Report Interpretation Guide

Version: 0.140.0-Beta Date: 2025-12-23

--- Revision History ---

[0.140.0-Beta] - 2025-12-23

Added

- Added "Multiplier Breakdown (Group Par)" section.

[0.119.1-Beta] - 2025-12-15

Changed

- Replaced "Animation Reports" (MP4) with "Interactive Animation Reports" (HTML).

- Updated descriptions for Plotly interactivity.

[1.0.0] - 2025-12-06

Added

- Added Section 6 "WRTC Reports" to document `wrtc_propagation` and

`wrtc_propagation_animation`.

[0.94.0-Beta] - 2025-12-06

Removed

- Removed the "Multipliers by Hour" report documentation as the report has been deprecated.

[0.88.4-Beta] - 2025-12-06

Changed

- Updated the "Hourly Rate Sheet" section to describe the new

Summary vs. Band Detail (Drill-Down) structure.

[0.88.3-Beta] - 2025-09-21

Fixed

- Corrected the report ID for the QSO Breakdown Chart to align with the

source code (`qso_breakdown_chart`).

[0.85.14-Beta] - 2025-09-13

1. Introduction

This guide explains how to read and interpret the various reports generated by the Contest Log Analytics. The goal is not just to understand the numbers, but to turn them into actionable insights that can help you improve your scores in future contests.

Single-Log vs. Multi-Log Reports

Contest Log Analytics adapts its reporting based on the number of logs provided:

- **Single-Log Reports**: Analyze one log to understand performance metrics, rates, multipliers, and band-by-band breakdowns. These reports focus on your individual operation.
- **Multi-Log Reports**: Compare 2-3 logs to identify strategic differences. These reports add comparative analysis, unique vs. common QSO breakdowns, and missed multiplier identification.

Note: Some reports (marked below) require multiple logs for comparison. Others work with both single and multiple logs.

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2. Text Reports

Text reports provide detailed, granular data in a plain-text format. They are best for deep-dive analysis and finding specific details.

Score Summary (`score_report`)

Supports: Single-log only

This is a comprehensive, single-log summary of your final score, broken down by band. It provides the most important top-level metrics for your operation.

How to Interpret This Report

- **AVG (Average Points per QSO)**: This is a crucial metric. An AVG close to 3.0 indicates a strong focus on high-value inter-continental QSOs. An AVG closer to 1.0 or 2.0 suggests more contacts within your own continent.
- **Multiplier Totals**: For contests like CQ WW, multipliers are counted on each band. The `TOTAL` row shows the *sum* of multipliers from each band, not the number of unique multipliers.

WAE Score Summary (`text_wae_score_report` & `text_wae_comparative_score_report`)

This report is specific to the Worked All Europe contest and has a unique structure to reflect the contest's rules. The final score is `(Total QSO Points + Total QTC Points) * Total Weighted Multipliers`.

How to Interpret This Report

- **QSO Pts**: The number of regular QSOs made on that band. Each is worth 1 point.
- **QTC Pts**: The number of QTCs (Quebec Traffic Units) received or sent. Each is worth 1 point.
- **Weighted Mults**: This is the score contribution from multipliers on a given band. Each unique multiplier is multiplied by a band-specific weight (e.g., 4x for 80M, 3x for 40M, 2x for 20-10M). This column shows the sum of those weighted values.

Comparative Score Report (`comparative_score_report`)

Supports: Multi-log only (2+ logs required)

This report interleaves the score summaries for multiple logs, allowing for a direct, band-by-band and mode-by-mode comparison of performance.

How to Interpret This Report

Use this report to see at a glance how your band-by-band totals for QSOs, Points, and Multipliers stack up against your competitors. The final `TOTAL SCORE` at the bottom provides the ultimate bottom line.

QSO Summary (`summary`)

Supports: Multi-log only (2+ logs required)

This report provides a high-level comparative overview of the total QSO counts and operating styles for all analyzed logs.

How to Interpret This Report

This report is the quickest way to understand fundamental differences in operating strategy. A station with a high Run-to-S&P ratio is primarily calling CQ, while a station with a lower ratio is spending more time tuning the bands.

