ICASC Document on Standards and Recommended Practises of Flight Inspection & Flight Validation Organisations

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ABSTRACT

The following paper continues from the papers and presentations given at the IFIS 2012 in Braunschweig and the IFIS 2014 in Oklahoma City by the same author, which covered aspects of flight safety on flight inspection and flight validation missions, and ways to mitigate risks associated with flying these particular types of missions. The new paper represents the status of discussions the Operational Working Group within ICASC reached on this topic to this day.

After some detailed discussion among members, both of ICAS in general as well as among the Operations Workgroup of ICASC, this work group is now able to present a first version of an ICASC document that deals with Standards and Recommended Practises of Flight Inspection & Flight Validation Organisations.

The content of the document will be introduced – aspects like Equipment, Theatre of operation, Operation Manuals, Standard Operating Procedures (SOPs), Check Lists and Crew Coordination Concepts – and the recommendations given in the document being elaborated in detail. The main driver behind the proposed standard is explained in more detail:

The idea behind these 2 documents is to enhance safety in our industry by providing a level playing field with regard to operational standards and practises. To that end the paper will introduce an additional tool in the shape of a Contract Annex to Flight Inspection tender documents and contracts, a document that describes the minimum standards any potential bidder for flight inspection and flight validation work should address, with this Annex to be distributed within the industry and all potential customers, again with the ultimate aim to provide a level - and safe! - playing field for all stakeholders.

INTRODUCTION

As the main aspects of this topic are covered in the two documents cited above, this introduction will be kept to a minimum. Attention of the valued reader is drawn to the attached documents "*ICASC Document on Standards and Recommended Practises of Flight Inspection & Flight Validation Organisations"* and "*ICASC Recommended Flight Inspection & Flight Validation Contract Annex"*, which are given unde r Appendix A resp. B of this paper.

As the pros and cons of the recommended standards and recommended practices in flight inspection and flight validation operations have been discussed in some detail in the two previous papers and presentations of this author, this paper focusses on the introduction of a proposed new tool, an annex to any new flight inspection and flight validation contract.

CONTRACT ANNEX

The idea of a contract annex picks up on a scheme our colleagues from the International Airborne Geophysics Safety Association (IAGSA) developed over the years, with the latest edition published I May, 2014.

IAGSA faced a challenge similar to our industry, with an operational environment spelling a certain degree of risk, mainly in the shape of low level flying, for a prolonged period of time, at in same cases remote areas of the world with little support in terms of ATC infrastructure or any aviation related infrastructure to start with.

The challenging operational environment of airborne geophysics applications like photogrammetry, aeromagnetic survey, etc., warrants a considerable effort for those organisations that take up on this challenge: due investments in equipment, crewing, training and operational considerations are required to take these challenges seriously.

More often than not operators willing to commit to these investments found themselves in an economically unviable position, as addressing issues like proper equipment, training etc. inevitably invokes a higher cost bases, which in turn commercially favors operators that are not willing to invest in these areas.

When accident numbers rose to level unacceptable to the industry any longer, most of the stakeholders involved agreed to a common set of standards, prescribed in both IAGSA's Safety Manual as well as their published Contract Annex.

The interesting part here to note is that this agreement on common standards did not only cover all operators, but most of all potential customers as well: by agreeing on the aforementioned contract annex, most of the customers in the airborne geophysics environment acknowledged the fact that the risks involved in their particular kind of required services called for a commonly agreed upon standard.

The way of turning this acknowledgment into practical consequences was by first: developing the contract annex and commonly agreeing on the required minimum standards and then second: making this contract annex an integral part of all contracts out for bidding and their associated tender documents. With that move a vitally important level playing field was established for all stakeholders, enhancing safety considerably by not commercially disfavoring operators any more that take issues like proper equipment, crewing and training seriously.

