Friendly fire, historical analysis, and why database size counts

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- Implementing the catalogue

  – how does historical analysis compare with other OA methods?

- Some statistics from the catalogue

- Incident frequency on three recent operations

- Value and impact of HA for friendly fire studies

- Database size, and HA project management

- Questions

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Introduction

- 'Friendly fire', amicicide, amicide or fratricide
  - the problem of attacking one's own side in battle
- Historically accounted for 10–20% of battle casualties
- Greater impact *per casualty* than those from enemy fire
  - loss of morale
  - loss of operational effectiveness
- Awareness raised by events in Iraq, 1991 onwards
  - solution needed, but problem was not well understood

Examples of incidents

- Firing at returning patrols
  - e.g. death of 'Stonewall' Jackson at Chancellorsville in 1863
- Bombarding own troops with artillery
  - many incidents, particularly in WW1
- Mis-directed air attacks on own ground forces
  - St. Lô (1944), Iraq (1991, 2003), Afghanistan (2001, 2007)
- Mis-identification of friends in the contact battle
  - all conflicts … WW1, WW2, Vietnam, Falklands, Iraq …
- Also ground-to-air … in fact, all environments

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Vietnam, 3-Aug-1967

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Need for a solution

- Three potential solutions:
  - improve training, tactics, techniques and procedures (TTPs)
  - improve situational awareness (SA)
  - improve target identification using technology, e.g. a TID
- Question: which is most cost-effective?
  - depends on frequency of events, causes, impact, environment
- 1990s – attempts to simulate battles with fratricide
  - battle modelling not best suited to problem
  - revealed lack of understanding and dearth of data

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[dstl] Implementing the catalogue

Development of catalogue

- 1996: need to understand the phenomenon
    - idea of listing events proposed by Di Wardleworth
    - catalogue started as an 'unofficial' project
    - events gathered by those interested, in DERA/Dstl and outside
- First working paper published 2004
    - listed 1318 incidents, including 1238 post-1900
- Compilation of events ongoing … now around 2600
- DG(S&A) sponsored archiving and validation in 2006–07

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Plusses and minuses of HA

- Historical analysis is based on 'ground truth'
  - albeit a partial and biased sample …
  - models and simulations are based on our imperfect understanding
- Totally uncontrollable
  - the only analysis tools are retrospective statistics
  - whereas a combat model is a 'battle in a goldfish bowl'
- Protracted data-gathering phase … *should* apply to both
- They are complementary techniques
  - e.g. catalogue has informed Dstl's INCIDER simulation

Sources for catalogue

- Problem: events scattered throughout military literature

  – sources have taken months or years to find …

- Monographs on fratricide, e.g.:

  – Shrader (1982), other UK and US studies

  – Percin (1921), Kemp (1995), Garrison (1999)

- General books on military history

  – typically yielding 2 to 6 events per book

- Military obituaries and web pages

- Over 300 sources searched

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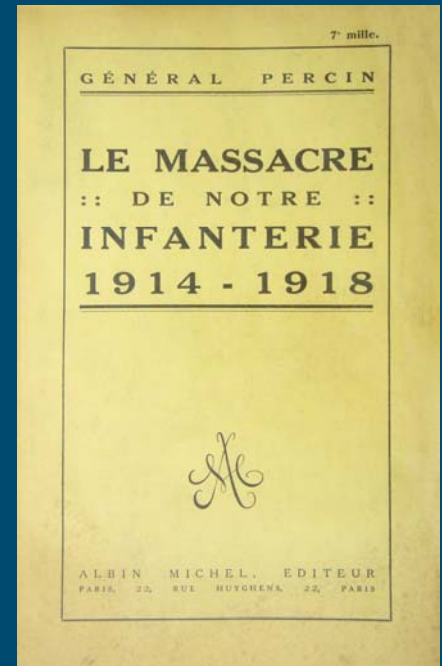
Information recorded per event

- When? Where? What type of event?
  - environment (L–L, A–L etc.), actual event or a 'near miss' etc.
  - circumstances: day or night, in combat or not

- Short factual statement of what happened

- Cause(s) of the incident – 9 categories plus 'unknown'

- Casualties (K&W) and materiel losses
  - and did the victim return fire on the initiator?

