RESPONSES RECEIVED ON DRAFT REPORT: 'FLY-AWAY AFTER COMPASS MALFUNCTION'

Reading guide: The fourth and fifth columns provide the literal text of the response of the parties. The last column contains an explanation from the Dutch Safety Board of the processing method.

* N.B: Review comments received in Dutch were translated into English. If there is a difference in interpretation between the Dutch and English versions, the Dutch text will prevail.

No	Organisation	Section	Text to be corrected (first … last word) *	Argumentation for response *	Adopted?	Dutch Safety Board response
1	National Police	Summary	*During flight preparation of the incident flight,…..*	Zoals het nu verwoord is lijkt het alsof het gaat om de weergave op de controller van een vlucht voor de ongevalsvlucht. Denk dat bedoeld wordt de betreffende ongevalsvlucht. Translation Dutch Safety Board: *As it is worded now, it seems like the sentence is about the record on the controller of a flight before the incident flight. I think the incident flight in question is meant here.*	Yes	Concerns a clarification. The text suggestion was adopted.
2	National Police	Summary	TOEVOEGEN. Zie argumentatie. Translation Dutch Safety Board: *Add. See argumentation.*	Deze bevinding komt in de conclusie en aanbevelingen niet terug terwijl dit een wezenlijke bevinding betreft. De discrepantie tussen de verschillende schermen van de DJI Go 4 app is van groot belang bij het onderkennen van een kompas error. Zie ook blz 32 van het rapport, regel 26 en verder waar dit aspect wel benoemd staat. Translation Dutch Safety Board: *This finding is not reflected in the conclusions and recommendations while it is a substantial finding. The discrepancy between the different screens of the DJI Go 4 app is of great importance in recognising a compass error. See also page 32 of the report, line 26 onwards, where the aspect is mentioned.*	Partly	This comment is also mentioned by the party in question in the relevant chapter and was partly adopted there (see no. 12).
3	National Police	Recommendations	TOEVOEGEN. Zie argumentatie. Translation Dutch Safety Board: *Add. See argumentation.*	Toe te voegen de aanbeveling aan DJI dat de software zodanig consistent dient te zijn dat kompas fouten in het hoofdscherm aan de bedienaar worden weergegeven zonder dat deze in "onderwater" schermen behoefte te zoeken naar kompas errors Translation Dutch Safety Board: *Add a recommendation, addressed to DJI, that they should ensure that compass errors are shown to the operator on the main screen [of the DJI Go 4 app], without the need to look for compass errors in underlying menu's.*	No	The Dutch Safety Board gives a recommendation to DJI to review the user manual and safety guidelines based on the lessons learned from this incident. In particular, attention should be given to the calibration of the compass. The Safety Board leaves it up to the manufacturer of the UAS to decide whether to make changes to the software or to make a particular course of action more explicit in e.g. the user manual.

