

"PRINCIPLES OF FIRE BEHAVIOR": A CD-ROM-BASED INTERACTIVE MULTIMEDIA TRAINING COURSE*

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The development of formalized wildland fire behavior and related training courses for fire suppression personnel began in the mid- to late 1950s (e.g., Cochran 1957). The fundamentals that were taught are essentially the same as those relayed today, but technological advancements have completely altered the delivery method. Although conventional classroom-style lectures and outdoor field demonstrations (e.g., Pearce and Alexander 1995) remain valuable, the application of computer technology to wildland fire behavior training has steadily increased in the past two decades (e.g., Jenkins and Matsumoto 1986).

New Technology, Fundamental Information

"Principles of Fire Behavior" (ETC 1998), developed and reviewed by a Canadian team of experts in fire operations, fire behavior, and fire

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"Principles of Fire Behavior" received the 2001 VIDEOfUEGO Special Mention (For Quality) Award for Best Multimedia CD-ROM Program of Formation (<http://www.videofuego.com/>).

weather, is an intermediate fire behavior training course developed specifically for a Canadian audience. The course is the Canadian version of the CD-ROM-based training course "Intermediate Fire Behavior" (S-290) (ETC and NWCG 1997). Both courses are based on text material provided by the National Wildfire Coordinating Group (NWCG 1994a, 1994b). The interaction of video, audio, text, graphics, photos, and animation increases student interest and retention and decreases learning time. Students typically complete the course in 8 to 10 hours, and a bookmarking feature gives students flexibility in course completion.

"Principles of Fire Behavior" runs on a personal computer or a network. Minimum system requirements include:

- Windows 95,
- Pentium 100,
- 16 MB RAM,
- 100 MB of free hard drive space,
- Color SVGA monitor set for 640 x 480,
- 16-bit color,
- "Video for Windows" software (included on the CD-ROM),
- 16-bit sound card,
- 8X CD-ROM and driver(s), and
- mouse.

Six Sections

"Principles of Fire Behavior" begins with an Overview Activity, followed by a pretest of introductory-level wildland fire behavior. After the pretest, students navigate through the following six sections:

- **Fire Environment** introduces students to basic fire behavior and appropriate terminology and reviews the factors that affect fire behavior and the components of the wildland fire environment (Countryman 1972).
- **Topography** includes two activities, *Topographical Features* and



The CD-ROM "Principles of Fire Behavior" provides students with an at-home intermediate fire-behavior-training course that uses the latest in interactive multimedia technology. Photo: M.E. Alexander, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB, 2001.

Topography and Fire, which focus on the characteristics of topography that influence fire behavior.

- **Fuel** also includes two activities. *Fuel Characteristics* teaches students the main characteristics of wildland fuels, and *Fuel and Fire* describes the relationship between fire behavior and fuels.
- **Weather** is the largest section of the course. Its multiple activities—*Atmosphere, Wind, Clouds, Weather Observation, Weather Forecasting*, and *Weather and Fire*—all focus on the important link between fire behavior and the atmosphere and weather (Schroeder and Buck 1970).
- **Extreme Fire Behavior** shows students how to recognize fire behavior in the third dimension and to understand some causes of this phenomenon.
- **Assessing Fire Behavior** allows students to practice their new knowledge of the fire environment, topography, fuel, weather, and extreme fire behavior to recognize indicators of problematic fire behavior and identify situations that might be hazardous to fireline personnel.

Testing

At the end of each section is at least one test to help students review the material and to ensure their competency before proceeding. After students have completed all six sections, they take a final test. A performance-tracking system records all test scores, which course



A "Principles of Fire Behavior" CD-ROM training session. Students generally complete the course in 8 to 10 hours. Photo: R.W. Thorburn, Alberta Sustainable Resource Development, Environmental Training Centre, Hinton, AB, 2001.

administrators can use for certification purposes.

For a copy of "Principles of Fire Behavior," contact the University of British Columbia Press, Georgetown Terminals Warehouses, 34 Armstrong Avenue, Georgetown, Ontario L7G 4R9, 1-877-864-8477 (voice), 1-877-864-4272 (fax), info@ubcpress.ca (e-mail); or visit the University of British Columbia Press Website at <<http://www.ubcpress.ca>>. The U.S. version (ETC and NWCG 1997) is available through the National Fire Equipment System (NWCG 2002).

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COMPUTER-BASED TRAINING IN CANADA

In the late 1980s, the Environmental Training Centre in Canada initiated a computer-based wildland fire behavior training course. This venture involved a Canadian version of the "Fire Behavior Interactive Computer-Videodisc Program" course developed by the National Wildfire Coordinating Group in the United States (Jenkins 1990; NWCG 1989).

The course was developed by D. Quintilio (Environmental Training Centre), M.E. Alexander, and T.A. Van Nest, with some minor revisions by W.R. Thorburn and K.G. Hirsch (Canadian Forest Service) in 1991. The result was the "Principles of Fire Behavior Laserdisc" (later replaced by a CD-ROM), which most Canadian fire management agencies have used to train personnel since 1989.