

**POST PERSIAN GULF MEDICAL  
FINDINGS IN MILITARY RESERVISTS**

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POST PERSIAN GULF MEDICAL FINDINGS  
IN MILITARY RESERVISTS

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123 ARMY RESERVE COMMAND (ARCOM) - APR 92

The 123 ARCOM comprises 9200 soldiers; 90 separate units, in Indiana, Michigan, and Ohio. About 1900 mobilized for Operation Desert Shield/Storm (ODS/S); 1200 deployed to Southwest Asia (SWA), one in combat. In JAN 92, a variety of symptoms began to be reported to the Surgeon's office, but did not suggest a particular illness. In FEB a non-commissioned officer (NCO) developed and circulated a symptom questionnaire. An Epidemiology Consultant Service Team from Walter Reed Army Institute of Research visited Ft. Benjamin Harrison, Indianapolis the first two weeks of APR. The team included two physician epidemiologists, and a psychiatrist, occupational medicine physician, and dentist-oral pathologist. Information was gathered by medical questionnaire and interview, selective medical records review, Derogatis and Spencer Brief Symptom Inventory (BSI) and a limited psychiatric interview, physical exam, lab, and dental exam.

The 125 soldiers known to be symptomatic, or concerned over hazardous exposure were invited; 79 attended, 78 were examined. Most individuals came from three units located in central Indiana. Demographically 77% were male; 90% caucasian and 9% Afro-American; 46% age 20-29, 30% 30-39, 22%  $\geq 40$ ; 54% NCOs, 37%  $\leq$  corporal, 5% officers. These proportions over-represent whites and those age

30-39, compared to the Army Reserve as a whole. Analysis of individual or grouped symptoms showed no correlation with SWA deployment variables (duration, location, duties, living or climatic conditions) or receipt of anthrax vaccine (received by 87%), anti-malarial medications (51%), or pyridostigmine (51%).

A lack of SWA exposure data limited occupational risk hazard assessment. (In many cases civilian jobs probably posed a greater risk.) Handling petroleum fuels (e.g. diesel fuel, gasoline, JP4), a major duty of some reservists, may have exposed them to mild acute toxicity from vapors. Some experienced dermal splash exposure, managed appropriately by soap and water washing. Heating stoves in tents would have first produced acute toxicity due to carbon monoxide and other gases. None was reported. Overall there is little or no reason to expect long term effects.

A very few individuals had applied chemical agent resistant coating (CARC) to vehicles, however appropriate personal protective gear had been worn. Some individuals were exposed to fumes, but the painting was at least 50, and usually > 100-200 yards away. Although some symptoms were reported, the levels would have been very low. CARC has been reported to cause asthma in up to 5% of individuals applying it; none interviewed complained of this.

One unit had been sited near a microwave communications unit. These microwaves are narrowly focused, and the transmitting units are elevated or cordoned off, making exposure unlikely. Microwaves can cause tissue heating and redness, and cataracts, but not the musculoskeletal complaints of this unit. Complaints attributed to

possible ionizing radiation exposure in a "hazardous waste site" were not compatible with known effects. Possible exposure to organophosphate insecticides or DDT had not been associated with acute effects, making long term effects unlikely. These latter possible exposures involved only a few of those interviewed.

(See Tables for Work Days Lost, Symptoms, Dental and Skin Problems, and Lab Findings.) Twelve individuals were felt to probably have a formal psychiatric disorder, e.g. substance abuse, adjustment disorder, major depression. Formal criteria for post-traumatic stress disorder (PTSD) were not met. The symptoms most strongly reported are not those strongly associated with PTSD, and those most strongly associated with PTSD were not heavily reported. The question of psychological or behavioral contagion was difficult to assess; some of the circumstances associated with the group are consistent with this. However data were considered insufficient to demonstrate contagion. The BSI scores were felt to indicate a great amount of psychological distress. (See Table)

CONCLUSIONS: 1) No objective evidence to suggest an outbreak of any disease. 2) Stress associated with post-deployment adjustment to civilian life is a plausible explanation for reported symptoms. 3) In general the symptoms have been worrisome, but not debilitating. 4) PTSD does not appear to be an important illness. 5) There is a high level of general psychological distress.

(123 ARCOM data kindly provided by the EPICON Team leader, LTC R. F. DeFraithe, Medical Corps, U.S. Army, Walter Reed Army Institute of Research. Errors in presentation and conclusions are the presenter's responsibility.)

NAVAL MOBILE CONSTRUCTION BATTALION (NMCB) 24 - NOV 93 - FEB 94

NMCB 24 is a 700 man reserve battalion divided into 12 separate detachments in the southeastern U.S. About 725 deployed to ODS/S, including 100 from other battalions, from NOV 90 - APR 91. Most were stationed at Al Jubail, a port facility with a heavy concentration of chemical plants and refineries. Exposure variables during ODS/S included anthrax and botulinum vaccines, anti-malarial medications, pyridostigmine, ammonia fumes, and (some individuals) an acrid cloud which turned sweaty brown tee shirts purple, and possibly other industrial chemicals.

In 1992 several media reports indicated a large degree of symptomatic illness in at least two detachments, which were evaluated that fall. A year later the two detachments were revisited, as were two detachments which had received no publicity regarding their health. Teams consisted of 1-3 physician epidemiologists and a preventive medicine technician. Visits were made during a drill weekend, and former reservists were encouraged to attend. Each session began with an introduction and information exchange, followed by reservists filling out a standard questionnaire. Reservists were interviewed individually if they had questions, wanted to meet with a team member, or their questionnaire had unusable answers. Medical records from private physicians, hospitals (often the local VA hospital), and other sources were reviewed to verify diagnoses and obtain additional information. Physical exams and lab tests were not done.

