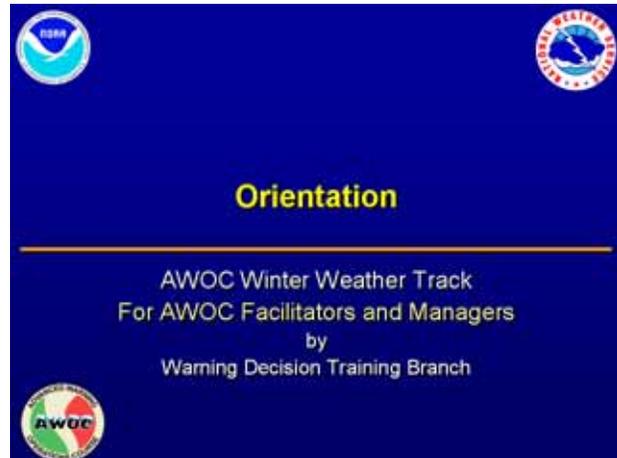

1. Orientation

Instructor Notes: This instructional component is designed to introduce you to the AWOC Winter Weather Track. My name is Brad Grant, Meteorologist Instructor for the Warning Decision Training Branch in Norman, Oklahoma and for the next 30 minutes or so, we're going to be showing you a brand new training course on winter weather that we're really excited about. This is the first comprehensive winter weather warning course for NOAA's NWS.

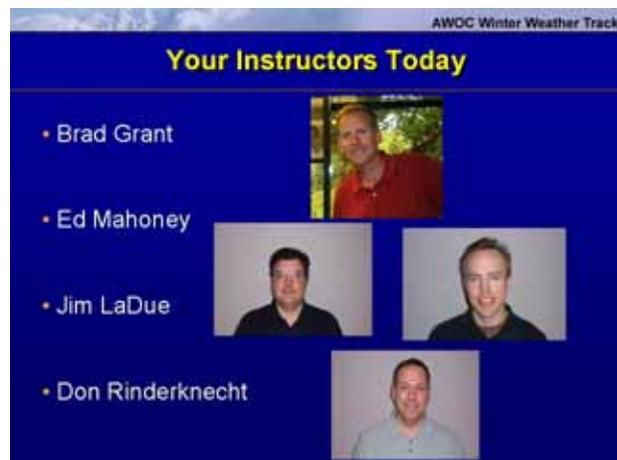
Student Notes:



2. Your Instructors Today

Instructor Notes: We will be delivering the session today live and in person.

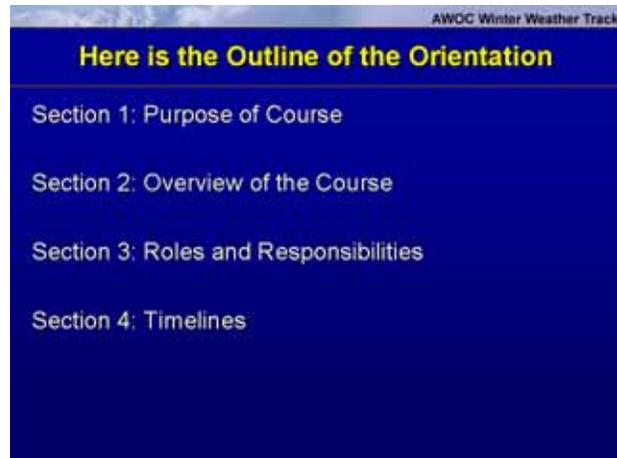
Student Notes:



3. Here is the Outline of the Orientation

Instructor Notes: Section 1 describes the goals of the course such as GPRA goals. Section 2 details the structure of the course, such as ICs and objectives. Section 3 describes the roles of the training transfer management team and Section 4 briefly describes the course delivery schedule. Stick around because we're going to need some information from you before you leave on printed materials.

Student Notes:



4. Section 1: Purpose of the Course Why a Winter Weather Track?

Instructor Notes: Recent statistics in 2004 on adverse weather impacts on transportation by the Federal Highway Administration (FHWA) indicate that: Winter weather dramatically impacts roadway safety Each year 18% of fatal crashes and 22% of injury crashes occur due to combination of adverse weather (rain, snow, sleet, hail, or fog) and poor pavement conditions. 74% of nation's roads are located in snowy locations (and 70% of pop) Reported economic losses of \$42 billion from adverse weather from travel delays: 23% (\$10 B) due to fog, snow, and ice, additional road operating costs, and maintenance costs Nearly 39% of road operating costs can be attributed to winter maintenance annually. Each year, state and local agencies spend over 2.3 billion dollars on snow and ice control operations and an est. \$5 billion to repair roadway infrastructure (Paul Pisano, Lynette Goodwin, and Andrew Stern, 2004: Surface Transportation Safety and Operations: The Impact of Winter within the Context of Climate Change) The image at the right is of Red Cross workers searching for victims buried in cars following heavy snowfall. The picture shows the roof of a car. Location: Buffalo, New York Photo Date: February, 1977 Photographer: American Red Cross

Student Notes:

AWOC Winter Weather Track

Section 1: Purpose of the Course Why a Winter Weather Track?