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4	National Police	2	At that time the Dutch Safety Board had no active policy in actively investigating accidents and incidents with UA's.	Op het moment van het ongeval had de OVV de policy dat UAV ongevallen / incidenten niet actief werden onderzocht. Door de politie is voor dit ongeval een aantal malen melding gedaan van een ongeval / incident waarbij door OVV werd aangegeven dat dit niet nodig was om dit te melden. Translation Dutch Safety Board: *At the time of the accident, the Dutch Safety Board had the policy of not actively investigating accidents/incidents. A number of accident/incident notifications were made by the police prior to the accident in question, where it was indicated by the Dutch Safety Board that there was no need to notify.*	No	An obligation to notify the safety investigation authority of accidents and serious incidents stems from both national and international regulations. This obligation to notify does not distinguish between manned and unmanned aviation. As it may not be familiar to users of unmanned aircraft (systems), the obligation to notify is explained in more detail in Chapter 1 of the report.
5	National Police	2	The location was chosen by the flight crew because it was a police owned location surrounded with fence and not accessible to public. Furthermore because of its proximity to the area of operation, while offering sufficient space for taking off and landing.	Uit de tekst blijkt niet dat het een afgesloten eigen terrein van de politie betreft omsloten door hekken. Dit is een afgesloten terrein afgesloten voor publiek. Zoals nu omschreven staat wordt benoemd dat het terrein het Zuiderpark was omgeven door bomen. Dit is feitelijk niet juist en een andere weergave dan de actuele situatie Translation Dutch Safety Board: *From the text it is not clear that this is a police owned private area, enclosed by fences. This area is closed to the public. As currently described, it is stated that the area in the Zuiderpark is enclosed by trees. This is factually incorrect and a different representation of the actual situation.*	Yes	Concerns a clarification. The Section has been adjusted on a number of points.
6	National Police	2	Figure 3 - A general example of a Unmanned Aircraft System, its components and subsystems.	Het figuur 3 geeft een algemeen beeld van een UA systeem. Het komt echter over alsof dit het gebruikte systeem is. Dit is niet het geval. In regel 1 staat benoemd dat de volgende secties de verschillende gebruikte en hardware en software beschrijven. Dit is tegenstrijdig met fig. 3 wat eronder staat afgebeeld. Optie is of juiste figuur af te beelden of om de tekst aan te passen naar de juiste beschrijving. Translation Dutch Safety Board: *Figure 3 gives a general overview of a UA system. The text suggests that this was the system that was used. This is not the case. Line 1 states that the following sections describe the various software and hardware used. This is contradictory to Figure 3, which is shown below. An option is to either correct the figure or adjust the text to the correct description.*	Partly	The caption and Section above the figure have been modified in part to clarify that this is a general representation of the components in a UA. From Section 2.3.1, the components of the UA in question are specifically addressed.
7	National Police	2.3.1.	Through the two sticks of the master controller, ….	De actuele situatie was dat gebruik werd gemaakt van 2 controllers, 1 master controller om het toestel te bedienen en 1 slave controller om de payload te bedienen. Zoals nu beschreven is niet de actuele situatie maar slechts een deel daarvan. Optie is of de algemene situatie te beschrijven of de actuele situatie. Translation Dutch Safety Board: *The current situation was that 2 controllers were used: 1 master controller and 1 slave controller to control the payoad. The current text only partially describes the actual situation. Either describe the general situation or the actual situation.*	Yes	Concerns a clarification. Added to the Section that a secondary controller was used to control the payload.
8	National Police	2.4.3	The use ….. this flight.	Er was voorafgaand aan het gebruik afstemming en overleg geweest met FOM over het gebruik van deze payload. Deze payload was in de weken daarvoor al meerdere malen gebruikt zonder technische problemen. Zoals nu staat beschreven is er geen consultatie geweest met de FOM terwijl dit wel heeft plaats gevonden. Translation Dutch Safety Board: *There had been coordination and consultation with the FOM prior to the use of this payload. This payload had been used several times in the weeks before, without technical problems. The text currently describes that there had been no consultation with the FOM, while in fact this had taken place.*	Yes	Concerns a factual correction/clarification. The last sentence of the Section is modified.

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9	National Police	2.6.2	TOEVOEGEN: de beschrijving van de weergave van de beelden van de vlucht weergegeven op de monitor van de RC Translation Dutch Safety Board: *Add: a description of the flight record as shown on the monitor of the RC.*	De data van de RC is niet gebruikt. Uit de weergave van de beelden van de vlucht, afgespeeld via de RC, blijkt echter dat het toestel op een eerder moment niet bestuurbaar was. Hieruit blijkt dat het toestel direct na het opstijgen al niet meer reageerde in plaats van op het moment dat het toestel boven de bomenrij vloog. Translation Dutch Safety Board: *The data from the RC was not used. However, the playback of the recording of the flight, played through the RC, shows that the aircraft was not controllable at an earlier time. This shows that the aircraft was already unresponsive immediately after take-off, rather than at the time the aircraft was flying above the line of trees.*	Partly	The controller's recordings were examined but not used further in the analysis because these recordings show the same flight path as the analysed data. For completeness, this is now also mentioned in the report.
10	National Police	3.1.1	TOEVOEGEN: zie argumentatie Translation Dutch Safety Board: *Add. See argumentation.*	Zie de opmerking hierboven. Op de rechter afbeelding van Figuur 7 wordt weergegeven dat de Loss of connection voorbij het RTH punt ligt terwijl de drone niet meer reageerde net na take off. Dit is een verschil in zowel de opname het scherm van de RC, de weergave zoals nu beschreven staat in het rapport en de beleving van de vliegers. Uit de RC scherm beelden blijkt dat de stickinput niet overeenkomt met de draaiing die het toestel heeft ingezet kort na de take off. Translation Dutch Safety Board: *See the comment above. The right image of Figure 7 shows that the loss of connection is beyond the RTH point, while the drone was no longer responding just after take-off. This is a difference in both the recording the RC screen, the current description in the report and the pilots' perception. The RC screen recording shows that the stick input does not match the rotation the aircraft initiated shortly after take-off.*	Partly	In this report, the Dutch Safety Board distinguishes between "loss of control" and "loss of connection". Loss of control means that control of the unmanned aircraft is not possible, or only possible to a limited extent. For example, because an engine stops working or, as is the case here, control of the aircraft is no longer possible due to a system failure. Loss of connection refers to the loss of connection between the aircraft and the controller. The definitions used are given in Chapter 1. To indicate this difference also in Figure 7, the point of loss of control has been added.
11	National Police	3.1.3	Wijzigen in The flight time after starting the engines of the first 30 seconds….. Translation Dutch Safety Board: *Change to "The flight time after starting the engines of the first 30 seconds…."*	Zoals het nu beschreven staat lijkt het alsof de vlucht al 30 seconden geduurd heeft. Het toestel heeft echter een aantal seconden aangestaan met draaiende motoren waarna het in take off gegaan is. Het toestel is enkele seconden na take off de verbinding verloren (blijkt uit de schermopname van de RC) De RTH werd daarna geïnitieerd. Het daadwerkelijk verlies van controle van het toestel was boven de take-off locatie toen het toestel begon te draaien en wegvloog zonder commando daarvoor en het verlies van controle lag niet niet boven / na de bomenrij. Zie ook regel 12 blz 48 van B.1 waar beschreven staat dat "immediatly after take the UA began to drift and could not respond well to the pilot's input". Translation Dutch Safety Board: *As it is described now, it looks like the flight has already lasted 30 seconds. However, the aircraft was on for a few seconds with engines running after which it went into take-off. The aircraft lost connection a few seconds after take-off (evident from the RC's screen recording). The RTH was then initiated. The actual loss of control of the aircraft was above the take-off location when the aircraft started turning and flew away without a command to do so, and the loss of control was not above/after the tree line. See also line 12 page 48 of B.1 where it is described that "immediately after take-off the UA began to drift and could not respond well to the pilot's input".*	Partly	The text has been amended to clarify that it refers to the first 30 seconds of flight. Furthermore, it concerns a partial repetition of the previous point. Analysis by the Dutch Safety Board shows, entirely in line with NLR's analysis, that the loss of control occurred while doing the post take-off checks. The report further mentions that the loss of connection between the aircraft and the controller occurred after about 30 seconds. The aircraft was then flying near the line of trees.

