

RESPONSES RECEIVED ON DRAFT REPORT: 'LOSS OF ENGINE POWER AFTER TAKEOFF'

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 response
1	pilot			Ik snap dat het zwaartepunt ligt bij het vinden van de oorzaak en het voorkomen van herhaling. Ik zie enkele verticale profielen van de vlucht, wat interessant is (had ik nog niet gezien), maar wat mijns inziens niet een compleet beeld schetst van het vluchtverloop. Puur toevallig heeft mijn telefoon dit geregistreerd, waarvan bijgevoegd de afbeelding. Translation Dutch Safety Board: <i>I understand that the focus is on finding the cause and preventing recurrence. I see only vertical profiles of the flight, which is interesting (I had not seen this), but what in my opinion does not give a full picture of the flight path. Purely by chance my phone has registered this, of which a picture is attached.</i>	No	The horizontal flight profile provided has been reviewed by the Dutch Safety Board, but has no further relevance for the analysis of the accident.
2	pilot			Daarnaast was er een auto, wiens dashcam de landing heeft gefilmd. En voor de emotionele component heeft één van de para's het hele gebeuren in de cabine gefilmd. Ik weet niet of u dat gezien heeft en het buiten het rapport heeft gehouden als zijnde niet relevant, maar ik wilde het toch even genoemd hebben. dashcam: https://www.nu.nl/287844/video/dashcambeelden-tonen-noodlanding-vliegtuigje-langs-a50.html in de cabine: https://www.youtube.com/watch?v=ldjSBr412h8&t=4s Translation Dutch Safety Board: <i>In addition there was a car, which dashcam filmed the landing. And for the emotional aspect, one of the skydivers has filmed the event in the cabine. I do not know if you have seen this and left this out of the report as being not relevant, but I wanted to mention it anyway. [see website links above]</i>	No	The mentioned video recordings are known to the Dutch Safety Board and have been considered as part of the investigation.
3	Skydive Teuge	2.7	Runway 28	Moet zijn Runway 26 Translation Dutch Safety Board: <i>Must be Runway 26</i>	Yes	
4	Skydive Teuge	2.7	Onvolledig beschreven VFR procedure	Mist de AIP zin: if the altitude of 717 ft AMSL (700 ft AAL) is not yet reached over the visual circuit Marker A, a climbing right hand turn is allowed. Translation Dutch Safety Board: <i>Is missing a sentence from AIP:</i>	Yes	Footnote has been added for completeness.
5	Skydive Teuge	2.8	"At....position"	"high pitch" moet zijn "low pitch". De pitch is zelfs zero Translation Dutch Safety Board: <i>"high pitch" must be "low pitch". Pitch is even zero</i>	Yes	Factual correction.

