

D O C U M E N T E D B R I E F I N G

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*Army Stationing and
Rotation Policy*

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*Prepared for the
United States Army*

Arroyo Center

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PREFACE

This research was conducted in 1996–1997 as a special assistance project for the senior leadership of the U.S. Army. The Army requested a broad analysis to examine a possible policy change in how it could maintain its forward presence in Europe. Under the policy proposal then being considered, the United States would maintain as much of its forward presence in Europe as feasible by rotating units from the United States, rather than by permanently stationing those units in Europe.

Implementing such a proposal, and thus restationing units from Europe to the United States, would require numerous other adjustments in basing infrastructure, unit training and deployment cycles, personnel movements, and family support. The objective of this study was to identify the most important adjustments that would be necessary and to assess the feasibility and potential costs associated with the change.

The analysis reflects conditions and military posture that were current at that time. Although units were not restationed during that time period, the topic of overseas restationing has recently attracted renewed interest, including proposals similar to the plan that was studied in this research. This study is being published now because of that renewed interest, in the hope that it may inform debate about the pros, cons, and costs associated with restationing and rotating units to overseas locations.

The work was carried out in the Manpower and Training Program of the RAND Arroyo Center. The Arroyo Center is a federally funded research and development center sponsored by the United States Army.

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SUMMARY

POLICY EXAMINED IN THIS ANALYSIS

This report documents a briefing prepared in April 1997 by the RAND Arroyo Center for the senior leadership of the U.S. Army. The Army had requested a broad analysis to examine a possible policy change in how the Army could maintain its forward presence in Europe. Under the policy proposal that was examined, the United States would maintain as much of its forward presence in Europe as feasible by rotating units from the United States, rather than by permanently stationing those units in Europe, as has been the practice for many years.

At the time of this writing, two heavy brigades were stationed in Korea, four in Germany, and the other 12 in the continental United States (CONUS). In addition, one brigade was devoted to other missions, such as deployments to the Middle East or the Balkans. The specific policy we examined would restation the four heavy brigades in Europe to CONUS. Included in the restationing would be division support units that traditionally accompany a brigade but are not organic to it. Further, a small number of nondivisional corps units could also be rotated. The policy does not involve rotating other divisional elements. It also excludes the remainder of the European theater structure at echelons above division.

The basic policy we were asked to examine would maintain the same amount of forward presence in Europe—four heavy brigades' worth—through continual six-month rotations. The rotating brigades would be drawn from all heavy brigades in CONUS (both the restationed brigades and others that had previously been in CONUS). Under this plan, the two brigades in Korea would remain as before. All of the other U.S. Army heavy brigades would participate in rotations, either to Europe or the Middle East.

POLICY OBJECTIVES

Such a plan might affect the Army's ability to accomplish several important objectives:

- *Stabilizing soldiers and their families.* Soldiers are normally sent to Europe on three-year tours and then returned to the United States. The resulting demand to replace the 65,000 soldiers in Europe creates significant turbulence in the force through permanent changes of station (PCS). Restationing and implementing unit rotations could reduce the effects of this turbulence within units.
- *Saving money.* The Army spends over \$1 billion a year on PCS moves. The government also incurs unique costs associated with overseas stationing, including cost-of-living allowances, costs for housing in Europe, and Department of Defense expenditures for overseas dependent schools. The proposed plan could reduce some of these costs.
- *More flexibility.* A rotational plan in which many units periodically deploy to an overseas location could offer more flexibility than the current system of permanently stationing units in one place. With increasing demand for units to deploy to other regions (e.g., the Middle East) or for other purposes (e.g., peace operations), this consideration may gain importance.
- *Training and readiness.* Restationing and the attendant unit rotation schemes could have a variety of effects on training and readiness. A key goal in implementing a policy change like this would be to ensure that the changes do not diminish the Army's state of training and readiness below the requirements of future missions.

ANALYSIS RESULTS

The analysis showed that it was clearly feasible to implement the rotational policy for a group of units covering 20,000 to 25,000 soldiers—about 40 percent of the European force structure. For several reasons, described in the text, it is infeasible to rotate all the units.

This policy would reduce the frequency of PCS moves for those in specialties represented in the rotating units. However, considerable turbulence would continue, especially among NCOs, because of other demands (principally from organizations in the Army's institutional support structure, typically "Table of Distribution and Allowances," or TDA organizations). The effects on families would be mixed: The policy would return 15,000 families to CONUS and increase their stability there, which would benefit them in a number of ways. However, the added stability in CONUS would come at the price of increases in the amount of time soldiers are separated from their families, since soldiers would deploy without their families during the six-month rotations. This would

be an increase not only in the total amount of separation time in a typical career, but also in the number of times soldiers and families would face protracted separations. This policy, in essence, would gain stability for units and geographical stability for families, at the expense of significant increases in family separations.

To implement this policy, the Army would need to build new facilities at U.S. installations to house the four returning brigades. Upfront construction costs at the receiving CONUS installations were estimated to total more than \$700 million. These one-time costs, however, would be offset by recurring annual savings in the range of \$200–350 million, due to savings in housing, cost-of-living allowances, and PCS moves. Therefore, the initial costs would be paid back in two to five years.

Another cost could arise from equipment requirements. Unless units rotate with their equipment for each deployment—an option we considered unreasonable in terms of cost and readiness—four brigade sets must either be purchased or otherwise brought into use from existing stocks (such as war reserve). If existing stocks are used, many brigades would have to train on one generation of equipment at home station but use a different one while on rotations in Europe. The text discusses an array of options that appear feasible to avoid purchasing new equipment, but the Army would have to work around the incompatibility problem, as it has done in the past.

Finally, the rotation policy would create some training and readiness effects that would have to be managed. To maintain four brigades' worth of European presence using 16 brigades, each rotating for 6 months, implies a cycle time of 24 months. Under that plan, each unit spends 18 months in CONUS followed by 6 months overseas. But if one assumes that the Kuwait or other deployments represent, in effect, commitment of a fifth brigade to rotations, the cycle time shortens to 19 months. Then, each unit spends only 13 months in CONUS followed by 6 months overseas.

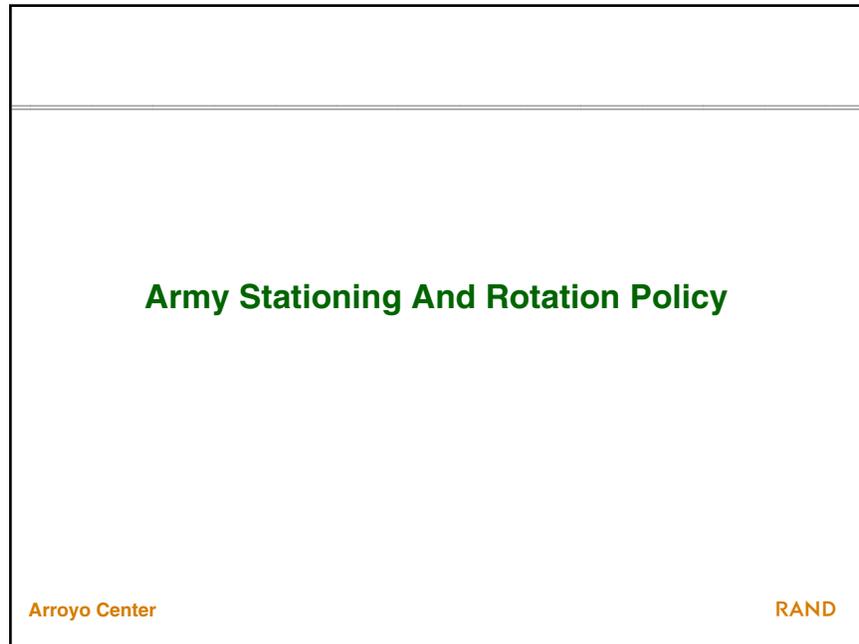
This rotational cycle could still permit CTC rotations for all brigades, but it would limit the amount of training time because time is used for deployment preparation and recovery. It would also lead to "lumpy" unit readiness. Some brigades would be unavailable at any given time because they are preparing for deployment or recovering from it. The divisions in Europe would have to cope with continual turnover of brigades, and divisions in CONUS would have limited time when the full division is together. This would limit divisions' ability to accomplish BCTP together or be entirely ready to deploy as a division to a major contingency. A countervailing advantage of the policy, however, is that it would exercise

brigade operations and focus the Army on that smaller, more flexible organization.