CONCLUSIONS

Apart from a common set of standards and recommended practices, IAGSA's approach of developing these standards being incorporated in any potential contract as a base requirement bears a lot of promise to foster and enhance safety in our industry as well, which is why ICASC is promoting this concept and putting it up for further discussion within our industry.

RECOMMENDATIONS / FUTURE WORK

Future work on the issue of common standards and recommended practices (SARPs) and the proposed contract annex should focus on two aspects:

With the SARPs being recognized by ICASC as a common set of tools, the question to discuss with industry is how to proceed from here: does it suffice to publish the SARPs on the ICASC's webpage, or shall this concept be developed into a full industry-recognized concept by turning it into an officially granted "seal of approval? Who would be "owner" of this concept or the issuer of this approval? And how to address the cost implications that would inevitably go with an approval like this, bearing in mind that in will invoke some form of audit/approval/monitoring process?

The second aspect is the question of how to proceed with the proposed and highly recommended Contract Annex: here, more discussions are required with all stakeholders involved within our industry. Would most of the potential customers of flight inspection and flight validation services be willing to subscribe to a concept like that?

REFERENCES

[1] Thomas Wede, 2012: Flight Safety on Flight Inspection Missions – Past Statistics and Future Strategies
Proceedings of the 17th IFIS, Braunschweig, 2012

[2] Thomas Wede, 2014: Common Standards in Flight Inspection Operations – The Way Ahead to Improve Safety?
Proceedings of the 18th IFIS, Oklahoma City, 2014

[3] International Airborne Geophysics Safety Association, 17/06/2014: Safety Policy Manual

[4] IAGSA Survey Contract Annex Last Revised 29/5/2014 Revision 3

[5] www.iagsa.ca

Appendix A:

International Committee on Airspace Standards and Calibration (ICASC) :

Document on Standards and Recommended Practises of Flight Inspection & Flight Validation Organisations

Vers 1.2

Introduction

Flight Inspection and Flight Validation represents a rather demanding operational environment in aviation. Its very nature translates into a certain amount of risk elements – which are covered in one of the following chapters - that have to be identified, addressed and subsequently mitigated in order to achieve a safe and reliable flight operation.

The tools to mitigate these risks are wide and varied. This document tries to identify these tools, concentrating on the organisational set-up and environment of a flight inspection entity. Each chapter contains ICASC recommendations for addressing risk mitigation. The idea is to arrive at a common set of tools that are useful in achieving the goal of a safe flight inspection flight operation.

A. General Set-up

Objective: paramount to a safe execution of flight inspection missions is a coherent set-up of the organisation, where size, staff numbers, management, equipment, mission profile and theatre of operations are in line, and no ambiguities exist, i.e. staff numbers or other resources insufficient for the intended missions to be flown over the year. Government organisations might have a tendency to be over-bureaucratic and/or underfunded; private organisations might have a tendency to be overly ambitious in economic terms; both tendencies will put unnecessary stress on the organisation and must be avoided.

ICASC Recommendations:

A1. Have a clearly defined set-up, where size, staff numbers, management, equipment, mission profile and theatre of operations are in line with the intended operation, and no ambiguities exist.

A2. Due to the fact that flight inspection missions are time-critical, ICASC recommends to have a back-up solution in place in case the own resources (aircraft, qualified staff) are unavailable.

B. Organisational Set-up

Objective: the organisational set-up, in a way, clearly reflects if an organization is aware of what it is doing and is organizing itself accordingly. The items in questions below go along that line. A clearly defined path of accountability, and a management structure that goes in line with it, are paramount.

ICASC Recommendations:

B1. Establish an organizational set-up that follows the requirements below in a clear and unambiguously manner.

B2. Establish a clear way of communication that set-up, best in a comprehensive Operations Manual OM.

B3. Publish a clearly defined Statement of Work

B4. Establish a clearly defined path of accountability and management structure. Communicate this structure unambiguously

B5. Establish a clearly defined path of responsibilities: Clearly establish asset allocation, position titles, roles and responsibilities, training requirements, as well as Operational Control and Maintenance.

