

Lessons Learned: Suncor Implements the TruckLogic™ Training System

By Chuck Frey, Marketing Manager, VISTA Training Inc
Input/SME: Kirk McClain, Manager, Mine Operations Training, Suncor Energy

Abstract

Suncor Energy realized significant gains in the effectiveness of its haul truck operator training at its mines in the Alberta, Canada oil sands using an innovative training curriculum called TruckLogic™, which was designed and developed by VISTA Training. During a 4-month pilot program conducted in 2010, trainees in the pilot group had 50% fewer incidents compared to new hires trained using the existing training methods, and productivity increased 3.5%. This curriculum has since been expanded to the other two shifts at the mine, and is used to train all new haul truck operators. This paper outlines how Suncor implemented this ambitious training program and the cultural changes it helped set in motion, and how other mines can benefit from this innovative approach.

A new approach to training

Many mines are overlooking a key opportunity for productivity improvement by not taking a closer look at the most significant group of people who influence it – haul truck operators – and more specifically how they are trained. How can haul truck operator training be more effective and result in significant reductions in incidents and increases in productivity?
By:

- Considering how adults learn most effectively. By engaging them in three dimensions – hearing, seeing and doing (experience), trainees are better able to develop the knowledge, skill and (most importantly) the attitude to be safe, productive operators.



- Improving the handoffs from the classroom to field coaching, so that skill-building and knowledge are enhanced in the process
- Providing everyone involved in the on-boarding process with the insight, training and tools they need to support, coach, evaluate and ensure consistency
- Helping operators understand how their performance impacts the performance of others

It's not that the content is incomplete, but rather how it's delivered. In many operations, operator training consists of trainees viewing computer-based training (CBT) programs in one giant “brain dump” – after which trainees are expected to remember everything from which truck braking system to use under which circumstances to the best techniques for turning in to a failing dump.

Trainees then immediately transition to an actual haul truck, where they ride with an experienced operator – often called a coach or “mentor” – for certain period of time. Ideally, these ride-alongs should reinforce the knowledge the trainee has gained in the training lessons. But more often than not, field training is unstructured and inconsistent – dependent to a large extent upon the mentor knowing what he ought to be teaching the trainee and knowing the correct procedures for doing so, and most importantly, on the mentor being motivated and rewarded for sharing those procedures.

A better way

Why is the new approach for training haul truck operators piloted at Suncor a better solution?

- It employs “chunked” learning to help trainees retain knowledge. Trainees learn one critical skill (for example, how to operate a haul truck safely on the mine’s haul roads), then have an opportunity to apply it in one or more hands-on settings before moving on to the next concept.
- It employed a PC-based simulator (which generated a wealth of performance data), “check your knowledge” questions within the training modules and field assessment forms and checklists to generate a record of training of each student.
- The curriculum goes beyond training to consider the environment in which the training is taking place. In other words, supervisors, coaches and dispatchers experience the training, too, so they can better understand what trainees are learning and support them. And they also learn how to coach in the process.
- It provides a solid foundation in safe operating practices, and helps trainees appreciate how their work directly impacts those around them. This lays the foundation for them to operate safely and productively throughout their careers in the mine.

Do these challenges sound familiar?

Safety: While open-pit mines around the world may speak different languages and extract different materials from the ground, they share similar challenges when it comes to training haul truck operators. Haul truck operation is typically the entry level position in most operations. So why is it that mines typically start their most inexperienced operators on one of the most expensive, massive pieces of equipment in the operation? They are expected to operate a vehicle the size of a three-story house, under extreme conditions – such as inclement weather, challenging haul road conditions and steep grades.

In addition, haul trucks are the prime movers of ore and overburden in the mine. As such, they are a key element of any mine's productivity. Inefficiencies in haul cycles tend to be multiplied across the rest of the mine's production operations. That's why it's critical that mine management train new operators how to properly balance safety and productivity. For example, new operators are expected to maintain the same pace as the trucks ahead of and behind them on the same haul road, while taking corners safely and not overspeeding on downhill grades.

