

**2nd Meeting of the Technical Advisory Panel on Accidental Aircraft Crash Risk
01 February 2013 – Redgrave Court**

Attendees

Tim Allmark (TA)	Technical Lead – ONR
Joanna Cook (JC)	Business Support (Note-taker) – ONR
██████████	Independent
Ian Dugmore	Airprox Board
Malcolm Goodwin (MG)	ABS Consulting
Matthew Greaves (MGR)	Cranfield
Sid Hawkins (SH)	Air Accident Investigation Branch
Roger Jackson (RJ)	AMEC – Representing DNSR
David Pitfield	Loughborough University

Apologies

Alan Farmer – DNSR
Malcolm Spaven – Aviatca

Introduction

- TA welcomed attendees and introductions took place around the table for the benefit of new attendees Ian Dugmore and David Pitfield.

Discussion of the 1st Meeting Notes

- Page 1 stated █████ **flagged a concern since the Energy Minister had given a commitment to consider the proposal for a Minimum Separation policy (MSP) prior to the inception of the panel and the Chief Nuclear Inspector Mike Weightman (MW) had accepted the issues it raised onto the TAP agenda.**

TA said he was uncomfortable with the reference to MW's commitment since he was unable to confirm this (MW is currently on extended special leave). █████ subsequently provided an email from Mike confirming his agreement.

- Colin Patchet's action point from the first meeting was discussed. █████ had said there is evidence demonstrating a problem with the cross departmental issues – if they are not to be considered by the TAP could he advise in what forum they can be addressed? CP agreed to find out. MG had also noted this exchange.
- In relation to action 15/11 – 03: **(All to review the documents on criteria from █████ TA to confirm these are correct. Others to provide comments if they wish to)** TA advised that he would ask a colleague specialising in ALARP to look at the documents and confirm their accuracy. Action reworded to; **TA to ask a colleague specialising in ALARP to confirm that the information is correct or identify any specific errors.**
- There was some discussion regarding the question of whether there is a mechanism to flag changes to the local air traffic environment. The TAP agreed that there are two levels. The wider effect (e.g. aircraft returning from the gulf) and the more specific

localised effects (e.g. operational changes at a nearby airport). ■ noted that currently there is no mechanism for flagging these changes and the TAP agreed that there should be a way of feeding back such changes into the model.

■'s authors note had said that this would seem to present the TAP with a problem as any system which flags change will involve a discussion on how the various government departments and organisations interact. It implies that a deliverable will be a recommended communication process. RJ & TA suggested that the outcome will not be a communication process since it is for the licensee to keep updated on any ongoing developments.

■ pointed out that operational decisions get made on the ground without those making them understanding the implications to the nuclear safety case and therefore are not flagged or communicated. SH noted that one of the outcomes from the TAP might be a recommendation on what kind of information should be available so that those needing to know could be made more aware.

Everyone agreed that the model would need to have the capability to be updated as new information emerged.

TA advised that it is for the licensee to keep abreast of developments which affect their safety cases, this is a legal obligation.

■ said that ■ felt this places an unreasonable expectation given the nature of the changes which can impact a nuclear safety case and would circulate a note.

■ subsequently circulated an email (appendix 1) noting that it is for the licensee to keep abreast of changes in the nuclear safety case in the years between Periodic Safety Reviews and for ONR to keep abreast of changes in its role as an advisor to the government on proposed airport developments – together with an explanation of why this proves problematic. TA wishes to challenge aspects of this note at the 3rd meeting of the TAP.

- There was a discussion on the issue of what happens if the licensee objects to a proposed airport activity. ■ noted that this had happened at Dungeness. There was speculation on why the licensee had objected. ■'s note included the text of the licensee's objection which was on the grounds that ***'The large scale increase in air traffic around the (nuclear) site is a risk that should be sensibly avoided in the local and wider public interest and we maintain our strong objection to the development.'***

RJ raised the question of what would happen in the situation where the licensee objected because the change took the nuclear safety case above acceptable levels – who would win – the airport wanting more flights or the licensee. ■ stated both at the time and in ■ subsequent note (appendix 1) that it appears the licensee has little sway in such situations.

