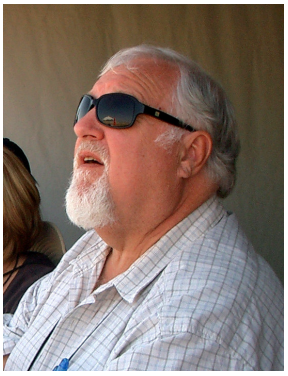
AGENDA ITEM 7.4



REPORT ON THE QINETIQ SYSTEM

25TH World Aerobatic Championships
19-29 August 2009

John Gaillard
Assistant Chief Judge

It was announced before the WAC that the QinetiQ aircraft tracking system would be used for the purposes of establishing Height penalties (both high & Low) as well as box infringement penalties, a copy of this announcement is attached.

My role was to record every infringement at the Chief Judge's work station after each competition flight and to ensure that this information was submitted to the scoring office via the Chief Judge.

In order to ensure that the information received was viable, every flight sequence was followed and places where possible infringements could have occurred were noted. A dedicated radio channel was used to make contact with the QinetiQ personnel who were situated at the control tower on the airfield. After a few flights a rhythm was established. Generally a couple of minutes after the completion of each flight, the box outs were given with reference to the side where the infringement occurred and the aerobatic figure on which they occurred. The same method was used to record height penalties.

In every instance the reported infringements were in places identified as being a possibility with the check already made during the flight itself by myself. I can therefore say that I have 100% confidence in the system and the results it produced.

An interesting fact is that more infringements were reported for the aircraft being high, than those for being low, the statistics are as follows:

1. Programme Q	Low Infringements	= 2		High Infringements	= 8
2. Programme 1	"	= 13		"	= 13
3. Programme 2*	"	= 0		"	= 15
Totals		**15**			**36**

4. Programme Q	Box Outs	= **46**
5. Programme 1	"	= **103**
6. Programme 2*	"	= **18**

*Only four flights completed and not included in WAC results.

This is an interesting situation as in my experience very few if any "too high" calls have ever carried at previous championships. The QinetiQ therefore brings something new to CIVA insofar as it ensures adherence to our Regulations in a situation which is very hard to assess by the naked eye.

Whilst I did not keep statistics it was apparent that on many occasions where a low had been recorded, only some Judges had noted this and many lows would not have carried based on the simple majority of Judges, this again is a very positive situation.

Conclusion

That CIVA utilise this system wherever possible, as it clearly gives far more reliable information than is possible manually.

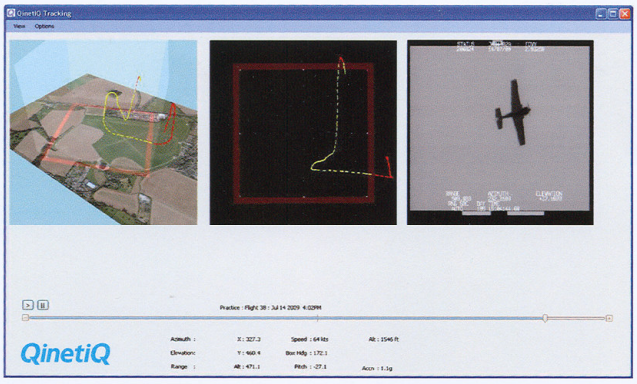
Attachments:

QinetiQ Pamphlet
WAC 2009 Jury Policy Letter 09-3
Report of Penalties awarded Silverstone via ACRO (separate document)

QinetiQ

Display aircraft monitoring systems

Improve the quality of scoring with independent tracking of competing aircraft using advanced radar and electro optical tracking instruments



Working with the British Aerobatics Association, QinetiQ has developed the dedicated scoring solution supporting the World Aerobatics Championship at Silverstone 2009.

- Accurate measurement of aircraft position
- Deployable anywhere in the world
- Independent and traceable scoring

QinetiQ has a long established history in the field of test and evaluation of both military and civil aircraft. A key element of this is the accurate tracking of airborne objects, providing Time, Space, Positional Information (TSPI) in real-time. This TSPI data can be used to control the test event or to evaluate the performance of the tracked object.

Using these capabilities QinetiQ has teamed with the British Aerobatic Association to provide a real-time display aircraft scoring package for the 2009 World Aerobatics Championship.

