Cross-Validation

Step by Step Guide to Resolving Cross-Validation Errors

Last updated 30/07/2021 – V1

Introduction

This guide has been created to help those airlines that submit monthly sector and point-to-point data resolve issues that may occur when the two data sets are cross validated. Discrepancies between the two datasets, which should match, is relatively common.

To provide assistance we have selected six typical data issues that users experience, increasing in complexity, along with our proposed solution and workings.

There may be an occasion when an unplanned sector is operated (e.g. a medical emergency diversion) and consequently the figures in the two datasets will not match. In this scenario, please contact the AvStats team for further guidance AvStatsSupplierEnquiry@caa.co.uk

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Example 1

The first example refers to a service operating between CWL and PMF.

Submission Issue

Reporting the same R/ID CAA001 on Line Numbers 13 and 14 indicates to AvStats the service is multi-sector.

These are the fields linking the Sector and Point to Point (R/ID) CAA001 (as included in the rejection email)

Route ID	Charge Code	Operation	Service	Aircraft	Licence Type
CAA001	1	Charter	Passenger	E130	A

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As a further aid in understanding the nature of the issue, a sector map is provided offering a graphical representation and confirming that there is an issue with (R/ID) CAA001.
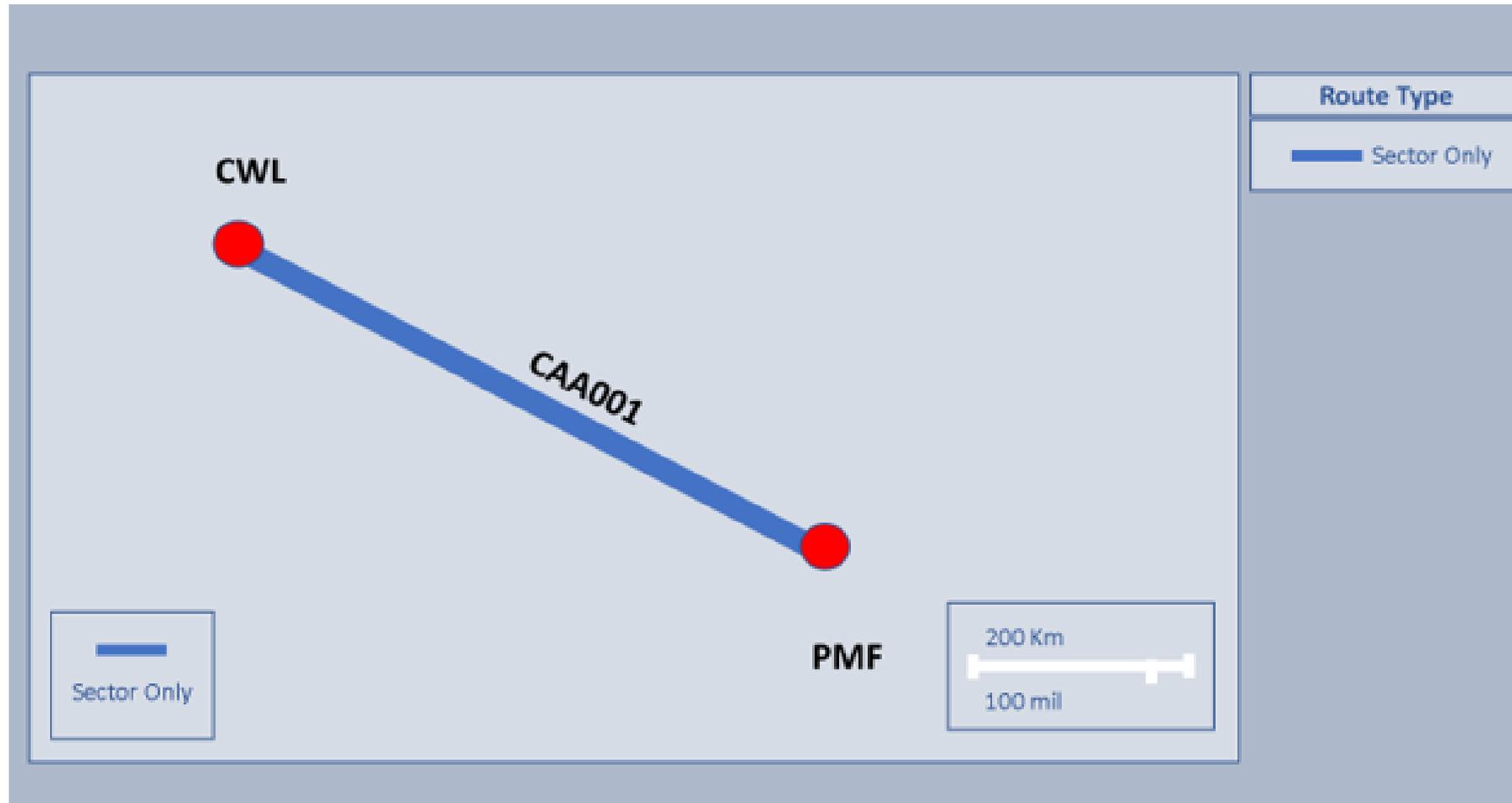
Line numbers and error messages

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
13	IATA CWL	IATA PMF	0	0	43	CrossVal Sector missing PTP
14	IATA PMF	IATA CWL	0	0	43	CrossVal Sector missing PTP

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Our Proposed Solution

In this example, to resolve this issue we would propose that the following steps be followed.

- Review all entries on the sector file which relate to the specified (R/ID) CAA001. Assess for diversions i.e. the [Intended To] or [Intended From] fields completed.

- In this example there were no intended airports reported, so it is reasonable to assume that service operated from CWL to PMF and the return service, PMF to CWL. Outbound and inbound flights of a service would commonly operate with a different (R/ID).

Line Number	Sector From	Sector To	Aircraft Type	Charge Code	Operation	Service	Licence	Route Identifier	Revenue Passengers
13	CWL	PMF	E130	1	Charter	Passengers	A	CAA001	43
14	PMF	CWL	E130	1	Charter	Passengers	A	CAA001A	43

- The proposed solution for this error is to amend the (R/ID) of the PMF to CWL line 14 to CAA001A. This will then enable two point to point lines to be derived from the data reported on the two sector lines (13 & 14). **In the table above sector line 14 shows the change made to correct the data.**

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Example 2

The second example refers to a service operating from BQH to BHX and DUB.