A total of 154 (64%) of 232 ODS/S veterans were interviewed; participation ranged from 43%-97% among the four detachments, participation was 97% and 69% in the two original detachments. The mean age was 40 years (about 10 years older than active duty Naval personnel); 94% were caucasian, 5% Afro-American; 80% married, 10% single, 10% divorced; 81% were middle level enlisted personnel (petty officers, E4-E6), 8% non-petty officers (E1-E3), 6% senior enlisted (E7-E9), 5% officers. All are male. (Only males deployed to ODS/S.) Whites and enlisted personnel are over-represented compared to the Navy as a whole, but probably reflect the proportions in this battalion.

Work days lost per individual during the previous year due to illness or injury ranged from 1-365; mean 19 days, median 6. However 51% lost no work days, and 35% lost  $\leq 10$  days. This suggests that although the group is highly symptomatic, the symptoms are not sufficiently debilitating to cause significant work loss. (Information was not obtained as to availability of civilian "sick leave.") (See Tables)

Reservists reported from 1-20 symptoms; mean 8.6, median 9.0. Overall 40% reported  $> 10$  symptoms, 24% 6-10, 29% 1-5, 7% no symptoms. These proportions varied among the detachments - 28-52% reported  $> 10$  symptoms, and 2-24% reported no symptoms. The majority reported that symptoms were unchanged or worse in the past year, but up to 35% of symptoms were improved or gone. The symptoms did not suggest a particular pattern or illness. (Tables)

There were 59 reservists (38%) who reported 92 medical or psychiatric diagnoses. A variety of illnesses were reported, suggestive of the distribution which would probably be seen in a comparable age group of non-ODS/S veterans. (See Tables) Gastrointestinal illnesses accounted for 20 diagnoses, musculoskeletal for 16 diagnoses, psychiatric for 14 diagnoses, and EENT for 13 diagnoses. Two individuals had cancer - non-hodgkin lymphoma and prostate. Psychiatric disorders were mostly adjustment disorders or depression; one reservist had PTSD. Three individuals were said to have "Persian Gulf Syndrome," however there are no criteria for this illness and the basis for this conclusion was not clear. Two reservists have died - auto accident (hit by another car), and sudden unexpected death.

CONCLUSIONS: 1) Highly symptomatic group - nine symptoms per reservist; most symptoms unchanged or worse in past year; up to 35% of symptoms better or gone in past year. 2) Symptoms do not suggest a pattern or particular illness. 3) Symptoms are not sufficiently severe to prevent work; 86% lost  $\leq$  10 work days in past year; no information as to availability of "sick leave," i.e. might not have been paid if they did not work. 4) Types and frequencies of diagnosed illnesses appear normal for this age group (no control group examined). 5) PTSD rarely seen.

## **123 ARMY RESERVE COMMAND**

- o HEADQUARTERS - FT BENJAMIN HARRISON, IN
  - 9200 SOLDIERS - 90 SEPARATE RESERVE UNITS
  - 3 STATES - IN, MI, OH
- o 1900 MOBILIZED FOR ODS/S
  - 1200 DEPLOYED TO SOUTHWEST ASIA
  - 1 WAS IN COMBAT
- o JAN 92 - SURGEON'S OFFICE HEARS OF SYMPTOMS
  - ULTIMATELY - 75 SICK OR CONCERNED
- o FEB 92 - NCO CIRCULATES QUESTIONNAIRE

## EPIDEMIOLOGY CONSULTANT SERVICE TEAM

- o MOBILIZED 30 MAR 92
  - VISITED FT HARRISON - 3 - 5 APR
  - 9 - 12 APR
- o 2 PHYSICIAN - EPIDEMIOLOGISTS
  - 1 PSYCHIATRIST
  - 1 OCCUPATIONAL HEALTH PHYSICIAN
  - 1 DENTIST - ORAL PATHOLOGIST
  - 1 PREVENTIVE MEDICINE TECHNICIAN
- o MEDICAL QUESTIONNAIRE & INTERVIEW
  - MEDICAL RECORDS REVIEW - SELECTIVE
  - BRIEF SYMPTOM INVENTORY (BSI)
    - DEROGATIS & SPENCER
  - VITAL SIGNS, HEIGHT, WEIGHT
  - DENTAL EXAM - XRAY'S PRN
  - LABS - CBC, LFT'S, BRUCELLA & LEISHMANIA Ab

## 123 ARCOM EVALUATION - DEMOGRAPHICS

- o 125 SOLDIERS INVITED - SYMPTOMATIC OR CONCERNED
  - HAD HANDLED PETROLEUM FUELS
  - WERE NEAR MICROWAVE COMMUNICATIONS UNIT
- o 79 CAME FOR EVALUATION - (78 GOT LAB TESTS)
- o 209 SUPPLY COMPANY } 123 ARCOM
- 417 QUARTERMASTER CO or HHC } SUPPORT GROUP
- 300 SUPPLY & SERVICE BATTALION } CENTRAL INDIANA
- o 77 % MALE
- o 90 % CAUCASIAN
- 9 % AFRO-AMERICAN
- o 54 % NON-COMMISSIONED OFFICERS
- 37 % PRIVATE, PRIVATE 1ST CLASS, CORPORAL
- 5 % OFFICERS
- 4 % WARRANT OFFICERS

