AD-A170 531 AIR FORCE INTEGRATED READINESS MEASUREMENT SYSTEM (AFIRMS) AFIRMS FILM REPORT PRODUCTS(U) SOFTECH INC ALEXANDIRIA VA 10 JAN 83 F49642-82-C-0045 1/1

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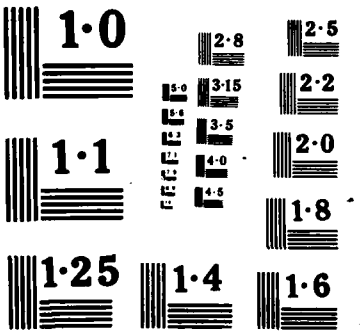
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4·5
5·0

Air Force Integrated Readiness
Measurement System
(AFIRMS)

Final
AFIRMS FILM REPORT PRODUCTS

*Original contains color plates: All DTIC reproductions will be in black and white"

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10 January 1983

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Prepared by

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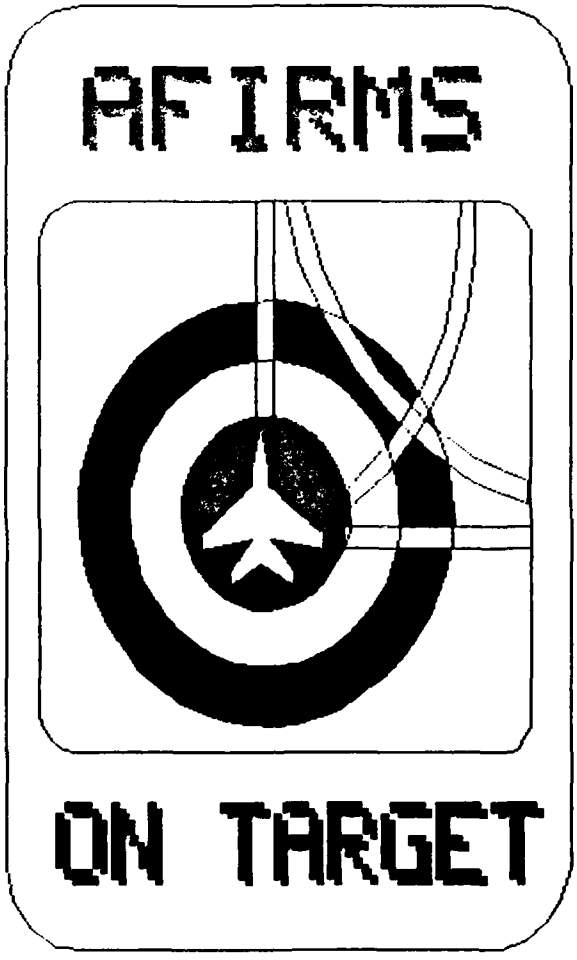
Under Contract
F49642-82-C-0045

CDRL Item - 008



This document presents a selection of example products for illustration of the types of products the AFIRM System may produce. Each example is a representation of a "product type" that may be developed during the AFIRMS's Learning Prototype Phase (LPP). The examples are not and should not be viewed as "real" products. The examples are accompanied by a textual explanation of the purpose of the product and its axis labeling. Additionally, the text presents a list of interpretation aids which help the reader quickly focus on the product's important information.

The charts in this document present information as it would be presented during an interactive session on a graphics terminal. The user would have the ability to substitute his own information in place of default values thus giving the user the option of asking "what if" questions.

Each chart presented to the user would have blocks which could be selected by the user for presentation of more detailed information pertaining to the chart being viewed. This information magnification is accomplished by a leveling concept where selection of a particular block would activate software to present the detailed information selected. In the upper right corner of each chart is a level indicator block showing where in the level structure the information being displayed resides. The highest level of data, i.e., the greatest aggregation, is indicated by a '0' in the level indicator block. More specific levels are denoted in much the same way as subparagraphs in a document. The immediate levels under the top would be shown as 0.1, 0.2, 0.3, 0.4, ..., 0.N. Each of these levels could have lower levels; i.e., level 0.1 could have levels 0.1.1, 0.1.2, ..., 0.1.N. This structure would follow for each lower level chart. A specific example of this concept can be shown by using the first four charts of this document; the XX TFW's response capability for the F-4Es:

Level 0 = Uncommitted aircraft over time.

Level 0.1 = Time required to generate all mission capable aircraft for general mission types.

Level 0.1.1 = Limiting factors in generating aircraft over time for a particular mission type.

Level 0.2 = Time required to generate all mission capable aircraft using specific munition loads.

The lowest level is bounded by the amount and type of data available on the highest level of aggregation.

Three data items are always eligible for selection to view lower level information on each chart. These are: the tasking and flying schedule used to generate the chart (both located in the upper left corner of the chart) and the date and time of the oldest data used in preparation of the chart (in the lower left portion).

Selection of the lower level charts would be accomplished by use of a light pen to activate the block associated with the desired next level. If the next level required user-supplied information or if there were default values which could be changed by the user, a menu would be displayed for option selection by the user.

While viewing the charts in this document, the reader should keep in mind the fact that the display format was designed for persons who would be using the information on a regular basis. The charts were not designed to be understood by someone without training.

UNCOMMITTED A/C

The purpose of this chart is to display the number of uncommitted aircraft for any given time during the day. The chart would normally be used on a daily basis to brief the Wing Commander; however, it might also be used by the wing operations officer or the training officer to better utilize available aircraft.

The left axis shows the total number of mission capable aircraft available. The range on this axis would be anywhere between 0 to the total number of mission capable aircraft of a particular type within a WING. The lower bound would be no greater than the minimum number of aircraft ready to fly at any time during the day.

The bottom axis shows ZULU time from 1/2 hour prior to the first flight to the time the last aircraft is regenerated. The increments would be by 1/2 hour if the span is six or less hours, 1 hour if the span is less than 12 hours, and by 2 hours if the span is greater than 12 hours.

Prime User: Wing Commander

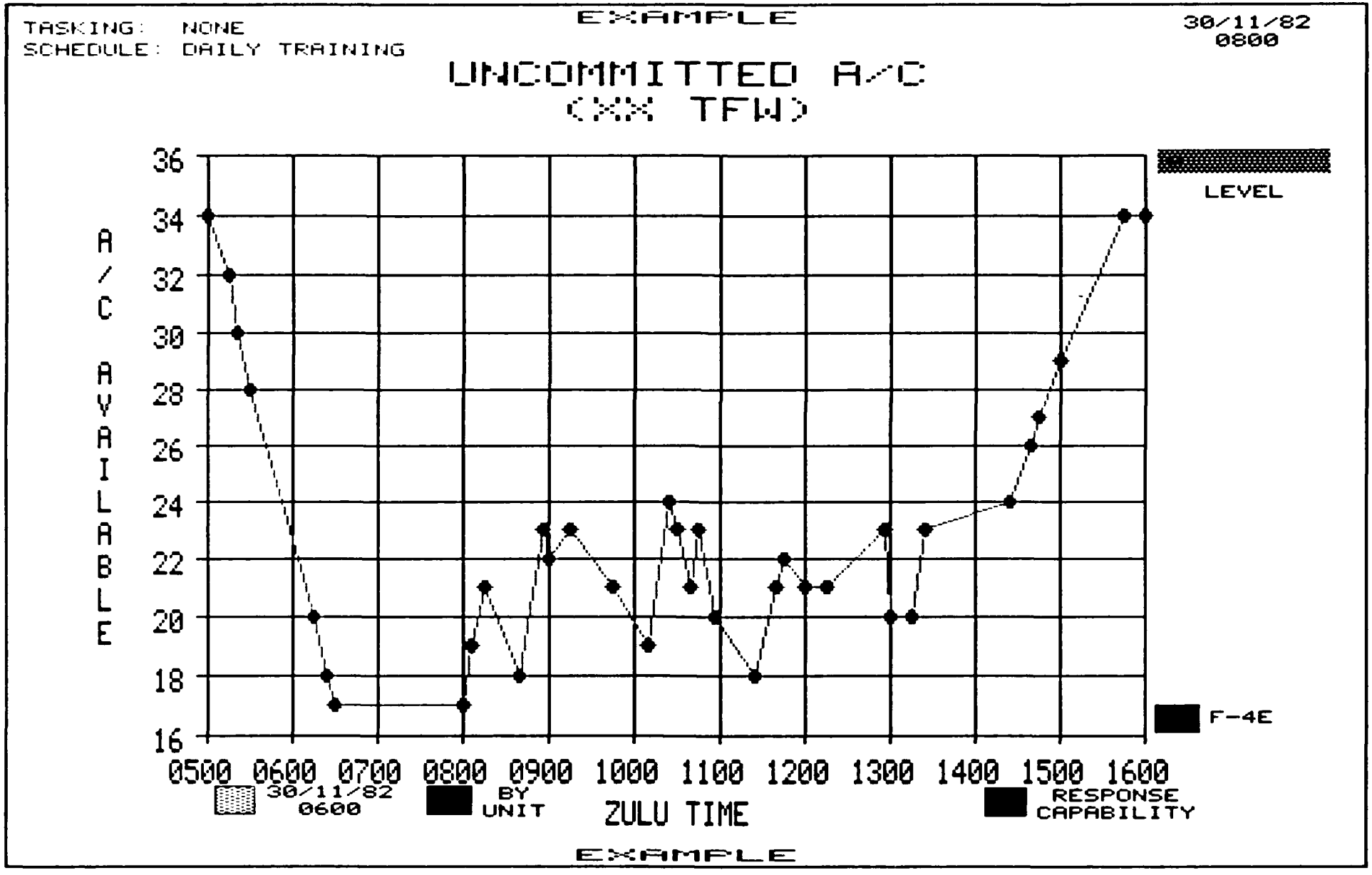
Type of Use: Crisis, War, Exercise

Purpose: Compare preparation time for different mission types

Default Values:
1) Start Time - worst case from previous chart.
2) 30 min to reconfigure from training to OCA.
3) 30 min to load MK 82s (2 clusters).
4) 60 min turn time for A/C landing (not including loading).
5) 3 crews capable of changing configurations in each squadron.
6) 5 crews for loading munitions.

