



## Information Article - **Part 1**

### Disaster Victim Identification - DVI

Note - **Part 2** of this article provides information about '**Personal Effects**' operations (part of the overall DVI process) - following a mass fatality / casualty aircraft accident - see page [15](#)

Note - **Part 3** provides information on telephone '**Call / Contact / Information Centre** (Casualty Bureau)' type operations (part of the overall DVI process) - following a mass fatality / casualty aircraft accident - see page [19](#)



## Relevance

### Airline / Airport Crisis Response - Multiple (Mass) Fatality Ops

Search, Recovery, Identification, Reconciliation, Return, Disposal etc. - as related to deceased persons / human remains / personal effects etc.





## DISASTER VICTIM IDENTIFICATION

### Background

#### General

**Disaster Victim Identification** (DVI) is the generally accepted international term for how the dead (i.e. **deceased person**[s]) in a generally complete [whole body] condition and / or **human remains** [parts of deceased person(s) not forming part of / attached to a complete body]) are **recovered** and **identified**, typically (for the purposes of this info article only) following a multiple fatality (aviation related) type incident

Whilst a 'multiple fatality incident' can involve as few as two 'victims' - DVI is more typically associated with significantly larger numbers of fatalities e.g. following a public transport type accident where hundreds and even thousands of fatalities (think cruise ship - some of which today carry more than around 8,000 persons) are potentially and realistically conceivable

Going 'up the scale' we have e.g. natural disasters where fatalities can run into hundreds of thousands plus (e.g. Tsunami of 26 December 2004) or even millions for certain types of public health incident (e.g. Covid-19 pandemic late 2019 - 2021) where DVI **might** be required

The above are commonly referred to worldwide as 'mass fatality' events and, quite clearly, can pose extreme problems for associated DVI operations

An added dimension occurs when terrorism or other criminal activity is actually or potentially linked to the cause of fatalities - in that the DVI process will need to now run alongside (but typically subordinate to) any associated criminal countermeasures and investigation processes

#### What is 'Death' (in the context of DVI operations)?

As an example and starting at 'the accident site' itself (if accessible and safe), appropriately qualified personnel (e.g. Medical Doctor; Pathologist; Paramedic etc.) will examine victims showing no apparent signs of life. Should death be confirmed - this might typically be termed **at this stage** as - '**extinction of life**'

Where such dead persons are (relatively rarely) 100% identifiable at this early stage (e.g. a surviving, uninjured First Officer [co-pilot] of a 'mass fatality aircraft accident' who identifies the fully intact and facially uninjured [but \* dead] Captain he had been flying with just minutes before) - then an associated family member (Next of Kin / Closest Relative etc.) or equivalent person should be notified of the deceased status without delay (However, how this is done is **not** the subject of **this** particular information article)

\* For example, 'extinction of life' formally declared (on site) for the Captain by an appropriately qualified medical professional - and this declaration witnessed and confirmed by e.g. an attending police officer





Progressing with the same scenario described just above (and still assuming that the situation is designated as a 'mass fatality incident' due the actual circumstances 'on the day'), '**official**' death of the Captain will typically be declared in due course (and in most jurisdictions) by an 'official' body of experts who are part of the DVI process - often known as an '**identification commission / board**'

To get to this point (and getting back to generalities rather than the specific example just above) **may** take some considerable time - during which corroborating evidence (e.g. medical and dental records; fingerprints; DNA etc.) might be used to positively confirm the identification. The body / human remains will typically **not** be released to the family during this time (although 'viewing' might be possible)

The identification commission reports its findings to the appointed and responsible government officer (Medical Examiner / Coroner / equivalent person) who, in due course (possibly following an inquest) - declares '**legal**' death. A death certificate can now be issued and the body normally released to the family etc. - for funeral, cremation, other form of disposal

## Interpol

Interpol (International Criminal Police Organisation) is an entity which facilitates international police co-operation. It is the second largest inter-governmental organisation in the world (after the United Nations) in terms of the number of member states

Amongst many other responsibilities, Interpol is widely recognised as the primary entity for setting international protocols & standards related to DVI. However, the latter are typically not compulsory / mandatory / binding on 'member' states / countries

Nevertheless, a significant number of Interpol member States (countries) **do** take guidance from the Interpol protocols & standards when setting up and operating their own DVI operations. Amongst other significant advantages, this creates a degree of international standardisation and 'quality control' - especially where a complex, international dimension is involved (again, as was the situation with the December 2004 Tsunami)

For more information on Interpol's DVI operations click on the below link:

<https://www.interpol.int/How-we-work/Forensics/Disaster-Victim-Identification-DVI>

## The USA

A significant absence from those Countries using Interpol DVI guidance etc. is the USA

Simplistically, there is only one logical pathway to the planning and operation of DVI ops - and all countries / organisations / entities etc. conducting same will follow this pathway in one way or another, to a greater or lesser degree etc. This obviously also includes the USA. However, it (USA) has decided to set its own processes, standards, documentation etc. (separate from those set by Interpol) - for how this is to be accomplished





In brief - **Disaster Mortuary Operational Response Teams** (DMORTs) have been developed in the USA. They comprise **private citizens** (each having a particular field of expertise related to DVI) who are activated in the event of a major emergency involving large numbers of fatalities

DMORTs work under the guidance of 'local authorities' (which are, in turn, part of appropriate US government departments) by providing technical assistance and personnel to process and identify multiple / mass fatality deceased victims

For a brief insight into how DVI is handled in one part of the USA - follow the below link:

[http://en.wikipedia.org/wiki/Unified\\_Victim\\_Identification\\_System](http://en.wikipedia.org/wiki/Unified_Victim_Identification_System)

### No DVI Capability?

A significant number of the world's countries have minimal to nil DVI capability - and it is in this area that agencies such as Interpol and its members (having such DVI capabilities) can be of assistance e.g. by providing a central co-ordinating facility; by deploying DVI teams to assist 'member' countries (having minimal / no DVI capability); by recommending standards & protocols etc.

