

Metropolitan Fire Service

REPORT:

FIREFIGHTER INJURIES
EAST AVENUE,
BEVERLEY

9th April 2013



CONTENTS

1. INTRODUCTION	2
2. OUTLINE OF EVENTS.....	3
The Property.....	5
Dispatch.....	6
Initial situation on arrival of MFS crews	7
The Initial Incident Action Plan	9
Deployment/Internal Operations.....	10
Issues with radio communications.....	11
Situation on arrival of Metropolitan Commander	13
Injuries to S/F Heritage and F/F Giadresco	13
Managing the incident following the injuries	16
Ongoing Operations	17
Role of the Media	17
Impact of the fire.....	18
Impact of the fire.....	19
3. ASSESSMENT OF INJURY CAUSATION.....	19
Performance of Personal Protective Equipment (PPE)	22
Performance of Personal Protective Equipment (PPE)	23
4. CONCLUSIONS	25
The cause of the injuries to S/F Heritage and F/F Giadresco	25
5. FACTORS AND RECOMMENDATIONS	26
<i>Situational Factors</i>	<i>26</i>
<i>Initial incident action plan.....</i>	<i>26</i>
<i>Initial communication, coordination and control actions.....</i>	<i>27</i>
<i>Incident Management - Control.....</i>	<i>29</i>
<i>Operational Rehabilitation.....</i>	<i>30</i>
<i>Firefighter safety and welfare.....</i>	<i>30</i>
<i>Building Fire Safety Issues</i>	<i>31</i>
<i>Incident Recovery</i>	<i>32</i>
APPENDIX 1 INCIDENT TIMELINE.....	34
APPENDIX 2 PPE REPORT.....	36
APPENDIX 3 BUILDING PLAN.....	40

1. Introduction

On Tuesday 9th of April 2013, the South Australian Metropolitan Fire Service (MFS) responded to a domestic structure fire at the corner of East Avenue and Spring Street, Beverley. The premises, located on the north-western corner, was a single story detached residential property that was being utilised as a supportive care facility for residents with Down Syndrome. It was constructed of brick external and internal walls, iron roof which had been capped with an artificial / aluminium tile roof with timber roof frame. The windows were timber sashed and had security shutters to the external side. Interior floors were timber with a combination of linoleum and carpet coverings. The three metre high ceilings were lath and plaster. This fire originated in a bedroom located on the south-east corner of the premises. Fuel within the area of origin consisted of a bed located centrally at the western end of the room, wardrobe containing clothing in the north-western corner, cupboards on the southern side and various electrical components throughout, all of which contributed to the production of large quantities of smoke that was issuing the premises on arrival of crews.

An off duty senior firefighter was one of the first on scene and had conducted a rapid internal search prior to the arrival of responding MFS appliances. At the height of the incident 52 MFS firefighters were responded to the scene. From initial information received, Comcen had determined that this was to be an 'A' risk response.

The fire was contained to the south-eastern bedroom with the remainder of the premises sustaining heat and smoke damage to varying degrees. It is estimated that \$100,000 damage was caused by the fire. The cause of the fire was determined as not suspicious.

Two firefighters, Senior Firefighter (S/F) David Heritage and Firefighter (F/F) Brad Giadresco sustained burn injuries during the fire. One was initially reported as critical with 60% burns with the second having sustained 40% non critical. The initial reports were later shown to be over estimated.

This review aims to provide a recount of MFS actions during the Beverley fire, to identify potential lessons learned and to provide recommendations for future improvements. The first hand recounts provided by personnel who attended this incident have been incorporated in this report and will be indicated by the use of *italics*. The significant

assistance and cooperation of these personnel is greatly appreciated. (Personal detail provided by the respondents including the names of firefighting staff involved in the incident, has been edited from this report where it bears no influence on the report).

2. Outline of events

The fire at the corner of East Avenue and Spring Street, Beverley was unusual in that an off-duty member of the MFS was one of the first people on scene. In the time before the arrival of the first appliance the off duty S/F conducted a size-up of the incident that included taking statements from a woman who had placed the original 000 call.

The off duty S/F collected a considerable amount of information concerning the fire that was subsequently passed on to the first arrival officer. The off duty S/F formed the opinion that there was a fire within the building and that it was likely that there could be other occupants remaining within the house.

Recordings of the initial Emergency 000 provide evidence of the off duty S/F's call to Comcen and the amount of detail that he was able to provide in regards to this incident. The off duty S/F's recount of his initial involvement follows:

On the Tuesday the 10th (Sic) of April 2013, I picked up my kids from...School. The pick up was at 3.25. I was driving down East Avenue in a northerly direction, when I noticed a small amount of smoke coming from a house roof. As I drove past the house I could smell the smoke and noticed a female who was clearly stressed. I thought the house was on fire.

So I drove around the block and came back onto Spring Street. I parked on the corner of Spring and East Ave. I ran to the front of the house and saw a female whom I knew from the school. She was with a handicapped man. She was on the phone to the fire service. She said to me that the handicapped man lived there and said that he said there was someone inside. I went to the front door, it was locked and there was no response when I banged on it. I went back to the female she gave me the phone; I spoke to Comms and explained who I was and what the situation was. I said I was going to go around the back and see if anyone was there.

I then went around the back as there was a side driveway off of Spring Street. I noticed there was a new looking 4wd in the drive way. I thought to myself that the handicapped man wouldn't be driving it and there should be someone here looking after him. So I assumed that there was someone inside that owned the 4wd. I went right around the back of the house and down the other side. I didn't see any flame or smoke coming out the windows. However I noticed two tool sheds with hazmat signs on them (Figure 1).

I went to the back door which was unlocked. I went inside and yelled out. There was no response, so I went in further. There were no signs of smoke, although I could smell it. So I thought the fire must be in a room or the roof space. I also thought that the inside of the house looked like a hostel for handicapped people, as I have been in other ones in our area that looked a lot like this one. This also made me think there could be other residents inside.



Figure 1 - Shed with Hazmat signage

I went to the 1st room on my left, I checked the door handle to see if it was hot, and it wasn't so I banged on the door, yelled out if there was anyone there and tried to open the door. It was locked. So I went onto the next door and did the same thing with the same result.

I then went to the door which was for the room at the front/left of the house, if you were looking at the house from East Avenue. I banged on the door and yelled out, there was no answer so I felt the door handle, and it was not hot. I stayed to the side of the door and attempted to open it. It opened and the fire seemed to pull the door in. The smoke started to billow out from the door. The colour of the smoke was like wet straw. The colour and the movement of the smoke concerned me. I also remembered that the front window had a roller screen on it which was closed. So I thought there might be a backdraft. I wanted to close the door; however I would have had to step in 3 foot of the smoke to reach the door handle. I was not prepared to do this, so the door was left open. So I quickly got out of the house. On the way out I discovered that a man had followed me in. I told him to quickly get out.

The off duty S/F's observation of the smoke colour and movement upon opening the door to the room (Bedroom 4) is consistent with that of an "oxygen controlled" fire. He was astute in recognising the closed roller shutter on the front window and identifying the potential for a backdraft.

The Property

The premises located on the north-western corner of East Avenue and Spring Street was originally two, single storey semi-detached residential Units sharing a common dividing wall (A plan of the premises is provided in Appendix 3). It was constructed of brick external and internal walls, with a timber framed iron roof that had been capped with artificial / aluminium tiles. Interior floors were timber with a combination of linoleum and carpet coverings. The three metre high ceilings were lath and plaster.

The windows to the property were timber sashed and fitted with security shutters to the external side. Two Roller shutters, in the 'down' position were located on the east side with one more on the north-western corner of the building. Aluminium security mesh was fitted to the remaining windows. A ducted air conditioning system was fitted with air registers throughout.



Figure 2 – 50 East Avenue Beverley

From the exterior, the property can be seen to have two front and two rear access doors, however on the inside, a number of internal walls have been removed or breeched to provide access between the Units creating a common detached five bedroom residence. Two garden sheds with HAZCHEM placards were located in the yard on the northern side.

The property was being utilised as a supportive care facility for persons with Down Syndrome. The facility housed four residents and a caregiver. One of the residents was present at the time of the fire. Whilst not in attendance at the time of the fire, the carer's car was parked at the rear of the premises.

A standalone, non-monitored fire alarm was fitted to the premises. This alarm was activating on arrival of the MFS.

Lessons from the initial incident phase:

The role of off-duty S/F in identifying himself to Comcen in the initial 000 call, conducting a rapid size up, an initial risk assessment including a search and isolation of electricity and liaising with the 1st Arrival Officer appear to have provided timely, accurate information, valuable to the Incident Controller.

Off-duty personnel may be a source of valuable situational information. However, all actions taken by such personnel must be consistent with a safe system of work.

