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A FEW PRELIMINARY OBSERVATIONS ON "BLACK TUESDAY"
THE FEBRUARY 7, 1967 FIRES IN TASMANIA, AUSTRALIA

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The island of Tasmania, covering 26,383 square miles some 120 miles off the southern coast of Australia, is in many ways similar to southern California. Climate, vegetation, and topography are all quite comparable to certain areas in the vicinity of Los Angeles. A rugged terrain covered with irregular patches of forest and scrub growth characterizes both regions. This, added to the hot, dry, Mediterranean climate, presents -- in both cases -- a highly vulnerable setting for disastrous forest and brush fires. One major difference between the two areas should be noted, however. In the State of Tasmania the population is so sparse (about 14 persons per square mile) and the areas removed from the coast are so little developed that facilities for combating and access to potentially dangerous fires are significantly poorer than in California.

On Tuesday, February 7, 1967, all of these factors combined to produce the most destructive fires in the history of Tasmania. Extremely dry weather during the preceding two months had created a serious incendiary hazard throughout the State, so that when isolated blazes were reported to fire and police authorities during the early morning hours of Tuesday, the problem was not unexpected. These first fire reports were from the quasi-mountainous areas in the southeastern quarter of the island, generally within 10 miles of Hobart, the capital of Tasmania.

As the sun rose, the temperature rose rapidly with a corresponding drop in humidity. As firemen, policemen and volunteers battled the above-mentioned fires, a northwesterly wind began to fan the fires, pushing them toward the coast. By late morning this wind was of such strength that it was turning every combustible pile in the southeastern portion of Tasmania into a blazing brush fire.

By early afternoon the situation was one of severe crisis, with huge fires sweeping out of control across vast areas, engulfing dozens of square miles. The metropolitan area of Hobart was in grave danger as flames licked at the periphery of the city, igniting houses and kindling stores and factories. In the city's business district the sky was darkened by smoke, and the wind, at times reaching speeds of 65 knots, dropped ashes, embers, and burning brands which set off small blazes throughout the community.

This situation, with fires burning up to and even across the city limits, prevailed until about 4:00 p.m. when the northwesterly wind died down and a sea breeze (from the southeast) began to blow across the city. This shift in the winds drove the flames back and allowed fire fighters to extinguish many of the smaller blazes. By evening the crisis had passed since most of the fires, being forced back into previously scorched areas, burned themselves out.

Despite the fact that Hobart was largely saved by the wind change, the fires constituted the worst disaster in Tasmania's history. While figures on the damage are far from complete at this writing, at least 61 people are known to have died in the conflagration, and fire and accident insurers in the State estimate that insurance payments alone will exceed 15 million dollars (Australian). According to the Tasmanian Postmaster-General's Office about one million dollars worth of damage was done just to telephone lines and equipment. Officials also estimated that 1400 houses and buildings valued at several million dollars were destroyed in the disaster. In Hobart alone, 464 homes and buildings went up in flames. About 5 per cent of the pasture land in the whole State was burned, and damage to rural property,

crops and stock was initially judged to be somewhere around 10 million dollars. The total value of stock lost was about one million dollars - this includes the loss of approximately 50,000 sheep, 1,000 beef cattle, 300 dairy cattle, 600 pigs, and 25,000 laying hens. Serious damage was also done to the State's apple crop, one of the major export commodities.

Field Procedures

News of the fires in Tasmania reached DRC the day they occurred. Nevertheless, because of prior difficulties in obtaining OCD permission for foreign disaster studies, and also because of the considerable cost involved in sending a team to Australia, no initial effort was made to initiate a field study. However, later reports more clearly indicated the massive nature of the fires and suggested that conflagrations of such magnitude would ordinarily be found, although not in identical form, only in certain wartime situations. Therefore, the opportunity was taken to study the large scale fire fighting efforts that appeared required in this disaster.

A two-man DRC field team began making initial observations in Hobart on Sunday, February 19, 1967. The team remained in Tasmania through Friday, February 24, interviewing various organizational officials and collecting information from other sources. Field operations concentrated on the Hobart metropolitan area since it was the largest community in Tasmania to be affected by the fire disaster. Also, many of the key organizations that participated in the emergency activities throughout the State had headquarters in Hobart.

The field research effort mainly involved acquiring data on the fire control efforts of several key emergency organizations. Officials from the following groups and agencies were contacted and interviewed during the field trip:

Hobart Fire Brigade (including the Ferntree Auxiliary Fire Brigade)
Tasmania Fire Brigades Commission
Tasmania Police Department
Tasmania Forestry Commission
Tasmania Rural Fire Brigades Board
Australian Army
Tasmania Civil Defense
Hobart City Government

In this report, we will initially describe the Hobart area and southeastern Tasmania. This will be followed by descriptions of the structure of key emergency organizations and their functioning during the disaster. Finally, particular organizational problems will be discussed, and some general observations and conclusions will be presented. This report is a preliminary working paper and the ideas herein presented are not based on a systematic analysis of all of the available data. Some of the interpretations presented in this preliminary report, then, may later be elaborated upon or modified somewhat upon further analysis of the data.