### Airline Perspective

There is no doubt whatsoever that a full (high density seating configuration) Airbus A380, crashing at high speed onto a densely populated residential area in a city, will be a mass fatality incident. The latter will require (amongst many other issues) a massive DVI operation from government(s) level down and possibly / probably with international government and private sector DVI participation & support (amongst a myriad, other things)

Note that airlines do **not** typically conduct DVI activities themselves - except possibly for the collection / provision / storage of victim associated (mainly ante-mortem [i.e. pre-death]) information, data, evidence etc. This is typically accomplished in conjunction with the appropriate DVI 'authority' etc. involved

If such a mass fatality incident occurs in the 'developed' world, it is likely (but not certain) that the associated DVI operation will be overseen (more or less) in an effective & efficient manner by the government and other entities involved - and effectively / efficiently managed and undertaken (more or less) by those directly responsible for carrying out the operation (Medical Examiner / Coroner / DVI & associated teams etc.)

However, as passenger airlines can and do fly into and / or over absolutely every region of the earth - it follows that air accidents can and do occur absolutely anywhere. This means that such airlines may have the need for what might effectively be termed their own '**self-contained**' DVI response capability - related to crisis situations requiring a DVI input - but where the latter is not generally 'easily / reliably available' for one or more of many various and valid reasons





For example, consider how DVI ops might be carried out & supported at the North Pole; e.g. consider how such ops might be carried out & supported in circumstances where such capabilities (of the country / region involved) are non-existent etc.

Further to the above, many airlines engage the services of **commercial**, third party specialist organisations able to unilaterally and / or jointly (e.g. typically acting together with government / 'official' DVI teams etc. for the latter) conduct the necessary DVI operation - where permitted - the best known of which is probably '[Kenyon International Emergency Services](#)'. The latter is an excellent example to quote as many real past deployments (by Kenyon) in support of client airlines' accidents ably demonstrate

Whilst Kenyon (and the **very, very** few similar / other **commercial** entities [in the world] so capable) is generally able to conduct DVI ops independently - it typically works in joint collaboration with government & similar authorities to 'get the job done' in the most effective, efficient and sensitive / compassionate manner possible

### **Personal Effects** (Personal Property)

The search for, recovery and reconciliation of personal effects belonging to (or otherwise associated with) victims of multiple / mass fatality incidents is an integral part of the DVI process. All such items have the potential to be used as a part of the overall reconciliation (matching) and victim identification tasks

A further reason for conducting such operation is a compassionate one - i.e. the eventual return of personal effects (belonging or associated with the deceased) to surviving victims and / or associated family of the deceased - possibly in circumstances where such personal effects are all that **is** able to be returned (See Part 2 / page **15** for more information on this subject)

### **Next of Kin / Closest Relative / Equivalent Person**

For the purposes of this info article, '**Next of Kin**' / '**Closest Relative**' / '**Equivalent Person**' / '**Emergency Contact Person**' etc. typically refers to the closest 'related' person (**not** being an accident victim) as associated with a specific accident victim. Note that the word 'related' in the last sentence can (and does) have many different interpretations

The whole subject is both complex and suffers (in the context of a mass fatality aircraft accident and similar scenarios) from a distinct lack of clear, explanatory guidance material - basically because there isn't much of it about

However, the author of this information article has made an attempt to clarify this situation to the best of his knowledge and experience. The explanation (information article) runs to more than 20 pages so is not suitable for inclusion herein. Details of how to access it are shown in the 'boxed info' at the top of the next page:





Interested readers will find the associated 'information article' at:

<https://www.aviationemergencyresponseplan.com/information/>

When you get to the webpage, scroll down until you find the article entitled:

- **Info Article** - Major Air Accident - 'Next of Kin' / 'Closest Relative' / 'Emergency Contact Person'

Click on the article to open it for reading

### Other Considerations

There are a whole host of other considerations associated directly and / or indirectly with DVI operations - including dealing with accident victims' families; accounting for faith / spiritual / cultural / ethnic matters; involvement with the air accident investigation process; dealing with the 'media'; commemorations and memorials etc.

All are outside the scope of this particular information article - but many are covered by other information articles published as part of the same series of documents - and available at:

<https://www.aviationemergencyresponseplan.com/information/>





## The DVI Process - a Brief, Generic Explanation



At its simplest the DVI process comprises:

- Search and Recovery
- Identification / Reconciliation
- Return and / or Disposal

### Search and Recovery

It is a widely known principle (but perhaps not known widely enough!) that emergency first responders to a mass fatality incident should typically **NOT** move deceased persons / human remains - **unless** not to do so might further endanger life and / or destroy evidence (e.g. such evidence as might eventually be used in the DVI identification process itself; as part of the air accident investigation process etc.)

There is an immediate conflict here of course - as first on-scene fire and rescue etc. personnel attending an aircraft accident will generally evacuate all persons remaining on board the accident aircraft (if circumstances permit) - whether alive or apparently dead (how will they have the time to check if a person is dead or just unconscious?). No doubt there are other similar 'conflicts' - but at least the general 'principle' should be understood and logically & practically interpreted 'on the day'

The actual search for and recovery of the deceased & human remains - together with the search for and retrieval of personal effects (personal property) and evidence, should be undertaken in a systematic and methodical manner by personnel specifically trained for the task. Dignity, respect and compassion for victims (even though deceased) and associated families should be uppermost throughout the process







The resources involved in a mass fatality search & recovery operation will be considerable

The associated process roughly follows the below course:

- An 'appropriate' person(s) will be assigned primary (overall) operational responsibility for the recovery of the deceased, human remains, personal effects / property and evidence. This will typically go together with implementation of an associated and pre-prepared 'DVI - Search & Recovery Plan', including provision and deployment of the required resources
- Where possible and practicable - the search & recovery area will be 'stabilised' (as required) and otherwise made safe, before search & recovery operations commence
- The search and recovery area is typically 'marked out' in a gridded format (or equivalent process)
- A 'Specialist' victim search & recovery team(s) commence search and recovery operations
- Families should be initially briefed and then kept updated on what is happening and why

Note 1 - when anything of significance is found, a rigorous recording and evidential (audit trail) process is typically followed - however, same is beyond the scope of this information article

Note 2 - where considered practicable and beneficial - the search and recovery teams looking for the deceased and human remains can also be used in the search and recovery for / of **personal effects**

## Reconciliation / Identification

The above title refers to the process of attempting to identify the deceased / human remains via the gathering and use of all available material and information (evidence)

### Ante-Mortem Operations

Such operations relate to the processes required to gather **ante-mortem** (before death) information in respect of each missing person (believed to have been involved in a mass fatality incident) but where such person(s) have not yet been adequately accounted for or identified as deceased i.e.