B6. Establish Operational Control and maintain it.

B7. Publish a clearly defined set of rules, procedures and best practises, best laid down in an OM

B7. Establish a clearly defined Change Management / Administration and Program Management Plan in place.

B8. Establish an Emergency Response Plan in place

C. Safety Philosophy / Safety Management System

Objective: A Safety Philosophy, and accompanying Safety Management System (SMS), are the formalized approach of an organization on how to implement safety, clearly defining risk identification methods and tools, risk communication and mitigation strategies, lines of responsibilities and accountability, which are precursors for demonstrating proper organizational risk awareness and increasing overall mission effectiveness. The Safety philosophy of an organization must be a top-down approach, spearheaded by management with a demonstrated and unwavering commitment independent profits and mission success rates. . The SMS should be part an integral part of the OM (preferred option, to avoid

over-complexity), or may be a stand-alone document. The associated Reporting System (RS) does not have to be overly complex with sophisticated forms, as long as it is formalized in one way at all. Just Culture has to be clearly communicated, promoted and executed under all circumstances. Just Culture in the context of aviation means a culture within an entity / organisation that is tailored towards identifying / mitigating risk through an atmosphere of open communication, transparency and non-punitive action, with a clear focus of avoiding / mitigation weak spots within the organisation instead of apportioning blame.

ICASC Recommendations:

C1. Have a Safety Philosophy and a Safety Management System that goes with it .

C2. Live the top-down-approach to safety even in (economically) harsher times.

C3. Encourage a healthy communication on mishaps by a viable Reporting System (RS) and an actively lived Just Culture.

C4. Avoid over-complexity by integrating the SMS into the OM.

D. Flight Operations : Operating Limits

Objective: Operating limits form an essential part of any safety philosophy. The minimum objectives to be covered are set below. It is paramount that the operating criteria be directly related to the organization's mission set. Here, a balance between safety and operational requirements has to be struck: Minima with an excessively high threshold will enhance safety, but will limit the operation up to a point where providing a reliable service to the customer will be impossible. The goal is efficient risk mitigation as there is no way to eliminate risk all together

Again, operating limits have to be accepted by all stakeholders from top down; raising minima and expecting the same productivity output, for instance, will not be a realistic prospect.

Therefore, operating limits should be set after careful study of the operational environment to be expected, equipment to be used and crew qualification considered. The limits have to be open, transparent, clearly communicated and no ambiguities must exist between the organization's ambitions and targets and its operating limits.

ICASC Recommendations:

D1. Have Operating Limits established according to the objectives above.

D2. Operating limits must reflect and bring in line the organization's objectives with mission profile, equipment, and crew requirements, especially in the light of qualification, training, recurrency status and FTLs.

D3. The Operating Limits must reflect the operational environment of the organisation

D4. Have established Flight and Rest Time Limitations (FTLs)

D5. FTLs must reflect individual operational circumstances and requirements of the affected organisation.

D6. Have Weather minima defined

D7. Have Minimum Equipment status and requirements defined

D8. Have defined Crew qualification, training and recurrency standards

D9. Have Airport criteria established

D10. Have defined Security criteria

D11. Have Night Ops specified

D12. Have established a clear, unambiguously method of communicating these limitations, best via OM

E. Equipment

Objective: Picking the proper equipment is an essential factor affecting safety on flight inspection / flight validation missions.

Aircraft: In light of the wide variety of flight calibration missions and theatres of operation, there is no one-size-fits-all solution in picking the right aircraft, however, the selected aircraft type should be able to fly the mission required without restrictions (i.e. fuel load, payload), in order not to pressure crews into accepting risks beyond means of mitigation, just to get the mission done. The aircraft selected must be capable of handling the environmental conditions of the intended theatre of operations (weather hazards, heat, cold, icing conditions, etc.).

The performance of the aircraft selected must be in line with the task at hand, this concept is even more important for Flight Validation missions, where the performance of the validation aircraft must be commensurate with the

performance of the aircraft that will later fly the validated procedures.

