

“What-If” Study Report

**Alberta Provincial Pulp Mills
Chip Haul Industry**

Chip Haul Operations Hazard Assessment Report 2010 Release

October 11th, 2010

**Diashowa-Marubeni International Ltd. - Peace River Pulp Division
Alberta Newsprint Company
Buchanan Lumber
Goldstar Transport
West Fraser Mills- Hinton
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"WHAT IF" TYPE HAZARD/OPERABILITY ANALYSIS

APPLICATION: ALBERTA CHIP HAULING HAZARD ASSESSMENT
2010 Edition

METHODOLOGY: "WHAT IF" HAZARD/OPERABILITY ANALYSIS

DATES: August 31; September 1, 2010

REPORT ISSUE: Original

ISSUE DATE: OCTOBER 11TH, 2010

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Executive Summary

A “What if” hazard assessment adaptation/revalidation was performed on the Alberta chip haul. The term “adaptation” is used for this exercise because the sessions used an October 2007 hazard analysis of the chip haul for Daishowa-Marubeni International Ltd., Peace River Pulp Division (DMI) as a base file. The sessions of this 2010 report widen the scope of that specific DMI “What if” to encompass Alberta chip haul province wide practice. The term “revalidation” is applied because the sessions closely resembled a classic chemical process industry “What if” revalidation exercise.

The sessions took place over a two day period at the Daishowa-Marubeni International Ltd., Peace River Pulp Division woodland offices at the DMI mill site. The exercise was undertaken as a condition of compliance with Section 12 of the Alberta Occupational Health and Safety Code 2009. The letter confirming acceptance sets out 7 conditions, of which the second is:

2. The DMI October 11, 2007 Chip Haul Operations Hazard Assessment Report be updated and include identification/implementation of controls to ensure safe operation of truck/trailer units.

The study team leader had done all previous hazard assessment exercises for the Alberta log haul and chip haul industry, the first of which was performed in 1998 for the province wide log haul industry. These 2010 sessions were designed to raise the level of the 2007 DMI “What if” assessment inquiry (which was based upon previous Alberta Forest Products Association [AFPA] log haul work) to that of a dedicated “What if” exercise focussing on the province wide chip haul trucking application. Some points in support of this statement are:

- these are the second set of chip haul sessions, which provides an additional check that the assessment product provides a good coverage of the chip practice, and

- two days of session time has been provided for dedicated chip haul industry consideration (the original 2007 exercise was one day), and
- additional team participants compared to 2007 original sessions represent the provincial industry in general, and supply a second expert opinion concerning effective modification of the original log haul industry work to dedicated chip haul consideration.

The sessions were attended by a total of eight members, including the team leader. One DMI member attended for a short time on the first day for the contract administration section. The main DMI representative participated in the original chip haul adaptation sessions for the DMI specific assessment of 2007, as well the 2007 (AFPA) log haul revalidation sessions. Four other mill operations were represented in sessions, as well as the trucking industry through Goldstar Transport representation. One of the two Goldstar representatives provided Weyerhaeuser representation.

This chip haul assessment is an upgrade from the original work of 2007, as noted in a paragraph above. It represents a culmination of three AFPA log haul exercises, as well as the 2007 DMI chip haul session work. In chemical process risk assessment terms, this work represents an adaptation of the “What if” methodology of hazard assessment for the purpose of producing an industry Checklist. It is a similar exercise to the original AFPA log haul directed work from which it is modelled. “What if” hazard assessment is an assessment form recognized throughout the world. One example of this is found in United States legislation CFR 1910.119, which covers hazard assessment regulation in the United States of America. There is no equivalent legislation in Canada, although many industries in Canada practice hazard assessment - examples are the offshore oil & gas industry, Canadian chemical industry, and gas storage industry.

The product of these provincial chip haul trucking industry sessions is the Chip Haul Checklist presented in section 5.0 of this report. The DMI Checklist of the October 2007 sessions was reviewed by the sessions group at the beginning of these 2010 sessions to assess the format of the Checklist for province wide chip haul application. The approval

of the group was obtained for the Checklist format. At the end of sessions, a sessions mandate was provided to the team leader and the DMI representative for first edition Checklist modifications. Some minor modification to the original 2007 Chip Haul Checklist was done by the team leader, using the original AFPA Log Haul Checklist philosophy for assessment of Chip Haul Checklist modifications. Approval of Checklist modifications was obtained through the DMI representative, and subsequent distribution of the Checklist to the entire sessions group.

The sessions produced nine new Potential Checklist Items to be considered, in addition to the previous total of 91 Potential Checklist Items of the original chip haul work. Some updating of assessment terms was also performed, as well as changes to previous risk ranking according the evaluation of the sessions group.

The session day ended with the general conclusion by the session group members that the work was valid for chip haul application, and represented a good basis for examination and adjustment of the 2007 Chip Haul Checklist for a 2010 Checklist edition, in response to the Letter of Acceptance from Alberta Employment and Immigration.

1.0 Introduction & Summary

Two “What if” session days were held at Daishowa-Marubeni International Ltd.’s Peace River Pulp Division (DMI) location to update original chip haul assessment work of 2007. The work was undertaken in response to the Letter of Acceptance from Alberta Employment and Immigration to the industry (through DMI), dated February 16th, 2010. This work was accomplished through two days of sessions at the DMI site on August 31st and September 1st, 2010. A feature of this work was that the original DMI specific orientation of the work was widened to include Alberta province wide practice. This was accomplished through additional industry representation in sessions, and appropriate changes to session records wording as the sessions progressed.

A province wide Chip Haul Checklist has been prepared as a result of these sessions, which is included in section 5.0 of this report. It is an update of the original work performed in 2007.

This is the fifth set of sessions from the Alberta trucking industry devoted to either log haul or chip haul trucks. The original log haul oriented work was commissioned by the Alberta Forest Products Association (AFPA) in 1998. There have been two subsequent revalidations of that 1998 log haul work, the last being in 2007. In 2007 DMI commissioned the conversion of the AFPA log haul work into a chip haul hazard assessment, with chip haul oriented Checklist, based upon DMI practice.

The 2007 chip haul assessment was a work of conversion, which consisted of inspection of the log haul items of the AFPA hazard assessment, and changes as necessary to produce a chip haul record. The work was performed by a group of four people, including the team leader. The other three members were DMI professionals, and one trucking industry representative familiar with DMI chip haul practise.

While the group was small in number compared to the log haul exercises that employed 23 different professionals over three separate occasions, a hazard assessment of such a

small number is not unusual in the chemical process industry. Many complicated processes are examined by a sessions group of four to seven people, for example.

The 2007 conversion of log haul examination and Checklist to the chip haul situation rested on a solid foundation of the previous work from three AFPA generic log haul assessments, and the similarity between log haul practice and chip haul practice. It was felt by the 2007 sessions group to represent an effective conversion, and Checklist assessment process, for the chip haul situation.

This 2007 sessions record, and 2007 chip haul Checklist product has been upgraded through wider application of scope to the province wide industry, greater number of session members to represent Alberta wide practice, and thorough checking of all previous entries over two days of sessions. The actual sessions review closely resembled “revalidation,” or renewal of a previous hazard assessment, as practiced in the chemical process industry. Therefore, the record as presented in this report is the product of two chip haul exercises, and can be considered to be a chip haul specific work, as opposed to a product converted from log haul work.

These DMI sessions were attended by a total of eight team members for two days of session time, including the team leader/scribe who had previously led all of the AFPA work, designed the original AFPA hazard assessment methodology and risk ranking system (aided by some log haul industry experts), and had also led the 2007 chip assessment conversion sessions.

The preparation for the sessions and reporting function for the “What if” analysis was performed by U G M Engineering Ltd., using PHA-Pro 5.0 software for recording, organizing, and reporting functions. Mr. Gordon W. Cowan, P.Eng., of U G M Engineering Ltd., was team leader. Mr. Cowan was assisted in the preparation by Mr. Samuel Elkins from DMI. Mr. Elkins also attended the 2007 AFPA revalidation sessions, and the subsequent chip haul sessions.

The current sessions produced nine new Potential Checklist Items for consideration of the chip haul checklist. This chip haul hazard assessment exercise ended with 100 Potential Checklist Items.

The 2007 chip haul Checklist was updated for the 2010 release, through some changes of wording to enlarge on some checklist item bullet examples, for the most part. A dedicated new Checklist item was added to reflect requirements outlined in the Letter of Acceptance from Alberta Employment and Immigration. Initial Checklist changes were made by the team leader, then sent to the sessions group for modification/approval through the DMI representative. The philosophy of what Checklist items are included out of the total Potential Checklist Item listings is based upon original work in the AFPA log haul work. The method of consideration is reproduced in the main body of this report, from the 1998 AFPA log haul report. In essence, the number of times a Potential Checklist Item is cited, and the risk ranking attached to the item, influence inclusion in the ultimate Checklist.

The risk ranking for chip haul hazard assessment uses the same risk matrix and principles as the AFPA work it stems from. Chip haul rankings of this report are made on a province wide basis. This means that some items will have higher risk ranking than if they were evaluated strictly on a one location basis. The Risk Rankings of this report should be regarded as tools to assess the relative risk of industry operations. They are qualitative measures which are suitable for guidance concerning the relative risks of various operations concerning the chip haul. They are not quantitative, or absolute, expressions of risk. Further details concerning Risk Ranking for this study can be found in section 4.0.

This hazard assessment encompassed all aspects of the chip haul operation. Session members were not limited in topics which could be brought up in session. Session topics were dealt with in logical sequence, with all items of the 2007 work examined, and any additional chip haul items brought up by session members for a specific topic being dealt with until the group as a whole agreed that the issue had been covered. Each item of the 2007 work was reviewed and considered with changes and updating applied as required.

In this manner, the group agreed that the operations of the province wide chip haul operation had been covered in a proper manner by these sessions. This “What if” study is therefore considered by the Study Team to be thorough in review of the chip haul operation in Alberta.

2.0 “What if” Team & Team Attendance

The DMI chip haul assessment sessions were attended by:

Gordon Cowan	Hazard Assessment Team Leader	U G M Engineering Ltd.
Samuel Elkins	Continuous Improvement Coordinator	DMI - Peace River Pulp Division
Cliff Kostiuick	Division Manager	Goldstar Transport
Steven Krahn	Business Team Leader - Operations	DMI - Peace River Pulp Division
Dan Bloomfield	Trucking Coordinator	Buchanan Lumber
Harold Freeman	Fibre Supply Manager	Alberta Newsprint Company
Riley Ireland	Division Manager (from Goldstar)	Weyerhaeuser - Grand Prairie
Warren Kehr	Purchase Fibre Coordinator	West Fraser Mills - Hinton

3.0 Description of the Chip Haul Operation

This section outlines the various portions of the portable chipping truck haul hazard assessment, as originally based upon the 1998 work performed by the AFPA assessment team in outlining the steps involved in the log haul operation. The main divisions used for the original log haul assessment work were converted by the 2007 session team for Chip Haul assessment. The following table sets out the terminology similarities between chemical process hazard assessment and the converted applications to log haul and chip haul assessments:

Classic Guideword	Process Oriented “What if”	Log Haul “What if”	Chip Haul “What if”
Nodes	Systems	Log Haul Division	Chip Haul Division
Deviations	Sub-systems	Division Activity	Division Activity

The main divisions of chip haul operations studied by the revalidation team were:

- 1) Truck/Contractor Administration
- 2) Driving to the Cut Block or to the Residual Mill
- 3) Loading at the Cut Block or at a Residual Mill
- 4) Returning to the Mill
- 5) Unloading at the Mill.

3.1 Chip Haul Division #1 - Truck/Contractor Administration

This main Division provides a place for contractual considerations. Such considerations, if not done in a thorough fashion by the hiring operation (i.e., the operating mill, or the trucking contractor/sub-contractor) might result in safety being compromised in the field. This Division is therefore included as a place to consider the management aspects of a chip hauling operation which do not immediately show from the other main divisions of chip haul activity.

3.1.1 Division Activity - Contract Management

This Division Activity considers the “paper work” of chip hauling. Some examples of items for consideration in this phase are:

- ⇒ Specification of equipment in a contract
- ⇒ Hiring under unusual, or mid-season, circumstances
- ⇒ Due diligence in contracts
- ⇒ Driver qualification consideration.

3.1.2 Division Activity - Hauling to - Orientations

Almost all mills within Alberta, and virtually any mill of significant size in the province, provide a mill orientation for log haulers. Even the smallest mill of the province will still provide information for the log haul operation, although the degree of formality will probably be less than a larger operation. The same is true for chip haul practice. The rules of the yard, the practice of the yard, must be set out for chip trucks. The chip haul sessions examined province Mill Orientation practice. Some elements of a mill orientation include:

- ⇒ Mill yard traffic control
- ⇒ Radio operation
- ⇒ Radio frequency control
- ⇒ Follow through of mill orientations to the trucker level
- ⇒ Loading practice for a specific mill.

This Division Activity refers to the mill site which receives fibre delivered by chip truck to the mill yard. These 2010 sessions treat the Orientation Division Activity differently from previous assessment studies, in that the two Division Activities are distinctly split to cover chip truck Hauling To and Hauling From on a separate basis. While the content of the two

Division Activities is similar, the chip haul industry obtains fibre at a residual mill site supplying chips to the producing mill operation on a regular basis. In contrast, an operation using log trucks for fibre collection would rarely go to another mill to obtain logs for fibre.

3.1.3 Division Activity - Hauling from - Orientations

The Division Activity is essentially similar to the previous “Hauling to” Division for content. The actual driving practice is in the yard of the residual mill, with loaded truck, where the fibre is obtained. The elements the residual mill considers for yard practice resemble the previous Division, and include:

- ⇒ Mill yard traffic control
- ⇒ Radio operation
- ⇒ Radio frequency control
- ⇒ Follow through of mill orientations to the trucker level
- ⇒ Unloading practice for a specific mill.

3.2 Chip Truck Haul Division #2 - Driving to the Cut Block or to a Residual Mill

The Division Activity describes the operation of the chip haul driver driving to a site where trees have been cut, and a portable chipper is on site to directly load chips created at the site into the chip truck trailer.

The use of portable chippers means that other sites can be used to obtain chips through processing them on site. These sites are referred to as “Residual Mill” sites. An example of a Residual Mill site might be a sawmill operation which has waste wood of sufficient size and quality for pulp wood chips.

Regardless of cut block or residual mill site destination, this Division Activity refers to driving the unloaded chip haul truck from the mill site to the place of fibre loading. For a

typical operation of four round trips per shift, this Division would include the beginning of the driver's shift, and pre-shift inspection, as well as mid-shift trips.

3.2.1 Division Activity - Pre-Shift Inspection

The pre-shift inspection is similar to the "pre-trip inspection" of the Motor Carrier Safety Standards. For chip hauling, a shift contains more than one trip, and the term "pre-shift inspection" is more apt than "pre-trip inspection" for this study.

The Motor Carrier Safety Standards provide for inspection and maintenance of the vehicle. The driver of a commercial vehicle must inspect all vehicles operated prior to the first trip of the day and at the completion of his work shift.¹ Daily inspections are to include a safety check of the following vehicle components:

- ⇒ Emergency equipment
- ⇒ Horn
- ⇒ Lighting devices and reflectors
- ⇒ Parking brake
- ⇒ Rear vision mirrors
- ⇒ Service brake and trailer brake mechanisms
- ⇒ Steering mechanism
- ⇒ Tires
- ⇒ Wheels and rims
- ⇒ Windshield wipers
- ⇒ Coupling devices.

The pre-shift inspection is performed by the chip haul driver at the beginning of his shift, before embarking on the first drive to the cut block or residual mill. At the end of the shift, the chip haul driver may perform a last check if the vehicle is to be handed over to another

¹ This information has been taken primarily from Motor Carrier Safety Standards.

driver - practice varies. The original driver will inform the incoming driver of any items which the next driver should be aware of when performing his own pre-shift inspection.

Not all trucks are handed over to other drivers at the end of a shift. Many chip haulers own their own trucks which they use with corporately owned trailers. These trucks are used only by the owner/driver/individual contractor.

3.2.2 Division Activity - Driving to the Cut Block

Driving to the cut block is done under the regulation of the mill, as prescribed to the driver through the mill orientation. There is a radio procedure for roads activity, and for the off-highway operation. Example features are mandatory check-in points, dedicated radio channels according to the area of travel, check in and check out of radio controlled traffic roads.

The drive to the cut block or residual mill site will take place in a variety of weather and road conditions, and although a chip truck driver will do his/her best to perform the trip under all conditions, it is a province wide practice that the driver can decide for himself if conditions are such that the trip should not be made. The mill or trucking contractor will also suspend a hauling operation if conditions should be unsafe due to driving conditions, but modern practice is that the individual driver is not pressured to make what he considers an unsafe run for any reason (such as his/her personal abilities for the conditions of the run) as per Sec. 35 (1) OHS Act.

The chip haul driver will be informed of the run destination prior to embarking on the trip, and will have been over the route for training purposes prior to an actual trip. He or she will certainly have been informed of route and conditions of the road prior to the trip. The actual route could be on or off the public highway, both of which have their considerations. The public highway route, for example, requires recognition of the potential for heavy traffic, and the presence of public traffic as a constant in the trip. Off highway routes can be expected to be rougher in construction, but they can potentially be better maintained in

adverse conditions, as another example of contrast between public highway and off-road conditions.

3.3 Chip Haul Division #3 - Loading at the Cut Block or at a Residual Mill

Loading at the cut block is a major Division of chip hauling. There will be progressively more basic roads providing access to the cut block. Once at the cut block, the driver will announce the arrival to the chipper operator prior to entering the loading area. The driver will not enter the “danger zone” (an area defined as 60 metres or 200 feet around an active chipper) until directed by the chipper operator to do so. The driver will position the truck such that the chipper discharge spout is close to the centreline of the A trailer. The trailers are filled front to back, starting with the front A trailer, and working back. The driver monitors the loading of the trailer, and may tarp the front A trailer while the B trailer is loading. The driver must perform a walk around prior to moving the truck/trailers combination from the chipper site.

The following Personal Protection Equipment is considered to be necessary (for example) at the chipper site:

- ⇒ • CSA Side Impact hardhat blazed fluorescent orange or red
- ⇒ • CSA safety boots with ankle support
- ⇒ • Eye protection (required within the danger zone)
- ⇒ • CSA ear-muff protection (required within the danger zone).

3.3.1 Division Activity - Preparing the Vehicle for Loading

The chipper operator will provide direction to the chip hauler as to when the danger zone can be entered, and when the truck/trailers combination can be positioned at the chipper. The chipper operator is considered to be the contact and supervisor for the site. The

driver will remove tarps from the A and B trains while awaiting direction to position the truck combination.

3.3.2 Division Activity - Positioning the Vehicle at the Cut Block Location

Once receiving clearance from the chipper operator to position the truck, the driver will proceed to move into the Danger Zone (60 metres/200 feet around the chipper). The important aspect of positioning the truck is to have the chipper spout at the centreline of the trailer. This provides best starting position for the truck and chipper spout combination to load the trailers in a balanced fashion. Loading starts at the front of the trailer and works to the back end.

Once the chipper is operating, all communication at the site is done through radio use.

3.3.3 Division Activity - Positioning the Vehicle at the Residual Mill Location

A residual mill location will not have a portable chipper on site. Instead the chip truck operator will go to a set site with a storage bin in a permanent place for loading. The truck operator will have to be familiar with the site, as outlined in the mill site orientation.

3.3.4 Division Activity - Loading the Vehicle at the Cut Block

The chipper operator is the supervisor of the chipper area, controlling movement into and out of the danger zone. It is the truck driver who is responsible for the monitoring of the loading of the trailer. He or she must inform the chipper operator by radio contact if there are any loading problems, or if there is a requirement to stop the chip flow. The truck driver will move the truck for repositioning during the loading process.

Once the cut block has been exhausted for fibre, the chipper will be moved to a new location, which is analogous to the log haul operation in that the destination of the driver will not be a constant.

3.3.5 Division Activity - Loading the Vehicle at the Residual Mill - Bin

Residual chips are derived from sawmill wastage. The site will provide the chips pre-loaded into a bin for pick up. The sawmill will have yard traffic direction procedures, weigh in/out, and established radio frequencies for the yard location, for example.

3.3.6 Division Activity - Loading the Vehicle at the Residual Mill - Storage

This Division Activity also provides chips on site to be picked up. The inventory will be in storage pile form. Loading is accomplished by front end loader. Yard orientation, rules for weigh in/out and other yard procedures are applicable.

3.3.7 Division Activity - Tarping at the Chipper and at the Residual Mill

The tarping operation is to replace the tarps on the top of the loaded trailers. The A trailer can be tarped as the B trailer is being filled at the chipper. The vehicle is moved a short way from the chipper loading site prior to tarping of the B train. Procedure says the vehicle cannot be moved until the driver has performed a walk around to ensure there are no obstructions or unsafe conditions.

3.4 Chip Haul Division #4 - Returning to the Mill

Returning to the Mill from a cut block or residual mill represents a highly skilled activity in chip hauling. The loaded trucks are driven under circumstances of high load by weight, under all kinds of road and weather conditions, to be unloaded at the mill site. The driver must be aware of speed limits, radio use and call-in points, other log haul and chip haul traffic on the road, and other traffic such as public vehicles and commercial vehicles which are not subject to radio control (for example).

3.4.1 Division Activity - Leaving the Loading Location

The division activity of Leaving the Loading Location represents the time between tarping the A and B trains, and being underway out of the immediate area of the cut block or residual mill location. The driver must be aware of the traffic conventions of the area, whether bush or residual mill. Roads at this point of a cut block operation can be in poor shape because of their immediacy to the cut block, and distance from better maintained roads (which implies more time required for sanding trucks and graders to get to the location, for example). In the case of chip hauling, the greater weight of the truck/trailer combination compared to log truck means that there is greater requirement for road planning and maintenance at this point, compared to a the log haul operation. There is a higher probability of tow assistance being required, compared to other portions of the drive.

The driver will switch radio frequency to the main returning road frequency at the proper point of this phase of travel.

3.4.2 Division Activity - Driving to the Mill - Public Highway

Most of the considerations of this division activity are similar to the off-road situation. The driver will be subject to road and weather conditions. While the public highway might be expected to provide superior road conditions to off road, this is not a given. The public

highway will contain more traffic untrained in log haul or chip haul operations, less skilled drivers, and may not be designed as well for a large and heavy vehicle, compared to a dedicated off-highway road which is privately maintained.

The driver must be aware of mandatory check points on the route, and mandatory call-in points.

One important difference of public highway driving, compared to off-highway driving, is the potential for more serious accidents. Vehicles are more likely to have multiple occupants, to cite one example, in the public highway situation. Another feature of public highway driving is restricted routes, which requires the driver to adhere to proper routing for heavy vehicles through towns and villages.

3.4.3 Division Activity - Driving to the Mill - Off Highway/Bush Roads

As with the public highway case, professional driver skill is a must for the off highway/bush road situation. Use of chains, for example, is an aspect of both cases, with the off highway situation requiring more frequent use.

In some respects, off highway driving represents less of a problem to the chip haul driver than public highway driving. There will be less public traffic to deal with in the off highway situation, and a greater number of places to stop should the driver feel it is necessary. In contrast, stopping a loaded truck on the public road for a load containment check in the case of a log truck, or for other truck related reason in the case of a chip haul, is not allowed. Traffic off highway will often benefit from radio control of log haul and chip haul trucks.

3.5 Log Haul Division #5 - Unloading at the Mill

Unloading at the mill consists of the mill approach, weighing-in, removal of tarps, the unloading operation, weighing out, and preparing for the next truck use in the case of a shift change. A feature of this division activity is the variety of mill site conditions and practices which can be encountered by the contract driver. This is why the mill orientation is important for the operation - the driver is better prepared for variations in mill layout and unloading equipment/procedures through the mill orientation.

Mill orientation is particularly important for a chip unloading site because the automatic chip dumpers of the site are operated by the driver.

3.5.1 Division Activity - Arriving at the Mill Site

An important feature of arriving at the mill site is the changing of the radio frequency from road frequency to the mill yard frequency. The location for this will be marked by road sign at the approach. Upon arrival at the mill site, the driver will proceed by predetermined route to the weigh scale for weighing-in.

3.5.2 Division Activity - Weighing-In

The act of weighing in consists of registering the incoming load. Weights are recorded for many reasons at the mill site, such as for inventory control, carrier/driver compensation, and driver management. Both the underweight and overweight load, outside of set parameters, will result in a reduction of carrier compensation.

Weighing in and out at the mill site is performed by the driver, as opposed to having dedicated staff at the scale site, with few exceptions in the province. Regardless of the staff particulars at a weigh scale site, the weighing records are computer generated.

PPE is worn when the driver is outside of the truck cab. After tarp removal the driver can proceed to the dumper.

3.5.3 Division Activity - The Unloading Operation

Unloading is accomplished through use of the dumpers, controlled by the driver. The driver will check the dumper signal board to confirm dumper availability, then enter the dumper. Once the truck is clear of the backstop location, the driver pushes the “Down” button to lower the backstop, then backs the truck into position. Fuel caps are checked for tightness, driver's side trailer doors are unlatched, and trailer suspension is lowered. The backstop is secured by safety pin to prevent it from rising. The access gate is checked to be sure it is closed.

The driver is in the dumper booth during operation. The control buttons for the dumper must be continually pressed to maintain operation. After chips have been dumped from the truck, the backstop safety pin is removed, the truck moved forward for clearance, and the backstop is put into place for the next truck. The truck exits the dumper according to yard traffic flow and road rules, and proceeds to weigh out.

3.5.4 Division Activity – Weighing Out

Weighing out is done at the driver operated weigh out scale.

3.5.5 Division Activity - Preparing for the Next Truck Use

For a mid-shift load, the driver will proceed without pause to pick up the next load. For a shift change, the driver will proceed to the mill site location where the shift change is to be accomplished. Although a pre-shift check is mandatory for the trucks, the out-going driver may also perform a less thorough check (compared to the prescribed pre-shift inspection) so that he can alert the incoming driver to any attention the truck might require.

4.0 “What if” Proceedings Overview

This hazard assessment is a revalidation of the 2007 DMI work which was directed to adapting a log haul hazard assessment to the chip haul trucking industry. As such, this assessment represents the culmination of five session sets in total directed to either log haul trucking in Alberta, or chip haul trucking. The first subsection presented immediately below outlines the history and progression of Alberta chip/log haul assessment practice.

4.1 Alberta Chip/Log Haul Assessments

The log haul industry assessment was undertaken by the Alberta Forest Products Association (AFPA) in 1998, in response to an acceptance letter sent to mill owners in Alberta by Alberta Labour (as it was known at the time). This letter provided for a partial condition of acceptance for the log haul industry winter weights program, with the stipulation that a hazard assessment be prepared for the fleet of trucks the operates on the mill work site.

4.1.1 1998 AFPA Log Haul Assessment

The approach employed by the AFPA for response to the Alberta Labour letter was to

- ⇒ utilize recognized hazard assessment techniques which had been developed in the chemical process industry
- ⇒ modify the technique under disciplined conditions
- ⇒ apply it to the Alberta log haul industry in order to produce a generic log haul hazard assessment
- ⇒ produce a checklist for the log haul industry in Alberta
- ⇒ have the individual mill do their own specific assessment based upon the AFPA Generic Log Haul Industry Checklist.

The AFPA retained the services of a chemical process engineering practitioner (the team leader) who had experience in both the application of classic hazard assessment to the chemical process industry, and experience in providing adaptations of chemical process hazard analysis to other industry types. The team leader worked with log haul industry experts to design the sessions and risk evaluation techniques that have been used for the original and subsequent trucking industry exercises in Alberta for log trucks and chip trucks.

4.1.2 2002 Alberta Log Haul Revalidation

A feature of hazard assessment work in the chemical industry is that for certain chemical processing sites meeting threshold criteria (concerning the kind, and weight, of chemicals in inventory at the site), a hazard assessment performed at the chemical process location is to be renewed every five years. Although this legislative necessity does not apply to Canadian jurisdiction, the AFPA arranged for the original log haul assessment of 1998 to be revalidated in 2002. Revalidation is a complete examination of the original assessment to ensure continued relevance of the session record entries of the original assessment.

The 2002 revalidation work examined every entry of the 2002 work, and added some Potential Checklist Items for consideration to include in the next edition Log Haul Checklist published for the industry after the revalidation work.

4.1.3 2007 Log Haul Revalidation

In keeping with established international jurisdiction philosophy, a 2007 Log Haul revalidation was undertaken by the AFPA. The methodology was similar to that previously established. All previous entries of the log haul assessment were examined in sessions for the purpose of updating, approval, changes, and additions. Changes to the Log Haul Checklist were made for a latest issue Checklist.

4.1.4 2007 DMI Chip Haul Assessment

In the period since the first log haul revalidation of 2002, DMI moved to portable chipping in place of log haul and wood room practice. By 2007, the log haul trucks of the sort examined by the AFPA hazard assessment had been replaced at DMI by chip trucks for the purposes of fibre transport. Chip truck dumpers were now used in the DMI yard.

The DMI representative recognized that there are many overlapping issues of concern with respect to chip truck and log truck driving. Some examples are:

- ⇒ trucks drive to remote locations from the mill
- ⇒ roads can be off public highway and radio controlled
- ⇒ chip trucks are subject to similar regulations, such as the National Safety Code, as log trucks
- ⇒ the trucks carry considerable payload
- ⇒ the trucks are subject to a winter weights program.

