

**TECHNICAL REPORT
NATICK/TR-15/003**



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**TECHNOLOGY-ENABLED CAPABILITY
DEMONSTRATION 4A SUSTAINABILITY AND
LOGISTICS-BASING: INITIAL QUALITY OF LIFE AND
SOLDIER READINESS USER ASSESSMENT**

**by
Justine Federici
Larry L. Leshner
Jason Augustyn
and
Jessica Howe**

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**U.S. Army Natick Soldier Research, Development and Engineering Center
Natick, Massachusetts 01760-5020**

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14. ABSTRACT This report documents an initial user assessment on Soldier quality of life (QoL) performed for the Technology-Enabled Capability Demonstration (TECD) 4A Sustainability and Logistics- Basing by the Natick Soldier Research, Development and Engineering Center (NSRDEC) on 15 May 2013 at the Maneuver Support Center of Excellence (MSCOE) at Fort Leonard Wood, Missouri. The purpose was to collect data on what is critical to Soldier QoL in order to baseline, measure, and model QoL at contingency base camps. The assessment consisted of three portions: a computerized (i.e., tablet-based) survey followed by an after action review (AAR) and a focus group. Twelve male U.S. Army Soldiers with experience living in and operating base camps ranging from 50 to 1000 PAX participated in the survey, and 11 data sets were included in the final analysis. Due to the relatively small number of data sets, statistical significance could not be tested, but the data from the assessment provides insight on what attributes Soldiers believe are most important to contributing to their QoL when living in a base camp. Attributes concerning security were rated as contributing the most to a camp's QoL score. Other important attributes identified were the quality of the latrines and having HVAC in Soldier billeting. It was also found that improving QoL services may lengthen the time Soldiers can perform at their full potential (i.e., days of readiness) and that leadership can both add to and detract from a Soldier's QoL when deployed. Some of the next steps for the TECD 4A QoL effort will be to incorporate the Soldiers' suggestions for improving the tablet -based survey. In addition, the TECD will collect data from a larger and more representative sample size.						
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TECHNOLOGY-ENABLED CAPABILITY DEMONSTRATION 4A SUSTAINABILITY AND LOGISTICS-BASING: INITIAL QUALITY OF LIFE AND SOLDIER READINESS USER ASSESSMENT

1 Introduction

This report documents an initial user assessment on Soldier quality of life (QoL) performed for the Technology-Enabled Capability Demonstration (TECD) 4A Sustainability and Logistics- Basing. The user assessment was performed by the Natick Soldier Research, Development and Engineering Center (NSRDEC) on 15 May 2013 at the Maneuver Support Center of Excellence (MSCOE) at Fort Leonard Wood, Missouri.

The purpose of this assessment was to collect data on Soldier QoL to populate the technology assessment tool (TAT) under development for TECD 4A. It should be noted that due to the relatively small number of Soldiers who participated in this initial user assessment, statistical significance could not be tested. However, the data from this assessment can be used to provide insight on what attributes Soldiers believe are most important to contributing to their QoL when living in a base camp. The exercise also provided an opportunity to explore establishing an ongoing partnership with the MSCOE to collect additional QoL data used to inform and guide TECD 4A and the Army contingency basing community of practice.

TECD 4A, which was initiated in July 2011, is a multi-year 6.3 Army advanced technology development program that aims to improve Soldier readiness through efficient and effective sustainment capabilities that provide improved leadership options at contingency bases housing 1000 personnel (PAX) and below. In addition, TECD 4A will demonstrate reduced fuel resupply by 25%, reduce the need for water resupply by 75%, and decrease waste generation by 50% while maintaining Force Provider-like QoL for the resident forces. Efficient and effective sustainment capabilities can enable Soldier readiness and camp operational effectiveness by reducing Soldier risks associated with resupply efforts, reducing manpower (troop to task) necessary for camp sustainment, and providing leadership with greater ability to enhance QoL factors that increase Soldier readiness.

A TAT is being developed under the TECD that will combine data regarding a number of factors that influence QoL and non-material solutions (e.g., timed showers, improved camp layout) with technical data from the TECD technology portfolio in order to assist with selection of technologies for demonstration and to support follow-on base camp decision making.

Prior to this assessment, the TECD team had gathered extensive baseline data on current basing tactics, techniques, and procedures (TTPs) and currently fielded equipment used in contingency basing operations in Afghanistan. This information was used to create baseline models of camps that range in size from “extra-small” facilities accommodating 1 to 299 PAX to “small” facilities accommodating 300 to 1,999 PAX. This information is one input for the TAT model.

Extensive data had also been collected concerning the QoL of Soldiers who had lived in extra-small and small base camps. Between May and July 2012, NSRDEC conducted approximately 20 interviews with Soldiers, at various locations, of varying rank, Military Occupation Specialty (MOS), and years in service. The Soldiers described the living conditions in their camps and explained how they believed these conditions related to their mission performance. The Soldiers were asked which attributes, e.g., rations available (in the field feeding category), showers (field hygiene), and conditions within billeting, had the greatest impact on their performance outside the wire. The intent of these interviews was to create a list of attributes that are both common and important to all Soldiers living in base camps; however, it was evident from the interviews there were varying levels within each attribute. The major categories of attributes discussed during the interviews fell into the following categories: billets; dining facility administration center (DFAC); field feeding; field hygiene; morale, welfare, and recreation (MWR); MWR shelter; security; and tactical operations center (TOC).

For example, under the major category of field hygiene, the attribute latrine facilities or structures available at a camp may be limited to only a straddle trench and urination tubes. On the other hand, a camp may have a Force Provider latrine system with heating, ventilation, and air conditioning (HVAC) available. Therefore, a survey was created to get feedback not only on attributes pertaining to QoL but also on the range of possibilities or levels within a given attribute. Figure 1 gives an example of a major category, an attribute, and associated attribute levels.

The list of common attributes and levels were then verified with over 200 Soldiers during a data collection at Fort Carson, Colorado in August 2012. Soldiers at MSCOE also gave feedback on these QoL attributes during a wargaming activity held during October 2012 (Augustyn et al.). These attributes were then refined, and levels were established for each attribute, which can be traced to the baseline camp models established by the TECD for extra-small and small camps.

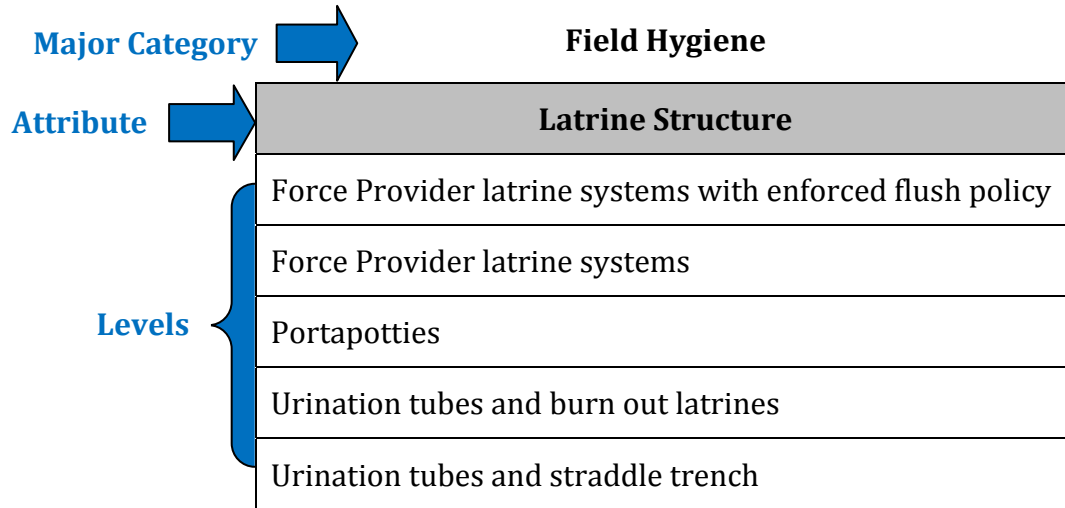


Figure 1: Levels within the Latrine Structure Attribute

In addition to these data, more data collections were needed in order to finalize the survey structure and questions. Therefore, a pilot user event was held at NSRDEC on 21 March 2013. Ten US Army personnel (both active duty and retired) with experience living in and operating base camps ranging from 50 to 1000 PAX were selected to participate. Recommendations from the pilot participants provided the feedback necessary to further refine the survey instrument for the initial user assessment summarized in this report.

2 Methodology

The user assessment consisted of three portions: a computerized (i.e., tablet-based) survey followed by an after action review (AAR) and a focus group. This chapter describes the Soldiers who participated in this assessment, the procedures followed, the structure of the survey portion, and the method used to analyze the survey data.

2.1 Participants

Twelve male U.S. Army Soldiers with experience living in and operating base camps ranging from 50 to 1000 PAX were recruited from MSCOE. Eleven data sets were included in the final analysis of the QoL survey. One participant was not able to complete the survey; however, he participated in both the AAR and focus group. Table 1 provides detailed demographic data on each of the Soldiers.

Table 1: Demographic Data for Soldier Participants

Rank	MOS	Years of Service	Current DP	Last Deployment	DP during Last Deployment
O-4	74A	13.75	BN XO	Iraq	Civil Military Operations/CO
O-3	31A	19.25	BN S-3	Afghanistan RC East	MP Liaison/Police Training/Platoon Sergeant
O-3	90A	8.17	MSCOE Deputy G-4	Iraq	PL
E-8	12Z	24.00	1SG	Afghanistan RC East	1SG
E-6	12B	12.92	Instructor/Writer	Iraq	Squad Leader
E-6	12B	13.42	BDE Operations Sergeant	Afghanistan RC East	Operations Sergeant
E-8	88M	32.00	1SG	Afghanistan RC East	S-3 NCOIC
E-5	92Y	8.17	S-4 NOC		
E-6	74D	14.00	Instructor/Writer	Iraq	QRF
O-2	31A	7.00	XO	Afghanistan RC South	PL/XO
E-6	12C	13.25	Training Instructor	Iraq	Section Leader
E-7	12H	24.17	S-3 Construction	Iraq	BOM Yard NCO

1SG=First Sergeant

BDE=Brigade

BN=Battalion

BOM=Base Operations Manager

CO=Comannding Officer

DP=Duty Position

MOS=Military Occupational Specialty

MP=Military Police

NCO=Non-Commissioned Officer

NCOIC=Non-Commissioned Officer in Charge

PL=Platoon Leader

QRF=Quick Reaction Force

RC=Regional Command

XO=Executive Officer

2.2 Procedure

The participants received a background briefing on TECD 4A and the objectives and procedure for the Initial QoL and Soldier Readiness User Assessment. Following the opening brief, Soldiers completed a demo on the tablets to become familiar with the technology and survey tool. A total of 11 participants completed the computerized survey regarding factors that can impact QoL and therefore Soldier readiness within base camps. The Soldiers were given the following information prior to completing the survey:

- Please answer the questions based on what is important for maintaining *your* QoL, rather than maintaining QoL for any Soldiers under your command.
- You are deployed to a region that is hot and humid. The average daytime temperature is 80 °F with 80% humidity.
- You could be stationed at a contingency base for up to 180 days.
- This survey utilizes “touch” technology. If you prefer, you may use a stylus.
- The survey has both written descriptions and images throughout the survey of various attributes and levels that you may find within a base camp.
- A counter appears at the top right hand of the screen to inform you of your progress.

