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|---|---|--|---|--|
| 1. AGENCY USE ONLY (Leave blank) | | 2. REPORT DATE APRIL 1997 | 3. REPORT TYPE AND DATES COVERED Final | |
| 4. TITLE AND SUBTITLE 44 Tank Report Impact on Combat Service Support (CSS) | | | 5. FUNDING NUMBERS | |
| 6. AUTHOR(S) Jeannette Blumenthal, Operations Research Analyst | | | | |
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| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Commander, Combined Arms Support Command (CASCOM) 3901 A Avenue, Suite 200 Fort Lee, VA 23801-1809 | | | 10. SPONSORING/MONITORING AGENCY REPORT NUMBER | |
| 11. SUPPLEMENTARY NOTES <p style="text-align: center;">DTIC QUALITY INSPECTED 2</p> | | | | |
| 12a. DISTRIBUTION/AVAILABILITY STATEMENT Distribution Statement A: Approved for Public Release; Distribution is Unlimited | | | 12b. DISTRIBUTION CODE A | |
| 13. ABSTRACT (Maximum 200 words) In the Force XXI Heavy Division, the impact upon CSS due to the decrease in the number of tanks in each Armor Battalion is a minor reduction in the requirements for CSS personnel--maintainers and vehicle operators--with a small reduction in the number of support vehicles. For the Division, the largest personnel change is in direct positions--crew. For the Force XXI Heavy Division, Approved Interim Design-Objective, 73 percent of the reduction in personnel requirements is attributable to operational combat positions. The impact upon CSS is small compared to the reductions in the rest of the force structure. At the forward support level, about forty percent of the CSS positions are some type of maintenance. If all or part of the Direct Support (DS) maintenance is not counted in the CSS total, the shift is greater--up to 79 percent of the reduction would be due to combat operations positions. In addition, the CSS positions are more difficult to identify and quantify. Much of the CSS support is not totally dedicated to the tanks. Even the majority of the maintainers work on more than just tanks. Any reduction in CSS structure has a potentially broad impact and increases the risk of not having enough support for the systems which remain. | | | | |
| 14. SUBJECT TERMS Combat Service Support (CSS); Force XXI; Support Requirements; Armor Battalion | | | 15. NUMBER OF PAGES 25 | |
| | | | 16. PRICE CODE | |
| 17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED | 18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED | 19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED | 20. LIMITATION OF ABSTRACT UL | |

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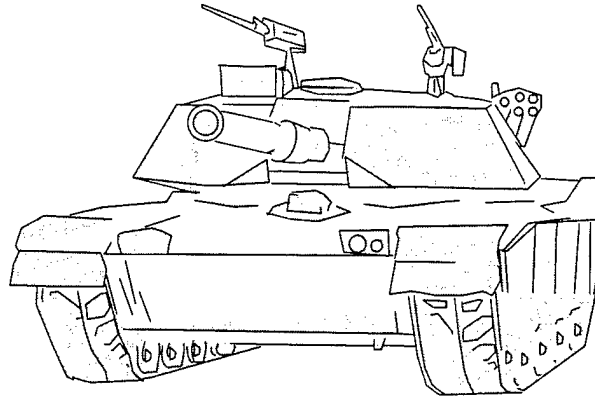
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TRAC-TR-0597
April 1997



STUDY REPORT
44 TANK STUDY

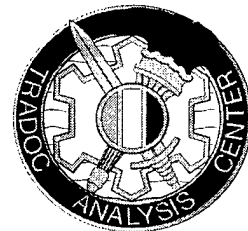
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44 Tank Study

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44 Tank Study

Purpose. To assess the impact upon Combat Service Support (CSS) of changing the number of tanks in a battalion from 58 to 44.

Background. On 18 November 1996, the Combined Arms Support Command (CASCOM) briefed LTG Miller, Commander, Combined Arms Command (CAC), on CSS in the Force XXI Division. During that briefing, LTG Miller asked CASCOM to determine the impact on CSS of reducing the number of tanks in an Armor Battalion from 58 to 44. MG Guest, Commander, CASCOM, passed this tasking on to TRADOC Analysis Center - Fort Lee (TRAC-LEE). TRAC-LEE provided an initial, "back of the envelope" estimate the same day. This estimate was based upon the manpower analysis completed in 1994 for the M1A2 Abrams Cost and Operational Effectiveness Analysis (COEA) which supported a Milestone III decision. A summary of the results of this quick turn-around analysis is at Appendix A. Dr. Klopp, Director, TRAC-LEE, agreed to provide a more rigorous analysis as the required data became available.

Scope.

TRAC-LEE's preliminary work considered an Army of Excellence (AOE) Heavy Division with five Armor Battalions, four Mechanized Battalions, and two Attack Helicopter Battalions (AHB). The ground combat units are organized into two Brigades, one with three Armor Battalions, the other with two. The final analysis focused on the Force XXI Heavy Division, Approved Interim Design - Objective, which has four Armor Battalions, five Mechanized Battalions, and one AHB. The ground combat units are organized into three Brigades, one with two Armor Battalions and the others with one Armor Battalion each. TRAC-LEE interpreted the fourteen tank reduction to be equivalent to an Armor Company and assessed the impact of removing an entire company from each Armor Battalion. Figure 1 depicts this basic assumption and its effect on a Force XXI Armor Battalion.