Submission Issue

Reporting the same R/ID CAA002P on Line Numbers 21 and 22 indicates to AvStats the service is multi-sector.

These are the fields linking the Sector and Point to Point (R/ID) CAA002P (as included in the rejection email)

Route ID	Charge Code	Operation	Service	Aircraft	Licence Type
CAA002P	1	Charter	Cargo Only	B463	A

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As a further aid in understanding the nature of the issue, a sector map is provided offering a graphical representation and confirming that there is an issue with (R/ID) CAA002P.
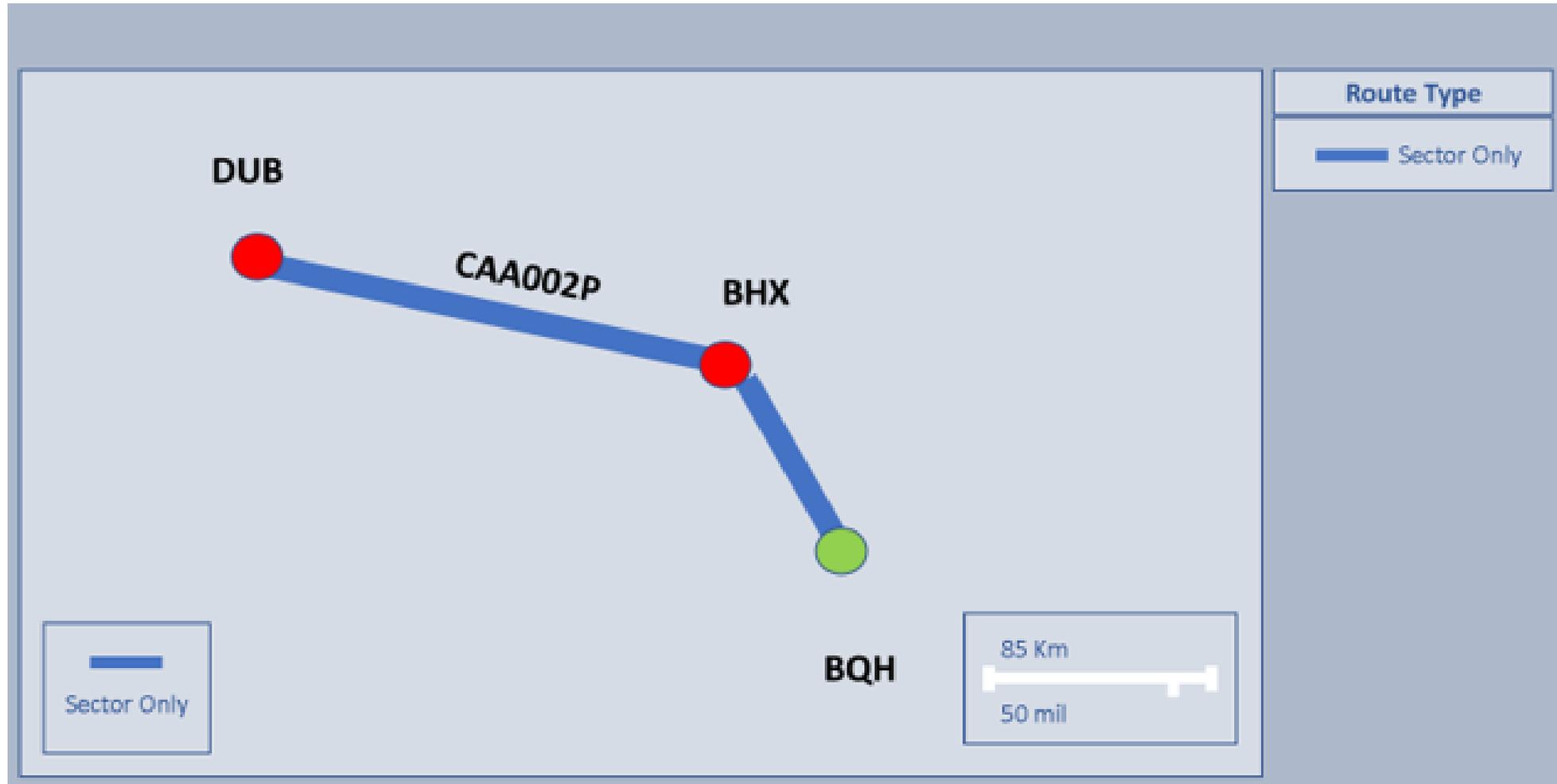
Line numbers and error messages

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
21	IATA BQH	IATA BHX	0	0	0	(No Load).
22	IATA BHX	IATA DUB	3.2	0	0	CrossVal Sector missing PTP

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Our Proposed Solution

In this example, to resolve this issue we would propose that the following steps be followed.

• Review all entries on the sector file which relate to the specified (R/ID) CAA002P. Assess for diversions i.e. the [Intended To] or [Intended From] fields completed.

• There were no intended airports reported, but one of the flights was an empty sector. It is reasonable to assume that the service operated as a positioning flight from BQH to BHX and then with some load BHX to DUB. Positioning flights would commonly operate with a different (R/ID).

Line Number	Sector From	Sector To	Aircraft Type	Charge Code	Operation	Service	Licence	Route Identifier	Revenue Freight
21	BQH	BHX	B463	1	Charter	Cargo Only	A	CAA002P	0
22	BHX	DUB	B463	1	Charter	Cargo Only	A	CAA002	3.2

• The proposed solution for this error is to amend the (R/ID) of the BHX to DUB line 22 to CAA002 after checking that this (R/ID) has not been reported on another line. This will then enable one point to point line to be derived from the data reported on the two sector lines (21 & 22). Positioning flights reported on sector do not derive PTP records. **In the table above sector line 22 shows the change made to correct the data.**

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Example 3

The third example refers to a service operating from LHR to BOS or JFK.

Submission Issue

The airports reported on R/ID CAA003 on Sector Line Numbers 326 and 329 do not match the airports reported on the same R/ID on Point to Point line 1.