**DEPLOYMENT EXPOSURE VARIABLES**  
**VS**  
**INDIVIDUAL OR GROUPED SYMPTOMS**  
**123 ARCOM**

- o NO CORRELATION WITH DEPLOYMENT VARIABLES
  - TOTAL TIME DEPLOYED IN SOUTHWEST ASIA
  - GEOGRAPHIC LOCATION IN SOUTHWEST ASIA
  - DUTIES DURING ODS/S
  - LIVING & CLIMATIC CONDITIONS IN SW ASIA
- o NO CORRELATION WITH MEDICATIONS
  - 87 % RECEIVED ANTHRAX VACCINE
  - 51 % RECEIVED ANTI-MALARIAL MEDICATIONS
  - 51 % RECEIVED PYRIDOSTIGMINE

## **ODS/S OCCUPATIONAL EXPOSURES - 1**

**123 ARCOM**

### **o PETROLEUM FUELS HANDLING**

- POSSIBLE MILD ACUTE EFFECTS FROM VAPORS
- DERMAL SPLASH EXPOSURES ----> WASHED OFF
- TENT HEATERS - NO ACUTE TOXICITY SEEN
  - LONG TERM EFFECTS NOT LIKELY

### **o CHEMICAL AGENT RESISTANT COATING (CARC)**

- PERSONAL PROTECTION USED WHEN PAINTING
  - VERY FEW INDIVIDUALS INVOLVED
- SOLVENT VAPOR DRIFT FROM PAINTING
  - > 50 TO > 200 YARDS DISTANT
  - SOME SOLDIERS ACUTELY SYMPTOMATIC
- NO ASTHMA - (SEEN IN 5 % OF CARC PAINTERS)

## ODS/S OCCUPATIONAL EXPOSURES - 2

123 ARCOM

- o MICROWAVE - NON-IONIZING - RADIATION
  - ONE COMPANY CONCERNED ABOUT POSSIBLE EXPOSURE
  - COMMUNICATIONS MICROWAVES NARROWLY FOCUSED
    - EQUIPMENT ELEVATED AND/OR CORDONED OFF
  - CAUSES HEATING, TISSUE REDNESS, CATARACTS
    - NOT A COMPLAINT
  - DOES NOT CAUSE MUSCULOSKELETAL COMPLAINTS
- o POSSIBLE IONIZING RADIATION EXPOSURE
  - POSSIBLE ALPHA SOURCE IN "HAZARDOUS WASTE SITE"
  - SYMPTOMS NOT COMPATIBLE WITH KNOWN EFFECTS
- o POSSIBLE EXPOSURES TO UNKNOWN PESTICIDE OR DDT
  - PESTICIDE IDENTIFIED AS ORGANOPHOSPHATE
  - NO ACUTE EFFECT ----> LONG TERM EFFECT UNLIKELY

## 123 ARCOM - WORK DAYS LOST

- o 10 - 11 MONTHS SINCE RETURN FROM ODS/S
- o 762 TOTAL DAYS LOST - ABOUT 3 % OF AVAILABLE DAYS
- o 334 DAYS (44 %) LOST TO INJURY, ELECTIVE SURGERY
- o 36 RESERVISTS (46 %) LOST ZERO WORK DAYS  
67 RESERVISTS (85 %) LOST  $\leq$  10 WORK DAYS
- o 6 RESERVISTS (7%) LOST 206 DAYS
  - EQUALS 48 % OF 428 MEDICAL ILLNESS DAYS
  - 60 DAYS - POST-TRAUMATIC STRESS DISORDER
  - 40 DAYS - INFECTIOUS MONONUCLEOSIS
  - 35 DAYS - LACK OF MOTIVATION & FATIGUE
  - 30 DAYS - RECURRENT "FLU"
  - 21 DAYS - RECURRENT DIARRHEA - IRRITABLE BOWEL
  - 20 DAYS - RECURRENT FEVER

## 123 ARCOM - TOP 20 SYMPTOMS

| SYMPTOM             | %  | SYMPTOM             | %  |
|---------------------|----|---------------------|----|
| FATIGUE             | 71 | RASH                | 35 |
| SLEEP DISTURBANCE   | 57 | COUGH               | 35 |
| FORGETFULNESS       | 54 | ABDOMINAL PAIN      | 34 |
| PAIN IN ANY JOINT   | 54 | JOINT PAIN - ARM    | 33 |
| DENTAL COMPLAINT    | 47 | DIARRHEA            | 32 |
| EASILY IRRITATED    | 47 | JOINT PAIN - LEG    | 30 |
| HARD TO CONCENTRATE | 43 | PAIN BACK OR NECK   | 27 |
| DEPRESSION          | 42 | EAR PAIN OR RINGING | 24 |
| DIFFICULTY THINKING | 39 | LOSS OF HAIR        | 22 |
| HEADACHE            | 37 | FEVER               | 13 |

(N = 79; INDIVIDUALS COULD REPORT > 1 SYMPTOM)

## 123 ARCOM - DENTAL & SKIN PROBLEMS

- o DENTAL PROBLEMS - 51 % NO COMPLAINTS & NORMAL
  - 14 % GINGIVITIS
  - 11 % PERIODONTITIS
  - 9 % BRUXISM
  - 5 % CARIES or OLD DENTAL WORK PROBLEM
  - 10 % OTHER
- o RASHES - 28 (35 %) COMPLAIN OF RASH
  - 13 (16 %) HAD RASH PRESENT ON EXAM
  - 5 TINEA INFECTION
  - 3 DRY SKIN
  - 2 FOLLICULITIS - LEGS
  - 2 HYPO/HYPER PIGMENTATION
  - 1 PITYRIASIS ALBA
- o 12 MEN - MALE PATTERN BALDNESS (5 WOMEN NORMAL)