- Preparation of a list of missing persons (believed to have been involved in the incident)
- Obtaining evidence re the likelihood that such missing persons were actually involved
- Creating an **ante-mortem** \* evidence collection for eventual comparison (& hopefully matching [reconciliation]) with material and data gathered from the **separate post-mortem** (after death) process
- Provide a single point of contact for ante-mortem operations

\* Note - 'evidence' can include e.g. DNA, dental records, finger prints, scars / tattoos / markings, photographs, medical and other records (including x-rays) etc.

Much of the ante-mortem information required will be provided directly and indirectly by families and / or equivalent persons







Establishment & operation by the authorities / airline etc. - of an '**Uninjured Victim Centre**'; a '**Family & Friends Reception Centre**' (shorter term facility); a (longer term) '**Humanitarian (Family) Assistance Centre**' and an associated '**Call / Contact / Information**' facility can facilitate this process. However, the ante-mortem gathering process will be accomplished regardless of the location of those providing the ante-mortem information e.g. as provided by families who decide to 'stay at home' i.e. not attend any of the 'centres' referred to just above

Where ante-mortem information is gathered using an Interpol derived system, then same is typically recorded on the Interpol '**DVI form - Ante-Mortem (Yellow) form**' - and / or its local equivalent. An example of the latter form can be seen by clicking on the below link:

[file:///C:/Users/User/Downloads/Ante%20Mortem%20\(yellow\)%20INTERPOL%20DVI%20Form%20-%20Missing%20Person.pdf](file:///C:/Users/User/Downloads/Ante%20Mortem%20(yellow)%20INTERPOL%20DVI%20Form%20-%20Missing%20Person.pdf)

### **Post-Mortem Operations**

The main objectives here are to:

- Gather post-mortem identification evidence (material & information)
- Ascertain cause of death
- Gather evidence for criminal investigation (as appropriate)

The primary objective of the first bullet point immediately above is to create a post-mortem evidence collection for eventual comparison (& hopefully matching [reconciliation]) with material and data gathered from the separate **ante-mortem** process. A successful reconciliation typically leads to a successful identification

There is also the need to provide a single point of contact for post-mortem operations

### **Post-Mortem Operations - Methodology**

Deceased persons and / or human remains from mass fatality incidents will eventually be delivered to a mortuary where post-mortem operations will be conducted. The facility used might be:

- An existing mortuary
- An existing mortuary with additional space
- A temporary / ad-hoc mortuary

For 'no-notice' mass fatality incidents it is possible that 'normal' mortuary capacity might be hopelessly insufficient - and contingency plans for such circumstances should have been prepared (by those so responsible) in advance - including use of e.g. military and 'private sector' facilities / services. A further factor is the time for which a mass fatality incident related mortuary might need to be available - this can easily be many weeks and, exceptionally, considerably longer

**Note: The set-up, manning, administration and operation of such mortuary (mortuaries) can be a complex task - but (apart from below) is outside the scope of this information article**





Examination & identification of the deceased and human remains should comply with guiding forensic strategy and operational plans - typically as directed by an appropriate Medical Examiner / Coroner / equivalent person. The strategy and plans will guide e.g. the mortuary operating environment and the sequence of the post-mortem processes

The 'on-scene' overall DVI Manager will take over this directing role for 'remote location' DVI operations - as appropriate and as directed

Provision of adequate forensic specialists (and similar e.g. medical [health & safety], administrative, logistics and security support) for mass fatality post-mortem activities should (in an ideal world) have already been adequately provided for (i.e. pre-crisis) in appropriate contingency plans. The same goes for other anticipated resources e.g. portable mortuaries; transport facilities; facilities for keeping bodies and human remains chilled (or frozen) to an appropriate temperature etc.

Ideally, the whole DVI operation (manpower and other supporting resources) should be capable of rapid, international deployment by air

**Note - Where necessary *joint* DVI operations** (including ante and post-mortem activities) **between participating countries / agencies may be necessary** (e.g. the 2004 Tsunami; the 2010 Haiti earthquake). **This (the 'international' joint operations concept) is a particularly strong argument for use of the Interpol based DVI system of standardisation, information sharing and resource support protocols**

As mentioned, DVI ops require provision of an appropriate team of forensic specialists - sufficient to deal adequately with the required DVI post-mortem (and other) task(s). This team might typically include (for a mass fatality incident):

- Pathologists
- Fingerprint specialist(s)
- Forensic anthropologist(s) \*
- Forensic osteology specialist(s) \*\*
- Forensic odontology (dental) specialist(s)
- Radiographer(s) & fluoroscopy specialist(s)
- CT & MRI scanning specialist(s)
- Forensic Podiatrist(s) \*\*\*
- Forensic Palynology specialist(s) \*\*\*\*
- Forensic Environmentalist(s) \*\*\*\*\*
- Forensic Archaeologist(s)
- Forensic Toxicologist(s) and Biochemical Specialist(s)
- Any other technical specialist deemed necessary

**Note - the word "forensic" refers to the application of an appropriate subfield of science - as used in the proceedings of a court of law**