DMI had participated in the original hazard assessment sessions, as well as the two revalidations following. In view of the similarities between chip hauling and log hauling, DMI explored the possibility of providing a hazard assessment and “Generic Chip Haul Checklist” with the AFPA sessions team leader. The participation of DMI in the AFPA generic hazard assessment checklist creation process, and through monetary support of the AFPA, meant that previous AFPA work was available for the team leader of the AFPA sessions to use as seed material for the chip haul application.

The 2007 chip haul sessions were one day in total. The sessions were attended by four people including the team leader, and were used to adapt the just completed log haul work to chip haul application. This meant that the hazard assessment portion of the work was pre-existing, and provided an excellent base for chip haul consideration because of the similarities of the two truck practices. The purpose of the one day session time was to

- ⇒ consider the existing log haul work for chip truck applicability
- ⇒ adapt terms and session records for chip haul practice
- ⇒ recommend any changes suitable for a chip haul checklist
- ⇒ add chip haul specific points to the assessment.

4.1.5 2010 Chip Haul Revalidation

This work has provided an opportunity to both revalidate the 2007 work, and also to raise the quality of the work to the point that it can be considered a chip haul specific assessment in the same sense that the AFPA work has produced a log haul specific assessment. Every entry of the 2007 work was examined over two days of sessions, and nine additional Potential Checklist Items have been added to the assessment. The Chip Haul Checklist has been updated for a 2010 edition.

4.1.6 The Present State of Chip Haul Assessment Practice

The combined chip/log haul assessments to date, including this 2010 chip haul revalidation, have had the benefit of five review sessions on the log/chip haul topic, with a total of 32 different experts in the field of log hauling, trucking, chip hauling, or hazard assessment participating in the various reviews. The names below list the people who have contributed to the sessions:

Gordon Cowan	Hazard Assessment Team Leader	U G M Engineering Ltd.
Samuel Elkins	Continuous Improvement Coordinator	Daishowa-Marubeni International Ltd.
Larry Jones	Director	Alberta Forest Products Association
Richard Chemago	Woodlands Central Superintendent	High Level Forest Products Ltd.
Greg Cunliffe	Woodlands Supervisor	Daishowa-Marubeni International Ltd.
Brian Davies	Woodlands Manager	Blue Ridge Lumber (1981) Ltd.
Gordon Goodall	Owner/Operator	Down Under Contracting
Lloyd Harman	Director	Alberta Forest Products Association
Morgan Isley	Owner/Operator	D&J Isley & Sons Contracting Ltd.

Bert Larocque	Operations Forester	Slave Lake Pulp
Rick Martin	Owner/Operator	Rick Martin Trucking Ltd.
Keith Murray	Environmental Manager	Millar Western Forest Products Ltd.
Ken Mvyres	Owner/Operator	North End Holdings Ltd.
Terry Nilson	Production Manager	Weldwood of Canada Ltd.
Ian Price	Lead Health & Safety Officer	Daishowa-Marubeni International Ltd.
Peter Selig	Safety, Loss Control Coordinator	Daishowa-Marubeni International Ltd.
Roy Timmermans	Safety Management Consultant	Devonian Safety Services Corp.
Axel Winter	Log Haul Coordinator	Miller Western Forest Products Ltd.
Dennis Young	Log Haul Coordinator	Weyerhaeuser Canada Ltd.
John Buitenhuis	Woodlands Supervisor - Hauling	Weyerhaeuser Company
Ralph Cook	Owner/Operator	R & S Trucking
Mark Coolen	Woodlands Supervisor - Hauling	Millar Western Forest Products Ltd.
Bob Demulder	Director, Forestry and Transportation	Alberta Forest Products Association
Martin Mudryk	Woodlands Supervisor - Hauling	Millar Western Forest Products Ltd.
Henry Dyck	Branch Manager	Excel Transport
Stephen Szabo	Continuous Improvement Manager	Daishowa-Marubeni International Ltd.
Steven Krahn	Operations Manager	Daishowa-Marubeni International Ltd.
Cliff Kostiuck	Division Manager	Goldstar Transport
Dan Bloomfield	Trucking Coordinator	Buchanan Lumber
Harold Freeman	Fibre Supply Manager	Alberta Newsprint Company
Riley Ireland	Division Manager	Goldstar Trucking/Weyerhaeuser GP
Warren Kehr	Purchase Fibre Coordinator	West Fraser Mills

The logical outcome of five reviews over two essentially similar topics is that there is decreasing change being introduced into the session records. The repetitive portions of industry practice, such as “Driving to the Cut Block” and “Driving to the Mill,” which incorporate similar What ifs such as “What if there is fog, snow, freezing rain, visibility reduced” represent a constant in terms of session record entries.

It is the team leader’s opinion that the chip haul Checklist has reached the point of cumulative examination such that renewal of the Checklist, and the implied revalidation sessions, could be triggered by specific government/regulation requirement, or by significant change of industry practice, as opposed to a mandatory five year regular revalidation period. Should this philosophy be put in place, and the chip haul Checklist

continue to be considered “current,” there is an implied responsibility on the collective industry to reconvene in the event that a “significant change” should occur in the industry.

In the event that regular five year revalidation practice is continued, the team leader, if retained for revalidation session design, would identify the various portions of the chip haul (or log haul, in the event that another log haul revalidation was performed) practice that are repetitive entries. Such entries would be organised using the categories feature of Dyadem PHA Pro 5.0 (or its equivalent) for standardised quality checking, and also rated for expected variation over a five year period. The intent would be to provide for more concentrated use of session participant time, with the ultimate goal of reducing repetitive session points consideration, in the session records. Another way of thinking of this, is to direct the design of sessions such that they become more interesting in total, as repeated consideration of repeated points is not value added after so many sessions (five session assessment exercises over the two industries).

A secondary outcome might be reduced session time - but this is of minor benefit for chip/log haul sessions, as the session time of (less than) two days is not long in present practice form. The main intent is to provide for better quality of revalidation than might be provided through the classic revalidation practice of the work to date.

The methodology outlined above has been successfully used by the team leader for gas storage operations in Ontario, as a response to CSA Z.341 requirement.

In summary, the following conditions may trigger a chip haul industry Checklist session revalidation:

- 1) significant change in industry practice - similar to the abandonment of log haul and wood room practice in favour of portable chipping, which led to the chip haul work of 2007
- 2) regulation development similar to the February 2010 Letter of Acceptance from Alberta Employment and Immigration

- 3) a desire on the part of the industry and the province to practice a five year revalidation period as a matter of course.

4.2 General Description and Application - “What if” Analysis

“What if” analysis is a recognized method of formal inquiry into industrial hazards. The “What if” analysis technique is a brainstorming approach in which a group familiar with the technology being examined asks questions or voices concerns about the proposed project or modification.² The purpose of “What if” analysis as applied to the chemical process industry is to identify hazards, hazardous situations, or specific accident events which could trigger an undesirable consequence. Operability examination is a secondary, but important topic of inquiry.

“What if” analysis is recommended by the Center for Chemical Process Safety (CCPS) of the American Institute of Chemical Engineers (AIChE). It is also described in the API 750 publication of the American Petroleum Institute, Management of Process Hazards; and recognized in legislation in the United States of America, under the Department of Labor, Occupational Safety and Health Administration (OSHA) regulation 29CFR 1910.119, “Process Safety Management” (PSM).

The “What if” analysis concept encourages the analysis team to think of questions that begin with “What if”, however any type of question can be included. The questions are applied to various drawings and sections of the plant - items such as electrical safety, or fire protection, are examples.

In its simplest form, the “What if” analysis technique leads to a list of questions and answers about the process under examination. Two to three people, plus leader and

²Further information can be found in Guidelines for Hazard Evaluation Techniques, 2nd edition, Centre for Chemical Process Safety, AIChE, 1992. Much of the content of this general description is taken directly from this source (pages 60 - 61, 95 - 99).

scribe, are the preferred number of participants, although a more classic HAZOP Team make-up of diverse disciplines totalling five to seven people is also common and accepted practice. Examples of candidate disciplines for inclusion in a HAZOP and/or “What if” exercise are:

- ⇒ • Process engineering
- ⇒ • Instrumentation & instrument engineering
- ⇒ • Electrical engineering
- ⇒ • Maintenance
- ⇒ • Safety/loss prevention personnel
- ⇒ • Operations
- ⇒ • Inspection/materials personnel.

Preparation for the review usually consists of examination by the team leader of process descriptions, relevant drawings, and operating procedures. The process to be examined is usually broken into nodes, as in classic HAZOP. “What if” terminology often refers to the nodes and deviations of classic Guideword HAZOP as “Systems” and “Subsystems.” Preliminary questions (or seed questions) are prepared for presentation to the team. The team will provide additional questions during session.

The conduction of meetings can be done by listing all questions and safety issues, followed by consideration by the team of the listed items. Another recognized method is to deal with each question individually before inviting new questions.

The report portion of a “What if” session is prepared by the team leader after the meetings. It is usually structured into categories which reflect the session inquiry, such as (for example):

- ⇒ • “What if” questions
- ⇒ • Consequences/hazards
- ⇒ • Safeguards
- ⇒ • Recommendations or actions.

“What if” analysis is frequently combined with Checklist analysis, which uses lists developed in the chemical process industry to ensure complete coverage of the process. The lists provide a reference for the session group to refer to as an aid for their consideration. While there are checklists available in the public domain for process industries, a checklist is most useful if it has been developed for the specific operation or facility which is being examined. Development of a checklist can be a project in and of itself. Exxon is well known for its application of checklists to HAZOP methodology. In the case of Exxon, the company used its extensive technical and procedural records to supplement the Guideword HAZOP technique. The motivation for this was to improve the quality of HAZOP inquiry through the use of in house technology and the learning associated with it, as well as decrease the time required for classic ICI type Guideword HAZOP methodology.³

4.3 Application - The Alberta Chip Hauling Hazard Assessment

Application consideration for Chip Hauling Assessment was a two part activity. The first part was the original selection of “What-if” methodology for the 1998 AFPA Log Haul Generic Hazard Assessment. The second activity was application of the original log haul assessment and records to the chip haul situation.

The description of this subsection sets out the means employed for hazard assessment methodology selection - which in the case of Alberta chip haul practice means a progression of events beginning with the original AFPA work of 1998, including the dedicated DMI work of 2007, and this latest revalidation work.

³ ICI (Imperial Chemical Industries) was an early developer of HAZOP methodology; and could be considered the “inventor” of early Guideword HAZOP techniques.

4.3.1 - AFPA Assessment - Selection of Methodology

The following considerations were important to the selection of the hazards identification technique for examination of the Alberta log hauling industry on a generic and province wide basis:

- ⇒ The technical orientation of the log haul industry is operationally based, as opposed to process/chemical engineering based (for the purpose of the hazard assessment)
- ⇒ The exercise had to address the elements of the Alberta Labour letter, specifically:
 - weight monitoring
 - speed monitoring and control
 - route control and communications
 - signage
 - driver management
 - truck and trailer maintenance, and
 - any other factors that may be important to the safe operation of the trucks
- ⇒ The industry participants, while fully qualified for an examination of the Alberta log haul industry, had no experience in HAZOP techniques (only one participant had prior exposure to a “What if” exercise)
- ⇒ The “What if” sessions would be held during an active part of the hauling season - few of the participants would be able to devote four or five full days to the exercise. The methodology had to therefore be “friendly” to minimise loss of productivity due to turnover of personnel
- ⇒ The product of the hazard assessment had to be distilled into a useable guide to the individual mill owner, on a province and size wide basis, for the mill owner’s use in their own site specific hazard assessment.

The above elements of consideration led to the "What if" hazard/operability technique to be used for the session examinations, with substantial adaptations for the specific situation. In the view of the team leader, “What if” methodology formed a clearly superior technique for the situation, and while other forms of HAZOP technique were briefly considered by the team leader for the exercise, none were judged suitable for detailed consideration at the preparation stage of the AFPA generic assessment.

4.3.2 Application of AFPA Work to the DMI (2007) Setting

The second portion of application consideration, the assessment technique to be applied to the DMI chip hauling situation, was quite simple. The main consideration was that any serious consideration of another technique aside from “What-if” would imply a complete assessment exercise. Retention of the AFPA technique and modification of the 2007 AFPA revalidation work implied a one day Checklist type of session, with minimal personnel required for the sessions. There was very little incentive to seriously consider a significant change in the assessment exercise.

While the use of previous and revalidated work was indicated on the basis of the cost and effort savings alone, it is worth noting that even in the case of completely new work, the “What-if” hazard analysis technique would have been chosen. The similarities between log haul and chip transport are so great that there is virtually no chance that the team leader would have selected a different technique under the mandate provided, which was to produce a Checklist product similar to that of the AFPA, but directed to the chip haul.

A different mandate would be required in order to have another technique in use. An example might be the use of Failure Modes and Effects Analysis (FMEA) in the event that identification of a worse case truck mechanical failure was the object of the exercise, to cite one speculative illustration.

As a last consideration of the application of the AFPA product for conversion to the DMI situation, the question must be asked, “Is this the best way to accomplish the task?” For example, why would the methodology of this study be better than DMI undertaking a completely new hazard assessment, geared solely to chip truck operations?

The obvious answer is money and time - a new assessment implying considerably more input of both items. However, application of this money and time would not, in the team leader’s opinion, lead to a substantially better hazard assessment and subsequent checklist; and more importantly, it is quite possible that the final result would not be as

good as this adaptation of the 2007 AFPA revalidation work. The reason for this opinion is simply the level and quality of investment and talent which has gone into the AFPA work, prior to use by DMI for the chip truck situation, as has been outlined earlier. The team leader never seriously considered recommending a completely new assessment to DMI management for this reason.

4.3.3 Alberta Chip Haul Adaptation/Revalidation

While the technique of these 2010 chip haul sessions is essentially a revalidation technique, there is also an element of adaptation in the work. The team leader did not consider any change of assessment technique for the revalidation sessions, in much the same manner that the team leader of any chemical process assessment would not change the original technique of an existing assessment for revalidation purposes. Unless there was a substantial change of process, there would be no call for methodology change. The revalidation aspect of the work implied no change of technique, and the industry technology also implied no change from the “What if” basis.

The adaptation aspect of this work refers to the improvement of the assessment coverage from the former state of being a log haul exercise converted to a chip haul examination - to a dedicated chip haul examination. The elements of latest sessions coverage which allow the dedicated chip haul assessment label to be attached to this work are:

- ⇒ the closeness of previous entry examination during sessions (accepted revalidation practice);
- ⇒ the expanded number of session participants to encompass province wide practice,
- ⇒ the examination by current session participants of previous session records, including
 - previous session assessment structure
 - previous session data entries
 - previous session risk ranking, and

- ⇒ consideration of the previously issued DMI specific Checklist for wider Alberta application.

The important aspect of the above points is that in combination they provide ample opportunity for changes from the 2007 work. The fact that few changes were made to the final checklist product, and the overall structure and content of the pre-existing work was endorsed by these sessions, should be taken as a reflection of the thoroughness of the existing work and its suitability for chip haul examination, as outlined in subsection 4.1.6.

4.3.3 Checklist Sessions Product

The product of the sessions, the Alberta Chip Haul Checklist, is presented in subsection 5.5 of this report. As with the original AFPA Generic Log Haul Checklist, the work behind the Alberta Chip Haul Checklist is qualitative. Industry experts have identified, through a recognized hazard assessment technique, items which knowledgeable people in the industry consider important for general safety of the chip haul transport industry. The session group as a whole agreed the examination was thorough in examination of various aspects of the entire chip haul operation, as laid out by the Divisions of session records.

4.4 Methodology of Sessions

The pre-existing 2007 work established the following aspects of session methodology prior to the beginning of 2010 sessions:

- ⇒ the Divisions of the Chip Haul truck operation
- ⇒ the Division Activities
- ⇒ the form of the sessions final product - the Checklist
- ⇒ categories for the Potential Checklist Items
- ⇒ risk matrix design
- ⇒ risk matrix use.

The sessions used the fully completed 2007 chip haul PHA Pro 5.0 file (i.e., the recording hazard assessment software record) as the starting point for the 2010 chip haul assessment. The team leader prepared for sessions through review of the 2007 DMI Chip Haul Operations Hazard Assessment - Final Report.

There had been considerable previous education concerning chip haul operations, and log haul operations. The previous experience meant that the team leader entered into the 2010 chip haul sessions with reasonable familiarity of the industry. Some examples of previous experience are

- ⇒ the team leader had previously viewed the action of the DMI chip dumpers at the DMI mill site
- ⇒ performed a leadership/facilitation exercise for a technical meeting concerning DMI chip hauling
- ⇒ designed and performed the 2007 chip haul review/sessions
- ⇒ performed the original design for the 1998 log haul assessment sessions
- ⇒ performed two revalidations of the log haul assessment.

The team leader was therefore familiar with portable chipping equipment and practice, to the extent required for hazard assessment session leadership. Other than review of the 2007 chip haul work, preparation of 2010 session software files, and consideration of appropriate means to create a dedicated chip haul assessment, there was little preparation activity required. For example, the activity was substantially less than the expected preparation level of a new hazard assessment.

Chip haul operation split into Divisions and Division Activities was unchanged from 2007 work prior to sessions, although there was a minor revision to the structure of the “What if” during sessions, to split Mill Orientations into “Hauling to” and “Hauling from” activity.

Final products were unchanged from 2007 work, and took the form of:

- ⇒ a “revised checklist” to be provided to the mill owners for the identification and implementation of chip haul trucking industry controls in response to the acceptance letter of February 2010, and
- ⇒ a Final Report would be provided to describe the proceedings of the exercise.

The original “What if” scope as established by log haul assessment and converted to chip haul assessment was retained. Opportunity was provided in 2010 sessions for review of the Divisions to ensure the 2007 design was correct for the current application. The intent was to continue to provide for maximum scope of inquiry in order to a provide high quality product.

Previously defined categories were retained for the Chip Haul Checklist issue.

The Risk Matrix was unchanged from previous log haul work, and that used for 2007 chip haul examination. The use of the risk matrix was changed somewhat, in that the current review was performed on a province wide risk ranking basis. The result of this change was as expected, as some changes were made in sessions to increase risk ranking for specific points. Further details can be found in subsection 4.8.

Adaptations from the previous DMI chip haul sessions continued to be used. These in turn came from the original 1998 log haul work, which was quite carefully designed by four experts of various expertise. The four people who contributed to the initial design of the AFPA work were:

- | | |
|----------------------|----------------------------------------|
| · Mr. Gordon Cowan | - U G M Engineering Ltd. (Team Leader) |
| · Mr. Lloyd Harman | - Alberta Forest Products Association |
| · Mr. Peter Selig | - Daishowa-Marubeni International Ltd. |
| · Mr. Roy Timmermans | - Leal International Ltd. |

The team leader provided expertise in the original AFPA preparation and methodology for the “What if,” while the other members of the preparation team provided general expertise for the log haul industry (in the case of Mr. Harman and Mr. Selig); and in federal and

provincial trucking legislation (in the case of Mr. Timmermans). This original work was supplemented for the purposes of chip haul application by consideration by the team leader and Mr. Samuel Elkins of DMI for the 2007 chip haul assessment.

“What if” methodology as applied to a process oriented hazard assessment was essentially unchanged, in that the philosophy of breaking the operation into parts (splitting the process into nodes, or systems), and examining each portion in turn by posing “What if” questions, was retained.

Terminology adaptations from AFPA log haul work, and DMI chip haul work, were retained:

Chip Haul “What if” Terminology			
Guideword HAZOP	“What if” Methods	Chip Haul “What if”	Comments
Node	System	Division	Main division of the chip haul operations process
Deviation	Subsystem	Division Activity	An activity within the division
Causes	What if	What if	As with classic “What if” methodology
Consequences	Consequences/ Hazards	Potential Hazards	“Potential Hazards” cited because a Hazard may not be applicable to all provincial operations
Safeguards	Safeguard /Controls	Safeguards	Classic term which is suitable for the participants to work with
Actions	Recommendations	Potential Checklist Item	Checklist items were the main product of the HAZOP sessions. Recommendations were not an aspect of the HAZOP project - “Actions” are similar to AFPA work – they are a product of application of the DMI Chip Haul Checklist.

The table on the following page outlines the chip haul operation as defined by Divisions and Division Activities. The table shows the final form of the Division and Division Activity assignments. The current 2010 work provided a split examination of Orientation. The separation was into “hauling to” and “hauling from” Division Activities. This format provides for dedicated examination of chip truck operations on the site of mills providing chips to the haulers. In actual fact, the change provided little record change - but the 2010 layout is a better reflection of chip haul practice than the combined format of 2007.

Chip Haul “What if” - Divisions and Division Activities	
Chip Haul Division	Division Activity
1.0 - Truck/Contractor Administration	1.1 - Contract management 1.2 - Hauling to - Orientations 1.3 - Hauling from - Orientations
2.0 - Driving to the Cut Block or to a Residual Mill	2.1 - Pre-shift inspection 2.2 - Driving to the Cut Block
3.0 - Loading at the Cut Block or at a Residual Mill	3.1 - Preparing the vehicle for loading 3.2 - Positioning the vehicle at the Cut Block Location 3.3 - Positioning the vehicle at the Residual Mill Location 3.4 - Loading the vehicle at the Cut Block 3.5 - Loading the vehicle at the Residual Mill - Bins 3.6 - Loading the vehicle at the Residual Mill - Storage 3.7 - Tarping at the Chipper and at the Residual Mill
4.0 - Returning to the Mill	4.1 - Leaving the loading location 4.2 - Driving to the mill - public highway 4.3 - Driving to the mill - off highway/bush roads
5.0 - Unloading at the Mill	5.1 - Arriving at the mill site 5.2 - Weighing-in 5.3 - The unloading operation 5.4 - Weighing-out 5.5 - Preparing for the next truck use

Risk Ranking was unchanged from the previous work. Risk rankings provide an expression of the various levels of perceived risk. Evaluation of risk was accomplished in a similar manner to standard HAZOP practice, which in turn is based upon the relationship of risk to frequency and consequence:

Quantity Relation

Quality Relation

$$\text{Risk} = \text{Frequency} \times \text{Consequence} \quad \Leftrightarrow \quad \text{Risk Ranking} = \text{Likelihood} \times \text{Severity}$$

The definitions provided for the original, and revalidation exercises were:

Risk Ranking - Likelihood & Severity Definitions	
Likelihood	Severity
1 - Almost never - "one in a million"	1 - The outcome will be minor - maybe Minor First Aid
2 - Might happen - a driver may see it once in his career	2 - This event could result in a temporary disability
3 - This might happen once a season	3 - This event could result in a permanent injury/disability
4 - This will probably happen a few times a season	4 - This event could lead to a fatality
5 - Very probable - a driver will see this a lot during the season - it may happen once a shift or more	5 - This event could result in multiple fatalities - this is a "catastrophic" event

The session team reviewed all of the existing risk rankings of the 2007 documentation. Risk Ranking was assigned to each Potential Checklist Item, through the product of the likelihood and severity rating for the item. Existing 2007 Potential Checklist Items were retained in the prepared session file. New Potential Checklist Items, or revised wording of existing Potential Checklist Items, were applied to the chip haul situation. The Risk Matrix for the chip haul was applied:

"What if" - 5 X 5 Risk Matrix						
Likelihood	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Severity				

Risk Ranking was reviewed for each “What if” which had a Potential Checklist Item assigned to it, or assigned in the case of a new Potential Checklist Item. The ranking was based upon the situation as considered in session, with existing safeguards considered as part of the situation ranking. Potential Checklist Items were not an influence on Risk Ranking. There was no attempt to consider the risk change if a checklist item was adopted across the province (as opposed to not being current practice at the time of sessions).

The group assigned likelihood and severity after the Potential Checklist Item was identified, but before going on to the next “What if.” Risk Rankings were considered in light of all Potential Hazards identified, and are recorded as a separate item in the Potential Hazards entry of the session records.

No attempt was made to incorporate capital loss as part of the risk ranking, which is the same as original practice, and onward throughout all chip haul and log haul examinations.

4.5 Session Proceedings

The sessions were conducted over a two day period at the DMI Peace River Pulp Woodland Offices, just outside of Peace River, Alberta, at the mill site. The dates of meeting were Tuesday, August 31st, and Wednesday, September 1st, 2010. The first session day began at 8:30 am and ended at 4:00 pm. The second session day ran between 8:30 am and 1:15 pm. Breaks were called by agreement within the group with no set pattern. Lunch was provided at the meeting site. A team members list can be found in section 2.0.

The meetings were conducted and scribed by the team leader. The use of PHA-Pro 5.0 software meant that no additional individual was required to perform the function of scribe.

The team leader provided very little outline of hazard assessment session practice for the exercise. The main DMI employee participant had previously attended the log haul revalidation sessions of 2007, and helped to design the 2007 chip haul sessions, as well as be a main participant in the 2007 sessions. There was one other part time participant from DMI who had attended the 2007 sessions. The other participants had no experience with such sessions. The team leader very briefly explained the reasons for the sessions and the way in which the work would be conducted, but the main introduction for the sessions work was an early assignment to read the DMI Chip Haul Checklist of 2007, and consider its suitability for the chip haul industry on a province wide basis. The point of the exercise was to establish early in the proceedings the degree to which the expanded group felt the need to change the previous work.

The group reaction was that the checklist made sense for the industry. The next exercise was to consider the Divisions and Division activities of the 2007 chip haul work, and decide if changes were warranted. No changes were identified at that time, however the group as a whole made the later change to provide two orientation activities in the first Division - to account for orientations at the "hauling to" site, and the "hauling from" site.

The effect of the preliminary exercises of considering the previous work was two fold - to provide an opportunity to change the basic philosophy of the chip haul sessions structure if the group felt it to be necessary, and also to use the consideration of previous work to quickly gain a "feel" for the chip haul sessions, in place of relying on a presentation by the team leader.

There was no need to provide a description of Divisions and Division Activities in session, since all participants were professionals within the chip haul trucking industry except for the team leader.

The assessment sessions began with the coverage of Division Activity 2.1 - Driving to the Cut Block. This was done in order to accelerate progress in the early part of the sessions. Previous work had shown that the sessions group would more readily adapt to the assessment methodology by beginning with this Division Activity, as opposed to Truck/

Contractor Administration. The group quickly grasped the methodology of inquiry, and progress was rapid and efficient from early in the sessions work. The changes introduced early in sessions work were well considered and reasonable, a development which gave confidence to the team leader that the rather sparse introduction to the assessment methodology was not detrimental to the quality of the proceedings.

After the examination of the total Division - Driving to the Cut Block or to the Residual Mill, the group examined the first Division activities. The split of the Orientation Division Activity into two main categories of inquiry was initiated by the group. Coverage of Chip Divisions then proceeded in order through to Unloading at the Mill.

Display was provided by overhead projector connected directly to the notebook computer used for PHA-Pro 5.0 proceedings records. Session records were kept by the team leader with interactive participation by the assembled group.

Each question of each division activity was fully examined, such that no further points could be brought up by the group at the invitation of the team leader before moving on to the next question of the division activity. Similar treatment was provided for each division - at the conclusion of a division examination, the team leader asked for further points, concerns, "What if" questions. In this manner, the group as a whole provided the judgment as to whether a division had been adequately covered.

The extensive previous work showed itself in these sessions by the markedly faster closing of Division Activities, compared to previous work. The team leader was confident of the quality of the sessions because new points and changes in existing risk ranking were provided at regular intervals throughout the two days of sessions. It was apparent that a quality examination of the previous work was taking place, however once the Division Activity had been covered, closing of the assessment section and moving on to the next was a comparatively rapid process.

Another aspect of these sessions was that the repetitive nature of the Division Activities

- ⇒ Driving to the Cut Block
- ⇒ Driving to the Mill - Public Highway
- ⇒ Driving to the Mill - Off Highway/Bush roads ...

... became much more noticeable than in previous exercises. This point has been addressed in subsection 4.1.6 to some extent. The writing of this section outlines a preliminary method for accomplishing future revalidation practice, should it take place.

The aim is to include some measures to make the coverage less repetitive, and more efficient for the group. The risk of not doing this is that differences amongst the Division Activities may be missed in future revalidation work. The difference between present practice and earlier practice - why it matters - is the advanced state of the work after a total of five exercises over log trucks and chip trucks. Without limiting the future work, some consideration could be:

- team leader preparation activity at the beginning of the revalidation to provide a comparison of the various Division Activity data entries for the purpose of standardizing the entries (which means - make the “ice” entries in all Division Activities have the same Consequences and Safeguards, if and where warranted)
- use the categories feature of PHA Pro 5.0 to mark the changes to the preparation record made by the team leader prior to the revalidation sessions
- have the revalidation sessions group approve or change the team leader’s original changes
- have the revalidation group consider if future revalidations would expect changes in the future session entries
- mark entries accordingly, using category feature - this could probably be done by “What if”.

The effect of the above activity would be to mark for future record those aspects of the chip haul activity which prior session groups considered to be likely to change. This would be an aid to both the team leader, and the session group. The act of assigning

categories in session would concentrate the revalidation group's consideration on differences. The probable outcome for future groups would be a reduction of session time without loss of quality. This practice has been applied with success for another industry type by the team leader.

The team assembled for examination sessions was highly capable. The session participants were all highly experienced in the chip haul trucking industry (with the exception of the team leader). The make-up of the group included the DMI Continuous Improvement Coordinator, industry experts from four other operations, and two contract trucking representatives (one of which doubled as a mill owner representative). The team leader asked for and received ample assistance in recording technical points in an acceptable manner to the experienced group.