Dispatch

At 1534 Comcen dispatched an “A” Risk response to this incident. In accordance with SOP 4, a confirmed fire in an “A” Risk receives an automatic 2nd Alarm. The initial response comprised Brooklyn Park 451, Woodville 241, Woodville 249, Adelaide 205, Adelaide 206, Metropolitan Commander (M/C) in Car 40 and On Call Safety 1 M/C.

Woodville 249 was the first arrival appliance and transmitted a K99 at 1541 hours. The arrival message did not include details of the property type. On response, the M/C requested a talk group and enquired as to the responding appliances. He was informed by Comms “Automatic Second Alarm”; on further enquiry as to responding appliances the M/C was informed by Comms 241, 249, 451, 371, 205 and 206 were responding. It would appear that the Operator had provided the M/C with the list of appliances which had transmitted K1 at that time. What was not made clear to the M/C was that the 2nd Alarm (“A” Risk) response was yet to be completed at the time of his initial enquiry to Comcen. With the advice that four pumping appliances were responding, it is reasonable to assume that the M/C believed that he had received a full 2nd Alarm “C” Risk response. The risk response dispatched to this house fire ultimately resulted in 52 personnel being deployed.

Lessons from the dispatch phase:

The dispatch of an "A" Risk Response did not adversely impact the incident in the initial phase; however the arrival of additional appliances did add to the complexity of Incident.

It is important that Officers assess that the risk classification and alarm level is appropriate for the incident and confirm with Comcen. An awareness of all resources which are responding, staged, committed and available is critical for effective command and control

Initial situation on arrival of MFS crews

The 249 S/O positioned 249 on East Avenue which formed the eastern boundary of the property. On arrival the 249 S/O noted thick black smoke emanating from the south-east corner of the property. The 249 S/O was immediately met by the off duty S/F who provided additional information, including the likely presence of at least one person within the building. The off duty S/F describes the information he provided to the 249 S/O as follows:

Once the Officer got out of the truck I advised him which room the fire was in, that the front door was locked and the rear door was open. I also said I had a quick search and found no one however I hadn't searched all of the house. I also advised that I had turned off the electricity; however I didn't isolate the gas.

The 249 S/O corroborated the statement provided by the off duty S/F. His statement outlines what he saw on arrival and the information he received from the off-duty senior firefighter.

En-route further information gave person reported and there was an off duty firefighter in attendance. I informed my crew. BA was on and crew was ready with portable radio on (Simplex Channel) 182.

On arrival, I noticed thick black smoke emanating from south east corner of house and roof line around the gutters. K99 was given. The off duty S/F gave immediate info that he was unable to open front door and that the back door was open. He had isolated power but could not find the gas. A person of unknown origin was sitting on the fence.

On the basis of the information at hand the 249 S/O immediately requested his crew, wearing Breathing Apparatus (BA), to deploy with one High Pressure (HP) line to the rear door. As his crew prepared to enter the premises Brooklyn Park 451 arrived on scene. The 249 S/O asked for 451 to position immediately behind 249 on Spring Street and have a BA

crew prepare to make entry via the rear door. The 249 S/O provided the following account of his immediate actions:

I deployed my crew with BA and 1 HP line to the rear door. I went to the rear door while the crew rolled out hose and found a screen door closed but unlocked. Thick black smoke was present.

Brooklyn Park 451 made contact via 182 prior to arrival and I requested they turn into side street immediately behind 249, as the house is situated on a corner, and have BA crew with HP line available for deployment via rear driveway to rear door.

By this time 249 crew were present and I instructed them to make their way towards the fire at the front of the house (which was on a right hand side from this orientation), conducting a search and any firefighting as there was persons reported. I told them to have their radio on and to be careful.

Therefore, at this stage of the incident two BA crews had been formed to enter the premises and conduct a search for possible persons within. The BA crew from 249 and Brooklyn Park 451 crew were to enter the building from the rear (open) door.

Station Officers arriving on scene reported seeing thick black smoke coming from the building. The 249 S/O stated ‘On arrival I noticed thick black smoke emanating from the south-east corner of the house and the roofline around the gutters’. Similarly the 241 S/O reported ‘On arrival black smoke issuing from the house from the eaves. Black smoke moving in south-west direction....also there was very black smoke issuing from the door’. The density and colour of smoke suggested that the situation within the premises had worsened considerably from the time of the off duty S/F’s initial size-up.

Lessons from this incident phase:

The volume and colour of smoke present was a strong indication that high fuel volumes and the potential for extreme fire behaviour, such as backdraft, existed within the premises.

Given the potential risk factors present, High Pressure lines alone may not have provided sufficient volumes of firefighting water to effectively manage this incident.

The Initial Incident Action Plan

Both the 249 S/O and the off-duty S/F believed there was a strong probability that other persons were within the building. It was also clear that the situation within the building was worsening. The 249 S/O therefore established the objective of saving life and adopted an offensive strategy. Tactically, two BA Search and Rescue teams would enter the building and search for any person trapped within the premises. The 249 team would enter from the rear of the house and conduct a right hand search; the 451 team would also enter from the rear door and conduct a left hand search. An additional, third BA team was formed to be on stand-by at the Entry Control Point.

While the crews prepared to enter the building the 249 S/O conducted a 360 size-up during the course of which he located and isolated the gas meter. The 249 S/O encountered the 241 S/O who had also arrived on scene. He requested that the 241 crew also deploy a BA team to make forced entry through the locked front door. Despite his size-up, the 249 S/O was uncertain as to how much of the premises might be involved with fire.

The 249 S/O took a number of steps to coordinate and control the incident. The 241 S/O was appointed Safety Officer while the 451 S/O was asked to control operations from the entrance. The 249 S/O himself adopted a static position on the street corner at the front of the premises.

I appointed the 241 S/O Safety Officer. I approached the 451 S/O and asked him to control operations from the rear entrance. This was not a sectorising approach. My intent was to remain static on the street corner. Channel 182 remained fireground and command channel at this stage.

I received information from SAAS personnel that there was a deceased person inside and unknown others reported missing. The SAAS person stated that he was unsure of the validity of that info because it was from a distressed (Down Syndrome) occupant they were treating.

I attempted a Priority Voice request. No response. Comcen took request from another appliance. I tried again about 25secs later. Still no response and another request was taken from another appliance. Soon after my Priority request was acknowledged. I upgraded to 2nd alarm if not already done so and requested police and ETSA. I gave a K41 with unconfirmed and unknown numbers.

As the BA teams undertook search and rescue actions it became apparent that there were issues with communication on the fireground. The noise from the activating fire alarm considerably hampered communication by firefighters inside the building. Attempts to silence the alarm were initially unsuccessful.

Lessons from this incident phase:

Key elements of the initial incident plan including the objective of saving life and offensive strategic mode were appropriate, based on the statements from members of the public that there was a person within the premises.

Deployment/Internal Operations

At this point three BA teams had now been deployed internally to undertake offensive operations. The BA teams from 249 (Heritage and Giadresco) and 451 (S/F 1 and S/F 2) had entered through the rear of the property while 241 were entering through the locked front door.

The Woodville 241 crew attempted entry but had difficulty making progress as lounge chairs were up against the door restricting movement. They sprayed half fog/stream through the front door before being able to move into the property with a High Pressure line. The 241 team then began a right hand search of the northern side of the premises. As they progressed they encountered difficulty with the search due to a number of locked bedroom doors. The difficult conditions within the premises were reported back to the 241 S/O:

S/F 1 confronted me after appearing from the rear of the premises and told me it was very hot inside with little visibility and we needed to get the northern (North East) front door opened. Using the hooligan tool crews broke open the door and released smoke and heat. The positive pressure ventilation (PPV) Fan was operating from the rear door.

Meanwhile the 249 crew was also experiencing difficult conditions. S/F Heritage and F/F Giadresco had made entry though the rear door with their HP line. Although the rooms at that end of the house were more accessible F/F Giadresco experienced problems with a tangled hose-line. The premises had three metre high ceilings and the neutral plane was approximately one metre from the floor, suggesting high fuel and temperature loads. Appliance 249 is equipped with a Thermal Imaging Camera (TIC); however the 249 crew

conducting the search and rescue operation did not take the TIC with them into the premises during their search. The reasons for this remain unclear.

FF Giadresco provided the following recount of the conditions the 249 team experienced:

Dragged a high pressure line to the southern (western) side / back door...Appliance was parked on East Avenue. The hose had become tangled...Searched rooms starting with Bedroom 5 (as per plan Appendix 3)...Neutral plane was approximately 1 metre from floor...Rooms were easily accessible at this stage...Continued search to kitchen, then to lounge room where temperature rose dramatically and the neutral plane was to floor level...Then proceeded to Bedroom 4 / area of origin. I was banging into objects.