- Full source information, including a 'confidence rating'

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[dstl] Some statistics from the catalogue

Statistics from catalogue … 1

- Occurrence of 2526 events post-1800 by decade

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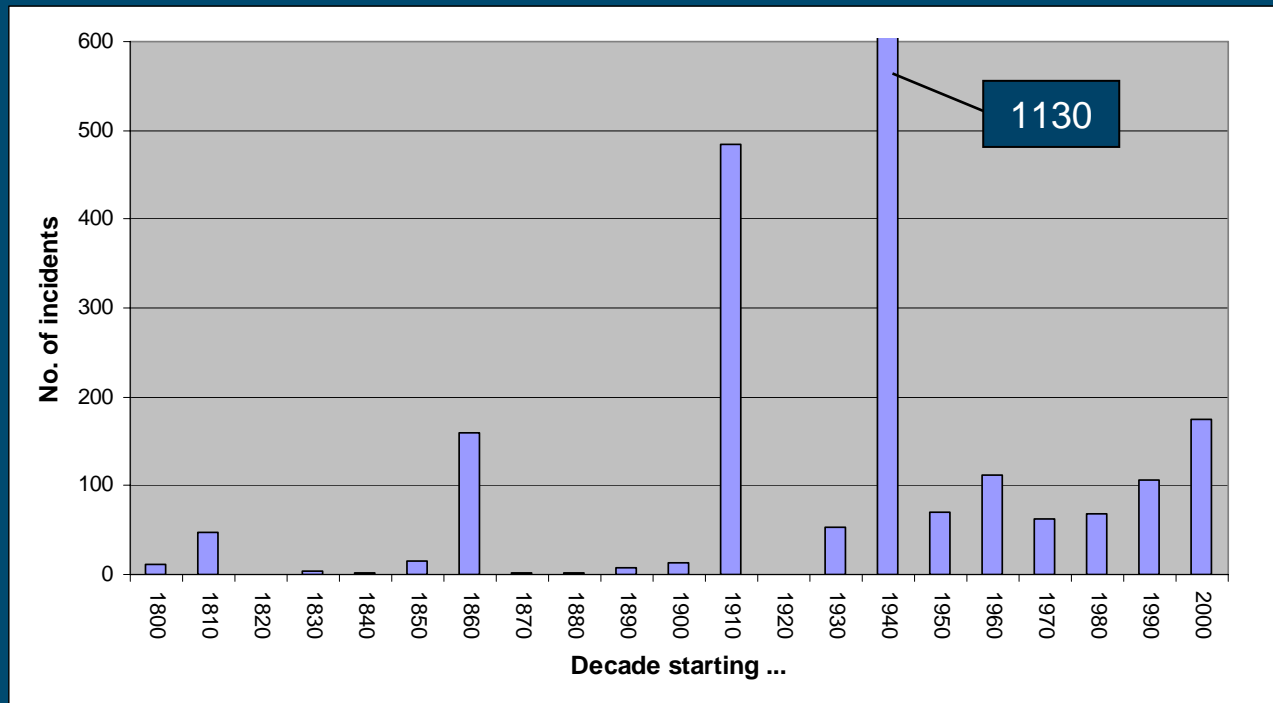
Statistics from catalogue … 2

- Breakdown of 20th. century events by environment
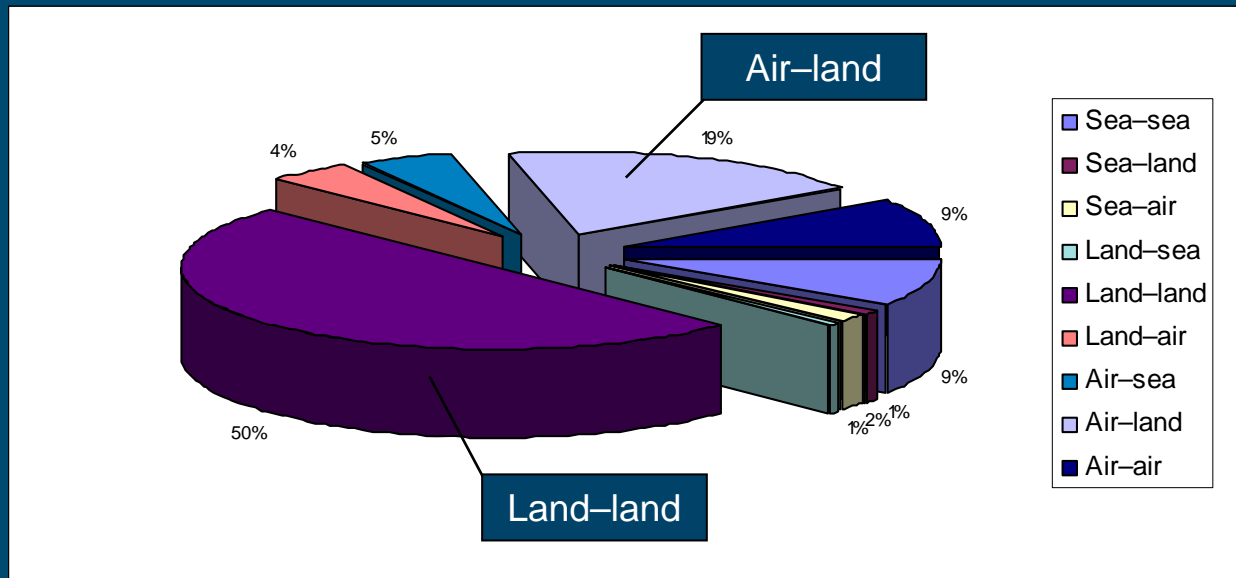
- 32% were 'cross-environment' events

