Australian Licenced Aircraft Engineers Association

Supplementary submission

The above submission was prepared for the Friday hearing and remains unchanged. During that hearing we were asked to provide further information regarding two aspects of the submission which is detailed below also for the benefit of the Economics Legislative Committee.

Engine Mounts

More detailed evidence was requested about statements regarding the ineffectiveness of CASA to regulate Aviation, particularly offshore. Reference in our original submission to an aircraft that was maintained in Hong Kong by a company called HAECO. We reported that three out of four engines had not been fitted correctly and that CASA had allowed Qantas to not report the maintenance errors as required by the mandatory Service Difficulty Reporting (SDR) scheme. If reported and addressed correctly by CASA this would most likely have seen a worldwide inspection of engines fitted by HAECO to determine whether further similar issues existed with aircraft flying during that period. CASA immediately made press comments defending their actions and made the following comment about our submission on Saturday 15th March 2014 to ABC radio (appendix 13) –

> *But CASA spokesman Peter Gibson told the inquiry that Mr Purvinas's account of the defect was not correct.*
>
> *"As it turned out, it was one washer on one bolt on one engine that had been incorrectly installed. And naturally that shouldn't happen, but that's the scope of what it was," he said.*

CASA were well aware that this is was not confined to one washer on one bolt on one engine. Around this time the ALAEA had submitted a Repcon report with the ATSB about the inaction of CASA in relation to engine mount problems out of HAECO. CASA issue a bi-monthly magazine called Flight Safety Australia and the result of the Repcon investigation was published in CASA's own magazine. CASA had again tried to play down the significance of engines not being mounted correctly however they do discuss the problem being across multiple engines and multiple engine mounts. A copy from the CASA Nov-Dec 2009 Flight Safety Australia magazine appears below –

REPCON comment:

REPCON supplied the operator with the de-identified report and the operator provided the following comments:

> We have discussed the report within the organisation and were concerned at receiving such a letter given the lengths they as an organisation have gone to develop a safer work place.
>
> We have taken this report seriously. Based on the content of the letter and the reference to "developing a culture of pushing on no matter what" we must assume that the basis for the comment is due to weather considerations.
>
> We however are not in agreement with the content of the report and certainly not with regard to the comment pertaining to "lip Service" when referring to our Safety Management System.
>
> We further assure you that our pilots consider constantly the Safety Management System and its content.
>
> There are numerous examples of planned flights that we have both postponed and indeed cancelled due to conditions we render undesirable. We do not operate based on commercial pressures.
>
> We have developed a hierarchy of aircraft to be used in certain conditions and with regard a particular contract we perform a set of criteria by which we measure whether or not the flight should occur at all. We have elected not to fly on many occasions. These flights are simply not postponed but cancelled so we do not have the opportunity of flying them again. We get remunerated when we-fly, not when we cancel so if we were a company that considered the commercial ramifications first and practiced pushing on no matter what we would not be cancelling such flights.
>
> We welcome the opportunity to discuss this matter with our CASA delegate.
>
> We will also ensure that this REPCON is made known to all our operational staff if for no other reason than to demonstrate to them that others are watching.

REPCON supplied CASA with the de-identified report and a version of the operator's response. CASA advised that it has reviewed the REPCON report and conducted targeted operational surveillance on the operator. CASA is satisfied with the operator's response to the Report.

Operators service difficulty report system

R200900038

Report narrative

The reporter expressed safety concerns that one of the operator's aircraft flew for approximately 6 weeks with some of the aircraft's engine mounts incorrectly installed. The mounts were reported to have been installed at another maintenance facility. The reporter also expressed concerns that a Licensed Aircraft Maintenance Engineer had submitted an internal form to report to the operator that a serious defect had been found and that it was required to be reported to CASA via the CASA Service Difficulty Report system. The reporter believes that this report was not then submitted to CASA via their Service Difficulty Report system as the operator assessed the defect as not to meet the Service Difficulty Report requirements.

REPCON comment:

REPCON supplied the operator with the de-identified report. The operator advised that they had received a similar report through their internal reporting system. In accordance with published procedures the information contained in the report was reviewed. The review determined that the nature of the occurrence was such that no Service Difficulty Report was warranted as airworthiness was not affected.

They also advised that a further evaluation has taken place as a consequence of the submitted REPCON and this evaluation confirmed the appropriateness of the original decision.

REPCON supplied CASA with the de-identified report and a version of the operator's response. CASA advised that they have reviewed the issues raised in the REPCON and liaised with the operator. CASA provided the following comments:

> The maintenance was carried out by an organisation highly experienced on this aircraft type appropriately approved to do so by CASA (and many other National Airworthiness Authorities).
>
> At a subsequent maintenance visit it was reported by the operator's engineers that the mount bolts on a couple of engines were installed with only one flat washer fitted. This in fact is not a defect as the Aircraft Maintenance Manual and the operator procedures allow for the fitment with only one flat washer. It was thought to be the 'normal' operator's practice to fit two washers. No Service Difficulty Report to CASA was required for this matter.
>
> At some [illegible] reported that one of the engines [illegible] countersunk washers fitted incorrectly, ie upside down. This was considered a maintenance error and was investigated by the maintenance organisation and the operator. The bolts were removed and examined for damage by the operator, with no significant findings or indications that would suggest any reduced tensile strength. The bolts were replaced as an extra precaution.
>
> A review was conducted by the maintenance organisation for this maintenance error and it was not conclusive as to how the error occurred. The maintenance organisation sent a reminder to all engineers about the event. The errors were reported at the time of discovery by the operator to the CASA office oversighting the operator.

REPCON reports received	
Total 2007	117
Total 2008	121
First Quarter 2009	41
Second Quarter 2009	28
July/August 2009	16
What happens to my report?	
For Your Information issued	
Total 2007	58
Total 2008	99
First Quarter 2009	42
Second Quarter 2009	20
July/August 2009	23
Alert Bulletins issued	
Total 2007	1
Total 2008	12
First Quarter 2009	0
Second Quarter 2009	0
July/August 2009	0
Who is reporting to REPCON?#	
Aircraft maintenance personnel	27%
Air Traffic controller	4%
Cabin crew	3%
Facilities maintenance personnel /ground crew	0%
Flight crew	34%
Passengers	7%
Others*	25%

29 Jan 2007 to 31August 2009
* examples include residents, property owners, general public

How can I report to REPCON?
On line: ATSB website at <www.atsb.gov.au>
Telephone: 1800 020 505
by email: repcon@atsb.gov.au
by facsimile: 02 6274 [illegible]
by mail: [illegible]
PO Box 600, Civic Square ACT 2608

We also attach some of the original reports filed with Qantas by their Licenced Aircraft Engineers as attachment 14. You will note that these forms talk about the mounting issues again being spread across three engines. A possible consequnce of the defect has been noted across the forms as "shearing of bolts". Despite Engineers checking the boxes declaring that these items needed to be reported to CASA, they never were.

