Results

CSV format

You can open the CSV file with your favourite document processing software and carry out any calculations and produce charts, as you might require. The CSV files are simple, covering only the specified run and the CSV files explain themselves.

HTML5 format

When you have selected the HTM5 format, you will be offered to download the results in a zip file 'results.zip'. After downloading has completed, all its files can be extracted to a folder on your PC. After that, you can find the file 'results.html' and open it with your favourite web browser. The web browser will open a new page with the production availability and mission reliability results for the complete system, as shown below.

The results page shows 10 sections:

- the group hierarchy,
- the snapshot,
- the run summary,
- the downtime events in the reporting period,
- the cumulative available capacity,
- the expected capacity,
- the loss breakdown table,
- the planned losses,
- the unplanned losses and
- the criticality ranking.

For the results breakdowns:

- the losses that are due to capacity swings (aka the capacity losses) are relative to the demand, that is the expected consumption capacity
- the capacity losses assume that there are no planned and unplanned losses
- the losses that are due to planned downtime (aka the planned losses) assume that there are no unplanned losses,
- the unplanned losses that coincide with planned losses or capacity losses on the same group or item, such as opportunity maintenance or opportunity inspection, are ignored and
- the bottom line of the breakdown table corrects for possible simultaneous losses of the groups and items.

ARTIS, Availability and Reliability Tracking Information System, V2.5

Powered by SecuoS

- system
  - ⊥ upstream
  - ⊥ midstream

system

Snapshot status
time: 05 Dec 2018 00:00
demand: 99 kbbl/day
maximum capacity: 99 kbbl/day
planned capacity: 99 kbbl/day
available capacity: 99 kbbl/day

Downtime events snapshot
At the time of the run, there were no downtime events.

Run summary
result: Available Capacity
mode: time dependent
scale: model unit
format: HTML
time of the run: 05 Dec 2018 00:00
reporting period: from 01 Nov 2017 00:00 till 01 Nov 2023 00:00
time scale: 72 steps of 1 month each

The listed downtime events in the reporting period
The reporting period has 9 listed downtime events.

facility	time down	time up	bypass capacity (%)
V6001	01 Nov 2017 12:00	01 Dec 2017 12:00	0.0
V6002	01 Nov 2017 12:00	01 Dec 2017 12:00	0.0
V6003	01 Nov 2017 12:00	01 Dec 2017 12:00	0.0
G10001	01 Apr 2020 08:00	30 Apr 2020 08:00	0.0
G10001	01 Apr 2023 08:00	15 Apr 2023 08:00	0.0
G11001	01 Apr 2018 08:00	15 Apr 2018 08:00	0.0
G11001	01 Apr 2021 08:00	30 Apr 2021 08:00	0.0
G12001	01 Apr 2019 08:00	15 Apr 2019 08:00	0.0
G12001	01 Apr 2022 08:00	30 Apr 2022 08:00	0.0

The cumulative available capacity losses - system

The expected capacity losses - system

Breakdown of the losses - system

facility	demand (kbbl/day)	capacity loss (kbbl/day)	maximum capacity (kbbl/day)	planned loss (kbbl/day)	unplanned loss (kbbl/day)	expected capacity (kbbl/day)	availability (%)	reliability (%)
upstream	99	7.5	91.5	0	0.7	90.7	99.2	99.2
midstream	99	7.5	91.5	1.8	1.5	88.2	96.4	98.3
system	**99**	**7.5**	**91.5**	**1.8**	**2.2**	**87.5**	**95.7**	**97.6**

The planned and unplanned losses are relative to the maximum capacity.

The planned losses - system

The unplanned losses - system

Criticality ranking - system

state of loss	maximum capacity (kbbl/day)	fraction of time	impact (kbbl/day)	availability loss (kbbl/day)	availability loss (%)
⊥ (V6001 ⊥ (V6002 V6003))	91.5	0.0135	3.7	0	0.1
G12001	91.5	0.0148	30	0.4	0.5
G11001	91.5	0.0159	30	0.5	0.5
G10001	91.5	0.0148	30	0.4	0.5

Diagram hierarchy

At the left-hand side of the results page, you see the list of groups in the availability diagram, with links to the respective group results pages. The list hierarchy reflects the availability diagram; the symbol '+' stands for parallel and the symbol '⊥' stands for serial.

Snapshot

Above the charts, you will find the snapshot with information on the status at the time of the run, provided that the time of the run lies inside the reporting period.

Run Summary

At the top right-hand side, you find the results summary.

Downtime events in the reporting period

Also at the right-hand side is the list of downtime events that fall wholly or partly in the reporting period.

Cumulative available capacity

The first chart shows the cumulative available capacity, with the losses due to:

- the fluctuations of demand

- the capacity swings,
- the planned downtime and
- the unplanned downtime.

The horizontal scale has the probability, that is the fraction of time. The vertical scale has the capacity, in model units, with the peak consumption capacity as maximum.

The surface area of the full rectangle equals the peak consumption capacity on the reporting period. The surface area of the full rectangle minus the grey surface area equals the demand. The surface area of the full rectangle minus the grey and red surface areas equals the maximum capacity. For each of the capacity, planned and unplanned loss, its coloured surface area equals the size of that loss. The white surface area equals the expected capacity. The demand, maximum capacity, losses and the expected capacity are averaged over the reporting period.

The reliability and availability can be determined from the chart.

- The reliability is the expected capacity divided by the sum of the expected capacity and the unplanned loss.
- The availability is the expected capacity divided by the sum of the expected capacity, the unplanned loss and the planned loss. That is the expected capacity divided by the maximum capacity.

The cumulative available capacity is the curve below the losses.

Expected capacity

The second chart has the horizontal axis with the timescale and the vertical axis with the capacity, in model units. It shows the expected capacity on the specified timescale of the reporting period, with the losses due to:

- the fluctuations of demand
- the capacity swings,
- the planned downtime and
- the unplanned downtime.

At each time step, the expected capacity is the white bar below the losses.

These results are averaged over the respective time steps.

Loss breakdown table

The top table shows the breakdown of the planned and unplanned losses by group:

- the capacity losses are relative to demand,
- the planned losses are relative to the maximum capacity, and
- the unplanned losses are relative to the planned capacity.

All tabled results are averaged over the whole reporting period. The losses are relative to the bottom-line demand. For groups and items in parallel, their capacities and losses add up to the bottom line. For groups and items in series, the capacities and losses are relative to the bottom line. In each row, expected capacity + capacity loss + planned loss + unplanned loss = demand.

For a network, no loss breakdown is provided. The criticality ranking can be used instead.

Planned losses

The third chart shows the breakdown, by group, of the planned downtime. When the model has no planned downtime during the reporting period, this chart isn't shown.

Unplanned losses

The fourth chart shows the breakdown, by group, of the unplanned downtime. When the model has no unplanned downtime during the reporting period, this chart isn't shown.

Criticality ranking table

The bottom table is the criticality ranking. It is only shown if the demand during the whole reporting period is deterministic or if the run uses Monte Carlo simulation.

Each row in the table lists one state of loss (aka minimum cut set) and its criticality. Each state lists the diagram items or network nodes that are simultaneously down. In each state, the availability loss, that is the loss of production availability or the loss of mission reliability, equals the downtime fraction multiplied with the impact.

Since the minimum cut sets are complete and mutually disjoint, there is no double-counting and the losses add up to the bottom line. Downtime scenarios that have the same impact and small individual losses are represented together under the flag 'other'.

The losses are relative to the maximum capacity, taking the demand into account. The criticality ranking does not show the capacity losses, if any.

All results are averaged over the whole reporting period.

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