Upon completion of the survey, the AAR was conducted in order to get qualitative feedback on the survey. Topics discussed included overall ease of use/method of a tablet-based survey, appropriateness of the QoL attributes (i.e., any attributes missing or any that should not be in the survey?), and QoL levels and descriptions (i.e., were they clear and would they be easily understood by a broader audience?).

The Soldiers then participated in focus group discussions in order to enable collection of qualitative data to supplement the quantitative results from the tablet-based survey. Research psychologists designed a script that was used as a guide during the discussions. Topics included factors that impact opinions of a base camp (e.g., leadership, personal training), motivation and morale boosters as well as morale barriers (e.g., food, contact with home), and specific services (e.g., Chaplain, sacred space) offered at base camps. A member of the QoL team took notes on the focus groups, which were also voice recorded.

2.3 Survey Structure

The survey was comprised of six sections:

Section 1: Demographics

Section 2: Attribute Level Rating Task

Section 3: Attribute Importance Sorting Task

Section 4: Attribute Importance Ranking Task

Section 5: Paired Comparison Task

Section 6: Days of Readiness Task

Section 1 contained demographic questions which asked the Soldiers about their military experience, deployment history, and experience operating out of contingency bases. The results are presented in Table 1 as the description of the participants.

Section 2 measured the relative desirability of the levels within each attribute. This section contained all of the attributes with their associated levels. For example, for the attribute “breakfast ration,” the levels First Strike Ration (FSR), Meal, Ready to Eat (MRE), Meal Cold Weather/Long Range Patrol (MCW/LRP), Unitized Group Ration (UGR) Heat & Serve, UGR-E, UGR-A, and UGR-A+ were shown on the screen. The Soldiers were asked to place the attribute levels on a visual analog line scale. They placed one attribute level at the “worst” condition and one at the “best” condition and distributed the remaining levels along the line as appropriate. The screen shot in Figure 2 illustrates this task:

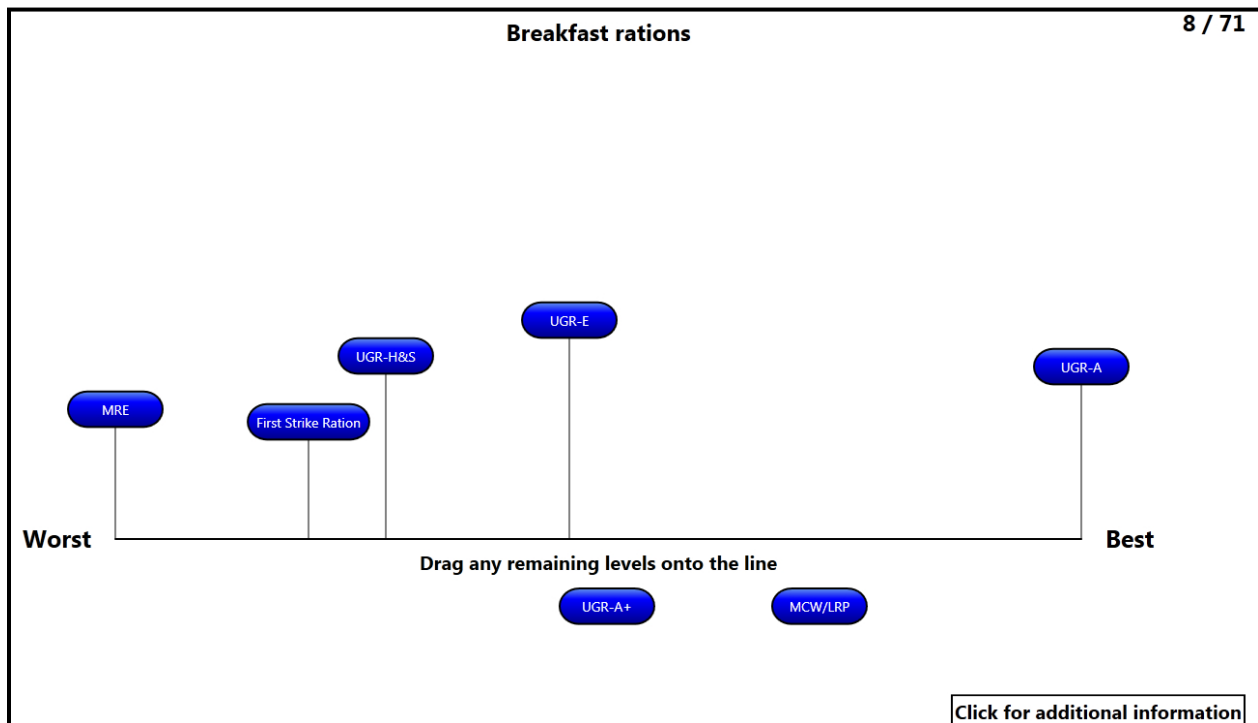


Figure 2: Attribute Level Rating Task

In Section 3, the Soldiers were asked to sort all of the QoL attributes (e.g., breakfast ration, shower duration) into three “buckets” (displayed as three columns on the tablet

screen shown in Figure 3) labeled “high impact,” “medium impact,” and “low impact,” based on how important they believed the attributes were to their overall QoL.

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How great of an impact would a change from the WORST to the BEST level of this attribute have on your quality of life at a base camp?

Answer by dragging the attribute onto one of the three lists below.
Try to sort about the same number of attributes into each bin.

Breakfast rations

WORST → **BEST**
MRE UGR-A

Low Impact <small>Count : 30</small>	Medium Impact <small>Count : 13</small>	High Impact <small>Count : 16</small>
How often you can access laundry capabilities	Convenience power in DFAC	Overhead protection of guard tower
Humidity level in billets	Noise level in billets	Temperature control in TOC
Bags of laundry you can do each week	Range of shower water temperature	HVAC temperature control in billets
Availability of sacred space	Access to cardio machines	Overhead protection of billets
Water for hand washing	Availability of supplemental food items	Building material of TOC

Figure 3: Attribute Importance Sorting Task

Once the Soldiers sorted the attributes into the three “buckets,” they were asked to sort these attributes by rank order on a line scale (see screen shot in Figure 4). This task can be referred to as the Attribute Importance Ranking Task (Section 4).

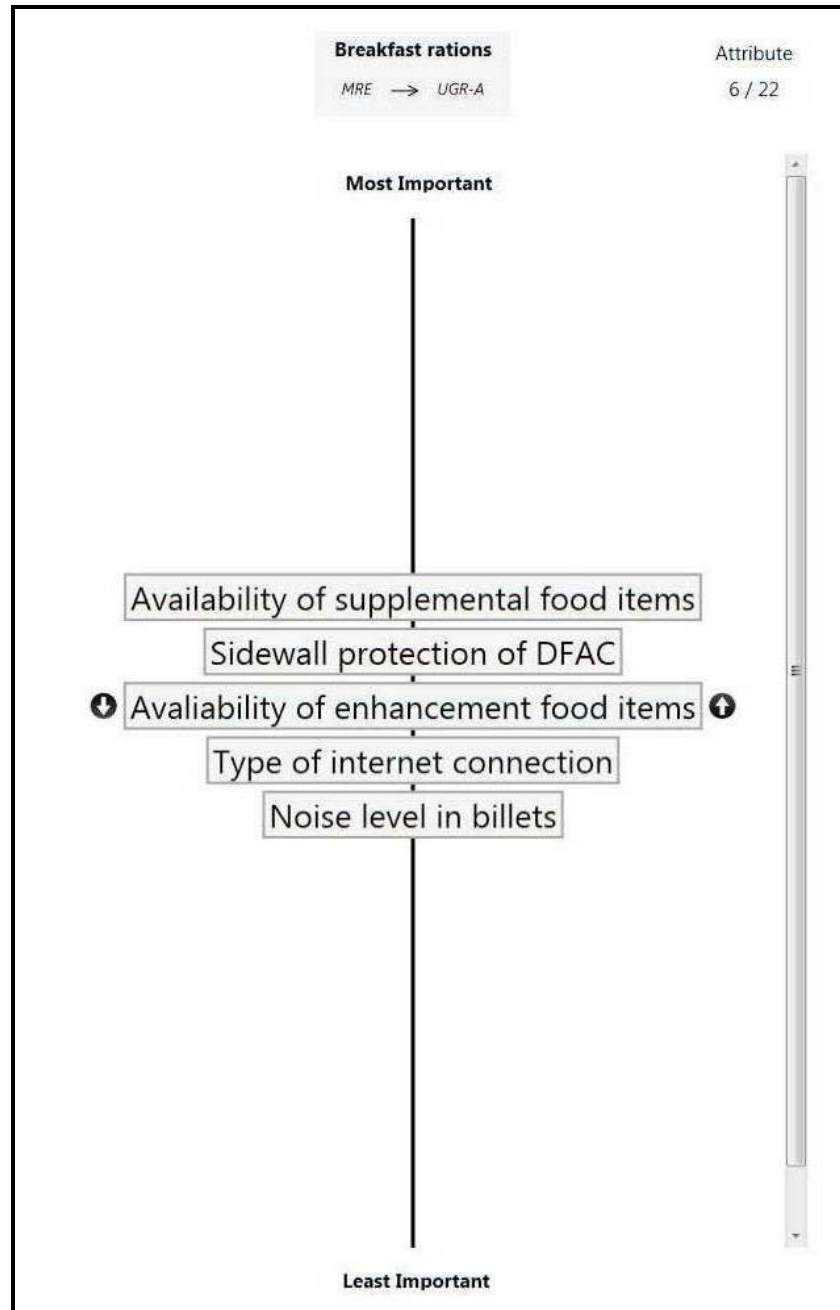


Figure 4: Attribute Importance Ranking Task

During Section 5 of the survey, the Paired Comparison Task, Soldiers were shown pairs of attributes along with two corresponding bars, shown in Figure 5. The Soldiers were asked to adjust the length of the bars (by dragging them forward and back) to reflect how important each attribute was relative to the others.

**Which of the improvements in these attribute levels is more important for your quality of life?
By how much more?**

The length of the bar next to each attribute indicates how important the improvement in that attribute is to you. If, for example, one improvement is twice as valuable as another, click and drag that bar to make it twice as long as the other. The numbers to the right of the bars show the bar lengths, which range from 1 to 99. You can use these numbers to help decide on an answer if you like.

When you are satisfied with your answer, click the "Next" button.

Internet speed Moderate (DSL) → Fast (high-speed)		50
Temperature control in TOC No temperature control → Temperature control for entire TOC		50

Next

Figure 5: Paired Comparison Task

During Section 6 of the survey, Soldiers completed the Days of Readiness Task. The Soldiers saw a box (Figure 6) with multiple tabs that contained information regarding major camp attribute categories (e.g., billets, combat rations) which described a base camp's profile. The box consisted of a list of all the attributes and their levels for that camp. The Soldiers were instructed to click on each of the tabs in order to read more information about each camp attribute category. At the bottom of the screen was a bar with three colors (green, amber, and red). The Soldiers were asked: with all other things being equal, how long could they live at that camp before their readiness would decline from green to amber? How much longer could they live there before their readiness level declined from amber to red? The color green represented an optimal readiness level, amber represented a declined level, and red represented a great decline in readiness level. This task maps the function relating QoL to Soldier readiness measured in days. A number of days was assigned to each of the colored bars that summed to 180, based on the bar length.

