

AFAC STREAM PAPER

Getting it Right: AIIMS ICS - Preliminary Results of National Review

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Abstract

A review of the incident control system of the Australian Inter-service Incident Management System¹ has included a national questionnaire-based survey, conducted in early 2003. Whilst only a preliminary analysis of the data has been undertaken at the time of preparation of this paper, interesting and valuable insights concerning the system have emerged. Generally, AIIMS-ICS appears to be meeting its objectives. The survey has identified some areas for improvement in the application of the system. Improvements relate more to flows within the system than to its structure. The data indicate the need to explore ways to improve the timeliness of information flows between incident management teams (IMT) and the incident ground. The data clearly indicate two schools of thought concerning the resource management function within the ICS structure. Further, they identify attributes of incident action plans and IMTs seen by practitioners as contributing to their effectiveness.

Introduction

The fires of historic proportions and duration that raged across, NSW, the Australian Capital Territory, and Victoria during the summer of 2002/03 clearly demonstrated the complexities of emergency management today. These fires saw the deployment of immense armies of people from emergency and non-emergency service agencies alike. They brought together, on numerous occasions, personnel from several states to assist another in its time of most need. International and military assistance rallied to the cause. The events gave witness to the need for a system that is transportable across both jurisdictional and spatial boundaries - a system having universal application.

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During the mid-eighties, the Australian Inter-service Incident Management System (AIIMS) was developed – utilising the American National Inter-agency Incident Management System as its genesis. Progressively introduced by various agencies since the late eighties, the formation of the Australasian Fire Authorities Council (AFAC), in 1993, exposed the system to a wider membership as well as other public safety organisations and interested stakeholders.

If for no other reason, good management practice alone would suggest more than a decade of operation indicates a review of a system is desirable. However, since AIIMS inception, the

¹ AFAC Ltd., 1994, *Incident Control System: The Operating System of AIIMS-2nd Edition*, Australasian Fire Authorities Council, Victoria, Australia

frequency and complexity of joint agency operations - both within and across State borders - has increased, placing greater emphasis on the need for consistency in the interpretation, understanding and application of the system – particularly, its incident control system (ICS). Thus, in late 2001, AFAC determined to establish a project to review AIIMS-ICS to ensure that it remains relevant and addresses the operational needs of its members and other users.

One element of the review was the development and application of a questionnaire to collect information from users of the system Australia-wide. The questionnaire was designed to target the effectiveness of current incident management arrangements across all aspects of the ICS and at all levels of the structure, with particular emphasis placed upon:

- ❑ Safety and personnel welfare and support.
- ❑ IMT arrangements and effectiveness
- ❑ Flows within the system
- ❑ Incident Action Plans
- ❑ Resource Management
- ❑ Briefings
- ❑ External relationships

Methodology

Following development, the questionnaire instrument was reviewed by a two-day workshop of operational personnel to ensure common understanding of the terminology used. This was followed by a pilot application of the questionnaire using a small sample group in each of fourteen agencies associated with AFAC, to confirm understanding of the questions and to seek respondent feedback regarding the instrument.

A supply of the questionnaires was distributed to each participating organisation, which was requested to distribute the questionnaires throughout their agency ensuring the questionnaires were sent to individuals with operational experience in one or more of the key ICS functions.

The approach used by agencies to distribute the questionnaire internally varied. Some chose to distribute them through random selection of respondents, others identified individuals known to have performed the roles as potential respondents.

Completion of the questionnaires was voluntary. Respondents undertook completion of the questionnaire individually and on a *self-report* basis. To ensure confidentiality, each respondent was provided with a reply paid envelope in which to enclose the completed questionnaire.

Respondents

Respondents covered all the roles under the AIIMS structure from Incident Controller (n = 227), through the functional roles of Planning Officer (n = 106), Logistics Officer (n = 70), and Operations Officer (n = 116), to the field roles of Division Commander (n = 87), Sector Commander (n = 73) and Crew Leaders/Officer in Charge of Appliance (n = 102)². All States had respondents across the full range of roles; in the case of the Northern Territory, only persons reporting their predominant role as Incident Controller completed the questionnaire.

Based on modal frequencies, a typical respondent to the questionnaire might be described as:

A male, aged 40 to 49, with no less than 6 years, and likely to have more than 11 years experience in the reported role. He has performed the role on multiple occasions and is most likely to be a full time employee from either a land management agency or an emergency service organisation agency having responsibilities for both rural and urban fires. He has received moderate to substantial training relevant to the role performed.

