



International Civil Aviation Organization

**SECOND SATELLITE DATA LINK OPERATIONAL CONTINUITY
MEETING TO REVIEW THE PERFORMANCE AND PROVISION
OF SATELLITE COMMUNICATIONS IN THE ASIA AND PACIFIC
REGIONS**

(Bangkok, Thailand, 8-10 February 2012)

Agenda Item 3: Review Global Operational Data-Link Document (GOLD) and compliance

3.1 Planning and implementation of performance-based communications and surveillance framework

vii) ANSP post-implementation monitoring and compliance actions

GOLD PERFORMANCE ANALYSIS TOOL (G-PAT) STATUS

(Presented by the United States of America)

SUMMARY

This paper provides the status for the GOLD – Performance Analysis Tool (G-PAT). The purpose of the G-PAT is to provide air navigation service providers (ANSPs) with a software tool to aid in the creation of the GOLD performance charts. This paper also provides the draft user manual for G-PAT.

1 INTRODUCTION

1.1 This paper provides the current status of the GOLD – Performance Analysis Tool (G-PAT). G-PAT is software which can be used to create GOLD performance charts from input CPDLC and ADS-C data. The G-PAT has a graphical user interface (GUI) which can be run on a MS Windows-based personal computer.

1.2 G-PAT will import pre-filtered data in the GOLD format¹, create the requisite cumulative distributions and generate the reports and charts selected by the user. Currently, G-PAT is in beta test with a few selected users. The FAA is awaiting responses from these users and will eventually make G-PAT available to all ANSPs. .

¹ There is one additional field needed by G-PAT – see Table 1 in this paper

1.3 This paper contains a description of the important requirements related to the input data for use by the G-PAT. In addition, this paper contains the current version of the G-PAT draft user manual, and samples of input data files.

2 DISCUSSION

2.1 The prescribed data for the CPDLC and ADS-C data found in Appendix D of the GOLD are needed to successfully run the software. The input file must contain data of only one type; CPDLC or ADS-C. A file containing the CPDLC data and another file containing the ADS-C data are needed to create the Required Communication Performance (RCP) and Required Surveillance Performance (RSP) charts. . G-PAT automatically determines the transaction type from the input data.

2.2 The current draft version of the G-PAT user manual is attached as Appendix A to this paper. Detailed instructions with screen shots are provided.

2.3 The input data must be in comma separated format. There are a few notes related to the input files which are important.

2.3.1 The current version of the software requires a header row in each input file. For the CPDLC transaction data, this header row should appear as follows:

ATSP,REGNO,ACTYPE,OPER,DATE,MASRGS,OPRGS,UTIME,MASTIME,MASRTRP,FMSTIME,ATSPTIME,OPRTRIP,DTIME,UMSG,DMSG,ACTP,ACP,PORT,COMTYP

Although the above text wraps, it is to be the first row in the CPDLC input data files. A small sample of input CPDLC transaction data is shown in Appendix B.

The header row for ADS-C transaction data should appear as follows:

ATSP,REGNO,ACTYPE,OPER,DATE,RGS,TYP,LAT,LONG,STIME,RTIME,DEL,COMTYP

A small sample of input ADS-C transaction data is shown in Appendix B.

2.3.2 Some of the initial comments on the current version of the software indicate that the addition of this row is troublesome. This header row is used by the software to identify the type of input data. The software developers are looking into other methods to recognize the type of input data and detect any input errors.

2.3.3 The second item that is needed in the input data is an additional field which specifies the media used to transmit the message. This information is needed to observe data by media; for example, it might be necessary to observe performance for HF data link messages only. The additional field is the last field in both input files; COMTYP. Table 1 contains the possible values for COMTYP for the CPDLC transaction data.

2.3.4 There are nine possible entries for the COMTYP field for the CPDLC transaction data. The left column of Table 1 specifies the media used in the uplink CPDLC message. The middle column in Table 1 specifies the media used in the downlink CPDLC response message. The resulting value for COMTYP is contained in the last column of Table 1. For example, if both the uplink CPDLC transaction and downlink CPDLC response were sent using satellite (SAT) data link, the value for COMTYP is SAT. If the uplink CPDLC transaction was sent via SAT and the downlink CPDLC response was sent via VHF, the resulting value of COMTYP is SV.

Table 1. Input Data - COMTYP field

MAS RGS Communication Type	OPS RGS Communication Type	COMTYP
SAT e.g. MAS RGS = POR1	SAT e.g. OPS RGS = POR1	SAT
VHF e.g. MAS RGS = ADK	VHF e.g. OPS RGS = ADK	VHF
HF e.g. MAS RGS = H02	HF e.g. OPS RGS = H02	HF
SAT e.g. MAS RGS = POR1	VHF e.g. OPS RGS = ADK	SV
SAT e.g. MAS RGS = POR1	HF e.g. OPS RGS = H02	SH
VHF e.g. MAS RGS = ADK	SAT e.g. OPS RGS = POR1	VS
VHF e.g. MAS RGS = ADK	HF e.g. OPS RGS = H02	VH
HF e.g. MAS RGS = H02	VHF e.g. OPS RGS = ADK	HV
HF e.g. MAS RGS = H02	SAT e.g. OPS RGS = POR1	HS

2.3.5 For the ADS-C transaction data, there are three possible entries for the COMTYP field. The ADS-C transaction was either sent via SAT, VHF, or HF.

2.3.6 Some of the initial comments received on the current version indicate that the addition of the COMTYP field does not need to be part of the G-PAT format. The GOLD Ad-Hoc Working Group is proposing to target a 2nd Edition of the GOLD by the first quarter of 2013, this field is currently being considered for an addition to the GOLD required format. It would be difficult for the software to determine the COMTYP for every transaction, as some of the station identifiers are known only locally to each ANSP (for example, VHF and HF stations).

2.4 In the current version of the software, it is necessary to have both the header row and valid entries in the COMTYP field for the G-PAT software to run successfully.

3 ACTION BY THE MEETING

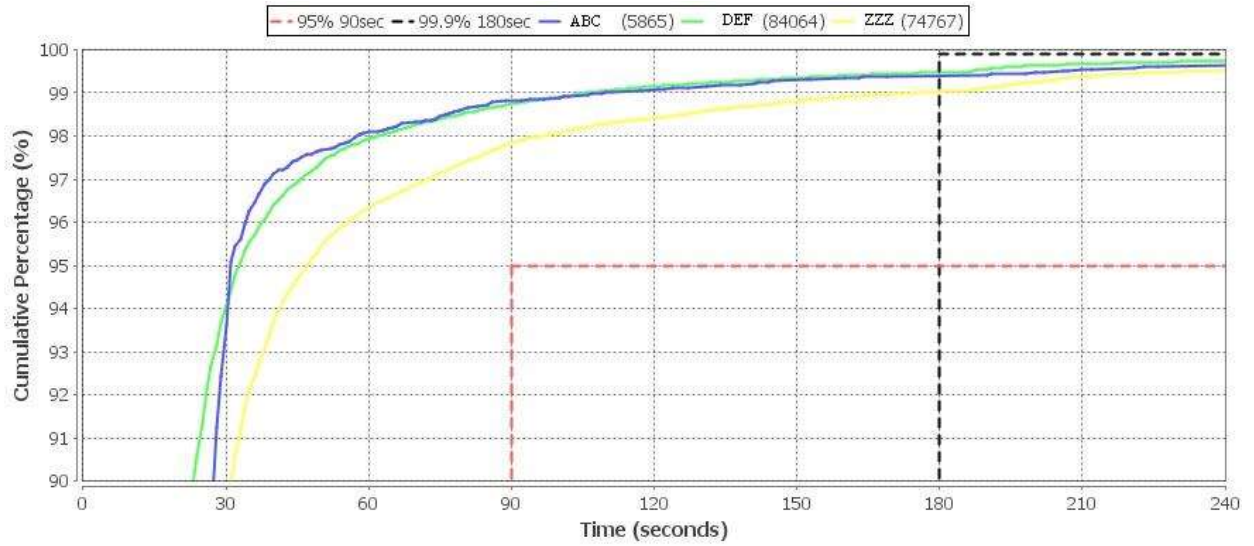
3.1 The meeting is invited to:

- a) Note the information in the paper.
- b) Provide comments to the United States on the expected use of the G-PAT software

Appendix A
G-PAT User Manual

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GOLD Performance Analysis Tool (G-PAT)



User Manual

Version 1.0

August 2011

US Federal Aviation Administration Technical Center

Atlantic City, New Jersey

1. Introduction

1.1. The GOLD Performance Analysis Tool (G-PAT) is used to monitor performance of the operational data link system in a given airspace, by analyzing operational data and comparing the results to the specifications outlined in the Global Operational Data Link Document (GOLD).