Imagine that you have been deployed to a base camp in a hot, humid environment for a period of up to 180 days. The camp conditions are as follows:

DFAC Shelter	Medical Shelter	Maintenance/Work Shelter	MWR Shelter	TOC Shelter
Combat Rations	Shower	Laundry	Latrines	MWR
Breakfast rations	UGR-A+			
Lunch rations	UGR-A+			
Dinner rations	UGR-A+			
Availability of supplemental food items	Supplemental food available			
Availability of enhancement food items	Enhancement food items available			
Availability of pokey bait	Pogey bait available			
Availability of water/beverage refrigeration	Water/beverage refrigeration available			
Availability of water/beverage heating	Water/beverage heating available			

All other things being equal, how long could you live at this camp before your readiness would decline from GREEN to AMBER? How much longer could you there before your readiness would decline from AMBER to RED?

Days GREEN	Days AMBER	Days RED:
60	60	60

Next

Figure 6: Days of Readiness Task

2.4 Survey Analysis

The data from Section 1 were not analyzed. They were collected merely to provide background information on the participants. The data from the remaining sections were analyzed to determine (1) the QoL score for the three baseline camps (50, 300, and 1000 PAX), (2) how the Soldiers prioritized each of the eight major camp attribute categories, (listed in Chapter 1) as a whole, (3) how Soldiers prioritized the various attributes within each of the eight major categories, and (4) the potential for improvement in each of the eight major categories for the three baseline camps. The results for each of these analysis groups are presented in Sections 3.1.1, 3.1.2, 3.1.3, and 3.1.4, respectively.

The relative desirability data collected from Section 2 of the survey were scaled from 0 to 100, where 0 represented the “worst” level of a given attribute and 100 represented the “best” level of that same attribute. All other relative desirability levels of the attribute, where applicable, were scaled between 0 and 100 based on their relative position on the 100 point “worst” to “best” line (see Figure 7). This section of the survey provided researchers with a 0 to 100 scaled desirability value for each level of an attribute relative to the “worst” (0) and “best” (100) levels of that attribute.

Example From This Section:

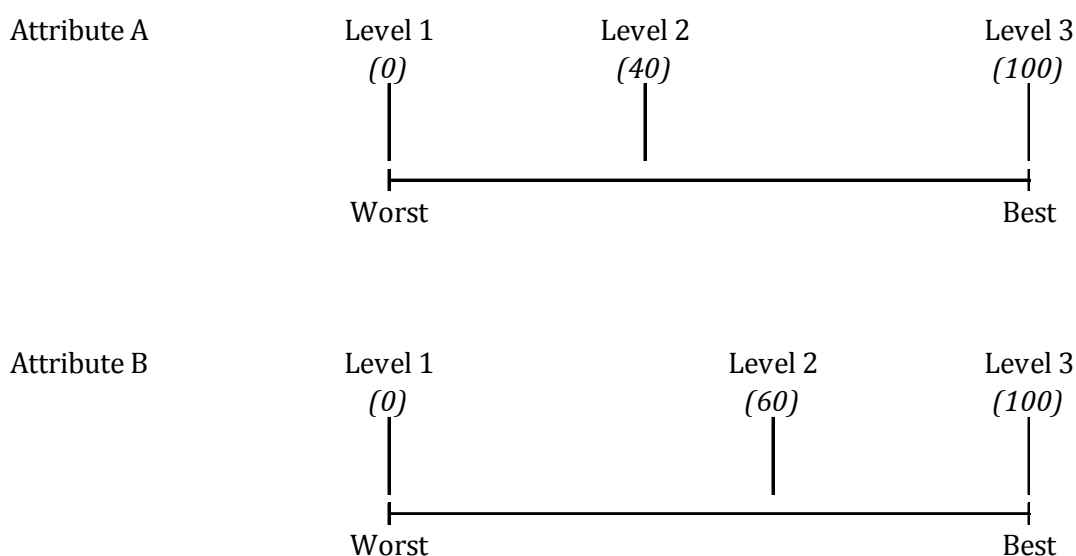


Figure 7: Example Attribute and Level Comparisons Based on Attribute Level Ratings

Sections 3, 4, and 5 of the survey were used to establish the relationship among all of the QoL attributes based on importance. The results of the Attribute Importance Ranking Task collected in Section 4 (which was a continuation of the Section 3 task) were used by the researchers to determine the pairs of attributes presented in the Paired Comparison Task (Section 5). The data collected (bar lengths) from the Paired Comparison

Task were used to scale the importance of all of the QoL attributes relative to each other. If the bar length of attribute x was twice as long as the bar length of attribute y , attribute x was deemed to be twice as important as attribute y . For each volunteer, the overall sum of these importance values was 100. These importance values were then normalized across all study volunteers. Normalized attribute importance values from this set of tasks were combined with the relative desirability data collected during Section 2 (see Figure 8). These final scaled QoL values, commonly referred to as part-worths, can be used to directly compare levels of one QoL attribute to levels of another QoL attribute. These scaled values can also be used to construct the overall QoL score for any given base camp.

Example From This Section:

(Assume Attribute A is twice as important as Attribute B from the previous example)

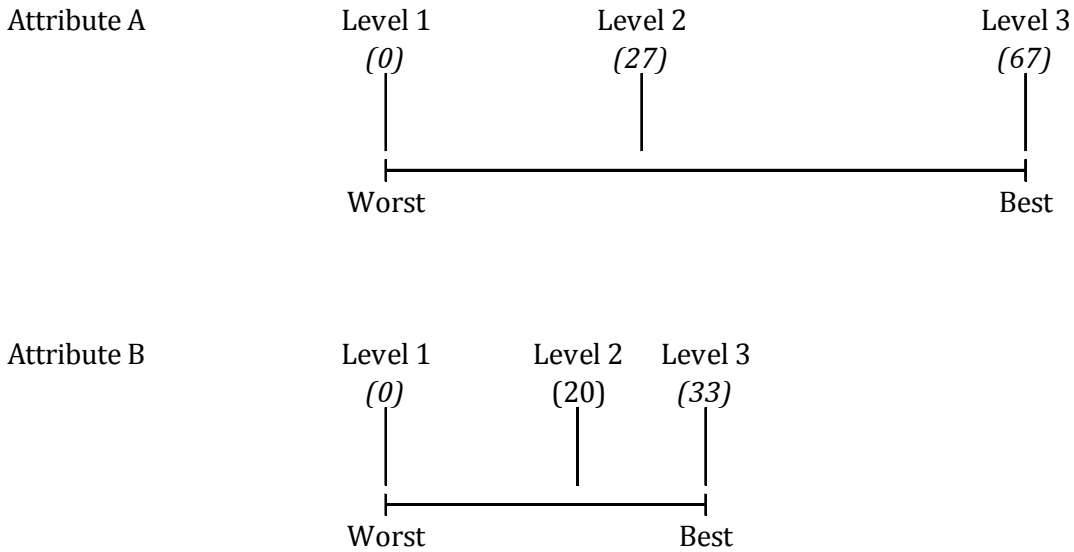


Figure 8: Example Attribute and Level Comparisons Based on Attribute Importance Ratings

Data collected during Section 6 were analyzed using a regression analysis to establish the relationship between overall QoL at a given camp and green, amber, and red days of readiness at that camp. This model expressed the QoL for a given camp as the sum over all QoL attributes of the importance of the j^{th} attribute times the desirability of the k^{th} level of that attribute in place at the camp:

$$QoL(Camp) = \sum_{j=1}^J W_j D_{jk}$$

The regression coefficients from this analysis (B_0 and B_1) can be used to predict green, amber, and red days of readiness using any given base camp scenario QoL. These regression coefficients can also be used to populate a base camp QoL and associated Soldier readiness module in the TAT.

3 Results

3.1 Survey Results

3.1.1 Baseline Camps

The results from the analysis to determine the QoL score for the three baseline camps (50, 300, and 1000 PAX) are displayed in Figure 9. Again, it should be noted that these results cannot be tested for statistical significance due to the small sample size; however, they do provide insight into what results may reveal once data have been collected from a larger sample size. As expected, the 50 PAX camp, which has the fewest number of assets (e.g., no showers, latrines, or kitchen), had the lowest overall QoL score (39 points out of a possible 100). In contrast, the 300 and 1000 PAX camps had higher scores than the 50 PAX and very similar scores (67 and 70, respectively) to each other. This is not surprising, as these two camps have similar baselines. The biggest differences between these two camp sizes are the ration cycles and availability of MWR equipment. The baseline for the 1000 PAX camp has the Soldiers receiving a hot meal (UGR-A) for dinner in addition to breakfast. The 1000 PAX camp also has larger numbers of MWR equipment. Refer to Appendix A for a complete list of attributes for the three baseline camp sizes.

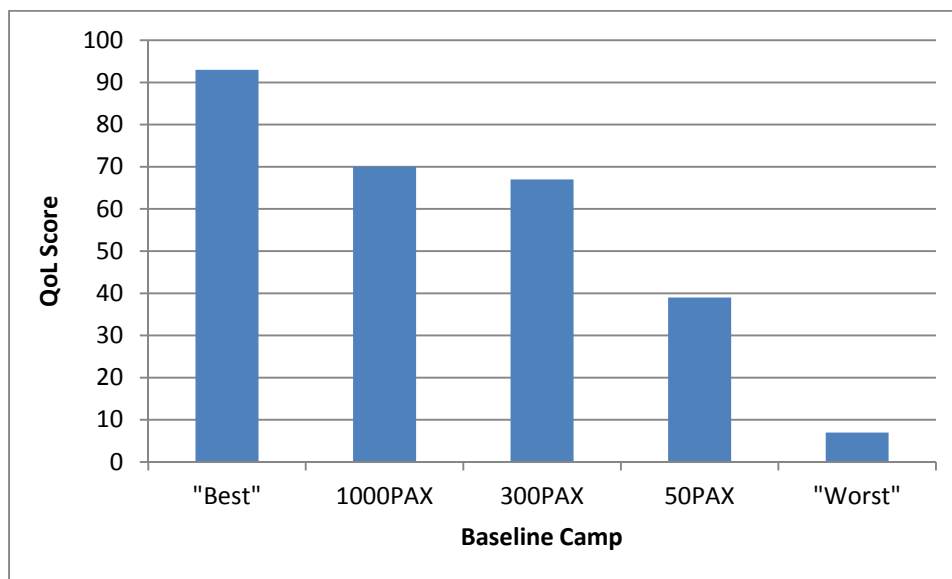


Figure 9: Baseline Camp QoL Scores

3.1.2 Overall QoL Results by Major Category

The results of the analysis to determine how the Soldiers prioritized the attributes by the eight major camp categories are displayed in Figure 10. They indicate that attributes relating to camp security had the greatest contribution towards QoL on a camp, receiving a score of 34.6 out of a possible 100 points. Billeting and hygiene received the next highest

scores (13.9 and 12.9, respectively). These results are consistent with the information gathered during the May 2011 interviews conducted prior to this assessment, as well as the data collection at Fort Leonard Wood during a wargame in October 2012 (Augustyn et al.). During the wargame, Soldiers spoke of their need to feel secure within the camp and about the importance of having quality billeting and field hygiene capabilities available when living in small and extra-small camps.