The FIS to be used must be commensurate with the task at hand, and must be integrated with fixed aerials that are subject to regular on-aircraft-calibration.

Maintenance Maintenance must be fully integrated into the safety philosophy, executed by appropriately qualified and trained staff, at the proper intervals. The flight inspection aircraft in use should be maintained and upgraded to the current, mission-specific requirements.

The paramount driver behind the Cockpit Environment is the requirement to provide maximum Situational Awareness. Glass cockpits, suitable Flight Management Systems (FMS), interface between FIS and cockpit, TCAS, EGPWS all work towards that goal.

The Environmental System of the aircraft used must be capable of coping with the environmental conditions of the theatre of operation (sufficient cooling, heating, etc.).

ICASC Recommendations:

E1. Aircraft utilised must be in line with mission profile and mission environment.

E2. ICASC recommends multi engine aircraft for flight inspection / flight validation missions.

E3. Aircraft in use should be upgraded, and must be maintained, to the current, mission-specific requirements.

E4. The Maintenance provider must be able to support aircraft in all theatres of operation.

For the benefit of Situational Awareness, ICASC recommends:

E5. Glass cockpits and their associated Moving Map Displays

E6. An interface between FIS and the cockpit, either by utilising the existing avionics or by providing an additional display

E7. a suitable FMS

E8. In case the aircraft is used for Flight Validation Missions as well, the FMS must be capable of handling all relevant ARINC424 formats used on the new procedure under validation, and must be capable of depicting them properly; the autopilot must be capable of following these signals

E9. TCAS

E10. In case an EGPWS is installed, there must be means available to silence it on flight inspection missions in order to avoid nuisance alarms.

E11 The environmental system of the aircraft must be capable of coping with the environmental conditions of the theatre of operation, both in terms of cooling and heating, in order to cater for requirements both of the crew as well as integrity requirements of the FIS Nav receivers.

E12. The FIS must be integrated with fixed aerials, which are in turn subject to regular, on-board calibrations (see chapter F for FIS Requirements)

E13. For Flight Validation Missions, the use of Pre-Production-databases for the relevant Flight Management System FMS is required

F. Crewing

Objective: Defining adequate crew qualification and composition and finding the staff that meet these requirements is an essential part of the overall safety concept of a flight inspection organization.

ICASC Recommendations:

F1. Define crew qualification and skill sets required for the intended mission profile.

F2. As a minimum requirement for commanders, and in line with ICAO Doc 9906 Vol 6, ICASC recommends the following qualifications as a guideline:

- CPL/IR or ATPL
- Current type rating for the type to be flown on mission
- Total flight time > 1.500 hrs
- Command time > 400 hrs
- Flight Inspection Pilot > 2 years

F3. Define adequate selection process

F4. Use adequate tools for the selection process.

F5. Minimum crew on Flight Inspection / Flight Validation missions: 2 pilots, or define applicable means of compliance

F6. Define crew composition.

F7.Define status of Cabin Crew / Nav Aid Inspectors .

G. Operational Status

Objective: A number of flight inspection missions are outside the normal operating envelope of the aviation community (i.e., in some countries, flying below the Minimum Safety Altitude, night flying activities, special Noise Certificates, or waivers stipulating dispense from these Noise Certificates, etc.). In many case this stipulates a requirement for official approval of these kinds of operations.

ICASC Recommendations:

G1. Have Operational status defined and approved by Regulator / Authorities

G2. It is recommended that the affected flight inspection organisation applies for all relevant approvals or "waivers" by the appropriate authorities, to minimize ambiguities and potential risk of violating rules and regulations, which in turn is essential to reduce workload and stress on crews.

I. Quality Management System (QMS)

Objective: A Quality Management System (QMS) is an essential part of any flight inspection organization. Most regulatory frameworks address this requirement – an AOC holder is required to set up a QMS, for instance. A QMS is highly desirable for tracking the performance of, and thus providing integrity for, the flight inspection mission itself, thus providing clarity on issues like ownership of calibration reports, data integrity, and postflight processing.