Description of the Area

Hobart is the capital of Tasmania, and also its largest city, with a population of about 53,000 inhabitants. Covering about 18,972 acres, it lies about 12 miles above the juncture of the Derwent River with the sea. The city and its several suburbs comprise a metropolitan area of approximately 123,000 persons. To the west of the area are rugged mountains, dominated by Mt. Wellington at an altitude of 4,167 feet. The city is governed by a Lord Mayor, and Deputy Lord Mayor,

and ten aldermen. In addition to being the seat of government, Hobart has a fine deep water harbor used by over 600 vessels a year.

The topography of the southeastern part of Tasmania has been described as "... extremely rugged and ... dissected by deep valleys and precipitous gorges."¹ The coastline is highly irregular in design, and hills and mountains of up to 4200 feet in elevation are located within a very few miles of the coast. Hobart and other communities in this section of the island thus tend to be built up from the water's edge, with the business districts located close to sea level and residential areas being constructed on the foothills, or in some cases, on the lower reaches of mountains.

Vegetation in this part of the State is, as was noted earlier, basically similar to that found in portions of southern California. Eucalyptus forests are common to both areas, as is thick and persistent scrub growth. In Tasmania, however, the scrub commonly reaches heights of growth not seen in California. It is not uncommon for this scrub to be 10 to 15 feet tall and to be virtually impenetrable to human passage. The few level and gently rolling areas found in this part of the State tend to be covered with grasses which grow vigorously during spring but wither and dry out during the very dry summers which prevail.

Rainfall is relatively sparse, ranging from 20 to 40 inches per year, with often virtually no precipitation during the summer months of December to March. This, coupled with the continually moderate to warm temperatures creates a definite growth season (spring) followed by a period during which the vegetation dehydrates in the face of high temperatures and little, if any rain. Add to this climatic

situation the unusually volatile nature of the vegetation -- the eucalyptus trees and many of the shrubs in the State contain a large amount of oil in their leaves -- and the possibilities for forest and brush fires can readily be seen.

As would be expected then, fires are indeed common in southeastern Tasmania. Large tracts of government-owned forests not used for commercial, farming or residential purposes, plus the extremely low population density in the interior of the island provide vast areas for fires to originate and spread, with a minimal chance of being spotted by human observers. Often when fires are noticed in unpopulated areas in the deep forest or low-value brush land, no actions are taken to extinguish them. They are frequently allowed to burn themselves out, especially if they do not seem to have a potential for endangering lives or valuable property.

However, if a fire should happen to threaten a farm or a suburban area, nearby residents typically join in helping endangered persons fight the blaze. Such somewhat informal fire fighting efforts are part of the way of life especially in the more rural areas. In the past, such actions have kept fire losses relatively low and only one life in all of rural Tasmania had been lost in a fire prior to the recent disaster.

However, on February 7, "Black Tuesday" as it came to be called, conditions were at a maximum for a massive and destructive conflagration. December and January, normally dry months had produced only about 30 per cent of their normal rainfall. The Hobart area had received only 1.25 inches in rain in the preceding ten weeks and there had been no precipitation whatsoever since January 30. This drought was preceded by an unusually rainy spring which caused an abundance of

grass and brush growth. From Triabunna on the east coast to the southern tip of the island, forests and undergrowth had reached the tinder stage and conditions were highly favorable for the disastrous fires which followed.

Tuesday, the seventh, was predicted to be a day of extreme fire danger, but even the Bureau of Meteorology (i. e., the Weather Bureau) underestimated the severity of the weather conditions. At 9:00 a. m. the humidity was only 34 per cent and by midafternoon (3:00 p. m.) it had dropped to 13 per cent. The temperature soared to an all time record high for that date, reaching 102.8 during the early afternoon. The wind velocity rose at one point to 65 knots (approximately 75 miles per hour).

Fires which had been smoldering or burning slowly in the mountainous areas removed from the coast flared up under these conditions and began moving toward the southeastern coast including the Hobart area. New fires broke out as the near-gale force winds blew small trash and land clearance fires completely out of control. Flames swept across rural forests and the brush with amazing rapidity. Burning leaves and pieces of bark from the eucalyptus trees were blown far in advance of actual fire fronts, lighting new blazes as much as three to five miles ahead of the main front. In fact, as the fires developed, no one front could be easily identified. A multitude of isolated as well as occasionally interlinked fires spread, all moving in roughly the same direction. The mountainous terrain of course also played its part in the catastrophe, as canyons and valleys created strong local updrafts to fan the fires, and the rugged topography prevented fire fighters from reaching burning areas.

