%	Percentage statistical difference	6.4%



- **Calculated** demand \approx **reported** demand
- Calculated demand := refinery output + receipts + imports – exports - products transferred + interproduct transfers – stock change
- **Calculated** demand - **reported** demand = **Statistical Difference**
- **Statistical difference** should be small in relative terms (**less than 10% of demand**)

Balance check – petroleum products



		Total products (tb/d)
+	Refinery output	126
+	Receipts	0
+	Imports	59
-	Exports	13
-	Products transferred	0
+	Interproduct transfers	0
-	Stock change	-2
-	Reported demand	176
=	Statistical difference	-2
%	Percentage statistical difference	-1%



- Applicable **only** if all data **are complete** and reliable
- **Large deviations** would require **review** and/or **verification/correction**
- **Applicable** to **every column**
- **Range** of **over 10%** is **quite large**

Internal consistency checks



Quantities of **Refinery Intake** should correspond to quantities in **Gross Refinery output** (processing gains are the source of slight mismatch)

	Crude Oil	NGL	...
	(1)	(2)	(3)
+ Production			
+ From Other sources			
+ Imports			
- Exports			
Products			
+ Transferred /Backflows			
- Direct Use			
- Stock Change			
- Statistical Difference	0	0	0
= Refinery Intake			
Closing stocks			



	LPG	Naphtha	...
	(5)	(6)	(7)
+ Refinery Output			
+ Receipts			
+ Imports			
- Exports			
- Products Transferred			
+ Interproduct Transfers			
- Stock Change			
- Statistical Difference	0	0	0
= Demand			
Closing stocks			



- Automatic checks could be incorporated in the questionnaire to point out inconsistencies
- **Fuel checks** – **total oil products** should be equal to the **sum of reported products** (excluding memo items – automotive diesel and jet fuel)
- Statistician should ensure that this property holds in all columns
- Indication of misreporting of data

Other checks



	Crude Oil	NGL	...	Total		Petroleum Products			
						LPG	Naphtha	...	Total Products
	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(13)
+ Production	0	0	0	0	+ Refinery Output	0	0	0	0
+ From Other sources			0	0	+ Receipts	0	0	0	0
+ Imports	0	0	0	0	+ Imports	0	0	0	0
- Exports	0	0	0	0	- Exports	0	0	0	0
Products + Transferred /Backflows			0	0	- Products Transferred	0	0	0	0
- Direct Use	0	0	0	0	+ Interproduct Transfers	0	0	0	0
- Stock Change	0	0	0	0	- Stock Change	0	0	0	0
- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0
= Refinery Intake	0	0	0	0	= Demand	0	0	0	0
Closing stocks	0	0	0	0	Closing stocks	0	0	0	0

Larger or equal to zero

Zero

Positive, neagive or Zero



- 1- For **Crude** – the **Total** should be equal to the **Sum of all Streams** where applicable

- 2- For **NGLs** – the **Total** should be equal to the **Sum of all NGL** subcategories
 - Field (lease) condensates
 - Plant condensates
 - Gas plant LPG
 - Others

- 3- For **Other Primary oil**– the **Total** should be equal to the **Sum of all subcategories**
 - CTL
 - GTL
 - Others



- Comparison with
 - data from other sources
 - last years' annual data
- Time-series check (seasonality, outliers, etc.)
- Visual checks
- Metadata



- The simplest definition of metadata is that it is **data** about **data**. More specifically **information** (data) about a **particular content** (data)
- **Metadata** describes how and when and by whom a particular set of data was collected; how the data is formatted
- **Metadata** must be updated when there is a change in resource it describes
- It can be useful to keep **metadata** even when the resource no longer exists
- **Metadata** enhances data transparency and is essential for understanding information stored in a database

Smiley faces



- **Timeliness**
- **Completeness**
- **Sustainability**

Smiley faces (timeliness)



- The **JODI database** is expected to be updated **regularly**.
- The **timeliness** indicates whether submissions were submitted at the **expected deadline**



"**good**" when **6 submissions** received within **45 days** after the end of the reference month



"**fair**" when **4 or 5 submissions** received



"**less reliable**" when **less** than **4 submissions** received

Smiley faces (completeness)



Completeness measures the number of expected data points out of the **maximum 42** in the **JODI questionnaire** which are filled in



"**good**" when **more** than **90%** of the data are given for production, stock change/closing and demand



"**fair**" when **between 60%** and **90%** of the data are given



"**less reliable**" when **less** than **60%** of the data are given

Smiley faces (sustainability)



Sustainability is the number of the monthly **JODI data** (timely) **submissions** evaluated **2 months** after the end of the **six-month period**



"**good**" if the **6 questionnaires** have been **submitted**



"**fair**" if **4 or 5 questionnaires** have been **submitted**



"**less reliable**" when **less** than **4** questionnaires have been **submitted**



- The **quality** of the **data** will be affected by available resources to collect, analyze and store energy statistics
- **Costs**: Specialized equipment, office space, utility bills, staff-hours involved, software, etc.
- **Response burden**: Simplest way to measure is the time spent by the respondent to provide information
- A compromise between **quality** and **cost** and **burden** must be achieved



- Functions of cost/burden
 - **Collection** of data
 - **Level** of disaggregation
 - **Time lags**, frequencies of data
 - Applied methodologies



Thank you.



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