TA queried the wording in the paragraph; ■ ***noted that in a planning situation ONR placed more emphasis on the comparison between different development scenarios,*** as he suggested that this wording made it seem that ■ was seeking to speak on behalf of ONR.

- ■ said that ONR has, on many occasions, stated that it places emphasis on the comparison between different airfield scenarios and any one of those with the background crash rate when consulted on planning applications. There was subsequent agreement to remove the word 'more'.
- MG 's notes from the first meeting record TA as confirming that both the delta and absolute are considered in a planning situation and suggested a sentence to that effect be added after **'TA stated that from ONR's perspective the same criteria are applied from the SAPs'**. Now carries addition; **'TA stated that both the delta and absolute values are examined by ONR to inform its response to planning authorities'**.
- It was agreed that Lockerbie would be discussed later in the meeting. As time did not permit this, the discussion rolls over to the next meeting.
- In relation to the statement ■ **pointed out the ESR report states the need to move away from the generic model when considering site specific, non standard airports and confine the comparison to those airports which have the same combination of constraints as the one under consideration - a problem if there is not a statistically meaningful equivalent.'** TA commented that he wanted to review and contextualise this quote before agreeing to its addition.
- ■ had said that applying a measure which cuts out the vast majority of the risk is the solution which would be required in any other industry. There was a concern that this statement was too sweeping. ■ has provided amended text clarifying this point as stating that, in ■ experience, applying an obvious preventative measure that cuts out a majority of the risk would, at minimum, have to be evaluated in other industries with pressure for it to be adopted, especially in situations where the potential outcome is extreme....' and the notes of the first meeting have been amended.

Review of Actions

Action No.	Details	On	Status
15/11 - 01	ONR to advise forum in which the cross departmental issues can be dealt with.	ONR	TBC
15/11 – 02	Review TOR's and provide feedback to TA.	All	Complete
15/11 – 03	TA to ask a colleague specialising in ALARP to confirm that the information is correct or identify any specific errors.	TA	Ongoing
15/11 - 04	Consider inclusion of Lockerbie at meeting 3	All	Ongoing
15/11 – 05	MGR to forward link to European background crash rate data to the group.	MGR	Complete
15/11 – 06	TA to circulate slide which had the list of factors. TAP members to add to the list of	TA/All	Slides from 1 st meeting presentation had not been circulated

	factors and limitations for discussion at next meeting.		electronically so attached to these notes.
15/11 – 07	All TAP members to see if they can identify any other extant Models for modelling of Accidental Aircraft Crash Rates.	All	Ongoing
15/11 – 08	SD to check route through the Safety Directors Forum which resulted in his nomination to the panel.	SD	Complete - SD was nominated by Alan Brandwood through Keith Spooner at Magnox
15/11 – 09	SH will contact Military Air Accident Investigation Branch to try to identify a contact/potential TAP member	SH	Complete – SH made contact & response was positive however will only go forward if Military Aviation Authority endorses involvement – This has stalled at present.
15/11 – 10	SH will contact Civil Aviation Authority to try to identify a contact/potential TAP member	SH	Complete – The head of the Safety Department has agreed to help with requests for data wherever possible.
15/11 – 11	SH to contact the Airprox Board and forward any relevant data held on near misses/discuss the potential for an attendee at the next meeting.	SH	Complete – Ian Dugmore from Airprox Board in attendance at this meeting.
15/11 – 12	JC to co-ordinate diaries for the next meeting of the TAP	JC	Complete
15/11 – 13	TA will develop and circulate a draft topic list for the next meeting	TA	Complete

- In relation to 15/11 – 09. ID spoke to Colonel G Dick who he received some data from. Colonel Dick advised that he is happy to become involved if required. ID agreed to provide an email address & ID and SH will generate a point of contact between them. ID has since provided Colonel Dick's email address.

Airprox Presentation by Ian Dugmore

- ID delivered a presentation covering Background to UK Airprox Board (UKAB) which covered the composition and methodology of the board along with the outputs and results. (Full electronic copy of presentation circulated to TAP members on 18/02/2013). TRIM ref – 2013/68877.
- ID explained the meaning of some of the different zones in slide 18;
 - Zone A airspace applies close to Heathrow for example, where tight controls are applied.
 - In zone D airspace, larger aircraft are flying on instrument flight rules and smaller one maybe visual with the responsibility on them to move out of the way. - MG noted that zone G is 'see and beware'.

