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ACCIDENT PREVENTION TRAINING PROCEDURE AND EQUIPMENT MAINTENANCE AT TEXADA MINES

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TEXADA MINES

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ACCIDENT PREVENTION, TRAINING PROCEDURE AND EQUIPMENT MAINTENANCE AT TEXADA MINES

Texada Mine has been in operation since 1952. Underground development began in 1962 and the underground mine was in full production by 1964. During 1964, the compensable injury rate was 32 accidents per million man hours. This was 18 percent higher than the average of underground metal mines in the province.

The Neil George Safety System was adopted in 1964 at the Texada Mine. Each year from 1966 until the present time, Texada Mine has ranked 1st, 2nd or 3rd in having the lowest accident frequency of underground metal mines in British Columbia.

Since the first of January 1976, there have been two fatal accidents in the mine. One fatal accident occurred on February 6 to a Teletram Operator who was in training. The second fatal accident occurred to a Jeep Driver who had been employed at the mine for eight months in various capacities, trained as a Jeep Driver for two months and who had been driving on his own for three weeks before the accident.

A summary and comparison of the two accidents will be made. A detailed analytical review of the achievements, safety practices, accident prevention programs, training programs and mechanical maintenance of personnel carriers, service vehicles, mining equipment and hoisting equipment will be compiled.

SUMMARY AND COMPARISON OF THE TWO FATAL ACCIDENTS AT TEXADA MINE

Marcel Robert - Fatal Accident

Age: 20
Date of Birth: September 18, 1955
Accident: Fatal accident by being crushed under the frame of the teletram which he was operating
Date of Accident: 1:30 p.m. on February 6, 1976

Training and Previous Experience

M. Robert had been employed at the Texada Mine for one year and seven months in various capacities. He had worked as a helper, a jeep driver and a transloader operator. On February 6, the morning of his accident, he was assigned to receive instructions in the operation of a teletram ore carrier.

It is confirmed that his supervisor told him that he was not to drive the ore carrier during the shift unless his instructor was with him and that he agreed to comply with this directive. His instructor operated the teletram on the first trip and part of the second trip while Marcel Robert rode with him. His instructor allowed him to operate the teletram during part of the second trip and to drive the third, fourth and fifth trips while he rode with him. Right after lunch, M. Robert said he was cold, and when his instructor went to fill the ore chute, M. Robert took the teletram. He drove for about 1600 feet and then on the first ramp he struck the pipe on one side of the drift then struck the wall heavily on the other side of the heading and then crashed into the wall on the other side. It appears that Marcel Robert jumped off of the teletram but did not get clear and was crushed under the frame of the teletram.

He died in the Powell River General Hospital at 8:40 p.m. of the same day.

Leonard Donald Vickery - Fatal Accident

Age: 19
Date of Birth: November 23, 1956
Accident: Fatal accident when pinned under overturned jeep which he was driving.
Date of Accident: 1:15 p.m. on July 26, 1976

Training and Previous Experience:

L. Vickery had been employed at the mine for eight months in various capacities. He had worked as a labourer and skip tender. In May and June, he worked as a helper to the jeep driver, taking working crews underground to their working places, bringing them out at the end of the shift, and delivering explosives and supplies throughout the mine. During May and June he received on the job training for the jeep drivers job.

L. D. Vickery
Training and Previous Experience Con't

He was checked out by his supervisor and he frequently drove the various personnel carriers. At the beginning of July, he took over the jeep drivers job. He continued at this job and was rated as a safe and good operater until the day of the accident.

Just two minutes prior to his accident, he had been asked by Frank Rosenberger to bring a punch-lock and clamp to repair the water hose. Vickery drove along the drift for 60 feet down a 15 percent grade. Apparently he then tried to make the corner in one pass. As he cut the corner, a shade too short, the upper wheel went over a hump of rock and then the wheel must have climbed the wall. This tilted the front section of the Personnel Carrier upon the left wheel. He drove across the drift and struck the drift wall at the opposite junction. At this time the bumper was 41 inches above the footwall. The front section turned upside down. L. Vickery's head was pinned between the safety bar which protects the operator from falling out and the footwall.

He died immediately.

The equipment was thoroughly checked after each accident and found to be mechanically sound. The two men had been employed underground at the Texada Mine for 19 months and 8 months respectively. They had both received adequate training for the work they had been assigned to do. Both accidents happened shortly after 1 p.m. on dayshift when a workman is supposed to be most alert. Both accidents happened within a few minutes of the time the men had been seen and talked to by other workmen.

There are two common factors which appear relevant in these accidents. They both involved vehicles, and they both involved operators who were less than 20 years of age.

Why is it that so many young men are involved in these equipment accidents? Men who are older than 25 years usually have a slightly different attitude toward the job, toward equipment and toward themselves. These older men have developed a different set of values and have developed a bit more natural caution. For example, a man who is 30 years old and who has been trained and had three weeks experience as a Jeep Driver would certainly have no more experience than a man of 19 who has had the same training. However, the man of 30 usually has a great deal less interest in being able to drive around a certain corner in the mine in one turn instead of having to back up once, to make the corner in two turns.