However, respondents included the full spectrum of metropolitan fire and rescue agencies, State Emergency Services, rural fire services, and land management organisations. Interest was shown in the project by the Army's emergency services, which completed a small number of questionnaires. The survey included volunteer as well as paid, retained, auxiliary, and seasonal employees; and both males and females. The number of questionnaires completed across States and Territories is shown in the Figure 1.

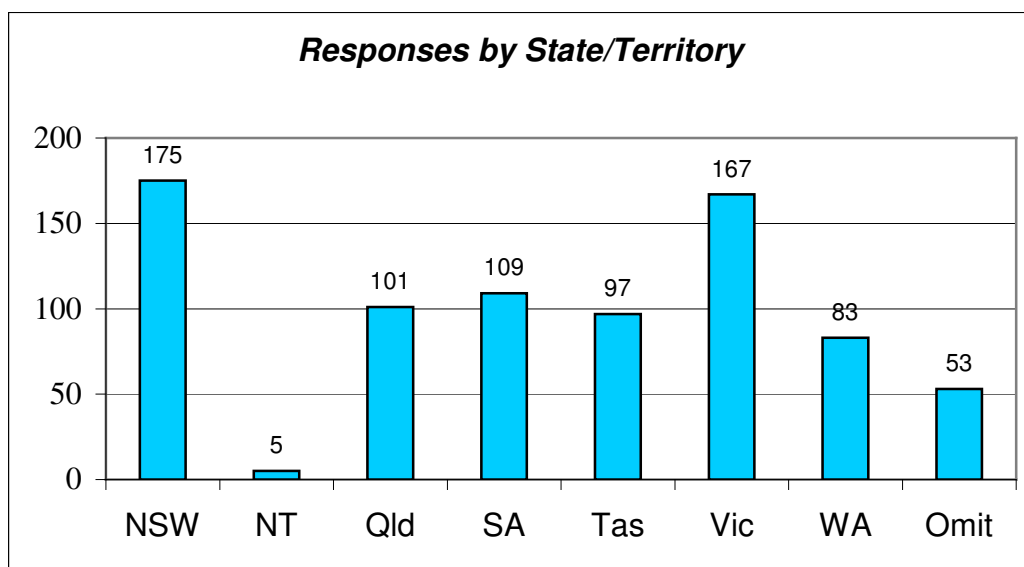


Figure 1. Distribution of Responses by State/Territory Incidents

Ninety-five percent of the questionnaires returned related to incidents occurring between 2000 and 2003, with ninety percent in the period 2001 to 2003. Thus, the vast majority of the respondents have provided information relating to incidents managed under relatively current

² The numbers in each category represent persons who positively identified their *predominant role* at the incident as one of the specified functions; some people omitted to answer the question.

procedures compared to the period of operation of AIIMS within Australia. Further, it seems reasonable to postulate that respondents would have had reasonably good recollections of the incident and circumstances they reported upon as they completed the questionnaires. Tables 1 to 4 provide an overview of the incidents reported upon by type, duration, complexity as perceived by the respondent, and number of personnel engaged in the management/control of the incident during the 24 hours involving the respondent's shift. The tables illustrate that the questionnaire covered an extensive range of incidents and that AIIMS is being applied widely.

Table 1. Incident types

<i>Type of incident</i>	<i>Number of Responses</i>
Structure fire	83
Structural collapse	1
Hazardous materials incident	19
Transport incident	21
Rescue incident	14
Rural/urban interface fire	84
Grass fire	14
Forest/Scrub fire	464
Other	34
Omit/Multiple	56

Table 2. Incident duration

<i>Duration of incident</i>	<i>Number of Responses</i>
Up to 6 Hours	83
6 to 24 hours	77
1 to 7 days	212
8 days to month	177
More than 1 month	228

Table 3. Incident complexity

<i>Perceived Complexity of incident</i>	<i>Number of Responses</i>
Low	74
Medium	305
High	398

Table 4. Personnel involved in 24-hour period including respondent's shift

<i>Personnel – 24 hours</i>	<i>Number of Responses</i>
10 or less	21
11 – 50	224
51 – 100	200
101 – 500	223
501 or more	67
Don't know	16

Incident Action Plans³

Ninety-three percent of Incident Controllers (IC) reported the Incident Action Plan (IAP) available to them during the shift they reported upon contributed satisfactorily (or better) to their ability to undertake their role. These ICs were asked to select from a range of five attributes of the IAP that contributed to its usefulness. Further, all ICs who had an IAP available during their shift, regardless of whether they believed it satisfactory or not, were asked to select the attributes that would have improved it. Respondents were free to select more than one attribute. Their responses are shown in the Figure 2.