The Fire Fighting Organization in the Hobart Area

The Hobart Fire Brigade is chiefly responsible for fire control operations in the Hobart area. The Brigade comes under the authority of the Fire Brigades Commission of Tasmania, which consists of six members appointed by the Governor of the State. Under the provisions of the Fire Brigades Act of 1945, the Commission is responsible for determining policy regarding fire fighting organizations and services in Tasmania. The following are among the more specific duties of the Commission:

"to purchase, on behalf of boards, such classes of equipment as the Commission thinks desirable ...

take such measures for the standardization of fire brigade equipment as it considers necessary for the efficient and economical operation of brigades ...

take such measures as it considers necessary for the formation of new fire brigades, and determine the apparatus and appliances to be used by such brigades..."²

In addition to the Commission there are two fire brigade boards in the State. Each of these boards consists of five members likewise appointed by the Governor. The two boards are located in the municipal districts which are large enough to have permanently manned fire brigades. These districts are the Hobart and the Launceston areas; the latter is located in the northern portion of the island state. The responsibility of these boards is to carry out the policies set down by the Commission in accordance with the above-mentioned act. With regard to Hobart, then, the formal fire control system includes the Fire Brigades Commission of Tasmania, the Hobart Fire Brigade Board, and the Hobart Fire Brigade. The headquarters for all three units are located in the City of Hobart.

At the time of the disaster there was a total of 74 men in the Hobart Fire Brigade, including six executive officers. A chief officer was in command of the Brigade backed up by two assistant chief officers.

The main fire station located in downtown Hobart also serves as the headquarters for the Brigade. Here the greatest bulk of the Brigade, approximately 52 men on "Black Tuesday," is stationed. Additionally, substations are maintained in the nearby suburbs of Moonah, Claremont, and in Clarence. Each of these substations is usually manned by one officer and a few paid firemen. The fourth substation, Kingston, is normally manned by several volunteers.

The Brigade was sorely undermanned with respect to its extensive area of responsibility. It was expected to respond to fire calls in several other suburban communities in addition to those in which substations were maintained, as well as in Hobart proper. Furthermore, the Commission had assigned the Hobart organization the responsibility for controlling fires in a "bush fire area" which extended several miles outside of the main metropolitan suburban complex. This meant that the Brigade had to be oriented toward bush type as well as urban type fire problems. The Brigade's bush fire area of responsibility included the foothills a few miles to the west of downtown Hobart, and extended several miles into the mountains. The community of Ferntree, with about 350 inhabitants, was one of the main concerns in the mountain area of the Hobart Fire Brigade. This small village is about six miles to the west of Hobart.

To offset its manpower limitations, the Brigade heavily utilizes the services of citizen volunteers. Mention has already been made of the Kingston volunteer

substation. However, the greatest use of volunteers by the fire organization was in the aforementioned community of Ferntree. Here, approximately 102 residents were registered members of the Ferntree Auxiliary Fire Brigade. This organization of volunteers operated as an arm of the Hobart Fire Brigade and assumed much of the burden of providing fire protection for the village community. A fire warden, also a volunteer, was appointed by the Hobart Brigade to guide the auxiliary group. The pattern had been established that the Ferntree Brigade would respond to bush and other kinds of fires in its area and would call on the Hobart Fire Brigade for aid whenever a situation grew to such proportions as to tax its limited resources.

In addition to the citizens that are formally registered as volunteer or auxiliary firemen in support of the Hobart Brigade, various governmental officials in the greater Hobart area become involved, though less frequently, in fire fighting activities. For example, this is true of some of the councilmen in a number of the suburban communities. Thus, the fire fighting organization in the Hobart area is made up of professionals, auxiliaries and citizen volunteers.

Besides a shortage of manpower, the Hobart Brigade and its supporting units also suffered from a lack of modern equipment. Just as fire officials recognized the personnel problem, so they were aware of the need for more and newer equipment, but the financial resources required were not available. Consequently, the organization was not prepared to handle a major fire disaster. The lack of needed equipment was nowhere better demonstrated than in the case of the Ferntree Auxiliary Fire Brigade. The Hobart Brigade was supposed to provide this Auxiliary

with needed equipment. Yet, aside from such small items as pack pumps, the major piece of equipment made available to the volunteers was an old pump engine. As will be shown later, these two factors -- limited trained personnel and shortage of equipment -- proved to be very important during the fire emergency.

The Fire Fighting Effort of the Hobart Fire Organization

In the main, the immediate emergency period of the disaster lasted about 14 hours for the Hobart Fire Brigade and the other organizations that supported it in the metropolitan area. In terms of demands upon the Brigade, the crisis began to build up early Tuesday morning and reached its peak in the middle of the afternoon. By Tuesday night, although the organization responded to more fires, demands fell off substantially. Furthermore, by Wednesday the situation was such in the Metropolitan area that members of the Brigade could spend time cleaning equipment which had seen considerable use the day before.

The first hint of the impending disaster on Tuesday came at about 3:00 a. m. when a report was received in the dispatching room at the Brigade's headquarters in downtown Hobart. The information received was that a fire was rapidly developing in the mountain area several miles west of the city. This location was actually a few miles outside of the Brigade's area of responsibility for brush fires. However, officials were nonetheless concerned because if the fire moved in the direction of that area, it could eventually endanger even Hobart itself. The fire initially reported was near a hamlet called Neika, only four miles from Ferntree, which as said earlier, is within the jurisdiction of the Hobart Brigade.

Following routine procedure, the Hobart Brigade contacted by telephone the fire warden of the Ferntree Auxiliary and asked him to investigate the fire. Apparently this was one of several fires in southern Tasmania that had been burning for many days prior to the disaster, but had not been considered a threat because up to then it had not spread close to any populated area. However, the head of the Auxiliary observed that the fire was now burning several miles of brush land in the mountains near enough to Neika to pose a threat to the community. Consequently, sometime after 4:00 a.m. the Ferntree Auxiliary was called out. The Hobart Brigade also dispatched men and equipment. The intent was to contain the fire outside of Neika and prevent it from threatening Ferntree and other Hobart suburbs.

