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Medical Capabilities Study Republic of Iraq ~~(C)~~

A Defense S&T Intelligence Study

Defense Intelligence Agency

Armed Forces Medical Intelligence Center

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Medical Capabilities Study
Republic of Iraq (U)

A Defense S&T Intelligence Study

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PREFACE

(S) This Medical Capabilities Study was prepared to respond to the medical intelligence requirements of operational forces, medical planners, and policymakers for Operation Desert Shield/Desert Storm. This study includes subjects of highest interest for medical planning and operations and omits many topics normally included in Medical Capabilities studies. A complete Medical Capabilities study on the Republic of Iraq will be issued in accordance with the DIA Scientific and Technical Intelligence Production Schedule. This study has been reviewed by the AFMIC surgeon.

(U) Each classified paragraph, caption, and title in this report has been properly marked; those unmarked are unclassified.

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(U) Request any amplification of subject matter, constructive criticism, comments, or suggested changes be forwarded to the Defense Intelligence Agency, (ATTN: DT-5C), Washington, DC 20340-6053 and to the Director, Armed Forces Medical Intelligence Center, Fort Detrick, Frederick, MD 21702-5004.

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KEY JUDGMENTS

Medical Capabilities Study - Republic of Iraq (U)

(U) The topography of Iraq is characterized by broad plains covering about 90 percent of the country, rugged highlands in the northeast, and numerous lakes and marshlands along the Tigris and Euphrates Rivers. The wet areas provide ideal habitats for many disease vectors and are a considerable obstacle to vehicular movement, thus complicating the provision of medical care. Large areas of the marshlands are only accessible by boat.

(U) The climate generally is hot and dry throughout the summer with wet, mild to cool winters. Mean annual rainfall is 10 to 17 centimeters. Mean daily temperatures range from about 38 to 43°C in summer and from 13 to 24°C in winter. Dust storms and sandstorms occur occasionally and may promote or aggravate respiratory and ophthalmic ailments.

(C) The standard of living in Iraq is among the lowest in the Middle East. Migration to urban areas has taxed medical facilities and utilities. More than one-half of the population of Iraq receives water from open, polluted water sources. Water in Baghdad is treated, but pollution occurs during distribution; therefore, water should be treated prior to consumption. Government inspection and sanitary standards for food are lax.

(C) Diseases with the highest short-term (less than 15 days) impact on military operations include diarrheal diseases, enteric protozoal diseases, sandfly fever, typhoid and paratyphoid fevers, malaria, meningococcal meningitis, arboviral fevers, sexually transmitted diseases (STDs), acute respiratory infections, and cholera. Diseases with incubation periods generally longer than 15 days include viral hepatitis, leishmaniasis, and schistosomiasis. Other diseases endemic to the indigenous population include zoonoses, vectorborne diseases, and other infectious diseases (trachoma, intestinal helminthic infections, and tuberculosis). Among the indigenous population, malnutrition is a major problem, especially among children.

(S) The Iraqi civilian health care infrastructure is incapable of meeting the country's medical needs, especially in rural areas. The war with Iran damaged the health care infrastructure but improved medical skills and emergency response capabilities. Medical supplies are scarce and the quality of civilian medical personnel ranges from poor to good.

(C/~~AWN~~) The Iraqi military medical system suffers from personnel and materiel shortages. Medical personnel qualifications are fair. Nursing care is poor. There are inadequate amounts of blood and blood plasma.

(b)(1),1.4 (c) ~~(C/AWN)~~ Iraq has a civilian hospital bed-to-population ratio of about 1:600. The best civilian hospital is Saddam Hussein Medical City in Baghdad. [redacted]

(S/~~AWN~~) Iraq has an offensive chemical and biological warfare (CBW) capability, but has little CBW medical defensive capability.

(U) In addition to the key judgments provided above, the following summarizes key medical intelligence as of mid-January 1991 in support of Desert Shield/Desert Storm operations:

(S/~~WN~~/NC) Iraqi forces in the Kuwaiti theater of operations are experiencing significant medical problems (diarrhea, skin disease, heat stroke, malnutrition, and dehydration) as the result of poorly distributed and supported forward medical assets, inadequate rations of food and water, and deplorable sanitary conditions.

(S) Iraq's health care infrastructure and lines of communication remained essentially intact throughout the country's 8-year war with Iran. Appreciable damage or loss to either of these entities would have a devastating impact on Iraq's capability to medically support large numbers of casualties in the event of sustained combat.

(S/WN) Iraq has greatly improved the road network of Kuwait and southern Iraq. This improvement, which includes reinforcement and/or new construction of over 550 kilometers of road, allows greater mobility and flexibility to the Iraqi military units. Iraq's upgrading of earth tracks in Kuwait with bituminous treatment can be expected to enhance ground evacuation capabilities.

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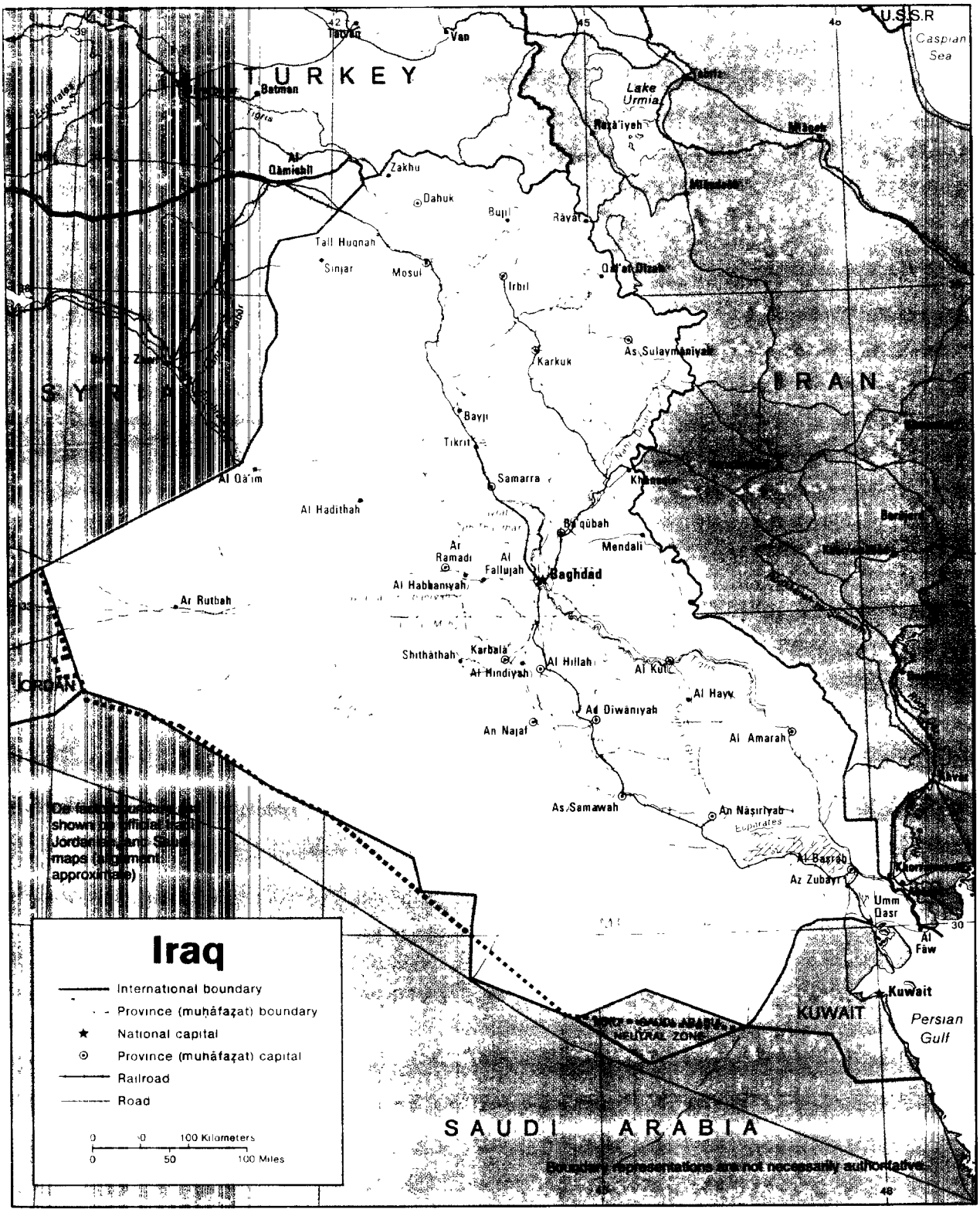

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GEOGRAPHICAL NAMES AND COORDINATES

Ad Diwaniyah	31-59N 44-56E
Al Amarah	31-50N 47-09E
Al Basrah (Basra)	30-30N 47-47E
Al Habbaniyah	33-23N 43-34E
Al Hillah	32-29N 44-25E
Al Khalis	33-49N 44-32E
Al Kufah	33-02N 44-24E
Al Kut	32-30N 45-50E
Al Mansuriyah	34-02N 45-00E
Al Musayyib	32-47N 44-18E
Al Yusufiyah	33-05N 44-15E
An Najaf	31-59N 44-20E
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Diwaniyah	33-00N 44-35E
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Irbil	36-11N 44-01E
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Karbala	32-36N 44-02E
Kirkuk	35-28N 44-23E
Khanaqin	34-21N 45-22E
Maydan	35-54N 45-02E
Mosul	36-20N 43-08E
Muaskar ar-Rashid	33-17N 44-28E
Ninawa (Nineveh)	36-22N 43-09E
Ras al Khaymah (UAE)	25-47N 55-57E
Rawandoz	36-37N 44-31E
Salman Pak	33-06N 44-35E
Samarra	34-12N 43-52E
Shamiyah	32-48N 45-01E
Taji	33-28N 44-15E
Tikrit	34-36N 43-42E
Tuwaitha	33-12N 44-31E
Umm Qasr	30-01N 47-58E

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SECTION I

Environmental Health Factors

Topography

(U) The terrain in the Republic of Iraq consists primarily of broad plains (covering about 90 percent of the country), a small area of rugged highlands in the northeast, and numerous lakes and marshes along the Tigris and Euphrates Rivers (primarily from Baghdad to the Persian Gulf). The marshlands and low areas along the rivers are subject to seasonal flooding and provide breeding sites for various disease vectors, including mosquitoes and the snail hosts of schistosomiasis. Contamination of water supplies by flooding increases the spread of waterborne diseases. The southwestern and southern part of the country are desert areas. The northeastern highlands near the borders with Turkey and Iran range from hills to barren serrated mountain summits rising more than 3,650 meters in elevation. In most areas, helicopters would be required for patient evacuation. Damaging earthquakes occur in the northeastern two-thirds of the country, but they are not common. Minor seismic activity is more common; damage to medical facilities could result from landslides in the northeastern highlands.

Climate

(U) Iraq has very dry, extremely hot, nearly cloudless summers (May through October) and mild to cool, moderately cloudy winters (December through March). About 65 percent of the annual precipitation occurs in winter. Temperatures as high as 49°C and as low as -11°C have been recorded (Table I). The hot, dry climate contributes to heat injuries. During winter, freezing temperatures occur in the northeastern highlands. Occasional dust storms and sandstorms, which occur more frequently in summer, increase the incidence of respiratory and ophthalmic diseases. Dust and sand penetrate equipment, and can render it inoperable in a short time. The "shamal," a strong, hot, persistent northwest wind, occurs most often in summer and frequently is accompanied by dust storms, especially in the southern part of the country. Dust storms would hamper air support for medical evacuation missions.

Cultural Factors

(U) The standard of living in Iraq is among the lowest in the Middle East. The movement of large numbers of rural migrants to the cities has overtaxed available housing, increased the number of slum areas, placed further demands on already inadequate medical facilities, and overburdened available health care personnel. Huts, constructed on vacant lots by the migrants, house an average of six persons in a single room. Lacking sufficient water, sewage disposal, and sanitary facilities, such quarters represent a major health hazard for the inhabitants and the community alike. These overcrowded and unsanitary living conditions significantly contribute to the transmission of communicable diseases.

Table I
(U) Climatic Data
Baghdad

TEMPERATURE	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean daily maximum (°C)	15	18	23	28	34	40	43	43	39	33	24	17
Mean daily minimum (°C)	3	6	9	14	20	24	27	26	22	17	11	7
PRECIPITATION Mean total (mm)	23	23	23	15	10	<1	<1	<1	<1	3	20	25
FIRST LIGHT	0640	0622	0549	0508	0436	0424	0435	0458	0521	0542	0607	0631
LAST LIGHT	1744	1812	1835	1858	1922	1942	1941	1915	1835	1755	1727	1724

(Mean civil twilight, local standard time)

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(U) Housing in the rural areas consists principally of tents and mud-and-reed huts. Nomads live in tents and are not exposed to the diseases which are widespread in the urban areas; however, their personal hygiene practices are poor, and they rely on tribal remedies for illnesses and injuries. Communal use of eating and drinking utensils is practiced throughout the country, further promoting the spread of gastroenteric diseases. Livestock live with or close to humans, a situation which promotes the transmission of zoonotic diseases.