4.6 "What ifs" Profile

The sessions provided for a total of 216 "What ifs," covered over the two days of session time. The starting chip haul 2007 preparation PHA Pro file had 181 "What ifs." The original philosophy of minimal restraint on "What if" formulations, present in session conduct since 1998, was retained for 2010 work.

The following table shows "What if" distributions for the 2010 chip haul sessions, the 2007 chip haul work, and the AFPA log haul 2007 revalidation sessions.

There was no "quota" or aim in coverage by "What if." The distribution shown on the next page table is presented as a matter of interest.

Haul Division	2010 Chip Haul Distribution	2007 Chip Haul Distribution	2007 Log Haul Distribution
Truck/Contractor Administration	10.65%	7.9%	6.6%
Driving to the Cut Block	18.96%	18.4%	16.1%
Loading at the Cut Block	29.63%	29.0%	33.1%
Returning to the Mill	24.46%	28.4%	27.7%
Unloading at the Mill	15.28%	16.3%	16.5%
	100.0%	100.0%	100.0%

4.7 Potential Hazards/Safeguards Profile

Potential Hazards/Safeguards examinations formed the record of rationale for a Potential Checklist Item (if assigned). Entries from the 2007 work were left as is, modified, or new ones added according to the judgement of the sessions group for the current chip haul trucking industry situation.

Potential Hazards/Safeguards were influenced by the following factors:

- ⇒ Effort was made to record discussions and reasoning in point form
- ⇒ Effort was made to record context of discussion for the understanding of Potential Checklist Item rational
- ⇒ Group participation was encouraged to ensure that technical points and “jargon” were correctly recorded
- ⇒ Potential Hazards were cited to include variety of industry chip haul practice in the province

4.8 Potential Checklist Items Profile

The 2007 DMI chip haul work ended with 91 Potential Checklist Items. These 2010 sessions provided an additional nine Potential Checklist Items for a total of 100 items. Checklist categories were assigned for new items during sessions. Previous Potential Checklist Items were not examined on an exhaustive basis in 2010 for check of category, although some attention was paid to existing categories as assigned in 2007 work. No changes were made in existing category assignments.

Chip haul Potential Checklist Item categories are presented below, for both editions of chip haul work:

Potential Checklist Item Category Chip Haul Trucking Industry	2010 "What if" Distribution	2007 "What if" Distribution
Weight Monitoring	1.0%	1.1%
Speed Monitoring and Control	1.0%	1.1%
Route Control and Communications	23.0%	24.2%
Signage	3.0%	3.3%
Driver Management	38.0%	39.5
Truck and Trailer Maintenance	11.0%	9.9%
Other Factors	23.0%	20.9%
	100.0%	100.0%

4.9 Risk Ranking Profile

The 2010 distribution of Maximum Risk Ranking for Potential Checklist Items is shown below:

Potential Checklist Items - RX Rating Value	2010 RX	2007 RX
1	1.0%	1.1%
2	1.0%	1.1%
3	1.0%	1.1%
4	7.0%	8.8%
5	2.0%	2.2%
6	4.0%	4.4%
8	1.0%	0.0%
9	1.0%	2.2%
10	0.0%	3.3%
12	6.0%	7.4%
15	1.0%	1.1%
16	13.0%	11.0%
20	38.0%	30.8%
25	23.0%	25.3%

The figures are presented for interest only.

The use of Risk Ranking in any HAZOP application should be exercised with caution. The following remarks were made with respect to HAZOP Risk Ranking as classically applied in the chemical process industry:

- ⇒ HAZOP Risk Ranking is a qualitative exercise - team members are either presented with a Risk Matrix (including definitions) designed by the team leader, or (less often) provide/design the Risk Matrix as a group. In either case, the application of likelihood and severity is a judgement on the part of the group as a whole

- ⇒ Risk Ranking has been proven to be a well accepted and useful tool for the chemical process industry. It is accepted as an indicator of relative risks uncovered in sessions
- ⇒ Risk Ranking, where it is used, is assigned to express the relative importance of Actions. This means that the tool is applied to a situation where a change, design activity, equipment configuration (for example) will result in an action at the process installation which is clearly understood by most if not all of the HAZOP group
- ⇒ For a substantial proportion of HAZOP exercises in the process industry, HAZOP teams have accumulated experience with HAZOPs, and also with the use of Risk Ranking (as a generality)
- ⇒ Where a predetermined level of maximum risk (RX) for an action will result in a definitive change in the process oriented project, this level of RX is understood by the group. For example, if a Risk Matrix RX level of "20" means that the change must be made in the process plant, this is understood by the HAZOP Team at the time the Action/ Recommendation is made
- ⇒ In general, Risk Ranking is applied to discrete situations - while the project being examined may be large, it is probably applied within a corporate entity, and/or within a geographical location (such as a single plant site), and/or a set technology (such as a discrete process unit, or a large process unit of related technologies - a refinery catalytic cracker unit, for example).

In considering the use of Risk Ranking for a chip haul operations assessment, there are many facets of the work which are different from a classic process HAZOP. For example:

- ⇒ The exercise is applied to a situation outside of classic chemical process application
- ⇒ Risk Rankings were not applied to Actions, but to aid in the consideration of Checklist items, and as a tool to express the relative importance of Potential Checklist Items
- ⇒ The audience of the HAZOP RX product (log truck personnel in one case, chip truck personnel in this specific case, and less likely, entities outside of the chip haul industry) is an unsophisticated audience; meaning that the audience has no experience with HAZOP Risk Rankings, its usual areas of application, and the

alternatives to Risk Ranking (such as Action Priorities, Failure Modes Effects and Criticality Analysis (FMECA), or Quantitative Risk Analysis⁴).

While the Risk Ranking tools employed in these sessions are aids for the consideration of Potential Checklist Items for the ultimate chip haul industry Checklist, it is important that the interpretation of RX results be exercised with care. The main aspect to keep in mind is that Risk Ranking as performed in sessions is a qualitative exercise. It cannot be taken as an absolute indicator of risk.

4.10 Checklist Adaptation

Checklist design for the chip haul was relatively simple, in that the Checklist presented as part of this work is an adaptation of the AFPA Generic Log Haul Checklist to the chip haul situation. Compared to the AFPA Checklist design effort of 1998, the effort for the AFPA revalidation work, and the original DMI chip haul adaptation work of 2007, were both minor. For the AFPA revalidation work, the existing Checklist was examined for currency of cited legislation, for example. The revalidation session team would consider whether new Checklist Items should be added, either because the revalidation group felt the changes were necessary, or perhaps because a revised risk ranking drew attention to a previously created Potential Checklist Item.

The 2007 DMI Chip Haul Checklist was the product of conversion from log haul terminology to chip haul terminology. While the actual work involved in the DMI Chip Haul Checklist was minor at the end stage, there was extensive prior work supporting the Checklist conversion from the log haul version. The following writing outlines the effort and methods that were used for the original AFPA Checklist design of 1998. Later AFPA Log Haul Checklists, and the 2007/2010 Chip Haul Checklists, are products of this earlier work. From the AFPA Final Report of 1998:

⁴ More information concerning these alternatives may be found in [Guidelines for Hazard Evaluation Procedures](#), CCPS, 2nd Edition.

The checklist is the visible response from AFPA to aid the log haul industry response to the Alberta Labour acceptance letter. The checklist has the following uses:

- ⇒ It provides a reference for Alberta Labour to consider when evaluating response of the industry to the acceptance letter requirement for a site specific “hazard assessment” by the mill owner*
- ⇒ It provides a base for the mill owner or other hazard assessment responsible party to start from when undertaking a response to the acceptance letter*
- ⇒ It provides some indication to the mill owner/responsible party as to what a minimum acceptable response would be to the Alberta Labour acceptance letter.*

In assigning Potential Checklist Items to the checklist, the following points were in place by the time the HAZOP sessions were completed:

- ⇒ The HAZOP sessions had provided a high quality basis for the construction of a useful checklist (i.e. - there was excellent material to work with)*
- ⇒ Some indication had been given to the preparation team (who also performed the construction of the checklist) as to what items were considered of importance - through assignment of the 1-2-3 category to Potential Checklist Items,⁵ and the Risk Ranking of the sessions*
- ⇒ The checklist as a final product was to directly address the acceptance letter and the categories of interest quoted in the letter*
- ⇒ The checklist was required to be out to the industry in time for a least some response on the part of individual operations by a deadline date of January 15th, 1999*
- ⇒ The checklist should represent an achievable goal for the industry in light of time available to respond to the acceptance letter.*

What was less clear cut was a means by which to assign checklist items to the checklist. The fact that the checklist would be a basis for Alberta Labour evaluation of mill responses was an

⁵ Not done for the chip haul work – the task was not necessary for the session group.

influence in assignment. In a classic application of a checklist tool, the largest checklist available is offered to a hazard assessment team, which then uses those items which the team considers applicable to the assessment situation. For the checklist, such a philosophy could not co-exist with the regulatory direction of the checklist - no large checklist could represent all things to all sites. Such a philosophy, for example, is not prescribed in the chemical process industry.⁶

The basis of Potential Checklist Item inclusion in the checklist was the following:

- ⇒ All Potential Checklist Items with risk ranking of 25 were included in the checklist*
- ⇒ Consideration was given to other items which had been assigned a 1-2-3 category of 1 during sessions, although a 1 rating was not a basis for mandatory inclusion*
- ⇒ Those Potential Checklist Items which were strongly related to items of a 25 rating were combined into checklist items*
- ⇒ Potential Checklist Items of 25 rating were combined on the checklist when duplication of points was apparent, or where the checklist usefulness would be enhanced by such combination (for example, bullet points of various Potential Checklist Items were sometimes combined into the same checklist point).*

The design of the checklist was strongly influenced by the acceptance letter, in that the categories provided within the checklist were taken directly from the letter. Aside from helping the preparation team ensure that the checklist would form a direct response to the acceptance letter, these categories will also help the hazard assessment designer for individual sites produce a product which will be easier for Alberta Labour representatives to evaluate for response to the acceptance letter.

The checklist is presented as part of section 5.

⁶ *In the more regulated regime of the United States of America, for example, where hazard assessment is mandatory for the chemical process industry under OSHA Regulation 1910.119; an industry familiar with HAZOP methodology (in general) is told only to do a HAZOP; HAZOP methods are cited (including checklist oriented methods); but a checklist is not cited or provided - that is left up to the specific site. The checklist never forms a guide for regulatory agencies, and a multitude of checklists, if used, are available from outside sources, or developed by the specific site(s).*

While the decision mechanism for items to be included on the checklist was somewhat arbitrary, it did provide a product which is the result of a dispassionate process. The primary mechanism of decision was Risk Ranking, with a rating of 25 resulting in automatic inclusion. The rationale behind this decision making process was:

- ⇒ A rating of 25 represented the highest possible expression of risk which the group could assign to a Potential Checklist Item*
- ⇒ A rating of 25 represented at minimum, a potential fatality (regardless of how likely such a fatality might be to an individual situation at an individual mill/trucking situation)*
- ⇒ The bias introduced to RX values by definitions of likelihood and severity applied on a province and industry wide basis was acknowledged by the preparation group.*

The arbitrary decision of the exercise was, where to draw the line (in terms of RX rating)?

The use of the 25 RX rating as a cut-off point was and is, ultimately, a judgement call. It is a product of the consideration of the preparation team under direction of the team leader. As the rating level represents a minimum of 28% of all Potential Checklist Items,⁷ a reasonable proportion of items has been represented, on a subjective basis.

The 2010 Chip Haul Checklist is presented in Section 5.0. It is slightly changed from the 2007 edition, and has undergone examination by the 2010 sessions group, and approval, in its present form.

4.11 Scope Assumption

The scope of the assessment was unconfined in consideration of the chip haul process, as has been described in other parts of this Final Report. The knowledge and experience of the small DMI sessions team provided for an effective review of the AFPA 2007 revalidation work product, and adaptation to a chip haul situation. The experience of the

⁷ *The actual proportion of Potential Checklist Items is greater, because of roll-up of related items.*

same team leader for all sessions has provided a source of continuity for the proceedings. The presence of the same DMI representative at the 2007 AFPA work, and the DMI sessions, also contributed to the continuity of the work.

Team members were encouraged to cover any and all aspects of the operation which concerned them. In general, the team did not consider process design type double jeopardy failure; unless a compelling case could be made for such examination. The team explored each issue to their satisfaction, and for the vast majority of considerations, the response “it is highly unlikely to happen” was not considered as an acceptable conclusion of the examination.

While the “What if” format provided for a free range of issue examination, and the group agreed that each division and division activity had been covered; and that there were no more issues to address before moving on to another topic area, it is realized by the group that no guarantee can be made that all possible upset scenarios can be covered by a HAZOP type exercise. As well as this exercise, chip haul operations are subject to federal and provincial regulations, safety evaluation by the DMI mill site, and the professionalism of the individual chip haul truck operator. DMI mill site operations are subject to the procedures and safety provisions of DMI, many of which can be reviewed in the DMI Truck Safe Program manual.

Notwithstanding examination of upset scenarios, the “What if” examination was conducted under the following general assumptions:

- ⇒ The equipment used in chip haul operations will work as designed
- ⇒ The equipment is fit for its intended use
- ⇒ Trained operators will be used
- ⇒ Written procedures will be followed, and
- ⇒ Preventive maintenance and inspections will be performed.

5.0 Session Records

This section consists of records arising from session proceedings. The sub-sections are:

- 5.1 “What if” Outline Report
- 5.2 Risk Matrix Presentation
- 5.3 Session Detail Report
- 5.4 Potential Checklist Item Registers
 - 5.4.1 Potential Checklist Item Register
 - 5.4.2 Potential Checklist Items by Category
 - 5.4.3 Potential Checklist Items by RX Rating
- 5.5 Final Product - Alberta Chip Haul Industry Checklist

5.1 “What if” Outline Report

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 1. Contract Management

What ifs
1. What if the equipment is not specified in the contract?
2. What if the sub-contracts are not followed through in a consistent manner?
3. What if short term hiring?
4. What if the contractor is not fulfilling his contract responsibilities?
5. What if mill responsibility?
6. What if there is inconsistency between carriers?
7. What if the geography and distance of the cycle has not been anticipated well?

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 2. Hauling to - Orientations

What ifs
1. What if the mill yard orientation is not done?
2. What if mill yard orientations are inadequate?
3. What if mill yard orientations are not documented?
4. What if main contractor mill orientations are not done ("Train the Trainer")?
5. What if employee/subcontractor mill orientations are not done?
6. Does the orientation cover unloading requirements for your location?
7. Does the orientation cover location of personnel during loading and unloading?
8. Does the mill orientation - include a yard tour - consider consistency in quality between instructors?

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 3. Hauling from - Orientations

What ifs
1. What if the residual mill orientation is not done?
2. What if residual mill orientations are inadequate?
3. What if residual mill orientations are not documented?
4. What if main contractor residual mill orientations are not done ("Train the Trainer")?
5. What if employee/subcontractor residual mill orientations are not done?
6. Does the residual mill orientation cover loading requirements for your location?
7. Does the residual mill orientation cover location of personnel during loading?
8. Does the residual mill orientation - include a yard tour - consider consistency in quality between instructors?

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 1. Pre-Shift Inspection

What ifs
1. What if the driver assumes that the previous driver checked out the truck, when the check has not been made?
2. What if there is no means to monitor the quality of pre-shift inspections?
3. What if the driver finds a mechanical deficiency during inspection?
4. What if the driver does not provide an appropriate response to the deficiency?
5. What if the pre-shift inspection is not done?
6. What if the operator does not have the pre-shift inspection form?

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs
1. Fog, snow, freezing rain, visibility reduced.
2. Electrical.
3. What if there is no clearly safe place to stop from the road/highway in the event of adverse weather or other chip truck problems?
4. Malfunction in air brake system.
5. Mud.
6. Tires and rims.
7. Suspension.
8. What if a call-in is missed (kilometer marker, radio call-in)?
9. What if loss of radio system, or inappropriate frequency for the location, in the chip truck?
10. What if a deer is on the road - other wildlife?
11. What if another vehicle is met while the truck is going too fast?
12. What if driver competence?
13. What if the off-highway road is of poor quality?
14. What if the operator is fatigued?
15. What if the operator is impaired?
16. What if there is a catastrophic air brake failure?
17. What if there is a mechanical failure? (drive train, for example)
18. What if there is an icy road?
19. What if you get off the approved route (on or off highway situation) - wrong routing, or mistake in routing?
20. What if it is necessary to re-route (because of highway incident, for example)?
21. What if you lock up going down hill?
22. What if there is traffic on the road which is not radio controlled?
23. What if the chip truck is involved in an accident?
24. What if the chip truck is involved in an accident in an area of no cell phone or radio coverage - no communication? (In 2007 there are few, if any, dead spots - there is now working alone legislation, and the industry has responded - the "what if" is left in as an acknowledgement it could happen, but the group cannot identify any dead spots that they know of)
25. What if the chip truck is speeding?
26. What if other traffic on the road is speeding?
27. What if the public highway is of poor quality?
28. What if the public highway is under designed, considering traffic flow?
29. What if there is a recovery needed - truck?
30. What if it is the first time in the area?
31. What if a trailer is lost from the vehicle during a drive to the cut-block or residual mill?

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill

Division Activity: 2. Driving to the Cut Block

What ifs

32. What if in cab distractions (cell phone, radios, CD players, CB's etc.)?

33. What if the cycle time is lengthy - one trip is eight or nine hours?

34. What if chains are required?

35. Air bag suspension systems.

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill

Division Activity: 1. Preparing the Vehicle for Loading

What ifs

1. What if improper use of radio?
2. What if the loading site is not level?
3. What if the loading site is not acceptable?
4. What if the driver is not wearing PPE?
5. What if the road is steep?
6. What if the driver is outside of the truck?
7. What if rolling the tarp?
8. What if de-icer?

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 2. Positioning the Vehicle at the Cut Block Location

What ifs
1. What if use of the radio is lost?
2. What if the frequency is not able to be received by the driver?
3. What if a vehicle accident?
4. What if chains are required?

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 3. Positioning the Vehicle at the Residual Mill Location

What ifs
1. What if there is no match of radio channels at the residual mill site (mills run a UHF program, not VHF)?
2. What if a vehicle accident?
3. What if the vehicle is not correctly positioned?
4. What if the site is not maintained?
5. What if the site is not level?
6. What if chains are required for positioning under the bin/access to the loading site?
7. What if a loader is used to position the chip truck?

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 4. Loading the Vehicle at the Cut Block

What ifs
1. What if the driver is not visible to the chipper operator?
2. What if the driver is not wearing PPE?
3. What if the chipper is not on stable ground?
4. What if the chipper operator is inexperienced?
5. What if chipper operator competency?
6. What if the 5th wheel on a B train is not done up correctly (or due to severe weather - ice/snow buildup)? (B train cited because it is on and off frequently - valid for other 5th wheel connections)
7. What if the road is steep?
8. What if the slope which the chipper is on is steep?
9. What if no radio communication?
10. What if a truck moves before the movement should be done?
11. What if overhead power lines?
12. What if a skidder, fuel truck, or other vehicle has an accident at the chipper site?
13. What if a manual TM-9 form is filled out incorrectly?
14. What if the bar code machine goes down?
15. What if the truck driver picks the wrong bar code machine at the loading site?
16. What if overload?
17. What if there is contamination at the cut block (from plastic, oil, for example)?

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 5. Loading the Vehicle at the Residual Mill - Bins

What ifs
1. What if the driver is not wearing PPE?
2. What if the 5th wheel on a B train is not done up correctly (or due to severe weather - ice/snow buildup)? (B train cited because it is on and off frequently - valid for other 5th wheel connections)
3. What if no radio communication?
4. What if a truck moves before the movement should be done?
5. What if a manual TM-9 form is filled out incorrectly?
6. What if the bar code machine goes down?
7. What if the truck driver picks the wrong bar code machine at the loading site?
8. What there is contamination from the bin?
9. What if the bins do not function?
10. What if the bin is not full?
11. What if overload?

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 6. Loading the Vehicle at the Residual Mill - Storage

What ifs
1. What if the driver is not wearing PPE?
2. What if the 5th wheel on a B train is not done up correctly (or due to severe weather - ice/snow buildup)? (B train cited because it is on and off frequently - valid for other 5th wheel connections)
3. What if a manual TM-9 form is filled out incorrectly?
4. What if no radio communication?
5. What if a truck moves before the movement should be done?
6. What if the bar code machine goes down?
7. What if the truck driver picks the wrong bar code machine at the loading site?
8. What there is contamination from the stock pile?
9. What if overload?
10. What if the driver is using a third party loader?
11. What if the loading ramp is not adequate?

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 7. Tarping at the Chipper and at the Residual Mill

What ifs
1. What if a power line is overhead?
2. What if bad weather? Icy conditions, mud.
3. What if the driver is inexperienced?
4. What if tarping isn't done well?
5. What if improper use of boomers?
6. What if the tarps are buried?

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 1. Leaving the Loading Location

What ifs
1. What if the wrong radio channel is used?
2. What if chains are needed?
3. What if chains are being used?
4. What if a tow assist is required?
5. What if pipeline in the area?

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs
1. Electrical.
2. Fog, snow, freezing rain, visibility reduced.
3. Malfunction in air brake system.
4. Mud.
5. Tires and rims.
6. Air bag suspension systems.
7. What if mandatory brake check is not done?
8. What if a deer is on the road - other wildlife?
9. What if the chip truck is speeding?
10. What if driver competence?
11. What if the public highway is of poor quality?
12. What if the operator is fatigued?
13. What if the operator is impaired?
14. What if the public highway is under designed, considering traffic flow?
15. What if there is a catastrophic air brake failure?
16. What if there is a mechanical failure? Drive train.
17. What if there is an icy road?
18. What if you get off the designated/restricted route?
19. What if you lock up going down hill?
20. What if the chip truck is involved in an accident?
21. What if there is a recovery needed - truck, load?
22. What if recovery of chips is required?
23. What if public vehicle drivers are impaired?
24. Approach of slow moving vehicle on public highway?
25. Spacing of vehicles on public highways.
26. What if chains are required?

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs
1. What if the off-highway road is of poor quality?
2. What if a "steep" grade?
3. What if you lock up going down hill?
4. What if there is an icy road?
5. What there is traffic on the road which is not radio controlled?
6. Mud.
7. What if a call-in is missed (kilometer marker, radio call-in)?
8. What if you get off the designated/restricted route?
9. What if another vehicle is met while the truck is going too fast?
10. What if there is a mechanical failure? Drive train.
11. Malfunction in air brake system.
12. Electrical.
13. Tires and rims.
14. Air bags/suspension.
15. What if a deer is on the road - other wildlife?
16. Fog, snow, freezing rain, visibility reduced.
17. What if the operator is fatigued?
18. What if the route is under designed for its use - i.e. - not designed for continuous two way traffic?
19. What if the operator is impaired?
20. What if driver competence?
21. What if there is a catastrophic air brake failure?
22. What if public vehicle drivers are impaired?
23. Approach of slow moving vehicle on the route - or oversized equipment from oil field operations?
24. What if there is an inadequate water course and/or pipeline crossing?

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 1. Arriving at the Mill Site

What ifs
1. What if radio channels?
2. What if mill traffic other than chip haul trucks?
3. What if the driver does not follow scale route policy?
4. Backed up trucks due to scale breakdown, or heavy truck traffic volumes (peak season).
5. What if speeding while arriving at the mill?
6. What if entering the mill site?

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 2. Weighing-in

What ifs
1. What if the scale is icy - or other weather conditions?
2. What if backing off the scale?
3. What if PPE is not worn at the scale?
4. What if there are unauthorized passengers in the truck?
5. What if the truck is overweight?
6. What if computer error/malfunction?

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 3. The Unloading Operation

What ifs
1. What if the driver is inexperienced?
2. What if the trailer doesn't conform to required configuration?
3. What if dumper malfunction?
4. What if there is an incident?
5. What if the dumper procedure was not followed?
6. What if the fuel cap is not tightened properly (other specific What-ifs considered covered under Dumper Procedure)?
7. What if the driver walks across the backstop?
8. What if driver walks across the bridge while open?
9. What if the driver leaves the dumper booth while the dumper is under operation?
10. What if the driver is not wearing PPE?
11. What if the driver fails to lower the suspension in the truck and/or trailer?
12. What if the driver fails to back up to the back stop, fails to contact the back stop prior to unloading?
13. What if the truck fails to start?

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 4. Weighing-out

What ifs
1. What if the scale is icy - or other weather conditions?
2. What if backing off the scale?
3. What if PPE is not worn at the scale?
4. What if computer error/malfunction?

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 5. Preparing for the Next Truck Use

What ifs
1. What if there is something wrong with the truck?
2. What if fueling?
3. What if all equipment is not placed properly for the next trip?
4. What if there is a shift change?

5.2 Risk Matrix Presentation

5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
	1	2	3	4	5

5.3 Session Detail Report

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 1. Contract Management

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the equipment is not specified in the contract?	1. Could have the wrong configuration for permitting (payload).				1. Daily safety checks.	1. Have contractual arrangements been reviewed? - vehicle specifications and suitability to task; - trucks, trailers
	2. Equipment breakdown or fatigue as a result of overloading.				2. Most companies have standard contracts.	
	3. Risk Ranking -	2	1	2	3. Maintenance program. 4. Equipment specification in contracts is less important for chip haul, compared to log haul.	4. Does the mill/carrier have a registration process for all chip trucks?
2. What if the sub-contracts are not followed through in a consistent manner?	1. Could have the wrong configuration.				1. Most principals will orient the sub-contractor in the same manner as the main contractor.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Equipment breakdown as a result of overloading.				2. Some mills require the same documentation from the subs as the main contractor - sometimes this is done through audits and reliance on the main contractor.	
	3. May not have items from the original contract (features) appear in the sub - such as insurance, WCB coverage, radios, frequencies, other safety items.					3. Does the mill require similar documentation from the sub-contractor as the main contractor? - insurance coverage; - current CVIP; - WCB; - Drivers hold proper licenses; - copy of AT&U permit
	4. Risk Ranking -	3	1	3	3. Some mills require pre-approval by the mill for a sub-contractor.	4. Does the mill/carrier have a registration process for all chip trucks?
					4. The process of registering the truck at the mill will almost always identify sub-standard trucks.	90. Does the mill follow through with the company safety programs?
					5. A CVIP must be obtained.	
					6. Independent random mechanical checks are made throughout the year.	
				7. Company safety programs.		
				8. Annual documented inspection/assessment of trailers for adequate structural integrity.		
3. What if short term hiring?	1. More difficult situation to hire hauling resources under. Short term hiring is often needed when pressure is on a contractor (and the mill) for volume performance. The resulting lack of time, and increasing pressure for results, can lead to deviations from the usual hiring procedures of the				1. Most mills attempt to locate additional resources from mills which have reliable means for capacity. The result is that any shortfall in procedure which may result from pressure on the hiring operation is covered to a large degree by the confidence provided by hiring through	12. Does the employer require a current driver's abstract? - certification class; - restrictions
						13. Is the driver's abstract original, and current?

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 1. Contract Management

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
3. cont'd	1. cont'd operation.				1. cont'd known contacts of the other operation.	14. For a newly issued license - has the previous abstract been asked for, examined?
	2. Risk Ranking -	5	4	20		15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment
						17. Does the operation have regularly scheduled safety meetings?
						18. Are inexperienced drivers given time with an experienced driver for a time period prior to undirected driving?
						61. Is there a means to maintain the integrity of the hiring process for short term hiring, or high volume portions of the season? - orientation; - quality of driver; - inspection checks; - past references; - abstracts
						90. Does the mill follow through with the company safety programs?
						97. Is the carrier profile reviewed as part of the hiring process?
4. What if the contractor is not fulfilling his contract responsibilities?	1. Potential for provisions of contracts/operation to not be complete.				1. Monitoring of contracts. 2. Over weight monitoring program. 3. Company safety programs	60. Has the operation considered an audit/compliance checking procedure for their contracts (such as the Forest Care Program, or ISO programs, PIC Program, Alberta Transportation) as a model for audit procedures to insure that contract provisions are being performed?
	2. Potential for drivers not oriented properly.					
	3. Risk Ranking -	2	4	8		
5. What if mill responsibility?	1. Responsibility of mill for contractor trucks which they do not hold contracts for.				1. The mill contract could be worded such that responsibility will flow through to the contractor. 2. Sample auditing of contracts. 3. No compensation for over weight.	82. Does the mill have a system in place through the contract or other means for the truck driver's employer to assess driver competency? (rewording example).
	2. Concern for being held accountable through this hazard assessment process (winter weight program) which the mill cannot actually control - such as the inability / unwillingness / inconsistency of					

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 1. Contract Management

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
5. cont'd	2. cont'd some contractors to assess and document driver competency.				4. Penalty programs for non-compliance (over weight) at locations with winter weight program.	
	3. Risk Ranking -	1	1	1		
6. What if there is inconsistency between carriers?	1. Contractor not following through with safe practices.				1. Company Safety Program.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Potential problems with program orientations.				2. Truck driver audits.	
	3. Trucks speeding.				3. Periodic joint carrier/mill meetings.	
	4. Deviation from dumper procedures.				4. Mill orientations.	
	5. Potential danger to public.				5. Mechanical audits.	3. Does the mill require similar documentation from the sub-contractor as the main contractor? - insurance coverage; - current CVIP; - WCB; - Drivers hold proper licenses; - copy of AT&U permit
	6. Potential equipment damage.					19. Does the mill/carrier have a speed monitoring system/process?
	7. Potential revoking of their carrier profile (running rights).					28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections
	8. Risk Ranking -	5	4	20		
7. What if the geography and distance of the cycle has not been anticipated well?	1. Driver fatigue.				1. Consider driver shift length management during annual fibre supply planning.	
	2. Carrier frustration.				2. Consistency of haul practice.	
	3. Driver frustration.					
	4. Fleet mis-management and inefficiency.					

