



Level Bust

**European Action Plan for
the Prevention of Level Bust**

**Edition 1.0
July 2004**

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1. Statement of Commitment



The European air transport industry has made considerable progress in driving down accident rates over the past 3 decades and we can be justifiably proud that air travel is the safest method of public transport in Europe. Nevertheless, the number of flights in Europe is forecast to grow by a factor of 2 by 2020, which means that the accident rate must be halved to ensure that the absolute number of accidents does not increase. The safety objective of the ECAC ATM Strategy for 2000+ is “to improve safety levels by ensuring that the number of ATM induced accidents and serious, or risk bearing, incidents do not increase and, where possible decrease”.

The level bust issue is one that has been a concern to the aviation industry for over 10 years now. The deviation of an aircraft from its assigned flight level, for whatever reason clearly jeopardises safety. The developing safety culture within the European air transport industry, and increasing numbers of incident reports generated by pilots and controllers, has helped to raise awareness of this issue. Research by NASA, the FAA, the Flight Safety Foundation, and latterly the UK CAA, has helped to improve our understanding of the causes of level busts, and actions needed to reduce them. While technological developments, such as ACAS and STCA, have helped to reduce the risks associated with a level bust, the absolute number of reported level bust incidents has not declined significantly.

Whilst the majority of level bust incidents do not involve any loss of separation, it is not difficult to imagine the catastrophic outcome and significant loss of life should a mid-air collision occur due to such an occurrence. Indeed, the tragic midair collision that occurred in 1996 near New Delhi and claimed 349 lives was the result of a level bust by one of the aircraft involved. The immediate cause of the accident has been documented as poor flight deck communication and lack of co-ordination, but there were a number of additional contributory factors.

This action plan specifically addresses the subject of level bust prevention and is the result of the combined efforts of organisations representing all areas of airline operations. Those organisations that contributed to this action plan are totally committed to enhancing flight safety by advocating the implementation of the recommendations that it contains.

The recommendations, when implemented, will assist in reducing the number of level bust incidents by the consistent and harmonized application of existing ICAO provisions, improving controller/pilot communications and reporting systems; increasing awareness of the impact of airspace/procedural design processes and by the subsequent increase in situational awareness.

2. Introduction and Background

A Level Bust is defined as “Any deviation from an assigned level in excess of 300 feet” ¹. Within RVSM airspace, this limit is reduced to 200 feet and statistics suggest that 35% of reports to organisational Safety Reporting Systems are level bust related. A number of national CAA organisations have made addressing the level bust issue a priority, however this is not the case in all aviation organisations across the ECAC community and the issue is one of growing concern throughout the industry.

EUROCONTROL began raising awareness of the Level Bust issue in 2001, and commenced its current initiative in 2002 with the publication of a Safety Letter on the subject and two Level Bust Workshops held in Brussels and Palma de Majorca.

EUROCONTROL was determined to act quickly and established a cross-industry task force to formulate an action plan to reduce level busts. The Level Bust Task Force (LBTF) worked within the existing structure of the EUROCONTROL Safety Improvements Sub Group (SIGG) and included representatives from ANSPs, airlines, and European institutions. The LBTF aimed to develop the action plan and a Level Bust Toolkit for publication in 2004.

The LBTF made several observations:

Understanding of the number of level busts throughout Europe is limited because of lack of data. We must make greater efforts to improve the level of safety reporting in Europe so that we can identify and understand more clearly the key safety issues.

Several factors have been identified as causing level busts. These include non-adherence to SOPs, terminal chart design, design of instrument flight procedures (SIDs & STARs), RT phraseology and discipline, and callsign confusion. Most level bust events are caused by several of these factors acting together and human factors (human performance limitations) have an effect on all aspects of system and procedure.

Better cooperation between ATC and operators is essential if any progress is to be made in reducing level busts.

UK NATS data indicates that the number of level bust incidents involving military aircraft appears to be proportionately greater than those involving civilian aircraft – this deserves closer examination.

There are variations in the incidence of level busts between airlines. This is encouraging because it shows that much can be done to reduce level busts by adopting best practices (SOPs, reinforced training) that reduce the chances of a level bust.

Recognition is given to those organisations that have already completed a lot of this work.

¹ EUROCONTROL Harmonisation of European Incident Definitions Initiative (HEIDI)

3. Explanatory Note – Recommendations

The recommendations are contained in Section 4. For clarity the recommendations have been divided into specific areas for action. It is essential that each organisation take an overview of all recommendations to optimise their own contribution. Guidance on implementing these recommendations, and associated reference material, is contained in the Level Bust Toolkit.

Whereas the National Aviation Safety Authorities have overall responsibility for safety regulation and oversight, the importance of this issue requires that implementation commences at the earliest opportunity by all parties involved. All parties include, but are not limited to, ANSPs, Aircraft Operators, and National Aviation Safety Authorities.