(U) Iraqis in rural areas traditionally have regarded illness as a manifestation of divine will or as the work of evil spirits. Suffering from illness and injury is endured as an inevitable and normal condition rather than a temporary suspension of good health. Villagers rarely seek medical treatment if they are able to follow a regular daily work routine. Hospitals are regarded as places of suffering and death and are entered only as a last resort. Villagers usually go to a local "holy man," known for his wisdom and piety, or to a bonesetter. Belief in the curative qualities of charms and amulets is nearly universal. Charms and amulets are used to ward off malevolent spirits and provide protection against the "evil eye," believed to be the principal cause of disease. Special therapeutic powers are ascribed to mud and dust gathered from holy places. Mud is caked and applied over wounds; dust scraped from the mud cakes is mixed with water and taken for internal ailments. Cauterization is widely used by traditional practitioners to treat pain, tumors, and sprains, and to stop hemorrhages. A burning rag is used to make small circular or cross-shaped scars on the site of the affliction. The meat of roasted hedgehogs is fed to children to cure their diseases and to expectant mothers to cure ailments accompanying pregnancy. Typhoid and malaria are treated with various herb teas. Water pipes, sometimes containing medicinal herbs, are smoked for treatment of syphilis. Persons bitten by snakes are treated with human or snake saliva mixed with sugar. Measles are treated by wrapping the individual in a loose red gown.

(U) In Iraq, 97 percent of the population is Muslim (60 percent Shia and 37 percent Sunni), and 3 percent is Christian or other religions. There are no religious objections to surgery or the destruction of animal vectors of disease, but there are religious objections to postmortems. The reluctance to donate blood, even to save the life of a relative, is based on superstition rather than religious objection.

Sanitation

Water — (C) More than one-half of the population of Iraq receives its water from rivers, reservoirs, irrigation canals, drainage ditches, and open wells. These sources are polluted by human and animal wastes, washing, bathing, and watering animals. The incidence of some infectious diseases is directly attributable to these unsanitary practices. The remainder of the population is served by piped water systems in urban areas and by itinerant water vendors in small towns and villages. Water carried in tin or skin containers is contaminated by the time it reaches the consumer. Some major waterways, especially the broad, shallow Shatt al Arab (the joining point of the Tigris and Euphrates Rivers), have favorable breeding conditions for the mosquito vectors of malaria. Periodic flooding of rivers contaminates water supplies and causes an increase in the incidence of disease. The use of known poisons and toxins to control fungi on foodstuffs and to control insects in residential areas also contributes to pollution.

(C) The Tigris and Euphrates Rivers and their tributaries serve as water sources for Baghdad and some major provincial towns. Irbil and As Sulaymaniyah, located in the northern mountains, have adequate supplies of spring water. In Al Basrah, Mosul, and Karkuk, the water is stored in elevated tanks and is chemically treated before distribution. In Baghdad the water is filtered, chlorinated, and piped into homes or to communal fountains located throughout the city. Due to widespread contamination during delivery and storage, all water, even treated water, should be considered nonpotable and subject to reliable testing prior to consumption.

(C) Water quality is becoming a severe problem in the Shatt al Arab River, which supplies water to the capital city of Baghdad and the southern city of Al Basrah. Further complicating Iraq's water problems

is Turkey's plan to divert major portions of the Euphrates River at its source in Turkey for a massive hydroelectric and agricultural project.

Food — (U) Sanitary precautions and practices in food storage, handling, and preparation are inadequate. Perishable foods are exposed to sun and insects. Most meat preparation takes place outside of the slaughterhouses, usually in unsanitary surroundings. Night soil is used for fertilizer. Grains often are mixed with dirt, and facilities are not available for cleaning. Failure to clean and unsanitary handling of fruits and vegetables before marketing preclude the safe consumption of these items. Picking, sorting, and packing of dates are carried out without proper sanitary inspection, and dates are not washed to remove insecticides. Fresh fish are displayed for sale in the open, where they are handled by shoppers; stale fish also are sold. Enforcement of sanitary standards is hindered by a shortage of trained inspectors and lack of public concern.

Sewage/Waste Disposal — (S) Modern sewage and waste disposal systems are installed only in Iraq's larger cities. The remainder of the country relies on cesspools, pit privies, septic tanks, and other unsophisticated disposal methods. Cesspools and septic tanks are common in many urban areas, including larger cities. Cesspools and septic tanks are emptied periodically by contractors and their contents are dumped at city outskirts or used as fertilizer. Public buildings have toilet facilities, but the septic tanks which serve them often empty into nearby canals, causing pollution and creating a serious health hazard. A survey conducted in commercial and residential sections of Al Basrah, for example, revealed considerable rodent infestation, caused primarily by the disposal of waste into canals through unscreened pipes. Waste disposal facilities in rural areas are nearly nonexistent. Pit privies are used in some small towns and villages, but their use is not widespread and maintenance is poor. Indiscriminate defecation and dumping of garbage are common practices. Animal dung is a common source of fuel.

Substance Abuse

(S) Hashish (marijuana), heroin, and opium are the principal drugs abused in Iraq. The government considers drug addiction a minor problem because of the small number of addicts in the country. Alcoholism, although not a major problem, occurs. The Medical Center for the Treatment of Alcoholism and Drug Dependence has been established as a unit of the Ibn Rashid Hospital for Psychiatric Medicine. National health regulations allow both voluntary and involuntary admission to this facility as well as to other health care establishments throughout the country that are capable of dealing with alcoholism and drug dependence.

Invertebrates and Vertebrates

(U) Tables II and III list poisonous invertebrates and vertebrates in Iraq.

Table II
(U) Poisonous Invertebrates

Common Name/ Scientific Name	Distribution/Behavior	Medical Importance/ *Antivenin Availability
Centipedes (*Scolopendra* spp.)	Both *S. morsitans* and *S. subspinipes* are found in tropical and subtropical regions. *S. valida* has been specifically reported in the Mediterranean region, north and east Africa, and west Asia and should be expected in Iraq. All are essentially nocturnal, lying concealed during the day in holes in the ground, under stones, bark, logs, and fallen leaves. Their instinct when emerging into daylight is to escape to the dark.	Human deaths after Scolopendra envenomation are rare and the data for fatalities appear weak against exact analysis. Venom generally produces only local effects (burning, swelling, and necrosis) without serious consequences. Greatest threat is to infants and children. *No antivenin is available
Scorpions (*Androctonus australis*)	Found in hill regions and valleys under rocks, stones, loose bark of trees, and around human habitation in gardens, old buildings, garages, cellars, and under houses	*A. australis* is among the most dangerous to man. Its sting produces intense local pain, and significant swelling, but effects are principally systemic; a powerful neurotoxin with convulsant action. Mortality rate is high. *LIPM: "Scorpion" PAST-ALG: "Anti-scorpion"
(*Leiurus quinquestraiatus*)	Reported in Saudi Arabia, Jordan, Syria, and Iraq. Inhabits desert and semidesert regions, burrowing under rocks, stones, etc. Frequents human habitation. Nocturnal hunter. Stings occur more often at night and when the weather is stormy, temperature is elevated, and wind is hot.	Venom is neurotoxic with convulsant action. Venom is devoid of all blood coagulating activity. Effects are principally systemic. Vomiting generally is the first sign that nerve centers have been attacked by the toxin, in such cases, prognosis is poor. Average interval between envenomation and death is 2 to 20 hours. A characteristic of scorpion poisoning is the sudden reappearance of respiratory problems within 12 hours after an apparent recovery with complete disappearance of symptoms. *LIPM: "Scorpion"
Spiders Black widow (*Latrodectus mactans tredecimguttatus*) (*L. pallidus*)	In Iraq, the *Latrodectus* species are found mainly outdoors, unlike species found in North America, which are somewhat urbanized. Webs are found near the ground in wheat fields, corn fields, along borders of trenches, and in hollow trees. These spiders are not aggressive and appear rather sedentary. Females become aggressive when caring for their egg sacs or their young. Most bites occur when man violently interferes with the spider	This spider's venom is neurotoxic in action, affecting chiefly the spinal cord. The bite often is unperceived, and local symptoms are hardly visible. An early pain in the lymph nodes follows after 10 to 60 minutes. The most prominent symptom is intense pain in the lower back, abdomen, and thighs. Profuse sweating, muscle spasms, and salivation are characteristic. Several deaths have been reported

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SOURCES OF ANTIVENIN

LIPM: Lister Institute of Preventive Medicine, Elstree, Herts WD 6 3AX, England
PAST-ALG: Institut Pasteur d'Algerie, rue Docteur Laveran, Algiers, Algeria

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Table III
(U) Poisonous Vertebrates

Common Name/Scientific Name	Specific Information
Saw-scaled viper, carpet viper, Egyptian saw-scale viper (*Echis carinatus*; Figure 1) (*Echis pyramidium*) Subspecies: *Echis pyramidium* (Egypt, western coast of Arabian peninsula) *Echis carinatus sochureki* (Pakistan, Afghanistan, Iran, Central Asia)	***Identification*** — Category I. Average length, 0.4 to 0.6 meters. Head short, distinctly wider neck. Snout is blunt. Body moderately slender to stout, slightly flattened dorso-ventrally. Tail short, rather abruptly tapered, constitutes 8 to 11 percent of total body length. A light, trident or arrow-shaped mark usually seen on top of head, pale stripe from eye to angle of mouth. Dorsal ground color light buff or tan, to olive brown or chestnut, with median row of 28 to 36 whitish spots having dark edges; sides have narrow, undulating, white lines; dorsal portions of loops usually more conspicuous then ventral. Belly white to pale pinkish brown, stippled with dark gray; chin and throat white. ***Distribution/habitat*** — Range extends from West Pakistan through Afghanistan, Iran, Iraq, the Arabian peninsula, into North Africa. Snake is very abundant and inhabits most of desert and dry areas of these countries. Can be found far from any water source. Is found in almost barren rocky and sandy desert, and dry scrub forests, from seacoast to an elevation of about 1,800 meters. ***Behavior*** — Nocturnal during hot dry weather, occasionally diurnal in cool weather. Limited data suggest that most bites occur during day. Snake is arboreal; will climb into bushes to height of 2 meters or more and bask during early morning. During cooler weather suns in the open, but is found more frequently under rocks or in mounds of dead plant stalks. Can bury itself in sand with only head exposed above ground. Is very alert, irritable, and aggressive. Hunts prey almost entirely at night, but may hunt by day in cool weather. Usually tries to escape when encountered, but has been reported to chase victims aggressively. Sometimes moves with sidewinding motion. Assumes defensive figure 8 coil when encountered, rubbing inflated loops of body together to produce a distinctive rasping sound. Has considerable reach for small snake, can strike quickly, repeatedly. ***Risk*** — Venom highly toxic. Snake is involved in many snakebite incidents and fatalities almost everywhere throughout its range; is considered to be most dangerous snake in world because of its venom toxicity and high population densities, often in rural agriculture areas. Also is extremely short-tempered, aggressive, will strike without provocation. ***Clinical symptoms*** — Venom hemorrhagic; contains both coagulant and anticoagulant components. Central nervous system damage may result from hemorrhages. Victims experience local pain and swelling, often associated with local hematoma. In a few cases, necrosis may develop in affected area. Systemic affects include decreased blood pressure; fever; bleeding tendencies from gastrointestinal tract, mucous membranes, venipuncture sites, muscles, subcutaneous tissues; hematuria. ***ANTIVENIN**: Antivenin apparently effective only if prepared from venoms of same geographic taxonomic group. BEHR: "Near and Middle East", "North and West Africa" HAFF: Polyvalent IRAN: Poly-specific, "Echis" antivenin KASA: Polyvalent PAST: "Pasteur Ipser Afrique", "Antirept Pasteur" TASH: "Monovalent (*Echis carinatus*)", "Polyvalent (*Naja* and *Echis carinatus*)" SAIMR: "Echis"

