Report to the Minister of Justice and the Attorney General

on the

Public Fatality Inquiry

into the deaths of

Marjorie Catherine Big Plume and Joseph Angus M. Big Plume

CANADA
PROVINCE OF ALBERTA

Whereas a Fatality Inquiry was held at the Provincial Courthouse at 323 - 6th Avenue South East in the City of Calgary, Alberta, on the 13th and 14th of November 2001 and, by adjournment, on the 4th day of February 2002 before the Honourable L.S. Mandamin, a Provincial Court Judge.

And Whereas the Fatality Inquiry was held into the deaths of Marjorie Catherine Big Plume and Joseph Angus M. Big Plume both of the Tsuu T'ina Indian Reserve in the Province of Alberta. A jury was not summoned.

The following findings are made:

[1] **Date and Time of Death:** The deaths of Marjorie Catherine Big Plume and Joseph Angus M. Big Plume occurred on April 2, 1999 likely some time before 10:40 p.m.

[2] **Place:** The deaths occurred at House No. 145 on the Tsuu T'ina Indian Reserve, Alberta

[3] **Medical Cause of Death:** The medical cause of the deaths of Marjorie Catherine Big Plume and Joseph Angus M. Big Plume was the inhalation of smoke and gases generated by fire.

[4] **Manner of Death:** The manner of the deaths of Marjorie Catherine Big Plume and Joseph Angus M. Big Plume was accidental.

[5] **Circumstances under which Death Occurred:** Marjorie Catherine Big Plume and Joseph Angus M. Big Plume resided at House No. 145 on the Tsuu T'ina Indian Reserve. Marjorie Big Plume was 73 years of age and her grandson, Joseph Big Plume, was six years old. Also residing at the residence, but not home at the time of the house fire, was Lynne Big Plume, daughter of Marjorie Big Plume and mother of Joseph Big Plume.

[6] House No. 145 was located southeast quadrant of the Tsuu T'ina Reserve. 146th Avenue borders the Reserve on the south. A little after sunset on April 2, 1999, a witness driving westward on 146th Avenue saw the house fire and drove into the driveway. He could observe flames climbing the inside walls of the kitchen of the house. He also observed a great deal of smoke as well.

[7] The witness did not see anyone in the house. He decided to try to find a phone and left the scene. He met another person in a vehicle who called in to report the fire using a cell phone. By the time he returned, mere minutes later, the flames were coming out of the roof of the house.

[8] The Calgary Fire Department dispatched fire fighting units at 22:40 and the first Fire Department vehicle, a tanker unit, arrived at the house fire at 22:45. By this time, a large volume of smoke was generated by the fire and flames were emerging through the southeast corner of the house. The roof had collapsed. By 22:51, the

house fire was fully involved and by 23:00 the fire had spread to the basement of the house.

[9] The bodies of the two deceased were found in the northeast bedroom at 23:30 after the fire was extinguished. Marjorie Big Plume was found lying on her left side between two beds. She was clothed and clutching a child's sweat pants. Joseph Big Plume was also clothed. He was lying near Marjorie Big Plume at the end of one bed. A pair of child's running shoes were found near his body.

[10] A number of questions were reviewed during the course of the fatality inquiry. These included:

- Cause of the Fire
- Cause of Deaths
- Fire Fighting Response Time
- Presence of Smoke Alarms
- House Exits
- Cooking Oil Fires

[11] *Cause of the Fire:* Two Fire Investigators testified, George Alvin Hands, Fire Inspector, Alberta Safety Services, and Raymond Thomas Littlechild, Fire Protection Manager for the Maskwachees Fire Department, Samson Cree Nation. Both Hinds and Littlechild have previously investigated fires and provided expert testimony on the cause of fires.

[12] Mr. Hinds had been contacted by RCMP Constable Big Smoke to conduct a fire investigation.

[13] He testified that the southeast corner of the house where the kitchen was located suffered the greatest degree of fire damage. The kitchen had been totally engulfed

in flame and destroyed. A stove was located in the kitchen. The wall behind the stove had been almost completely burned by the fire.

[14] There was a cast iron frying pan on the left back element and a pot on the right front element. The area beneath the frying pan was scorched. An aluminum pot on the right back element had partially melted. All the controls and timers in the control panel on the back of the stove had burned away and the metal of the control panel in the vicinity of the frying pan had oxidized so rapidly that rusting had occurred. In contrast, the burn pattern in the remainder of the house exhibited a slower natural burn pattern.

[15] Mr. Hinds concluded the fire began at the left back element where the frying pan was located. From this point the flames spread to the overhead cabinets and wall behind the stove, then to the upper ceiling and roof and eventually the remainder of the house.

[16] He believed that the cause of the fire was the ignition of a combustible food product by the heating element.