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 2. Hauling to - Orientations

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the mill yard orientation is not done?	1. Collisions & property damage.				1. Driver on-site certification.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Potential danger to employees.				2. Most mills have contracts which ask for orientation of new contractor hires.	
	3. Wrong communication equipment.				3. Contract provisions.	
	4. Interference with yard equipment.				4. Yard access card (some mills, yards).	
	5. Traffic congestion.					
	6. Reduced production potential.					
	7. Risk Ranking -		4	4	16	
2. What if mill yard orientations are inadequate?	1. Collisions & property damage.				1. Driver on-site certification.	65. Are orientation packages reviewed? - incidents from previous years; - yard changes; - practice changes; - map changes; - route changes; - communications
	2. Potential danger to employees.				2. Most mills have contracts which ask for orientation of new contractor hires.	
	3. Wrong communication equipment.				3. Contract provisions.	
	4. Interference with yard equipment.				4. Orientation video.	
	5. Traffic congestion.				5. Yard access card (some mills, yards).	
	6. Reduced production potential.					
	7. Risk Ranking -		4	4	16	
3. What if mill yard orientations are not documented?	1. No proof of due diligence.				1. Sticker.	66. Is there a means in place to identify those drivers who have taken orientation?
	2. Credibility of the operation.				2. Card.	
	3. Risk Ranking -		1	1	1	
4. What if main contractor mill orientations are not done ("Train the Trainer")?	1. Collisions & property damage.				1. The mill orientation.	
	2. Potential danger to employees.				2. Driver on-site certification.	
	3. Wrong communication equipment.				3. Most mills have contracts which ask for orientation of new contractor hires.	
	4. Interference with yard equipment.				4. Contract provisions.	
	5. Traffic congestion.					

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 2. Hauling to - Orientations

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd	6. Potentially, an inadequate response to an emergency.					
	7. Risk Ranking -	2	2	4		
5. What if employee/subcontractor mill orientations are not done?	1. Collisions & property damage.				1. The mill orientation.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Potential danger to employees.				2. Driver on-site certification.	
	3. Wrong communication equipment.				3. Most mills have contracts which ask for orientation of new contractor hires.	
	4. Interference with yard equipment.				4. Contract provisions.	60. Has the operation considered an audit/compliance checking procedure for their contracts (such as the Forest Care Program, or ISO programs, PIC Program, Alberta Transportation) as a model for audit procedures to insure that contract provisions are being performed?
	5. Traffic congestion.					
	6. Reduced production potential.					
	7. Risk Ranking -	3	2	6		
6. Does the orientation cover unloading requirements for your location?	1. Inability of truck to work safely with mill equipment.				1. The contract between the main employer and the mill contains specifications for the operations equipment.	67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;
	2. Potential damage to equipment.					
	3. Risk Ranking -	2	1	2		
7. Does the orientation cover location of personnel during loading and unloading?	1. Potential injury, disability, fatality.				1. Safe practices.	67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;
	2. Risk Ranking -	1	4	4	2. Mill orientations.	
						3. Tarp stations.
8. Does the mill orientation - include a yard tour - consider consistency in quality between instructors?	1. Collisions & property damage.				1. Driver on-site certification.	61. Is there a means to maintain the integrity of the hiring process for short term hiring, or high volume portions of the season? - orientation; - quality of driver; - inspection
	2. Potential danger to employees.				2. Most mills have contracts which ask for orientation of new contractor hires.	

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 2. Hauling to - Orientations

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
8. cont'd	3. Interference with yard equipment.				3. Contract provisions.	61. cont'd checks; - past references; - abstracts
	4. Traffic congestion.				4. Company safety video.	64. Does the mill randomly check individual chip haul drivers for orientation?
	5. Inadequate practice during emergency procedures.				5. Company safety plan.	66. Is there a means in place to identify those drivers who have taken orientation?
	6. Risk Ranking -	5	1	5		83. Does the mill orientation include a yard tour?

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 3. Hauling from - Orientations

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the residual mill orientation is not done?	1. Collisions & property damage.				1. Driver on-site certification.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Potential danger to employees.				2. Most mills have contracts which ask for orientation of new contractor hires.	
	3. Wrong communication equipment.				3. Contract provisions.	
	4. Interference with yard equipment.				4. Yard access card (some mills, yards).	
	5. Traffic congestion.					
	6. Reduced production potential.					
	7. Risk Ranking -	4	4	16		
2. What if residual mill orientations are inadequate?	1. Collisions & property damage.				1. Driver on-site certification.	65. Are orientation packages reviewed? - incidents from previous years; - yard changes; - practice changes; - map changes; - route changes; - communications
	2. Potential danger to employees.				2. Most mills have contracts which ask for orientation of new contractor hires.	
	3. Wrong communication equipment.				3. Contract provisions.	
	4. Interference with yard equipment.				4. Orientation video.	
	5. Traffic congestion.				5. Yard access card (some mills, yards).	
	6. Reduced production potential.					
	7. Risk Ranking -	4	4	16		
3. What if residual mill orientations are not documented?	1. No proof of due diligence.				1. Sticker.	66. Is there a means in place to identify those drivers who have taken orientation?
	2. Credibility of the operation.				2. Card.	
	3. Risk Ranking -	1	1	1	3. Driver's certification.	
4. What if main contractor residual mill orientations are not done ("Train the Trainer")?	1. Collisions & property damage.				1. The mill orientation.	
	2. Potential danger to employees.				2. Driver on-site certification.	
	3. Wrong communication equipment.				3. Most mills have contracts which ask for orientation of new contractor hires.	
	4. Interference with yard equipment.				4. Contract provisions.	
	5. Traffic congestion.					

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 3. Hauling from - Orientations

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd	6. Potentially, an inadequate response to an emergency.					
	7. Risk Ranking -	2	2	4		
5. What if employee/subcontractor residual mill orientations are not done?	1. Collisions & property damage.				1. The mill orientation.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Potential danger to employees.				2. Driver on-site certification.	
	3. Wrong communication equipment.				3. Most mills have contracts which ask for orientation of new contractor hires.	
	4. Interference with yard equipment.				4. Contract provisions.	60. Has the operation considered an audit/compliance checking procedure for their contracts (such as the Forest Care Program, or ISO programs, PIC Program, Alberta Transportation) as a model for audit procedures to insure that contract provisions are being performed?
	5. Traffic congestion.					
	6. Reduced production potential.					
	7. Risk Ranking -	3	2	6		
6. Does the residual mill orientation cover loading requirements for your location?	1. Inability of truck to work safely with mill equipment.				1. The contract between the main employer and the mill contains specifications for the operations equipment.	67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;
	2. Potential damage to equipment.					
	3. Risk Ranking -	2	1	2		
7. Does the residual mill orientation cover location of personnel during loading?	1. Potential injury, disability, fatality.				1. Safe practices.	67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;
	2. Risk Ranking -	1	4	4	2. Mill orientations.	
					3. Tarp stations.	72. Does the operation have a loading and unloading policy?
8. Does the residual mill orientation - include a yard tour - consider consistency in quality between instructors?	1. Collisions & property damage.				1. Driver on-site certification.	61. Is there a means to maintain the integrity of the hiring process for short term hiring, or high volume portions of the season? - orientation; - quality of driver; - inspection
	2. Potential danger to employees.				2. Most mills have contracts which ask for orientation of new contractor hires.	

Chip Truck Haul Division: 1. Truck/Contractor Administration
Division Activity: 3. Hauling from - Orientations

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
8. cont'd	3. Interference with yard equipment.				3. Contract provisions.	61. cont'd checks; - past references; - abstracts
	4. Traffic congestion.				4. Company safety video.	64. Does the mill randomly check individual chip haul drivers for orientation?
	5. Inadequate practice during emergency procedures.				5. Company safety plan.	66. Is there a means in place to identify those drivers who have taken orientation?
	6. Risk Ranking -	5	1	5		83. Does the mill orientation include a yard tour?

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 1. Pre-Shift Inspection

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the driver assumes that the previous driver checked out the truck, when the check has not been made?	1. Low oil levels possibly not noticed.				1. Various safeguards pertaining to the potential deficiency.	30. Does the operation have a system of random independent mechanical checks in place?
	2. Brakes out of adjustment, or potentially not functional.					2. Sign off of pre-shift inspection by the current driver.
	3. Low fluid levels not noticed.				32. Are drivers informed of pre-shift inspection legal requirements for commercial vehicles? - Motor Transport Act AR-118/89; - National Safety Code; - commercially available log books	
	4. Broken suspension not noticed.				33. Does the principal employer have a means to pass new trucking regulations/developments to the driver?	
	5. Mechanical & electrical deficiencies not noticed, as above and other items.				34. Does the principal employer receive notices concerning new chip hauling regulations from government bodies which is clearly marked for their information needs?	
	6. Missing equipment.				39. Are air lines checked as part of pre-shift inspection?	
	7. Risk Ranking -		4	5	20	40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?
2. What if there is no means to monitor the quality of pre-shift inspections?	1. Due diligence issue.				1. Pre-shift inspection is a legal requirement.	28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections
	2. Mechanical failures could occur.					
	3. A potential perception by the driver that pre-shift inspection is not valued.				37. Does the operation (main employer) ask for drivers to document their pre-shift check compliance? - diary; - pre-shift check sheets; - inspection reports	
	4. Risk Ranking -		4	4		16

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 1. Pre-Shift Inspection

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
2. cont'd						87. cont'd place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;
						89. Does the mill/contractor monitor the quality of the pre-shift inspections?
3. What if the driver finds a mechanical deficiency during inspection?	1. No hazard if appropriate action is taken.				1. Response to uncovered deficiencies.	35. Is there a process in place to track corrective action for major deficiencies?
	2. Risk Ranking -	4	1	4	2. Independent equipment checks.	36. Are the operation's drivers required to do a pre-shift inspection? (Consult standard checklists)
						37. Does the operation (main employer) ask for drivers to document their pre-shift check compliance? - diary; - pre-shift check sheets; - inspection reports
4. What if the driver does not provide an appropriate response to the deficiency?	1. Brakes out of adjustment, or potentially not functional.				1. Training.	15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment
	2. Low fluid levels.				2. Manufacturer parts manuals.	
	3. Broken suspension.				3. Regulatory system.	
	4. Mechanical & electrical deficiencies.				4. Audits.	29. Is there a means of documentation in place for pre-trip (i.e. - pre-shift) inspection?
	5. Missing equipment.				5. Mill/contractor policies and requirements.	30. Does the operation have a system of random independent mechanical checks in place?
	6. Risk Ranking -	4	4	16	6. Forest Industry Professional Driver Improvement Course or other recognized programs.	
						31. Is there a mechanism of response to pre-shift checklist items which might have uncovered deficiencies?
						32. Are drivers informed of pre-shift inspection legal requirements for commercial vehicles? - Motor Transport Act AR-118/89; - National Safety Code; -

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 1. Pre-Shift Inspection

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd						32. cont'd commercially available log books
						35. Is there a process in place to track corrective action for major deficiencies?
5. What if the pre-shift inspection is not done?	1. Low fluid levels not noticed.				1. Various safeguards pertaining to the potential deficiency.	29. Is there a means of documentation in place for pre-trip (i.e. - pre-shift) inspection?
	2. Brakes out of adjustment, or potentially not functional.				2. Independent equipment checks.	30. Does the operation have a system of random independent mechanical checks in place?
	3. Broken suspension not noticed.					31. Is there a mechanism of response to pre-shift checklist items which might have uncovered deficiencies?
	4. Mechanical & electrical deficiencies not noticed, as above and other items.					32. Are drivers informed of pre-shift inspection legal requirements for commercial vehicles? - Motor Transport Act AR-118/89; - National Safety Code; - commercially available log books
	5. Potential fatality.					39. Are air lines checked as part of pre-shift inspection?
	6. Potential for multiple fatalities.					40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?
	7. Risk Ranking -	4	5	20		89. Does the mill/contractor monitor the quality of the pre-shift inspections?
6. What if the operator does not have the pre-shift inspection form?	1. There will be no documentation to show the pre-shift inspection was done.				1. Driver orientations.	37. Does the operation (main employer) ask for drivers to document their pre-shift check compliance? - diary; - pre-shift check sheets; - inspection reports
	2. Increased likelihood for the inspection to not be performed.				2. Mill/carrier policies/procedures.	
	3. Out of service citation if checked by transportation officials.				3. Provincial/federal legislation.	
	4. Risk Ranking -	4	4	16	4. Readily available pre-shift inspection forms at a strategically convenient locations.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. Fog, snow, freezing rain, visibility reduced.	1. Higher possibility of roll-over.				1. Chains.	42. Does the operation have a procedure for shut down of haul in adverse weather conditions?
	2. Loss of productivity.				2. Road maintenance.	
	3. Collision.				3. Driver experience.	73. Does the mill have a means to consider technology advancements?
	4. Off-road and collision with tree, etc.				4. Driver education.	
	5. Vehicle damage.				5. Road design.	74. Does the mill consider equipment configuration?
	6. Potential for driver injury.				6. Proper signage.	
	7. Increased danger to and from private vehicles.				7. Road orientations.	
	8. Two heavy trucks meeting on the road unexpectedly.				8. Driver communication.	
	9. Lock up of vehicle.				9. Alternative braking mechanisms - diff locks, for example.	
	10. Risk Ranking -		4	5	20	
11. On the job training - information from experienced drivers.						
12. Proper VHF radio use instruction.						
13. Some mills have operating procedures, manuals, for driver training.						
14. Forest Industry Professional Driver Improvement Course or other recognized programs.						
15. Shutting down the haul - temporary suspension.						
16. Mandatory call-in signs and locations?						
17. Equipment selection - tri-drives example - CTI - Central Tire Inflation - FM transmitters.						
18. Employer/management policy - management can demonstrate commitment to adverse weather						

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. cont'd					18. cont'd appropriate response through documentation available to the driver, reiteration of the policy in safety meetings (for example).	
					19. Road Cameras.	
2. Electrical.	1. Loss of headlights.				1. Extinguisher.	29. Is there a means of documentation in place for pre-trip (i.e. - pre-shift) inspection?
	2. Fire.				2. Pre-shift inspection.	
	3. More trips to make up for loss of productivity.				3. Regular maintenance programs.	
	4. Shut down of engine.					
	5. Risk Ranking -	4	3	12		
3. What if there is no clearly safe place to stop from the road/highway in the event of adverse weather or other chip truck problems?	1. Potential accident or incident.				1. Could pull into a semi-suitable location such as a gas station instead, out of necessity.	
	2. Potential fatality.				2. Build pull off points, out of necessity.	
	3. Potential multiple fatalities.					
4. Malfunction in air brake system.	1. Lock up of vehicle.				1. Brakes lock on.	39. Are air lines checked as part of pre-shift inspection?
	2. Equipment damage.				2. Pre-trip inspection.	
	3. Vehicle could go off the road.				3. Dual air systems on the vehicle (runs off the same compressor).	40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?
	4. Potential hazard to the public.					
	5. Risk Ranking -	4	4	16	4. Warning systems.	94. Are air lines and coupling devices checked as part of en-route inspections?
				5. Random inspections.		
5. Mud.	1. Mechanical breakdown.				1. Speed limits.	
	2. Potential hazard to the public.				2. Chains.	
	3. Off-road and collision with tree, etc.				3. Road maintenance.	
	4. More trips to make up for loss of productivity.				4. Driver experience.	
					5. Driver education.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
5. cont'd	5. Vehicle damage.				6. Road design.	
	6. Potential for driver injury.				7. Driver communication.	
	7. Increased cycle time, decreased productivity.				8. Alternative braking mechanisms - diff locks, for example.	
	8. Truck wear - increased maintenance.				9. Towing vehicle.	
				10. Shutting down the haul - temporary suspension.		
6. Tires and rims.	1. Loss of tire.				1. Pre-shift inspection.	41. Does the operation have an organized maintenance program for tires and rims?
	2. Loss of wheel assembly.				2. En-route inspections.	
	3. Blowouts.				3. Regular maintenance.	
	4. Potential for fire.				4. Tire air pressure gauges.	
	5. Projectiles.				5. Variable tire pressure.	
	6. Shift of trailer.					
	7. Potential personnel injury.					
	8. Risk Ranking -	4	3	12		
7. Suspension.	1. Possible control problem - vehicle control.				1. Regular inspections.	
	2. Blown air bag.				2. Road maintenance.	
					3. Pre-shift inspection.	
8. What if a call-in is missed (kilometer marker, radio call-in)?	1. Potential hazard to the public.				1. Speed limits.	26. Are mandatory call-in points located in areas of good radio transmission?
	2. Collision.				2. Driver experience.	27. Are mandatory call-in points located at high risk areas?
	3. Off-road and collision with tree, etc.				3. Driver education.	
	4. Vehicle damage.				4. Driver communication.	
	5. Potential for driver injury.				5. Some operations require orientation/competency evaluation trips.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
8. cont'd	6. Impaired public relations for the industry.				6. One way roads.	
	7. Potential for public injury.				7. Mandatory call-in signs and locations	
	8. Two trucks meeting on the road unexpectedly.					
	9. Risk Ranking -	5	4	20		
9. What if loss of radio system, or inappropriate frequency for the location, in the chip truck?	1. Potential hazard to the public.				1. Speed limits.	
	2. Collision.				2. Driver experience.	
	3. Vehicle damage.				3. Driver education.	
	4. Potential for driver injury.				4. Driver communication.	
	5. Impaired public relations for the industry.				5. Some operations require orientation/competency evaluation trips.	
	6. Potential for public injury.				6. One way roads.	
	7. Two trucks meeting on the road unexpectedly.				7. Mandatory call-in signs and locations	
10. What if a deer is on the road - other wildlife?	1. Potential for driver injury.				1. Vehicle design.	
	2. Potential for loss of control, off road collision, tree.				2. Radio, driver communication.	
	3. Potential public hazard if not removed from road.				3. Seat belt.	
	4. Equipment damage.				4. Roo bumpers.	
11. What if another vehicle is met while the truck is going too fast?	1. Collision.				1. Speed limits.	19. Does the mill/carrier have a speed monitoring system/process?
	2. Off-road and collision with tree, etc.				2. Driver education.	
	3. Equipment damage.				3. Tachographs.	28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; -
	4. Risk Ranking -	4	5	20	4. Speed monitoring devices.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
11. cont'd					5. Driver experience.	28. cont'd inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections
					6. GPS for speed monitoring.	
					7. Governors.	
12. What if driver competence?	1. Roll-over.				1. Class 1 driver's license.	12. Does the employer require a current driver's abstract? - certification class; - restrictions
	2. Collision.				2. Air brake certification.	
	3. Off-road and collision with tree, etc.				3. Driver's abstracts.	13. Is the driver's abstract original, and current?
	4. Run away.				4. Forest Industry Professional Driver Improvement Course or other recognized programs.	14. For a newly issued license - has the previous abstract been asked for, examined?
	5. Vehicle damage.					
	6. Potential for driver injury.				5. Mill yard orientation.	15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment
	7. Increased cycle time, decreased productivity.				6. Pre season and post season safety meetings.	
	8. Truck wear - increased maintenance.				7. Monthly safety meetings.	
	9. Operating cost increase as a result of higher maintenance.				8. Some operations require orientation/competency evaluation trips.	16. Does the operation have pre and post haul season safety meetings?
	10. Impaired public relations for the industry.				9. On the job training - information from experienced drivers.	17. Does the operation have regularly scheduled safety meetings?
	11. Risk Ranking -		4	5	20	10. Proper VHF radio use instruction.
					11. Some operations have daylight only driving for new drivers for a certain period of time.	
					12. Loading and unloading procedures.	75. Does the chip truck driver's employer consider driver's abstracts from previous out of province activity?
					13. Log haul road regulations.	
					14. Progressive training.	
					15. Training follow-up.	
				16. Tachographs.		

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
12. cont'd					17. Some haulers have drug/alcohol testing.	
					18. Some mills have operating procedures, manuals, for driver training.	
					19. First aid training and CPR. Emergency response training.	
13. What if the off-highway road is of poor quality?	1. Higher possibility of roll-over.				1. Roads are signed to warn public of log haul traffic.	20. Does the operation consider road quality in setting restricted road usage?
	2. Roll-over.				2. Chains.	
	3. Collision.				3. Road maintenance.	
	4. Off-road and collision with tree, etc.				4. Driver experience.	
	5. Vehicle damage.				5. Driver education.	
	6. Potential for driver injury.				6. Proper signage.	
	7. Increased cycle time, decreased productivity.				7. Driver communication.	
	8. Truck wear - increased maintenance.				8. Alternative braking mechanisms - diff locks, for example.	
	9. Operating cost increase as a result of higher maintenance.				9. Proper two way radio use instruction.	
	10. Increased danger to and from private vehicles.				10. One way roads reduce chances for incident.	
	11. Risk Ranking -		4	4	16	
14. What if the operator is fatigued?	1. Potential hazard to the public.				1. Hours of work legislation.	32. Are drivers informed of pre-shift inspection legal requirements for commercial vehicles? - Motor Transport Act AR-118/89; - National Safety Code; - commercially available log books
	2. Higher possibility of roll-over.				2. Monitoring of regular shift changes.	
	3. Collision.				3. Some mills have a pre-arranged haul schedule.	43. Does the operation have an auditing program for driver hours of service?
	4. Off-road and collision with tree, etc.				4. TM 9 - tracking mechanism.	
	5. Vehicle damage.				5. Forest Industry Professional Driver Improvement Course or other recognized programs.	76. Does the mill, and truck driver's employer, work toward educating drivers with respect to fatigue management?
	6. Potential for driver injury.					

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
14. cont'd	7. Operating cost increase as a result of higher maintenance.				6. National Safety Code outlines fatigue management.	76. cont'd Does the mill and truck driver's employer provide opportunity for driver education with respect to fatigue management?
	8. Impaired public relations for the industry.				7. On the job training - information from experienced drivers.	
	9. Risk Ranking -	4	5	20	8. Progressive training.	
					9. Some mills have operating procedures, manuals, for driver training.	
15. What if the operator is impaired?	1. Potential hazard to the public.				1. Driver experience.	46. Does the operation consider a drug/alcohol program?
	2. Higher possibility of roll-over.				2. Driver education.	
	3. Roll-over.				3. Driver communication.	
	4. Collision.				4. Driver's abstracts.	
	5. Off-road and collision with tree, etc.				5. Proper VHF radio use instruction.	
	6. Run away.				6. Some haulers have drug/alcohol testing.	
	7. Vehicle damage.				7. Some mills test after an incident.	
	8. Potential for driver injury.				8. Speed monitoring.	
	9. Increased cycle time, decreased productivity.					
	10. Truck wear - increased maintenance.					
	11. Operating cost increase as a result of higher maintenance.					
	12. Impaired public relations for the industry.					
	13. Increased danger to and from private vehicles.					
	14. Lock up of vehicle.					
	15. Risk Ranking -	2	5	10		
16. What if there is a catastrophic air brake	1. Collision.				1. CVIP.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
16. cont'd failure?	2. Potential hazard to the public.				2. Pre-shift inspection.	
	3. Roll-over.				3. Inspection certificate.	
	4. Off-road and collision with tree, etc.				4. Speed limits.	
	5. Vehicle damage.				5. Driver experience.	
	6. Potential for driver injury.				6. Driver education.	
	7. Road blockage.				7. En-route inspection.	
	8. Loss of productivity.					
17. What if there is a mechanical failure? (drive train, for example)	1. Potential hazard to the public.				1. Driver experience.	38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?
	2. Collision.				2. Driver education.	
	3. Vehicle damage.				3. Driver communication.	
	4. Potential for driver injury.				4. Proper two way radio use instruction.	
	5. Increased cycle time, decreased productivity.				5. First aid training and CPR. Emergency response training.	
	6. Truck wear - increased maintenance.				6. Maintenance programs.	
	7. Impaired public relations for the industry.				7. Pre-shift inspections.	
	8. Potential for public injury.					
	9. Road blockage.					
	10. Loss of productivity.					
	11. Risk Ranking -		4	4	16	
18. What if there is an icy road?	1. Roll-over.				1. Road maintenance - sanding, grading.	7. Has the mill had road maintenance input from road users?
	2. Collision.				2. Chains.	10. Does the road maintenance program consider differing weather and road considerations?
	3. Off-road and collision with tree, etc.				3. Driver experience.	
	4. Run away.				4. Driver education.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
18. cont'd	5. Vehicle damage.				5. Driver communication.	11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?
	6. Potential for driver injury.				6. Seat belt.	
	7. Increased cycle time, decreased productivity.				7. Anti-lock brakes - mandatory on new trucks and trailers.	95. Is there a process in place for road conditions to be collected, and to be communicated to the driver? - road cameras; - RCMP; - cross shift checking; - other contact persons/entities on the route?
	8. Risk Ranking -	5	4	20	8. Potential to shut the haul down under adverse conditions. 9. Potential for individual driver to not haul a load.	
19. What if you get off the approved route (on or off highway situation) - wrong routing, or mistake in routing?	1. Potential hazard to the public.				1. Driver experience.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Higher possibility of roll-over.				2. Driver education.	
	3. Increased cycle time, decreased productivity.				3. Proper signage.	
	4. Impaired public relations for the industry.				4. Road orientations.	
	5. Increased danger to and from private vehicles.				5. Driver communication.	
	6. Potential for public injury.				6. Chip haul road regulations.	
	7. Possibility of haul shutdown.				7. Chip haul permits.	
	8. Impaired relations with regulatory bodies.				8. Route maps in the truck.	
	9. Power line contact.				9. GPS.	
	10. Vehicle damage (low bridge, for example).					
	11. Potential pipeline contact.					
	12. Risk Ranking -	2	1	2		
20. What if it is necessary to re-route (because of highway incident, for example)?	1. Higher potential for power lines damage.				1. Driver knowledge of the area.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and
	2. Higher potential for being overweight on bridges, for example.				2. Obtain dispatch approval for the indicated route.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
20. cont'd	3. Higher potential for adverse public consequences.				3. Wait for obstacle to be removed from the approved route.	2. cont'd route review; - communications
	4. Potential for public injury.					
	5. Vehicle damage (low bridge, for example).					
	6. Potential pipeline contact.					
	7. Risk Ranking -	3	3	9		
21. What if you lock up going down hill?	1. Roll-over.				1. Chains.	5. Are air brakes checked regularly for adjustment and operation? - check slack adjusters; - in cab checks - warning devices, compressor build time, air containment, functionality; - driver able to adjust the air brakes; - air bag weights [Reference AR-118/89]
	2. Collision.				2. Road maintenance.	
	3. Off-road and collision with tree, etc.				3. Driver experience.	
	4. Run away.				4. Driver education.	6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review
	5. Vehicle damage.				5. Road design.	
	6. Potential for driver injury.				6. Proper signage.	7. Has the mill had road maintenance input from road users?
	7. Risk Ranking -		4	3	12	
						8. Driver communication.
						9. Seat belt.
						10. Alternative braking mechanisms - diff locks, for example.
						11. Brake maintenance - proper adjustment.
	12. Forest Industry Professional Driver Improvement Course or other recognized programs.	10. Does the road maintenance program consider differing weather and road considerations?				
11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?						
22. What if there is traffic on the road which is not radio controlled?	1. Collision.				1. Speed limits.	23. Does the operation provide signs indicating radio controlled roads and

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
22. cont'd	2. Off-road and collision with tree, etc.				2. Roads are signed to warn public of haul traffic.	23. cont'd procedures?
	3. Vehicle damage.				3. Driver experience.	
	4. Potential for driver injury.				4. Driver education.	24. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?
	5. Increased cycle time, decreased productivity.				5. Driver communication.	
	6. Impaired public relations for the industry.				6. Proper VHF radio use instruction.	25. Are drivers made aware of areas which have high public or other use (oil patch, for example)?
	7. Potential for public injury.				7. One way roads reduce chances for incident.	
	8. Two heavy trucks meeting on the road unexpectedly.				8. Buddy system with radioed vehicle.	
	9. Risk Ranking -		5	4	20	
						10. Consultation to educate the local public, concerning hauling times, procedures, inform hauling contractors of school bus times.
11. Commercial road use agreements.						
					12. Pre-commencement meeting for drivers.	
23. What if the chip truck is involved in an accident?	1. Potential driver, public injury.				1. Driver experience.	56. Does the operation have an emergency response program? - vehicle collision; - fire; - spill; - personal injury; - recovery methods/situations
	2. Property damage.				2. Driver education.	
	3. Vehicle damage.				3. Spill kits on some trucks.	
	4. Environmental damage - spilt diesel oil, other fluids.				4. Safety plans - mill safety plans, contractor plans.	
	5. Risk Ranking -				4	
24. What if the chip truck is involved in an accident in an area of no cell phone or radio coverage - no communication? (In 2007 there are few, if any, dead spots - there is now working alone legislation, and the industry has responded - the "what if"	1. Potential driver, public injury.				1. Driver experience.	56. Does the operation have an emergency response program? - vehicle collision; - fire; - spill; - personal injury; - recovery methods/situations
	2. Property damage.				2. Driver education.	
	3. Vehicle damage.				3. Cycle times.	77. Has the contractor/main employer/truck

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
24. cont'd is left in as an acknowledgement it could happen, but the group cannot identify any dead spots that they know of)	4. Environmental damage - spilt diesel oil, other fluids.				4. Check-in procedure.	77. cont'd operator considered a plan for check-in procedures of truck operators if the operator is working alone?
	5. Difficulty in starting emergency response.				5. Buddy system.	
	6. Risk Ranking (including single vehicle accident) -	3	4	12	6. Spill kits on all trucks.	
					7. Mill Safety plans, contractor safety plans.	
25. What if the chip truck is speeding?	1. Collision.				1. Speed limits.	19. Does the mill/carrier have a speed monitoring system/process?
	2. Off-road and collision with tree, etc.				2. Driver education.	28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections
	3. Potential for loss of control.				3. Driver experience.	
	4. Potential impairment to public relations.				4. Speed monitoring programs.	
	5. Risk Ranking -	5	5	25	5. In 2007 there is an increased use of governors on the trucks.	
					6. Disciplinary action in the case of repeated speeding, repeat offenders.	
26. What if other traffic on the road is speeding?	1. Collision.				1. On a private road, the road owner has the possibility of acting/enforcing - for commercial users.	78. Does the mill have language in the road use agreement which considers speeding on the part of commercial vehicle users?
	2. Potential for loss of control.				2. Inform police to enforce the speed limits in other cases.	
	3. Hazard creation.				3. Radar monitoring on the part of the road owner.	
	4. Risk Ranking -	5	5	25		
27. What if the public highway is of poor quality?	1. Roll-over.				1. Roads are signed to warn public of haul traffic.	20. Does the operation consider road quality in setting restricted road usage?
	2. Collision.				2. Chains.	
	3. Off-road and collision with tree, etc.				3. Road maintenance.	
	4. Vehicle damage.				4. Driver experience.	
	5. Potential for driver injury.				5. Driver education.	
	6. Increased cycle time, decreased productivity.				6. Proper signage.	