CASA has allowed Qantas not to file these reports and even 5 years on are still prepared to lie to the public by claiming it was only one bolt on one engine. Their own repsonse to the

ATSB shows that this is not the case. This and other instances of CASA defending and speaking on behalf of Qantas when they do not meet the regulatory requirements have led us to conclude that CASA are giving Qantas preferential treatment. A copy of the requirements is explained in the CASA Civil Aviation Advisory Publication (CAAP) regarding defect reporting are attached as appendix 15.

Staff Allocation in Overseas Facilities

During verbal submissions we explained that it is typical for an operator in Asia to operate approximately six concurrent lines of maintenance in their hangars. We explained that it was usual for the airline who sponsors the facility to send the most experienced teams to their own aircraft with the less experienced crews working the customer aircraft.

We have been asked to substantiate the statements. These reports of inadequate staffing on Qantas aircraft that reside in the outer Heavy Maintenance bays has come from members who have accompanied aircraft in these facilities across many years. It would be nigh on impossible for us to obtain crew lists from other operators showing the years of experience of each employee.

The evidential support to substantiate these ongoing claims of our members resdides in reports of a different nature. Attached is appenix 16 which shows some maintenance breaches from a Singaporean facility on aircraft VH-TJX in April 2010. The listed errors note –

- *06-April-10 LAE's working far too many hours, no fatigue management evident. Roland called in on only day off for several weeks 04/04/10*
- *ST Aero staff being constantly moved between aircraft, possible confusion on tasks and continuity.*
- *Several S/metal AMEs found working on aircraft with NO LAE coverage.*
- *Avionics AMEs found working on aircraft with NO LAE coverage.*

The above practices are illegal in Australia. We trust this satisfies the Senate request for further substantiating evidence to support claims made by the ALAEA in relation to the hearing of Friday 14th March 2014.

Kind Regards
Steve Purvinas
Australian Licenced Aircraft Engineers Association
Federal Secretary

Appendix 13

ABC NEWS

CASA defends against claim Qantas engine not attached correctly after offshore maintenance

AM By Natalie Whiting

Posted Sat 15 Mar 2014, 12:26pm AEDT

The Civil Aviation Safety Authority (CASA) has hit back at claims that it is failing in its duty to oversee safety in the industry.

During a Senate inquiry into Qantas yesterday, an engineering union official accused CASA of failing to properly supervise maintenance and of favouring the national airline.

The federal secretary of the Australian Licensed Aircraft Engineers Association, Steven Purvinas, said that the engines of a Qantas jet were not properly attached after it was serviced in Hong Kong.

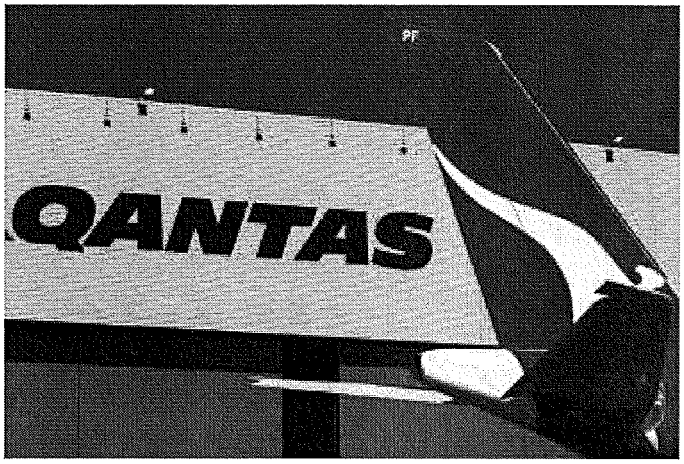


PHOTO: CASA has been accused of being "nothing more than another arm of Qantas' industrial relations department". (Flickr: Sheba_Also)

RELATED STORY: Alan Joyce defends Qantas job cuts at inquiry

RELATED STORY: Virgin runs loss-making 'strategy directed at weakening Qantas'

RELATED STORY: Qantas maintenance workers heartbroken to leave

MAP: Australia

He says the jet flew for about a month afterwards before an Australian engineer discovered that three of the four engines were not bolted on correctly.

He raised concerns that sending maintenance offshore was putting public

safety at risk.

The Senate inquiry was meant to be investigating the future of Qantas and its decision to shed 5,000 jobs.

"I have a very dim view on CASA's oversight of maintenance in this country and outside of Australia. We do not have confidence in CASA to provide effective oversight," Mr Purvinas said.

But CASA spokesman Peter Gibson told the inquiry that Mr Purvinas's account of the defect was not correct.

"As it turned out, it was one washer on one bolt on one engine that had been incorrectly installed. And naturally that shouldn't happen, but that's the scope of what it was," he said.

Mr Purvinas alleges the defect was not documented properly and that CASA failed to submit a mandatory report.

AUDIO: Listen to Natalie Whiting's story. (AM)

While Mr Gibson was not able to confirm if the report had been filed or not, he says the regulator took appropriate action.

But Mr Purvinas accused CASA of being "nothing more than another arm of Qantas' industrial relations department".

"I think they've been a victim of corporate capture. They've gotten too close to the airline," Mr Purvinas said.

"A lot of them are friends with people who work for Qantas.

"And I just think that corporate capture, Stockholm Syndrome, whatever you want to call it," he said.

Mr Gibson says there is no difference to CASA whether maintenance is conducted onshore or offshore.

"They must work to Australian standards and they must continue to meet those standards at all times," he said.

Mr Gibson rejected that Qantas received preferential treatment

"We certainly do not favour any particular airline. We certainly do not turn a

blind eye to any practices," he said.

"Where we have evidence of safety standards slipping, we step in and take action."

Qantas chief executive Alan Joyce has also rejected claims that the airline has a special relationship with the aviation safety regulator.