1.2. The G-PAT creates GOLD-format performance charts for both the CPDLC and ADS-C messages. The performance for CPDLC messages are measured against the Required Communication Performance (RCP). The message transit times for ADS-C reports are measured against the Required Surveillance Performance (RSP). Both the RCP and RSP criteria as described in the GOLD.

1.3. The G-PAT creates GOLD-format charts and reports with up to 2 levels of filtering, i.e. for a specific aircraft type used by a specific operator. For example, to monitor the fleet of B744 used by Operator ABC, the user would apply a first level filter by selecting Operator ABC from the list of Operators available in the data, then apply a second level filter by selecting Aircraft Type B744 from the list of Aircraft Types available in the data for Operator ABC.

1.4. This manual provides the format required for the CPDLC and ADS-C input files and details how to use the Tool. Screen shots of the various steps are included along with sample output. GOLD charts and reports are created by the G-PAT by following these steps.

- *Loading data into the Tool*
- *First Level Filtering*
- *Second Level Filtering*
- *Selection of Performance Parameter and Criteria*
- *Generation of the Output Chart and Report*
- *Modification of the Chart*
- *Save or Print a Copy of the Chart or Report*

2. Input Files

2.1. The input files containing the CPDLC and ADS-C operational data should be in the comma separated values (CSV) format specified in the GOLD. The files should contain all of the fields prescribed in the GOLD as well as an additional field appended to the end of each line specifying the media type.

2.2. It is essential to include a header row in each input file. The G-PAT uses this header row to distinguish between ADS-C and CPDLC input data. The header row also provides the user with an extra means to verify that the fields are in the expected order.

2.3. Table 1 describes the 20 fields required for the input data files containing the CPDLC data link messages. The first 19 fields contained in Table 1 are from the GOLD, Appendix D, Table D-1. The last row in Table 1, is the media type used for the CPDLC transaction, and is necessary to distinguish performance amongst the satellite (SAT), VHF and HF data link messages.

2.4. Field 20, which contains the data link communication type, will have one of the nine values listed in column 3 of Table 2. This information is based on the communication types associated with both the indicated MAS RGS and OPS RGS data fields.

2.5. The header row required for the CPDLC input data is:

ATSP,REGNO,ACTYPE,OPER,DATE,MASRGS,OPRGS,UTIME,MASTIME,MASRTRP,FMSTIME,ATSPTIME,OPRTRIP,DTIME,UMSG,DMSG,ACTP,ACP,PORT,COMTYP

Table 1. Required CPDLC Input Data

Ref	Label	GOLD Field Name	Description and/or remarks
1	ATSP	ATSP	The four letter ICAO designator of the FIR, e.g. NZZO.
2	REGNO	Aircraft registration	The aircraft registration in ICAO Doc 4444 Format (no hyphens, packing dots, etc.), e.g. N104UA. <i>Note.</i> — <i>Extracted from ACARS header or application message.</i>
3	ACTYPE	Aircraft type designator	The ICAO aircraft type designator, e.g. B744. <i>Note.</i> — <i>Extracted from ATSP database using aircraft registration as key.</i>
4	OPER	Operator designator	The ICAO designator for the aircraft operating agency, e.g. UAL. <i>Note.</i> — <i>Extracted from ATSP database using aircraft registration as key.</i>
5	DATE	Date	In YYYYMMDD format, e.g. 20081114. <i>Note.</i> — <i>Extracted from ATSP system data recording time stamp, synchronized to within 1 second of Universal Time Coordinated (UTC).</i>
6	MASRGS	MAS RGS	Designator of the RGS that MAS downlink was received from, e.g. POR1. <i>Note.</i> — <i>This is a 3 or 4 letter designator extracted from the ACARS header DT line.</i>
7	OPRGS	OPS RGS	Designator of the RGS that the operational response was received from, e.g. AKL1. <i>Note.</i> — <i>This is a 3 or 4 letter designator extracted from the ACARS header DT line.</i>
8	UTIME	Uplink time	The timestamp on the uplink CPDLC message sent by the ATSP in HH:MM:SS format, e.g. 03:43:25. <i>Note.</i> — <i>Extracted from ATSP system data recording time stamp, synchronized to within 1 second of UTC.</i>
9	MASTIME	MAS receipt time	The ATSP timestamp on receipt of the MAS in HH:MM:SS format, e.g. 03:43:55. <i>Note.</i> — <i>Extracted from ATSP system data recording time stamp, synchronized to within 1 second of UTC.</i>
10	MASRTRP	MAS round trip time	In seconds (#9-#8), e.g. 10.

Ref	Label	GOLD Field Name	Description and/or remarks
11	FMSTIME	Aircraft FMS time stamp	In the operational response messages in HH:MM:SS, e.g. 03:44:15. <i>Note.</i> — <i>Extracted from the ATCmessageHeader timestamp in the decoded operational response message. See RTCA DO-258AEUROCAE ED-100A section 4.6.3.3.</i>
12	ATSPTIME	ATSP timestamp on the receipt of the operational response	In HH:MM:SS, e.g. 03:44:45. <i>Note.</i> — <i>Extracted from ATSP system data recording time stamp, synchronized to within 1 second of UTC.</i>
13	OPRTRIP	Operational message round trip time	From sending uplink (#8) to receipt of operational response (#12) in seconds, e.g. 80.
14	DTIME	Downlink response transit time	In seconds (#12-#11), e.g. 30.
15	UMSG	Uplink message elements	All uplink message element identifier preceded by U encapsulated between quotation marks with a space between each element, e.g. "U118 U80" <i>Note.</i> — <i>Extracted from the decoded operational uplink that initiated the transaction.</i>
16	DMSG	Downlink message elements	All downlink message elements encapsulated between quotation marks with a space between each element if required, e.g. "D0" <i>Note.</i> — <i>Extracted from the decoded operational downlink.</i>
17	ACTP	ACTP	Actual communication technical performance in seconds, e.g. 35. <i>Note.</i> — <i>Truncated to whole seconds.</i>
18	ACP	ACP	Actual communications performance in seconds measured as the difference between time uplink sent (#8) to operational response received (#12), e.g. 80.
19	PORT	PORT	Pilot Operational Response Time = ACP (#18) – ACTP(#17), e.g. 45.
20	COMTYP	COMTYP	Data link communication type, e.g. SAT <i>Note: There are nine possible entries for COMTYP are SAT, VHF, HF, SV, SH, VS, VH, HS, HV. Value is based on the MAS RGS field (#6) and OPS RGS (#7). See Table 2. Satellite (SAT), Very High Frequency (VHF), High Frequency (HF)</i>

Table 2. Possible Values for the Data Link Communication Type in the CPDLC Data

MAS RGS Communication Type	OPS RGS Communication Type	COMTYP
SAT e.g. MAS RGS = POR1	SAT e.g. OPS RGS = POR1	SAT
VHF e.g. MAS RGS = ADK	VHF e.g. OPS RGS = ADK	VHF
HF e.g. MAS RGS = H02	HF e.g. OPS RGS = H02	HF
SAT e.g. MAS RGS = POR1	VHF e.g. OPS RGS = ADK	SV
SAT e.g. MAS RGS = POR1	HF e.g. OPS RGS = H02	SH
VHF e.g. MAS RGS = ADK	SAT e.g. OPS RGS = POR1	VS
VHF e.g. MAS RGS = ADK	HF e.g. OPS RGS = H02	VH
HF e.g. MAS RGS = H02	VHF e.g. OPS RGS = ADK	HV
HF e.g. MAS RGS = H02	SAT e.g. OPS RGS = POR1	HS

2.6. Table 3 describes the 13 data fields required for the ADS-C input file. The first 12 fields contained in Table 1 are taken from the GOLD, Appendix D, Table D-2. The last row in Table 3, field 13, is the media type, and is necessary to distinguish performance amongst the satellite (SAT), VHF and HF data link messages.