These are the fields linking the Sector and Point to Point (R/ID) CAA003 (as included in the rejection email)

Route ID	Charge Code	Operation	Service	Aircraft	Licence Type
CAA003	1	Scheduled	Cargo Only	B772	A

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As a further aid in understanding the nature of the issue, a sector map is provided offering a graphical representation and confirming that there is an issue with (R/ID) CAA003.
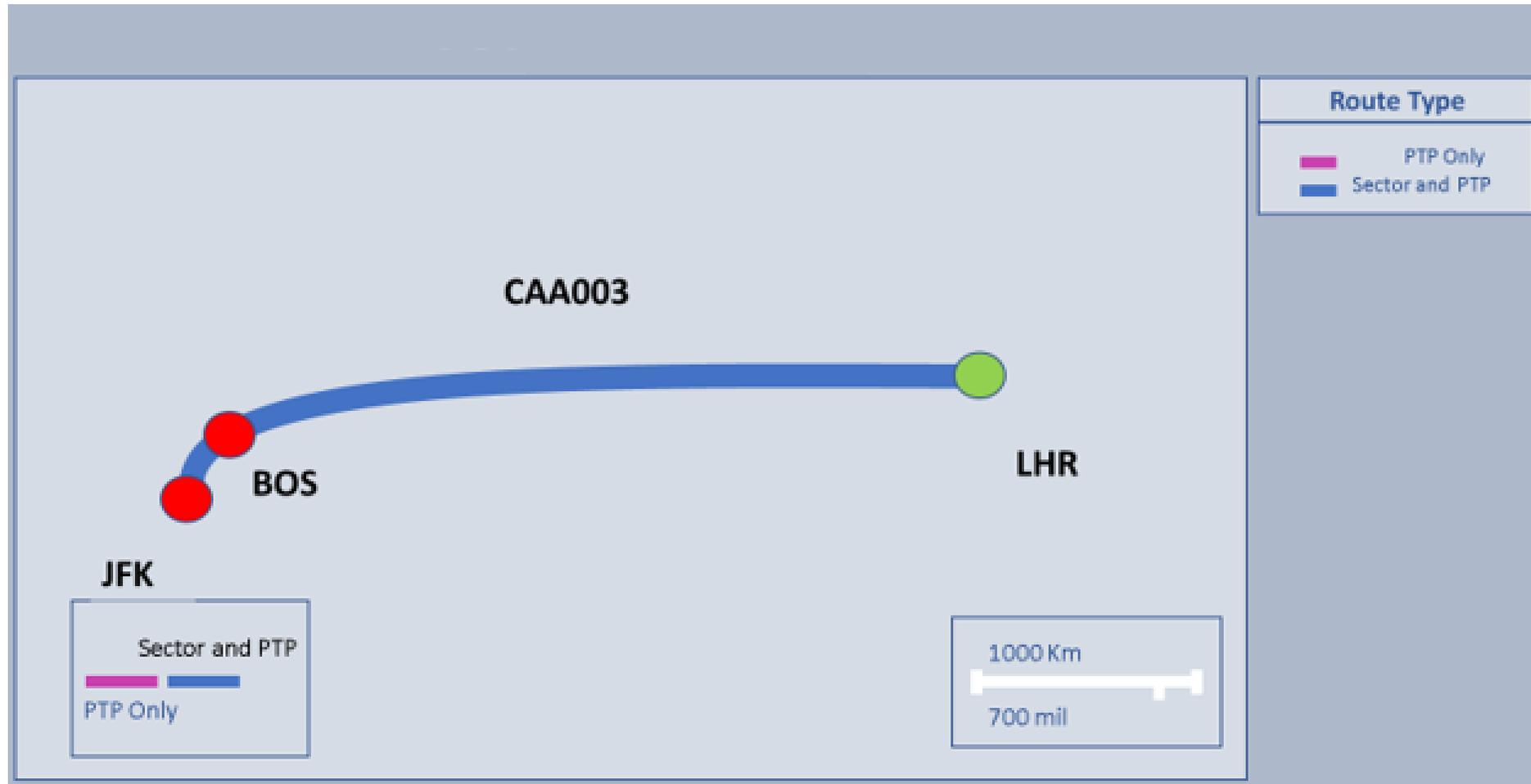
Line numbers and error messages

Sector Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
326	IATA LHR	IATA BOS	20.2	3.1	0	
329	IATA LHR	IATA BOS	4.6	0	0	

Point to Point Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
1	IATA LHR	IATA JFK	15.2	3.1	0	CrossVal PTP missing Sector
1000326	IATA LHR	IATA BOS	20.2	3.1	0	
1000329	IATA LHR	IATA BOS	4.6	0	0	

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Our Proposed Solution

In this example, to resolve this issue we would propose that the following steps be followed.

- Review all entries on the sector file which relate to the specified (R/ID) CAA003. Assess for diversions i.e. the [Intended To] or [Intended From] fields completed.

- In this example there were no intended airports reported, so it is reasonable to assume that the service operated from LHR to BOS.

- As the destination airport and the freight figure is different on the PTP it is reasonable to assume that the PTP record is incorrect.

- The other two PTP lines included in the table above have been derived by the system from the sector data. Derived PTP records can be identified by a line number beginning 1000.

- The proposed solution for this error is to check both the sector and the PTP data reported under this (R/ID).

- There are a few possible solutions. It is possible that there are other sector lines which would match PTP line 1, if so the (R/ID) should be amended on PTP line 1 to correspond with these. Or, if there are no corresponding sector records which match PTP line 1 and the PTP is correct, then an additional sector line(s) should be added to the sector file using a unique (R/ID) for the new sector lines and PTP line 1. The other possible solution is that PTP line 1 is incorrect and is deleted.

- Once data has been resubmitted or amended and revalidated the derived PTP lines will be automatically updated by the system to reflect the correct information and so can be ignored on this query.

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Example 4

The fourth example refers to a multi-sector service operating from STN to EMA to GLA.

Submission Issue

AvStats has found a difference in the passenger figures reported on the sector and PTP files for R/ID CAA004 aircraft E145.