Skilled labor shortage: Another persistent and escalating challenge is the shortage of skilled labor. In the past, finding operators with previous experience in other mining operations or in related industries – such as construction and forestry – wasn't difficult. But the global workforce is aging, and experienced operators are retiring, taking their expertise and knowledge with them. A growing percentage of new haul truck operator trainees in the northern Alberta oil sands, where Suncor is located, and in many areas around the world have no previous experience operating heavy machinery. In other words, they don't have operating skills that are transferrable to the mine environment. On the other hand, this trend provides mines with a unique opportunity: These unskilled operators are "blank slates" who haven't developed bad habits, and who can more easily be trained to be safe equipment operators.

Retaining the best: A related challenge is worker retention. In labor constrained markets there are more jobs than there are workers. This imbalance in supply and demand tends to inflate wages and ratchet up the competition for skilled workers among mines, giving the most skilled operators the opportunity to job jump from one mine to another. Training isn't the total answer to this challenge, but if an employee feels valued and capable in their job, they are more likely to stay with a company. Watch for the ability to hire and retain laborers to become a big issue for the global mining industry in the years ahead.

The power of a good coach: A final difficulty faced by many mines is that they expect that coaches will pass along the "right" knowledge to their trainees and that they will know how to do so. In reality, these interactions are often not structured enough to ensure that the experienced operator's knowledge will be transferred to the trainee. Worse still is the operator who is

“unknowingly” passes on bad habits or unsafe practices to their trainees. Often, supervisors show up at an operator’s truck with a trainee and say, “Bob’s going to be riding with you today.” Without a structured program for field training, there isn’t much consistency to what trainees learn while riding with coaches. When you have a group of people independently deciding what trainees will learn, the results are bound to be inconsistent.

Suncor challenges

Suncor also faced several unique challenges that contributed to the need for a new approach to training haul truck operators:

- A major mine expansion resulted in the need to hire a large number of new haul truck operators.
- The existing computer-based training program had a number of shortcomings. The program was traditional in structure, which means it “dumped” a large quantity of knowledge on the trainee all at once, which trainees were expected to remember. Trainees tested well in the training lab, but when they transitioned to the haul trucks, they weren’t retaining enough of what they had learned.
- The content of the training program was focused on do’s and don’ts of haul truck operation, but didn’t cover the all-important whys – information that adult learners need to know. In addition, the existing training did not provide any job aids to assist trainees in retaining knowledge. Nor did the mentors have any training or tools to provide their trainees with meaningful coaching or feedback.
- The knowledge contained in the existing training materials was superficial in nature. It didn’t cover enough detail, and it wasn’t aligned with Suncor’s Journey to Zero initiative – which aims to improve the safety of Suncor employees and contractors working in the mine.

A new model of training

To address these challenges, Suncor partnered with VISTA Training to develop [TruckLogic™](#), a comprehensive haul truck training curriculum that integrates computer-based lessons with a PC-based simulator and on-the-job training guides for both mentors and trainees. This was supplemented by “train the trainer” sessions for coaches, dispatchers, and supervisors to help them understand what trainees were learning and why.

As you can see from the diagram on the next page, this new model of training provides not only more training content, but it has been instructionally designed and “chunked” to improve knowledge retention. For example, in the diagram on the next page, Module 2 Lesson 5 (circled in red) is focused on Dumping at a Dump Pocket. The simulator and OJT activities that follow

are also focused on the same topic. So trainees get the knowledge of how to back up to a dump pocket and dump their load from the CBT, followed by two hands-on opportunities to “anchor” that knowledge in their minds. As a result of this integrated learning approach, by the time trainees transition to a haul truck, they are much better prepared for what they will experience.