Topics: business-economics-and-finance, air-transport, federal-government, australia

Appendix 14

Form 500 09-Q00240

All fields with dark grey background titles are mandatory.

Registered By:	ANDREW RYAN	Registered Date/Time:	06/01/2009
Form 500 Report Title:	#2 ENG MOUNT BOLTS WASHERS INCORRECTLY INSTALLED	A/C Registration:	OJG
Model:	747-438	Occurrence Date:	06/01/2009
Nature of Report:	Quality Report, Engineering Report, Customer Complaint	Occurrence Time:	0900 (Local 24 Hr)
Secondary Rework:	Yes	SDR/Reportable Defect?	Yes
AD Related?:	No	AD Reference No.:	
Near Miss?		Operator:	QF - Qantas
Flight No:	QF32	Submitting Department:	BASE MAINTENANCE 001
This Station:	SYD BM - SYD BASE MAINT	Next Station:	BKK - BANGKOK
		S.T.D:	(Local 24 Hr)
		Estimated Cost:	$1K - $10K
Maintenance Error:	Installation Error	Maintenance Error Type:	Required equipment/part not installed
Insurance:	Yes	Insurance Works Order:	
Occurrence Category:	Other	Document Reference:	DR&R 006027
Part Quarantined:	No		

Detected: On Ground ETOPS No

ATA: 7120 00 MOUNTS

Component Description	Part Number	Serial No.	Position

Details: Andrew ARY11 Ryan on 6/01/2009 11:54:02 AM
INSP OF#2 ENG. TWO OF AFT ENG MOUNT BOLTS & ONE OF FWD ENG MOUNT AFT BOLTS FOUND WITH INCORRECT WASHER ORIENTATION.

Corrective Actions Taken: ALL BOLTS CHANGED DUE ENG CHANGE.

Possible Consequences of Defect/SDR: SHEARING OF BOLTS

Mark MST41 Stanton/SYD/QANTAS

Send Copy To / CC :	Rodney RPU05 Pulbrook/SYD/QANTAS Greg GBO01 Boyce/SYD/QANTAS Craig CHO59 Howell/SYD/QANTAS Andrew ARY11 Ryan/SYD/QANTAS

Severity:	Moderate	Likelihood:	Unlikely
Followup Allocated To:	ALEX PARPAIOLA QUALITY SYSTEM STANDARDS 458	Risk:	Medium
Secondary Alllocated To:		Due Date:	21/01/2009

Action Taken:	Alex APA25 Parpaiola on 7/01/2009 9:16:27 AM Review for possible sdr/mei. Alex APA25 Parpaiola on 7/01/2009 1:56:03 PM Refer to MEI 09/SI/12

Report Status:	Closed	AQD Ref:	
Manhours:		Manhour Costs:	0.00
Other Costs:	0.00	Total Costs:	0.00

Distribution

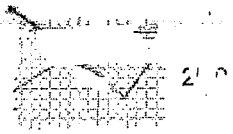
Engineering Report Department	Powerplants Rolls Royce
Local Quality Coordinator	Engineering Services
Quality System & Risk Management	

Attachment: No

Print | Exit

Modification History

Form500 raised by Andrew ARY11 Ryan on 6/01/2009 11:54:02 AM
Modified by Alex APA25 Parpaiola on 7/01/2009 9:16:28 AM
Status updated by Alex APA25 Parpaiola on 7/01/2009 9:16:28 AM from For Review to Followup
Local Quality Coordinator' updated by Alex APA25 Parpaiola on 7/01/2009 9:16:28 AM from Heavy Maintenance to Engineering Services
Modified by Alex APA25 Parpaiola on 7/01/2009 1:56:03 PM
Status updated by Alex APA25 Parpaiola on 7/01/2009 1:56:03 PM from Followup to Closed
Local Quality Coordinator' updated by Alex APA25 Parpaiola on 7/01/2009 1:56:03 PM from Heavy Maintenance to Engineering Services
Modified by Alex APA25 Parpaiola on 7/01/2009 1:59:44 PM
Risk updated by Alex APA25 Parpaiola on 7/01/2009 1:59:44 PM from Low to Medium
Local Quality Coordinator' updated by Alex APA25 Parpaiola on 7/01/2009 1:59:44 PM from Heavy Maintenance to Engineering Services



cc

bcc

Subject Fw: Form 500 - Ref:09-Q00240 Reg:OJG SYD BM - SYD BASE MAINT

To: Mark MST41 Stanton/SYD/QANTAS@QANTAS, Rodney RPU05 Pulbrook/SYD/QANTAS@QANTAS, Greg GBO01 Boyce/SYD/QANTAS@QANTAS, Craig CHO59 Howell/SYD/QANTAS@QANTAS, Andrew ARY11 Ryan/SYD/QANTAS@QANTAS
From: do-not-reply@QANTAS.com.au
Sent by: Qantas AgentExec/QANTAS
Date: 01/06/2009 11:54AM
Subject: Form 500 - Ref:09-Q00240 Reg:OJG SYD BM - SYD BASE MAINT

Do not reply to this e-mail!
The Form 500 Report has been raised by ANDREW RYAN from location SYD BM - SYD BASE MAINT
Report Title: #2 ENG MOUNT BOLTS WASHERS INCORRECTLY INSTALLED

This report has been sent to you for information.

This report contains Confidential and Private information and should not be forwarded without the expressed permission of a Qantas Engineering Manager.

Click on the link to access the document...
http://QFSYDAPP01.QANTAS.com.au/Apps/Form500.nsf/vwAllByUNID/A77790E2066D1D77CA2575360004F264?OpenDocument

09-Q00240

Form 500 -

Registered By	ANDREW RYAN	Registered Time/Date	06/01/2009
Report Title	#2 ENG MOUNT BOLTS WASHERS INCORRECTLY INSTALLED	A/C Registration	OJG
Occurrence Date	06/01/2009	Model	747-438
Nature of Report		Occurence Time	0900
Secondary Rework		SDR/Reportable Defect?	
AD Related?		AD Reference No.	
Near Miss?		Operator	QF - Qantas
Flight Number	QF32	Submitting Department	BASE MAINT 001
This Station	SYD BM - SYD BASE MAINT	Next Station S.T.D	BKK - BANG
		Estimated Cost	$1K - $10K
Maintanence Error	Installation Error	Maintanence Error Type	Required equi installed
Insurance		Insurance Work Order	
Occurence Category	Other	Document Reference	DR&R 00602'
Part Quarantined		Quarantine Reason	
Detected		ETOPS	
ATA	7120 00 MOUNTS		

