NEW ZEALAND FIRE SERVICE

Auckland Region

Operational Review Report

Structure fire with damage
F163587
8B Kahika Rd,
North Shore City
Incident Date: 24/05/2008 10:50 a.m.

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1. Executive Summary

Performance Hosiery Ltd occupies a site in the middle of a cul-de-sac of a light industrial/residential mix in the suburb of Birkenhead. The building is 3.6 Kilometers from the Birkenhead Fire Station and they were engaged in the business of manufacturing textiles (Knitwear, Socks).

At 10:50hrs on the morning of Saturday the 24th May 2008, the Fire Service Communications Centre received multiple calls to a "two storey building on fire" at 8B Kahika Rd Birkenhead. This fire escalated to a 3rd alarm.

The structure involved in the fire (refer Appendix A) was constructed of concrete block with an iron roof approximately 50m x 20m. A narrow alleyway separated this from an adjacent building of similar size.
The fire started at the rear of the building and quickly spread forward causing the roof to collapse. The building had a very high fire loading due to large amounts of textile materials inside the building.

This building was not fitted with a sprinkler system and there was no risk plan information at the ICU (Incident Command Unit). The fire was effectively contained to the building of origin. The basement area to the front of the building which houses a sportswear store was protected, only sustaining some water damage.

During the extinguishments of this fire two firefighters received minor burns to the hand of one and hand and shoulder of the other.

The premises were occupied by the owner at the time of the fire. He had just arrived and attempted to extinguish the fire with a water extinguisher. He escaped through an already open exit door at the rear of the factory. Following enquiries by Fire Safety this fire is being treated as suspicious. The Police were notified and are investigating. Fire Safety does not have any ongoing concerns for this building as it is to be demolished and rebuilt on the same site.

There were a number of issues identified for comment under the terms of reference and these include:
• Review of communications centre beat lists
• Composite pumps be backed up for all 2 pump calls and all alarm levels without the mandatory minimum 4-minute delay occurring
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3. Terms of Reference

This operations investigation was requested by the Auckland Fire Region Commander Brian Butt (sponsor), under the authority of the New Zealand Fire Service (NZFS) Manual of Operations, Operational Management Manual, E.1 Operations Investigation.

During operations at this incident, two Firefighters sustained burn injuries. This review will incorporate an investigation into the cause of those injuries in accordance with the Health and Safety Manual and Guidelines Section 5.5.

This operational review was to be completed in accordance with the national policy and process evaluating the following:

- Describe the building/complex and its use prior to the incident;
- Identify transmission of the call to this incident; call reception and turnout of NZFS to this incident;
- Evaluate the operational response, initial (then subsequent) tactics and actions of the responding crews;
- Identify all relevant Operational Instructions and NZFS policies and determine whether they have been followed and were effective during the event;
- Identify any failures of equipment or processes during the operation of this incident
- Identify items for consideration for the Corrective Action plan;
- Note any follow-up from fire safety in relation to the continued operation of the building.
- Identify the activity and location of the injured Firefighters at the time their injuries were sustained.
- Determine the cause of those injuries; and provide conclusions that will drive recommended improvements in the form of a Corrective Action Plan.

The terms of reference established the rationale for this operations investigation as being an opportunity for learning. It was to follow a “no blame” philosophy while preparing a constructive evaluation for future improvement. To facilitate this, the investigation team has avoided the inclusion of names (other than those included in the SMS Incident Report) to identify individuals although key incident management roles have been discussed.

Operational Review Team:

Kerry Gregory	Review Team Leader Senior Station Officer Waitakere City Fire District
Michael McEnaney	Senior Station Officer Community Education
Peter Doughty	Senior Fire Fighter Operations
John Waldow	Union Representative

4. Incident Summary

Fire District:	North Shore
CAD No:	F163587
Time:	10:50 hours
Date:	24th May 2008
Incident Type:	Structure (initial call)
Alarm Method:	111 telephone
Cause:	Incendiary
Building Use:	Textile manufacturing
Premises:	8B Kahika Rd Birkenhead Auckland
Zone:	148251
Alarm Level:	3rd alarm
PDA:	Birk821, Birk822, Alba851
Stop Message:	24th May 2008 @ 19:38hrs

At 10:50 hours on the morning of Saturday 24th May 2008, the Fire Communications Centre received multiple calls to a building on fire at 8B Kahika Rd, Birkenhead.