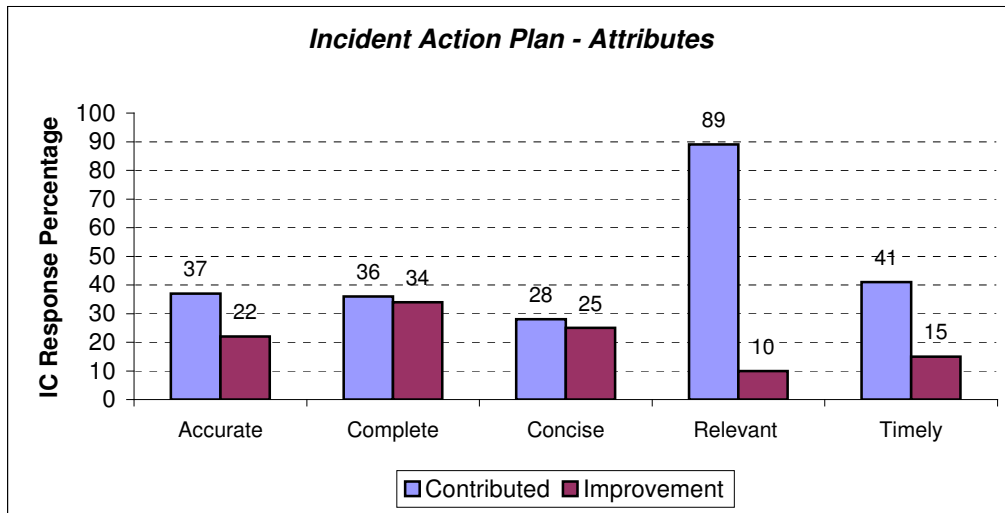


Figure 2. IAP attributes selected by Incident Controllers

Very similar trends occurred for Planning, Logistics and Operations Officers (PLOOs), and Division and Sector Commanders (DSCs), with 89 and 86 percent (respectively) who had an IAP available to them reporting that it supported their role satisfactorily (or better). Their responses in relation to the attributes of the IAP that contributed to the performance of their roles, and suggestions for possible improvements are shown in the Figures 3 and 4.

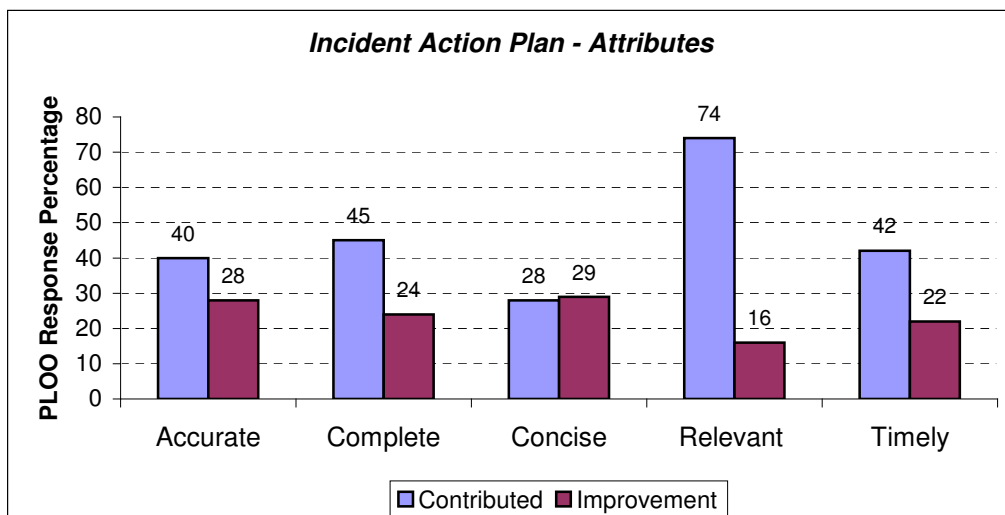


Figure 3. Frequency Planning, Logistics & Operations Officers (PLOOs) selected IAP attributes

³ The questionnaire informed respondents that *Incident Action Plans* included plans that had been prepared prior to an incident (eg incident pre-plans, major hazard pre-plans or similar).