## 123 ARCOM - LABORATORY TESTS

- o NONE HAD EOSINOPHILIA
- o 4 (5 %) HAD ELEVATED SEDIMENTATION RATES
  - 2 WITH RATES = 46, 55 MM/HR
- o 4 (5 %) WITH DECREASED HEMATOCRIT
  - COMPARE: 5 % OF 186 SPECIAL OPERATIONS TROOPS
- o 9 (12 %) WITH ELEVATED ALT LEVELS - 1 % > 2X ULN
  - COMPARE: 8 % & 1 % OF 333 HEALTHY TROOPS
- o LEISHMANIA IFA TITERS - DONE AT WRAIR
  - 76 NEGATIVE
  - 2 1:16 (PRE- & POST-DEPLOYMENT)
- o BRUCELLA TITERS = NEGATIVE (N = 6)

## 123 ARCOM - PSYCHIATRIC FINDINGS

- o 12 RESERVISTS WITH LIKELY FORMAL PSYCHIATRIC DISORDER
  - DIVERSE DIAGNOSES - SUBSTANCE ABUSE, DEPRESSION, ETC
- o CRITERIA FOR POST-TRAUMATIC STRESS DISORDER NOT MET
  - EMPHASIZED NON-PTSD SYMPTOMS; LITTLE PTSD SYMPTOMS
- o CLIMATE CONDUCTIVE TO PSYCHOLOGICAL CONTAGION
  - INSUFFICIENT DATA TO DEMONSTRATE THIS OCCURRED
- o PERCENT WITH GLOBAL STRESS INDEX SCORE > 63
  - 123 ARCOM MEN 64 %  
WOMEN 50 %
  - 8600 OTHERS DEPLOYED TO SWA 33 %
  - 475 NOT DEPLOYED TO SWA 31 %

## **123 ARCOM - CONCLUSIONS**

- o NO OBJECTIVE EVIDENCE FOR A DISEASE OUTBREAK
- o STRESS ASSOCIATED WITH POST-DEPLOYMENT ADJUSTMENT  
TO CIVILIAN LIFE IS PLAUSIBLE EXPLANATION FOR SYMPTOMS
- o SYMPTOMS HAVE BEEN WORRISOME, BUT NOT DEBILITATING
- o PTSD DOES NOT APPEAR TO BE AN IMPORTANT ILLNESS
- o THERE IS A HIGH LEVEL OF PSYCHOLOGICAL DISTRESS

## **NAVAL MOBILE CONSTRUCTION BATTALION 24**

- o APPROXIMATELY 700 RESERVISTS
  - 12 DETACHMENTS IN SOUTHEASTERN U.S.
- o 725 DEPLOYED TO ODS/S - NOV 90 - APR 91
  - INCLUDES 100 FROM OTHER CB BATTALIONS
- o FUNCTIONS
  - BUILDER
  - CONSTRUCTION ELECTRICIAN
  - CONSTRUCTION MECHANIC
  - ENGINEERING AIDE
  - HEAVY EQUIPMENT OPERATOR
  - STEELWORKER
  - UTILITIESMAN

## NMCB 24 EVALUATION METHOD

- o 4 DETACHMENTS VISITED - NOV 93 - FEB 94
- o 1 - 3 PHYSICIAN EPIDEMIOLOGISTS
  - 1 PREVENTIVE MEDICINE TECHNICIAN
- o VISITED DURING DRILL WEEKEND
  - INCLUDED FORMER RESERVISTS
- o INTRODUCTION & INFORMATION EXCHANGE
  - ADMINISTER STANDARD QUESTIONNAIRE
    - INCLUDED MEDICAL DIAGNOSES
    - REVIEWED WITH SOME - MOST RESERVISTS
  - MEDICAL RECORDS REVIEW
    - ALL SOURCES
- o DID NOT DO PHYSICAL EXAMS OR LABS

# NMCB 24 DETACHMENTS SURVEYED POST-PERSIAN GULF ILLNESS

|                                  | <u>DATE OF<br/>SURVEY</u> | <u>NUMBER OF<br/>VETERANS</u> | <u>NUMBER<br/>SURVEYED</u> | <u>%</u> |
|----------------------------------|---------------------------|-------------------------------|----------------------------|----------|
| DETACHMENT 1324<br>ASHEVILLE, NC | 6 NOV 93                  | 64                            | 62                         | 96.9     |
| DETACHMENT 1624<br>COLUMBUS, GA  | 11 DEC 93                 | 58                            | 40                         | 69.0     |
| DETACHMENT 1124<br>ATLANTA, GA   | 22 JAN 94                 | 54                            | 23                         | 42.6     |
| DETACHMENT 0624<br>KNOXVILLE, TN | 12 FEB 94                 | 56                            | 29                         | 51.8     |
| TOTAL                            |                           | 232                           | 154                        | 66.4     |