The recommendations are mainly generic and it will be for the responsible organisations to decide specific details, after taking local circumstances into account.

For many of the recommendations contained in this action plan it is suggested that a single representative body take the lead, with other organisations providing support to fully co-ordinate actions. All recommendations suggest a completion date. Progress will be monitored by the LBTF under the auspices of the EUROCONTROL SIGG. The urgency of the need to prevent further level bust incidents dictates the high priority of much of the work. Implementation of the recommendations should commence upon receipt of this action plan.

Guidance on implementing these recommendations is contained in the Appendices – Level Bust Briefing Notes. The 14 Briefing Notes are divided into 3 groups – General (GEN), Aircraft Operators (OPS), and Air Navigation Service Providers (ATM).

4. Recommendations

4.1 Strategic ATM Issues

| # | RECOMMENDATION | ACTION | TIMESCALE | BRIEFING NOTE |
|--------|--|--|-------------|---------------|
| 4.1.1. | Review Airspace Procedure & Design to reduce the likelihood and the severity of level bust incidents | Primary: National Authorities Supporting : EUROCONTROL Agency | 1 July 2005 | ATM 4 |

4.2 Air Traffic Control (ATC) Issues

| # | RECOMMENDATION | ACTION | TIMESCALE | BRIEFING NOTE |
|-------|---|--|----------------|-----------------|
| 4.2.1 | Improve the level of safety reporting | Primary: National Authorities Supporting : EUROCONTROL Agency, ANSPs | SSAP IMP* | ATM 3 |
| 4.2.2 | Improve co-operation between ATC and Aircraft Operators in the investigation of level bust incidents | Primary: National Authorities Supporting : EUROCONTROL Agency, ANSPs, Aircraft Operators | 1 July 2005 | ATM 3, OPS 7 |
| 4.2.3 | Review ATC Operating Procedures (SOPs) & Training to reduce the likelihood the severity of level bust incidents | Primary: ANSPs Supporting : EUROCONTROL Agency, National Authorities | 1 July 2005 | ATM 1 ATM 2 |
| 4.2.4 | Ensure that level bust issues are included in training and briefing for ATC staff | Primary: ANSPs Supporting : EUROCONTROL Agency, National Authorities | 1 July 2005 | ATM 1 ATM 2 |
| 4.2.5 | Introduce Team Resource management (TRM) training. | Primary: ANSPs Supporting : EUROCONTROL Agency, National Authorities | 1 July 2005 | ATM 1 ATM 2 |
| 4.2.6 | Radio Discipline: Use standard ICAO phraseology | Primary: National Authorities Supporting : EUROCONTROL Agency, ANSPs | Immediate | GEN 2 |
| 4.2.7 | Radio Discipline: Avoid giving multiple clearances in the same transmission. | Primary: National Authorities Supporting : EUROCONTROL Agency, ANSPs | Immediate | ATM 1 |
| 4.2.8 | Radio Phraseology: Review and, if required, propose changes to ICAO standard phraseology to reduce the risk of a level bust. | Primary: EUROCONTROL Agency Supporting : ANSPs, IATA | Not applicable | Not applicable |

* Strategic Safety Action Plan Implementation Master Plan

4.3 Aircraft Operator Issues

| # | RECOMMENDATION | ACTION | TIMESCALE | BRIEFING NOTE |
|-------|---|--|-----------|----------------|
| 4.3.1 | Review SOPs to reduce the likelihood of level busts | Primary: Aircraft Operators Supporting : IATA, National Authorities | Immediate | OPS 1 |
| 4.3.2 | Reduce flight deck workload by avoiding all activity not directly related to the safe conduct of the flight | Primary: Aircraft Operators Supporting : IATA, National Authorities | Immediate | OPS 1 |
| 4.3.3 | Ensure clear procedures for altimeter cross-checking and approaching level calls | Primary: Aircraft Operators Supporting : IATA, National Authorities | Immediate | OPS 2 |
| 4.3.4 | Always confirm the clearance if any doubt exists on the flight deck | Primary: Aircraft Operators Supporting : IATA, National Authorities | Immediate | GEN 2 OPS 3 |
| 4.3.5 | Always report the level cleared to when checking in on a new frequency while in the climb or descent | Primary: Aircraft Operators Supporting : IATA, National Authorities | Immediate | GEN 2 OPS 3 |

