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APRIL 1997

REPORT NO. 96-48

ENVIRONMENTAL MONITORING
OF M1A1 TANKS IN
SOUTH KOREA, HUNGARY, AND
FORT STEWART, GA

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Prepared for:
U.S. Army Armament Research, Development,
and Engineering Center
ATTN: AMSTA-AR-QAC-T
Picatinny Arsenal, NJ 07806-5000

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SAVANNA, ILLINOIS 61074-9639
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Environmental Monitoring of M1A1 Tanks in South Korea, Hungary, and Fort Stewart, GA

The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SIOAC-DEV), was tasked by U.S. Army Armament Research, Development and Engineering Center (ARDEC) to obtain temperature and humidity data of the ammunition storage racks of M1A1 tanks. Four tanks were instrumented in South Korea and Hungary and six tanks were instrumented in Ft. Stewart, GA. This report contains test results of the tanks monitored from June-December 1996.
U.S. ARMY DEFENSE AMMUNITION CENTER  
VALIDATION ENGINEERING DIVISION  
SAVANNA, IL 61074-9639  

REPORT NO. 96-48  

ENVIRONMENTAL MONITORING OF M1A1 TANKS IN  
SOUTH KOREA, HUNGARY, AND FORT STEWART, GA  

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PART 1

INTRODUCTION

A. BACKGROUND. The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SIOAC-DEV), was tasked by U.S. Army Armament Research, Development and Engineering Center (ARDEC) to monitor ammunition storage conditions inside M1A1 tanks located in South Korea, Hungary, and Ft. Stewart, GA. This report contains test results of data obtained from June-December 1996.

B. AUTHORITY. The test was accomplished IAW mission responsibilities delegated by U.S. Army Armament Munitions and Chemical Command (AMCCOM), Rock Island, IL. Reference is made to the following:


2. AMCCOM-R, 10-17, Mission and Major Functions of USADACS, 13 January 1986.

C. OBJECTIVE. The objective of the instrumentation was to obtain temperature and humidity data in the ammunition storage compartments of deployed tanks. U.S. Army Armament Research, Development and Engineering Center will apply the data obtained to provide information concerning chamberability and swelling of two designs of bourrelets.

D. CONCLUSION. The temperature and humidity in the stowage compartments of the tanks generally maintained higher temperature levels than ambient conditions provided. The temperature and humidity conditions of the semiready and ready storage compartments were similar. Hull storage experienced similar temperature conditions to the semiready and ready storage areas. The standing water, being common in the hull storage area, contributed to the generally higher hull storage area humidity than the semiready and ready storage areas.
PART 2

JUNE - DECEMBER 1996

ATTENDEES

Bradley J. Haas
Mechanical Engineer
DSN 585-8336
815-273-8336

Director
U.S. Army Defense Ammunition Center
ATTN: SIOAC-DEV
3700 Army Depot Road
Savanna, IL 61074-9639

William R. Meyer
General Engineer
DSN 585-8090
815-273-8090

Director
U.S. Army Defense Ammunition Center
ATTN: SIOAC-DEV
3700 Army Depot Road
Savanna, IL 61074-9639

Quinn D. Hartman
General Engineer
DSN 585-8992
815-273-8992

Director
U.S. Army Defense Ammunition Center
ATTN: SIOAC-DEV
3700 Army Depot Road
Savanna, IL 61074-9639

David V. Valant
Electronics Technician
DSN 585-8988
815-273-8988

Director
U.S. Army Defense Ammunition Center
ATTN: SIOAC-DEV
3700 Army Depot Road
Savanna, IL 61074-9639

Richard O. Schubert
DSN 880-7597
201-724-7597

Commander
U.S. Army Armament Research, Development
and Engineering Center
ATTN: AMSTA-AR-QAC-T, B-62
Picatinny Arsenal, NJ 07806-5000

MAJ Steve Thorsen
DSN 880-3519
201-724-3519

Office of Project Manager for
Tank Main Armament Systems
ATTN: AMCPM-TMA
Picatinny Arsenal, NJ 07806-5000