These are the fields linking the Sector and Point to Point (R/ID) CAA004 (as included in the rejection email)

Route ID	Charge Code	Operation	Service	Aircraft	Licence Type
CAA004	1	Scheduled	Passenger	E145	A

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As a further aid in understanding the nature of the issue, a sector map is provided offering a graphical representation and confirming that there is an issue with (R/ID) CAA004.
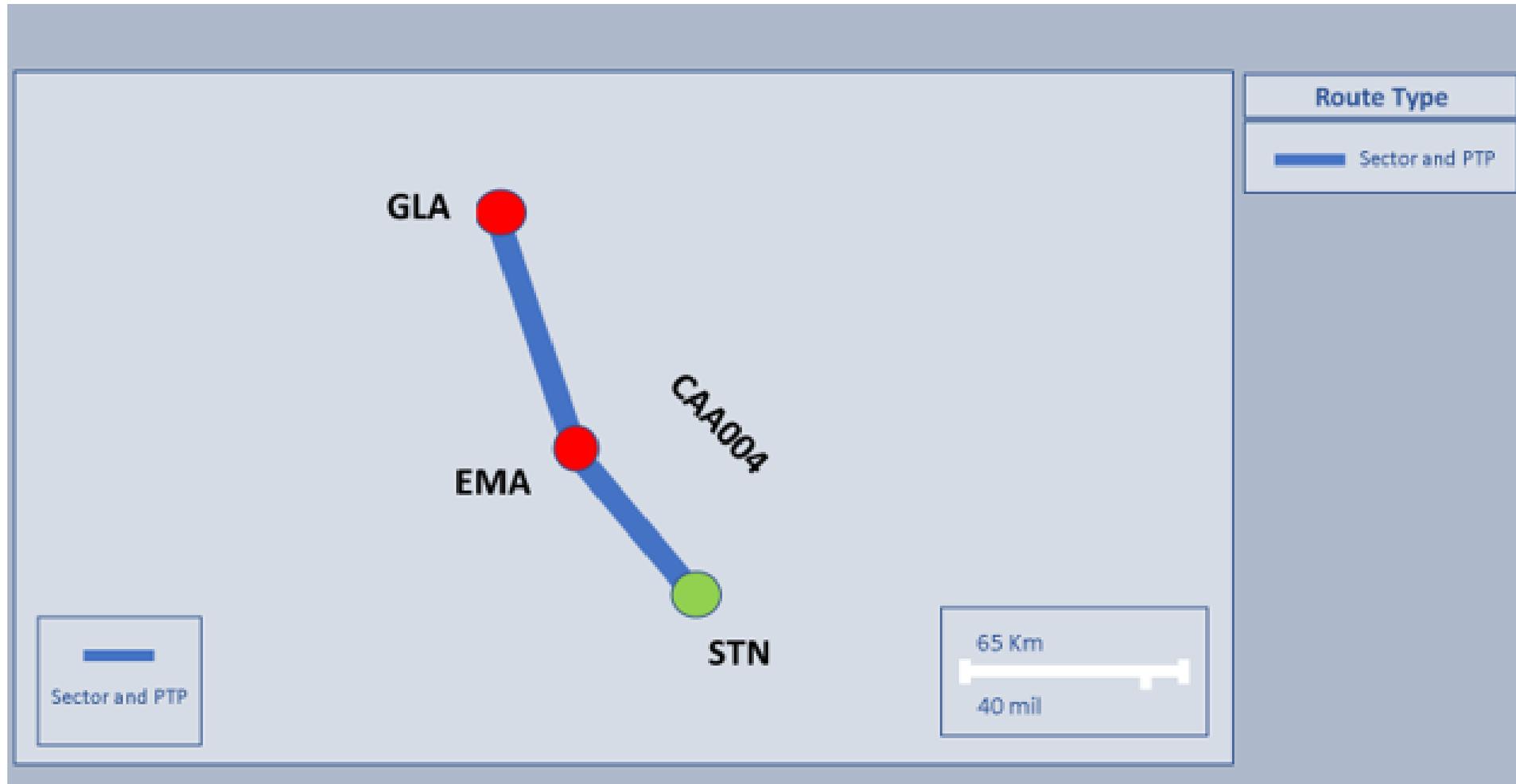
Line numbers and error messages

Sector Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
36	IATA STN	IATA EMA	0	0	137	Origin Validated at Route Level.
45	IATA EMA	IATA GLA	0	0	383	CrossVal Arriving Passenger Difference=-137

Point to Point Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
11	IATA EMA	IATA GLA	0	0	383	CrossVal Differences raised against Sector.
12	IATA STN	IATA GLA	0	0	137	CrossVal Differences raised against Sector.

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Our Proposed Solution

In this example, to resolve this issue we would propose that the following steps be followed.

- Review all entries on the sector file which relate to the specified (R/ID) CAA004 and aircraft E145. It is sometimes necessary to check against the aircraft type (or other criteria – Charge Code/Operation Type etc) reported. Assess for diversions i.e. the [Intended To] or [Intended From] fields completed.

- In this example there were no intended airports reported, so it is reasonable to assume that the service operated from STN to EMA and then to GLA. If sector information is correct the PTP data must be reviewed.

- Point to point line 12 shows STN - GLA 137 passengers, this matches the sector line 36 STN - EMA so this is OK.

- Sector line 45 EMA – GLA records a total load of 383 passengers. This includes the 137 passengers from STN still on board. If the sector figures are correct, the difference of 383 less 137 passengers is 246, so this must be the number of passengers travelling between EMA - GLA.

- The proposed solution for this error is to amend point to point line 11 from 383 to 246 passengers so that the two point to point records 137 + 246 equal the total of 383 on board as reported on sector line 45 EMA – GLA.

- All sector and PTP figures will then balance.

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Below PTP line 11 shows the change made to correct the data

Line Number	Origin Airport	Destination Airport	Aircraft Type	Charge Code	Operation	Service	Licence	Route Identifier	Revenue Passengers
11	EMA	GLA	B463	1	Scheduled	Passenger	A	CAA004	246
12	EMA	STN	B463	1	Scheduled	Passenger	A	CAA004	137

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Example 5

The fifth example refers to a multi-sector circular service operating from MAN to DND to GLA to MAN.

Submission Issue

AvStats has found a difference in the number of passengers and freight carried reported on route ID CAA005 on the sector & PTP submission files.