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
27. cont'd	7. Truck wear - increased maintenance.				7. Driver communication.	
	8. Operating cost increase as a result of higher maintenance.				8. Proper two way radio use instruction.	
	9. Increased danger to and from private vehicles.				9. One way routes reduce chances for incident.	
	10. Risk Ranking -	4	4	16		
28. What if the public highway is under designed, considering traffic flow?	1. Potential hazard to the public.				1. Speed limits.	7. Has the mill had road maintenance input from road users?
	2. Collision.				2. Roads are signed to warn public of haul traffic.	10. Does the road maintenance program consider differing weather and road considerations?
	3. Off-road and collision with tree, etc.				3. Chains.	26. Are mandatory call-in points located in areas of good radio transmission?
	4. Vehicle damage.				4. Driver experience.	27. Are mandatory call-in points located at high risk areas?
	5. Potential for driver injury.				5. Driver education.	44. Has the road been reviewed for pull-outs? - frequency; - location; - signage
	6. Increased cycle time, decreased productivity.				6. Driver communication.	45. Is there a pre-haul inspection? - pull-outs; - signage; - radio communications; - maintenance requirements
	7. Increased danger to and from private vehicles.				7. Road maintenance - sanding, grading.	53. Does the operation consult with local government with respect to public highway condition and improvement?
	8. Potential for public injury.				8. Monthly safety meetings.	79. Has the mill had input to appropriate maintenance through the Regional Transportation Advisory Committee?
	9. Signage.				9. Proper two way radio use instruction.	80. Has the mill had road design reviewed for safety and provided input to the appropriate authority of the public road? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review
	10. Risk Ranking -	3	2	6	10. Construction of pull-outs.	
					11. If an alternate route is available - make it into a one-way route.	
29. What if there is a recovery needed -	1. Potential hazard to the public.				1. The contractor is responsible for	56. Does the operation have an emergency

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
29. cont'd truck?	2. Impaired public relations for the industry.				1. cont'd responding immediately to the recovery situation.	56. cont'd response program? - vehicle collision; - fire; - spill; - personal injury; - recovery methods/situations
	3. Potential for public injury.					
	4. Risk Ranking -	4	3	12	2. Some mills and carriers have developed safe practices for recovery of trucks.	
30. What if it is the first time in the area?	1. Potential for the driver to get lost.				1. Most mills "educate" the area through public awareness - radio, for example.	57. Does the main employer provide off highway system area maps to drivers?
	2. Driver doesn't drive to the new conditions.				2. Driver communications.	58. Does the operation provide for public awareness when operating trucks in a new area?
	3. May not have correct radio frequencies.				3. Signage - new and permanent.	
	4. Unaware public.				4. Mill maps showing main routes and roads of the area.	59. Does the operation consider public traffic in the area? - school bus road use hours; - high tourist presence times; - special high traffic conditions
	5. Risk Ranking -	4	1	4	5. Buddy driving.	81. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?
31. What if a trailer is lost from the vehicle during a drive to the cut-block or residual mill?	1. Collision.				1. Driver experience.	36. Are the operation's drivers required to do a pre-shift inspection? (Consult standard checklists)
	2. Vehicle damage.				2. Driver education.	
	3. Increased danger to and from private vehicles.				3. Driver communication.	
	4. Potential hazard to the public.				4. Random inspections.	
	5. Possible control problem - vehicle control.				5. Pre-trip inspections, pre-shift inspections.	
	6. Potential fatality.					
	7. Potential for multiple fatalities.					
	8. Impaired public relations for the industry.					
	9. Potential for public injury.					
	10. Risk Ranking -	1	4	4		

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
32. What if in cab distractions (cell phone, radios, CD players, CB's etc.)?	1. Potential for driver inattention.				1. Driver experience.	37. Does the operation (main employer) ask for drivers to document their pre-shift check compliance? - diary; - pre-shift check sheets; - inspection reports	
	2. Collision.				2. Driver education.		
	3. Vehicle damage.				3. Company safety policies.		
	4. Increased danger to and from private vehicles.						
	5. Potential hazard to the public.						
	6. Possible control problem - vehicle control.						
	7. Potential fatality.						
	8. Impaired public relations for the industry.						
	9. Potential for public injury.						
	10. Risk Ranking -	5	4	20		76. Does the mill, and truck driver's employer, work toward educating drivers with respect to fatigue management? Does the mill and truck driver's employer provide opportunity for driver education with respect to fatigue management?	
33. What if the cycle time is lengthy - one trip is eight or nine hours?	1. The effect is that the shifts do not stay constant - the start times and finish times of a shift vary because of the shift length.				1. Can put more trucks on to cover for it.	92. Has the mill reviewed dumper procedures to optimize cycle times for drivers?	
					2. Multiple dumpers will help this.		
	2. Sleep cycle is interfered with.				3. Optimize dumpers - use the existing equipment in a better fashion.	93. Has the mill reviewed cut block or loading procedures to optimize cycle times for drivers?	
	3. Increased potential for accidents (driver fatigue).						
	4. A two week cycle can go from day to night to day in the same cycle.						4. Planning fibre supply cycles to keep the shifts a constant for the driver.
	5. Trips are lost in order to make up for this.						
	6. This can happen due to mechanical breakdowns at the cut block.						
7. Risk Ranking -	5	4	20				
34. What if chains are required?	1. Potential for personnel injury.				1. Operator training.		99. Does the carrier/contractor provide proper chain procedures?
	2. Potential for equipment damage.				2. Chain up/chain off areas.		
	3. Potential for collisions.				3. Radio communication.		

Chip Truck Haul Division: 2. Driving to the Cut Block or to a Residual Mill
Division Activity: 2. Driving to the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
34. cont'd	4. Risk Ranking -	4	4	16	4. Forest Industry Professional Driver Improvement Course or other recognized programs.	
35. Air bag suspension systems.	1. Potential for blown air bag.				1. Regular inspections.	
	2. Loss of air causing brakes to dynamite.				2. Vehicle maintenance programs.	
					3. Road maintenance.	
					4. Allowable public road weight.	
					5. Pre-shift inspection.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 1. Preparing the Vehicle for Loading

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if improper use of radio?	1. Potential interference with legitimate use of the radio at the cut block.				1. Orientations.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Congestion at the block or the mill.				2. Driver ensures that chipper operator is aware he is out of the truck.	
	3. Collision potential with other equipment.				3. PPE - Hi Viz vest.	
	4. Potential for personnel injury.				4. Driver, chipper operator training.	
	5. Risk Ranking -	5	4	20	5. Some mills/contractor do working instructions at the site with chipper operators.	
2. What if the loading site is not level?	1. Potential for equipment damage.				1. Driver experience.	
	2. Potential for inaccurate scale readings with resultant overweight.				2. Routine maintenance at the loading site.	
	3. Potential personnel injury.				3. Driver experience in assessing the loading site.	
3. What if the loading site is not acceptable?	1. Potential for equipment damage.				1. Driver experience.	98. Does the mill have a means for reporting of unsafe conditions at the supply location?
	2. Potential for inaccurate scale readings with resultant overweight.				2. Routine maintenance at the loading site.	
	3. Potential personnel injury.				3. Driver experience in assessing the loading site.	
	4. Loss of productivity.				4. Driver/carrier input considered by the mill.	
	5. Risk Ranking -	3	2	6		
4. What if the driver is not wearing PPE?	1. Potential for driver injury.				1. OH&S requirement for PPE.	87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;
	2. Reduced visibility for equipment operators.				2. Safe operating procedures.	
	3. Risk Ranking -	5	4	20	3. Most chipper operators are instructed to not load unless a driver outside the cab has PPE.	
					4. Mandatory PPE regulations.	
					5. Mill/loading orientations.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 1. Preparing the Vehicle for Loading

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
5. What if the road is steep?	1. Potential for the truck to slide.				1. Driver experience.	
	2. Potential for driver injury.				2. Site planning.	
	3. Potential for personnel injury.				3. Communication between contractor and mill/carrier.	
6. What if the driver is outside of the truck?	1. Potential for driver injury - such as when ice is on the truck step, there is slippage and resulting injury.				1. Driver training.	
					2. Non-slip soles for boots/footwear.	
	2. Trips and falls potential.				3. Chipper/operator training.	
					4. Three point dismount for ladder use.	
					5. Company safety policies.	
			6. Communication between chipper operator, or yard personnel, and driver.			
7. What if rolling the tarp?	1. Potential for slippage off the platform or ladder.				1. Platform anti-slip material.	
	2. Potential for personnel injury.				2. Three point contact when using ladder.	
					3. Swing out ladder.	
8. What if de-icer?	1. Potential slippage because of applying the de-icer from a height.				1. Platform anti-slip material.	
	2. Potential personnel injury during application, from climbing, for example.				2. Three point contact when accessing trailer.	
					3. Use of the tarping facility at the mill, if available.	
					4. PPE.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 2. Positioning the Vehicle at the Cut Block Location

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if use of the radio is lost?	1. Potential for incorrect positioning.				1. Driver orientation - instruction in use of horn, for example. 2. Most cases a horn is used. This is a contractor option.	
	2. Impairs communication between chipper and truck - when it is safe to position the truck, for example.					
	3. Potential loss of production at the cut block.					
	4. Potential collision.					
	5. Potential equipment damage.					
	6. Potential personnel injury.					
2. What if the frequency is not able to be received by the driver?	1. Potential for incorrect positioning.				1. Driver orientation - instruction in use of horn, for example. 2. Parts van two-way. 3. Start up meetings. 4. Haul route hazard assessment.	
	2. Impairs communication between chipper and truck - when it is safe to position the truck, for example.					
	3. Potential loss of production at the cut block.					
	4. Potential collision.					
	5. Potential equipment damage.					
	6. Potential personnel injury.					
3. What if a vehicle accident?	1. Potential injury.				1. Most cases when a driver arrives, there is a driver leaving - usually a straight forward operation. 2. Driver orientation. 3. Emergency response plans. 4. Incident report (deals with equipment damage).	85. Does the mill/carrier/contractor have an Emergency Response Plan?
	2. Potential equipment damage.					
	3. Loss of productivity.					
	4. Risk Ranking -	3	3	9		
4. What if chains are required?	1. Potential for personnel injury.				1. Operator training. 2. Chain up areas (that are flat, for example).	99. Does the carrier/contractor provide proper chain procedures?
	2. Equipment damage.					

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 2. Positioning the Vehicle at the Cut Block Location

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd	3. Risk Ranking -	4	4	16	3. Radio communication.	
					4. Forest Industry Professional Driver Improvement Course or other recognized programs.	
					5. Pre-shift inspection.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 3. Positioning the Vehicle at the Residual Mill Location

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if there is no match of radio channels at the residual mill site (mills run a UHF program, not VHF)?	1. Potential overloads.				1. PPE.	91. Has the mill requested the residual mill site to consider obtaining a compatible radio system?
	2. Potential equipment damage.				2. Verbal communication.	
	3. Potential personnel injury.				3. Hand signals.	
	4. Potential collision.				4. Yard orientations.	
	5. Potential loss of production due to wrong routing.				5. Site location check in.	
	6. Risk Ranking -	5	3	15		
2. What if a vehicle accident?	1. Potential injury.				1. Most cases when a driver arrives, there is a driver leaving - usually a straight forward operation.	85. Does the mill/carrier/contractor have an Emergency Response Plan?
	2. Potential equipment damage.				2. Driver orientation.	
	3. Loss of productivity.				3. Emergency response plans.	
	4. Risk Ranking -	3	1	3	4. Incident report (deals with equipment damage).	
3. What if the vehicle is not correctly positioned?	1. Potential for the chips to miss the trailer at the side.				1. Yard orientation.	
	2. Potential for not being able to pull away from the loading site.					
	3. Potential equipment damage.					
	4. Potential for loss of chips on the public highway.					
	5. Potential impaired public relations.					
	6. Potential for personnel injury.					
4. What if the site is not maintained?	1. Potential for the chips to miss the trailer at the side.				1. Potential for the chip truck driver to communicate the deficiencies to the yard superintendent/mill representative.	
	2. Potential for not being able to pull away from the loading site.				2. The carrier can communicate the deficiency to the chip procurement	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 3. Positioning the Vehicle at the Residual Mill Location

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd	3. Potential equipment damage.				2. cont'd supervisor.	
	4. Potential for loss of chips on the public highway.					
	5. Potential overload.					
5. What if the site is not level?	1. Potential for the chips to miss the trailer at the side.				1. Potential for the chip truck driver to communicate the deficiency to the yard superintendent.	
	2. Potential for not being able to pull away from the loading site.				2. The carrier can communicate the deficiency to the chip procurement supervisor.	
	3. Potential equipment damage.					
	4. Potential for loss of chips on the public highway.					
	5. Potential overload.					
6. What if chains are required for positioning under the bin/access to the loading site?	1. Potential for personnel injury.				1. Operator training.	99. Does the carrier/contractor provide proper chain procedures?
	2. Equipment damage.				2. Chain up areas (that are flat, for example).	
	3. Risk Ranking -	4	4	16	3. Radio communication.	
					4. Forest Industry Professional Driver Improvement Course or other recognized programs.	
					5. Pre-shift inspection.	
7. What if a loader is used to position the chip truck?	1. Personnel injury.				1. Operator training.	
	2. Equipment damage.				2. Use proper equipment, such as towing straps.	
					3. Use of proper towing procedure.	
					4. Communication.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 4. Loading the Vehicle at the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
1. What if the driver is not visible to the chipper operator?	1. Potential personnel injury.				1. Driver experience.		
	2. Potential equipment damage.				2. Chipper operator must not load - loading procedure.		
					3. Orientations.		
					4. Communication.		
2. What if the driver is not wearing PPE?	1. Potential for driver injury.				1. OH&S requirement for PPE.	87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;	
	2. Reduced visibility to equipment operators.				2. Safe operating procedures.		
	3. Risk Ranking -	5	4	20	3. Chipper operators are instructed to not load unless a driver outside the cab has PPE, and communicated his location.		
3. What if the chipper is not on stable ground?	1. Potential personnel injury.				1. Chipper will be on cleared level ground by industry practice.		
	2. Potential equipment damage.						2. Chipper operator experience.
	3. Loss of production.						
	4. Potential overloading.						
4. What if the chipper operator is inexperienced?	1. Potential for an overload.				1. Driver experience.	69. When a new chipper operator is being hired, is a resume considered, are references looked into?	
	2. Longer cycle times.				2. Chipper operator instruction.		
	3. Could lead to speeding to reduce cycle times.					3. Safe operating procedures.	70. Is there a process to examine chipper operator competency? - checklist; - experience; - education; - aptitude; - chipper handling
						4. Experienced chipper operator will help/instruct an inexperienced chipper operator.	
	4. Unsafe loads.						
	5. Potential for poor quality chips.						71. Are inexperienced chipper operators given time with experienced operators for a time period prior to undirected chipper operation?
6. Risk Ranking -	4	4	16				
5. What if chipper operator competency?	1. Potential for an overload.				1. Driver experience.	86. Is there a documented means or process to examine chipper operator competency - such as a checklist? - experience; - education; - aptitude; - truck handling	
	2. Longer cycle times.				2. Chipper operator instruction.		
	3. Could lead to speeding to reduce cycle times.				3. Safe operating procedures.		

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 4. Loading the Vehicle at the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
5. cont'd	4. Unsafe loads.				4. Experienced chipper operator will help/instruct an inexperienced chipper operator.	
	5. Potential for poor quality chips.					
	6. Work place altercations.					
	7. Risk Ranking -	4	4	16		
6. What if the 5th wheel on a B train is not done up correctly (or due to severe weather - ice/snow buildup)? (B train cited because it is on and off frequently - valid for other 5th wheel connections)	1. Potential for trailer separation.				1. 5th wheels are designed such that proper connection is likely. 2. Driver training. 3. Pre-shift inspections. 4. En-route inspections.	38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?
	2. Potential for personnel and public injury.					
	3. Potential collisions.					
	4. Loss of production.					
	5. Potential equipment damage.					
	6. Risk Ranking -	2	4	8		
7. What if the road is steep?	1. Could damage the truck.				1. Driver experience. 2. Chipper operator experience. 3. Chains. 4. Road design. 5. Block layout design.	15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment
	2. Potential for driver injury.					
	3. Unsafe loads.					
	4. Unstable truck.					18. Are inexperienced drivers given time with an experienced driver for a time period prior to undirected driving? 68. Has the carrier considered a checklist or procedure for loading, unloading? - loading procedures. 70. Is there a process to examine chipper operator competency? - checklist; - experience; - education; - aptitude; - chipper handling
	5. Improper axle weights.					
	6. Potential overweights.					
	7. Risk Ranking -	3	2	6		
8. What if the slope which the chipper is on is steep?	1. No Consequences of Concern - the chipper site is prepared and level.				1. Chipper operator experience.	
					2. Leveling of chipper area.	
9. What if no radio communication?	1. Potential for leaving the block in an unsafe mode.				1. Verbal communication.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 4. Loading the Vehicle at the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
9. cont'd	2. Potential overweight.					
	3. Additional cycle time.					
10. What if a truck moves before the movement should be done?	1. Considered, but not a frequent occurrence				1. Loading practice.	
	2. Potential for personnel injury.				2. Communication.	
11. What if overhead power lines?	1. No Consequences of Concern - a chipper is not placed underneath a power line.				1. Site choosing.	
					2. Signage.	
12. What if a skidder, fuel truck, or other vehicle has an accident at the chipper site?	1. Equipment damage.				1. Signage.	
	2. Potential personnel injury.				2. PPE.	
	3. Potential environmental spill/damage.				3. Spill kits in all vehicles.	
	4. Loss of production.				4. Radio communication.	
					5. Operator experience.	
					6. Emergency response procedures.	
13. What if a manual TM-9 form is filled out incorrectly?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Bar code machines are installed for all species.	
					2. Driver training.	
	2. Off spec pulp.				3. Driver experience.	
	3. Loss of revenue.				4. TM-9 example forms in the chipper vans.	
	4. Contravention of legislation (bill of lading).				5. Contamination presentations to operators.	
14. What if the bar code machine goes down?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Driver training.	
					2. Driver experience.	
	2. Off spec pulp.				3. TM-9 example forms in the chipper vans.	
	3. Loss of revenue.				4. Contamination presentations to operators.	
	4. Contravention of legislation (bill of lading).					

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 4. Loading the Vehicle at the Cut Block

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
15. What if the truck driver picks the wrong bar code machine at the loading site?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Driver training.	
					2. Driver experience.	
	2. Off spec pulp.				3. Contamination presentations to operators.	
	3. Loss of revenue.					
	4. Contravention of legislation (bill of lading).					
16. What if overload?	1. Potential equipment damage.				1. Work safe program and procedures.	100. Does the mill monitor that structural integrity inspections are done on an annual basis?
	2. Potential personnel injury.				2. Overload programs.	
	3. Loss of productivity.				3. Annual documented inspection/assessment of trailers for adequate structural integrity.	
	4. Risk Ranking -	5	4	20		
17. What if there is contamination at the cut block (from plastic, oil, for example)?	1. Potential equipment damage at the pulp mill site (conveyors, for example).				1. Driver experience.	
					2. Communication.	
	2. Productivity loss.				3. Driver training.	
	3. Longer cycle times.				4. Contamination presentations to operators.	
4. Quality loss.						

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 5. Loading the Vehicle at the Residual Mill - Bins

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the driver is not wearing PPE?	1. Potential for driver injury.				1. OH&S requirement for PPE.	87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;
	2. Reduced visibility to yard equipment operators.				2. Safe operating procedures.	
	3. Risk Ranking -	5	4	20		
2. What if the 5th wheel on a B train is not done up correctly (or due to severe weather - ice/snow buildup)? (B train cited because it is on and off frequently - valid for other 5th wheel connections)	1. Potential for trailer separation.				1. 5th wheels are designed such that proper connection is likely.	38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?
	2. Potential for personnel and public injury.				2. Driver training.	
	3. Potential collisions.				3. Pre-shift inspections.	
	4. Loss of production.				4. En-route inspections.	
	5. Potential equipment damage.					
	6. Risk Ranking -	2	4	8		
3. What if no radio communication?	1. Potential for leaving the load site in an unsafe mode.				1. Verbal communication.	
	2. Additional cycle time.					
4. What if a truck moves before the movement should be done?	1. Considered, but not a frequent occurrence				1. Loading practice.	
	2. Potential for personnel injury.				2. Communication.	
5. What if a manual TM-9 form is filled out incorrectly?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Bar code machines are installed for all species.	
	2. Off spec pulp.				2. Driver training.	
	3. Loss of revenue.				3. Driver experience.	
	4. Contravention of legislation (bill of lading).				4. TM-9 example forms in the chipper vans.	
6. What if the bar code machine goes down?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Driver training.	
					2. Driver experience.	
	2. Off spec pulp.				3. TM-9 example forms at the bins.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 5. Loading the Vehicle at the Residual Mill - Bins

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
6. cont'd	3. Loss of revenue.				4. Contamination presentations to operators.	
	4. Contravention of legislation (bill of lading).					
7. What if the truck driver picks the wrong bar code machine at the loading site?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Driver training.	
					2. Driver experience.	
	2. Off spec pulp.				3. Contamination presentations to operators.	
	3. Loss of revenue.					
4. Contravention of legislation (bill of lading).						
8. What there is contamination from the bin?	1. Potential equipment damage at the pulp mill site (conveyors, for example).				1. Driver experience.	
					2. Communication.	
	2. Productivity loss.				3. Driver training.	
	3. Longer cycle times.				4. Contamination presentations to operators.	
4. Quality loss.						
9. What if the bins do not function?	1. No loading.				1. Residual mills maintenance program.	
	2. Potential equipment damage to the truck or trailer.				2. Communication between driver and the mill yard supervisor.	
	3. Potential personnel injury.					
	4. Longer cycle times.					
	5. Loss of revenue.					
10. What if the bin is not full?	1. Potential longer cycle time.				1. Wait until a full load is chipped, bin is full.	
	2. Driver fatigue.				2. Mill communication to the carriers that there is a potential disruption.	
	3. Driver frustration.					
11. What if overload?	1. Potential equipment damage.				1. Work safe program and procedures.	100. Does the mill monitor that structural integrity inspections are done on an annual basis?
	2. Potential personnel injury.				2. Overload programs.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 5. Loading the Vehicle at the Residual Mill - Bins

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
11. cont'd	3. Loss of productivity.				3. Annual documented inspection/assessment of trailers for adequate structural integrity.	
	4. Risk Ranking -	5	4	20		

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 6. Loading the Vehicle at the Residual Mill - Storage

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the driver is not wearing PPE?	1. Potential for driver injury.				1. OH&S requirement for PPE.	87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;
	2. Reduced visibility to yard equipment operators.				2. Safe operating procedures.	
	3. Risk Ranking -	5	4	20		
2. What if the 5th wheel on a B train is not done up correctly (or due to severe weather - ice/snow buildup)? (B train cited because it is on and off frequently - valid for other 5th wheel connections)	1. Potential for trailer separation.				1. 5th wheels are designed such that proper connection is likely.	38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?
	2. Potential for personnel and public injury.				2. Driver training.	
	3. Potential collisions.				3. Pre-shift inspections.	
	4. Loss of production.				4. En-route inspections.	
	5. Potential equipment damage.					
	6. Risk Ranking -	2	4	8		
3. What if a manual TM-9 form is filled out incorrectly?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Bar code machines are installed for all species.	
	2. Off spec pulp.				2. Driver training.	
	3. Loss of revenue.				3. Driver experience.	
	4. Contravention of legislation (bill of lading).				4. TM-9 example forms in the chipper vans.	
					5. Contamination presentations to operators.	
4. What if no radio communication?	1. Potential improper placement at the stock pile..				1. Verbal communication.	
	2. Potential equipment damage.				2. Hand signals.	
	3. Potential overweight.					
	4. Potential chip spillage.					
	5. Potential underweight.					
5. What if a truck moves before the movement should be done?	1. Potential personnel injury.				1. Loading practice.	
	2. Potential equipment damage.				2. Communication.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 6. Loading the Vehicle at the Residual Mill - Storage

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
6. What if the bar code machine goes down?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Driver training.	
					2. Driver experience.	
	2. Off spec pulp.				3. TM-9 example forms in the ticket booth.	
	3. Loss of revenue.					
	4. Contravention of legislation (bill of lading).					
7. What if the truck driver picks the wrong bar code machine at the loading site?	1. The wrong classification of fibre could be done at the yard, with resulting contamination of the pile in the yard.				1. Driver training.	
					2. Driver experience.	
	2. Off spec pulp.					
	3. Loss of revenue.					
	4. Contravention of legislation (bill of lading).					
8. What there is contamination from the stock pile?	1. Potential equipment damage at the pulp mill site (conveyers, for example).				1. Driver experience.	
					2. Communication.	
	2. Productivity loss.				3. Driver orientations.	
	3. Longer cycle times.				4. Contamination presentations to operators.	
9. What if overload?	1. Potential equipment damage.				1. Work safe program and procedures.	100. Does the mill monitor that structural integrity inspections are done on an annual basis?
	2. Potential personnel injury.				2. Overload programs.	
	3. Loss of productivity.				3. Annual documented inspection/assessment of trailers for adequate structural integrity.	
	4. Risk Ranking -	5	4	20		
10. What if the driver is using a third party loader?	1. Potential personnel injury.				1. Driver orientation.	
	2. Potential equipment damage.				2. Driver training.	
	3. Loss of production.				3. Driver certification.	
	4. Loader upset.				4. Communication.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 6. Loading the Vehicle at the Residual Mill - Storage

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
11. What if the loading ramp is not adequate?	1. Personnel injury.				1. Loading ramp design.	
	2. Equipment damage.				2. Loading operator certification.	
	3. Loader upset.				3. Orientations.	
	4. Loss of production.				4. Communication.	
	5. Potential over/under load.					

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 7. Tarping at the Chipper and at the Residual Mill

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if a power line is overhead?	1. Potential personal injury.				1. Experienced driver.	
	2. Potential equipment damage.				2. Post the hazards.	
					3. Safe site choosing by the driver.	
					4. Signage.	
					5. Communication.	
					6. Haul route hazard assessment.	
2. What if bad weather? Icy conditions, mud.	1. Potential for driver injury.				1. Experienced driver.	
	2. Slipping, falling hazards.				2. Some organizations have standards for foot wear.	
					3. Anti-slip material.	
					4. Swing out ladders.	
					5. Fall restraint structure.	
					6. Tarping stations.	
					7. Tarp pull extenders.	
3. What if the driver is inexperienced?	1. Potential for driver injury.				1. Driver instruction.	15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment
	2. Potential for injury from climbing on the load.				2. Orientation.	
	3. Risk Ranking -	5	4	20	3. Driver training.	
					4. Hands on training.	
					5. Communication from experienced personnel.	18. Are inexperienced drivers given time with an experienced driver for a time period prior to undirected driving?
4. What if tarping isn't done well?	1. Lost chips - on road.				1. Experienced driver.	68. Has the carrier considered a checklist or procedure for loading, unloading? - loading procedures.
	2. Impaired public relations for the industry.				2. Safe loading practices.	