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12	National Police	3.1.5	Before the …… the UAS.	In het NLR rapport 2021/344 blz 7 en 8 wordt beschreven de statusweergave van het Sensor State scherm van de DJI GO4 app. Dit is een zogeheten onderwaterscherm waarin dieper kan worden gekeken naar de status van diverse functies. Uit het NLR onderzoek is gebleken dat weergave van het Sensor State aanduiding “geel” niet wordt weergegeven in de algemene pagina welke de vlieger gebruikt bij het opstijgen nl het hoofdscherm van de DJI GO4 app. Het hoofdscherm geeft geen waarschuwing terwijl deze wel is vastgesteld door het systeem. De vlieger krijgt niet de waarschuwing gepresenteerd omtrent deze interferentie. Zoals het nu in regel 26 27 beschreven staat krijgt de vlieger een “yellow interference level” gepresenteerd terwijl dit feitelijk niet zo is. Dit interference level kan pas gepresenteerd worden als er dieper de menu’s in gegaan wordt en wordt niet gepresenteerd in het hoofdmenu wat de vlieger ziet tbv de vlucht. Translation Dutch Safety Board: *NLR report 2021/344 pages 7 and 8 describe the status report of the Sensor State screen of the DJI GO4 app. This is a so-called “underwater” screen [underlying menu], in which a deeper look can be taken at the status of various functions. The NLR investigation showed that the Sensor State indication “yellow” is not displayed in the general page which the pilot uses when taking off, which is the main screen of the DJI GO4 app. The main screen does not display the warning even though it has been identified by the system. The pilot is not presented with a warning regarding this interference. As it is now described in rules 26 27, the pilot is presented with a “yellow interference level” when in fact this is not the case. This interference level can only be presented when going deeper into the menus and is not presented in the main menu that the pilot sees for the flight.*	Yes	The text of the report refers to the status in the (underlying) sensor state screen. As this is an important aspect, the text was amended to clarify this. The relevant Section in 3.1.5 was updated.
13	National Police	5	TOEVOEGEN: De conclusie van de vaststelling (van blz 5) dat de software de kompas fouten niet weergeeft op het RC scherm terwijl deze fouten er wel waren als er verder in het menu gekeken wordt. Translation Dutch Safety Board: *Add: the observation (as described on page 5) that the software did not display the compass errors on the RC’s main screen, while underlying menu’s did in fact show errors.*	Toe te voegen; de aanbeveling aan DJI dat de software zodanig consistent dient te zijn dat kompas / IMU fouten in het hoofdscherm aan de bedienaar moeten worden weergegeven. Dit zonder dat de bedienaar in “onderwater” schermen behoeft te “zoeken” naar kompas / IMU errors. Dit is een wezenlijke vaststelling van een fout die wel gesignaleerd door het systeem maar niet werd weergegeven op het hoofdscherm ten behoeve van de vlucht. Translation Dutch Safety Board: *To be added; a recommendation to DJI to make sure that the software is consistent, such that compass / IMU errors are displayed in the main screen that is presented to the pilot. This is to prevent the pilot from having to look for compass / IMU errors in underlying menu’s. This is a substantial finding of a fault that was detected by the system but not display on the main screen.*	Partly	The finding (the difference in status display) has been clarified in the report (see no. 12) and also included in the conclusion of the relevant Section and the report. The suggestion to make a recommendation is a repetition of a point made earlier (see no. 3).
14	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate		There is still connection between the RC and the UA, but the UA does not respond to what the pilot commands through the RC, or responds in unexpected ways (behaviour inconsistent with input).	… there may still be a connection… lijkt passender.	Yes	Concerns a clarification. Suggestion was adopted. The definition of ‘loss of connection’ was also modified.