The first two appliances arrived within 4 minutes and 11 minutes after the initial 111 call respectively. The officer of the first responding appliance transmitted an assistance en route "K88 proceeding transmit second alarm". On arrival they transmitted K99 and a priority message for a third alarm. He carried out a complete size up of the building and was unable to ascertain whether there were still people in the building. The fire was such that it was unsafe for firefighters to carry out an internal search of the building.

The initial get to work involved a low-pressure delivery through the side door of the first floor (shown appendix 1) for interior cut off. The second arriving appliance established a second low-pressure delivery down the northern side of the building for exterior exposure protection.

During operations signs of building collapse were recognised and firefighters were withdrawn from the building. A fire ground message was transmitted that roof collapse was imminent and no crews should enter the building. Moments after withdrawing from the building the roof collapsed.

A command structure was established with two sectors put in place and it was identified early that aerial attack would be needed. Appliances positioned themselves to allow the driveway on the southern side of the building to be used for the aerial to position upon its arrival. As a result of the fire spread and roof collapse firefighting became limited to exterior attack with low-pressure deliveries and an aerial monitor attack

Pager notifications were initially to the North Shore CFO/DCFO on the second alarm and included the Fire Regional Commander, Assistant Fire Regional Commander, and Auckland City East DCFO on the fire ground transmitting a third alarm.
The first senior officer arrived on the scene at 11:08. He took over incident command and on the arrival of the following two executives appointed them operations and logistics. A safety officer was also appointed to this incident.

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5. Incident Communications

5.1 Response Overview

The Communications Centre started receiving multiple calls to a factory fire at 8B Kahika Road, Birkdale at 1050 hours Saturday, 24 May 2008.

From the information being received from members of the public, the building was confirmed as a two story structure with a significant fire in the upper floors.

As a result of this information, the Communications Centre upgraded the initial first alarm response which was a departure of the predetermined attendance (PDA) to include the closest aerial appliance – that being AUCK205.

AUCK205 was responded as part of the Incident Resource Deployment Management requirements - Statement of Service Performance (SSP) where information is received as part of the initial call that indicates a confirmed incident or an escalating situation Comcen Shift Managers may increase the turnout or escalate the Alarm level on the initial response.

On route to the incident (1 minute 32 seconds after responding), the OIC of the first responding appliance transmitted a K88 proceeding and upgraded the response to a second alarm. This was subsequently upgraded to a third alarm upon his arrival.

In addition to this, he specifically requested to make aerial appliances two.

The inclusion of AUCK207 was a further departure from the PDA and was added as the Communications Centre Shift Manager believed this crew (who were K3 in Ponsonby's first pump area) would arrive prior to one or more of the volunteer appliances recommended on the third alarm turnout. This decision was in accordance with Operational Procedure No 2 Section – Part 1 where it shall be the objective of the Comcen to respond the closest appliance provided that District, time and distance are taken into consideration when comparisons are necessary. And also to include an additional SSO on the third alarm response.

5.2 Operational Instructions and Policies (Comcentres)

The actions of Comcentre staff during this incident were such that the enhancing of the PDA with an aerial appliance and the addition of a pump highlighted beat list inaccuracies. Further investigation identified the complexity of surrounding the composite stations backup rules.

The concerns raised by the Comcentre staff regarding the confusion, inaccuracies and unreasonable complexities which make up the backup rules for composite brigades was confirmed when the investigation team raised the same issues with the Comcentre Operations Manager, Eric Smith.

