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NATIONAL TRAINING CENTER DATA LIBRARY

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The BDM Corporation

for

ARI Field Unit at Presidio of Monterey, California
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The primary objective of this report is to assess the materials present at the Army Research Institute's field unit at Presidio of Monterey, and to determine security procedures and current data processing routines. The second objective is to determine what materials are necessary for current and anticipated research efforts.		

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NTC DATA LIBRARY

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INTRODUCTION

The National Training Center (NTC) at Fort Irwin, California serves as a facility where U.S. Army battalions perform realistic combat arms training exercises which are not normally possible at home station. Beyond the NTC's training function, NTC also has a research objective aimed at improving training, doctrine, equipment, and organization. Information collected at the NTC during battalion performance serves as a database for the conduct of future research.

ARI has established a program to investigate the training implications of performance at NTC as well as the home station predictors of that performance. ARI has designated the field unit at the Presidio of Monterey (ARI-POM) to be the point of contact for NTC research as well as the location for the archival storage of all NTC related research materials.

PURPOSE

The purpose of this document is to describe the NTC data on file and procedures for the processing, acquisition, and control of those data elements at ARI-POM. The remainder of this document is organized into four sections:

- 1) An outline of the contents of the library;
- 2) Description of the resource materials;
- 3) The procedures for security, storage, retrieval, and documentation of library contents; and
- 4) A description of the library, acquisition process, and an identification of point of contact for acquisition.

An appendix containing a current inventory of the materials in the library and forms to be used at ARI-POM are also included.

CONTENTS OF THE NTC LIBRARY

The ARI-POM NTC Library consists of various data Resource Materials and background Reference Materials. The following is a list presented for an easy reference to the materials available at ARI-POM. Further description of each resource material is found in the next section of this document.

Resource Materials

- o Digital Tapes
- o Take Home Packages (THP)
- o Company Take Home Packages (CTHP)
- o Operation Plans (OP PLANS)
- o Video Tapes (VT)
- o Unit After Action Reports (UAAR)
- o Communication Tapes (COMMO TAPES)

Reference Materials

- o TAF Procedures
- o Brigade Slice Status & Plan
- o AGES/AD Status & Plan
- o OPFOR AAR Report
- o CSS AAR
- o Rules of Engagement
- o OC Checklist
- o Desert Training Reports
- o Desert Preventive Maintenance Directives
- o NTC G.O.S. Report 10 September 1984
- o Live Fire status and plan

DESCRIPTION OF RESOURCE MATERIALS

Each of the resource materials received at ARI-POM and used in the conduct of NTC research is briefly described below.

Digital Tape - NTC Instrumented Data

- (1) The Range Data Measurement System (RDMS).
- (2) The Core Instrumentation Subsystem (CIS).
- (3) The Live Fire Subsystem (LFS), and
- (4) The Range Monitoring and Communications Subsystem (RMCS)

The NTC-IS Data Tape contains information to replay mission segments for display on "NTC Workstation" graphics terminals and also for input into the ARI-POM Research and Training Database. The tape data are reformatted for the INGRES relational database management system (RDBMS) on the DEC-VAX 11/780 computer system.

The RDMS and CIS are the subsystems principally involved in digital data collection. Figure 1 shows the interrelationships of the relevant components of the RDMS and CIS relating to data collection.