During the early morning hours of Tuesday, the Brigade committed approximately a fourth of its manpower and equipment to fires in the Neika and Ferntree areas. This force was led by the chief officer and the senior assistant chief officer. They did manage to save some buildings in the Neika area and until noon, worked with the idea of keeping the fire away from Ferntree. However, their efforts became increasingly unsuccessful. By about one o'clock thought was given to evacuating residents out of Ferntree and saving as many individual homes as was possible under the worsening circumstances.

By late morning and early afternoon, fires began to break out with increasing regularity in other suburbs of Hobart and the city proper. There fires flared up in widely separated places. They were apparently caused by sparks and ashes carried by the wind coming in from the mountain areas. A wide variety of buildings

of different kinds of construction were set ablaze.

Numerous calls for assistance came into the dispatching room of the headquarters of the Hobart Brigade. By one o'clock every available professional fireman had been dispatched (including all the men in the substations). In fact, at one point, there was just a single officer left at the headquarters station handling all dispatching duties. Every regular fireman in the Brigade who was not in the Fern-tree area -- from the main as well as the substations -- was out battling the many blazes within the city proper and adjacent suburbs. Thus, the picture in the Hobart area on Tuesday afternoon was one of very widely scattered fires being fought by greatly dispersed small clusters of professional fire crews.

As previously mentioned, around one o'clock the Hobart Fire Brigade and Ferntree Auxiliary personnel saw the need to evacuate residents from the Ferntree area. This became almost mandatory when the fire which came from the direction of Neika spread and was joined by two other fire fronts so that the Ferntree area was caught in a triangular wedge of advancing fires. The evacuation of the locality proceeded with the assistance of the Tasmania Police, as well as the State Civil Defense organization which provided some personnel and trucks for transportation.

The main fire fronts moved through Ferntree by approximately five o'clock in the evening. Fire fighting efforts continued in the area with elements of the Hobart Brigade and the Auxiliary group attempting to save individual residences rather than fighting the fire as a whole. The attempt was not too successful since out of around 156 homes, 100 were destroyed. (Ferntree was the hardest hit community in the Hobart metropolitan area.)

Although the Hobart Brigade continued to receive calls for assistance throughout Tuesday night and on Wednesday, the time between 1:30 and 5:00 p.m. (on Tuesday) was undoubtedly its busiest and most hectic period. During that afternoon, all of the regular fire fighting personnel were heavily engaged in fire fighting activities. This meant that a considerable number of untrained volunteer assistance had to be used. Some such personnel were provided by the Army; still others by the Civil Defense organization. City councilmen in several of the suburbs also joined in the fire fighting effort on Tuesday. However, the vast majority of the additional manpower utilized by the Brigade consisted of untrained citizen volunteers.

Between 1:00 and 1:30 p.m., partly in response to a radio broadcast appeal, hundreds of persons showed up outside of the organization's headquarters in downtown Hobart. Others milled inside the building. For hours, as said earlier, only one fire official remained at the headquarters with the responsibility for sorting the hundreds of volunteers into small crews, giving them whatever equipment was still available, and dispatching them to the numerous fires. Furthermore, these untrained persons almost always had to be sent out unaccompanied by a trained officer or fireman because none were available. Of necessity, there was a certain amount of confusion in the situation.

During this period of greatest activity, materials and equipment needed for fire fighting were exhausted. This situation was temporarily alleviated when the Army and several businesses which sold fire equipment donated some equipment to the Brigade. However, after a brief period, this supply also was exhausted. At that point, the volunteer crews were sent out into Hobart to fight fires with

only wet bags. Their instructions were not to approach homes that were burning badly, but solely to attempt to protect nearby residences and such buildings where there were only minor blazes.

The critical stage of the disaster was essentially over for the Hobart Brigade and its backup units sometime after 5:30 p.m. on Tuesday. As far as the Hobart area was concerned many of the initial fires were either extinguished by this time, had burned out, or were coming under the control of fire units. Also, fewer new fires were breaking out in the area. Indeed, one indication that the critical point had been passed was the fact that a number of the regular officers and firemen of the Hobart Brigade began returning to their headquarters early Tuesday evening.

The Police Organization in Tasmania

Police in Tasmania are under State control, under the Minister for Police, rather than local jurisdiction as in the United States. A Commissioner of Police is in active control of police activities, assisted by a Deputy Commissioner. Four main structural groupings exist, including Administration, Traffic Control, Criminal Investigation Branch, and Uniform Branch. Of these four, the Uniform Branch is the major administrative grouping, and is organized into four geographical districts: Northern, Southern, Central and Northwest. The Southern District is the largest entity, both geographically and organizationally. This District includes the Hobart area in which both State and District offices are located. Within the Southern District, headed by a Superintendent, there are four divisions (Hobart, Huonville, Glenorchy, and Bellerive), each under the direction of an Inspector.