Hourly Rate Sheet (`rate_sheet` & `rate_sheet_comparison`)

Supports: `rate_sheet` (single-log), `rate_sheet_comparison` (multi-log)

The `rate_sheet` provides an hour-by-hour breakdown of QSO rates for a single log, while the `rate_sheet_comparison` places this data side-by-side for multiple logs.

How to Interpret This Report These reports follow a **"Drill-Down"** structure to help you isolate specific trends:

- **Executive Summary:** The top block shows the "All Bands" total. Use this for a high-level view of hourly activity and to compare the overall pace of operations.
- **Band Details:** Subsequent blocks drill down into specific bands (e.g., "Detail: 20M"). These sections break the data down further by mode (CW, PH, RTTY), allowing you to analyze exactly *how* a band was utilized during any given hour.
- **Strategic Insight:** You can see which operator was on which band during critical times (like band openings) and how their hourly rates compare.

QSO Comparison Summary (`qso_comparison`)

Supports: Pairwise only (exactly 2 logs required)

This powerful pairwise report breaks down how two logs compare on each band, focusing on which QSOs were **unique** to each station and which were **common** to both.

How to Interpret This Report

The Unique columns reveal the real strategy. If one operator has a high number of "Unique Run" QSOs, it means their CQing was effective at attracting stations the other operator never logged. A high number of "Unique S&P" QSOs would indicate that one operator was more effective at searching for and finding rare stations that the other missed. This analysis is key to understanding *how* an advantage was gained—whether through a more effective "Run" frequency or superior "S&P" skill.

Missed Multipliers Report (`missed_multipliers`)

Supports: Multi-log only (2+ logs required)

This report is essential for identifying the most costly unworked stations. It lists every multiplier that was worked by at least one person in the group but missed by at least one other, showing who worked it and how.

How to Interpret This Report

The text `(Run)`, `(S&P)`, or `(Both)` shows how the station logged that multiplier. This is critical information. If your competitor worked a rare multiplier via `(S&P)`, it means they found it by tuning the band. If they got it via `(Run)`, it means that multiplier *called them*.

Multiplier Breakdown (`text_multiplier_breakdown` & `html_multiplier_breakdown`)

Supports: Single-log and multi-log

This report provides a hierarchical "Group Par" analysis. It establishes a "Universe" of all unique multipliers worked by the entire group (e.g., all 3 logs combined) and compares each station against that standard.

For single-log analysis, this report shows your multiplier performance broken down by Run/S&P status.

How to Interpret This Report

- **Total Worked (Par):** The count of unique multipliers found by the group combined. This represents the "potential" score available on the band.
- **Common:** The count of multipliers worked by *everyone* in the group.
- **Delta:** The most critical metric. It shows your distance from the Group Par. A delta of `-10` means there were 10 multipliers worked by others that you missed.

- **Strategic Insight:** In a team contest (like WRTC or Multi-Op), minimizing the standard deviation of the Delta across stations is key to maximizing the group score.

Multiplier Summary (`multiplier_summary`)

Supports: Single-log and multi-log

This report lists every unique multiplier (e.g., each individual Country, Zone, or State) worked by one or more logs and shows the QSO count for that multiplier on each band.

How to Interpret This Report

This report provides a granular view of multiplier productivity. It helps you see which multipliers were most fruitful on which bands and identify multipliers that you might have worked only once or twice, representing potential vulnerabilities.

Continent Summaries (`continent_summary`, `continent_breakdown`, `comparative_continent_summary`)

Supports: `continent_summary` and `continent_breakdown` (single-log), `comparative_continent_summary` (multi-log)

These reports provide different views of QSO counts by continent.

- `continent_summary`: For a single log, shows total QSOs per continent on each band.
- `continent_breakdown`: For a single log, provides a Run/S&P/Unknown breakdown for each continent.
- `comparative_continent_summary`: Places the simple QSO totals for multiple logs side-by-side.

How to Interpret This Report

Use these reports to understand your geographic focus. A high number of QSOs with your own continent might yield a lower score in a DX contest. The `continent_breakdown` is particularly useful for seeing *how* you worked different regions—were you running Europeans, or were you S&P-ing for rare African stations?

3. Plots and Charts

Plots and charts provide a high-level, visual summary of performance.