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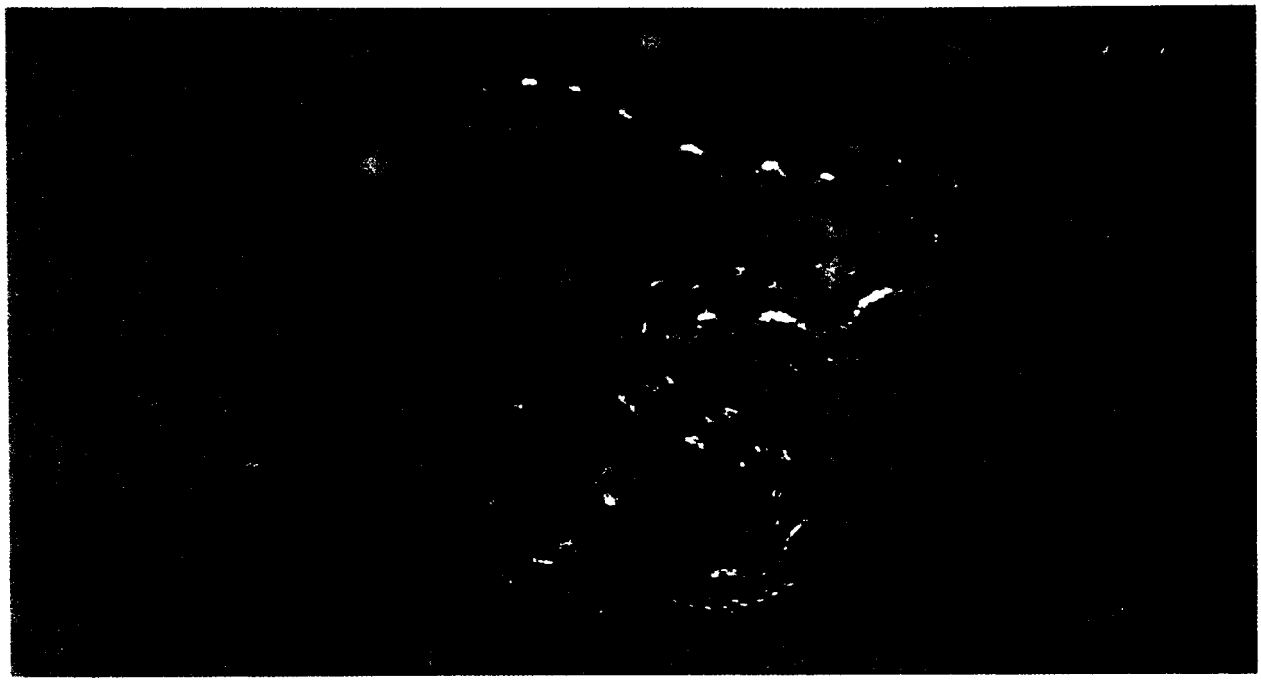

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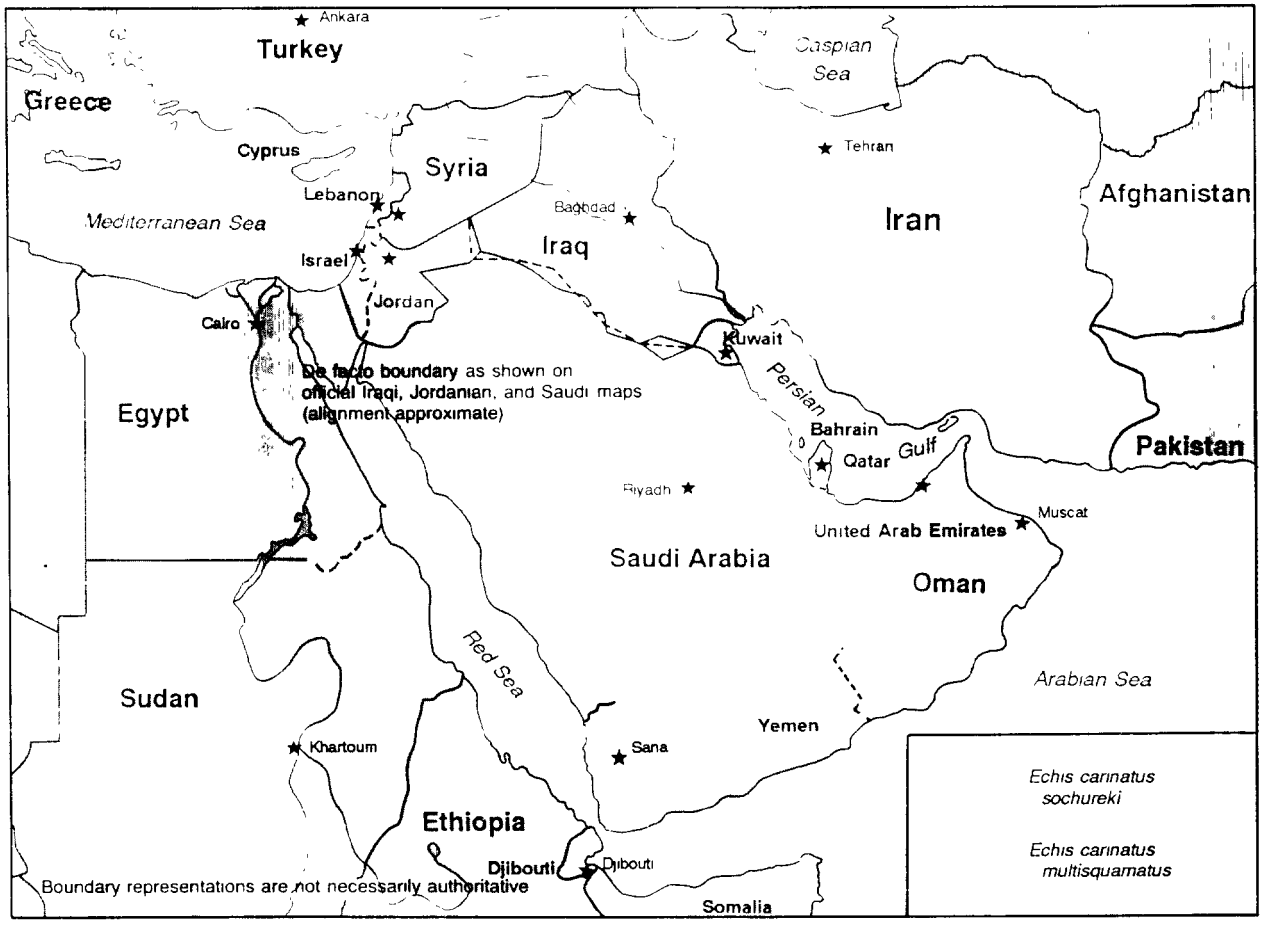

Table III
(U) Poisonous Vertebrates (continued)

Common Name/Scientific Name	Specific Information
Eye-horned viper, Persian desert horned viper, false horned viper, Persian horned viper, Field's horned viper, "shepipon" (Hebrew), horned desert viper, horned snake (*Pseudocerastes persicus*; Figure 2) Subspecies: Two subspecies occur in Southwest Asia. *P.p. persicus*: False horned viper, Persian Desert horned viper, Persian horned viper (Iran) *P.p. fieldi*: Eye-horned viper, false horned viper, Field's horned viper "shepipon", Trans-Jordanian viper (Egypt, Israel, Jordan, Iraq, Saudi Arabia)	***Identification*** — Category II. Average adult length 0.51 to 0.70 meters; maximum length 0.87 meters. Males larger than females. Snake wide relative to its length. Head short, wide, quite distinct from neck. Snout blunt, with small scale-covered horns just above eyes. A dark brown band marks side of head just around eye. Eyes are small to moderate size, pupils are elliptical vertically. Nostrils are located dorsolaterally. Dorsal coloration is pale gray or bluish gray to khaki with gray or brownish gray blotches or crossbands, usually much narrower than the interspace between them. Throat and body sides have alternating faint spots. Ventral side white, tail black, narrow in relation to body. ***Distribution/habitat*** — *Pseudocerastes persicus persicus*: found in southern Afghanistan; in Pakistan, west of the Kirthar and Sulaiman ranges as far north as 32 degrees north; Iran, in the extreme northeast, in the Zagros Mountains in the southwest, in the eastern, central, and southern parts of the country except in the high mountains and the desert regions of Dashte Lut; in the far north. An isolated population occurs in northern Oman and in the United Arab Emirates. *Psuedocerastes persicus fieldi*: found in southwestern Iraq as far north and east as the Euphrates, in Jordan, and in southern Israel. One specimen was found in the Sinai in Egypt. *Pseudocerastes persicus*: found in sandy, rocky terrain up to elevations of approximately 2,000 meters. Has been found at 1,500 meters elevations in Iran and Baluchistan. Found in flat, sandy regions with desert vegetation, in rocky areas in burrows and crevices. In Israel, has been found in Dinona, Sde Boder, Har Hanagev, Michtash, Rimon, central and southern Sinai, and the southern Negev Desert. Its customary habitat is desert bushes. ***Behavior*** — *Psuedocerastes persicus*: nocturnal. Sluggish, placid, less likely to bite during day, dangerously active and aggressive at night. When disturbed, will hiss loudly but is not particularly vicious. Snake's locomotion characteristically sidewinding. Frequently will hide in rodents tunnels and underneath rocks. ***Risk*** — *P.p. fieldi* venom has little or no hemorrhagic activity; *P.p. persicus* venom moderately to highly hemorrhagic. The less hemorrhagic *P.p. fieldi* venom is more toxic. ***Clinical symptoms*** — These two snakes' venoms differ in their effects on victims. *Pseudocerastes persicus fieldi* venom, characterized as neurotoxic, may produce few local symptoms, usually consisting of minor pain, mild tingling of the limb or local area, impaired digital dexterity, stiffness; more serious envenomation causes weakness followed by ptosis. Victim will be conscious but cannot respond. *Pseudocerastes persicus persicus* venom, characterized as hemorrhagic, causes localized, followed by systemic, symptoms. Local symptoms include local pain, hematoma. More severe cases experience severe swelling and ecchymosis. ***ANTIVENIN**: Antivenin for specific subspecies *Pseudocerastes persicus fieldi* must be used. IRAN: "Persica antivenom", Polyspecific *Pseudocerastes persicus* ROGO: May have antivenin for this subspecies

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Species: *Pseudocerastes persicus*

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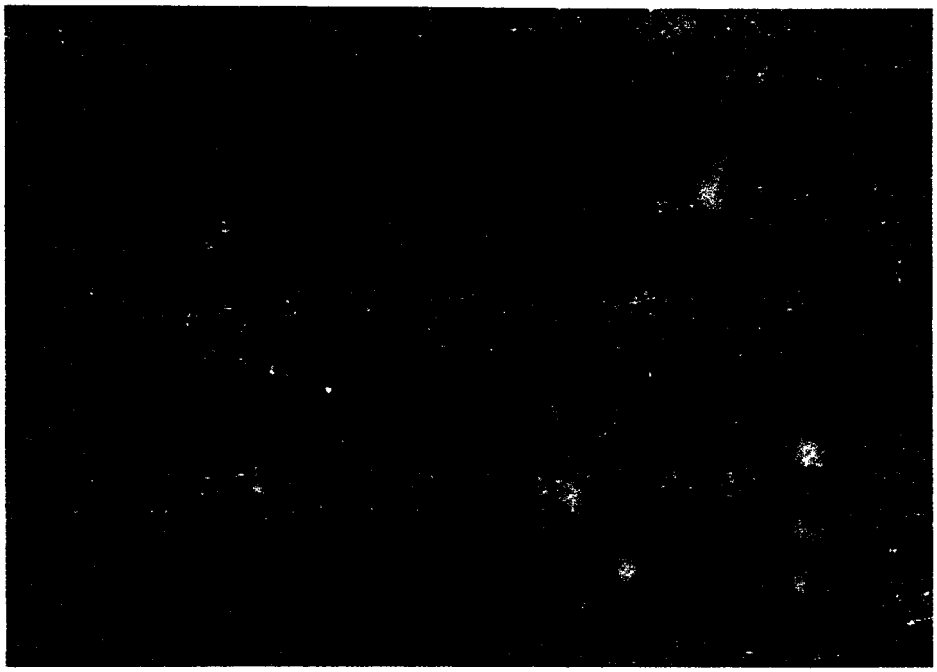