\* Forensic anthropologist - assists in the identification of deceased individuals whose remains are decomposed, burned, mutilated or otherwise unrecognizable

\*\* Forensic osteology - science of determining the causes and circumstances of human death from the features, composition and context of bony remains





\*\*\* Related to feet and / or footwear

\*\*\*\* Study of pollen and powdered minerals, their identification and where and when they occur - in order to ascertain that a body or other object was in a certain place at a certain time

\*\*\*\*\* Assists with building up the 'geographical' profile of a deceased person / human remains e.g. identifying where same 'might have been (lived)'

Where post-mortem information is gathered using an Interpol derived system - then same is typically recorded on the Interpol '**DVI form - Post-Mortem** (Pink)' – and / or its local equivalent. An example of this latter form by clicking on the below link:

[file:///C:/Users/User/Downloads/Post%20Mortem%20\(pink\)%20INTERPOL%20DVI%20Form%20-%20Unidentified%20Human%20Remains.pdf](file:///C:/Users/User/Downloads/Post%20Mortem%20(pink)%20INTERPOL%20DVI%20Form%20-%20Unidentified%20Human%20Remains.pdf)

### **Identification Criteria**

**Primary** identification criteria are such that, **taken on their own**, each is (generally) sufficiently robust for confirming identification of deceased persons and / or human remains - examples being:

- DNA
- Fingerprints
- Dental Records (Odontology)

Note - '**visual** identification' - on its own, is widely considered **not** to be a primary or even a secondary identification method (but, as always, this will depend on the circumstances, on the day - see the example of the airline Captain & First Officer – near bottom of page 2)

Two or more **secondary** identifiers are considered to be the norm for confirming identification of deceased persons and human remains - examples being:

- Marks / scars / tattoos
- Blood group
- Signs of known physical (ante-mortem) disease found during post-mortem - e.g. tumour
- Known ante-mortem bone fractures (healed or unhealed) found during post-mortem
- Serial number(s) on e.g. replacement joint(s); breast implant(s); pacemakers & similar
- Medical records
- Unique and identifiable medical bracelets & similar (e.g. as used by diabetics, donors etc.)
- Unique and identifiable jewellery & similar
- Distinctive and / or unique clothing
- Other **personal effects** linked to victims in some verifiable manner





**Assistance** identifiers are used to support both primary and secondary identifiers - where circumstances so require. Examples of assistance identifiers include:

- Clothing
- Photographs
- Jewellery & similar
- Location of deceased person / human remains e.g. as sat in a specific aircraft seat
- Description
- **Visual identification by an appropriate person**

Secondary and 'assistance' identifiers are used to support primary identifiers where necessary

### **Matching / Reconciliation**

**Reconciliation** is the process whereby ante-mortem & post-mortem information are analysed and managed - in an attempt to **positively identify** a deceased person and / or re-unite different parts of human remains belonging to the same individual

Once all available ante-mortem and post-mortem information has been gathered, it is cross-checked in order to try and make a **match** (*reconciliation*). If a match is made, there now exists a form of 'identification' - which can range from '**possible**' to '**confirmed**' - with '**probable**' being in between

Note that it is sometimes possible for '**provisional**' identification to be established for some victims at a very early stage of the reconciliation process (again - see the Captain / First Officer example near the bottom of page 2) - and as per above, there are generally three 'levels' of such provisional identification:

- Possible
- Probable
- Confirmed

The nature of the word 'provisional' as used above should be clearly understood - in that a considerable number of further processes typically still need to be completed before '**official**' and '**legal**' identification can be made and promulgated (e.g. death certificate issued; deceased / human remains released etc.)

Those overseeing the DVI process should carefully decide and implement a policy (including guidance material) for disclosure of **provisional** identification information to families e.g. the latter will typically wish to be advised of identification of a loved one (provisional or otherwise) without delay. Conversely, there is a risk of secondary trauma to families if an incorrect identification is made and passed on





### **Family Viewing of the Deceased**

At this stage (if not already done as part of the 'identifier' post-mortem process) those overseeing the DVI process should decide and implement a policy (with guidance material included) for family viewing of the deceased (or not - as the case may be). There are many considerations to account for here which are outside the scope of this information article - except (as always) to treat all concerned with appropriate compassion, respect and dignity

### **Official (Formal / Legal) Identification / Death**

An appointed, official body of appropriate specialist persons (typically known as an '**Identification Commission / Board**' or equivalent title) meets (under the authority of a **Medical Examiner / Coroner** / equivalent person) to recommend formal confirmation (or otherwise) of identification of the deceased / human remains

The Identification Commission will jointly decide if any particular identification is '**possible**', '**probable**', '**confirmed**' or '**not made**'. Their report is then made to the Medical Examiner / Coroner / equivalent person. It is also at this point that families **might** be '**officially**' notified of the death - but this still might not yet generally mean '**legal**' death - and it is possible (in some countries / jurisdictions) that the deceased / human remains will not be released until the next stage (see below) is complete

This next stage can involve the Medical Examiner / Coroner / equivalent person overseeing an **official inquest** (necessary in some countries) - generally to ascertain for each identified deceased persons / set of human remains:

- Who the deceased was / were
- Where, when and how they died
- The details required to register the death

### **Return and /or Disposal**

Once the above processes are complete - a death certificate (or equivalent) will typically be issued - and the deceased / human remains released to families / whoever, for final disposal e.g. repatriation; burial or cremation etc. **Unidentified** deceased / human remains will generally be disposed of in accordance with appropriate **local** legal or equivalent requirements

In certain circumstances (e.g. high level of unidentified human remains) an appropriate, approved form of mass burial / cremation etc. might be utilised. In such circumstances the wishes of how families (in general) might want this to be conducted should typically be respected

**Note - Interpol has adopted commercial software application 'Plass Data'** (current version known as 'DVI System International') to assist in providing software solutions to DVI operations - especially reconciliation and identification. The system was adopted for joint DVI operations associated with the 2004 Tsunami and is now in common use worldwide, as part of national DVI programmes. For a brief overview of 'Plass Data' - follow the below link (note that other, similar systems do exist)