- Winter Weather Impacts on Transportation
 - Nearly 74% of nation's roads are located in snowy regions
 - 7000 deaths/year
 - 1.4 million crashes
 - \$10 billion economic losses

Source: Federal Highway Administration (FHWA) 2004

Buffalo, New York, 1977, Photographer: American Red Cross



5. Section 1: Why a Winter Weather Track?

Instructor Notes: The picture shown was taken from the Jan. 26, 1967 snowstorm in Chicago, IL. Picture taken from the Dept. of Streets and Sanitation.

Student Notes:

AWOC Winter Weather Track

Section 1: Why a Winter Weather Track?

- Winter Weather Impacts on Transportation (cont.)
 - Freeway speed and traffic volume reduced by 16-30% (ISU study)
 - 23% of travel time delays
 - Increased operating and maintenance costs (nearly 39% of road operating costs can be attributed to winter maintenance annually)

Chicago, IL, Jan. 26, 1967, Photographer: Dept. of Streets and Sanitation



6. Section 1: Why a Winter Weather Track?

Instructor Notes: Adverse winter weather impacts sectors of the economy in many ways, most notably with increased gas and electric consumption and inflated costs to heat businesses and homes. Over \$3 trillion of the nation's annual economy is now directly affected by weather events (Freedman, 2003). With the change of the energy industry to a "no storage" model, energy availability is always "on the edge" and flirting with crisis in consumption and availability. Costs associated with snow removal industry are tied mostly to amounts and duration, which are linked to people hours. Also, property losses from winter storms can be significant, esp. with big snowstorms (March 2003, Denver Colorado \$93 M) or ice storms (98 NE/Canada Ice Storm, \$1.4 B USD, \$3 B in Canada). When businesses close due to adverse weather, the local economies are

affected. Insurance losses associated with one major winter storm can cost up to \$6 billion (Kunkel et al, 99).

Student Notes:

AWOC Winter Weather Track

Section 1: Why a Winter Weather Track?

- Impacts on Public
 - No energy reserves
 - Heating costs
 - Snow-removal costs
 - Closures
 - Insurance losses



The slide features three photographs illustrating winter weather impacts. The top right photo shows a bus and a car stuck in deep snow on a street. The bottom left photo shows a snow-covered street with a car. The bottom right photo shows a snow-covered street with a yellow snowplow clearing the road.

7. Rapidly Escalating Societal Demands

Instructor Notes:

Student Notes:

AWOC Winter Weather Track

Rapidly Escalating Societal Demands

- Energy Industry has changed in just the past 10 years
- Has evolved to a "No Storage" model



The diagram illustrates a domino effect with four dominoes falling. The first domino is labeled '1 Demand Forecast' and the fourth is labeled '4 Demand Forecast'. The diagram includes text boxes and arrows indicating the flow of information and the resulting impact on the energy industry.

8. Rapidly Escalating Societal Demands

Instructor Notes:

Student Notes:



9. Section 1: Why a Winter Weather Track?

Instructor Notes: Winter weather affects our children, and slick roads can cause devastating accidents. All schools have a specific plan of action to mitigate winter weather impacts. Most schools do not close during the day b/c there is no one home to pick them up. Schools make their decisions on when to close usually 1-2 hours before buses are scheduled to leave which, in many districts is around 6 A.M. local time. School superintendents meet with local transportation officials and make a decision using direct observations, the current weather forecasts (from TV and internet), and what other districts are doing. There are other variables to the decision making process when events occur that are “unexpected” (such as a “rush-hour” storm).

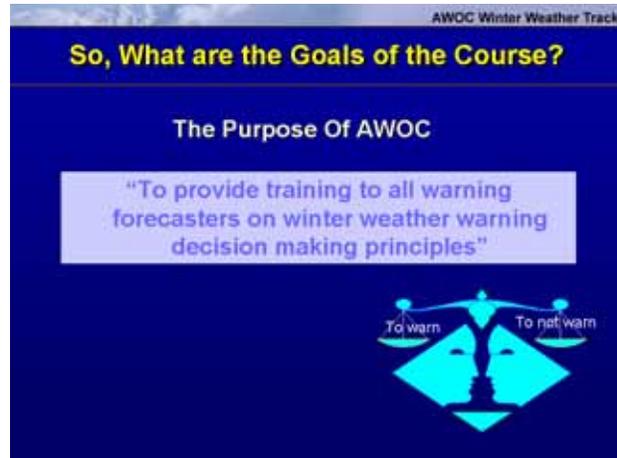
Student Notes:



10. So, What are the Goals of the Course?

Instructor Notes: Training is composed of science , tech, and human factors associated with winter weather warning decision making.