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6	Skydive Teuge	2.11	Tekst onvolledig. Daardoor wordt niet duidelijk hoe e.e.a. is verlopen en vastgesteld. Translation Dutch Safety Board: <i>Text incomplete. As a result, it is not clear how things were done and established.</i>	De volgende vragen doemen op: Waarom is de computer niet in SRL inop (rode lamp zichtbaar voor de piloot) gegaan (bij het uitvoeren van de test boven 80%); Waarom is tijdens de procedure voor montage de motor niet uitgezet om vast te stellen dat het geconstateerd probleem *) is verholpen? *) de klacht die ten grondslag aan de sensor wissel ligt luidt: Na uitzetten motor te hoge temperatuur welke bovendien te lang hoog blijft. Translation Dutch Safety Board: <i>Why did the computer did not go into SRL inop (red light visible to the pilot) (while performing the test above 80%); Why was during the installation procedure the engine not shut down in order to determine if the identified problem* had been solved? * the complaint underlying the sensor change is: After switching off the engine too high temperature which moreover remains high for too long.</i>	Partly	Text in sections 2.1 and 2.11 has been updated to indicate the actions that were taken, including that an SRL-check has been performed before take-off. Autostart of the engine was possible, indicating that the magnetic pick-up was functioning.
7	Skydive Teuge			Vraag: Waarom staat in de Honeywell Service Information Letter van 11 maart 2022 Rev 0 de TPE 331-12JR van Texas Turbines niet genoemd? In de Service Information Letter van 17 mei 2022 Rev 1 overigens wel. Translation Dutch Safety Board: <i>Question: Why does the Honeywell Service Information Letter of 11 March 2022 Rev 0 not list the TPE 331-12JR of Texas Turbines? In the Service Information Letter of 17 May 2022 Rev 1 it is.</i>	n/a	It is understood that the list of applicable units (engines) was accidentally incomplete. The engine manufacturer corrected this by issuing a revision of the Service Information Letter.
8	Honeywell	Summary	head assembly in the governor housing, [ADD] allowing	Add "likely displacing the metering valve aft and" Reason: Slowing the RPM of the ball head assembly and flyweights would cause the metering valve to move forward, increasing the oil flow to the propeller and thus flatten the blades.	Yes	
9	Honeywell	2.1	off this task after [ADD] he verified that the replacement was done correctly.	Add "believing" Reason: As written, the statement is not factually correct as the maintenance task was not completed.	Partly	Sentence has been amended to 'because he was convinced'.
10	Honeywell	2.1	...a speed below which lift could [ADD] be	...a speed below which lift could <u>not</u> be omission	Yes	Sentence has been amended.
11	Honeywell	2.5.2	engine/propeller speed is maintained by a propeller governor.	This sentence needs a qualifier to be correct, i.e. during propeller governing mode. Beta Mode (ground) = engine/propeller speed controlled by fuel control unit (FCU) underspeed governor. Propeller Governing Mode (flight) = engine/propeller speed is maintained by a propeller governor.	Yes	The factual description of the functioning of the system has been refined.
12	Honeywell	2.5.2	The desired RPM (within a certain range) is set by the pilot using the RPM	This sentence needs a qualifier to be correct. See previous comment. <u>During propeller governing mode of operation</u> , the desired RPM...	Yes	
13	Honeywell	2.5.2	To maintain the set RPM, the propeller governor changes the propeller pitch (or propeller blade angle), thereby changing its load to increase or decrease RPM.	To make this sentence more correct, suggest changing to: To maintain equilibrium between the commanded Power Lever setting and RPM (Speed Lever setting), the propeller governor makes minor changes the propeller pitch (or propeller blade angle), thereby modulating its load to increase or decrease RPM.	Yes	The factual description of the functioning of the system has been refined.
14	Honeywell	2.5.2	Full paragraph	You may consider moving this paragraph to earlier in the section 2.5.2 to provide the definition of Beta and Propeller Governing modes.	Yes	The factual description of the functioning of the system has been refined.
15	Honeywell	2.5.2	range (between 71%-97% RPM)	I cannot comment to the correctness of these values and defer to the operator or STC holder. This is defined by the Airframe Flight Manual (AFM).	Yes	Values have been checked and updated.

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16	Honeywell	2.5.2	and [ADD] governing mode or flight range (between 94%-100%	and <u>Propeller</u> governing mode or flight range (between <u>96%</u> -100% Omission and corrected value IAW Maintenance Manual Engine Operating Limitations.	Yes	Factual correction.
17	Honeywell	2.5.2	The engine of the accident aircraft was operating in the [ADD] governing mode when the	The engine of the accident aircraft was operating in the <u>propeller</u> governing mode when the Omission	Yes	
18	Honeywell	2.5.2	In the [ADD] governing mode, with the power lever in the flight range	In the <u>propeller</u> governing mode, Omission	Yes	
19	Honeywell	2.5.2	The propeller governor is mounted at the rear of the gearbox. During the [ADD] governing mode	The propeller governor is mounted at the rear of the gearbox. During the <u>propeller</u> governing mode Omission	Yes	
20	Honeywell	2.5.2	When RPM changes, the flyweights, and subsequently the ball head assembly, change position and move the sliding metering valve.	Suggest changing to: When RPM changes, the flyweights, a component of the ball head assembly, change position and move the sliding metering valve. Clarify that the flyweights are component of the ball head assembly	Yes	The factual description of the functioning of the system has been refined.
21	Honeywell	3.2	It is plausible that during normal operation of the governor <u>in an over-speed condition</u> , one or more larger debris particles temporarily got stuck between the ball head and the housing. <u>During an over-speed condition, when a shift of the ball head assembly occurred</u> , and thereby also a shift of the sliding metering valve, oil was drained from the propeller dome. This increased propeller pitch, increasing load and reducing propeller RPM. <u>When the propeller was "on-speed" again, debris prevented the ball head assembly and thereby the sliding metering valve to slide back in the on-speed position and stop the oil release from the propeller dome</u> (and prevented restoring a balanced on-speed condition).	Discussion: The ballhead assembly is spring loaded against the housing. During normal operation, the ballhead assembly does not move axially, it only rotates proportional to engine RPM. The flyweights attached to the ballhead assembly sense the rotational speed and adjust the metering valve position to control the oil delivered to the propeller. Once present, the debris likely mechanically/physically displaced the ballhead assembly and interfered with its position. The position of the flyweights attached to the ballhead assembly (on-speed, under or over-speed) were not likely a factor. Rather it was the physical displacement (shift) of the ballhead assembly and the resulting aft displacement of the metering valve that released the oil pressure from the propeller dome.	Yes	The text has been further refined.
22	Honeywell	3.3	It is possible that the voltage check could have shown that the measured value did not correspond with the value mentioned in the procedure. However, steps five to eight of the procedure, which included the voltage check, were not performed...	Recommend including discussion related to 14 CFR Part 43 or EASA equivalent: Given that the FAA approved maintenance instructions were not completed in their entirety as required by § 43.13 by mistake or otherwise, the return to service approval in accordance with § 43.9 was not valid. As a result, the aircraft was not in an airworthy condition upon commencement of the accident flight.	No	The comment made is the conclusion of the engine manufacturer. The purpose of the safety investigations by the Dutch Safety Board is to investigate occurrences and draw lessons to prevent occurrences from reoccurring. The investigation does not focus in hindsight on whether the aircraft was in an airworthy condition or not. The conclusion presented in the report is the conclusion of the Dutch Safety Board.
23	Honeywell	Appendix D	Image 2 below illustrates the oil flow path during [ADD] Governing mode at takeoff.	during <u>Propeller</u> Governing mode... Omission	Yes	
24	Hartzell	2.8	"...all four propeller blades were found in a high pitch position."	Based on photos your provided me (see below), it appears to me the blades are in a relatively low pitch position? Additionally in section 2.10.1 you state the blades were found in the start lock position which somewhat contradicts "high pitch?"	Yes	Factual correction.