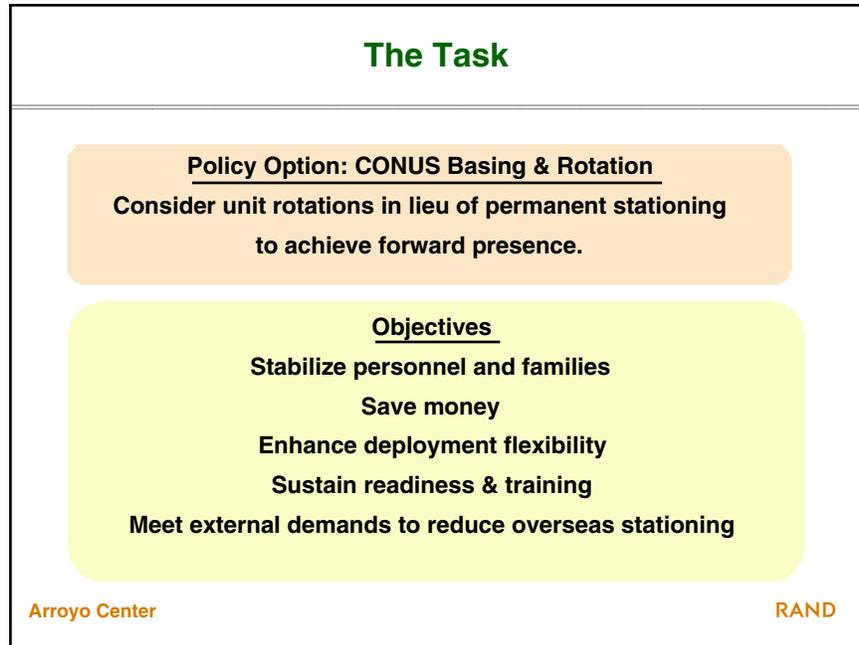
LIST OF ACRONYMS

ARNG	Army National Guard
AWR	Army War Reserve
BAQ	Basic Allowance for Quarters
BCTP	Battle Command Training Program
BOS	Battlefield Operating System
CEWI	Communications, Electronic Warfare, and Intelligence
CMTC	Combat Maneuver Training Center
COLA	Cost of Living Allowance
CONUS	Continental United States
CTC	Combat Training Center
DISCOM	Division Support Command
MIE	Miscellaneous and Incidental Expense
MOS	Military Occupational Specialty
NCO	Noncommissioned officer
NTC	National Training Center
PCS	Permanent change of station
PERSCOM	Personnel Command
RPLANS	Real Property Planning and Analysis System
SETAF	Southern European Task Force
SHAPE	Supreme Headquarters Allied Powers Europe
TAACOM	Theater Army Area Command
TDA	Table of Distribution and Allowances
TOE	Table of Organization and Equipment
USAREUR	U.S. Army Europe
VHA	Variable Housing Allowance

INTRODUCTION



This briefing responds to a request from the senior leadership of the Army to the Arroyo Center to examine a significant policy change in how the Army maintains its forward presence in Europe.



In particular, the Army asked the Arroyo Center to examine a policy under which the United States would maintain as much of its forward presence in Europe as feasible by rotating units from the United States, rather than by permanently stationing them in Europe, as has been the practice for many years.

Prominent among objectives for a unit rotation policy would be the five shown on the chart above. First is the desire to stabilize soldiers and their families. Soldiers are normally sent to Europe on three-year tours, and then returned to the United States. The resulting demand to replace the 65,000 soldiers in Europe creates significant turbulence in the force through permanent changes of station (PCS). Such turbulence affects the ability of spouses to obtain and keep good jobs, disrupts children’s lives, and increases soldier turnover in units.

The second objective is, of course, to save money. Not only does the Army spend well over \$1 billion a year on PCS moves, it incurs unique costs associated with overseas stationing.¹ These costs include cost-of-living allowances, uniquely high costs for housing in Europe, and

¹ All dollar amounts in this briefing are stated in 1997 dollars, because the calculations were done in 1997 based on then-existing conditions.

significant expenditures by the Department of Defense for its overseas dependent schools.

Third, a rotational policy in which many units periodically deploy to an overseas location could offer more flexibility than the current system of permanently stationing units in one place. With increasing demand for units to deploy to other regions (e.g., the Middle East) or for other purposes (e.g., peace operations), this consideration may gain importance.

Fourth, it is important that any restationing not diminish the Army's state of training and readiness below the requirements of future missions.

Finally, there has been concern that restationing might be necessitated by the demands of our alliance partners to reduce our overseas stationing or training activities in theater. Although such demands seem in abeyance at the present, political changes could bring them forward in the future.

Specific Policy Under Study

- **Restation selected units from Europe to CONUS**
 - 4 brigade slices plus some echelon-above-division (EAD) units
- **Continue permanent stationing of remaining European structure:**
 - Other division elements (main support battalion, MLRS battery, division aviation, division HQ)
 - EAD and theater personnel
- **Maintain forward presence by rotating CONUS-based units to Europe on 6-month tours**

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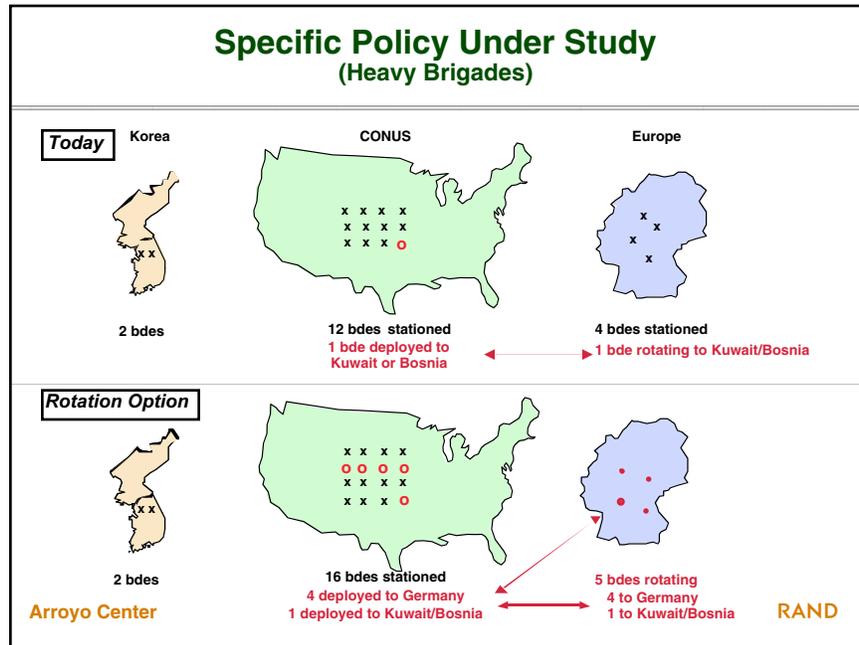
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The specific policy we examined would restation the four heavy maneuver brigades now in Europe to the Continental United States (CONUS). Included in the restationing would be division support units that traditionally accompany a brigade but are not organic to it. Further, a small number of nondivisional corps units would also be rotated.

The policy would not involve other divisional elements. It also excludes the remainder of the European theater structure at echelons above division.

This policy would maintain the same amount of forward presence—four brigades' worth—through continual six-month rotations. The rotating brigades would be drawn from all heavy brigades in CONUS (both the restationed brigades and others that had previously been in CONUS).

In articulating how the policy would work, this analysis seeks to maintain the same degree of combat power and theater presence as before. For example, we initially consider rotating only heavy brigades to Europe, rather than substituting light brigades in their place. However, when we encounter aspects of the policy that seem difficult to implement, we will describe alternatives that might make it more feasible or attractive.



This chart simply depicts the stationing and rotation pattern of today's heavy force and contrasts it with the pattern under the rotational policy. Today, two heavy brigades reside in Korea, four in Germany, and the other 12 in CONUS. In addition, one brigade is chronically tied up today supporting deployments to other locations, such as periodic rotations to Kuwait or Bosnia.²

Under the new plan that we have examined, the two brigades in Korea remain as before. All of the other U.S. Army heavy brigades participate in rotations, either to Europe or Kuwait/Bosnia. The latter type of deployment takes on added importance in the rotational plan because it removes a brigade from the European rotational sequence, in effect adding a fifth rotation to the four in Europe.

²At the time of this writing, the United States was conducting a continuous battalion-level deployment to Kuwait. In addition, the United States supported other periodic deployments to the Middle East, such as the Bright Star exercise in Egypt, which occupied a brigade for 2 to 3 months once every two years. Potential deployments to Balkan areas (such as Bosnia or Kosovo) represent further demands of this kind.