Table 3. Required ADS-C Input Data

Ref	Label	GOLD Field Name	Description and/or remarks
1	ATSP	ATSP	The four letter ICAO designator for the FIR of the reporting ATSP, e.g. NZZO.
2	REGNO	Aircraft Registration	The aircraft registration in ICAO Doc 4444 Format (no hyphens, packing dots, etc.), e.g. N104UA. <i>Note.</i> — <i>Extracted from ACARS header or application message.</i>
3	ACTYPE	Aircraft Type Designator	The ICAO aircraft type designator, e.g. B744. <i>Note.</i> — <i>Extracted from ATSP database using aircraft registration as key.</i>
4	OPER	Operator Designator	The IATA designator for the aircraft operating agency, e.g. UAL. <i>Note.</i> — <i>Extracted from ATSP database using aircraft registration as key.</i>
5	DATE	Date	In YYYYMMDD format, e.g. 20081114. <i>Note.</i> — <i>Extracted from ATSP system data recording time stamp, synchronized to within 1 second of UTC.</i>

Ref	Label	GOLD Field Name	Description and/or remarks
6	RGS	RGS	Designator of the RGS that ADS-C downlink was received from, e.g. POR1. <i>Note.</i> — This is a 3 or 4 letter designator extracted from the ACARS header DT line.
7	TYP	Report Type	The type of ADS-C report extracted from the ADS-C basic group report tag where tag value 7=PER, 9=EMG, 10=LDE, 18=VRE, 19=ARE, 20=WCE. As some aircraft concatenate more than one report in the same downlink extract the ADS-C report tag from each ADS-C basic group and identify them in the REP_TYPE column by using the first letter of the report type as an identifier e.g. for a concatenated report containing two ADS-C basic groups for a periodic report and a waypoint event report the field will contain PW. Where a downlink does not contain a ADS-C basic group the REP_TYPE field will be left blank.
8	LAT	Latitude	The current latitude decoded from the ADS-C basic group. The format is “+” for North or “-“ for South followed by a decimal number of degrees, e.g. -33.456732.
9	LONG	Longitude	The current longitude decoded from the ADS-C basic group. The format is “+” for East or “-“ for West followed by a decimal number of degrees, e.g. +173.276554.
10	STIME	Aircraft Time	The time the ADS-C message was sent from the aircraft in HH:MM:SS, e.g. 03:44:15. <i>Note.</i> — Decoded from the ADS-C basic group timestamp extracted as seconds since the most recent hour. See RTCA DO-258A/EUROCAE ED-100A, section 4.5.1.4.
11	RTIME	Received Time	The ATSP timestamp on the receipt of the ADS-C message in HH:MM:SS, e.g. 03:44:45. <i>Note.</i> — Extracted from ATSP system data recording time stamp, synchronized to within 1 second of UTC.
12	DEL	Transit Time	The transit time of the ADS-C downlink in seconds calculated as the difference between #10 Aircraft Time and #11 Received Time, e.g. 30.
13	COMTYP	COMTYP	Data link communication type, e.g. SAT <i>Note:</i> There are three possible entries for COMTYP are SAT, VHF, or HF. Value is based on the RGS field (#6). Satellite (SAT), Very High Frequency (VHF), High Frequency (HF)

2.7. The header row required for the ADS-C input data is:

ATSP,REGNO,ACTYPE,OPER,DATE,RGS,TYP,LAT,LONG,STIME,RTIME,DEL,COMTYP

3. Loading Data into the Tool

3.1. The first step in using the Tool is to load the CPDLC or ADS-C input data. This is accomplished by selecting “Open” from the File Pull-down Menu of the Toolbar. Alternately, the user can click the “Open” button below the Toolbar as illustrated in Figure 1. From here, the user selects the data of interest to be loaded into the Tool. The input data must be in a comma separated format following the data field structure described in Table 1 for CPDLC data or Table 3 for ADS-C data. It is important that the first row of the input file contain the necessary header row (see section 2 for details).

3.2. Once the data has been loaded, the G-PAT automatically generates a generic GOLD chart for the unfiltered data. The header row is used to determine the input data, ADS-C or CPDLC.

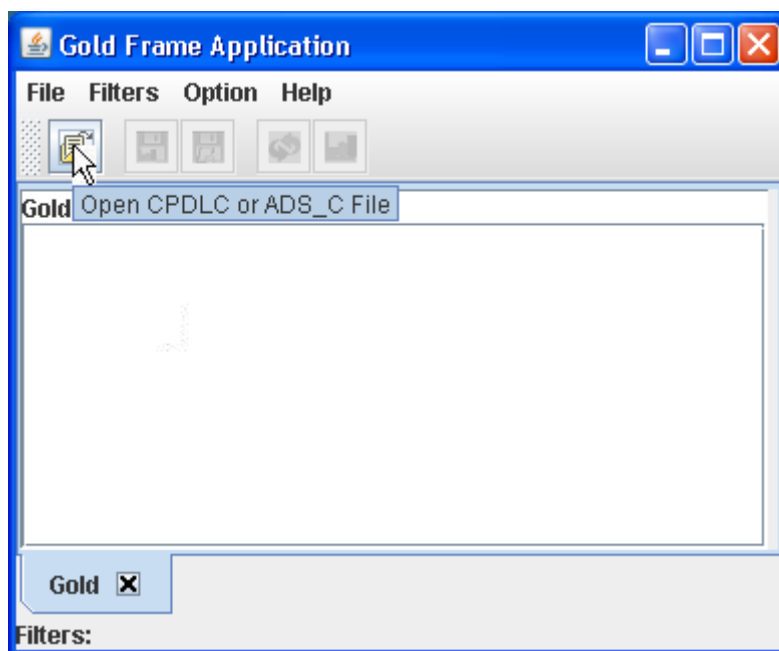


Figure 1

4. First-Level Filtering

4.1. The first level filtering option is accessed by selecting the “Filters” option on the Toolbar. The following types of first-level filters are available:

- *FIR - Flight Information Region*
- *Media Type – Satellite (SAT), VHF, HF , etc...*
- *GES - Ground Earth Stations*
- *Operator*
- *Aircraft Type*

4.2. In the “Filters” pull-down Menu, the number of options within the selected data set that are associated with each filter type is shown next to the name of the filter type. The example shown in Figure 2 lists only one option for FIR, eight options for Media Type, and

so on. The number of available options will vary depending on the data loaded into the program.

4.3. Once a filter is selected from the “Filters” pull-down Menu, a new window is presented that contains further information about the selected filter. Figure 3 shows a sample of a pop-up window for Filter by Operator. This window lists all of the possible options for the selected filter (Operator) and how many data points exist in the data set for each of the options. In Figure 3, there are 287 data link messages for AAL, 483 data points for AAR, and so on. Initially all options are selected.