2-1
Christopher A. DeLima
DSN 880-3782
201-724-3782

Commander
U.S. Army Armament Research, Development and Engineering Center
ATTN: AMSTA-AR-QAC-T
Picatinny Arsenal, NJ 07806-5000
PART 3

TEST PROCEDURE

M1A1 tanks were instrumented at the following three sites: Fort Stewart, GA; Taborfalva Training Area, Hungary; and Camp Gary Owen, South Korea. Each tank was instrumented with three ACR data loggers. One data logger was placed in the tank ready rack, one data logger in the semiready rack, and one data logger in the hull stowage compartment. These data loggers collected temperature and humidity readings for these locations. The instrumented tanks continued to be used in normal operations, including maintenance. Additionally, a weather station was assembled at each location to record ambient conditions.

At the Fort Stewart site, six tanks were instrumented as described above. Readings were recorded every 10 minutes, 30 May - 1 November 1996. A weather station was operated onsite.

At Taborfalva Training Area, Hungary, four tanks were instrumented as described above. The data loggers recorded readings every 10 minutes. The initial data loggers were installed 24 June 1996. The program concluded 16 December 1996. A weather station was operated onsite.

The South Korea site had four tanks instrumented, each with three data loggers. Camp Gary Owen is located approximately 50 km east-northeast of Seoul and 325 km north of Taegu. The data loggers recorded temperature and humidity data every 30 minutes. The data loggers were initially installed 6 June 1996, with the program concluding 20 December 1996. The South Korea weather station was positioned at Ammunition Depot 2 (AD-2), located approximately 40 km southeast of Taegu.
PART 4

TEST RESULTS

Six M1A1 tanks were instrumented at Fort Stewart from 30 May - 31 October 1996. The ambient temperature during this timeframe ranged from 44 degrees Fahrenheit to 101 degrees Fahrenheit. The maximum semiready storage temperature of 112 degrees Fahrenheit was recorded in tank 206 on 23 June 1996. The maximum ready storage temperature recorded was 117 degrees Fahrenheit in tank 224 on 23 June 1996. The maximum hull storage temperature recorded was 108 degrees Fahrenheit in tank 206 on 24 June 1996 and tank 221 on 10 July 1996 (see part 6 for additional temperature data obtained at Fort Stewart).

The ambient humidity at Fort Stewart ranged from 14 to 100 percent. Readings of 100 percent were obtained during each month. Hull storage readings ranged from 37 to 100 percent, with the hull storage of five of the six tanks reaching 100 percent humidity. The remaining tank, tank 210, had a maximum hull storage humidity reading of 83 percent. Tank 210 was the only instrumented tank that did not show evidence of standing water in the hull storage area. Semiready storage readings ranged from 21 to 100 percent, with four of the six instrumented tanks reaching 100 percent humidity. The remaining tanks, tanks 210 and 213, had maximum ready storage readings of 88 and 83 percent, respectively. Ready storage humidity readings ranged from 29 to 100 percent, with three of the six instrumented tanks reaching 100 percent humidity. The remaining three tanks (tanks 210, 213, and 219) had maximum humidity readings of 79, 93, and 90 percent, respectively. No standing water was noted in the semiready or ready storage areas of any of the instrumented tanks (for additional humidity distribution data, see part 6).

From 24 June - 16 December 1996, four M1A1 tanks were instrumented at Taborfalva Training Area, Hungary. During this timeframe, the ambient temperature ranged from
20 degrees Fahrenheit to 93 degrees Fahrenheit. The maximum semiready storage temperature reading of 98 degrees Fahrenheit was recorded in tank 301 on 8 July 1996. The maximum ready storage temperature of 107 degrees Fahrenheit was also recorded in tank 301 on 8 July 1996. The maximum recorded hull storage temperature of 105 degrees Fahrenheit occurred in tank 301 on 4 July 1996.