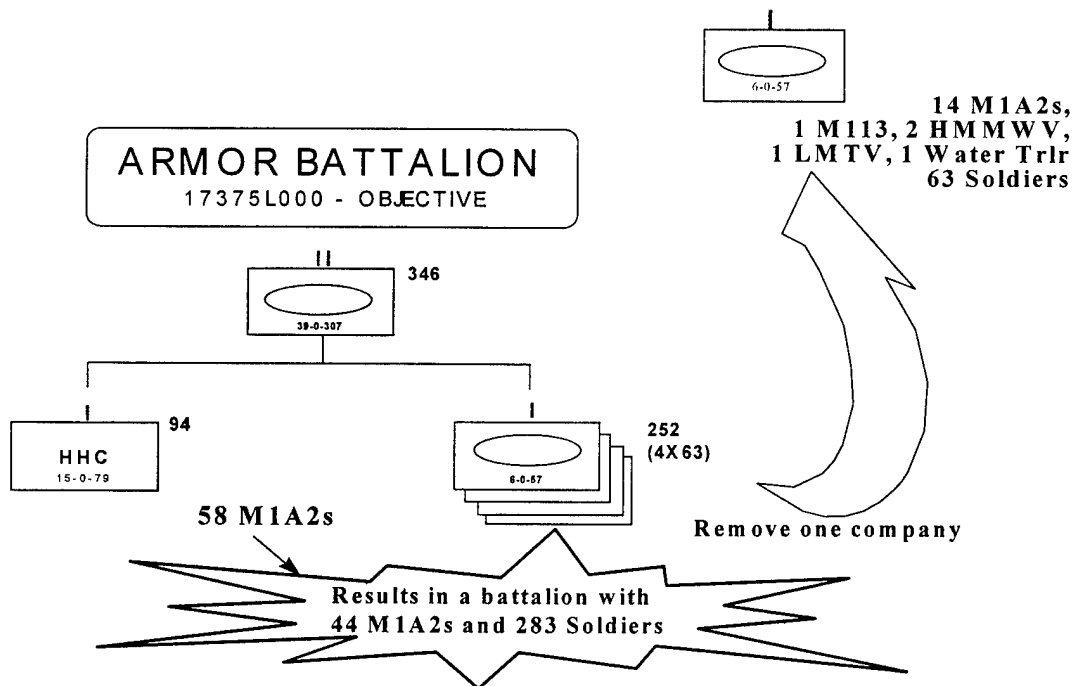


Figure 1. Removing One Company from an Armor Battalion

Table 1 provides a summary of this approach in terms of an AOE Heavy Division and the Force XXI Heavy Division, Approved Interim Design - Objective.

Table 1. Reducing Armor Battalion Size under AOE and Force XXI

| AOE Heavy Division | Force XXI Heavy Division |
|--|--|
| Remove: One Company from each Battalion | Remove: One Company from each Battalion |
| → 70 M1A1s or M1A2s 5 Companies and parts of their Battalion's unit maintenance | → 56 M1A2s 4 Companies and parts of their associated FSCs |

Methodology (Figure 2).

a. Identification of Affected Units and Equipment. After identifying the affected units and their associated force structure, we developed a list of specific Associated Support Items of Equipment (ASIOE) affected by tank density as delineated in the M1A1 Abrams Tank Basis of Issue Plan (BOIP) and the M1A2 BOIP. M1A1 data was substituted for M1A2 data when the latter was incomplete. Quantities were computed based upon a 58 tank Armor Battalion and a 44 tank Armor Battalion.

b. Maintenance Manpower. After calculating the maintenance workload based upon the Manpower Requirements Criteria (MARC) for major items of equipment in the companies and the ASIOE for an Armor Battalion with 58 tanks in four companies, we recalculated the workload based upon a battalion with 44 tanks in three companies. Calculations for the AOE structure were done using both the M1A1 MARC and the M1A2 MARC. Maintenance workload for the items of interest was aggregated based upon the brigade structures identified above. We captured the differences, in terms of soldiers—sometimes expressed as a fractional requirement—and equipment, and compared those to the support force structure to identify possible further reductions in support equipment and personnel. This process was repeated to quantify additional differences. The cumulative maintenance manpower totals for the Division based upon a 58 tank battalion and the Division based upon a 44 tank battalion were captured and consolidated for unit level, Direct Support (DS), and General Support (GS) maintenance. After this consolidation, fractional values were rounded to whole numbers with all values between zero and one rounded to one.

c. Other Manpower. Operational personnel, such as tanks crews and vehicle drivers, were identified along with the equipment. In all cases, where exact relationships were not identifiable, estimates were conservative. For example, freeing up a Heavy Expanded Mobility Tactical truck (HEMTT) or a fueler could free-up two soldiers, but we only estimated one driver saved. We assumed that the operators of other vehicles could have other duties unrelated to the vehicle and did not identify soldier savings on a one-for-one with vehicles. Hence the uncertainty of the estimate and the “+” in reference to the Forward Support Company (FSC) Supply and Transportation (S&T) personnel in Table 2.

d. Total Reduction in Requirement. We identified the difference in the number of soldiers between the two Division structures—58 tank Armor Battalion and 44 tank Armor Battalions—for both the Force XXI Heavy Division and an AOE Heavy Division. The maintenance manpower and other support differences are consolidated in the support reduction in requirement subtotal, while combat operations manpower differences—crew, command positions, and others—are captured in the direct reduction subtotal. The personnel reductions identified for the Force XXI structure are not comparable to the AOE reductions since they are based upon different equipment as well as force structure changes.

e. Ammunition and Fuel Support.

To assess the impact upon the Division's transportation (fuel delivery) and ammunition handling systems, we ran the 1997 release of the Operations Logistics Planner (OPLOGPLN '97) (version 1.40) with the AOE Heavy Division force structure and M1A2 tanks. OPLOGPLN '97 is a computer-based program designed to assist logistics planners in calculating supply usage estimates in support of operations. Like its predecessor, the Supply Usage Requirements Estimator (SURE), OPLOGPLN '97 allows the logistician to calculate supply estimates by class of supply for selected units. OPLOGPLN '97 is designed specifically to support operations typically associated with multi-phase operation plans and operation orders. The user creates units based upon standard Tables of Organization and Equipment (TOE) and maps these units into task organizations. The task organizations can then be assigned to a multi-phase order and assigned user-developed mission parameter sets. Reports can then provide supply consumption by unit, task organization, phase, and order.