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25	Ministry of Infrastructure and Water Management	2.4 e.v.	Aanvulling gewenst op het gebied van de bevindingen over het functioneren van de onderhoudsorganisatie(s).	<p>Er ontbreekt een beschrijving onder welk onderhoudsregime (Part-M?) het onderhoud heeft plaatsgevonden, wie de verantwoordelijke CAMO/CAO was die het onderhoud heeft aangestuurd en welke Part-145 organisatie het werk heeft uitgevoerd. Er wordt alleen ingegaan op de personen die het onderhoud hebben uitgevoerd, terwijl er waarschijnlijk een erkenning is afgegeven door de ILT voor de organisatie(s) die verantwoordelijk is(zijn) voor het werk.</p> <p>Het vrijgeven van een onderhoudstaak zonder dat alle (noodzakelijke) stappen zijn doorlopen zou ook moeten worden opgepakt door het erkende bedrijf om herhaling te voorkomen (veiligheidsmanagement).</p> <p>Door niet in te gaan op de rol van het erkende onderhoudsbedrijf blijft onduidelijk wat de situatie is t.a.v. het leervermogen in deze schakel van de onderhoudsketen. Om deze onduidelijkheid weg te nemen zou de OVV moeten kijken naar de bijbehorende acties en genomen maatregelen, en daarvan zijn bevindingen, analyse, etc. in het conceptrapport verwerken.</p> <p>Translation Dutch Safety Board: <i>The description under which maintenance regime (Part-M?) the maintenance took place is missing, who the responsible CAMO/CAO was that managed the maintenance and which Part-145 organisation performed the work. It only addresses the persons that performed the maintenance, while there probably has been an approval issued by ILT (Human Environment and Transport Inspectorate) for the organisation(s) that is/are responsible for the work.</i> <i>The release of a maintenance task without having completed all (necessary) steps, should also be picked up by the approved organisation to prevent recurrence (safety management).</i> <i>By not addressing the role of the approved maintenance organisation, it remains unclear what the situation is with regard to the learning ability in this link of the maintenance chain. To remove this lack of clarity, the Dutch Safety Board should look at the associated actions and measures taken, and include the findings, analysis et cetera in the draft report.</i></p>	Partly	The maintenance organisation involved was an approved Part-145 organisation. The organisation has drawn safety lessons following the occurrence. These have been added to Chapter 5 Safety Actions.
26	Woodward	3.2	<p>"It is plausible that during normal operation of the governor with a damaged ball head and damaged magnetic pickup in an over-speed condition, one or more larger debris particles temporarily got became lodged stuck between the ball head and the housing and shifted the During an over-speed condition, when a shift of the ball head assembly occurred, and thereby also when a shift of the sliding metering valve occurred, draining oil drained from the propeller dome. Draining oil from the propeller dome increased propeller pitch, increasing load and reducing propeller RPM. When the propeller was "on-speed" again, debris prevented the ball head assembly and thereby the sliding metering valve to slide back in the on-speed position and stop the oil release from the propeller dome.</p>		Yes	The text has been further refined.
27	AMN	Summary	Erratic and high egt readings reported <u>on ground with engine off</u>		Yes	Underlined text has been added.
28	AMN	Summary	Mechanic + pilot did a static engine test run <u>+ SRL check</u>	<p>Boven 80% springt EGT omhoog</p> <p>Translation Dutch Safety Board: <i>Above 80% EGT jumps up</i></p>	Yes	Underlined text has been added.