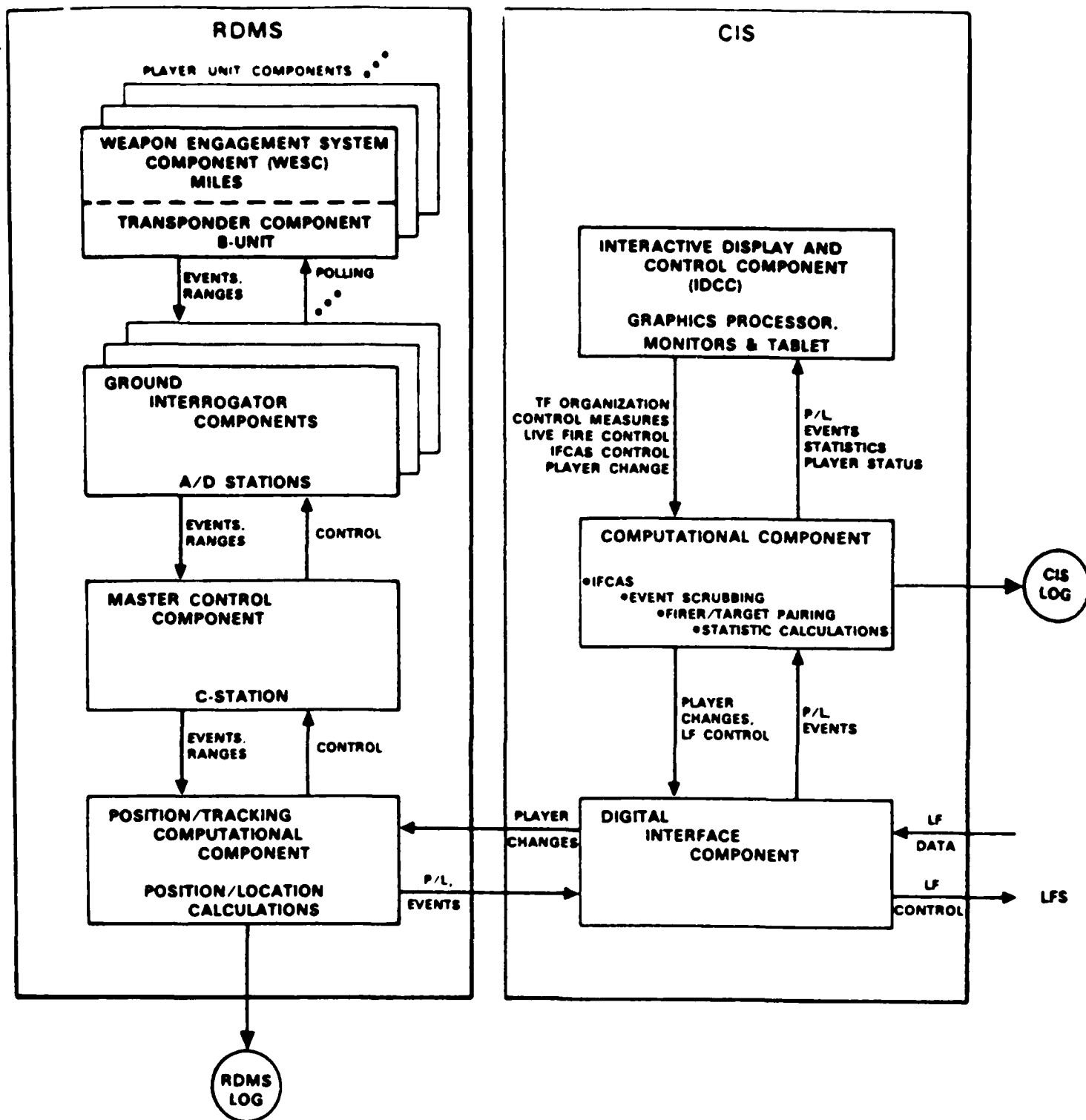
Data collected at the NTC can be divided into three categories:

- (1) Raw field data.
- (2) Data input manually, and
- (3) Data derived from either or both of the prior two categories.

Raw field data are collected by the RDMS; input data are entered via components of the CIS, and data elements are derived by both subsystems.

Data Collected/ Logged by the RDMS

Raw field data events collected by the RDMS include trigger pull (fire event), laser illumination (pairing), and microphone key pressed/ released. During Live Fire Exercises (LFX) the RDMS also collects target status (up, down, hit). In addition, the



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Figure 1: Interrelationships of RDMS and CIS

RDMS collects raw ranging data from which position/ location is derived for all instrumented players.

The RDMS provides one source of archival data from the NTC. Data elements logged from the RDMS are listed in Figure 2.

Data Collected/ Logged by the CIS

The CIS performs several functions related to the collection/ generation of NTC digital data:

(1) The interactive Display and Control Component (IDCC) provides the interface between Experiment Monitoring and Control (EMC) and Training Analysis and Feedback (TAF) personnel and the ongoing exercise(s).