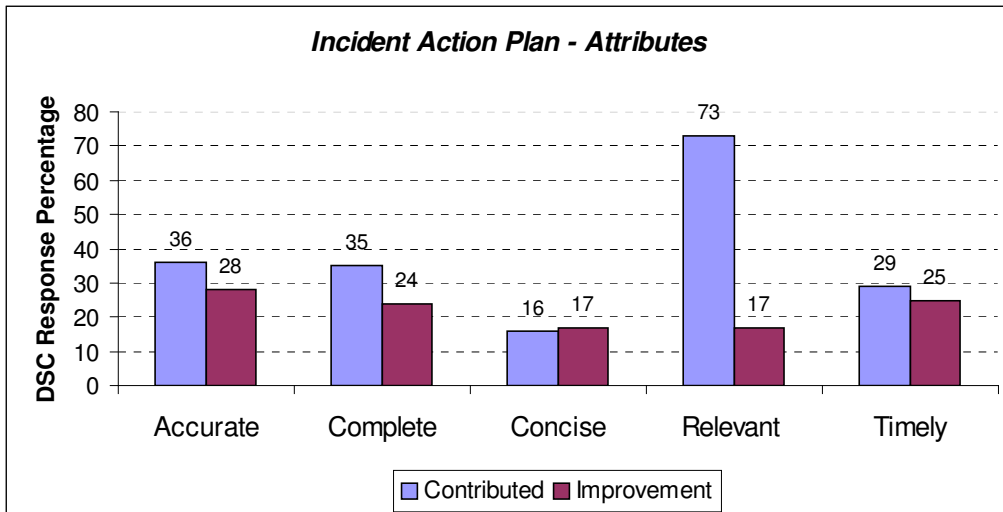


Figure 4. Frequency Divisional & Sector Commanders selected IAP attributes

Generally, the data from all three groups indicate the same trends in both the attributes that were seen to contribute to IAPs being useful in the performance of respondents’ roles, and hence resolution of the incident, and attributes identified as offering scope for improvement.

The data highlight the need to explore ways to improve the flow of information between the IMT and incident ground to remove, what many reported as, a phase-delay between the Incident Control Centre (ICC) and action on the line. The flow-on effect will be an improvement in the accuracy and completeness of IAPs, and the timeliness of their production and dissemination. Many respondents in their *free-form* comments referred to IAPs as being too bulky or cumbersome; the challenge for IAPs of the future is to be comprehensive yet concise. Some respondents have suggested the development of electronic templates to facilitate the speedier production and transfer of IAPs.

Briefings

To be most effective, briefings must facilitate the uptake of information by those being briefed. A key part of this process is to allow for clarification of the information by the recipient. Responses were very positive in this regard. In all functional categories, 99 percent of respondents who received a briefing prior to commencing their shift reported that the briefing included the opportunity for questions and clarification.

Further, a significant proportion in each functional category indicated that the briefing provided them with sufficient information to undertake their role - the percentages being:

- Planning, Logistics & Operations Officers87 percent
- Divisional, Sector Commanders84 percent
- Crew Leaders94 percent

However, many briefings (and, indeed, IAPs) were reported as not providing information on alternative strategies; many *free-form* comments reinforced that alternative strategies had, seemingly, not been considered – or, at least, not explicitly included in briefings or plans. Other issues reported fairly consistently across the functional groups as not having been included in briefings are provided in Table 5. Inclusion of these items in future briefings (and plans) has the potential to improve the quality of briefings.