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29	AMN	Summary	Pickup was installed incorrectly	was installed acc. to maintenance manual.	Yes	Text has been refined.
30	AMN	Summary	and turned in the governor assembly between gear tooth's <u>which is not noticeable due to normal auto-start & SRL check,</u>	Op moment van proefdraaien onbekend dat dit mogelijk is en door normale start ook niet opgevallen. Translation Dutch Safety Board: <i>At the time of test run of the engine it was unknown that this is possible and because of the normal start also not noticed.</i>	Yes	These aspects have been added to the text.
31	AMN	2.1	pilot started engine with AutoStart <u>Which needs the magnetic pickup.</u>		Yes	Aspect has been added in analysis part of the report.
32	AMN	2.1	Mechanic was on board and checked EGT <u>± performed SRL check</u>		Yes	Detail of SRL check has been added.
33	AMN	2.1	And correct illumination of SRL light <u>Which should, and did not illuminate during entire test.</u>		Yes	Text has been refined.
34	AMN	2.1	Pilot taxied to pick up para's and took off from runway	no before take-off runup mentioned if this is applicable.	No	The checklist that has been used does not refer to a run up.
35	AMN	2.4	Licensed engineer held a valid part 66.	Aircraft is Part 145 released, statement onder aan pagine omschrijft regelgeving voor part 66 Translation Dutch Safety Board: <i>Aircraft is Part 145 released, statement at the bottom of the page describes the regulation for Part 66</i>	Yes	Footnote has been amended to reflect this.
36	AMN	2.5 and 2.9	<u>G600 is panel mounted not on steering column</u>		Yes	Factual correction.
37	AMN	2.5	Changing its load to in/decrease RPM <u>and torque</u>		Partly	This section has been rewritten.
38	AMN	2.5	Prop gov. is composed of integral pump, ...	There is no pump installed in governor, all oil pressure comes from gearbox mounted oil pump.	Yes	Factual correction.
39	AMN	2.5	SRL condition system functional above 80%	This can and has been verified by the SRL check	Yes	Added reference to SRL check.
40	AMN	2.7	Runway 28	Runway 26	Yes	Factual correction.
41	AMN	2.8	Prop blades found in high pitch	blades where on locks	Yes	Factual correction.
42	AMN	2.11		In MM punt 1 tot 8 punten zijn niet aansluitend in MM, punt 1 tot 4 volgende pagina is een afbeelding daar opvolgende pagina heeft punt 5 tot 8. Translation Dutch Safety Board <i>In Maintenance Manual step 1 to 8 steps are not aligned in MM, steps 1 to 4 next page is an illustration next page contains steps 5 to 8.</i>	Yes	Text has been refined.
43	AMN	2.11	On ground SRL test was performed <u>and was found serviceable</u>		Yes	
44	AMN	2.11	in this position the pick-up comes in contact with gear	which was not mentioned in manual that this is possible	Partly	This section refers to the published Safety Alert. Text has been amended to better align with the text of the alert.

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45	AMN	3.2	pick-up was turned in between 2 gear teeth	engine started in auto-start & SRL check was ok, pickup might have been critical but not fully between teeth.	Partly	Text has been refined.
46	AMN	3.3	Delicate, carefully job <u>which is hard due to small working space it is difficult to hold sensor in place and torque lock nut</u>		Yes	Added the opinion of the maintenance organisation.
47	AMN	3.3	Voltage check could have shown	Unlikely, due to smaller gap increases magnetic flux and therefore a higher voltage which increases signal to SRL. With too low of a voltage auto-start would not have worked. Manual describes a to low voltage and what to do and no procedures for a to high voltage. If voltage was found to be low with a check the sensor would have been turned in further.	No	The comment of the maintenance organisation is noted. This aspect has not been part of the safety investigation, therefore the Safety Board cannot draw any conclusion on this aspect.
48	AMN	n/a		Extra information: At the maintenance facility there has been damage found on the wire of the original Magnetic pickup which has been replaced.	No	This has been reviewed. The investigation did not focus on the defect of the magnetic pick-up that was replaced before the accident flight.