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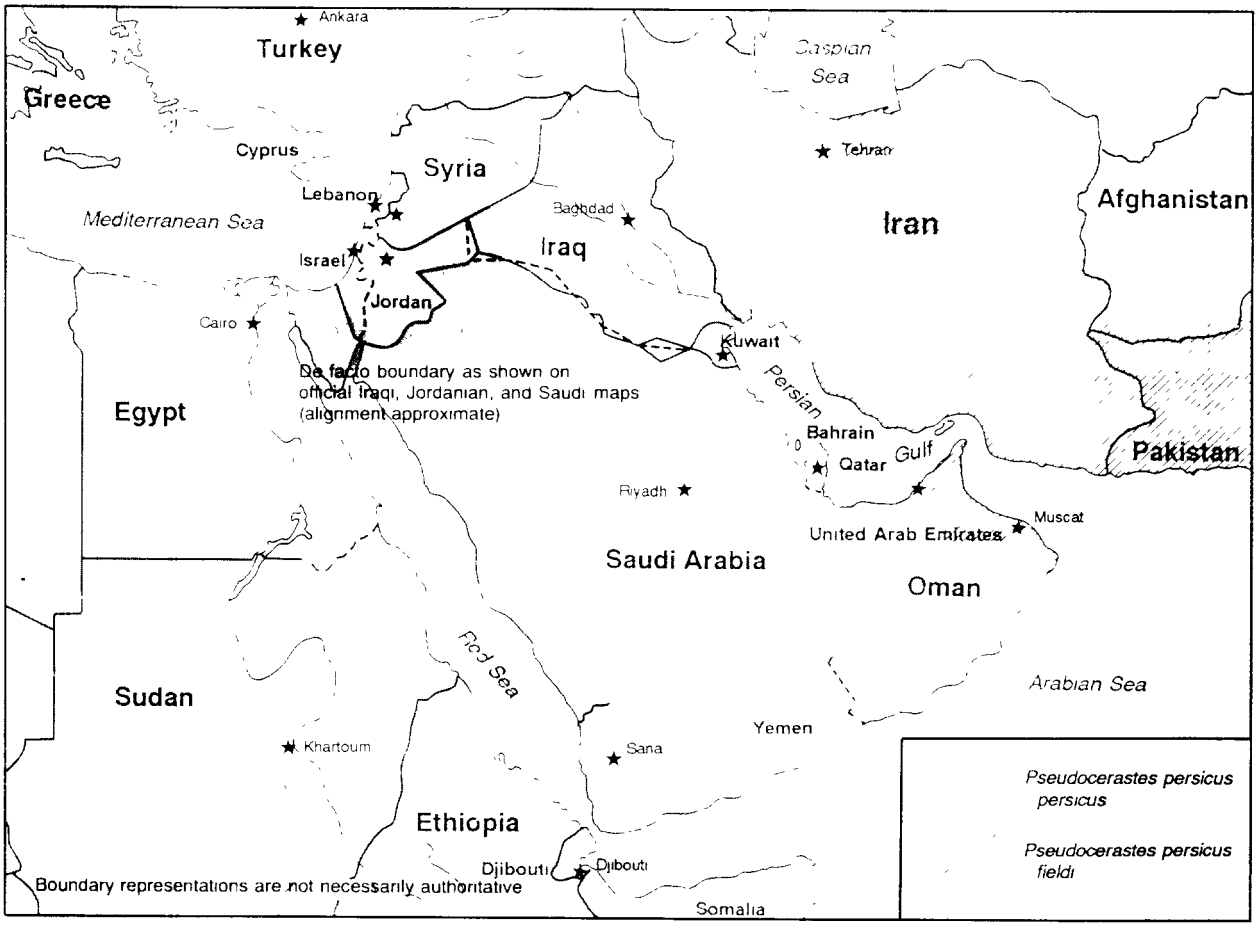

Table III
(U) Poisonous Vertebrates (continued)

Common Name/Scientific Name	Specific Information
Levantine viper, mountain adder, desert adder, blunt-nosed viper or Kufi, Levant viper, Levantine adder, Levative viper, true adder (*Vipera lebetina*; Figure 3) Subspecies: *Vipera lebetina lebetina* (Cyprus) *Vipera lebetina euphratica* (Iraq, Iran) *Vipera lebetina obtusa* (Iran, Pakistan, Afghanistan, Syria, Israel, Lebanon) *Vipera lebetina turanica* (Iran, Afghanistan, Pakistan)	***Identification*** — Category II. Large, up to 1.6 meters long; females larger than males. Has no horn, no shields; fangs very large. Scale pattern consists of rosettes with light centers; intensity of margination may merge into wavy band, lateral spots more distinct than dorsal patterns. Coloration is gray, gray-brown, or yellowish with gray underside in females. Tail pinkish brown, tapers abruptly. ***Distribution/habitat*** — Found throughout most of Asia Minor and east to Pakistan. Found mostly in dry, rocky, mountainous areas between 1,000 and 2,200 meters elevation. ***Behavior*** — Normally placid during day, but quite alert and will strike quickly. Occasionally aggressive at night. Is terrestrial, but can be found in bushes. ***Risk*** — Risk to man high. A dangerous snake of major medical importance. ***Clinical symptoms*** — Venom contains hemorrhagic factors, proteolytic enzymes, L-amino oxidase, phospholipase, coagulation accelerator, coagulation inhibitor. Clinical signs/symptoms include free bleeding from punctures, immediate burning local pain. Swelling occurs promptly around bite site, spreads centrally. Swelling often accompanied by discoloration of skin and ecchymosis. Blood-filled or serum-filled vesicles appear within a few hours. Early systemic symptoms also include weakness, faintness, sweating, thirst, nausea, vomiting, and frequently, diarrhea. Pain along lymphatics, swelling of regional lymph nodes occurs later. ***ANTIVENIN** BEHR: "Europe", "Near & Middle East", "North and West Africa" TASH: Monovalent "*Vipera lebetina*", Polyvalent PAST-ALG: "Antiviperin" IRAN: Monospecific "*Vipera lebetina*" PAST: "Antirept Pasteur"

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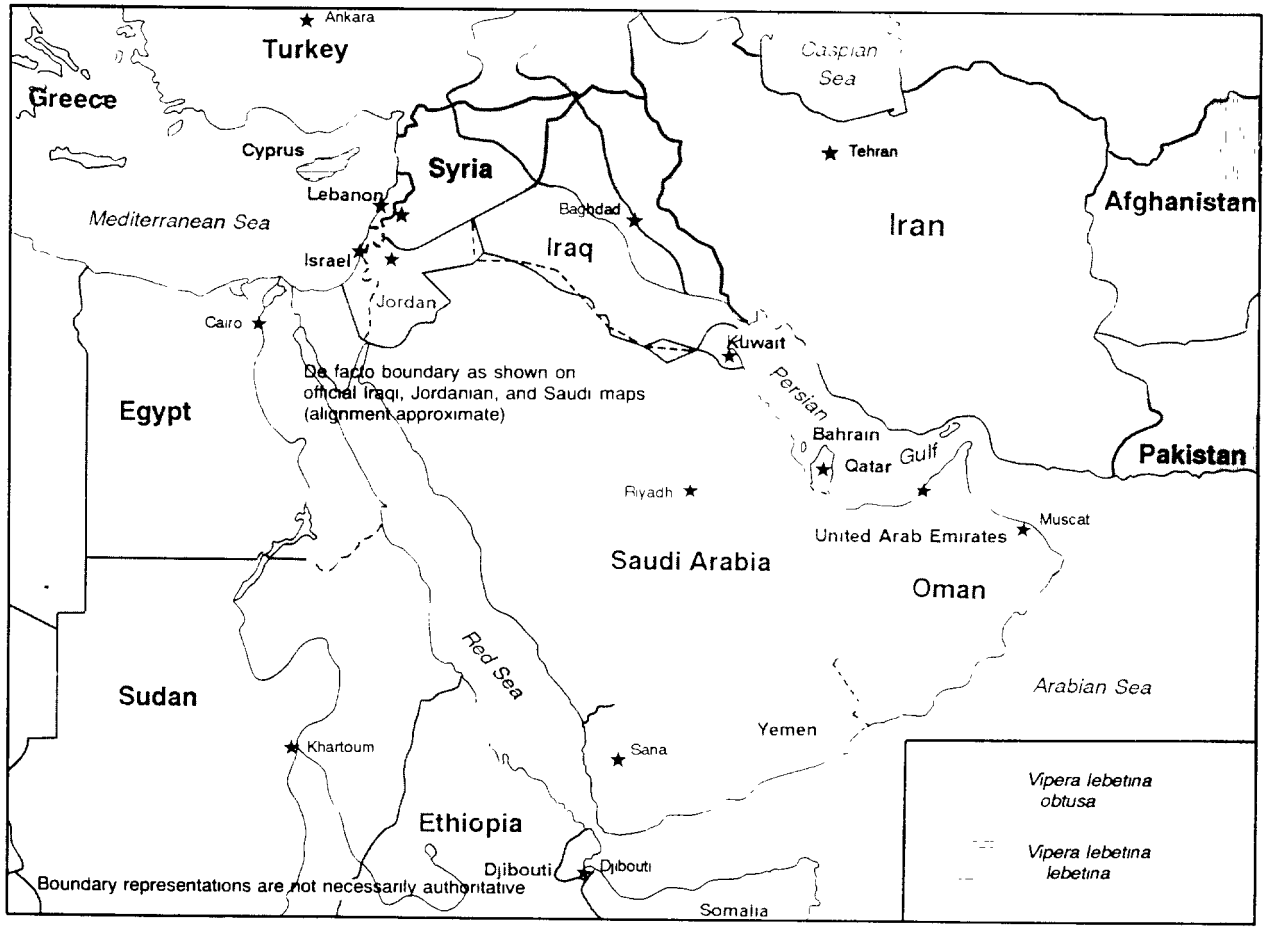

Table III
(U) Poisonous Vertebrates (continued)

Common Name/Scientific Name	Specific Information
Black snake, Innes's cobra, desert black snake, Innes's snake, desert cobra, Walter Innes's snake, "happeter hashshahor" (Hebrew), Sinai cobra (*Walternessia aegypti*; Figure 4) Subspecies: None	***Identification*** — Category II. Average length 0.9 to 1.1 meters; maximum length slightly more than 1.2 meters. Moderately slender. Color glossy black, possibly with brownish tinge. High gloss helps distinguish this species from duller *Naja haje*. Males' tails longer, heads and hoods wider than females'. Hood usually not apparent. Head small, not distinct from neck. Tail short. ***Distribution/habitat*** — Found in: desert areas of northern Egypt, near Nile; the Sinai; along Red Sea coast; the Negev region, southern Israel; western Jordan; Syria; Iraq; Iran. In Saudi Arabia, found in interior plateau east of hills and mountains along Red Sea coast; along Persian Gulf coast near Bahrain; not found in ar-Rub al-Khali, ad-Dahna, an-Nafud, other lifeless desert areas. Also present in Kuwait. Probably present in similar regions of Iraq, but not found in Mesopotamia region. In Iran, found in desert hills of Khuzistan, in foothills of Zagros Mountains at elevations up to 1,000 meters. Primarily a desert species, ranges into adjoining grassland plains or foothills. Seldom found in damp areas. Reports of snake's presence in Lebanon doubtful. ***Behavior*** — Nocturnal, spends much time underground. Eyesight poor. Can be very aggressive. When molested, threatened, or provoked, will hiss violently, strike (generally with closed mouth). Can strike at distances two-thirds its body length. Does not spread a hood or maintain an upright stance. ***Risk*** — Risk moderate, but can be dangerous. Venom highly toxic, but bite victims in Israel, although requiring hospitalization, have recovered without specific antivenin treatment. Only one effective antivenin known to be available. ***Clinical symptoms*** — Venom strongly neurotoxic inhibits blood clotting, causes little local hemorrhage. Symptoms include local pain, swelling, fever, general weakness, headache, vomiting ***ANTIVENIN** SAIMR: "Polyvalent" (Possibly effective)

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***SOURCES OF ANTIVENIN**

BEHR:	Behringwerke AG D3550 Marburg (Lahn), Postfach 167, Germany, Telephone: (06421)39-0, Telefax: (06421)66064, Telex: 482320-01 bwd
HAFF:	Haffkine Bio-pharmaceutical Corporation, Parel, Bombay, India
IRAN:	Institut d'Etat des Serums et Vaccins Razi, P.O. Box 656, Tehran, Iran
KASA:	Central Research Institute Kasauli (Simla Hills), (H.P.), India
PAST:	Institut Pasteur Production, 3 Boulevard Raymand Poincare, 92430-Marnes la Coquette, France, Telephone: (1) 47.41.79.22, Telex: PASTVAC206464F
PAST-ALG:	Institut Pasteur d'Algerie, rue Docteur Laveran, Algiers, Algeria
ROGO:	Rogoff Medical Institute, Beilinson Medical Center, Tel Aviv, Israel
SAIMR:	South African Institute for Medical Research, P.O. Box 1038, Johannesburg, 2000, South Africa, Telephone: 724-1781, Telex: "BACTERIA"
TASH:	Research Institute of Vaccine and Serum, Ministry of Public Health, Ul. Kafanova 93, Taskent, USSR

