Ministry of Justice
Coroners Service
Province of British Columbia

File No. :2012:0607:0045

VERDICT AT CORONERS INQUEST

FINDINGS AND RECOMMENDATIONS AS A RESULT OF THE CORONER'S INQUEST PURSUANT TO SECTION 38 OF THE CORONERS ACT, [SBC 2007] C 15, INTO THE DEATH OF

SURNAME	GIVEN NAMES
ROCHE	Glenn Francis

An Inquest was held at Prince George Courthouse, in the municipality of Prince George

in the Province of British Columbia, on the following dates March 2-25, 2015 & May 11-14, 2015

before: Lisa Lapointe, Presiding Coroner.

into the death of ROCHE (Last Name) Glenn (First Name) Francis (Middle Name) 46 (Age) ☒ Male ☐ Female

The following findings were made:

Date and Time of Death: April 24, 2012 20:43 hrs

Place of Death: University of Alberta Hospital (Location) Edmonton, AB (Municipality/Province)

Medical Cause of Death:

(1) Immediate Cause of Death: a) Multi-system organ failure

Due to or as a consequence of

Antecedent Cause if any: b) 90% total body surface burn with inhalational injury, not compatible with survival

Due to or as a consequence of

Giving rise to the immediate cause (a) above, stating underlying cause last. c)

(2) Other Significant Conditions Contributing to Death:

Classification of Death: ☒ Accidental ☐ Homicide ☐ Natural ☐ Suicide ☐ Undetermined

The above verdict certified by the Jury on the 14 day of May AD, 2015

Lisa Lapointe
Presiding Coroner's Printed Name

Presiding Coroner's Signature

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PARTIES INVOLVED IN THE INQUEST:

Presiding Coroner:	Lisa Lapointe
Inquest Counsel:	John Orr, J. Alexander Dutton
Court Reporting/Recording Agency:	Verbatim Words West
Participants/Counsel:	Mr. Ben Parkin, Mr. Mark Skorah and Mr. Gerald Massing for WorkSafeBC; Mr. Nigel Trevethan for the British Columbia Safety Authority; Mr. John Rogers and Ms. Diane Irvine for the United Steel Workers; Mr. Gavin Marshall and Ms. Jennifer Hogan for Sinclar Group Forest Products Ltd (Lakeland Mill).

The Sheriff took charge of the jury and recorded 37 exhibits. 54 witnesses were duly sworn and testified.

PRESIDING CORONER'S COMMENTS:

The following is a brief summary of the circumstances of the death as set out in the evidence presented to the jury at the inquest. The following summary of the evidence as presented at the inquest is to assist the reader to more fully understand the Verdict and Recommendations of the jury. This summary is not intended to be considered evidence nor is it intended in any way to replace the jury's verdict.

At 9:37 pm on April 23, 2012, there was a significant explosion and resulting fire at Lakeland Mill in Prince George. Twenty six people were in the mill at the time. Mr. Glenn Roche and Mr. Alan Little (BCCS File #2012-0607-0044) lost their lives. Many others were terribly injured and many continue to struggle with the physical and emotional aftermath of that night.

Mr. Roche had worked at the mill since 1983. He was married and had one son. His wife testified that he'd been extremely concerned about the risk of fire at the mill, particularly after the explosion and fire at Lake Babine mill three months earlier. He had also voiced these concerns to many of his co-workers.

At the time of his death, Mr. Roche was a head rig operator on the large head rig. On the night of April 23rd, 2012, the horn had gone off at 9:30 pm for lunch break. None of the other workers were with Mr. Roche when the explosion occurred but one came across him inside the mill shortly afterwards. He was clearly severely burned though conscious and walking. Mr. Roche and the co-worker were helped from the building by a third colleague who had already escaped from the burning mill and returned to assist.

Mr. Roche was helped outside and, after a period of time was moved onto a spine board by firefighters and then into the Deputy Fire Chief's SUV along with several other injured workers.

They were driven to the University Hospital of Northern BC by the Deputy Fire Chief, arriving at approximately 10:15 pm.

Mr. Roche was conscious and talking clearly upon arrival at hospital. He had extensive 3rd degree burns to approximately 90% of his body. No fractures or obvious displacement of bones was noted. He was sedated and intubated, and treatment for his extensive burns was commenced. He was transferred by air to the burn intensive care unit at University of Alberta Hospital on the morning of April 24th. His death occurred there at 8:43 pm that day.