4.4. By default, the filter pop-up window displays the options sorted by name in alphabetical order. By pressing the “Sort by Count” button (located on the bottom right side of the window), the options can be sorted in descending order of the number of data points associated with each option. The “Select All” and “Deselect All” buttons provide the named functionality which is available to aid in the selection of few or many of the available options. To return to the default, press the “Sort by Name” button.

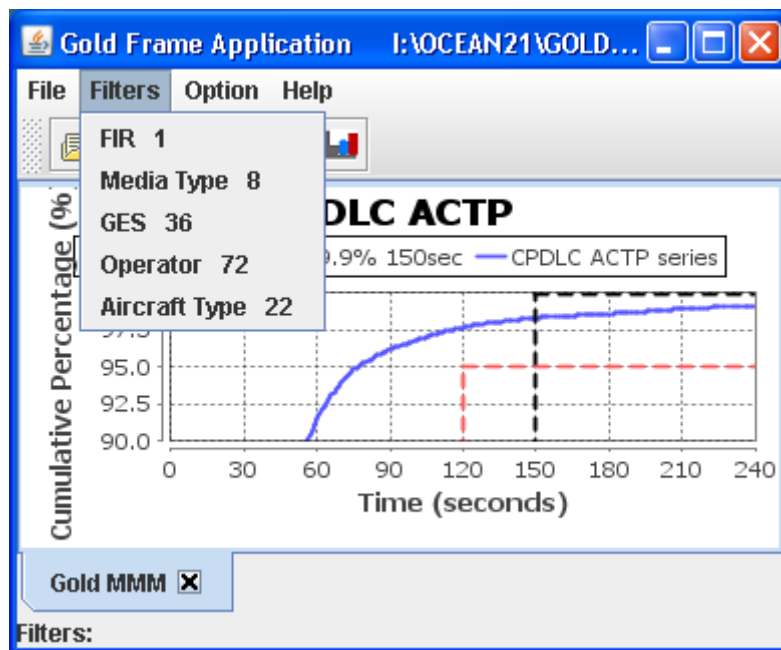


Figure 2

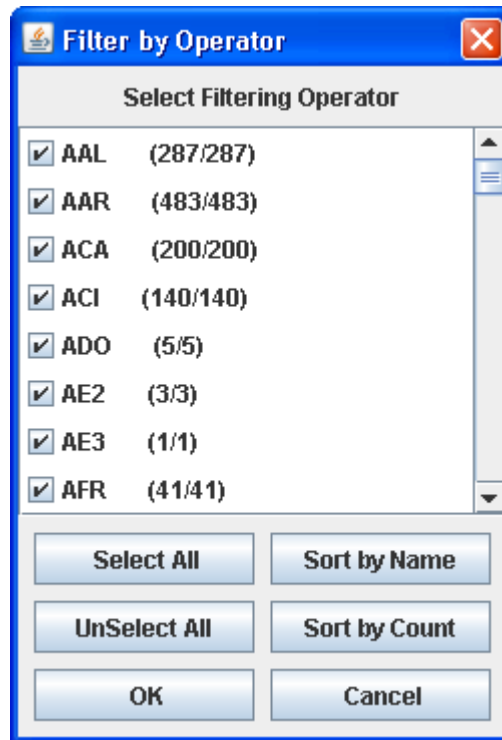


Figure 3

5. Second-Level Filtering

5.1. Once the first-level filter has been applied, a second-level filter may be chosen. Second-level filtering is available under “Type of Analysis to Perform,” which can be found in the “Options” pull-down menu. Figure 5 illustrates the pop-up window produced by selecting “Type of Analysis to Perform.”

5.2. The default setting for this filter is the “All Data” option, which applies no second-level filtering. If second-level filtering is required, the following are the available options:

- Month
- FIR
- Media type
- GES
- Operator
- Aircraft Type
- Airframe

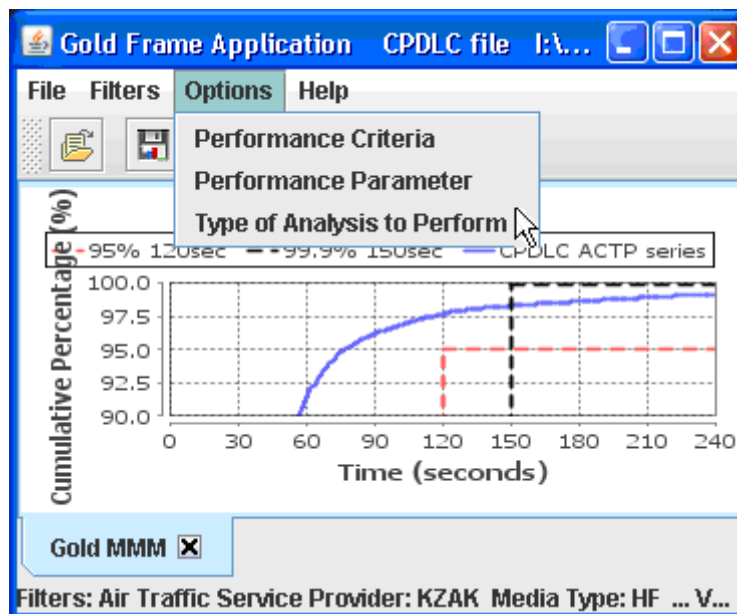


Figure 1

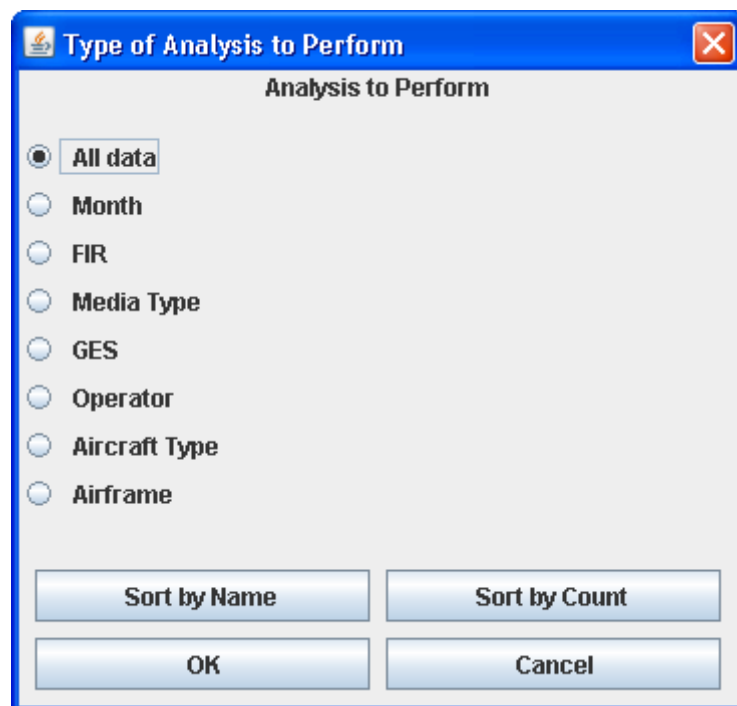


Figure 5

5.3. If one of the second-level filtering options listed in the “Type of Analysis to Perform” window is selected, the options corresponding to that selection with the first-level filter applied are displayed. For the example shown in Figure 6, the first-level filter selected was Operator ABC. When the “Aircraft Type” analysis was selected, only the available aircraft types for Operator ABC were displayed, i.e. A332 and A388.

5.4. In Figure 6, the numbers within parentheses to the right of the aircraft type provide the number of messages to be included in the chart based on the selected first level filter. The

number on the right represents the total number of data points for this category in all of the input data. The number on the left represents the number of data points available for this category after the first level filter has been applied. Thus, in Figure 6, it is shown that there are a total of 901 data points corresponding to an A332 aircraft in the input data and 133 of these belong to the Operator ABC.