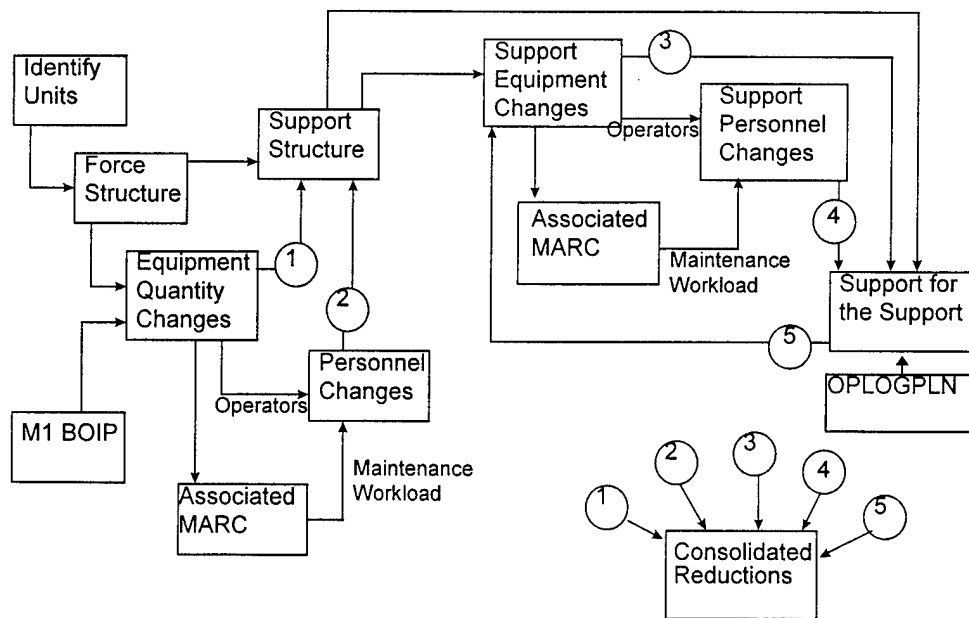


Figure 2. Methodology

The Force XXI release of OPLOGPLN did not have the exact Force XXI Heavy Division, Approved Interim Design - Objective loaded. Due to time constraints and the lack of significant impacts revealed in the consumption reports generated by the '97 AOE version, we did not modify the software and did not use OPLOGPLN for the Force XXI analysis.

Findings.

For the Force XXI Division with four Armor Battalions organized into three brigades, the overall reduction in personnel requirements which result from eliminating one company from each Armor Battalion are shown in Table 2. Of the 347 soldiers "freed up" when the companies are eliminated, over 70 percent are operations spaces—primarily crew for the tanks—which include command spaces. Table 3 provides similar information for an AOE Heavy Division with five M1A2 Armor Battalions. Although the Force XXI analysis and results are of primary interest, we have included the AOE findings for completeness and to serve as a frame of reference.

Table 2. Summary of Reduction in Requirements, Force XXI Heavy Division, Approved Interim Design
- Objective (4 M1A2 Battalions)

| | Battalion | Division |
|--|-----------|-----------------|
| Total Personnel Reduction | | 347 |
| Direct (Combat Operations) Personnel Reduction Subtotal | | 252 |
| Company Personnel | 63 | 252 |
| Crew | 56 | 224 |
| Others | 7 | 28 |
| Company Equipment | | |
| M1A2 | 14 | 56 |
| M113A3 | 1 | 4 |
| HMMWV | 2 | 8 |
| LMTV Cargo Truck | 1 | 4 |
| Water Trailer, 400 gal | 1 | 4 |
| Support Personnel Reduction Subtotal | | 95 |
| FSC Maintainers ¹ | 6 to 8 | 28 |
| FSC S&T ² | 10+ | 40 |
| DS Maintainers ³ | --- | 27 |
| FSC Equipment | | |
| HEMTTs (LHS) ⁴ | 3 (1) | 12 (4) |
| Fuelers ⁵ | 2 | 8 |
| LMTV Cargo Trucks | 4 | 16 |
| LMTV Trailers | 3 | 12 |
| MTV Cargo Trucks | 2 | 8 |
| MTV Trailer | 1 | 4 |
| HMMWVs | 2 | 8 |
| M88AA1E1 | 1 | 4 |
| Field Feeding Kitchen | 1 | 4 |
| GS Maintainers ⁶ | ---- | 14 ⁷ |

¹ Depends upon how maintenance workload is rolled up—two Armor battalions in a Brigade or one.

² Depends upon how many dedicated drivers there are for the equipment shown.

³ This maintenance may be performed by other than Division personnel either in the Division area or at an Echelon Above Division (EAD).

⁴ Assumes 15 HEMTTs or 7 LHS supporting 58 tanks (one battalion).

⁵ Assumes 12 fuelers supporting 58 tanks (one battalion).

⁶ All or part of this maintenance may be performed by other than Division personnel either in the Division area or at an EAD.

⁷ GS Maintenance personnel are not included in the Division totals shown above.

Table 3. Summary of Reduction in Requirements, AOE Heavy Division (5 M1A2 Battalions).

| | Battalion | Division |
|--|-----------|------------------|
| Total Personnel Reduction | | 374 |
| Direct (Combat Operations) Personnel Reduction Subtotal | | 315 |
| Company Personnel | 63 | 315 |
| Crew | 56 | 280 |
| Others | 7 | 35 |
| Company Equipment | | |
| M1A2 | 14 | 70 |
| M113A3 | 1 | 5 |
| M998 Utility Truck | 2 | 10 |
| LMTV Cargo Truck | 6 | 30 |
| Support Personnel Reduction Subtotal | | 59 |
| Brigade/Battalion Maintainers Subtotal | | 28 |
| Other Brigade/Battalion Level Support ⁸ | --- | --- |
| DS Maintainers | --- | 31 |
| Battalion/Brigade Equipment | | |
| HEMTTs ⁹ | 3 | 15 |
| Fuelers ¹⁰ | 2 | 10 |
| LMTV Cargo Trucks | 6 | 30 |
| M998 Utility Trucks | 2 | 10 |
| Field Feeding Kitchen | 1 | 5 |
| GS Maintainers ¹¹ | --- | 15 ¹² |

Appendix B contains tables providing detailed quantities in terms of the 58 tank structure as it compares to the 44 tank structure for both the Force XXI Division and the AOE Division with M1A2 and M1A1 tanks. All maintenance manpower information was calculated at the Military Occupational Specialty (MOS) level of detail. The spreadsheets developed for these calculations are available from TRAC-LEE independent of this report.

OPLOGPLN '97 generated consumption for the AOE Heavy Division is provided in Table 4. The one percent reduction for Ammunition spread across the Armor units of an entire division is negligible. A change of this magnitude will not affect the force structure. Since the seven percent reduction in fuel also is dispersed across the Brigades, it likewise will not have a significant impact upon the support force structure. The "freeing-up" of ammunition carriers and fuelers merely reduces the risk associated with the support of the rest of the combat force.

⁸ The analysis of the AOE force structure did not cover additional layers of support.

⁹ Assumes 15 HEMTTs supporting 58 tanks (one battalion).