The 451 team had been performing a left hand search of the premises. Unlike the 249 crew, the 451 team deployed their TIC. The TIC provided the 451 crew with immediate information regarding the high temperature risk in the lounge room, particularly at the ceiling area of the room. In part because of the information provided by the TIC the 451 team stopped at the doorway between the kitchen and lounge room.

As the BA teams continued their internal operations the M/C arrived on the fireground.

Lessons from this incident phase:

249 search and rescue crew Heritage and Giadresco were instructed to perform a right hand search of the premises with the aid of a HP hose line. They did not take the 249 TIC with them. This crew traversed through the lounge room and into the area of fire origin (Bedroom 4 on the attached plan).

The 451 BA team who were using a Thermal Imaging Camera were able to see that conditions within the lounge room were marginal by using their TIC.

It is a key learning that the Thermal Imaging Camera (when available) is a useful tool for making search and rescue more effective. It also provides valuable advice concerning fire conditions that may not be immediately obvious to firefighters.

Issues with radio communications

The 249 S/O considered the fireground layout and noted that there were two entry control boards in operation. He requested that these were condensed into a single board. However, this did not happen because of incidents that happened shortly thereafter. Radio contact was received from the 451 crew requesting ventilation be implemented inside the building. The 249 S/O replied in the negative explaining that he wanted the seat of the fire confirmed

first in order to limit the risk of backdraught/flashover. He noted that *'the smoke was thick, black and insipid'*.

It became apparent to the 249 S/O that there were issues concerning radio communications with the 249 BA team. He provides the following recount of the issues experienced:

I tried to contact 249 BA crew and got no answer. The 249 driver had tried to contact the 249 crew as well to get airset readings. He notified me immediately of his attempt. Neither of us got a response.

I tried a further 2 or 3 times to get a response but my radio was giving poor battery signals as well as long low tones. I asked the 249 driver to get me another radio whilst continuing to try. The 249 driver returned with another radio saying that he got a response from the 249 crew and that they had been hearing me. It seemed apparent that there were radio problems at this time. I tried again on the 2nd radio and again got no response.

I moved towards the rear entrance to find out about the 249 crews location or if the 451 S/O had any info.

Furthermore, issues were encountered with radio communications both to Comcen and on the fireground. The 249 S/O experienced problems with his radio early in the incident. This created difficulties communicating with his crew and other personnel on the fireground. Low battery warnings and other audible warning tones from the 249 S/O's portable radio indicate that the Incident Controller's ability to communicate on the fireground via radio was impaired at an early stage of the incident.

High ambient noise from the functioning fire alarm and relatively large number of personnel operating on the Simplex 182 radio channel in the initial phase of this incident appear to have contributed to radio communication difficulties. The Post Incident Debrief revealed that some Station 20 Appliances were operating on Simplex Channel 183. It appears that the Initial Incident Controller and a number of the first alarm appliance crews were unaware of this. Some difficulties in fireground radio communication at this incident can be attributed to this fact.

Lessons from this incident phase:

The nature of Simplex radio channels dictates that the radio with the most advantageous position will override other radios operating in the same area. The need for an effective communications plan utilising both Talk Groups and Simplex Tactical channels must be considered at a very early stage of any working incident.

The Incident Controller appeared to suffer from radio communications issues from early in this incident. Low battery warnings and other audible warning tones from his portable radio at an early stage indicate that the Incident Controller's ability to communicate on the fireground via radio was impaired.

Portable radios need to be checked at the start of each shift to confirm operational performance. Correct engagement of the radio in the vehicle's portable radio battery chargers also needs to be ensured.

High ambient noise from the functioning fire alarm and relatively large number of personnel operating on the Simplex 182 radio channel in the initial phase of this incident appear to have contributed to radio communication difficulties.

Situation on arrival of Metropolitan Commander

Following the initial size up and crew deployments, it appears that the Incident Controller continued with his dynamic risk assessment process until the arrival and handover to the M/C. The M/C received a briefing from Incident Controller, the 249 S/O at 1550 hours. The briefing comprised the following:

Report of a K41 / K42 to MFS from occupant who had safely evacuated property (Reliability unknown)...Offensive strategy in place comprising two crews in BA conducting primary search & rescue / fire control from rear of premises...One BA relief crew staged at entry control...Fire had yet to breach externally and no current risk to exposures; and the 241 S/O had been appointed Safety Officer.

The M/C assumed Command at 1552 hours and appointed the 249 S/O Operations Officer. A K38/39 and an informative message were transmitted at 1553 hours. The M/C (Safety Officer) confirmed the isolation of utilities at 1554 hours. The 205 driver was seconded to assist the Incident Controller and instructed to relocate Car 40 to the south-eastern corner of East Avenue and Spring Street at 1555 hours.

Injuries to S/F Heritage and F/F Giadresco

Firefighters Heritage and Giadresco had continued their search into the bedroom (Bedroom 4) at the south-east of the premises. Firefighter Giadresco recollected that they

had bumped into a number of objects. The room was extremely hot, evidenced by the amount of heat the 451 crew had seen in the adjacent lounge room using the TIC.

Within the room no flame was visible; however firefighters Heritage and Giadresco attempted cooling using the HP line. At this time, it is likely that both firefighters were standing upright. F/F Giadresco later recalled stumbling or falling on to his heels into a crouching / squatting position. He then recalled seeing water spraying onto his BA mask and shortly after, experienced a rapid increase in temperature. Firefighter Giadresco's recollections of what happened are summarised below:

Remembers water in contact with face mask...Room became extremely hot and unbearable, felt like he was getting burnt...Decided to evacuate...Yelled out to Dave to get out.

It is believed likely that as one or both of the firefighters stumbled, the branch stream was accidentally opened and directed into the window area in an uncontrolled manner, shattering the glass and spraying through the window shutter. The water reflecting back from the roller shutter would have been spraying onto the walls, ceiling and contents of the room, including firefighters Heritage and Giadresco.

This premise is supported by the recount provided by the 249 driver. The 249 driver was standing at the rear of 249 that was located in East Avenue. The 249 driver's recount is summarised below:

Heard a breaking noise (was behind 249 in the centre of East Avenue)...noticed water spraying through the roller shutter at area of origin (Bedroom 4).

Firefighter Giadresco made his way out of the room but poor visibility hampered his view of S/F Heritage and he could not immediately see whether his team mate had also left the room.

Senior Firefighters 1 and 2 (451 BA Team) had entered the premises from the rear. S/F 1 was in front operating the TIC while S/F 2 was behind with the HP line. While S/F 2 remained at the step between the kitchen and the lounge room S/F 1 went to the front door to try and vent. Because conditions were too hot S/F 1 then returned past S/F 2 to return to the rear door for ventilation. At the doorway between the kitchen and lounge room F/F Giadresco passed S/F 2 saying something as he passed, however S/F 2 was unable to make out what was said. Upon reaching the rear door F/F Giadresco met S/F

1. It was at this time that F/F Giadresco realised that S/F Heritage had not exited the building with him.

Meanwhile, S/F 2 had heard a noise which he later realised was moaning, he then heard someone call out 'Dave, Dave, Dave'. This call had been made by F/F Giadresco when he realised that S/F Heritage was still in the building. Moving approximately three steps toward the muffled sound, S/F 2 bent down and saw a gloved hand. Realising it was S/F Heritage he grabbed him by the chest and ran outside yelling for S/F 1 and F/F Giadresco to get out of the building.

It quickly became apparent that both F/F Giadresco and S/F Heritage had received burns. S/F 2 looked for a hoseline to cool the firefighters, he noticed that S/F Heritage had already begun to blister as soon as the personal protective equipment (PPE) was removed. He located a garden hose and used that to cool the burns. He then checked with the 451 S/O whether all personnel were out of the premises.

The 241 S/O (the initial incident Safety Officer) recalled the moment when he was informed the firefighters were injured:

I was then notified that S/F Heritage and F/F Giadresco were burnt. I proceeded around the rear and checked their welfare and made sure that their partner (Dave) and parents (Brad) were notified.

We continued extinguish the fire in the front southern bedroom. I used an atmospheric monitor and ensure the smoke was clear so Fire Cause could enter and start the investigation.

I gave Brad his phone to ring his dad and I told Dave I would ensure (Dave's Partner) was notified. I acquired her phone number and got (the Employee Assistance Coordinator) to notify her.

The 249 S/O described the scene as he observed it:

The 249 crew were outside the back door with other crew members. S/F Heritage was on his hands and knees, highly distressed. His airset was being removed and he was being wetted with water from a HP line by other crew members. They continued to remove his PPE.

I approached F/F Giadresco and asked how he was as he appeared agitated and extremely upset. But he told me he was "burning up" as well. I told him to get his gear off and told other crew members to get some water on him as well.

I caught the attention of SAAS staff and told him to get some more ambulances and crews for 2 injured firefighters severely burnt. At this stage I still had persons reported inside and only one crew inside from the front.

