Reducing turbulence and enhancing stability are opposite sides of the same coin: anything that reduces turbulence enhances stability. Turbulence is a readiness problem for the Army because the more frequent the turnover of unit personnel, the less chance there is to develop cohesion and teamwork, thought to be key elements of an effective unit. Shorter tenure in any given position (i.e., more rapid turnover) also limits the development of expertise in that position and reduces as well the experience base on which skills are built for future, more senior positions. In other words, within reasonable limits, the longer a soldier or leader remains at a given station and in a given position, the better.

Although not as easily captured in the aggregate, soldier and leader absences from their assigned positions have effects essentially the same as those just discussed: disruption of cohesion and teamwork, erosion of the experience base. In many cases, in fact, these kinds of absences can be even more disruptive, since a permanent departure usually (but not always) coincides closely with the arrival of a replacement.

Turbulence affects the well being of all the Army’s people, not just its soldiers. The effects of DL on family separations are somewhat ambiguous. For example, shortening a course and converting it from an accompanied station change to an unaccompanied temporary duty (TDY) might make soldiers more available to their units (i.e., if the course duration is shorter), but it would increase the amount of time soldiers would be separated from their families. In other cases, e.g., shortening courses that are already done in TDY mode, the effects
would be more clear-cut: more time available both to units and to families. We shall discuss these implications in more detail.

As suggested in the previous discussion, a common measure of turbulence (and thus of stability) is average time on station (TOS). This is particularly true because turbulence is perhaps most commonly associated with permanent change of station (PCS) moves. More PCS moves mean more turbulence; conversely, longer TOS between moves means more stability. But permanent changes of station are not the only manifestations of turbulence. The previous discussion also notes that absences for school attendance contribute to turbulence, as do taskings (either internal or external) that take soldiers away from their assigned duties. Finally, some additional turbulence occurs internal to units or installations as soldiers and leaders move from one position to another to fill vacancies caused by departures of others or to progress professionally in their fields.

Some additional points regarding turbulence warrant mention. First, the optimum amount of turbulence is not zero (which is infeasible) or even close to zero: an Army with near-zero turbulence is a stagnant one with limited upward or lateral mobility and few opportunities for broadening or advancement. Thus, too much stabilization can keep soldiers from the assignments and experience they need to grow into effective leaders at more senior positions. Second, not all forms of turbulence can be alleviated by the introduction of DL-supported training. Requirements imposed from outside the unit will continue, unaffected by DL. Also, units and installations will continue to have internally generated moves, although their frequency may decline somewhat as the effects of DL work to increase the amount of time soldiers can spend in each assignment.

THE RECENT TIME ON STATION (TOS) PICTURE

Figure 2.1 provides perspective on the Army’s trends in stability. Each bar represents the average time on station (i.e., the time between PCS moves) for each general category in fiscal years (FY) 1997

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1For a full treatment of the factors and polices that drive the Army to move large numbers of soldiers, see Hix et al. (1998).
through 1999. The general trend is slightly downward, with officers spending less than 29 months on station and enlisted personnel somewhat over 31 (for FY99).

This figure shows a reasonable estimate of PCS-induced turbulence, but it should not be construed to mean that soldiers are at their home stations continuously for the periods indicated. Training and operational deployments are not reflected in the TOS figures. Nor do these figures reflect the turbulence induced by school attendance. The personnel account for trainees, transients, holdees, and students (TTHS) indicates some of the soldier absences from units resulting from school attendance. That account reflects upward of 12,000 student man-years for officers and enlisted personnel as students.

This figure excludes any time for soldiers participating in Initial Entry Training (IET), which would not be affected by the DL alternatives we are examining in this research. However, the figure also excludes student man-years for courses in which the student returns to the same unit when the course is completed; these man-years would be

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2 Based on PCS and time on station data provided by the Army’s Personnel Command (PERSCOM). Data do not include time spent in PCS schools, which would have given the figures—particularly for officers—a misleading downward bias. Monthly figures were averaged for each year.

3 DCSPER 170 Report through May 2000.
affected and thus should be included in our DL comparisons. We estimate that about another 7,000 student man-years are devoted annually to these TDY-and-return courses. Thus, our estimated basis for comparison of total student man-years is in the neighborhood of 19,000–20,000 each year.