Chip Truck Haul Division: 3. Loading at the Cut Block or at a Residual Mill
Division Activity: 7. Tarping at the Chipper and at the Residual Mill

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd	3. Risk Ranking -	3	3	9		
5. What if improper use of boomers?	1. Potential equipment damage.				1. Driver education.	
	2. Potential for the boomer to pop free and resulting injury to third party.				2. Wire or other secure mechanism to secure boomer.	
	3. Impaired public relations for the industry.				3. Boomer selection - snap shut type.	
	4. Potential personnel injury.				4. Designated stops for tarps.	
	5. Potential loose load.					
	6. Potential for chips on highway.					
6. What if the tarps are buried?	1. Driver will have to climb on the load, which is above height limits for fall restraint.				1. Driver education.	38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling? 68. Has the carrier considered a checklist or procedure for loading, unloading? - loading procedures.
	2. Potential personnel injury.				2. Driver experience.	
	3. Contravention of OHS because of the height involved.				3. Communication with the chipper or loader operator.	
	4. Potential chip spillage.				4. Procedure for untarping.	
	5. Risk Ranking -				5. Tarp pole extender.	
			5	4	20	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 1. Leaving the Loading Location

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the wrong radio channel is used?	1. Potential hazard to public.				1. Driver education.	47. Do routes have signs to mark where radio frequencies should be changed?
	2. Collision.				2. Driver experience.	
	3. Increased danger to and from private vehicles.				3. Mandatory call-in signs and locations will cause the driver to consider radio channel.	48. Are necessary radio frequencies posted?
	4. Potential fatality.				4. Proper signage.	49. Does the operation have a radio standard? - frequencies; training
	5. Potential for driver injury.				5. Proper two way radio use instruction.	
	6. Potential for loss of control, off road collision, tree.				6. Buddy system.	
	7. Potential for multiple fatalities.					
	8. Potential for public injury.					
	9. Risk Ranking -		4	5	20	
2. What if chains are needed?	1. Potential for accident.				1. Drivers install chains as needed.	50. Does the driver orientation include instruction or check for driver competence for installing chains?
	2. Potential personnel injury if they are not installed properly.					
	3. Potential equipment damage.					
	4. Risk Ranking -		4	3		12
3. What if chains are being used?	1. Damage to bridges from the chains.				1. Driver Training.	
	2. Potential damage to winter roads.					
4. What if a tow assist is required?	1. Driver, operator injury.				1. Use of proper equipment - cables, slings, clevises.	52. Does the operation have documented procedures for towing situations? - proper slings; - attachment points; - operator placement; - operator competence; - tow operator stays in cab
	2. Light towing vehicle could be a problem.				2. Operator stays with towing machine.	
	3. Loss of productivity.				3. Proper procedures.	
	4. Cable/chain breakage.					
	5. Dependence on mechanical equipment for safety - parking break, for example.					

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 1. Leaving the Loading Location

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd	6. Potential for equipment damage.					
	7. Risk Ranking -	3	2	6		
5. What if pipeline in the area?	1. Potential damage to the pipeline.				1. Site consideration.	65. Are orientation packages reviewed? - incidents from previous years; - yard changes; - practice changes; - map changes; - route changes; - communications
	2. Potential environmental release.				2. Signage.	
	3. Potential fire and/or explosion.				3. Pipeline crossing agreements.	
	4. Potential for sour gas release.				4. Properly designed and built crossings.	
	5. Risk Ranking -	2	4	8		

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
1. Electrical.	1. Loss of tail lights, lights in general.				1. Extinguisher.		
	2. Fire.				2. Pre-shift inspection.		
	3. More trips - loss of productivity.				3. Regular maintenance programs.		
	4. Shut down of engine.				4. En-route inspection.		
	5. Potential personnel injury, and to general public.						
	6. Potential accidents.						
2. Fog, snow, freezing rain, visibility reduced.	1. Higher possibility of roll-over.				1. Chains.	42. Does the operation have a procedure for shut down of haul in adverse weather conditions?	
	2. More trips - loss of productivity.				2. Road maintenance.		
	3. Collision.				3. Driver experience.		
	4. Off-road and collision with tree, etc.				4. Driver education.		
	5. Vehicle damage.				5. Road design.		
	6. Potential for driver injury.				6. Proper signage.		
	7. Increased danger to and from private vehicles.				7. Road orientations.		
	8. Two heavy trucks meeting on the road unexpectedly.						8. Driver communication.
							9. Road maintenance - sanding, grading.
	9. Lock up of vehicle.				10. On the job training - information from experienced drivers.		
	10. Potential overweight from snow.						
	11. Risk Ranking -		4	5	20		11. Proper two way radio use instruction.
							12. Forest Industry Professional Driver Improvement Course or other recognized programs.
							13. Shutting down the haul - temporary suspension.
					14. Mandatory brake and light check locations.		

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
3. Malfunction in air brake system.	1. Lock up of vehicle.				1. Warning systems.	39. Are air lines checked as part of pre-shift inspection?
	2. Higher possibility of roll-over.				2. Pre-trip inspections.	
	3. Collision.				3. Random inspections.	40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?
	4. Off-road and collision with tree, etc.				4. Maintenance program.	94. Are air lines and coupling devices checked as part of en-route inspections?
	5. Vehicle damage.				5. En-route inspections.	
	6. Potential for driver injury.					
	7. Increased danger to and from private vehicles.					
	8. Risk Ranking -		4	3	12	
4. Mud.	1. Mechanical breakdown.				1. Speed limits.	
	2. Potential hazard to the public.				2. Chains.	
	3. Higher possibility of roll-over.				3. Road maintenance.	
	4. More trips - loss of productivity.				4. Driver experience.	
	5. Roll-over.				5. Driver education.	
	6. Off-road and collision with tree, etc.				6. Road design.	
	7. Vehicle damage.				7. Driver communication.	
	8. Potential for driver injury.				8. Towing vehicle.	
	9. Increased cycle time, decreased productivity.				9. Shutting down the haul - temporary suspension.	
	10. Truck wear - increased maintenance.				10. Alternative braking mechanisms - diff locks, for example.	
	11. Potential overweight.					
5. Tires and rims.	1. Loss of tire.				1. Pre-shift inspection.	41. Does the operation have an organized maintenance program for tires and rims?
	2. Loss of wheel assembly.				2. Regular maintenance.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
5. cont'd	3. Blowouts.				3. Tire air pressure gauges.	
	4. Potential for fire.				4. Variable Tire Pressure.	
	5. Projectiles.				5. Some operations have wheel streamers.	
	6. Potential personnel injury.				6. Tire installation program (retorque).	
	7. Risk Ranking -	4	4	16	7. "Wheel-off" program.	
6. Air bag suspension systems.	1. Potential for blown air bag.				1. Regular inspections.	
	2. Loss of air causing brakes to dynamite.				2. Vehicle maintenance programs.	
					3. Road maintenance.	
					4. Allowable public road weight.	
					5. Pre-shift inspection.	
7. What if mandatory brake check is not done?	1. Potential runaway.				1. Pre-shift inspection.	
	2. Potential personnel injury.				2. En route inspection.	
	3. Potential public injury.				3. Carrier monitoring.	
8. What if a deer is on the road - other wildlife?	1. Potential for driver injury.				1. Vehicle design.	
	2. Potential for loss of control, off road collision, tree.				2. Radio, driver communication.	
	3. Potential public hazard if not removed from road.				3. Seat belt.	
					4. Roo bumpers.	
9. What if the chip truck is speeding?	1. Collision.				1. Speed limits.	19. Does the mill/carrier have a speed monitoring system/process?
	2. Off-road and collision with tree, etc.				2. Driver education.	
	3. Potential for loss of control.				3. Driver experience.	28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed
	4. Truck wear - increased maintenance.				4. Speed monitoring programs.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
9. cont'd	5. Risk Ranking -	5	5	25		28. cont'd monitoring devices; - mechanical inspections
10. What if driver competence?	1. Roll-over.				1. Class 1 driver's licence.	12. Does the employer require a current driver's abstract? - certification class; - restrictions
	2. Collision.				2. Air brake certification.	
	3. Off-road and collision with tree, etc.				3. Driver's abstracts.	13. Is the driver's abstract original, and current?
	4. Run away.				4. Forest Industry Professional Driver Improvement Course or other recognized programs.	14. For a newly issued license - has the previous abstract been asked for, examined?
	5. Vehicle damage.					
	6. Potential for driver injury.				5. Mill yard orientation.	15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment
	7. Increased cycle time, decreased productivity.				6. Pre season and post season safety meetings.	
	8. Truck wear - increased maintenance.				7. Monthly safety meetings.	
	9. Operating cost increase as a result of higher maintenance.				8. Some operations require orientation/competency evaluation trips.	16. Does the operation have pre and post haul season safety meetings?
	10. Impaired public relations for the industry.				9. On the job training - information from experienced drivers.	17. Does the operation have regularly scheduled safety meetings?
	11. Risk Ranking -		5	5	25	10. Proper two way radio use instruction.
11. Loading and unloading procedures.						
12. Provincial road regulations.						75. Does the chip truck driver's employer consider driver's abstracts from previous out of province activity?
13. Mill orientation.						
14. Training follow-up.						
15. Tachographs/speed monitoring devices.						
16. Some mills have operating procedures, manuals, for driver training.						
17. First aid training and CPR. Emergency response training.						

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
11. What if the public highway is of poor quality?	1. Higher possibility of roll-over.				1. Roads are signed to warn public of haul traffic.	20. Does the operation consider road quality in setting restricted road usage?
	2. Collision.				2. Chains.	
	3. Off-road and collision with tree, etc.				3. Road maintenance.	
	4. Vehicle damage.				4. Driver experience.	
	5. Potential for driver injury.				5. Driver education.	
	6. Increased cycle time, decreased productivity.				6. Proper signage.	
	7. Truck wear - increased maintenance.				7. Driver communication.	
	8. Operating cost increase as a result of higher maintenance.				8. Proper two way radio use instruction.	
	9. Increased danger to and from private vehicles.				9. One way routes reduce chances for incident.	
	10. Risk Ranking -		3	5	15	
12. What if the operator is fatigued?	1. Potential hazard to the public.				1. Hours of work legislation.	43. Does the operation have an auditing program for driver hours of service?
	2. Higher possibility of roll-over.				2. Monitoring of regular shift changes.	
	3. Collision.				3. Some mills have a pre-arranged haul schedule.	76. Does the mill, and truck driver's employer, work toward educating drivers with respect to fatigue management? Does the mill and truck driver's employer provide opportunity for driver education with respect to fatigue management?
	4. Off-road and collision with tree, etc.				4. TM 9 - tracking mechanism.	
	5. Vehicle damage.				5. Forest Industry Professional Driver Improvement Course or other recognized programs.	
	6. Potential for driver injury.				6. National Safety Code outlines fatigue management.	
	7. Impaired public relations for the industry.				7. On the job training - information from experienced drivers.	
	8. Increased cycle time.				8. Progressive training.	
	9. Risk Ranking -		4	5	20	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
12. cont'd					9. cont'd manuals, for driver training.	
13. What if the operator is impaired?	1. Potential hazard to the public.				1. Driver experience.	46. Does the operation consider a drug/alcohol program?
	2. Higher possibility of roll-over.				2. Driver education.	
	3. Collision.				3. Driver communication.	
	4. Off-road and collision with tree, etc.				4. Driver's abstracts.	
	5. Run away.				5. Proper two way radio use instruction.	
	6. Vehicle damage.				6. Some haulers have drug/alcohol testing.	
	7. Potential for driver injury.				7. Speed monitoring.	
	8. Increased cycle time, decreased productivity.					
	9. Truck wear - increased maintenance.					
	10. Operating cost increase as a result of higher maintenance.					
	11. Impaired public relations for the industry.					
	12. Increased danger to and from private vehicles.					
	13. Lock up of vehicle.					
	14. Potential load shift.					
	15. Risk Ranking -		2	5	10	
14. What if the public highway is under designed, considering traffic flow?	1. Potential hazard to the public.				1. Mandatory check points.	6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review
	2. Collision.				2. Speed limits.	
	3. Off-road and collision with tree, etc.				3. Roads are signed to warn public of log haul traffic.	7. Has the mill had road maintenance input from road users? 8. Has the mill considered appropriate
	4. Vehicle damage.				4. Chains.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
14. cont'd	5. Potential for driver injury.				5. Driver experience.	8. cont'd maintenance given the road layout (grades, turns, for example)?	
	6. Increased cycle time, decreased productivity.				6. Driver education.		
	7. Increased danger to and from private vehicles.				7. Driver communication.	9. Does the road design review for new construction incorporate the opinions of chip truck drivers?	
					8. Road maintenance - sanding, grading.		
	8. Potential for public injury.				9. Monthly safety meetings.	10. Does the road maintenance program consider differing weather and road considerations?	
	9. Signage.				10. Proper two way radio use instruction.		
	10. Risk Ranking -		3	4	12	11. Construction of pull-outs.	26. Are mandatory call-in points located in areas of good radio transmission?
						12. If an alternate route is available - make it into a one-way route.	27. Are mandatory call-in points located at high risk areas?
							44. Has the road been reviewed for pull-outs? - frequency; - location; - signage
							45. Is there a pre-haul inspection? - pull-outs; - signage; - radio communications; - maintenance requirements
						53. Does the operation consult with local government with respect to public highway condition and improvement?	
						79. Has the mill had input to appropriate maintenance through the Regional Transportation Advisory Committee?	
15. What if there is a catastrophic air brake failure?	1. Collision.				1. CVIP.		
	2. Potential hazard to the public.				2. Pre-shift inspection.		
	3. Roll-over.				3. Inspection certificate.		

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
15. cont'd	4. Off-road and collision with tree, etc.				4. Alternative braking systems.		
	5. Vehicle damage.				5. Speed limits.		
	6. Potential for driver injury.						6. Driver experience.
							7. Driver education.
							8. Independent mechanical inspections.
							9. En-route inspection.
10. Maintenance programs.							
16. What if there is a mechanical failure? Drive train.	1. Potential hazard to the public.				1. Driver experience.	38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?	
	2. Collision.				2. Driver education.		
	3. Vehicle damage.				3. Driver communication.		
	4. Potential for driver injury.				4. Proper two way radio use instruction.		
	5. Increased cycle time, decreased productivity.				5. Maintenance programs.		
	6. Truck wear - increased maintenance.				6. Pre-shift inspections.		
	7. Impaired public relations for the industry.						
	8. Potential for public injury.						
	9. Possibility of haul shutdown.						
	10. Runaway.						
	11. Potential catastrophic brake failure.						
	12. Risk Ranking -		4	4	16		
17. What if there is an icy road?	1. Higher potential for roll-over.				1. Road maintenance - sanding, grading.	7. Has the mill had road maintenance input from road users?	
	2. Collision.				2. Chains.	10. Does the road maintenance program consider differing weather and road	
	3. Off-road and collision with tree, etc.				3. Driver experience.		

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
17. cont'd	4. Run away.				4. Driver education.	10. cont'd considerations?
	5. Vehicle damage.				5. Driver communication.	
	6. Potential for driver injury.				6. Seat belt.	11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator? 54. Does the operation have a means of providing input concerning public road conditions to public road maintenance managers?
	7. Increased cycle time, decreased productivity.				7. Anti-lock brakes - mandatory on new trucks and trailers.	
	8. Potential hazard to the public.				8. Potential to shut the haul down under adverse conditions.	
	9. Risk Ranking -	5	5	25	9. Potential for individual driver to not haul a load.	
18. What if you get off the designated/restricted route?	1. Bridge failure.				1. Driver experience.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Potential hazard to the public.				2. Driver education.	
	3. Higher possibility of roll-over.				3. Proper signage.	
	4. Increased cycle time, decreased productivity.				4. Road orientations.	
	5. Impaired public relations for the industry.				5. Driver communication.	
	6. Increased danger to and from private vehicles.				6. Commercial vehicle safety regulations.	
	7. Potential for public injury.				7. Route maps.	
	8. Possibility of haul shutdown.				8. Driver experience.	
	9. Impaired relations with regulatory bodies.				9. Chip haul permits.	
	10. Power line contact.				10. GPS.	
	11. Vehicle damage (low bridge, for example).					
	12. Risk Ranking -	2	2	4		
19. What if you lock up going down hill?	1. Roll-over.				1. Chains.	5. Are air brakes checked regularly for adjustment and operation? - check slack adjusters; - in cab checks - warning
	2. Collision.				2. Road maintenance.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
19. cont'd	3. Off-road and collision with tree, etc.				3. Driver experience.	5. cont'd devices, compressor build time, air containment, functionality; - driver able to adjust the air brakes; - air bag weights [Reference AR-118/89]	
	4. Run away.				4. Driver education.		
	5. Vehicle damage.				5. Road design.		
	6. Potential for driver injury.				6. Proper signage.	7. Has the mill had road maintenance input from road users?	
	7. Potential for public injury.				7. Road orientations.	8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?	
	8. Back up of public road traffic.				8. Driver communication.		
	9. Risk Ranking -		5	5	25	9. Seat belt.	10. Does the road maintenance program consider differing weather and road considerations?
						10. Brake maintenance - proper adjustment.	
						11. Chip haul permits.	11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?
12. GPS.							
20. What if the chip truck is involved in an accident?	1. Potential driver, public injury.				1. Driver experience.	56. Does the operation have an emergency response program? - vehicle collision; - fire; - spill; - personal injury; - recovery methods/situations	
	2. Property damage.				2. Driver education.		
	3. Vehicle damage.				3. Emergency Response Plan.		
	4. Environmental damage - spilt diesel oil, other fluids.				4. Impaired public relations to the industry.		

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
20. cont'd	5. Risk Ranking -	4	5	20	5. Spill kits on some trucks.	
					6. Safety plans - mill safety plans, contractor plans.	
21. What if there is a recovery needed - truck, load?	1. Potential hazard to the public.				1. The contractor is responsible for responding to the recovery situation.	56. Does the operation have an emergency response program? - vehicle collision; - fire; - spill; - personal injury; - recovery methods/situations
	2. Potential for public injury.					
	3. Impaired public relations for the industry.				2. Some mills and carriers have developed safe practices for recovery of trucks.	
	4. Risk Ranking -	4	1	4		
22. What if recovery of chips is required?	1. Impairment to public relations for the industry.				1. Commercial traffic direction.	
	2. Potential injuries.				2. Signage.	
23. What if public vehicle drivers are impaired?	1. Potential accidents, injuries.				1. Policies for reporting - some mills have them.	
					2. Relations with local RCMP.	
24. Approach of slow moving vehicle on public highway?	1. Traffic congestion.				1. Some mills ask that loaded chip trucks not pass vehicles until there is a specific passing lane or equivalent. 2. Some oil companies will post times of large equipment transport.	
	2. Potential hazard from impatience behind the slow moving vehicle.					
25. Spacing of vehicles on public highways.	1. Potential hazard from impatience behind the slow moving vehicle.				1. Scheduling of trucks.	6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review
	2. Dust.				2. Road maintenance.	
	3. Snow.				3. Dust control.	11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?
	4. Reduced visibility.				4. Driver experience.	
	5. Increased cycle times.				5. Driver education.	
	6. Driver frustration.				6. Road orientations.	25. Are drivers made aware of areas which have high public or other use (oil patch, for example)?
	7. Risk Ranking -	4	4	16	7. Driver communication.	
					8. Proper VHF radio use instruction.	42. Does the operation have a procedure for shut down of haul in adverse weather

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 2. Driving to the Mill - Public Highway

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
25. cont'd					9. Forest Industry Professional Driver Improvement Course or other recognized programs.	42. cont'd conditions?
					10. Shutting down the haul - temporary suspension.	80. Has the mill had road design reviewed for safety and provided input to the appropriate authority of the public road? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review
26. What if chains are required?	1. Potential for personnel injury.				1. Operator training.	99. Does the carrier/contractor provide proper chain procedures?
	2. Potential for equipment damage.				2. Chain up/chain off areas.	
	3. Potential for collisions.				3. Radio communication.	
	4. Risk Ranking -	4	4	16	4. Forest Industry Professional Driver Improvement Course or other recognized programs.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the off-highway road is of poor quality?	1. Higher possibility of roll-over.				1. Roads are signed to warn public of log haul traffic.	20. Does the operation consider road quality in setting restricted road usage?
	2. Collision.				2. Chains.	
	3. Off-road and collision with tree, etc.				3. Road maintenance.	
	4. Vehicle damage.				4. Driver experience.	
	5. Potential for driver injury.				5. Driver education.	
	6. Increased cycle time, decreased productivity.				6. Proper signage.	
	7. Truck wear - increased maintenance.				7. Driver communication.	
	8. Operating cost increase as a result of higher maintenance.				8. Proper two way radio use instruction.	
	9. Increased danger to and from private vehicles.				9. One way roads reduce chances for incident.	
	10. Risk Ranking -		4	4	16	
2. What if a "steep" grade?	1. Potential hazard to the public.				1. Roads are signed to warn public of log haul traffic.	6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review
	2. Roll-over.				2. Chains.	
	3. Collision.				3. Road maintenance.	7. Has the mill had road maintenance input from road users?
	4. Off-road and collision with tree, etc.				4. Driver experience.	
	5. Run away.				5. Driver education.	8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?
	6. Vehicle damage.				6. Road design.	
	7. Potential for driver injury.				7. Proper signage.	9. Does the road design review for new construction incorporate the opinions of chip truck drivers?
	8. Increased cycle time, decreased productivity.				8. Road orientations.	
	9. Truck wear - increased maintenance.				9. Driver communication.	10. Does the road maintenance program consider differing weather and road considerations?
	10. Risk Ranking -		4	4	16	
						21. Does cut block design consider percentage grade for "road" within the

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
2. cont'd					11. Experienced people are hired to do block layout.	21. cont'd block?	
					12. Some mills have SOP's concerning grades of road.	22. Is there a process of examination to consider cut block grades and truck requirements? - road grade; - towing vehicle; - season;	
					13. Operating company ground rules.		
3. What if you lock up going down hill?	1. Roll-over.				1. Chains.	5. Are air brakes checked regularly for adjustment and operation? - check slack adjusters; - in cab checks - warning devices, compressor build time, air containment, functionality; - driver able to adjust the air brakes; - air bag weights [Reference AR-118/89]	
	2. Collision.				2. Road maintenance.		
	3. Off-road and collision with tree, etc.				3. Driver experience.		
	4. Run away.				4. Driver education.		
	5. Vehicle damage.				5. Road design.		
	6. Potential for driver injury.				6. Proper signage.	6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	
	7. Risk Ranking -		4	4	16	7. Road orientations.	7. Has the mill had road maintenance input from road users?
						8. Driver communication.	8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?
						9. Seat belt.	9. Does the road design review for new construction incorporate the opinions of chip truck drivers?
						10. Brake maintenance - proper adjustment.	10. Does the road maintenance program consider differing weather and road considerations?
						11. GPS.	11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?
4. What if there is an icy road?	1. Roll-over.				1. Road maintenance - sanding, grading.	7. Has the mill had road maintenance input from road users?	
	2. Collision.				2. Chains.	10. Does the road maintenance program consider differing weather and road	
	3. Off-road and collision with tree, etc.				3. Driver experience.		

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
4. cont'd	4. Run away.				4. Driver education.	10. cont'd considerations?
	5. Vehicle damage.				5. Driver communication.	
	6. Potential for driver injury.				6. Seat belt.	11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator? 42. Does the operation have a procedure for shut down of haul in adverse weather conditions?
	7. Increased cycle time, decreased productivity.				7. Anti-lock brakes - mandatory on new trucks and trailers.	
	8. Potential hazard to the public.				8. Potential to shut the haul down under adverse conditions.	
	9. Risk Ranking -	5	4	20	9. Potential for individual driver to not haul a load.	
5. What there is traffic on the road which is not radio controlled?	1. Collision.				1. Speed limits.	23. Does the operation provide signs indicating radio controlled roads and procedures?
	2. Off-road and collision with tree, etc.				2. Roads are signed to warn public of chip haul traffic.	
	3. Vehicle damage.				3. Driver experience.	24. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?
	4. Potential for driver injury.				4. Driver education.	
	5. Increased cycle time, decreased productivity.				5. Driver communication.	25. Are drivers made aware of areas which have high public or other use (oil patch, for example)?
	6. Impaired public relations for the industry.				6. Proper two way radio use instruction.	
	7. Potential for public injury.				7. One way roads reduce chances for incident.	
	8. Two heavy trucks meeting on the road unexpectedly.				8. Buddy system with radioed vehicle.	
	9. Risk Ranking -	5	5	25	9. Some operations attempt a buddy system for private traffic.	
					10. Consultation to educate the local public, concerning hauling times, procedures, inform hauling contractors of school bus times.	
					11. Check stops - stopping public on the roads, provide information concerning chip haul.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
5. cont'd					12. Communication concerning road conditions.	
6. Mud.	1. Mechanical breakdown.				1. Speed limits.	9. Does the road design review for new construction incorporate the opinions of chip truck drivers?
	2. Potential hazard to the public.				2. Chains.	
	3. Higher possibility of roll-over.				3. Road maintenance.	42. Does the operation have a procedure for shut down of haul in adverse weather conditions?
	4. More trips - loss of productivity.				4. Driver experience.	
	5. Roll-over.				5. Driver education.	
	6. Off-road and collision with tree, etc.				6. Road design.	
	7. Vehicle damage.				7. Driver communication.	
	8. Potential for driver injury.				8. Towing vehicle.	
	9. Increased cycle time, decreased productivity.				9. Shutting down the haul - temporary suspension.	
	10. Truck wear - increased maintenance.				10. Alternative braking mechanisms - diff locks, for example.	
	11. Risk Ranking -	5	2	10		
7. What if a call-in is missed (kilometer marker, radio call-in)?	1. Potential hazard to the public.				1. Speed limits.	26. Are mandatory call-in points located in areas of good radio transmission?
	2. Collision.				2. Driver experience.	
	3. Off-road and collision with tree, etc.				3. Driver education.	27. Are mandatory call-in points located at high risk areas?
	4. Vehicle damage.				4. Driver communication.	
	5. Potential for driver injury.				5. Some operations require orientation/competency evaluation trips.	
	6. Impaired public relations for the industry.				6. One way roads.	
	7. Potential for public injury.				7. Mandatory call-in signs and locations?	
	8. Two heavy trucks meeting on the road unexpectedly.				8. Mill orientations concerning the proper use of radios, since call-ins can sometimes be missed due to conversation over the radio.	
	9. Risk Ranking -	5	4	20		

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
8. What if you get off the designated/restricted route?	1. Bridge failure.				1. Driver experience.	2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications
	2. Potential hazard to the public.				2. Driver education.	
	3. Higher possibility of roll-over.				3. Proper signage.	
	4. Increased cycle time, decreased productivity.				4. Road orientations.	
	5. Impaired public relations for the industry.				5. Driver communication.	
	6. Increased danger to and from private vehicles.				6. Chip haul road regulations.	
	7. Potential for public injury.				7. Mill specific resource route maps (for when public roads are part of the route).	
	8. Possibility of haul shutdown.				8. GPS.	
	9. Impaired relations with regulatory bodies.					
	10. Vehicle damage (low bridge, for example).					
	11. Potential wellhead, pipeline contact.					
	12. Risk Ranking -		3	1	3	
9. What if another vehicle is met while the truck is going too fast?	1. Collision.				1. Speed limits.	19. Does the mill/carrier have a speed monitoring system/process?
	2. Off-road and collision with tree, etc.				2. Driver education.	28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections
	3. Risk Ranking -	4	4	16	3. On board monitoring systems. 4. Driver experience.	
10. What if there is a mechanical failure? Drive train.	1. Potential hazard to the public.				1. Driver experience.	38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?
	2. Collision.				2. Driver education.	
	3. Vehicle damage.				3. Driver communication.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
10. cont'd	4. Potential for driver injury.				4. Proper two way radio use instruction.	
	5. Increased cycle time, decreased productivity.				5. Maintenance programs.	
	6. Impaired public relations for the industry.				6. Pre-shift inspections.	
	7. Potential for public injury.					
	8. Possibility of haul shutdown.					
	9. Runaway.					
	10. Potential catastrophic brake failure.					
	11. Risk Ranking -	4	4	16		
11. Malfunction in air brake system.	1. Lock up of vehicle.				1. Brakes lock on.	39. Are air lines checked as part of pre-shift inspection?
	2. Higher possibility of roll-over.				2. Warning systems.	40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?
	3. Collision.				3. Random inspections.	
	4. Off-road and collision with tree, etc.				4. Maintenance program.	94. Are air lines and coupling devices checked as part of en-route inspections?
	5. Vehicle damage.				5. En-route inspections.	
	6. Potential for driver injury.					
	7. Increased danger to and from private vehicles.					
	8. Risk Ranking -	4	4	16		
12. Electrical.	1. Loss of lights.				1. Extinguisher.	
	2. Fire.				2. Pre-shift inspection.	
	3. More trips - loss of productivity.				3. Regular maintenance programs.	
	4. Shut down of engine.				4. En-route inspection.	
	5. Potential injury.					

