



SAT vs. Conventional one: Comparison and Benefits

A. Yu. KAZENNOV

General Energy Technologies, Inc.
Russian Federation




Alexei Yu. KAZENNOV

*GET Inc., Coordinator
Analysis and Development &
Personnel Training and Development*

- **Date of Birth:** 11 June 1955
- **Education and Specialized Training:**
 - ◆ Moscow Engineering Physics Institute, M.S.
 - ◆ Post-graduate studies
 - ◆ Strategic Management and Marketing
 - ◆ SAT
- **Fields of Nuclear Training Activities:**
 - ◆ Training System Development, Simulators, CBT, AI Applications, Personnel Job Performance Analysis and Design, SAT, Training Courses Development and Conduct, Project Management, Marketing
- **Work Experience:**
 - ◆ 20 years with Nuclear Training
 - ◆ Projects in Russia, Ukraine, Slovakia, Bulgaria, Hungary, Pakistan, Lithuania
 - ◆ Worked with 15 Nuclear Power Plants and Enterprises
 - ◆ Expert Services for the IAEA and International Initiatives

A. Kazennov / GET, Inc.

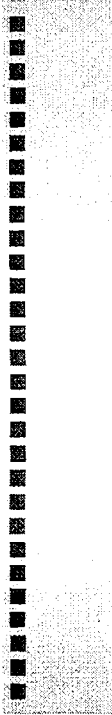


Objectives and Expectations:

- To discuss main features distinguishing a SAT-based training system from a conventional training system.
- To introduce expected training-related benefits of SAT implementation.
- To discuss expected improvements for the utilities resulting from SAT implementation.
- To state major responsibilities of the utility staff in the development and upgrade of the personnel training system.

(to be continued)

A. Kazennov / GET, Inc.



Objectives and Expectations

(continuation)

- For the Workshop (WS) participants to be able to complete SAT Advantages' evaluation form.
- In the medium-term, for the WS participants to evaluate the status of a SAT application or applicability at their NPPs / utilities / operating organizations.
- In the long-term, for the WS participants to be able to conduct the seminars or presentations on the SAT-based personnel training / qualification processes.

A. Kazennov / GET, Inc.

Main features distinguishing a SAT-based training system from a conventional one

Requirements for personnel competency, training, and qualification	
<i>Conventional training system</i>	<i>SAT-based training system</i>
Fuzzy, large job descriptions. Fuzzy task statements in procedures. Fuzzy procedures to qualify personnel and assess knowledge by means of vast examinations.	Short job descriptions plus complete clear task list. Specific criteria to assess job performance. Assessment of knowledge only necessary to perform tasks.

A. Kazennov / GET, Inc.

Main features distinguishing a SAT-based training system from a conventional one

Identification of training needs	
<i>Conventional training system</i>	<i>SAT-based training system</i>
Not systematic; mostly based on standard training programs.	Clear and well organized technology to analyze training problems. Constant feedback to personnel training.

A. Kazennov / GET, Inc.

Main features distinguishing a SAT-based training system from a conventional one

Training objectives and assessment of their achievement	
<i>Conventional training system</i>	<i>SAT-based training system</i>
Absent or fuzzy. Standards are practically absent.	Exist and are consistent with required competencies. Standards are established and known both to a trainee and to an evaluator.

A. Kazennov / GET, Inc.

Main features distinguishing a SAT-based training system from a conventional one

Training materials and instructors	
<i>Conventional training system</i>	<i>SAT-based training system</i>
Focus on training material development. Strong dependence upon individual judgments of instructors.	Focus on explicit training objectives. Instructors activities are directed by training objectives, lesson plans, and training materials with appropriate content.

A. Kazennov / GET, Inc.

Main features distinguishing a SAT-based training system from a conventional one

Cost-effectiveness	
<i>Conventional training system</i>	<i>SAT-based training system</i>
Is not considered.	Established mechanism to evaluate effectiveness. Delivery of only training that is needed for safe and effective job performance, excluding all unnecessary training.


A. Kazennov / GET, Inc.

Expected Training-related benefits of SAT Implementation

- Clear requirements for personnel competency. Personnel duty areas, tasks, performance and knowledge standards, approved by plant managers.
- Ensuring the achievement of required competency. Implementation the QA/QC of training, as a part of overall plant Quality Assurance Programme and Quality Control System.

(to be continued)

A. Kazennov / GET, Inc.




Expected Training-related benefits of SAT Implementation *(continuation)*

- Recommendations to improve job descriptions and procedures.
- Recommendations to modify plant systems/equipment, to improve working environment, to upgrade organizational structure.
- The trainee will know what to expect from training, established standards, and the results of the training.

(to be continued)


A. Kazennov / GET, Inc.



Expected Training-related benefits of SAT Implementation *(continuation)*

- The trainer will clearly know what to teach and the results of the training.
- The assessor will clearly know what and how to measure.
- The manager will clearly know the content and the results of the training.
- Development and upgrade of all aspects of training system: training materials, training tools, facilities.