Finally, a very important thing to note is that both of these young men could just as easily have walked away from these accidents with only minor bruises. WHEN AN ACCIDENT HAS HAPPENED, ONLY CHANCE DECIDES HOW SERIOUS THE INJURY WILL BE. An effective accident prevention program must be based on all of the accidents including the ones which result in no injury and on the most accurate measure we have of accident frequency at any mine and that is the number of compensable accidents per million man-hours.

Achievements of Texada Mines

1. Texada Mine won the Canadian "John T. Ryan" trophy for having the lowest accident rate of any underground metal mine in Canada during 1971 and won this trophy again in 1974.

2. Texada Mine won the B. C. & Yukon Ryan trophy for having the lowest accident rate of any mine in the province during 1969, and won this trophy again in 1974.

3. The operation has maintained an accident rate each year since 1965 which has been appreciably lower than the average of all mines in the province. In fact, Texada Mine has placed 1st, 2nd or 3rd in having the lowest accident rate of any underground metal mine in the province since 1966. (SEE GRAPH NO. 1 ON NEXT PAGE)

4. The statistics compiled by the B. C. Mining Association show that Texada Mine has the lowest accident frequency of any underground metal mine in British Columbia for 1976 year-to-date.

5. Texada Mine has a reputation for very active participation in first-aid training, mine rescue training, shiftboss training as well as first-aid competitions and mine rescue competitions.

Training

The Mine Superintendent does not take for granted that a worker who can drive a car or a truck on surface is capable of safely operating a Jeep, a Transloader, a Scooptram or a Teletram underground. Each operator must be adequately trained and then checked out on each piece of mobile equipment before he is permitted to operate it. This prevents the problems which would arise if untrained or inexperienced workers caused unsafe conditions by improvising their own techniques.

The responsibility for operator training is carried out by one of the lead hands who is an experienced operator. The training procedure is as follows:

The person chosen for training must have worked underground for some time in order to be familiar with conditions underground.

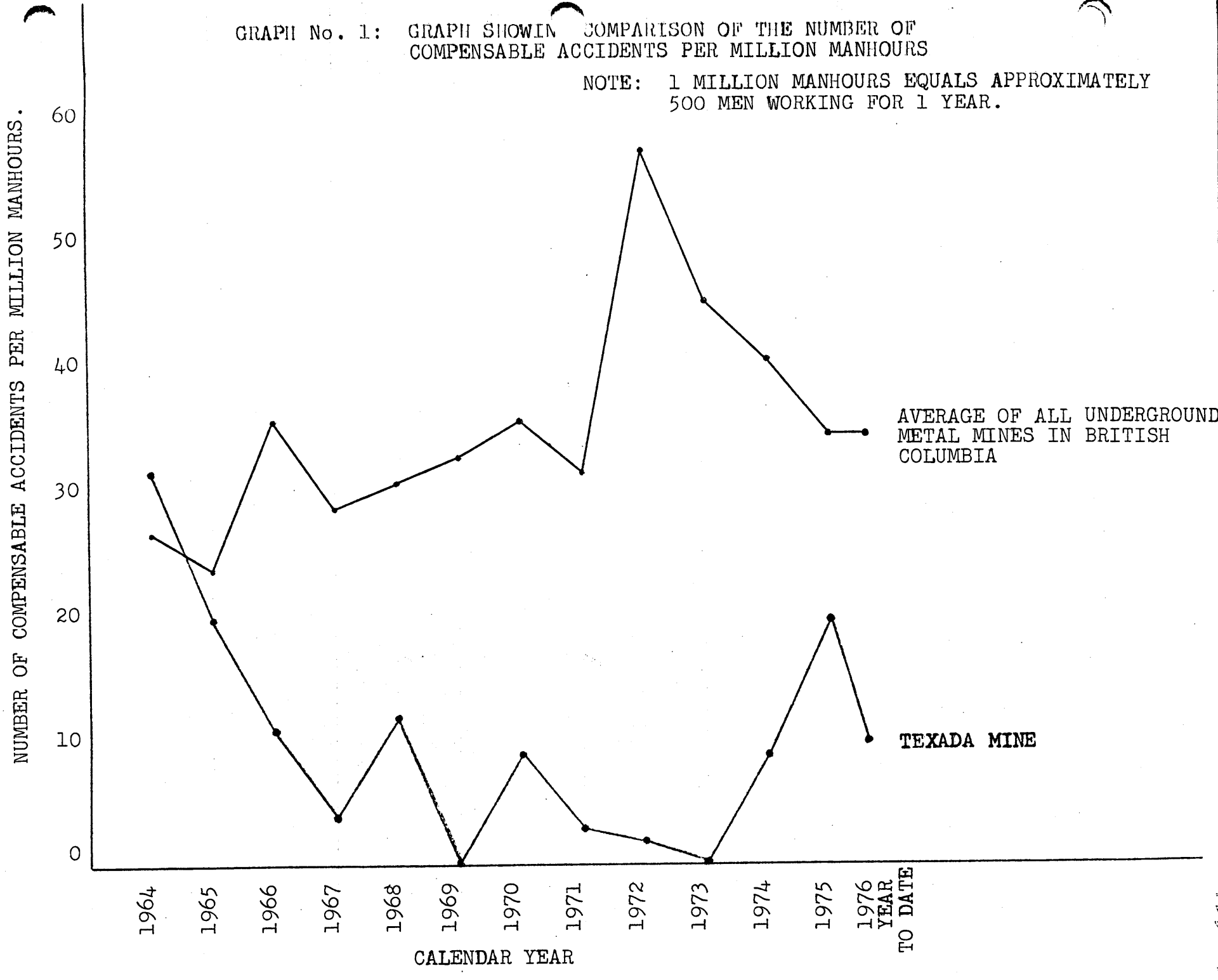
The trainee then spends several days to a week travelling with the lead hand in order to become familiar with the different working places, with the ore passes, and with the personnel and equipment traffic in the mine.