Length of View: 1 Day maximum

Lower level charts:
1) Tasking - if any
2) Schedule
3) Oldest data used
4) By Unit - squadron breakout
5) By Mission Type


EXAMPLE
TASKING: NONE
SCHEDULE: DAILY TRAINING
30/11/82
0800
UNCOMMITTED A/C
(XX TFW)
A/C AVAILABLE
36
34
32
30
28
26
24
22
20
18
16
0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600
ZULU TIME
LEVEL
F-4E
30/11/82
0600
BY
UNIT
RESPONSE
CAPABILITY
EXAMPLE

RESPONSE CAPABILITIES

The purpose of this chart is to show the amount of time needed to generate all available, mission capable aircraft for each mission type. It would be used by the Wing Commander during a crisis, a war, or an exercise. It could also be used by the Wing Commander or his staff for "what if" types of queries.

The left axis shows the total number of prepared aircraft available for a particular mission type. The range of this axis is between 0 and the maximum available mission capable aircraft. The lower bound would be no greater than the least number of prepared aircraft at any time. The upper bound would be no less than the maximum number of aircraft which can be prepared for any of the mission types being compared.

The bottom axis shows ZULU time from the selected (or default) start time to at least the hour where all available aircraft have been prepared for the mission type requiring the greatest preparation time. The chart would not span a time greater than 24 hours. The increments will range between 1/2 hour and 2 hours depending on the time span of the entire chart.

Prime User: Wing Commander

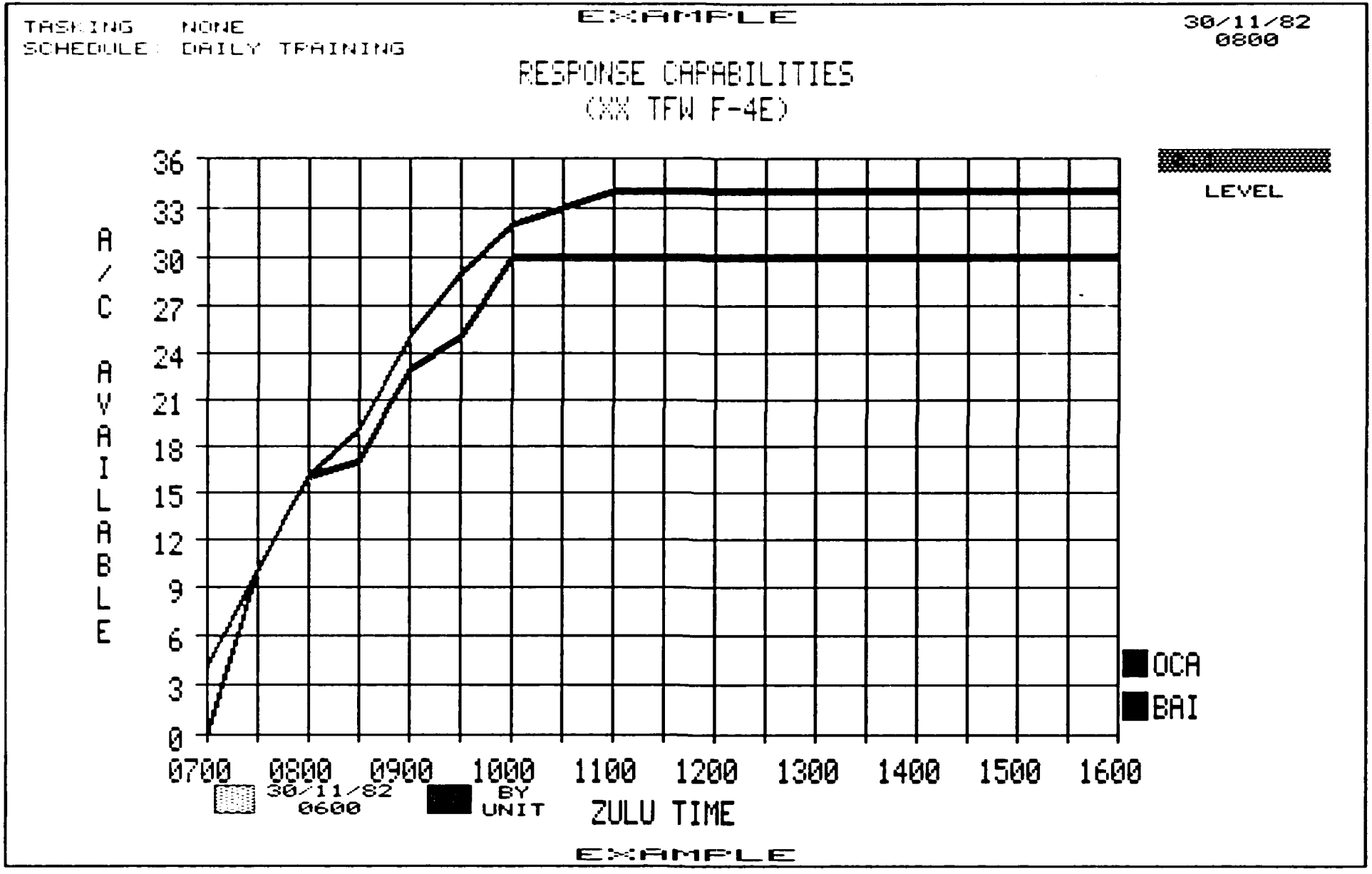
Type of Use: Crisis, War, Exercise

Purpose: Compare preparation time for different mission types.

Default Values:
1) Start time - worst case from previous chart.
2) 30 min to reconfigure from training to OCA.
3) 30 min to load MK 82s (2 clusters).
4) 60 min turn time for A/C landing (not including loading).
5) 3 crews capable of changing configurations in each squadron.
6) 5 crews for loading munitions.

Length of View: 1 Day maximum

Lower level charts:
1) Tasking - if any
2) Schedule
3) Oldest data used
4) By Unit - squadron breakout
5) By Mission Type


EXAMPLE
TASKING NONE
SCHEDULE DAILY TRAINING
30/11/82
0800
RESPONSE CAPABILITIES
(XX TFW F-4E)
LEVEL
A/C AVAILABLE
36
33
30
27
24
21
18
15
12
9
6
3
0
OCA
BAI
0700
0800
0900
1000
1100
1200
1300
1400
1500
1600
30/11/82
0600
BY UNIT
ZULU TIME
EXAMPLE

OCA RESPONSE CAPABILITY

The purpose of this chart is to show the limiting factors, at each point in time, for generating aircraft for a particular mission type. The chart would be used by the Wing Commander during a war, a crisis, or an exercise. It could also be used by Wing Staff for projecting limiting factors in generating aircraft for different missions on a "what if" basis.

The left axis shows the total number of prepared A/C at any given time. The range on this axis would be between 0 to the total number of prepared A/C, of a particular type, for the mission type. The lower bound would be no greater than the minimum number of prepared A/C and the upper bound would be no less than the maximum number of available mission capable A/C to be prepared.

The bottom axis shows ZULU Time from the selected, or default, start time, to a time no less than the time required to generate all A/C but no greater than 24 hours.

The limiting factors are shown by different colors on the line graph and are shown for the time periods for which they are limiting factors. A maximum of 6 limiting factors would be shown at any given time. The limiting factors shown would be those creating the greatest impact on the preparation of A/C for the mission type.