Several workers testified that they had been concerned about increased dust accumulations at the mill in the months prior to the explosion. A number of reasons were offered for this including the addition of a third shift, the lack of time for regular cleaning, disagreements about cleaning responsibilities, and on-going problems with the baghouse (a device designed to filter sawdust and particulates from the air). Most significantly, the wood processed at the mill had become significantly drier over the years as much of it was beetle kill wood; trees that had died several years earlier as a result of beetle infestation. Various witnesses described more and finer wood dust that floated in the air, hung in the air, or wafted. The inquest was told that when the baghouse went down, workers couldn't breathe or see. The company had built boxes for the paper dust masks that workers would don when the dust was extreme.

During the week of January 16th, 2012, there were two explosions and resulting fires at Lakeland Mill; the first on January 17th and the second on January 19th. The first was caused by a motor and was quickly extinguished by workers. The second occurred as a result of sparks when a saw contacted metal at the large head rig. The resulting explosion sent a fire ball approximately 30 feet in the air. Workers using extinguishers from above and beside the fire eventually put it out but many testified that they were increasingly afraid of a catastrophic event.

Though numerous mill workers testified that they had significant concerns about the cleanliness of the mill and had raised the concerns with managers, these concerns were not reflected in the minutes of Safety Committee meetings nor were they reported to the union. Nobody refused work on grounds that it was unsafe, though Mr. Little, reacting to concerns by workers, shut the mill down twice for cleaning. While there were concerns about dust accumulations, and dust as fuel, the combustibility of wood dust wasn't well understood amongst workers. Mill managers testified that they knew that wood dust was a fire hazard, however; there was no significant understanding of the combustibility of wood dust and they did not believe conditions at the mill posed a serious risk.

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The jury heard that on February 6th, 2012, a WorkSafeBC Occupational Safety Officer and an Occupational Hygiene Officer had visited Lakeland mill in response to an anonymous call to WorkSafeBC expressing concern about large amounts of sawdust at the mill. The call had been received a few days after January 20th, 2012, when an explosion and fire had decimated the Babine Forest Products mill in Burns Lake, resulting in the deaths of two workers. The Occupational Safety Officer testified that he wasn't aware of the hazards of combustible dust and determined that conditions at Lakeland mill on February 6th didn't warrant a house-keeping order but that the mill was the dirtiest he'd ever seen it. He testified that Lakeland had previously been a clean mill. He also stated that at that time he had no reference point with which to assess dust levels. The Occupational Hygiene Officer testified that she did know about combustible dust but reported that she didn't observe a violation on the February 6th visit.

In the immediate aftermath of the explosion of April 23rd, both fire and ambulance responded quickly. There were challenges moving the injured quickly from the mill site to the hospital because ambulances did not come on to the site. Many of the injured men were taken to hospital by private vehicles. A BC Ambulance Executive Director testified about the agency's Technical Advisor program, in which paramedics at the site consult with a Technical Advisor by phone about potential hazards and risks. In the case of Lakeland, the ambulances were instructed by the Advisor to remain off site, away from danger, despite repeated requests and assurances from the Fire Department Incident Commander that it was safe to enter.

Following the explosion and fire, several agencies began investigations including RCMP, WorkSafeBC, BC Safety Authority, and CASE Forensics on behalf of Roper Greyell, the law firm representing Lakeland mill.

RCMP investigators interviewed 18 witnesses over 2 ½ days and concluded there was no criminality: no arson or foul play or criminal negligence. Major crimes in BC are investigated as bench-mark offences however; workplace critical injuries and fatalities were not considered bench-mark offences at that time. A senior investigating officer testified that an investigation can be reopened if new evidence arises.

The BC Safety Authority has the authority to investigate incidents that may involve technical systems and equipment. Their investigation into the Lakeland explosion identified the area of origin as the basement level. They did not identify a specific ignition. Their investigation resulted in several recommendations and a Safety Order for all wood-working and wood-processing facilities.

CASE Forensics, who investigated the cause of the explosion and fire on behalf of the law firm for Lakeland Mill, concluded that the area of origin was the operating level (above the basement level), and that the conflagration was due to dust but that the ignition source remains undetermined. The primary investigator testified that static in air-hoses commonly used to blow down dust and debris in mills is a well-studied, well-recognized ignition hazard and advised that an air-hose was a possible ignition source. It was noted that this risk can be removed by grounding the air-hoses and that grounded air-hoses are commercially available.

