

**Updated February 9, 2022**

**Monitoring Checklist  
S-290 Intermediate Wildland Fire Behavior**

To ensure that sufficient wildland fire training opportunities are available for private sector contractors who participate in the Pacific Northwest crew and engine/tender contracts, and that this training meets or exceeds National Wildfire Coordination Group (NWCG) standards, the Pacific Northwest Wildfire Coordination Group (PNWCG) has entered into memorandums of understanding (MOUs) with representatives of two groups of training providers. The groups are firefighting contractor associations (FCA) and public training providers (PTP).

The United States Forest Service (USFS) MOU Representative and staff administer the FCA MOUs for PNWCG and monitor FCA courses and instructors.

The Interagency Zone Training Committee (IZTC) representatives perform PTP MOU administration for PNWCG and monitor PTP courses and instructors in their respective geographic zones of responsibility. The IZTC may also be asked to have representatives monitor FCA courses by the MOU-Rep when needed.

This checklist outlines the key facilities, course concepts and teaching elements that course monitors should be observing and documenting.

Course monitors will introduce themselves to the lead instructor and explain that they are evaluating the course per the Memorandum of Understanding (MOU). Course monitoring checklists (see APPENDIX A) for each NWCG course being monitored will be provided to the IZTC member agency representative monitors in advance of assignments. The checklists will serve as both a form for evaluating the course instruction and a report to be sent to the IZTC. Course checklists may be completed through course monitoring and by examination of the written agenda, lesson plan, test(s), student evaluations or other documents presented by the instructor. Upon completion of the course monitoring/evaluation, monitor will scan and email the completed monitoring documentation to the R-6 Fire Contract Operations inbox [SM.FS.fact@usda.gov](mailto:SM.FS.fact@usda.gov) (within 2-3 working days of monitoring course delivery). The R-6 Fire Contract Operations Specialist will then forward monitoring documentation to the (FCA) or (PTP) the training provider is affiliated with; within ten (10) working days of training delivery.

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NOTE: Serious deficiencies include: omitting required course modules, substitution of training material that results in dropping portions of required course material, course instruction time varying greatly from recommendations listed in the NWCG Standards for Course Delivery (PMS 901-1), required oral and written testing not done or done with open book, or other deficiencies that limit the ability of students to learn the course objectives.

**Name of Monitor** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address** \_\_\_\_\_ **Unit/Agency** \_\_\_\_\_

**Course Location** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Lead Instructor** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address** \_\_\_\_\_ **Certifying Association** \_\_\_\_\_

**Unit Instructor** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address** \_\_\_\_\_ **Certifying Association** \_\_\_\_\_

**Unit Instructor** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address** \_\_\_\_\_ **Certifying Association** \_\_\_\_\_

**Interpreter** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address** \_\_\_\_\_ **Certifying Association** \_\_\_\_\_

**S-290 Course Administration**

<b>Language Requirements</b>		
	<b>Y</b>	<b>N</b>
Non-English Speaking Students Present?		
Instructor able to Converse Fluently in Language of Non-English Speaking Students?		
If Instructor was Non-Fluent in Specific Language, was a Fluent Translator Present?		
Translator's Name:		
<b>Comments/Suggestions:</b>		

<b>Student Materials</b>		
<i>Were the following materials utilized in course delivery?</i>	<b>Y</b>	<b>N</b>
NWCG November 2007 course materials?		
NFES 2891 S-290 Student Workbook (one per student)		
Student Pre-course Work		
NFES 2893 Student CD-ROM (one per student)		
NFES 2894 FLAME Field Guide (Optional; one per instructor and one per student if used)		
NFES 1077 Incident Response Pocket Guide (PMS 461) (one per student)		
Language Specific Course Materials Provided for Non-English Speaking Students?		
<b>Comments/Suggestions:</b>		

<b>Audiovisuals</b>		
<i>Audiovisual aids used for course delivery:</i>	<b>Y</b>	<b>N</b>
NFES 2890 Instructor Guide		
NFES 2892 Course Materials CD-ROM		
A computer with projector (LCD), external speakers, projection screen, and PowerPoint software for electronic presentations.		
A white board with markers.		
Flip chart with extra pads and markers.		
Tables, chairs, pens, and pencils should be supplied for the students.		
<b>Comments/Suggestions:</b>		

<b>Teaching Facility</b>		
<b><i>Did the Teaching Facility Provide for Adequate?</i></b>	<b>Y</b>	<b>N</b>
Space?		
Lighting?		
Seating?		
Ventilation?		
<b>Comments/Suggestions:</b>		