Lessons from this incident phase:

The use of multiple BA teams including an additional team on stand-by for Rapid Intervention increases the safety of personnel.

The decision by the initial Incident Controller to deploy two BA Search and Rescue crews with a third on stand-by at Entry Control proved decisive in the rapid response to the changed situation inside the premises.

The immediate availability of BA teams to conduct a rapid Intervention rescue of S/F Heritage resulted in his removal from the building in approximately 60 seconds, from the time of the high temperature reading on his BA set.

The existing standard practice of having SAAS personnel on scene ensured rapid and potentially life-saving early treatment of injured MFS personnel. SAAS were also available to provide assistance to the persons reported if required.

Managing the incident following the injuries

At 1556 hrs, whilst setting up Incident Control at Car 40, the M/C was advised by the 451 S/O that two firefighters had been injured and were located at the rear of the property. He quickly moved to this location and observed S/F Heritage and F/F Giadresco being treated by MFS and South Australian Ambulance Service (SAAS) for burn injuries via a HP line and garden hose.

A third alarm was transmitted at 1559 hours with the expectation that this would increase attending appliances to six pumpers based on a 'C' risk category due to the loss of crews to injury and noting that the primary search had yet to be completed. Additionally, the M/C requested that the On Call Assistant Chief Fire Officer (ACFO) contact Car 40 urgently.

The M/C liaised with the SAAS Team leader to confirm the extent of injuries and was advised that they were to be immediately transferred to the Royal Adelaide Hospital. The ACFO contacted the M/C via mobile and advised that he was held up in traffic where he was notified of the firefighter injuries and provided with an overview of the incident.

At 1604 hrs, the M/C was advised that a primary search had been completed and that no person/s had been located. He was also advised that the fire had been contained to the front part of the property with some minor fire spread into the ceiling space and that ventilation had commenced and there was no risk to exposures to either the western or northern sides

of the premises.

The 249 S/O who was the Operations Officer at this stage describes his actions following the injuries to S/F Heritage and F/F Giadresco:

I was called upon numerous times from this point to give verbal reports to the Commanders and ACFO...Between these reports I learnt that there was a 3rd alarm activated and another crew had been deployed through the front for a secondary search by the 241 S/O.

The fire had been mostly extinguished and ventilation had been operating I assume under the instruction of either the 451 S/O or the 241 S/O. It appeared that there were no civilians inside...I received another message from SAAS that the person(s) normally in the house were elsewhere. I asked him to get me confirmation as to their whereabouts.

I had the 371 crew enter the room mainly burnt and take a preventer to bring down some ceiling material and detect if there was any fire in the ceiling space, and to work their way north as needed. Further intermittent ventilation was applied per PPV...Prior to the departure of attending crews the M/C spoke with the officers to confirm initial crew welfare and advised them to record at their earliest convenience all information relating to actions taken at the incident.

Ongoing Operations

Employee Support Coordinator (ESC) was contacted at 1605 hours via mobile phone and advised of the situation.

At 1607 hrs, the 249 S/O advised that a secondary search was being conducted throughout the premises. At 1625 hours, the secondary search was completed.

At 1630 hrs, the M/C conducted a media interview. At 1659 hrs, the M/C contacted Comcen at 1659 hours and requested the attendance of SafeworkSA per advice and discussions with the ACFO, Fire Cause Investigator and M/C (Safety).

Role of the Media

Most fires of this type are of interest to the public; however the injury to two firefighters created even greater public interest. One television media outlet was on site when the injured firefighters exited the building, capturing images of the injured and obviously distressed firefighters being treated on scene.

The media strongly defend their right to publish images gained whilst in a public place – as these images were.

It is very often possible for the media to widely publish these images prior to the MFS being able to put appropriate procedures in place to inform next of kin, partners etc. or to ensure that an accurate account of the incident has been distributed.

Various media outlets, from national television broadcasters to South Australian Police (SAPOL) social media news site incorrectly stated that the firefighters had fallen through a floor, had become trapped, or that they had been caught by a flashover or backdraught. None of these statements were based on fact. The MFS did not initiate or distribute the incorrect information; however it did take extensive steps to correct any misinformation being disseminated.

One media outlet began to use the footage of the injured firefighters in its evening news promotional advertisements. Upon notification that this was occurring, the MFS registered an objection with the media outlet in regards to the use of these images in this manner. The footage was withdrawn from the advertisement by the media outlet.

The MFS has been extremely cautious with the release of any information in regards to the injured firefighters, respecting their wishes and those of their families. However, the general media has been able to gather significant amounts of information not released by the MFS, such as details of their identities, simply by monitoring social media sites such as Facebook.

Two MFS MLO's responded and provided support to the Incident Controller in the post injury phase of this Incident. Ongoing support was also provided to MFS Senior Managers who were coordinating operations at the SCCF.

Lessons from this incident phase:

The Media should not be viewed in an adversarial manner as they are often of assistance to the Organisation's overall public safety objectives.

However, following this incident Journalists were able to gather a large amount of personal details in regards to the injured firefighters which was not being disseminated by the MFS, simply by monitoring Social Media sites such as Facebook. The MFS has little effective control over information shared on Social Media sites.

Officers should consider the development of an appropriate media management strategy at all "working incidents".

Officers should consider using the services of MFS On-Call Media Liaison Officers who are available at all times to assist with media management issues.

Impact of the fire

It is estimated that \$100,000 damage was caused to the premises by the fire. No surrounding property was damaged.

3. Assessment of Injury Causation

At the time of preparing this report, it has not been possible to interview S/F Heritage in regards to his recollection of the incident.

However, in the absence of testimony from S/F Heritage, the Review Committee have formed the opinion that the most likely cause of injury to S/F Heritage and F/F Giadresco was the accidental application of an excessive amount of water in the room of fire origin resulting in the firefighters being sprayed with water, wetting their PPE. The uncontrolled release of water may have been the result of one or both of the firefighters having stumbled within the room of fire origin.

It is believed that the accidental over application of water produced a large amount of steam in the room and possibly created an inversion layer, forcing hot fire gases down on to the firefighters, resulting in scald and steam burns.

There is evidence that a jet of water from the HP line was directed into the window of Bedroom 4. Firefighters on the exterior of the building reported hearing a loud noise (possibly breaking glass) followed by a water jet coming from the security shutter of Bedroom 4. S/F Heritage was the branch operator with F/F Giadresco backing up.

Poor visibility hampered F/F Giadresco's vision within the room and his view of S/F Heritage, therefore it is not possible to determine with certainty Heritage's stance, however F/F Giadresco recalls stumbling or falling on to his heels into a crouching/squatting position. He then recalls seeing water spraying onto his BA mask and shortly after, experienced a rapid increase in temperature. This would suggest that both firefighters were standing upright in Bedroom 4 at the time the incident occurred.

It is possible that as one or both of the firefighters stumbled, S/F Heritage may have opened the branch in an unintentional and uncontrolled manner. This resulted in the water from the HP line being directed into the window, shattering the glass and then spraying on to shutter at close range.

It is believed that hot water, reflecting back from the window shutter sprayed on to both firefighters wetting their PPE, the walls, ceiling and other contents of the room, resulting in

the rapid production of hot water and steam. This may have created an inversion layer in the overpressure region in the room, resulting in hot fire gas, steam and hot water vapour enveloping the firefighters.

As the branch operator, S/F Heritage would have been sprayed with the largest amount of reflected water and it appears that he did not have his collar in the upright position with the neck flap secured – allowing a greater opportunity for water to get inside his PPE. By backing up S/F Heritage on the hoseline, F/F Giadresco may have also been largely shielded from the reflected water spray by S/F Heritage. Giadresco did have his collar extended with the collar flap secured. He received burns around the throat area, believed to be caused by the water that had sprayed on to his facemask running off and soaking into his flash hood.

The BA sets worn by S/F Heritage and F/F Giadresco have the capability to record ambient temperatures during operational periods. Data download from the alphaSCOUT worn by S/F Heritage indicated that he experienced temperatures in the 70°- 75° C range. A high temperature alarm (set to operate at 71° Celsius) activated on S/F Heritage's set.

Temperature readings on F/F Giadresco's set was similar, however did not quite reach the threshold levels required to activate the alarm – possibly due to being partly shielded by Heritage as discussed earlier. F/F Giadresco cannot recall hearing the airset alarm, possibly due to the high ambient noise levels inside the premises. The data indicates that both firefighters had exited the building within one minute of the temperature peak being reached. Data downloaded from the TIC carried by the 451 crew who stopped at the doorway between the kitchen and lounge room recorded maximum ambient temperature at 49° C.

Supporting information in regards to the manner in which burns injuries such as those experienced by S/F Heritage and F/F Giadresco can occur is provided at Page 22.

The data downloaded from both firefighters' airsets is provided in Figure 3.