The relevant policies that relate to the role of the Comcen are:

Policy	Followed	Effective and outcome
Mobilisation – Volunteer Response Operational Procedure No. 2 – Part 2	**No**	This policy is unable to be followed to any extent by any comcentre staff. It is cumbersome, confusing and unworkable. There is as many interpretations of this policy as there are staff on duty. The actions of the comcentre on the day, although not following the policy were very effective and had an excellent outcome on the incident.
Incident Resource Deployment Management requirements - Statement of Service Performance (SSP)	**Yes**	Policy allows for increasing the turnout to a confirmed incident or an escalating situation. The outcome was that an enhanced response was sent achieving an earlier arrival of the first responding aerial appliance.
Comcentre Manual – Mobilising Procedures (E3)	**No**	Had the comcentre followed this, the effect would have been detrimental to the successful response and AUCK207 would have been delayed by 4 to 6 minutes. The outcome was a more effective response by responding the additional pump immediately and not delaying the response by the mandatory 4 minutes.
Qualified Firefighter Program – Radio Operation (Location and Role of the Comcen) – Stage One Study Guide	**Yes**	The guide confirms that the Comcentre remains in command of an incident until the first appliance arrives. Comcentre actions lead to an excellent outcome.

5.3 Beat List Anomalies

Set out below is the beat list (pumping and aerial appliances only) for the specific incident. It requires the response of GREE841 and EAST832 on a third alarm Structure fire. These appliances are recommended ahead of appliances that are immediately available and it is known that they would have an earlier arrival time.

BIRK821
BIRK822
ALBA851

TAKA807
GREE841

EAST831
EAST832
PONS261*
AUCK207*
AUCK205*

DEVO811*
DEVO812
PARN251*
PARN256*

BALM611
REMU211
ELLE271
MTRO621
WAIT671
WAIT672
MTWE237
ONEH221
AVON601
AVON607
KUME867
KUME861
STHE241
OTAH311

6. Incident Management

An effective command and control system was established at an early stage that contributed to effective incident management. The first arriving officer was the initial Incident Controller. On arrival at the incident he transmitted a 3rd alarm following an assessment of resource requirements. In line with Auckland Region local operational procedure: Command and Control 3.5 the SSO took over incident command on his arrival. Two sectors were established and although not communicated to the communication centre all changes to incident command were.

The first senior officer arrived at the scene approximately 14 minutes after the arrival of the first responding appliance. Upon his arrival he assumed command of the incident and appointed the SSO operations manager. With the arrival of two other senior officers they moved into the roles of operations and logistics. A safety officer was also appointed to this incident in line with our operational procedures.

7. Appliance Deployment and water supplies

Appliances were well located at the incident to cover any further fire spread or development. An early assessment of developing needs meant the first arriving appliances were positioned well to allow the aerials to site themselves appropriately.

Water supplies were as follows prior to aerial operation.
Twined feeder from single standpipe supplying 821 with 1xLPD and 1Lay flat delivery operating.
Single feeder from a separate hydrant supplying 822 with 1xLPD operating.
Due to the high demand for water from the same 100mm main, branch men experienced some fluctuation in pressure as a result of other branches being opened and closed. The water supply was considered adequate for the operations in hand.

Once the crews had withdrawn from the fire and aerials were operating a further feeder was run from an independent supply on Birkenhead Road. A crew unfamiliar with aerial operations were tasked to supply that water to the fire ground for the aerial operation and ran the supply through the first arriving appliance to the aerials. Normal practice for aerial appliances is for them to have their own independent supply connected directly to the aerial appliance. This mitigates the effect on other deliveries operating on the fire ground that can result in firefighters losing water to their deliveries while operating in dangerous environments.

This highlights the importance of clear communications when tasking staff duties and the necessity for officers to familiarise themselves with the aerial appliance operations. It does raise the question as to whether a water supply officer should be established when aerial appliances are to be used on the fire ground.

8. Fire Safety Follow Up

This fire is being treated as suspicious with the cause established as incendiary. The Police were notified at the time and are investigating. Fire Safety does not have any ongoing concerns for this building as it is to be demolished and rebuilt on the same site.

10. Fire-fighter Injuries

Two fire-fighters from the first arriving crew received minor burns during the course of the fire. Both firefighters were correctly wearing their protective gear and the burns were received to the shoulder and hand of one firefighter and the hand of the other through their personal protective clothing.
The two firefighters had entered the building and were attempting to control the fire with a low-pressure delivery. They were less than 4 metres inside the building at all times. The firefighters encountered extreme heat and felt they were well protected with their Level Two personal protective clothing. The crew at one stage withdrew from the building because the heat was so intense then re-entered after a recovery spell. The two rotated turns at the branch as that position was more exposed to the heat.