<http://www.plassdata.com/news/why-dvi-system-international.html>





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## Information - Part 2

### DVI / PERSONAL EFFECTS OPERATIONS (following a mass fatality aircraft accident)



## Background

Personal Effects (PE) operations following a mass fatality aircraft accident are first and foremost an integral part of the Disaster Victim Identification (DVI) process. As such they can form part of both the ante-mortem and post-mortem inputs to the reconciliation / identification process described in 'Part 1' of this information article

However, a further **vital element** of personal effects recovery ops is for the eventual claim of same by surviving victims and / or associated family of deceased victims - especially as personal effects might be all that remains of a 'loved one'

The sequence typically followed is likely to be a variation of something like:

- Once fire and rescue ops and the **preliminary** air accident investigation work are complete, it is likely that the DVI team (and / or their nominees) will be authorised to address just one of the many tasks assigned to them i.e. the search & recovery operation for personal effects

There are many considerations to be accounted for here - not the least being:

- The physical state of the accident aircraft and the accident location - for example:
  - ❖ Accident aircraft relatively intact and surrounding area undamaged
  - ❖ No significant part of the aircraft remains and the accident site centres on e.g. a 'large hole in the ground' with immediate, surrounding area having suffered severe damage







- ❖ Accident aircraft and most of those on board lie on an ocean bed at a depth at which 'recovery' operations will be extremely difficult / almost impossible
- ❖ The aircraft wreckage and everything on board has been scattered over hundreds of square kilometres of territory.....etc.
- 'Confliction' with any aircraft recovery / salvage ops also taking place
- (Assuming an 'on-airport accident') - pressure to return the accident **airport** to 'normal' operations without delay - possibly (in turn) putting undue time pressure on completing the PEs search & recovery process
- Lack of security / safeguarding at accident site e.g. no cordons; no access / exit lanes; police (or equivalent) failing to secure the area; public free to wander through site (and even remove [steal] personal effects; parts of the aircraft) etc.
- The composition and experience of the search & recovery team(s)
- Personal health & safety issues (e.g. use of personal protective equipment; awareness of blood-borne pathogen risks; vaccination & similar protection etc.)
- Combining the search for PEs with that for the deceased and / or human remains (which is generally the recommended [but not ideal] course of action) ..... etc.
- Assuming that the PEs search & recovery team are operating in a reasonably safe, accessible and 'unhindered' scenario, the first part of the operation usually requires the laying out of a systematic grid (of the area to be searched) - typically using string / twine / markers / similar - e.g. as PEs are found, their 'found location' is documented using a position reference system derived from the grid (the 'modern' method of doing this uses GPS - but only certain GPS equipment will typically have the required accuracy)
- Personal effects found on a deceased person or on human remains generally accompany the body and / or remains to the post-mortem facility

All other personal effects found (even those near / adjacent to a deceased person or human remains) are typically gathered & stored in some form of secure central depository - for possible future use in the DVI process and / or for eventual claim by surviving victims and / or associated family. A rigorous record keeping process (audit trail) should be maintained throughout - including the making of maps and sketches and the taking of photographs / video

At this point personal effects are maintained in the same condition as when found unless there is some overriding need not so to do e.g. preservation of evidence; clarity of evidence (achieved by e.g. protecting, cleaning etc.)





- Modern technology can assist considerably in the audit trail documentation required e.g. items found can be identified via a bar-code attached to the item in an appropriate way. The bar-code can then be scanned and the results populated to soft copy data bases which, in turn, are used to provide 'master' hard copy records and reports
- When identified, deceased persons and / or human remains are eventually released to families - any personal effects originally found **ON** an associated body / human remains will typically also be released
- **Un-associated** personal effects will typically be photographed, described and catalogued - and the catalogues eventually distributed to families in order that, where appropriate, a claim can be made. Careful protocols are usually in place to ensure that only genuine claims are honoured

Where a genuine claim is being processed, it is normal to ask families in what 'condition' they wish the PEs to be eventually forwarded to them i.e. in original state; cleaned; restored etc. (Same generally applies to 'associated' PEs returned with identified deceased persons / human remains - unless they have already been processed [e.g. cleaning] in some way, as part of the post-mortem process)

- There is a real risk of further mental trauma and stress to families when Personal Effects are 'uncaringly' forwarded to entitled recipients. As always, compassion, dignity, respect and tact should be kept in mind by all involved during the entire process - from start to finish

#### Important Note

*What has just been described in **Part 2** above is how it **should** work*

*In reality, the 'local' situation 'on the ground - on the day' will typically dictate the effectiveness & efficiency of personal effects operations*

*Same goes for the body & human remains search & recovery operation (as per '**Part 1**' of this information article)*

*A reminder here that in certain countries and / or geographical regions around the world - there will be **absolutely zero** DVI and PEs capabilities without some form of external assistance e.g. as provided by other countries / organisations which **do** have capable and deployable DVI and PEs capabilities*





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### Information - Part 3

## DVI - CALL / CONTACT / INFORMATION CENTRE OPERATIONS

### Following a Mass Fatality Air Accident



### Background

#### General

An inherent requirement of any mass fatality DVI operation is the expeditious giving and taking of appropriate, incident related 'information' (in the widest possible sense) - with the primary intent of using relevant elements of same in the DVI reconciliation / identification process

It is essential that a rigorous but highly (quality) controlled filter system is applied to all such information (especially inbound telephoned and similar 'electronic' type information [e.g. email and other forms of social media]) in order to avoid 'information overload' and / or seriously exceeding the capacity of the receiving unit

Much of the typical information attained and used in DVI operations has already been described in **Parts 1** and **2** of this information article. However, one very significant area is missing so far - and that is the exchange of information with the 'public' - amongst which will certainly be associated family, relatives and friends (FR) of the 'mass fatality victims'