¹⁰ Assumes 12 fuelers supporting 58 tanks (one battalion).

¹¹ Some of this maintenance may be performed by other than Division personnel either in the Division area or at an EAD.

¹² GS Maintenance personnel are not included in the Division totals shown above.

Table 4. OPLOGPLN 97 results for AOE Heavy Division (5 M1 Battalions, 4 BFVS, 2 AHB)

| OPLOGPLN Data ¹³ | 58 Tank | 44 Tank | Difference | Percent Reduction |
|---------------------------------------|------------|------------|------------|-------------------|
| Fuel (One day consumption) | | | | |
| Attack posture | 657,422.31 | 612,203.93 | 45,218.38 | 7% |
| Other | 641,515.57 | 597,987.59 | 43,527.98 | 7% |
| Ammunition (STONS) | | | | |
| Attack 1 st Day (Moderate) | 1,476.11 | 1,458.45 | 17.66 | 1% |
| Attack-Succeeding Day (Moderate) | 489.11 | 483.25 | 5.86 | 1% |
| Defend-Succeeding Day (Light) | 1,180.97 | 1,166.82 | 14.15 | 1% |

Related Efforts. In a parallel effort, CASCOM first evaluated the effect on the Force XXI Division of removing one tank per tank platoon and then quantified the impact of eliminating an entire Armor Battalion. Table 5 provides a summary of these approaches and the impacts identified as they compare to the analysis done on removing one company from each battalion. The changes in maintenance support requirements among the three approaches are not linear due to maintenance consolidation and rounding rules. Whether the fractional requirement is 0.4, 0.9, or 1.4, you still need one maintenance person.

Table 5. Impact of Eliminating a Battalion VS a Company VS a Tank.

| Force XXI Heavy Division | | |
|-----------------------------------|---------------------------------|--------------------------------|
| Remove: | | |
| One Battalion | One Company from each Battalion | One Tank from each Platoon |
| Impact (Reduces Requirements By): | | |
| → 58 M1A2s | → 56 M1A2s | → 48 M1A2s |
| 4 Companies & HHC | 4 Companies | 3 M1A2s from each Company |
| FSC | parts of 4 FSCs | smaller parts of 4 FSCs |
| 30+DS Maintenance | 27 DS Maintenance | 18 DS Maintenance |
| 583 Soldiers | 347 Soldiers | 210 Soldiers (192 crew) |

Comparison. The largest decrease in requirements as a result of reducing the number of tanks in a Division is in direct positions—crew. Removing force structure at a higher aggregate level, e.g., eliminating an entire battalion instead of one company from each battalion, results in more operational overhead decreases and consolidates the CSS reductions; however, each action has different operational implications. As larger aggregates are taken—there are fewer tanks, less firepower, and fewer command positions. The total elimination of one unit’s maintenance workload does nothing to ease the workload of other units. Battlefield coverage and span of control shift, information gaps become more apparent, and the brigade becomes less flexible since it is no longer a “heavy” brigade.

Conclusions. In the Force XXI Division, the impact upon CSS due to the decrease in the number of tanks in each Armor Battalion is a minor reduction in the requirements for CSS personnel—maintainers and vehicle operators—with a small reduction in the number of support vehicles. For the Division, the

¹³ All consumption rates are for the entire Division for one day. OPLOGPLN 97 lists the M1A2 Line Item Number (LIN) in all Armor Units.

largest personnel change is in direct positions—crew. For the Force XXI Heavy Division, Approved Interim Design - Objective, 73 percent of the reduction in personnel requirements is attributable to operational combat positions. The impact upon CSS is small compared to the reductions in the rest of the force structure. At the forward support level, about forty percent of the positions are some type of maintenance. If all or part of the DS maintenance requirement is not counted in this total, the shift is greater—up to 79 percent of the reduction would be due to the combat operations positions. In addition, the CSS positions are more difficult to identify and quantify. Much of the CSS support is not totally dedicated to the tanks. Everything that moves needs fuel; all weapon systems need ammunition resupply. Even the majority of maintainers work on more than just the tanks. Any reduction in CSS structure has a potentially broad impact and increases the risk of not having enough support for the systems that remain.

Appendix A

The following table shows the results of the "back of the envelope" analysis which was based upon the manpower analysis completed in 1994 for the M1A2 Abrams Cost and Operational Effectiveness Analysis (COEA) which supported a Milestone III decision.

"Back of the Envelope" Analysis.

| Back of the Envelope - Tanks | 58 Tank | 44 Tank | Difference | Percent Reduction |
|------------------------------|---------|---------|------------|-------------------|
| Tanks in a Battalion | 58 | 44 | 14 | 24% |
| Bn Maintenance for tanks | 30 | 22 | 8 | 27% |
| DS for tanks | 357 | 262 | 95 | 27% |
| Total Force (Tank Support) | 1366 | 1014 | 352 | 26% |
| Bn HEMTTs | 15 | 11 | 4 | 27% |
| OPLOGPLN Battalion Level | | | | |
| Class III (Bulk) | 42,856 | 34,657 | 8,199 | 19% |
| Class V (STON) | 34.54 | 31.78 | 2.76 | 8% |

Appendix B

Table 1. Force XXI Heavy Division, Approved Interim Design - Objective (4 M1A2 Battalions).