## NMCB 24 DEMOGRAPHICS -1

|                | ASHEVILLE<br>(N=62) |    | COLUMBUS<br>(N=40) |    | ATLANTA<br>(N=23) |    | KNOXVILLE<br>(N=29) |     | COMBINED<br>(N=154) |    |
|----------------|---------------------|----|--------------------|----|-------------------|----|---------------------|-----|---------------------|----|
|                | NO.                 | %  | NO.                | %  | NO.               | %  | NO.                 | %   | NO.                 | %  |
| AGE (MEAN)     |                     |    |                    |    |                   |    |                     |     |                     |    |
|                | 41.7                |    | 40.7               |    | 37.5              |    | 38.4                |     | 40.2                |    |
| RACE           |                     |    |                    |    |                   |    |                     |     |                     |    |
| WHITE          | 61                  | 98 | 37                 | 93 | 18                | 78 | 29                  | 100 | 145                 | 94 |
| BLACK          | 1                   | 2  | 3                  | 7  | 4                 | 18 | 0                   | 0   | 8                   | 5  |
| OTHER          | 0                   | 0  | 0                  | 0  | 1                 | 4  | 0                   | 0   | 1                   | <1 |
| MARITAL STATUS |                     |    |                    |    |                   |    |                     |     |                     |    |
| MARRIED        | 49                  | 79 | 34                 | 85 | 19                | 83 | 21                  | 72  | 123                 | 80 |
| DIVORCED       | 8                   | 13 | 4                  | 10 | 1                 | 4  | 3                   | 10  | 16                  | 10 |
| SINGLE         | 5                   | 8  | 2                  | 5  | 3                 | 13 | 5                   | 17  | 15                  | 10 |

## NMCB 24 DEMOGRAPHICS - 2

|           | ASHEVILLE |    | COLUMBUS |    | ATLANTA |    | KNOXVILLE |    | COMBINED |    |
|-----------|-----------|----|----------|----|---------|----|-----------|----|----------|----|
|           | (N=62)    |    | (N=40)   |    | (N=23)  |    | (N=29)    |    | (N=154)  |    |
|           | NO.       | %  | NO.      | %  | NO.     | %  | NO.       | %  | NO.      | %  |
| PAY GRADE |           |    |          |    |         |    |           |    |          |    |
| E1-E3     | 4         | 6  | 3        | 8  | 4       | 17 | 1         | 3  | 12       | 8  |
| E4-E6     | 56        | 90 | 33       | 83 | 11      | 48 | 25        | 86 | 125      | 81 |
| E7-E9     | 1         | 2  | 3        | 8  | 3       | 13 | 2         | 7  | 9        | 6  |
| OFFICERS  | 1         | 2  | 1        | 3  | 5       | 22 | 1         | 3  | 8        | 5  |

ALL ARE MALE

DAYS OF WORK LOST  
IN LAST 12 MONTHS - 1  
NMCB 24

|           | <u>TOTAL</u> | <u>RANGE</u> | <u>MEAN</u> | <u>MEDIAN</u> |
|-----------|--------------|--------------|-------------|---------------|
| ASHEVILLE | 1891         | 1-365        | 30.5        | 6             |
| COLUMBUS  | 722          | 2-270        | 18.1        | 6             |
| ATLANTA   | 83           | 1-30         | 3.6         | 5             |
| KNOXVILLE | 161          | 2-90         | 5.6         | 6             |
| TOTAL     | 2857         | 1-365        | 18.6        | 6             |

DAYS OF WORK LOST  
IN LAST 12 MONTHS - 2  
NMCB 24

|           | NONE |      | 1-10 |      | 11-30 |      | >30 |     |
|-----------|------|------|------|------|-------|------|-----|-----|
|           | NO.  | %    | NO.  | %    | NO.   | %    | NO. | %   |
| ASHEVILLE | 35   | 56.5 | 15   | 24.2 | 6     | 9.7  | 6   | 9.7 |
| COLUMBUS  | 15   | 56.5 | 19   | 47.5 | 4     | 10.0 | 2   | 5.0 |
| ATLANTA   | 11   | 47.8 | 10   | 43.5 | 2     | 8.7  | 0   | 0.0 |
| KNOXVILLE | 17   | 58.6 | 10   | 34.5 | 1     | 3.4  | 1   | 3.4 |
| TOTAL     | 78   | 50.6 | 54   | 35.1 | 13    | 8.4  | 9   | 5.8 |

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NUMBER OF SYMPTOMS  
NMCB 24

|           | <u>RANGE</u> | <u>MEAN</u> | <u>MEDIAN</u> |
|-----------|--------------|-------------|---------------|
| ASHEVILLE | 1-17         | 9.1         | 9.0           |
| COLUMBUS  | 1-20         | 9.9         | 11.5          |
| ATLANTA   | 1-17         | 8.3         | 7.0           |
| KNOXVILLE | 1-15         | 5.9         | 7.0           |
| TOTAL     | 1-20         | 8.6         | 9.0           |

NUMBER OF SYMPTOMS  
NMCB 24 COMBINED DETACHMENTS  
(N=154 RESERVISTS)

|           | NONE |      | 1-5 |      | 6-10 |      | >10 |      |
|-----------|------|------|-----|------|------|------|-----|------|
|           | NO.  | %    | NO. | %    | NO.  | %    | NO. | %    |
| ASHEVILLE | 1    | 1.6  | 17  | 27.4 | 18   | 29.0 | 26  | 41.9 |
| COLUMBUS  | 2    | 5.0  | 9   | 22.5 | 8    | 20.0 | 21  | 52.5 |
| ATLANTA   | 1    | 4.3  | 9   | 39.1 | 6    | 26.1 | 7   | 30.4 |
| KNOXVILLE | 7    | 24.1 | 9   | 31.0 | 5    | 17.2 | 8   | 27.6 |
| TOTAL     | 11   | 7.1  | 44  | 28.6 | 37   | 24.0 | 62  | 40.3 |