These are the fields linking the Sector and Point to Point (R/ID) CAA005 (as included in the rejection email)

Route ID	Charge Code	Operation	Service	Aircraft	Licence Type
CAA005	1	Scheduled	Passenger	SF34	A

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As a further aid in understanding the nature of the issue, a sector map is provided offering a graphical representation and confirming that there is an issue with (R/ID) CAA005.
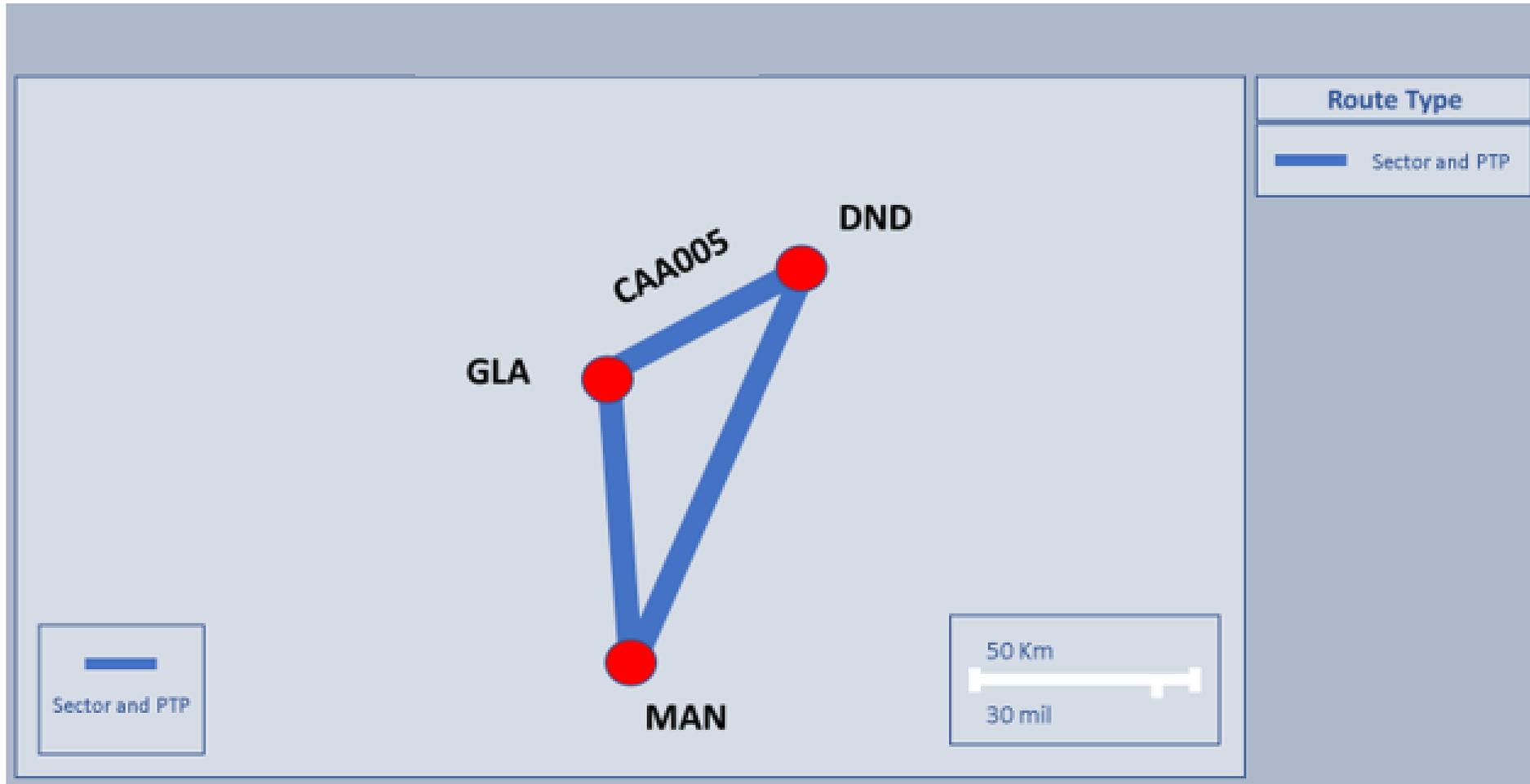
Line numbers and error messages

Sector Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
59	IATA MAN	IATA DND	0.4	0	293	Origin Validated at Route Level.
60	IATA DND	IATA GLA	0.5	0	266	CrossVal Through Passenger Difference=-34 Freight Difference=-.5
61	IATA GLA	IATA MAN	0.7	0	205	CrossVal Through Passenger Difference=-34 Freight Difference=-.5

Point to Point Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
19	IATA MAN	IATA GLA	0	0	110	CrossVal Differences raised against Sector.
20	IATA MAN	IATA DND	0.4	0	183	
21	IATA GLA	IATA MAN	0.7	0	83	CrossVal Differences raised against Sector.
22	IATA DND	IATA MAN	0	0	122	CrossVal Differences raised against Sector.

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Our Proposed Solution

In this example, to resolve this issue we would propose that the following steps be followed.

- Review all entries on the sector file which relate to the specified (R/ID) CAA005.   Assess for diversions i.e. the [Intended To] or [Intended From] fields completed.

- In this example there were no intended airports reported, so it is reasonable to assume that the service operated from MAN to DND to GLA and then back to MAN.