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15	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate		Fly-away is a condition in which the UA maintains horizontal velocity, e.g. under the influence of wind and/or as a result of system failure(s), while the pilot (through the RC) has no control over the UA's movement.	Een fly away kan ook in het verticale vlak plaatsvinden. Translation Dutch Safety Board: *A fly-away can also take place in the vertical plane.*	Yes	Concerns a clarification. Text has been amended in line with response.
16	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate		Algemene opmerking Translation Dutch Safety Board: *General comment*	Zie AMC1 UAS.OPEN.020(5)(c), UAS.OPEN.030(3) en UAS.OPEN.040(4)(c),(d) voor de open categorie. In de categorie specifiek missen aanwijzingen betreffende kennis en verantwoordelijkheden van operator en piloot gerelateerd aan payload en interferentie. Translation Dutch Safety Board: *See AMC1 UAS.OPEN.020(5)(c), UAS.OPEN.030(3) and UAS.OPEN.040(4)(c),(d) for the open category. In the category specific, guidance on operator and pilot knowledge and responsibilities related to payload and interference is missing.*	No	Does not concern proposal for factual correction. The incident in question occurred while operating under national rules for flying with unmanned aircraft.
17	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	2.3.3	Fail safe mode, The inspire, ….. RTH mode.	In lijn met de gerefereerde User manual, bestaat de RTH functie uit 3 verschillende RTH modes. Deze 3 verschillende RTH worden nu onder 1 noemer beschreven terwijl dit niet de feitelijke situatie is. Ref usermanual page 15/16. Aangezien hoofdstuk 2 de feitelijke informatie weergeeft dienen deze varianten onder de RTH te worden weer gegeven aangezien deze alle 3 relevant zijn voor het voorval en de faalmodus. Translation Dutch Safety Board: *In line with the referenced User manual, the RTH function consists of 3 different RTH modes. These 3 different RTH are now described under 1 heading while this is not the actual situation. Ref user manual page 15/16. As Chapter 2 represents the factual information, these variants should be represented under the RTH as all 3 are relevant to the event and failure mode.*	Partly	The Safety Board is aware that the Inspire 2's user manual mentions three types of Return-to-Home (RTH). The main difference is the trigger of the RTH mode, not the operation of the UA in the mode itself. For clarity, the Board chose to describe the three types as one flight mode. For completeness, the three activation modes were added to the text.
18	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	2.4	This manual had been approved as part of the issuing of an RPAS Operator Certificate (ROC) by the ILT.	De nationale politie heeft geen ROC. Het handboek hoeft niet te worden goedgekeurd, zoals bedoeld in artikel 11 van de Roabl. Wel heeft ILT naar delen van het handboek gekeken in verband met de aanvraag en afgifte van enkele ontheffingen van beperkingen en voorschriften. Translation Dutch Safety Board: *The national police does not have a ROC. The handbook is not subject to approval as per Article 11 of the Roabl. However, ILT did look at parts of the manual in connection with the application and issuance of some exemptions from restrictions and regulations.*	Yes	Concerns a factual correction. The text in the report was amended.

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19	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	2.4.3	According to …. This flight	"This flight" aan het einde van deze alinea verwijst naar de vlucht waarbij het beschreven voorval plaats vindt. Aangezien de vlucht van het voorval werd uitgevoerd in een configuratie die goedgekeurd was, is een overleg met de Flight Operations Manager ook niet nodig. De tekst zou beter kunnen weergeven dat voorgaande vluchten met de "Speaker" had moeten resulteren in een overleg met de Flight Operations Manager? *Translation Dutch Safety Board:* *"This flight" at the end of this Section refers to the flight in which the described occurrence took place. Since the flight of the incident was conducted in a configuration that was approved, a consultation with the Flight Operations Manager is also not necessary. The text might better reflect that previous flights with the "Speaker" should have resulted in a consultation with the Flight Operations Manager?*	Yes	The text was amended in response to a previous review comment (see no. 8).
20	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	3.1.1	During this … 95-100%	This suggests that the signal strength is shown in figures 8/9. No signal strength visible in the graph representing a 95-100% value	Yes	The text was modified for clarification.
21	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	3.1.2	Roughly … on	The way it is described can be confusing and does not benefit the readability. Which 5 seconds is precisely meant. Since the figure 8 and 9 have a time scale, please mention at which t=xxx seconds this 5 second interval starts.	Yes	The text was modified for clarification.
22	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	3.1.2	During … flight	Is there any indication that during period the intermitted fault was recorded that during the "no failure" periodes the respons of the RC was reestablished? If not than the initial fault should be logged was "failure" and the pilot should have had the indication that the connection was lost/UAV failure or some other failure indication. This should be considered as a design failure.	No	The Dutch Safety Board was unable to further investigate the various failure conditions described in this report and the way error handling is done within the UAS due to a lack of information about (the systems of) the UAS and validation of the flight data used.
23	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	3.1.2	"remark": The …. Connection.	Is this "probable cause" supported by the OVV?	No	Although this is in line with what is known about the propagation characteristics of signals, and thus seems plausible, the Dutch Safety Board has not been able to establish this further.
24	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	3.1.4	The … Detail.	If there is no data/analysis available on the failure mode(s) of the compass, but the conclusion of the report is that the compass failure is the most likely failure, than the ILT has a direct airworthiness concern. Under the ROABL (test pass/fail criteria for the UAV) and under the 947 legislation (Step 9 of SORA, article 11 AMC 1) there is no single failure allowed that results in the UAV leaving the operational volume (if no mitigating actions are available / can be taken / will be effective). This conclusion could lead to an Airworhtiness Directive (AD) resulting in the grounding of these type of UAV and/or grounding UAV using these types of compasses.	No	The Dutch Safety Board did not investigate the consequences of the compass error on formal airworthiness. Note: It is plausible that UA control was possible in Attitude flight mode. See also further explanation in the relevant Section in the report.