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
12. cont'd	6. Potential accidents.					
13. Tires and rims.	1. Loss of tire.				1. Pre-shift inspection.	41. Does the operation have an organized maintenance program for tires and rims?
	2. Loss of wheel assembly.				2. Regular maintenance.	
	3. Shift of load.				3. Mandatory check points.	
	4. Blowouts.				4. Tire air pressure gauges.	
	5. Potential for fire.					
	6. Projectiles.					
	7. Potential personnel injury.					
	8. Risk Ranking -		4	3	12	
14. Air bags/suspension.	1. Potential air bags blowing causing the air system to dynamite.				1. Regular inspections.	28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections
	2. Potential equipment damage.				2. Road maintenance.	
	3. Potential injury.				3. Allowable public road weight.	
	4. Risk Ranking -		4	3	12	
15. What if a deer is on the road - other wildlife?	1. Potential for driver injury.				1. Vehicle design.	
	2. Potential for loss of control, off road collision, tree.				2. Radio, driver communication.	
	3. Potential public hazard if not removed from road.				3. Seat belt.	
	4. Equipment damage.				4. Roo bumpers.	
16. Fog, snow, freezing rain, visibility reduced.	1. Higher possibility of roll-over.				1. Chains.	42. Does the operation have a procedure for shut down of haul in adverse weather conditions?
	2. More trips - loss of productivity.				2. Road maintenance.	
	3. Collision.				3. Driver experience.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
16. cont'd	4. Off-road and collision with tree, etc.				4. Driver education.		
	5. Vehicle damage.				5. Road design.		
	6. Potential for driver injury.				6. Proper signage.		
	7. Increased danger to and from private vehicles.				7. Road orientations.		
	8. Two heavy trucks meeting on the road unexpectedly.				8. Driver communication.		
	9. Lock up of vehicle.				9. Road maintenance - sanding, grading.		
	10. Risk Ranking -		4	3	12		10. On the job training - information from experienced drivers.
							11. Proper two way radio use instruction.
							12. Some mills have operating procedures, manuals, for driver training.
							13. Shutting down the haul - temporary suspension.
14. Mandatory call-in signs and locations.							
					15. Individual driver can choose not to drive because of conditions.		
17. What if the operator is fatigued?	1. Potential hazard to the public.				1. Hours of work legislation.	43. Does the operation have an auditing program for driver hours of service?	
	2. Higher possibility of roll-over.				2. Monitoring of regular shift changes.	76. Does the mill, and truck driver's employer, work toward educating drivers with respect to fatigue management? Does the mill and truck driver's employer provide opportunity for driver education with respect to fatigue management?	
	3. Collision.				3. Some mills have a pre-arranged haul schedule.		
	4. Off-road and collision with tree, etc.				4. TM 9 - tracking mechanism.		
	5. Vehicle damage.				5. Forest Industry Professional Driver Improvement Course or other recognized programs.		
	6. Potential for driver injury.				6. National Safety Code outlines fatigue management.		
	7. Operating cost increase as a result of higher maintenance.				7. On the job training - information from		
	8. Impaired public relations for the industry.						

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
17. cont'd	9. Increased cycle time.				7. cont'd experienced drivers.	
	10. Risk Ranking -	4	4	16	8. Progressive training.	
					9. Some mills have operating procedures, manuals, for driver training.	
18. What if the route is under designed for its use - i.e. - not designed for continuous two way traffic?	1. Potential hazard to the public.				1. Speed limits.	6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review
	2. Collision.				2. Roads are signed to warn public of chip haul traffic.	
	3. Off-road and collision with tree, etc.				3. Chains.	7. Has the mill had road maintenance input from road users?
	4. Vehicle damage.				4. Driver experience.	
	5. Potential for driver injury.				5. Driver education.	8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?
	6. Increased cycle time, decreased productivity.				6. Driver communication.	
	7. Increased danger to and from private vehicles.				7. Road maintenance - sanding, grading.	9. Does the road design review for new construction incorporate the opinions of chip truck drivers?
	8. Potential for public injury.				8. Monthly safety meetings.	
	9. Two heavy trucks meeting on the road unexpectedly.				9. Proper VHF radio use instruction.	10. Does the road maintenance program consider differing weather and road considerations?
	10. Could be stuck - require help to get going again.				10. Construction of pull-outs.	
	11. Signage.				11. If an alternate route is available - make it into a one-way.	26. Are mandatory call-in points located in areas of good radio transmission?
	12. Risk Ranking -	5	4	20	12. Mill policy - loaded trucks have the right-of-way.	27. Are mandatory call-in points located at high risk areas?
44. Has the road been reviewed for pull-outs? - frequency; - location; - signage						
					45. Is there a pre-haul inspection? - pull-outs; - signage; - radio communications; - maintenance requirements	
19. What if the operator is impaired?	1. Potential hazard to the public.				1. Driver experience.	46. Does the operation consider a drug/alcohol program?
	2. Higher possibility of roll-over.				2. Driver education.	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
19. cont'd	3. Collision.				3. Driver communication.	
	4. Off-road and collision with tree, etc.				4. Driver's abstracts.	
	5. Run away.				5. Proper two way radio use instruction.	
	6. Vehicle damage.				6. Some haulers have drug/alcohol testing.	
	7. Potential for driver injury.				7. Speed monitoring.	
	8. Increased cycle time, decreased productivity.					
	9. Truck wear - increased maintenance.					
	10. Operating cost increase as a result of higher maintenance.					
	11. Impaired public relations for the industry.					
	12. Increased danger to and from private vehicles.					
	13. Lock up of vehicle.					
14. Risk Ranking -	4	4	16			
20. What if driver competence?	1. Roll-over.				1. Class 1 driver's licence.	12. Does the employer require a current driver's abstract? - certification class; - restrictions
	2. Collision.				2. Air brake certification.	
	3. Off-road and collision with tree, etc.				3. Driver's abstracts.	13. Is the driver's abstract original, and current?
	4. Run away.				4. Mill yard orientation.	
	5. Vehicle damage.				5. Pre season and post season safety meetings.	14. For a newly issued license - has the previous abstract been asked for, examined?
	6. Potential for driver injury.				6. Monthly safety meetings.	
	7. Increased cycle time, decreased productivity.				7. Some operations require orientation/competency evaluation trips.	15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment
	8. Truck wear - increased maintenance.				8. On the job training - information from experienced drivers.	
					16. Does the operation have pre and post	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
20. cont'd	9. Operating cost increase as a result of higher maintenance.				9. Proper two way radio use instruction.	16. cont'd haul season safety meetings?
	10. Impaired public relations for the industry.				10. Loading and unloading procedures.	17. Does the operation have regularly scheduled safety meetings?
	11. Risk Ranking -	5	5	25	11. Chip haul road regulations.	
					12. Speed monitoring devices.	18. Are inexperienced drivers given time with an experienced driver for a time period prior to undirected driving?
					13. Some haulers have drug/alcohol testing.	
					14. First aid training and CPR. Emergency response training.	75. Does the chip truck driver's employer consider driver's abstracts from previous out of province activity?
15. Forest Industry Professional Driver Improvement Course or other recognized programs.						
21. What if there is a catastrophic air brake failure?	1. Collision.				1. CVIP.	
	2. Potential hazard to the public.				2. Pre-shift inspection.	
	3. Roll-over.				3. Inspection certificate.	
	4. Off-road and collision with tree, etc.				4. Speed limits.	
	5. Vehicle damage.				5. Driver experience.	
	6. Potential for driver injury.				6. Driver education.	
					7. Independent mechanical inspections.	
					8. En-route inspection.	
					9. Maintenance programs.	
22. What if public vehicle drivers are impaired?	1. Potential accidents, injuries.				1. Policies for reporting - some mills have them.	
					2. Relations with local RCMP.	
23. Approach of slow moving vehicle on the route - or oversized equipment from oil field operations?	1. Traffic congestion.				1. Some mills ask that loaded chip trucks not pass vehicles until there is a specific passing lane or equivalent.	
	2. Driver impatience from the slow moving vehicle.				2. Some oil companies will post times of	

Chip Truck Haul Division: 4. Returning to the Mill
Division Activity: 3. Driving to the Mill - Off Highway/Bush Roads

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
23. cont'd					2. cont'd large equipment transport.		
24. What if there is an inadequate water course and/or pipeline crossing?	1. Damage to infrastructure.				1. Engineered crossings.	6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	
	2. Damage to truck.				2. Signage.		
	3. Potential injuries.				3. Pipeline crossing and road use agreements.	8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?	
	4. Risk Ranking -		3	3	9		4. Bridge monitoring.
							5. Bridge maintenance.

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 1. Arriving at the Mill Site

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item	
1. What if radio channels?	1. Won't be able to communicate with the yard equipment and other drivers.				1. The driver will notice if he cannot communicate.	47. Do routes have signs to mark where radio frequencies should be changed?	
	2. Loss of productivity.				2. Posting the radio channel.	48. Are necessary radio frequencies posted?	
	3. Risk Ranking -		2	1	2	3. Other mill personnel in the area.	49. Does the operation have a radio standard? - frequencies; training
							62. Does the operation have a mill orientation program? - communications; - signage; - yard procedures
							63. Has the mill a means of checking if the main employer/contractor provides an orientation to new hires?
							64. Does the mill randomly check individual chip haul drivers for orientation?
							65. Are orientation packages reviewed? - incidents from previous years; - yard changes; - practice changes; - map changes; - route changes; - communications
							66. Is there a means in place to identify those drivers who have taken orientation?
67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;							
68. Has the carrier considered a checklist or procedure for loading, unloading? - loading procedures.							
2. What if mill traffic other than chip haul trucks?	1. Interaction with other vehicles may lead to near misses.				1. Mill orientations.	62. Does the operation have a mill orientation program? - communications; - signage; - yard procedures	
	2. Line up at the scales.				2. Mill workers education.		
	3. Increased cycle times.				3. Signage.		
	4. Risk Ranking -		5	2	10		4. Speed limits.
							5. Radio use.

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 1. Arriving at the Mill Site

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
3. What if the driver does not follow scale route policy?	1. Loss of production.				1. Mill orientations.	62. Does the operation have a mill orientation program? - communications; - signage; - yard procedures
	2. Potential for collision.				2. Signage.	
	3. Risk Ranking -	4	3	12		
4. Backed up trucks due to scale breakdown, or heavy truck traffic volumes (peak season).	1. Trucks can be backed up, sometimes right up on to public roads.				1. Procedures to deal with scale breakdowns.	
	2. Collisions.				2. Traffic control devices such as cones, triangles.	
	3. Frustration for public drivers and haul drivers.				3. Contact persons.	
	4. Potential for an out of hours service violation.				4. Possibility for haul shutdown until the equipment is repaired.	
	5. Increased cycle time.				5. Scheduling of trucks.	
5. What if speeding while arriving at the mill?	1. Potential accident.				1. Signage.	
	2. Potential equipment damage.				2. Orientation.	
	3. Potential personnel injury to pedestrians.				3. Driver education.	
6. What if entering the mill site?	1. Potential collisions.				1. Orientations.	
	2. Potential collisions with trains, depending on the site.				2. Driver training.	
					3. Signage.	
					4. Two way radio communication.	

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 2. Weighing-in

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the scale is icy - or other weather conditions?	1. Potential for operator to lose footing.				1. Sanding.	
	2. Potential for incorrect weight reading - the scale may not zero out correctly.				2. Salting.	
	3. Heavy snow can block the photo sensors.				3. Mill will have a maintenance procedure for the conditions at the scale house.	
2. What if backing off the scale?	1. Could happen if the photo sensors do not work properly.				1. Most scale houses prohibit backing up from the scale.	
	2. Potential for truck damage.				2. Procedure for backing up from the scale - such as someone directing the truck.	
	3. Loss of production.					
	4. Potential personnel injury.					
3. What if PPE is not worn at the scale?	1. Lack of protection.				1. Mill procedures.	
4. What if there are unauthorized passengers in the truck?	1. Can have unauthorized people left in the cab because drivers can conceal those passengers - therefore the driver will be outside the cab in a safe zone.				1. Mill orientations - brought up every year.	88. Does the operation have a mill orientation program? - communications; - unwrapping hazards; - tripping loads if applicable; - routes; - signage; - yard procedures; - passengers in trucks
	2. Sometimes if the passengers are discovered, they will have to leave the cab to go the safe zone.				2. No passengers are allowed at the mill site, unless for training purposes.	
	3. Potential liability problems for the mills and/or contractor if there is an incident.				3. Some contractors have forms signed by drivers which state the driver is aware there are to be no passengers, which would limit the potential liability for that contractor.	
	4. Potential for personnel injury.					
	5. Risk Ranking -	3	4	12		
5. What if the truck is overweight?	1. Contravention of the winter weight program.				1. Driver training.	87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;
	2. Risk Ranking -	5	1	5	2. Enforcement by the mill (fines, for example).	
6. What if computer error/malfunction?	1. Line up at scales.				1. Driver training.	
	2. Longer cycle times.				2. Report/call to the site tech department.	

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 2. Weighing-in

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
6. cont'd	3. Driver frustration.					
	4. Potential chip pile contamination.					

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 3. The Unloading Operation

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the driver is inexperienced?	1. Potential equipment damage.				1. Mill orientation.	62. Does the operation have a mill orientation program? - communications; - signage; - yard procedures
	2. Potential chip pile contamination.				2. Safety procedures, enforcement.	
	3. Potential dumper delays.				3. Signage.	
	4. Increased cycle times.				4. Radios.	
	5. Driver frustration.				5. Buddy system for the first few unloads.	
	6. Potential personnel injury.				6. Cross shift will orient the inexperienced driver.	
	7. Risk Ranking -	4	2	8	7. Yard staff may help this situation when they can.	
2. What if the trailer doesn't conform to required configuration?	1. Equipment damage.				1. Pre-shift inspection.	1. Have contractual arrangements been reviewed? - vehicle specifications and suitability to task; - trucks, trailers
	2. Dumper damage.					
	3. Potential for not being able to unload.					
	4. Potential for a trailer in the pit.					
	5. Loss of production.					
	6. Risk Ranking -	2	1	2		
3. What if dumper malfunction?	1. Equipment damage.				1. Maintenance.	
	2. Longer cycle times.				2. Unloading procedures anticipate this possibility.	
	3. Driver frustration.					
4. What if there is an incident?	1. Accident consequences.				1. Emergency Response Plans.	
					2. Accidents investigations.	
					3. Corrective actions/follow up.	
					4. Training and emergency drills.	
5. What if the dumper procedure was not followed?	1. Potential equipment damage.				1. Mill procedure.	62. Does the operation have a mill orientation program? - communications; -

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 3. The Unloading Operation

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
5. cont'd	2. Potential chip pile contamination.				2. Driver certification.	62. cont'd signage; - yard procedures
	3. Potential dumper delays.				3. Orientation.	
	4. Increased cycle times.					
	5. Driver frustration.					
	6. Potential personnel injury.					
	7. Risk Ranking -	4	2	8		
6. What if the fuel cap is not tightened properly (other specific What-ifs considered covered under Dumper Procedure)?	1. Potential fuel spill.				1. Dumper procedure - check fuel cap prior to dumping.	
	2. Chip contamination.				2. Orientation.	
	3. Fire hazard.				3. Driver Training.	
	4. Potential personnel injury.					
7. What if the driver walks across the backstop?	1. Potential personnel injury.				1. Dumper procedure.	
	2. Potential for slips and falls.				2. Driver training.	
					3. Orientation.	
8. What if driver walks across the bridge while open?	1. Potential personnel injury.				1. Prohibited from being on the bridge at any time.	
	2. Potential for slips and falls.				2. Driver training.	
					3. Orientation.	
9. What if the driver leaves the dumper booth while the dumper is under operation?	1. Potential personnel injury.				1. Prohibited from leaving the dumper booth while the dumper is operating.	
	2. Potential fatality.				2. Driver training.	
					3. Orientation.	
10. What if the driver is not wearing PPE?	1. Potential personnel injury.				1. Driver training.	
	2. Breach of OH&S regulations.				2. Orientation.	

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 3. The Unloading Operation

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
11. What if the driver fails to lower the suspension in the truck and/or trailer?	1. Potential for the trailer to jump the backstop.				1. Engineered hoops for trailer restraints.	
	2. Potential equipment damage.				2. Driver training.	
	3. Potential injury.				3. Orientation.	
	4. Production loss.					
12. What if the driver fails to back up to the back stop, fails to contact the back stop prior to unloading?	1. Equipment damage.				1. Driver training.	
	2. Potential fuel spill.				2. Orientation.	
	3. Loss of production.				3. Dumper cameras.	
	4. Chip contamination.					
13. What if the truck fails to start?	1. Increased cycle time.				1. Preventative maintenance program.	
	2. Potential personnel injury while towing.				2. Driver education.	
	3. Potential equipment damage.				3. Communicate with company representatives.	

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 4. Weighing-out

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if the scale is icy - or other weather conditions?	1. Potential for operator to lose footing.				1. Sanding.	
	2. Potential for incorrect weight reading - the scale may not zero out correctly.				2. Salting.	
	3. Heavy snow can block the photo sensors.				3. Mill will have a maintenance procedure for the conditions at the scale house.	
2. What if backing off the scale?	1. Could happen if the photo sensors do not work properly.				1. Most scale houses prohibit backing up from the scale.	
	2. Potential for truck damage.				2. Procedure for backing up from the scale - such as someone directing the truck.	
	3. Loss of production.					
	4. Potential personnel injury.					
3. What if PPE is not worn at the scale?	1. Lack of protection.				1. Mill procedures.	
4. What if computer error/malfunction?	1. Line up at scales.				1. Driver training.	
	2. Longer cycle times.				2. Orientation.	
	3. Driver frustration.				3. Report/call to the site tech department.	
	4. Potential chip pile contamination.					

Chip Truck Haul Division: 5. Unloading at the Mill
Division Activity: 5. Preparing for the Next Truck Use

What ifs	Potential Hazards	L	S	RR	Safeguards	Pot. Checklist Item
1. What if there is something wrong with the truck?	1. Mechanical hazards, as covered in pre-shift inspection portions of the study.				1. Driver experience.	
2. What if fueling?	1. Potential hazards from being outside the truck such as slips and trips.				1. PPE.	
	2. Fire.				2. Fire extinguisher.	
	3. Environmental spill.					
					4. Driver Training.	
					5. Orientation.	
3. What if all equipment is not placed properly for the next trip?	1. Potential for lack of equipment.				1. Driver experience.	
	2. Lights, missing.				2. Walk arounds.	
	3. Loss of production.					
					4. Driver Training.	
					5. Orientation.	
4. What if there is a shift change?	1. Covered by pre-shift inspection.					

5.4 Potential Checklist Item Registers

5.4.1 Potential Checklist Item Register

5.4.2 Potential Checklist Items by Category

5.4.3 Potential Checklist Items by RX Rating

5.4 Potential Checklist Item Registers

5.4.1 Potential Checklist Item Register

Categories

WT	-	Weight Monitoring
SMC	-	Speed Monitoring and Control
RCC	-	Route Control and Communications
S	-	Signage
DM	-	Driver Management
TTM	-	Truck and Trailer Maintenance
OT	-	Other Factors

Pot. Checklist Item	Place(s) Used	SX	RX	CAT
1. Have contractual arrangements been reviewed? - vehicle specifications and suitability to task; - trucks, trailers	1.1.1; 5.3.2	1	2	OT
2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications	1.1.2,6; 1.2.1,5; 1.3.1,5; 2.2.19,20; 3.1.1; 4.2.18; 4.3.8; 5.3.2	4	20	DM
3. Does the mill require similar documentation from the sub-contractor as the main contractor? - insurance coverage; - current CVIP; - WCB; - Drivers hold proper licenses; - copy of AT&U permit	1.1.2,6	4	20	DM
4. Does the mill/carrier have a registration process for all chip trucks?	1.1.1,2	1	3	WT
5. Are air brakes checked regularly for adjustment and operation? - check slack adjusters; - in cab checks - warning devices, compressor build time, air containment, functionality; - driver able to adjust the air brakes; - air bag weights [Reference AR-118/89]	2.2.21; 4.2.19; 4.3.3	5	25	TTM
6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	2.2.21; 4.2.14,25; 4.3.2,3,18,24	4	20	RCC
7. Has the mill had road maintenance input from road users?	2.2.18,21,28; 4.2.14,17,19; 4.3.2,3,4,18	5	25	RCC
8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?	2.2.21; 4.2.14,19; 4.3.2,3,18,24	5	25	RCC
9. Does the road design review for new construction incorporate the opinions of chip truck drivers?	2.2.21; 4.2.14; 4.3.2,3,6,18,24	4	20	RCC
10. Does the road maintenance program consider differing weather and road considerations?	2.2.18,21,28; 4.2.14,17,19; 4.3.2,3,4,18	5	25	RCC
11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?	2.2.18,21; 4.2.17,19,25; 4.3.3,4	5	25	RCC
12. Does the employer require a current driver's abstract? - certification class; - restrictions	1.1.3; 2.2.12; 4.2.10; 4.3.20	5	25	DM
13. Is the driver's abstract original, and current?	1.1.3; 2.2.12; 4.2.10; 4.3.20	5	25	DM
14. For a newly issued license - has the previous abstract been asked for, examined?	1.1.3; 2.2.12; 4.2.10; 4.3.20	5	25	DM
15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment	1.1.3; 2.1.4; 2.2.12; 3.4.7; 3.7.3; 4.2.10; 4.3.20	5	25	DM
16. Does the operation have pre and post haul season safety meetings?	2.2.12; 4.2.10; 4.3.20	5	25	DM
17. Does the operation have regularly scheduled safety meetings?	1.1.3; 2.2.12; 4.2.10; 4.3.20	5	25	DM
18. Are inexperienced drivers given time with an experienced driver for a time period prior to undirected driving?	1.1.3; 2.2.12; 3.4.7; 3.7.3; 4.2.10; 4.3.20	5	25	DM
19. Does the mill/carrier have a speed monitoring system/process?	1.1.6; 2.2.11,25; 4.2.9; 4.3.9	5	25	SMC
20. Does the operation consider road quality in setting restricted road usage?	2.2.13,27; 4.2.11; 4.3.1	5	16	RCC
21. Does cut block design consider percentage grade for "road" within the block?	4.3.2	4	16	RCC
22. Is there a process of examination to consider cut block grades and truck requirements? - road grade; - towing vehicle; - season;	4.3.2	4	16	RCC
23. Does the operation provide signs indicating radio controlled roads and procedures?	2.2.22; 4.3.5	5	25	S
24. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?	2.2.22; 4.3.5	5	25	DM
25. Are drivers made aware of areas which have high public or other use (oil patch, for example)?	2.2.22; 4.2.25; 4.3.5	5	25	RCC
26. Are mandatory call-in points located in areas of good radio transmission?	2.2.8,28; 4.2.14; 4.3.7,18	4	20	RCC

Pot. Checklist Item	Place(s) Used	SX	RX	CAT
27. Are mandatory call-in points located at high risk areas?	2.2.8,28; 4.2.14; 4.3.7,18	4	20	RCC
28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections	1.1.6; 2.1.2; 2.2.11,25; 4.2.9; 4.3.9,14	5	25	DM
29. Is there a means of documentation in place for pre-trip (i.e. - pre-shift) inspection?	2.1.4,5; 2.2.2	5	20	TTM
30. Does the operation have a system of random independent mechanical checks in place?	2.1.1,4,5	5	20	TTM
31. Is there a mechanism of response to pre-shift checklist items which might have uncovered deficiencies?	2.1.1,4,5	5	20	TTM
32. Are drivers informed of pre-shift inspection legal requirements for commercial vehicles? - Motor Transport Act AR-118/89; - National Safety Code; - commercially available log books	2.1.1,4,5; 2.2.14	5	20	OT
33. Does the principal employer have a means to pass new trucking regulations/developments to the driver?	2.1.1	5	20	OT
34. Does the principal employer receive notices concerning new chip hauling regulations from government bodies which is clearly marked for their information needs?	2.1.1	5	20	OT
35. Is there a process in place to track corrective action for major deficiencies?	2.1.3,4	4	16	TTM
36. Are the operation's drivers required to do a pre-shift inspection? (Consult standard checklists)	2.1.3; 2.2.31	4	4	TTM
37. Does the operation (main employer) ask for drivers to document their pre-shift check compliance? - diary; - pre-shift check sheets; - inspection reports	2.1.2,3,6; 2.2.32	4	20	DM
38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?	2.2.17; 3.4.6; 3.5.2; 3.6.2; 3.7.6; 4.2.16; 4.3.10	4	20	DM
39. Are air lines checked as part of pre-shift inspection?	2.1.1,5; 2.2.4; 4.2.3; 4.3.11	5	20	TTM
40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?	2.1.1,5; 2.2.4; 4.2.3; 4.3.11	5	20	TTM
41. Does the operation have an organized maintenance program for tires and rims?	2.2.6; 4.2.5; 4.3.13	4	16	TTM
42. Does the operation have a procedure for shut down of haul in adverse weather conditions?	2.2.1; 4.2.2,25; 4.3.4,6,16	5	20	RCC
43. Does the operation have an auditing program for driver hours of service?	2.2.14; 4.2.12; 4.3.17	5	20	DM
44. Has the road been reviewed for pull-outs? - frequency; - location; - signage	2.2.28; 4.2.14; 4.3.18	4	20	RCC
45. Is there a pre-haul inspection? - pull-outs; - signage; - radio communications; - maintenance requirements	2.2.28; 4.2.14; 4.3.18	4	20	OT
46. Does the operation consider a drug/alcohol program?	2.2.15; 4.2.13; 4.3.19	5	16	OT
47. Do routes have signs to mark where radio frequencies should be changed?	4.1.1; 5.1.1	5	20	S
48. Are necessary radio frequencies posted?	4.1.1; 5.1.1	5	20	RCC
49. Does the operation have a radio standard? - frequencies; training	4.1.1; 5.1.1	5	20	RCC
50. Does the driver orientation include instruction or check for driver competence for installing chains?	4.1.2	3	12	DM
51. If chains are required, do the routes have designated areas for chain installation, take off?	4.1.2	3	12	S
52. Does the operation have documented procedures for towing situations? - proper slings; - attachment points; - operator placement; - operator competence; - tow operator stays in cab	4.1.4	2	6	OT
53. Does the operation consult with local government with respect to public highway condition and improvement?	2.2.28; 4.2.14	4	12	OT

Pot. Checklist Item	Place(s) Used	SX	RX	CAT
54. Does the operation have a means of providing input concerning public road conditions to public road maintenance managers?	4.2.17	5	25	RCC
55. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review; - for public roads - town approach; - city limits; - pull-outs; - cross overs	4.2.19	5	25	RCC
56. Does the operation have an emergency response program? - vehicle collision; - fire; - spill; - personal injury; - recovery methods/situations	2.2.23,24,29; 4.2.20,21	5	20	OT
57. Does the main employer provide off highway system area maps to drivers?	2.2.30	1	4	DM
58. Does the operation provide for public awareness when operating trucks in a new area?	2.2.30	1	4	OT
59. Does the operation consider public traffic in the area? - school bus road use hours; - high tourist presence times; - special high traffic conditions	2.2.30	1	4	RCC
60. Has the operation considered an audit/compliance checking procedure for their contracts (such as the Forest Care Program, or ISO programs, PIC Program, Alberta Transportation) as a model for audit procedures to insure that contract provisions are being performed?	1.1.4; 1.2.5; 1.3.5	4	8	OT
61. Is there a means to maintain the integrity of the hiring process for short term hiring, or high volume portions of the season? - orientation; - quality of driver; - inspection checks; - past references; - abstracts	1.1.3; 1.2.8; 1.3.8	4	20	DM
62. Does the operation have a mill orientation program? - communications; - signage; - yard procedures	5.1.1,2,3; 5.3.1,5	3	12	DM
63. Has the mill a means of checking if the main employer/contractor provides an orientation to new hires?	1.2.5; 1.3.5; 5.1.1	2	6	DM
64. Does the mill randomly check individual chip haul drivers for orientation?	1.2.5,8; 1.3.5,8; 5.1.1	2	6	DM
65. Are orientation packages reviewed? - incidents from previous years; - yard changes; - practice changes; - map changes; - route changes; - communications	1.2.2; 1.3.2; 4.1.5; 5.1.1	4	16	DM
66. Is there a means in place to identify those drivers who have taken orientation?	1.2.3,8; 1.3.3,8; 5.1.1	1	5	DM
67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;	1.2.6,7; 1.3.6,7; 5.1.1	4	4	OT
68. Has the carrier considered a checklist or procedure for loading, unloading? - loading procedures.	3.4.7; 3.7.3,4,6; 5.1.1	4	20	OT
69. When a new chipper operator is being hired, is a resume considered, are references looked into?	3.4.4	4	16	OT
70. Is there a process to examine chipper operator competency? - checklist; - experience; - education; - aptitude; - chipper handling	3.4.4,7	4	16	OT
71. Are inexperienced chipper operators given time with experienced operators for a time period prior to undirected chipper operation?	3.4.4	4	16	OT
72. Does the operation have a loading and unloading policy?	1.2.7; 1.3.7	4	4	DM
73. Does the mill have a means to consider technology advancements?	2.2.1	5	20	OT
74. Does the mill consider equipment configuration?	2.2.1	5	20	OT
75. Does the chip truck driver's employer consider driver's abstracts from previous out of province activity?	2.2.12; 4.2.10; 4.3.20	5	25	DM
76. Does the mill, and truck driver's employer, work toward educating drivers with respect to fatigue management? Does the mill and truck driver's employer provide opportunity for driver education with respect to fatigue management?	2.2.14,32; 4.2.12; 4.3.17	5	20	DM
77. Has the contractor/main employer/truck operator considered a plan for check-in procedures of truck operators if the operator is working alone?	2.2.24	4	12	DM
78. Does the mill have language in the road use agreement which considers speeding on the part of commercial vehicle users?	2.2.26	5	25	RCC