The ambient humidity at Taborfalva Training Area ranged from 20 to 100 percent. Readings of 100 percent were obtained during each month of instrumentation. Hull storage readings ranged from 36 to 100 percent with three of the four instrumented tanks recording maximum readings of 100 percent. The remaining tank, tank 304, had a maximum recorded reading of 93 percent. Semiready storage readings ranged from 36 to 100 percent with the semiready storage of each instrumented tank reaching 100 percent for a period of time. The ready storage humidity readings ranged from 34 to 100 percent, with only tank 312 reaching 100 percent humidity. Each of the remaining three instrumented tanks had maximum humidity readings in the ready storage area in excess of 75 percent. Additional details for the temperature and humidity data obtained in Hungary are located in part 6.

From 27 June - 20 August 1996, three M1A1 tanks at Camp Gary Owen, South Korea were each equipped with three data loggers. This timeframe is referred to as “Setup No. 1.” Instead of replacing the removed data loggers, four sets of three data loggers were placed in four different M1A1 tanks, referred to as “Setup No. 2.” Monitoring of these four tanks continued until the termination of the program on 18 December 1996. No ambient conditions at this location were obtained during this timeframe. Ambient conditions from AD-2 were used for data analysis. During this timeframe, ambient temperature conditions ranged from 14 to 100 degrees Fahrenheit. The maximum semiready storage temperature reading was 110 degrees Fahrenheit in tank A-42 on 1 August 1996. The maximum ready storage temperature was
104 degrees Fahrenheit in tank C-33 on 21 August 1996. The maximum hull storage temperature was 104 degrees Fahrenheit in tank C-33 on 21 August 1996.

The ambient humidity at AD-2 ranged from 15 to 100 percent. Readings of 100 percent were obtained during each month of instrumentation. Hull storage readings ranged from 33 to 100 percent with three of the four instrumented tanks in Setup No. 2 having readings of 100 percent. The remaining tank, tank A-14, had a maximum hull storage humidity reading of 76 percent. Semiready storage humidity readings ranged from 36 to 90 percent, with the semiready storage of six of the seven tanks that were instrumented providing readings in excess of 78 percent at a period of time. The ready storage humidity readings ranged from 28 to 98 percent, with the minimum peak humidity reading of any instrumented tank being 79 percent. Additional details for the temperature and humidity data obtained in South Korea are located in part 6.
PART 5

PHOTOGRAPHS
U.S. ARMY DEFENSE AMMUNITION CENTER

PHOTO NO. AO317-SCN-96-155-3041. This photograph shows M1A1 tanks located at Fort Stewart.
U.S. ARMY DEFENSE AMMUNITION CENTER

PHOTO NO. AO317-SCN-96-155-3043. This photograph shows an ACR data logger located in the semiready rack of an M1A1 tank.
<table>
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<tbody>
<tr>
<td>PHOTO NO. AO317-SCN-96-155-3045. This photograph shows the ready rack of an M1A1 tank. An ACR data logger is located in the top right of the compartment.</td>
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PHOTO NO. AO317-SCN-96-155-3040. This photograph shows an ACR data logger located in the hull rack of an M1A1 tank.
PART 6

GRAPHS
FORT STEWART DATA
<table>
<thead>
<tr>
<th>AMBIENT</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
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</thead>
<tbody>
<tr>
<td>High Temperature</td>
<td>101</td>
<td>101</td>
<td>95</td>
<td>95</td>
<td>89</td>
</tr>
<tr>
<td>Low Temperature</td>
<td>90</td>
<td>71</td>
<td>59</td>
<td>59</td>
<td>44</td>
</tr>
<tr>
<td>High Humidity</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td>Low Humidity</td>
<td>23</td>
<td>26</td>
<td>29</td>
<td>15</td>
<td>14</td>
</tr>
</tbody>
</table>