To return us back to context here - this information article is generally concerned with DVI operations related to mass fatality **aircraft accidents**

**As an example** let's take a very large international passenger airliner (550 seats - all of them are occupied) which crashes on arrival near to its destination airport - resulting in 200 dead, 200 injured (most with life-threatening injuries), 100 uninjured and 70 missing (why 570? - because there were also 20 crew on board)

If (repeat - **IF**) the accident airline above had use of some type of telephone etc. call / contact centre which could be dedicated to the taking and giving (from / to the public) of \* information related to this example crisis alone - historical and extrapolated evidence indicates that the number of inbound telephone calls received on day one (first 24 hours) of the crisis might reasonably exceed 100,000

\* **BUT** - typically **not** DVI specific / related information - at this early stage of a call / contact centre operation

Of course, the vast majority of such inbound calls - mostly from the 'public worldwide' (remember - we are talking about an international airline here - with potentially **many** different nationalities on board) will **not** be related to the specific accident flight, but such calls must be taken and dealt with nonetheless

Obviously, various 'filter' systems are used in such call centres to **try** to ensure that only callers with a real or apparent genuine, personal interest (generally as related in some valid way with persons who had been on board the accident flight) finally get through to a human operator. The result is typically not encouraging

So, here is the first part of the accident airline's dilemma / problem:

- Does it (the airline) have use of such an 'emergency' call / contact / information centre?
- If it does, can it cope adequately (call-taking capacity) with the numbers of calls anticipated?
- Are the 'people' resources (call-centre & supporting staff) adequate in terms of manning?
- Are the 'people' resources (call-centre & supporting staff) adequately trained & exercised?
- Are the call centre technical (including all aspects of ICT & telephony) and infrastructure resources adequate?
- Are adequate translation resources available?
- Has adequate budget been provided?
- What happens next? (i.e. after the call centre bit of an airline's overall emergency response plan is complete) - remember, the call centre is just one cog in the airline's emergency response 'machine' - and all the cogs need to get 'joined up' to make the machine work
- ..... and so on

**If** all of the above (and much more) **is** in place and capable of effective and efficient operation commensurate with the risk scenario (i.e. can it deal 'acceptably & adequately' with the numbers of calls anticipated) - then the airline which owns or has access to such a **complete** 'system' itself would be a significant rarity e.g.

- Many, many passenger airlines (as at late 2020) have / had absolutely no **emergency** call etc. centre capability whatsoever





- Most passenger airlines which **do** have such a call centre capability (either their own or one 'hired -in' off the shelf from a specialist, external [commercial] company) **fall way short** in anticipated **call taking capacity** e.g. you anticipate up to 100,000 inbound calls on day 1 (first 24 hours) of the crisis (because of your type of operation / operating aircraft) - but the call centre's inbound call per 24H capacity is typically only 30,000! (which again, is the actual situation which exists / existed in reality as at late 2020)

Assuming for a moment that the accident airline **\* does**, in fact, have an adequate emergency call centre in place (commensurate with the number of calls anticipated as described above) - we come to the second and more important part of the problem (and the reader is reminded again here that the subject of this information article is '**Disaster Victim Identification**')

**\* Only a VERY small number can even come close to an inbound call capacity of 100,000 per 24 hours**

This second problem area relates to the fact that **airline** emergency call centres are typically designed and operated on a humanitarian basis i.e. **NOT** specifically as part of a DVI process - with most airlines assuming that 'someone else' will handle this (DVI) communications problem - and, essentially, this is not an unreasonable assumption to make 'in principle'

However, as previously stated in Part 1 of this information article - aircraft can crash absolutely anywhere on the earth's surface - and the DVI concept, yet alone its implementation, is lacking to non-existent in much of the world

**Note - even 'developed' countries such as the USA, UK & Australia etc. had only really started to address mass fatality DVI in a more 'effective, efficient and joined up' way relatively recently - usually as a result of some catastrophic event which 'might have been handled better' from a DVI viewpoint e.g. September 11<sup>th</sup> 2001 terrorist attacks in USA; 2004 Tsunami etc.)**

This means that if e.g. **\*\*** no responsible 'official' (government and / or equivalent type) organisation is handling the **DVI-specific** incoming, telephoned (call centre) information flow from the 'public' - then almost by default such information will need to be taken by the accident airline instead - always assuming that it is operating its own emergency call centre specifically for the accident concerned (which would probably be a very misplaced assumption!!!)

But - and as already mentioned, **airline** emergency call centres are **typically** not 'geared up' to deal with a **DVI type** inbound (ante-mortem related) information flow - i.e. they will not have appropriately trained staff; will not have the appropriate software and hardcopy documentation; will not have appropriate and standardised co-ordination and communication measures in place with the official DVI 'authorities' etc.

**\*\* In clarification of the above two paragraphs, the scenario used assumes that the state / country where the aircraft accident occurred **has** a DVI operational response in place - but that this response does **not** include a DVI specific call / contact / information (telephone) centre facility / capability**

**Note - in some states / countries (e.g. UK, Ireland, Oman and UAE) which **do** operate a dedicated / specific DVI call / contact centre facility - the facility is otherwise known as a 'casualty bureau'. In all such countries, the casualty bureau is operated by the appropriate Police Force (i.e. not by the accident airline)**





The logical conclusion of all of the above is that a DVI operational response *should ideally have* (in addition to all of its other vital components):