Table 5. Percentage of responses indicating issues not addressed in briefing

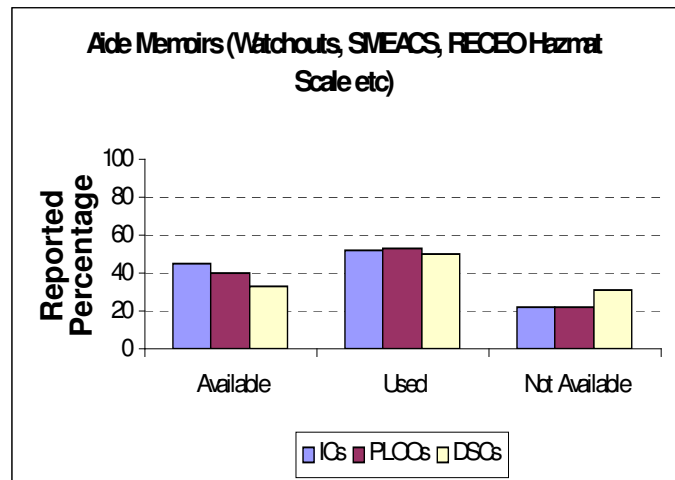
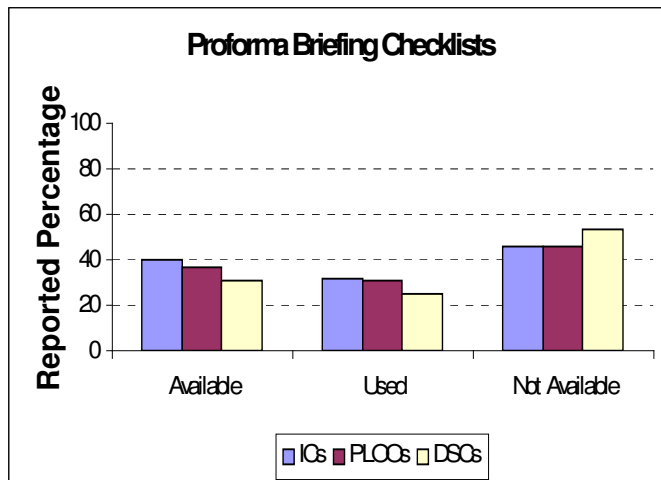
<i>Issue lacking from Briefing</i>	<i>Functional Role</i>		
	<i>IC</i>	<i>PLOO</i>	<i>DSC</i>
Alternative Strategies	60	52	n/a
Communications Plan ¹	38	36	30
Boundaries of Divisions & Sectors ²	38	33	33
OHS Issues	37	37	31
Objectives and Strategies	18	19	11
Key operations points	19	15	13

Notes to Table:

1. Some agencies have default communications plans that are used in routine operations; therefore may not have included a communications plan in the IAP or briefings.
2. Due to their size, not all of the incidents reported upon may have divided into sectors and/or divisions. The preliminary analysis has not involved multi-factor analysis of these matters.

Data was collected regarding the use of various aids capable of assisting the management of incidents. Respondents were asked to identify whether proforma checklists were available to assist the situational/risk assessments, prompt actions that should be taken in various roles, and to facilitate briefings. Commonly used acronyms/aide memoirs were specifically identified in one question. Respondents were asked to indicate both the availability and use of these tools (see Figures 5a and b).

When these data are considered together with responses regarding the adequacy and content of briefings (discussed above), they suggest that the wider use of appropriate proforma checklists and aide memoirs may represent part of the solution to improving briefings. Some agencies already provide handy pocket-sized booklets of proforma checklists, prompts and aide memoirs to their personnel; the potential exists for sharing across agencies those tools having a common application.



Figures 5a and 5b. Proforma and Aide Memoirs use at incidents by functional roles.

Span of Control

One of the underlying principles of ICS is the maintenance of a manageable span of control at all levels in the structure; the system recommends up to five as the desirable number of direct reports. The questionnaire collected information regarding the application of this principle at incidents. For positions below the IC, respondents were asked to indicate (i) if it was made clear to them to whom they were reporting, (ii) how many people reported directly to them, and (iii) how many people (including themselves) reported to their supervisor.

Since five is considered *a desirable number*, suggesting some flexibility in the upper limit of span of control, the questionnaire collected data each side of the range 5 \pm 2. That is, the ranges offered to respondents were: 1 to 3; 4 to 7; 8 to 10; and 11 or more. Responses indicated:

- 44 percent of ICs stated that more than seven people reporting directly to them, including approximately 32 percent having eleven or more reporting to them. One IC indicated being “*unaware at the time*”⁴ of how many people were reporting directly to him.
- 96 percent of PLOOs indicated that it was made clear to them to whom they were reporting with approximately 70 percent indicating seven or less people (including themselves) reported to their supervisor. However, 11 percent indicated having between eight and ten people (including themselves) reporting to their supervisor with a further 14 percent indicating eleven or more direct reports to their immediate supervisor.
- In terms of personnel reporting to them, 19 percent of PLOOs reported having more than seven people reporting directly to them including 9 percent indicating eleven or more reporting to them. Seven PLOOs indicated being “*unaware at the time*” of how many people were reporting directly to them.
- 92 percent of DSCs indicated that it was made clear to them to whom they were reporting with approximately 35 percent indicating more than seven people (including themselves) reported directly to their immediate supervisor, including 27 percent indicating eleven or more.
- 46 percent of DSCs reported they had more than eight people reporting directly to themselves, including 33 percent who indicated having eleven or more direct reports.
- 90 percent of Crew Leaders (CLs) indicated that it was made clear to them to whom they were reporting with 50 percent reporting that more than seven people (including themselves) were reporting to their up-line supervisor; 31 percent indicated eleven or more persons reporting directly to their supervisor.
- Crew Leaders generally had seven or less people reporting to them (76 percent), however 23 percent reported having more than eight direct reports, including 12 percent having eleven or more people reporting to them.