ICASC Recommendations:

I1. Have a QMS in place, including a relevant Audit program and procedures defining how to act on audit findings.

I2. ICASC recommends the QMS be an integral part of the overall OM of an organization, thus reducing complexity in the organization's documentation.

J. Operations Manual

Objective: The Operations Manual (OM) is the central document of an organisation as it defines all aspects of the flight operation and communicating the way it intends to do business with all relevant stakeholders. Its format, structure and extent, to a certain degree, will be driven by the individual requirements of the regulator in charge of that particular entity.

Numerous layouts and templates for an OM exist within the industry; however, the industry standard is outlined below:

ICASC Recommendations:

J1. Have an OM in place as the central way to document and communicate the scope of work and how to accomplish it.

J2. The OM should be concise and limited to the absolute minimum necessary, in order to avoid over-complexity, which in turn would only create a work atmosphere of ambiguity and unnecessary workload.

J3. The OM must incorporate all operational circumstances organizational operations.

J4. Minimum objects to be covered:

- Organisational set-up
- Responsibilities and accountabilities
- Theatre of Operations
- Aircraft related subjects (Minimum Equipment List (MEL), navigation equipment, etc.)
- Limitations and Minima
- Crewing
- Operational Procedures, Normal and Abnormal
- All weather operations
- Flight and Rest Time Limitations
- Training
- Security

K. Crew Resource Management (CRM) / Team Resource Management (TRM) / Crew Coordination Concept (CCC)

Objective: Crew Resource Management (CRM), and a Crew Coordination Concept (CCC) defines how a crew is to work together, and clearly defines the roles and responsibilities of each crew member. It clearly describes the communication involved in executing these tasks and should be reinforced by Standard Operating Procedures (SOPs) and Checklists (see chapter 11 & 12 of this document). The CRM system, however, does not only define the cooperation between cockpit members, it also should encompass procedures and communication between cockpit and cabin, and it should define the interface between the flight crew and the rest of the company, like tasking / scheduling, management, maintenance, etc. This holistic approach in CRM is of great importance to create a working environment that takes into account all requirements to accomplish the organization's mission profile safely and reliably. It effectively translates into a Team Resource Management (TRM).

ICASC Recommendations:

K1. Have a CRM / CCC in place.

K2. Base it on a holistic approach that does not only cover aspects of flight crew coordination, but all other relevant stakeholders within the organization as well.

K3. CRM should be holistic, = Total Resource management (TRM), i.e. encompasses cabin crew and rest of organization as well.

L. Standard Operating Procedures (SOPs)

Objective: Standard Operating Procedures (SOPs) describe how certain aspects of the scope of work are handled by whom, and at what time. SOPs govern aspects like cockpit work, crew coordination, checklist philosophy, but also issues like how to execute certain calibration profiles, how to schedule tasks, write reports, etc. SOPs should be commensurate with the task at hand. They should be concise, transparent, and whenever possible, be an integral part of the OM.

ICASC Recommendations:

L1. Define SOPs to describe how certain aspects of the scope of work are handled by whom, and at what time within the organization.

L2. Keep SOPs concise and transparent.

L3. SOPs must be in line with other documents, like the OM, CCC, checklists, etc.

M. Checklists

Objective: Checklists form an enormously important part of the operating environment. It is a well-known fact that the manufacturer's checklists, especially when the aircraft in question is certified for single pilot operations, are often less then optimal in a normal aviation environment for reasons of over-complexity and length. These checklists reflect legal and liability issues, which might be well required to keep the manufacturer from harm in legal terms, however, focusing on these legal aspects unfortunately renders these checklists almost useless. As check lists are vital for crew procedural standardization every operator is called upon to design checklists that do reflect its individual needs. Depending on the regulatory environment it might be necessary to get the altered checklist approved by the respective regulator.