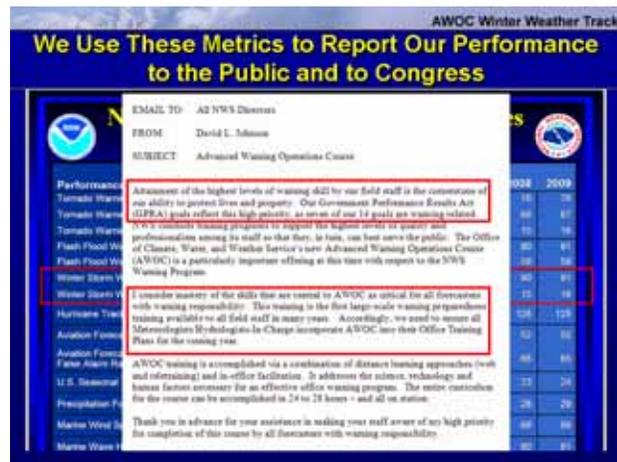
Student Notes:



11. We Use These Metrics to Report Our Performance to the Public and to Congress

Instructor Notes: The 2006 GPRA goals for winter wx are POD= 90%, and 15% lead times. These are conservative measures, according to Dr. U, and do not reflect our stretch goals, or what the public expects. Mention the user expectations are increasing with each event. The memo from DL last year for AWOC was significant and sent an important message : “this training is directly tied to skills necessary to perform our mission.” No memo for AWWT (yet), but MICs and SOOs in the audience should receive the message from us that we think this training is just as critical as old AWOC.

Student Notes:



12. Section 1: Purpose of Course (cont.)

Instructor Notes: Since winter wx impacts transportation goals, we need to consider the components of surface wx (onset of precip) to the course goals. Radar product showing lack of detection of significant Freezing drizzle.

Student Notes:

AWOC Winter Weather Track

Section 1: Purpose of Course (cont.)

- The training is also directly related to NOAA Commerce and Transportation Goals
 - Surface Weather Program
 - Accuracy of onset of event (frozen and freezing precip)
 - 0-6 hrs period: 85%
 - Aviation Program

	2005	2006	2007	2008	2009		
Aviation Forecasts (Ceiling & Visibility) - Accuracy (%)	43	46	48	49	50	52	55
Aviation Forecasts - (Ceiling & Visibility)	54	72	55	65	67	66	65
False Alarm Rate (%)							



13. Section 2 : Overview of the AWWT

Instructor Notes: This is what we are going to talk about in section 2. A bit about how we got here: Needs and Priorities were determined from Winter Program Team. The WDTB then assessed priorities from the field to help determine what training topics should be addressed the course.

Student Notes:

AWOC Winter Weather Track

Section 2 : Overview of the AWWT

- Collaborative Development Process
- What's in the Course?

14. Partnerships

Instructor Notes: 17 SMEs were at our workshop in Norman in July 2005. We eventually enlisted 25 collaborators for direct content development. IF you count the number of reviewers, the number in our winter team is about 35. Mention this was a new way of doing business. Jury is still out on how effective this can be. It shows tremendous promise, if managed effectively and stakeholders (with accountability) are defined along the way.

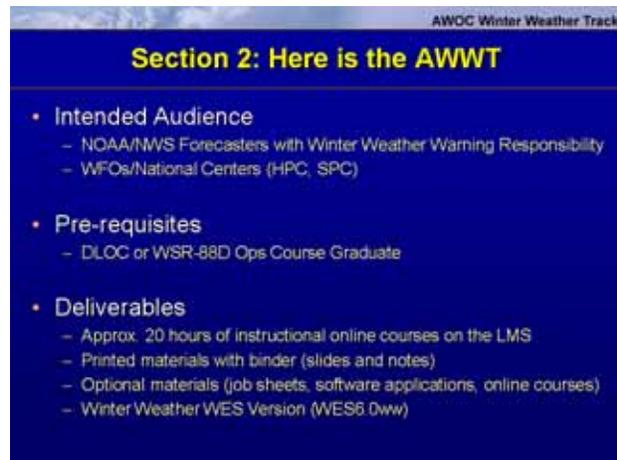
Student Notes:



15. Section 2: Here is the AWWT

Instructor Notes:

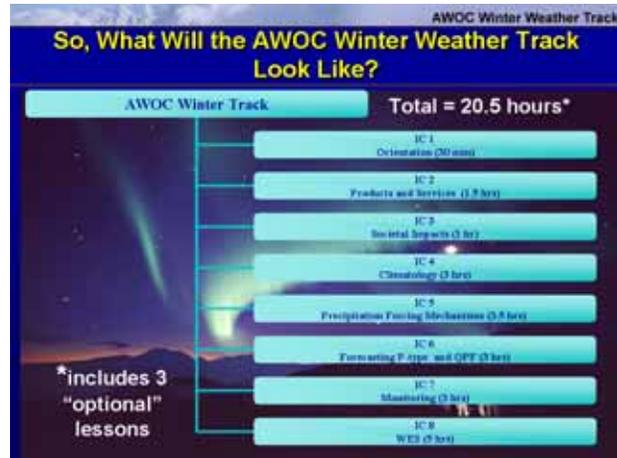
Student Notes:



16. So, What Will the AWOC Winter Weather Track Look Like?

Instructor Notes: This begins Section 2 of the Orientation. This is how the course breaks down into individual instructional components. Or 25 Subject Matter Experts in Winter Weather have collaborated with WDTB in developing these ICs. It amounts to about 20 hours of instruction. That includes all 31 lessons. There are 3 lessons that are optional (topo forcing, using CPC products, and LES). That reduces the length of instruction to 19 hours.