The trainee is then taken to surface and instructed what the different levers, switches, dials and controls are for on the machine. He is taught what items are to be checked before and after the engine is started. He is also shown how to fill out the daily operator's report.

The lead hand then takes the machine to a suitable area on surface. There the trainee is allowed to operate while the lead hand stays on the machine, observing and instructing.

GRAPH No. 1: GRAPH SHOWIN COMPARISON OF THE NUMBER OF COMPENSABLE ACCIDENTS PER MILLION MANHOURS

NOTE: 1 MILLION MANHOURS EQUALS APPROXIMATELY 500 MEN WORKING FOR 1 YEAR.



Training Con't

When the lead hand is satisfied that the trainee is capable, the machine is taken to an area on surface where broken rock can be loaded and moved. Barrels are set up to simulate the drift walls and paint marks and planks are used to simulate ore passes. This training continues for several days.

The trainee is then allowed to operate the machine up and down various drifts and ramps while the lead hand rides with him on the machine.

Next, the trainee is allowed to ride with an experienced operator to observe how he mucks and hauls with the experienced operator riding beside him, the trainee is allowed to muck, haul and dump with the machine.

After about five days of this training, the shiftboss checks his performance. If he is found satisfactory he is permitted to operate on his own from a relatively easy working place.

After a week or so of this, he is gradually phased into the regular mucking and hauling crew. Depending upon the aptitude of the trainee, this program usually takes about one month to six weeks.

Terry Rabideau, skip and cage tender reported that he had worked with the skip and cage tender for about two weeks in order to become trained as a skip and cage tender. He explained the signals, the safety checks which are made each morning, and why the skip will not move if the bar or the gate are not closed. He demonstrated the checks on the control buttons and the emergency buttons as well as the procedure for loading the skip.

Roland Plante, Ore Pass Man, said that he had been at his job so long, he did not remember who had trained him. He said that when a person came to him to learn to be an Ore Pass Man, that he would take the trainee with him, show him the location of the ore passes, show him the controls and show him how to operate the chain gate for the ore passes, and then accompany the trainee while he did the job. He said that this took about five days, depending on the man's previous experience.

MAINTENANCE

Maintenance of Personnel Carriers

A daily equipment check sheet is required to be filled out each day by the person who operates a Jeep or Personnel Carrier. Each vehicle is equipped with an hour meter. The reading of this hour meter is recorded on the equipment check sheet at the beginning and at the end of each shift. These vehicles are scheduled for a maintenance check every 120 hours of operation. They are serviced in the shop which is operated by Cecil Egglestone.

The maintenance records which were inspected, indicated that these service and preventive maintenance checks are performed within close limits

Maintenance of Personnel Carriers Con't

of the 120 hour schedule. Mr. Egglestone states that the mechanical condition of each vehicle is checked thoroughly during each of these maintenance inspections. Operators and other mechanics at the mine have a very high opinion of the competence and ability of Mr. Egglestone.

Maintenance of Mining Equipment

A daily inspection is required to be made by each operator of a Jumbo, Transloader, Scooptram or Teletram. The operator completes his inspection report. The daily inspections of the vehicles are done well and the reports properly filled out by almost all of the operators. These vehicles are taken to the upper shop which is operated by Mr. Kurt Prime for their service and preventive maintenance work. This service and preventive maintenance work is scheduled to be performed after each 120 hours of operation.

Maintenance of Hoisting Equipment

The hoisting equipment is inspected and checked at the beginning of each day. The inspection sheets listing exactly what is checked during each of the Daily Safety Tests for the 60 inch Cage Hoist are shown on the next three pages.

Report from the Safety Supervisor, Mine Superintendent, & Master Mechanic

The accident prevention policy is laid out by the Safety Supervisor, the training program is laid out and administered by the Mine Superintendent, and the maintenance program is supervised by the Master Mechanic.

Mr. Fred Raleigh, Safety Supervisor, Mr. Herb Shuttleworth, Mine Superintendent and Mr. Kurt Prime, Master Mechanic were asked to prepare a report on their safety practices, accident prevention programs and the mechanical maintenance programs for personnel carriers, service equipment, mining equipment and hoisting equipment at Texada Mine. They have prepared an excellent report which is attached to this report.

Respectfully submitted,

J. W. Robinson, P. Eng.
Inspector of Mines and
Resident Engineer

NOTE: Any unusual conditions list below, and do NOT proceed with PART III if these in any way affect the safety of the hoist.

_____

_____

PART III.