5.5. The aircraft types contained in the input data file that are not available for Operator ABC are also shown in the window in Figure 6, but these options are shadowed as they are not available for this selection based on the first-level filter.

5.6. Only one option may be selected for the “Type of Analysis.” However, once the option for the “Type of Analysis” has been selected, multiple options may be selected within the second-level filter (such as multiple aircraft types).

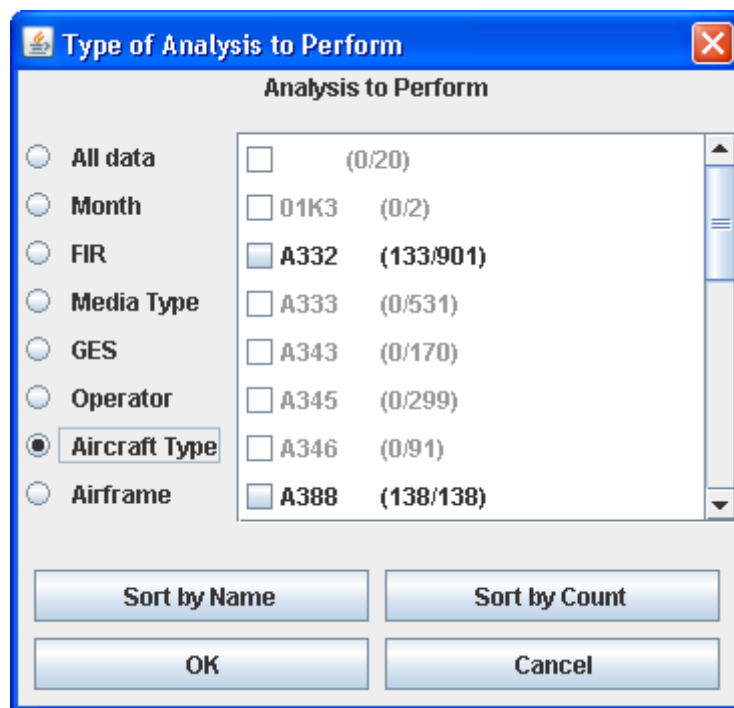


Figure 6

6. Selection of Performance Parameter and Criteria

6.1. For CPDLC analysis, the G-PAT can create the ACP, ACTP and PORT charts. The options for the type of chart to be created can be found by selecting “Performance Parameter” from the “Options” pull-down menu of the toolbar shown in Figure 7. The pop-up window generated by selecting “Performance Parameter” is shown in Figure 8.

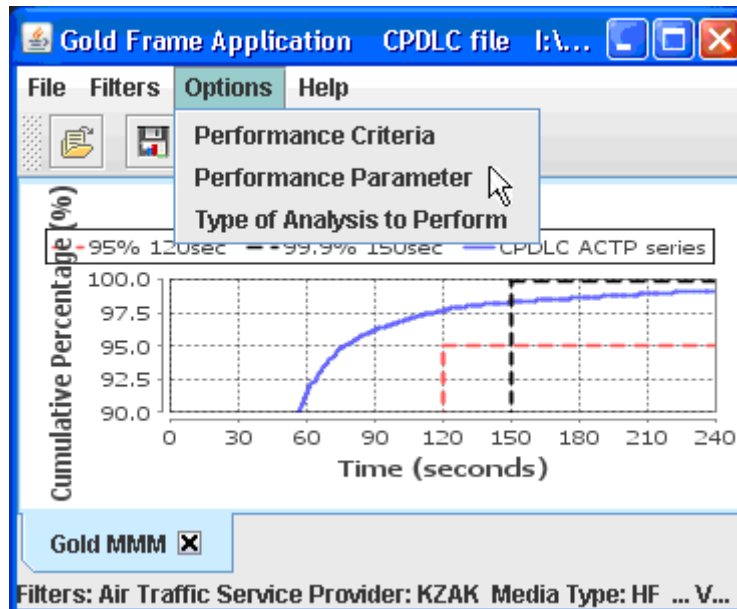


Figure 2

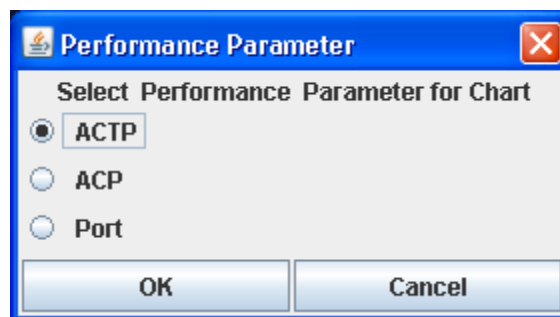


Figure 8

6.2. There are no “Performance Parameter” options to select for the ADS-C data. The only chart prescribed for ADS-C analysis in the GOLD is the ADS-C Downlink Latency chart so this is the only chart generated by G-PAT for ADS-C data.

6.3. The options for performance criteria, e.g. the 95 and 99.9 percent performance goals to be used in the chart, can be found by selecting “Performance Criteria” from the “Options” pull-down menu of the Toolbar shown in Figure 9. The pop-up window generated by selecting “Performance Criteria” is shown in Figure 10. As shown in Figure 10, the default performance criteria are initially checked based on the selected “Performance Parameter.”