After being relieved by another crew, who carried on with an external fire attack, the injured crew went to recommission. It was then they realised they had minor burns to their hands. These were reported to their officer who relayed this information to the ICU. As these burns were of a minor nature it was not deemed any further action was warranted. When back on station after showering the firefighter with the shoulder burn showed his officer the burn and it was decided to take him to North Shore Hospital for treatment.

Accident Cause

The burns to both the hands of the injured firefighters were situated where their upper most hand had held the branch. As the glove was closed and compressed on the skin the heat was able to radiate through the glove. Likewise the shoulder burn was in the area where the Breathing Apparatus straps had pulled the jacket tight. This meant the air barrier between the protective jacket and the firefighter was removed.

The injured fire fighters complained of fluctuating water pressure on their delivery at times during the incident. This was a result of the high demand on the water supply as outlined above in "*water supplies*". This did not play a significant part in the cause of injury, although it would have added to the temperatures the firefighters experienced.

The major contributing factors for this accident were:

- the length of exposure to the extreme heat
- the compression of the protective gear in that situation

Accident Notifications

Communication of the injured firefighters and their hospital treatment was confused through the notification process. The decision to transport them to hospital for assessment was not made at the fire ground but was decided later after their crew had returned to station. The crew had changed appliances as they were returning to the fire on standby and their appliance was committed at the incident. This caused some confusion in who had been taken to hospital when the senior officer was notified. This highlights the point that all injuries on the fire ground should be reported and investigated thoroughly at the time to determine what course of action is needed so the correct procedures can be followed in dealing with the following action.

11. Failures of equipment or processes

The failure of equipment at this incident consisted of the personal protective clothing outlined in the Firefighter injuries section above and although not a failure as such, fluctuations at the branch were encountered as a result of high demand from the water supply.

Conclusions and Recommendations
Operational Practices & Safety Issues

5) Incident Communications

It needs to be acknowledged that although some polices were not followed this had no detrimental effect on the incident. If on the other hand, comcentre staff were to follow them even in the most liberal way, significant and unreasonable delays would have occurred. Therefore, the recommendations set out below address the situation whereby staff are knowingly and continually breeching Fire Service policy.

5.1 Recommendation
That the existing communications centre beat lists be reviewed so as to ensure the early response of appliances which are immediately available.
As part of beat list review, the necessity for the second pump at composite stations to respond outside of the stations first pump area should be reviewed.

5.2 Recommendation
The existing composite station backup rules built into I/CAD automate the backup of composite pumps for structure fire calls only, in the stations first pump area and only on first alarm level. I/CAD does not backup these appliances for the following types of incident, but introduces a mandatory 4-minute minimum delay:

- Rescue event
- Hazardous substance
- All greater alarms
- Any call outside the composite stations first pump area in which they are responded to.

It is our recommendation that composite pumps be backed up for all 2 pump calls and all alarm levels without the mandatory minimum 4-minute delay occurring.

6) Incident Management

This incident highlighted the importance of making up resources early to allow adequate time for their arrival so they can be utilised at the earliest opportunity. It also shows the importance of establishing a well defined incident ground structure at the incipient stages so it can be further developed.

7) Appliance Deployment and Water supplies

7.1 Recommendation
A training note should be formulated and circulated to re-inforce the importance of monitoring water supply on the fire ground and considering the establishment of a water supply officer when utilizing multiple low pressure deliveries. This should also encompass the water requirements for aerial appliances using water on the incident ground.

8) Fire Safety

There are no ongoing concerns for the fire safety department.

9) Firefighters Injuries

With the efficiency of protective clothing being worn now, including flash hoods, firefighters are able to place themselves in hotter environments without realising the external conditions.

9.1 Recommendation
Training needs to be delivered to re-enforce the importance of exposure times in these environments and the importance of the layer between the PPC and the firefighter being maintained. This should be reinforced at the annual BA refresher course when delivered.

11) Failures of Equipment

Fluctuations were experienced at the branch as a result of high demands being placed on the water supply. The personal protective clothing where it had been compressed tight against the firefighters skin failed as a result of being exposed to extreme heat. (see recommendation 9.1 above)