AUTOMATIC TEST AND ROLLING INSPECTION:

1. Bring the cage back to surface and spot it on the rope mark.

2. Does the automatic synchronizer bring the depth indicator to the usual "Surface" indicator mark? YES ( ) NO ( )

3. Inspect the Lilly Surface Cam.
Do the cam and roller index marks line up accurately? YES ( ) NO ( )

4. Put the hoist on "Automatic" and turn it over to the Cage Tender.

5. Have the Cage Tender press (and reset) the red Emergency Stop Push Button.
Did the UV circuit trip and alarm sound? YES ( ) NO ( )

6. With the collar shaft gate Open put both cage cars down. Have the cage tender select 2S (2055 Level).
Do the "Automatic" green indicating lamps in the cage go dim? YES ( ) NO ( )

7. Have the cage tender press the RUN button.
Verify that the cage did NOT start with the shaft gate open. YES ( ) NO ( )

8. Press the STOP button.
Did the cage "Automatic" lights come up bright again? YES ( ) NO ( )

9. Close the shaft gate, but leave the cage bar UP.
Select 2S (2055 Level) and press RUN.
Verify that the cage did not start. YES ( ) NO ( )

10. Drop the cage bar, and again press the RUN button.
The cage completed a normal trip and spotted correctly at the 2055 Level?

11. Were the brakes primed correctly as the 2055 Level was approached and did not cause any increase of motor current during final crawl of more than 150 amperes? YES ( ) NO ( )

(a) If the Prime Pressure regulator is set too close to the Releasing Pressure, brake pounding results. Lower the Prime pressure.

(b) If the Prime Pressure Regulator is set too low the brakes will tend to stall the hoist during automatic spotting. Raise the Prime Pressure.

12. Have the Cage Tender continue down for at least 2 other levels and the bottom.

With the hoist at top speed between levels, observe the lilly overspeed contact gap.

Is the overspeed gap less than 35/1,000 of an inch. YES ( ) NO ( )

Make small top speed gap adjustments by the auxiliary High speed Governor Spring.

13. Is the Lilly in good operating condition, clean and lubricated? YES ( ) NO ( )

14. As the cage spots at the bottom level, check the lilly cage underwind slow down cam.

Do the roller and cam index marks line up accurately? YES ( ) NO ( )

If not, relocate the lower cam until they do.

GENERAL NOTES:

1. Cage and skip Tenders should be instructed that in the event of any unusual operation, such as failure of the hoist to respond to a push button signal, to press the STOP button. This will reset the control panel and eliminate any danger that might possibly result from a jammed conveyance rather than waiting for the automatic protection to act.

2. Underground push buttons with their neoprene covers must be pressed firmly to the bottom of their travel to ensure good performance.

4. Crawl up until the track limit switch trips.

Did the UV circuit trip and alarm sound? YES ( ) NO (
Did the pinion brake apply? YES ( ) NO (

Reset the track limit switch. Press the backout push button and if necessary, lift the pinion weight. Reclose the UV Circuit and take cage down out of limits and at crawl speed. Note when backing out, brakes will not release until at least 400 amperes of current circulates in the main loop.

5. Press the MV 3 test push buttons with the master switch on the second point.

Do the main brakes apply promptly? YES (.) NO (
If not, discontinue all hoisting and check the valve.

6. As the cage passes the collar, the GREEN SYNC. light should light up for approximately <u>one (1) foot only</u>.

Does the SYNC. light remain on for not more than two feet of travel? YES ( ) NO (

7. When clear of limits, increase speed and bring the counter weight to the surface.

Did the RED backout light go out? YES ( ) NO (

During the first trip proceed at reduced speed if shaft conditions are in doubt.

8. Lower the cage slowly past the bottom level until the counterweight lilly limit trips.

Did the UV circuit trip and alarm sound? YES ( ) NO (
Did the lilly trip ahead of the Track Limit Switch? YES ( ) NO (

Operate the Track Limit Test Switch and reclose the UV circuit.

9. Continue to lower the cage until the Counter Weight Track Limit Switch trips.

Did the UV circuit trip and alarm sound? YES ( ) NO (
Did the pinion brake fall? YES ( ) NO (
Reset the Track Limit Switch.
Press Back-Out Push button, and lift Pinion Brake.
Reset UV circuit and back out of the limits.

10. Make the return trip hoisting the cage at Full Speed.

Is top speed at the meter mark? YES ( ) NO (

Make a dynamic brake test as follows:
(a) Run the upcoming EMPTY cage at <u>full speed</u>.
(b) Hold down the Brake Test Push Button well in advance of the depth indicator mark, and allow the Program Switch to indicate an emergency stop.

Did the Hoist stop within the GREEN BAND? YES ( ) NO (

Record the stopping distance_____feet.
Record the Applying Pressure as the hoist comes to rest_____psi.
If the dynamic Brake Test is within the Green Band, the performance of the brakes, valves and safety circuit is satisfactory. If the hoist stops just outside the Green Band but the brakes appear satisfactory, lower the cage about 200 feet and then repeat the test. If a maximum of two (2) successive tests do not fall within the Green Band, advise the Master Mechanic (or his representative) and have the Apply and Prime Pressure adjusted until a Green Band test results. It is unsafe to hoist men with the brakes operating outside the Green Band limits.