Key Questions

- Is the rotational policy feasible?
- To what extent would the policy:
 - Enhance soldier and family stability
 - Save money
 - Affect readiness and training
 - Offer other benefits

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The issues at hand are those listed on the chart above. In this briefing, we address each in turn.

Summary of Findings	
Feasibility	<ul style="list-style-type: none"> • Can rotate 20-25K of 65K • CONUS bases can accept 4 brigades--costs
Personnel & families	<ul style="list-style-type: none"> • More stable tours, but TDA demand for NCOs • More families resident in CONUS • Family separation rate higher
Cost	<ul style="list-style-type: none"> • \$700-830M, up-front for unit facilities in CONUS • \$200-350M annual savings • Equipment needed for 4 brigades – possible compatibility issue
Training & readiness	<ul style="list-style-type: none"> • 16 hvy bdes w/ 4 depl–18 mo. CONUS, 6 mo. depl 5 depl–13 mo. CONUS, 6 mo. depl • CTC rotations feasible, but limited training time • Lumpy unit readiness, DIV training challenges • More flexible force -- with brigade focus
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Here we summarize the findings of our research, which we amplify in the remainder of the briefing.

It is clearly feasible to implement the rotational policy for a group of units covering 20,000 to 25,000 soldiers—about 40 percent of the European force structure. For several reasons—such as operational continuity, political considerations, or lack of a rotation base in CONUS—it is infeasible to rotate all types of units. We treat this in more detail subsequently.

The policy would clearly reduce the frequency of PCS moves for those in specialties represented in the rotating units. As we will explain, however, considerable PCS turbulence will continue, especially among noncommissioned officers (NCOs), because of other demands (principally from units in the Army’s institutional base). The effects on families will be mixed. The policy returns 15,000 families to CONUS and increases their stability there, which benefits them in a number of ways, but the added stability in CONUS comes at the price of increased family separation, because soldiers deploy without their families during the six-month rotations.

Upfront construction costs at the receiving CONUS installations are estimated to total more than \$700 million. These, however, are offset by recurring annual savings in the range of \$200–350 million, due to reductions in costs for housing, cost-of-living allowances, and PCS moves.

Unless units rotate with their equipment for each deployment—an option we considered unreasonable in terms of cost and readiness—four brigade sets must either be purchased or otherwise brought into use from existing stocks (such as war reserve). If existing stocks are used, many brigades would have to train on one generation of equipment at home station but utilize a different one while on rotations in Europe. Later in the briefing we show an array of options that appear feasible to avoid purchasing new equipment, but the Army would have to work around the incompatibility problem, as it has done in the past.

Finally, the rotation policy would create some training and readiness effects that would have to be managed. To maintain four brigades' worth of European presence using 16 brigades, each rotating for 6 months, implies a cycle time of 24 months. Under that plan, each unit spends 18 months in CONUS followed by 6 months overseas. But if one assumes that the Kuwait or other deployments represent, in effect, commitment of a fifth brigade to rotations, the cycle time shortens to 19 months. Then, each unit spends only 13 months in CONUS followed by 6 months overseas.

This rotational cycle could still permit Combat Training Center (CTC) rotations for all brigades, but it would limit the amount of training time because time is used for deployment preparation and recovery. It would also lead to "lumpy" unit readiness. Some brigades would be unavailable at any given time because they are preparing for deployment or recovering from it. The divisions in Europe would have to cope with continual turnover of brigades, and divisions in CONUS would have limited time when the full division is together. This would limit divisions' ability to accomplish BCTP (Battle Command Training Program) together or be entirely ready to deploy as a division to a major contingency. A countervailing advantage of the policy, however, is that it would exercise brigade operations and focus the Army on that smaller, more flexible organization.

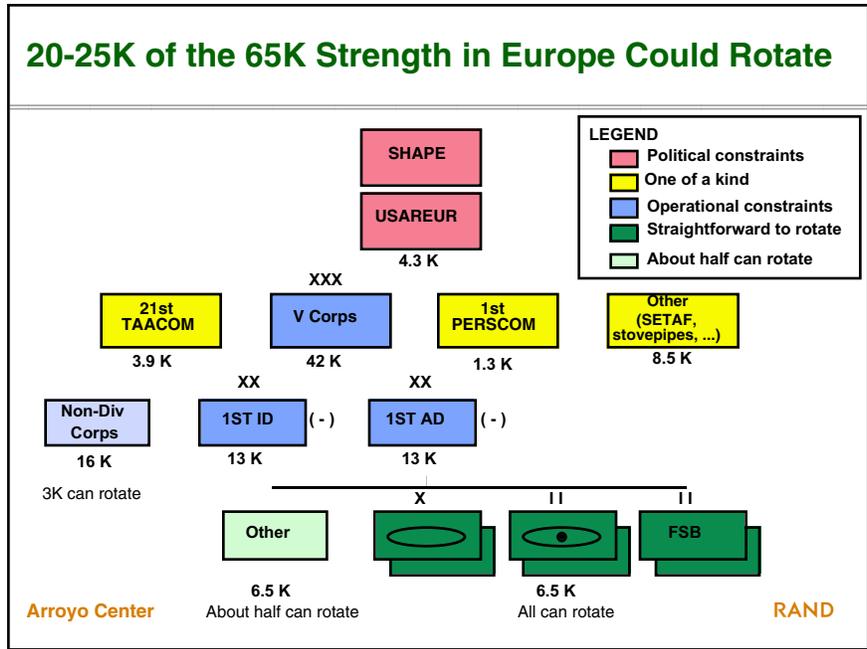
FEASIBILITY OF ROTATIONAL POLICY

Key Questions

- **Is the rotational policy feasible?**
- **To what extent would the policy:**
 - Enhance soldier and family stability
 - Save money
 - Affect readiness and training
 - Offer other benefits

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We now turn to the details of the analysis, examining first the feasibility of the policy.



Many of the 65,000 soldiers stationed in Europe are assigned to units that for various reasons could not rotate. The chart above illustrates the various types of units in the European force structure and, for those that could not rotate, the reasons.

The two red boxes at the top of the chart show that approximately 4,300 soldiers serve in either the Supreme Headquarters, Allied Powers, Europe (SHAPE) or the United States Army, Europe (USAREUR). Three factors preclude rotation of these headquarters. Principally, political considerations would preclude the nation from periodically changing out a U.S. element of a strategic-level international political-military headquarters such as SHAPE. Further, the strategic planning nature of the work done at both headquarters is inconsistent with turnover of entire headquarters. But even if one were to overcome those hurdles, the Army has no counterpart units to serve as a rotation base. So the option of rotating these headquarters units is not feasible for both political and practical reasons.

The next row down illustrates that another 13,700 soldiers are assigned to highly specialized headquarters and support units, shown in yellow, which are one-of-a-kind and therefore lack any rotation base at all. Such units include the 21st Theater Army Area Command (TAACOM), the 1st Personnel Command (PERSCOM), and other specialized units such as

SETAF and various intelligence and support organizations. Hence, only the 42,000 soldiers assigned to V Corps remain as candidates for a rotation plan.

Within the corps, our subjective assessment led to the conclusion that, for reasons of operational continuity, corps and division headquarters (blue) should not rotate but should continue as permanently stationed units staffed through individual replacements. The same conclusion applies to most of the nondivisional units assigned to V Corps. Only about 3,000 of the 16,000 nondivisional corps soldiers are assigned to units that have a sufficient rotation base and could, in our judgment, rotate without operational risk.

Within each of the two divisions, the two brigade combat teams (green) have in CONUS a sufficient rotation base of comparable units to permit rotation. Further, the political and operational constraints cited above do not apply to these units. Within each division, those who can rotate include about 6,500 soldiers from brigade combat teams, plus about 3,500 in other divisional units outside the brigade combat teams. This makes a total of 10,000 soldiers who can rotate from each division. We considered it too disruptive to both the donor and recipient divisions to rotate key divisional support elements, such as the main support battalion of the DISCOM and the headquarters of the CEWI battalion and other divisional support units.

Others might devise ways to rotate some of the above elements. However, regardless of one's specific assumptions, only a fraction of the total Army strength in Europe could rotate. Our estimate sums to about 10,000 soldiers in each division plus about 3,000 in the nondivisional corps units, or 23,000.

