

# Better Training, Lower Costs Through First Federally Approved Interactive Multimedia Safety Certification

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While the petroleum industry has appeared to be in a constant state of change for the past 20 years, one thing that hasn't changed much is its less than state-of-the-art training methodology. The week ending the 19th of May, 1995 marked a turning point in this respect. During the two preceding weeks, InSysTech Interactive Multimedia Managing Partner David A. Mallett, under the watchful eye of the U.S. Minerals Management Service, certified 16 Vastar Resources offshore operators in Offshore Safety Systems. What made these certifications different is that they were performed without an instructor, and while the operators worked their regular tour. The average student finished in half the usual time, scored higher than normal on the certification test, and Vastar Resources saved \$24,445.

## Automated training comes of age

The stealth weapon in this story is an entirely computer-based training system begun 5 years ago by ARCO Exploration and Production Technology. In January, 1994, project management of Production Safety Systems Training was outsourced to InSysTech Interactive Multimedia of Argyle, Texas. InSysTech worked with MMS Inspection and Compliance Division, who provided guidance, invaluable



A Vastar Resources, Inc. Safety and Training Coordinator, tangles with the notorious Well Control Panel II.

input, and encouragement to make Production Safety Systems Training the first entirely automated training system accepted to replace conventional classroom training for Federal certification purposes.

## A cooperative effort

Vastar had already introduced cost-cutting in their MMS Certification courses by housing operators at the Venice, Louisiana shorebase and bringing in an instructor to do the course on site. However, due to the normal five-day length of the course, operators were on their days-off being paid overtime. Vastar, always interested in improving operator skills, had been

supporting development of the computer-based safety systems training since its inception. Originally called "Offshore Safety Systems," the program had been under development for several years when AEPT realized they had a significant portion of MMS Certification requirements in the system. That is when InSysTech's Dave Mallett was called in to rework the program to fit the labyrinthine maze of outdated regulatory requirements that lay between Offshore Safety Systems and approval by the MMS as a certification course. If this had been OSHA, the story would have ended here. However, the MMS is not your typical government bureau-

crazy. Unlike many federal agencies who tend to resist change, the MMS takes its congressional mandate to protect workers, the environment, and produce revenue as a challenge to embrace emerging technology in whatever form it may take. After a year and a half of cooperative tailoring of both Offshore Safety Systems and 30 Code of Federal Regulations 250, production of three new modules and some 300 pages of support print materials, Production Safety Systems Training received a 12 month provisional approval.

## “We’re makin’ this up as we go along...”

When AEPT ITT began system development,



The platform is a carefully crafted composite of actual platforms in the Gulf of Mexico.

genlock card overlays computer graphics on video, and digitally de-

interlaces the video to provide the highest quality image available. 57 of these systems were built, and most of them are still in service.

While SimStation provides a price-performance level still difficult to exceed, the death of Commodore Business Machines (maker of the Amiga) and the desire of users to have training that can be run on their existing computers led to the decision to port the PSST program to the PC

platform. In April, 1996, InSysTech Interactive Multimedia won the contract to make this difficult port.

## The PC Version

In the last couple of years, some of the deficiencies of standard PC's have been remedied. Windows95 and NT bring a degree of multitasking to the PC world, and much faster CPU's have closed the gap in processing speed. While multichannel audio remains a

While the virtual consequences of error in controlling these wellheads are as severe as the real world, most people prefer to experience them here.

conventional PC's did not have the capability of performing to the standards envisioned. “Multimedia” was still several years in the future, and conventional computer based training consisted of little more than blocky pictures and on-screen buttons. Rather than wait, the ITT group began to research and assemble a system from the ground up.

SimStation, as the system came to be known, was designed around the Amiga multiprocessor computer system and it's preemptive multitasking operating system. A



Every knob, gauge, and switch on this Well Control Panel functions just like its real-world counterpart.

problem (without resorting to nonstandard hardware), InSysTech's creative programmers have found ways to get around this bottleneck. The same is true of virtual screens (screens that exceed the visible area of the monitor), which are crucial to PSST's interface. The PC version will sport availability in either AVI or MPEG 1 video, and run on multimedia-equipped PC's with P90 or higher processors.