In making this test, was the apparent rope slip less than two (2) feet? YES (-) NO (

Are all the above tests satisfactory, and is the entire hoisting

DAILY SAFETY TESTS FOR TEXADA 60" CAGE HOIST

DAY:_____ DATE:_____ HOISTMAN:_____

RT I:

INITIAL TEST WITH EMPTY CAGE (MAN RIDING NOT PERMITTED)

These tests should be conducted at the beginning of each day or after an idle period to prove the correct operation of the basic safety equipment. If the equipment fails to pass any part of the following daily checks, discontinue testing and all hoisting until clearance is obtained from Mr. Prime or Mr. Fox.

WITH CAGE SPOTTED AT THE SURFACE AND SYNCHRONIZED:

1. Obtain a release from cage tender.

2. Close the UV circuit.

   Is the loop current within the green band of 25-0-25 amperes? YES ( ) NO ( )
   If not, inform the electrical department and discontinue automatic hoisting. Discontinue manual hoisting and open the UV contactor if the armature loop current at standstill is above 50-0-50 amperes as the regulator requires attention.

3. Raise the lilly governor weight by hand.

   Does the UV circuit trip and alarm sound? YES ( ) NO ( )

   Bleed the main brake engine to atmosphere.

   Did the UV circuit trip and alarm sound? YES ( ) NO ( )
   Did the weight engine fall FREELY? YES ( ) NO ( )

   Restore applying pressure to the main brake engine.

   Does the weight engine lift FREELY? YES ( ) NO ( )
   Is there evidence of oil on the weight engine piston rod? YES ( ) NO ( )
   Does the brake engine lubricator sight gauge show at least ½" of oil? YES ( ) NO ( )

5. Operate the Broken Linkage Dump Valve (BLDV) by hand.

   Did the UV circuit trip and alarm sound? YES ( ) NO ( )
   Does the pinion brake fall FREELY? Any tendency to hang up should be reported immediately. YES ( ) NO ( )
   Is the pinion brake fully apply in 3/4 a second? YES ( ) NO ( )

   Do not set the throttle valve for a slow gradual application as the overwind protection will be defeated.

6. Is the brake engine stroke pointer above the adjust mark? YES ( ) NO ( )

   What is the applying pressure?_____psi.
   Is the applying pressure within the posted limits? YES ( ) NO ( )

PART II.

WITH THE EMPTY CAGE MOVING UNDER MANUAL CONTROL (MAN RIDING NOT PERMITTED)

1. Turn Variac to zero and set Master Switch to 2nd point HOIST.

   What is release pressure?_____psi.
   Do brakes reach full release within approximately 3 seconds? YES ( ) NO ( )

2. Prime the brakes by putting master switch on first point.

   What is prime pressure?_____psi.
   Do brakes fully prime in 2 seconds? YES ( ) NO ( )
   Restore Variac Setting to normal full scale.

3. Crawl up until cage lilly trips.

   Did the UV circuit trip and alarm sound? YES ( ) NO ( )
   Did the Lilly trip ahead of the track limit switch? YES ( ) NO ( )

   Operate the track limit switch and reclose the UV circuit.

ACCIDENT PREVENTION & TRAINING AT TEXADA MINES LTD.

After the first full year of underground operation at Texada Mines it was found that our compensable injury rate was 20% higher than the average total experienced by all mines in B. C. At this time it was decided to introduce "The Neil George Safety System" into the mine. The course was given to all first line supervision and others. This was followed up by subsequent courses given by the B. C. Mining Association and later by Neil George in person. The "Mines Regulation Act" along with the "Safety System" is reviewed annually with the supervisors by the mine superintendent and the safety director. To show what has been accomplished by the use of this safety system, I submit the following statistics:

Year	Number of U/G Mines	Average Compensation rate per 1,000,000 Manhours	Texada Rate
1964	16	27	32
1965	16	24	20
1966	19	36	11
1967	18	29	4
1968	16	31	12
1969	14	33	0
1970	16	36	9
1971	15	32	3
1972	15	58	2
1973	13	46	0
1974	12	41	9
1975	9	35	20
1976 to date	9	35	10

You will note that it took two years after the introduction of the Safety System before an acceptable level of "compensable injury frequency rate" was reached. This level was maintained and in some years bettered until 1974. During this period from October 19th, 1970 until August 8th, 1974 the underground department did not have a lost time accident. They worked a total of 476,037 manhours accident free.

From 1963 until 1966 our underground work force built up from a handful of men to approximately 113 and remained at this level until 1973 and then started to decrease to todays level of approximately 56.

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During this period of time we were able to maintain a high percentage of safety conscious skilled workers. Because of the numbers of these men it was comparatively easy to utilize their skills in the training of newer and unskilled workers.

However, all good things do come to an end and in July of 1974 the workmen went on strike for one month. At that time some highly trained men looked for and obtained work elsewhere. Texada Mines has never completely recovered from the loss of those men. Since that time Texada Mines has experienced a high turnover of skilled men and it has proved to be nearly impossible to find men with equal qualifications. To offset this situation the existing training programs had to be stepped up. This proved to be more difficult than at first thought because of two things: Firstly because of cut-backs in production our work force had been decreased underground from a high of 113 men down to approximately 60 so we did not have the numbers of highly trained men with which to put the trainees, ~~with~~. Secondly the caliber of men we were able to hire were on the whole lower and more difficult to train.