Prime User: Wing Commander

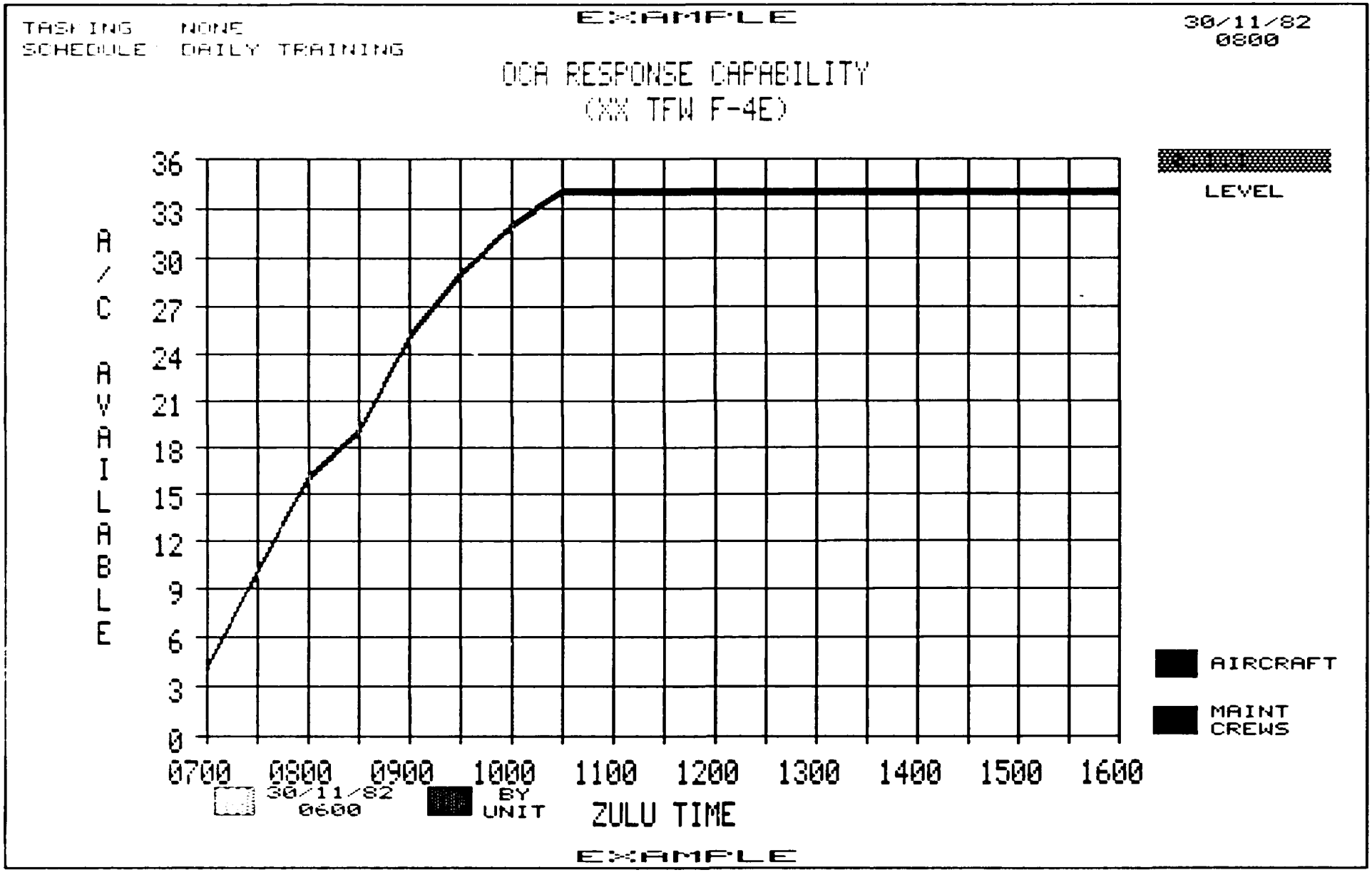
Type of Use: Crisis, War, Exercise, "what if"

Purpose: Show preparation time for particular mission type and limiting factors.

Default Values:
1) Start Time - worst case from Uncommitted Capability chart.
2) 30 min to reconfigure from training to OCA.
3) 30 min to load 2 clusters of MK 82's.
4) 60 min turn time for A/C landing (not including loading).
5) 3 crews capable of changing configurations in each squadron.
6) 5 crews for loading munitions.

Length of View: Maximum of 1 Day

Lower Level Charts:
1) Tasking - if any
2) Schedule
3) Oldest data used
4) By Unit - squadron breakout
5) By Limiting Factor


EXAMPLE
TASKING NONE
SCHEDULE DAILY TRAINING
30/11/82
0800
DCA RESPONSE CAPABILITY
(XX TFW F-4E)
A/C AVAILABLE
36
33
30
27
24
21
18
15
12
9
6
3
0
0700
0800
0900
1000
1100
1200
1300
1400
1500
1600
ZULU TIME
LEVEL
AIRCRAFT
MAINT CREWS
30/11/82 0600
BY UNIT
EXAMPLE

RESPONSE CAPABILITIES

The purpose of this chart is to show the amount of time needed to generate all available, mission capable aircraft for each mission type. It would be used by the Wing Commander during a crisis, a war, or an exercise. It could also be used by the Wing Commander or his staff for "what if" types of queries.

The left axis shows the total number of prepared aircraft available for a particular mission type. The range of this axis is between 0 and the maximum available mission capable aircraft. The lower bound would be no greater than the least number of prepared aircraft at any time. The upper bound would be no less than the maximum number of aircraft which can be prepared for any of the mission types being compared.

The bottom axis shows ZULU time from the selected (or default) start time to at least the hour where all available aircraft have been prepared for the mission type requiring the greatest preparation time. The chart would not span a time greater than 24 hours. The increments will range between 1/2 hour and 2 hours depending on the time span of the entire chart.

Prime User: Wing Commander

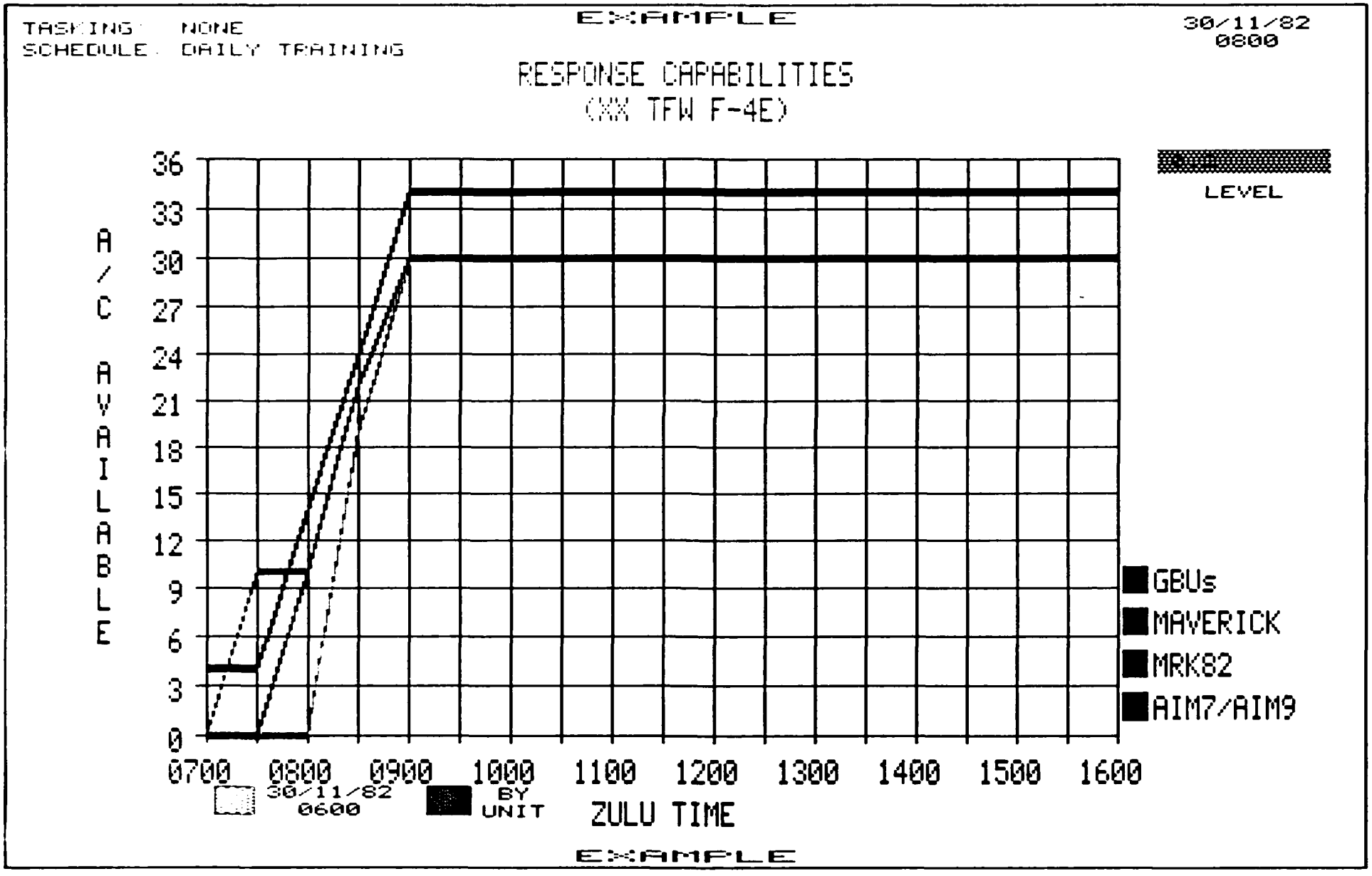
Type of Use: Crisis, War, Exercise

Purpose: Compare preparation time for different mission types.