- ATZ airspace is that which is associated with airfields and may be a subset of a larger area. Heathrow for example has an ATZ area surrounded by an A area. ATZ airspace could also be a small area surrounded by G (general airspace).
- Ian noted that most accidents occur in G airspace.

- ID showed a plot of near misses which had occurred around the UK. DP queried whether this could be reproduced without events involving military aircraft included. ID pointed out that if military was omitted this would result in losing information as events between military and civilian aircraft would not be shown. A consensus needs to be reached by the group before ID expends effort into reworking the figures.
- Slide 9 showed the Airprox range for category of incidents. Category A relates to the most severe incidents, where aircraft passed one another before realizing proximity.
- Category B incidents occur when one of the pilots has to take diversionary action.
- In category C incidents, both pilots are allegedly aware of the situation. This does not however, mean that it is benign. All incidents should be considered as potentially serious events.
- MG queried whether a separation of zero means that the aircraft touched. ID clarified that zero separation means aircraft passed extremely close but did not touch.
- ID clarified the process with TCAS (Traffic Collision Avoidance System), confirming that it is not automatic. Initially, the position of an aircraft will be picked up and a notice sent. This shows on radar but is not accurate enough for a pilot to use as an instruction. If the situation escalates then pilots are sent instructions on what course to take (assuming that they both have TCAS). There is still an issue of how pilots react, the response time of individuals and the response time of the equipment to take into account.
- B means one of the pilots had to take diversionary action
- C both pilots allegedly knew the situation. Does not mean that it is benign

ID said that all categories should be treated as potentially serious events.

Terms of Reference

- TA had requested panel members to provide comments on the TOR's. ■ provided a response which TA and ■ agreed to discuss over lunch. There was insufficient time to discuss this fully however the following three points were addressed;
 - If the TAP is only going to consider the probability of an aircraft induced radiological emission then the word 'hazard' should be removed from the title of the TAP.
 - ■ had proposed adding the clarification that the TAP needs to '*Consider the fundamental problems associated with using this kind of historical crash rate model as a means of predicting the probability of future events at a given location.* TA agreed with this requirement but felt that it was considered under 'Limitations of the Byrne Methodology'.

- TA confirmed that the '*Ability of the model to address curved or non aligned flight paths and locations which are offset from the runway centre line*' will be covered under 'Limitations of the Byrne Methodology'.
 - A number of [REDACTED]'s suggestions for amendments to the TOR's were not able to be discussed at this meeting and therefore the TOR's should be reviewed further in the next meeting.
- In response to TA's request, [REDACTED] also provided a list of issues to consider with the current methodology covering; fundamental and specific. These were not discussed at the 2nd meeting so should be considered as items for the subsequent meeting agenda.
 - SH raised the recommendation that there should be a clear statement of the objective of the TAP. TA felt this was covered by the list on the slide from the 1st meeting of the TAP. [REDACTED] noted that this is standard in problem solving exercises and felt it should be written up on a flip chart/white board so that it is visible throughout meetings. TA suggested '*Objective of TAP to develop a model for calculating accidental aircraft crash impact likelihood at a given location*'. [REDACTED] questioned this asking whether it is actually the mandate of the group to develop a model or whether it is to critically assess the existing methodology along with other methodologies and establish whether they are fit for purpose then make recommendations for if/what needs to be developed.

Action – 01/02 – 01: All to agree a clear statement of objective for the TAP.

- [REDACTED] noted a concern that the TAP was jumping into looking at new models without first considering the problems with the existing methodology. [REDACTED] compared this with an AAIB report. In an air accident investigation, all contributing factors are critically assessed to establish the root cause(s) of the problem before jumping to conclusions or making recommendations. This is important otherwise one can miss things which might be relevant. SH agreed with this description of the aaib approach.
- TA commented that he couldn't envisage a non crash rate based model. The use of a theoretical model was simply too complex to consider practical.
- DP responded that, in his view, the Byrne model was not fit for purpose since it would generate the same results for two airports where the operational factors might be completely different. Any model must be capable of reflecting the operational and environmental factors at that airport.
- [REDACTED] noted that Byrne developed the model 15 years ago. TAP is now carrying out a review. Must therefore look at the experience over those years and consider what problems have been encountered in trying to apply it.