ICASC Recommendations:

M1. Define checklists in a way as to reflect the operational environment the specific missions are flown in.

M2. Avoid over-complexity.

M3. The checklists have to be in line with SOPs and other procedures laid down in the OM.

M4. They have to be workable under all circumstances the organization is flying in!

M5. Both Normal and Abnormal / Emergency Checklists should be defined by operator

M6. Checklist philosophy: Do vs. Follow-up Checklists

N. Training & Checking

Objective: The importance of training in aviation in general, and in flight inspection in particular, cannot be overstated. Every flight inspection organization should establish a training scheme, covering both initial as well as recurrent training, and execute it rigourously. This translates into a certain commitment from all stakeholders involved, including management, as training inevitably has cost implications. The training regime should not only cover flight crews, but all other staff members involved in flight operations as well. It must reflect the individual, mission specific requirements, that are not normally covered by a routine training program provided by training organizations.

Aspects to be covered are addressed by the following items:

ICASC Recommendations:

N1. Define and implement training scheme for both initial as well as recurrent training.

N2. Training should be regime described (i.e. in Part D of OM)

N3. Training must reflect and be in line with other organization's documents, like OM, CCC, Checklists, etc.

N4. Training should cover not only crew training, but all pertinent aspects of organization's activities, like OPS, scheduling, etc.

N5. ICASC strongly recommends use of suitable qualified simulators for flight training, both initial as well as recurrent, to the maximum extent possible

N6. Whenever possible, customized training programs should be employed,

N7. Training should always be a tp-down commitment

N8. Training should reflect the equipment to be used

N9. For No-Tech-Training: Cabin Crews should be involved as well

O. Risk Mitigation Strategy

Objective: The Risk Mitigation Strategy of an organisation is a pro-active approach, via a risk assessment, of the individual risks associated with a specific mission, with the goal to arrive at a strategy to minimize or avoid these risks all together. Any risk mitigation strategy shall address the external circumstances of the operation: where do we operate, doing what with whom? How is the terrain, how is the infrastructure (fuel / de-icing / hangar available)? How well is ATC organized, is radar coverage given? Who on a specific mission will be point of contact for the company? Who for the crew? How is the security situation on site / in country? Whenever possible, these data should be collated prior bidding for a tender; marketing or management should try to find out as much information as possible prior committing to a task, in order to reduce crew pressure on site later.

Crew fatigue is another major issue to be addressed: At what point fatigue hits will very much depend on the type of mission flown (for instance, ILS low level work, in general, is more stressful than airway work at high altitudes), the aircraft being used (Cockpit equipment available, space available on board, susceptibility to turbulence, temperature control) and the environment operated in (poor ATC? poor infrastructure, i.e. refueling a major undertaking? Night flying involved?). Thus, geographical and climatological conditions of theatre of operation, length of deployment, transit times and other factors, like aircraft and cockpit equipment or even accommodation should be taken into account when executing a risk assessment and designing a risk mitigation strategy (which, in this case, would be an organization-specific a FTL scheme).

ICASC Recommendations:

O1. Have a Risk Mitigation Strategy in place as a good indicator of one's organization being aware of its mission profile and its associated risk.

O2. It should, as a minimum, have the factors cited above covered.

O3. The external circumstances of operation and associated risk must always be identified.

O4. A Risk Assessment should always be completed prior to bidding for a contract.

O5. As a risk reduction exercise, a FTL scheme should be in place.

Appendix B:

ICASC Recommended Flight Inspection & Flight Validation Contract Annex

Vers 0.2

Introduction

Flight Inspection and Flight Validation represents a rather demanding operational environment in aviation. Flying low or even very low at times, in congested airspace shared by platforms operated at varying airspeeds from ultralight and gliders to heavy airliners, under considerable time pressure to keep the impact of the Flight Inspection mission on the rest of the community as low as possible - this very nature of Flight Inspection and Flight Validation work translates directly into a certain amount of risk elements that have to be identified, addressed and subsequently mitigated in order to achieve a safe and reliable mission outcome.