Pot. Checklist Item	Place(s) Used	SX	RX	CAT
79. Has the mill had input to appropriate maintenance through the Regional Transportation Advisory Committee?	2.2.28; 4.2.14,19	5	25	RCC
80. Has the mill had road design reviewed for safety and provided input to the appropriate authority of the public road? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	2.2.28; 4.2.14,19,25	5	25	RCC
81. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?	2.2.30	1	4	DM
82. Does the mill have a system in place through the contract or other means for the truck driver's employer to assess driver competency? (rewording example).	1.1.5	1	1	DM
83. Does the mill orientation include a yard tour?	1.2.8; 1.3.8	1	5	DM
84. Does the mill have signage advising new drivers to the yard of appropriate action prior to unloading?				DM
85. Does the mill/carrier/contractor have an Emergency Response Plan?	3.2.3; 3.3.2	3	9	OT
86. Is there a documented means or process to examine chipper operator competency - such as a checklist? - experience; - education; - aptitude; - truck handling	3.4.5	4	16	DM
87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;	2.1.2; 3.1.4; 3.4.2; 3.5.1; 3.6.1; 5.2.5	4	20	DM
88. Does the operation have a mill orientation program? - communications; - unwrapping hazards; - tripping loads if applicable; - routes; - signage; - yard procedures; - passengers in trucks	5.2.4	4	12	DM
89. Does the mill/contractor monitor the quality of the pre-shift inspections?	2.1.2,5	5	20	DM
90. Does the mill follow through with the company safety programs?	1.1.2,3	4	20	DM
91. Has the mill requested the residual mill site to consider obtaining a compatible radio system?	3.3.1	3	15	DM
92. Has the mill reviewed dumper procedures to optimize cycle times for drivers?	2.2.33	4	20	OT
93. Has the mill reviewed cut block or loading procedures to optimize cycle times for drivers?	2.2.33	4	20	OT
94. Are air lines and coupling devices checked as part of en-route inspections?	2.2.4; 4.2.3; 4.3.11	4	16	TTM
95. Is there a process in place for road conditions to be collected, and to be communicated to the driver? - road cameras; - RCMP; - cross shift checking; - other contact persons/entities on the route?	2.2.18	4	20	RCC
96. Does the mill/contractor have a policy concerning driver distractions?	2.2.32	4	20	DM
97. Is the carrier profile reviewed as part of the hiring process?	1.1.3	4	20	OT
98. Does the mill have a means for reporting of unsafe conditions at the supply location?	3.1.3	2	6	OT
99. Does the carrier/contractor provide proper chain procedures?	2.2.34; 3.2.4; 3.3.6; 4.2.26	4	16	DM
100. Does the mill monitor that structural integrity inspections are done on an annual basis?	3.4.16; 3.5.11; 3.6.9	4	20	TTM

5.4 Potential Checklist Item Registers

5.4.2 Potential Checklist Items by Category

Categories

WT	-	Weight Monitoring
SMC	-	Speed Monitoring and Control
RCC	-	Route Control and Communications
S	-	Signage
DM	-	Driver Management
TTM	-	Truck and Trailer Maintenance
OT	-	Other Factors

Pot. Checklist Item	SX	RX	CAT
4. Does the mill/carrier have a registration process for all chip trucks?	1	3	WT

Pot. Checklist Item	SX	RX	CAT
19. Does the mill/carrier have a speed monitoring system/process?	5	25	SMC

Pot. Checklist Item	SX	RX	CAT
6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	4	20	RCC
7. Has the mill had road maintenance input from road users?	5	25	RCC
8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?	5	25	RCC
9. Does the road design review for new construction incorporate the opinions of chip truck drivers?	4	20	RCC
10. Does the road maintenance program consider differing weather and road considerations?	5	25	RCC
11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?	5	25	RCC
20. Does the operation consider road quality in setting restricted road usage?	5	16	RCC
21. Does cut block design consider percentage grade for "road" within the block?	4	16	RCC
22. Is there a process of examination to consider cut block grades and truck requirements? - road grade; - towing vehicle; - season;	4	16	RCC
25. Are drivers made aware of areas which have high public or other use (oil patch, for example)?	5	25	RCC
26. Are mandatory call-in points located in areas of good radio transmission?	4	20	RCC
27. Are mandatory call-in points located at high risk areas?	4	20	RCC
42. Does the operation have a procedure for shut down of haul in adverse weather conditions?	5	20	RCC
44. Has the road been reviewed for pull-outs? - frequency; - location; - signage	4	20	RCC
48. Are necessary radio frequencies posted?	5	20	RCC
49. Does the operation have a radio standard? - frequencies; training	5	20	RCC
54. Does the operation have a means of providing input concerning public road conditions to public road maintenance managers?	5	25	RCC
55. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review; - for public roads - town approach; - city limits; - pull-outs; - cross overs	5	25	RCC
59. Does the operation consider public traffic in the area? - school bus road use hours; - high tourist presence times; - special high traffic conditions	1	4	RCC
78. Does the mill have language in the road use agreement which considers speeding on the part of commercial vehicle users?	5	25	RCC
79. Has the mill had input to appropriate maintenance through the Regional Transportation Advisory Committee?	5	25	RCC
80. Has the mill had road design reviewed for safety and provided input to the appropriate authority of the public road? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	5	25	RCC
95. Is there a process in place for road conditions to be collected, and to be communicated to the driver? - road cameras; - RCMP; - cross shift checking; - other contact persons/entities on the route?	4	20	RCC

Pot. Checklist Item	SX	RX	CAT
23. Does the operation provide signs indicating radio controlled roads and procedures?	5	25	S
47. Do routes have signs to mark where radio frequencies should be changed?	5	20	S
51. If chains are required, do the routes have designated areas for chain installation, take off?	3	12	S

Pot. Checklist Item	SX	RX	CAT
2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications	4	20	DM
3. Does the mill require similar documentation from the sub-contractor as the main contractor? - insurance coverage; - current CVIP; - WCB; - Drivers hold proper licenses; - copy of AT&U permit	4	20	DM
12. Does the employer require a current driver's abstract? - certification class; - restrictions	5	25	DM
13. Is the driver's abstract original, and current?	5	25	DM
14. For a newly issued license - has the previous abstract been asked for, examined?	5	25	DM
15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment	5	25	DM
16. Does the operation have pre and post haul season safety meetings?	5	25	DM
17. Does the operation have regularly scheduled safety meetings?	5	25	DM
18. Are inexperienced drivers given time with an experienced driver for a time period prior to undirected driving?	5	25	DM
24. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?	5	25	DM
28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections	5	25	DM
37. Does the operation (main employer) ask for drivers to document their pre-shift check compliance? - diary; - pre-shift check sheets; - inspection reports	4	20	DM
38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?	4	20	DM
43. Does the operation have an auditing program for driver hours of service?	5	20	DM
50. Does the driver orientation include instruction or check for driver competence for installing chains?	3	12	DM
57. Does the main employer provide off highway system area maps to drivers?	1	4	DM
61. Is there a means to maintain the integrity of the hiring process for short term hiring, or high volume portions of the season? - orientation; - quality of driver; - inspection checks; - past references; - abstracts	4	20	DM
62. Does the operation have a mill orientation program? - communications; - signage; - yard procedures	3	12	DM
63. Has the mill a means of checking if the main employer/contractor provides an orientation to new hires?	2	6	DM
64. Does the mill randomly check individual chip haul drivers for orientation?	2	6	DM
65. Are orientation packages reviewed? - incidents from previous years; - yard changes; - practice changes; - map changes; - route changes; - communications	4	16	DM
66. Is there a means in place to identify those drivers who have taken orientation?	1	5	DM
72. Does the operation have a loading and unloading policy?	4	4	DM
75. Does the chip truck driver's employer consider driver's abstracts from previous out of province activity?	5	25	DM
76. Does the mill, and truck driver's employer, work toward educating drivers with respect to fatigue management? Does the mill and truck driver's employer provide opportunity for driver education with respect to fatigue management?	5	20	DM
77. Has the contractor/main employer/truck operator considered a plan for check-in procedures of truck operators if the operator is working alone?	4	12	DM
81. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?	1	4	DM
82. Does the mill have a system in place through the contract or other means for the truck driver's employer to assess driver competency? (rewording example).	1	1	DM
83. Does the mill orientation include a yard tour?	1	5	DM

Pot. Checklist Item	SX	RX	CAT
84. Does the mill have signage advising new drivers to the yard of appropriate action prior to unloading?			DM
86. Is there a documented means or process to examine chipper operator competency - such as a checklist? - experience; - education; - aptitude; - truck handling	4	16	DM
87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;	4	20	DM
88. Does the operation have a mill orientation program? - communications; - unwrapping hazards; - tripping loads if applicable; - routes; - signage; - yard procedures; - passengers in trucks	4	12	DM
89. Does the mill/contractor monitor the quality of the pre-shift inspections?	5	20	DM
90. Does the mill follow through with the company safety programs?	4	20	DM
91. Has the mill requested the residual mill site to consider obtaining a compatible radio system?	3	15	DM
96. Does the mill/contractor have a policy concerning driver distractions?	4	20	DM
99. Does the carrier/contractor provide proper chain procedures?	4	16	DM

Pot. Checklist Item	SX	RX	CAT
5. Are air brakes checked regularly for adjustment and operation? - check slack adjusters; - in cab checks - warning devices, compressor build time, air containment, functionality; - driver able to adjust the air brakes; - air bag weights [Reference AR-118/89]	5	25	TTM
29. Is there a means of documentation in place for pre-trip (i.e. - pre-shift) inspection?	5	20	TTM
30. Does the operation have a system of random independent mechanical checks in place?	5	20	TTM
31. Is there a mechanism of response to pre-shift checklist items which might have uncovered deficiencies?	5	20	TTM
35. Is there a process in place to track corrective action for major deficiencies?	4	16	TTM
36. Are the operation's drivers required to do a pre-shift inspection? (Consult standard checklists)	4	4	TTM
39. Are air lines checked as part of pre-shift inspection?	5	20	TTM
40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?	5	20	TTM
41. Does the operation have an organized maintenance program for tires and rims?	4	16	TTM
94. Are air lines and coupling devices checked as part of en-route inspections?	4	16	TTM
100. Does the mill monitor that structural integrity inspections are done on an annual basis?	4	20	TTM

Pot. Checklist Item	SX	RX	CAT
1. Have contractual arrangements been reviewed? - vehicle specifications and suitability to task; - trucks, trailers	1	2	OT
32. Are drivers informed of pre-shift inspection legal requirements for commercial vehicles? - Motor Transport Act AR-118/89; - National Safety Code; - commercially available log books	5	20	OT
33. Does the principal employer have a means to pass new trucking regulations/developments to the driver?	5	20	OT
34. Does the principal employer receive notices concerning new chip hauling regulations from government bodies which is clearly marked for their information needs?	5	20	OT
45. Is there a pre-haul inspection? - pull-outs; - signage; - radio communications; - maintenance requirements	4	20	OT
46. Does the operation consider a drug/alcohol program?	5	16	OT
52. Does the operation have documented procedures for towing situations? - proper slings; - attachment points; - operator placement; - operator competence; - tow operator stays in cab	2	6	OT
53. Does the operation consult with local government with respect to public highway condition and improvement?	4	12	OT
56. Does the operation have an emergency response program? - vehicle collision; - fire; - spill; - personal injury; - recovery methods/situations	5	20	OT
58. Does the operation provide for public awareness when operating trucks in a new area?	1	4	OT
60. Has the operation considered an audit/compliance checking procedure for their contracts (such as the Forest Care Program, or ISO programs, PIC Program, Alberta Transportation) as a model for audit procedures to insure that contract provisions are being performed?	4	8	OT
67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;	4	4	OT
68. Has the carrier considered a checklist or procedure for loading, unloading? - loading procedures.	4	20	OT
69. When a new chipper operator is being hired, is a resume considered, are references looked into?	4	16	OT
70. Is there a process to examine chipper operator competency? - checklist; - experience; - education; - aptitude; - chipper handling	4	16	OT
71. Are inexperienced chipper operators given time with experienced operators for a time period prior to undirected chipper operation?	4	16	OT
73. Does the mill have a means to consider technology advancements?	5	20	OT
74. Does the mill consider equipment configuration?	5	20	OT
85. Does the mill/carrier/contractor have an Emergency Response Plan?	3	9	OT
92. Has the mill reviewed dumper procedures to optimize cycle times for drivers?	4	20	OT
93. Has the mill reviewed cut block or loading procedures to optimize cycle times for drivers?	4	20	OT
97. Is the carrier profile reviewed as part of the hiring process?	4	20	OT
98. Does the mill have a means for reporting of unsafe conditions at the supply location?	2	6	OT

5.4 Potential Checklist Item Registers

5.4.3 Potential Checklist Items by RX Rating

Categories

WT	-	Weight Monitoring
SMC	-	Speed Monitoring and Control
RCC	-	Route Control and Communications
S	-	Signage
DM	-	Driver Management
TTM	-	Truck and Trailer Maintenance
OT	-	Other Factors

Pot. Checklist Item	SX	RX	CAT
12. Does the employer require a current driver's abstract? - certification class; - restrictions	5	25	DM
13. Is the driver's abstract original, and current?	5	25	DM
14. For a newly issued license - has the previous abstract been asked for, examined?	5	25	DM
15. Is there a documented means or process to examine driver competency - such as a checklist? - experience; - education; - aptitude; - truck handling; reference check; - previous employment	5	25	DM
16. Does the operation have pre and post haul season safety meetings?	5	25	DM
17. Does the operation have regularly scheduled safety meetings?	5	25	DM
18. Are inexperienced drivers given time with an experienced driver for a time period prior to undirected driving?	5	25	DM
24. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?	5	25	DM
28. Does the mill and/or carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring devices; - mechanical inspections	5	25	DM
75. Does the chip truck driver's employer consider driver's abstracts from previous out of province activity?	5	25	DM
7. Has the mill had road maintenance input from road users?	5	25	RCC
8. Has the mill considered appropriate maintenance given the road layout (grades, turns, for example)?	5	25	RCC
10. Does the road maintenance program consider differing weather and road considerations?	5	25	RCC
11. Is there a process whereby the truck operator can immediately communicate maintenance needs to his/her coordinator?	5	25	RCC
25. Are drivers made aware of areas which have high public or other use (oil patch, for example)?	5	25	RCC
54. Does the operation have a means of providing input concerning public road conditions to public road maintenance managers?	5	25	RCC
55. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review; - for public roads - town approach; - city limits; - pull-outs; - cross overs	5	25	RCC
78. Does the mill have language in the road use agreement which considers speeding on the part of commercial vehicle users?	5	25	RCC
79. Has the mill had input to appropriate maintenance through the Regional Transportation Advisory Committee?	5	25	RCC
80. Has the mill had road design reviewed for safety and provided input to the appropriate authority of the public road? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	5	25	RCC
23. Does the operation provide signs indicating radio controlled roads and procedures?	5	25	S
19. Does the mill/carrier have a speed monitoring system/process?	5	25	SMC
5. Are air brakes checked regularly for adjustment and operation? - check slack adjusters; - in cab checks - warning devices, compressor build time, air containment, functionality; - driver able to adjust the air brakes; - air bag weights [Reference AR-118/89]	5	25	TTM
43. Does the operation have an auditing program for driver hours of service?	5	20	DM
76. Does the mill, and truck driver's employer, work toward educating drivers with respect to fatigue management? Does the mill and truck driver's employer provide opportunity for driver education with respect to fatigue management?	5	20	DM
89. Does the mill/contractor monitor the quality of the pre-shift inspections?	5	20	DM
32. Are drivers informed of pre-shift inspection legal requirements for commercial vehicles? - Motor Transport Act AR-118/89; - National Safety Code; - commercially available log books	5	20	OT
33. Does the principal employer have a means to pass new trucking regulations/developments to the driver?	5	20	OT
34. Does the principal employer receive notices concerning new chip hauling regulations from government bodies which is clearly marked for their information needs?	5	20	OT
56. Does the operation have an emergency response program? - vehicle collision; - fire; - spill; - personal injury; -	5	20	OT

Pot. Checklist Item	SX	RX	CAT
56. cont'd recovery methods/situations			
73. Does the mill have a means to consider technology advancements?	5	20	OT
74. Does the mill consider equipment configuration?	5	20	OT
42. Does the operation have a procedure for shut down of haul in adverse weather conditions?	5	20	RCC
48. Are necessary radio frequencies posted?	5	20	RCC
49. Does the operation have a radio standard? - frequencies; training	5	20	RCC
47. Do routes have signs to mark where radio frequencies should be changed?	5	20	S
29. Is there a means of documentation in place for pre-trip (i.e. - pre-shift) inspection?	5	20	TTM
30. Does the operation have a system of random independent mechanical checks in place?	5	20	TTM
31. Is there a mechanism of response to pre-shift checklist items which might have uncovered deficiencies?	5	20	TTM
39. Are air lines checked as part of pre-shift inspection?	5	20	TTM
40. Are slack adjusters part of pre-shift inspection? Air leaks in the brake system?	5	20	TTM
2. Does the mill provide for sub-contractor orientation in the same manner as the main contractor (could be through the main contractor)? - safety; - yard procedures; - PPE; - restricted routes and route review; - communications	4	20	DM
3. Does the mill require similar documentation from the sub-contractor as the main contractor? - insurance coverage; - current CVIP; - WCB; - Drivers hold proper licenses; - copy of AT&U permit	4	20	DM
37. Does the operation (main employer) ask for drivers to document their pre-shift check compliance? - diary; - pre-shift check sheets; - inspection reports	4	20	DM
38. Are inexperienced drivers instructed in the training program as to the correct use of vehicle components (various braking systems, for example) for the specific requirements of chip hauling?	4	20	DM
61. Is there a means to maintain the integrity of the hiring process for short term hiring, or high volume portions of the season? - orientation; - quality of driver; - inspection checks; - past references; - abstracts	4	20	DM
87. Does the mill/carrier have a process in place to deal with noncompliance? - speeding; - over loads; - dimensions; - restricted route compliance; - repeated offences; - inadequate radios; - PPE; - speed monitoring device; - mechanical inspections;	4	20	DM
90. Does the mill follow through with the company safety programs?	4	20	DM
96. Does the mill/contractor have a policy concerning driver distractions?	4	20	DM
45. Is there a pre-haul inspection? - pull-outs; - signage; - radio communications; - maintenance requirements	4	20	OT
68. Has the carrier considered a checklist or procedure for loading, unloading? - loading procedures.	4	20	OT
92. Has the mill reviewed dumper procedures to optimize cycle times for drivers?	4	20	OT
93. Has the mill reviewed cut block or loading procedures to optimize cycle times for drivers?	4	20	OT
97. Is the carrier profile reviewed as part of the hiring process?	4	20	OT
6. Has the mill had road design reviewed for safety? - line of sight; - crowning; - grade; - surface; - signage; - pull-outs; - contractor review	4	20	RCC
9. Does the road design review for new construction incorporate the opinions of chip truck drivers?	4	20	RCC
26. Are mandatory call-in points located in areas of good radio transmission?	4	20	RCC
27. Are mandatory call-in points located at high risk areas?	4	20	RCC
44. Has the road been reviewed for pull-outs? - frequency; - location; - signage	4	20	RCC
95. Is there a process in place for road conditions to be collected, and to be communicated to the driver? - road cameras; - RCMP; - cross shift checking; - other contact persons/entities on the route?	4	20	RCC

Pot. Checklist Item	SX	RX	CAT
100. Does the mill monitor that structural integrity inspections are done on an annual basis?	4	20	TTM
46. Does the operation consider a drug/alcohol program?	5	16	OT
20. Does the operation consider road quality in setting restricted road usage?	5	16	RCC
65. Are orientation packages reviewed? - incidents from previous years; - yard changes; - practice changes; - map changes; - route changes; - communications	4	16	DM
86. Is there a documented means or process to examine chipper operator competency - such as a checklist? - experience; - education; - aptitude; - truck handling	4	16	DM
99. Does the carrier/contractor provide proper chain procedures?	4	16	DM
69. When a new chipper operator is being hired, is a resume considered, are references looked into?	4	16	OT
70. Is there a process to examine chipper operator competency? - checklist; - experience; - education; - aptitude; - chipper handling	4	16	OT
71. Are inexperienced chipper operators given time with experienced operators for a time period prior to undirected chipper operation?	4	16	OT
21. Does cut block design consider percentage grade for "road" within the block?	4	16	RCC
22. Is there a process of examination to consider cut block grades and truck requirements? - road grade; - towing vehicle; - season;	4	16	RCC
35. Is there a process in place to track corrective action for major deficiencies?	4	16	TTM
41. Does the operation have an organized maintenance program for tires and rims?	4	16	TTM
94. Are air lines and coupling devices checked as part of en-route inspections?	4	16	TTM
91. Has the mill requested the residual mill site to consider obtaining a compatible radio system?	3	15	DM
77. Has the contractor/main employer/truck operator considered a plan for check-in procedures of truck operators if the operator is working alone?	4	12	DM
88. Does the operation have a mill orientation program? - communications; - unwrapping hazards; - tripping loads if applicable; - routes; - signage; - yard procedures; - passengers in trucks	4	12	DM
53. Does the operation consult with local government with respect to public highway condition and improvement?	4	12	OT
50. Does the driver orientation include instruction or check for driver competence for installing chains?	3	12	DM
62. Does the operation have a mill orientation program? - communications; - signage; - yard procedures	3	12	DM
51. If chains are required, do the routes have designated areas for chain installation, take off?	3	12	S
85. Does the mill/carrier/contractor have an Emergency Response Plan?	3	9	OT
60. Has the operation considered an audit/compliance checking procedure for their contracts (such as the Forest Care Program, or ISO programs, PIC Program, Alberta Transportation) as a model for audit procedures to insure that contract provisions are being performed?	4	8	OT
63. Has the mill a means of checking if the main employer/contractor provides an orientation to new hires?	2	6	DM
64. Does the mill randomly check individual chip haul drivers for orientation?	2	6	DM
52. Does the operation have documented procedures for towing situations? - proper slings; - attachment points; - operator placement; - operator competence; - tow operator stays in cab	2	6	OT
98. Does the mill have a means for reporting of unsafe conditions at the supply location?	2	6	OT
66. Is there a means in place to identify those drivers who have taken orientation?	1	5	DM
83. Does the mill orientation include a yard tour?	1	5	DM
72. Does the operation have a loading and unloading policy?	4	4	DM
67. Does the contract outline necessary equipment configurations for unloading? - bumper heights; - truck numbers/ID;	4	4	OT

Pot. Checklist Item	SX	RX	CAT
36. Are the operation's drivers required to do a pre-shift inspection? (Consult standard checklists)	4	4	TTM
57. Does the main employer provide off highway system area maps to drivers?	1	4	DM
81. Does the driver orientation program incorporate the buddy system of driving? Is there a means for lead drivers to know when they are being depended upon?	1	4	DM
58. Does the operation provide for public awareness when operating trucks in a new area?	1	4	OT
59. Does the operation consider public traffic in the area? - school bus road use hours; - high tourist presence times; - special high traffic conditions	1	4	RCC
4. Does the mill/carrier have a registration process for all chip trucks?	1	3	WT
1. Have contractual arrangements been reviewed? - vehicle specifications and suitability to task; - trucks, trailers	1	2	OT
82. Does the mill have a system in place through the contract or other means for the truck driver's employer to assess driver competency? (rewording example).	1	1	DM
84. Does the mill have signage advising new drivers to the yard of appropriate action prior to unloading?			DM

5.5 Final Product - Alberta Chip Haul Industry Checklist

ALBERTA CHIP HAUL SECTION 524(3) COMPLIANCE CHECKLIST

BACKGROUND OF THE CHECKLIST

This Checklist is designed to provide a means to conduct a hazard assessment as a condition of Acceptance for the purpose of compliance with Section 524(3) of the Alberta Health & Safety Occupational Code 2009. The specific condition is quoted below:

The DMI October 11, 2007 Chip Haul operations Hazard Assessment Report be updated and include identification/implementation of controls to ensure safe operation of truck/trailer units.

The conditions of the acceptance may be met by application of the Alberta generic hazard assessment for Chip Haul trucks, through the use of this Checklist. It considers the following Chip Haul Divisions and their respective activities:

- *truck/contractor administration*
- *driving to the cut block or to the residual mill*
- *loading at the cut block or at the residual mill*
- *returning to the mill*
- *unloading at the mill.*

The acceptance intends that the development and implementation of reasonable and practical safe work controls be accomplished, based on the outcome of a hazard assessment that can be based upon this Chip Haul Checklist.

Compliance with the code can be demonstrated by maintaining copies of the hazard assessment performed using this Checklist as a basis, safe work controls, and monitoring system at the worksite for review by an Occupational Health and Safety Officer.

This Chip Haul Checklist is a product of a modified generic hazard assessment performed with representative participation from:

- ⇒ Mill - Chip Haul Co-ordinators
- ⇒ Health & Safety Coordinators
- ⇒ Chip Haul Operation Owners
- ⇒ Chip Haul Truck Drivers

CHECKLIST USE

Individual hazard assessments can be accomplished by reviewing the Checklist and comparing your activities to it. Then enter one of the following letter codes to indicate your status with respect to the Checklist issue:

A = Program is in place through documentation, observation and/or interviews to show compliance

B = Program is not in place or does not show compliance

C = Program not applicable for this mill/contractor application

Additional information concerning this Checklist can be obtained by contacting Samuel Elkins at 780-624-7448.

Weight Monitoring

1. Does the mill have a weight monitoring program in place, and report weight monitoring during the winter haul season?

2. Does the mill/contractor have a process to enforce weight limit compliance?

3. Has the mill considered road infrastructure and found it sufficient for the weights being carried off-highway?

Examples:

- bridges
- signage
- road surfaces
- main haul road widths
- maintenance of the road surfaces

Speed Monitoring and Control

1. Does the mill/contractor have a speed control system/process?

Examples:

- signage for off-highway routes
- governing trucks
- cycle time monitoring/analysis

2. Does the mill/contractor have a speed monitoring and enforcement system/process?

Examples:

- tachograph
- global positioning system
- cycle times, and/or radar
- coaching
- fines
- suspension

Signage

1. Does the mill provide signs to aid road safety for off highway loads?

2. Specifically, are signs posted indicating:

radio controlled roads?

radio frequency changes?

overhead hazards?

kilometre markers?

bridges?

utility crossings?

and other necessary road warning signs?

3. Are road hazards reviewed for appropriate signage prior to hauling?

Route Control and Communication - Traffic

1. Are chip truck drivers made aware of high public road use areas by the mill/contractor?

Examples:

- oil patch traffic
- public traffic
- public institutional use - schools, etc.
- other log truck operations in the area
- maintenance crews and operations

2. Does the mill have language in the road use agreement which considers speeding on the part of commercial vehicle users?

3. Does the mill/contractor have a system in place to deal with adverse weather and/or road conditions; communication of adverse conditions to drivers?

Route Control and Communications - Road Design/Maintenance/Construction



1. Have off road routes been reviewed for safety?

Examples:

- line of sight
- crowning
- grade
- road surface
- signage
- traffic speeds
- pull-outs - location, frequency, signage
- contractor review of roads
- maintenance requirements



2. For public highways, has the mill had routes reviewed for safety and provided input to the appropriate authority of the public road?

Examples:

- line of sight
- crowning
- grade
- road surface
- signage
- traffic speeds
- pull-outs - location, frequency, signage
- contractor review of roads
- town approach
- city limits
- cross overs
- maintenance requirements
- bus stop locations

Route Control and Communication - Radio Communications



1. Does the mill/contractor have standard radio frequencies?



2. Are frequencies co-ordinated with other radio users in the area?



3. Does the mill/contractor enforce radio use on radio controlled roads?

Driver Management - Driver Qualifications

1. Does the chip truck driver's employer review driver abstracts?

Examples:

- current/original driver's abstract
- certification class
- restrictions
- including out of province abstracts

2. Does the mill/contractor have a system in place through the contract with the chip truck driver's employer, to assess driver competency?

Examples:

- experience
- driver training
- driver check-out
- four operational phases of log hauling
- tarping

3. Does the mill/contractor have a system in place to ensure the drivers are trained to recognize mechanical deficiencies?

Examples:

- brakes
- adjustment of brake systems
- lamps and turn signals
- suspension
- tires

Driver Management - Driver Orientation

1. Does the mill/contractor have Pre Chip Haul Safety Meetings that include chip haul contractors and sub-contractors?

2. Does the mill/contractor have regularly scheduled safety meetings that include chip haul contractors and sub-contractors?

3. Does the mill have a mill yard orientation program?

Examples:

- communications
- tarping hazards/controls
- routes
- signage
- yard procedures
- yard tour
- policies concerning passengers in truck

4. Does the mill/contractor have driver education/orientation program?

Driver Management - Non-compliance

1. Does the mill/contractor have a process in place to enforce driver compliance?

Examples:

- speeding
- overloads
- restricted routes
- repeat offences
- inadequate radio
- PPE
- tachograph
- mechanical inspections
- tires
- driver distractions

Truck and Trailer Maintenance - Pre-shift Inspection

1. Are all chip trucks under mill/contractor control subject to a pre-shift inspection as required under AR118/89 - section 3, page 2, "Inspections" (Commercial Vehicle Maintenance Standards Regulation)?

2. Does the mill/contractor have a process to enforce mechanical non-conformities?

3. Is there a mechanism to correct deficiencies identified by the pre-trip inspection?

Truck and Trailer Maintenance - General Maintenance/Inspections

1. Does the mill/contractor conduct random independent mechanical inspections?

2. Does the mill/contractor have a process to enforce the timely correction of mechanical non-conformities?

3. Does the mill monitor that structural integrity inspections be done on an annual basis?

General Items and Other Factors



1. Are drivers informed of legal requirements which pertain to chip hauling?

Examples:

- pre-shift inspection (Commercial Vehicle Maintenance Standards)
- load securement – trailer (National Safety Code Standard 10)
- hours of service (Provincial: AR-317-2002; National: NSC-Standard 9)
- air brake system (Commercial Vehicle Maintenance Standards)
- parking brake (Commercial Vehicle Maintenance Standards)
- emergency brake (Commercial Vehicle Maintenance Standards)
- engine controls and steering (Commercial Vehicle Maintenance Standards)