<b>Course Administration</b>		
	<b>Y</b>	<b>N</b>
Was Daily Attendance Documented with the use of Sign in Sheets?		
Was a Course Agenda Provided?		
Was A Final Test Administered?		
<b>Comments/Suggestions:</b>		

**S-290 Course Objectives Covered**

<b>Unit 0 – Course Introduction</b>		
<b>(1 Hour) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following?</i></b>	<b>Y</b>	<b>N</b>
Introduce instructors and students.		
Discuss administrative concerns.		
Explain the purpose of the course.		
Review the course objectives.		
Discuss course expectations.		
Explain course evaluation methods.		
Explain where the course fits in the wildland fire behavior curriculum.		

Review pre-course work.		
<b>Comments/Suggestions:</b>		

<b>Unit 1 – The Fire Environment</b>		
<b>(1 Hour) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Describe the three components of the wildland fire environment.		
List and give examples of the three methods of heat transfer.		
List three methods of mass transport of firebrands on wildland fire.		
Explain the relationship between flame height/length and its relationship to the fire line intensity.		
Describe primary environmental factors affecting ignition, fire intensity, and rate of spread of wildland fires.		
Discuss the relationship of wildland fires of different intensities to their environments.		
Describe the behavior of wildland fires using standard fire behavior terminology.		
<b>Comments/Suggestions:</b>		

<b>Unit 2 – Topographic Influences on Wildland Fire Behavior</b>		
<b>(1 Hour) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Identify standard features on a topographic map.		
Describe how topography affects fuels and their availability for combustion.		
Describe how topography can affect the direction and rate of spread of wildland fires.		
Describe how changes in fuels and topography can provide full and partial barriers to the spread of wildland fires.		

Describe how slope percent can be determined or estimated in the field.		
Did the instructor administer the unit exercises (2)?		
<b>Comments/Suggestions:</b>		

<b>Unit 3 – Fuels</b>		
<b>(2 Hours) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Identify and describe basic wildland fuel characteristics.		
Identify and describe seven characteristics of fuels that affect wildland fire behavior.		
Identify and define by size class the four dead fuel time lag categories used to classify fuels.		
Describe how fuel availability is essential to predicting wildland fire behavior.		
Describe the fuel model concept and its utility for predicting wildland fire behavior.		
<b>Comments/Suggestions:</b>		

<b>Unit 4 – Basic Weather Processes</b>		
<b>(1.5 Hours) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Describe the structure and composition of the atmosphere.		
Define weather and list its elements.		
Describe the sun-earth radiation budget and the earth’s heat balance.		
Describe factors affecting the temperature of the earth’s surface and the lower atmosphere.		
Describe the greenhouse effect and its influence on air temperature.		
Describe temperature lag and the effect daily and seasonal temperature lags have on wildland fire behavior.		
Did the instructor administer the unit exercises (2)?		

<b>Comments/Suggestions:</b>

<b>Unit 5 – Temperature and Humidity Relationships</b>		
<b>(1.5 Hours) Start Time:</b> _____ <b>End Time:</b> _____		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Describe the relationship between dry bulb temperature, wet bulb temperature, dew point temperature, and relative humidity.		
Describe typical day and night (diurnal) variations in air temperature and relative humidity.		
Determine relative humidity, dew point, and wet bulb temperatures using a psychrometric table.		
Describe the effects of topography, vegetation, clouds, and wind on air temperature and relative humidity.		
Describe the temperature and relative humidity characteristics of continental and maritime air masses.		
Did the instructor administer the unit exercises (3)?		
Did the instructor review the unit objectives at the end of unit 5?		
<b>Comments/Suggestions:</b>		

<b>Unit 6 – Atmospheric Stability</b>		
<b>(4 Hours) Start Time:</b> _____ <b>End Time:</b> _____		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Describe the relationship among atmospheric pressure, temperature, density, and volume.		
Describe temperature lapse rate and stability, and the different lapse rates used to determine the stability of the atmosphere.		