In providing this level of safety, both the customers of Flight Inspection and Flight Validation services (Customers) as well as the provider of these services, the Flight Inspection and Validation service providers (Contractors) share a responsibility to achieve a Duty of Care to ensure the highest level of safety is achieved on every mission.

In order to achieve this level of safety, this Annex is an integral part of the process for tendering for Flight Inspection and Validation services. This Annex addresses a number of mission specific requirements to which all contractors must adhere. It is based on the safety framework ICASC has developed and defined as the standards in Flight Inspection and Flight Validation operations. Further guidance on this matter may be taken from ICASC webpage under www.icasc.com.

In light of the aforementioned Duty of Care, this Annex serves 2 purposes:

1. It identifies and thus addresses the inherent risk elements of the Flight Inspection and Flight Validation work at hand

and

2. It provides a level playing field for all potential contractors, as adhering to high standards in flight operations inevitably involves a higher cost base by higher expenditure on training, equipment and restrictions on operating parameters

In order to achieve the aforementioned goals of safety, this Annex requires any potential contractor bidding for a specific Flight Inspection or Flight Validation contract to meet the following requirements:

A. General Set-up

The Contractor shall have in place a clearly defined set-up, where size, staff numbers, management, equipment, mission profile and theatre of operations are in line with the intended operation, with no ambiguities.

Due to the fact that Flight Inspection missions are time-critical, this Annex requires to have a back-up solution in place in case the own resources (aircraft, qualified staff) are unavailable.

B. Organisational Set-up

The Contractor shall have in place an organisational set-up that clearly reflects that its organization is aware of what it is doing and is organizing itself accordingly. A clearly defined path of accountability, and a management structure is paramount. Factors to address this requirements are at least, but not limited to

B1. Establish a clear way of communicating its set-up, best in a comprehensive Operations Manual OM.

B2. Establish a clearly defined Statement of Work

B3. Establish a clearly defined path of accountability and management structure. Communicate this structure unambiguously

B4. Establish a clearly defined set of rules, procedures and best practises, Clearly outlined in a comprehensive Operations Manual in an Operations Manual (OM)

B5. Establish a Safety Philosophy and a Safety Management System

B6. Establish an Emergency Response Plan in place

In order to meet the requirements under B., this Annex requires any potential Contractor to operate under an approved Air Operator Certificate (AOC) by its respective Authority, or provide an equivalent level of compliance.

C. Flight Operations

Any potential Contractor for a specific Flight Inspection and Flight Validation Contract shall meet the operational requirements as laid down in the following Annexes chapters:

C1. Operating Limits

The Contractor shall

C.1.1. Establish Operating Limits according to the objectives above.

C.1.2. have his operating limits reflect and align with the organisation's objectives in terms of mission profile, equipment, and crew requirements, especially to include

qualification, training, recurrency status and Flight Time Limitations (FTLs).

C.1.3. have his Operating Limits reflect the operational environment of the organisation

C.1.4. Establish Flight and Rest Time Limitations (FTLs). These FTLs must reflect individual operational circumstances and requirements of the affected organisation.

C.1.5. have Weather minima defined

C.1.6. have Minimum Equipment status and requirements defined

C.1.7. have defined Crew qualification, training and recurrency standards

C.1.8. have Airport criteria established

C.1.9. have defined Security criteria

C.1.10. have Night Ops specified

C.1.11. have established a clear, unambiguously method for communicating these limitations, such as an OM

D.1 Equipment

The Contractor is obliged to meet equipment requirements as follows:

D.1.1. All aircraft utilised must be in line with mission profile and mission environment.

D.1.2. This contract stipulates the use of multi engine aircraft for Flight Inspection / Flight Validation missions.

D.1.3. Aircraft in use are be upgraded, and must be maintained, as best as possible to the current, mission-specific requirements.