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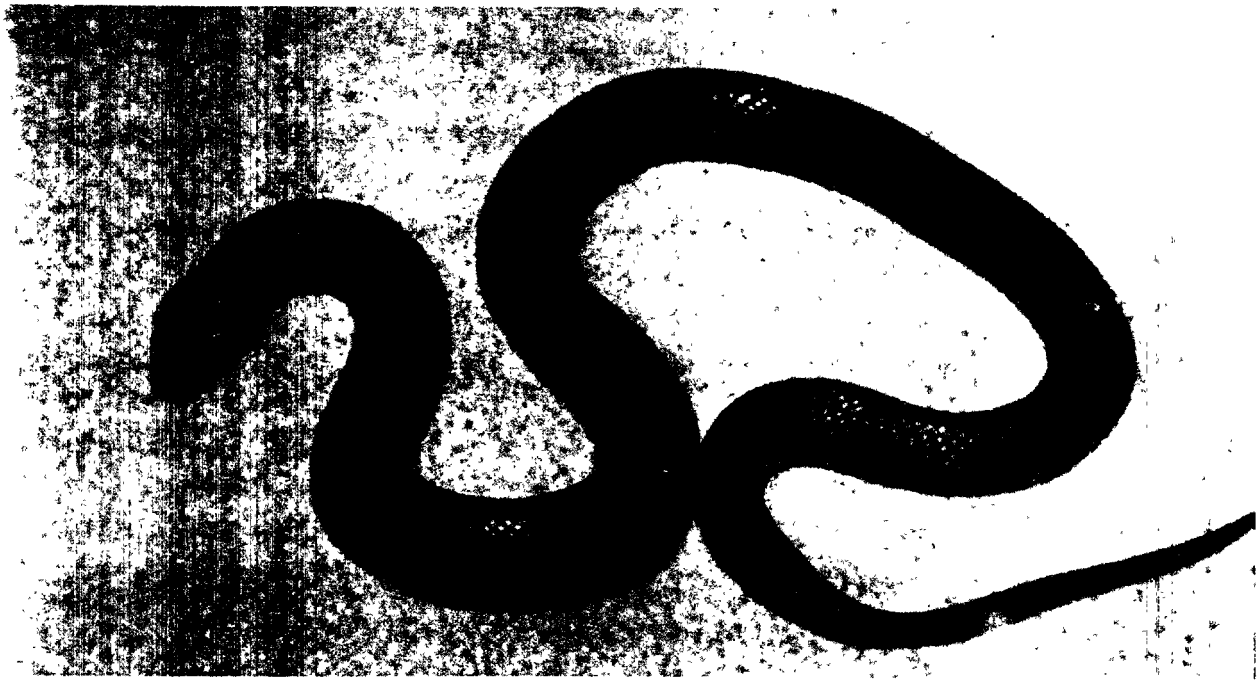

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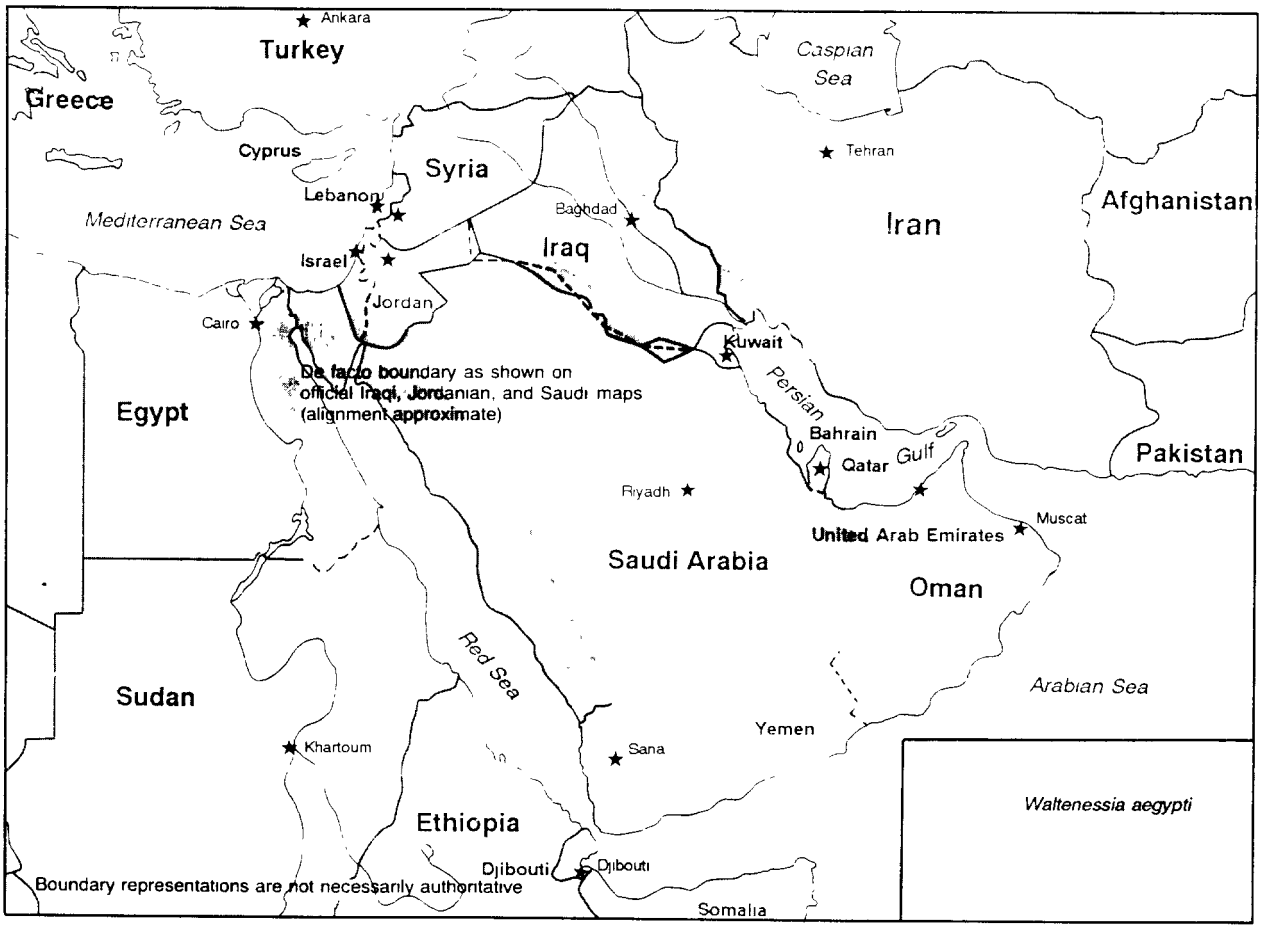

SECTION II

Diseases

(C) Acute diarrheal diseases are the most common medical problem among visitors to the region. Contaminated food and water sources are the usual causes of these diseases.

(U) Malnutrition is a major causative factor of the country's high incidence of infant mortality. There are marked deficiencies of calcium, riboflavin, vitamins A and C, and animal protein in the Iraqi diet. Severe cases of calcium and iodine deficiency occur, particularly among infants. Dietary deficiency diseases include avitaminosis, anemia, scurvy, rickets, osteomalacia, hyperkeratosis, cheilosis, pellagra, and beriberi. Beriberi occurs sporadically among nursing infants.

(U) Diseases on the following list are prioritized in descending order of expected impact on military operations if no preventive measures are taken. The order provided does not take into account possible extraordinary events such as periodic epidemics of highly cyclic diseases, natural disasters, or armed conflict.

DISEASES OF OPERATIONAL IMPORTANCE

(U) **Acute Diarrheal Diseases (6 hours to 10 days)**

Transmission

Ingestion of causative agents or their toxins in contaminated food or water.

Risk Period/Distribution

Year-round, with overall risk elevated from July through September; risk from bacterial etiologies is elevated from June through October, and risk from viral etiologies is elevated from December through March. Risk greater in rural village areas. Countrywide.

Remarks

Moderately endemic, frequently occurring pathogens include enterotoxigenic *Escherichia coli* (ETEC), rotavirus (most common in children), *Shigella* spp. (primarily *Shigella sonnei* or *S. flexneri*), *Salmonella* spp., and *Campylobacter* spp. Salmonellosis increasingly is being reported. Multiple drug-resistance strains of *Salmonella* and *Shigella* presumably are present.

(U) **Enteric Protozoal Diseases (1 week to several months)**

Transmission

Ingestion of causative agents in fecally contaminated water or food.

Risk Period/Distribution

Year-round, with increased incidence in August to September. Countrywide.

Remarks

Frequently associated with more chronic infections, protozoans such as *Entamoeba histolytica*, *Giardia lamblia*, and *Cryptosporidium* spp. can cause acute diarrhea. Moderately endemic; clinical cases of giardiasis and amebiasis are common. Giardiasis also could present with constipation. Giardiasis usually is seen in children and is the most commonly detected intestinal parasite. Amebiasis is the most common cause of clinical dysentery; carriers are common in apparently healthy adults, including higher socioeconomic groups in urban areas.

(U) **Sandfly Fever (3 to 4 days)**

Transmission/Vector Ecology

Bite of an infective sand fly. *Phlebotomus papatasi*, the primary vector, is most active between dusk and dawn, has a limited flight range, is peri-domestic in its breeding habits, and readily enters human habitations to feed.

Risk Period/Distribution

Transmission occurs primarily from April to October, coinciding with vector activity, which peaks in August and September. Foci may occur throughout the country, paralleling the distribution of sand fly vectors; risk may be limited along the southwestern border with Saudi Arabia.

Remarks

Although local populations generally become immune during childhood, sandfly fever poses a significant risk to nonindigenous personnel. Sandfly fever caused significant morbidity

among allied forces in the Persian Gulf theater during World War II. Serological studies indicate that the Sicilian and Naples viruses are present.

(U) **Typhoid and Paratyphoid Fevers (1 to 3 weeks)**

Transmission

Ingestion of causative agent in food and water contaminated by feces or urine of infective humans.

Risk Period/Distribution

Year-round, with increased incidence from June to August. Countrywide.

Remarks

Moderately endemic. The carrier rate likely is high, but data are not available. Multiple drug resistance has been reported. May be a significant source of morbidity among nonindigenous personnel.

(U) **Malaria (12 to 14 days; Figure 5)**

Transmission/Vector Ecology

Bite of an infective mosquito (*Anopheles* spp.). The primary mosquito vectors are *An. sacharovi* and *An. superpictus* countrywide, and *An. stephensi* (associated with urban malaria) in the south; all will feed on humans indoors. Larva of *An. sacharovi* breed in brackish as well as fresh water.

Risk Period/Distribution

Transmission occurs from May through November, with a seasonal peak in July and August. Risk areas include rural and urban areas in the northern provinces of Dahuk, Ninawa, Irbil, As Sulaymaniyah, and Tamin at elevations below 1,500 meters. (Baghdad is risk free.)

Remarks

A persistent low level of endemicity exists in the north; malaria transmission was interrupted in other parts of the country during the early 1980s. The majority of clinical cases usually are seen from July through September. Nearly all indigenous cases are attributed to *Plasmodium vivax*, and drug-resistant falciparum malaria is not considered a risk. Most cases reported from southern areas are imported, but the region is considered receptive.

(U) **Acute Respiratory Infections (1 to 10 days)**

Transmission

Direct or indirect contact with infectious droplets.

Risk Period/Distribution

Year-round. Influenza risk elevated from December through February; risk of other etiologies increases in July and August (related to dusty environment). Countrywide.

Remarks

Presumably highly endemic, but expected impact on military operations is difficult to assess because data on incidence and specific etiologies is not available. Large outbreaks of influenza have occurred. During the late 1980s, isolates of influenza A(H3N2) predominated over those for A(H1N1) and B. Although other etiologies could become a major source of morbidity among nonindigenous personnel, effects on operational readiness of military units may be limited.

(U) **Arboviral Fevers (Other than Sandfly Fever) (3 to 12 days)**

Lack of incidence data may reflect inadequacies in diagnostic capabilities.

Crimean-Congo hemorrhagic fever (CCHF) is enzootic and is widely distributed in discrete foci, with a small number of clinical cases reported sporadically. The virus is transmitted by infective *Hyalomma* ticks or by exposure to infected animals (usually sheep, goats, or cattle) or humans. Transmission risk is greatest from June through September. CCHF first was reported in 1979 from Baghdad, Diyala, and Karbala; an unconfirmed source reported over 300 fatalities among Egyptian agricultural workers in 1980. The virus circulates in rural agricultural areas, especially in the north. Many infections are apparently asymptomatic, and serological evidence indicates exposure rates of up to 30 percent among persons associated with livestock.

Dengue fever historically has been reported in the southern regions, but current data is not available; the potential mosquito vector, *Aedes aegypti* is present.

boring countries; potential mosquito vectors are present. Risk would be greatest in spring and summer months.

(U) **Meningococcal Meningitis (2 to 10 days, usually 3 to 4 days)**

Transmission

Direct contact, including droplets and discharges from noses and throats of infected persons.