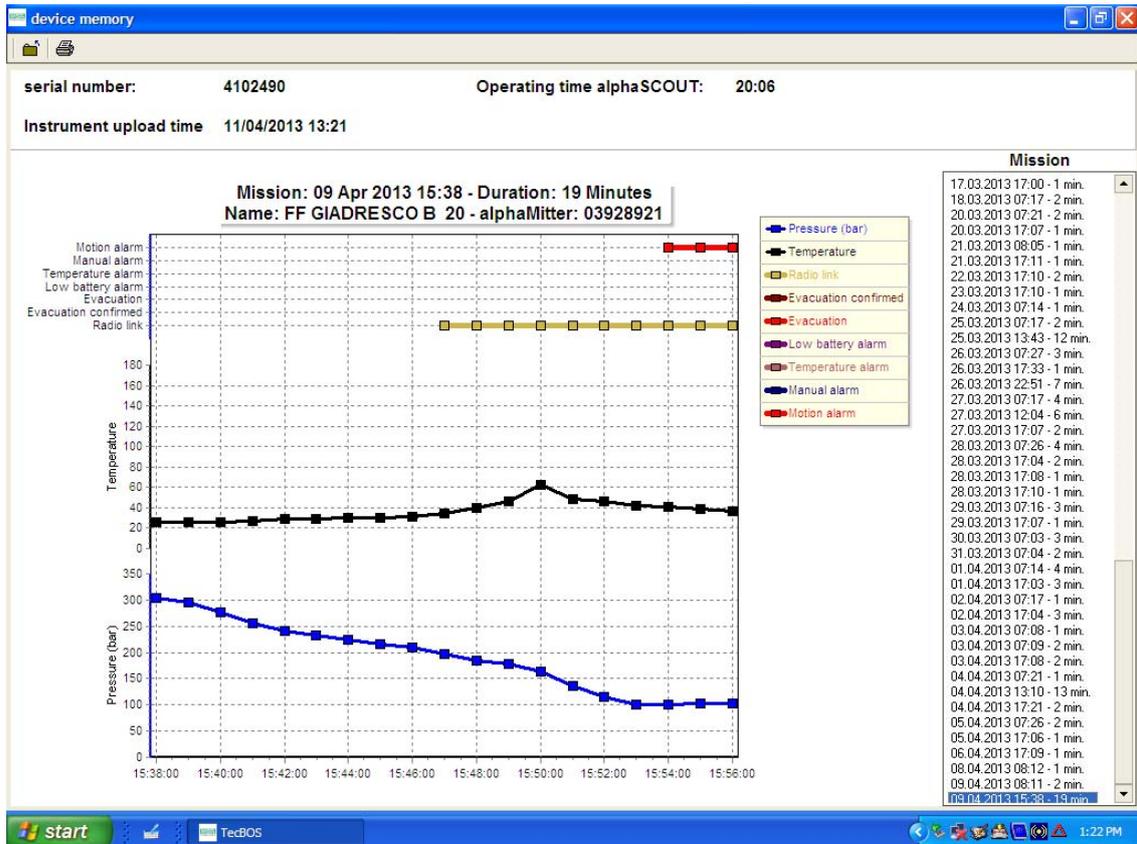
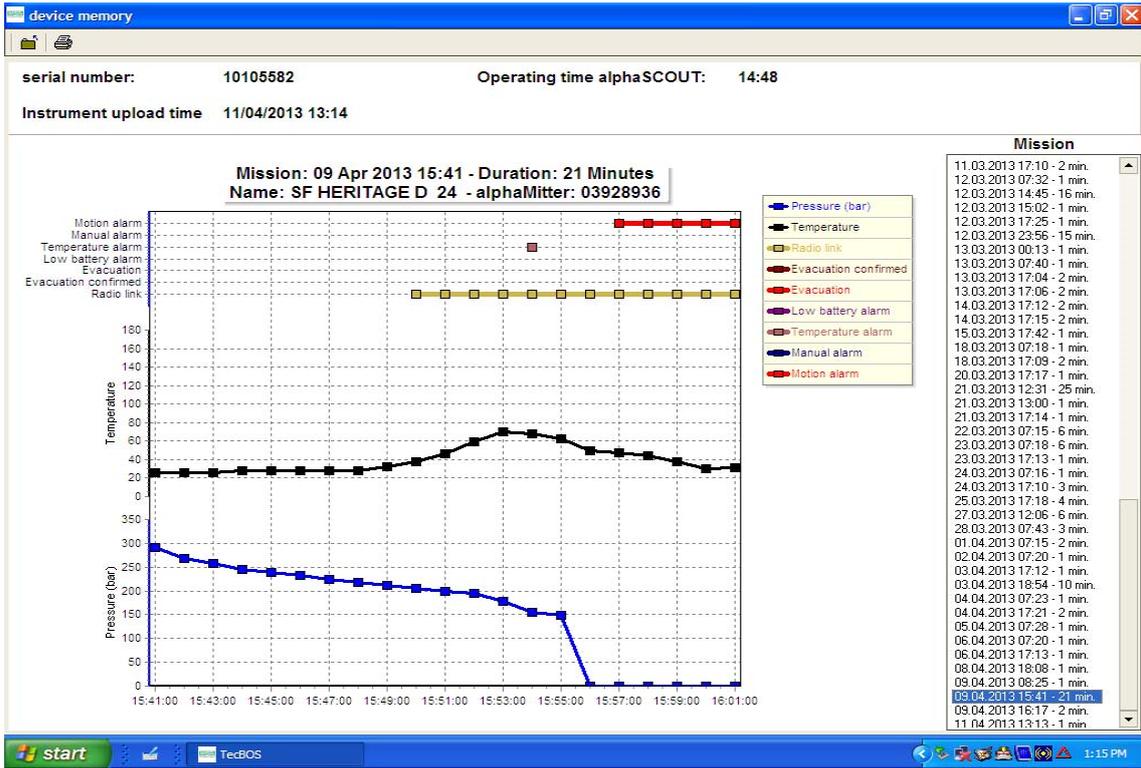


Figure 3 - Data from S/F Heritage's & F/F Giadresco's BA Sets

Supporting Information

The Structural Firefighting Protective Clothing worn by MFS is designed to protect wearers from the extreme temperatures associated with firefighting operations. The fact that two firefighters received burns whilst wearing this PPE, which appears to be undamaged, may raise some concerns. It should be acknowledged that all protective clothing has limits in its ability to protect the wearer. The following is provided as supporting information in regards to the performance of Structural Firefighting PPE. It has been drawn from an article in Fire Engineering Magazine.

“Burn injuries can occur at relatively low skin temperatures. Discomfort or pain will be experienced at temperatures of about 7° C above core body temperature (about 37 C), second degree burns will occur with skin temperature about 18° C above core body temperature and instantaneous skin destruction will occur at 35° C above core body temperature.

Moisture on the outside of a firefighter’s protective clothing may result in a cooling effect as the water evaporates, however water which gets absorbed by the garment’s thermal liner and firefighter’s clothing is not likely to evaporate.

Wet clothing exhibits significantly higher rates of heat transfer than dry clothing. Water will transfer heat about 21 times faster than air at a temperature of 93° C. Wet, compressed thermal protective clothing has a much higher thermal conductivity than dry clothing. It should be noted that clothing compression can occur without touching surrounding surfaces. Arm and leg movements will cause fabric compression, as will BA straps. Rotating the body in a defensive movement away from a heat source will compress clothing across the upper arm and shoulder and across the back.”

The temperature sensor on S/F Heritage’s air set recorded temperatures in the 70° C range. As previously noted, first degree burns can occur at skin temperatures of approximately 48° C Second Degree burns at approximately 55° C and instantaneous skin destruction at approximately 72° C.

“Firefighters receive scald burns when they come into contact with a hot liquid that is flowing or splashing from the ceiling and walls of a structure..

This hot liquid will burn exposed skin and penetrate certain elements of protective clothing, producing burns injuries. In cases where protective clothing becomes wet when a hot liquid and the garment become compressed, heat will quickly be transmitted to a firefighter’s skin, potentially resulting in a burn injury.”

Lawson R. J., Thermal Performance and Limitations of Bunker Gear. Fire Engineering, August 1998

Performance of Personal Protective Equipment (PPE)

F/F Giadresco and S/F Heritage's Level 2 Structural Firefighting PPE was inspected following the incident. A separate report detailing the inspection is attached in Appendix 2.

In summary, the following was observed:

- The PPE was heavily soiled by soot,
- There was no apparent flame impingement or heat damage to either F/F's PPE,
- The inspection of S/F Heritage turnout coat indicated the neck flap had not been in use,
- The BA sets continued to function in this situation and show no signs of flame or heat damage,
- There was no observable PPE failure.