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Describe the effects of atmospheric stability on wildland fire behavior.		
Name four types of temperature inversions and describe their influence on wildland fire behavior, including the thermal belt.		
Name and describe the four lifting processes that can produce thunderstorms.		
Describe the elements of a thunderstorm and its three stages of development.		
Use visual indicators to describe the stability of the atmosphere.		
Describe the four-principal cloud groups and identify the six clouds most often associated with critical wildland fire behavior.		
Did the instructor administer the unit exercises (9)?		
Did the Instructor review the unit objectives?		
<b>Comments/Suggestions:</b>		

<b>Unit 7 - Wind Systems</b>		
<b>(3.5 Hours) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Define wind and wind direction.		
Describe the effects of wind on wildland fire behavior.		
Describe general winds around high pressure and low-pressure systems.		
Describe the cause and effect of local winds (slope/valley winds and land/sea breeze) on wildland fire behavior.		
Describe typical diurnal slope and valley wind patterns and identify these temporal patterns on a topographic map.		
Describe critical winds and their impact on wildland fire behavior.		
Identify three ways topography can alter wind direction and speed.		
Describe general, local, and 20-foot and mid flame winds, and their relationship to each other.		
Adjust wind speeds based on topographic location and calculate mid-flame wind speeds for the three main fuel types.		
Did the instructor administer the unit exercise (4)?		



Did the Instructor review unit objectives?
<b>Comments/Suggestions:</b>

<b>Unit 8 – Keeping Current with the Weather</b>		
<b>(2 Hours) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Identify the types, purpose, and elements of Predictive Service products.		
Identify the types, purpose, and elements of National Weather Service products.		
Identify ways in which firefighters can receive fire weather products and weather observations.		
Describe the importance of Incident Meteorologists (IMET) and Fire Behavior Analysts (FBAN) on wildland fires.		
Did the Instructor review the unit objectives?		
<b>Comments/Suggestions:</b>		

<b>Unit 9 – Observing the Weather</b>		
<b>(1.5 Hours) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Describe when, how often, and where to take weather observations on wildland fires.		
Describe the importance of having field observers or other fire personnel assigned as lookouts for potentially hazardous weather and wildland fire behavior conditions.		
Demonstrate the correct use and maintenance of the belt weather kit in the field.		
Did the instructor administer the unit exercises (1)?		
Did the Instructor review the unit objectives?		

<b>Comments/Suggestions:</b>

<b>Unit 10 – Fuel Moisture</b>		
<b>(3 Hours) Start Time:</b> _____ <b>End Time:</b> _+ _____		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Define critical live fuel moisture and the thresholds for various fuel types.		
Identify three methods for obtaining live fuel moisture.		
Describe the relationships between relative humidity, wind, and moisture content of fine and large fuels.		
Explain how the amount and duration of precipitation and soil moisture affect moisture content of fine and large fuels.		
Define the fuel moisture time lag concept and its value to firefighters and fire managers.		
Describe how fuel moisture is determined for dead fuels in each of the four-time lag categories.		
Define moisture of extinction, how it varies in natural fuel complexes, and how it affects wildland fire ignition and spread.		
Determine fuel moisture content for fine dead 1-hour time lag fuels from fuel moisture tables during daylight conditions.		
Did the instructor administer the unit exercises (1)?		
Did the Instructor review unit objectives?		
<b>Comments/Suggestions:</b>		

<b>Unit 11 – Extreme Wildland Fire Behavior</b>		
<b>(2 Hours) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Describe the four common denominators of fire behavior on tragedy wildland fires.		
Describe extreme fire behavior characteristics and recognize fire environment influences that contribute to extreme fire behavior.		
Describe the three stages of crown fire development and identify the key factors and indicators leading to crown fire development.		
Identify the three factors that contribute to the spotting problem and describe the conditions associated with each factor.		
Define the probability of ignition, describe its use, and determine it using tables.		
Define fire whirls (vortices), the conditions under which they are likely to develop, and their implications to wildland fire behavior.		
Explain the difference between wind-driven and plume-dominated fires.		
Did the instructor administer the unit exercises (1)?		
Did the Instructor review unit objectives?		
<b>Comments/Suggestions:</b>		

<b>Unit 12 – Gauging Fire Behavior and Guiding Fireline Decisions</b>		
<b>(6 Hours) Start Time: _____ End Time: _____</b>		
<b><i>Did the instructor cover the following objectives?</i></b>	<b>Y</b>	<b>N</b>
Describe how to apply fire behavior information to safety and suppression decisions.		
Demonstrate how to calculate the size of safety zones.		
Identify the importance of changes in fire behavior to firefighter safety.		
Discuss what drives large changes and identify the “next big change.”		
Demonstrate a simple but systematic method for gauging change and estimating fire spread time.		
Identify other fire behavior prediction tools.		

<b>Comments/Suggestions:</b>

<b>Final Examination</b>		
<b>(2 Hours) Start Time:</b> _____ <b>End Time:</b> _____		
	<b>Y</b>	<b>N</b>
Did the instructor allow time for participants to review course material and to answer questions?		
<b>Comments/Suggestions:</b>		