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25	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate	3.1.5.	During … loudspeaker.	It is correct that a (strong) magnet can affect the magnetic field around the drone. However is this the issue? Or is it the (lasting) effect on components/systems such as compasses.	No	The report describes that the payload can interfere with the magnetic field around the UA and therefore may affect the controllability of the UA if the compass is not further calibrated.
26	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate		Switching to A-mode is in most cases a measure without adverse effects since the RTH function can still be used.	Niet helemaal duidelijk: RTH is weliswaar beschikbaar, maar de goede werking ervan blijft twijfelachtig als sprake is van een compass error. Translation Dutch Safety Board: *Not entirely evident: while RTH is available, its proper functioning remains questionable if there is a compass error.*	No	The Dutch Safety Board is not suggesting that RTH always works. The point being made is that there are few drawbacks to switching to A mode when the UA appears to respond unexpectedly to pilot input, because RTH mode is still available as another potential resolution. See further the footnote to the relevant Section.
27	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate		The influence of the particular payload on the compass could have been identified during the Functional Check Flight or assessment as part of obtaining the S-BvL.	Is dit met zekerheid te stellen? Het gaat naar alle waarschijnlijkheid om een combinatie van factoren. Deze moeten tijdens een FCF dan ook gelijktijdig optreden. Translation Dutch Safety Board: *Can this be stated with certainty? In all likelihood, it involves a combination of factors. These must therefore occur simultaneously during an FCF.*	No	Does not refer to a proposed factual correction. There is no certainty that an FCF or S-BvL assessment would have established the loudspeaker's influence on the compass, which is reflected in the verb "could" instead of "would".
28	Ministry of Infrastructure and Water Management/ Human Environment and Transport Inspectorate		Opmerking Translation Dutch Safety Board: *Comment*	Onder EU-regels is het (speciaal) BvL niet langer vereist voor dit soort operaties. Onderzoek in hoeverre Nationale Politie overgaat naar deze EU-regels via Opt-in is nog gaande. Tot die tijd zal het mogelijk zijn om middels ontheffing te vliegen met onbemande luchtvaartuigen zonder dat deze zijn voorzien van een BvL. Een eenmalige en beperkte typekeuring blijft tot die Opt-in nodig. Translation Dutch Safety Board: *Under EU-rules, the (special) CofA is no longer required for this type of operation. Enquiries to what extent the National Police will operate under EU-rules via opt-ins is still ongoing. Until then, it will be possible to fly unmanned aircraft without CofA by means of an exemption. A one-off and limited type certificate will continue to be required until opt-in.*	No	The Dutch Safety Board investigated the flight and the relevant national legislation applicable at the time, not the current European legislation, some of which is still being developed.
29	European Union Aviation Safety Agency		Manufacturers have a responsibility with regard to the quality and safety of a product. Given DJI's limited cooperation on this safety investigation, the Dutch Safety Board finds that this responsibility is not sufficiently fulfilled	According to Art 36.1 of Reg 2019/945 economic operators (meaning the manufacturer, the authorised representative of the manufacturer, the importer, and the distributor of the UAS) are required under to support the authority in its investigation.	No	The legal route described by EASA is a possibility to enforce cooperation from the manufacturer through the market surveillance authority of a member state (Article 36.1 of 2019/945), but does not negate the international aviation accident investigation framework described in the report. Moreover, the said regulations did not apply to operator's operations (the state operator operated under national legislation).

