



## WESTERN REGION TECHNICAL ATTACHMENT

NO. 87-40

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### SUMMARY OF NATIONAL TRAINING MEETING, SEPTEMBER 21-23, 1987

On September 21-23, 1987, a training meeting was held in Norman, Oklahoma. Representatives attended from all six regions, several WSH offices, the Training Center, the WSFO in Norman, and the National Severe Storms Laboratory. The Office of Meteorology chaired the meeting. The Western Region was represented by Glenn Rasch, who prepared this summary. A wide range of topics and problems related to training was discussed. Most are related in one way or another to plans for modernizing and restructuring the NWS.

#### **Met Tech Crossover**

San Jose State University Course - An evaluation of the San Jose State University met tech course was provided by Glenn Rasch. This 12-week summer course provided six-semester hours of dynamic and six-semester hours of synoptic meteorology to 18 NWS met techs working toward crossover to the field of meteorology. A strong recommendation was made for repeating the course during the summer of 1988, and it is very likely that will occur. The main findings of the report are as follows. 1) Quality of the instruction was outstanding, and instructors capitalized on the strong experience based backgrounds of students. 2) The math backgrounds of most students was weak and/or dated. The level and intensity of the math in the dynamics course was high, making this course difficult for many. Future students need good preparation in math and should be provided a pre-course tutorial. 3) Housing students together in the dormitory was a good idea, permitting group study and exchange of information. 4) NWS needs to provide better pre-course guidance to students on such matters as preparing travel orders, travel advance forms, and travel vouchers. 5) The staff at San Jose -- instructors, clerical, dormitory, cafeteria, teaching assistants -- did a commendable job in making this a valuable educational experience.

USDA Dynamics - Part one of this two-part revised correspondence course is nearing completion. Because NWS reviewers had many criticisms of the first draft revision, quality of this course is very uncertain.

Correspondence Courses for Crossover - The Training Committee voted against expending NWS funds for developing courses in synoptic and dynamic meteorology for meeting the basic OPM requirements in these subjects. That does not mean that existing or future correspondence courses available to NWS employees will not count toward crossover. However, it should send a clear signal to met techs. The committee believes that in-residence courses, in general, are superior to correspondence courses. In-residence opportunities, through San Jose State and the university scholarship program, are available.

Reimbursement Policy for Met Tech Crossover Courses - There is some variance between regions over what conversion courses are paid for by the NWS, scheduling adjustments made, duty time provided for classes, etc. For example, some regions pay course costs for calculus, some do not. A uniform draft policy was discussed, but none was adopted due to the number and complexity of factors involved and because of differences of opinions between regions.

### **Forecaster Development Program**

Forecaster Development Course (FDC) - Eleven remote training modules (RIMs) have thus far been developed by the NWS Training Center for interns to complete on-station. They are prerequisites to the in-residence portion of the FDC. As a result, in-residence training has been reduced in length from five to three weeks. The first of the shortened classes is being held this month.

Several more modules are in various stages of planning or development. Attachment 1 shows a complete list of RIMs as currently planned. Some modules will support other Training Center courses, as shown in the attachment, permitting the in-residence part of these courses to be reduced in length. Some of the RIMs will be taken by students after they complete the in-residency training. Currently, the RIMs are available only to interns. Eventually it is anticipated that they will be available to other employees, including met techs interested in conversion to meteorologist.

Satellite Training Module - Mike Young of OM, with help from several other people, has developed a series of multiple choice questions as a correspondence training module on satellite interpretation. It is based on the material contained in Forecasting Handbook NO. 6. At the meeting we discussed whether this course should be part of the FDC and how it would be administered. Consensus is that it should be a part of the FDC but taken by interns after the in-residence part of the course. Details on administering the course must still be worked out. It will be available late this fall to interns as well as other meteorologists.

### **Meteorologist Training**

Correspondence Courses - OM has temporarily enlisted the help of Professor Tom McKee of Colorado State University in trying to get correspondence courses developed to meet current and future training needs for meteorologists. Professor McKee plans to work with university met departments to make NWS needs known and initiate course development work. Needs were prioritized at the meeting as follows: 1) Thunderstorm Morphology (as in Kessler Volume II); 2) Numerical Weather Prediction; 3) Statistical Meteorology Applications. Many other needs for on-station training were expressed. The above three were only the highest priority out of many.

Interactive Video Disk - In keeping with the idea that most future meteorologist and hydrologist training will have to be accomplished on-station, the NWS is investigating interactive video disk (IVD) as a training vehicle. IVD can be used for developing training modules and for playing the modules back in an interactive mode. It can store up to 50,000 images in its data base. At the present time a company called TASC is developing a prototype training module on satellite interpretation (based on SWIS) to demonstrate the feasibility of this system.

Mesoscale Meteorology - Consensus among the group was that the best way to prepare for NEXRAD over the next 2-3 years is to provide training to forecasters in the concepts of mesoscale and stormscale meteorological systems. The basics of Doppler radar interpretation probably will be grasped fairly readily by forecasters if they understand the meteorology on these small scales. Dan Smith of Southern Region SSD presented a plan for accomplishing this training. Without going into details, it calls for providing reading material to forecasters on various mesoscale and stormscale meteorology topics. The Kessler Volume II book on thunderstorms was mentioned as one source of material. Information to be read and comprehended would be documented through the employee GWPAS plan and effectiveness of the training would also be measured through employee performance again using the GWPAS. It is basically the same approach that has been applied in the Forecaster Development Program. Committee members will be working on fleshing out a proposal on how to implement and administer such a program.