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Statistics from catalogue … 3

- Breakdown of 20th. century events by causes

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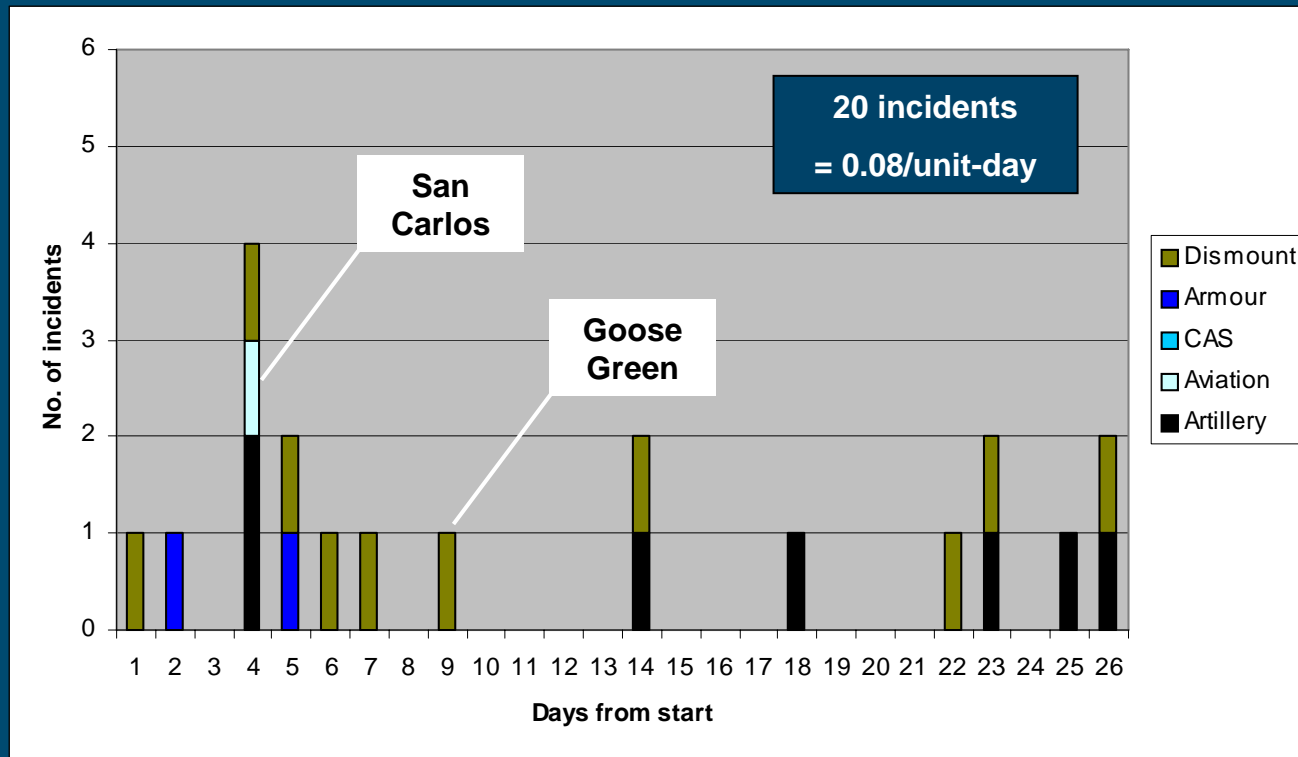Ministry of Defence
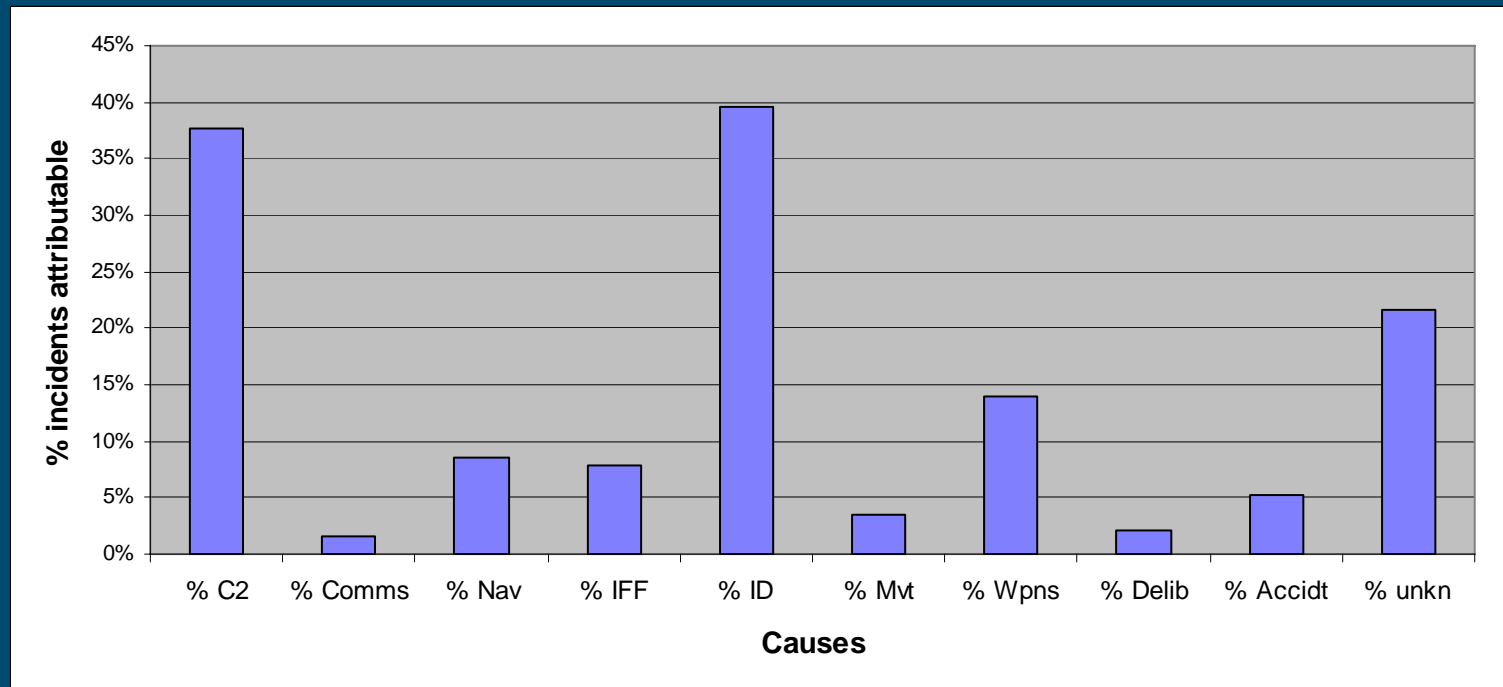
Falklands, 1982 … 1