| Description | 58 Tank | 44 Tank | Difference | Percent Reduction |
|--|---------|---------|------------|-------------------|
| Personnel ¹ | | | | |
| Maintenance | | | | |
| Brigades (Tank Support) | 151 | 123 | 28 | 19% |
| DS (Tank Support) ² | 126 | 99 | 27 | 21% |
| GS (Tank Support) ³ | 67 | 53 | 14 | 21% |
| Other Support | | | | |
| FSC S&T | 72 | 62 | 10 | 14% |
| FSC 4 Battalion Roll-up | 288 | 248 | 40 | 14% |
| Combat Operations ⁴ | | | | |
| Tank Company (Crew +) | 63 | 63 | ---- | |
| Battalion (4 to 3 AR Companies) | 252 | 189 | 63 | 25% |
| Division (16 to 12 AR Companies) | 1008 | 756 | 252 | 25% |
| Equipment (not compared to Division Totals) | | | | |
| Tanks M1A2 — Company | 14 | 14 | ---- | |
| —Battalion | 58 | 44 | 14 | 24% |
| – 4 Battalion Roll-up | 232 | 176 | 56 | 24% |
| M113 Personnel Carrier – Company | 1 | 1 | ---- | |
| – 4 Battalion Roll-up | 16 | 12 | 4 | 25% |
| HMMWV—Company | 2 | 2 | ---- | |
| —FSC | 16 | 14 | 2 | 13% |
| – 4 Battalion Roll-up (w/ FSCs) | 96 | 80 | 16 | 17% |
| Truck Cargo LMTV – Company | 1 | 1 | ---- | |
| —Battalion (Company Support+Company) | 24 | 18 | 6 | 25% |
| —FSC | 22 | 18 | 4 | 18% |
| —4 Battalion Roll-up (w/ FSCs) | 184 | 144 | 40 | 22% |
| HEMTTs ⁵ “freed up” | | | | |
| — Battalion | 15 | 12 | 3 | 20% |
| – 4 Battalion Roll-up | 60 | 48 | 12 | 20% |
| Fuelers ⁶ “freed up” | | | | |
| — Battalion | 12 | 10 | 2 | 17% |
| – 4 Battalion Roll-up | 48 | 40 | 8 | 17% |

¹ Ripple impact on CSS/Personnel Service Support (PSS) not addressed. Maintenance is that generated by the tank and its ASIOE (based upon the BOIP).

² Some of this maintenance may be performed by other than Division personnel either in the Division area or at an EAD.

³ This maintenance may be performed by other than Division personnel either in the Division area or at an EAD.

⁴ Covers only those personnel in the Companies.

⁵ Does not reflect the total number of HEMTTs in the Brigade or Division.

⁶ Does not reflect the total number of Fuelers in the Brigade or Division.

Appendix B

Table 2. AOE Heavy Division (5 M1A1 Battalions, 4 BFVS, 2 AHB).

| Description | 58 Tank | 44 Tank | Difference | Percent Reduction |
|---|---------|---------|------------|-------------------|
| Personnel ⁷ | | | | |
| Maintenance | | | | |
| Brigades (Tank Support) | 139 | 107 | 32 | 23% |
| DISCOM (Tank Support) | 135 | 104 | 31 | 23% |
| Other Support ⁸ | --- | --- | -- | --- |
| Combat Operations ⁹ | | | | |
| Tank Company (Crew +) | 63 | 63 | ---- | |
| Battalion (4 to 3 AR Companies) | 252 | 189 | 63 | 25% |
| Division (20 to 15 AR Companies) | 1260 | 945 | 315 | 25% |
| Equipment | | | | |
| M1A1 Tanks – Company | 14 | 14 | ---- | |
| — Battalion | 58 | 44 | 14 | 24% |
| — Division Total | 317 | 247 | 70 | 22% |
| M113 Personnel Carrier — Company | 1 | 1 | ---- | |
| — Division (Company Requirement) | 20 | 15 | 5 | 25% |
| — Division Total | 269 | 264 | 5 | 2% |
| M998 Utility Truck – Company | 2 | 2 | ---- | |
| — Division (Company Requirement) | 40 | 30 | 10 | 25% |
| — Division Total | 1155 | 1145 | 10 | 0.9% |
| Truck Cargo LMTV – Company | 1 | 1 | ---- | |
| — Battalion (Company Support +Co) ¹⁰ | 24 | 18 | 6 | 25% |
| — Division Total | 609 | 579 | 30 | 5% |
| HEMTTs ¹¹ “freed up” | | | | |
| — Battalion | 15 | 12 | 3 | 20% |
| — 5 Battalion Roll-up | 75 | 60 | 15 | 20% |
| Fuelers ¹² “freed up” | | | | |
| — Battalion | 12 | 10 | 2 | 17% |
| — 5 Battalion Roll-up | 60 | 50 | 10 | 17% |

⁷ Ripple impact on CSS/PSS not addressed. Maintenance is that generated by **the tank and its ASIOE** (based upon the BOIP).

⁸ The number of support personnel other than maintainers was not estimated for the AOE units.

⁹ Covers only those personnel in the Companies.

¹⁰ LMTV distribution is one in the Company and five in the Battalion to support each Company, i.e., six LMTV in each Battalion for the support of each Company.

¹¹ Does not reflect the total number of HEMTTs in the Brigade or Division.

¹² Does not reflect the total number of Fuelers in the Brigade or Division.

Appendix B

Table 3. AOE Heavy Division (5 M1A2 Battalions, 4 BFVS, 2 AHB).

| Description | 58 Tank | 44 Tank | Difference | Percent Reduction |
|----------------------------------|---------|---------|------------|-------------------|
| Personnel ¹³ — | | | | |
| Maintenance | | | | |
| Brigades (Tank Support) | 120 | 92 | 28 | 23% |
| DISCOM (Tank Support) | 135 | 104 | 31 | 23% |
| Other Support — same as M1A1 | | | | |
| Combat Operations — same as M1A1 | | | | |
| Equipment — same as M1A1 | | | | |

¹³ Ripple impact on CSS/PSS not addressed. Maintenance is that generated by the tank and its ASIOE (based upon the BOIP).

Appendix C

References

Army MARC Maintenance Data Base, 17 Jan 97 printing
Annual Maintenance Man Hours (AMMH) by Line Item Number (LIN)

Basis of Issue Plan (BOIP) Feeder Data, Total Asset Visibility System, Qualitative Quantitative
Personnel Requirements Information (QQPRI)

Tank Combat 105MM M1IP (Abrams) LIN: T13374

Tank Combat 120MM M1A1 (Abrams) LIN: T13168

Tank Combat 120MM M1A2 (Abrams) LIN: T13305

Associated Support Items of Equipment (ASIOE) and their basis of issue.

AR 570-2, Manpower Requirements Criteria
Annual available MOS time.

OPLOGPLN 97

Division SRC 87000A300: Armor Division (5 M1, 4 BFVS, 2 AHB).

AR 611-201, Enlisted Career Management Fields and Military Occupational Specialty

Author: "Lundy, Anniestine CPT" <lundy@lee-dns1.army.mil> at internet
Date: 4/7/97 7:54 AM
Priority: Normal
TO: blumentj at trac-lee
Subject: 44 Tank Study

----- Message Contents -----
We have reviewed your revised final draft. No significant comments
were noted.