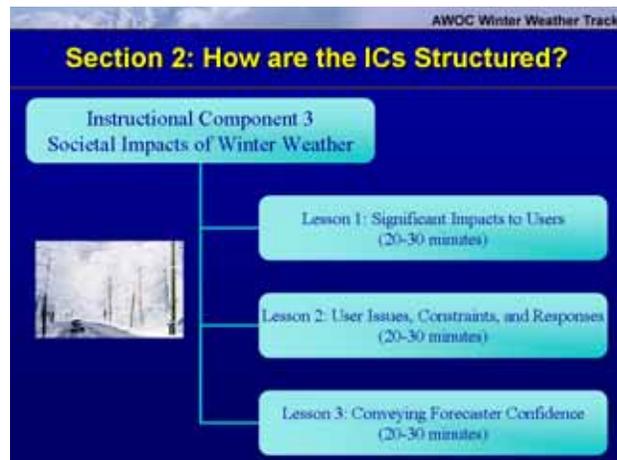
Student Notes:



17. Section 2: How are the ICs Structured?

Instructor Notes: There are multiple lessons within each IC. After completing each lesson, the student will need to take an exam in the LMS that addresses the learning objectives of the course.

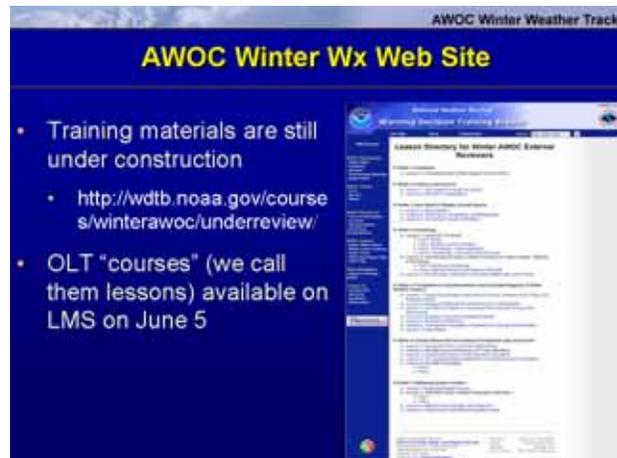
Student Notes:



18. AWOC Winter Wx Web Site

Instructor Notes: Good opportunity to show outline of course on the web site.

Student Notes:



AWOC Winter Weather Track

AWOC Winter Wx Web Site

- Training materials are still under construction
 - <http://wdtb.noaa.gov/courses/winterawoc/underreview/>
- OLT "courses" (we call them lessons) available on LMS on June 5

19. What are Learning Objectives?

Instructor Notes: Learning objectives are defined and described in the ICs for each lesson.

Student Notes:



AWOC Winter Weather Track

What are Learning Objectives?

- Learning objectives are defined for each Instructional Component (IC).
- Learning objectives describe what learners should be able to do at the end of each lesson (and are testable via the OLT final tests in the LMS).

"Identify the key elements of the top-down approach to predict precipitation type and amounts in the watch and warning phases."

20. What are Performance Objectives?

Instructor Notes: IC performance objectives are similar to the learning objectives and are defined for each lesson. Many of performance objectives will be included in IC 8, the Weather Event Simulator (WES) instructional case for the course. Facilitators should evaluate how well students can master specific performance objectives for each IC. After the entire course has been completed, students will be evaluated on the extent of training transfer of the performance objectives, to help determine behavioral changes. This is part of the level 3 training evaluation process.

Student Notes:

AWOC Winter Weather Track

What are Performance Objectives?

- Performance objectives are defined for each IC.
- Performance objectives provide precise, measurable statements of the behaviors that course participants will be able to demonstrate on the job.

"For a given event, be able to disseminate pertinent products and event information to the user community in a timely fashion and update that information at appropriate intervals."

21. Learning Activities for Each IC?

Instructor Notes: Articulates are a way you can play a Powerpoint presentation and hear the author deliver the speaker notes. Note you can start and stop the Articulates (it remembers where you left off).

Student Notes:

AWOC Winter Weather Track

Learning Activities for Each IC?