A. Kazennov / GET, Inc.




Expected improvements for the utilities resulting from SAT implementation

- Plant regulations, job descriptions, and procedures
- NPP organizational structure and human resources management.
- Human Performance Evaluation System.
- Recruitment procedures.
- Quality Assurance and Quality Control.

(to be continued)

A. Kazennov / GET, Inc.



Expected improvements for the utilities resulting from SAT implementation *(cont.)*

- Mutual understanding of management and their subordinates.
- Requirements for the contractors providing training services are well defined.
- Working contacts with the regulatory body, public, and international missions.

A. Kazennov / GET, Inc.

Training impact on job performance

A study for a non-reactor nuclear facility
(Dr. R. W. Klemm, 1994)

- **What is the performance difference between TRAINED and NON-TRAINED workers?**

Answer:

The overall performance difference between the two groups (as measured by management and supervision) is +2.48 points on a 0 to 9 scale. When this rating is converted to Standard Deviations above/below the Average Job Performance, it signifies an average of **44%** Job Performance improvement for the TRAINED worker.

(to be continued)

A. Kazennov / GET, Inc.

Training impact on job performance

A study for a non-reactor nuclear facility
(Dr. R. W. Klemm, 1994) *(continuation)*

- **What is the dollar value added (gain or loss) of the performance-based training programs used to train workers for their jobs?**

Answer:

The dollar value of TRAINED operators is \$59,155 per operator. This value would provide a payback period of one and a half years even if no other operators were TRAINED in that period of time.

(to be continued)

A. Kazennov / GET, Inc.

Training impact on job performance

A study for a non-reactor nuclear facility

(Dr. R. W. Klemm, 1994) *(continuation)*

- ***What is the dollar value added (gain or loss) of the performance-based training programs used to train workers for their jobs?***

Answer:

Projecting the same dollar gains for untrained operators in two of the three facilities and given their larger operator population of ~ 150 operators, the monetary performance value gain would be \$8,873,250 a year.

(to be continued)

A. Kazennov / GET, Inc.

Cost/benefit analysis of nuclear training programs

(Dr. R. W. Klemm, 1992)

- **The results of the study indicated that there was a significant difference in job performance of highly trained and moderately trained nuclear maintenance workers.**
- **The models used yielded a 24% increase in job performance and from a \$1,476 to a \$6,760 savings per trainee after training program costs had been removed.**

A. Kazennov / GET, Inc.

Responsibilities of the utility/plant staff
in the development and upgrade of the
personnel training system

**The utility/plant managers committed
personally to:**

- Know basic SAT principles.
- Exercise responsibility for the quality of training programs (that should be stated in their job descriptions).
- Analyze personnel training problems on a regular basis.

(to be continued)

A. Kazennov / GET, Inc.

Responsibilities of the utility/plant staff
in the development and upgrade of the
personnel training system *(continuation)*

**The utility/plant managers committed
personally to:**

- Take necessary actions in relation to the urgency, criticality, and attainability of a problem solution.
- Participate in plant Training Review Committees (that should be established by Plant Manager directive).
- Establish criteria for the effectiveness of training.

(to be continued)

A. Kazennov / GET, Inc.

Responsibilities of the utility/plant staff
in the development and upgrade of the
personnel training system *(continuation)*

**The utility/plant managers committed
personally to:**

- Participate in training observation and evaluation.
- Issue plant documents stating the policies for personnel training.
- Provide time for personnel training as needed.

(to be continued)

A. Kazennov / GET, Inc.

Responsibilities of the utility/plant staff
in the development and upgrade of the
personnel training system *(continuation)*

**The utility/plant managers committed
personally to:**

- Allocate necessary financial resources.
- Develop and establish optimal procedures to staff the training department, using full-time instructors, a system of personnel rotation, and adjunct instructors from the plant.

(to be continued)

A. Kazennov / GET, Inc.

Responsibilities of the utility/plant staff
in the development and upgrade of the
personnel training system *(continuation)*

**The utility/plant PERSONNEL are
committed to:**

- View training and maintenance of qualifications as one of their main activities.
- Participate in training development; beginning from the Analysis phase through to Training Evaluation.

A. Kazennov / GET, Inc.

Key Considerations

- **Strange though it may seem, but SAT works hard and efficiently.**
- **An approach provides the principles or methodology. Specific SAT model describing the TECHNOLOGY should be customized and used.**
- **MAKE IT YOURS !**

(to be continued)

A. Kazennov / GET, Inc.



Key Considerations (continuation)

- Qualitative constructive analysis has convincingly showed the advantages of SAT-based training, but...
- While completing the Evaluation Form you will hopefully find the preconditions to gain benefits.
- Design, Development, and Implementation take ~80% of the resources in our life, but Analysis and Evaluation provide ~80% of the gains...->

A. Kazennov / GET, Inc.



Key Considerations (continuation)

- So, conduct SAT Implementation phase, **TRAIN** personnel !!!

A. Kazennov / GET, Inc.