**TANK 206**

| SEMIREADY | |
| High Temperature | 112 | 102 | 95 | 103 | 101 |
| Low Temperature | 68 | 76 | 76 | 72 | 56 |
| High Humidity | 94 | 65 | 61 | 110 | 81 |
| Low Humidity | 32 | 45 | 47 | 52 | 57 |

| READY | |
| High Temperature | 115 | 117 | 111 | 97 | 98 |
| Low Temperature | 68 | 75 | 75 | 72 | 55 |
| High Humidity | 92 | 63 | 55 | 100 | 100 |
| Low Humidity | 31 | 42 | 44 | 52 | 80 |

| HULL | |
| High Temperature | 108 | 98 | 98 | 95 | 89 |
| Low Temperature | 64 | 77 | 75 | 75 | 56 |
| High Humidity | 100 | 100 | 100 | 100 | 85 |
| Low Humidity | 50 | 65 | 79 | 45 | 45 |

**TANK 210**

| SEMIREADY | |
| High Temperature | 108 | 100 | NA | 96 | 87 |
| Low Temperature | 69 | 85 | NA | 77 | 60 |
| High Humidity | 61 | 67 | NA | 87 | 68 |
| Low Humidity | 36 | 61 | NA | 77 | 83 |

| READY | |
| High Temperature | 115 | 113 | 106 | 110 | 94 |
| Low Temperature | 61 | 75 | 73 | 72 | 55 |
| High Humidity | 79 | 60 | 55 | 55 | 55 |
| Low Humidity | 29 | 42 | 43 | 43 | 43 |

| HULL | |
| High Temperature | 105 | 99 | 89 | 89 | 85 |
| Low Temperature | 70 | 77 | 74 | 73 | 56 |
| High Humidity | 50 | 83 | 80 | 80 | 57 |
| Low Humidity | 37 | 42 | 74 | 49 | 49 |

**TANK 212**

| SEMIREADY | |
| High Temperature | 98 | 101 | 93 | 89 | 84 |
| Low Temperature | 69 | 77 | 75 | 72 | 65 |
| High Humidity | 81 | 83 | 84 | 88 | 67 |
| Low Humidity | 69 | 62 | 73 | 51 | 44 |

| READY | |
| High Temperature | 107 | 113 | 104 | 98 | 92 |
| Low Temperature | 69 | 76 | 73 | 65 | 54 |
| High Humidity | 83 | 67 | 61 | 93 | 78 |
| Low Humidity | 54 | 37 | 40 | 66 | 58 |

| HULL | |
| High Temperature | 107 | 107 | 107 | 101 | 87 |
| Low Temperature | 69 | 84 | 79 | 70 | 65 |
| High Humidity | 100 | 100 | 87 | 100 | 100 |
| Low Humidity | 86 | 93 | 84 | 75 | 67 |

**TANK 215**

| SEMIREADY | |
| High Temperature | 101 | 104 | 97 | 104 | 93 |
| Low Temperature | 68 | 75 | 74 | 70 | 65 |
| High Humidity | 100 | 85 | 92 | 92 | 83 |
| Low Humidity | 47 | 55 | 69 | 49 | 55 |

| READY | |
| High Temperature | 111 | 112 | NA | 108 | 93 |
| Low Temperature | 71 | 85 | NA | 70 | 56 |
| High Humidity | 90 | 67 | NA | 88 | 77 |
| Low Humidity | 39 | 38 | NA | 57 | 55 |

| HULL | |
| High Temperature | 101 | 93 | NA | 98 | 84 |
| Low Temperature | 71 | 82 | NA | 69 | 54 |
| High Humidity | 100 | 100 | NA | 100 | 97 |
| Low Humidity | 84 | 92 | NA | 56 | 64 |

**TANK 221**

| SEMIREADY | |
| High Temperature | 99 | 104 | 95 | 95 | 85 |
| Low Temperature | 69 | 77 | 74 | 72 | 58 |
| High Humidity | 100 | 95 | 92 | 92 | 92 |
| Low Humidity | 40 | 45 | 42 | 31 | 21 |

| READY | |
| High Temperature | 111 | 116 | 103 | 110 | 98 |
| Low Temperature | 68 | 70 | 75 | 70 | 67 |
| High Humidity | 100 | 100 | 100 | 100 | 84 |
| Low Humidity | 42 | 44 | 45 | 39 | 39 |

| HULL | |
| High Temperature | 98 | 105 | 93 | 92 | 97 |
| Low Temperature | 70 | 76 | 75 | 73 | 65 |
| High Humidity | 97 | 100 | 100 | 100 | 100 |
| Low Humidity | 59 | 85 | 94 | 54 | 74 |