Risk Period/Distribution

Year-round, with peak incidence from November through February. Countrywide, with increased risk under crowded living conditions.

Remarks

Endemic but cyclic. Usually occurs as sporadic cases, but with epidemics every 8 to 12 years. Most cases occur in children and young adults, with an overall case fatality rate between 10 and 25 percent. Group A usually predominates, but an unconfirmed outbreak attributed to Group W-135 occurred in Al Basrah in 1989; additionally, Group W-135 case reporting increased in neighboring countries during the late 1980s.

(U) **Sexually Transmitted Diseases (STDs) (2 days to 3 weeks)**

Transmission

Sexual contact.

Risk Period/Distribution

Year-round; countrywide.

Remarks

Endemic but levels are unclear. Recent unconfirmed reports indicate that gonorrhea is a severe problem. Penicillin-resistant strains of *Neisseria gonorrhoeae* (PPNG) and other acute STDs have not been officially reported, but presumably occur.

(U) **Cholera (usually 2 to 3 days, range of 6 hours to 5 days)**

Transmission

Ingestion of causative agent, primarily in water contaminated with feces or vomitus of infective humans.

Risk Period/Distribution

Undetermined.

Remarks

Endemic status unclear, but nonindigenous personnel on western military rations are at low risk of infection. Although cases were not reported officially from Iraq in the 1980s (the most recent reported outbreak occurred in 1978), outbreaks have occurred in neighboring countries as recently as 1990.

(U) **Enterically Transmitted Acute Viral Hepatitis (A and E) (15 to 65 days)**

Transmission

Person to person by the fecal-oral route.

Risk Period/Distribution

Year-round, countrywide.

Remarks

Hepatitis A is highly endemic and may pose a major health threat to nonindigenous personnel; most Iraqis contract hepatitis A virus infection during childhood. Hepatitis E has not been reported, but presumably occurs.

(U) **Leishmaniasis (1 week to many months; Figure 6)**

Transmission/Vector Ecology

Bite of an infective sandfly (*Phlebotomus* spp.). Most sand flies are active from between dusk and dawn, and have a very limited flight range. The primary vectors for cutaneous leishmaniasis (CL) include *P. sergenti* for *Leishmania tropica* and *P. papatasi* for *L. major*. The suspected vectors for visceral leishmaniasis (VL), caused by *L. donovani*, are *P. alexandri* and *P. papatasi*.

Risk Period/Distribution

Transmission primarily occurs from April through November, peaking August to October. CL and VL occur countrywide, but cases are more commonly reported from foci in the central regions.

Remarks

Most CL cases, especially in urban areas (such as Baghdad and Mosul), are caused by *L. tropica*, with peak incidence from October through February. No animal reservoir has been identified, and the disease likely circulates only between humans and sand flies. Infections caused by *L. major* usually occur in rural areas; the principal zoonotic reservoirs are cricetid rodents, particularly gerbils (*Psammomys obesus* and *Meriones* spp.). These rodents establish their burrows in areas where halophilic plants are available as a food source. VL is more common in rural areas in focal lowland areas having alluvial soil and peak incidence is from December to April. The reservoir for VL is unknown, but suspected to be jackals and dogs.

(U) **Schistosomiasis (2 to 6 weeks; Figure 7)**

Transmission/Vector Ecology

Penetration of the skin by waterborne larval forms (cercariae) that develop in snails in fresh water impoundments. The primary intermediate host for *Schistosoma haematobium* (urinary schistosomiasis) is *Bulinus truncatus*.

Risk Period/Distribution

Transmission occurs year-round, with increased risk from June through September. Focally distributed in areas near the Tigris and Euphrates Rivers, especially in the central regions. No transmission occurs south of Al Basrah because the waters in this area are too saline for the snail intermediate hosts.

Remarks

Only *S. haematobium* is present in Iraq, which has low level prevalence in endemic foci. Reported annual case totals decreased in the 1980s as a result of control programs.

(U) **Parenterally Transmitted Acute Viral Hepatitis (B, C, and D) (15 to 180 days)**

Transmission

Contact with causative agent through blood transfusions, contaminated needles, sexual contact, and contaminated perineal wounds.

Risk Period/Distribution

Year-round, countrywide.

Remarks

Hepatitis B virus (HBV) is prevalent in the general population (nearly 40 percent of pregnant women in one study had HBV markers), and the HBV carrier rate is estimated at 4 percent. Hepatitis D has been found in approximately 5 percent of HBV carriers. Hepatitis C has not been reported, but presumably occurs.

OTHER DISEASES ENDEMIC IN THE INDIGENOUS POPULATION

(U) **Zoonotic Diseases**

Brucellosis (enzootic, particularly in goats and camels; human cases, usually due to consumption of raw goat or camel milk, caused by *B. melitensis* are common, with recent outbreaks); Q fever (enzootic; rarely reported in humans, but human serology in rural areas indicates exposure); anthrax (enzootic, with outbreaks in livestock reported; occupational exposure usually involves sheep); echinococcosis (enzootic, with stray dogs in rural agricultural and urban areas commonly infected; hydatid disease endemic, accounting for 1 percent of all surgical procedures); rabies (enzootic, particularly in the northern rural areas, where jackals constitute the primary reservoir, with some spillover into stray dogs; fewer than 10 human cases annually).

(U) **Vectorborne Diseases**

Plague (flea-borne; cases have not been reported, but enzootic foci historically have existed in the highlands near the border with Syria and along the Tigris-Euphrates River extending to Kuwait); flea-borne typhus (sporadic cases occur, particularly in southern areas); tick-borne relapsing fever (cases have not been reported, but restricted enzootic foci exist in a belt through central Iraq, extending from Syria to Iran); louse-borne typhus (last reported in 1977-1978 from endemic foci in central regions); louse-borne relapsing fever (endemic in northern Iraq).

(U) **Sexually Transmitted Diseases**

AIDS (although some are thought to have occurred, no officially reported cases through the end of 1990; in-country testing for HIV infection reportedly is performed, but no data are available).

(U) **Other Infectious Diseases**

Trachoma (widespread, especially in rural areas and among nomadic tribesmen; control measures reduced incidence during the 1980s, but it is still the most common cause of preventable blindness in Iraq); intestinal helminthic infections (including hymenolepiasis, ascariasis, enterobiasis, trichuriasis common in rural areas and among lower socioeconomic groups); tuberculosis (endemic, annual incidence reportedly declined during the late 1980s, but prevalence remains moderate, especially in rural areas).

SECTION III

Health Services

Civilian Health Services

(C) Iraq's population of approximately 19 million is growing at a rate of 3.9 percent a year. Infant mortality is 67 per 1,000 live births, and life expectancy is 66 years for males and 68 for females. While these figures are an improvement over previous estimates, they reflect a national health care infrastructure incapable of meeting the medical needs of its people. The rural population is particularly underserved.

(S) Iraq's health care infrastructure suffered a serious setback as the result of the country's 8-year war with Iran. Most health programs and construction projects begun before the war were delayed or abandoned as the majority of Iraq's health resources were diverted to the war effort.

(S) As the result of their wartime experiences, many Iraqi medical personnel developed valuable emergency medical and surgical skills. Iraq's emergency response capabilities developed considerably through the repeated mass casualties, triaging, and treatment of tens of thousands of trauma victims.

~~(S)~~ While the medical system benefitted from the practical emergency and surgical experience derived from the conflict, the war severely depleted the country's supplies of blood, blood products, intravenous (IV) solutions, hospital beds, disinfectants, and medicines (particularly analgesics). Hospitals were overcrowded, undermanned, and filthy. Sanitation, basic hygiene, preventive health programs, and public health standards declined, contributing to increased incidence of some communicable diseases (acute diarrheal diseases and typhoid/paratyphoid fevers) as well as vectorborne diseases (typhus, malaria, arboviral fevers, leishmaniasis, and schistosomiasis). The war also created an increased incidence of psychological disorders (peptic ulcer disease, psychosomatic illnesses, neuroses, psychoses, and stress-induced cardiovascular disease).

(b)(1),1.4 (c)

(b)(1),1.4 (c)

(S) Iraq has an estimated 7,000 physicians, 10,000 nurses, 16,000 pharmacists, 1,000 dentists, and 8,640 other medical personnel. The maldistribution of health manpower exacerbates the shortages of health care workers. Most medical personnel are concentrated in major cities, leaving small towns and rural areas with insufficient health care. Baghdad, which has roughly 27 percent of the population, has nearly 49 percent of all the country's physicians (3,340).

(S) By Western standards, the quality of Iraqi medical personnel ranges from poor to good, but the majority are believed to fall on the lower end of the scale, particularly nurses. Those who received their medical training in Western universities are judged to be generally more competent than those trained in Iraq. Medical personnel working in urban areas generally are better qualified than those in rural areas.

(S) Trauma care capabilities are rated especially high, due to the years of wartime experience. However, the war also prevented many Iraqi physicians from traveling abroad, limiting their exposure to new medical and surgical advances. Medical training, testing, nursing, and preventive medicine programs have been described as below par.

(C) The shortage of nurses is as acute in Iraq as it is in other Middle Eastern countries, primarily due to the Islamic objection to women working with and around unclothed men. Iraq has only one-fifth the number of nurses required to staff existing hospitals and clinics. Efforts are being made to recruit more

candidates for nursing schools with some success. Nevertheless, a serious nursing shortage is expected to persist.

(C) The country's medical training system is being expanded and modernized, but not on a scale that will significantly improve the quality of health care in the near future. Iraq has employed some expatriate contract health workers (from Egypt, Pakistan, India, the Philippines, Cuba, China, Japan, and South Korea). However this work force did little to alleviate the shortage. Moreover, the recruitment of non-Arabic speaking personnel, unfamiliar with local language and customs further contributes to the country's health care problems.

(U) As of mid-January 1991, the majority of Iraq's expatriate medical work force from the West and other countries which support Desert Shield/Desert Storm operations, are believed to have departed Iraq. While the overall impact of their departure on the country's health care infrastructure is assessed as minimal, the loss of the primarily Irish and Western European health workers at Baghdad's Ibn al Bitar Hospital (also referred to as the PARC or Irish Hospital) raises serious doubts about the future capabilities of what had been considered the foremost hospital in Iraq. A small 200-bed private institution, the Ibn al Bitar offered clean and modern services with the best surgical care and laboratory services in the country. The hospital was almost exclusively used by the country's elite and served as the primary referral facility for foreign diplomats and their families stationed in Baghdad.

(S) After the August 1990 Iraqi invasion of Kuwait, Iraqi troops stripped Kuwaiti hospitals of sophisticated medical equipment and supplies: ambulances, kidney dialysis units, blood, frozen plasma, blood banking equipment, entire operating theaters, equipment from organ transplant and burn centers, orthopedic equipment, x-ray machines, x-ray film processors, laboratory equipment, EKG machines, CT scanners, ultrasound machines, ENT equipment, surgical laser equipment, photographic equipment, furniture, air-conditioning units, medications, and other consumable medical stores. Despite reports of Iraqi looting, most medical equipment and (more importantly) consumable medical stores (such as bandages, syringes, medicines) were sent back to Iraq and were not easily available to troops in the Kuwait theatre of operations (KTO).

Military Health Services

(C) Military medical support for Iraq's Armed Forces is provided by the Iraqi Army Medical Service (IAMS). The IAMS's capability to staff and supply fixed medical installations and field medical units, however, is limited by shortages of medical and health care personnel and by reliance on imports of medical materiel.

(C) Personnel shortages exist in most, if not all, principal health categories within the IAMS. The physician shortage is acute, particularly among specialists (especially orthopedic surgeons). Lack of trained orthopedic surgeons has contributed to the high number of amputees among soldiers with extremity injuries.

(C) Overall, the qualifications of Iraqi military medical personnel are considered fair. Iraq's military medical service has a number of senior physicians who have received US and/or United Kingdom training, however, the majority of the junior physicians are not as well trained. In many instances, treatment quality suffers because physicians lack the training necessary to operate newer, more complex medical equipment. The quality of nursing care in military hospitals is very low.

(b)(1),1.4 (c)

~~(S)~~ The IAMS can be expected to apply the following combat medical lessons learned from the Iran/Iraq War to any future regional conflict:

~~(S)~~ During the first 4 to 5 years of the Iran/Iraq War, the IAMS was overwhelmed and could not cope with the massive number of casualties. Many Iraqi sol-

diers died for lack of treatment. Additionally, a disproportionate number of wounded were lost to secondary wound infections, especially burn casualties.