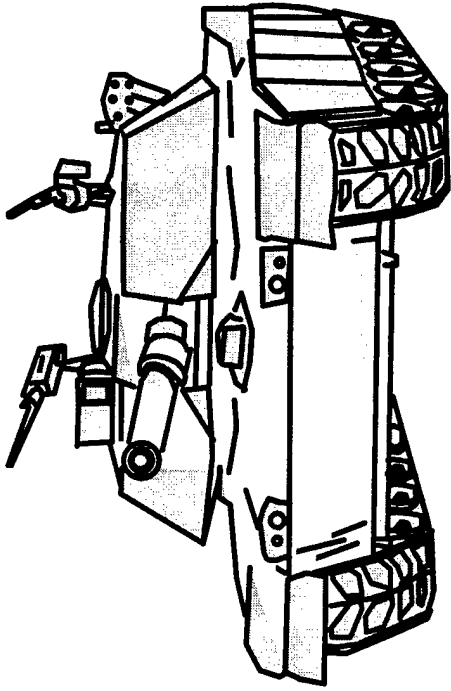
VR,
CPT Lundy

APPENDIX D

ACRONYMS

| | |
|----------------|---|
| AHB | Attack Helicopter Battalion |
| AMMH | Annual Maintenance Man Hours |
| AOE | Army of Excellence |
| ASIOE | Associated Support Items of Equipment |
| BOIP | Basis of Issue Plan |
| BFVS | Bradley Fighting Vehicle System |
| CAC | Combined Arms Command |
| CASCOM | Combined Arms Support Command |
| COEA | Cost and Operational Effectiveness Analysis |
| CSS | Combat Service Support |
| DISCOM | Division Support Command |
| DS | Direct Support |
| EAD | Echelon(s) Above Division |
| FSC | Forward Support Company |
| GS | General Support |
| HEMTT | Heavy Expanded Mobility Tactical Truck |
| HHC | Headquarters and Headquarters Company |
| HMMWV | High Mobility Multipurpose Wheeled Vehicle |
| LHS | Load Handling System |
| LIN | Line Item Number |
| LMTV | Light Mobility Tactical Vehicle |
| M113A3 | Armored Personnel Carrier |
| M1A2 | Abrams Tank |
| M88AA1E1 (IRV) | Armored Recovery Vehicle |
| MARC | Manpower Requirements Criteria |
| MOS | Military Occupational Specialty |
| MTV | Medium Tactical Vehicle |
| OPLOGPLN | Operations Logistics Planner |
| OPLOGPLN '97 | Operations Logistics Planner 1997 release (version 1.40) |
| PSS | Personnel Service Support |
| QQPRI | Qualitative Quantitative Personnel Requirements Information |
| S&T | Supply and Transportation |
| STONS | Short Tons |
| SURE | Supply Usage Requirements Estimator |
| TOE | Tables of Organization and Equipment |
| TRAC-LEE | TRADOC Analysis Center - Fort Lee |
| TRADOC | Training and Doctrine Command |
| VS | Versus |

APPENDIX E
Briefing Slides

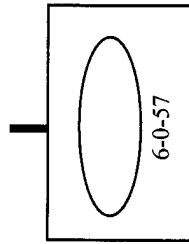


44 Tank Study

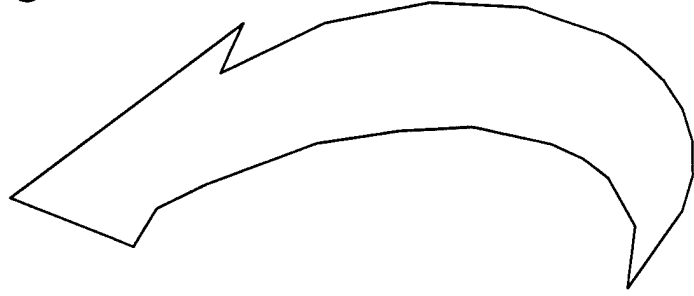
Purpose: Assess the impact on CSS of changing the number of tanks in a battalion from 58 to 44.

What we did.

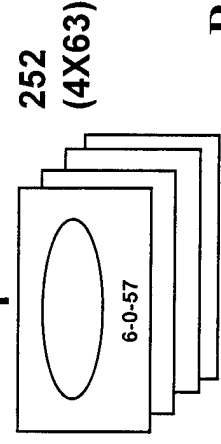
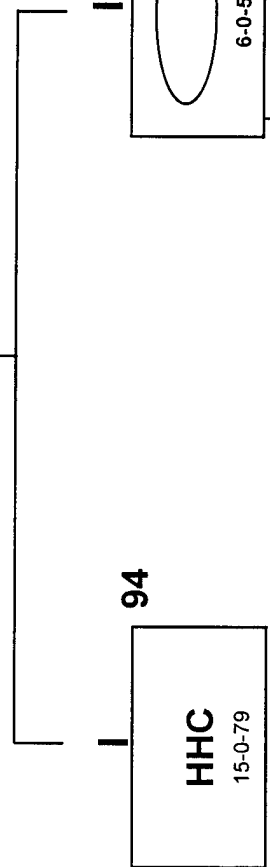
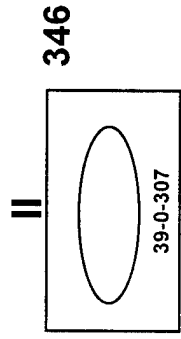
ARMOR BATTALION
17375L000 - OBJECTIVE



14 M1A2s,
1 M113, 2 HMMWV,
1 LMTV, 1 Water Trlr
63 Soldiers

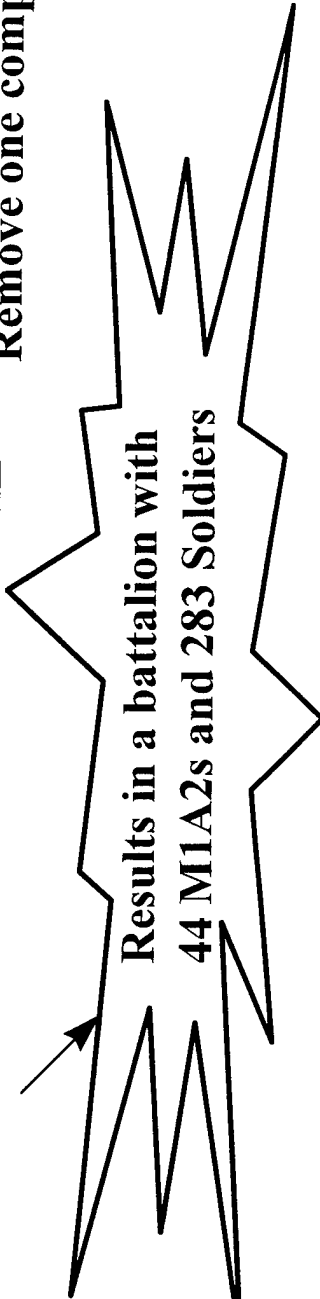


Remove one company



252
(4X63)