VISTA				
TruckLogic™ Haul Truck Training Curriculum				
DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Module 1: Operating the Haul Truck	Module 1: Operating the Haul Truck	Module 2: Dumping a Load	Module 2: Dumping a Load	Module 3: Loading the Haul Truck
Lesson 1: Introduction	Lesson 5: Vehicle Monitoring	Lesson 1: Introduction to Dump Sites	Lesson 4: Back-in Dumping	Lesson 1: Introduction to the Shovel Pit
Lesson 2: Preparing Your Haul Truck	Lesson 6: Brake & Gear Selection	Lesson 2: Goals, Methods & Skills	Simulator Activity 3	Lesson 2: Positioning at the Shovel
Lesson 3: Haul Road Conditions & Visibility	Simulator Activities 1 & 2	Lesson 3: Drive-by Dumping on a Lift	Lesson 5: Dumping at a Dump Pocket	Lesson 3: Cab-side Back Up
Lesson 4: Rules of the Haul Road	Lesson 7: Fuel & Lube Bay	On-the-job Ride Along	Simulator Activity 4	Simulator Activity 5
On-the-job Ride Along	On-the-job Ride Along		On-the-job Ride Along	On-the-job Ride Along
				Lesson 4: Blind-side Back Up
				Simulator Activities 6 & 7
				On-the-job Ride Along

<p>LEGEND</p> <ul style="list-style-type: none"> CBT Simulator Activity On-the-job Ride Along 	<p>NOTE: All lessons are self-guided computer-based training via the web, and include "check your knowledge" questions.</p> <p>On-the-job ride along and simulator time slots are variable and adjustable depending on the trainee and the needs of the mine.</p>
--	---

Copyright © 2010 VISTA Training Inc.

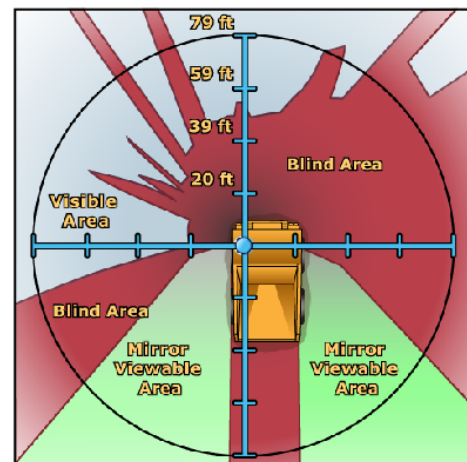
The pilot program

Suncor and VISTA Training conducted a three-and-a-half-month pilot of the TruckLogic™ training curriculum beginning in April and concluding in July of 2010. To ensure scientific validity, an “experimental” group was formed that included 4 trainers, 24 truck mentors and 22 haul truck operator trainees from the mine’s K and L shifts. The “control” group, which continued to use Suncor’s existing training program, consisted of I and J shift trainers, truck mentors and new haul truck operator trainees. Because these shifts work during opposite time periods, there was no significant interaction between the two groups. This enabled Suncor to obtain more accurate data comparing the performance of the two groups.

A sampling of the new OJT activities and coaching skills

As previously described, content in the computer-based program was delivered in chunks, to improve knowledge retention and was followed by immediate, practical and structured application practice – in other words, hands-on activities. Several of these structured on-the-job activities are worth mentioning, because they were new to Suncor and they turned out to be very effective:

Shock and awe: Early in the TruckLogic™ program, trainees take part in a field exercise where one person sits in the cab of a 400-ton haul truck with a portable radio. The rest of the students and the field trainer (who also has a radio) place orange cones around the perimeter of the truck, one at a time. They do this by walking a succession of straight lines away from the front and sides of the truck. As soon as the person in the cab can see the field trainer with the cone, he or she lets them know on the radio, and the trainer drops a cone on that spot.



Additional cones are placed in the same way. In approximately 10 minutes, the team has created a visual representation of the perimeter of the blind area of the truck. This unique, memorable hands-on activity tends to shock trainees into the realization that that they must take great care when operating such a large haul truck.