## The course of study

The system works like this. The student first reads the required pre-read material from the Study Guide and Federal regulatory materials. SimStation interactive learning is next.

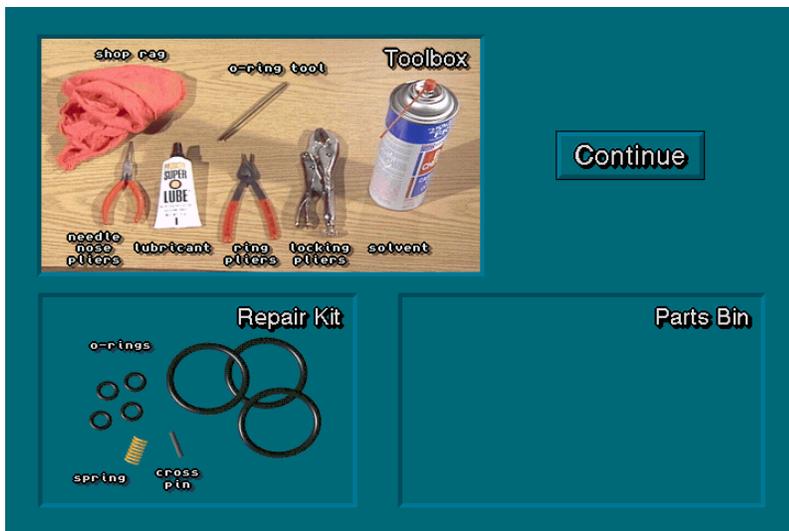
The student has a choice of taking the training for certification or just for skills enhancement. Choosing "Production Safety Systems Training-MMS Certification" leads to a screen that displays the student's

record as kept by the Student Records Database. PSST directs a new learner to enter a job classification, and the date of their last certification.

Once they have entered this information, it can only be changed by the Training Administrator through use of their unique password. PSST tracks their progress, and tells them which CD-ROMs to insert and opens the disc drawer at the appropriate time. The program then examines the disc and prompts them if it is not the correct one.

## At work on the virtual platform

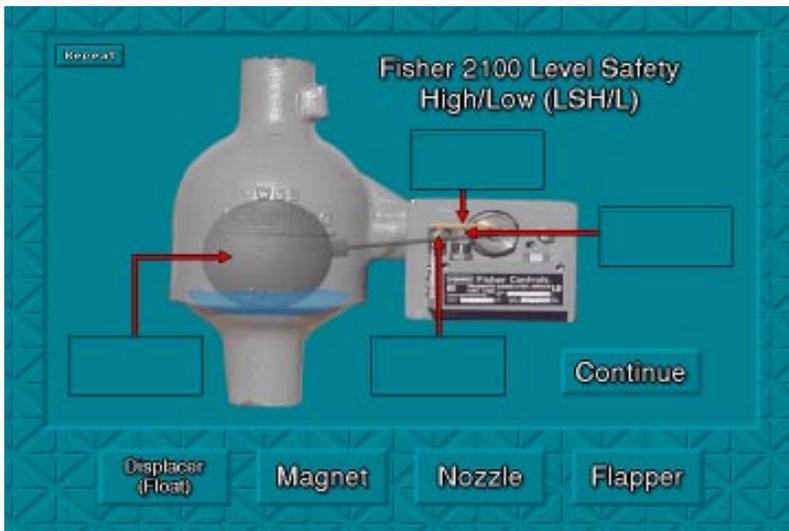
After a brief introduction during which the learner is acclimated to the PSST environment, the first module uses video, frequent (an average of every 3 minutes) reviews, and "mini-simulations" to familiarize the learner with test equipment procedures that are eventually used in the full-blown freeplay simulations later in the course. Unit 2, "Maintenance, Installation, and Repair of Safety Devices" introduces the learner to each type of safety device commonly employed on offshore platforms. This includes Subsurface Safety Valves, Surface-Controlled Subsurface Safety Valves, Subsurface Controlled Safety Valves, the Control Relay Block-and-Bleed Manual, Pressure Safety High/Low, Level Safety High/Low, Pressure Safety Valves, Burner Safety Low, Flow Safety Valves, and Temperature Safety High. Some of the segments require the student to test, perform field adjustments, or completely rebuild the device. Testing and operation of Smoke, Thermal, Ultraviolet and Gas Detectors is covered in a separate module. The units that follow cover



*In Maintenance, Installation, and Repair of Safety Devices, students test and repair platform safety systems in a depth not practical by conventional methods.*



*Three dimensional animations bring students nose-to-nose with critical platform devices.*



*Computer manipulation renders this real LSH/L transparent to accelerate and enhance student comprehension.*

each device in greater detail using a full platform simulator that gradually becomes more and more complete.