- Its own 'embedded' or otherwise available telephone **call / contact / information centre and associated facilities** (*the 'centre'*) - primarily for the taking of 'missing person' reports (related to a specific mass casualty incident or similar) typically made by associated family, relatives and friends (FR) of accident victims, by use of a telephone
- The '*centre*' should also take in other forms of DVI related information provided from all and any appropriate sources - and as related to the incident e.g. reports from the accident location; from 'uninjured victim centre'(s); from 'family & friends reception centre'(s); from humanitarian (family) assistance centre(s); from hospitals; from ante-mortem derived information; from post-mortem derived information; from the airline itself (if a catastrophic aircraft accident type situation); from the general public; from the media etc.
- The '*centre*' should collate, reference and cross-reference all information obtained and, where necessary, re-distribute it to other appropriate elements of the DVI process and other appropriate receiving units
- The '*centre*' should play the pivotal role in **supporting** the associated reconciliation / identification process
- The '*centre*' should be manned to a level commensurate with what it has been designed to achieve
- The '*centre*' should be equipped with sufficient telephony & ICT etc. capability commensurate with what it has been designed to achieve
- The '*centre*' should be equipped with an appropriate software (ICT) system designed to facilitate much of the information processing task - which might otherwise need to be accomplished manually. This applies particularly to the reconciliation / identification process - much of which (but not the very final bit - which is still confirmed by a 'human') can now be accomplished extremely quickly using appropriate computer software
- The '*centre*' should be provided with any other resources necessary to fulfil its function
- The '*centre*' should be the primary point of contact with incident victims' FR (if an airline type situation)
- The '*centre*' should provide incident related general information to government type authorities, the general public and the media

There are / were very, very few countries / states in the world (as at late 2020) which include such a '*centre*' in their national DVI programme - and even fewer still which include all of the above e.g. the UK's 'Casualty Bureau' system makes it very clear in its literature that it is **not** a general information centre for the public - but rather a centre for the taking in and processing of appropriate information *as related to the DVI process ONLY*







A further consideration for airlines running their own **emergency** (humanitarian related) call / contact centre at time of crisis is '.....**what if the DVI authority associated with the crisis is also running its own (separate) DVI related call / contact information centre at the same time?**.....'

Even worse, what if e.g. an involved \* code-share partner airline (or similar) also activates its own (separate) airline emergency call centre. The result is 3 quite different call centres - all dealing concurrently with the same crisis and almost certainly with no co-ordinated and cohesive plan between them

\* That is - code-sharing with the accident airline and also having its passengers on board the accident flight

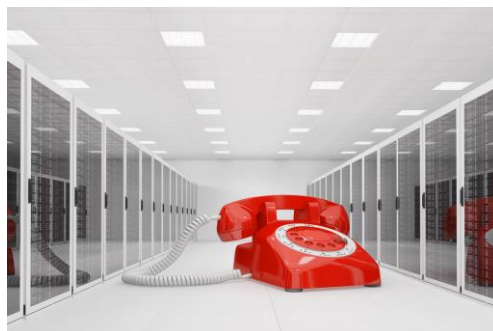
However, some work **has** been accomplished in a small number of countries / states regarding such a situation as the one described in the above paragraph - e.g. airline **A** operates a daily international flight from XXX airport to YYY airport - and carries code-share passengers from (separate) airline **B** on this sector. At YYY, airline **B** plans to take its own code share passengers from the airline **A** flight, together with some code-share passengers now provided by airline **A** (and who would have been on the flight from XXX to YYY) - and then fly them onwards (on an international sector) to ZZZ airport

On approach to YYY airport airline **A's** aircraft crashes with resulting mass fatalities and injuries

The result could be that airlines **A** and **B** will both open up their respective **airline** emergency call centres (assuming they have them) in their respective home countries (just try to stop them!) - and **also** the 'authority' responsible for DVI operations at YYY will additionally **open its own DVI only related** telephone call / contact facility - which we shall name the YYY **Police 'Casualty Bureau'**

In such circumstances it is easy to envisage the utter confusion and mayhem amongst the general public (let alone both airlines and the police) which might ensue - and particularly amongst potentially associated FR of accident victims. The 'media' would also be taking a major interest!

This particular situation could be prevented (or at least ameliorated) if the airlines and Casualty Bureau involved regularly met, trained and exercise with each other as part of a co-ordinated and cohesive plan - designed to manage such a potentially chaotic situation e.g. **some work to this effect had actually been done in reality, albeit to a very limited degree, in the UK.** (This work was actually an utter waste of time and effort as this system has, unfortunately, subsequently fallen into disuse)





*Deliberately Blank*





## Appendix **A1** to Information Article

### Further Useful Information - DVI etc. associated Links

#### Information from UK Police

UK legislation (Civil Contingencies Act 2004) is very comprehensive in setting out how the UK is to prepare (in the widest sense of the term) for all types of contingency (crisis / emergency / disaster etc.)

The UK Police play a significant role in such preparation and have accordingly produced some useful guidance documents - including one on DVI operations & another on Casualty Bureau ([*DVI Specific*] Call / Contact / Information Centre) ops

Whilst both documents are specific to UK, the subject areas are generic enough to possibly be useful to many readers using this information article (the one you are now reading) - who might now wish to delve deeper into the subject of DVI. Click on the links below to 'delve'!

<https://www.app.college.police.uk/app-content/civil-emergencies/disaster-victim-identification/>

<https://www.app.college.police.uk/app-content/civil-emergencies/disaster-victim-identification/dvi-roles-and-responsibilities/?highlight=casualty%20bureau?s=casualty+bureau>

For considerably more detail as to how UK Police recover and identify the deceased / human remains, click on the below link:

<https://www.app.college.police.uk/app-content/civil-emergencies/disaster-victim-identification/recovering-and-identifying-the-deceased-and-human-remains/>





## Appendix **A2** to Information Article

### **Further Useful Information**

DVI Specific Call Centre - Examples of Typical Forms Used by UK Police

See info starting next page:





**RESTRICTED**  
(when completed)

## Survivor/Evacuee

UK Police - '**SURVIVOR / EVACUEE**' Form  
(Equivalent of airline 'Victim Record Card')

Force  Holmes ref   
Location where form completed  Reception centre ref

☐ Survivor ☐ Evacuee

Surname  Sex ☐ Male ☐ Female ☐ Unknown  
Forenames  Date of birth  or Age from  to   
Other name  Nationality

### Address

Type (home/business/contact/other)  Address  Postcode   
    
Telephone number(s)  Mobile number(s)  Email(s)

### Location details

Location at time of incident   
Location now   
Destination

### Additional information

Date of Issue- November 2013

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(when completed)

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**NOK details**

Surname  Forenames   
Relationship

Informed ☐ Unknown ☐ Informed ☐ To be informed ☐ Not to be informed  
Involved ☐ Unknown ☐ Yes ☐ No

**Address**

Type (home/business/contact/other) Address Postcode  
    
    
Telephone number(s) Mobile number(s) Email(s)

**Information sharing statement**

This data may be disclosed to the government and/or its partner agencies and/or the emergency services in order to protect your vital interests and/or the vital interests of others, for the purpose of emergency response and the recovery process, in accordance with the Data Protection Act 1998.