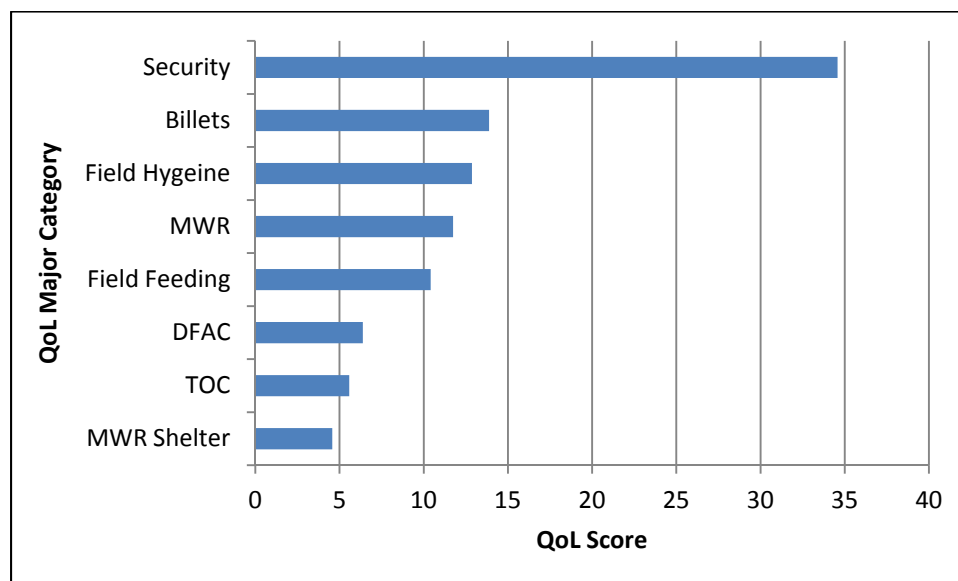


Figure 10: Overall QoL Scores by Major Category

3.1.3 Attribute Scores by Major Category

The following series of graphs (Figures 11 to 18) displays the results from the analysis of how Soldiers prioritized the various attributes in each of the eight major categories. See Appendix B for a complete list of attributes and associated levels.

3.1.3.1 Security The security category consists of 17 attributes. Figure 11 depicts the results of the top nine attributes. Base camp perimeter was the most important attribute with a QoL score of 6.3 points.

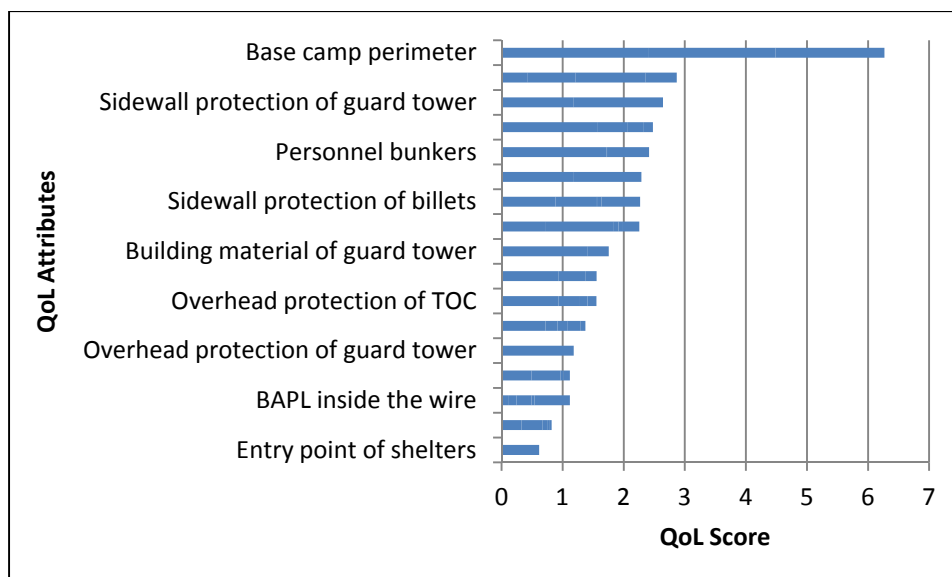


Figure 11: Security Attribute Scores

3.1.3.2 Billets As shown in Figure 12, temperature range and temperature control were the most important billeting attributes. This is again consistent with past interviews and the wargame event of 2012. Soldiers spoke about the importance of having air conditioned billeting when deployed in a hot environment in order to ensure a restful sleep cycle. The amount of space to store personal items and lighting were the least important attributes.

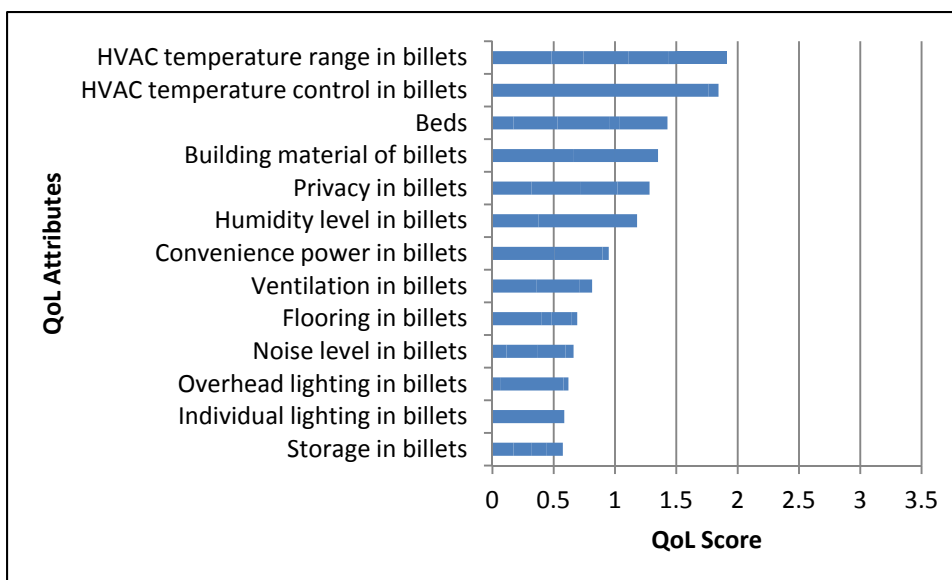


Figure 12: Billets Attribute Scores

3.1.3.3 Field Hygiene Soldiers prioritized the latrine structure above all other field hygiene attributes (Figure 13).

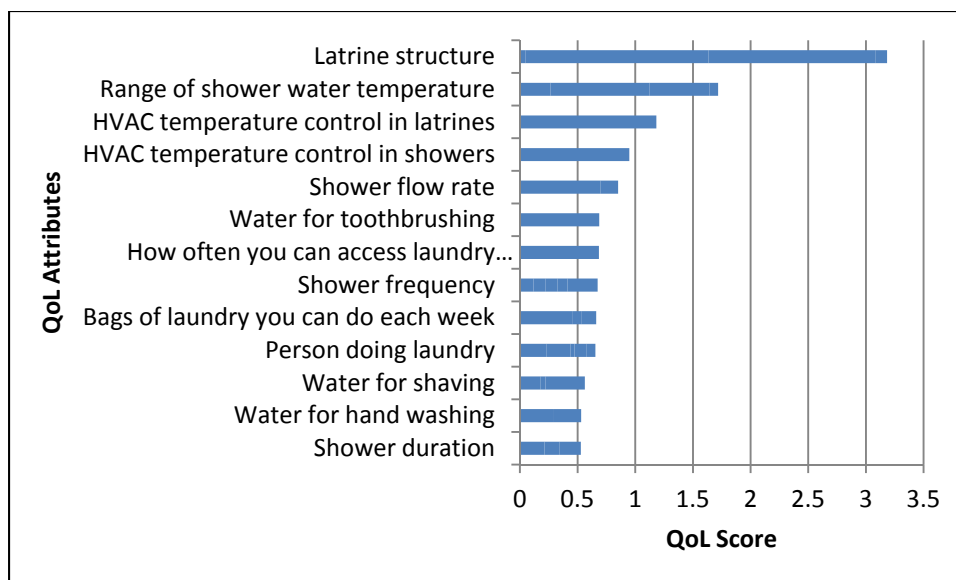


Figure 13: Field Hygiene Attribute Scores

3.1.3.4 MWR Having a telephone available to make personal phone calls was the most important MWR attribute (Figure 14). Having contact with home is a topic that was discussed during the focus group portion of this assessment. One Soldier stated: “That one phone call means ten times more to me than a cool breeze on the back of my neck. I would take that call over AC in the TOC any day.”

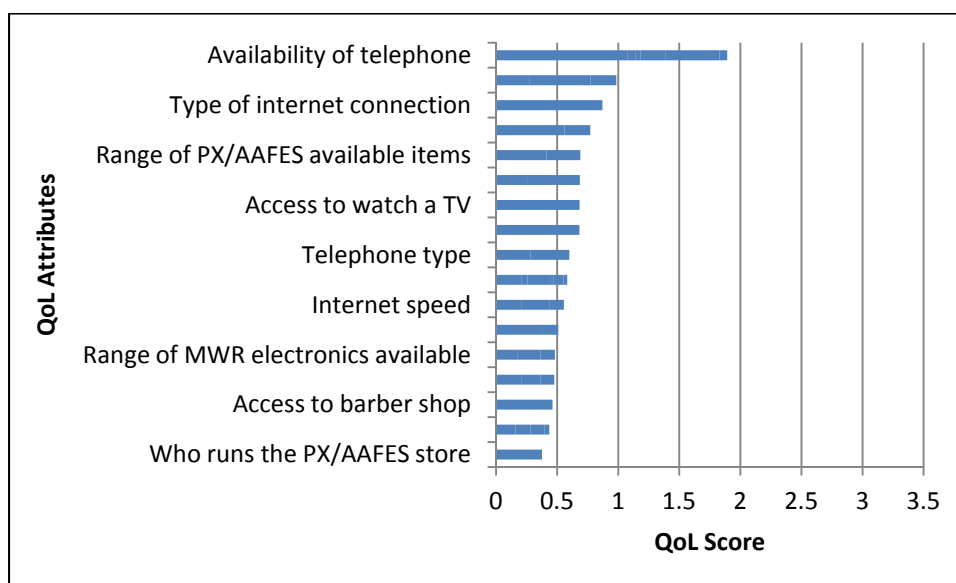


Figure 14: MWR Attribute Scores

3.1.3.5 Field Feeding The Soldiers prioritized breakfast rations slightly over dinner and lunch rations. Availability of supplemental food items (e.g., milk) and pogeys (i.e.,

food purchased or brought to the camp by an individual) were rated as least important (Figure 15).

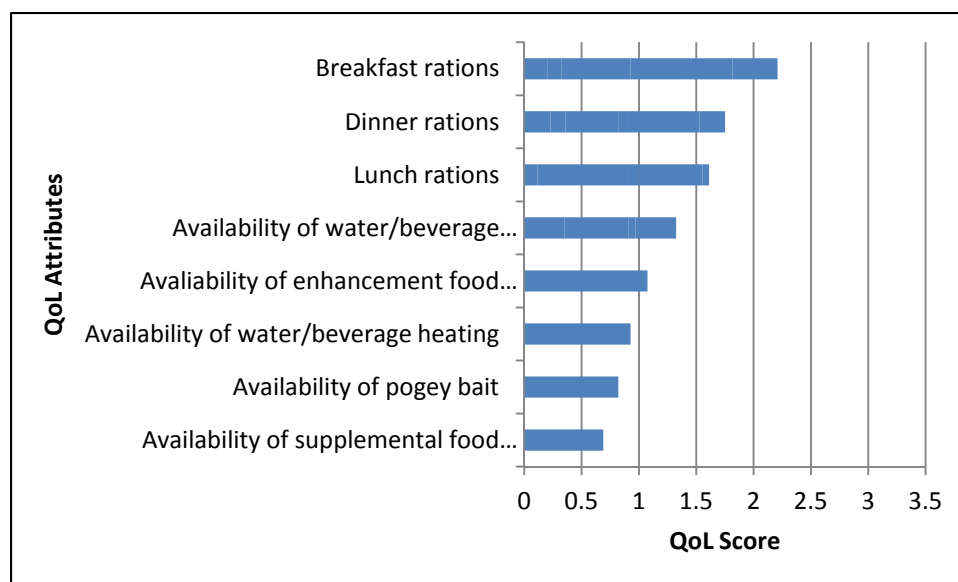


Figure 15: Field Feeding Attribute Scores

3.1.3.6 DFAC The building material of the DFAC (e.g., soft walled, rigid walled etc.) was most important to the Soldiers (Figure 16).