Ambient Crash Rates

- The TAP discussed the ambient models. [REDACTED] pointed out conflicts in definition. Sandia seems to think that ONR told it there two different types of ambient traffic – background and airways. This conflicts with the Byrne definition of background which categorizes it as everything over 5 nautical miles from the runway.
- For commercial aircraft both airways and background have the same 'en route' data base, i.e. they are just two different ways of modeling the same data. The worked

example in the paper which [REDACTED] circulated before the meeting showed that if you took all of the recorded overflying large aircraft in a 40 x 40 km square area around Dungeness A and put it directly over the power station, the peak of the distribution is 25 times less than when you take the same data and distribute it uniformly across the country. This means either;

- Low overflying in that particular location, or
- Overflying information in the Dungeness A PSR is not correct, or
- Average reliability figure which had been calculated from the number of crashes per flight kilometer in the Byrne model is not correct, or
- The construction of the airways model is not correct.

[REDACTED] noted that, since none of this seems to stack up, it would need to be investigated further.

TA subsequently noted that this was site specific data and should not be the focus of the TAP. TA also notes that the Byrne Methodology (section 5.5) provides guidance on the use of Background and Airways models.

- ID noted that in future of the regulatory approach there will be less emphasis on airways and more optimisation of airspace so having an airway model might not be so representative.
- The TAP was moving towards the notion of having one category that is ambient and one that is airfield.
- There was a discussion on how far back in time to go. A suggestion was made to only consider data from the past 10-20 years. DP challenged this and said that it is necessary to go back further to encompass a wider data base. It is possible to determine whether the cause of a particular accident in history is representative of what could happen and then filter but you should start out with a maximum data set and then adapt it for the particular situation.
- [REDACTED] noted that only considering crashes from the last 10 – 20 years negates the mathematical model for the airfield location model since that was based on crashes before 1991.
- TA subsequently commented that this is the data that feeds into the model rather than the model itself and highlighted the importance of not confusing the two. [REDACTED] challenges this but, in any case, the matter will be discussed at meeting 3.
- General consensus was reached that the use of data from the last 10 years should be used as a basis, but recognition of data from the past 20 years given.

In the general discussion on how to widen the data set for the UK, SH suggested looking at accidents which either initiated from or were en route to the UK where an accident happened outside of the country (rational being that it could have happened any time in en route phase of that particular flight and therefore could have been in the UK).

- RJ circulated a note prior to the meeting. Since there are so few crashes in the ambient crash data base, especially for large aircraft, could better insight be gained by looking at what caused severe incidents or near misses and somehow applying this information to

predict the likelihood of this developing into a crash? MG felt that this would be difficult. Once the cause is established, it would be unlikely to have the same cause again and it would be difficult to distil the information to even 10 causal factors.

█ had put in an 'author's note' into █ draft of the minutes sent to ONR on 4th February which said 'I wonder whether this merits further exploration? Not sure Roger necessarily meant the exact cause of failure (as in component x, y, or z) but perhaps some characteristic of cause associated with particular situations.

- RJ's note also observed that the presence of an airport could also attract crashes in the general vicinity.
- There was a discussion about the extent to which it is possible to regionalise data. MG said that he felt there is a problem in looking at airways over a certain area as aircraft at 35000 feet will project forward a long way and may have deviated off the flight path.

█'s draft minutes, sent to ONR shortly after the meeting, reflected on the validity of this concern. Since airways models count aircraft traveling along the length of an airway, then the forward projection along that airway is already taken into account, yes? The lateral crash deviation is predicted in the below statement from the Dungeness A PSR definition as up to 24nm and 46nm (lower and upper airways respectively. However the reference (a paper by Allison) suggests it is justifiable to represent it as predominantly 10km either side of the airway centre line. (Byrne model would give values up to 15km either side)

The reason for raising this point is that the customer would prefer information which is, as far as possible, customized to his particular location – this was clearly stated and agreed at the first meeting. So, before jumping to an assumption that it is not possible to localize the information, one would need to first read the papers and look at the studies which have been done in this area (standard good practice). This is a pertinent note to consider before time is spent gathering more generalized information.