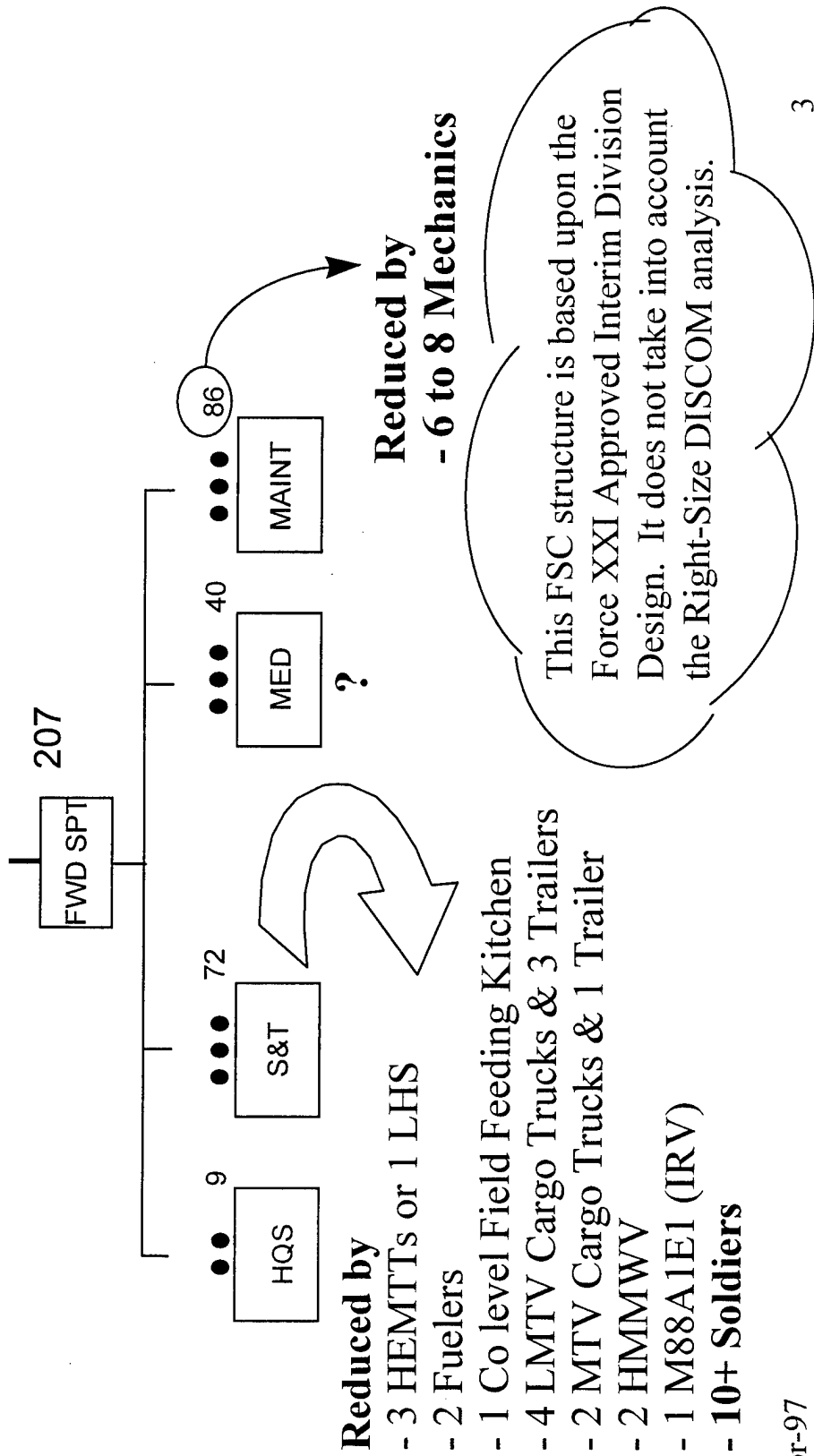
58 M1A2s



2-Apr-97

Support Impact (each FSC).