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30	Dutch Drone Group B.V.			Ik heb de documenten doorgenomen, en verder geen opmerkingen voor het rapport. Dank voor de informatie en rapport, goed om nu in ieder geval eindelijk een compleet rapport te zien, waarin de gevonden compass error ook als oorzaak staat, evenals het atti vliegen als oplossing. Zeker dat laatste wordt nog wel eens onderschat. Translation Dutch Safety Board: *I went through the documents, and no further comments for the report. Thanks for the information and report, good to at least finally see a complete report, in which the compass error found is also listed as a cause, as well as atti flying as a solution. Certainly the latter is sometimes underestimated.*	No	An important lesson that can be learned from this incident for other users of UAS, is that in case of compass errors, switching to A mode should be given priority over engaging the Return-To-Home (RTH) mode, as it eliminates dependence on the compass. Also see Section 3.3 and the conclusions in the report. This review comment concerns a confirmation of this finding. The comment does not address any proposals for factual corrections.
31	DJI	3.6	"Not….manufacturer"	DJI has tried to answer all questions received from the Dutch Safety Board. Unfortunately the questions were not clearly structured and the investigation timeline was not clear to DJI (for example DJI did not receive feedback after sending in answers and only received new questions after weeks' time), which was challenging for the manufacturer to coordinate.	No	In order to learn from accidents and incidents involving UAS, it would be recommendable for all parties involved, among which manufacturers, to share the information needed for the investigation as much as possible. Also participating in safety investigations would improve the way all involved parties can learn from accidents and incidents, and subsequent investigations such as the one laid out in this report. All in all, in order to improve flight safety, the engagement of all parties involved is essential to learn from accidents and incidents. During the Dutch Safety Board's investigation, information from multiple (involved) parties is retrieved, analysed and where needed incorporated into the report. At several points during the investigation, requests may be made to an involved party for information to be supplied, without feedback from the Safety Board on the status of the investigation. A lot of time was invested by the Safety Board in the relationship with DJI. For instance, the party was informed several times about the Safety Board's modus operandi and jurisdiction, and the incident in question was discussed several times. All information requests were made with the offer to provide clarification if required by DJI.

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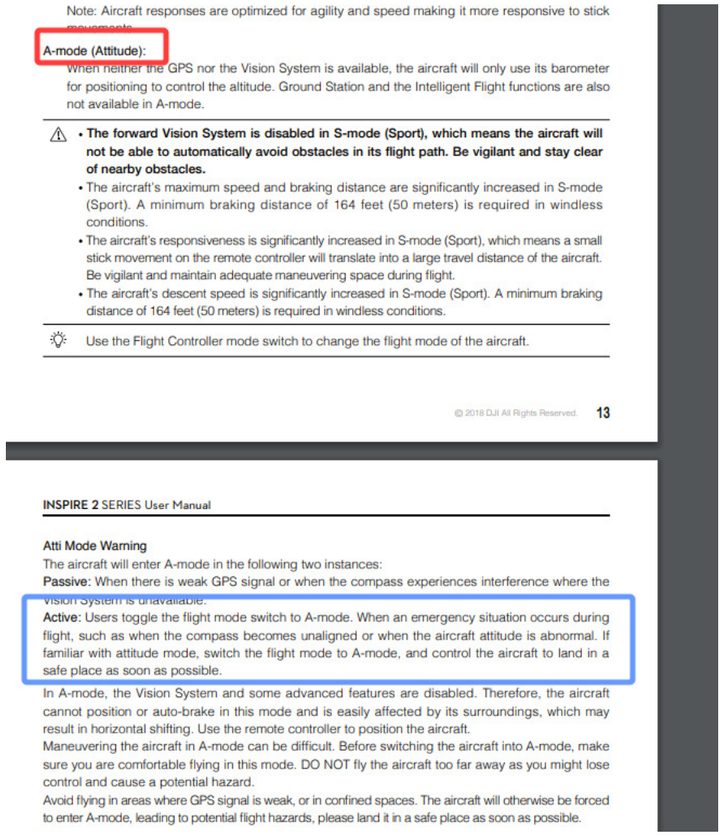
32	DJI	5	"Review…types"	In the DJI product user manual (https://www.dji.com/downloads/products/inspire-2), the information about A-Mode and RTH is already included. 1)	No	The user manual describes in general terms when and how the A mode should be used and how the RTH system works. However, the Dutch Safety Board recommends making it clearer in the user manual, based on the lessons learned from this incident: (1) how users should act in case of a control problem during flight, (2) when a compass calibration is needed, for example prior to take-off as DJI itself indicates in their analysis of this incident (see appendix B.1) and (3) what any risks (and guidelines) are when using custom payload. This is not sufficiently made clear in the current user manual and is not clear to users. The UAS manufacturer, as indicated in this response, formally only provides support to the payload they manufacture. However, the manufacturer has indicated in interviews that the use of a custom payload is not discouraged / made impossible. In fact, with the Payload Software Development Kit (SDK) released by the manufacturer, the manufacturer actively supports other parties in developing custom payload (see e.g. "A new set of protocols that let your payload communicate with the drone's internal systems such as …" on the website https://developer.dji.com/payload-sdk/). DJI's disclaimer and safety guidlines for the Inspire 2 also talk about payload in a broad sense. DJI does not point out a factual inaccuracy in the report with regard to the communication and therefore the report was not amended.