Finally, it all comes together in the unit entitled “Well Control Panel II” in which the student performs a complete platform Emergency Shutdown Down (ESD) timing test. Reality level in these situations is extremely accurate, visually as well as sonically. Incorrect procedures result in a number of humorous and not-so-humorous reactions. If the operator does not inform the pipeline company, he or she gets a call from them loudly complaining about dropping pressures and the failure to inform them about the test. If the operator forgets to pin out the fuel supply CRBBM (which keep the platform’s generators running), he or she eventually sees a long shot of lights going out all over the platform, then video of the narrator standing on deck lighting himself with a flashlight and informing the learner of the error, and the fact that the platform is shut in and outside aid will be necessary to get it going again. The narrator sums up by suggesting “things really couldn’t get much worse.” Then you hear the air starters for the fire pumps and see

water raining down on the narrator. He less than politely suggests perhaps you should try the simulation again.

## The MMS Certification Test

After completing all modules, the Training Administrator inserts the CD-ROM containing the 574 questions used to generate the Certification Test. Each test is unique. Test security is maintained through the requirement for a password to access the disc. After insertion, the drive is locked and the disc may be removed only through use of the password. Each TA has a unique password, and the system maintains a record of password usage to further enhance system security. Plan & Identification screens, component and device identification, matching, multiple choice, and true-false questions are evenly distributed to break up test monotony. Students may elect to have questions read aloud, thus



*The reward: The coveted T-shirt, and three more years of certification.*

providing an even playing field for those with reading or perceptual difficulties. Students may skip questions, which are then re-queued for answering at the end of test.

Tests are graded immediately, and students are informed of their status. Students failing to pass are provided with a list of questions missed so they may determine precisely which areas they need to review.

## The verdict

Operators taking the training said “If you go to sleep, it just sits there and waits till you get back on the job. Individual participation is required-I like it.”

Another commented “This is intense. You’re doing exactly the

time to time from the rooms, but eventually there are shouts of joy and triumph as one-by-one they complete the simulation successfully.

Of the first 16 students certified, 14 said there was no contest between PSST and conventional classroom instruction. Two felt that first time students might benefit from instructor-led instruction. All 16 agreed: “We like it, and we like not training on our days off.”

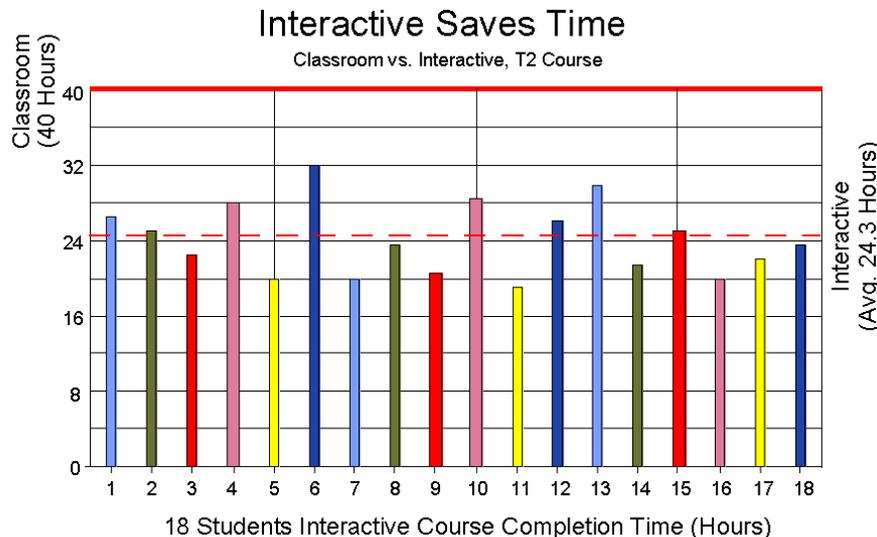
## Not just cheaper training, but better training