Narrative coaching: As the mentor drives the truck, he describes what he is doing and, more importantly, why. This helps the trainee understand the nuances of controlling the truck, how the mentor makes decisions and trade-offs when approaching the shovel pit or a dump site, and other tips that help the trainee understand how to become a more skilled operator. This technique improves the transfer of the mentor’s valuable knowledge – tips and know-how gleaned from years of experience – to the trainee. When the mentor and trainee switch seats

and the trainee is driving the truck, this form of “talk out loud” performance helps the mentor understand what the trainee is thinking and planning to do, so he or she can keep both of them – and others in the mine – safe.

Observation worksheets: These worksheets help initiate meaningful conversations between the trainee and mentor during the time spent driving in the mine. Trainees are directed to observe and record how the mentor handles the truck in various situations, for example, when approaching an intersection or encountering a disabled truck. Trainees are also provided questions to ask their mentor. The questions focus on concepts, skills and areas within the mine, for example, the dump site or crusher that will be introduced in the next set of lessons.

Assessment forms and checklists: As part of the OJT tools, VISTA Training developed assessment forms and checklists, which are used to document what each trainee has learned.

The secret to success

A key element in the success of this training program is that it was extended to include the truck mentors – the critical link in the transfer of knowledge from the learning lab to the real-world environment of the haul truck. Suncor made a major investment in developing its mentors by taking them through the entire training program, providing them with coaching skills and tools, and by providing a forum where they could share their concerns and discuss how to overcome obstacles encountered during field training.

Mentors who participated in the program reported very positive experiences. Although they had been filling these roles for some time, they now felt validated and recognized as a key part of the training process. Not only that, but they were given tools to help them be more successful as mentors. Rather than having to ask, “What do you want us to do with these trainees?” they had the answer, in the form of structured activities within the coaching guide.

As supervisors and dispatchers began to interact with trainees and mentors who were trained in this new program, some of them asked to participate in it, too. This was an unexpected but very welcome development. It was particularly important to gain the cooperation and support of the dispatchers, because several of the on-the-job activities require trucks to be taken out of the production loop (for pre-use walk-around inspections, for example). Also, as trainees were



learning how to operate a truck, mentors needed to arrange trips to specific pits and dump locations. At Suncor, new hires are assigned to haul waste rather than ore, which means they would otherwise have to wait many weeks before they could practice positioning the haul truck at a shovel. Dispatchers wanted to understand why the training department was requesting these changes and the benefits of doing so.

In addition, as word began to spread throughout the mine about TruckLogic™, operators on the I and J shifts couldn't wait for the new program to be expanded to include them. The key point is that they didn't view it as something that was being forced upon them; rather, they openly embraced it after hearing their coworkers talk about it.

The payoff

As part of this pilot program, VISTA Training completed a full, four-level evaluation of the program. In training terms that means they looked at everything from the trainees' reaction to the computer-based lessons, to whether they learned the content, to whether or not they were able to apply it in on an actual haul truck. Performance data for the pilot period was collected for both the experimental group (trainees who experienced the new TruckLogic™ training program) as well as for the control group (those new hires who continued using the old program).

At the conclusion of the four-month pilot program, Suncor data showed that incidents on the K and L shifts decreased by 50% compared to the I and J shifts. In addition, the experimental group delivered a 3.5% increase in productivity.