[redacted]

The purchase of wound dressings offering greater wound protection for all injuries, including burns, has since become a high priority issue within the IAMS. (b)(1),1.4 (c)

~~(S/WN)~~ As the Iran/Iraq War progressed, the Iraqis learned from their earlier mistakes. Instead of sending the majority of their casualties to hospitals in Baghdad or Al Basrah, where they quickly inundated available facilities, they sent only the more seriously wounded to the rear, keeping the lesser injured closer to the front in corps level field hospitals and civilian hospitals, hotels, and schools appropriated by the military.

~~(S/WN)~~ After the war, construction of new treatment facilities specializing in the management of burn, orthopedic, neurologic, and renal injuries was initiated.

Forward Military Medical Capabilities

~~(S/WN)~~ Iraqi military medical care is provided at the tactical level by division field hospitals, unit clinics, and field medical units organic and/or attached to combat formations. The responsibility for medical evacuation is assigned to the field ambulance section, a field medical unit that is subordinate to the brigade.

~~(C)~~ Medical personnel are assigned to battalion level or higher, with a physician at each level. The battalion aid stations are located in the battalion administrative area, about 5 to 10 kilometers behind front line or 2 kilometers behind last line of defense. Physicians and enlisted corpsmen assigned to these stations perform triage, render first aid, and treat simple wounds. No beds are available and there are minimal supplies and drugs at this level of support. Evacuations from the aid station are conducted using ambulances and litters. The brigade treatment post retriages patients and has no long-term holding capability.

~~(C)~~ At the division level, casualties are again retriaged with most critically wounded sent to a rear fixed facility (probably either Al Basrah or Baghdad) and the least critically wounded sent to a corps level field hospital. Aeromedical evacuation is available at this level, using corps assets. At the corps level, field hospitals perform emergency surgical intervention (hemostasis, fracture immobilization, debridement, amputation, laparotomy) and general stabilization.

~~(S/WN)~~ Iraqi medical evacuation during war consists primarily of ground ambulances, augmented by empty supply vehicles returning to the rear, hospital trains, helicopters, planes, trucks, and school buses. Aeromedical evacuation is provided to division level field medical units by the corps helicopter wing on a limited basis. Helicopters are the assets of Iraqi Army Aviation Command, not the Air Force. Iraqi Air Force transport planes may provide limited aeromedical evacuation support; some were configured for litters during Iran/Iraq War.

~~(S)~~ When the rear hospitals become unable to accept any more casualties, medical personnel assets (military and civilian physicians, nurses and paramedics) may be transferred to forward field medical units and hospitals.

~~(S/WN)~~ Iraq's upgrading of earth tracks in Kuwait with bituminous treatment can be expected to enhance ground evacuation capabilities, particularly to medical facilities in southern Iraq (Al Basrah and Umm Qasr). The Iraqi rail line connecting Baghdad to southern Iraq is likely to play a critical role in transport of large numbers of casualties to major military hospitals in Baghdad. (b)(1),1.4 (c)

[redacted]

~~(C)~~ Experience from the Iran/Iraq War demonstrated that in the face of massive combat casualty requirements, Iraq's medical infrastructure was unable to maintain basic hygiene and preventive health requirements. As a result, wound infection and communicable disease rates (such as typhoid, typhus, and malaria) were extremely high. Insufficient water sources contributed to hepatitis and diarrheal illness (from soldiers forced to drink contaminated water). As of mid-January 1991, we are seeing a similar

situation among Iraqi forces currently deployed in southern Iraq and Kuwait.

~~(C)~~ The following information relates to Iraqi military medical capabilities in the KTO as of mid-January 1991:

(b)(1),1.4 (c)

(S/WN/NC) Iraqi military deployed in the KTO are believed to be experiencing serious health problems and psychological problems, largely due to inadequate logistics support. Communicable diseases due to contaminated food and water also have been reported.

(b)(1),1.4 (c)

(b)(1),1.4 (c)

Blood Banking

~~(C)~~ Iraq is not capable of providing adequate blood and blood plasma to support its civilian medical facilities. The principal reason for the inability to collect sufficient quantities of blood is the reluctance of the population to donate blood.

Civilian Casualty Management

(b)(1),1.4 (c),1.4 (d)

(U) The Ministry of Health (MOH) has a limited capability for activating and operating emergency medical services in disaster situations, but it can effectively mobilize the country's medical resources in support of national military objectives. The MOH effectively coordinates the national medical effort with international agencies, other civilian and military elements of the national government, and the provincial and desert administrations.

(U) In times of major disasters, aid is available from state, private, and charitable medical facilities, but assistance would be required from international organizations to include personnel, medical materiel, pharmaceuticals, and food. The MOH manages disaster-related inoculation and quarantine services through the provincial and desert medical administrations. There are a number of ambulance centers distributed around the country. The Red Crescent Society operates a blood bank and provides first aid training.

Hospitals

(b)(1),1.4 (c) [redacted] Most of them are government owned and operated.

(S) With few exceptions, the overall quality of health care delivered in Iraqi hospitals is marginal by US standards. Major factors which adversely effect the quality of hospital care in Iraq include poor sanitation, insufficient quantities of medical supplies and equipment, countrywide medical personnel shortages, poorly qualified medical staff, and shortages of physician specialists and nurses. The general mistrust in Iraqi medicine is evidenced by the regular travel of the social and political elite to foreign countries for medical treatment.

~~(S)~~ There are some islands of high class medicine in university-affiliated hospitals and other hospitals staffed by British trained Iraqi physicians. Additionally, some Iraqi hospitals, specifically the newer (b)(1),1.4 (c) hospitals [redacted] have some sophisticated equipment and services.

(S/WN/NC) The 1,200-bed Saddam Hussein Medical City Hospital (until the summer of 1990, it was named the Baghdad Medical City Hospital) in Baghdad is the best government hospital in the country. The hospital complex includes a modern, state-of-the-art 400-bed, subspecialty surgical hospital and is equipped with at least two CT scanners (one of which is broken and is unlikely to be repaired).

~~(C)~~ Over the past few years, Iraq also is reported to have opened several 400-bed surgical hospitals similar to the one collocated with the Saddam Hussein Medical City Hospital. [redacted] (b)(1),1.4 (c)

[redacted] (b)(1),1.4 (c) Table IV provides information on hospitals in Iraq.

Table IV
(U) Hospitals

CITY: Baghdad
COORDINATES: 33-21-XXN 44-25-XXE

FACILITY:	Ibn al-Bitar Hospital
ADDRESS:	Just west of Central Radio/TV broadcasting station
TYPE:	Private
BEDS:	200

EVACUATION CAPABILITY

Distance from airport:	Saddam International Airport
Airport capacity:	C-130, C-141B, KC-10
Distance from seaport:	Between 400 and 450 km from Al Basrah
Ambulance:	Probably
Ambulance telephone:	City ambulance phone - 122

PERSONNEL

Physicians/ Qualifications:	See comments
Nurses/Qualifications:	See comments
Auxiliary personnel/ Qualifications:	See comments

ENGLISH SPEAKING STAFF Yes

MEDICAL SERVICES

Emergency room:	Yes
Operating room:	6 - reported to have best surgical care in Iraq
Intensive care unit:	Probably
Ancillary services:	X-ray, laboratory (best in Iraq), pharmacy, radiotherapy
Specialties:	General medical, surgical, cardiology, ENT, plastic surgery, renal lithotripsy
Mass casualty capability:	Probably can handle only a small number of serious casualties - but probably has good triage capability

SUPPORT SERVICES
Power supply: A.C. 50 cycle; 220/380 volt; 1,3 phase

COMMENTS
Employed staff of 600 (550 expatriates from Ireland and West Europe - quality probably declined significantly with their departure). Referral facility for Iraqi notables and foreign diplomats.

~~CONFIDENTIAL~~

Table IV
(U) Hospitals (continued)

CITY: Al Basra
COORDINATES: 30-30-40N 04-75-130E

FACILITY: Port Hospital
TYPE: Government
BEDS: 800

EVACUATION CAPABILITY
Distance from seaport: City located on Shatt Al Arab

PERSONNEL
Physicians/
Qualifications: Approximately 20

ENGLISH SPEAKING STAFF Probably some of the senior staff

MEDICAL SERVICES

Emergency room:	Probably
Operating room:	Yes
Intensive care unit:	Probably
Ancillary services:	X-ray, laboratory
Specialties:	General medical, surgical, cardiology, EENT, OB/GYN, ophthalmology, otolaryngology, dermatology, radiology
Mass casualty capability:	Could be expected to treat military casualties during war

SUPPORT SERVICES
Power supply: A.C. 50 cycle; 220/380 volts; 1,3 phase

COMMENTS
Hospital name is not confirmed.

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Pages 24 and 25 are denied in full per FOIA exemption (b)(1).

(b)(1),1.4 (c)

(b)(1),1.4 (c)

Table IV
(U) Hospitals (continued)

CITY: Baghdad
COORDINATES. 33-20-58N 44-22-46E

FACILITY:	Saddam Hussein Medical City Hospital (Formerly Baghdad Medical City Hospital)
ADDRESS:	Ar Razi & Al Asharit Streets (North Gate)
TELEPHONE:	4168611/4169004
TYPE:	Civilian
BEDS:	1,200

EVACUATION CAPABILITY

Distance from airport:	Estimate 15-25 km from Saddam International Airport
Airport capacity:	C-130, C-141B, KC-10
Distance from seaport:	Between 400 and 450 km from Al Basra
Ambulance telephone:	City ambulance phone - 122

PERSONNEL

Physicians/ Qualifications:	Senior staff probably better trained
ENGLISH SPEAKING STAFF	Probably some of the senior staff

MEDICAL SERVICES

Emergency room:	Probably
Operating room:	15 rooms
Intensive care unit:	Yes, and a cardiac unit
Ancillary services:	X-ray, laboratory (state of art), pharmacy
Blood banking/ Donor center:	Yes
Specialties:	General medical, surgical, pediatrics (all major services)
Specialized equipment:	2 CT scanners [redacted] (b)(1),1.4 (c)
Mass casualty capability:	Probably will be used to treat military casualties

SUPPORT SERVICES
Power supply: A.C. 50 cycle; 220/380 volts; 1.3 phase

COMMENTS
Opened 1980. Includes 650 bed surgical hospital, 220 bed pediatric hosp; 11 story 400 bed subspecialty hospital (with 6 ORs). Estimate employs 1,000 employees. Clean facility. Home to Baghdad Medical College. 9 story nurses' residence, 9 story physcian residence, 6-8 story nursing home, and 3 story conference center on compound. Has an underground parking garage located approximately 220m south of main hospital building.

~~CONFIDENTIAL~~

Table IV
(U) Hospitals (continued)

Other Major Hospitals in Iraq

City/Hospital	Coordinates	Type*	Beds
Ad Diwaniyah			
Ad Diwaniyah Hospital	31-59N 44-56E	(G)	400
Al Amarah			
Al Amarah General Hospital	31-50N 47-09E	(G)	400
Al Basra			
Republican Hospital	30-33N 47-47E	(G)	1,000
Al Basrah General Hospital	29-28N 47-48E	(G)	400
National Hospital	30-33N 47-50E	(G)	1,000
Al Hindiyah			
Al Hindiyah General Hospital	32-32N 44-13E	(G)	100
Al Kufah			
Middle Euphrates Hospital	32-02N 44-24E		300
An Najaf			
An Najaf General Hospital	31-59N 44-20E	(G)	400
An Najaf-Saddam Hospital	31-59N 44-20E	(G)	1,200
An Nasiriyah			
An Nasiriyah General Hospital	31-02N 46-16E	(G)	400
Ar Ramadi			
Saddam General Hospital	33-25N 43-18E	(G)	400
(b)(1),1.4 (c)			
Baghdad			
Al Shaab Hospital	33-21N 44-25E	(G)	600
As Sulaymaniyah Teaching Hospital	33-21N 44-25E		
Baghdad General Hospital	33-21N 44-25E	(G)	400
Dar al Salam Hospital	33-19N 44-26E		300
Emergency Hospital	33-21N 44-24E	(G)	400
(b)(1),1.4 (c)			
Republican Hospital	33-23N 44-21E	(G)	1,300
Tuwaitha Hospital	33-19N 44-25E		682
Dahuk			
Dahuk General Hospital	36-52N 43-00E		400
Diwaniyah			
(b)(1),1.4 (c)			
Diwaniyah General Hospital	33-00N 44-35E	(G)	750
Irbil			
Irbil General Hospital	36-11N 44-01E	(G)	400
(b)(1),1.4 (c)			
Republican Hospital	36-11N 44-01E	(G)	750

(b)(1),1.4(c)

~~SECRET~~

Table IV
(U) Hospitals (continued)