(2) The CIS/IDCC also supports pre-exercise initialization which includes entry of:

- (a) Player initialization information.
- (b) Control measure information.
- (c) Task Force organization.
- (d) Live Fire scenarios, and
- (e) Pre-planned artillery.

(3) The IDCC provides real-time control of the Live Fire Exercises (LFX) by the Live Fire Control Officer (LFCO).

(4) The CIS Computational Component is used to pair firers with targets for real-time engagement simulation.

(5) The CIS provides computing capacity for real-time data manipulation, such as the calculation of statistical measures and unit roll-up totals.

(6) The CIS logs data in real-time to provide the primary archival source of NTC data.

Figure 3 lists NTC data logged by the CIS, noting data elements that are logged by both the RDMS and the CIS. It should be noted that many of the elements logged from the CIS are manually input data elements. Reliability of manual data depends upon the accuracy of the personnel entering the data and the verification procedures that are employed, such as proofreading and consistency checks.

DATA ELEMENT

DESCRIPTION

Trigger Pull

Event received when a shot is fired by an instrumented weapon system. Event data consist of firer player number and weapon type.

Ammunition Remaining

Pair of events received immediately following trigger pull. Tens digit in former message, units in latter.

Laser Illumination

Event sent by target (player being lased.) This event type is one of three different kinds of codes, for HIT, NEAR MISS, and KILL. For a HIT message, event indicates general type of weapon. For NEAR MISS and KILL, more exact weapon type information is included.

Communication

An event is sent by a player whenever the microphone key for either net is depressed or released. The message includes the net (1 or 2) and the action (depress = on, release = off).

Live Fire

There are four Live Fire events passed from the targets via RDMS. They are: target UP, target DOWN, HIT by ballistic projectile, and HIT by Laser.

Position/Location

The Position/Location of each instrumented player is derived by RDMS software from raw Range Data and logged.

Player Status

Player Status initialization and updates, which are entered from the CIS and transmitted to the RDMS are also logged. These data include the B-Unit Player identification/weapon system assignment.

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Figure 2. Data Elements Logged from the RDMS

DATA ELEMENT

DESCRIPTION

Background/Documentation

History and segment name, start and end times, mission type, exercise conditions, task force and OPFOR organizations.

Unit/Player Status info

Status of individual players and/or units, including:
Instrumented/Not Instrumented
Tracked/Not Tracked
Position/Location

Fire Event (RDMS trigger pull)

Event generated when a shot is fired by an instrumented weapon system. Should be identical with RDMS log, with the exception of the deletion of invalid events

Pairing (RDMS pairing except as noted)

Event (HIT, NEAR MISS, or KILL) generated when the laser sensors of an Instrumented Target System are illuminated and decoded into a valid message. If possible, target is paired with a firer. If unpaired, firing weapon type is discarded.

Control Measures

Locations for control measures entered from IDCC. Message can include control measures added or deleted. Mines are included in this category.

Indirect Fire Casualty Assessment (IFCAS)

Fire Mission Number, assessment of number of casualties inflicted.

Call Fire Missions

Call for previously planned Indirect Fire (artillery, mortars).

Commo

Player Identification, Radio Net, and duration of Commo messages longer than 55 seconds, should agree with RDMS log for those messages, but all others are lost.

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Figure 3. NTC Data Logged by CIS

Operations Plans (OP Plans)

The Operations Plan is a planning document provided by the NTC to the TF controlling brigade to be executed by the battalion TFs at the NTC. Information typical of the Operations Plan include:

- o Missions
- o Astronomical Data
- o Scenario Plans
- o Time/Event Schedule
- o OPFOR
- o General Situation Narrative
- o Analysis of Area Operations
- o Defense Intelligence Report
- o Overlay Maps
- o OP ORDS - Divisional
- o Frag Orders (sequentially listed)
- o Warning Orders (sequentially listed)

Unit After Action Review (UAAR)

The Unit After Action Report is a detailed narrative and numerical description provided by the brigade commander to the division commander on the NTC training period. The UAARs consist of:

- o Narrative Overview
- o TF Commander's Comments
- o Task Organization
- o Maintenance Budget
- o Executive Overview
- o Units Participating
- o NTC Equipment Availability
- o Tactical Lessons Learned
- o Unresolved Issues.
- o Recommendations for Improvement

Company Take Home Package (CTTHP)

The Company Take Home Package describes in narrative form, the Plan, Prepare and Execute phases for each NTC mission for each Company/Team. It is prepared by the TAF Division on each Task Force mission and is intended to supplement the Take Home Package (THP).