Total police strength in the State of Tasmania as of June 30, 1966, was 675 men and women. Of these 113 were under the Criminal Investigation Branch, with the remainder split fairly evenly between Traffic and Uniform Branches. The largest number of men in the Southern District are stationed in Hobart where there are 37 stations. Also located in that city is the radio section which is equipped for communication with all other states in Australia, other districts in the State of Tasmania, and local radio-equipped cars. The Police Search and Rescue Squad, part of the Emergency and Rescue organization, is likewise stationed in Hobart. This unit is supposed "to initiate and direct police activity in the event of an emergency of any nature."³

Police Activities in the Disaster

On February 7, the Hobart District's day began normally enough for the police. Then about 10:00 a.m. a call was received from the New Norfolk area, about ten-fifteen miles northwest of Hobart reporting a large brush fire in that locality. (In terms of the initial response to fires, the police direction wise went northwest whereas the firemen had gone southwest to Ferntree.) Acting on this information, the Inspector in charge of the Emergency and Rescue Organization went with a small contingent of men to the area. They assisted the locally based police in organizing volunteers, collecting and deploying equipment, and generally aiding in the fire fighting effort. These men remained in that vicinity until Tuesday evening. Most of the time this unit was without communication with the Hobart headquarters, since the radio equipment available to the men in the field was incapable of sending or receiving signals across the rough terrain separating the

two communities. Since the raging fires burned many telephone lines and poles, this mode of communication was likewise generally blocked. The Inspector in charge did manage to get through to Hobart (circa 2:00 p.m.) and was requested to return with his men to bolster police operations in the Hobart area. He was unable however to do so for several hours because of the seriousness of the fire situation at New Norfolk. Thus, an important emergency group of the police organization, at the most critical times of the fires in Hobart, was spatially distant from the city itself.

After the dispatch of the men to New Norfolk, police activities also increased markedly after 10:00 a.m. in Hobart. While no special actions were taken by the Commissioner or other operational heads during the morning, individual officers in the field started on their own initiative to engage in numerous fire-related activities. As midday passed and the fire situation in and around the city grew more serious, the police began the first steps toward organizing for a large scale disaster. During the early afternoon a liaison was established with the Fire Brigade in Hobart (although the exact function of this liaison officer seems to have been indefinite) and police officials asked commercial radio stations (by the end of the afternoon only one station remained on the air) to broadcast requests for volunteers. These volunteers were to report to either the Police headquarters or the Fire Brigade headquarters for assignment to fire fighting details.

During this particular time period, the police faced a very definite traffic problem. This is a usual difficulty that arises in disasters, but it was compounded in this particular emergency by two somewhat unusual factors. Not only were a

number of roads -- primarily near the periphery of the city -- blocked by fallen trees and burned vehicles, but commercial radio was transmitting a multitude of personal messages from various individuals which urged friends and relatives to return home to protect their own residences. Thus, a large number of police officers had to be detailed to traffic duty in and around the city.

It can therefore be seen that police activity on Tuesday was divided between the metropolitan area of Hobart and the rural areas removed from the city. Within and just around the city, the police aided the Fire Brigade, helped in public evacuation, organized volunteers, undertook search and rescue work, and directed traffic, but engaged in a minimum of actual fire fighting. In the rural areas instead, police officers were more directly involved in fire fighting, in large part because of the lack of an organized fire control agency outside of the metropolitan zone. Volunteers, policemen and rural fire wardens all worked closely together in rural fire fighting, and such organization as did emerge was probably due chiefly to the efforts and directions of the police officers. (The equipment itself, however, was primarily obtained from the Forestry Commission, and consisted chiefly of knapsack pumps, beaters, and other hand items.)

During Tuesday afternoon, while the police performed all these tasks, it does not appear that they followed a master plan or that assignments were made by a master control center in Police headquarters. Rather it seems that the men in the field took it upon themselves to handle such immediate problems as they encountered, with a minimum of central control or direction. Thus, while higher echelon officers did apparently know what in general their men were doing and

where, the role of headquarters at this point was more a supervisory than a directive one. The variety of tasks were thus carried out with varying success.

However, by Wednesday morning the picture changed drastically. The night was used to good advantage to plan a more coordinated response. For example, by morning a registration procedure had been established for volunteers. Special constables were appointed to supplement the regular police personnel. Also on Wednesday morning, the Police Commissioner was appointed head of relief and rehabilitation efforts in Tasmania, and so he was able to exercise considerable authority in organizing inter-organizational cooperation. After Wednesday, almost all of the disaster-related police efforts were in the areas of search and clean-up.

Organization of Fire Fighting in the Rural Areas

Fire control in the rural areas of Tasmania is handled by two organizations, the Forestry Commission and the Rural Fire Board. The Forestry Commission is responsible for fires on Crown land (i. e., State forests), while the Rural Fire Board is responsible for fire control on private property. The former organization, of course, has other more general responsibilities also.

Established in 1920, the Forestry Commission operates under the Minister for Forests and is responsible for all matters related to State forests. The operational head of the Commission, the Chief Commissioner of Forests, directs several branches including the Silviculture and Fire Protection Branch. This segment of the organization is responsible for detection, observation, and control of fires on State lands, and has at its disposal a moderate amount of fire fighting

equipment. Among the latter are such items as observation planes, mobile radio units, knapsack pumps, and other types of basic hand fire fighting equipment.