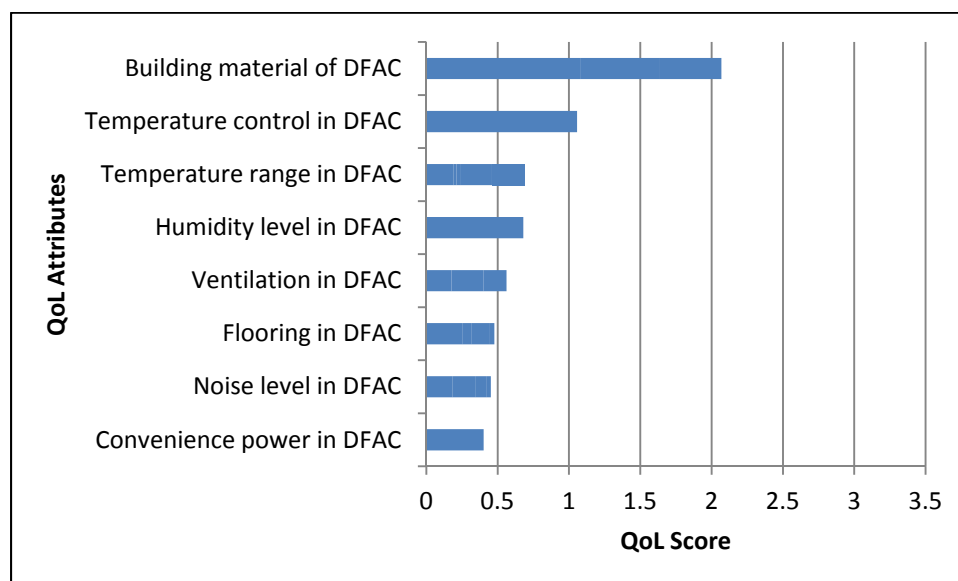


Figure 16: DFAC Attribute Scores

3.1.3.7 TOC The Soldiers were most concerned with the building material of the TOC. Next was temperature range inside the TOC (Figure 17).

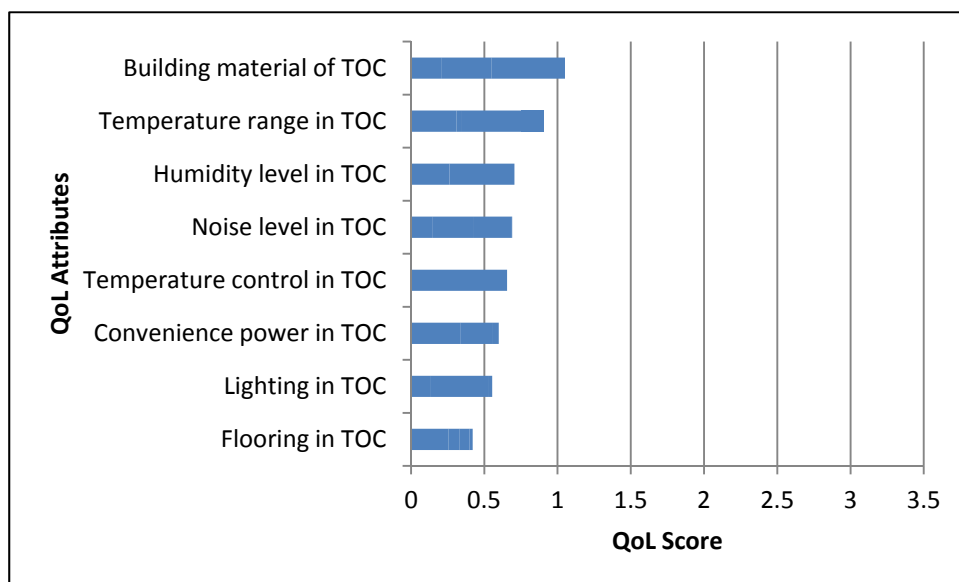


Figure 17: TOC Attribute Scores

3.1.3.8 MWR Shelter In general, the Soldiers rated each of the eight MWR shelter attributes as similarly important (Figure 18).

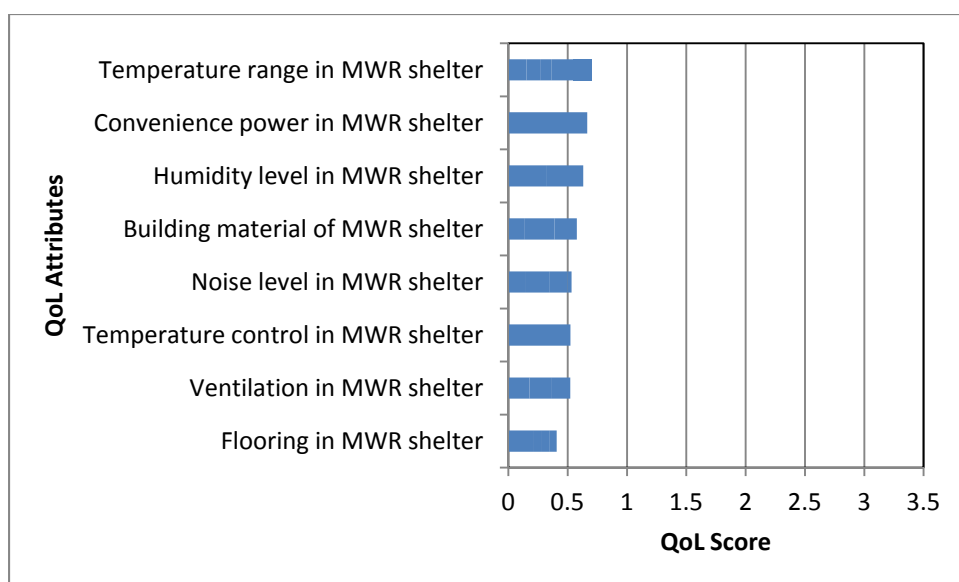


Figure 18: MWR Shelter Attribute Scores

3.1.4 QoL Baseline Potential

Figures 19 to 21 show the potential for improvement in each of the eight major attribute categories for the three baseline camps. The blue portion of each bar represents the actual score the baseline camp received in each of the eight categories. The red portion of each bar demonstrates the gap between the actual score and the priority Soldiers placed in each major category, as shown and discussed in Section 3.1.3 of this report.

For example, the attributes regarding security had the greatest overall contribution towards a camp's QoL rating (34.6 points); however, security attributes and associated levels were not optimal at the 50 PAX camp, only 17.3 (Figure 19). Hence, attributes concerning security show some of the most room for improvement, having only reached half of potential (34.6 vs. 17.3). Field hygiene attributes showed the greatest percentage for potential improvement (currently at only approximately one-tenth of potential) at the 50 PAX camp. This is not surprising given the limited assets regarding field hygiene that are available at the 50 PAX baseline camp.

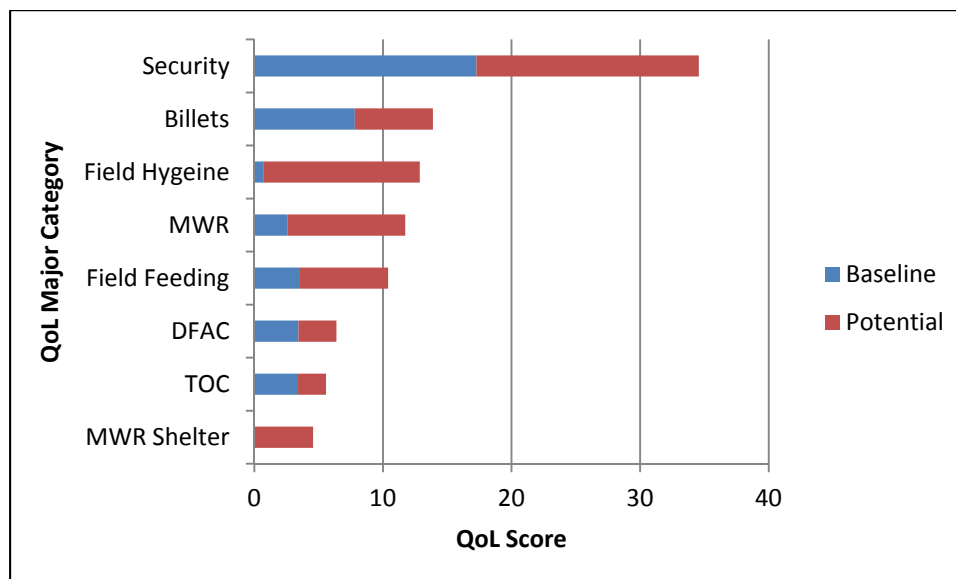


Figure 19: 50 PAX Baseline Camp QoL Improvement Potential

As shown in Figure 20, the 300 PAX camp has the potential to gain the most QoL points in the security category (approximately 13) followed by billets and DFAC. The 300 PAX baseline camp has reached close to full potential in each of the remaining categories.

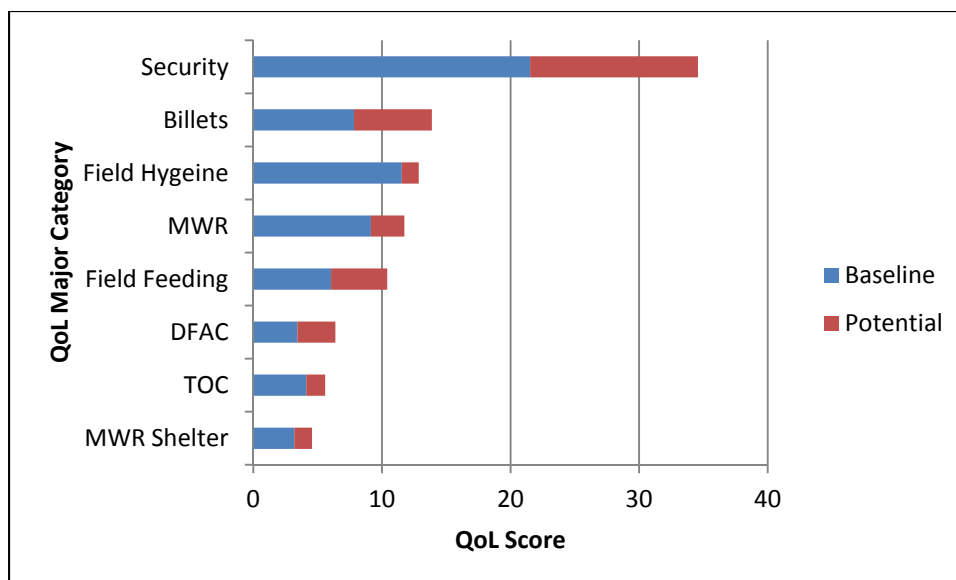


Figure 20: 300 PAX Baseline Camp QoL Improvement Potential

As stated earlier in the report, the 1000 PAX baseline camp closely resembles the 300 PAX baseline camp. Hence, as shown in Figure 21, it too shows the potential to gain the most QoL points in the security category, followed by billets and DFAC.