**TANK 224**

| SEMIREADY | |
| High Temperature | 102 | 90 | NA | 95 | 85 |
| Low Temperature | 69 | 85 | NA | 68 | 54 |
| High Humidity | 100 | 50 | 46 | 100 | 100 |
| Low Humidity | 73 | 44 | 44 | 43 | 69 |

| READY | |
| High Temperature | 117 | 109 | 110 | 102 | 94 |
| Low Temperature | 70 | 75 | 73 | 68 | 53 |
| High Humidity | 100 | 94 | 92 | 90 | 85 |
| Low Humidity | 64 | 71 | 69 | 75 | 68 |

| HULL | |
| High Temperature | 93 | 105 | 88 | 81 | NA |
| Low Temperature | 70 | 76 | 74 | 73 | NA |
| High Humidity | 97 | 97 | 97 | 102 | NA |
| Low Humidity | 59 | 56 | 84 | 94 | NA |
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 206

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 206

Temperature (Fahrenheit)

Julian Date

- AMBIENT
- SEMIREADY
- READY
- HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 206

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation

Ft. Stewart, Georgia

Tank 206

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 206

Temperature (Fahrenheit)

Julian Date

235 240 245 250 255

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 206

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 206

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 210

Temperature (Fahrenheit)

Julian Date

- AMBIENT
- SEMIREADY
- READY
- HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 210

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 210

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 210

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 210

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 213

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation

Ft. Stewart, Georgia

Tank 213

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 213

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 213

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 213
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 213

Temperature (Fahrenheit)

<table>
<thead>
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<tbody>
<tr>
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<tr>
<td>HULL</td>
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Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 213

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 219

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 219

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 219

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 219

Temperature (Fahrenheit)

 Julian Date

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</tr>
<tr>
<td>HULL</td>
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1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 219

Temperature (Fahrenheit)

Julian Date

- AMBIENT
- SEMIREADY
- READY
- HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 221

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 221
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 221

Temperature (Fahrenheit)

Julian Date

Ambient
Semiready
Ready
Hull
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 221

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 221

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 221

Temperature (Fahrenheit)

Julian Date

- AMBIENT
- SEMIREADY
- READY
- HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 224

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 224

Temperature (Fahrenheit)

Julian Date

AMBIENT

SEMIREADY

READY

HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 224

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 224

Temperature (Fahrenheit)

Julian Date

Ambient
Semiready
Ready
Hull
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 224
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 224

Temperature (Fahrenheit)

<table>
<thead>
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<tbody>
<tr>
<td>SEMIREADY</td>
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<tr>
<td>READY</td>
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</table>
1996 M1A1 Tank Evaluation
Ft. Stewart, Georgia
Tank 224

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HUNGARY DATA
<table>
<thead>
<tr>
<th>AMBIENT</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
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<th>DECEMBER</th>
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<tr>
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<td>90</td>
<td>74</td>
<td>72</td>
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<tr>
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<td>45</td>
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<td>20</td>
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<tr>
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<td>25</td>
<td>20</td>
<td>37</td>
<td>38</td>
<td>34</td>
<td>59</td>
</tr>
</tbody>
</table>

**TANK 301**

**SEMIREADY**

| High Temperature | 88    | 98    | 94     | 77        | 70      | 64       | 46       |
| Low Temperature  | 60    | 58    | 59     | 46        | 37      | 31       | 30       |
| High Humidity    | 100   | 100   | 100    | 100       | 100     | 67       | 66       |
| Low Humidity     | 54    | 85    | 36     | 56        | 52      | 53       | 55       |

