

APPENDIX A

RESPONSES RECEIVED ON DRAFT REPORT: 'OVEN OVERHEAT IN AFT GALLEY'

Reading guide: The fourth and fifth columns provide the literal text of the responses of the parties. The last column contains an explanation from the Dutch Safety Board of the way the responses were processed.

No.	Organisation	Section	Text to be corrected (first ... last word)	Argumentation for response	Adopted?	Dutch Safety Board's response
1	KLM	Summary	The investigation.. condition.	The statement regarding the effect of the meal tray backside is to conclusive. It has not been proven that this led to the increase of temperature of the oven backside electronics in this particular case. It is only conluded based on comments from the manufacturer that this could happen. It should be fomulated less conclusive.	no	The design of the oven as well as investigations into similar oven overheat events by the oven manufacturer has proven that using a meal tray carrier with a mostly closed backside raises the temperatures. There is no reason to conclude that this would be different for the incident oven which also had a meal tray carrier with a mostly closed backside.
2	Collins	Summary	the 3-phase safety device was already defect	Request changing 'defect' to "damaged and inoperable" because there was not a defect of the device, the capilarity tube was damaged making the device inoperable.	yes	The text has been modified (also in Conclusions).
3	KLM	Summary	Disconnection of... overheat event.	Sentence refers to the Oven smoke/fire procedure, not checklist. Checklist is a list to be completed next or at the moment of the event itself. Procedure is what is written in the manuals on how to act in case of. In this case the report refers to the procedure written in our manuals.	yes	Oven smoke/fire checklist has been replaced by Oven smoke/fire procedure throughout the report.
4	KLM	Summary	Disconnection... event.	The statement regarding the fact that the galey power had not been switched off is to conclusive. It should be mentioned that the PU did perform the procedure item regarding the galley power shut-off but got misguided by a galley power light that for unknown reasons did not work at the time of checking the power switch.	no	The oven test confirmed that had the electrical power to the oven been switched off, the oven overheat event would have stopped immediately. Also the melting of the aluminum fan as well as the orange glow inside the oven could not have happened without electrical power to the oven. The investigation of the incident oven as well as the oven test confirmed that electrical power to the oven was not removed during the whole incident. Whether the purser did push the galley power switch or not, it can be concluded with certainty that electrical power was not removed to the oven. Hence, the conclusion as described.
5	KLM	Summary	The circuit... checklist item	See above, cabin crew has procedures on how to handle emergencies, no checklist. Sentence should be "The circuit breaker of the oven was not pulled by the cabin crew as this is not the procedure.	yes	The text has been modified.
6	KLM	Summary	as a... again.	This statement is to conclusive. It is a plausible scenario but should be described with a bit more caution for uncertainty.	no	The second investigation of the incident oven revealed that the electronics of the oven were still working, despite the damage, and capable of switching off electrical power to the oven. If this had not happened, then the third heating element would also have been completely damaged. The investigation revealed that the third heating element was partly damaged. The described scenario in which the oven overheat event stopped is the only one that is plausible, based on the results of the investigation.