QSO Rate Comparison Plots (`qso_rate_plots`)

Supports: Single-log and multi-log

This plot shows the cumulative QSO total over the course of the contest. For single logs, it displays your rate progression. For multiple logs, it shows the comparative "horse race."

How to Interpret This Plot

- **Slope of the Line**: A steeper slope indicates a higher QSO rate. You can see periods where one station pulls ahead or another catches up.
- **Plateaus**: Flat sections of the graph indicate off-times or periods of very low activity.
- **Inset Table**: The table provides a convenient summary of the final QSO totals and the Run/S&P/Unknown breakdown for each station.

Point Rate Comparison Plots (`point_rate_plots`)

Supports: Single-log and multi-log

This plot is identical in format to the QSO Rate Plot but tracks the cumulative **Point** total over time.

How to Interpret This Plot

This plot shows how a scoring advantage was built. A station's point line might rise faster than their QSO line if they are focusing on high-value contacts (e.g., inter-continental QSOs). Comparing this plot to the QSO Rate Plot reveals insights into scoring efficiency.

Cumulative Difference Plots (`cumulative_difference_plots`)

Supports: Pairwise only (exactly 2 logs required)

This plot presents rate information as a cumulative difference, which shows trends and momentum shifts more clearly than traditional rate graphs. It is one of the most powerful analysis tools in the package for visualizing the flow of a competition between two logs.

How to Interpret This Plot This plot shows a comparison of two logs (e.g., Station A minus Station B).

- **Top Panel (Overall Diff)**: This shows the total QSO difference. When the line is above zero, Station A is ahead. When it drops below zero, Station B has taken the lead. The slope reveals who is winning at any given time.
- **Middle Panel (Run Diff)**: This isolates the difference in **Run** QSOs. It shows which operator had a more effective run station over time.
- **Bottom Panel (S&P+Unk Diff)**: This isolates the difference in **S&P** QSOs. An upward trend shows that Station A was more effective at Search & Pounce.
- **Strategic Insight**: This plot tells a clear story about how the contest was won or lost, breaking down whether the advantage came from running or S&P.

QSO Breakdown Chart (`qso_breakdown_chart`)

Supports: Pairwise only (exactly 2 logs required)

This chart provides a visual companion to the `qso_comparison` text report, breaking down the unique and common QSOs on each band.

How to Interpret This Chart This chart is unique to this analyzer and reveals where each station gained its advantage.

- **Center Bar (Common)**: This is a color-coded, stacked bar representing the QSOs worked by both stations. It shows whether those common QSOs were logged as "Run" by both, "S&P" by both, or a mix.
- **Colored Bars (Unique)**: The stacked, colored bars on either side show the QSOs that were unique to that station, broken down by Run, S&P, and Unknown.
- **Strategic Insight**: On 20 meters, for example, a high "Common" bar shows both stations worked a similar pool of stations. However, large red segments (**Unique Run** QSOs) would reinforce that they were successfully running different sets of stations.

Point Contribution Breakdown (`chart_point_contribution`)

Supports: Single-log only

This chart shows where your points came from. For CQ WW, for example, points are awarded based on the continent of the station worked. It shows a per-band breakdown for one log, displaying pie charts for each band showing the proportion of points from each point value (1-point, 3-point, etc.).

How to Interpret This Chart

- **Pie Chart**: The slices show the proportion of total points that came from each point value. In CQ WW, 3-point inter-continental QSOs are the most valuable.
- **Table**: The table below the chart provides the exact counts for each point category and the final average points per QSO.

Band Activity Heatmaps (`band_activity_heatmap` & `comparative_band_activity_heatmap`)

Supports: `band_activity_heatmap` (single-log), `comparative_band_activity_heatmap` (pairwise)

These plots visualize QSO rates over time on a grid.

- `band_activity_heatmap`: Shows the rate for a single log in 15-minute intervals. Darker colors mean higher rates.
- `comparative_band_activity_heatmap`: A powerful split-cell view comparing two logs. Each hourly cell is split, showing the rate for each operator.

How to Interpret This Plot

This is the best way to visualize an entire contest at a glance. You can see band openings and closings, off-times, and periods of high activity. The comparative version makes it immediately obvious which operator was more active on which band at any given time.