**TEN MOST COMMON SYMPTOMS  
NMCB 24 COMBINED DETACHMENTS  
(N=154 RESERVISTS)**

| SYMPTOM               | NO. | %    | CHANGE IN PAST YEAR (%) |      |        |      |
|-----------------------|-----|------|-------------------------|------|--------|------|
|                       |     |      | WORSE                   | SAME | BETTER | GONE |
| 1. FATIGUE            | 112 | 72.7 | 33.9                    | 48.2 | 14.3   | 3.6  |
| 2. JOINT/MUSCLE PAINS | 108 | 70.1 | 38.0                    | 42.6 | 12.0   | 7.4  |
| 3. CONFUSION          | 90  | 58.4 | 33.3                    | 52.2 | 11.1   | 3.3  |
| 4. HEADACHE*          | 90  | 58.4 | 30.0                    | 50.0 | 14.4   | 4.4  |
| 5. IRRITABILITY       | 90  | 58.4 | 23.3                    | 47.8 | 18.9   | 10.0 |
| 6. RASH               | 82  | 53.2 | 18.3                    | 43.9 | 20.7   | 17.1 |
| 7. INSOMNIA           | 78  | 50.6 | 26.9                    | 44.9 | 15.4   | 12.8 |
| 8. WEAKNESS           | 78  | 50.6 | 34.6                    | 50.0 | 9.0    | 6.4  |
| 9. DIARRHEA           | 72  | 46.8 | 6.9                     | 44.4 | 26.4   | 22.2 |
| 10. LOSS OF INTEREST  | 64  | 41.6 | 34.4                    | 51.6 | 9.4    | 4.7  |

\* CHANGE IN PAST YEAR - 1 UNKNOWN

SECOND TEN MOST COMMON SYMPTOMS  
NMCB 24 COMBINED DETACHMENTS  
(N=154 RESERVISTS)

| SYMPTOM                  | NO. % |      | CHANGE IN PAST YEAR (%) |      |        |      |
|--------------------------|-------|------|-------------------------|------|--------|------|
|                          |       |      | WORSE                   | SAME | BETTER | GONE |
| 11. DEPRESSION           | 63    | 40.9 | 23.8                    | 38.1 | 23.8   | 14.3 |
| 12. SORE THROAT          | 55    | 35.7 | 13.0                    | 48.1 | 18.5   | 20.4 |
| 13. ANXIETY              | 54    | 35.1 | 20.4                    | 51.9 | 18.5   | 9.3  |
| 14. MARITAL STRESS       | 50    | 32.5 | 14.0                    | 42.0 | 24.0   | 20.0 |
| 15. SHORTNESS OF BREATH* | 37    | 24.0 | 30.3                    | 60.6 | 6.0    | 3.0  |
| 16. LOSS OF APPETITE     | 26    | 16.9 | 11.5                    | 46.2 | 19.2   | 23.1 |
| 17. CHEST PAIN**         | 20    | 13.0 | 16.7                    | 66.7 | 11.1   | 5.6  |
| 18. SWOLLEN GLANDS       | 19    | 12.3 | 31.6                    | 57.9 | 5.3    | 5.3  |
| 19. HAIR LOSS            | 18    | 11.7 | 38.9                    | 55.6 | 0.0    | 5.6  |
| 20. NIGHT SWEATS         | 16    | 10.4 | 25.0                    | 50.0 | 25.0   | 0.0  |

\*CHANGE IN PAST YEAR - 4 UNKNOWN

\*\*CHANGE IN PAST YEAR - 1 UNKNOWN

VERIFIED DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS  
(N=154 RESERVISTS)

|           | NUMBER OF DIAGNOSES PER VETERAN |      |     |      |     |      |        |     |
|-----------|---------------------------------|------|-----|------|-----|------|--------|-----|
|           | NONE                            |      | ONE |      | TWO |      | ≥THREE |     |
|           | NO.                             | %    | NO. | %    | NO. | %    | NO.    | %   |
| ASHEVILLE | 41                              | 66.1 | 13  | 21.0 | 5   | 8.1  | 3      | 4.8 |
| COLUMBUS  | 25                              | 62.5 | 10  | 25.0 | 4   | 10.0 | 2      | 5.0 |
| ATLANTA   | 13                              | 56.5 | 7   | 30.4 | 2   | 8.7  | 1      | 4.3 |
| KNOXVILLE | 16                              | 55.2 | 6   | 20.7 | 6   | 20.7 | 1      | 3.4 |
| TOTAL     | 95                              | 61.7 | 36  | 23.4 | 17  | 11.0 | 6      | 3.8 |

CATEGORIES OF DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS  
(N=154 RESERVISTS)

| <u>DIAGNOSES</u> | <u>NUMBER OF<br/>DIAGNOSES</u> | <u>NUMBER OF<br/>RESERVISTS<br/>WITH DIAGNOSIS</u> | <u>% OF<br/>RESERVISTS<br/>WITH DIAGNOSIS</u> |
|------------------|--------------------------------|----------------------------------------------------|-----------------------------------------------|
| CANCER           | 2                              | 2                                                  | 1.3                                           |
| CARDIOVASCULAR   | 7                              | 6                                                  | 3.9                                           |
| DERMATOLOGICAL   | 4                              | 4                                                  | 2.6                                           |
| EENT             | 11                             | 11                                                 | 7.1                                           |
| ENDOCRINE        | 3                              | 3                                                  | 1.9                                           |
| GASTROINTESTINAL | 20                             | 15                                                 | 9.7                                           |
| GENITOURINARY    | 6                              | 6                                                  | 3.9                                           |
| MUSCULOSKELETAL  | 16                             | 15                                                 | 9.7                                           |
| PSYCHIATRIC      | 14                             | 12                                                 | 7.8                                           |
| PULMONARY        | 5                              | 5                                                  | 3.2                                           |
| OTHER            | 4                              | 4                                                  | 2.6                                           |