Hydrologic Services Course - Chuck Hoffeditz of OH presented a plan for updating the hydrologic services course. The plan is to have this course revamped in about one year. It would follow the current outline with perhaps one or two modules added.

#### **NEXRAD Training**

Precursor Modules - At the last meeting of this group in December 1986, we discussed the need for training forecasters prior to NEXRAD deployment in order to take best advantage of this new technology. A list of NEXRAD precursor training modules was compiled to meet that need. At the current meeting the list (Attachment 2) was reviewed and a status report provided by OM. A few modules have already been partially or wholly completed as a result of FDC module development. Some of these modules could be converted to or developed for IVD if that technology is deployed in the field. It is intended that all these modules would be taken by forecasters on-station.

Denver Doppler Training - Doppler radar and other detailed observational data sets were available through a modern PROFS work station at WSFO Denver this summer. Hal Bogin and Larry Dunn of Central Region reported on efforts to train forecasters in use of Doppler data at Denver in hopes that the NWS could gain from Denver's experience as we train for NEXRAD. The Denver training consisted of five phases:

- Phase I - limited assigned reading (four articles)
- Phase II - full day classroom lecture by a radar expert
- Phase III - four displaced real-time cases, including workbook, conducted on PROFS work station
- Phase IV - case study on work station led by an expert
- Phase V - one-on-one real-time training between forecaster and NCAR scientist (at NCAR).

In general the training was successful. Students said it could be improved by compressing the training from several months into one, providing more case studies, and doing all training (especially case studies) off shift.

Top Gun Concept - Due to staffing and resource limitations, it is expected that most training for NEXRAD and other new technology will have to be conducted locally. This training will require local expertise. Thus, the concept of the Top Gun was born. The idea is that each future NEXRAD site would have an evaluation/training meteorologist or Top Gun who will be a local expert on mesoscale meteorology and Doppler radar interpretation. The Top Gun (and perhaps one other forecaster from each NEXRAD site) would receive factory produced NEXRAD training and perhaps some yet undefined centralized training in mesoscale meteorology. The Top Gun would then administer and conduct local training of the staff. The Top Gun would also be the scientific conscience or chief scientist of the local NEXRAD site.

Hydrology - Mark Walton of OH presented an outline of hydrology plans for NEXRAD training. A significant part of what OH plans to develop duplicates material that already has been developed or is planned for development in the NEXRAD precursor modules. This underscores the need for strong hydro participation in the planning process for training as was the case at this meeting.

#### **A Final Note**

Forecaster training is receiving quite a bit of concern and attention as evidenced by this and earlier meetings, by appointment of a full time training focal point in OM, and by other training development activity. These are encouraging signs. Modern technology promises many challenges and opportunities for forecast improvement. Adequate training will be essential in fully exploiting the new technology.

Attachment 1.

MODULE CROSS UTILIZATION

Module	Course:	FDC	RADAR	WSO	FLASH FLOOD	MEDIA
Completed Modules						
Intro to the NWS		X		X		P
NWS Directives System		X		X		P
Intro: Aviation Terminal Forecasting		X		X		P
The Skew T, Log P Diagram		X	X	X	X	P
Training Guide-AFOS Operators-Unit I		X		X		P-F
Hurricanes		X	X	X		*P
Mathematics for Radar Meteorology			X			P
Radar Principles		X	X	X	X	*P
Radar Wave Propagation		X	X	X	X	*P
Radar Reflectivity		X	X	X	X	*P
Weather Radar Systems		X	X	X		*P
.....						
Modules in Development						
Doppler Radar		X	X		X	@P
Transcribed Weather Broadcasts		X		X		
AFOS Operations II		X		X		P-F
Convection and Thunderstorms		X	X	X	X	*P
.....						
Planned Modules						
Winter Storms		X		X	X	P
Aviation Weather		X		X		P
Disaster Preparedness		X		X		P
Public Forecasts		X		X		P
.....						
Potential Modules						
Advanced Doppler Radar		X	X		X	*P

LEGEND: P - Print  
 F - Floppy Disk  
 \* - Potential for Video Tape  
 @ - Completed Video Tape

All video tape (completed and potential) are candidates for IVD.

Attachment 2.

NEXRAD PRECURSOR MODULES

1. OVERVIEW - COORDINATED BY OM
2. RADAR PRINCIPLES (CONVENTIONAL) - DONE - PREPARED BY TC
3. DOPPLER PRINCIPLES - DONE - INCLUDING VIDEOTAPES - PREPARED BY TC
4. PRECIPITATION ESTIMATION TECHNIQUES - COORDINATED BY OM AND OH
5. INTRODUCTION TO CONVECTION - BASED PARTLY ON NWSFC SKEW-T MODULE  
COORDINATED BY OM
6. ORGANIZED CONVECTION - MOLLER AND DOSWELL
7. SUPERCELLS - MOLLER AND DOSWELL
8. WSR-88D - SEVERE STORM SIGNATURE - COORDINATED BY OM

OTHER SUBJECTS SUCH AS WINTER STORMS AND OTHER MESOSCALE FEATURES WILL BE  
PLANNED LATER.