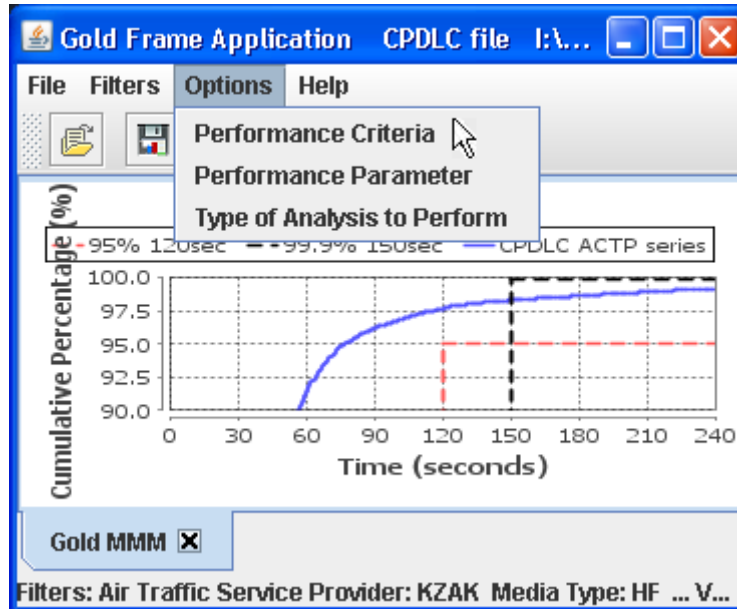


Figure 3

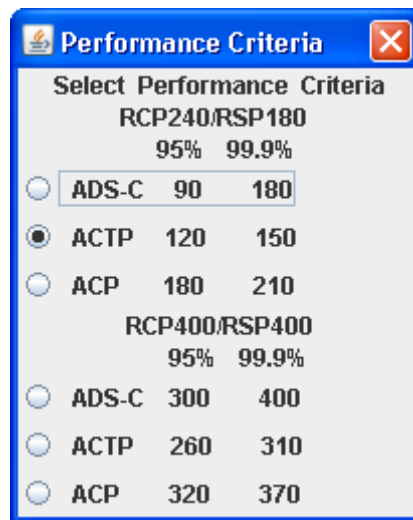


Figure 10

7. Generation of The Output Chart And Report

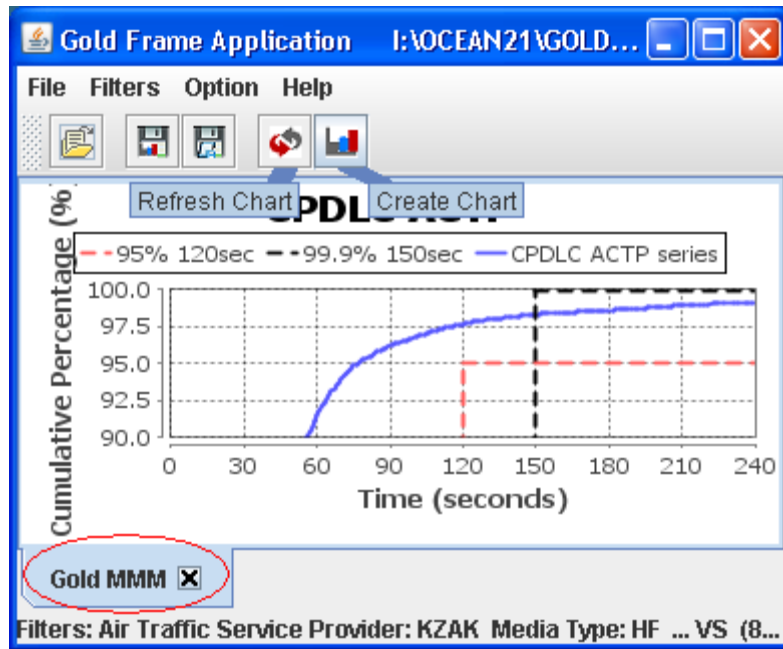


Figure 4

7.1. Once the input data has been loaded, the first and second-level filters have been applied, and the performance parameter and criteria have been selected, the G-PAT is ready to produce the GOLD chart and report. The chart and report corresponding to the current selections are visible by selecting the appropriate tab at the bottom of the G-PAT window (circled in red in Figure 11).

7.2. To create the GOLD chart and report for the existing selections in a new Tab, click the “Create Chart” button. To create a new chart in the current Tab, overwriting the currently-displayed chart and report, click the “Refresh Chart” button.

7.3. Figure 12 shows a sample chart and report for the observed performance of CPDLC message transactions from the A380 and B744 aircraft types for Operator QFA using the default performance criteria (RCP240/RSP180).

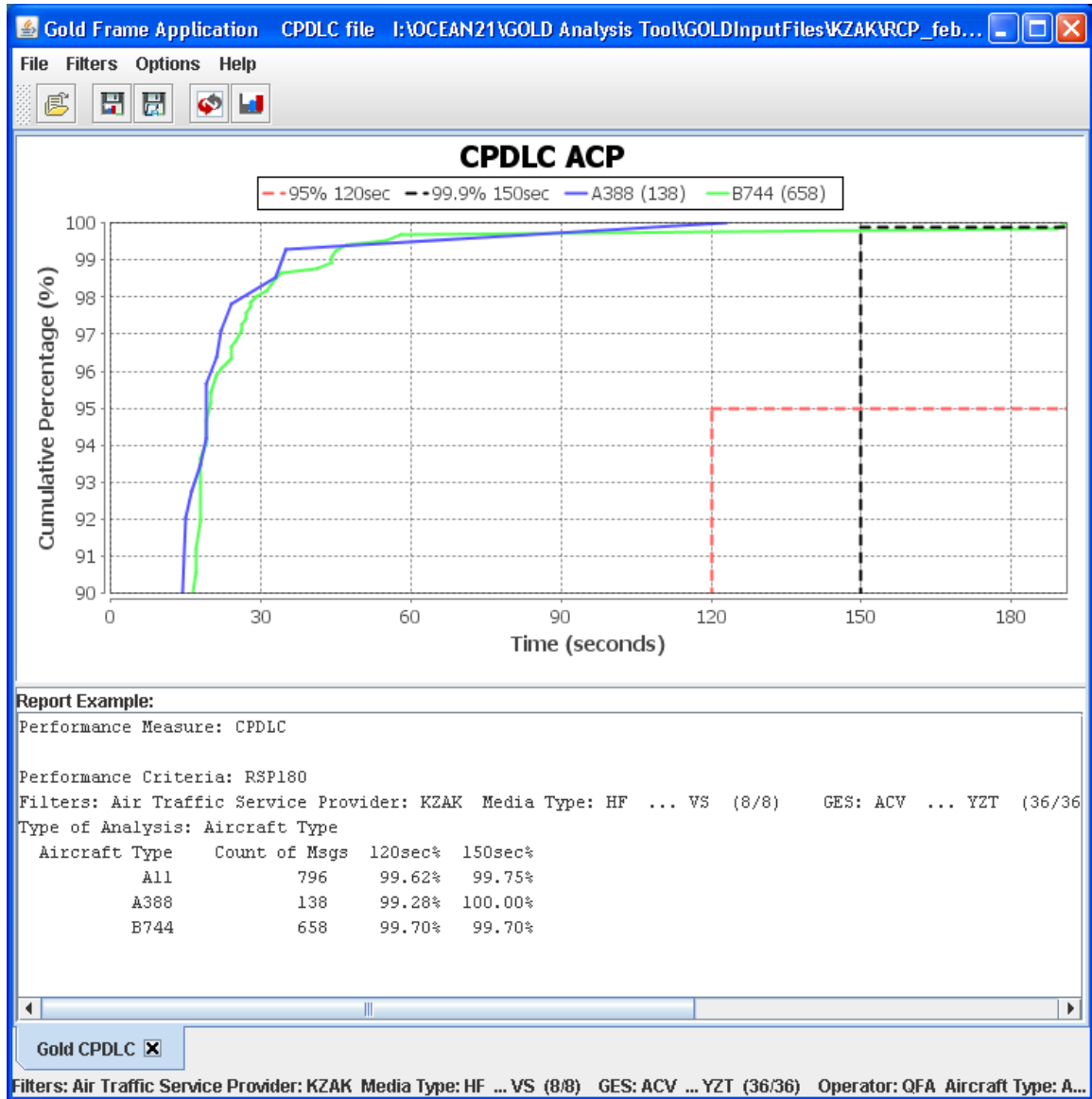


Figure 5

8. Modification of The Chart

8.1. Once a GOLD chart has been generated, the properties of the chart can be changed to modify the view.

8.2. The default view is a scale from 90 to 100 percent on the vertical range (y) axis, with increments of 1 percent. To change the view to a scale from 0 to 100 percent on the vertical range axis, right-click and select "Auto Range." To return to the default setting, press the "Refresh Chart" button.

8.3. To zoom on a particular portion of the chart, click and drag the mouse to draw a box enclosing the desired area. This area will then be enlarged to fit the screen.

8.4. Several other chart properties are accessible by right-clicking on the chart and selecting "Properties." This action will open the "Chart Properties" window, which contains the three tabs shown in Figure 13: "Title", "Plot", and "Other."