Other Major Hospitals in Iraq

City/Hospital	Coordinates	Type*	Beds
Karbala			
Hussein Hospital	32-36N 44-02E	(G)	300
Karkuk			
Iraq Petroleum Company Hospital	35-28N 44-23E	(P)	250
Karkuk General Hospital	35-28N 44-23E	(G)	400
(b)(1),1.4 (c)			
Karkuk Republican Hospital	35-28N 44-23E	(G)	400
(b)(1),1.4 (c)			
Mosul			
Mosul General Hospital	36-21N 43-07E	(G)	400
(b)(1),1.4 (c)			
Shamiyah			
Shamiyah Hospital	32-48N 45-01E	(G)	400
Tikrit			
Tikrit General Hospital	34-36N 43-42E	(G)	400
(b)(1),1.4 (c)			
(b)(1),1.4 (c)			

* (G) Government Hospital
(P) Private Hospital

(b)(1),1.4 (c)

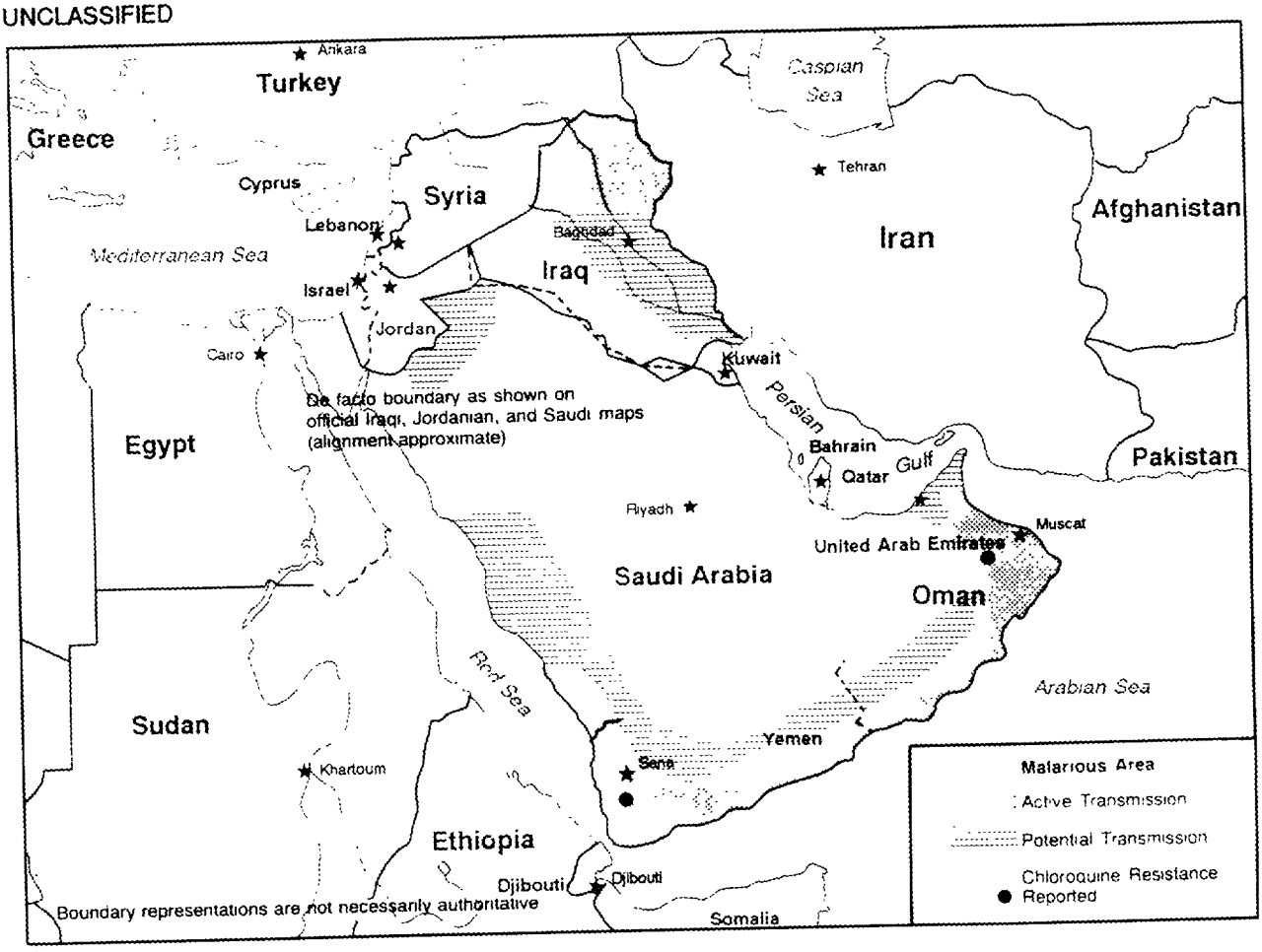
~~SECRET~~

Pages 29 and 30 are denied in full per FOIA exemption (b)(1).

(b)(1),1.4 (c)

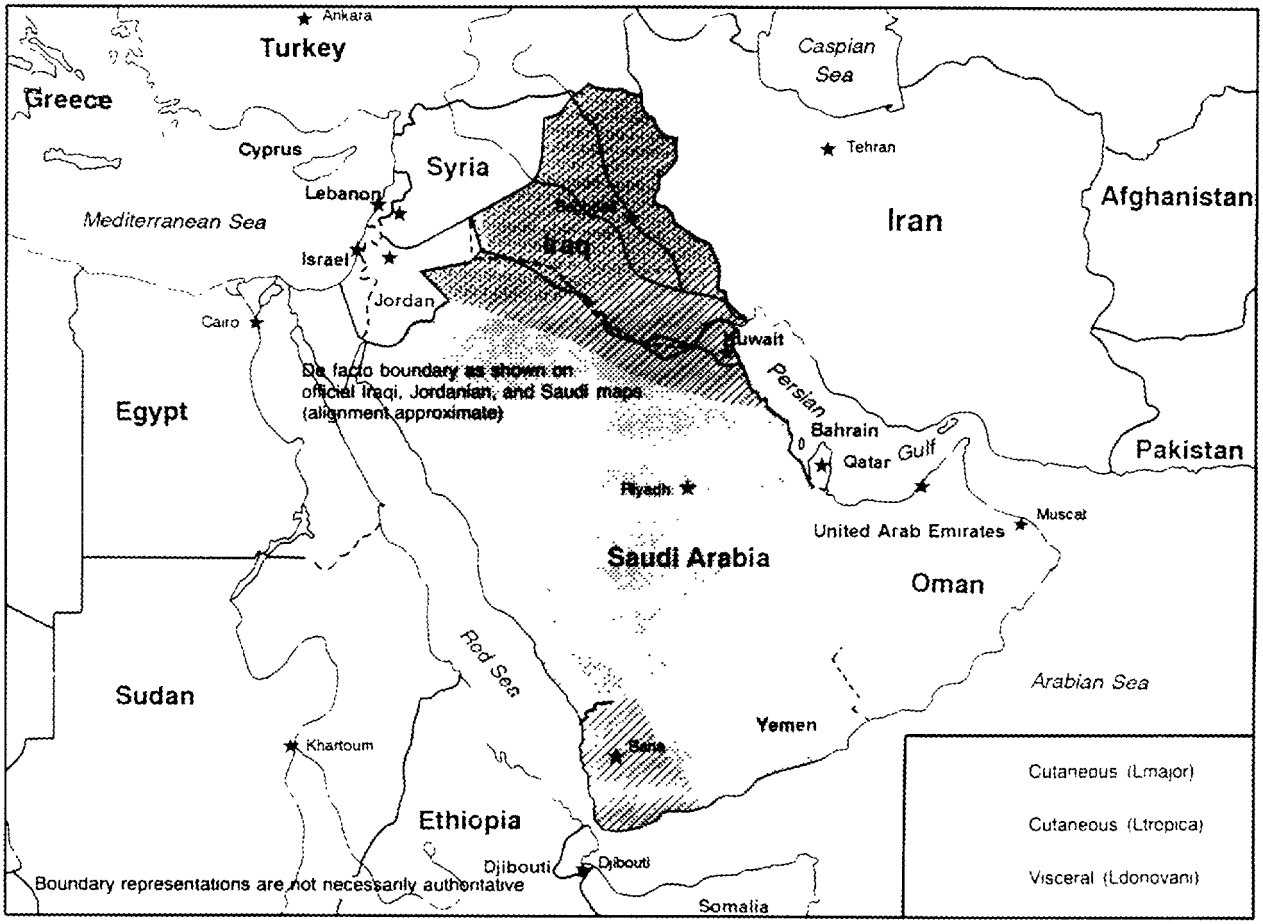
(b)(1),1.4 (c)

UNCLASSIFIED



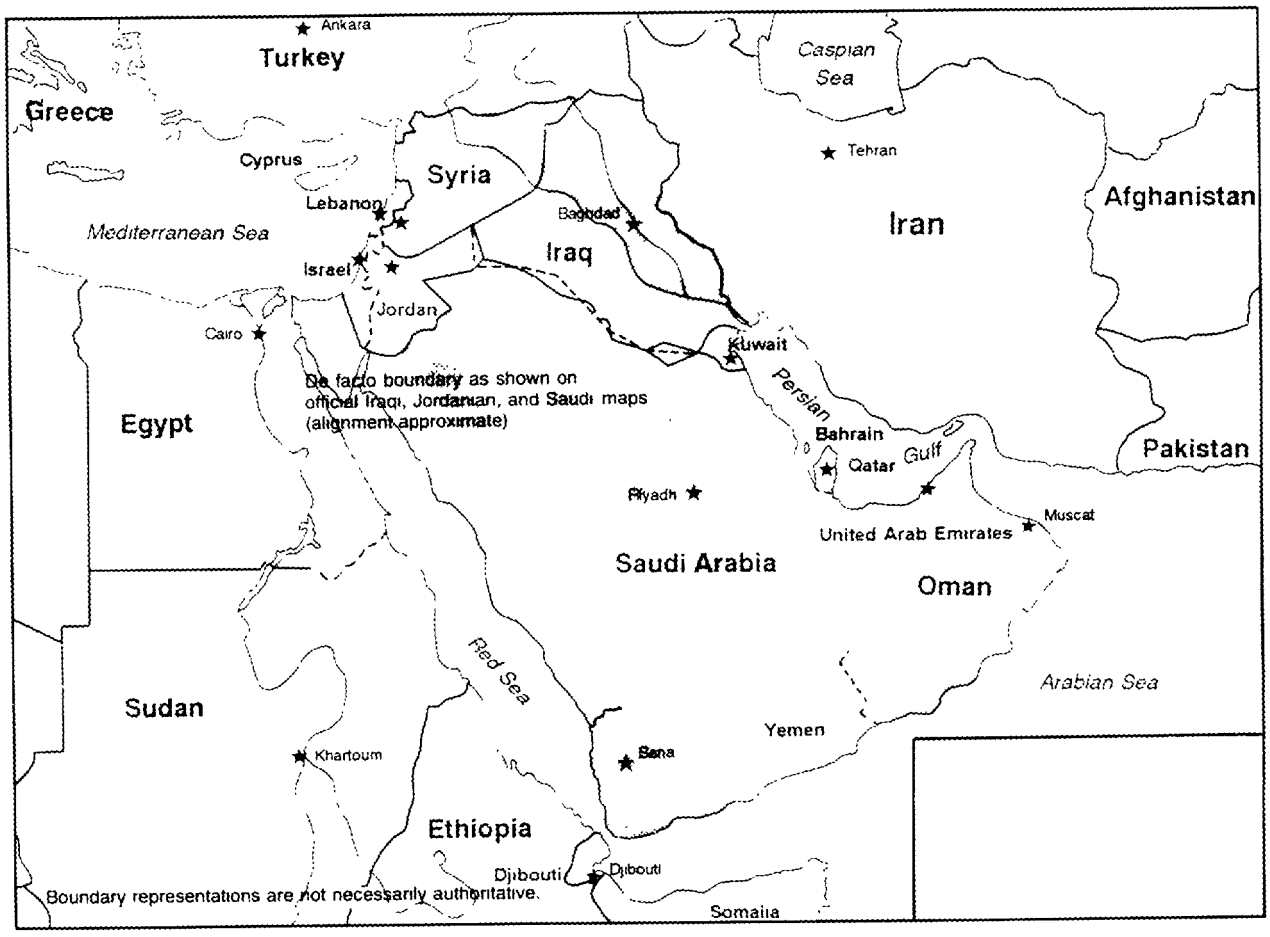
(U) Reported Malaria Distribution in Iraq and the Arabian Peninsula

UNCLASSIFIED



(U) Reported Distribution of Leishmaniasis in Iraq and the Arabian Peninsula

UNCLASSIFIED



(U) Distribution of Schistosomiasis in Iraq and the Arabian Peninsula

Pages 34 and 35 are denied in full per FOIA exemption (b)(3).

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