- Calculate the totals to find which line(s) is/are incorrect by creating a diagram:
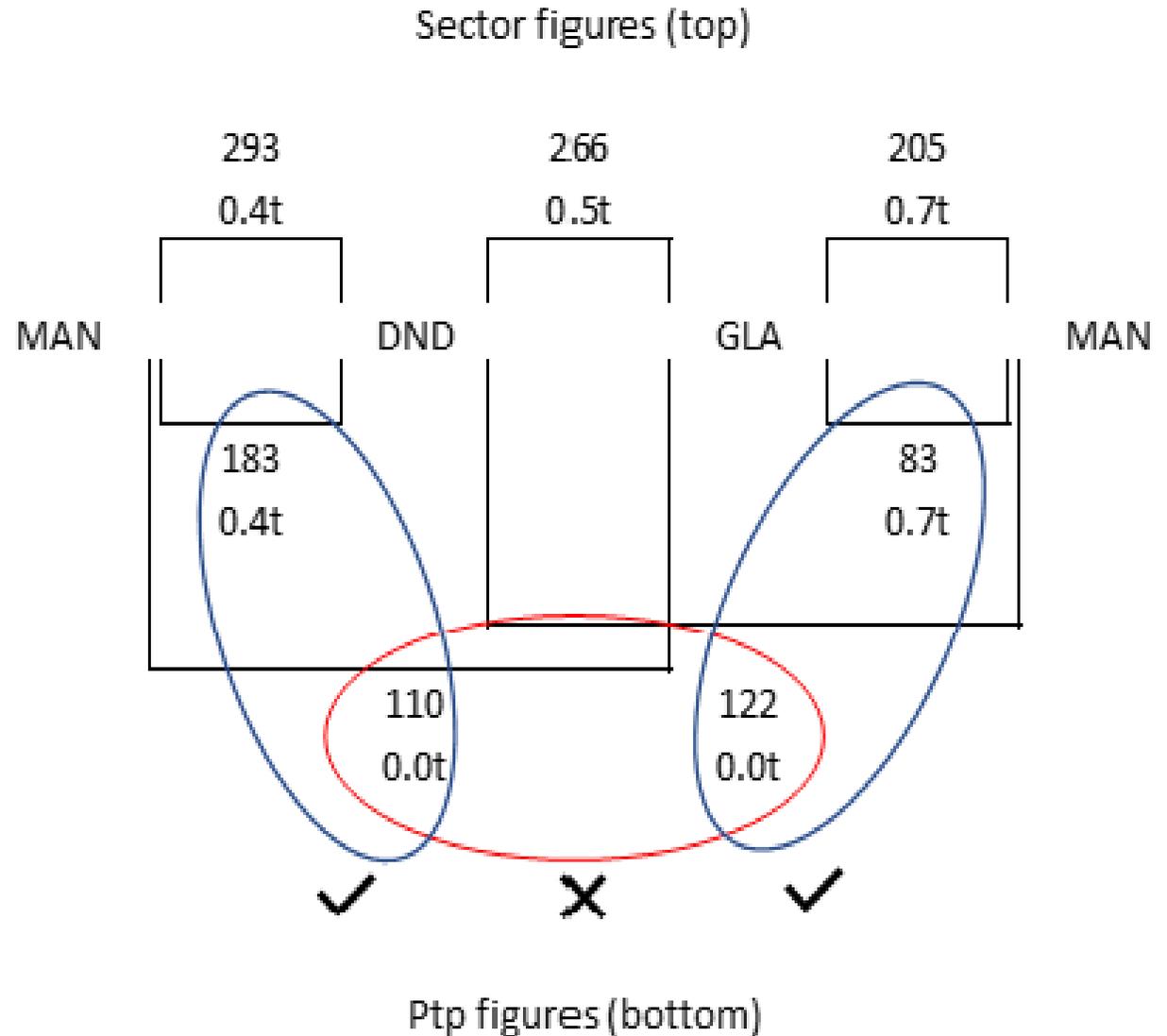
The total of PTP lines 19 MAN-GLA (110, 0t) and 20 MAN-DND (183, 0.4t) balance with sector line 59 MAN-DND (293, 0.4t).

The total of PTP lines 21 GLA-MAN (83, 0.7t) and 22 DND-MAN (122, 0t) balance with sector line 61 GLA-MAN (205, 0.7t).

The total of PTP lines 19 MAN-GLA (110, 0t) and 22 DND-MAN (122, 0t) equal to 232 passengers and 0.0t freight which does not balance with sector line 60 DND-GLA (266, 0.5t). As the other PTP lines do balance with their corresponding sector lines this implies that the figures reported on sector line 60 DND-GLA are incorrect.

Amend on sector line 60 DND-GLA from 266 passengers and 0.5t freight to 232 passengers and 0t freight.

All sector and PTP figures will then balance.

Sector figures (top)

	293	266	205
	0.4t	0.5t	0.7t

MAN   DND   GLA   MAN

183
0.4t

83
0.7t

110
0.0t

122
0.0t

✓   ✗   ✓

Ptp figures (bottom)

Below sector line 60 shows the change made to correct the data

Line Number	Sector From	Sector To	Aircraft Type	Charge Code	Operation	Service	Licence	Route Identifier	Revenue Freight	Revenue Passengers
59	MAN	DND	SF34	1	Scheduled	Passenger	A	CAA005	0.4	293
60	DND	GLA	SF34	1	Scheduled	Passenger	A	CAA005	0	232
61	GLA	MAN	SF34	1	Scheduled	Passenger	A	CAA005	0.7	205

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Example 6

The sixth example refers to a multi-sector circular service operating from IOM to BRS to SOU to IOM.

Submission Issue

AvStats has found a difference in the number of passengers carried reported on route ID CAA006 on the sector & PTP submission files.

These are the fields linking the Sector and Point to Point (R/ID) CAA006 (as included in the rejection email)

Route ID	Charge Code	Operation	Service	Aircraft	Licence Type
CAA006	1	Scheduled	Passenger	DH8D	A

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As a further aid in understanding the nature of the issue, a sector map is provided offering a graphical representation and confirming that there is an issue with (R/ID) CAA006.
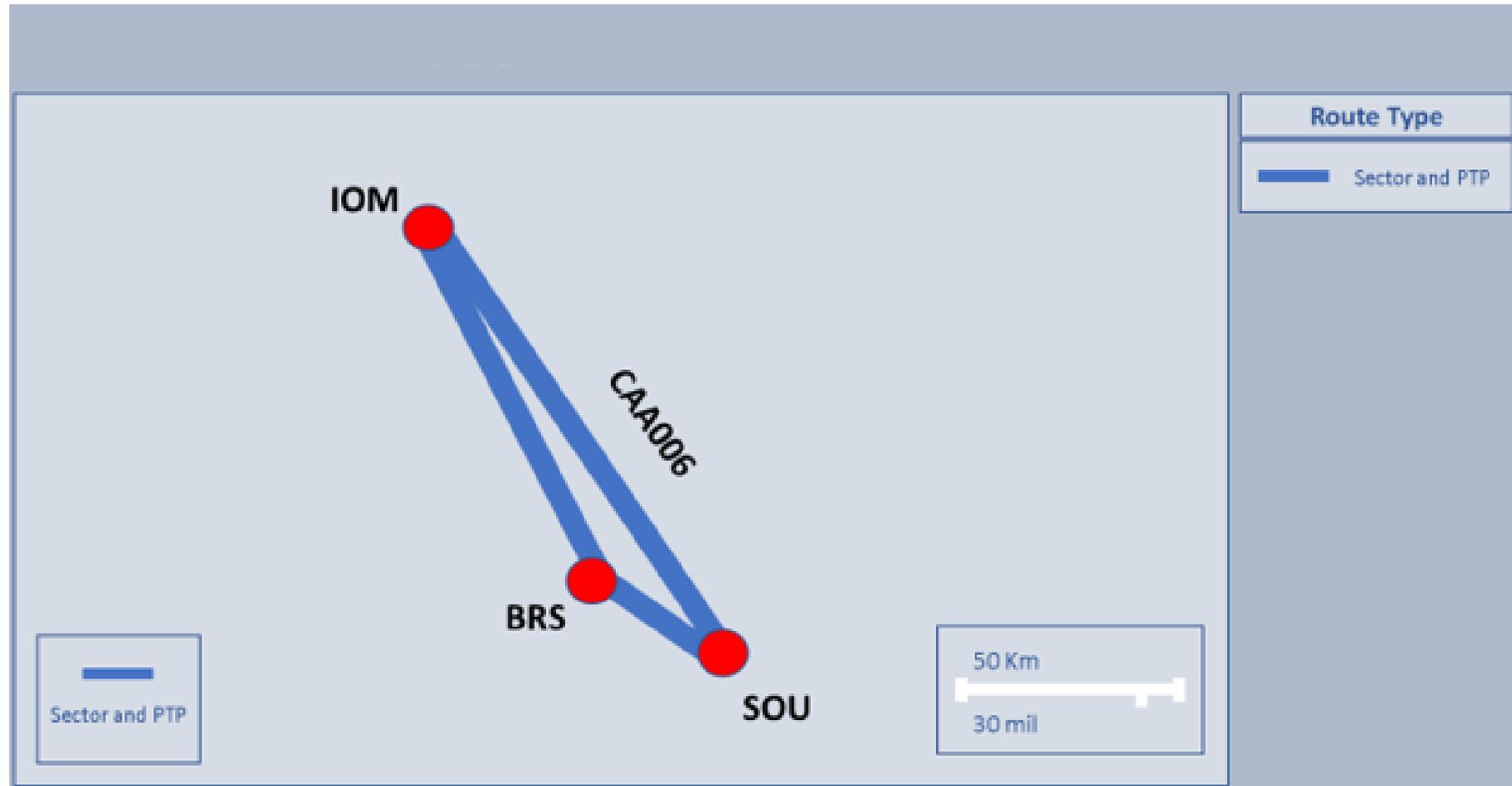
Line numbers and error messages