Default Values:
1) Start time - worst case from previous chart.
2) 60 min to load AIM-9/AIM-7 configuration (1/2 & 1/2).
3) 30 min to load MK 82s (2 clusters).
4) 90 min to load MAVERICKS not on rails.

Length of View: 1 Day maximum

Lower level charts:
1) Tasking - if any
2) Schedule
3) Oldest data used
4) By Unit - squadron breakout
5) By Mission Type


EXAMPLE
TASKING: NONE
SCHEDULE: DAILY TRAINING
30/11/82
0800
RESPONSE CAPABILITIES
(XX TFW F-4E)
A/C AVAILABLE
36
33
30
27
24
21
18
15
12
9
6
3
0
0700
0800
0900
1000
1100
1200
1300
1400
1500
1600
ZULU TIME
LEVEL
GBUs
MAVERICK
MRK82
AIM7/AIM9
30/11/82
0600
BY
UNIT
EXAMPLE

A/C COMMANDER EXPERIENCE

The purpose of this chart is to show the number of experienced versus non-experienced aircraft commanders within a wing. The chart would probably be used by the Wing Commander on a monthly basis to view both historical and projected trends.

The left axis shows the total number of commanders assigned aircraft.

The bottom axis shows the months for the year being shown.

The number shown in each color bar are the number of aircraft commanders experienced or not experienced for that month. The experienced will always be shown in green and the non-experienced in red.

The lower level charts for experienced would show the breakout by aircraft commander. The same is true for the non-experienced level.

Prime User: Wing Commander

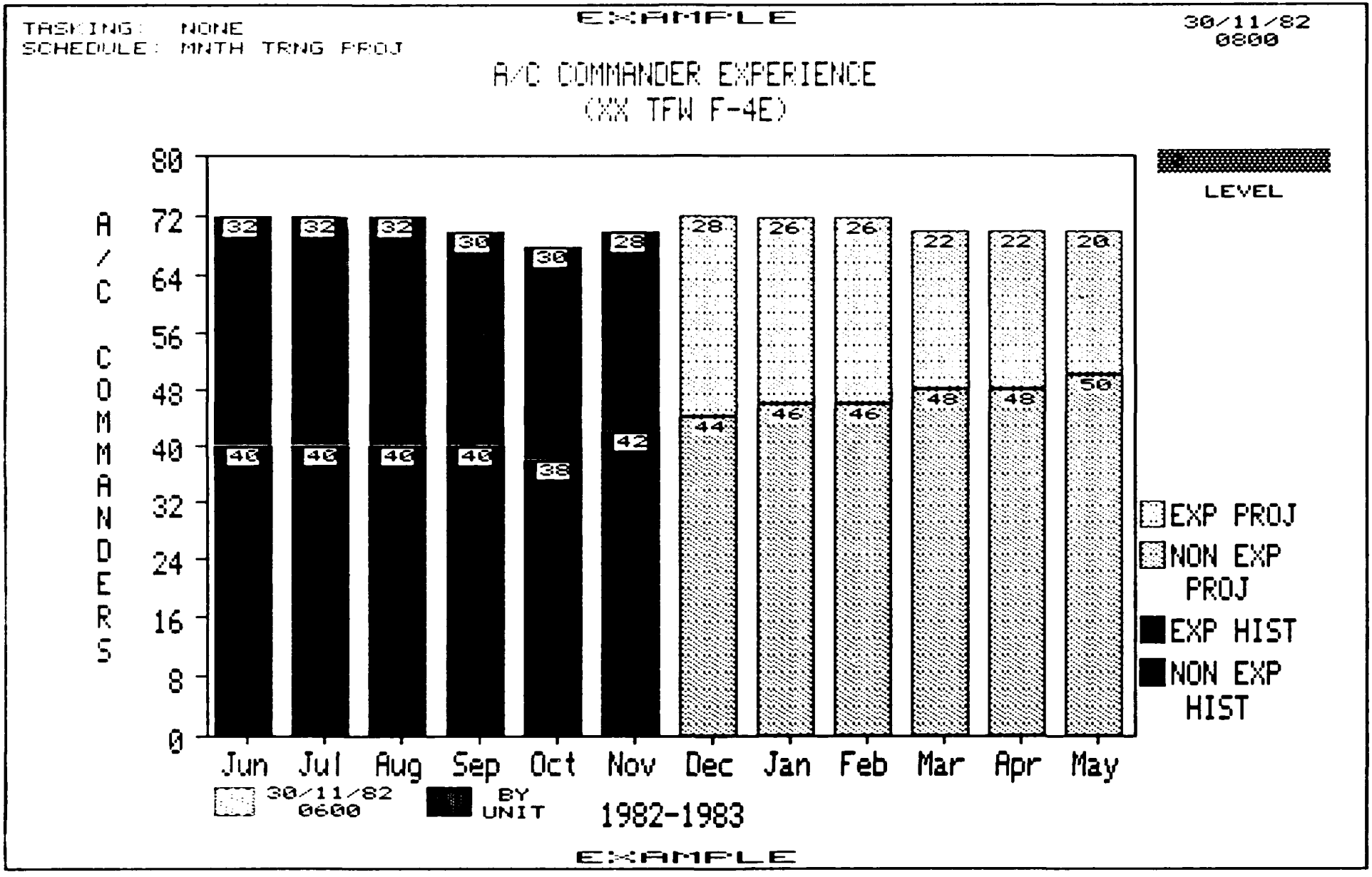
Type of Use: Monthly trend analysis

Purpose: Show historical and projected trends in experience/non-experience levels.

Default Values:
1) Start Month - 6 months prior to current month.

Length of View: 12 months maximum

Lower Level Charts:
1) Tasking - None
2) Schedule
3) Oldest data used
4) By Unit - squadron breakout
5) By Experience Levels.


EXAMPLE
TASKING: NONE
SCHEDULE: MNTH TRNG PROJ
30/11/82
0800
A/C COMMANDER EXPERIENCE
(XX TFW F-4E)
A/C COMMANDERS
80
72
64
56
48
40
32
24
16
8
0
32 32 32 30 30 28 28 26 26 22 22 20
40 40 40 40 38 42 44 46 46 48 48 50
Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May
LEVEL
EXP PROJ
NON EXP PROJ
EXP HIST
NON EXP HIST
30/11/82
0600
BY UNIT
1982-1983
EXAMPLE

AIRCRAFT COMMANDER GCC LEVELS

The purpose of this chart is to show the GCC levels of aircraft commanders for each month. The Wing Commander would use this chart on a monthly basis to view both historical and projected trends.

The left axis shows the total number of aircrews assigned.

The bottom axis shows the months for the year being shown.

The numbers shown in each color bar are the number of aircraft commanders at each GCC level.

The lower level charts for each GCC Level would show the breakout by crew member.