Several CONUS Locations Could Accept A Brigade

Post	"Excess" Capacity vs. Recent Peak	Maneuver Space	Maneuver Accessibility	Heavy Gunnery Capacity
Bliss	4500	Extensive	Few problems	Adequate, may need some upgrade
Carson	2500	Adequate +	Rail to Pinon Canyon	Adequate
Lewis	3000	Adequate --	Rail to Yakima	Adequate
Knox	4000	Inadequate, but could use western KY area	Rail to western KY	Adequate
Riley	6000	Barely adequate BN is largest area	Can't use MPRC & maneuver simul.	Adequate
Polk	8500	Barely adequate BN is largest area	Must compete with JRTC	Adequate

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Another important feasibility question is: Where could the returning brigades be stationed in the United States? Six candidate posts, shown on the chart, emerged from our analysis. All six have recently supported larger soldier populations than they do currently. From the standpoints of maneuver space and other geographic considerations, the best candidates appear to be Fort Bliss, Fort Carson, and Fort Lewis. Fort Knox and Fort Riley are clearly inferior in training capacity to the first three. Fort Polk is the least desirable.³ Later in the briefing we demonstrate the costs associated with stationing returning brigades at various combinations of these installations.

³However, we found it useful to use Fort Polk in another way. As shown later, if Fort Lewis is used to house a returning heavy brigade, it is advantageous to move a light brigade from Fort Lewis to Fort Polk.

ENHANCING SOLDIER AND FAMILY STABILITY

Key Questions

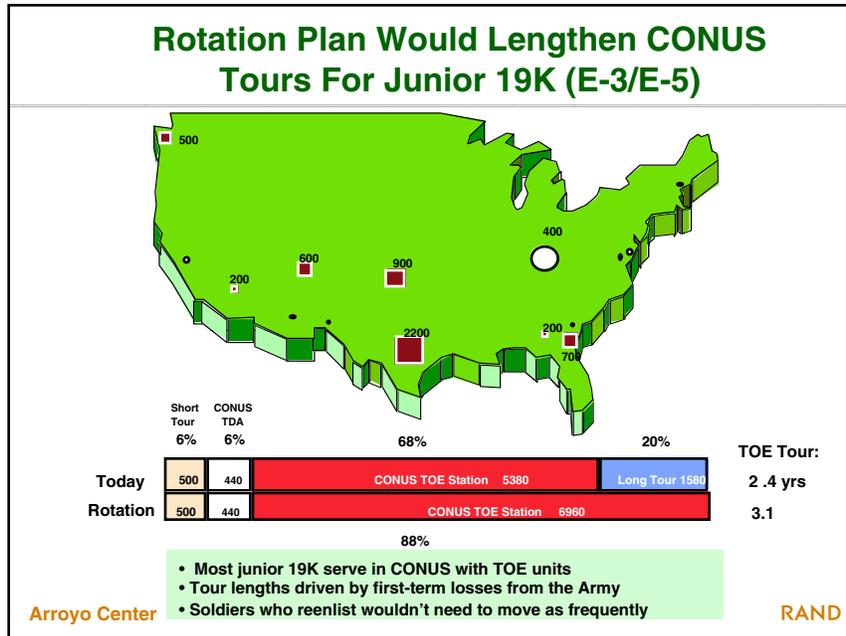
- Is the rotational policy feasible?
- **To what extent would the policy:**
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We now turn to the personnel implications of the policy, which revolve around the concept of stability for both soldiers and families.

Our analysis touches on three different phenomena that are related to stability, each of which is potentially important but apt to be affected by rotation policy in different ways. First, we consider “permanent changes of station” (PCS), which constitute the traditional focus of military policy related to personnel movement. The rate of PCS moves is important because each PCS involves transporting the entire household, including the soldier, his/her family, and their household goods—a costly and disruptive enterprise for all. One reason for considering the rotation policy is that it could reduce the PCS move rate.

In addition, however, we consider two other aspects of personnel turbulence: (1) operational movement of individual soldiers; (2) and separation of those soldiers from their families. The rotational policy requires soldiers to move from CONUS to Europe, with their units but without their families, for 6-month tours. Therefore, as we will show, the policy *increases* these two aspects of turbulence.



In examining the personnel implications of the rotational policy, it is necessary to conduct analysis specific to military occupational specialty (MOS) and grade; aggregate data mask important differences in effects across grades and skills. We begin with MOS 19K, armor crewman, since it is the MOS most affected by the policy.

Most of the authorizations for junior 19K (68 percent) are at installations where there are armor TOE units.⁴ Authorizations at such installations are reflected by the red-shaded segments in the bars above. These installations are important, because they are the only ones at which soldiers can develop in their MOS for indefinite periods of time. In other words, they are locations where the Army could consider “homebasing” armor crewmen. The 20% of junior 19K serving overseas in long-tour areas (such as Europe, shaded in blue) must be replaced by policy every three years at a rate of one-third a year. Similarly, those in short-tour locations (such as Korea, shaded in orange) must all be replaced every year. Those stationed in CONUS at locations where there are no TOE units (called here TDA stations) must also be moved periodically (we

⁴ Units defined as TOE (Table of Organization and Equipment) are the Army’s principal deploying and warfighting entities. Units defined as TDA (Table of Distribution and Allowances) provide institutional support or training but do not generally deploy.

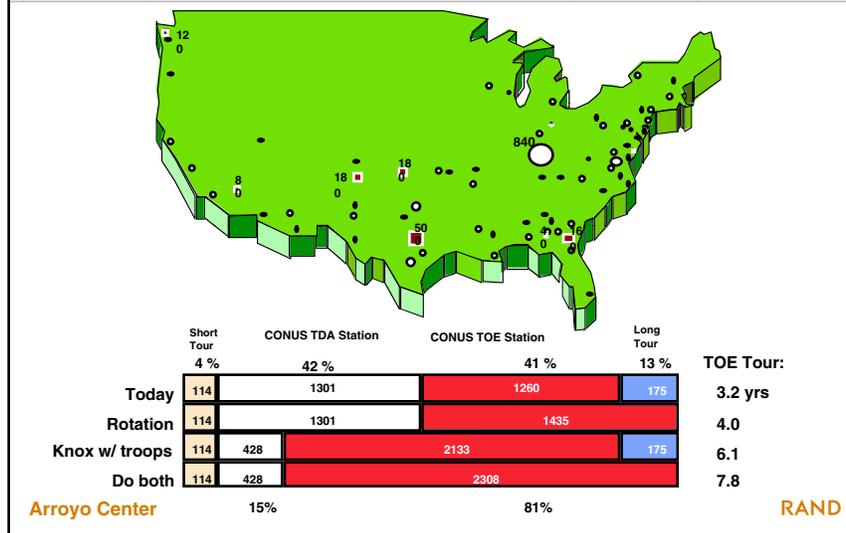
assume every three years), to return them to troop units where they can rehone their combat skills.⁵

These demands—to replace soldiers who are returning from overseas tours or who are returning to troop units from TDA assignments—drive the movement rates of soldiers and families. If all soldiers in this pool of junior 19Ks remained in the pool indefinitely—that is to say, never left the Army or got promoted to staff sergeant—they could remain assigned to CONUS TOE stations for more than five years under today’s policies.⁶ But the combination of promotions out of the pool and departures from the service reduce the current tour length of this population to about 2.4 years in CONUS TOE units. Under the rotational policy that tour length would rise to 3.1 years, but would be far longer, about 15 years, without the effects of losses from the pool.

⁵See Hix et al. (1998) for an aggregate analysis of effects of various policies, including overseas tour lengths, on personnel stability under the Army’s traditional individual replacement system.

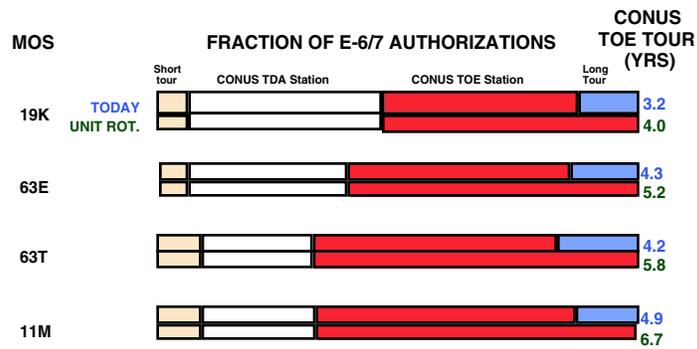
⁶Clearly, the case under which a soldier neither leaves the Army nor is promoted to staff sergeant is unrealistic. We present it to provide a feel for the absolute maximum length of time a soldier’s family could remain at a CONUS TOE station if the only reasons to move the soldier were to replace overseas returnees and those who leave TDA locations.

