



MA 104 PROJECT ONE, SPRING 99

“Anytime, Anywhere, Anything”

Situation 1.

Of course, when you choose branches Firstie Year, you will choose the *Corps of Engineers*! As your first assignment, you are assigned to the 14th Engineer Battalion, 555th Engineer Group, Ft. Lewis, Washington. After being a successful platoon leader, you are made the assistant S-3 Officer, Operations. You and your battalion are currently training at Yakima Firing Center (YFC) when you get the following message over the command net: “Sapper 3, Sapper 3, this is



Old Reliable 5. FRAGO follows. The National Forest Service (NFS) requests our assistance in cutting a firebreak to protect the town of Leavenworth which is threatened by a forest fire moving down the Wenatchee Valley at SPEED feet per minute. Your battalion has the mission to cut a firebreak. The military is to be reimbursed for transportation costs and for labor (\$SC per soldier-hour) while cutting firebreaks. The NFS is losing a significant number of trees valued at \$FC per square mile. NFS wants to keep their costs low. Execute as soon as possible. Keep the force protected.”

You have about three hours before the battalion commander and S-3 return from Ft Lewis. You immediately send a Warning Order to the companies within your battalion and then start to plan. Questions race through your mind: “Where should the firebreak be cut so that it is finished before the fire engulfs our troops or the town? How many troops should be deployed? How should they be deployed? How much will this cost? What will the battalion commander want to know during the briefing? Have I thought of everything?”

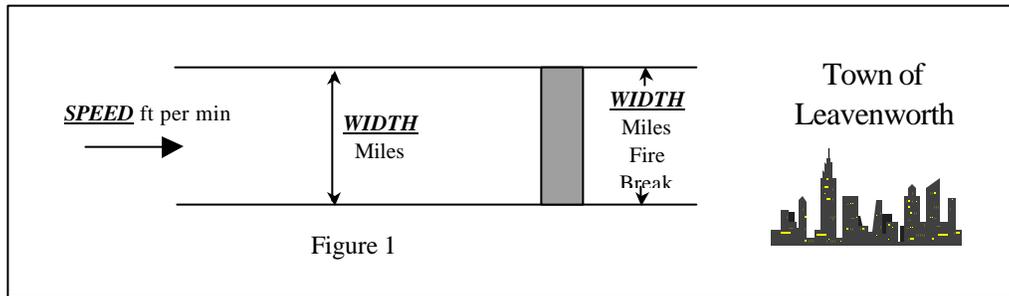
You grab a reconnaissance map, learn that the Wenatchee Valley is only WIDTH miles wide, and make the rough sketch on the next page.

2



From your experience as a platoon leader you know that a combat engineer soldier can clear ClearRate linear feet of the firebreak per minute and that it costs \$HC to transport each soldier to the scene of the fire and back using Chinook helicopters and \$TC using trucks --- but that will take an hour longer. You wonder if dense smoke will prevent using the helicopters. You also know that there are 35 soldiers in each line platoon, three line platoons per line company, and three available line companies for this mission. The line

companies, however, are training for a possible deployment to Bosnia and you would like to minimize the interference with their training.



Prepare a memorandum to the battalion S-3 discussing your major findings and recommended course of action. Include appendices showing procedures and analyses to support all findings and recommendations.

Situation 2.

Your headquarters/section becomes the TAC (Tactical Command Post) and deploys with the engineer units that are required to fight fires. The NFS is concerned that enough drinking water will be available for the troops. They have a full tank that will be used exclusively for the troops and plan to measure the height of the water column from the bottom of the tank to the top of the water each day. They anticipate that the surface of the water will drop by the same amount each day.

However, when you see that the tank has a hemispherical bottom of radius Radius feet surmounted by a cylinder of HitCylinder feet and capped off with a cone of height HitCone feet you are sure that they are wrong.

Prepare a memorandum for the NFS explaining qualitatively why they are wrong --- or right, if that is your conclusion after thinking about it. Include a technical appendix in which you model the situation and determine the rate at which you expect the water to drop. Explain the process carefully; do not just give formulas. Discuss your assumptions and the reliability of your results.

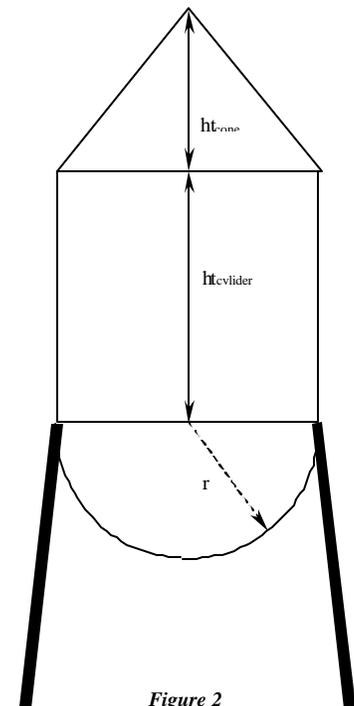


Figure 2

1. A Hot Shot Photo Journal. "Tesky2.Jpg" available from <http://www.rovers.net/~kenandeb/fire/hotshot.html>; Internet.
2. A Hot Shot Photo Journal. "Plane.Jpg" available from <http://www.rovers.net/~kenandeb/fire/plane.html>; Internet.