Articulate Presentations + WES Application

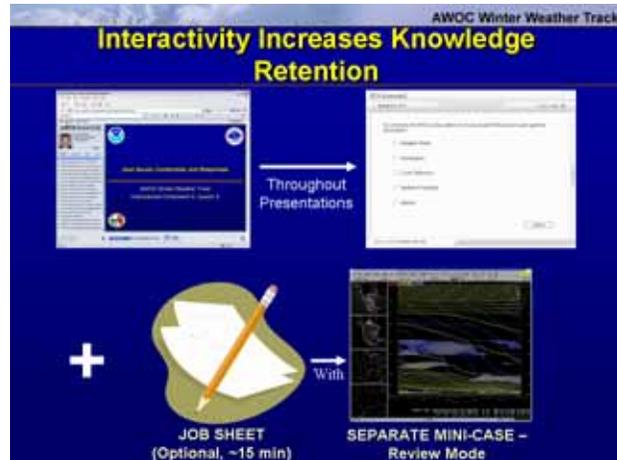
Increased Interactivity

Two 2.5 hr Simulations

22. Interactivity Increases Knowledge Retention

Instructor Notes: Most articulate presentations will contain increased interactivity with quiz questions, and some modules will have short 15 min optional job sheets along with mini-case data that are separate from the primary Simulation case.

Student Notes:



23. What are Job Sheets?

Instructor Notes: The job sheets will take 10-15 minutes to run through and we'll look at an example on the next slide. We are producing job sheets for the ICs that lend themselves to such a tool, specifically, those ICs that examine AWIPS case data in the warning process. You will not need to run the WES in simulator mode. Since these will be for case review mode, all that will be required is setting the clock to the desired event time. We plan on having just one model run, a few satellite images, surface obs, and perhaps radar imagery for one event. Thus, case size will be small, and even more importantly, many lesson job sheets can be applied to the same event. So the number of cases will be fewer than the number of job sheets. The goal is to have the job sheet case data loaded on your WES machines by the time the WAWOC training modules are released (June 1). We will have answer sheets available online.

Student Notes:

The slide, titled "What are Job Sheets?", provides details about the application. It lists the following points:

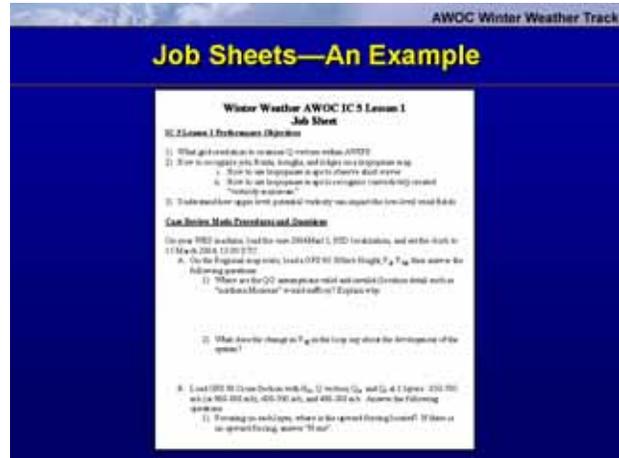
- Application with 10 mini-cases on WES
– Case Study Mode
- One job sheet per lesson (IC 5-7)
- Several job sheets can be applied to each case
- Jobs sheets and case data shipped by June 1

The slide includes a notepad and pencil icon and a screenshot of a computer monitor displaying a weather interface.

24. Job Sheets—An Example

Instructor Notes: This is an example of one of the job sheets for WWAWOC.

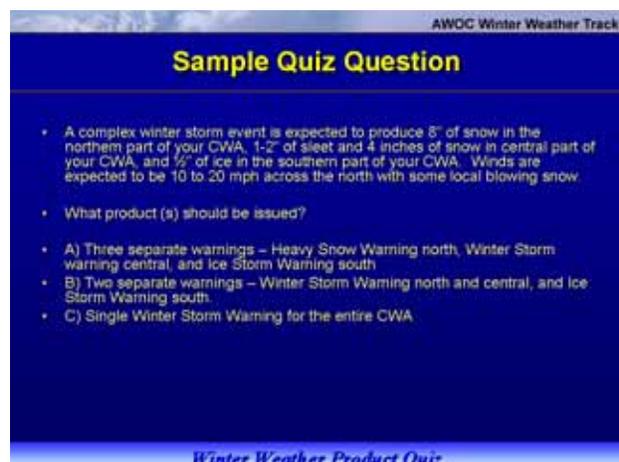
Student Notes:



25. Sample Quiz Question

Instructor Notes: Based on field input, several scenarios are presented in IC 2 lesson 1 to help you decide what winter weather products to issue. A complex winter storm event is expected to produce 8" of snow in the northern part of your CWA, 1-2" of sleet and 4 inches of snow in central part of your CWA, and ½" of ice in the southern part of your CWA. Winds are expected to be 10 to 20 mph across the north with some local blowing snow. What product (s) should be issued? A) Three separate warnings – Heavy Snow Warning north, Winter Storm warning central, and Ice Storm Warning south B) Two separate warnings – Winter Storm Warning north and central, and Ice Storm Warning south. C) Single Winter Storm Warning for the entire CWA Answer: A Wind speed and visibility criteria don't meet WSW criteria across north

Student Notes:



26. Simulation Case

Instructor Notes: The WES case will be delivered with multiple DVDs by June 1. The version will include support for GFE/GHG for issuing warnings. We will have multiple simulation examples complete with performance objectives and evaluation criteria for both Louisville (LMK) and Indianapolis (IND) CWAs. As with the previous AWOC Course, feel free to select your own local cases for a winter weather simulation. New with this simulation, we will have GFE and SREF imagery. As always, WESSL will play a role in the simulation. We will examine the storm total precip from this event on the next slide.