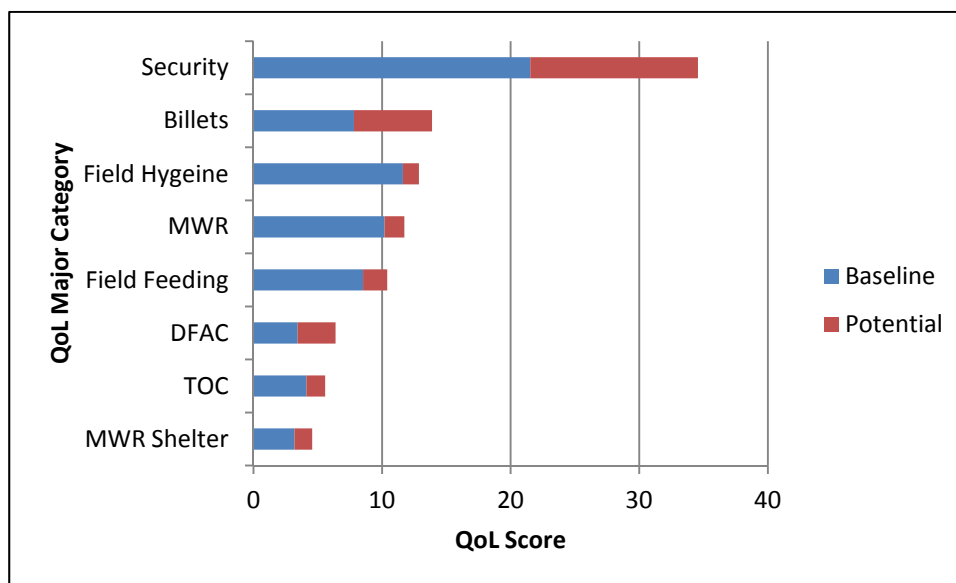


Figure 21: 1000 PAX Baseline Camp QoL Improvement Potential

3.2 AAR Results

The Soldiers provided valuable feedback regarding the QoL survey, tablet usage, test administration, and QoL factors. Overall, the Soldiers agreed the tablet was preferred to pen and paper surveys. The Soldiers would like the 2-hour survey to be shortened if

possible, but thought it was a reasonable task to do in one sitting provided that facilitators are present during survey administration in order to monitor progress and answer questions. The Soldiers agreed the attributes were clear and concise. They said that the descriptions provided for some of the attribute levels needed to be refined, specifically the ballistic and pre-ballistic panels in the overhead protection attribute. The Soldiers recommended adding “variety of combat rations available” as an additional attribute. (One Soldier said he was delivered only the Country Captain Kitchen MRE repeatedly for several months.)

The Soldiers also had several suggestions related to the survey programming, such as adding a “back” button, especially for the Paired Comparison Task, in order to allow a participant to change or review answers before moving to the next question. It was noted that it would be helpful if each color portion of the bar on the Days of Readiness Task screen “locked” in position while displaying the corresponding days for green, amber, and red. Two of the Soldiers stated that they did not realize there were multiple tabs that they needed to click on in order to review the full camp profile. The Soldiers suggested that the instructions need to emphasize that the participant must click on all 11 tabs. In addition, they recommended locking the slider bar until the participant taps on each of the 11 tabs.

3.3 Focus Group Results

The focus group discussions provided valuable insight into the participants’ beliefs regarding how living at a base camp with limited assets influences how long they could sustain or maintain a “ready state” at that camp. The Soldiers talked about several different attributes that can contribute to their experience when deployed. Some of these attributes could be categorized as being dependent on systems or material solutions (e.g., quality of showers, latrines), and others could be categorized as non-systems or non-material factors (e.g. experience, leadership, training). These discussions can be summarized by focusing on some key recurring themes.

The first theme was that leadership has a great impact on a Soldier’s QoL during a deployment. One Soldier stated that “leadership affects your quality of life 1000%.” Another Soldier described his experiences and stated that just seeing his leadership and knowing the leader was present was critical to his morale. He said that “you need to have a leader you see more.” Several of the other Soldiers concurred with this viewpoint. The experience level of the leader is also crucial. One participant stated, “having a crafty leader is important.” Conversely, another topic point raised was Soldier need or desire for “being away from the brass.” Soldiers stated that not having to deal with “political bureaucracy” was important and impacted their QoL. Thus, it seems there is an optimal level of leadership engagement that is necessary for high QoL.

Several points were raised by the Soldiers during this initial user assessment which were also heard during the data collection at Fort Leonard Wood during the wargame in October 2012 (Augustyn et al., 2012). The first topic was that having something and taking it away is worse than not having it at all. One Soldier stated, “Don’t give it to them if you can’t keep giving it to them.” Another recurring topic that is sometimes divisive concerns the optimal level or amount of a Soldier’s contact with home. Contact with home can be viewed as both a QoL enhancement or as a distraction.

Finally, showers continue to be a very important contributor to QoL. The Soldiers made statements such as “Shower is rated number one or number two with hot chow for quality of life. It could be that important to do a whole separate study. Quality of the shower affects the whole thing. Two minute fantastic shower is way better rather than a ten minute dribble.”

4 Conclusions

The following conclusions can be drawn from the data collected during this user assessment:

- Attributes concerning security contribute the most towards a camp's QoL score. Other important attributes are the quality of the latrines and having HVAC in Soldier billeting. These results are consistent with what was discussed in the interviews and the wargame conducted prior to this assessment.
- The 50 PAX camp's overall score was much lower than the 300 PAX and 1000 PAX scores. This is not surprising given the limited assets at a 50 PAX camp. The 300 and 1000 PAX camps received similar overall camp scores, which is expected given that the 300 and 1000 PAX camps have very similar baselines.
- The mission will always be completed, but improving QoL services may lengthen the time Soldiers can perform at their full potential (i.e., days of readiness).
- Leadership can both add to and detract from a Soldier's QoL when deployed. This in part may be due to a leader's level of engagement and leadership style.

Some of the next steps for the TECD 4A QoL effort will be to incorporate the Soldiers' suggestions for improvement to the tablet-based survey. Specifically, changes will be made to ensure the survey is easy to administer, understand, and complete. In addition, the TECD will collect data from a larger and more representative sample size. It is important to collect data from Soldiers who have a wide range of MOS, years in service, and duty positions, with the ultimate purpose of incorporation into the TAT.

5 Reference

Augustyn, J., Benasutti, P., Bolduc, S., Darkow, D., Federici, J., Haddad, R., Howe, J., McCarty, P., & Mahoney, J. (2012). *Technology-Enabled Capability Demonstration 4A Sustainability and Logistics-Basing Baseline Wargame*. Internal Report. Natick, MA: U.S. Army Natick Soldier Research, Development, and Engineering Center.

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Appendix A: QoL Levels per Baseline Camp

A.1 Security

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Sidewall protection of billets	None	HESCO barriers	HESCO barriers	HESCO barriers	Pre-detonation ballistic panels
Overhead protection of billets	None	None	None	None	Pre-detonation ballistic panels
Sidewall protection of DFAC	None	HESCO barriers	HESCO barriers	HESCO barriers	Pre-detonation ballistic panels
Overhead protection of DFAC	None	None	None	None	Pre-detonation ballistic panels
Sidewall protection of MWR shelter	N/A	N/A (Shared space with DFAC)	HESCO barriers	HESCO barriers	Pre-detonation ballistic panels
Overhead protection of MWR shelter	N/A	N/A (Shared space with DFAC)	None	None	Pre-detonation ballistic panels
Sidewall protection of TOC	None	HESCO barriers	HESCO barriers	HESCO barriers	Pre-detonation ballistic panels
Overhead protection of TOC	None	Overhead wood with sandbags	Overhead wood with sandbags	Overhead wood with sandbags	Pre-detonation ballistic panels
Building material of guard tower	Wooden tower	Wooden tower	Concrete tower	Concrete tower	Ballistic pre-fab tower
Sidewall protection of guard tower	Sandbags	Sandbags	Sandbags	Sandbags	Pre-detonation ballistic panels
Overhead protection of guard tower	None	Sandbags	Sandbags	Sandbags	Sandbags
Base camp perimeter	Berm	HESCO barriers	HESCO barriers	HESCO barriers	Cement barriers
Base camp entry point	Berm	HESCO barriers	HESCO barriers	HESCO barriers	Cement barriers
Entry point of shelters	HESCO barriers	HESCO barriers	HESCO barriers	HESCO barriers	Cement barriers
Perimeter lighting	No lights	Pole mounted perimeter lights	Pole mounted perimeter lights	Pole mounted perimeter lights	Pole mounted perimeter lights
Personnel bunkers	None	None	HESCO with plywood and sandbags	HESCO with plywood and sandbags	Ballistic panels
BAPL inside the wire	Level 0	Level 0	Level 0	Level 0	Level 0

A.2 Billets

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Building material of billets	Soft walled	Soft walled	Soft walled	Soft walled	Brick and mortar or prefabricated building
Privacy in billets	Open bay tent (no privacy)	Open bay tent (no privacy)	Open bay tent (no privacy)	Open bay tent (no privacy)	Individual private quarters
Noise level in billets	Up to 85 dBA	Up to 75 dBA	Up to 75 dBA	Up to 75 dBA	Up to 45 dBA
Ventilation in billets	No air ventilation	Moderate air ventilation (e.g. circulated air)	Moderate air ventilation (e.g. circulated air)	Moderate air ventilation (e.g. circulated air)	Well ventilated (e.g. filtered air)
Humidity level in billets	No humidity control (dry)	Humidity control	Humidity control	Humidity control	Humidity control
Overhead lighting in billets	No overhead lighting (flashlights only)	Complete overhead fluorescent lighting	Complete overhead fluorescent lighting	Complete overhead fluorescent lighting	Complete overhead LED lighting
Individual lighting in billets	No individual lighting	No individual lighting	No individual lighting	No individual lighting	Individually controlled bunk light
Convenience power in billets	No plugs available	Two plugs available per person	Two plugs available per person	Two plugs available per person	Four plugs available per person
HVAC temperature range in billets	80-85 °F	70-75 °F	70-75 °F	70-75 °F	65-70 °F
HVAC temperature control in billets	No temperature control	Temperature control for entire shelter	Temperature control for entire shelter	Temperature control for entire shelter	Temperature control for your personal space
Beds	Sleeping on the floor/ground	Sleeping on one cot of bunked cots	Sleeping on one cot of bunked cots	Sleeping on one cot of bunked cots	Sleeping on your own bed with mattress
Flooring in billets	Bare ground	Integrated style flooring	Integrated style flooring	Integrated style flooring	Rigid flooring
Storage in billets	No storage in your sleeping area	Small unsecurable area around sleeping area	Small unsecurable area around sleeping area	Small unsecurable area around sleeping area	Wall locker and a three drawer chest with locks in your sleeping area

A.3 Field Hygiene

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Shower frequency	No shower at your base camp (shower available only during R & R)	No shower at your base camp (shower available only during R & R)	Once every day	Once every day	Once every day
Shower duration	N/A	N/A	10-min shower or less	10-min shower or less	15-min shower or less
Range of shower water temperature	N/A	N/A	Control (cold to hot)	Control (cold to hot)	Control (cold to hot)
HVAC temperature control in showers	N/A	N/A	HVAC temperature control	HVAC temperature control	HVAC temperature control
Shower flow rate	N/A	N/A	Moderate	Moderate	High
Person doing laundry	Individual hand wash at base camp	Turn-in (LOGPAC) for offsite laundering (7 day turn-around time)	Individual machine wash and machine dry at base camp	Turn-in for onsite laundering (2 day turn-around time)	Turn-in for onsite laundering (2 day turn-around time)
How often you can access laundry capabilities	Scheduled	N/A	Scheduled	Scheduled	Whenever you want
Bags of laundry you can do each week	Restricted use for heavily soiled garments only	One laundry bag	Two laundry bags	Two laundry bags	Four laundry bags
Latrine structure	Urination tubes and straddle trench	Urination tubes and burn out latrines	Force Provider latrine systems	Force Provider latrine systems	Force Provider latrine systems
HVAC temperature control in latrines	No HVAC temperature control	No HVAC temperature control	HVAC temperature control	HVAC temperature control	HVAC temperature control
Water for hand washing	Hand wash station	Hand wash station	Running hot water	Running hot water	Running hot water
Water for shaving	Bottled water	Bottled water	Running hot water	Running hot water	Running hot water
Water for tooth brushing	Bottled water	Bottled water	Running cold water	Running cold water	Running cold water