Figure 4

**PPE Worn by S/F Heritage at
the Beverley House Fire
Incident**



Lessons concerning PPE:

Issues such as the firefighters' PPE possibly being damp prior to entering the building have been considered and discounted as a contributing factor. The PPE ensemble including Level 2 Structural Firefighting Clothing and Breathing Apparatus performed within operational parameters and was not damaged in the incident.

The effectiveness of the MFS Level 2 Structural Firefighting Ensemble was identified as a factor in preventing more serious injury. Most significantly, the use of Breathing Apparatus prevented serious respiratory injury.

The need to have appropriate levels of PPE worn correctly are paramount with particular attention to be paid to details such as thumb loops, collar flap, helmet flap and flash hood – BA mask interface.

The existence of a temperature sensor on the alphaSCOUT is not widely known within the MFS.

The operation of the high temperature alarm is not presently included in breathing apparatus (BA) training screeds or courses.

The MFS does not currently have a procedure in the event of an activation of an alphaSCOUT TM high temperature alarm.

Recommendations:

- 1. Current practice and procedures in regards to the appropriate donning of PPE are reinforced at all times including training, exercises and incidents*
- 2. The MFS reviews current training information to include details of the function and operation of the high temperature alarm in the alphaSCOUT.*
- 3. Recommend that the high temperature alarm is covered in future BA courses.*
- 4. The MFS investigates the functionality of the alphaSCOUT TM high temperature alarm.*
- 5. The alarm should have a "latched" feature that requires acknowledgment by the user.*
- 6. The MFS investigates the possibility of the high temperature alarm being transmitted via the alpha Personal Network to the alphaTABLET.*
- 7. The MFS develops a procedure in the event of the operation of an alphaSCOUT high temperature alarm activation*

4. Conclusions

It is generally accepted that firefighting is an occupation that carries a higher than normal level of risk, however any incident which results in the injury to firefighters is a very serious concern, requiring a full and thorough investigation of the contributing factors.

The purpose of this review was to discover areas of possible improvement, minimising the likelihood of a similar occurrence happening in the future. The review has identified a number of opportunities for improvement and has made recommendations for the organisation's ongoing consideration across a broad range of areas.

By critically analysing any operation, the decisions and actions of those involved in the incident are brought into focus. It is important that fireground decisions made in a high pressure, time constrained environment are not unfairly challenged with the benefit of hindsight by persons in the relaxed environment of a post-incident review. The significant assistance and cooperation of the personnel who provided evidence for this review and those who contributed to the production of this report is greatly appreciated.

The cause of the injuries to S/F Heritage and F/F Giadresco

The consensus view of the review committee was that the cause of the burn injuries to Senior Firefighter Dave Heritage and Firefighter Brad Giadresco was accidental.

The key themes that emerged from the review of this incident and that are believed to have contributed to the injuries are listed below.

- The primary cause of injury is believed to be the accidental application of an excessive amount of water in the room of fire origin resulting in the firefighters being sprayed with water, wetting their PPE. The uncontrolled release of water may have resulted from one or both of the firefighters having stumbled within the room of fire origin.
- It is believed that the accidental over application of water wet the firefighters' PPE, produced a large amount of steam in the room and possibly created an inversion layer, forcing hot fire gases down on to the firefighters, resulting in scald and steam burns.
- S/F Heritage may have contributed to the degree of burn injury he suffered by failing to properly secure the collar and neck flap of his turnout coat.

To reach this view a number of potential causal factors were considered in turn. The full list of factors considered during this review and recommendations made are provided in the following section.

5. Factors and Recommendations

The following section outlines the factors which were of significance to this incident.

Where appropriate, recommendations for consideration and /or review by the MFS have been made.

Situational Factors

Woodville and Brooklyn Park appliances were the first to arrive at a structure fire where an off duty MFS Senior Firefighter had reported a confirmed fire.

First arrival crews discovered a residential property which featured an apparent high level of security with roller shutters and security screens fitted to all doors and windows.

Thick black smoke emanating from the roof line around the gutters, the presence of a resident with a intellectual disability who was apparently unsupervised and a vehicle in the driveway lead to a reasonable belief that a carer may still be in the burning building.

The existence of a potential life risk resulted in the IC making the decision to take a measured risk by committing firefighting crews in an attempt to locate and save a “saveable life”. This decision is in accordance with the MFS’ stated position.

The prevalence of thick black smoke was an indicator of high fuel load and potential risk of backdraft. Furthermore, the smoke volumes seen prior to entry by the BA teams indicated that a confirmed fire and associated high temperatures may also be present within the premises.

Recommendations:

1. *Thermal Imaging Cameras should be utilised where possible, in any internal firefighting operation, to provide additional situational information.*

Initial incident action plan

The 249 S/O’s initial incident action plan was for his (249) crew to perform a right hand primary search of the premises, with the next crew (451) to perform a left hand primary search in an attempt to locate person(s) who were believed to be inside. Two HP hose lines and one TIC were utilised.

The initial assessment undertaken is considered to be both accurate and to have been undertaken with due diligence and timeliness. Key issues identified included potential life risk, thick smoke and apparent high temperatures within the premises.

This assessment was assisted by the local area knowledge of the first responding crews and by prior teamwork between the responding Officers and crews.

The decision by the initial Incident Controller to conduct a search and rescue operation, supported by offensive firefighting tactics in an attempt to locate and rescue a person(s) whom he reasonably believed may be in the burning building is supported by the MFS' stated position of taking measured risks to save "saveable" lives. The courage of the firefighters tasked with undertaking this operation is commended.

Recommendations:

- 2. Although the decision to adopt an offensive search and rescue strategy is supported, it is recommended that in such circumstances where there is a significant risk of extreme fire behaviour; Officers consider the use of larger diameter hoselines to provide additional firefighting water.*

Initial communication, coordination and control actions

Talkgroups were not utilised, with the 249 S/O choosing to use Simplex Channel 182.

The dispatch of an "A" Risk Response did not adversely impact the incident in the initial phase; however this may have contributed to span of control issues that would become apparent further into the incident.

Given the risks and exposures present; the incident objectives, strategies and tactics adopted for the incident appear appropriate, constituting safe and effective use of available resources. Station Officers in attendance performed their roles as required while continuing to seek incident information and also directly tasking their crews. The actions of the Incident Controller were consistent with MFS policies, procedures and training.

An apparent delay in an immediate response from Comcen in relation to a Priority Voice request via the MCT is a concern and needs to be addressed. Currently, Station Officers are saying "Priority Voice" in an attempt to gain the attention of Comcen Operators.

Portable radios need to be checked at the start of each shift to confirm operational performance. Correct engagement of the radio in the vehicle's portable radio battery chargers also needs to be ensured.

The initial Incident Controller was hampered by communication difficulties from the early stages of this incident and these appear to have manifested themselves in some confusion on the fireground as to the Incident Action Plan and the actions taken by some firefighting crews as a result of this. Whilst these actions appear to have had no effect on the cause of the injuries to the two firefighters at this incident, the implications of "freelancing" require consideration by the MFS.

Furthermore, it is clear that a variety of communications issues impacted this incident from the outset. Issues include:

- Inappropriate Risk Response - up to the 3rd Alarm level.
- Problems with flat batteries on portable radios,
- Confusion over allocation of radio channels/communication plan
- Problems for BA crews communicating via portable radio due to high ambient noise
- A lack of awareness on behalf of Comcen in regards to the situation on the fireground, caused in part by delays in Sitreps from the fireground.

At 1553, an informative message was provided to Comcen including a HAULERS format message. At this time, the appropriate risk response should have been identified and the Incident Controller notified.

At 1559 the Alarm level was upgraded to 3rd Alarm level. "A" Risk resources were dispatched. There is no evidence to suggest that Comcen identified the higher than necessary Alarm response.

Dispatch of "A" Risk level of resources had the potential to overwhelm the IC's span of control if this level of resourcing was not factored into his Incident Action Plan.

There is no single factor which can be attributed to these communications issues, rather there were a combination of factors.

Recommendations:

3. *It is recommended that the MFS investigates the provision of a more prominent audio and visual prompt for a MCT Priority Voice request for Comcen Operators.*
4. *It is recommended that the MFS reviews current radio communications procedures which require staff to wait 30 seconds for an acknowledgement from Comcen in response to a MCT Priority Voice Request. MCT Priority Voice Requests should be accompanied by a simultaneous radio request stating "Priority Voice".*
5. *It is recommended that the MFS reviews Standard Operating Procedure 15 "Communications at Incidents" to consider the possibility of pre-allocation of radio channels for all incidents other than minor.*
6. *The MFS reviews current operational radio communications procedures to consider a more prominent audio and visual prompt on Appliance Mobile Computer Terminal (MCT) or via a voice message from Comcen confirming the initial response classification.*
7. *The MFS reviews current Comcen procedures to consider the immediate establishment of an "Incident Desk" for any/all working incidents.*
8. *The MFS investigates the options for "hands free" radio communications devices suitable for effective radio communications whilst wearing breathing apparatus or whilst working in an environment with high levels of background noise.*
9. *The MFS investigates the possibility of being able to monitor/record Simplex radio Channels.*
10. *MFS Officer Development and Promotion processes should highlight the need for regular, timely situation reports to Comcen.*

Incident Management - Control

The Incident Controller was clear on the timing and application of ventilation at this incident. It would appear that this direction may have been mis-communicated or misunderstood, evidenced by the operation of a PPV at the rear door. Approval for the operation of a PPV was provided by the Safety Officer – not the IC.