⁴ *Unaware at the time* is a different response to *Can't remember* – both options offered to respondents.

Table 6. Summary data - Span of Control

	<i>IC</i>	<i>PLOO</i>	<i>DSC</i>	<i>CL</i>
Clear to whom reporting	n/a	96%	92%	90%
Number reporting to your Supervisor:				
≤8	n/a	25%	35%	50%
≤11	n/a	14%	27%	31%
Number reporting to you:				
≤8	44%	19%	46%	23%
≤11	32%	9%	33%	12%

Whilst encouragingly high proportions of people indicated it was clear to them to whom they were reporting during their shift, the data indicate a slight decrease in the proportion as one progressively moves down the structure closer to the on-ground action. At the same time, the data also show a trend for larger proportions, of increasing numbers of people to be reporting to the same supervisor, as one moves down the structure (*Number reporting to Supervisor* data).

The data suggest that there has been significant adoption and application of the principle of span of control, but that there are still opportunities for improvement, at all levels of the structure, to limit the number of direct reports to a functional role.

Practically, there are many factors that will affect the ability to achieve such, including:

- Time and space issues
- Duration of an incident
- On-going access to appropriately skilled personnel
- Priorities in use of personnel to fill different roles
- Competition for resources when several incidents occur concurrently
- Size and complexity of an incident

Resources Management – Where’s Wally?

It is important to know the “where, what and when” about resources deployed to an incident; something often more easily said than achieved at large incidents. The questionnaire asked several questions regarding this issue, replies to which, even on a *first-cut* analysis, indicate that improvements in resource management have great potential to return bonuses in the form of (i) increased satisfaction with use of ICS and (ii) in reduced frustration due to IMTs, Divisions and Sectors being able to keep abreast of their resources deployments. Whilst large majorities in all three categories reported confidence in knowing where resources were during their shift, there were still significant proportions that reported they were “not at all confident” that all resources (people, vehicles, plant etc) were accurately accounted for (see Figure 6).

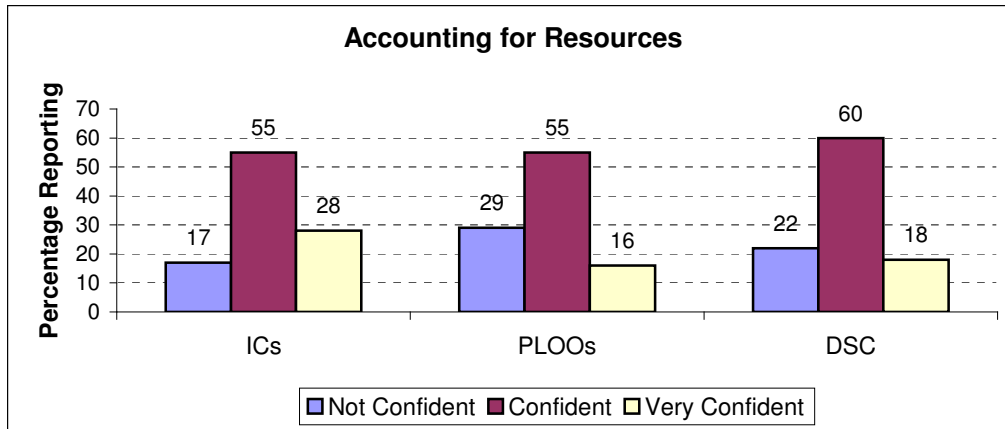


Figure 6. Reported confidence levels – accounting for all resources

There may be many reasons for such. First shifts may find that the incident control system is not fully functional and energies are devoted more to *actions at the front* than to accounting. Later shifts tend to allow for a *steady state* to be achieved and more attention to be paid to records. At the time of preparing this paper, a cross-tab analysis of the above data against “first or subsequent shift” has not been possible.

A second emerging issue in relation to resources is the question of which function should maintain the resources management system. Figure 7 clearly illustrates the dichotomy in this area; it provides ICs and PLOOs responses to the question: Who maintained the primary resource management system for personnel and equipment used at the incident?