Comparative Activity Timeline (`comparative_run_sp_timeline`)

Supports: Pairwise only (exactly 2 logs required)

This plot provides a high-level, visual summary of how two operators used their time on each band. It shows a minute-by-minute timeline for each station, color-coded by their inferred activity.

How to Interpret This Plot

- **Paired Timelines**: For each band, two horizontal bars are shown, one for each callsign. This allows for a direct, minute-by-minute comparison of activity.

- **Color Coding**: The color of the bar at any given time shows the operator's strategy: **Run** (solid red), **S&P** (solid green), or **Mixed** (solid yellow). Inactive periods are shown as gaps.
- **Strategic Insight**: This chart is excellent for quickly identifying differences in operating strategy. You can see who was active on a band during an opening, who spent more time running versus searching, and how their off-times compare.

Comparative Band Activity (`comparative_band_activity`)

Supports: Pairwise only (exactly 2 logs required)

This is a "butterfly" chart that shows the hourly QSO rate for two logs on each band.

How to Interpret This Plot For each band, bars for one station go up, and bars for the other go down. This provides a clear, hour-by-hour visual of which operator had a higher rate on a specific band. It's excellent for analyzing head-to-head band selection strategy.

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4. Animation Reports

Supports: Single-log and multi-log

Animation reports provide an interactive, hour-by-hour replay of the entire contest directly in your browser.

Interactive Contest Animation (`interactive_animation`)

This report generates an interactive HTML dashboard that visualizes the contest progression between up to three logs. It allows you to "scrub" through time using a slider or play the contest back in real-time.

How to Interpret This Animation

- **Controls:** Use the **Play/Pause** buttons or drag the **Time Slider** at the bottom to jump to any specific hour. Hover over any bar to see exact numbers.
- **Top Chart (The Horse Race)**: This horizontal "Racing Bar" chart shows the overall progression.
- The top bar for each station shows the cumulative score.
  - The labels update dynamically as the contest progresses.

- **Interpretation:** Watch for "crossover events" where one station overtakes another in score, even if their QSO counts are similar (indicating better multiplier hunting).
- **Bottom-Left Chart (Hourly Rates)**: This vertical bar chart shows the moment-to-moment action.
- It displays the number of QSOs made in the current hour, broken down by band and mode.
- The bars are stacked and color-coded by Run/S&P/Unknown status, showing *how* the QSOs were made.
- **Bottom-Right Chart (Cumulative by Band)**: This vertical bar chart shows the cumulative QSO totals for each band.
- Like the hourly chart, it is a stacked, color-coded bar chart showing the breakdown of Run, S&P, and Unknown QSOs.
- Use this chart to see which bands were most productive over the entire contest and how each operator's band strategy differed.

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5. HTML Reports

Supports: Pairwise only (exactly 2 logs required)

HTML reports provide rich, interactive data summaries in a modern web format.

HTML QSO Comparison Report (`html_qso_comparison`)

This report presents a comprehensive, multi-log comparison of QSO statistics in a clean, web-based format. It provides a detailed breakdown of Total, Unique, and Common QSOs for each log, further categorized by Run, S&P, and Unknown status. The report generates a summary table for "All Bands" and individual tables for each band with activity.

How to Interpret This Report

This report provides the same detailed data as the `qso_comparison` text report but in a more readable and visually organized layout, making it easier to compare performance across multiple stations and bands.

6. WRTC Reports

Supports: Pairwise only (exactly 2 logs required)

These reports are specialized for analyzing logs from the World Radiosport Team Championship (WRTC), visualizing propagation coverage.

WRTC Propagation by Continent (`wrtc_propagation`) [Plot]

- **Description:** A side-by-side "butterfly" chart comparing two logs for the single hour of peak activity. Breaks down QSOs by Continent.
- **Interpretation:** Shows exactly which continents were being worked by each station during the critical "run" hour.

WRTC Propagation Animation (`wrtc_propagation_animation`) [Animation]

- **Description:** An MP4 video that animates the "Propagation by Continent" chart for every hour of the contest.
- **Interpretation:** Visualizes how the propagation opening shifted across continents throughout the event.