Component Description	Part Number	Serial No	Position

Details	Andrew ARY11 Ryan on 6/01/2009 11:54:02 AM INSP OF#2 ENG. TWO OF AFT ENG MOUNT BOLTS & ONE OF FWD ENG MOUNT AFT BOLTS FOUND WITH INCORRECT WASHER ORIENTATION.		
Corrective Action Taken	ALL BOLTS CHANGED DUE ENG CHANGE.		
Possible Consequences of Defect/SDR	SHEARING OF BOLTS		
Send Copy To / CC	MARK STANTON;032598;MST41;Mark MST41 Stanton/SYD/QANTAS		
Severity		Likelihood	
Followup Allocated To		Risk	
Secondary Alllocated To		Due Date	
Action Taken			
Report Status	For Review	AQD Ref	
ManHours		Manhours Costs	0.00
Other Costs	0.00	Total Costs	0.00
Distribution			
Engineering Report Department	Powerplants Rolls Royce		
Local Quality Coordinator	Heavy Maintenance		
Quality System & Risk Management			
Has Attachment			

Modification History Form500 raised by Andrew ARY11 Ryan on 6/01/2009 11:54:02 AM

cc

bcc

Subject Fw: Form 500 - Ref:09-Q00238 Reg:OJG SYD BM - SYD BASE MAINT

To: Mark MST41 Stanton/SYD/QANTAS@QANTAS, Rodney RPU05 Pulbrook/SYD/QANTAS@QANTAS, Greg GBO01 Boyce/SYD/QANTAS@QANTAS, Craig CHO59 Howell/SYD/QANTAS@QANTAS, Andrew ARY11 Ryan/SYD/QANTAS@QANTAS
From: do-not-reply@QANTAS.com.au
Sent by: Qantas AgentExec/QANTAS
Date: 01/06/2009 11:28AM
Subject: Form 500 - Ref:09-Q00238 Reg:OJG SYD BM - SYD BASE MAINT

Do not reply to this e-mail!
The Form 500 Report has been raised by ANDREW RYAN from location SYD BM - SYD BASE MAINT
Report Title: #3 ENG FWD MOUNT BOLTS(AFT) MISSING WASHERS

This report has been sent to you for information.

This report contains Confidential and Private information and should not be forwarded without the expressed permission of a Qantas Engineering Manager.

Click on the link to access the document...
http://QFSYDAPP01.QANTAS.com.au/Apps/Form500.nsf/vwAllByUNID/E11E2F9BC7505598CA25753600029723?OpenDocument

Form 500 - 09-Q00238

Registered By	ANDREW RYAN	Registered Time/Date	06/01/2009
Report Title	#3 ENG FWD MOUNT BOLTS(AFT) MISSING WASHERS	A/C Registration	OJG
Occurrence Date	06/01/2009	Model	747-438
Nature of Report		Occurence Time	0900
Secondary Rework		SDR/Reportable Defect?	
AD Related?		AD Reference No.	
Near Miss?		Operator	QF - Qantas
Flight Number	QF32	Submitting Department	BASE MAINT 001
This Station	SYD BM - SYD BASE MAINT	Next Station S.T.D	BKK - BANG
		Estimated Cost	$1K - $10K
Maintanence Error	Installation Error	Maintanence Error Type	Required equi installed.
Insurance		Insurance Work Order	
Occurence Category	Other	Document Reference	DR&R 00602
Part Quarantined		Quarantine Reason	
Detected		ETOPS	
ATA	7120 00 MOUNTS		

Component Description	Part Number	Serial No	Position

Details	Andrew ARY11 Ryan/SYD/QANTAS on 6/01/2009 11:28:18 AM INSP OF#3 ENG FOUND FWD ENG MOUNT AFT BOLTS HAVE ONLY ONE WASHER UNDER NUTS.(SHOULD HAVE 2 WASHERS UNDER EACH NUT)		
Corrective Action Taken	DUE TWO THREE OUT OF THE FOUR ENG HAVING INCORRECT BOLT FITMENT,ALL BOLTS ARE TO BE CHANGED ON #3 ENG		
Possible Consequences of Defect/SDR	OVER TORQUE BOLTS		
Send Copy To / CC	MARK STANTON;032598;MST41;Mark MST41 Stanton/SYD/QANTAS		
Severity		Likelihood	
Followup Allocated To		Risk	
Secondary Alllocated To		Due Date	
Action Taken			
Report Status	For Review	AQD Ref	
ManHours		Manhours Costs	0.00
Other Costs	0.00	Total Costs	0.00
Distribution			
Engineering Report Department	Powerplants Rolls Royce		
Local Quality Coordinator	Heavy Maintenance		
Quality System & Risk Management			
Has Attachment			

Modification History Form500 raised by Andrew ARY11 Ryan/SYD/QANTAS on 6/01/2009 11:28:18 AM

Appendix 15

Australian Government
Civil Aviation Safety Authority

CAAP 51-1(2)

Civil Aviation Advisory Publication

November 2012

Defect Reporting

CAAPs provide guidance, interpretation and explanation on complying with the Civil Aviation Regulations (CAR) or Civil Aviation Orders (CAO).

This CAAP provides advisory information to the aviation industry in support of a particular CAR or CAO. Ordinarily, the CAAP will provide additional 'how to' information not found in the source CAR, or elsewhere.

A CAAP is not intended to clarify the intent of a CAR, which must be clear from a reading of the regulation itself, nor may the CAAP contain mandatory requirements not contained in legislation.

Note: *Read this advisory publication in conjunction with the appropriate regulations/orders.*

Contents

The relevant regulations and other references

- Part 4B of CAR 1988, deals with reporting of defects on Australian aircraft or components.

This CAAP will be of interest to:

- Aircraft Registered Operators
- Certificate of Approval holders
- Air Operator's Certificate holders
- Aircraft Engineer Licence holder
- Pilots or other persons authorised to carry out maintenance.

Why this publication was written

Regulations 51, 51A, 51B and 52 of the Civil Aviation Regulations (CAR 1988), require the reporting of defects in aircraft and aircraft components to the Civil Aviation Safety Authority (CASA).