Discussions have occurred as to the timing / decision to begin ventilation. Based on the information available to him, the Incident Controller decided to wait until the seat of the fire was located prior to conducting ventilation operations, which included the use of a positive pressure ventilation fan. This decision is consistent with MFS policy, procedure and safe systems of work. Timing and application of ventilation is a critical fireground issue which remains the responsibility of the IC.

Given the risks and exposures present; the incident objectives, strategies and tactics appear appropriate, constituting safe and effective use of available resources. The actions of the Incident Controller were consistent with MFS policies, procedures and training.

Recommendations:

11. *The MFS reviews its training programs regarding tactical ventilation techniques, including the use of Positive Pressure Ventilation (PPV).*
12. *The MFS considers regular provision of compartmentation and live structural firefighting training.*
13. *Ongoing training for the assignment of Rapid Intervention Teams (RIT) is provided and assessed as a component of Officer Development and Promotional processes.*

Operational Rehabilitation

The rehabilitation of firefighting crews appears to have been well managed. The availability of BA/Hazmat Appliance 206 to manage firefighter rehabilitation aspects of the incident such as the supply of drinking water was of benefit.

Firefighter safety and welfare

The outcomes of this incident created a heightened level of activity in the area of firefighter welfare. This level of activity was not limited to the injured firefighters, but extended across the organisation.

The activation of the State Coordination Centre Fire (SCCF) staffed by Senior Management personnel proved effective in the coordination of a wide range of issues including (but not limited to):

- staff welfare
- stakeholder notification
- media management

A coordinated communication strategy was developed in consultation with the MFS Employee Support Coordinator, Hospital medical and corporate communication staff and the firefighters' families/partners.

The need to balance people's desire to express their concerns and best wishes for the injured firefighters with the serious and ongoing recovery issues resulting in extremely

limited communication capacity of the injured personnel is a matter which requires constant ongoing management.

The development of an “all staff” communication in relation to the condition of the injured firefighters proved effective in managing some staff concerns. A variety of communication channels including e-mail, Integrated Voice Response (IVR) and “face to face” meetings were employed. The workload for the Employee Support Coordinator is considerable particularly in the early phases of such an occurrence.

Recommendations:

14. *The activation/recall of additional Employee Support personnel is considered at an early stage in an occurrence such as this.*
15. *The MFS considers the development of a Crisis Management Plan to assist in the effective management of issues such as a serious injury to staff member(s).*

Building Fire Safety Issues

As stated previously in this report, the premises located on the north-western corner of East Avenue and Spring Street, Beverley, was being utilised as a supportive care facility for residents with Down Syndrome. Prior to arrival at the scene, the MFS were unaware of the building’s primary use. The absence of the resident carer at the time of the fire added a degree of uncertainty for the Incident Controller in regards to the likelihood of a person requiring rescue from the property.

The property had a fire alarm system which included smoke detectors in all bedrooms, a thermal detector in the kitchen and two audible warning devices. The alarm panel was located in the passageway near the north-eastern (front) access door. The fire alarm was not monitored and was activating at the time of MFS arrival.

Early notification of this fire via a monitored fire alarm or the presence of a competent person capable of confirming whether all persons had been evacuated from this building prior to the MFS’ arrival had the potential to significantly change the Incident Controller’s Incident Action Plan.

The risk from fire increases considerably where occupants have impairments. These disabilities reduce their ability to detect a fire, to deal with it in its initial stages or to be able to escape/react in a timely manner.

State Governments in Western Australia and New South Wales have undertaken the installation of fire sprinklers in State owned housing for residents with mobility, mental health or other disability issues.

A monitored fire alarm, resulting in a timely response by the MFS to this incident had the potential to greatly reduce the impact of this fire. The installation of a fire sprinkler had the potential to limit this fire to its incipient stages.

Recommendations:

- 16. The MFS requests a current register of supportive care facilities in the community from the Department of Human Services. This information is to be used to inform South Australian Computer Aided Dispatch (SACAD).*
- 17. The MFS promotes the installation of monitored fire alarms in supportive care facilities as a minimum fire safety requirement.*
- 18. The MFS promotes the installation of fire sprinklers into domestic dwellings as a preferred option.*

Incident Recovery

The Post Incident Review of this incident identified that a Hot Debrief was not conducted on site / or near vicinity prior to the dispersion of crews, which was of concern for some personnel. The Incident Controller had been asked to clear the immediate area by Fire Cause Investigators.

The outcomes of this incident had an obvious and immediate effect on a number of personnel on scene. The conduct of a Hot Debrief may have provided the opportunity for firefighters to raise any issues or concerns that they had prior to leaving the fireground. The timely identification of any concerns or issues particularly in the area of personnel welfare is vital and the Hot Debrief is an ideal opportunity for this to occur.

The recollection of firefighters in regards to their actions and observations has proved beneficial at other incidents in identifying opportunities for improvement with the intention of reducing the likelihood of a similar occurrence in the future.

Recommendations:

19. *The failure to debrief crews prior to dispersal from the fireground may result in a delay of several days before issues can be addressed. It is recommended that the MFS reinforces the need for Hot Debriefs to be conducted immediately after the incident and prior to any crews leaving the fireground – regardless of the time of day. This should also allow the IC and others to identify any possible issues staff may have in regard to the incident.*
20. *It is recommended that all firefighting staff are encouraged to record their actions/observations at incidents in a written form for their personal use. This should occur at the earliest possible time following the conclusion of firefighting activities.*

Appendix 1 Incident Timeline

Sequence of events	
Time	Activity
1533	First 000 call to the MFS, Off Duty S/F speaks with Comcen.
1534	Appliances responded to domestic structure fire, corner of East Avenue and Spring Street, Beverley.
1541	The 249 S/O on Woodville 249 arrived, K99
1543	Metro Commander requests confirmation of responding appliances. Automatic 2 nd Alarm "A" responded on initial dispatch.
1546	Car 40, K2
1550	Metro Commander briefed by the 249 S/O. 241, 451, 249, 205 & 206 in attendance. K41 / 42?; Offensive strategy; 2 x BA crews conducting primary search & fire control Fire had not breached externally; 241 S/O Safety Officer
1552	Transfer of Command, Metro Commander IC, the 249 S/O appointed Operations Officer
1553	K38 / K39, HAULERS Message / SITREP
1554	Commander Safety confirms utilities have been isolated; 371 in attendance
1555	Car 40 relocated and commencing set-up
1556	IC notified by the 451 S/O that two personnel have been injured. IC liaises with SAAS Team Leader
1559	Upgrade 3 rd Alarm; request ACFO contact IC immediately
1604	Primary search completed; Nil persons located; Fire contained to front room, Minor fire spread into ceiling space; ventilation commencing
1605	IC contacts Employee Support Coordinator
1607	Secondary search commenced
1610	SAAS depart with S/F Heritage & F/F Giadresco
1611	ACFO K2; briefed by IC SITREP to COMCEN 331 K2; Crew to report to Entry Control
1613	COMCEN advised that Airdesk was established & monitoring TG 155 IC advises that Command Channel now 155, Tactical Channel 183
1615	203, 361 & 2015; K2 203 crew requested to report to Entry Control, 361 to remain in staging; 2015 not required

1616	201 & 202, K2
1625	SITREP - Secondary search completed, K43, ventilation in progress, 201, 202 & 2015 released
1630	Metro Commander conducts media interview
1635	203 & 361 released
1640	Ventilation completed, Nil readings on Micro 5 monitor
1645	451 & 371 requested to make up; COMCEN notified
1659	IC contacts COMCEN and requests Safework SA attendance
1700	ACFO departs incident 205 released
1705	371 released
1709	Stop Message transmitted
1715	206 released
1730	241 & 249 released Safework SA contact IC
1750	451 in attendance; IC briefs S/O FCI
1755	IC liaises with Commander FCI & Commander Safety prior to departure
1801	Car 40 mobile to Stn 20