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7	KLM	Summary	and had not been incorporated either by the operator	This Service bulletin introduced preventive barriers, but cannot completely prevent a similar incident.	no	Similar incidents with the service bulletin implemented are not known to the manufacturer of the oven. Similar incidents without implementation of the service bulletin have taken place on a regular basis.
8	Collins	Summary	Service Instruction Letter	SIL is a Service Information Letter (not Instruction). This is mentioned several times in the document and would be good to correct. It may also be called Service Letter.	yes	Service Instruction Letter has been replaced by Service Information Letter throughout the report.
9	Collins	Summary	The operator indicated that Service Instruction Letter H0212-25-0164, issued by the oven manufacturer, had not been incorporated in maintenance procedures. This service instruction letter gives additional instructions for the checking of the 3-phase safety device and its replacement every five years.	Request changing "had not been incorporated in maintenance procedures." to "had been incorporated in the Components Maintenance Manual by the manufacture in 2013." The Oven maintenance procedure is described in the CMM (Component Maintenance Manual). The SIL has been incorporated into the applicable manual by the oven manufacturer on Dec 2013	partly	The statement of the operator has not been changed. The text has been modified.
10	Collins	Summary	oven control module and temperature probe from controlling the temperature in the oven.	Request "oven control module" be changed to "Power Control Board" and "temperature probe" be removed from the sentence, because the SB doesn't change that. Oven control module (OCM) is located in the galley, the Oven Control Board is located on the oven and is improved with the SB.	yes	The text has been modified (also in Section 3.1.4).
11	KLM	Summary	The application... smoke.	Halon was also applied into the cavity between the oven and the galley boards, as it seemed that the smoke also came from there and therefore it was concluded that the fire could also be behind/outside the oven.	yes	The text has been modified.
12	KLM	Summary	As a... reached.	This sentence is inappropriate in this context. There was no fire that elevated the temperature. It was the overheating of the coils that elevated the temperature to above the decomposition temperature of halon.	no	In this sentence, the difference in temperatures between an oven fire and heating elements is described. It is referring to a fire in the case it had been present in the incident oven.
13	KLM	Summary	Also,... oven.	Delete sentence: suggestive, not appropriate when investigation is still ongoing.	no	During the investigation, the Dutch Safety Board did alert the operator on certain issues. One of them was the importance of keeping the oven door shut during an overheat event.
15	KLM	General overview	Damage to aircraft/other damage	Table says no damage to aircraft or no other damage. Is that right? Chapter 2.3 does state damage to the aircraft.	yes	The text has been modified.
17	KLM	2.1	Upon... automatically.	The PU did mention in her interview that she did push the galley power button at some time in the process. Ref. P27 remark also.	yes	The text has been modified.
18	KLM	Page 12, line 9	The captain... aft galley.	Reads as if captain deviated from what he was supposed to do, while real reason was that the checklist at that certain point required for more information and assessment before continuation.	yes	The text has been modified.
19	KLM	2.1	Subsequently,...oven fire	Maybe the term 'encouraged' suits better than 'supported'	yes	The text has been modified.
20	KLM	2.1	When the... extinguishers.	Maybe the term 'encouraged' suits better than 'supported'	yes	The text has been modified.
21	KLM	2.1	Before the... aft galley.	Which point on the SFF checklist is being referred to? 'Diversion may be needed' as quoted in the text is point 1. Whole paragraph (line 34 -45) mixes up the sequence of the checklist items, as refers back and forth to checklist items, leaving reader confused about point in time.	yes	The text has been modified.
22	KLM	2.1	The flight crew... destination.	Is this accurate, the flight crew did NOT decide to continue to the intended destination?	yes	The flight crew considered the situation as acceptable to continue the flight towards its destination. For clarity the word 'considering' is replaced by 'the possibility'.

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23	KLM	2.1	Then,... Johannesburg.	"they decided" should be the captain or the flight crew?	yes	The text has been modified.
24	KLM	2.2	After the... breathing difficulties.	Feedback from cabin crew: I was never checked by medical personnel. They did not respond appropriate to my complaints. I mentioned this several times during debriefs and interviews.	partly	The word 'all' has been removed and a footnote has been placed stating that one cabin crew member was never checked by medical personnel. The question of how the operator took care of the personnel after the flight is beyond the scope of the investigation.
25	lenW	2.2	Additionally, twelve passengers also reported experiencing breathing difficulties. However, no supplemental oxygen was provided to them during the flight.	The report is lacking information why no supplemental oxygen was provided to these passengers.	no	The need for supplemental oxygen for the mentioned passengers is beyond the scope of the investigation.
26	lenW	2.3	The oven suffered overheat damage, consisting of a melted aluminum fan and damage of the entire inner side.	In the General Overview on page 9, both the Damage to aircraft and Other damage is stated as "None". Correction needed. Both galley floor and incident oven sustained damage due to heating and failure.	yes	The text has been modified.
27	NTSB	2.4	xx-04-2020	FO last recurring training date missing month	no	The operator did not provide the exact date.
28	KLM	2.7	The CVR... minutes.	The CVR did record but due to the elapsed time, the recordings of the time of the incident were overwritten.	yes	The word 'record' changed to 'contain'.
29	KLM	2.7	The CVR... minutes.	Suggestive: CVR recording time "made available by the operator is only". May suggest KLM limits the recording time where other operators do not.	yes	The text has been modified.
30	KLM	2.8.2	This... stopped.	A plausible scenario but should be stated with more caution and less conclusive as being the definitive way how things worked out.	no	The second investigation of the incident oven revealed that the electronics of the oven were still working, despite the damage, and capable of switching off electrical power to the oven. If this had not happened, then the third heating element would also have been completely damaged. The investigation revealed that the third heating element was partly damaged. The described scenario in which the oven overheat event stopped is the only one that is plausible, based on the results of the investigation.
31	KLM	2.9.1	Because of... in 2022.	A SIRA was not performed by the "maintenance department" but by E&M S&Q and also the operator. This was at the beginning of 2019. At that time, the operator was the predecessor of the SCO, or the Integrated Safety Services Organization (ISSO).	yes	The text has been modified.
32	KLM	2.9.1	Especially... rejected.	Rejecting implementation of a SB is not determined by means of a SIRA. The decision to reject implementation of SB 2000-25-0001 was made by the operator's CAMO, not by the "maintenance department".	yes	The text has been modified.
33	KLM	2.9.1	The maintenance... services.	The maintenance department does not argue regarding operational decisions by the operator. This is responsibility of the operator's CAMO.	yes	The text has been modified.
34	KLM	2.9.2	The oven... the oven.	Incorrect. Only certain Boeing 737 aircraft require cabin crew to pull circuit breaker because no mainpower button is present. See appendix B, step two of over smoke/fire flowchart	yes	The text has been modified.
35	KLM	2.9.2	The removing... discussed.	Suggestive: removing the tray from an incident oven has no impact on a thermal runaway event, this was an operational decision by the crew at that time.	no	The galley floor suffered from heat damage when the insert of the oven was removed and placed on the floor. This is an undesirable situation. The report does not link this action to a thermal runaway.
46	KLM	2.10.1	Boeing 777...	Not a KLM manual. Perhaps good to mention	yes	The text has been modified.
47	KLM	2.10.1	Cooling... liquid.	Cooling equipment with water should NOT be done?	yes	For clarity, equipment has been specified.