Note: Aircraft responses are optimized for agility and speed making it more responsive to stick

A-mode (Attitude):

When neither the GPS nor the Vision System is available, the aircraft will only use its barometer for positioning to control the altitude. Ground Station and the Intelligent Flight functions are also not available in A-mode.

- **The forward Vision System is disabled in S-mode (Sport), which means the aircraft will not be able to automatically avoid obstacles in its flight path. Be vigilant and stay clear of nearby obstacles.**
- The aircraft's maximum speed and braking distance are significantly increased in S-mode (Sport). A minimum braking distance of 164 feet (50 meters) is required in windless conditions.
- The aircraft's responsiveness is significantly increased in S-mode (Sport), which means a small stick movement on the remote controller will translate into a large travel distance of the aircraft. Be vigilant and maintain adequate maneuvering space during flight.
- The aircraft's descent speed is significantly increased in S-mode (Sport). A minimum braking distance of 164 feet (50 meters) is required in windless conditions.

Use the Flight Controller mode switch to change the flight mode of the aircraft.

Atti Mode Warning

The aircraft will enter A-mode in the following two instances:

Passive: When there is weak GPS signal or when the compass experiences interference where the Vision System is unavailable.

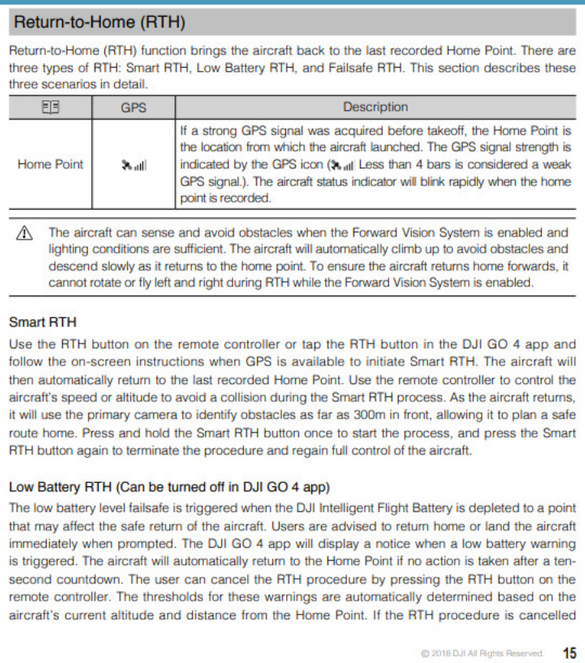
Active: Users toggle the flight mode switch to A-mode. When an emergency situation occurs during flight, such as when the compass becomes unaligned or when the aircraft attitude is abnormal. If familiar with attitude mode, switch the flight mode to A-mode, and control the aircraft to land in a safe place as soon as possible.

In A-mode, the Vision System and some advanced features are disabled. Therefore, the aircraft cannot position or auto-brake in this mode and is easily affected by its surroundings, which may result in horizontal shifting. Use the remote controller to position the aircraft.

Maneuvering the aircraft in A-mode can be difficult. Before switching the aircraft into A-mode, make sure you are comfortable flying in this mode. DO NOT fly the aircraft too far away as you might lose control and cause a potential hazard.

Avoid flying in areas where GPS signal is weak, or in confined spaces. The aircraft will otherwise be forced to enter A-mode, leading to potential flight hazards, please land it in a safe place as soon as possible.

No	Organisation	Section	Text to be corrected (first … last word) *	Argumentation for response *	Adopted?	Dutch Safety Board response



Return-to-Home (RTH)

Return-to-Home (RTH) function brings the aircraft back to the last recorded Home Point. There are three types of RTH: Smart RTH, Low Battery RTH, and Failsafe RTH. This section describes these three scenarios in detail.

	GPS	Description
Home Point		If a strong GPS signal was acquired before takeoff, the Home Point is the location from which the aircraft launched. The GPS signal strength is indicated by the GPS icon. Less than 4 bars is considered a weak GPS signal.). The aircraft status indicator will blink rapidly when the home point is recorded.

⚠ The aircraft can sense and avoid obstacles when the Forward Vision System is enabled and lighting conditions are sufficient. The aircraft will automatically climb up to avoid obstacles and descend slowly as it returns to the home point. To ensure the aircraft returns home forwards, it cannot rotate or fly left and right during RTH while the Forward Vision System is enabled.