Sector Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
293	IATA IOM	IATA BRS	0	0	564	CrossVal Through Passenger Difference=-53 CrossVal Passenger Difference=295
294	IATA BRS	IATA SOU	0	0	705	CrossVal Through Passenger Difference=-242 CrossVal Passenger Difference=531
295	IATA SOU	IATA IOM	0	0	743	CrossVal Through Passenger Difference=295 CrossVal Passenger Difference=242
728	IATA IOM	IATA SOU	0	0	6	CrossVal Through Passenger Difference=-53 CrossVal Passenger Difference=295

Point to Point Details

Line Number	Origin	Destination	Freight	Mail	Passengers	Message
12	IATA IOM	IATA BRS	0	0	269	CrossVal Differences raised against Sector.
13	IATA BRS	IATA SOU	0	0	168	CrossVal Differences raised against Sector.
14	IATA SOU	IATA IOM	0	0	501	CrossVal Differences raised against Sector.
30	IATA IOM	IATA SOU	0	0	6	CrossVal Differences raised against Sector.

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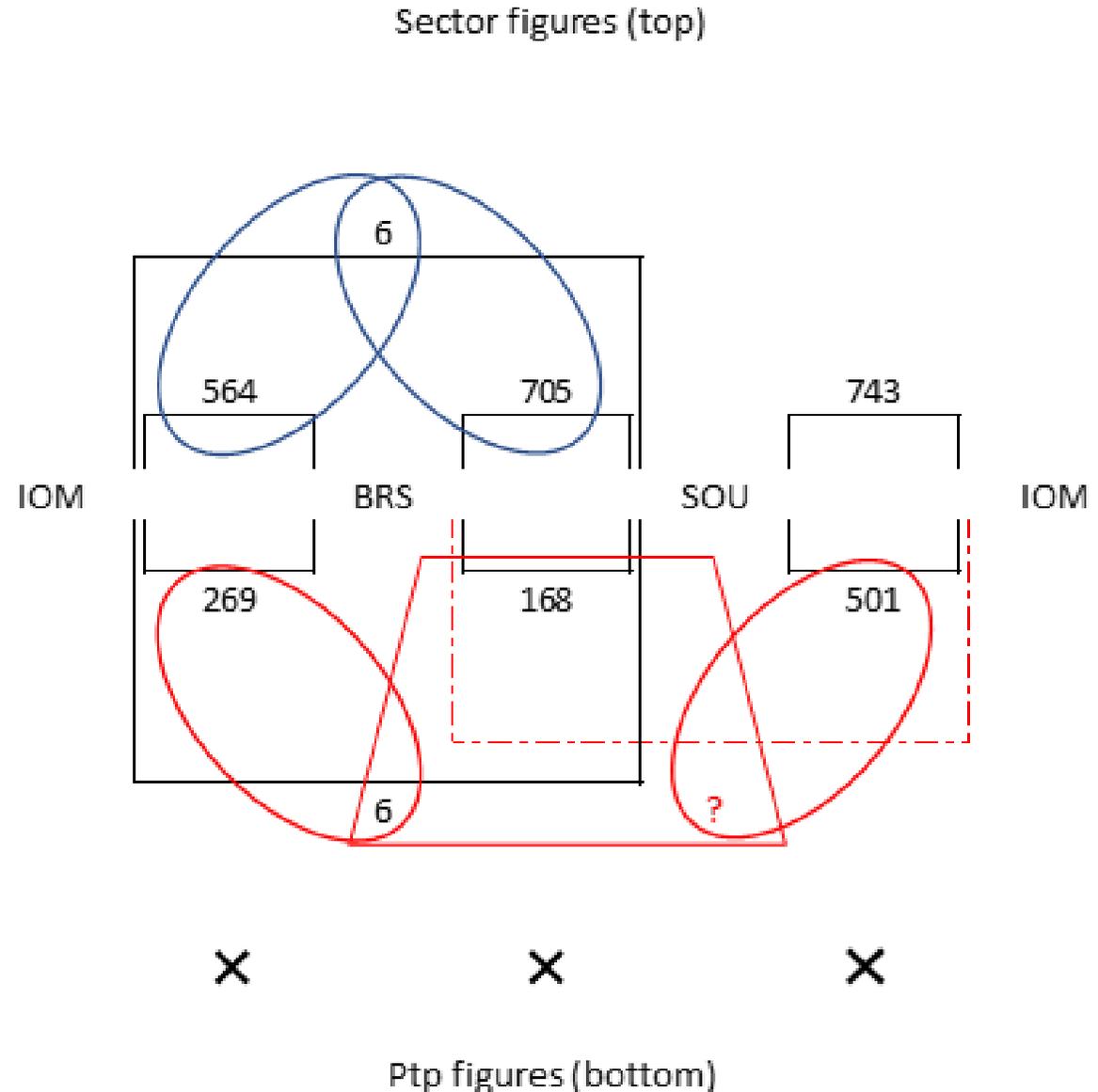
Our Proposed Solution

In this example, to resolve this issue we would propose that the following steps be followed.