Although the basis of a fairly sophisticated fire control organization has been laid, it has not been developed, and the Commission still leans heavily upon informal methods of information collection and assessment. For example, one individual has almost total responsibility for receiving and evaluating information received from foresters in the field and for organizing response to fires in all parts of the State. Central radio control in Hobart consists of one man operating a radio set and relaying information to the "decision-maker" in the downtown office via telephone. As will be noted later, this system is vulnerable to problems in times of extreme emergency.

The Rural Fire Board, on the other hand, has responsibility for fire control on rural private property -- in other words, all that which is not within the jurisdiction of the Fire Brigades or of the Forestry Commission. The Board itself is composed of eight men, representing the police, the Forestry Commission, the Fire Brigade Board, labor unions, farmers, and municipalities. The Board operates on a very small budget (\$28,000 per year), members serving without compensation. It is responsible for appointing and directing rural fire wardens throughout Tasmania. The State is divided into 29 districts, with a chief warden in each. These districts are further subdivided, with local wardens responsible for small areas, normally areas small enough to be visually surveyed from their residences. These local wardens are the operational units of the Rural Fire Board. All serve voluntarily and have authority to issue burning permits and organize

fire control efforts in their own locales. Few, if any of these men have any formal training in fire prevention and control, and the equipment at their disposal is most rudimentary, at best consisting of a few knapsack pumps and beaters. Heavy reliance is placed upon volunteer assistance and normal farm equipment as a means of combating fires.

Activities of Rural Fire Fighting Organizations

Of all the organizations in southeastern Tasmania, the Forestry Commission was probably the most alert to the possibility of large scale fires prior to February 7. This was because of the fact that it is the only organization actively dealing with fire control in the forest and brush areas that has the professional personnel and observation facilities required to keep up to date on fire potential. On Sunday, February 5, the individual in charge of the fire control sector in the Forestry Commission obtained a weather forecast from the Meteorology Bureau which projected extreme fire danger for Monday and Tuesday, with special emphasis on Tuesday. Acting upon this data, he prepared press releases which were transmitted via commercial radio and newspaper (in Hobart) which informed the public of the danger and included instructions aimed at minimizing the incidence of man caused fires. As noted earlier, a number of fires were burning Sunday and Monday in various parts of southeastern Tasmania, but none of these were considered serious threats to populated areas.

Early Tuesday morning, the Commission received fire reports from places near New Norfolk. These indicated very serious fires, and by 9:30 a.m. the Fire Prevention Officer concluded that the problem would increase in magnitude as the

day passed. He therefore contacted the Commissioner of Police and the two discussed the possibility of declaring a state of fire emergency in the area. No decision was reached at this point on the declaration, both parties agreeing to wait for further developments.

By 11:30 a.m. the Fire Prevention Officer had obtained data on the fires in the vicinity of Neika and Ferntree. Acting on this information, he prepared a special press release for dissemination over local radio stations. This statement urged the populace to keep houses closed. It further suggested that spouts be plugged with tennis balls and that the gutters on roofs filled with water to minimize the possibility of burning brands igniting the litter which inevitably collects in such places.

Immediately after this, he again contacted the Police Commissioner and the two began to set in motion the process of declaring a state of fire emergency. By 2:30 p.m. the State Minister for Forests had been contacted and he agreed to the declaration. It went into effect that evening.

Meanwhile, district foresters throughout the southeastern quarter of Tasmania were attempting to fight massive fires with the equipment available, and having little success. Their efforts were primarily organized on a local basis, each forester depending upon the resources at hand and relying upon volunteer assistance and scattered aid from local fire wardens and policemen. The fire wardens were having no better time of it on private land. Here the picture was entirely one of volunteer organization, with fire wardens and police officers attempting to structure the effort. In the rural areas, as in the Hobart metropolitan area, the wind

change which occurred late in the afternoon was the one factor which prevented even more severe damage than that which did occur. Had this not come about, it is highly unlikely that the fires could have been prevented from destroying most of the farms and forests which were threatened earlier in the day.

Special Problems of Fire Fighting Organizations

There were certain non-organizational conditions and circumstances during the disaster that seemed to affect in particular the effectiveness and efficiency of the fire fighting operations. At least on the basis of field observations, they appeared to pose special problems. While only a later and more systematic analysis of all the data will show to what extent this was actually the case, some tentative impressions regarding non-group factors creating organizational difficulties will be noted here.

1. Low water pressure. The Hobart metropolitan area water system can supply about 40 million gallons per day.⁴ Under normal circumstances, there are no problems in using the same water supply both for domestic and industrial consumption, and for routine fire fighting purposes. However, during the fire emergency individual home owners throughout the metropolitan area used an extraordinary amount of water in attempting to protect their property by hosing down their homes and adjacent land. As a result, in many sections in and around Hobart, the water pressure was significantly reduced. Consequently, on many occasions, fire crews were seriously hampered in their efforts, lacking either enough water or pressure.