TDA Demands Dominate Senior 19K (E-6 & E-7) Tour Lengths Even Under Rotation Plan



The situation for senior 19K, those in grades E-6 and E-7, is far different. The bars are similar to those on the previous chart, except that they display some additional stationing alternatives. Note the high proportion of the authorizations in CONUS TDA locations: 42 percent. In fact, more CONUS-based soldiers in this population serve in TDA than in TOE locations. For example, there are more authorizations for these personnel at Fort Knox (840, all TDA) than at Fort Hood (500, primarily TOE). The rotational scheme, therefore, raises the current TOE tour length from 3.2 to only 4.0 years. But if the Army were either to place a TOE brigade at Fort Knox or co-locate the Armor School with existing TOE units (say at Fort Hood), the TOE tour length would almost double to 6.1 years. Adopting both policies—rotation and co-locating the school with troops—would increase the tour length to 7.8 years, a very stable career.

In All MOSs, Senior Personnel Will Continue To Move To Replace TDA Rotations



- Can stabilize but not “permanently” station noncommissioned officers
- Must deal with TDA demand to have greater effect on senior stability

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The tour lengths from the previous chart are reproduced here on the top two bars, labeled 19K. Similar improvements from the rotational plan accrue to other MOSs in the rotating units. Today, senior mechanics in the 63 series, for example, have a smaller proportion of their authorizations in CONUS TDA locations than do their 19K counterparts. This gives them longer tours today and the same order-of-magnitude increases under the rotational policy.

The MOS 11M (fighting vehicle infantryman) contrasts with 19K because the Infantry School at Fort Benning is already co-located with a heavy brigade. In this analysis we counted only one brigade’s worth of TDA authorizations at Fort Benning as being at a TOE location, under the assumption that the single TOE brigade could not serve as a rotation base (i.e., source) for soldiers to fill the entire larger number of TDA authorizations. Nevertheless, the co-location provides a more stable pattern for 11M both today and under the rotational plan. The central point of this chart, however, is that substantial improvements in stability require solutions to the TDA problem.

Ways to Enhance Personnel Stability

- **Reduce TDA Demand**
 - **Co-locate centers and schools with troops**
 - Enhances stability of noncommissioned officers more than returning 4 brigades
 - Big impact but big front-end cost to relocate
 - Could, instead, place a returning brigade at Knox, for example
 - Do as part of long-term vision
 - **Allow soldiers to remain in TDA assignments longer**
 - Modest effect on stability
 - Skills and readiness erode
 - **Civilianize ROTC, training, RC and recruiting slots**
 - ROTC initiative already under study--use recent or retired soldiers
 - Extent of conversions is limited
- **Spread effect of rotations by including light brigades**

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Given these circumstances, how would the Army enhance personnel stability further? As already discussed, an important way to improve stability beyond that offered by the rotational plan is to co-locate centers and schools with troop units.

In addition, we considered several other potential policy changes. For example, the Army could extend TDA tours to four years. That would increase stability to a small degree, but at the expense of further erosion of soldier skills.

A recent initiative by the Army to consider using recently separated or retired soldiers in Reserve Officers' Training Corps (ROTC) slots could be expanded, but the potential may not be great.⁷

A broader idea, which would also reduce the effect of family separations, is to include one or more light brigades in the pool of units rotating to Europe. We develop this idea further later in the briefing.

⁷See Goldman et al. (1999) for analysis of the extent to which such people could be substituted for active-duty personnel in ROTC battalions.

Soldiers and Families: Location and Separation

Family location

- 15,000 families restationed in CONUS – formerly in Europe with brigades
- Longer time on station in CONUS

6-month brigade rotations – frequent soldier movements

Family separation

- Families of brigades separated during rotations
- Current requirements – Korea, Kuwait, Bosnia, Macedonia, Bright Star, field training – already impose substantial separations

Family Separation Time within Heavy Brigades

Today, without Bosnia	31%
Today, including Bosnia	38%
Rotation: 16 brigades, 5 rotating	45%
Rotation: 16 brigades, 4 rotating	39%

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To summarize, the rotation policy would return about 15,000 families to the United States, and they would remain at one location for longer periods.

In contrast, the soldiers themselves would be more mobile, since they would travel with their units to Europe for six-month rotations. In addition to physically moving overseas, soldiers would be likely to face very different duties in an overseas locale as compared with home station. This could be viewed either negatively, as a complication of life and work, or positively, as a welcome change of pace.

One aspect that is not likely to be perceived positively is the ensuing amount of family separation. As the lower portion of the chart shows, in the base case a typical brigade member would spend about 31 percent of his/her time apart from the family. That rate rises to 45 percent in the case of 16 brigades with five rotating—nearly half again as much time separated. In effect, the policy would gain stability for units and geographic stability for families, at the expense of significant increases in family separations.

We cannot judge the direction or magnitude of the net effects on morale or retention. Some families may feel more comfortable by remaining in the United States, even if they are separated from the soldier somewhat more often. (Note that today, many families in Europe are already separated

during out-of-area deployments such as Bosnia.) On the other hand, many soldiers may prefer occasional overseas accompanied tours and more frequent PCS moves to a situation characterized by periodic and relatively long unaccompanied deployments and fewer PCS moves. There are few empirical data to justify a clear case on the issue.

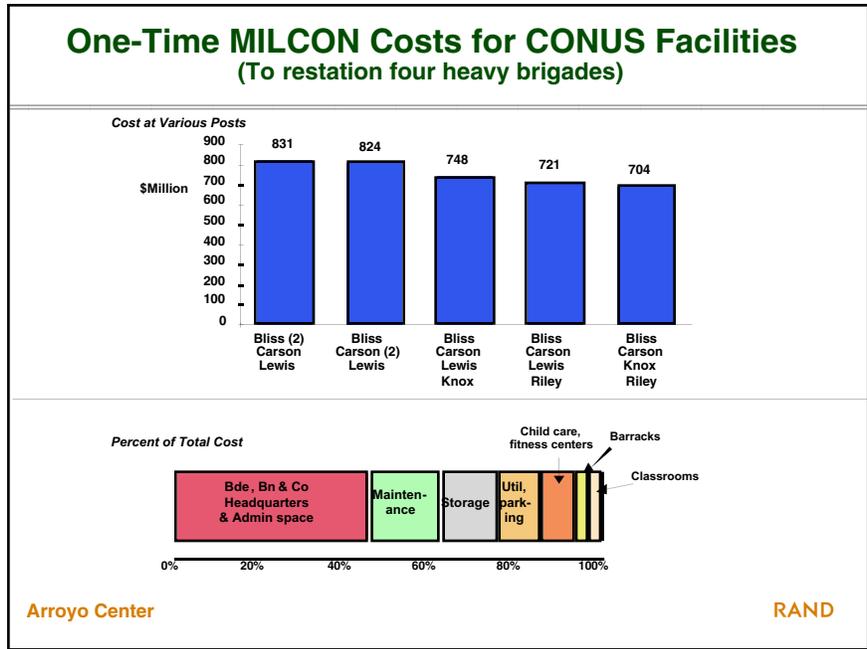
COST SAVINGS

Key Questions

- Is the rotational policy feasible?
- **To what extent would the policy:**
 - Enhance soldier and family stability
 - **Save money**
 - Affect readiness and training
 - Offer other benefits

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Here we turn to the issue of cost.



Installation costs are an important consideration, and they are complex because they involve both one-time, initial expenditures and recurring benefits that reduce costs in later years. The one-time construction costs associated with restationing the four brigades to CONUS vary according to the installations selected, due principally to differences in excess capacity at each installation. The sum of the construction cost for four brigades plus other units would be about \$700 million (in 1997 dollars) if the four were relocated to Forts Bliss, Carson, Knox, and Riley. Alternatively, the cost could range up to \$830 million if two brigades were placed at Fort Bliss, one at Carson, and one at Lewis.⁸ The more expensive options place brigades at posts that have the most extensive maneuver areas and training capacities (Bliss and Carson, in particular), while the cheaper options utilize posts with more limitations (e.g., Knox and Riley).

Each installation requires a unique distribution of new facilities. The bar near the bottom of the chart shows a typical distribution. Almost half the

⁸ In each case in which a brigade moves to Fort Lewis, we restation the light brigade now there to Fort Polk. And in the case in which two brigades move to Fort Carson, we restation the armored cavalry regiment now there to Fort Bliss. These arrangements cost less than building all the additional facilities required at the receiving installations if nothing is moved out.

construction costs are required to build headquarters and administrative space.