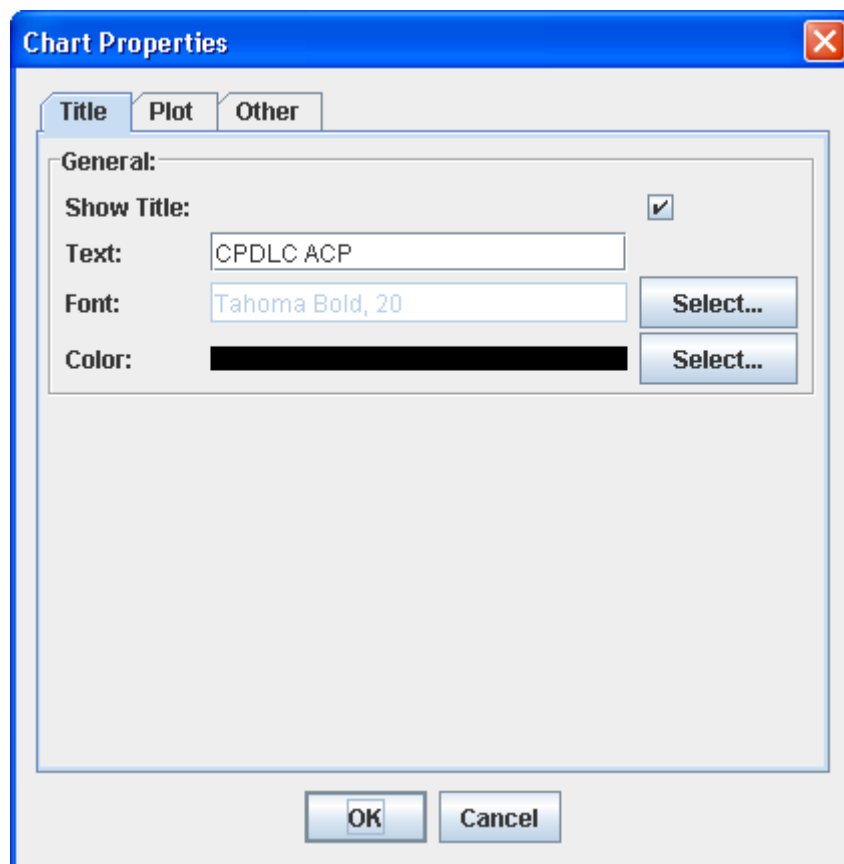


Figure 13

8.5. The "Title" tab, shown in Figure 13, allows properties of the chart title to be modified. The chart title can be hidden by deselecting the check box displayed to the right of the chart

title text box. The text of the title can be changed in addition to the font, size, and color of the title.

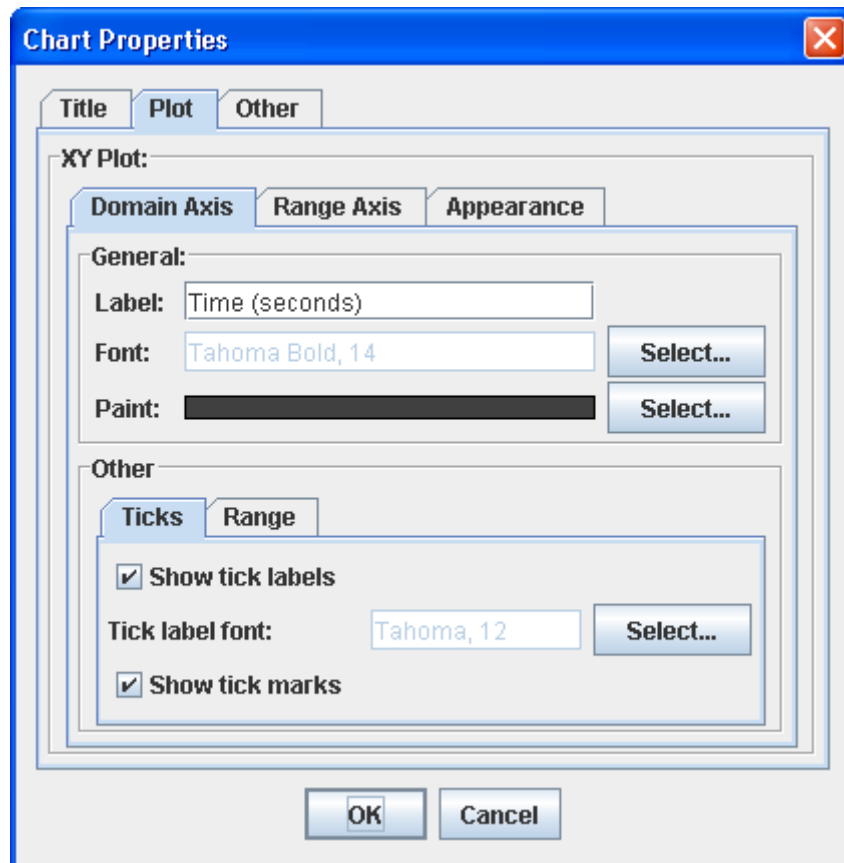


Figure 14

8.6. The “Plot” tab allows properties of the horizontal domain (x) axis and of the vertical range (y) axis to be independently modified. As shown in Figure 14, the label as well as its font, size, and color can be changed. Additional properties, such as the showing or hiding of the tick labels and tick marks for the axes, can be modified.

8.7. The range displayed on the chart can be modified by selecting the “Range” tab, shown in Figure 15. To adjust the range, deselect the checkbox for “Auto-adjust range” and then enter the desired minimum and maximum range values.

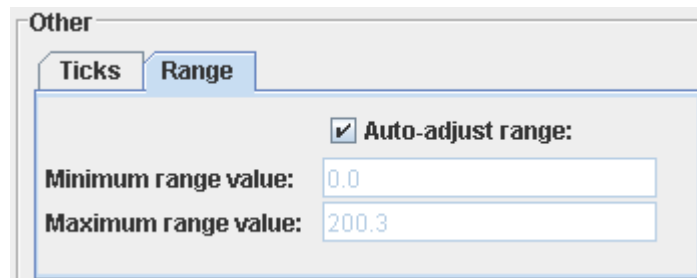


Figure 15

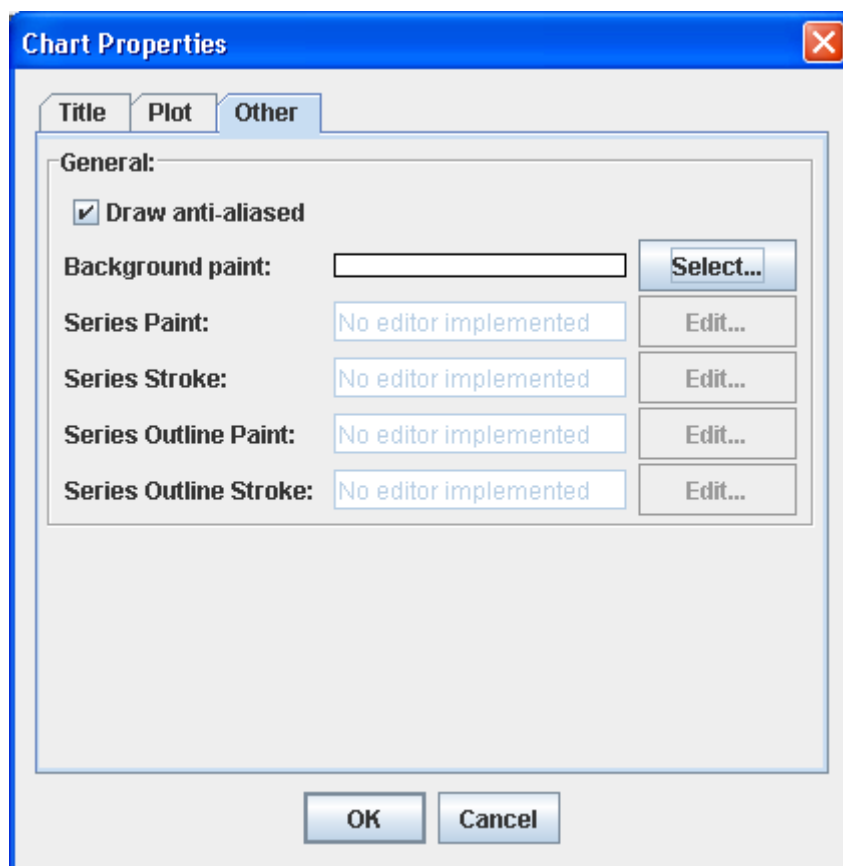


Figure 16

8.8. The remaining tab, “Other”, shown in Figure 16, allows the line colors in the chart to be modified.

9. Save or Print a Copy of the Chart or Report

9.1. The generated chart or report can be saved using the “File” pull-down menu of the toolbar. Alternatively, “Save Chart” and “save report” buttons are available below the

toolbar. Note that when saving the report, a valid file extension must be added to the end of the file name.