**READY**

| High Temperature | 89    | 107   | 101    | 81        | 75      | 63       | 51       |
| Low Temperature  | 60    | 57    | 58     | 45        | 35      | 31       | 30       |
| High Humidity    | 94    | 95    | 96     | 66        | 75      | 76       | 76       |
| Low Humidity     | 47    | 59    | 35     | 51        | 52      | 57       | 56       |

**HULL**

| High Temperature | 77    | 105   | 98     | 93        | 83      | 64       | 57       |
| Low Temperature  | 63    | 60    | 62     | 49        | 35      | 34       | 31       |
| High Humidity    | 100   | 100   | 100    | 100       | 100     | 68       | 69       |
| Low Humidity     | 47    | 76    | 36     | 94        | 59      | 58       | 55       |

**TANK 304**

**SEMIREADY**

| High Temperature | 89    | 95    | 93     | 79        | 72      | 63       | 44       |
| Low Temperature  | 60    | 58    | 58     | 48        | 37      | 33       | 28       |
| High Humidity    | 100   | 100   | 100    | 75        | 70      | 63       | 59       |
| Low Humidity     | 52    | 69    | 43     | 49        | 50      | 49       | 49       |

**READY**

| High Temperature | 93    | 102   | 101    | 85        | 74      | 77       | 52       |
| Low Temperature  | 59    | 57    | 57     | 48        | 37      | 34       | 29       |
| High Humidity    | 92    | 94    | 95     | 64        | 70      | 62       | 62       |
| Low Humidity     | 52    | 71    | 49     | 43        | 43      | 41       | 46       |

**HULL**

| High Temperature | 98    | 89    | 96     | 87        | 77      | 58       | 52       |
| Low Temperature  | 63    | 60    | 58     | 48        | 39      | 34       | 29       |
| High Humidity    | 91    | 90    | 88     | 73        | 73      | 65       | 65       |
| Low Humidity     | 48    | 76    | 46     | 48        | 51      | 50       | 51       |

**TANK 306**

**SEMIREADY**

| High Temperature | 83    | 94    | 91     | 76        | 74      | 65       | 45       |
| Low Temperature  | 60    | 58    | 59     | 48        | 36      | 33       | 27       |
| High Humidity    | 61    | 65    | 67     | 66        | 73      | 83       | 75       |
| Low Humidity     | 51    | 52    | 39     | 45        | 46      | 47       | 33       |

**READY**

| High Temperature | 89    | 104   | 97     | 83        | 77      | 70       | 46       |
| Low Temperature  | 59    | 57    | 59     | 47        | 34      | 31       | 27       |
| High Humidity    | 59    | 62    | 67     | 65        | 78      | 83       | 81       |
| Low Humidity     | 47    | 44    | 40     | 42        | 41      | 40       | 51       |

**HULL**

| High Temperature | 83    | 100   | 104    | 89        | 80      | 75       | 57       |
| Low Temperature  | 63    | 62    | 68     | 53        | 35      | 34       | 29       |
| High Humidity    | 100   | 100   | 100    | 100       | 100     | 94       | 92       |
| Low Humidity     | 50    | 81    | 37     | 61        | 68      | 84       | 85       |

**TANK 312**

**SEMIREADY**

| High Temperature | 89    | 95    | 94     | 81        | 74      | 67       | 44       |
| Low Temperature  | 59    | 58    | 58     | 46        | 39      | 29       | 28       |
| High Humidity    | 99    | 99    | 100    | 79        | 97      | 94       | 92       |
| Low Humidity     | 31    | 59    | 35     | 53        | 54      | 70       | 70       |

**READY**

| High Temperature | 91    | 99    | 100    | 82        | 76      | 66       | 42       |
| Low Temperature  | 60    | 56    | 56     | 46        | 36      | 29       | 27       |
| High Humidity    | 94    | 100   | 97     | 82        | 100     | 97       | 94       |
| Low Humidity     | 48    | 54    | 34     | 50        | 46      | 62       | 73       |