We based these estimates on data from the Army's Real Property Planning and Analysis System (RPLANS), which calculates available facilities, new facilities required, and new construction costs at specific posts.⁹ These computations ignore temporary facilities, such as older wooden structures, as assets. To the extent that such structures could be used, costs would decline, although the Army might not wish to plan its long-term stationing strategy based on use of such old facilities, many of which date back at least to World War II.

⁹However, in many cases we interposed our own judgment about construction proposed by the RPLANS model. For example, RPLANS called for extensive construction of on-post housing facilities and utility infrastructure, but we modified those estimates using expert judgment when model results were not credible or when the model could not provide accurate predictions in specific categories.

Recurring Savings and Costs (\$Million)		
Source of Cost or Savings	Added Cost	Savings
BAQ+VHA for more families in CONUS	+100	
Reduced European housing		-170 to -230
Family sep'n & subsistence allowances	+ 10 to 100	
European COLA		- 90
Impact aid to U.S. schools	+3(DOE)	
Reduced DODDS labor cost in Europe		-70(DOD)
Soldier transportation for rotations	+20	
Fewer PCS moves		-90
Totals	+130 to 220	-420 to -480
		Net Savings \$200-350M

Caution

- Some savings likely to phase in over time (e.g., European leases)
- Base operations cost uncertain: Down in Europe, up in CONUS
- Schools savings accrue to DoD, not Army budget
- Assume no net change: medical, BOS

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The return on the \$700 to \$830 million investment comes in the form of:

- Savings from reduced family housing and leasing costs in Europe, offset by increases in CONUS housing costs. The CONUS costs include Basic Allowance for Quarters (BAQ) and Variable Housing Allowance (VHA),¹⁰ which would need to be paid to troops restationed in the United States. We assume no new family housing construction in CONUS; soldiers without dependents in lower grades (E1–E3, O1–O2, and W1) are assumed to live on post; and all with dependents are assumed to receive BAQ and VHA.
- Savings from fewer soldiers receiving the overseas Cost of Living Allowance (COLA), offset by increased family-separation and subsistence allowances for soldiers on six-month rotations.
- Non-Army savings related to a potential \$70 million reduction in cost of the dependent school system, a Defense budget item, offset by a \$3 million increase in the Department of Education’s impact aid budget.

¹⁰At the time of this writing, the new basic allowance for housing, which supplanted BAQ and VHA, had not yet been implemented.

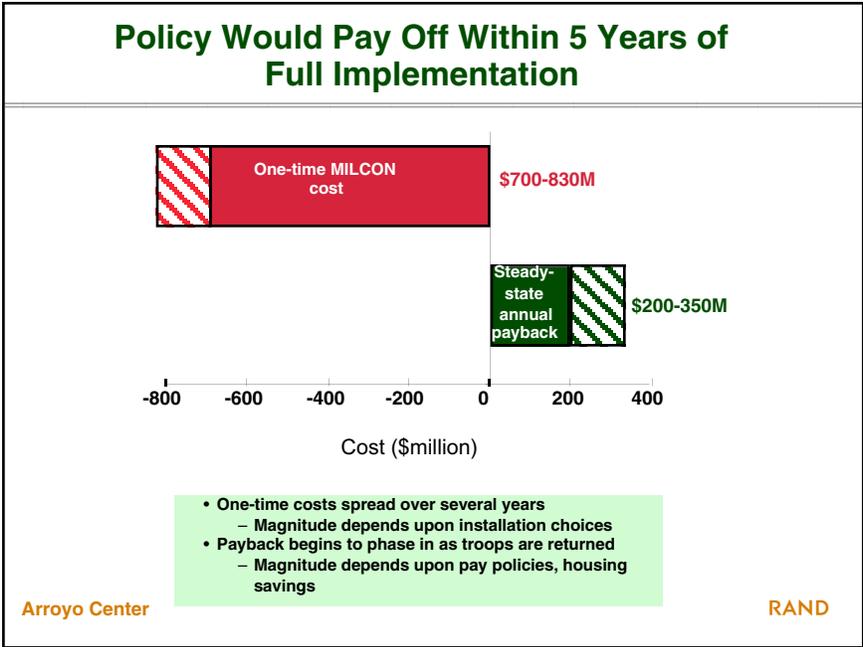
- A \$20 million cost of transporting 23,000 soldiers to and from Germany every six months, offset by a \$90 million reduction in permanent change of station moves.

We assume here that soldier and dependent medical costs and base operating support costs net to zero. In each of those cases, the Army would experience a reduction in demand for services in Europe due to the departure of families, but demand would increase in CONUS.

We therefore estimate that the resulting steady-state net annual savings would range between \$200 and \$350 million a year.

There are, of course, significant uncertainties in these figures.¹¹ The ranges shown indicate the results of varying the key assumptions that would affect major cost elements.

¹¹The sources of the ranges are as follows. (1) Savings on European housing: The lower figure of \$170 million assumes that per-unit savings equal 0.75 of the average cost, accounting for fixed overhead and management; the full \$230 million assumes that costs come down at the full average cost. (2) Allowances: The lower figure assumes that the Army does not pay the miscellaneous and incidental expense (MIE) allowance to rotating soldiers and that it recoups some of their dining-hall food cost by charging them the current enlisted subsistence rate; the upper figure assumes that the Army pays the MIE allowance and does not collect a charge for food. In addition, some uncertainty exists about two other areas: soldier transportation costs (we assumed a government cost of \$500 per round trip), and base operating costs in CONUS vs. Europe (subject to considerable uncertainty, particularly for changes in Europe).



Based on the preceding estimates, the policy would pay for itself within two to five years of full implementation. Both the upfront costs and the recurring savings would, however, be spread over several implementation years.

Equipment Cost

Problem

- Brigades restationed in CONUS need equipment on-site
- Cost for one brigade set: \$2 billion if purchased

Alternative sources

- Army War Reserve has 7 complete brigade sets
 - Major items probably available for one or two additional sets
 - 2 AWR sets in Central Europe
- National Guard equipment, if combat units are converted

Compatibility a significant issue

Solution could include:

- Reduce requirement from 4 to 3 brigades
- Substitute one infantry for one heavy brigade

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Finding equipment for the rotating brigades poses some choices. Under the rotation plan, the Army would need additional equipment because the brigades would need one set of equipment for training at home station and a different set while deployed overseas. We dismissed as unreasonably costly the idea of brigades taking their equipment with them during each rotation.¹² Instead, we assume the four brigades would need equipment sets both in Europe and in CONUS.¹³ The equipment in Europe would remain there permanently and be used by the successive rotating units during their six-month tours. Actually purchasing extra sets poses similarly unreasonable costs: \$2 billion per brigade set.

One alternative source would be Army war reserve equipment, which exists in seven complete sets located in various places. In addition, major

¹² We also judged that it would be too cumbersome to exchange equipment among rotating brigades in order to avoid purchasing additional equipment. For example, without new equipment, if a Fort Stewart brigade returns to CONUS and a Fort Riley brigade rotates to Europe, the Fort Riley equipment is now “available.” But to make that equipment useful, the Army would need to ship it from Fort Riley to Stewart. Such a procedure would involve constant and frequent shipments of equipment among CONUS stations, a process that would be unworkable over the long term.

¹³ This assumes that any continuing fifth rotation to Kuwait or elsewhere outside Europe could use equipment currently located in Kuwait.

items are probably available for one or two additional sets.¹⁴ Another source could be National Guard equipment in the event that ARNG heavy brigades are reduced in number or converted to light units. In addition, the requirement for heavy equipment could be reduced if the European presence were altered to include at least one light brigade among the four present, or if the requirement for units in Europe were simply reduced by one or more brigades.

In all of these cases, compatibility could be a significant problem because heavy brigades differ in the type of equipment they possess at home station. For example, the types of armored vehicles, communications devices, or targeting systems would be different, requiring different tactics, training, and operating procedures. Clearly it is less than optimal for a unit to train on one type of equipment at home and then deploy to a station where they must use a different type of equipment. Solving that problem, however, would be costly, since the Army is always likely to have various units in different stages of modernization. We concluded that the Army would probably not attempt to outfit all units with uniform equipment, and therefore would not face such a cost. As we describe below in the section on training and readiness, the resulting equipment incompatibility does pose a difficulty for unit training.

¹⁴ In addition, at the time of this writing one additional set of war reserve equipment was being assembled.

