Training Simulation:
A New Management Tool

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www.simlog.com
1-888-774-6564

Your Bottom Line

"How people operate your equipment has, without a doubt, the greatest impact on operating costs.

"The fact is, data clearly shows that good operators run their machines better, more productively, and more cheaply because they understand their machines better, and know how to maximize production without over application and abuse."

Characterizing Typical Operators

Training Challenges (1)

- need to be able to better select training candidates (up to 30% will never become truly proficient) --> need to evaluate operator potential (natural abilities)
- especially important where the workforce is unionized
- up to 30% are typically unsuitable

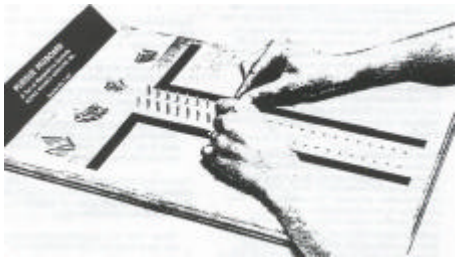
Everyone an Athlete?
Everyone a Crane Operator?

- although "practice makes perfect" when learning skills, some people:
  - learn faster
  - attain higher levels of proficiency
- why is this so?
  - differences in "natural" abilities

Key Human Abilities

- "psycho-motor" ability associated with manual dexterity and hand-eye coordination, i.e. moving arms/hands/fingers (and feet) at the same time
- "perceptual" and "cognitive" abilities associated with depth perception and thinking about spatial orientation, i.e. seeing things at a distance, knowing and keeping track of what's in front, what's behind, and what's around you

Sample "Psycho-Metric" Test



Test Weaknesses

- task performance is only measured in terms of "productivity" (speed), not "quality"
- work with real cranes also requires attention to detail, even when working "quickly"

And today's "video game" kids?

Many (most?) people believe that today's "video game" kids will *necessarily*:

- learn to operate heavy equipment better
- go on to achieve higher levels of proficiency at the controls

Simlog knows better!

- yes, "video game kids" do *begin* more quickly at the simulator and in the cab of real equipment, but only because they better anticipate the behaviour of the operator controls
- no, they do *not* learn faster
- no, they do *not* become better operators

Training Challenges (2)

- need to help new operators become proficient more rapidly --> need to better prepare them for their limited *training* seat-time so that they can reach performance targets sooner
- need to reduce wear-and-tear on real equipment to reduce training costs
- need to improve workplace *safety* during training

Training Challenges (3)

- need to help older operators adapt to newer equipment
- e.g. 4 control levers --> two joysticks

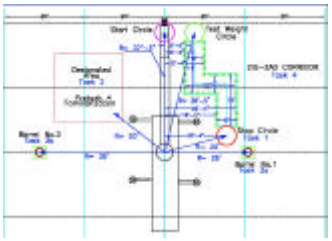
Benchmarking Challenges

- need to benchmark the performance of existing operators and where appropriate, help them improve their operating skills
- difficult business climate means that all operators must be proficient!

New Certification Challenges!

- increasing public concern about crane operations and workplace safety
- new industry-led crane operator certification
  - must demonstrate adequate knowledge
  - must demonstrate adequate operating skill
  - are your operators ready?

The CCO Practical Exam



- do the work *quickly*
- do the work *carefully*

Your competitive edge
= people doing better

… and training simulators can help!

Why Training Simulation (1)

- "What I hear, I forget. What I see, I remember. What I *do*, I understand." (Confucius)
- teach by *showing*
- learn by *doing*

Why Training Simulation (2)

- everyone operates the same (virtual) equipment
- everyone performs the same (virtual) tasks
- everyone's performance is carefully measured in the very same way!

Why Training Simulation (3)

- learning is controlled and uniform
- learning is personalized, i.e. everyone trains up to the same level (same "starting line")
- learning is always available (so long as the simulator isn't broken)

But is training simulation cost-effective? (there are many different kinds …)

The "Flight Simulator"

(150M$, Boeing)

(15M$, CAE)

Characterising the Crane "Flight Simulator"

- crane-specific
- real operator controls
- specialized display(s)
- motion platform
- specialized computers
- trainer's station
- emphasis on machine "replication"
- portable?

Simlog's "Personal Simulators"

- *your* PC
- *your* projector (or computer monitor)
- simulator controls: off-the-shelf PC joysticks
- simulator software for:
  - mobile cranes
  - tower cranes

Conclusions

- there exists a wide range in operator performance (and repair costs and safety records)
- the increasing costs of owning, operating, and insuring your cranes means that the financial *consequences* of these differences are more important than ever
- "training" simulation can offer real workforce management help, but must be careful about hardware-software complexity, instructional design, and *pricing*