Student Notes:

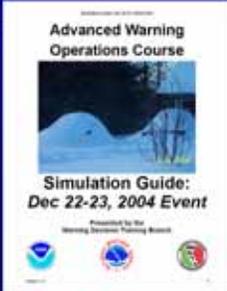


AWOC Winter Weather Track

Simulation Case

- 22-23 Dec. 2004 heavy snow (IND) and snow/sleet/ice (LMK)
 - SREF, WESSL
- Can use your own local case
- Utilize GFE*

* Special Spring WES release



Advanced Warning Operations Course
Simulation Guide:
Dec 22-23, 2004 Event
Presented by the
Warning Decision Training Branch

27. How Difficult are the Lessons?

Instructor Notes: A stands for Advanced. Some education and instruction may be review for some, but new for others.

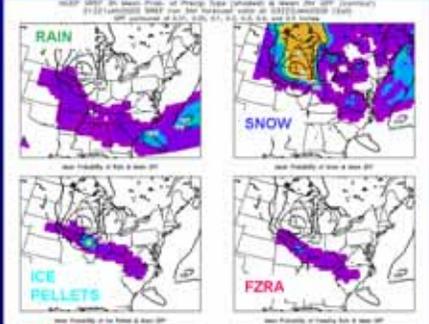
Student Notes:



AWOC Winter Weather Track

How Difficult are the Lessons?

- Advanced Warning Operations Course



RAIN
SNOW
ICE PELLETS
FZRA

28. Transfer of Training into Performance Requires Management Support

Instructor Notes: When training organizations spend the bulk of their efforts on design and delivery (content), studies (such as Stolovitch, 2000) show transfer rates at only 10-15%. But, when you get management actively involved in the transfer process, the transfer rates go up to 95%, in many instances.

Student Notes:



29. Who's Responsible for Performance Improvement? (Broad, 2005)

Instructor Notes: These factors have been determined from research by Broad and Newstrom, 1992 and Broad (2005). For effective performance, it requires much more than knowledge and skills. All six of the factors in the table shown here are necessary to support full performance. For a specific performance requirement: NWS Forecasters making accurate and timely warning decisions, there are 3 main stakeholder groups: 1. Instructors (Training designers and facilitators) 2. Students (learners/performers) 3. Managers (including executives and supervisors) The red circle shows which stakeholder group is responsible for making sure each factor is in place. To elaborate on the factors, which are adapted by Broad from Rummler and Brache (1995), individual capability is physical, mental, and emotional capacity, also experience. Necessary knowledge and skills is the training (that's where WDTB comes in) and the learning that is required to perform. Clear performance specifications are procedures, outputs, and standards. Necessary support is resources, priorities, responsibility, authority, and time. Clear consequences can be reinforcement, incentives, or rewards. Prompt feedback is how well performance matches expectations. Note that Managers are primarily responsible for 4 out of the 6 factors.

Student Notes:

AWOC Winter Weather Track

Who's Responsible for Performance Improvement? (Broad, 2005)

Top 6 Factors	Instructors	Students	Managers
Clear performance specifications	I	S	M
Necessary support	I	S	M
Clear consequences	I	S	M
Prompt feedback	I	S	M
Individual capability	I	S	M
Necessary skills and knowledge	I	S	M

30. New Research on Autonomous Learners

Instructor Notes: To address credibility : you get SMEs who are well-respected To address practicality: you get WDTB to help design the training so its easy to apply To address recognition: performers must realize their forecasting skills aren't perfect; need to constantly stay abreast of latest science and tech, and human factors to maintain high level of excellence.

Student Notes:

AWOC Winter Weather Track

New Research on Autonomous Learners

- 3 factors determine extent of transfer
 - Credibility of information (who is saying it)
 - Practicality (how easy to apply it)
 - Recognition (need to improve their own performance)

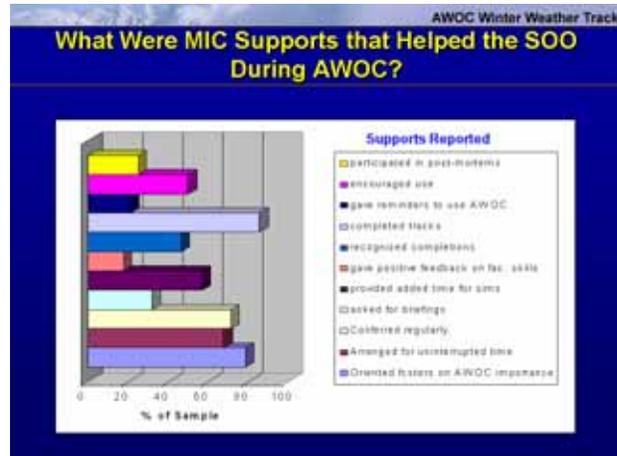
All 3 stakeholder groups play a role in supporting these factors!