Returning to the rate statistics shown earlier, you will note that our rate jumped from zero in 1973 to nine in 1974. In 1974 we were at a zero rate until the first month of operation after the strike. Then we had two compensable cases in August and one in October followed by four in the first four months of 1975. All of these cases had something in common. All of them were comparatively new men. Four of them had had no previous experience in the industry, the other three had limited experience at other mines. Five of the seven were around 20 years of age.

Because of the knowledge obtained from these seven cases we realized what we had to deal with and to compensate for this situation three things have been done. The training programs were reviewed and where necessary revised to meet the job requirements. The ratio of supervision per workman was increased from 10-1 to 5-1 to afford closer on the job supervision of trainees and all other underground workers. Experienced lead hands with shift boss certificates were used as instructors in specific fields of the training programs.

Changes are continually being made in the interest of safety. Just recently after an accident with one of the haul trucks, it was decided that closer and more direct qualified supervision was required as to the movement of trucks and of the drivers. That responsibility was taken over by the Mine Superintendent.

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As can be seen positive steps are continually being taken to upgrade the training and accident prevention at the mine. Over the past twelve years Texada Mines Ltd. has, in the interest of safety, made available to it's employees and encouraged them to take the following courses:

St. Johns First Aid Certificates	over 150 people.
Industrial First Aid Certificates	figures not available
Underground Mine Rescue Certificates	36
Surface Mine Rescue Certificates	10
Underground Shift Boss Certificates	19
Surface Shift Boss Certificates	7

Each year up to 1975 underground supervisors and others have attended various courses and seminars in Vancouver covering the field of supervision and accident prevention.

ACHIEVEMENTS

1. The mine rescue team entered eleven regional competitions and won nine. The team also won the Canadian Competition once.
2. B. C. & Yukons' "John T. Ryan" plaque, symbolic of the provinces safest metal mine was won by Texada Mines in 1969 and again in 1974.
3. The Canadian "John T. Ryan" trophy, symbolic of Canada's safest metal mine was won by Texada Mines in 1971 and again in 1974. To become eligible for either of these awards a mine must work 1,000,000 manhours. As it takes Texada Mines three years to accumulate these manhours it can be said that it was one of, if not the safest mine in Canada for eight of its twelve years of operation as an underground mine.
4. Texada Mines has achieved a high degree of safety in its operation as can be shown by the following statistics compiled by the B. C. Mining Association. The figures show Texada Mines' standing in relation to all other underground mines in B. C.

1964	11th	Number of Mines	16
1965	10th	" " "	16
1966	3rd	" " "	19

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1967	2nd	Number of Mines	18
1968	2nd	" " "	16
1969	1st	" " "	14
1970	3rd	" " "	16
1971	1st	" " "	15
1972	3rd	" " "	15
1973	1st	" " "	13
1974	1st	" " "	12
1975	2nd	" " "	9
1976 to date	1st	" " "	9

FR/ms

TRAINING PROCEDURE FOR CAGE AND SKIPTENDERS

The training time is generally governed by the employees previous experience. Cage and skiptenders are selected from other underground helping or labour jobs.

One weeks training time at each job has been found to be adequate for inexperienced operators. Cagetender training covers shaft signals manual and automatic operation, power failure procedures and daily hoistman - cagetender safety checks. Moving of heavy equipment and supplies is also covered.

Skiptending training covers semi-automatic operations in the loading pocket, electrical procedures to follow and procedures to follow when malfunctions occur. The training includes cleanup procedures around the conveyor belt, protective devices installed for operator safety, checking with hoistmen and crushing crews at commencement of the shift and if any other problems or delays require communication; the use of two phone systems.

Enclosed is a copy of electrical start-up procedures posted in the loading pocket.

SEMI - AUTOMATIC SKIP LOADING

1. SIGNAL SKIP TO LOADING POCKET. PHONE HOISTMAN TO PUT SKIP ON AUTOMATIC CONTROL.
   NOTE: WHEN HOIST IS ON AUTO-CONTROL (2) TWO AMBER LIGHTS WILL SHOW, ON THE CONTROL PANEL.

2. TO START CONVEYOR, PUSH START BUTTON, THIS BUTTON WILL START THE FEEDER AND EXHAUST FAN ALSO.

3. WITH SKIP IN LOADING POCKET A GREEN LIGHT WILL SHOW ON RELAY PANEL WHEN 13 LONG TONS HAVE BEEN DEPOSITED IN WEIGHING POCKET, CONVEYOR, FEEDER AND FAN WILL STOP.

4. TO LOAD SKIP, PUSH BUTTON UNDER. CONVEYOR STOP - START, THIS WILL ENERGISE CONTROL VALVE AND ALLOW AIR TO PASS INTO CYLINDER ATTACHED TO DOOR OF WEIGHING POCKET, THIS ALLOWS DOOR TO OPEN AND TRANSFER LOAD FROM POCKET TO SKIP.
   NOTE: DOOR WILL NOT OPEN UNTIL SKIP IS IN LOADING POSITION.