D.1.4. The Maintenance provider for the aircraft of the Contractor must be able to support the aircraft in all theatres of operation.

For the benefit of Situational Awareness this Annex requires:

D.1.5. Glass cockpits and Moving Map Displays

D.1.6. An interface between Flight Inspection System (FIS) and the cockpit, either by utilising the existing avionics or by providing an additional display

D.1.7. a suitable FMS

D.1.8. In case the aircraft is used for Flight Validation Missions as well, the FMS must be capable of processing and displaying all relevant ARINC424 formats used on the new procedure under validation, the autopilot must be capable of following these signals

D.1.9. TCAS installed

D.1.10. If an EGPWS is installed, there must be means available to silence it on flight inspection missions in order to avoid nuisance alarms.

D.1.11 The environmental system of the aircraft must be capable of coping with the environmental conditions for all theatres of operation, both in terms of cooling and heating, in order to cater for requirements both of the crew as well as integrity requirements of the FIS Nav receivers.

D.1.12. The FIS must be integrated with fixed aerials, which are in turn subject to regular, on-board calibrations

D.1.13. For Flight Validation Missions, the use of Pre-Production-databases for the relevant Flight Management System FMS is a must.

E.1 Crewing

The Contractor shall

E.1.1. define crew qualification and skill sets required for the intended mission profile.

E.1.2. have a minimum crew on Flight Inspection / Flight Validation missions: 2 pilots, or define applicable means of compliance

E.1.3.define status of Cabin Crew / Nav Aid Inspectors .

F.1 Quality Management System QMS

The Contractor shall

F.1.1 have a QMS in place, including a relevant Audit program and procedures how to act on findings of these audits.

G.1 Operations Manual

The Contractor shall

G1.1. have an OM in place as the central way to document and communicate the scope of work and how to accomplish it. The OM has to be workable under all of the Organisation's operational circumstances , and shall cover, as a minimum, but not limited to, the

- Organizational set-up
- Responsibilities and accountabilities
- Theaters of Operation

- Aircraft related subjects (Minimum Equipment List (MEL), navigation equipment, etc.)
- Limitations and Minima
- Crewing
- Operational Procedures, Normal and Abnormal
- All weather operations
- Flight and Rest Time Limitations
- Training
- Security

H.1 Crew Resource Management (CRM) / Team Resource Management (TRM) / Crew Coordination Concept (CCC)

The Contractor shall

H1.1. have a CRM / CCC in place. Its CRM should be holistic in the sense of a Total Resource Management (TRM) scheme, i.e. encompasses cabin crew and rest of organization as well.

I.1 Standard Operating Procedures (SOPs)

The Contractor shall

L1.1. define SOPs to describe how certain aspects of the scope of work are handled by whom, and at what time within the organisation.

L1.2. SOPs must be in line with other documents, like the OM, CCC, checklists, etc.

J.1 Checklists

The Contractor shall

J1.1. Develop mission-specific/operational environment checklists

J1.2. have the checklists to be in line with SOPs and other procedures laid down in the OM.

J1.4. ensure the Checklist actions are achievable under all expected flight operations and conditions

K.1 Training & Checking

As the importance of training in aviation in general, and in Flight Inspection in particular, cannot be overstated, the Contractor shall

K1.1. define training scheme for both initial as well as recurrent training and adhere to that scheme.

K1.2. develop and implement a training program commensurate with other organisation's documents, like OM, CCC, Checklists, etc. . which does not only cover crew training, but all aspects of organisation's activities, like OPS, scheduling, etc.

K1.3. Contractors are to use suitably qualified simulators (either Full flight Simulators (FFS) or other Flight Training Devices (FTDs)) for flight training, both initial as well as recurrent.

L.1 Risk Mitigation Strategy

The Contractor shall

L1.1. Develop and implement a Risk Mitigation Strategy which encompasses all mission profiles and expected conditions

L1.2. identify the external circumstances of operation and associated risk