- UK land units involved in Operation Corporate:
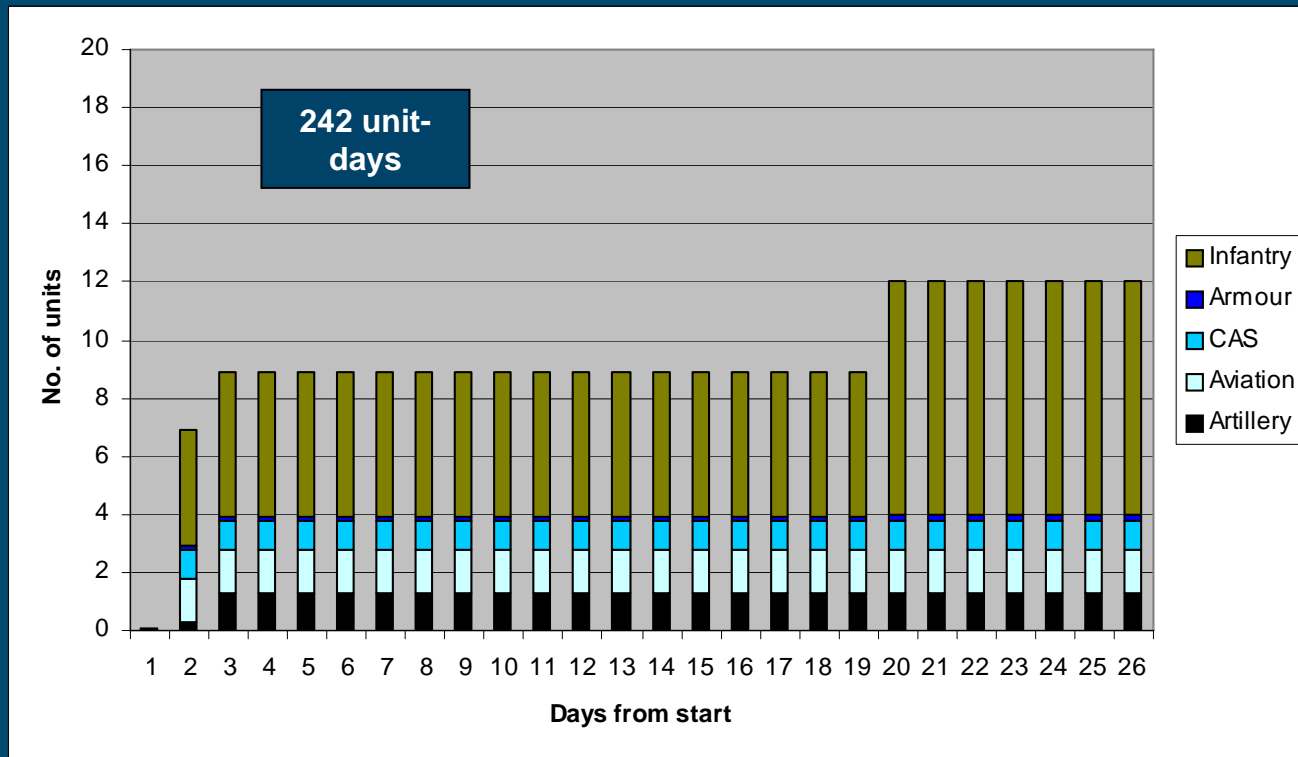
Falklands, 1982 … 2