5. TWO RED LIGHTS ON CONTROL PANEL WILL SHOW THE DOOR IN THE CLOSED POSITION. AFTER DUMPING LOAD INTO SKIP THE LIGHTS MAY NOT COME ON, THIS IS DUE TO THE DOOR NOT CLOSING PROPERLY. RE-OPEN DOOR BY USING EMERGENCY BUTTON AND ALLOW TO CLOSE, LIGHTS SHOULD NOW COME ON. TO SEND LOADED SKIP TO SURFACE DUMP, PULL SEND CORD. START PROCEDURE OF LOADING AS NUMBER TWO (2) SUGGESTS.

   NOTE: AFTER LOAD HAS BEEN DEPOSITED IN SKIP A YELLOW LIGHT WILL COME ON AND A BELL WILL RING, THESE DEVICES ARE TO PREVENT THE OPERATOR ATTEMPTING TO PUT A SECOND LOAD IN THE SKIP.

TRAINING PROGRAM FOR PERSONNEL CARRIER & JEEP DRIVERS

The training time and procedure is governed by the employees previous experience and aptitude in job familiarity. Normally two weeks is the necessary training time given.

In the two week training period the employee is instructed in driving the equipment, equipment check points, brakes, fuel, oil etc. and mine workings. The first driving by the new man is done on surface, flat area and then inclines. If after practicing he shows careful and safe driving habits he is allowed to drive underground with the experienced operator on secondary runs of supplies throughout the mine.

In this two week period his shift boss rides with him observing and checking the trainee in learning the mine and use of the equipment and in filling out equipment reports.

When the shift boss is satisfied that the new operator is competent he assigns him to driving but leaves the experienced operator with him for another two or three days.

TRAINING PROCEDURE FOR A TRANSLOADER SCOOPTRAM OR TSC OPERATOR

Trainees chosen for operators must have worked underground to be familiar with the conditions and also preference is given those with heavy duty equipment experience.

Depending on the previous experience the trainee spends several days to a week traveling with the lead hand to become familiar with the different working places and ore passes.

Then on surface with a machine, the trainee is instructed and shown what the different levers and controls are for and also the instruments on the panel and what they indicate. The trainee is then shown how to do the before starting check, start the engine, the after starting check as required by the daily operators report.

The machine is then taken by the lead hand to an area on the surface, (accompanied by the trainee), where the trainee is allowed to operate the machine with the lead hand on the machine observing and instructing. When the lead hand is satisfied that the trainee can drive the machine safely, he is allowed to drive it, still on surface using markers to simulate drifts and ore passes.

After a couple of days of this he is allowed to drive, accompanied by the lead hand down and up the various ramps and drifts underground using only first gear.

After several days of this he is sent with an experienced operator to observe the procedure of mucking, hauling and dumping for a day or so, then with the experienced operator riding beside him he is allowed to muck, haul and dump with the machine.

After about a week of this he is allowed to muck by himself in a place that is easy to muck and under the direct supervision of a lead hand or shift boss. After he gets more proficient he is phased into the regular transloader crew.

Depending on the trainee this usually takes two weeks to a month.

TRAINING PROCEDURE FOR LONGHOLE DRILLERS

Depending on experience, a prospective driller must be familiar with the mine, usually this is acquired by helping the nipper or longhole loaders for a month or so.

He then goes down with a regular driller and observes the drilling procedure for a couple of days. He is then allowed to run the machine under the direct supervision of the experienced driller. The experienced driller is told to explain all the different proper and safe procedures to use in set ups, alignment of holes, collaring, use of casings, retrieving stuck and broken rods, the reading of layout prints, use of a degree rule and protractor and other related aspects of the job.

In about three weeks if he shows he can handle the job he is placed on a machine near an experienced driller, so if he does run into difficulties he can get help.

JOB TRAINING FOR LONGHOLE BLASTERS

A new employee who has had previous experience in longhole loading and blasting and is the holder of a blasting certificate is assigned to work with a lead hand blaster for up to one month. In this time he becomes familiar with Texada's loading procedures in high explosives, Anfo, Powermex and different pressure and cartridge loaders. Loading and priming plans are explained and when he is familiar with these he may be allowed to prime for blasting, but final wiring and circuit testing are done only by the lead hands who have been employed at Texada for the past ten years.

A new employee with no previous experience will be employed as a helper for an interval of up to six months before being checked out to qualify for a blasting certificate. If qualified and obtaining one he then may be assigned to loading and priming under the observation of a lead hand blaster and the shift boss.

REPORT FROM MECHANICAL DEPARTMENT

We have a regular preventive maintenance schedule at Texada Mines. Each machine is serviced and checked after every 120 hours of service. Scrubbers are serviced every 500 hours and valves every 240 hours for Deutz Diesel engines, and 480 hours for Cummins. Operators are required to fill in daily report sheets, listing fuel and lube consumption as well as any mechanical problems. These problems are recorded each morning with the list being given to the lead hand shop mechanic. He in turn designates the division of labour for the day. The lead hand records all work done and his reports are kept and recorded by the shop clerk. In addition to the above, one man designated by the underground department tests all vehicles twice a week for exhaust gasses. These results are recorded and where any machines are found to be approaching the maximum limits they are taken out of service and repaired.