This Civil Aviation Advisory Publication (CAAP) provides guidance as to the kind of defects that must be reported to CASA and when. This CAAP does **not** deal with defect reporting required by Part 42 of the Civil Aviation Safety Regulations 1998 (CASR 1998).

Status of this CAAP

This CAAP replaces CAAP 51-1(1) dated June 2001. The CAAP has been amended to address a mismatch between established practices and new technology which has emerged over the past decade.

For further information

Contact the CASA Service Difficulty Reporting (SDR) Unit on 131 757

1. Acronyms

AD Airworthiness Directive

AOC Air Operator's Certificate

CAAP Civil Aviation Advisory Publication

CAR Civil Aviation Regulations 1988

CASA Civil Aviation Safety Authority

CASR Civil Aviation Safety Regulations 1998

MLG Main Landing Gear

OEM Original Equipment Manufacturer

RO Registered Operator

SDR Service Difficulty Reporting

2. Definitions

The *CASR Dictionary* defines MAJOR DEFECT to mean:

- in relation to an aircraft, a defect of such a kind that it may affect the safety of the aircraft or cause the aircraft to become a danger to persons or property; and
- in relation to an aircraft component that is not fitted to an aircraft, a defect of such a kind that if the component is fitted to an aircraft it may affect the safety of the aircraft or cause the aircraft to become a danger to persons or property.

CASA regards a DEFECT as any defect that is not a major defect and is something that is an imperfection that impairs the structure, composition, or function of an object or system of an aircraft or component.

MALFUNCTION - when a part of an aircraft structure, aircraft engine, propeller, system or component fails to operate in the manner for which it was designed.

FAILURE - the lack of expected or satisfactory performance. (Example: the overloading or overstraining of a structure to such an extent that it can no longer perform its required function).

3. Introduction

3.1 The purpose of the defect reporting scheme is to:

- permit the assessment of reports to detect trends in the Australian aircraft fleet and products;
- permit timely airworthiness and safety oversight of the Australian aircraft fleet;
- provide feedback to industry to promote aircraft & product improvement; and
- assist in long term improvement in design, manufacturing and maintenance standards.

3.2 CASA uses SDRs as a means of identifying trends in design and maintenance reliability. Reports are entered into a database by CASA and a de-identified summary of submitted SDR data is available on CASA's website. It is of benefit to both CASA and the aviation industry that the database contains as much accurate information as possible. CASA may use this information as a basis for an Airworthiness Directive (AD), other advisory publications, such as Airworthiness Bulletins and other appropriate regulatory purposes. From this database, information may be obtained to provide reliability statistics and trend monitoring of aircraft, engines, propellers, systems and components. CASA shares this information with other regulatory authorities.

3.3 CASA publishes monthly and yearly summaries of SDR information on its website. Archived records are also available from the CASA SDR Unit. You can access summaries of Australian and Foreign defect reports from the following web sites:

CASA: http://www.casa.gov.au/airworth/sdr/

FAA: http://av-info.faa.gov/sdrx/

TC: http://wwwapps3.tc.gc.ca/Saf-Sec-Sur/2/CAWIS-SWIMN/

3.4 CASA also makes a selection of SDR summaries that may be of interest to the aviation community and publishes them in its Flight Safety magazine.

4. Reportable defects

4.1 Regulations 51, 51A, 51B and 52 of CAR 1988 state that those who own, operate or maintain Australian aircraft must advise CASA (in accordance with Regulation 52A of CAR 1988) of the existence of any:

- major defect related to an aircraft;
- defect discovered while complying with an AD or a direction given by the Authority under Regulation 38 of CAR 1988; and
- defect in an aircraft or an aircraft component that if installed in an aircraft would affect its safety or result in a danger to person or property.

4.2 The Regulations make a distinction between 'defects' and 'major defects'.

Regulation 51A of CAR 1998 - major defects

4.3 All major defects to which Regulation 51A of CAR 1988 applies discovered in an aircraft must be reported to the Authority immediately. Regulation 51A of CAR 1988 applies to major defects:

- that have caused, or that could cause, a primary structural failure in an aircraft;
- that have caused, or that could cause, a control system failure in an aircraft;
- that have caused, or that could cause, an engine structural failure in an aircraft; or
- caused by, that have caused, or that could cause, fire in an aircraft.

Other major defects or defects

4.4 All other major defects and other defects (being those covered by regulations 51, 51B and 52 of CAR 1988) must be reported to CASA within two (2) working days of their discovery. These include:

- a defect discovered in an aircraft in the course of complying with an Airworthiness Directive or a Regulation 38 of CAR 1988 direction (but if the defect discovered is a CAR 51A major defect it should be reported immediately);

- a defect discovered in an aircraft component when:
  - a person engaged in the maintenance of an aircraft component becomes aware of a defect in the component;
  - a person engaged in the maintenance of an aircraft becomes aware of a defect in an aircraft component that the person proposed to install in the aircraft in the course of that maintenance;
  - a person who holds a certificate of approval that covers the maintenance of aircraft components becomes aware of a defect in an aircraft component that he or she owns; or
  - a person who holds an Air Operator's Certificate (AOC) becomes aware of a defect in an aircraft component that he or she owns and intends to install in an aircraft used in operations under that AOC.

4.5 A list of examples of major defects can be found in Appendix A of this CAAP.

4.6 Failure to report a defect when required by the Regulations is an offence of strict liability and may result in prosecution and/or administrative action.

4.7 Any defective parts must be kept in a state that will allow CASA to investigate the defect for a period of 12 months after the defect is reported. CASA can and usually does, on request release parts for repair or disposal at an earlier time.

4.8 CASA encourages reporting of defects the Regulations do not require be reported, where the reporter considers the provision of such information could be of value to CASA or the aviation community. For example, a non-major defect found during the normal course of inspection may be reported if in the opinion of the person performing the inspection, the defect may highlight maintenance errors.

5. Reporting guidelines

5.1 General

5.1.1 To assist in reporting defects in accordance with the requirements of Regulation 52A of CAR 1988, CASA has produced a Defect Report Form (CASA Form 404). This form provides a standard format which facilitates the submission of complete data and reduces the time and cost associated with submitting a report. CASA Form 404 is available at http://www.casa.gov.au/manuals/regulate/mdr/form404.pdf.

5.1.2 When reporting a defect, you should provide as much descriptive information as possible on the cause of the problem. Any attachments, such as photographs and sketches of defective parts, are also appreciated. However, you should not submit any physical parts to CASA unless directed to do so by CASA.