- Review all entries on the sector file which relate to the specified (R/ID) CAA006. Assess for diversions i.e. the [Intended To] or [Intended From] fields completed.

- In this example there were no intended airports reported. Note there is a flight which operates IOM - SOU direct as well as the triangular service. If everything is correct on the sector file, the point to point information must be reviewed.

- Calculate the totals to find which line(s) is/are incorrect by creating a diagram:

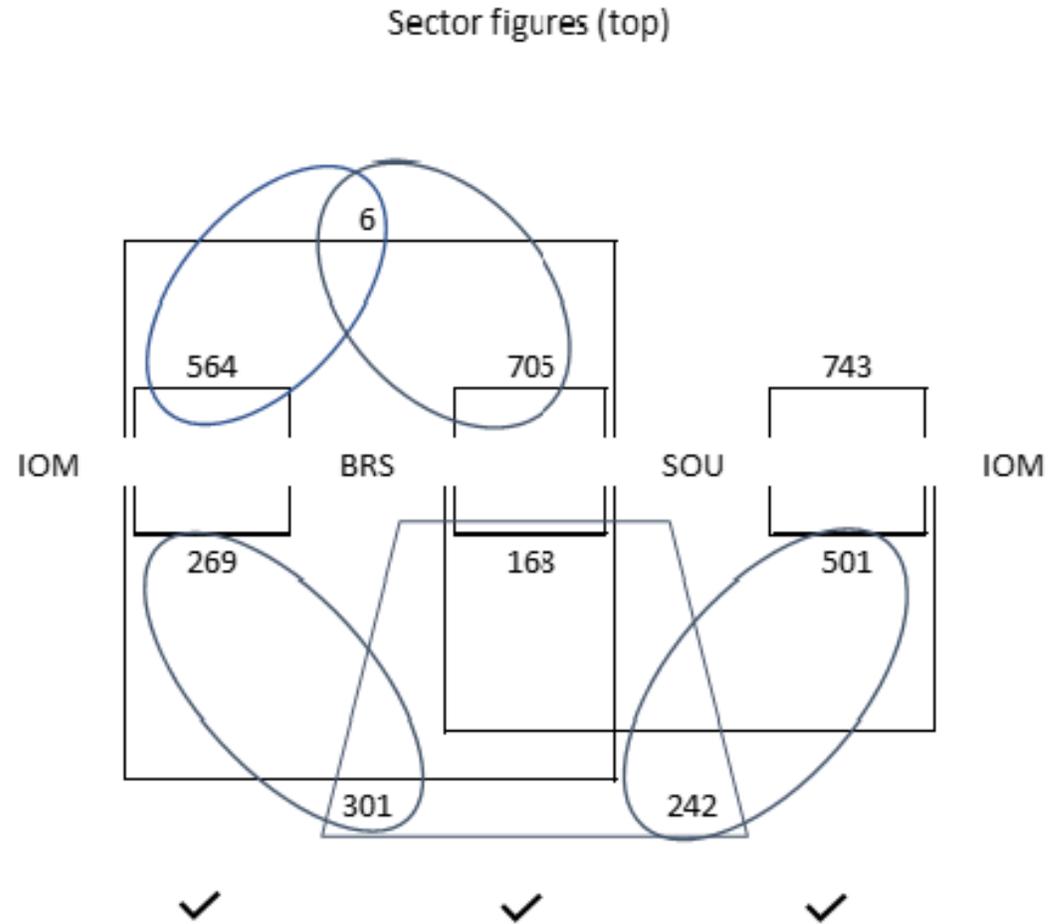Last updated 30/07/2021 – V1

The passenger total of sector lines 293 IOM-BRS and 728 IOM-SOU is 570 (564+6). This does not balance with the total of PTP lines 12 IOM-BRS and 30 IOM-SOU which is 275 (269+6). The difference is 295 passengers, suggest these are added to PTP line 30 IOM – SOU which will now have 301 passengers instead of 6 passengers. This results in the totals of PTP lines 12 and 30 balancing with the totals of sector lines 293 and 728.

The passenger total of sector lines 294 BRS-SOU and 728 IOM-SOU is 711 (705+6). This does not balance with the total of PTP lines 13 BRS-SOU and 30 IOM-SOU which is 469 (168+new figure 301). The difference is 242 passengers, this suggests there is a missing BRS - IOM PTP entry of 242 passengers. Add an extra PTP line for this r/id to show BRS-IOM 242 passengers. This results in the PTP totals balancing with the totals of sector lines 294 and 728.

Sector line 728 SOU-IOM has 743 passengers. This figure should now balance with the total of PTP line 14 SOU-IOM and the newly added PTP line for BRS-IOM (501+242).

Sector figures (top)

Ptp figures (bottom)

Once figures have been amended the correct diagram would look as follows

Sector figures (top)

IOM   BRS   SOU   IOM

564   705   743

6

269   168   501

301   242

Ptp figures (bottom)

Below PTP line 30 and new PTP line 31 shows the changes made to correct the data

Line Number	Origin Airport	Destination Airport	Aircraft Type	Charge Code	Operation	Service	Licence	Route Identifier	Revenue Passengers
12	IOM	BRS	DH8D	1	Scheduled	Passenger	A	CAA006	269
13	BRS	SOU	DH8D	1	Scheduled	Passenger	A	CAA006	168
14	SOU	IOM	DH8D	1	Scheduled	Passenger	A	CAA006	501
30	IOM	SOU	DH8D	1	Scheduled	Passenger	A	CAA006	301
31	BRS	IOM	DH8D	1	Scheduled	Passenger	A	CAA006	242

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Useful Contacts

Additional guidance and supporting documents are available on CAA website: https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/AvStats-project/Accessing-AvStats/

AvStats reporting codes and reference material can be accessed here https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/AvStats-project/How-to-submit-data-using-AvStats/

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