INDIVIDUAL DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS - 1  
(N=154 RESERVISTS)

- CANCER

- 1 LYMPHOMA (NON-HODGKINS)
- 1 PROSTATE

- CARDIOVASCULAR

- 1 CORONARY ARTERY DISEASE WITH ANGIOPLASTY
- 1 VALVULAR HEART DISEASE WITH HEART VALVE REPLACEMENT
- 3 HYPERTENSION
- 1 MITRAL VALVE PROLAPSE
- 1 MYOCARDIAL INFARCTION

- DERMATOLOGICAL

- 1 CHRONIC DERMATITIS
- 1 HERPES SIMPLEX
- 1 ONYCHOMYCOSIS
- 1 PSORIASIS

INDIVIDUAL DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS - 2  
(N=154 RESERVISTS)

- EENT

- 1 CHRONIC HOARSENESS
- 1 HEARING LOSS
- 1 PERFORATION OF EARDRUM
- 1 RHINITIS
- 6 SINUS INFECTION (1 WITH SINUS SURGERY)
- 1 THRUSH

- ENDOCRINE

- 1 DIABETES (NON-INSULIN DEPENDENT)
- 2 HYPERTHYROIDISM

INDIVIDUAL DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS - 3  
(N=154 RESERVISTS)

-GASTROINTESTINAL

- 1 APPENDICITIS
- 1 CHOLELITHIASIS
- 3 COLONIC POLYP
- 1 CHRONIC DIARRHEA
- 1 DIVERTICULITIS
- 1 DIVERTICULOSIS
- 1 DUODENITIS
- 1 DYSPEPSIA
- 1 ESOPHAGEAL CANDIDIASIS
- 1 PEPTIC ULCER DISEASE (SITE UNSPECIFIED)
- 1 GASTRIC ULCERS
- 1 GASTROENTERITIS
- 3 GASTROESOPHAGEAL REFLUX (1 WITH NISSAN FUNDOPLASTY)
- 1 HEMORRHOIDS
- 1 HEPATITIS A
- 1 IRRITABLE BOWEL SYNDROME

INDIVIDUAL DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS - 4  
(N=154 RESERVISTS)

- GENITOURINARY

- 1 FOCAL GLOMERULOSCLEROSIS
- 1 KIDNEY STONE
- 1 MICROHEMATURIA
- 3 PROSTATE INFECTION

- MUSCULOSKELETAL

- 1 TRAUMATIC AMPUTATION OF TWO FINGERS
- 1 ANKLE SYNOVITIS
- 2 ARTHRITIS (1 WITH LEFT ANKLE SURGERY)
- 5 BACK PAIN/INJURY
- 1 COCCYDYNIA
- 2 KNEE INJURY
- 1 MUSCLE STRAIN OF THIGH
- 1 POLYMYOSITIS (BIOPSY DIAGNOSIS)
- 1 SHOULDER INJURY
- 1 TENDONITIS

INDIVIDUAL DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS - 5  
(N=154 RESERVISTS)

- PSYCHIATRIC

- 2 ACUTE ADJUSTMENT REACTIONS
- 3 ADJUSTMENT DISORDERS
- 4 DEPRESSIVE DISORDERS
- 1 DYSTHYMIA
- 3 POST-TRAUMATIC STRESS DISORDER
- 1 SLEEP DISTURBANCE

- PULMONARY

- 1 ASTHMA
- 3 BRONCHITIS
- 1 PNEUMONIA

- OTHER

- 1 ANEMIA
  - 1 CHRONIC FATIGUE SYNDROME
  - 1 HYPERLIPIDEMIA
  - 1 RECEDING GUMS
-

INDIVIDUAL DIAGNOSES  
NMCB 24 COMBINED DETACHMENTS - 6  
(N=154 RESERVISTS)

- PERSIAN GULF SYNDROME

3 DIAGNOSES MADE ON THE BASIS OF UNKNOWN CRITERIA

- DEATHS\*

1 MOTOR VEHICLE ACCIDENT (VEHICLE BROADSIDED AT INTERSECTION)

1 SUDDEN DEATH IN RETIREE

\* NOT INCLUDED IN SURVEY

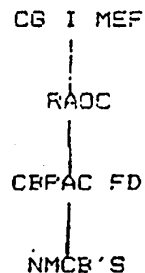
## **NMCB 24 DETACHMENTS - CONCLUSIONS**

- o HIGHLY SYMPTOMATIC GROUP - 9 SYMPTOMS PER RESERVIST
  - MOST SYMPTOMS UNCHANGED / WORSE IN PAST YEAR
  - UP TO 35 % OF SYMPTOMS BETTER / GONE IN PAST YEAR
- o SYMPTOMS NOT SUGGEST A PATTERN OR PARTICULAR ILLNESS
- o SYMPTOMS NOT SUFFICIENTLY SEVERE TO PREVENT WORK
  - 86 % OF RESERVISTS LOST < 11 WORK DAYS
  - NO INFORMATION AS TO AVAILABILITY OF "SICK LEAVE"
- o TYPE & FREQUENCY OF MEDICAL DIAGNOSES APPEAR NORMAL
- o POST-TRAUMATIC STRESS DISORDER RARELY SEEN