TURBULENCE: GOOD AND BAD

Turbulence is a stubborn problem. Having already noted that zero turbulence is inherently undesirable—and infeasible—we also observe that many measures that might reduce turbulence to “better” levels would be distasteful in other ways. Much of the turbulence related to PCS moves, for example, comes from the need to replace soldiers returning from overseas. Increasing overseas tour lengths would therefore reduce turbulence, but this beneficial effect is offset by the possibility that longer overseas tours would be unpopular and thus damaging to morale and, ultimately, retention. Moreover, changing overseas tour lengths would require policy action at the DoD level. Also, increasing the CONUS force relative to forces deployed overseas would reduce the number of PCS moves generated by overseas replacements, but it would also alter the Army’s segment of the national security posture. (Previous research by RAND and others goes into some detail on both the preceding points.)

If people are promoted less frequently and stay in the service longer, they can stay in each position longer; the offsets here are an older force and less promotion opportunity. Finally, an overall reduction in PCS school opportunities would reduce school-generated moves, offset (absent other changes) by a less educated force.

Reducing other soldier absences from units entails reducing individual taskings or time spent in schools. The former is unlikely in today’s environment and is in any case irrelevant to DL discussions. The latter is made possible by the judicious substitution of DL seg-

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4Based on analysis of FY99 data on course lengths and course attendance from the Army’s Training Resource Requirements System. These man-years are not included in TTHS because the student is still assigned to the same unit, and would in fact be available to that unit in the event of a major wartime deployment.

5See Hix et al. (1998).
ments for some residential training, as we have mentioned earlier. We note again that measures that improve soldier availability at home station also frequently increase the amount of time a soldier can spend with his or her family. Reducing taskings and unit deployments would also have this effect, but again the policies and procedures that could accomplish this fall outside the scope of a DL discussion.

TURBULENCE AND DL

We turn now to the potential for DL-supported training programs to enhance stability without undesirable policy or structural changes. It is important to note again that the benefits we estimate are robust but certainly not huge, and that reaping these benefits will depend on a careful approach to

• Selection of DL course segments
• Development of courseware
• Allocating resources appropriately to support DL student needs
• Ensuring that soldiers have the requisite time to complete their DL requirements
• Securing support by chain of command and supporting activities.

Experience in DL applications suggests that when the right choices are made about the material to be covered using DL, the same amount of material can be covered in about 30 percent less time (i.e., in about two-thirds of the time required for resident instruction).6

This is partly because some material can more readily be taught using DL technologies (using a computer is one obvious example). Perhaps just as important, though, are some less technical characteristics of the training or education that are enabled by DL technology.

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6Orlansky and String, in their research on computer-based instruction conducted for the Institute for Defense Analyses, found median time savings to be about 30 percent. See Orlansky and String (1979). Orlansky (1983, p. 60) notes in a later article that the principal benefit of computer-based instruction in military training may well be the savings in time, specifically, time saved “in attaining the required minimum levels of knowledge and skills without a loss of student achievement.” See also Winkler and Polich (1990).
For example, DL segments can be scheduled at times more optimal for the individual student, making better concentration possible. Self-paced DL, moreover, means the student can concentrate as needed on weak areas and skim or skip areas already mastered—a luxury unavailable in classroom training.

Based on the efficiency factor discussed above, we were able to derive estimates of how much each of a selected set of courses could be shortened if a portion of the course were to be converted to DL. Current TRADOC plans envision converting anywhere from 25 percent to 80 percent of these courses to DL, depending primarily on the nature of the curriculum and its amenability to DL techniques. We applied the 30 percent efficiency factor only to that fraction of the course slated for DL conversion. This results in estimated course length reductions ranging from 7.5 percent (.30 of .25) to 24 percent (.30 of .80).

It is important to note that this estimated reduction refers to the elapsed time for the entire program of instruction, e.g., a ten-week course could be shortened to just over nine or to as little as seven weeks, depending on how much of it is converted to DL. In other words, the new, shorter course length includes the estimated amount of time it will take students to complete the DL portions of the course as well as the resident portions. Note also that the student is at his or her home station for the DL portion of the course, which, as we have noted from the Army’s plans, could be anywhere from 25 percent to 80 percent of the previous course duration. We offer again the caveat that not all of the additional time available at home station is time available for unit duties, since a significant fraction of that time will be needed to fulfill DL course requirements. Nevertheless, some additional time, as our measures will show, will also be available as unit duty time.

In short, DL-supported courses increase soldier availability not only by reducing the time spent away from home station, but also by reducing the total amount of time needed for the training. And,

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7We used TRADOC’s list of courses scheduled for partial conversion to DL. This list is under revision; we expect the next list will be longer.

8From the same list. The fractions of courses slated for conversion to DL are also under review.
again, family quality-of-life effects generally follow suit. Reducing
the length of time students are in TDY status for residential training
will also produce some modest cost savings; the savings potential is
less clear when we look at the possibility of converting courses from
PCS to TDY.