SUSTAINING READINESS AND TRAINING

Key Questions

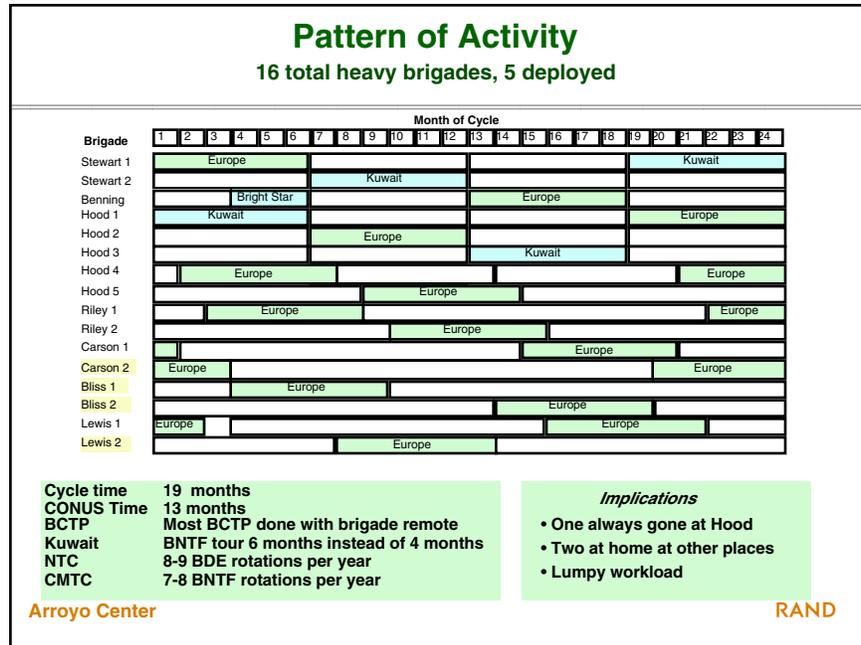
- Is the rotational policy feasible?
- **To what extent would the policy:**
 - Enhance soldier and family stability
 - Save money
 - **Affect readiness and training**
 - Offer other benefits

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We turn now to the policy's effects on training and readiness.

having the effect of a fifth rotation, the cycle time shortens to about 19 months, with about 13 months in CONUS between 6-month overseas tours. There would still be enough time to conduct gunnery and CTC rotations.

However, such a rapid rotation cycle would place considerable stress on units, and they would probably forgo some elements of training that their schedule now permits. In addition, as we noted above under the discussion of equipment costs, under this policy many brigades would be using one type of equipment at home station and a different type overseas. Particularly under a rapid rotation cycle, that incompatibility of equipment could degrade unit readiness by forcing constant reorientation of crews as they move from one location to another.



It seems prudent to expect that today’s requirements will continue into the future, including four brigades in Europe and at least one other heavy-unit deployment such as Kuwait. Therefore, we analyzed activity under a “16-and-5” option in some detail. This chart shows one possible rotation sequence for such an option.¹⁶ It indicates that at each CONUS installation the troop strength varies from time to time, creating a highly variable workload at each post. This lumpy workload could create some inefficiencies.

To summarize, this pattern yields cycle time of 19 months, CONUS time of 13 months. The patterns reveal that seldom would an entire division have all its brigades present for division and corps-level exercises (e.g., the Battle Command Training Program, or BCTP). There could be eight or nine NTC rotations and seven to eight CMTC rotations annually.

¹⁶ The yellow-shaded installations are those that receive a newly restationed brigade.

Training and Readiness Implications

16 Brigades Supporting 5 Deployments

- **About 10% of brigades are unavailable at any time**
 - Some are recovering, some preparing for deployment
- **Divisions in Europe must cope with continual turnover of brigades**
- **Divisions in CONUS are rarely together at home**
 - BCTP must be done remotely, using additional sim and comm
 - Deploying entire division more difficult – train-up, equipment prep
- **Brigades have limited time at home (12 to 14 months, average 13.2)**
 - Affects ability to support training of other units (OPFOR, OCs) and to provide post support
- **Brigades must shift from one type of equipment to another when rotating**
- **All brigades must support deployments**
 - No capacity to “fence” divisions
 - Difficult to sustain differential readiness across units

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This laydown of demands indicates several features of a rotation plan that the Army would probably want to ameliorate, or at least recognize as downsides of the policy.

First, under the 16-and-5 plan, at any given time about 10 percent of the brigades would not be available because they are preparing for an upcoming deployment or recovering from a past deployment.

Second, all heavy divisions would face some additional training and readiness challenges. Divisions in Europe would have to cope with frequent turnover among their maneuver brigades. They would find it difficult to develop sustained training relationships with subordinate brigades and difficult to conduct division-level training such as BCTP exercises.

Third, the divisions in CONUS would be more stable than those in Europe, but they would rarely have their complete complement of brigades “at home” at any given time. Therefore, the division BCTP would have to be done remotely, a situation that many commanders would prefer to avoid. Alternatively, divisions could exercise as two-brigade divisions, a less than optimal state of affairs but one that might well represent reality in some contingencies.

In addition, no single division would be available to deploy immediately from the CONUS to a potential major regional conflict (except for a division whose brigade might already be on rotation in Southwest Asia). Instead, these divisions—if the plan calls for them to be committed as divisions—would assemble themselves in theater. The deployed brigades would not be co-located for any extended preparation process, and more time would be needed to assemble and pack up their equipment for deployment. Having been away from their equipment for a time, the deployed brigade might also need to regain familiarity and conduct checks and preparation on the equipment. Again, this is less than optimal but not unheard of.

Fourth, the short time at home and the frequent absence of one of the post's brigades would pose some problems for training and post support. In today's environment, for example, personnel from one brigade are often used to support training of another brigade (as observer-controllers or opposing forces, for example). Such activities would be harder to support or could even be curtailed altogether while one brigade is absent from the post.

Fifth, as we have noted earlier, rotating brigades would have to train on one type of equipment at home station but utilize a different type while on rotations in Europe. The Army has faced a similar problem in the recent past, as with units rotating to Kuwait.

Sixth, the rotational policy requires participation of all heavy brigades, except those in Korea, to keep the cycle time even as long as 19 months. It would not be realistic to "fence" some divisions out of the rotational plan, for example to maintain a single division continuously available and in a higher state of readiness, to allow time to field new equipment, or to transform to a new organizational structure.

Possible Policy Changes That Would Enhance Training and Readiness

Key: Reduce number of heavy brigades that must deploy

- Discontinue heavy unit rotations to Kuwait, etc.
 - Seems unlikely
 - Other requirements may appear
- Reduce level of presence in Europe
 - Seems unlikely
 - Lengthens cycle, saves money, reduces time away
- Alter force mix in Europe--substitute a light for heavy bde
 - Increases versatility of presence
 - Better match for evolving missions?
 - Army could influence decision

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Because of the potential problems outlined above, we have considered several policy changes that could improve the rotation plan's readiness and training picture. Here we list some of them, each of which aims to reduce the total number of brigades that must be devoted to deployments at any given time.

First, the rotations to Kuwait or Bosnia could be terminated. This seems unlikely at this point. It is possible, however, to ease the burden of these rotations by simply tapping a Europe-bound brigade for Kuwait or Bosnia at each rotation. This would, of course, reduce European presence below the current 65,000 and would, therefore, require some political negotiations.

Second, the number of brigades required in Europe could be reduced below four. Such a policy would not only lengthen personnel cycles and save money; it would also reduce the equipment requirement.

Third, as mentioned above, the force mix requirement could substitute one or more light brigades for the four heavy. Such a substitution would increase the versatility of the European presence and may be more consistent than the heavy force with the emerging and evolving missions in Europe.

Effects of Substituting One Light for Heavy Brigade in European Rotation Plan

<i>Criterion</i>	Today's Req't <i>16 hvy Bdes 4 hvy in Europe 1 hvy in Kuwait</i>	Substitute Light <i>16 hvy Bdes 3 hvy + 1 light in Europe 1 hvy in Kuwait</i>
Personnel and families		
Family stability	Improved	Improved
Family separation in heavy bdes	45%	39%
Training and readiness		
Time in CONUS	13	18
Divisions with 3 heavy bdes in CONUS simultaneously	0	1
BTCP mode	Remote	Co-located
Cost		
European equipment sets	4	3
Recurring savings	\$200-350M/yr	A little more
One-time costs	4 bdes restationed	4 bdes restationed

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The substitution of a light for a heavy brigade has several positive effects. It would reduce the extent of family separation among soldiers in the heavy force by spreading that duty to soldiers serving in light divisions. It would lengthen the cycle time, thereby increasing the time in CONUS from 13 to 18 months. The change would also leave at least one CONUS division together and fully ready to deploy to a major conflict or on other missions. BCTP could also be done by most divisions in CONUS, with their brigades co-located. The change solves part of the equipment problem by reducing the number of additional brigade sets required from four to three.