The WorkSafeBC (WSBC) investigation concluded that the cause of the explosion was a friction point within the gear reducer at the 6P conveyor that resulted in the ignition of dispersed wood dust. The jury heard about the five elements of the explosion pentagon: Ignition source, Dispersion, Oxygen, Containment and Fuel. WorkSafeBC confirmed there was sufficient wood dust in the mill to fuel a travelling deflagration. Their investigator testified that prevention includes: control and removal of dust, preventative maintenance for electrical systems, preventative maintenance to prevent friction points and over-heating, and assessment of containment areas to mitigate explosive hazards. As a result of their investigation, WSBC forwarded a Report to Crown Counsel in February 2014, recommending regulatory charges under the *Workers Compensation Act*. In April 2014, the Criminal Justice Branch advised that no charges would be approved. As a result of concerns identified, WSBC has now changed its investigative model to a Major Case Management Model with the intent of ensuring that evidence is gathered appropriately for prosecutorial purposes.

Expert evidence from chemical engineers as well as the US Chemical Safety Board (CSB) Combustible Dust video provided information about the combustibility of dust. It was noted that the danger of dust explosions and fires is well known in the USA, where there were 450 dust explosions or fires, 150 deaths and 900 people injured in the years from 1980-2011. Evidence was heard that near misses are opportunities to consider and alleviate risks and that it is important to regularly bring in experts in process hazard analysis, particularly after a change in conditions or equipment. The CSB's keys for prevention are Education, Regulation and Enforcement. The expert also testified about the need to keep data on incidents and publicize it, advising the more information, the better.

Another expert testified that the smaller the particle, the greater the explosibility. He advised that risk needs to be minimized as reasonably practicable and cited a hierarchy of controls from most effective to least effective: inherent safety (minimize hazards by design), passive engineered safety, active engineered safety, and procedural safety. He noted that even a small layer of combustible dust can be hazardous; if a person could write their initials in it or leave a

footprint, it's too much dust. He testified that the goal is to eliminate the hazard; get rid of the dust. He also noted that the Babine sawmill explosion in Burns Lake in January 2012 was the first sawmill explosion in recent memory. The expert testified about the problem of "normalizing" – like the first expert, he noted the importance of learning from near misses instead of accepting them as normal. He advised they can be warning signals for a much bigger event coming.

A WorkSafeBC Regional Prevention Manager testified about the work that agency is now doing to raise awareness and reduce risk in the wood manufacturing industry including a requirement for wood manufacturers to conduct a risk assessment, develop a control program and ensure training and education with respect to dust. Within days of the Lakeland explosion, the agency also issued Guidelines related to combustible dust and cleaning with compressed air. The Prevention Manager advised that officers went out to all mills with hard copies of the Guidelines and ensured employers had a copy of the CSB video. He testified that the Guidelines note that combustible dust present at a depth of 1/8 of an inch or more over 5% of a given work area presents a fire or explosion hazard. Evidence was also heard about the Fire Inspection Prevention Initiative, a multi-jurisdictional initiative funded by WorkSafeBC to enhance worker safety and improve Fire Code compliance.

A senior United Steelworkers representative gave evidence about the need for effective safety programs and Occupational Health and Safety (OHS) Committees. He noted that OHS members in BC are currently entitled to 8 hours of annual education leave. Ontario, in contrast, provides 2 weeks of training. He also suggested that WorkSafeBC audits of OHS committees were necessary to ensure the committees were operating effectively. He observed that combustible dust workshops held around the province following the Lakeland explosion have had significant results in raising awareness about risks.

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Pursuant to Section 38 of the Coroners Act, the following recommendations are forwarded to the Chief Coroner of the Province of British Columbia for distribution to the appropriate agency:

JURY RECOMMENDATIONS:

To: BC Forest Safety Council
Manufacturers' Advisory Group
United Steelworkers

1. Collaborate to develop a training program with certification to foster active participation in joint health and safety committees.

Presiding Coroner's Comment: *The inquest heard that active joint occupational health and safety committees are a key factor in supporting worker health and safety but that there are challenges ensuring appropriate representation, attendance and effectiveness.*

To: United Steelworkers

2. The Steelworkers' newsletter should be mailed to the homes of workers in the wood manufacturing industry on an annual basis.

Presiding Coroner's Comment: *The inquest heard that the newsletter was e-mailed to a large mailing list but not mailed directly to workers. The jury noted that providing the newsletter to workers' families would allow them to be aware of safety issues at the workplace and be part of the safety culture.*

To: Royal Canadian Mounted Police (RCMP)

3. Develop policy, guidelines and training for the investigation of criminal negligence in the workplace.

Presiding Coroner's Comment: *The inquest heard that the RCMP investigation into the mill explosion was concluded after 2½ days without interviewing any mill managers or reviewing workplace policies or practices and a report was never issued.*

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4. Include work-site serious injuries and fatalities as "bench-mark" offences to be reported to the District Senior Investigating Officer.