The elements of the CTTHPs are:

- o Company/Team ARTEP Reference numbers for
- o Plan, Prepare, & Execution of Tasks

Take Home Package (THP)

The Take Home Package is prepared for each Commander by the NTC Training Analysis and Feedback (TAF) Division. The document contains narrative and numerical descriptions of unit performance at the NTC and recommends additional home station training. THPs include:

- o Purpose, Scope & Organization
- o After Action Review Briefing (Offense/Defense)
- o Daily AAR Presentations
- o Equipment Losses by Company/Team
- o Missions Conducted
- o Rotation Summary
- o Engagement Simulations (Offense/Defense)
- o Live Fire (Offense/Defense)
- o Trends
- o Lists of Audio/Visual Materials

Video Tapes (VT)

The Video Tape of After Action Reviews (AAR) is a tactical discussion among all soldiers conducted by the senior observer controller (OC) immediately following mission training exercise

SECURITY

The data archived at ARI-POM are not available for other than proper government use. This means the information shall not be duplicated, used, or disclosed in whole or part for any purpose other than for the conduct of authorized research in accordance with Army regulation and procedure.

The sensitive nature of the data obtained is protected by limiting access and by thorough documentation of its use. To ensure accountability of the data, a Master Log Book is kept which contains a record of all data received, the date of their receipt, and the location of the data in the library. In addition, the Master Log Book serves as the primary source for the assignment of identification codes to NTC Resource Materials and their correspondence to actual battalion, division, and/or brigade designators. The latter information is used solely for the purpose of resource material acquisition.

LIBRARY PROCEDURES

Resource Materials are received in various forms which include Digital Tapes for use on computers, hard copy documents (THPs, CTTHPs, OP PLANS, UAARs), video tapes, and slides.

Upon receipt at ARI-POM, all materials are recorded as to rotation number and date of NTC rotation, and the date of receipt.

Digital tapes are turned over to the computer manager, who also records them, assigns a bin number, and files them in a specially cooled room for storage. The bin number is retrieved by library personnel and recorded both in the Master Log Book and the Digital Tape Reference Book.

Hard copy materials such as Take Home Packages, Company Take Home Packages, Unit After Action Reports, and Operations Plans are recorded in the Master Log Book, and marked as to rotation number. Hard copy materials are then filed in specially designated rooms at ARI-POM and referenced in the Hard Copy Reference Book.

Video Tapes, Communication (Commo) Tapes, and slides are marked as to rotation number and filed in a designated area in Building 110 at ARI-POM.

RELEASE OF NTC DATA

On Premise Use

1. Access is obtained through library personnel.
2. All materials are signed for by the user and initialled by library personnel in the particular reference book.
3. Materials are accounted for weekly.
4. When materials are returned, they are initialled and noted in the reference book.

Release Off Premise

The procedures for the release of NTC data off premise include:

1. Receipt of formal request by ARI-POM.
2. Appropriate review of formal request at ARI-POM.
3. Deidentification of requested data.
4. Memorandum describing deidentification procedure.
5. Record of to whom, date and data sent.

ACQUISITION & CONTACT LISTING

DIGITAL TAPES:

Acquisition:

Digital Tapes are mailed directly from NTC.

THPS

Acquisition:

To be determined.

CCTHP

Acquisition:

To be determined.

OP PLANS

Acquisition:

To be determined.

VTs

Acquisition:

To be determined.

UAARs

Acquisition:

UAARs are sent by the Brigade Commander to the Division Commander to the DSCOPS to TRADOC to FT. Leavenworth who then forwards them to ARI-POM.