A.4 MWR

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Access to weights	No weights available	Dumbbells only	Dumbbells and barbells	Weight machines, dumbbells and barbells	Weight machines, dumbbells and barbells
Access to cardio machines	No cardio equipment available	No cardio equipment available	Twice a week for 30 minutes	Every day for 30 minutes	Every day for 30 minutes
Internet speed	N/A	N/A	Moderate (DSL)	Moderate (DSL)	Fast (high-speed)
Availability of MWR computers with internet	N/A	N/A	Once per day for 30 minutes or less	Once per day for 30 minutes or less	Once per day for 60 minutes or less
Type of internet connection	N/A	N/A	Hard wired (plugged-in)	Hard wired (plugged-in)	WiFi
Availability of Skype or other video chat services	No video chat available	No video chat available	Video chat available	Video chat available	Video chat available
Telephone type	Limited use of satellite phone (Iridium)	Limited use of satellite phone (Iridium)	Communal (e.g. phone bank)	Communal (e.g. phone bank)	Access to cell network
Availability of telephone	No phones available	Once per week for 30 minutes or less	Once per day for 30 minutes or less	Once per day for 30 minutes or less	Two to three times per week for 60 minutes or less
Access to barber shop	None	None	Trained barber	Trained barber	Trained barber
Access to watch a TV	None	None	Communal TV	Communal TV	Communal TV
Availability of MWR space	No MWR space available	Shared MWR space available	Dedicated MWR space available	Dedicated MWR space available	Dedicated MWR space available
Availability of sacred space	No sacred space available	Shared space available	Shared space available	Dedicated sacred space available	Dedicated sacred space available
Mail delivery schedule	No mail available	Every seven days	Every three days	Every three days	Everyday
PX/AAFES hours of operation	No PX on-site	No PX on-site	Extended hours (12 hours or less)	Extended hours (12 hours or less)	Extended hours (12 hours or less)
Range of PX/AAFES available items	No items available	No items available	Limited selection of sundries available	Wide selection of sundries available	Wide selection of sundries available
Who runs the PX/AAFES store	N/A	N/A	Soldiers	Contractors	Contractors
Range of MWR electronics available	No electronics available	No electronics available	Six TVs and three game consoles	Six TVs and three game consoles	Six TVs and three game consoles

A.5 Field Feeding

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Breakfast rations	MRE	MRE	MRE	UGR-A	UGR-A
Lunch rations	MRE	UGR-E	MRE	MRE	UGR-A
Dinner rations	MRE	MRE	UGR-A	UGR-A	UGR-A
Availability of supplemental food items	No supplemental food available	Supplemental food available	Supplemental food available	Supplemental food available	Supplemental food available
Availability of enhancement food items	No enhancement food items available	No enhancement food items available	Enhancement food items available	Enhancement food items available	Enhancement food items available
Availability of pogey bait	No pogey bait available	Pogey bait available	Pogey bait available	Pogey bait available	Pogey bait available
Availability of water/beverage refrigeration	No water/beverage refrigeration available	Sunshade available	Sunshade available	Refrigeration available for water/beverages	Ice available for water/beverages
Availability of water/beverage heating	No water/beverage heating available	No water/beverage heating available	Water/beverage heating available	Water/beverage heating available	Water/beverage heating available

A.6 DFAC

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Building material of DFAC	Soft walled	Soft walled	Soft walled	Soft walled	Brick and mortar or prefabricated building
Noise level in DFAC	Up to 85 dBA	Up to 75 dBA	Up to 75 dBA	Up to 75 dBA	Up to 55 dBA
Ventilation in DFAC	No air ventilation	Moderate air ventilation (e.g. circulated air)	Moderate air ventilation (e.g. circulated air)	Moderate air ventilation (e.g. circulated air)	Well ventilated (e.g. filtered air)
Humidity level in DFAC	No humidity control (dry)	Humidity control	Humidity control	Humidity control	Humidity control
Temperature range in DFAC	80-85 °F	70-75 °F	70-75 °F	70-75 °F	65-70 °F
Temperature control in DFAC	No temperature control	Temperature control for entire shelter	Temperature control for entire shelter	Temperature control for entire shelter	Temperature control for entire shelter
Convenience power in DFAC	None available	Available	Available	Available	Available
Flooring in DFAC	Bare ground	Integrated style flooring	Integrated style flooring	Integrated style flooring	Rigid flooring

A.7 TOC

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Building material of TOC	Soft walled	Soft walled	Rigid walled	Rigid walled	Brick and mortar or prefabricated building
Noise level in TOC	Up to 85 dBA	Up to 65 dBA	Up to 65 dBA	Up to 65 dBA	Up to 65 dBA
Humidity level in TOC	No humidity control (dry)	Humidity control	Humidity control	Humidity control	Humidity control
Lighting in TOC	No overhead lighting (flashlights only)	Complete overhead fluorescent lighting	Complete overhead fluorescent lighting	Complete overhead fluorescent lighting	Complete overhead LED lighting
Convenience power in TOC	No plugs available	No plugs available	No plugs available	No plugs available	4 plugs available per person
Temperature range in TOC	80-85 °F	70-75 °F	70-75 °F	70-75 °F	65-70 °F
Temperature control in TOC	No temperature control	Temperature control for entire shelter	Temperature control for entire shelter	Temperature control for entire shelter	Temperature control for entire shelter
Flooring in TOC	Bare ground	Integrated style flooring	Rigid flooring	Rigid flooring	Rigid flooring

A.8 MWR Shelter

	Worst Camp	50 PAX	300 PAX	1000 PAX	Best Camp
Building material of MWR shelter	N/A	N/A (Shared space with DFAC)	Soft walled	Soft walled	Brick and mortar or prefabricated building
Noise level in MWR shelter	N/A	N/A (Shared space with DFAC)	Up to 75 dBA	Up to 75 dBA	Up to 55 dBA
Ventilation in MWR shelter	N/A	N/A (Shared space with DFAC)	Moderate air ventilation (e.g. circulated air)	Moderate air ventilation (e.g. circulated air)	Well ventilated (e.g. filtered air)
Humidity level in MWR shelter	N/A	N/A (Shared space with DFAC)	Humidity control	Humidity control	Humidity control
Temperature range in MWR shelter	N/A	N/A (Shared space with DFAC)	70-75 °F	70-75 °F	65-70 °F
Temperature control in MWR shelter	N/A	N/A (Shared space with DFAC)	Temperature control for entire shelter	Temperature control for entire shelter	Temperature control for entire shelter
Convenience power in MWR shelter	N/A	N/A (Shared space with DFAC)	Convenience power available	Convenience power available	Convenience power available
Flooring in MWR shelter	N/A	N/A (Shared space with DFAC)	Integrated style flooring	Integrated style flooring	Rigid flooring

Appendix B: Overall QoL per QoL Level

B.1 Security

Base camp perimeter	
Cement barriers	6.267
HESCO barriers	4.488
Berm	2.413
Concertina wire	0.000

Personnel bunkers	
Concrete reinforced	2.415
Concrete	1.989
Ballistic panels	1.741
HESCO with plywood and sandbags	1.714
None	0.000

Base camp entry point	
Cement barriers	2.867
HESCO barriers	2.360
Berm	1.206
Vehicles	0.431
Concertina wire	0.000

Perimeter lighting	
Pole mounted perimeter lights	2.290
Hand held spot light	1.184
No lights	0.000

Sidewall protection of guard tower	
Ballistic panels	2.644
Pre-detonation ballistic panels	1.173
Sandbags	0.000

Sidewall protection of billets	
Cement barriers	2.268
Ballistic panels	1.637
Pre-detonation ballistic panels	1.562
HESCO barriers	1.560
Sandbags	0.884
None	0.000

Overhead protection of DFAC	
Ballistic panels	2.478
Overhead steel with sandbags	2.317
Pre-detonation ballistic panels	2.055
Overhead wood with sandbags	1.576
None	0.000

Sidewall protection of TOC	
Cement barriers	2.256
HESCO barriers	1.972
Ballistic panels	1.915
Pre-detonation ballistic panels	1.838
Sandbags	0.712
None	0.000

Overhead protection of TOC	
Ballistic panels	1.554
Overhead steel with sandbags	1.407
Pre-detonation ballistic panels	1.282
Overhead wood with sandbags	0.931
None	0.000

Building material of guard tower	
Concrete tower	1.754
Ballistic pre-fab tower	1.412
Wooden tower	0.000

Sidewall protection of DFAC	
HESCO barriers	1.372
Cement barriers	1.287
Ballistic panels	1.085
Pre-detonation ballistic panels	0.916
Sandbags	0.721
None	0.000

Overhead protection of billets	
Ballistic panels	1.555
Overhead steel with sandbags	1.530
Pre-detonation ballistic panels	1.368
Overhead wood with sandbags	0.936
None	0.000

Overhead protection of guard tower	
Sandbags	1.180
None	0.000

Overhead protection of MWR shelter	
Ballistic panels	1.118
Overhead steel with sandbags	1.009
Pre-detonation ballistic panels	0.967
Overhead wood with sandbags	0.490
None	0.000

BAPL inside the wire	
Level 0	1.118
Level 1	0.540
Level 2	0.491
Level 3	0.244
Level 4	0.108
Level 5	0.000

Sidewall protection of MWR shelter	
Cement barriers	0.820
HESCO barriers	0.790
Ballistic panels	0.746
Pre-detonation ballistic panels	0.673
Sandbags	0.328
None	0.000

Entry point of shelters	
Cement barriers	0.615
HESCO barriers	0.000

B.2 Billets

HVAC temperature range in billets	
65-70 °F	1.905
60-65 °F	1.489
70-75 °F	1.433
55-60 °F	1.109
50-55 °F	0.744
75-80 °F	0.482
80-85 °F	0.000

Building material of billets	
Brick and mortar or prefabricated building	1.350
Rigid walled	0.993
Hybrid	0.658
Soft walled	0.000

HVAC temperature control in billets	
Temperature control for your personal space	1.844
Temperature control for entire shelter	1.761
No temperature control	0.000

Privacy in billets	
Individual private quarters	1.282
Two man sleeping quarters	1.020
Four man sleeping quarters	0.721
Sectioned area open bay	0.320
Open bay tent (no privacy)	0.000

Beds	
Sleeping on your own bed with mattress	1.428
Sleeping on one bunk of a bunk bed	1.034
Sleeping on your own cot	0.958
Sleeping on one cot of bunked cots	0.531
Hotswapping	0.171
Sleeping on the floor/ground	0.000

Humidity level in billets	
Humidity control	1.179
No humidity control (dry)	0.378
No humidity control (damp or humid)	0.000

Convenience power in billets	
Four plugs available per person	0.949
Two plugs available per person	0.898
One plug available per person	0.508
No plugs available	0.000