The package consists of an advanced Electo Optical Tracking Instrument (EOTI) and a dedicated computer display system. The EOTI using either its radar or optical systems provides real-time TSPI data which feeds into the display system. The software reads the data and plots the aircraft's height and position relative to the predefined performance zone. The display is then used by the judging panel to accurately evaluate the flight of the display aircraft and identify any infringements of the zone boundaries. The EOTI can also provide real-time video footage of the display aircraft that can be recorded and re-played for post-flight evaluation.

The complete package is self contained and fully mobile, allowing it to be deployed to green field sites anywhere in the world.

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To find out how QinetiQ can support your air events, contact us today.

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WAC 2009 Jury Policy 09-3

Use of the QinetiQ System for Measuring Box and Altitude Infringements

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Background

In WAC 2009 Bulletin #2, section 2.1, it was announced that a electronic system will be used in lieu of Line Judges at the World Championships this year. This system is being provided by QinetiQ (pronounced "kinetic"), a UK-based company in Farnborough. A leaflet describing the system is provided separately.

The use of an electronic tracking instrument is permitted in Sporting Code, Section 6, Part 1. See paragraphs 2.2.1.1. While this provision has been in the regulations for a very long time, the last time a tracking system was used was WAC 1980 in Oshkosh, Wisconsin, USA.

The QinetiQ system consists of an Electro Optical Tracking Instrument (EOTI) and a dedicated computer display system. The software reads the data and plots the aircraft height and position relative to the Aerobatic Zone. It is extremely accurate.

Further, Section 6 makes reference to the use of "precision height measuring devices" in sections 4.2.4.2 and 5.2.2.3. It is permissible under the regulations to use such devices to measure height (high and low).

Therefore, the International Jury has taken the decision that the QinetiQ system will be used for both box infringement and height penalties.

Operation

Three people, working under the supervision of the Chief Judge and International Jury, will be responsible for the operation of the QinetiQ system.

John Gaillard, former WAC Chief Judge, will be working with the system at Chief Judge Graham Hill's station. While it is in operation, there will be a single Line Judge (Stephen Madle) and a caller (Steve Kirton) working with him so that it is determined which figures are in or out. They will be based in the first floor of the tower building with a micro-wave link feeding them data from the radar head. They will be in personal mobile radio contact with John Gaillard at the judging table who will keep the Chief Judge informed of relevant details from the tracker.

Priorities and What the Judges Will Do

The QinetiQ system will be the primary method of assessing box infringement and height penalties. It will also be used for disqualification for violations of the 50 meter lower height limit.

Judges will mark "Positioning" and will indicate height infringements on their Form A's.

In the event of a QinetiQ system failure, the higher K factor (60K) will be applied for Positioning. Judges' votes on height penalties will become primary and entered into the scoring system.

Protests will not be accepted if there is a discrepancy between the QinetiQ data and the Judges' Form A's with regards to height penalties. Just as there is only one "official" video system, QinetiQ will be the official device for measuring height.

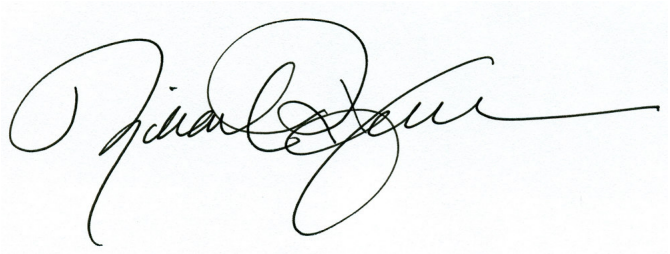
The QinetiQ system will be used for box infringements and height penalties and not for the grading of Positioning, as systems used in the past have done (WAC 1968 and the "Framing Machine" used there by the East Germans).

There are several provisions in the regulations dealing with "unsafe flying" and this policy does not dilute or change the authority the Board of Judges has in voting for disqualification. No machine can replace the human eyeball when it comes to assessing if a pilot is in trouble and flying dangerously.

Summary

The QinetiQ system will provide the fairest and most accurate method of measuring the pilots' ability to stay in the box. It will also provide the best method of measuring height – both high and low – that we have seen in World Championship competition.

Pilots will receive the most objective treatment on these important aspects of competition flying and we can be assured that the World Champions will be properly determined.



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MRH