Appendix 2 PPE Report

Daily Incident #088

Tuesday 9th April 2013

PPE Inspection **S/F Heritage**

1. Lion Apparel level 2 Structural fire fighting jacket
 - Jacket has moderate contamination
 - Pronounced demarcation of contaminated area to clean area outlining SCBA wear
 - Pronounced demarcation of contaminated area to clean area appears to denote that neck flap was not in use
 - No apparent flame or heat damage
2. Jacket liner
 - Appears in good condition
 - Little contamination
 - No flame or heat damage to cuffs or glove loops
3. Lion Apparel level 2 structural fire fighting over trouser
 - Moderate contamination to the front of the trouser
 - Rear of the trouser appears clean
 - Contamination to knee pads consistent with crawling in hot zone
 - Apparent scorch marks to markings front of right leg shin
 - Apparent scorch marks to markings right leg Achilles area
 - Braces cut
 - No apparent sign of flame or heat impingement
4. Level 2 trouser liner
 - Appears in good condition
 - No apparent sign of heat damage
5. Devon Agencies trouser and leather belt
 - Trouser cut up front of both legs
 - No sign of heat damage
 - Belt intact
6. Gildan blue cotton fire service issue t-shirt, size M
 - t-shirt cut down front
 - has moderate wear and tear
 - no sign of heat damage
7. SEIZ level 2 structural fire fighting gloves, size L
 - Moderate contamination to upper and palm consistent with being in hot zone
 - Cuffs intact and undamaged
 - No apparent flame or heat damage
8. HAIX level 2 structural fire fighting boots, size 8
 - Good overall condition
 - Some wear and tear to toe caps consistent with age and use
9. LIFE LINERS flash hood, Date of manufacture 5/02 lot # 6105
 - Name marking in reflective reverse cut "Heritage" to rear flap in good order
 - Some contamination demarcation showing outline of helmet and helmet neck flap
 - No apparent sign of flame or heat impingement

10. PACIFIC structural fire fighting helmet, torch and neck flap
 - Helmet and torch grossly contaminated
 - Face shield grossly contaminated, missing left hand side tag
 - Neck flap displays moderate wear and tear consistent with age and use, multiple holes and fraying seams
 - Chin strap intact
 - Bump cap intact
 - No distortion or melting of face shield
 - Velcro name tag patch may display dome degree of distortion
 - No apparent sign of flame or heat impingement
11. MSA SCBA and cylinder, set # 47
 - Moderately contaminated
 - Face mask relatively clean
 - No apparent flame or heat damage

Daily Incident #088
Tuesday 9th April 2013
PPE Inspection **F/F Giadresco**

1. Pacific helmet and helmet torch
 - heavy soot contamination to both outer shell and visor
 - moderate contamination to neck flap
 - strong demarcation to helmet torch from holder
 - no sign of flame or warping to outer shell, visor or markings
 - no sign of damage to chin strap
 - inner bump shell in place
 - harness intact
2. Blue cotton Gildan fire service t-shirt- large
 - slight contamination
 - relatively recent issue
 - no sign of heat or flame impact
 - no sign of shrinkage
3. Lion Apparel flash hood
 - slight contamination to surround of face mask
 - 6-7 cm diameter ring of abrasion to right hand side temporal area, consistent with mechanical abrasion No correlation to helmet harness
4. Stewart and Heaton trouser and leather belt
 - slight contamination to trouser
 - belt in sound condition
5. SEIZ level 2 structural fire fighting gloves- size 12
 - soot contamination to upper and palm
 - no sign of flame damage
 - no apparent sign of shrinkage
 - cuffs in good condition
6. Lion Apparel level 2 structural over trousers and braces
 - soot contamination to front of trouser
 - Rear of trouser appears clean
 - Left knee pad displays evidence of heavier contamination consistent with crawling in hot zone
 - Right knee pad shows moderate contamination
 - Apparent scorch marks to markings of right leg shin
 - no evidence of flame or heat impingement
7. Level 2 trouser liner
 - no apparent heat damage
 - liner appears sound
 - degradation of a small number of nodules, probably consistent with wear and tear
8. YDS level 2 fire fighting boot
 - slightly soiled
 - good, near new condition
9. Lion Apparel level 2 structural fire fighting jacket
 - Moderate contamination of outer shell, consistent with being hosed down with water
 - All markings in good order
 - Inner liner in place, all fastenings intact
 - Ink stain right upper sleeve
 - No evidence of flame or heat impingement

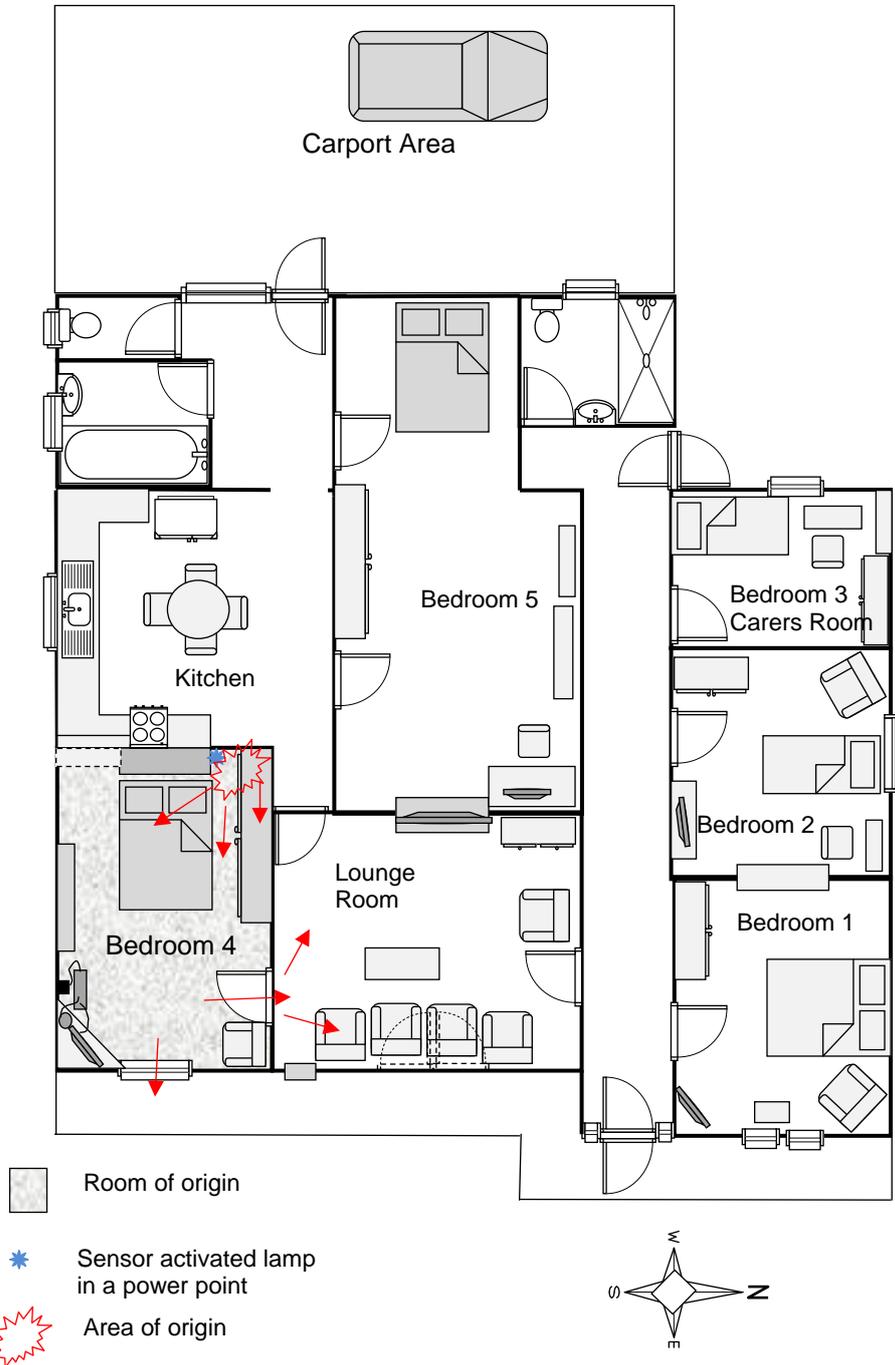
10. Level 2 jacket liner

- Liner appears sound with no structural damage
- Thumb loops and cuffs in good order
- Damage to small amount of nodules, appears consistent with wear and tear
- Ink mark on right upper sleeve aligning with stain from outer shell pocket
- No evidence of heat damage

11. MSA SCBA and cylinder. Set # 49

- Cylinder and harness grossly contaminated
- Face mask relatively clean and in good order
- Demand valve unattached to face mask
- Left hand side upper harness has come away from back plate
- No apparent flame or heat damage

Appendix 3 Building Plan



SKETCH PLAN OF: 50 East Avenue, Beverley	Not to scale	
	DRAWN Phil Kilsby	WORKFI
Minor detail not shown. Furniture, utilities and fittings shown are	DATE: 9/4/13	