5.1.3 A defect report must be submitted within the time limits required by the regulations. However, when all of the required information is not available within the required time for submitting the report, the submitter should state on the defect report that the report is still open. When the investigation has been completed, the submitter must file a final defect report. If the investigation will take more than two months to complete, the submitter should provide one or more follow-up (interim) reports. These reports should be submitted whenever the investigation has reached one of its milestones or a finding significant for the safety of operation has been established.

5.1.4 It is the responsibility of the Registered Operator (RO) to ensure that any necessary investigation of the cause of the defect is carried out and the results submitted to CASA.

5.1.5 The use of abbreviations in defect reports should be kept to a minimum, unless used universally (e.g. MLG).

5.1.6 In relation to major defects, the RO of the aircraft may, in a contractual agreement with a maintenance organisation, assign the task of submitting the major defect report to CASA. However, the ultimate responsibility for submission of the required report remains with the RO of the aircraft.

5.1.7 Instructions for completing CASA Form 404 are included in Appendix B of this CAAP.

6. Where to submit defect reports

6.1 Defect Reports

6.1.1 You may submit a defect report to CASA by any of the following means:

- **By Mail:**
  Mail, free of postal charge from anywhere within Australia, a completed Defect Report Form (CASA Form 404) to the following address:

  Civil Aviation Safety Authority
  SDR Unit
  Airworthiness and Engineering Branch
  Reply Paid 2005
  Canberra ACT 2601

- **By Facsimile:**
  Fax the CASA Form 404 to the following number: (02) 6217 1920

- **On-line:**
  Submit a defect report through the CASA web site via the following link:
  http://www.casa.gov.au/airworth/sdr/

- **Email:**
  sdr@casa.gov.au

6.1.2 If you have your own reporting system and wish to submit reports generated by your system to CASA, please liaise with CASA SDR staff to organise the format of the report before commencing.

6.2 Major defect Reports

For defects requiring immediate notification, CASA only requires a notification of the defect. There is no need to complete either CASA Form 404 or the online form initially, CASA will expect a complete report to follow up the initial notification.

- **By Phone:**
  Contact the AD/SDR cell on 131 757 (business hours)

- **On-line:**
  Submit a defect report through the CASA web site via the following link:
  http://www.casa.gov.au/airworth/sdr/

- **Email:**
  sdr@casa.gov.au
- **By Facsimile:**
  Fax a notification of the defect to the following number: (02) 6217 1920

7. Use and disclosure of reported information

7.1 CASA will only use or disclose information reported under the defect reporting scheme for purposes consistent with the interests of safety and in accordance with applicable laws.

Executive Manager
Standards Division

November 2012

Appendix A

Examples of Major Defects

Listed below are some representative examples of major defects. The list is **not** exhaustive. If you have any doubt about whether a defect is a major defect, you can seek advice from the CASA SDR Unit by email sdr@casa.gov.au or phone 131 757:

(a) fires during flight, whether or not the related fire warning system operated correctly;

(b) false fire warning during flight;

(c) smoke, toxic or noxious fumes inside the aircraft;

(d) an engine exhaust system that causes damage during flight to the engine, adjacent structure, equipment or components;

(e) unscheduled engine shut-down;

(f) on a multi-engine helicopter, loss of drive from one engine;

(g) inability to feather or unfeather a propeller, to shut-down an engine or to control thrust;

(h) fuel system malfunction affecting fuel supply and distribution;

(i) significant contamination or leakage of fuel, oil or other fluids;

(j) use of incorrect fuel, oil or other fluids;

(k) landing gear failing to extend or retract, or uncommanded opening or closing of landing gear doors during flight;

(l) brake system defects that result in inability or reduction in ability to brake when the aircraft is in motion on the ground;

(m) malfunction, stiffness, slackness or limited range of movement of any flight controls;

(n) significant failure or malfunction of the instrument, electrical, hydraulic, pneumatic, ice-protection, radio, navigation system or emergency equipment or a defect that could cause such a failure;

(o) a defect causing uncontrollable cabin pressure;

(p) cracks or corrosion in the primary structure:

- Corrosion levels are defined as follows:
  - Level 1 – Corrosion damage occurring between successive inspections, that is localised and can be blended-out to within allowable limits as defined by the Original Equipment Manufacturer (OEM), and surface treated appropriately.
  - Level 2 – Corrosion damage occurring between successive inspections, that exceeds allowable limits as defined by the OEM that requires blending, rework or replacement as well appropriate surface treatment action.
  - Level 3 – Severe corrosion damage, significantly in excess of OEM guidelines, that requires urgent structural reinforcement, component replacement and appropriate surface treatment.

    Note: *A defect report must be submitted for corrosion on discovery of levels 2 and 3 only.*

(q) any malfunction, failure or defect that affects or could affect the performance of any system or component essential to the safe operation of the aircraft;

(r) (removed);

(s) malfunction of systems or components, or a defect that could cause such a malfunction - including auxiliary power units, essential to the safe operation of those aircraft approved for extended diversion time operations irrespective of the type of operation being, or intended to be, conducted;

(t) failure of helicopter driveline components;

(u) separation of any part of an aircraft, which may become a hazard to the aircraft or persons;

(v) Failures in digital computer based equipment and systems, categorised as critical or essential (i.e. level A or B software), and the digital computer software used in this equipment, or system which is software whose anomalous behaviour, would cause or contribute to a failure of system function resulting in a hazardous condition for the aircraft.

(w) any other defect which the operator believes may be of interest to the regulator or the aviation community.

Note: *Definitions for the classification of equipment, systems and software are contained in Radio RTCA Inc. publication RTCA/DO-178B.*

Appendix B

Instructions for completing CASA Form 404 by the submitter:

1. *Aircraft Registration* - Enter the complete aircraft registration mark.

2. *Date of occurrence* - Enter the date the failure, malfunction, or defect occurred, or was discovered. This entry should be made in a numeric format (dd/mm/yy).

3. *Operator Name* - Enter the name of the registered operator of the aircraft.