COMMO TAPES

Acquisition:

To be determined.

Contact:

Cpt. Bielefeldt
NTC-IS
(619) 386-5092

Contact:

Major Echols TAF

Contact:

To be determined.

Contact:

LTC Donovan-Senior TAF0
LTC Haugen-Senior TAF0

Contact:

Major Ecols

Contact:

Lt. Col. MacDonald
HQ USFORSCOM
FT. McPherson
Atlanta, GA

Contact:

To be determined.

Appendix 1

Data Sources Required at ARI-POM

DATA REQUIREMENTS

Department	Material
TAF	COMPANY TAKE HOME PACKAGES
TAF	UNIT TAKE HOME PACKAGES (Both Task Forces)
TAF	INITIALIZATION LISTS (with changes during Rotation)
TAF	CLASS V SIMULATION AND LIVE FIRE DATA (MILES and Service)
TAF	RDMS TAPES/CODINGS
TAF	AAR TAPES/MANUAL CHART DATA from OC'S
TAF	TASK FORCE OP-ORDERS (with maneuver graphics)
TAF	TASK FORCE FRAGOS (Written and Verbal)
TAF	COUNTER MOBILITY GRAPHICS BY MISSION
TAF-Artillery	FIRE SUPPORT LOGS
TAF-Artillery	TAC FIRE PRINTOUTS
TAF-VVCEC	AMPEX TAPE REELS (Communications)
TAF-VVCEC	MISSION AAR TAPES - Task Force & Co. (Video Tape)
TAF-Video	CATALOGUE VIDEO TAPES (When Stored at NTC)
TAF-Instrumentation Officer	COMMO CUT SHEETS
TAF-Instrumentation Officer	DAILY COMMO SHEETS
TAF-Instrumentation Officer	TRACKING LISTS: BLUFOR & OPFOR
TAF-Instrumentation Officer	CIS TAPES/CODINGS
P & O	G-3 LOG
P & O	BRIGADE COMMANDER'S OPORDS (with maneuver graphics and concept of operation)
P & O	REVISED SOP & OC CHECKLISTS
P & O	SCENARIO (Fragos)
P & O	REVISED RULES OF ENGAGEMENT (ROE's)
P & O	CEOI'S
P & O	NBC & EW LOGS
P & O	EMC DAILY JOURNALS
P & O	OPLAN FOR EACH ROTATION
DCS	PLL/ASL USAGE DOCUMENTS
DCS	POL USAGE DOCUMENTS
DCS	DAILY 2406 (Vehicle & Weapon)
DCS	DAILY 2404 (Vehicle & Weapon)
EMC	EMC DAILY JOURNALS

APPENDIX 2

NTC Data Inventory

The following is a report as of 15 October 1985 on the current status of the NTC supplied data. The Date of Rotation, Rotation Number, Division, Brigade (Bde), Infantry Battalion (InfBn), and Armored Battalion (ArmBn), are noted for acquisition convenience.

Presence of the resource material is noted by an X in the appropriate box. The boxes are labelled as follows:

- D = Data Tapes (Digital Tapes)
- T = Take Home Packages (THP)
- C = Company/Team Take Home Packages (CTTHP)
- O = Operations Plan (OP PLANS)
- V = Video Tape After Action Review (VT)
- U = Unit After Action Reports (UAAR)
- Tp = Data Tape tested
- Tra = Data Tape Translated

Also included is a page from the S.O.P. for the library in which acquisition procedure and contact personnel are listed where known at present. Some resource materials are channeled sporadically and through unclear channels. Efforts are being undertaken to define the channels through which materials can be expected and time frames in which the materials will be received. Phone numbers will also be obtained to facilitate in follow-up efforts.

Forms to encourage participation in sign-out procedures for use of resource materials are being developed as well as a Master Log Book which will contain updated versions of the inventory report as well as the location of the materials in the library. Each section of the library will contain a sign-out clipboard as well as a listing of the acquired materials. Drafts of these forms are included.