Prime User: Wing Commander

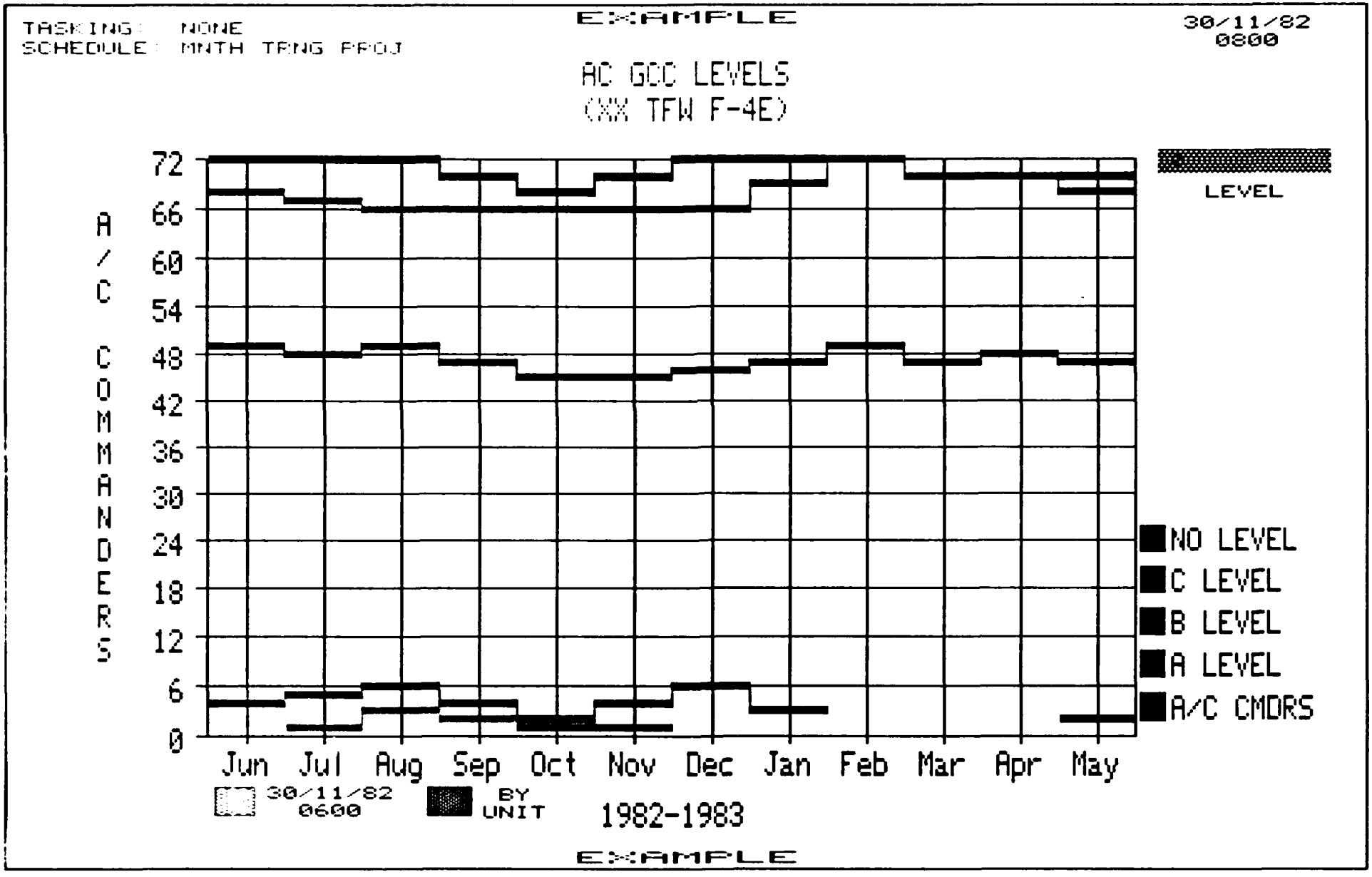
Type of Use: Monthly trend analysis

Purpose: Show historical and projected trends in experience/non-experience levels.

Default Values:
1) Start Month - Six months prior to current month.

Length of View: 12 months maximum

Lower Level Charts:
1) Tasking - None
2) Schedule
3) Oldest data used
4) By Unit - squadron breakout
5) By GCC Levels


EXAMPLE
TASKING: NONE
SCHEDULE: MNTH TRNG PROJ
30/11/82
0800
AC GCC LEVELS
(XX TFW F-4E)
LEVEL
A/C COMMANDERS
72
66
60
54
48
42
36
30
24
18
12
6
0
Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May
NO LEVEL
C LEVEL
B LEVEL
A LEVEL
A/C CMDRS
30/11/82
0600
BY
UNIT
1982-1983
EXAMPLE

MAJCOM CAPABILITY (5 days)

The purpose of this chart is to show the total number of sorties, projected for a 5 day period, for each weapons system. The chart would be used by a Major Command Mission Director to view the projected sortie capability for 5 days. The projection could be without regard to mission type or if desired, by entering a projected tasking for 5 days, could show the projected mission capability.

The left axis shows the total number of projected sorties.

The bottom axis shows the 5 days being projected. The start date would default to the Monday of the current week.

The A/C types are shown on the right side, color blocks matching the bars on the chart. Any of these could be selected to view the capabilities by type.

At the bottom of the chart are additional blocks which could be selected for different views of the projection.

Prime User: MAJCOM Mission Director

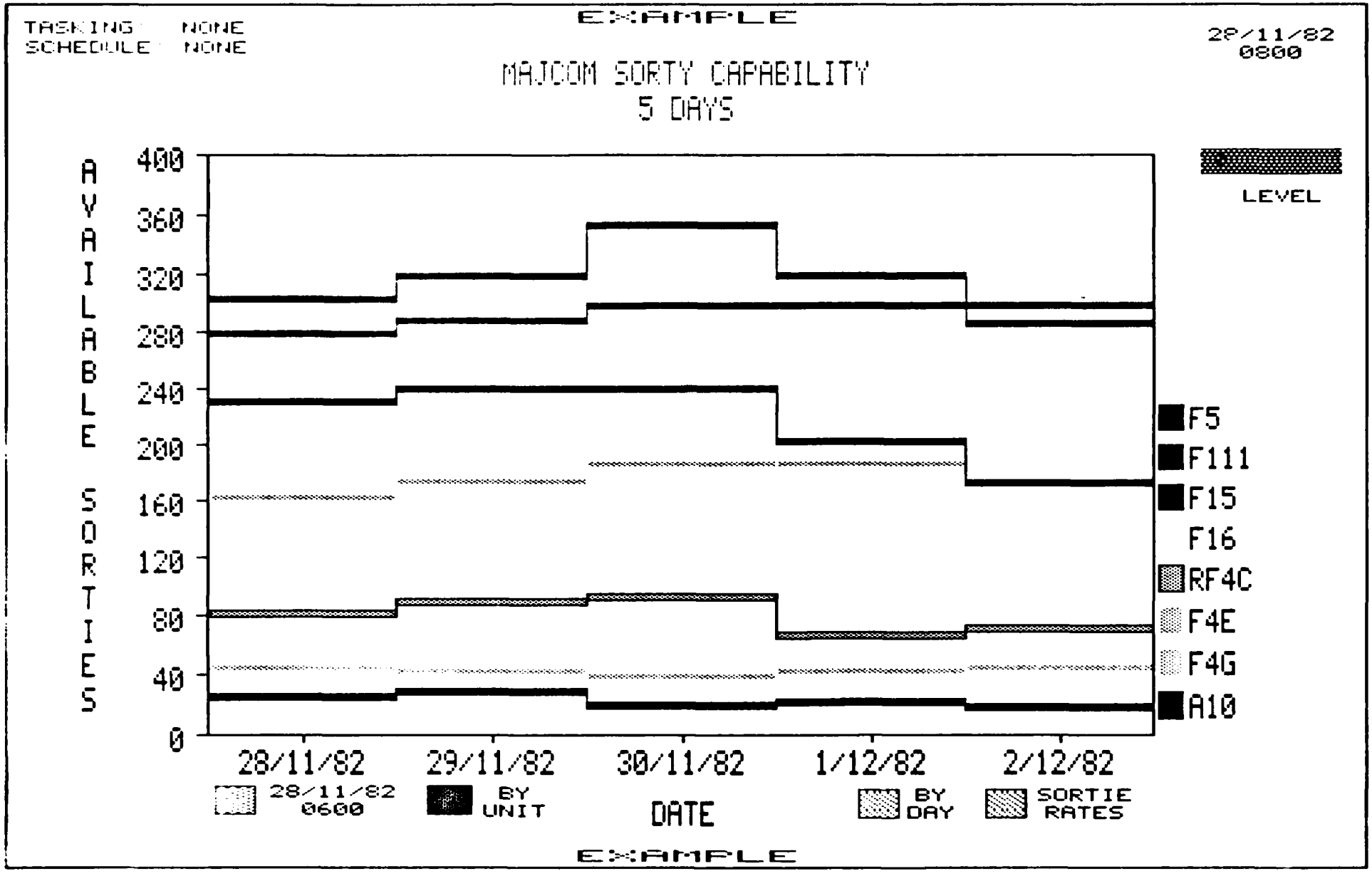
Type of Use: Crisis, War, Exercise

Purpose: Show 5 day projection of sortie capability

Default Values:
1) Mission Type - None

Length of View: 5 days

Lower Level Charts:
1) Tasking - if any
2) Schedule - if any
3) Oldest data used
4) By Unit
5) By day
6) By A/C type


EXAMPLE
TASKING NONE
SCHEDULE NONE
28/11/82
0800
MAJCOM SORTY CAPABILITY
5 DAYS
AVAILABLE SORTIES
400
360
320
280
240
200
160
120
80
40
0
LEVEL
F5
F111
F15
F16
RF4C
F4E
F4G
A10
28/11/82
29/11/82
30/11/82
1/12/82
2/12/82
DATE
28/11/82
0600
BY
UNIT
BY
DAY
SORTIE
RATES
EXAMPLE

MAJCOM CAPABILITY (DAY)

The purpose of this chart is to show the total number of sorties projected for a particular day for each weapon system. The chart would be used by a Major Command Mission Director to view the projected sortie capability for one day. The projection could be without regard to mission type, or if desired, by entering a projected day's tasking, could show the projected mission capability.

The left axis shows the total number of projected sorties.

The bottom axis shows the day being projected.

The A/C Types are shown on the right side, color blocks matching the bars on the chart. Any of these could be selected to view the capabilities by type.

At the bottom of the chart are additional blocks which could be selected for different views of the projection.