4. Major Equipment Identity:
   - AIRCRAFT - Enter the aircraft manufacturer's name.
     - Aircraft Model - This should be the official designation of the aircraft as listed in the Aircraft Specification or Type Certificate Data Sheets.
     - Aircraft Serial Number - The serial number assigned by the manufacturer.
     - Time Since New (TSN) - Enter the aircraft's total time since new in whole hours. Enter the aircraft's accumulated cycles. Mark the appropriate box to indicate the time units used.
     - Time Since Last Maintenance Check (TSLMC) - Enter the aircraft's total time since its last maintenance check in whole hours. If applicable, enter the aircraft's accumulated cycles. Mark the appropriate box to indicate the time units used.
   - Engine - Enter the engine manufacturer's name, model/series and serial number. Engine time related information is TSN or TSO (Time Since Overhaul).
   - Propeller - Enter the propeller manufacturer's name, model/series, and serial number should be entered. The propeller's time related information is TSN or TSO.

     Note 1: *When an engine or propeller problem or condition is being reported, it is a requirement to include engine or propeller information and the aircraft make and model information. This information is needed because of the inter-changeability of engine and propeller models on various aircraft.*

     Note 2: *Model and serial numbers should include prefix letters, if appropriate, but should not incorporate dashes, slashes, or blank spaces. If the component is amateur built, use the kit name. Avoid informal names and marketing titles.*

5. Aeronautical Product (Component):
   - Name - Enter the name of the aeronautical product that contains the part. For example, when the defective part is a bearing, the aeronautical product will be the unit that contains the bearing, such as a starter or alternator. For a defective exhaust valve, enter the cylinder identity, etc. This level of identification is important for output data sorting, interrogation, and trend analysis. A defect report submitted as an open report may only contain information on the aeronautical product until teardown reveals the specific part that was defective.
   - Manufacturer - Enter the manufacturer's name of the component/assembly being reported.
   - Model Number - Enter the applicable manufacturer's model number of the aeronautical product.
   - Serial Number - Enter the applicable manufacturer's serial number of the aeronautical product.

6. *Part* - Enter information about the specific part causing the problem. For example, bearing, spar, etc. In some instances, it may be possible to further identify the specific part, within a aircraft component, that failed, malfunctioned or was defective. For example, if a VHF communication system malfunctions and during the investigation of the VHF system, a damaged wire is discovered to have caused the malfunction. In this example, the wire is the specific part to be reported. The submitter would, therefore, be required to report all information pertaining to the wire:

- Part Name - Enter the manufacturer's part name of the specific part causing the difficulty.
- Part Number - Enter the applicable manufacture's part number.
- Part Condition - Enter the word(s) that best describes the condition of the part. Avoid the use of such terms as "unserviceable" or "repairable." If multiple word(s) are needed to describe the condition, enter the most significant word in the "Part Condition" block.
- Location on Aircraft - Enter location of the defective part or the defect. For example, right gearbox, aeroplane jack point, left outboard, etc.
- Time Since New (TSN) - Enter the total service time of the part since new in whole hours (HRS), accumulated cycles (CYCS) or landings (LNDS), or the part's total calendar time in months (MTHS), as applicable. Mark the appropriate box to indicate the time units used. In the case of a turbine engine, it is required to enter the number of cycles since new.
- Time Since Overhaul (TSO) - Enter the service time of the part since the last overhaul, in whole hours (HRS), accumulated cycles (CYCS) or landings (LNDS), or the part's total calendar time in months (MTHS), and mark the appropriate box to indicate the time units used, if applicable. If the part has not been overhauled since it was new, no information would be entered in this block.
- Available for Inspection - Mark the appropriate box if the defective part is available for inspection by the Authority.

7. When was the defect found?

Mark the appropriate box that best describes the stage of flight, ground or maintenance operation the aircraft was engaged in when the reported malfunction, failure or defect occurred, or was observed. This includes defects found after an accident, during compliance with an AD or Service Bulletin. Mark the box 'Other' if the stage of operation is unlisted and enter the operation - for example, preflight check.

If any AD, Service Bulletin, modification etc. exists, enter the document reference and mark the appropriate compliance status box.

8. *Opinion as to the cause of the defect* - At times, it is likely that the defect may appear to have been due to multiple reasons that led ultimately to the, failure, malfunction or defect. Seek to be as objective as possible in determining the contributing factor or root cause.

Mark the box or boxes, provided in this section of the form, that best describe the reason for the failure as follows:

- Design - Where the component does not meet its intended function or it is being required to do something outside the design scope.
- Manufacture - Where the component has not been appropriately manufactured or properly finished. For example, stress concentrators were not removed.
- Fatigue - Where the defect or failure exhibits classic fatigue symptoms.
- Corrosion - Corrosion, environment and age are closely related, particularly in older aircraft.

- Inadequate maintenance - Where the defect or failure is attributed to poor maintenance practices arising from lack of data, incorrect procedures, inadequate quality control, lack of appropriate training etc.
- Human factors - Where the defect occurred as a result of personnel error while carrying out maintenance. For example, failure to follow the correct instructions, use of inappropriate equipment/tools, or the use of incorrect fuel or lubricants.
- Suspected unapproved parts - Where the defect occurred as a result of the use of counterfeit or life expired parts. With older aircraft and the lack of approved spares, counterfeit parts are an increasing problem. This can also be related to personnel error or inadequate maintenance. The identification of counterfeit parts is of paramount importance.
- Operational - Where the defect occurred as a result of incorrect, inadvertent or uncommanded operation. This can also be related to personnel error other than during maintenance.

9. Defect description and investigation result - describe the defect, the circumstances under which it occurred, any indications or warnings and its non-apparent effects on the aircraft or other systems. State the probable cause, action taken to rectify the defect and recommendations to prevent recurrence.

10. Submitter's details - Enter the submitter's name, Aviation Reference Number (ARN) if any, company name, address (including postcode), telephone number (including area code) where the submitter or another person with knowledge of the defect may be contacted if the Authority needs further clarification regarding the defect report.

Enter the date when the report is submitted to the Authority. This is not the date when the failure, malfunction, or defect was discovered.

11. Defect Report Type - Mark the appropriate box as follows:

- Notification of defect with complete investigation results - Where no further submissions are anticipated.
- Initial defect notification only - Where the report does not contain all the required information or investigation results and a follow-up report is required to be submitted.
- Follow-up report from earlier defect notification - Where additional information or investigation results are being submitted following the initial defect notification.