Secretary's note: The Byrne Method gives a lateral distribution about airways (section 5.6) around a normal distribution with the airway height as the standard deviation.

- █ read out the extract from the Dungeness A PSR explaining how the Air Accident Analysis Branch, at the time, had determined how far an aircraft is likely to travel if it descends from the airway.

During their en route phase commercial aircraft tend to fly within air corridors. These are 10nm wide and extend upwards from 5500 to 24,500 ft in the case of airways and 24,500 to 46,000 ft in the case of upper airways.

In assessing the risk which these pose consideration needs to be given to the distance which an uncontrolled aircraft could travel. The Accident Analysis Branch of the CAA had indicated that in a loss of control situation an aircraft is unlikely to cover more than 1nm per 1000 ft of descent. This suggests that as airways extend up to 24,500 ft and upper airways to 46,000 ft a site is at risk from airways up to 24nm and upper airways to 46nm. However if such large distances are applied then this implies similarly large target areas should be adopted below airways Thus increasing the risk distance could lead to a lack of conservatism (author's note should this say excessive conservatism?). It is, therefore, assumed following Allison

(Reference 1) that crashes occur on a band of ground 20nm wide below the airway and accordingly airways upto 10nm distance are considered to pose a risk.

- ID felt it should be possible to get some of this information on overflying from the CAA and/or NATS (National Air Traffic Services) based on their definition of commercial aircraft which is any aircraft where someone can buy a ticket. A question was raised as to whether this would be too broad a spectrum in terms of aircraft types (presumably goes from quite small aircraft up to passenger jets).
- MG questioned whether it would be possible get information any more precise than breaking up the country into broad regions, e.g. thirds, given the distance at which an upper airways aircraft can travel.
- MG volunteered to calculate the en route crash rate in terms of (crashes per flight hour x number of hours flown)/area of country using worldwide figures, Europe and UK figures for aircraft over 2.3 tonnes, (or crash rate per km x number of km flown/area of country if more appropriate) to get a crash rate per km². To do this also requires a classification of the criteria for airfield vs en route crashes. ID noted that a good guide is when the seat belt sign goes on or off. MG noted that picking up an elevation (such as 10,000 ft) seemed appropriate and facilitated data collection. DP suggested crashes more than 10nm from the runway.
- ■ said that if a licensee or ONR is going to assess the impact of an airport on a nuclear facility then it should consider all operations which occur by virtue of the airports presence – so that should include circuits, stacking, etc. ID noted that 10 miles would not be sufficient to include stacking at an airport such as Heathrow.
- MG said that he would use 10nm in the first instance and also look at it in terms of aircraft over 10,000 feet if practical.
- TA suggested that MG circulate a one page spec to members of the TAP of how he intends to do the analysis before commencing.

Action 01/02 – 02: MG to circulate a one page spec to the TAP

- ■ noted ■ understanding that Malcolm Spaven has views in the area of background traffic and that he may circulate a note on this at some point prior to the next meeting of the TAP.
- There was some initial discussion on the Byrne airfield model as a consequence of attempting to define what the boundary is with ambient. ■ noted that the Byrne airfield model attempts to estimate a crash rate at a given location by multiplying;
 - Number of movements (specific to the airfield in question)
 - R – A reliability figure per million movements which is calculated by taking the number of crashes in the UK's airfield crash data base divided by the number of movements. This creates a generic figure for small transport aircraft, a generic figure for large transport aircraft, etc.
 - A location factor which attempts to describe the distribution of crashes around the runway in both x and y, ie. The likelihood that the crash takes place at a particular location.