Research conducted by Yelon, Sheppard, Sleight, and Ford (2004)

31. What Were MIC Supports that Helped the SOO During AWOC?

Instructor Notes: From approximately 30 SOOs , who were sampled after AWOC.

Student Notes:



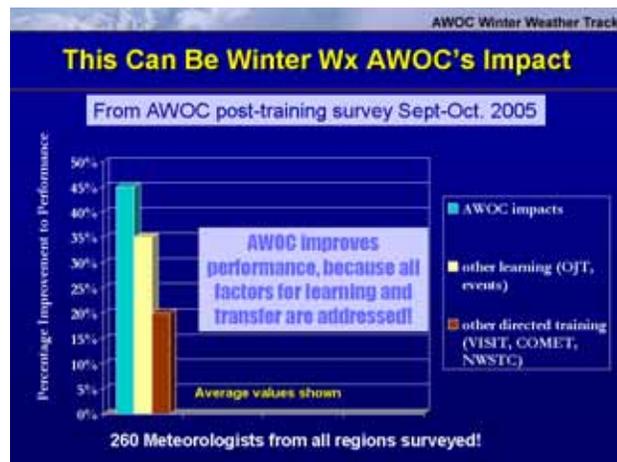
32. This Can Be Winter Wx AWOC's Impact

Instructor Notes: This survey results were from 260 NOAA NWS employees, including 30 MICs and 30 SOOs. The question on performance improvement was "Have there been other events or influences besides AWOC which have helped improve their performance since completing AWOC? Consider those listed below and insert others. Then in the next column, estimate the percentage of impact each item has had on improving their performance as a group. Performance impact percentages should add up to 100%."

Events or influences: Percentage of impact on improving forecaster performance: a. Completion of AWOCa. 45 b. Other learning event
 _____ b. 35 c. Other
 _____ c. 20 d. Other
 _____ d. _____ Total = 100% Note: I

lumped all the AWOC percentages (from SOOs, forecasters, and MICs) into one aggregate total percentage.

Student Notes:



33. What Can Facilitators Do to Help AWOC?

Instructor Notes: Facilitators should remember what worked best with the first AWOC. New ones may need extra training. Always keep the learners at the forefront and focus of the training – and make sure the training is performance based. Training can be a risky path unless we have some guidance.

Student Notes:

AWOC Winter Weather Track

What Can Facilitators Do to Help AWOC?

- Make the learning easier
 - Meet with each forecaster to determine needs/goals
 - Assign Winter AWOC learning paths
 - Set up a training completion schedule



34. SOO Transfer Strategies for AWOC

Instructor Notes:

Student Notes:

AWOC Winter Weather Track

SOO Transfer Strategies for AWOC

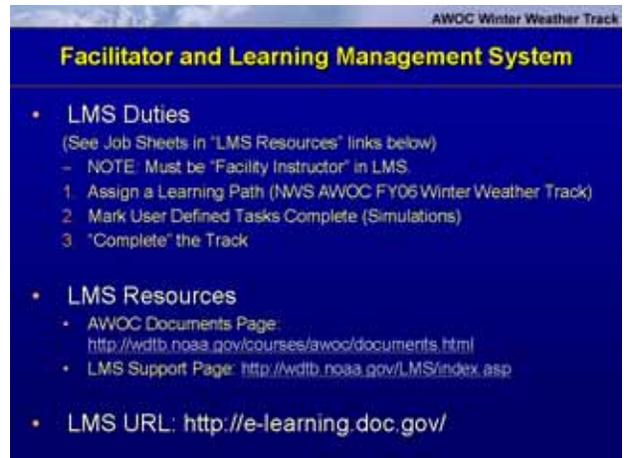
Stakeholder Group	Before Training	During Training	After Training
SOO	Provide advanced information about upcoming course – so they know it's coming. Get them excited about what they'll learn. Describe a scenario that they'll be better equipped to handle operationally, thanks to what they'll learn in the course.	Provide adequate time to complete course. Provide each forecaster with 1-2 WW AWOC training days (with management filling in on shift).	Reinforce course content in real-time as much as possible. Look for examples of how to directly apply course content to real world cases. Share this with the entire staff. Make a clear connection between course content and the improved forecast.

Example provided by Bruce Smith (WFO APX)

35. Facilitator and Learning Management System

Instructor Notes: Facilitators must perform certain duties in the LMS including: Assigning a Learning Path, Marking User Defined Tasks Complete, and Completing the AWOC Track. There are Job Sheets on these tasks on the WDTB Website. It is important to note that if you are facilitating the Winter Track, you need to be a Facility Instructor in the LMS. If you need help with this send a message to awochelp@wdtb.noaa.gov.