As part of the data collection process, VISTA Training conducted one-on-one interviews with over half of the trainees, mentors and dispatchers who participated in the pilot program. Here are several selected data points from these sessions:

- Trainees were asked to rate the value of the information in each block of content in the CBT lessons. They reported that these lessons were "very useful" 85% of the time.
- Trainees were also asked to rate the helpfulness of their truck mentors in preparing them for the OJT activities and their comfort level when asking their mentor questions. On a scale of 1 to 4, where 4 was "extremely helpful" or very comfortable, trainees rated their mentors a 3.8 in both areas.
- Mentors only rated the narrative coaching component of the program a 3.3 on a scale of 5, mainly because some of them weren't completely comfortable with this technique. This could easily be improved by providing them with more practice in the technique, examples of how to do so and by creating opportunities for mentor and trainee to meet prior to ride-along sessions

One of the unexpected benefits of this pilot program is that participants suggested numerous ideas for improving the curriculum, in effect creating a platform for continuous improvement of haul truck operator training at Suncor. The operators involved in the pilot have become very engaged and feel a sense of ownership in the program.

At the conclusion of the pilot program, which was managed with assistance from VISTA Training, Suncor rolled out TruckLogic™ training to the I and J shifts on its own. It is now being used with all new haul truck operator hires, and the mine is considering expanding this successful model to include shovel pit maintenance and track dozer operator training.

Lessons learned

From this successful pilot program, Suncor and VISTA Training learned a number of important lessons that, if followed, will help other mines to be more successful in implementing it:

1. **The composition of the mining labor pool is transitioning**, from skilled to unskilled workers. Mines that adapt their training and workforce management methods will be positioned to integrate unskilled workers in the mine's production loop and ensure they operate both safely and productively as seasoned operators.
2. **Start with a small pilot program.** Don't bite off more than you can chew. This case history is as much about behavior change as it is about training. People change slowly, so don't expect to roll out a big change all at once. A better approach is to follow Suncor's example: Keep the size of the pilot group manageable, and aim for early, documentable successes that you can bring to mine management to build top-level support for your new training initiative. And most importantly, enlist and engage the trainers, coaches, dispatchers and supervisors early in the process. You need them to support and sustain the program, not become barriers to its success.
3. **Arm your mentors or coaches with tools and training** to help them help become more effective coaches, share their expertise and ensure consistency – as well as to ensure the safety of trainees and others in the mine.
4. **Train for good habits:** Leverage the opportunity to train people with good habits right after they are hired, rather than trying to correct bad habits later. Usually, new hires are willing partners in training, because they want to make a good first impression with their new employer. Why not leverage this openness to lay an excellent foundation for safety?
5. **People have ideas and insights** for improving any aspect of your operation – including the training you use to bring them up to speed. Don't just ask them – engage them!
6. **Look at the bigger picture:** Implementing a curriculum like TruckLogic™ isn't just a safety program. It's an opportunity to enhance a safety culture in your mine, and to establish good, safe work habits that should hopefully last for an entire career.

- 7. Consider employing an outside perspective:** Many mines have always done operator training the same way. Often the training manager has been promoted from another area of mine operations into this role. Sometimes it helps to bring in outside expertise, a partner that is fluent with current best practices in training. In the case of this Suncor pilot program, VISTA Training brought a wealth of instructional design expertise to the table, which resulted in a superior training program that met the mine's needs for safety and continuous improvement.

Conclusion

To reach the safety and productivity targets that will be expected of you, will need to explore beyond the machinery side of the mine, and into the human component of it. Training alone will only take you so far. To reach the next level of safety and productivity, you need to look at the bigger picture – including the relationships that have the biggest influence on your new hires and by aligning your training program with the preferred learning style of adults (the see/hear/experience model described earlier in this paper).

Continuous improvement of the TruckLogic™ program wasn't a goal from the outset, but it was a welcome side-effect of this implementation. A steady stream of ideas from trainers, trainees, mentors and dispatchers will help to ensure that this training program will remain relevant for years to come, and will ultimately help Suncor Energy to move several steps farther along its "Journey to Zero."

Contacts

For more information about the Suncor [TruckLogic™](#) pilot program, please contact:

Kirk McClain

Manager, Mine Operations Training
Suncor Energy
Fort MacMurray, AB
KMcClain@Suncor.com

Chuck Frey

Marketing Manager
VISTA Training, Inc.
Waterford, WI
cfrey@vista-training.com