Prime User: MAJCOM Mission Director

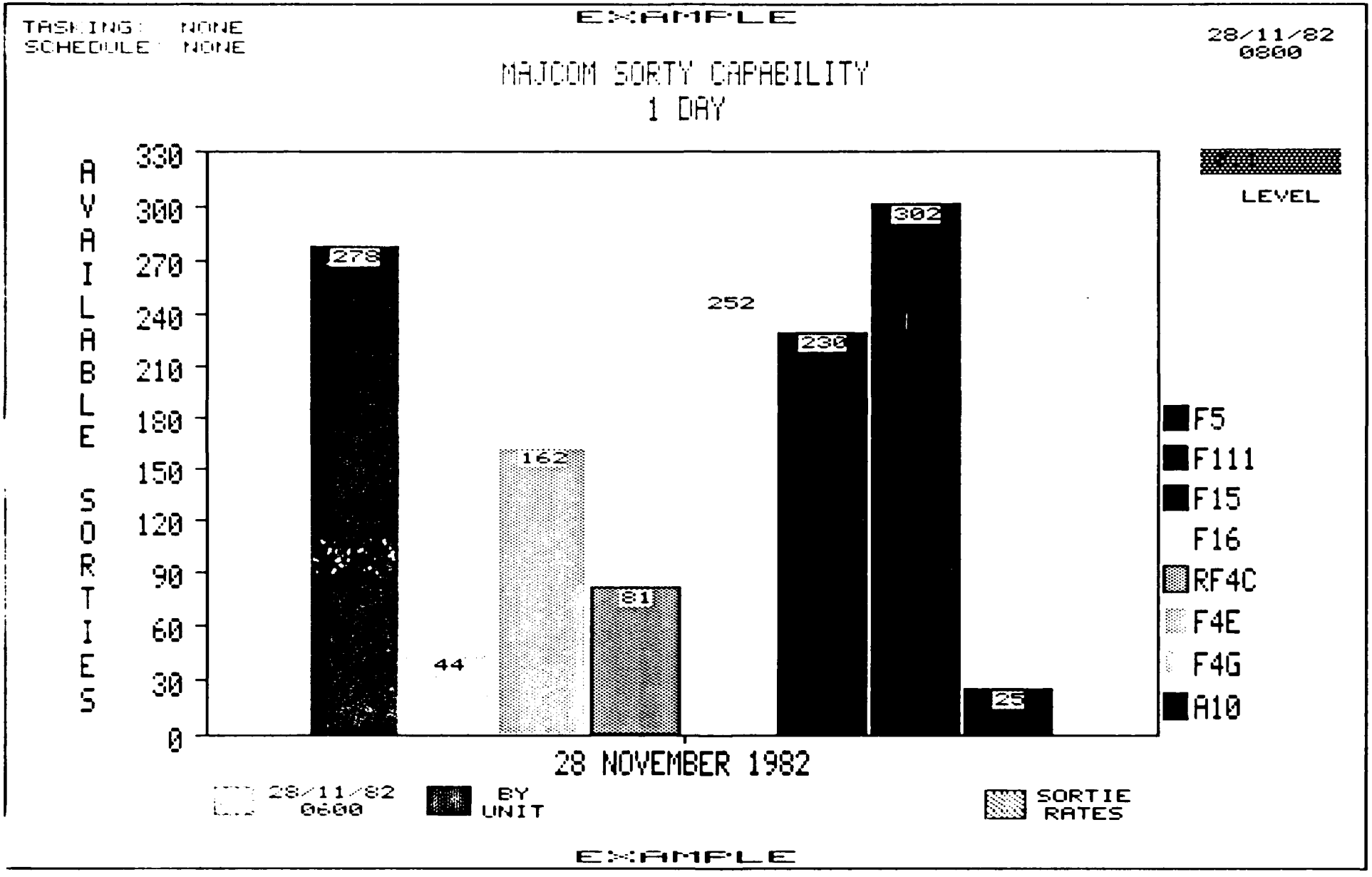
Type of Use: Crisis, War, Exercise

Purpose: Show 1 day projection of sortie capability.

Default Values:
1) Mission Type - None

Length of View: 5 days

Lower Level Charts:
1) Tasking - if any
2) Schedule - if any
3) Oldest data used
4) By Unit
5) By A/C type


EXAMPLE
TASKING: NONE
SCHEDULE: NONE
28/11/82
0800
MAJCOM SORTY CAPABILITY
1 DAY
AVAILABLE SORTIES
330
300
270
240
210
180
150
120
90
60
30
0
278
44
162
81
252
238
302
25
LEVEL
F5
F111
F15
F16
RF4C
F4E
F4G
A10
28 NOVEMBER 1982
28/11/82
0600
BY
UNIT
SORTIE
RATES
EXAMPLE

MAJCOM SORTIE RATES

The purpose of this chart is to show average sortie rates achieved by each weapon system. The chart would be used by the Mission Director at a Major Command to view the historical and/or projected sortie rates derived from the capability chart.

The left axis shows the sortie rates.

The bottom axis shows the 5 days being shown on the capability chart.

The A/C types are shown on the right and are the same as those shown on the Level 0 chart.

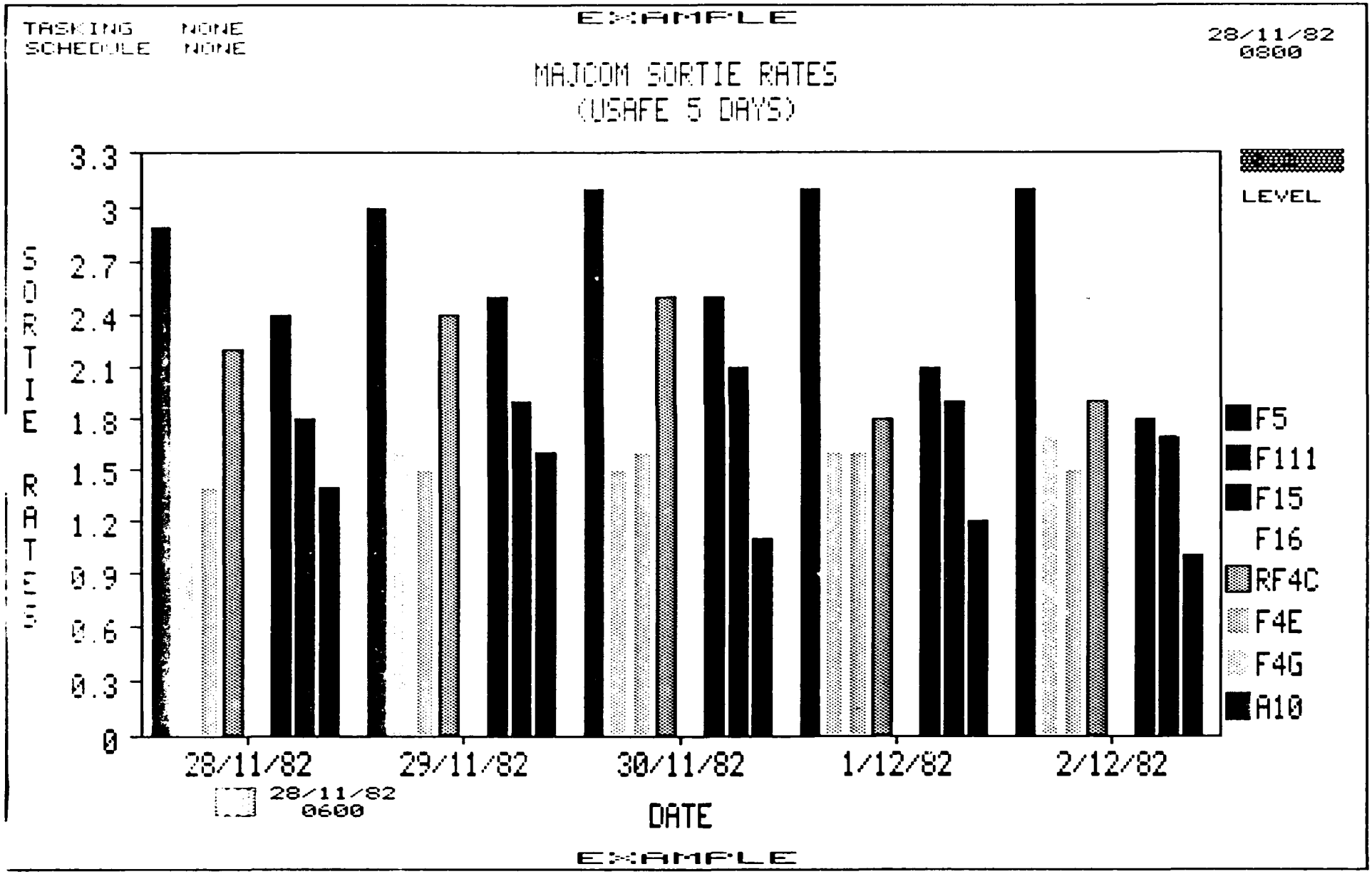
Prime User: MAJCOM Mission Director

Type of Use: Crisis, War, Exercise

Purpose: Show average sortie rates achieved by each A/C type for 5 day period.