Production Safety Systems Training provides users with

Further, the clear and immediate results of dangerous errors have long-lasting impact on the learner. The reactive nature of the system means that those who already know much of the material are not forced to sit through unnecessary, redundant lecture. Employees are delighted to not have to use days off to sit through a class. Another benefit one hopes never to have to use, but potentially important nonetheless, is the ability to roll the system into a hearing or courtroom to demonstrate the depth, detail, and comprehensive of an individuals training.

## Interactive Saves Time

The chart “Interactive Saves Time” (left) shows just how much time can be saved through interactive multimedia based training over conventional methods. 18 students who had never trained by this method were tracked at Vastar Resources Venice, LA shorebase. For the entire group, training time was reduced by 40%. Perhaps the most important thing to note, however, is the wide range of individual completion times. Individuals learn at different rates, and the optimum rate for an individual insures better learning and longer retention. Interactive multimedia provides the first truly equal opportunity learning methodology. For all students taking the course since its debut, the record time to completion is 12 hours—a reduction in time for that student of 70%.



same thing as if you were on a platform. In class, you’re doing one thing at a time.”

Yet another said “They teach the test at the schools. Here you learn the systems.”

Are they this enthused all the time? In a word, no. Mastering “Well Control Panel II” is no picnic. 38 steps must be completed in order and according to careful timing and observation. Language that would bend a driller’s ears is heard from

a new training tool to reduce costs, decrease learning time, and enhance employee skills and safety awareness. Training and testing may be done anywhere, any time, and on demand. Pre and Posttest results demonstrate the effectiveness of the system, with experienced personnel often showing 40 percent or greater improvement in essential knowledge and skills. This immediate feedback builds confidence in both the training system and on the job.

## The Internet

With the PC version due for completion and deployment to 6 major oil companies in January, 1997, InSysTech is now looking to the next logical step: Internet distribution. Working with

consultants from Asymetrix Corporation, makers of the language in which the PC version of PSST is written, and Internet America, one of the nation's largest and most innovative Internet service providers, InSysTech Interactive Multimedia has designed a comprehensive solution that provides the basis for the training needs of the 21st century.

InSysTech has proposed to the Minerals Management Service a nationwide service that could bring all certification training into a single network. Through a password system, oil operating companies would be identified by name, account, and location on logon and charged electronically for each certification. Required reports would be forwarded to MMS Washington headquarters electronically. Students could access a 24 hour help desk manned by analysts using software that will allow them to observe what the student is doing,

and even take control of the remote machine if necessary.

This advanced system promises savings to both the taxpayers and the operating companies of very large sums of money, as well as providing the infrastructure for even greater savings through "cooperation." New modules and training programs developed by InSysTech and the operating companies could be placed on the system, allowing access by all. These programs may be written in any of the major development languages, such as IconAuthor, Authorware, Multimedia Toolbook, or Quest. When accessed by a company not involved in the production, a royalty payment will be assessed for the producer. In this way, companies will be able to share the costs of training development while improving their training quality and efficiency.

## The most important educational advance since the printing press

InSysTech believes that the Internet holds the key to America's continued global dominance in business and industry. In the 21st century, worker productivity will be the key to competition as products become more and more standardized worldwide. InSysTech also looks to the day when every child in America can access a truly equal opportunity education through this technology. Today's classrooms, whether in the public schools or in industry, look only slightly different from the rows of students sitting at desks seen on the ancient temple walls and tombs of Egypt. Working together, we can create a completely new paradigm for education and training that will bring about a better life for all.

*Our clients have included:*

*ARCO  
Dallas Area Rapid Transit  
DFW International Airport  
Kerr-McGee  
National Univ. of Singapore  
Pennzoil  
Satellite Management Int'l  
University of North Texas  
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*InSysTech Interactive Multimedia is a certified woman-owned business by the North Central Texas Regional Accreditation Agency*



Logon



Production Safety Systems Training Menu



Maintenance and Repair of Safety Systems training.



Components training



Emergency Shutdown simulation



Final test