4.4 Future Considerations (issues currently beyond the immediate scope of the level bust action plan but which deserve further examination and evaluation)

| # | RECOMMENDATION | ACTION | TIMESCALE |
|-------|--|---|----------------|
| 4.4.1 | Consider introduction of Mode “S”/Datalink to provide controllers with information on subscale setting and selected altitude | Primary: EUROCONTROL Agency Supporting : National Authorities | Not applicable |
| 4.4.2 | Consider establishment of common european transition altitude | Primary: EUROCONTROL Agency Supporting : National Authorities | Not applicable |
| 4.4.3 | Consider harmonisation of chart design | Primary: EUROCONTROL Agency Supporting : National Authorities | Not applicable |
| 4.4.4 | Highlight local safety issues | Primary: EUROCONTROL Agency Supporting : National Authorities | Not applicable |
| 4.4.5 | Establish standard for the maximum amount of data on a plate | Primary: EUROCONTROL Agency Supporting : National Authorities | Not applicable |
| 4.4.6 | Increase understanding of the role of human factors in level busts. | Primary: EUROCONTROL Agency Supporting : National Authorities | Not applicable |
| 4.4.7 | Consider formal human factors audits of procedures and design | Primary: EUROCONTROL Agency Supporting : National Authorities | Not applicable |

5. Follow-up Actions

Some of the actions contained in this plan are already underway as a result of complementary safety initiatives whilst others are specific to the level bust issue. When the action plan has been agreed, an implementation monitoring function will be established. Progress of all the actions, new data on level busts, and further study into the causes of level busts will be monitored and all stakeholders will be advised of progress.

The Action Plan for the Prevention of Level Busts will be updated to reflect any changes that become necessary. It is intended that the second edition of this document will start to look at some of the longer-term issues, such as chart design and human factors.

5.1 Communication

The Action Plan will be distributed in hard copy to national authorities, ANSPs, and aircraft operators and be made available on-line via the EUROCONTROL website. Publication of the Action Plan will be a precursor to circulation of the Level Bust Toolkit. The target date of publication is July 2004.

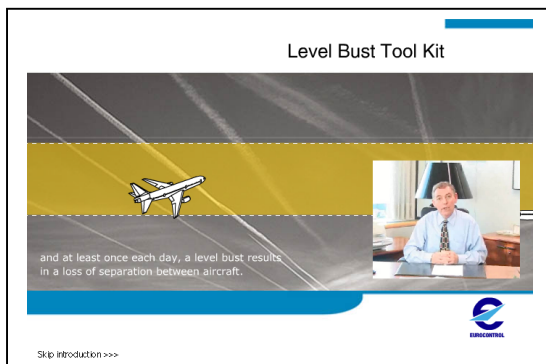
5.2 Monitoring

The Level Bust Task Force, reporting to the EUROCONTROL Safety Improvement Sub Group (SISG), will act as the monitoring group for the Action Plan. It's function will be to:

- Monitor the level bust risk - gather data on level busts from airlines, service providers, and authorities
- Monitor implementation of the action plan by "Actors" (National authorities etc.)
- Monitor distribution, use, and effectiveness of the toolkit.

6. The Level Bust Toolkit

The Level Bust Toolkit is designed to help safety managers implement the action plan and develop their own strategies to raise awareness of the level bust issue and reduce level busts. It also serves as a learning resource for anyone interested in learning more about the level bust issue.

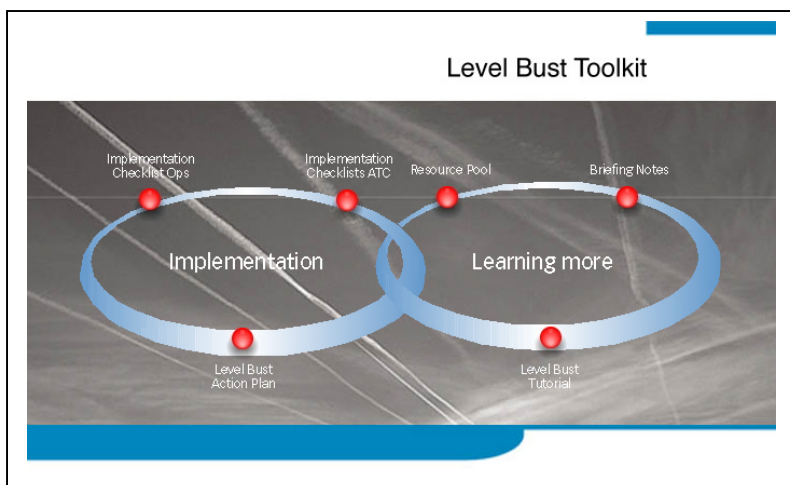


On loading the CD, the user enters an entrance portal where a Flash presentation introduces the level bust issue and briefly explains how to use the toolkit.

The user can skip through to the Introduction menu...



...and then choose to either view the Level Bust Action Plan, to work through a step by step guide to reducing level busts and implementing the Action Plan, specially designed for safety managers of aircraft operators and air navigation service providers (**Implementation**), ...



...or to freely explore the Toolkit resources, briefing notes, and Level Bust Tutorial (**Learning More**).

Central to the toolkit are detailed briefing notes linked to source references. The Resource Pool contains material which can be used to increase understanding of the level bust issue within organisations.

Appendices – Level Bust Briefing Notes

Appendices

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