Overhead lighting in billets	
Complete overhead fluorescent lighting	0.620
Complete overhead LED lighting	0.580
No overhead lighting (flashlights only)	0.063
Blackout lights	0.000

Ventilation in billets	
Well ventilated (e.g. filtered air)	0.814
Moderate air ventilation (e.g. circulated air)	0.712
Minimal air ventilation (e.g. doors opening and closing)	0.362
No air ventilation	0.000

Individual lighting in billets	
Individually controlled bunk light	0.587
No individual lighting	0.000

Flooring in billets	
Insulated flooring	0.691
Rigid flooring	0.648
Removable flooring	0.481
Integrated style flooring	0.398
Bare ground	0.000

Storage in billets	
Wall locker and a three drawer chest with locks in your sleeping area	0.574
Wall locker with lock in your sleeping area	0.439
Footlocker with lock in your sleeping area	0.321
Small unsecurable area around sleeping area	0.173
No storage in your sleeping area	0.000

Noise level in billets	
Up to 45 dBA	0.662
Up to 55 dBA	0.596
Up to 65 dBA	0.371
Up to 75 dBA	0.115
Up to 85 dBA	0.000

B.3 Field Hygiene

Latrine structure	
Force Provider latrine systems w/ enforced flush policy	3.183
Force Provider latrine systems	3.081
Portapotties	1.633
Urination tubes and burn out latrines	0.047
Urination tubes and straddle trench	0.000

HVAC temperature control in showers	
HVAC temperature control	0.949
No HVAC temperature control	0.000

Range of shower water temperature	
Control (cold to hot)	1.719
Control (cold to warm)	1.642
Control (cold to lukewarm)	1.122
No control (hot only in hot environment)	0.266
No control (cold only in cold environment)	0.000

Shower flow rate	
High	0.851
Moderate	0.700
Low	0.000

HVAC temperature control in latrines	
HVAC temperature control	1.183
No HVAC temperature control	0.000

Water for tooth brushing	
Running cold water	0.687
Bottled water	0.000

How often you can access laundry capabilities	
Whenever you want	0.685
Scheduled	0.000

Person doing laundry	
Turn-in for onsite laundering (2 day turn-around time)	0.654
Individual machine wash and machine dry at base camp	0.580
Turn-in (LOGPAC) for offsite laundering (3 day turn-around time)	0.472
Individual machine wash and air dry at base camp	0.440
Turn-in (LOGPAC) for offsite laundering (7 day turn-around time)	0.229
Individual handwash at base camp	0.000

Shower frequency	
Once every day	0.674
Once per week	0.413
Once every two weeks	0.327
Once every three weeks	0.220
Once per month	0.118
No shower at your base camp (shower available only during R & R)	0.000

Water for shaving	
Running hot water	0.562
Running cold water	0.221
Individually heated bottled water	0.179
Bottled water	0.000

Bags of laundry you can do each week	
Three laundry bags	0.661
Four laundry bags	0.660
Two laundry bags	0.537
One laundry bag	0.459
Restricted use for heavily soiled garments only	0.000

Water for hand washing	
Running hot water	0.531
Running cold water	0.295
Hand wash station	0.000

Shower duration	
15 minute shower or less	0.528
Ten minute shower or less	0.345
Five minute shower or less	0.214
Two minute shower	0.000

B.4 MWR

Availability of telephone	
Once per day for 30 minutes or less	1.893
Once per day for 60 minutes or less	1.829
Two to three times per week for 60 minutes or less	1.390
Two to three times per week for 30 minutes or less	1.181
Once per week for 30 minutes or less	1.139
Once per week for 60 minutes or less	1.074
No phones available	0.000

PX/AAFES hours of operation	
Extended hours (12 hours or less)	0.686
Duty hours (eight hours or less)	0.504
Limited hours (six hours or less)	0.253
No PX on-site	0.000

Mail delivery schedule	
Everyday	0.985
Every three days	0.774
Every seven days	0.271
No mail available	0.000

Access to watch a TV	
Communal TV	0.683
None	0.000

Type of internet connection	
WiFi	0.871
Hard wired (plugged-in)	0.000

Availability of Skype or other video chat service	
Video chat available	0.682
No video chat available	0.000

Availability of MWR space	
Dedicated MWR space available	0.771
Shared MWR space available	0.561
No MWR space available	0.000

Telephone type	
Access to cell network	0.599
Communal (e.g. phone bank)	0.281
Limited use of satellite phone (Iridium)	0.000

Range of PX/AAFES available items	
Wide selection of sundries available	0.690
Limited selection of sundries available	0.412
No items available	0.000

Availability of MWR computers with internet	
Once per day for 60 minutes or less	0.582
Once per day for 30 minutes or less	0.551
Two to three times per week for 60 minutes or less	0.468
Two to three times per week for 30 minutes or less	0.442
Once per week for 60 minutes or less	0.258
Once per week for 30 minutes or less	0.211
No computers with internet available	0.000

Internet speed	
Fast (high-speed)	0.555
Moderate (DSL)	0.440
Slow (dial-up)	0.206
No internet available	0.000

Availability of sacred space	
Dedicated sacred space available	0.509
Shared space available	0.383
No sacred space available	0.000

Range of MWR electronics available	
Six TVs and three game consoles	0.481
Two TVs and two game consoles	0.362
Two TVs	0.173
No electronics available	0.000

Access to weights	
Weight machines	0.477
Dumbbells and barbells	0.363
Dumbbells only	0.206
No weights available	0.000

Access to barber shop	
Trained barber	0.463
None	0.000

Access to cardio machines	
Every day for 30 minutes	0.435
Three to four times a week for 30 minutes	0.396
Twice a week for 30 minutes	0.281
Once a week for 30 minutes	0.159
No cardio equipment available	0.000

Who runs the PX/AAFES store	
Contractors	0.376
Soldiers	0.000

B.5 Field Feeding

Breakfast rations	
UGR-A+	2.209
UGR-A	1.816
UGR-E	1.376
UGR-H&S	0.927
MRE	0.327
First Strike Ration	0.205
MCW/LRP	0.000

Dinner rations	
UGR-A+	1.752
UGR-A	1.529
UGR-E	0.904
UGR-H&S	0.819
MRE	0.358
MCW/LRP	0.229
First Strike Ration	0.000

Lunch rations	
UGR-A+	1.612
UGR-A	1.554
UGR-H&S	0.994
UGR-E	0.913
MRE	0.337
First Strike Ration	0.115
MCW/LRP	0.000

Availability of water/beverage refrigeration	
Refrigeration available for water/beverages	1.324
Ice available for water/beverages	0.969
Water/beverage stored in air conditioned space	0.911
Sunshade available	0.348
No water/beverage refrigeration available	0.000

Availability of enhancement food items	
Enhancement food items available	1.075
No enhancement food items available	0.000

Availability of water/beverage heating	
Water/beverage heating available	0.927
No water/beverage heating available	0.000

Availability of pogeey bait	
Pogeey bait available	0.821
No pogeey bait available	0.000

Availability of supplemental food items	
Supplemental food available	0.689
No supplemental food available	0.000

B.6 DFAC

Building material of DFAC	
Brick and mortar or prefabricated building	2.069
Rigid walled	1.638
Hybrid	1.079
Soft walled	0.000

Ventilation in DFAC	
Well ventilated (e.g. filtered air)	0.563
Moderate air ventilation (e.g. circulated air)	0.400
Minimal air ventilation (e.g. doors opening and closing)	0.176
No air ventilation	0.000

Temperature control in DFAC	
Temperature control for entire shelter	1.056
No temperature control	0.000

Flooring in DFAC	
Insulated flooring	0.477
Rigid flooring	0.439
Removable flooring	0.319
Integrated style flooring	0.252
Bare ground	0.000

Temperature range in DFAC	
65-70°F	0.685
60-65°F	0.511
70-75°F	0.461
55-60°F	0.243
50-55°F	0.212
75-80°F	0.193
80-85°F	0.000

Noise level in DFAC	
Up to 45 dBA	0.453
Up to 55 dBA	0.425
Up to 65 dBA	0.342
Up to 75 dBA	0.182
Up to 85 dBA	0.000

Humidity level in DFAC	
Humidity control	0.680
No humidity control (dry)	0.201
No humidity control (damp or humid)	0.000

Convenience power in DFAC	
Available	0.401
None available	0.000

B.7 TOC

Building material of TOC	
Brick and mortar or prefabricated building	1.051
Rigid walled	0.551
Hybrid	0.205
Soft walled	0.000

Temperature control in TOC	
Temperature control for entire shelter	0.655
No temperature control	0.000

Temperature range in TOC	
65-70°F	0.905
70-75°F	0.829
60-65°F	0.751
55-60°F	0.423
50-55°F	0.348
75-80°F	0.309

Convenience power in TOC	
Two plugs available per person	0.599
Four plugs available per person	0.553
One plug available per person	0.335
No plugs available	0.000

Humidity level in TOC	
Humidity control	0.705
No humidity control (dry)	0.263
No humidity control (damp or humid)	0.000

Lighting in TOC	
Complete overhead LED lighting	0.554
Complete overhead fluorescent lighting	0.525
Blackout lights	0.135
No overhead lighting (flashlights only)	0.000

Noise level in TOC	
Up to 45 dBA	0.691
Up to 55 dBA	0.689
Up to 65 dBA	0.429
Up to 75 dBA	0.148
Up to 85 dBA	0.000

Flooring in TOC	
Rigid flooring	0.421
Insulated flooring	0.397
Removable flooring	0.329
Integrated style flooring	0.257
Bare ground	0.000

B.8 MWR Shelter

Temperature range in MWR shelter	
65-70°F	0.707
70-75°F	0.576
60-65°F	0.550
55-60°F	0.365
50-55°F	0.274
75-80°F	0.152
80-85°F	0.000

Noise level in MWR shelter	
Up to 45 dBA	0.533
Up to 55 dBA	0.499
Up to 65 dBA	0.344
Up to 75 dBA	0.148
Up to 85 dBA	0.000

Convenience power in MWR shelter	
Convenience power available	0.665
No convenience power available	0.000

Temperature control in MWR shelter	
Temperature control for entire shelter	0.524
No temperature control	0.000

Humidity level in MWR shelter	
Humidity control	0.631
No humidity control (dry)	0.325
No humidity control (damp or humid)	0.000

Ventilation in MWR shelter	
Well ventilated (e.g. filtered air)	0.521
Moderate air ventilation (e.g. circulated air)	0.360
Minimal air ventilation (e.g. doors opening and closing)	0.177
No air ventilation	0.000

Building material of MWR shelter	
Brick and mortar or prefabricated building	0.578
Rigid walled	0.388
Hybrid	0.138
Soft walled	0.000

Flooring in MWR shelter	
Insulated flooring	0.407
Rigid flooring	0.344
Integrated style flooring	0.283
Removable flooring	0.216
Bare ground	0.000

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List of Acronyms

1SG	First Sergeant
AAR	After Action Review
BDE	Brigade
BN	Battalion
CO	Commanding Officer
DFAC	Dining Facilities Administration Center
DP	Duty Position
HVAC	Heating, Ventilation, & Air Conditioning
MP	Military Police
MSCOE	Maneuver Support Center of Excellence
MWR	Morale Welfare and Recreation
PAX	Personnel
PL	Platoon Leader
PSG	Platoon Sergeant
RC	Regional Command
QoL	Quality of Life
TAT	Technology Assessment Tool
TECD	Technology-Enabled Capability Demonstration
TOC	Tactical Operations Center
TTPs	Tactics, Techniques, and Procedures
UGR	Unitized Group Ration