☐ Descriptive form

Person completing form  Time and date   
Surname  ID No

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(when completed)

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UK Police - 'Survivor/Evacuee' Form  
(Customised for *Airport* Use)

CASUALTY BUREAU amended from standard form for airport use

use blue fax or copy paper

# SURVIVOR / EVACUEE

# BLUE

Computer/Bureau reference

Survivor / Evacuee Surname

/Initials.

## DETAILS OF SURVIVOR / EVACUEE

Surname (Family name)

Forenames

Maiden/other name

Sex : Male / Female / Unknown

**ANY SPECIAL NEEDS ?**

Religion :

Nationality:  
(Passport No ?)

Date of Birth (dd.mm.yy) \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
or Approx. age (from) (to)

Permanent Address

Contact Address in UK

Telephone Number:

Telephone Number:

Position of Survivor/Evacuee (at time of incident)

Originally expecting to be met by (Relationship ? Telephone number / Mobile?)

Location or destination of Survivor/Evacuee (e.g. rehoused at named reception center, continuing to named place of work)

## NEXT OF KIN OR PERSON TO BE INFORMED

Surname (Family name)

Forenames

The person to be informed is the (relationship)

of the survivor

Address

Telephone Number :  
(Include STD code)

Contact Telephone Number :  
(if different )

Relevant information (e.g. elderly, pregnant or ill health)

Next of kin informed by - Survivor - Police at scene - Other (specify) :

at (time) , on (date) , by (name/message no.)

## OFFICER / PERSON COMPLETING FORM

Name

Rank / staff number  
Organization / Force

Time :  
Date :

Day :

at :

- Scene

- Other (specify)

- Reception Center

- Casualty Bureau

Details sent to Casualty Bureau by : - Phone - Fax - Other on : Date Time

Indexed by Rank and No. Date Time

Date of Issue- November 1999







## Misper

**RESTRICTED**  
(when completed)

UK Police - '**MISPER**' (Missing Person)  
Form - (Equivalent of airline 'FR Enquiry  
Card)

FR = Family, Relatives & Friends (of  
accident victims)

Force	<input type="text"/>	Holmes ref	<input type="text"/>
Location where form completed	<input type="text"/>	Inv grading	<input type="text"/>

### CALLER

Surname	<input type="text"/>	Forenames	<input type="text"/>
Relationship	<input type="text"/>	Next of kin	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not specified

### Address

Type (home/business/contact/other)	Address	Postcode
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
Telephone number(s)	Mobile number(s)	Email(s)
<input type="text"/>	<input type="text"/>	<input type="text"/>

### MISPER

Surname	<input type="text"/>	Forenames	<input type="text"/>
Other name	<input type="text"/>	Sex	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown

### Address

Type (home/business/contact/other)	Address	Postcode
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
Telephone number(s)	Mobile number(s)	Email(s)
<input type="text"/>	<input type="text"/>	<input type="text"/>
Date of birth	or Age from <input type="text"/> to <input type="text"/>	Height from <input type="text"/> to <input type="text"/>

### Ethnic appearance

<input type="checkbox"/> White/North European	<input type="checkbox"/> White/South European	<input type="checkbox"/> Black	<input type="checkbox"/> Asian
<input type="checkbox"/> Chinese, Japanese or any other South East Asian	<input type="checkbox"/> Arabic/North African	<input type="checkbox"/> Unknown	

Date of Issue- November 2013

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(when completed)

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**RESTRICTED**  
(when completed)**Vehicle**

VRM	<input type="text"/>	Make	<input type="text"/>	Model	<input type="text"/>
Body type	<input type="text"/>	Colour	<input type="text"/>		

**Information sharing statement**

This data may be disclosed to the government and/or its partner agencies and/or the emergency services in order to protect your vital interests and/or the vital interests of others, for the purpose of emergency response and the recovery process, in accordance with the Data Protection Act 1998.

**Additional information**

☐ Descriptive form ☐ Involvement form ☐ Additional misper form

Person completing form	<input type="text"/>	Time and date	<input type="text"/>
Surname	<input type="text"/>	ID No	<input type="text"/>

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(when completed)

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## Appendix B to Information Article

### Further Useful Information - Case Studies

#### The December 2004 Tsunami

The DVI response to the Tsunami covered a vast area ranging from the East African Coast to SE Asia.

A particularly strong, (joint) international DVI response was centred on Thailand which (from an international DVI viewpoint) had many fatalities amongst tourists on holiday at Thai coastal resorts, on parts of the west coast of that country

Many of these tourists were from 'developed' countries - the latter countries (to a greater or lesser degree) able to deploy their own, national DVI effort to Thailand - which many did

This first case study looks briefly at some of the experiences of the deployed Belgian DVI team - the link is shown below:

**WARNING** - graphic colour images of deceased persons are shown - most in advanced stages of decomposition and / or dissection

[http://cdn.intechopen.com/pdfs/13106/InTech-Autopsy\\_and\\_identification\\_techniques.pdf](http://cdn.intechopen.com/pdfs/13106/InTech-Autopsy_and_identification_techniques.pdf)

The second case study recounts the experiences and comments of the deployed Singapore DVI team

<http://www.annals.edu.sg/pdf/34volNo5200507/v34n5p341.pdf>