- The target area, i.e. the area over which an aircraft crash could culminate in a significant radiological release (specific to the nuclear site in question).
- [REDACTED] flagged a concern that the location factor was becoming ‘the elephant in the room’ for the TAP. Much focus is being placed on the collection of data for the reliability figures but it should be recognized that the location factor has large leverage on the numbers which the model generates.
- The distribution which this model describes was derived by taking 121 small and large transport crashes from various UK and USA data bases prior to 1991. The crash locations were plotted around the runway and two mathematical models were created to try and fit the data – one for take off and one for landing. When applied to a particular assessment, the x and y co-ordinates of the nuclear site (relative to the appropriate runway threshold) are plugged into this location factor equation. It generates a number which is then multiplied with N and R to generate a crash rate per km² at the location of interest.

So if the foundation of the location factor model is unsound, then it has a large impact on the integrity of the overall airfield model. This is the point raised in [REDACTED]’s note circulated prior to the meeting which flagged up the missing data. Less than half actual crashes considered in ESRT’s 2008 update, those screened out being the ones which tended to be away from the runway in locations where the data is, in any case, sparse. The note asked to what extent such crashes were screened out when the model was created.

- DP said that his model does not consider the distribution around runways but considers those crashes which are on/close to the runway centre line and others. He noted most crashes being around the runway centre line.

Action 01/02 – 03: DP to distribute a copy of his model and present it at the next meeting.

- ID asked whether consideration of the crashes on the runway were relevant to the problem at hand since none of the nuclear power stations are likely to be affected by these. DP said these should be including in the modeling. ID expressed a reservation that this is only appropriate if the modeling wouldn’t change when the less relevant crashes were taken away.
- [REDACTED] said the removal of crashes to test the validity of the modeling was a point that Dr Trotta had raised in his report. [REDACTED] felt that this was an area where it would benefit from a presentation by Dr Trotta since he could explain the issues he perceives in layman’s terms. Dr Trotta has said he is willing, in principle, to make such a presentation.
- TA commented that Dr Trotta’s presentation to the TAP should restrict itself to matters which are in his sphere of expertise, which as far as TA is aware, do not include the ONR risk criteria or airfield operations.
- TA asked if the TAP would be willing to receive such a presentation. There was general agreement. MG noted that it fits with the requirement to critique the model. TA said that he would be comfortable provided that Dr Trotta did not touch on certain areas, namely, Dr Trotta’s presentation should be limited to discussion of the statistical side of

the model and he should circulate his presentation to the group before presenting. ■ noted that it would just be an overview of the subject.

- A discussion on the availability of data from the CAA on airfield related crashes was held. SH agreed to investigate what the CAA could provide to the TAP and if possible, present to the next meeting.

Action 01/02 – 04: SH to investigate what the CAA could provide to the TAP and if possible, present to the next meeting

Action 01/02 – 05: ■ to provide JC with Dr Trotta’s contact details.

Just

Action 01/02 – 06: JC to invite Dr Trotta to the next meeting of the TAP.

- It was agreed that the next meeting of the TAP should be held just before or after Easter. JC asked TAP members to provide her with details of their availability around that time.

Action 01/02 – 06: All to send details of their availability to JC.

- ID queried whether it would be a good idea for the next meeting to look at one specific site and then extrapolate. TA responded that he felt it was too early on in the process to start looking at site specific.
- MG asked the question of how the TAP will validate what they produce as an end result. The suggestion was made that one of the ways in which you validate is to look at problems with the as is process thereby identifying what needs to be addressed in any new process which may be developed.

Action No.	Details	On	Status
15/11 – 01	ONR to advise forum in which the cross departmental issues can be dealt with.	ONR	TBC.
15/11 – 03	TA to ask a colleague specialising in ALARP to confirm that the information is correct or identify any specific errors.	TA	Ongoing
15/11 – 04	Consider inclusion of Lockerbie at meeting 3	All	Ongoing
15/11 – 07	All TAP members to see if they can identify any other extant Models for modelling of Accidental Aircraft Crash Rates.	All	Ongoing
01/02 – 01	All to agree a clear statement of objective for the TAP	All	Ongoing
01/02 – 02	MG to circulate a one page spec to the TAP	MG	Ongoing
01/02 – 03	DP to distribute a copy of his model and present it at the next meeting	DP	Ongoing
01/02 - 04	SH to investigate what the CAA could provide to the TAP and if possible,	SH	Ongoing

	present to the next meeting		
01/02 – 05	█ to provide JC with Dr Trotta's contact details	█	Complete
01/02 – 06	JC to invite Dr Trotta to the next meeting of the TAP	JC	Complete – Dr Trotta has accepted invitation
01/02 – 07	All to send details of their availability to JC	JC	Complete – Next meeting to be held 03/04/2013

Joanna, reference your request, below is the note that was circulated and now added as an appendix.