[17] Mr. Littlechild was also asked to conduct a fire investigation by the Tsuu T'ina Fire Chief. He was the Fire Protection Manager for the Maskwachees Fire Department of the Samson Cree Nation. Prior to assuming that position, he had been the Director of the Treaty First Nations Firefighter Association of Alberta and had conducted fire investigations on First Nations Reserves and had given evidence in court about his investigations. He was familiar with life on First Nations Reserves.

[18] Mr. Littlechild's separate investigation reached the same conclusion as that of Mr. Hinds. Because of his familiarity with First Nations customs, he added that it was

his opinion that Marjorie Big Plume was making fry bannock with cooking oil in the frying pan that was on the stove. He concluded that the oil became overheated and caught fire once the oil reached an ignitable temperature.

[19] Mr. Littlechild was of the opinion that the fire would have risen towards the ceiling, then radiated down and, once it got into the heat ventilation system, then spread rapidly through the house.

[20] The fire investigators did not find any sign the fire started elsewhere. A secondary fire had started in the basement but that fire began as melted plastics from a burning polyvinyl chloride drain pipe dripped onto and ignited some clothing in the basement.

[21] An RCMP investigation ruled out the possibility of arson.

[22] *Cause of Deaths:* The fire investigators testified that toxic fumes are generated in a house fire. The various products of combustion were the result of burning plasters, plastics, synthetics and other materials. The burning material generates carbon monoxide, cyanide gas and other toxic fumes.

[23] Dr. Pauline Alakija was qualified as an expert in the area of Forensic Pathology. She conducted an external examination the bodies of the deceased. She was able to determine the cause of death from the external examination and autopsies were not required.

[24] Joseph Big Plume had heavy soot deposition around his nostrils and mouth. His skin was cherry red in colour indicating inhalation of poisonous carbon monoxide or cyanide. He did not have any skin burns. The toxicology report recorded a level of 75 percent saturation of carboxyhemoglobin in his blood. Dr. Alakija

testified that Joseph Big Plume's death occurred as result of inhalation of smoke and gases, in particular, carbon monoxide.

[25] Marjorie Big Plume also had soot around her nostrils and mouth. Her skin was a cherry pink colour. The toxocology report recorded a level of 58 per cent saturation of carboxyhemoglobin in her blood. She did have some burns on her face and head which Dr. Alakija believed occurred after death. Dr. Alakija concluded Marjorie Big Plume also died of carbon monoxide poisoning.

[26] Dr. Alakija testified that, in a house fire, a person is not only breathing in soot and smoke but is also suffering from a lack of oxygen. The person would become nauseous and dizzy, experience headaches and progress to feeling drowsy, enter into a coma, and expire. The person may be overcome in a matter of seconds or minutes.

[27] *Fire Response Time:* The Tsuu T'ina Nation has an agreement with the City of Calgary wherein the Calgary Fire Department responds to major fires.

[28] The first witness testified that he left to find a phone. He met another person who used a cell phone to call in to report the fire. When he returned, a few minutes later, the flames were emerging from the roof.

[29] The Calgary Fire Department units were dispatched at 22:40. The first unit, a tanker truck, arrived on the scene at 22:45, five minutes after the dispatch. Calgary Fire Department Captain Bruce Kniss arrived 22:51 in a pumper unit. Another pumper unit arrived at 22:54 and an aerial unit arrived at 23:10. A bush buggy unit arrived at 23:19. In addition, other firefighting units arrived from Priddis and District of Rocky View Fire Departments.

[30] The first Calgary Fire Department firemen on the scene reported the house was fully involved in the fire and the roof had collapsed by the time they arrived.

[31] Ultimately, about ten fire fighting vehicles and approximately 25 firefighters responded to combat the house fire.

[32] Captain Kniss testified that a response of five minutes from the time of dispatch to arrival of the first unit was a good response time and consistent with usual Calgary Fire Department operations.

[33] I agree the five minute response from time of dispatch was a good response time.

[34] *Presence of Smoke Detectors:* Mr. Littlechild testified that he observed the remains of a smoke detector hanging from the wires in the lower level of the house. He concluded the smoke detector had been hardwired, that is it drew its power from the electrical system. He suspected that another smoke detector would have been installed on the main level of the house.

[35] Don Macleod, counsel for the Tsuu T'ina Nation, advised the Fatality Inquiry that he confirmed with the electrician who installed the smoke detectors that there had been two smoke detectors in the house, one on the main level and the other in the basement. The electrician said the smoke detectors were hardwired and interconnected so both would alarm if one was triggered.

[36] The electrical panel switch to the smoke detectors was in the 'off' position. Both fire investigators testified that there was no way of knowing whether the switch had been turned off or tripped when the fire melted the wires thereby shorting out the electrical circuit.

[37] I conclude that the house was properly equipped with smoke detectors.