12. Submitter Reference Number - Enter your own report reference number for future reference.

Appendix 16

QUALITY ISSUE LIST - Outsourced Heavy Maintenance Check

Important Notes:

1	All risk ratings to be performed in accordance with the 'Qantas Group - Risk Assessment Guide'
2	Issue list to be emailed to Qantas Management Team every 'Friday Afternoon' for the duration of the aircraft check (refer comment within this text box for mailing list)
3	Weekly email to be accompanied with 'Summary of Significant Issues'. This is to be in the form of a 'Dot Point' list and contain 'only' significant issues for the readers attention
4	High or Extreme Risk issues to be highlighted to Qantas Management immediately

Aircraft Rego	VH-TJX
Check Location (MRO)	ST Aerospace
Check Type	HM 1
Check Commencement Date	15-June-2010
Quality Representive (name)	
Date List Updated	

STATUS
OPEN
PROGRESSING
TO BE ADDRESSED / DISCUSSED AFTER CHECK COMPLETION

Risk Matrix

Likelihood	1. Negligible	2. Insignificant	3. Minor	4. Moderate	5. Major	6. Catastrophic
A. Almost certain	L	M	H			
B. Likely	L	M	H			
C. Possible	VL	L	M	H	H	
D. Unlikely	VL	L	L	M	H	H
E. Rare	VL	VL	L	L	M	H
F. Very rare	VL	VL	VL	L	M	M

Risk level	VL Very low	L Low	M Medium	H High	Extreme

Issues to Monitor on TJX (from issues arisen on TJG)

Issue No#	Date Discovered	Issue Details	Assigned To	Perceived Risk Rating	Quality Deficiency Raised Yes / No?	Status Open / Progressing / Closed	Remarks/Action Taken
8	06-Apr-10	LAE's working far to many hours, no fatigue management evident. Roland called in on only day off for several weeks 04/04/10	ST Aero	M	No	Monitor with TJX	Lim Yan Boon to print attandance sheets and copy of Ministry of Manpower requirements to confirm status of ST staff (Ministry of Manpower web-site provided for verification of working hrs policies) Fatigue being managed up to date with TJX. Will continue to monitor until end of check.
10	08-Apr-10	Reinstallation cards found certified with A/C still being inspected. Copies taken. Similar issue to item 5 cards not being fully understood	ST Aero	M	No	Monitor with TJX	Cards taken to Lim, who was already aware of issue. 8/04/10. Toolbox meeting 16-Apr to address Verify meeting minutes. Conducted more docs & procs sessions on July 13 & 14 with all STAE employees working on QF aircraft. Issue discussed at this session .
11	08-Apr-10	DRC's found raised for task cards. Duplication of paper work.	ST Aero	VL	No	Monitor with TJX	Concerns taken to Lim Yan Boon , who said this was done to clear inspection cards, was told these would be 0 hr DRC's. Toolbox breif to staff c/out 16/4/10 Verify meeting minutes. Conducted more docs & procs sessions on July 13 & 14 with all STAE employees working on QF aircraft. Issue discussed at this session .
24	19-Apr-10	ST Aero staff being constantly moved between aircraft, possible confusion on tasks and continuity.	ST Aero	M	No	Monitor with TJX	Disscusions held with St Aero over this issue. Revisited 23/04/10. St Aero agreement to mimimse practice. Reaffirmed 30-Apr, All movements to be communicated to Team Leader Movements on TJX are being monitored & found to be satisfactory to date. Team Leader being notified of LAE exchanges or loans.

27	23-Apr-10	Control column found with no restraint to prevent turning of wheel, Tape has been applied several times but is continualy removed.	ST Aero	VL	No	Open	Disscusions held with staff, awaiting ST Aero preventative actions for future aircraft (remains outstanding, LAE Teo C K is tasked to provide the proposed solution) Review QF
28	24-Apr-10	Several S/Metal AME's found working on aircraft with NO LAE coverage.	ST Aero	M	No	Monitor with TJX	QF staff shut down all non covered areas of aircraft. (A revised roster has been produced, minimum of 2 AC & 1 AV LAE will be available outside normal working time when there is works being done) Adequate LAE numbers have been maintained on all shifts throughout TJX to date. Will be monitored to check completion.
31	27-Apr-10	Avionics AME's found working on aircraft with NO LAE coverage.	ST Aero	M	No	Monitor with TJX	QF staff stopped Avionics work. (A revised roster has been produced, minimum of 2 AC & 1 AV LAE will be available outside normal working time when there is works being done) Adequate LAE numbers have been maintained on all shifts throughout TJX to date. Will be monitored to check completion.
32	28-Apr-10	3 Avionics kits inspected and found with various unservicable or uncalibrated tooling.	ST Aero	M	No	Open	Work in progress, Avionics technical rep working with QF staff to creat servicable kit. (Tools sent for calibration) Verification of calibration required
34	28-Apr-10	Can't sign some CIR tasks where job has been completed but not paperwork not completed by LAE	ST Aero	VL	No	Monitor with TJX	Comm's to QF LAME's re CIR tasks. LAE's wont certify cards until CIR complete. As such cards should be certified in front of LAME if CIR involved. (LAE now certify tasks before CIR. LAME will sign on log sheet after Inspection)
40	07-May-10	Incorrect strippers used to strip accelerometer wiring	ST Aero	L	No	Open	(Tool procured. Awaiting for delivery). Require proof of tool being procured.
45	16-May-10	Observed personel using plastic tube to drain fwd Lav pluming after leak test, which resulted in leakage over floor.	ST Aero	VL	No	Open	(Staff were instructed to drain the residue water to container instaed of plastic bag. STA is also looking into suitable adaptor which can be connected directly to the drain coupling - Leong/mike Tan following up) Require verification Not wearing correct safety gear.
55	06-Jun-10	Process for progressive certification of CIR's req'd	QANTAS	VL	No	Monitor with TJX	Maint Systems and planning reviewing current process. Process being incorporated on TJX.
56	06-Jun-10	A form for defects found by QANTAS that requires DRC to be raised & copy supplied	QANTAS	VL	No	Monitor with TJX	Process being trialled. Being monitored on TJX
57	07-Jun-10	L/E slats independent insp signed but all R/H slat actuator attach bolts do not have retainers in place.	ST Aero	L	TBA	Open	toolbox brief. Docs & Procs. LAE Siah Traceable through DRC Removed Formwork
60	07-Jun-10	Scribe line EI for LRTS signed of as incorperated on 18/05/10 but no tape applied to bare areas, no paperwork to cover the missing tape	ST Aero	L	TBA	Monitor with TJX	LAE Roland. Require verification on TJX

Trng & tool.

Calib

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