Student Notes:



AWOC Winter Weather Track

Facilitator and Learning Management System

- **LMS Duties**
(See Job Sheets in "LMS Resources" links below)
 - NOTE: Must be "Facility Instructor" in LMS
 - 1. Assign a Learning Path (NWS AWOC FY06 Winter Weather Track)
 - 2. Mark User Defined Tasks Complete (Simulations)
 - 3. "Complete" the Track
- **LMS Resources**
 - AWOC Documents Page: <http://wdtb.noaa.gov/courses/awoc/documents.html>
 - LMS Support Page: <http://wdtb.noaa.gov/LMS/index.asp>
- **LMS URL:** <http://e-learning.doc.gov/>

36. Course Completion Requirements

Instructor Notes:

Student Notes:



AWOC Winter Weather Track

Course Completion Requirements

- Prerequisites (DLOC or WSR-88D Ops)
- All 28 required lessons
 - Complete LMS OLT final tests
- 2 WES simulations
- Notify WDTB when completion certificate is awarded

37. Acknowledging Accomplishments

Instructor Notes: Facilitators send us the names of all your folks that have completed the course. And your bids. We'll make this the prize.

Student Notes:



38. Section 4: Timelines AWOC Winter Wx Delivery Schedule

Instructor Notes: Go over the dates. Not until June 5 will folks be able to complete modules, though you can sneak peak online modules in May.

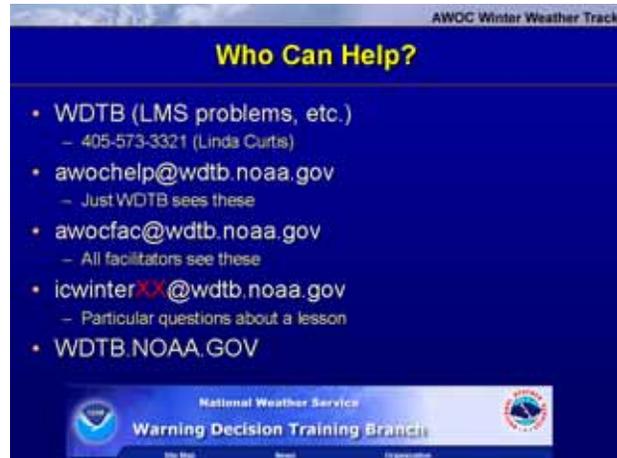
Student Notes:



39. Who Can Help?

Instructor Notes: We do provide a number of options to help alleviate potential problems in executing this course. Take advantage of these mechanisms to make the learning become easier and enjoy the course.

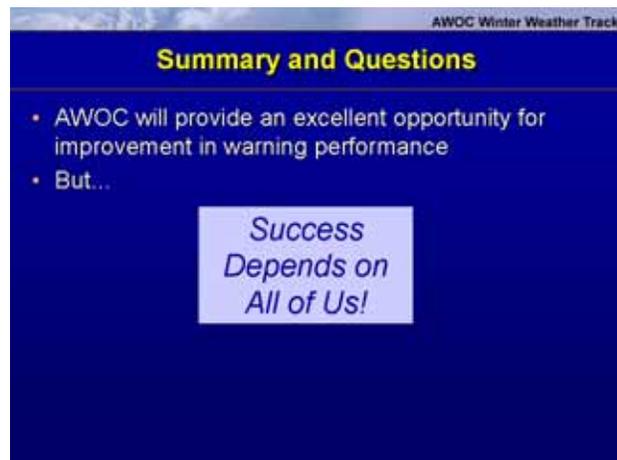
Student Notes:



40. Summary and Questions

Instructor Notes: We are committed to providing a rewarding learning experience for all participants in the AWOC Winter Wx Course. But, success in terms of how well it will be accepted and applied depends a lot on you. The developers of this course encourage all members of the management team to help provide support for learning and application of these very important learning concepts.

Student Notes:



41. How Many Handouts Do You Need?

Instructor Notes: We need your help in determining the names of the folks who will be taking this course. Please mail Linda with the names by May 31. Right now, give us an idea of how many binders you'll need. For a copy of this presentation, see the ftp address shown.

Warning Decision Training Branch

Student Notes:

AWOC Winter Weather Track

How Many Handouts Do You Need?

Slide 5
Snowfall County ABR: Tropical ZN
Midwest Snowfall Area

AWOC: 14 June 1999
Snowfall: 8:00 PM to 8:00 PM EDT

Notes:
Snowfall Area - Shows ABR using the tropical ZN methodology. Snowfall area overlaid on ABR in many instances.



- Estimated # of handouts?
- Email linda.j.curtis@noaa.gov by May 31 the names as you want them to appear on the Certificate
 - ftp://ftp.wdtb.noaa.gov/Pub/WDTB/AWOC_winter/orientation/ (for a copy of this presentation)