# CAMP 13 C.B.R.

NMCR-24  
005/11

## I CBR Chain of Command:



## II CBR Threat

|                      |            | <u>Range</u> |
|----------------------|------------|--------------|
| 1) Missile attack => | SCUDD B    | 300 KM       |
|                      | Al Hussein | 600 KM       |
|                      | Al Abbass  | 735 KM       |

All can deliver standard nerve and blister agent

Usually deliver high explosive with chemical so we need to treat an attack as a CBR attack until we determine otherwise *(full threat)*

## III Protective Gear

### 1) Mark III protective suit

- (a) good for 30 days once taken out of the original package but only if once taken out of original package suit is put in another plastic bag and sealed
- (b) once the suits are in contact with the ambient, non contaminated air, a 140 hour clock begins. The clock starts when the suit is placed in a plastic bag and sealed.
- (b) good for 6 hrs in a chemical environment
- (c) not 100% effective against dusty agent => due to small particle size

End (2)

(d) use of poncho and rubber hood is expected to increase survival odds to near 100%

\*\* - wearing of MOFP gear drastically increases the physical stress your body due to heat retention. *50 min. rest for every 10 min. work if 290°*

2) MCU-2/P Gas Mask

(a) canister is good for 6 months once opened

(b) good for 6 hours in a chemical environment

\* (c) mask should be cleaned regularly (mask wash station located in your main office building next to engineering)

3) NAAP kit - nerve agent antidote pills

(a) best if taken 8 hours before contact with nerve agent

(b) currently kept by med department

4) NAAK kit - nerve agent antidote kit

(a) Atropine, 2-PAM Chloride

(b) *3* kits should be issued per man *3 of each*

5) Diazepam - (valium) auto injector

(a) reduces the severity of seizures brought on by nerve agent which decreases the chances of brain damage

6) Items to be carried by each person at all times

(a) gas mask

(b) poncho

(c) weapons and ammo

\* (d) canteen with CBR cap

7) Items to be stored in the "Air Raid Pack"

(a) 2 sets of MOFP suits

(b) 1 pair of boots and gloves

*Put items  
in plastic bag  
inside pack*

- (c) 1 set greens (with underclothes)
- (d) 1 extra canister
- (e) 1 full canteen w/CBR cap (change water every 3 days)
- (f) first aid kit and E tool
- (g) flak jacket and helmet

**\*\*** - "Air Raid Pack" is carried with you whenever you leave the car

8) M-12 equipment decon unit is trailer mounted and ready to operate

9) Personnel decon supplies are all stored in an ISO container and the container is placed on a trailer

10) A few day supply of food and water are also stored in an ISO container and mounted on a trailer

#### IV Camp CBR Plan

1) 4 MOFF levels

- (a) MOFF 0 - always in this level => have all gear ready to
- (b) MOFF 0+ - have 1 full set of MOFF gear in hand at all times
- (c) MOFF 2 - boots, pants, smock worn, rest of gear carried
- (d) MOFF 4 - all gear worn including grey rubber hood and poncho

2) General Quarters => passed over PA system *by voice*

- (a) all personnel at MOFF 0+ and at their GQ stations with their air raid pack
- (b) wait at GQ for further instructions

3) MOFF Level 2 => passed over PA and landline

4) MOFF Level 4 => sound alarm over PA system and pass over landline

*MB*

5) If camp is contaminated by semi or persistent agent, we must evacuate the camp in order to do proper decon

(a) have a convoy plan with 3 possible convoy routes

(b) even if tasked with work by the marines we still must  
up a decon line in a clean area in order provide  
replacement for our troops

One thing not mentioned yet in this brief is biological munitions. Current there is not much we can do about biological agents. We have no means for detecting these agents. They are usually short lived and can on incapacitate or eliminate troops in a relatively small area.

# **GENERAL QUARTERS STATIONS**



**COC WATCH 1A REPORT TO COC**



**CBR STAFF REPORT TO COC**



**MEDICAL ASSISTANCE TEAM, STRETCHER BEARERS**

**MEDICAL STAFF REPORT TO MASS CASUALTY AREA BUNKER**



**ARMORY PERSONNEL REPORT TO ARMORY BUNKER**



**SECURITY REPORT TO THEIR POSTS**



**COMPANY COMMANDERS MAN THEIR CP BUNKERS**



**COMPANY MESSENGERS REPORT TO COC**



**ALL OTHER PERSONNEL REPORT TO TENT BUNKERS**

| LEVEL          | AVAILABLE     | CARRIED                                             | WORN                                                |
|----------------|---------------|-----------------------------------------------------|-----------------------------------------------------|
| 0              | AIR RAID PACK | GAS MASK/PONCHO                                     | _____                                               |
| 0 <sup>+</sup> | _____         | SMOCK/PANTS/BOOTS<br>GLOVES/GAS MASK<br>HOOD/PONCHO | _____                                               |
| 2              | _____         | AIR RAID PACK<br>GAS MASK/PONCHO                    | SMOCK/PANTS/BOOTS                                   |
| 4              | _____         | AIR RAID PACK                                       | SMOCK/PANTS/BOOTS<br>GLOVES/GAS MASK<br>HOOD/PONCHO |