Default Values:
1) Start Day - Same as level 0 chart.
2) Mission Type - Same as level 0 chart.

Lower Level Charts:
1) Tasking - if any
2) Schedule - if any
3) Oldest data used.


EXAMPLE
TASKING NONE
SCHEDULE NONE
28/11/82
0800
MAJCOM SORTIE RATES
(USAFE 5 DAYS)
SORTIE RATES
3.3
3
2.7
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0
28/11/82
29/11/82
30/11/82
1/12/82
2/12/82
DATE
28/11/82
0600
LEVEL
F5
F111
F15
F16
RF4C
F4E
F4G
A10
EXAMPLE

AIRCRAFT SYSTEM MALFUNCTIONS (WORLD WIDE TOTAL)

The purpose of this chart is to show historical and projected trends in system malfunctions causing aircraft to become Non Mission Capable. The chart would be used by the Air Staff on a monthly or quarterly basis to view historical and projected trends in System Malfunctions causing A/C to become Non Mission Capable. This chart shows both the total aggregated number of NMC A/C as well as the total by failure type.

The left axis shows the number of NMC A/C. The range on this axis would be from 0 to an upper bound no lower than the aggregated total of NMC A/C.

The bottom axis shows the quarters of the year being displayed. The first quarter shown would be either a selected starting quarter or the default start date. The chart would always show four quarters.

The systems malfunctioning are shown on the right side of the chart. Any of these could be selected to show a more detailed chart for the selected system.

On the bottom of the chart are blocks which can be selected to show different views of the system malfunctions.

Prime User: Air Staff

Type of Use: Monthly/Quarterly trend anaylsis

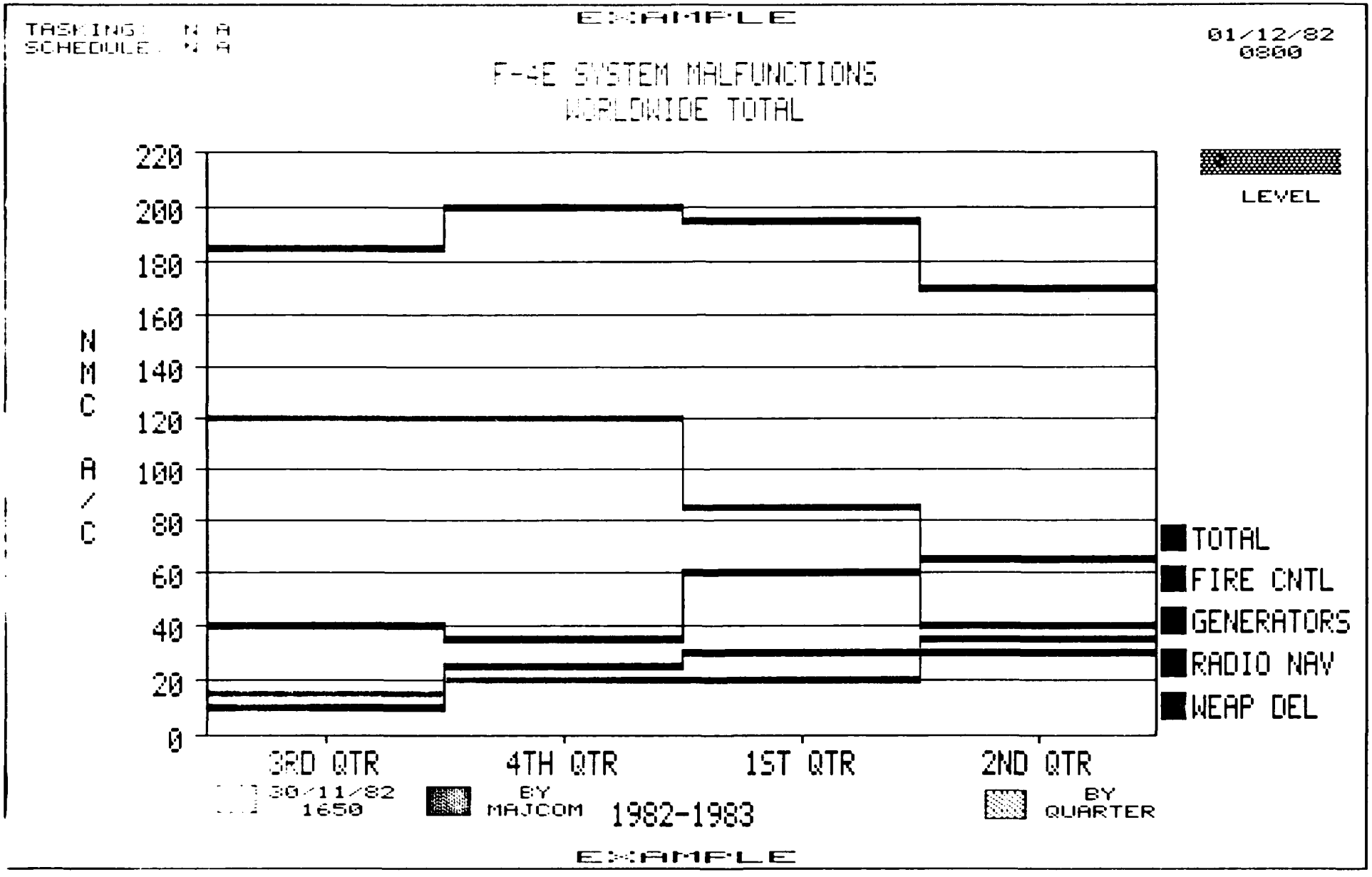
Purpose: Show historical and projected trends in system malfunctions causing A/C to become NMC.

Default Values:
1) Start Date: Two Quarters prior to current Quarter.

2) Top four system malfunctions shown.

Length of View: 4 Quarters

Lower Level Charts:
1) Tasking - if any
2) Schedule - if any
3) Oldest Data used
4) By MAJCOM
5) BY Quarter
6) By SYSTEM


EXAMPLE
TASKING: N/A
SCHEDULE: N/A
01/12/82
0800
F-4E SYSTEM MALFUNCTIONS
WORLDWIDE TOTAL
LEVEL
NMC A/C
220
200
180
160
140
120
100
80
60
40
20
0
TOTAL
FIRE CNTL
GENERATORS
RADIO NAV
WEAP DEL
3RD QTR
4TH QTR
1ST QTR
2ND QTR
30/11/82
1650
BY MAJCOM
1982-1983
BY QUARTER
EXAMPLE

AIRCRAFT SYSTEM MALFUNCTIONS (USAFE TOTAL)

The purpose of this chart is to show historical and projected trends in system malfunctions causing aircraft to become NMC. The view would be of a single MAJCOM. The chart would be used by the Air Staff on a monthly or quarterly basis to view historical and projected trends in System Malfunctions, within a specific MAJOR COMMAND, causing A/C to become Non Mission Capable. This chart shows both the total aggregated number of NMC A/C as well as the total by failure type.

The left axis shows the number of NMC A/C. The range on this axis would be from 0 to an upper bound no lower than the aggregated total of NMC A/C.

The bottom axis shows the quarters of the year being displayed. The first quarter shown would be either a selected starting quarter or the default start date. The chart would always show four quarters.

The systems malfunctioning are shown on the right side of the chart. Any of these could be selected to show a more detailed chart for the selected system.

On the bottom of the chart are blocks which can be selected to show different views of the system malfunctions.