When the library materials have installed in their permanent location, all resource materials will be locked in their designated areas. Two keys will be available, one will be with the designated NTC Librarian and the other will be with a designated alternate. Should neither be available, responsibility will be given to an available individual designated by the librarian. In all cases the librarian or designate must be present to provide access to the materials.

NTC DATA INVENTORY

Date	Rotation	Rotation Division	Tested					D	T	C	O	V	U
			Bde	InfBn	ArmBn	Tp	Tra						
APR 81		1ST CD						X	X	X	X	X	X
NOV 81		2d AD						X		X			
17-31 JAN 82	82-2	1st ID	1	1-18	1-63			X	X		X		
14-28 FEB 82	82-3	5th ID	2	3-11	3-70			X		X			
14-28 MAR 82	82-4	194 AR B		4-45	4-37			X		X			
10-23 JUN 82	82-5	4 ID	3	1-8	4-40			X			X		
9-22 JUL 82	82-6	4 ID	1	1-12	6-32			X		X			
5-18 AUG 82	82-7	24 ID	2	3-19	5-32			X		X			
10-23 SEP 82	82-8	1 CAV	1	2-7	3-10			X		X			
7-20 OCT 82	83-1	24 ID	1	2-34	2-70			X		X	X	X	
9-22 SEP 83	83-10	24 ID	1	2-21	1-108			X	X		X		X
5-18 NOV 82	83-2	197 INF		1-58	2-69			X			X	X	
13-26 JAN 83	83-3	194 ARB		4-54	5-33			X		X		X	
10-23 FEB 83	83-4	5 ID	1	1-61	3-77			X		X	X	X	
10-23 MAR 83	83-5	4 ID	2	1-11	1-77			X		X	X	X	
7-20 APR 83	83-6	24 ID	2	2-19	5-32			X		X		X	
9-22 JUN 83	83-7	5 ID	2	3-10	1-40			X		X			
JUL 83	83-8	OPFOR						X	X				
11-24 AUG 83	83-9	1 ID	2	2-16	3-37			X	X		X		X
6-19 OCT 83	84-1	4 ID	1	1-10	6-32			X	X		X		
15-28 JUN 84	84-10	4 ID	1	1-22	1-77			X	X		X	X	
7/23-8/5 84	84-11	197 INB		3-7	2-69	X		X	X		X	X	
8/22-9/4 84	84-12	1 ID	1	5-16	1-64			X	X				
1-14 NOV 83	84-2	5 ID	2	3-11	3-70			X	X		X		X
1-14 DEC 83	84-3	24 ID	2	3-19	2-70			X	X				X
5-18 JAN 84	84-4	194 ARB		4-54	5-73			X	X		X		

Rotation	Rotation	Division	Bde	InfBn	ArmBn	Tested Tp Tra	D	T	C	O	V	U
1-14 FEB 84	84-5	4 ID	3	1-8	2-34		X	X	X	X		
2/2-3/12 84	84-6	5 ID	1	1-61	3-72		X	X	X	X	X	
3/26-4/8	84-7	1 ID	1	2-136	1-34		X	X	X	X	X	
5/19-6/1 84	84-9	4 ID	1	1-22	1-77		X	X	X	X		
4-17 OCT 84	85-1	24 ID	2	1-121	5-32		X	X	X			
2-21 JUN 85	85-10	5 ID				X X	X					
6/26-7/15	85-11	4 ID				X X	X					
8/15-9/3 85	85-13	5 ID					X					
9-28 SEP 85	85-14	4 ID					X					
10/31-11/13	85-2	1 ID	2	8			X	X	X			
11/29-12/18	85-3	1 CD	1	2-7CA	2-5CA		X	X	X			
3-22 JAN 85	85-4	194 AB				X X	X	X	X			
1/27-2/15 85	85-5	24 ID					X		X		X	
2/21-3/12 85	85-6	1 ID					X		X		X	
3/18-4/6 85	85-7	24 ID					X		X			
4/12-5/1 85	85-8	2 AD					X	X	X			
6-29 MAY 85	85-9	197 IB					X		X			
5-24 OCT 85	86-1	5 ID					X					
10/30-11/18	86-2	24 ID					X					