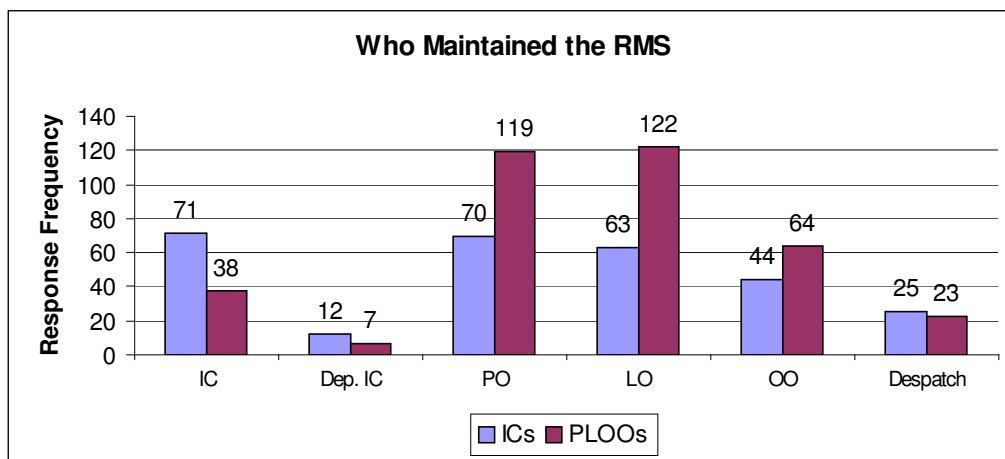


Figure 7. Function that maintained *Resource Management System* during shift.

One could reasonably expect that *single-shift* incidents and *first-shift* responses might account for the involvement of ICs, Operations Officers (OOs) and despatch centres in resource management in the absence of a full IMT. Further, for smaller incidents reported in the questionnaire, standard operating procedures that call upon the relevant despatch centre to monitor and record resource deployments may represent all the resource management utilised, and required. However, the main interest in Figure 7 is in the responses indicating the frequencies relating to Planning Officers and Logistics Officers maintaining the resource management system – the two central pairs in the graph.

These data suggest that there are two schools of thought about which function should be responsible for the resource management system. Some agencies appear to have adopted resource management as a logistics function; others see it as a part of the Resources Unit function within Planning. The crunch comes when these two different approaches come together in a multi-agency IMT. This is borne out by many *free-form* comments from people having experienced just that situation and, therefore, seeking clarification.

Under AIIMS ICS, the Resource Unit sits within the Planning Function. The revised AIIMS Manual proposes to address the confusion regarding resource management by more clearly defining the role of Logistics as a support role to Operations through the procurement and maintenance of facilities, services and materials. On the other hand, Planning is a function that principally monitors and analyses the situation confronting Operations: an intelligence role. Part of that intelligence function is to track the existing resources and assist predict the future resource needs, as an integral part of the situation monitoring and planning role.

Planning Function informs Operations ... Logistics Function supports Operations

Incident Management Teams

Fundamental to effective multi-agency operations, particularly at complex or large incidents, is a well functioning IMT. Respondents were asked to indicate if the IMT worked well and, if so, to select the factors that they perceived as contributing to the success of the IMT. Further, both those who believed the IMT worked well and those who believed otherwise were asked to select those factors they believed would have improved the performance of the team. Figures 8 and 9 provide the percentages of respondents selecting the various factors affecting the successful functioning of the IMT.