Possible Policy Changes That Would Hinder Training and Readiness

Reduced force structure

- Heavy: makes unit rotations to support 4 or 5 deployed bdes very difficult
- Light: still enough light structure to support 1 light bde deployed

Question: How would rotation work if heavy structure were reduced by one division?

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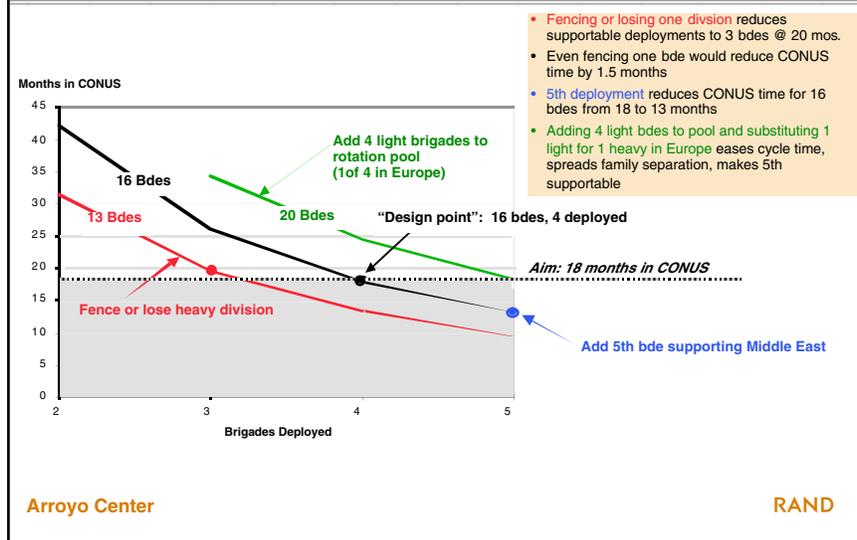
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Force structure levels are always at issue in defense planning and resource allocation. If the Army were to implement the rotational policy assessed here, the number of heavy brigades in the force would be critical to the success of the policy. Any reduction in the number of heavy brigades would jeopardize the plan. A reduction of one heavy division, without other changes, would make the rotations unsupportable. Cycle times for 13 brigades, supporting four brigades in Europe plus one in Kuwait or Bosnia, would leave the rotating brigades less than 10 months between six-month rotations.

A reduction in light force structure would be less threatening to this option. The option needs only four light brigades out of the four light divisions to yield a 24-month cycle time to meet a one-brigade foreign presence requirement.

Therefore, we examined how the Army might respond to a reduction in its heavy structure, and whether the rotation plan would seem attractive under such conditions.

How Changes in Requirement and Structure Affect Brigade Time in CONUS



The key parameter in operating the rotation plan under various circumstances is the amount of time brigades can spend in CONUS. This chart summarizes how that CONUS time, shown on the Y-axis, is affected by the number of brigades deployed on rotations (the X-axis) and by the total force structure available to rotate (the different lines on the chart).

For example, in our base case the Army would have a total of 16 brigades in the rotation pool, with four deployed; this situation yields a CONUS time of 18 months. Adding a fifth deployment shortens CONUS time to 13 months.

In contrast, the loss or fencing of a heavy division would leave only 13 brigades to meet the requirement. Using those 13 to support four brigades yields a CONUS time of 13 months. If a fifth brigade must be deployed, CONUS time drops to less than 10 months.

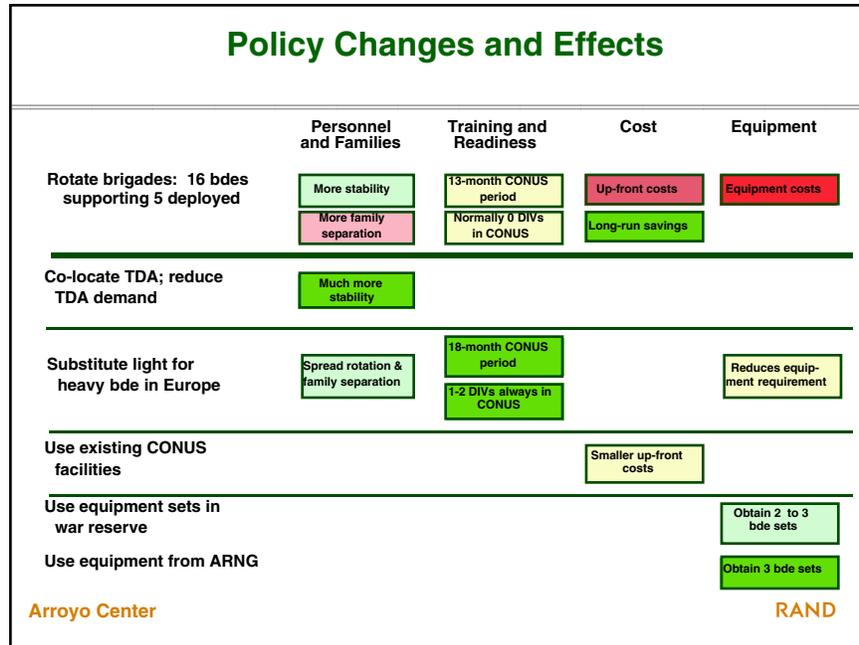
On the other hand, including light brigades in the rotation scheme increases the pool of units and lengthens time in CONUS. For example, including four light brigades in the rotation allows the resulting 20 brigades to achieve a CONUS time of about 18 months to support five deployed brigades.

Effects of Changes in Policies and Structure			
Criterion	Today's Req't 16 Bdes 4 hvy in Europe 1 hvy in Kuwait	Substitute Light 16 Bdes 3 hvy + 1 light in Europe 1 hvy in Kuwait	Force Structure Cut 13 Bdes 2 hvy + 1 light in Europe 1 hvy in Kuwait
Personnel and families			
Family stability	Improved	Improved	Improved
Family separation in hvy bdes	45%	39%	37%
Training and readiness			
Time in CONUS	13	18	20
Divisions with 3 hvy bdes in CONUS simultaneously	0	1	1
BTCP mode	Remote	Co-located	Co-located
Cost			
European equipment sets	4	3	None
Recurring savings	\$200-350M/yr	A little more	Much more
One-time costs	4 bdes back	4 bdes back	1 bde back

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Now, what can we conclude about the supportability of rotation under a force structure cut? The preceding chart shows that to keep CONUS time up as high as 18 months, the Army would need to have at least 13 brigades in the rotating pool, supporting just 3 brigades deployed. This chart shows one such plan, in the right-hand column, compared with the other conditions we discussed earlier.

In this “force structure cut” scenario, the Army would have to reduce its European commitment to a total of three brigades, two heavy and one light. Another heavy brigade would continue to support Kuwait or Bosnia. The results in the right-hand column indicate that such a situation is entirely supportable with rotation. In fact, under those conditions the Army would not have to find any equipment from war reserves or the National Guard, and it would need to construct CONUS facilities for only one brigade (since the force reduction would leave three sets of brigade equipment and facilities available).



The top panel of this chart summarizes the pros and cons of the rotation policy under current circumstances. Red and yellow portions indicate disadvantages, while green portions indicate advantages. The rotation policy would provide more family stability, but at the price of increased family separation. Further, units could probably work within the available cycle times, even including Kuwait or Bosnia as a fifth deployment, although training and readiness would not be optimal. The upfront construction costs associated with restationing the four brigades in CONUS would be substantial but would be paid back with recurring savings within five years of full implementation. Equipment costs for four brigade sets of equipment would be prohibitive at \$2 billion a brigade set, but other options exist to provide the equipment.

The lower panels summarize how different policies might counter some disadvantages associated with the current situation—in effect, attempting to ameliorate some of the problems indicated by “red” or “yellow” boxes. For example, the demand to replace soldiers assigned at TDA locations, from which they need to PCS to return to a TOE unit, limits the increase in family stability. Either co-locating TDA and TOE units or reducing the TDA demand would substantially improve stability.

Substituting a light for a heavy brigade among the four deployed would spread the liability for deployments to the light force, ameliorating the

effects of family separation on the heavy force. It would also lengthen heavy force cycle times and improve the readiness posture of heavy divisions. In addition, it would reduce the equipment requirement by one-fourth.

Using existing CONUS facilities would reduce the substantial upfront costs associated with the policy.

Finally, the equipment problem can be solved through some combination of substituting light for heavy units (already mentioned), using war reserve materiel, or using equipment from converted National Guard brigades.

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