Prime User: Air Staff

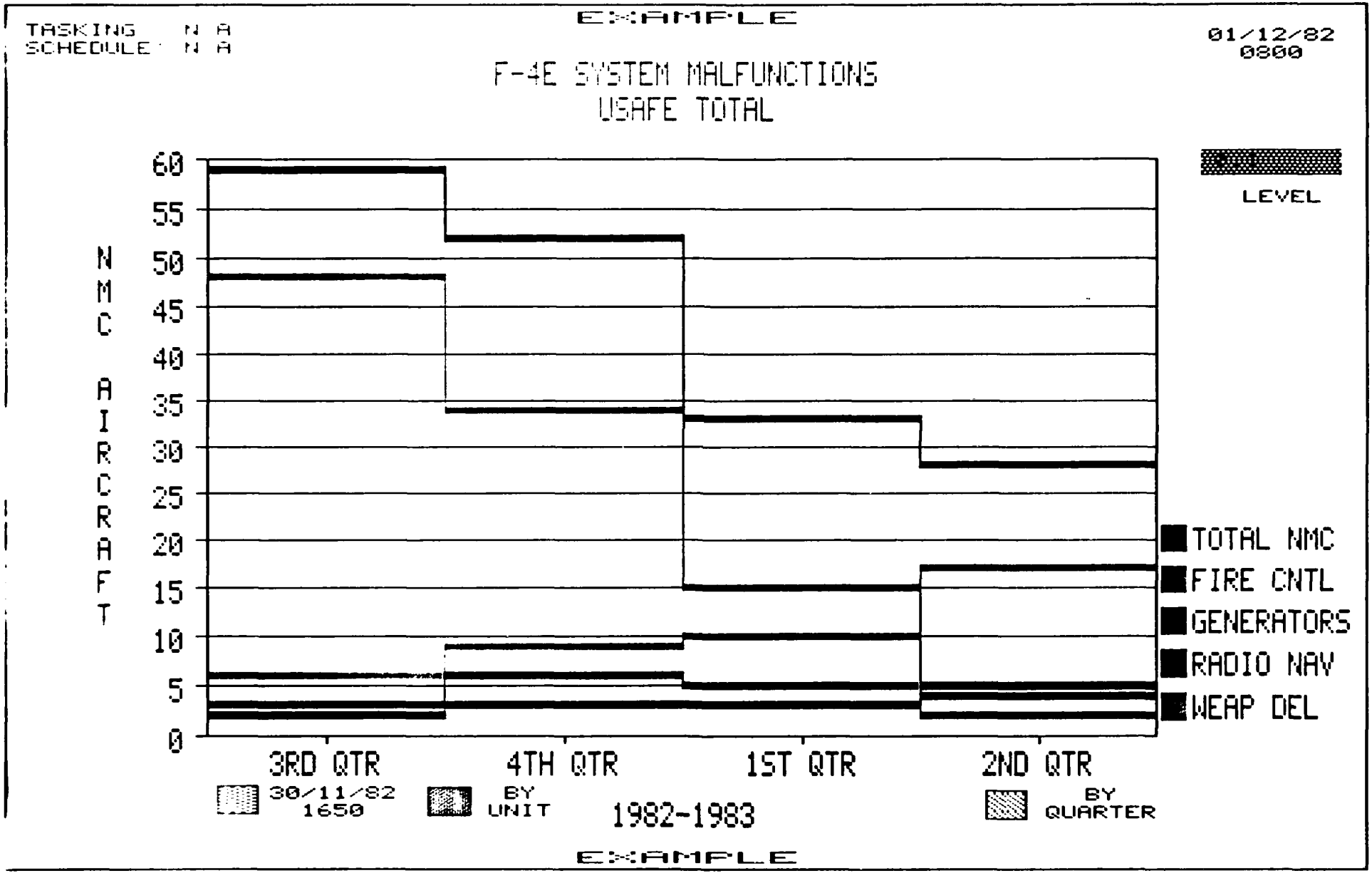
Type of Use: Monthly/Quarterly trend analysis

Purpose: Show historical and projected trends in system malfunctions causing A/C to become NMC.

Default Values:
1) Start Date: Two Quarters prior to current Quarter.
2) Top four system malfunctions shown.

Length of View: 4 Quarters

Lower Level Charts:
1) Tasking - if any
2) Schedule - if any
3) Oldest Data used
4) By SYSTEM


EXAMPLE
TASKING N A
SCHEDULE N A
01/12/82
0800
F-4E SYSTEM MALFUNCTIONS
USAFE TOTAL
NMC AIRCRAFT
60
55
50
45
40
35
30
25
20
15
10
5
0
LEVEL
TOTAL NMC
FIRE CNTL
GENERATORS
RADIO NAV
WEAP DEL
3RD QTR
4TH QTR
1ST QTR
2ND QTR
30/11/82
1650
BY
UNIT
1982-1983
BY
QUARTER
EXAMPLE

AIRCRAFT SYSTEM MALFUNCTIONS (WORLD WIDE BY QUARTER)

This chart would be used by the Air Staff on a monthly or quarterly basis to view historical and projected trends in System Malfunctions causing A/C to become Non Mission Capable. This chart shows both the total aggregated number of NMC A/C as well as the total by failure type.

The left axis shows the number of NMC A/C. The range of this axis would be from 0 to an upper bound no lower than the aggregated total of NMC A/C.

The bottom axis shows the months of the quarter being displayed.

The systems malfunctioning are shown on the right side of the chart. Any of these could be selected to show a more detailed chart for the selected system.

On the bottom of the chart are blocks which can be selected to show different view of the system malfunctions.

Prime User: Air Staff

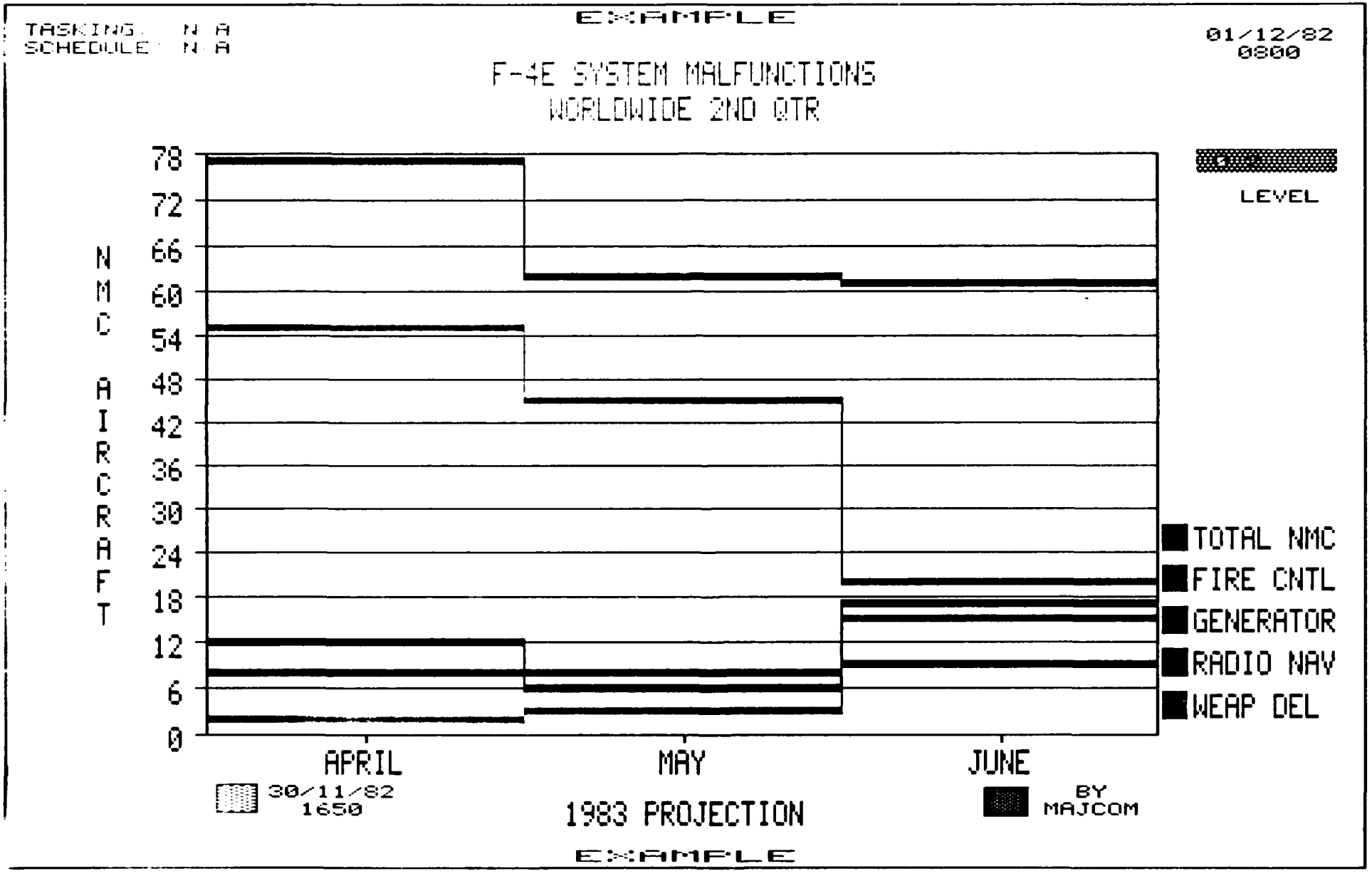
Type of Use: Monthly/Quarterly trend analysis

Purpose: Show historical and projected trends in system malfunctions causing A/C to become NMC.

DeFault Values:
1) Start Date: First month of selected quarter.
2) Top four system malfunctions shown

Length of View: 4 Quarters

Lower Level Charts:
1) Tasking - if any
2) Schedule - if any
3) Oldest Data used
4) By MAJCOM
5) By SYSTEM


EXAMPLE
TASKING N/A
SCHEDULE N/A
01/12/82
0800
F-4E SYSTEM MALFUNCTIONS
WORLDWIDE 2ND QTR
NMC AIRCRAFT
78
72
66
60
54
48
42
36
30
24
18
12
6
0
APRIL
MAY
JUNE
LEVEL
TOTAL NMC
FIRE CNTL
GENERATOR
RADIO NAV
WEAP DEL
30/11/82
1650
1983 PROJECTION
BY
MAJCOM
EXAMPLE

END

DTIC

9—86