2. The erratic pattern of the fires. There seemed to be no discernible pattern to the direction of movement of old fires and the breaking out of new ones. Abrupt changes in the distribution and spread of fires constantly plagued fire crews. For example, fire fighters would be trying to control what appeared to be a fire front when, without warning, new fires would flare up and engulf homes and areas yards behind them. Firemen and other persons used such terms as "they just exploded" in an effort to describe the "leap-frog" nature of new blazes. This situation of course frequently led to partial entrapment and temporary isolation of many fire crews. The already discussed widespread distribution of fires throughout metropolitan Hobart and other areas, of course, forced a parallel dispersion of the limited trained manpower and equipment resources of the fire suppression units. This alone created major problems of coordination, control, and communication among the involved organizations (although as already stated still other conditions contributed to these problems).

3. The lack of equipment. There was neither enough nor appropriate enough equipment. In and around Hobart, volunteers had to be sent out to douse blazes with wet bags when other equipment was exhausted. Milk and other tank container types of trucks were pressed into service to transport water, but were of limited usefulness lacking a pressurized fluid ejection system. In the rural areas, personnel fought massive fires at times spread over dozens, if not hundreds, of square miles with knapsack pumps. The equipment problem is of course understandable both in terms of the prior history of fires in Tasmania, and the lack of financial resources to amass the necessary items. However, this meant that even if

organizations had been structurally prepared for the kind of emergency that "Black Tuesday" presented, they still would not have had the material resources to do an adequate job.

4. The rugged terrain. The topography of the land presented no special fire fighting difficulties in Hobart, but was a major factor in the back country. In many instances the rugged nature of the terrain made it difficult, if not impossible, to reach a fire front. In these cases it is doubtful if any kind of equipment, with the exception of airplanes, would have been of much use. Not only is the terrain hard to cope with, but the lack of a developed road system in the back country would have precluded the movement of much heavy fire fighting equipment. Yet, because of the conditions mentioned earlier, many of the fires simply could not be left alone as is normally the case. The fire fighting groups had to make an effort to control the situation before it threatened populated areas and cultivated land. However, these organizations faced almost insurmountable barriers to easy movement on "Black Tuesday."

Some General Observations and Conclusions

1. The demands of the disaster situation far exceeded the capabilities of the involved agencies and groups. They were drastically understaffed in professional personnel to handle a situation of the magnitude that occurred. Further, many of the organizations were rather loosely organized particularly with regard to important administrative and standard operating procedures. For example, no one in the Hobart Brigade had the responsibility of keeping a systematic record of what

areas in the community were threatened or had undergone fires. There was not even a map of the metropolitan area in the dispatching room of headquarters on which might have been plotted the location of the fires, as well as the places to which crews had already been dispatched. The Hobart Brigade, as well as many other organizations involved on "Black Tuesday," were not structurally organized to obtain and process needed information, and to arrive at quick but broad decisions based on an overall view of the emergency. The groups had limited capabilities; demands far more limited than the fires presented would have created difficulties.

The problem was even more acute in the rural areas. This was true on several different levels. There was little structure to local fire fighting efforts, heavy reliance being placed upon the ability of volunteers to coordinate informally their efforts with one another. Similarly, there was virtually no overall coordination of fire control. Each district was left to respond to the threat in its own way. There was no central authority controlling the dispersion of equipment and manpower between districts. Given the miniscule budgets and scanty professional manpower available to both the Forestry Commission and the Rural Fire Board, it is not surprising that there was little in the way of an organizational framework, plans or sets of priorities. This meant however that capabilities of the rural organizations were even less than those of the urban groups, but with great demands in both instances.

2. Poor communication was a significant feature of this disaster, as it is in most large scale emergencies. The Hobart Fire Brigade, the Tasmania Police, and the organizations functioning primarily in the rural areas all had difficulties

on this score. Communication problems were both of an intra- and inter-organizational nature.

Vehicles of the Hobart Brigade have radios. Yet these radios were of no use to crews operating in the Ferntree area because the mountainous terrain made them inoperable. Furthermore, the numerous volunteer crews -- those composed of members of the Ferntree Auxiliary as well as those composed of "walk-in" volunteers -- did not have radio equipment available to them even when working in non-mountainous areas. Of course, given the lack of prior planning, training and overall control of their use, the availability of numerous radios would probably have led to a massive "communication jam" rather than an orderly and useful flow of messages.

Compounding the problem, was the inability of the telephone system to serve as an alternate or substitute means of communication. For one thing, considerable telephone equipment was damaged by fire in the Hobart area. Although the system never completely failed, the damage did cause some sections of the metropolitan community to be without service. Moreover, the heavy use of the phones by the public hampered their use by fire fighting organizations. For example, fire personnel found it very difficult to contact the Brigade headquarters during the height of the disaster. There were six lines which served the headquarters, but these were almost always tied up with calls from the public.

At the height of the disaster on Tuesday afternoon then, there was hardly any communication between fire fighting crews out in the field (even between those working very close to one another) or between the downtown headquarters and the

fire crews operating in the metropolitan area. Thus, there was little or no information exchange between units. At several points during the disaster, crews were isolated and trapped by fires for a number of hours. Yet at the time, headquarters had no knowledge of this (indeed, the whereabouts of the chief officer of the Brigade was not known for several hours), nor did other crews receive any information about this dangerous situation.