APPENDIX 1:

NOTE ON RESPONSIBILITY FOR KEEPING ABREAST OF CHANGE (CIRCULATED TO TAP MEMBERS ON 7TH FEBRUARY, 2013)

We have to remember that the model is used for two very different purposes:

A) The licensee uses it to check the probability of an aircraft induced radiological release as part of its 10 year Periodic Safety Review (PSR). In this case the onus is on the licensee to keep abreast of any changes that might affect the nuclear safety case during the intervening years.

However this is a passive function since I do not believe the licensee has any mechanism by which it can effect or insist on change if the probability increases above its generally acceptable level.

B) It is used as a basis of the ONR's recommendations to the government on airport developments which take place within 10km of a nuclear power station.

In this situation the licensee might have a view but that can be overridden by the ONR. So in the case mentioned, the licensee placed a formal objection stating that, in its view,

'The large scale increase in air traffic around the (nuclear) site is a risk that should be sensibly avoided in the local and wider public interest and we maintain our strong objection to the development'

However the ONR did not object, citing the outcome of the Byrne model as its reason for this position. Those making the decisions assume, not unreasonably, that the Regulator's view takes priority so the licensee has very little, if any, influence on the outcome in these circumstances.

Clearly the onus to keep abreast of changes transfers to the ONR in these situations where it is using the model to inform its recommendations to government - particularly when these involve a step change in the airfield related risk, bearing in mind that, once a development has been implemented, the licensee then has no powers to enforce a reduction in local airport activity (reference Roger's question of 'who wins').

Of course, overriding all of this is the fact that, even if the ONR makes a recommendation to government, it can still be overruled by the planning department for political reasons which is one of the reasons we proposed a Minimum Separation Policy on grounds that nuclear safety should be ring fenced and stand above politics in this regard.

The point raised in the 'author's note' was that the situation is more complex than it might first appear. Whilst, as a TAP, we might identify the type of information that should be made available, the communication process will not work unless

- a) those on the rock face understand the relevance of their actions and what they need to communicate

and unless

- b) the Licensee/ONR understands the implication of that change. This may cover a whole range of operational and environmental issues that are outside of its core expertise and, in many cases, outside of its control.

As noted, the licensee has little sway in these matters but for the ONR the vires to which CP refers actively inhibit joined up thinking in this area. One of the examples given in the Minimum Separation Policy is a situation where:

-The CAA had confirmed that a particular manoeuvre was more likely at the airport in question in the developed case but had not advised the ONR on grounds that it is not the CAA's responsibility; that it is for the ONR to seek clarification from the CAA on these matters if it so wishes.

-When HSE was advised of the situation it said that flight manoeuvres were the responsibility of the CAA not the nuclear regulator.

-In the meantime it transpired that ONR's consultant had written a report a year earlier saying that if this particular manoeuvre was more likely then it would increase the probability of an aircraft induced radiological release over and above that which could be predicted in the model (in sections of ESRT 2007 not circulated to the TAP)

i.e. all parties were sitting with different parts of the jigsaw but with no mechanism to join them up; this being just one of several examples given.

So whilst it is understood that the scope of this TAP is to consider the technical aspects of the model, the outcome will not address the nub of the issue unless there is also a workable structure in place for ongoing monitoring, communications and control. This is why, in our view, the technical aspects should have been considered in the wider context of the interdepartmental issues raised in the MSP and why it is important for CP to establish in what forum these can be addressed.

Given the TAP will only consider the technical issues then the implications of the above are:

* We should have a visible statement in the room of the two different ways in which the model is used and test our deliberations against each application as we go along.

* The minutes from last week should state that it is for the licensee to keep abreast of changes in the nuclear safety case which occur in the years between PSR's and for the ONR to keep abreast of changes in its role as advisor to the government on proposed airport developments.