- Land amicides on Op. Corporate – including near-misses:

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Iraq, 1991 … 1

- UK land units involved in Operation Granby:

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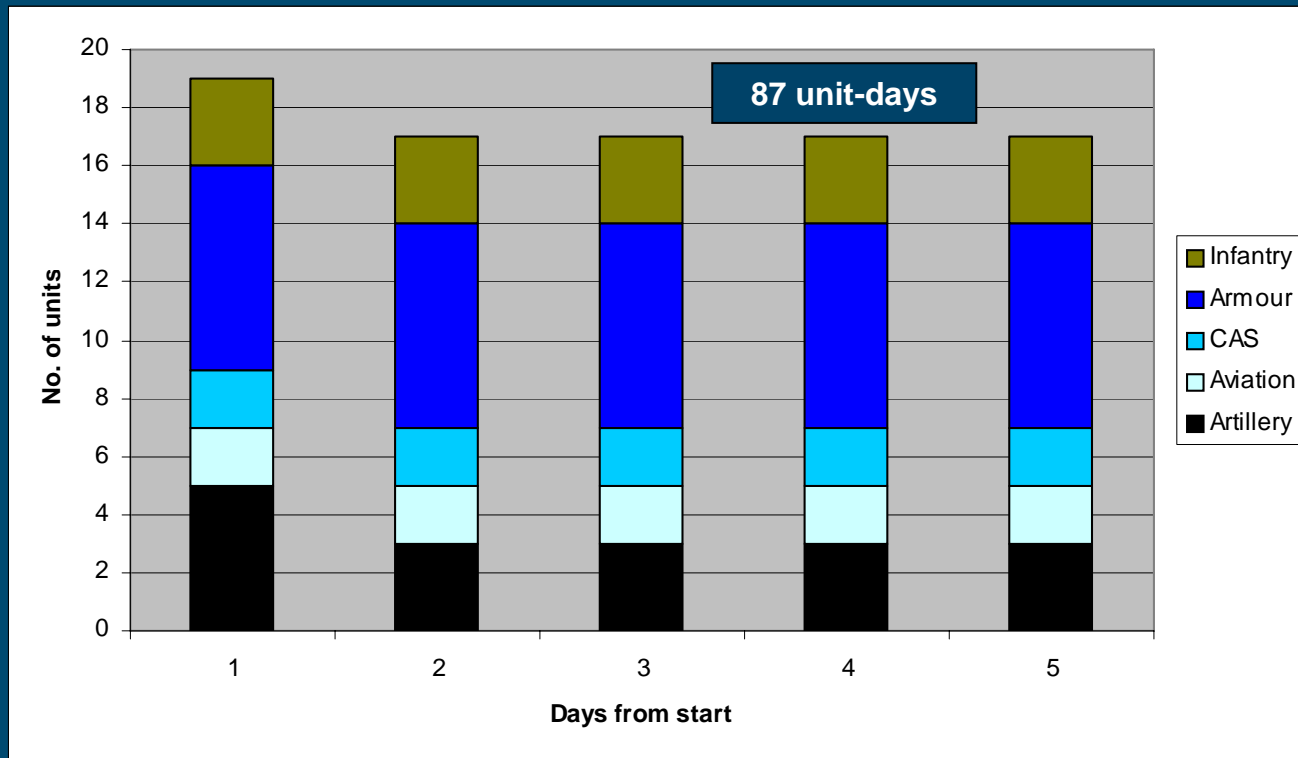
Iraq, 1991 … 2