The police also had communication problems in this emergency. The police radio communication system, while somewhat more effective than that of the Fire Brigade, was still not wholly successful when field units were operating in mountain areas. This fact, plus the inevitable surge of calls from the public, contributed to a definite intra- as well as an inter-organizational communication problem. There was no central information point. Telephone lines were so jammed that it was very difficult to communicate with other groups and agencies involved in the disaster.

Communications between emergency organizations and the public also posed serious difficulties. The already mentioned jamming of the phones in the fire and police headquarters by incoming calls was not the only problem. The police, for example, attempted and were successful in having certain general messages to the public transmitted by commercial radio. However, this information was interspersed between other general and personal messages which the police partly considered inaccurate and certainly contributed to the traffic control problem in and around Hobart. (As already noted, at one point Tuesday afternoon many persons at work received personal messages of an emergency nature regarding

their homes and relatives -- this led them to return to their places of residences, thus adding to the already heavy emergency traffic flow.) To what extent the strong police complaint that incorrect news was broadcast is a valid criticism is beyond the DRC data, but if almost all prior disaster studies are a guide, the mass media outlets probably did issue false, misleading and dramatized information.

There is no question, however, that organizations did receive inaccurate information from the public. For example, fire crews in Hobart found themselves answering calls where they were not needed. Persons phoned in requests for aid at particular addresses which proved, upon investigation, not to require firemen.

3. In general, the organizational response to the disaster was characterized by a lack of coordination within and between organizations. By and large, the Hobart Brigade worked apart from other organizations involved in emergency activities. Furthermore, there was little coordination between crews in the Brigade; they functioned to a considerable degree as independent units. The nature of the highly uncoordinated nature of the fire fighting responses in the rural areas has already been discussed in detail. The police operation, too, was not highly coordinated and lacked central control. While some important decisions were made at police headquarters, most officers in the field were permitted to select their own tasks and procedures especially on "Black Tuesday."

One consequence of the lack of coordination was that a set of priorities never developed during the emergency. That is, there was never any explicit (and seemingly also implicit) understanding where the major fire fighting efforts ought

to be concentrated, what areas if any ought to be abandoned, how different future contingencies (such as a partial or total evacuation of Hobart) might be handled, etc. The only thing that developed which anywhere approached a "policy" was that there was a tendency of fire fighters not to expend water and other kinds of resources on homes and buildings that appeared beyond saving. With each organization working on its own (and often the personnel of each working alone or in small groups), no overall priorities could emerge and none did.

4. When an organization faces a crisis without adequate manpower, it will often turn to the use of volunteers. This kind of adaptation may solve some of the emergency problems. However, since in almost all instances volunteers are untrained and unskilled for the required tasks, organizational difficulties are often not ameliorated in any major way.

This is what happened in the instance of the Hobart Fire Brigade. The headquarters of the Brigade was deluged with well-meaning persons trying to volunteer their services. However, the majority of these persons had apparently never fought fires and did not possess the most rudimentary knowledge of how to proceed. Few knew anything of the equipment that was made available to them. Furthermore, the Brigade was totally unprepared to sort, "train" and dispatch the volunteers. Only one regular fire official was present at headquarters; seemingly no plans existed on how volunteers were to be utilized. This harassed officer, who had many other duties, had to improvise some kind of "organization."

Even when the volunteers were sent out as crews, their effectiveness was probably low. They were generally unsupervised by regular firemen who were all

out with their regular units and had been so since much earlier in the day. Few regular firemen were even later reassigned to supervise volunteer crews. This seemed to result from the isolation of some of the crews of regular firemen, the generally poor communications as well as a lack of knowledge on the part of the organization where their volunteers were operating.

The police also lacked experience or plans for a disaster of this sort, and specifically for the utilization of volunteers on a large scale. The only prior experience the Department had had with volunteers was some years ago during a flood. But the number employed at that time was quite limited, compared with the nearly 4,000 volunteers who were registered at headquarters on Wednesday. Of course by that time, also, the peak of the emergency was over.

A final overall conclusion that can be drawn is one that continually comes to the fore in the study of disaster after disaster. It is that good intentions, hard working individuals, responsible officials and even abundance of manpower -- all visibly present in Tasmania -- cannot compensate for lack of organization and appropriate resources. In this fire situation, there were less adequate resources at hand than is usually the case in most disasters in American communities. However, even if resources had been available, it is perfectly clear that there was no organizational structure to maximize their use (although some Tasmanian officials fully recognized the problem). The necessity of having an appropriate social organization for dealing with large scale catastrophes is reinforced again by what was observed in this fire disaster. The logistical, technical and engineering aspects have to have an implementing organizational structure.

FOOTNOTES

1. Walch's Tasmanian Almanac for 1965-66 (Queenstown, Tasmania: J. Walch and Sons, 1965), p. 23.
2. Taken from the Fire Brigade Act.
3. Report of the Commissioner of Police (Tasmania, Australia: Government Printer, 1966), p. 10.
4. Walch's Tasmanian Almanac for 1965-66, op. cit., p. 369.