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48	KLM	2.10.2	Manufacturers...in SBs.	All SB's are recommended and not mandatory unless prescribed by an AD. This is suggestive as if KLM would knowingly disregard important information from the manufacturer.	no	This sentence only mentions the status of a service bulletin. The following sentence gives reasons why an operator may not implement a service bulletin. If an operator decides not to implement a service bulletin, it does not imply that an operator "knowingly disregards important information".
49	KLM	2.10.2	The manufacturer...bulletin.	See comment 12. All SB's are recommended, it is up to the Operator to decide on implementation (yes/no).	yes	The sentence has been removed.
50	Collins	2.10.3	Add SIL H0212-25-0328	SIL H0212-25-0328 issued in April 2022 as a result of a similar event. SIL reads: Field experience and research show that many errors in the field are caused by lack of maintenance and unincorporated product improvements. Although the likelihood of occurrence is relatively small, regular maintenance and inspection and/or the recommended SB improvements may prevent a potential oven overheat and presence of smoke in or around the oven. Collins Aerospace wants to emphasize the importance of periodic maintenance, regular inspection/replacement of life limited components and incorporation of product improvements per Service Bulletin.	yes	The text has been added.
51	KLM	2.10.4	These failures... board.	Is "burned" PCB accurate? Shopreports indicate only "PMA u/s".	no	Inquiries by the operator to an expert showed that this is one of the causes mentioned.
52	KLM	3.1.1	Based on... cycles.	Suggestive: how to draw a conclusion with an "or" statement and "possibly"? How can the manufacturer determine how the oven was used or is this prior knowledge or only an assumption based on previous information?	no	The oven manufacturer stated that the operator had provided information on the use of the oven.
53	KLM	3.1.1	Based on... between cycles	Assumption. How can the manufacturer conclude that the oven had been operated for several sequential or very long cycles? This event happened at the first service of the flight and therefore could have never been operated for longer than 23 minutes and possibly 10 more minutes (not meals but light bread rolls).	no	The oven manufacturer stated that the operator had provided information on the use of the oven.
54	KLM	3.1.1	The operator... inserts.	Add that the manufacturer also states it is not unusual for operators to purchase oven inserts for other operators. This is not just a statement from KLM.	yes	Text has been added to reflect the manufacturer's standpoint.
55	IenW	3.1.1	There was a need for an extra barrier between the meals and the fan opening. The operator decided to solve this with a perforated backside for the insert.	Missing analysis if the risk of oven malfunction using a perforated backside insert in any way is addressed in either SB 2000-25-0001, SIL H0212-25-0164 or any other handbook for that matter.	no	The operator started using after market meal tray carriers without informing the oven manufacturer. The meal tray carrier with an open back side is specifically designed and certified for this oven. The meal tray carriers with a mostly closed back side are not certified by the oven manufacturer and responsibility for the use of these mostly closed back side carriers lies with the operator.
56	KLM	3.1.1	Some... coil.	It is not 100% sure that the capillary tube was damaged by the/a heating coil. Just mention that it was damaged and that it therefore did not function as intended.	no	Investigation revealed that the capillary tube soldered itself shut by contact with the heating element. This was also consistent with marks on the heating element itself.
57	Collins	3.1.1	date of manufacture of the oven (2006)	Manufacturing date was actually 02 August 2007 (ref page 14 line 39)	yes	The year has been changed.
58	Collins	3.1.1	service instruction letter	Should be Service Information Letter and in this case letters (H0212-25-0164 and H0212-25-0328). Also good to mention that this is reflected in the CMM that prescribes maintenance.	yes	The text has been modified.
59	KLM	3.1.1	Smoke... aluminium fan.	Inaccuracy: melting aluminum does not produce smoke.	yes	The text has been modified.