- Land amicides on Op. Granby – including near-misses:

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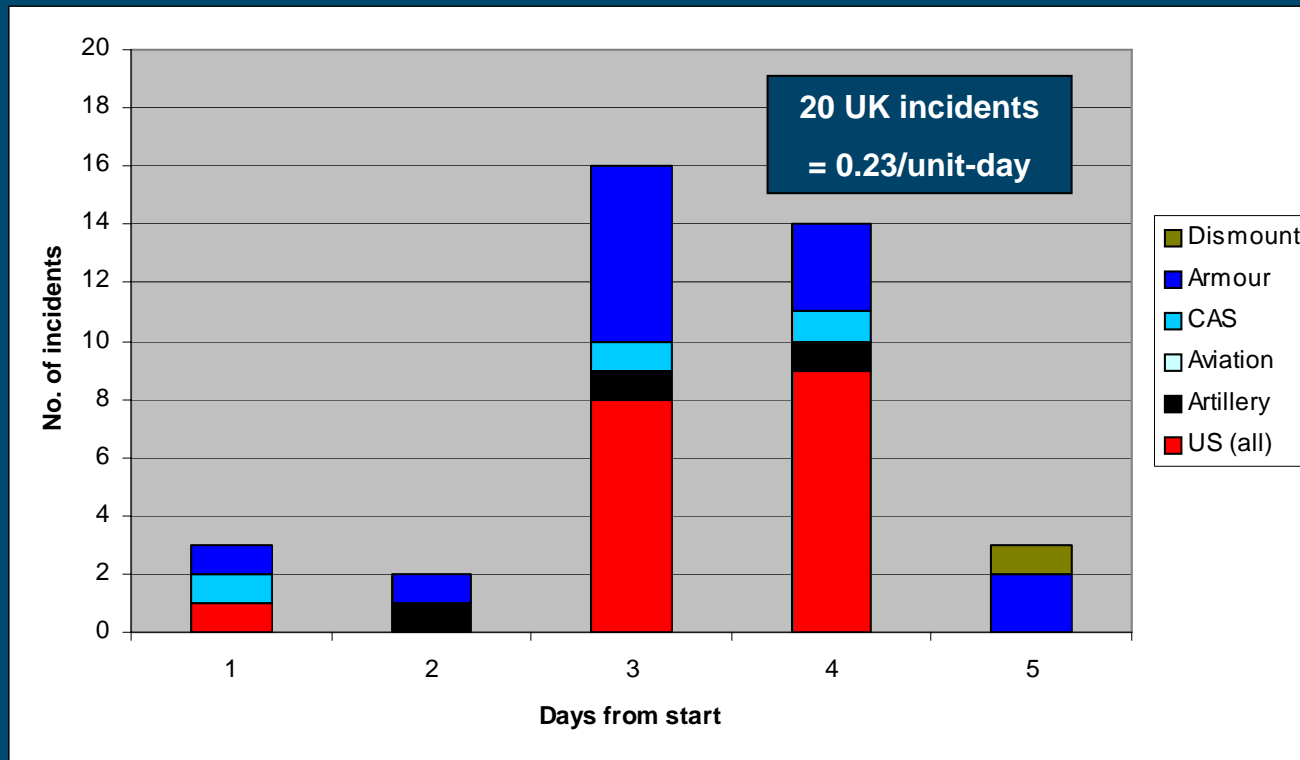
Iraq, 2003 … 1

- UK land units involved in Operation Telic 1:

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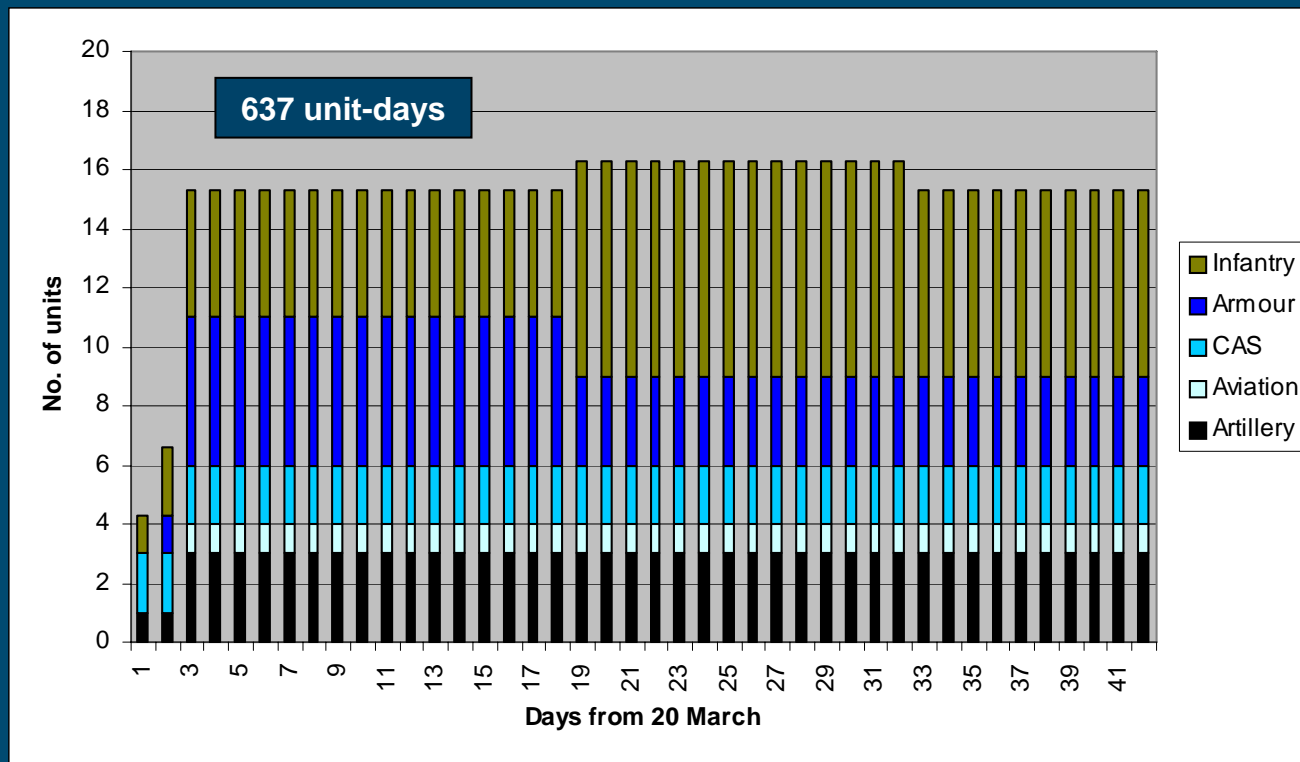
Iraq, 2003 … 2

- Land amicides on Op. Telic 1 – including near-misses:

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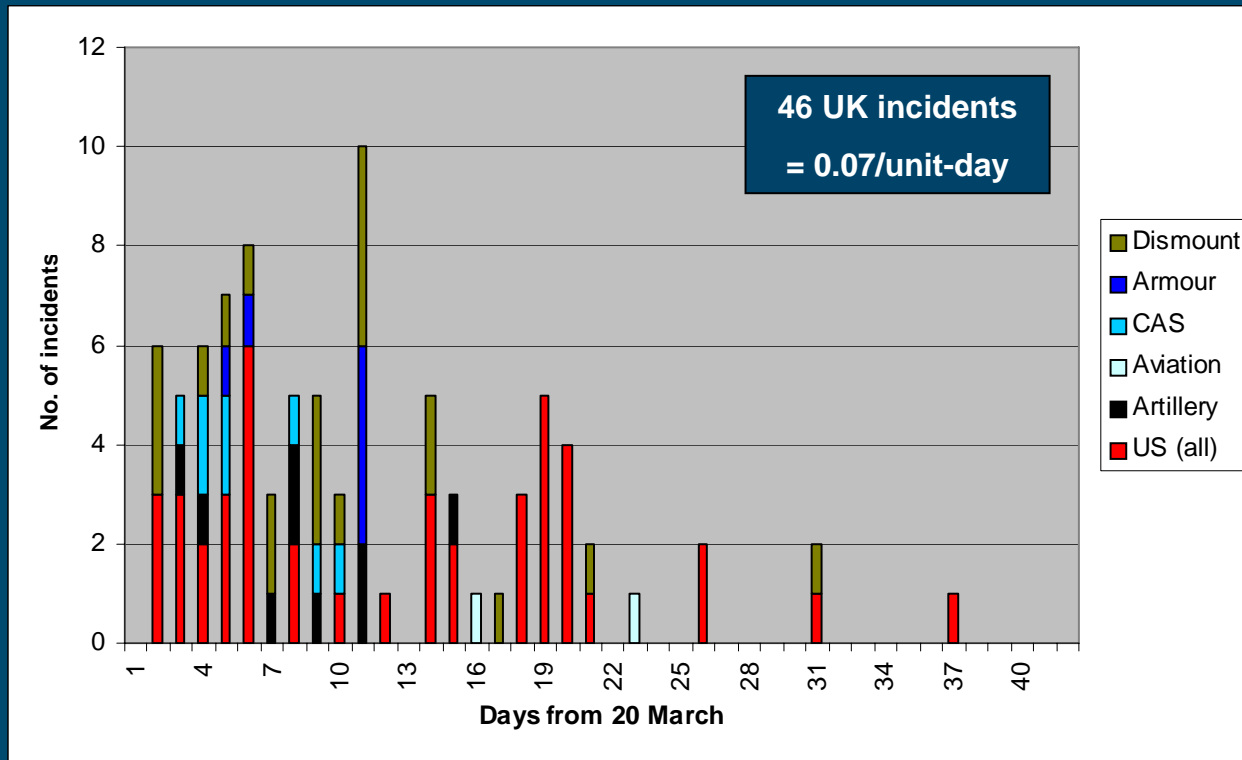
Conclusions on incident frequency

- Incident rates are similar when normalized
    - from 0.05 to 0.25 per unit-day
    - marked effects of operational tempo
- Normalized rates very similar to Normandy, 1944
    - at around 0.1 incidents per unit-day
- Thus more dependent on 'human factors' than technology
    - reinforces validity of HA for these research purposes

What value has HA added to friendly fire studies?

Value of catalogue

- Has compiled a representative sample of events
  - statistically robust for analysis purposes
- Has provided understanding of patterns in incidents
  - e.g. commonly poor C3 followed by poor physical ID
  - emphasizing multiple causes per event
    - Reason's (2000) 'Swiss cheese' model of civil accidents
- Highlighted frequency of 'cross-environment' events
  - alerted procurement to need for cross-boundary solutions

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Impact of project

- Better understanding of event frequency and causality

- Informed building of INCIDER* decision-making model

- Input to BoI studies for CID procurement
  - quantifying relative importance of each environment
  - in terms of casualties and maintaining operational effectiveness

- Input to NAO and PAC reports on CID
  - 2002, 2006 and 2007

- Ongoing input to Parliamentary Questions on CID

* Integrative Combat Identification Entity Relationship model; see Dean *et al.* (2005)

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[dstl] Database size, and HA project management

Database size

- Can it ever be definitive?
  - in very limited areas, maybe; in general, no …
  - but it *can* provide a representative sample of events
  - large enough to be statistically robust
- Does it *need* to be this large?
- Yes … projects always require a subset of the data …
  - but *which* subset cannot be predicted
    - selection can quickly reduce from 2600 to (say) 35 events …

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Database size

- Projects must select data from 'one **I** prepared earlier'

- *"Quantity has a quality all of its own."*
  - Josef Stalin

- Is this requirement compatible with modern PM practice?

HA and project management

- HA database compilation is a 'slow-burn' activity
  - has taken 12 years to compile 2600 amicide events
  - not particularly intensive, thus low cost per year
- Issue: no overall 'problem owner' …
  - it is a resource that has been used by about 20 projects to date
    - hard to assign to any one budget
  - should HA databases be treated as facilities?
- Data usually required at short notice
  - insufficient elapsed time for bespoke data gathering by projects

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What HA databases are needed?

- Potentially, one for each OA study area
  - with content guided by past study questions
  - e.g. for AFV vulnerability, a database of losses, by cause etc. …
- They rely on analysts interested in history
  - should OA organizations recruit more history graduates?
- OA culture must value *data* as much as it values *models*
  - *or more so … good data may feed many different models!*

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*   Co-author of 2004 paper
** Proposed catalogue in 1996

Questions?

Always keen to hear of amicide events for catalogue – compilation of V2.0 is ongoing

– please e-mail me on <u>prsyms@dstl.gov.uk</u>

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