Presiding Coroner's Comment: *The inquest heard that offences designated as bench-mark offences are investigated with major case management methodology.*

To: British Columbia Ambulance Services

5. Conduct a review of the Technical Advisor Program to ensure ambulance response is timely and coordinated with an established Incident Command Model.

Presiding Coroner's Comment: *The inquest heard that ambulances did not respond to the Command Post established at the Lakeland mill site but parked a significant distance away, leaving critically and mortally injured workers unattended or in the care of fellow workers and firefighters. Many injured workers were transported to hospital by private vehicles.*

6. No ambulances should ever be used as a command post.

Presiding Coroner's Comment: *Evidence showed that one of the ambulances that responded to the explosion and fire on April 23, 2012 was used strictly as a command post.*

To: Minister of Jobs, Tourism and Skills Training

7. Amend s. 130 of the *Worker's Compensation Act* to ensure that the joint occupational health and safety committee reviews any changes to equipment/machinery or process to assess impacts on workers' health and safety.

Presiding Coroner's Comment: *The inquest heard that regular evaluation of process hazards is important to ensure potential risks to workers are identified, particularly when process or equipment is changed.*

8. Construction of new mills as well as sawmill refits or upgrades should be made to the highest possible standards.

Presiding Coroner's Comment: *The inquest was provided with information about the newly built Lakeland Mill and its numerous and significant safety features.*

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9. Clarify the meaning of the term "participation" in s. 174 of the *Workers' Compensation Act* to ensure full and meaningful participation in the investigative process by both the employer and the worker representative.

Presiding Coroner's Comment: *The inquest heard that access to the Lakeland mill site by the employer's representative and a worker representative was denied or limited, hampering the employer's ability to comply with s. 175 of the Workers' Compensation Act.*

10. Review s. 175 and s. 176 of the *Workers' Compensation Act* to determine whether employer investigations are required.

Presiding Coroner's Comment: *The inquest heard that the employer did not prepare an Incident Investigation Report as required by the Workers' Compensation Act.*

11. Amend s. 172 of the *Workers' Compensation Act* to ensure that an employer must immediately notify the Board of any fire or explosion that causes a business interruption.

Presiding Coroner's Comment: *The inquest heard that there were two significant explosions/fires at Lakeland mill in January 2012, neither of which was reported to WorkSafeBC or fire officials. Evidence indicated that near misses should be treated as important opportunities to consider and alleviate risks.*

To: BC Minister of Justice

12. Ensure that the BC Fire Code and all other provincially mandated codes are freely available in the same manner as provincial Statutes and Regulations.

Presiding Coroner's Comment: *The jury heard that, though compliance with the Fire Code is mandatory, it is not available to view or access online except at a cost.*

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13. Amend the *Fire Services Act* to create penalty provisions for non-compliance with the BC Fire Code and orders of the Fire Commissioner.

Presiding Coroner's Comment: *The inquest heard that the Fire Commissioner cannot impose penalties for non-compliance with the Fire Services Act or the Fire Code, making enforcement very difficult.*

14. Provide the Fire Commissioner authority to set minimum standards for qualification and training of Fire Prevention Officers consistent with U.S. national Fire Prevention Association level 1 standards or higher.

Presiding Coroner's Comment: *The inquest heard that there is no formal training requirement for Fire Prevention Officers.*

15. Ensure the Office of the Fire Commissioner has an Information Management System capable of effectively receiving, analyzing and disseminating information in support of evidence-based decision making.

Presiding Coroner's Comment: *The inquest heard that the Office of the Fire Commissioner has limited ability to record, analyze or report statistical information about fires and that this information is not available to view on-line.*

To: Office of the Fire Commissioner

16. Implement recommendations #4, #5, #6 of the BC Safety Authority Investigation Report into the Lakeland Mills Ltd. Explosion and Fire.
(http://safetyauthority.ca/sites/default/files/lakeland_investigation_report_-_final.pdf)

To: WorkSafeBC

17. Implement an audit tool to measure the effectiveness of joint health and safety committees and ensure inspection officers audit an employer's joint health and safety committee when WorkSafeBC inspections are conducted.

Presiding Coroner's Comment: *The inquest heard that there is currently no oversight by WorkSafeBC of whether a joint occupational health and safety committee is active or effective.*

18. Maintain the Fire Inspection Prevention initiative (FIPI) beyond the 2016 termination date.

Presiding Coroner's Comment: *Evidence indicated this initiative was funded by WorkSafeBC until the end of 2016. The jury viewed this initiative as a beneficial communication tool.*

19. Require employers in the wood industry to provide access to local Safety Committee Minutes to Fire Prevention Officers upon request.