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60	IenW	3.1.1	Smoke during the overheat event was caused by residual grease on the inside of the oven as well as the melting of the aluminium fan.	Missing analysis of the operator's cleaning schedule and process to address the last time the inside of the oven was cleaned (thoroughly).	no	The text has been modified to describe that the smoke mainly originated from the cavity between the oven and the surrounding galley board. Possible grease on the inside of the oven therefore had a negligible effect on the amount of smoke produced by the overheat event.
61	KLM	3.1.1	The investigation... itself.	"damage consistent" should be "damage. This is consistent..." or equivalent phraseology for clarity. Tekstueel	yes	The text has been modified to specify who observed the absence of damage of the surrounding area.
62	KLM	3.1.2	By memory... checklist.	By memory', not just by memory, crew is trained to take these steps.	no	The purser did not use a paper or electronic flowchart to complete the procedure items. Hence the phrase "by memory".
63	KLM	3.1.2	As... oven.	The PU did mention in her interview that she did push the galley power button at some time in the process.	partly	The sentence has been removed. The investigation showed that electrical power to the failed oven was not removed by actions from the cabin or flight crew
64	KLM	3.1.2	Electrical power...crew.	Proof that the main power switch in the galley was switched on during the incident is very thin.	no	The investigation showed that electrical power to the failed oven was not removed by actions from the cabin or flight crew. Automatic switching of the galley area main power switch is not possible.
65	KLM	3.1.4	The incorporation... oven.	Suggestive: implementation of SB 2000-25-0001 helps to prevent potential failures but does not guarantee prevention of failures by itself.	no	Similar incidents with the service bulletin implemented are not known to the manufacturer of the oven. Similar incidents without implementation of the service bulletin haven taken place on a regular basis.
66	IenW	3.1.4	The non-incorporation of Service Instruction Letter H0212-25-0164 into the operator's maintenance procedures, resulted in not noticing the damage to and the incorrect operation of the 3-phase safety device and resulted in not replacing the device. The non-incorporation of Service Bulletin 2000-25-0001 resulted in certain overheat protection devices and safety features not being installed in the oven. As a result, the overheat condition of the oven could arise.	Ontbrekende analyse: er worden geen consequenties verbonden aan deze subconclusies, terwijl het hier gaat om een verplichting die voortkomt uit EU Verordening 1321/2003, Annex I (Part-M): M.A.302 met bijbehorende AMC en Appendix I bij AMC M.A.302. Dit is de root cause.	no	The Dutch Safety Board has actually ascertained that the relevant Service Information Letter and Service Bulletin have not been incorporated.
67	KLM	3.2.1	The Safety... trace.	Suggestive: there is no evidence of an intermittent illumination of the green internal light of the galley area main power button.	no	The preflight check by the cabin crew did not reveal a malfunction of the green internal light of the galley power button and therefore the green light should have illuminated. During the incident, the green internal light of the galley power button did not illuminate. After the incident, in a hangar the green internal light operated normally. Hence, the intermittent illumination of the green internal light.
68	KLM	Conclusions	The removal... switched off.	Sentence might be a bit suggestive, important detail is that the crew was convinced/preceived that the main power was switched off.	no	The investigation concluded that the galley power switch was in the 'on' position throughout the incident.
69	IenW	Conclusions	The oven overheat event did not cause damage to the surrounding area of the oven. All heat damage remained limited to the inside of the oven.	The conclusion is not entirely consistent with paragraph 2.3 Damage to aircraft: "(...) During the incident, the insert of the oven together with its trays were removed and placed on the galley floor. The galley floor sustained heat damage from the hot insert through melting of the contact surface."	no	The damage to the floor was caused by the crew putting a hot object on the galley floor. The damage to the floor was therefore not caused by the oven overheat event itself.
70	Collins	Conclusions	Service Instruction Letter H0212-25-0164 had	H0212-25-0164 and H0212-25-0328	no	The operator has not stated anything with regard to SIL H0212-25-0328.

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71	Collins	Conclusions		Add that SILs are incorporated into the CMM.	yes	The text has been modified.
72	KLM	Conclusions	During the... powered.	Suggestive: statement regarding pulling of a circuit breaker during an investigation is highly suggestive as at that time the cause of the event was not yet known and pulling a circuit breaker is not necessarily the best course of action.	no	During the investigation, the Dutch Safety Board did alert the operator on this subject.
73	Collins	Document	Change 'faulty' for 'failed oven'	Throughout the document it is referred to the oven as "faulty". In other areas it is just referred to it as "failed oven". Collins would prefer using failed oven instead as faulty can imply that there was something wrong with the oven itself	yes	The text has been modified.
74	KLM	Appendix F	source is not visually confirmed... continue	CPT judged that the source was known and sufficiently quickly under control to avoid moving to steps 10	no	While the checklist may have been consulted at different times throughout the incident, the switching of the utility bus to 'off' was considered by the captain but assessed as being unnecessary while the overheat event was still not under control.