FORWARD SUPPORT COMPANY (AR) 63XX7AXXX -OBJECTIVE

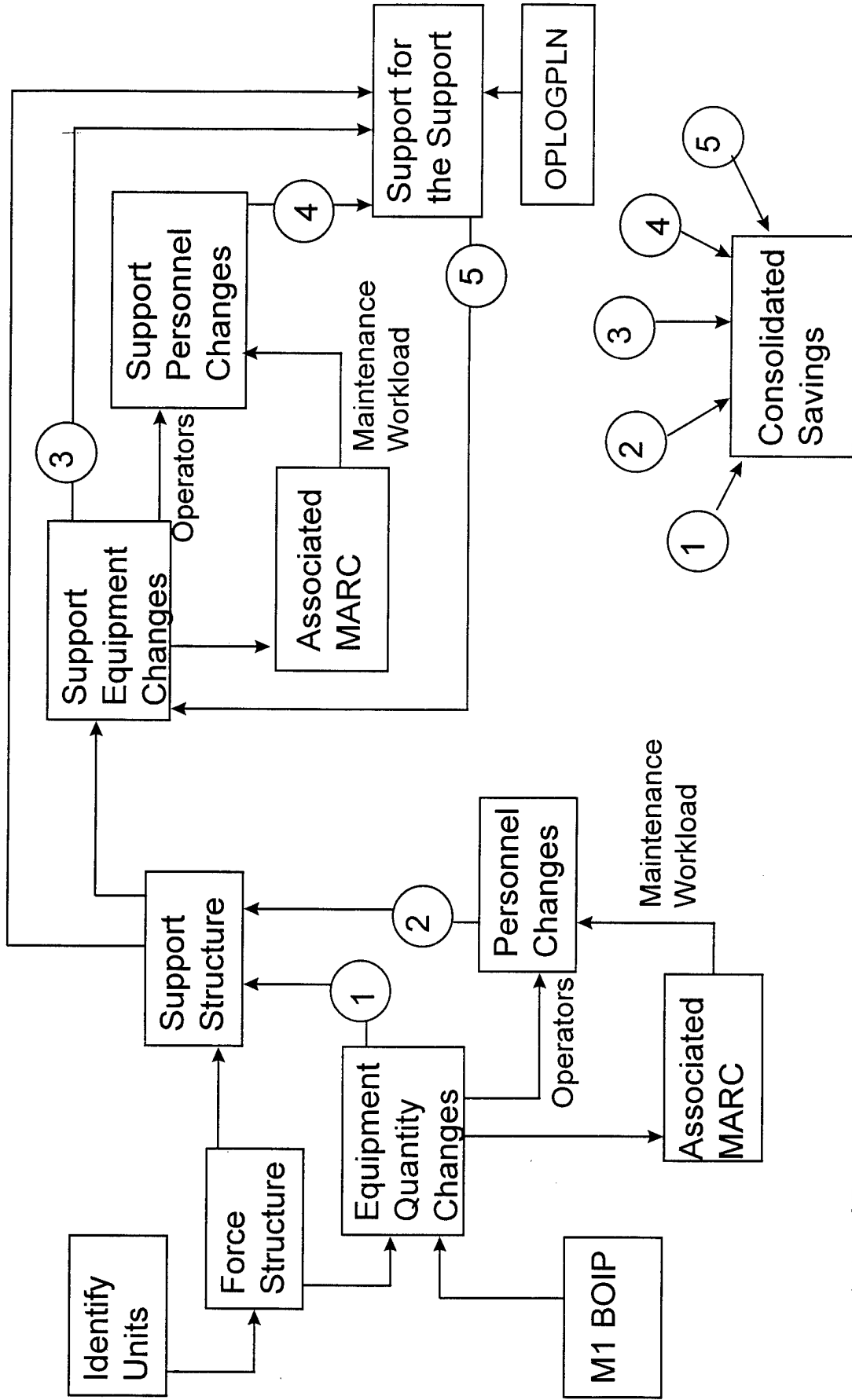


For the Division:

| | |
|--|------------|
| Personnel Total | 347 |
| Direct Reduction in Requirements | 252 |
| Company Personnel | |
| Crew | 224 |
| Others | 28 |
| Support Reduction in Requirements | 95 |
| FSC Maintainers | 28 |
| FSC S&T | 40 |
| DS Maintainers | 27 |

There is also a requirement for 14 GS maintainers.

How we did it.



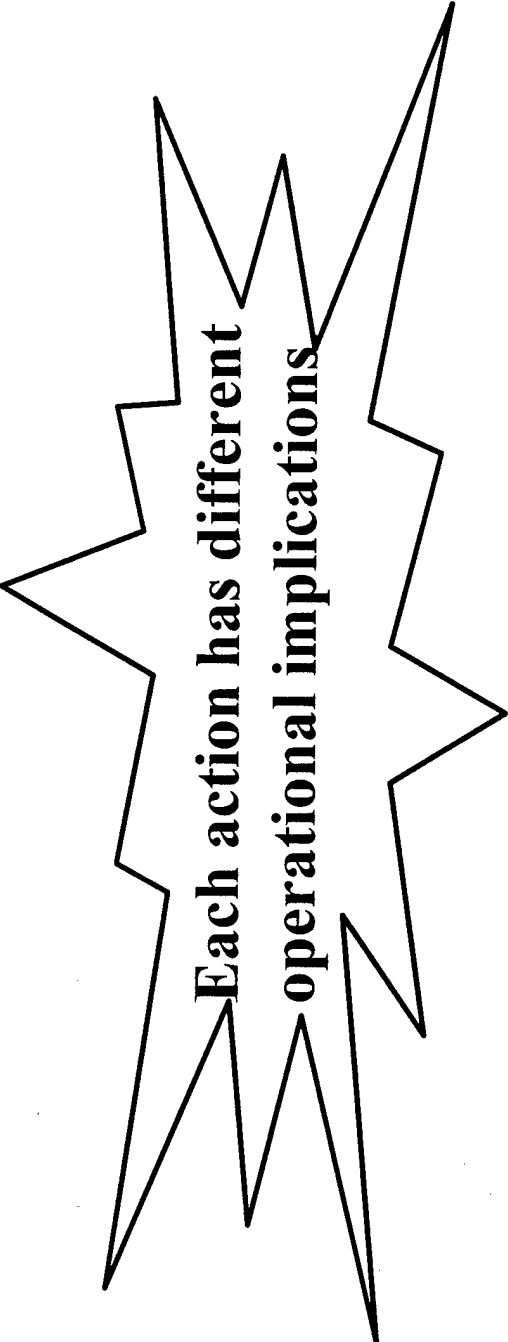
Conclusions.

- Removing force structure at a higher aggregate level results in more operational overhead savings and consolidates the CSS savings.

- Each action has different operational implications.

Remove:

| | | |
|---|--|--|
| One Battalion → 58 M1A2s 4 Co & HHC FSC 30+DS Maint 583 Soldiers | One Co from each Bn → 56 M1A2s 4 Co parts of 4 FSC 27 DS Maint 347 Soldiers | One Tank from each Platoon → 48 M1A2s 3 M1A2s from each Co smaller parts of 4 FSC 18 DS Maint 210 Soldiers (192 crew) |
|---|--|--|



**Each action has different
operational implications**

As larger aggregates are taken--

- fewer tanks, less firepower, fewer command positions
- total elimination of one unit's maintenance workload does not ease workload of other units
- battlefield coverage and span of control shift
- information gaps become more apparent
- brigade less flexible (no longer "heavy")

References:

Army MARC Maintenance Data Base, 17 Jan 97 printing
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Quantitative Personnel Requirements Information (QQPRI)

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Annual available MOS time.

AR 611-201, Enlisted Career Management Fields and Military Occupational
Specialty

OPLOGPLN 97

Division SRC 87000A300 Armor Division (5 M1, 4 BFVS, 2 AHB)
The M1A2 LIN is in the database.

2-Apr-97