9.2. When saving the chart using the file pull-down menu or the “Save Chart” button, the chart will be saved as a jpg file. To save the chart as a png file, simply right-click the chart and select “Save As.”

5

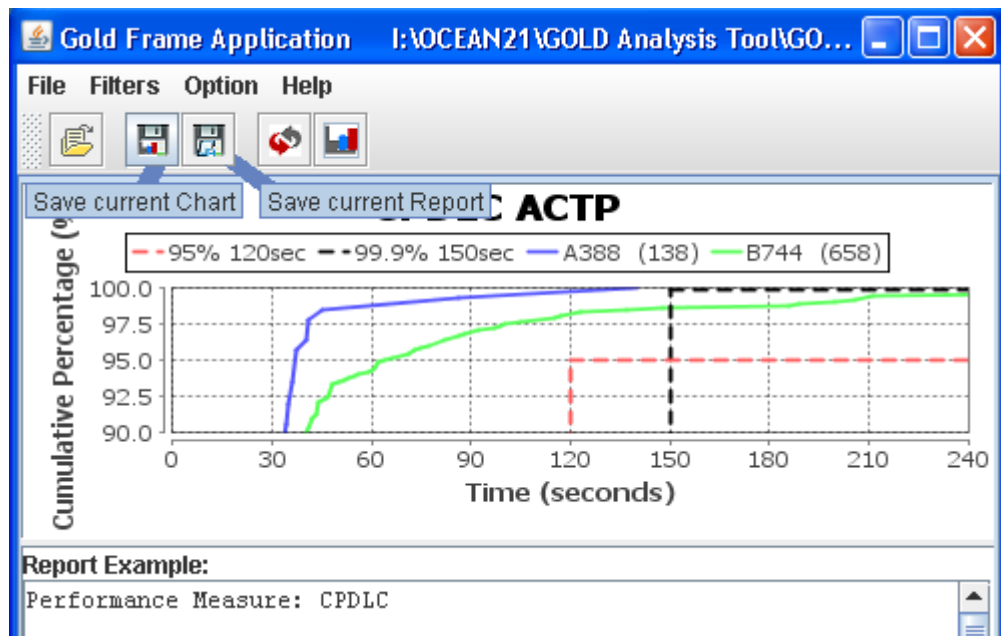


Figure 6

References

1. International Civil Aviation Organization (ICAO) Global Operational Data Link Document (GOLD), First edition, June 2010.

Appendix B**Sample CPDLC Transaction Data for use in G-PAT**

ATSP,REGNO,ACTYPE,OPER,DATE,MASRGS,OPRGS,UTIME,MASTIME,MASRTRP,FMSTIME,ATSPTIME,OPRTRIP,DTIME,UMSG,DMSG,ACTP,ACP,PORT,COMTYP
KZAK,9VSGB,A345,SIA,20101201,POR1,POR1,08:07:05,08:07:09,4,08:07:17,08:07:23,18,6,U30,DM0,18.0,8.0,10.0,SAT
KZAK,9VSGB,A345,SIA,20101201,POR1,POR1,09:47:38,09:47:42,4,09:47:57,09:48:04,26,7,U20,DM0,26.0,9.0,17.0,SAT
KZAK,9VSGB,A345,SIA,20101201,POR1,POR1,10:57:23,10:57:29,6,10:57:32,10:57:47,24,15,U82,DM0,24.0,18.0,6.0,SAT
KZAK,9VSGB,A345,SIA,20101201,POR1,POR1,12:55:12,12:55:18,6,12:55:28,12:55:51,39,23,U20,DM0,39.0,26.0,13.0,SAT
KZAK,B16412,B744,EVA,20101201,POR1,POR1,21:14:33,21:14:39,6,21:14:51,21:15:00,27,9,U31,DM0,27.0,12.0,15.0,SAT
KZAK,B16412,B744,EVA,20101201,POR1,POR1,21:41:55,21:42:02,7,21:42:10,21:42:20,25,10,U20,DM0,25.0,13.5,11.5,SAT
KZAK,B16483,B744,EVA,20101201,POR1,POR1,09:54:36,09:54:43,7,09:54:49,09:54:59,23,10,U20,DM0,23.0,13.5,9.5,SAT
KZAK,B16483,B744,EVA,20101201,POR1,POR1,12:53:38,12:53:45,7,12:53:53,12:54:24,46,31,U20,DM0,46.0,34.5,11.5,SAT
KZAK,B16701,B77W,EVA,20101201,POR1,POR1,08:44:19,08:44:29,10,08:44:32,08:44:48,29,16,U20,DM0,29.0,21.0,8.0,SAT
KZAK,B16701,B77W,EVA,20101201,POR1,POR1,09:19:53,09:20:04,11,09:20:08,09:20:24,31,16,U20,DM0,31.0,21.5,9.5,SAT
KZAK,B16701,B77W,EVA,20101201,POR1,POR1,09:52:55,09:53:05,10,09:53:15,09:53:28,33,13,U26,DM0,33.0,18.0,15.0,SAT
KZAK,B16707,B77W,EVA,20101201,POR1,POR1,21:51:06,21:51:16,10,21:51:38,21:51:52,46,14,U23,DM0,46.0,19.0,27.0,SAT
KZAK,B16707,B77W,EVA,20101201,POR1,POR1,22:03:49,22:03:59,10,22:04:00,22:04:17,28,17,U23,DM0,28.0,22.0,6.0,SAT

AppendixC**SampleADS-CTransactionDataforuseinG-PAT**

ATSP,REGNO,ACTYPE,OPER,DATE,RGS,TYP,LAT,LONG,STIME,RTIME,DEL,COMTYP
KZAK,N851FD,B77L,FDX,20101130,POR1,ADS,+51.9845581054688,-149.733180999756,23:59:48,00:00:01,13,SAT
KZAK,N69063,B764,COA,20101201,XXC,ADS,+34.5065116882324,-133.064002990723,00:00:41,00:00:59,18,SAT
KZAK,N220UA,B772,UAL,20101201,XXC,ADS,+25.242805480957,-171.414184570312,00:01:25,00:01:34,10,SAT
KZAK,N220UA,B772,UAL,20101201,XXC,ADS,+25.2455520629883,-171.426200866699,00:01:30,00:01:43,13,SAT
KZAK,B16713,B77W,EVA,20101201,POR1,ADS,+44.0457344055176,-144.599475860596,00:01:31,00:01:48,17,SAT
KZAK,JA603J,B763,JAZ,20101201,HNL,ADS,+21.0994148254395,-158.212738037109,00:01:52,00:01:56,4,VHF
KZAK,N213UA,B772,UAL,20101201,KOA,ADS,+21.4827346801758,-155.467529296875,00:02:10,00:02:14,5,VHF
KZAK,JA743J,B77W,JAL,20101201,POR1,ADS,+45.9980392456055,-150.003547668457,00:02:09,00:02:16,7,SAT
KZAK,BHUG,B744,CPA,20101201,XXC,ADS,+47.0384788513184,-179.028568267822,00:02:12,00:02:32,20,SAT
KZAK,N76065,B764,CMI,20101201,XXC,ADS,+15.1077461242676,+170.891647338867,00:02:16,00:02:35,19,SAT
KZAK,9VSP0,B744,SIA,20101201,POR1,ADS,+48.2315254211426,-130.203266143799,00:02:14,00:02:41,27,SAT
KZAK,BKPQ,B77W,CPA,20101201,XXC,ADS,+46.0011291503906,-159.993209838867,00:02:48,00:03:05,17,SAT
KZAK,N599FE,MD11,FDX,20101201,MKK,ADS,+24.048900604248,-156.320686340332,00:03:10,00:03:16,6,VHF
KZAK,JA615A,B763,ANA,20101201,POR1,ADS,+27.0016479492188,+179.997940063477,00:03:22,00:03:37,15,SAT