Smart RTH

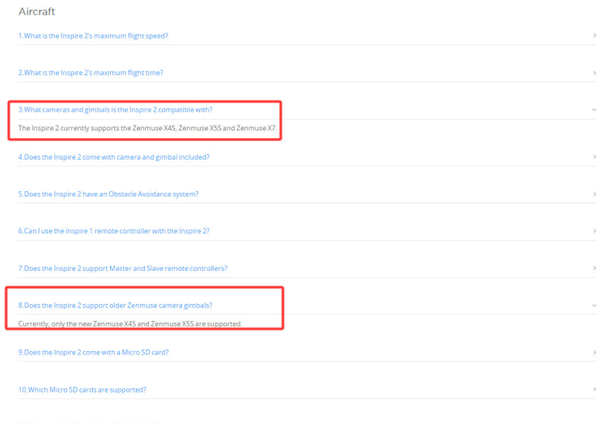
Use the RTH button on the remote controller or tap the RTH button in the DJI GO 4 app and follow the on-screen instructions when GPS is available to initiate Smart RTH. The aircraft will then automatically return to the last recorded Home Point. Use the remote controller to control the aircraft's speed or altitude to avoid a collision during the Smart RTH process. As the aircraft returns, it will use the primary camera to identify obstacles as far as 300m in front, allowing it to plan a safe route home. Press and hold the Smart RTH button once to start the process, and press the Smart RTH button again to terminate the procedure and regain full control of the aircraft.

Low Battery RTH (Can be turned off in DJI GO 4 app)

The low battery level failsafe is triggered when the DJI Intelligent Flight Battery is depleted to a point that may affect the safe return of the aircraft. Users are advised to return home or land the aircraft immediately when prompted. The DJI GO 4 app will display a notice when a low battery warning is triggered. The aircraft will automatically return to the Home Point if no action is taken after a ten-second countdown. The user can cancel the RTH procedure by pressing the RTH button on the remote controller. The thresholds for these warnings are automatically determined based on the aircraft's current altitude and distance from the Home Point. If the RTH procedure is cancelled

Regarding payloads, it has been clearly indicated in DJI's website (https://www.dji.com/inspire-2/info#specs) that the Inspire 2 currently supports the Zenmuse X4S, Zenmuse X5S and Zenmuse X7.

In this case, the operator used a customized payload and it was not communicated with DJI.



Aircraft

1. What is the Inspire 2's maximum flight speed?

2. What is the Inspire 2's maximum flight time?

3. What cameras and gimbals is the Inspire 2 compatible with?

The Inspire 2 currently supports the Zenmuse X4S, Zenmuse X5S and Zenmuse X7.

4. Does the Inspire 2 come with camera and gimbal included?

5. Does the Inspire 2 have an Obstacle Avoidance system?

6. Can I use the Inspire 1 remote controller with the Inspire 2?

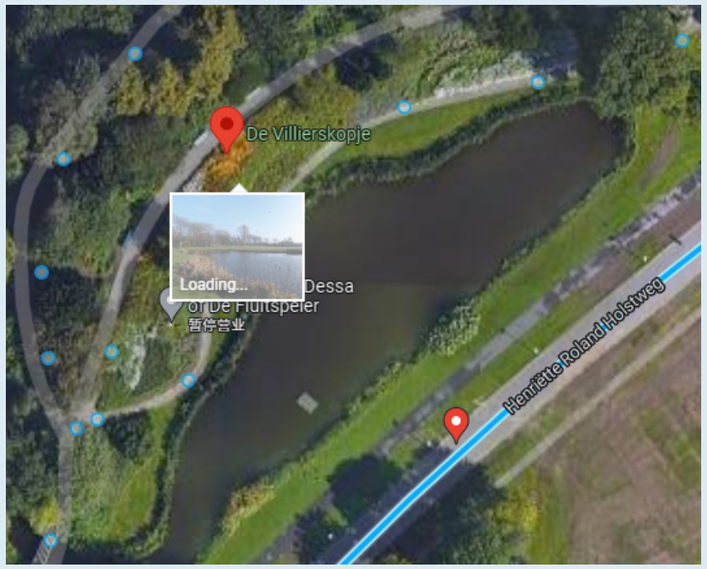
7. Does the Inspire 2 support Master and Slave remote controllers?

8. Does the Inspire 2 support older Zenmuse camera gimbals?

Currently, only the new Zenmuse X4S and Zenmuse X5S are supported.

9. Does the Inspire 2 come with a Micro SD card?

10. Which Micro SD cards are supported?

No	Organisation	Section	Text to be corrected (first … last word) *	Argumentation for response *	Adopted?	Dutch Safety Board response
33	DJI	Appendix B	"Because….so."	In DJI's answer to DSB's email, it was mentioned that it could be possible that the abnormality of compass could be caused by interference of the surrounding environment of the operation (*it seems to be an electrical substation. Nearby based on Google map). This should be included in the report.  	Partly	The "electrical substation" referred to by DJI in its response is located at over 450 metres from the take-off location, therefore the Dutch Safety Board considers it unlikely that it could have affected the compass during take-off. This was clarified in the report.