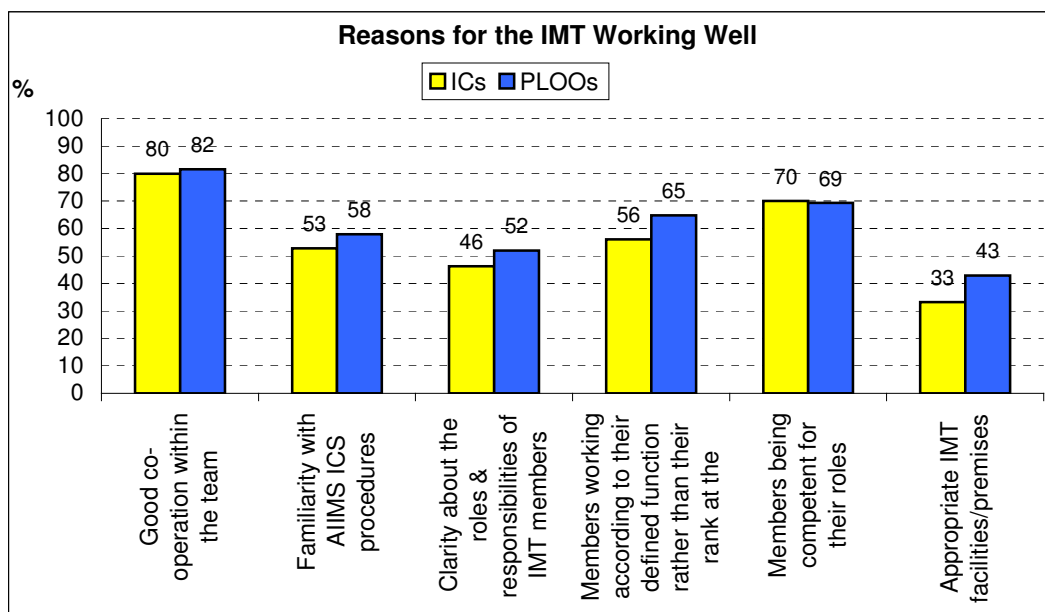


Figure 8. Reasons for IMT working well

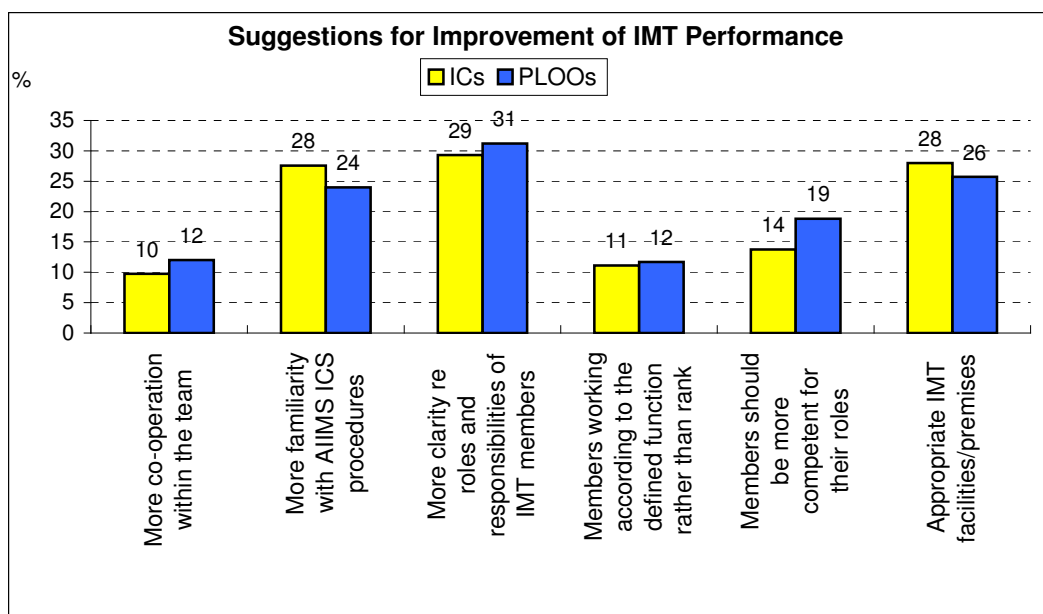


Figure 9. Suggestions for improvement to IMT functioning

‘Good co-operation within the team’, ‘Members competent in their roles’, and ‘Members working according to defined function rather than rank’ clearly stood out as factors that positively contributed to the performance of IMTs. The data suggest IMTs’ performances can be improved by having more people, across more agencies, with greater familiarity of ICS, including a better understanding of the roles, responsibilities and relationships between the various functions. Some *free-form* comments provided insights into these matters, referring to:

- ❑ Inter-agency teams of people who had previously trained, worked or exercised together; thereby, presumably, being somewhat familiar with each other, with personal styles, and with the different nuances and expectations of other agencies.
- ❑ Pre-established teams: whilst having positive effect in the same way as the above, there is a need to be aware of the displacement and disenfranchisement of locals – another issue frequently indicated in *free-form* comments.
- ❑ Opportunities for less skilled personnel to *shadow* a role; acting as the master’s apprentice to gain skills in action.
- ❑ Instances of mentors shadowing a protégé appointed to the role to assist, guide and prompt – again providing for the gaining of experience in action.

Another means of assisting in these matters, particularly where people may only infrequently be involved in particular roles, is the use of pro-forma checklists and aide-memoirs.

The adequacy and appropriateness of IMTs’ *facilities and premises* appears to be an area for improvement. Whilst not necessarily applicable to all incidents or situations, positive improvements may be achieved in this area by the adoption of pre-planned locations based on scenario planning for the more probable events within a jurisdiction. Some agencies have adopted this strategy.