[38] *House Exits:* The Fire Investigation Report by George Hinds concluded that the exits through the front and side doors would have been blocked because of the fire in the kitchen and living room area making it impossible for the elderly Marjorie Big Plume and her young grandson to escape.

[39] It is clear from their positions and their degree of dress that the deceased were overcome by the smoke and toxic gases while dressing in the bedroom prior to any attempt to exit the house.

[40] The house had a front entrance which led both to the main level and the basement. It was situated between the kitchen and the living room with the kitchen stove located against the wall separating the kitchen from the front door stairwell. A second exit was located on the east wall of the kitchen. A third exit was located in the basement. Attached is a copy of Exhibit #11 showing the layout of the house.

[41] Mr. Littlechild was of the opinion that the layout of the exits would have made little difference in this tragic event.

[42] In my view, given the rapid rate which a cooking oil fire would spread and the volumes of smoke and toxic gases generated, the house exit layout was not likely a significant factor in the deaths.

[43] *Cooking Oil Fires:* Mahendra Wijayasinghe, a Planning Officer for the Alberta Government, analyses fire statistics. Two of his articles, "*Cooking Oil: A Home Fire Hazard in Alberta, Canada"* Fire Technology, Second Quarter, May/June 1997, and "*Fire Losses on First Nations Reserves in Alberta*" Alberta Fire News, May 1998, were entered as exhibits.

[44] The introduction to Mr. Wijayasinghe's first article, *Cooking Oil: A Home Fire Hazard in Alberta, Canada,* succinctly summarizes the essential facts:

> *Few people realize that cooking oil heated to high temperatures can release flammable vapors that can ignite. Cooking fires, the majority of which originate when cooking oil ignites, remains the leading cause of home fire injuries. Analysis of Alberta fire loss data over the five-year period from 1988 to 1992 shows that cooking equipment accounts for 30% of home fires, leading the list of home fire ignition sources. Cooking oil comprised the material first ignited in 69% of all cooking-equipment-related fires. The most frequent ignition scenario in Alberta homes is "overheated cooking oil in a pot or pan on a stove top."*

[45] The article also noted that of all stove top fires, 62% were in deep-fat fryers or pots, 29% were in pans. Only 1% of cooking oil fires occurred in portable electric deep-fat fryers.

[46] Mr. Wijayasinghe provided updated information on cooking oil fires in Alberta homes. This information included the following facts:

- 32% of fires in Alberta homes happen in kitchens
- cooking equipment was involved in 90% of kitchen fires
- cooking oil is the material first ignited in 68% of cooking equipment fires
- 91% of most cooking oil fires on stove-tops involve pots and pans
- 79% of acts or omissions in cooking oil fires involved overheated cooking oil

[47] Mr. Wijayasinghe testified that while cooking oil fires were less of a problem in First Nations settings than non-First Nations settings, cooking oil fires were still a significant fire problem ranking as the 4th leading cause of First Nations home fires.

[48] The various safety measures recommended to prevent cooking oil fires were:

- use of a thermostatically controlled deep-fat fryer;
- education about the importance of attending to cooking and use of lower temperature levels;
- use of heat, smoke and gas detection devices in stoves which shut of the burner or element (these devices have been researched but are not publically available); and
- use of a thermometer to monitor cooking oil temperatures (this measure was not regarded as particularly viable).

[49] The measures recommended by Mr. Wijayasinghe in the event of a cooking fire occurrence were:

- use of a tight fitting lid to extinguish a small fire;
- correct use of a fire extinguisher of the appropriate type; and
- most important, evacuate all persons in the dwelling place and call for help if the cooking oil fire is more involved.

[50] **Recommendations for the Prevention of Similar Deaths:** On consideration of the evidence and submissions heard in this Fatality Inquiry, I would make the following recommendations:

1. *It is recommended that fire public prevention programs for Albertans and First Nations continue to stress*
   - *i. that cooking oil fires are a leading cause of residential fires and care is required when deep-frying;*
   - *ii. that attention must be given to the task at hand when deep-fat frying with cooking oil including care to use lower heat levels; and*
   - *iii. that use of thermostatically controlled deep-fat fryers are a desirable safe alternative to stove top pots and pans for deep-fat frying.*

2. *It is recommended that fire safety visits be made to First Nations homes, particularly those of elders, and that the visits include*

   i. a regular systematic fire prevention inspection such as that developed by the Muskwachees Fire Department (attached)

   ii. specific checks to ascertain smoke detectors are in working order;

   iii. specific checks to ascertain kitchens are equipped with appropriate fire extinguishers and the residents know how and when to use the fire extinguishers;

   iv that the residents understand the importance of giving priority to evacuation of all persons from the residence where a fire is escaping control; and

   v. that the residents identify alternate escape routes should regular exits be blocked by fire.

Dated this 7th day of August, 2003

The Honourable L.S. Mandamin
A Judge of the Provincial Court of Alberta