Presiding Coroner's Comment: *The inquest heard that minutes of local Safety Committee meetings are not routinely provided to the Fire Prevention Officer who may be unaware of concerns raised or discussed by the members.*

20. Establish minimal mandatory training and education for joint occupational health and safety committee members.

Presiding Coroner's Comment: *The inquest heard there is no minimum training required for chairs or members of joint occupational health and safety committee members though they are entitled to 8 hours of annual educational leave.*

21. There needs to be a heavier emphasis on workers' rights and that the worker has the right to refuse unsafe work.

Presiding Coroner's Comment: *The inquest heard evidence that workers continued to perform their duties at Lakeland Mill despite feeling it was unsafe to do so. Workers testified that they knew about the right to refuse work, but could not recall any specific training on the topic.*

22. Look into the possibility of installing automatic air quality sensors to monitor dust levels, in facilities where dust hazards may exist so employees are aware of the dust levels.

Presiding Coroner's Comment: *The inquest heard evidence that dust would float or waft in the air however; there was no sensor to indicate when dust levels reached a hazardous level.*

23. Maintain a public record of all accidents reported under s. 172 of the *Workers' Compensation Act.*

Presiding Coroner's Comment: *The inquest heard that maintaining a public record of accidents helps other employers and workers identify and minimize risks.*

24. Host an annual meeting of representatives of the wood products manufacturing sector, including employers, worker representatives and technical experts to share health and safety results, performance and best practices.

Presiding Coroner's Comment: *The inquest heard that a round-table of influential and committed representatives can share information about risks or improvements to health and safety to ensure better outcomes for workers.*

25. Implement an initiative to ensure all wands used in a combustible dust environment are properly grounded.

Presiding Coroner's Comment: *The inquest heard that wands used to "blow down" (clean) create static electricity capable of igniting an explosion in a combustible environment. Grounding eliminates this hazard.*

To: City of Prince George

26. Establish a bi-annual multi-agency emergency response exercise that includes all emergency and primary responders.

Presiding Coroner's Comment: *The inquest heard that there were communication and coordination challenges with the emergency responders attending Lakeland Mill on April 23, 2012 and that regular multi-agency exercises do not occur.*

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To: Sinclar Group Forest Products Ltd.

27. Ensure that every manager at Lakeland Mill is appropriately trained and qualified for their respective roles and that each manager be required to participate in on-going professional management development.

Presiding Coroner's Comment: *The inquest heard that Lakeland Mills management was not responsive to concerns being raised by workers and did not always have the skills or training necessary to effectively manage their teams and work with other managers.*

To: Manufacturers' Advisory Group
BC Forest Safety Council

28. Minutes of all mill safety committee meetings and investigations must be forwarded and read by all supervisors, superintendents, managers and mill owners.

Presiding Coroner's Comment: *The inquest heard that Safety Committee meeting minutes and concerns raised were not routinely shared with or read by those with the responsibility and authority to address them.*

29. Mills must ensure that there are enough millwrights, mechanics, electricians and clean-up staff to keep up with the daily demands of mill operation. Inspections, repairs, maintenance and clean-up should not be allowed to fall behind.

Presiding Coroner's Comment: *The inquest heard that there was a preventative maintenance (PM) schedule at the mill, however; there was not enough staff or enough time to keep up with the "PM's" so a significant number did not get done.*

30. There should be a "Safety Watch Person" on every shift to continually monitor dust systems, vacuum systems, conveyors and electric motors.

Presiding Coroner's Comment: *Several workers testified that they had been concerned about maintenance and condition of equipment, however; safety risks were not identified or shared.*

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31. Implement recommendations #1, #2 and #3 of the BC Safety Authority Report into the Lakeland Mills Ltd. Explosion and Fire.
(http://safetyauthority.ca/sites/default/files/lakeland_investigation_report_-_final.pdf)

To: Minister of Justice and Attorney General of Canada

32. Refer the criminal negligence provisions of the Criminal Code to the Standing Committee on Justice and Human Rights to review the onus of proof in cases of criminal negligence involving incidents of bodily harm or death in the workplace.

Presiding Coroner's Comment: *The inquest heard that it was very difficult to successfully prosecute bodily harm and death in workplace incidents.*

To: Canadian Standards Association

33. Implement recommendations #7 and #8 of the BC Safety Authority Investigation Report into the Lakeland Mills Ltd. Explosion and Fire.
(http://safetyauthority.ca/sites/default/files/lakeland_investigation_report_-_final.pdf)