**HULL**

| High Temperature | 94    | 93    | 102    | 97        | 89      | 73       | 42       |
| Low Temperature  | 64    | 60    | 59     | 56        | 38      | 32       | 28       |
| High Humidity    | 100   | 100   | 100    | 100       | 100     | 100      | 100      |
| Low Humidity     | 47    | 89    | 37     | 67        | 51      | 90       | 94       |
1996 M1A1 Tank Evaluation
Taborsalva Training Area, Hungary
Tank 301
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 301

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 301

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
Temperature (Fahrenheit) vs Julian Date for 1996 M1A1 Tank Evaluation at Taborfalva Training Area, Hungary. The graph shows temperature variations over time for different conditions: AMBIENT, SEMIREADY, READY, and HULL.
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 301

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 304

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 304

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 304

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 304

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 304

Temperature (Fahrenheit)

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 304

Temperature (Fahrenheit)

Julian Date

- AMBIENT
- SEMIREADY
- READY
- HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 306

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 306

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
Taborfaľva Training Area, Hungary

1996 M1A1 Tank Evaluation

Tank 306

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 306

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 306

Temperature (Fahrenheit)
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 306

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 312

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 312

Temperature (Fahrenheit)

Julian Date

AMBIENT

SEMIREADY

READY

HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 312
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 312
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 312

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
1996 M1A1 Tank Evaluation
Taborfalva Training Area, Hungary
Tank 312

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
READY
HULL
SOUTH KOREA SETUP NO. 1 DATA
### SOUTH KOREA M1A1 TANK MONITORING DATA
#### SETUP #1 (JUNE 27 - AUGUST 29)

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#### TANK A-24

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1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-24

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-24

Temperature (Fahrenheit)
Camp Gary Owen, South Korea

1996 M1A1 Tank Evaluation

Tank A-24

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-24
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-42

Temperature (Fahrenheit)

Julian Date

AMBIENT
SEMIREADY
HULL
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-42

Temperature (Fahrenheit)

AMBIENT

SEMIREADY

HULL
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-42
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-42

Temperature (Fahrenheit)

Julian Date

[Graph showing temperature fluctuations over Julian dates, comparing Ambient, Semi-ready, and Hull conditions]
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-44

Temperature (Fahrenheit)

Julian Date

- AMBIENT
- SEMIREADY
- HULL
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-44
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-44

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-44
SOUTH KOREA SETUP NO. 2 DATA
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1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-14

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-14

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-14

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-14

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-14

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-14

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank A-14

Temperature (Fahrenheit)

Julian Date
Camp Gary Owen, South Korea
1996 M1A1 Tank Evaluation
Tank A-14

Temperature (Fahrenheit)

Julian Date
345
350
340
10
20
30
40
50
60
70
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank B-11

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank B-11

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank B-11

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank B-11

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank B-11

Temperature (Fahrenheit)

Julian Date

Ambient
Ready
Hull
Camp Gary Owen, South Korea

1996 M1A1 Tank Evaluation

Tank C-33

Temperature (Fahrenheit)

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank C-33

Temperature (Fahrenheit)

Julian Date

246 248 250 252 254 256 258 260

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank C-33

Temperature (Fahrenheit)

Ambient

Semi-Ready

Ready

Hull

Julian Date
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank C-33

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank C-33

Temperature (Fahrenheit)

Ambient
Semi-Ready
Ready
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank D-31

Temperature (Fahrenheit)

![Graph showing temperature variations over Julian Dates](image_url)
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank D-31

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank D-31

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull
Temperature (Fahrenheit)

Julian Date

1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank D-31
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank D-31

Temperature (Fahrenheit)

Julian Date

- Ambient
- Semi-Ready
- Ready
- Hull
1996 M1A1 Tank Evaluation
Camp Gary Owen, South Korea
Tank D-31

Temperature (Fahrenheit)

Julian Date

Ambient
Semi-Ready
Ready
Hull