Form 247

TEXADA MINES LTD.
EQUIPMENT REPORT

Date _____ Shift _____ A.M. P.M.

Equipment _____

Location _____

From _____ To _____

Loads _____ Cu. Yds. _____

Working Time _____ Hrs.

Lost Time _____ Hrs.

Total Time _____ Hrs.

Fuel Oil _____ Gals.

Lub. Oil _____ Gals.

Gasoline _____ Gals.

Greases _____ Pounds

Cable _____ Size & Feet

Repairs _____

_____

_____

Remarks: _____

_____

_____

_____

_____

_____

_____ _____

Operator *Foreman*

P.R. NEWS

SURFACE OPERATORS REPORT
(TRUCKS, SHOVELS, MICHIGANS)
& UNDERGROUND SMALL EQUIPMENT
(GRADERS, PERSONNEL CARRIERS,
JEEPS)

MS Nº 2287

SERVICE CARD ISSUED
EVERY 120 HOURS

Texada Mines Ltd.

SERVICE CARD

Machine No. _____ Date _____ 19____

DUE FOR SERVICE

Hour Meter _____ Hrs.

Service Completed Date _____ 19____

Hour Meter _____ Hrs.

Series 3	AW 300	SAE 90	Type A		

P.R. NEWS

_____
Signature

UNDERGROUND OPERATOR'S REPORT SHEET (TRANSLOADER'S, SCOOPTRAMS, TELESCOPIC ORE CARRIERS, PERSONNEL CARRIERS)

R OPERATOR'S DAILY REPORT

MACHINE No. _____ SHIFT _____ DATE _____ OPERATOR _____

LUBRICATION	"√" when done _____		
REFERENCE No.		No. OF FITTINGS	
1. 1	Dipper Bail	2	( )
2. 2	Dipper Shaft	3	( )
3. 4	Foldback Shaft	3	( )
4. 7 & 8	Door Bearing	6	( )
5. 9	Winch Sheaves	2	( )
6. 11	Oscillation Shaft	1	( )
7. 14	Steering Cylinder	4	( )
8. 12	Steering Yoke Pin	2	( )
BEFORE STARTING ENGINE . .	"√" when done _____		
9. 31	Check Engine Oil Level—N.B. Amount of Oil Added		( )
10. 15	Check Diesel Fuel _____ Add if necessary		( )
11. 16	Check Hydraulic Oil _____ Add if necessary		( )
12. 25	Check Scrubber Water Supply Tank—N.B. Fill every 4 Hours		( )
13. 23	Check Scrubber _____ Drain and Flush		( )
START ENGINE	"√" WHEN DONE		
14.	Check Transmission Oil Level		( )
	NOTE: Amount of Oil Added		( )
15.	Drain Compressed Air System of Water		( )
CHECK THE FOLLOWING . . .	OK "√" NEEDS ATTENTION "X"		
16.	Wheel Lugs and Studs		( )
17.	Tires		( )
18.	Brakes—Including Parking Brake		( )
19.	Bucket Pins		( )
20.	Lights, Switches and Instruments		( )
21.	Shifting Levers		( )
22.	Water Level in Radiator		( )
23.	REPORT ANY OIL LEAKS		( )

REMARKS

Meter Reading Start

Finish

MACHINE No. _____ SHIFT _____ DATE _____ OPERATOR _____

WORKING PLACE	CODE No.	HOURS	LOADS Waste	LOADS Ore	SECONDARY EXPLOSIVES
Road Work—Nipping					
and Miscellaneous					

Operating Time

Meter Reading Start

Not Available—Repairs & Maint.

Finish

REMARKS

LEAD HAND REPORTS

12

TEXADA MINES LTD.

REPAIR AND SERVICE ORDER

Date: _____ 19____

Shift: _____ MACHINE No.: _____

Time in: _____ Time out: _____

Work Done: _____

_____

_____

_____

_____

_____

Workmen:

Remarks:

Signature _____

MACHINE

EQUIPMENT REPORTS

Scrubber:

Due for Service

Valves —

DATE	OPERATOR	METER	OP	DOWN	REC.	Operators Remarks	Repairs

SHOP CLERKS SUMMARY
SHEET OF ALL PREVIOUS
OPERATOR REPORTS &
LEAD HAND REPORTS

RECORD DIESEL EXHAUST TESTS

FOR MONDAY TO FRIDAY 19

			TRANSLOADERS										SCI		TSC		TK$_D$	MG		JM	JEEPS				PERSONNEL CARRIERS						
			1	2	3	4	5	6	7	8	9	10	1	2	1	2	3	1	3	2	1	3	4	6	1	2	3	4	5	6	7
NUMBER OF TESTS PREVIOUS WEEK																															
CURRENT WEEK	MONDAY	CO																													
		NO																													
	TUESDAY	CO																													
		NO																													
	WEDNESDAY	CO																													
		NO																													
	THURSDAY	CO																													
		NO																													
	FRIDAY	CO																													
		NO																													
CURRENT WEEK TOTAL																															